

4-20-2010

# Student Research Colloquium Proceedings 2010

St Cloud State University

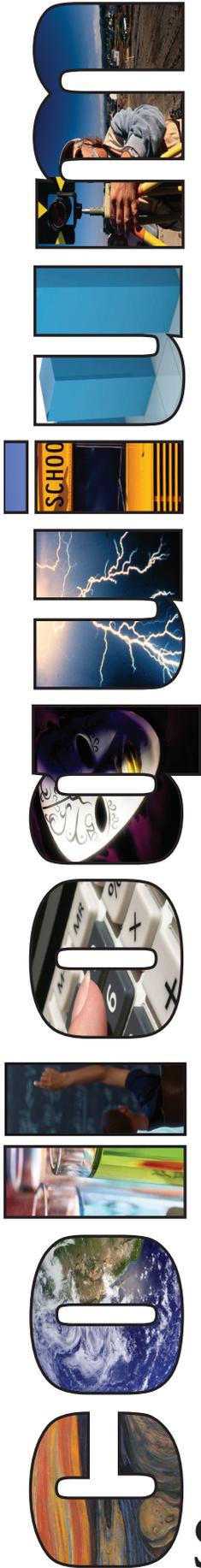
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# STUDENT RESEARCH

PROCEEDINGS

TUESDAY, APRIL 20, 2010

ATWOOD MEMORIAL CENTER

8:00AM - 8:00PM

**ST. CLOUD STATE UNIVERSITY**

## WHAT TO DO WITH A “PASSPORT” AT THE STUDENT RESEARCH COLLOQUIUM

Receive a passport when you pick up your SRC Proceedings booklet.

Have your passport stamped at each presentation you attend.

Be sure to fill out your student information on the back side of the passport.

Present your filled passport (six stamps) at the registration table outside the Atwood Ballroom prior to the evening awards ceremony to become eligible for a \$25 gift card; up to \$400 given away. Passport prizes are limited to students only.

If you need your passport for class credit, you can exchange a fully stamped passport at the registration table for proof of attendance to give to your instructor.

If you are part of the “opt-in” competition for a paper or poster:

- Each member of a group project must complete the competition opt-in requirements in order for that individual member to be eligible for the competition prizes.
- Each student participating in the competition must submit a **fully stamped** passport to the registration desk the day of the SRC, prior to the evening awards ceremony.
- Students nominated for awards are expected to be present with their faculty sponsor at the evening awards ceremony.

# 13<sup>th</sup> Annual Student Research Colloquium

## April 20, 2010

### **KEYNOTE ADDRESS – CASCADE ROOM**



**12:30 – 1:30 p.m. Keynote Speaker**

**1:30 – 2:00 p.m. Reception**

**Michael (Mick) D. Bauer**

Security Columnist, Linux Journal

Infrastructure Security Architecture Team Lead, Wells Fargo

***"Notes from the Trenches: Information Security in the So-Called Real World"***

In this talk, Mick Bauer will tell war stories from his adventures helping to secure one of our nation's largest banks against the best attack efforts of devious hackers, credit-card scammers, organized crime cartels and the scariest type of adversary which information security professions routinely encounter, the enthusiastic businessperson.

In so doing, he will illustrate in thrilling, name-dropping detail how his education, comprised of a Masters in Computer Science from St. Cloud State University and a BFA in Music Education, grounded him in the scientific method, a preference for facts over aspirations and an affinity for lecturing and constructing very long but grammatically coherent sentences, has served him well in what has been an unpredictable but very cool career thus far.

### **LOOKING BEYOND THE NOTES: MUSIC RESEARCH AND PERFORMANCE**

**12:30 – 1:30 p.m. Performing Arts Center, Ruth Gant Recital Hall, Room 230**

Students from the SCSU Music Department will perform and discuss the creative process of performance. Students were selected to present based on faculty nomination.

### **RECEPTION AND CLOSING CEREMONY – CASCADE ROOM**

**6:30 – 7:00 p.m. Reception** – All are welcome to attend the reception

**7:00 - 8:00 p.m. Closing Ceremony** – The following awards will be announced and given:

- Student Research Colloquium Best Poster Awards
- Student Research Colloquium Best Paper Awards
- College of Science and Engineering Denise M. McGuire Research Awards
- William H. Kurtz Sustainability Service Award

## SCHEDULE OF EVENTS

Session	Event	Time	Room
Session A-C	Paper Competition-1	8:00 AM - 9:20 AM	Cascade
Session A-GN	Economics	8:00 AM - 9:20 AM	Glacier North
Session A-GS	Learning and Community	8:00 AM - 9:20 AM	Glacier South
Session A-O	Globalization and Social Change in China	8:00 AM - 9:20 AM	Oak
Session A-VN	Natural Science and Engineering I	8:00 AM - 9:20 AM	Voyageurs North
Session B-B	Poster Session I - All Disciplines	9:00 AM - 10:30 AM	Ballroom
Session C-C	Paper Competition-2	9:30 AM - 10:50 AM	Cascade
Session C-G	Facilitating Human Communication	9:30 AM - 10:50 AM	Granite
Session C-GN	Natural Science and Engineering II	9:30 AM - 10:50 AM	Glacier North
Session C-GS	Sociology and Immigration	9:30 AM - 10:50 AM	Glacier South
Session C-O	Communication	9:30 AM - 10:50 AM	Oak
Session C-VN	Engineering	9:30 AM - 10:50 AM	Voyageurs North
Session C-VS	Biological Sciences	9:30 AM - 10:50 AM	Voyageurs South
Session D-C	Paper Competition-3	11:00 AM - 12:20 PM	Cascade
Session D-G	Are We A Helpful Community?	11:00 AM - 1:20 PM	Granite
Session D-GN	Geography	11:00 AM - 12:20 PM	Glacier North
Session D-GS	Migration	11:00 AM - 12:20 PM	Glacier South
Session D-O	SCSU Survey Center	11:00 AM - 12:20 PM	Oak
Session D-VN	Engineering and Communication	11:00 AM - 12:20 PM	Voyageurs North
Session D-VS	Fulbright Grants for Students	11:00 AM - 12:20 PM	Voyageurs South
Session E-C	Keynote: "Notes from the Trenches: Information Security in the So-Called Real World"	12:30 PM - 2:00 PM	Cascade
Session E-R	Looking Beyond the Notes: A Music Research And Performance Colloquium	12:30 PM - 1:30 PM	Ruth Gant Recital Hall Rm 230, Performing Arts Ctr
Session E-O	Gender and Class in China since Globalization	12:30 PM - 1:50 PM	Oak
Session F-GN	Natural Science and Engineering III	2:00 PM - 3:20 PM	Glacier North
Session F-GS	Studying Complex Systems	2:00 PM - 3:20 PM	Glacier South
Session F-O	Big Processes, Big Change & Globalization in China	2:00 PM - 3:20 PM	Oak
Session F-VN	Humanities I	2:00 PM - 3:20 PM	Voyageurs North
Session F-VS	Behavioral Sciences I	2:00 PM - 3:20 PM	Voyageurs South
Session G-B	Poster Session II - All Disciplines	2:00 PM - 3:30 PM	Ballroom
Session H-GN	Using Mathematics to Solve Problems	3:30 PM - 4:50 PM	Glacier North
Session H-GS	Optimizing Design	3:30 PM - 4:50 PM	Glacier South
Session H-VN	Behavioral Sciences II	3:30 PM - 4:50 PM	Voyageurs North
Session H-VS	Humanities II	3:30 PM - 4:50 PM	Voyageurs South
Session I-B	Poster Session III - All Disciplines	4:00 PM - 5:30 PM	Ballroom
Session J-GN	Effects of Societal Practices	5:00 PM - 5:40 PM	Glacier North
Session J-GS	Behavioral Studies	5:00 PM - 5:40 PM	Glacier South
Session K-C	Reception	6:30 PM - 7:00 PM	Cascade
	Awards Ceremony	7:00 PM - 8:00 PM	Cascade

## STUDENT RESEARCH COLLOQUIUM PROGRAM

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### Session A-C Paper Competition-1

Cascade

**Moderator** Jan Kircher, Assistant Professor, Social Work

Time	Index	Presenter(s)	Project Title
8:00 AM	1	Johnson, Jennina	Free Hugs: Random acts of Kindness at SCSU
8:20 AM	2	Kitzman, Rebecca	Learning Grammar by Learning Languages: How L2 Aids in the Grammatical Understanding of L1
8:40 AM	3	Amatya, Christina	Behavioral Effects of Galantamine in Scopolamine Treated Planaria
9:00 AM	4	Nicklay, Matthew	Market Efficiency and Profitability in the Gambling Market for the NFL from 1979 to 2009

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### Session A-GN Economics

Glacier North

**Moderator** Michael Gorman, Assistant Professor, Learning Resources and Technology Services

Time	Index	Presenter(s)	Project Title
8:00 AM	1	Nicklay, Matthew	Calculus Requirements and the Popularity of the Economics Major
8:20 AM	2	Nintiema, Hermine	The Impact of Literacy, Poverty, and Access on the School Enrollment Rate for Girls in Burkina Faso
8:40 AM	3	Benie, Evelyne	An Empirical Analysis of Leadership and Transparency
9:00 AM	4	Mielke, Trent	Marijuana Use and Productivity

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### Session A-GS Learning and Community

Glacier South

**Moderator** Mildred Burch, Pre-College Coordinator

Time	Index	Presenter(s)	Project Title
8:00 AM	1	Lundeen, Christopher	Different Types of Adult Education on Best Management Practices Influences Subsequent Implementation
8:20 AM	2	Krznarich, Lauren	Second Language Acquisition: Immersion and the Concordia Language Villages
8:40 AM	3	Tokar, Joshua	In the Beginning Was the Word: The Foreign Language Translation Process

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### Session A-O Globalization and Social Change in China

Oak

**Moderator** Stephen Philion, Assistant Professor, Sociology

Time	Index	Presenter(s)	Project Title
8:00 AM	1	Gross, Melissa	China's Religious Reform and Globalization
8:20 AM	2	Gross, Elizabeth	Globalization of Education in China
8:40 AM	3	Vondal, Edward	Tibet, Globalization and Divorce
9:00 AM	4	Thibodeau-Schuldt, Megan	How is China's Role Globally Impacting How Cubans See Capitalism?

## STUDENT RESEARCH COLLOQUIUM PROGRAM

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### Session A-VN Natural Science and Engineering I

Voyageurs North

**Moderator** Hung-Chih Yo, Assistant Professor, Geography

Time	Index	Presenter(s)	Project Title
8:00 AM	1	Ggani, Rasin	Fighting and Dishonest Signaling Among Hermit Crabs When There is a Scarce Resource
8:20 AM	2	Mirza, Muhammad; DeZeeuw, Garrett; Neilson, Christopher	Myoelectric Prosthesis
8:40 AM	3	Meyer, Bowen; Johnson, Aaron; Guevara, Jason	Rapid Production Metal Replacement
9:00 AM	4	Schirmacher, Adam	Design of a Current-Feedback Operational Amplifier

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### Session B-B Poster Session I - All Disciplines

Ballroom

**Moderator** Stuart Umberger, Assistant Director, Leadership Education and Development

Time	Index	Presenter(s)	Project Title
9:00 AM	1	Olson, Marin; Van Bruggen, Andrew	A Comparison of Two Methods for Isolation of CD4+ T Cells: Yield, Purity and Function of Isolated CD4+ Cells
9:00 AM	2	Gehling, Rebecca	Noise Affects on Memory Performance in Working Environments
9:00 AM	3	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn	SCSU Survey Fall 2009 Results
9:00 AM	4	Ford, Ashlee	Creatine Kinase Elevation Following Eccentric Exercise in Females as a Marker for Training Stress
9:00 AM	5	Peightal, Ashley; Feldick, Ashley; Mulbah, Henry; Tong, Wai Yan; Neighbors, Shayna; O'Fallon, Eric; Gross, Broc	Gender and Spatial Distribution of Groups in a Library Environment
9:00 AM	6	Veeramani, Viloshanakumara; Peightal, Ashley; Hasner, Michael	Use of Stereotypes of Race and Gender in the Perception of Facial Expressions
9:00 AM	7	Malla, Kailash; Veeramani, Viloshanakumara	Symmetry, Attractiveness and Facial Emotions
9:00 AM	8	Yee, Jong Hoe; Lee, Yong Heng	Immunophenotyping of Immune Cells Involved in Pathogenesis of Mouse Type 1 Diabetes Induced by Streptozotocin
9:00 AM	9	Zemien, Ashlie; Blenker, Tracy	Isolation of the BceT Enterotoxin in Strains of Bacillus cereus Isolated from Honey
9:00 AM	10	Saucedo, Frederico	Trailing Digit Distribution of St. Cloud State Survey
9:00 AM	11	Hoelscher, Amber; Schotl, Christine; Sullivan, Trisha; Miller, Heather; Moll, Michael; Nelson, Kelley; Jacobson, Jessica	H1N1 Preparedness In Meeker County
9:00 AM	12	Madden, Dennis; Wright, Eric	Design and Calibration of an Arm Ergometer for Nordic Skiers

## STUDENT RESEARCH COLLOQUIUM PROGRAM

9:00 AM	13	Douglas, JoAnna; Acker, Allison; Das, Chelsea; Windschitl, Lauren; Gustafson, Ronnie; Jonak, Cassandra; Beckers, Kayla; John, Jacob; Jacobs, Brian	Underage Drinking in Kandiyohi County
9:00 AM	14	Gunderson, Tracie	Evaluation of Facial Expressions
9:00 AM	15	Johnson, William	Psychological Correlates of Optimism and Test Taking
9:00 AM	16	Her, Maisee; Voegele, Alan	The Incidence of Streptozotocin (STZ)-Induced Autoimmune Diabetes in Janus Tyrosine Kinase (JAK) 3-Deficient Mice
9:00 AM	17	Ward, Tamara; Riddle, Megan; Rotz, Sarah; Shuck, Megan; Timm, Ann; Schwartz, Lauren; Swanson, Rebekah; Vopatek, Rachel	Buffalo Middle School Nutrition Assessment
9:00 AM	18	Niraula, Suresh; Bhattarai, Pallav	City of St. Cloud Surface Water Treatment Stages and Chemical Analysis
9:00 AM	19	Major, Chadwick; Giri, Sujan; Ledford, James; Yoshii, Tsuyoshi	Formula Hybrid Race Car
9:00 AM	20	Alem, Rekike	Mutagenic Potential of Ethylene Glycol Ether Metabolites
9:00 AM	21	Lueck, Andrea; Mortenson, Amanda; Herbst, Micaela; Hanson, Scott; Gruber, Nicholas; Johnson, Cory	Mille Lacs County Community Clinic Assessment
9:00 AM	22	Swanson, Brent; Brisley, Justin	SCSU Formula-Hybrid Electrical Systems
9:00 AM	23	Teoh, Wei Loon; Tay, Yii Van	Role of Human Liver Aldehyde Dehydrogenases in Non-Alcoholic Steatohepatitis (NASH) Caused by High-Fructose Corn Syrup (HFCS)
9:00 AM	24	Chan, Yee Mun	Measurement Equivalence of Multidimensional Aptitude Battery and Wonderlic Personnel Test across Cultures
9:00 AM	25	Hageman, Jonathan	Should Minnesotans Start Farming Their CRP Acres?
9:00 AM	26	Ripplinger, Rhonda; Flicek, Kira; Henning, Chantelle; Ericksen, Elise	Healthcare Cost Effects on Speech-Language Pathologists and Their Clients
9:00 AM	27	Eticha, Gudina	The Impact of Vanadium Flavonoid Complexes on the Catalytic Activity of Phosphodiesterase I
9:00 AM	28	Fortun, Todd	Investigations on the Sensitivity of Predicted Air Quality to the Uncertainty in Anthropogenic Emissions
9:00 AM	29	Popp, Amanda; Daniels, Melissa; Jawando, Abbey; Kilanowski, Chelsea; Lindstrom, Amy; Sonbol, Hend; Surat, Tess; Worm, Sadie	Pain Management in Patients with a History of Chemical Dependency
9:00 AM	30	Vocelka, Lucas	Investigation into Paternal Behavior in Sprague Dawley Rats
9:00 AM	31	Feeny, Briana; Miller, Karissa; Dyce, Elizabeth; Korbol, Liz	Healthcare Benefits for Speech-Language Pathologists
9:00 AM	32	Johnson, Chad; Davenport, Ashley	Pre-Competition Hydration Status of High School Athletes Participating in Different Sports
9:00 AM	33	Kortekaas, Rachel	Earthquake Risk and Hazards: Looking at the 2010 Haitian Earthquake

## STUDENT RESEARCH COLLOQUIUM PROGRAM

9:00 AM	34	Bushendorf, Erin	Should We Be Able to Own Exotic Animals as Pets?
9:00 AM	35	VanHecke, Matthew	Should We Use Food Based Crops For the Production of Biofuel?
9:00 AM	36	Maurer, Mary	Comparing the Effects of Surgical Procedures to Pharmacological Intervention One Year Post Initial Intervention of Women Over 50 Years of Age
9:00 AM	37	Eischen, Erica; Sexton, Amanda; Paulin, Deborah; Willert, Michael; Correa, Mayra; Chamberlain, Rebecca; Allen, Brittani; Achman, Amber; Hoffstrom, Christa	Stearns County: Smoking Assessment of St. Cloud State University
9:00 AM	38	Johnson, Tyler	Trans Fats in St. Cloud Food Establishments
9:00 AM	39	Buzzelli, Kristin	Fluorescence Characterization of Turbine Oils
9:00 AM	40	Liu, Yu; Hillukka, Gary	Non-invasive Measurement of Blood Glucose
9:00 AM	41	Vall, Andrew; Weygand, Martin; Lee, Huey	Precise Semiconductor Measurement System
9:00 AM	42	Hendricks, Wesley	Solar Power: Moving to a Cleaner Green Energy
9:00 AM	43	Kurtzbein, Courtney	The Aggregation of Snowflakes In the Presence of Banded Precipitation
9:00 AM	44	Patzer, Jeremy; Sevilla Rubi, Francisco; Tran, Paul	Autonomous Vehicle Tracker with Obstacle Avoidance
9:00 AM	45	Walsh, Jocelyn; Friebe, Angela; Knutson, Kaitlin; Philippi, Jenna	Speech-Language Pathologists' Opinions About Healthcare
9:00 AM	46	Ong, Wei; Yeoh, See Seong	Effect of Klenz Pre-Moistened Towels on Bacterial Growth
9:00 AM	47	Phuyal, Sandip	An Investigation of the Interaction Between Cholesterol Aggregates and Anticoagulants Using a Fluorescent Probe
9:00 AM	48	Lieser, Elizabeth Ann	Isolation and Expression of the Trypanosoma Receptor in Trypanosoma brucei
9:00 AM	49	Dupay, Tony	Are Home Laboratory Experiments an Effective Tool for Online Chemistry Students
9:00 AM	50	Bialka, Susan	Lakeshore Landscaping
9:00 AM	51	Hager, Alyse	Precipitation Distribution During Midwest Alberta Clipper Cases

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**Session C-C Paper Competition-2** **Cascade**

**Moderator** Monica Garcia-Perez, Assistant Professor, Economics

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Kuschke, April	The Effect of an Atrioventricular Node Ablation and Dual Chamber Sensor Technology on the Well Being of Subjects with Atrial Fibrillation
9:50 AM	2	Thapa, Rajan	Effect of Galantamine and Riluzole on Beta-Amyloid (1-42) using Fluorescence and Atomic Force Microscopy
10:10 AM	3	Liu, Xingcai	Internationalization of MnSCU Universities: The Perspective of Student Mobility

## STUDENT RESEARCH COLLOQUIUM PROGRAM

10:30 AM 4 Byczynski, John My Father's Past, My Children's Future

**Session C-G Facilitating Human Communication Granite**

**Moderator** Corita Beckermann, Director, Student Health Services

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Glidden, Charlotte; Friedrichs, Sarah; Striegel, Sarah	Differences in Affectionate Communication Between Same-Sex and Cross-Sex Friendships
9:50 AM	2	Ostroot, Alissa; Baumgartner, Bridget	Facebook and Communication Apprehension
10:10 AM	3	Li, Xue	Interactive Art

**Session C-GN Natural Science and Engineering II Glacier North**

**Moderator** Carolyn Williams, Associate Dean, Multicultural Affairs and STEM Initiatives

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Chen, Wenjie; Fong, Chen Kwang	Redesign and Optimization of Steel Coil Storing Inventory Space at a Freezer Manufacturing Company
9:50 AM	2	Johnson, Lewis; Muldowney, John; Schadewald, Nicholas	Manufacturing Interface
10:10 AM	3	Dasanayaka, Neranjana	Teratogenic Effects of Ethylene Glycol Ethers and Their Metabolites of Oxidative Metabolism in <i>Xenopus levis</i>
10:30 AM	4	Bigelbach, Brandon	A Case Study of the Orono/Long Lake Tornado Event of August 8, 2009

**Session C-GS Sociology and Immigration Glacier South**

**Moderator** Paul Greider, Assistant Professor, Sociology and Anthropology

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Eliszewski, Billie	A Historical Comparative of Migration Patterns and Experiences of Immigrants to Central Minnesota
9:50 AM	2	Thibodeau-Schuldt, Megan	The Links Between Alcohol Use and Smoking
10:10 AM	3	Wiehr, Jessica	Immigrants in the Military
10:30 AM	4	Johnson, Lukas	An Oral History of Diaspora from the Horn of Africa

**Session C-O Communication Oak**

**Moderator** Jo McMullen-Boyer, KVSC Station Manager

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Bauer, Conrad	Web Design and Rhetoric
9:50 AM	2	Schreifels, Heather	Nonverbal Communication: Are Writing Centers Part of the Conversation?
10:10 AM	3	Donovan, Moira	Visual Rhetoric in English Composition Textbooks

## STUDENT RESEARCH COLLOQUIUM PROGRAM

10:30 AM 4 Wester, Jason; Bronder-Roznauer, Alexander; Thell, Daniel; Berkesch, Paul      Quality in Education

### Session C-VN Engineering

Voyageurs North

**Moderator** Jane Minnema, Associate Professor, Child and Family Studies

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Vu, Quang; Anderson, Jonathan; Tamble, Patrick	A Numerical Simulation of Heat Loss from Coal Conveyor Gallery #51 Using ANSYS
9:50 AM	2	Paruthi, Vidhi; Pandey, Rajan	Ergonomic Design of a Workstation at a Freezer Manufacturing Company
10:10 AM	3	Rakotz, Susan	FHSAE Simulation

### Session C-VS Biological Sciences

Voyageurs South

**Moderator** John Harlander, Professor, Physics, Astronomy And Engineering Science

Time	Index	Presenter(s)	Project Title
9:30 AM	1	Wade-Ferrell, Jessica	An Analysis of the Effect of Toxoplasma gondii Putative Cell Cycle Proteins on the Cell Cycle of Saccharomyces Cerevisiae
9:50 AM	2	Alfano, Anthony	Identification and Characterization of HECT Ubiquitin Ligase that Regulates PGC-1 alpha, a Protein Implicated in the Pathogenesis of Parkinson Disease.
10:10 AM	3	Meister, Andrew	Jaw Muscle Fiber Characteristics In Hawaiian Gobioid Fishes: Histochemica Basis For Feeding Ecology and Behavior
10:30 AM	4	Stepanek, Joshua	From Micro to Macro: Examining the Hydrodynamic Properties of Stalk Forming Diatoms

### Session D-C Paper Competition-3

Cascade

**Moderator** Nancy Mills, Academic Learning Center

Time	Index	Presenter(s)	Project Title
11:00 AM	1	Hanson, Jamie	Restoring Invasive Plant Dominated Areas by Means of Assisted Succession
11:20 AM	2	Johnson, Carissa	Sustainable Development in Costa Rica

### Session D-G Are We A Helpful Community?

Granite

**Moderator** Chaturi Edrisinha, Assistant Professor, Community Psychology

Time	Index	Presenter(s)	Project Title
11:00 AM	1	Anderson, Nicole; Carman, Christopher; Hagel, Kendra; Hinnenkamp, Theresa; Novotny, Marissa	Do Looks Really Matter When Deciding to Help?
11:20 AM	2	Janikowski, Breanna	Donating What Works? Goodwill Versus Tangibles

## STUDENT RESEARCH COLLOQUIUM PROGRAM

11:40 AM	3	Dols, Jade; Ecker, Jordan; Therkilsen, Suzette; Gorres, Kandice; Warman, Jenna	Help: Take It or Leave It
12:00 PM	4	Brummer, Katie; Bosiacki, Amy; Hathaway, Phoenix; Williams, Frederick	Helping Hands
12:20 PM	5	Marklowitz, Cheyenne; Sandhoefner, Rebecca; Verwey, Matthew; Smith, Madison; Martin, Jacqueline	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys
12:40 PM	6	Swenson, Stephanie; Rein, LeaAnn; Krebsbach, Vanessa	Let's Dance: Promoting Good Cheer!
1:00 PM	7	Herold, Scott; Seawell, Jennarae; Saehr, Kelsey; Ranfranz, Genna; Gerdes, Randi	Lending a Helping Hand

**Session D-GN Geography** **Glacier North**

**Moderator** John Gareth, Assistant Professor, Geography

Time	Index	Presenter(s)	Project Title
11:00 AM	1	Sajevic, David	Real Estate Values and Golf Courses
11:20 AM	2	Campbell, Colleen	Topophilia in Absentia
11:40 AM	3	Johnson, David	The Economic Origins of Participation: Class in the Yeomanry of the Revolutionary Waxhaws Settlement

**Session D-GS Migration** **Glacier South**

**Moderator** Isolde Mueller, Professor, German

Time	Index	Presenter(s)	Project Title
11:00 AM	1	Ahles, Amanda; Anderson, Cassie	Correlating Migration Patterns Through the Presence of Economic Opportunity in Central Minnesota
11:20 AM	2	Holder, Molly; Kremers, Stephanie; Moberly, Lance; Nickolauson, Meghan; Larson, AnnaMarie; Muschler, Robert; Jensen, Alicia	Migration to Central Minnesota Project
11:40 AM	3	Wambua, Angela	How Has Female Genital Mutilation Affected Immigrant Life in America
12:00 PM	4	Mugo, Wanjiru; Lam, Amer	Rebuilding After Genocide: Women and Children of South Sudan

**Session D-O SCSU Survey Center** **Oak**

**Moderator** Michelle Kukoleca Hammes, Associate Professor, Political Science

Time	Index	Presenter(s)	Project Title
11:00 AM	1	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie	SCSU Survey Spring 2010 Results

**STUDENT RESEARCH COLLOQUIUM PROGRAM**

**Session D-VN Engineering and Communication** **Voyageurs North**

**Moderator** Mark Schmidt, Professor, Information Systems

<b>Time</b>	<b>Index</b>	<b>Presenter(s)</b>	<b>Project Title</b>
11:00 AM	1	Malla, Amit; Bajracharya, Anup; Amargui, Youssef	IP Network Video Surveillance and Security System
11:20 AM	2	Minkler, Steven	The Cell Phone: A Criminal's Best Friend or Worst Enemy? Cell Phone Forensics Can Help to Uncover the Truth
11:40 AM	3	Hemminger, Corey; Rogers, Dustin	High Performance/Green Computing
12:00 PM	4	Gidlow, Sonja	Mobile Telephone Use and Student Development: How Frequent Communication with Parents Affects College Student Autonomy

**Session D-VS Fulbright Grants for Students** **Voyageurs South**

**Moderator** Ann Radwan, Associate Vice President for Academic Affairs and International Studies

<b>Time</b>	<b>Index</b>	<b>Presenter(s)</b>	<b>Project Title</b>
11:00 AM	1		Fulbright Grants for Students

**Session E-C "Notes From the Trenches: Information Security in the So-Called Real World"** **Cascade**

**Moderator** Jim Chen, Professor, Information Systems

<b>Time</b>	<b>Index</b>	<b>Presenter(s)</b>	<b>Project Title</b>
12:30 PM	1		Keynote Speaker: Michael (Mick) Bauer
1:30 PM	2		Reception

**Session E-O Gender and Class in China Since Globalization** **Oak**

**Moderator** Stephen Phillion, Assistant Professor, Sociology

<b>Time</b>	<b>Index</b>	<b>Presenter(s)</b>	<b>Project Title</b>
12:30 PM	1	Eliszewski, Billie	Changing Attitudes Toward Gender Roles, Identity, Relations, and Inequality In China Since The Mao Era
12:50 PM	2	Revier, Kevin	From Field to Factory: The Struggle of the Chinese Migrant
1:10 PM	3	Teoh, Jun-Kai	The Rise of the Middle Class in China
1:30 PM	4	Schueler, Brittany	Changes in Sexual Identity in China Since 1980

## STUDENT RESEARCH COLLOQUIUM PROGRAM

**Session E-R Looking Beyond the Notes**

**Ruth Gant Recital Hall, Rm  
230, Performing Arts  
Center**

**Moderator** Terry Vermillion, Chair, Music Department

Time	Index	Presenter(s)	Project Title
12:30 PM	1	Eisenstadt, Alicia; Hogan, Tyler; Bernard, Paul; Henderson, Melissa	Looking Beyond the Notes: A Music Research and Performance Colloquium

**Session F-GN Natural Science and Engineering III**

**Glacier North**

**Moderator** Marina Cetkovic-Cvrlje, Associate Professor, Biological Sciences

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Olson, Marin	Does the JAK3 Inhibitor Induce In Vitro Generation of Regulatory T (Treg) Cells?
2:20 PM	2	Maharjan, Prabin	Modification of Jig Design to Improve the Ergonomic Rating at a Home Appliance Manufacturing Company
2:40 PM	3	Mboko, Wadzanai	Characterization of Bacillus cereus Honey Isolates and Pathogenic Effects on the Tobacco Hornworm ( <i>Manduca sexta</i> )
3:00 PM	4	Einck, Alan	The Effects of Burning and Herbicide Treatments on Spotted Knapweed ( <i>Centaurea maculosa</i> )

**Session F-GS Studying Complex Systems**

**Glacier South**

**Moderator** Kristin Gulrud, Assistant Professor, Biological Sciences

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Zuluaga, Juan	Modeling Sequence Similarity With Regression Methods
2:20 PM	2	Taraldsen, Matthew	Public Perception to Winter Weather Warnings: December 2007 to January 2010
2:40 PM	3	Deans, Carrie	The Stoichiometry of Enrichment in Detritus-Based Streams
3:00 PM	4	Kinter, Philip	Glacial Place Names Mapping

**Session F-O Big Processes, Big Change and Globalization in China**

**Oak**

**Moderator** Stephen Phillion, Assistant Professor, Sociology

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Dwyer, Cory	Changing Understandings of Imperialism and Nationalism in China
2:20 PM	2	Martin, Cory	Bureaucracy's Influence on China's Move to Privatisation
2:40 PM	3	Pickar, Michael	A Sociological History of Anarchist Resistance Movements in China from 1900 to Present
3:00 PM	4	Sherman, Sonny	Socialism: The way of the Chinese People

## STUDENT RESEARCH COLLOQUIUM PROGRAM

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### Session F-VN Humanities I

**Voyageurs North**

**Moderator** Tirthabir Biswas, Assistant Professor, Physics, Astronomy and Engineering Science

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Seamans, Dottie	University Advancement DVD
2:20 PM	2	Opatz, Thomas	Laud Literacy
2:40 PM	3	Gahm, Noah	Worlds Afire
3:00 PM	4	Marmolejo Davis, Alvaro	The DREAM Act and Higher Education: An Exploration of Its Outcomes and Impact

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### Session F-VS Behavioral Sciences I

**Voyageurs South**

**Moderator** Shumona Dasgupta, Professor, English

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Allen, Nicholas	The Effect of Urban and Natural Ambient Sound on Mental Restoration
2:20 PM	2	DeLyser, Melissa; Hauser, Tim	Personality, School and Life Satisfaction: The Mediational Role of Effort
2:40 PM	3	Matinda, Rebecca	Early Marriages in Maasai Culture: From the Native Perspective
3:00 PM	4	Sullivan, Dallas	The Economic Developmental Impact of the Underground Market Within the Americas

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### Session G-B Poster Session II - All Disciplines

**Ballroom**

**Moderator** Stuart Umberger, Assistant Director, Leadership Education and Development

Time	Index	Presenter(s)	Project Title
2:00 PM	1	Kuschke, April	The Effect of an Atrioventricular Node Ablation and Pacing Device Sensor Technology on the Well-Being of Subjects with Atrial Fibrillation
2:00 PM	2	Amatya, Christina; Meyer, Andrew; Acharya, Jyotindra	A Planaria Model for Epilepsy
2:00 PM	3	Amatya, Christina; DeSaer, Cassie	Behavioral Effects of Scopolamine in Planaria
2:00 PM	4	DeStefano, Anthony; Yong, Shun Jie	Improving Teaching Effectiveness and Student Interest in Uniform Circular Motion
2:00 PM	5	Mandal, Ayush	Single-Step Conversion of Cellulosic Biomass into Biofuels
2:00 PM	6	Traore, Mohamed; Mandal, Ayush	Fermentation of Biomass Pretreated with Sulfuric Acid and Bleach via Clostridium Phytofermentans
2:00 PM	7	Acharya, Subrat; Mandal, Ayush	The Role of Human Aldehyde Dehydrogenase 6 (ALDH6A1) in Resistance to Anticancer Drug Cyclophosphamide
2:00 PM	8	Feneis, Ashley; Thapa, Rajan	An Investigation of the Interaction Between Alzheimers Disease Drugs and the Fluorescein Amyloid (1-42) Peptide

## STUDENT RESEARCH COLLOQUIUM PROGRAM

2:00 PM	9	Gong, Hwee Kiat; KC, Birendra	Induction of Autoimmune Diabetes in mice by Streptozotocin
2:00 PM	10	Hirsch, Autumn	Minnesota Wolf Protection: Should It Be a Federal Issue?
2:00 PM	11	Heikkinen, Kyle; Abfalter, Nathan	Ultrafast, High Voltage Electronics for Photoconductive Materials Characterization
2:00 PM	12	Gustafson, Bryce	Radiation-Induced Thermoluminescence Dosimetry
2:00 PM	13	Sapkota, Puspak; Dangol, Prabal; Sitaula, Rajiv	Fabrication of Micro Accelerometer Using MEMS Technology
2:00 PM	14	Nelson, Daniel	College Students' Use of Online Pornography: A Review of the Literature
2:00 PM	15	Pikus, Brendon	Bulk Viscosity of Subatomic Matter
2:00 PM	16	Hankes, Nathaniel; Kauffman, Seth; Hovelson, Johannes; Lang, Joseph; Bradden, Gyangelo	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs
2:00 PM	17	Brown, Amanda	Investigating the Effects of Aquatic Microbial Contaminants on Fish Health
2:00 PM	18	Jenkins, Austin	Precontact Resources in Northern Minnesota: A Synthesis of Information from Macro and Microscopic Investigations
2:00 PM	19	Castellano, Janna	The Effect of Matching Leg Masses and Moments Of Inertia on Gait using Vacuum Suspension
2:00 PM	20	McCarty, David; Johnson, Brice	Breeding of JAK3 Deficient Mice at SCSU
2:00 PM	21	Stewart, Eric; Goenner, Andrew; Jasso, Manuel	Dynamometer Modernization
2:00 PM	22	Gucinski, Mark; Hord, Alexander	Analysis of the Applicability of a DNA Fingerprinting Method for Bacillus Cereus
2:00 PM	23	Stahlback, Dustin; Cuevas Ruiz, Carlos	Wireless Electrocardiogram (ECG/EKG)
2:00 PM	24	Khan, Niveen	Semiconductor Parameter Analysis Using LabView
2:00 PM	25	Girmay, Sisay Kenfe	Synthesis, Characterization and DNA Interaction Studies of Titanium-flavonoid Complexes
2:00 PM	26	Johnstone, Lucas	Investigation of the Decrease in Charge Carrier Mobilities at Low Temperature in Organic Semiconductor Materials
2:00 PM	27	Wirtz, Nicholas; Betzold, Adam; Blair, Cody	Electronic Warehouse Inventory Control System
2:00 PM	28	Robasse, Amanda; Eden, Ellen; Braun, Zachary; Diedrichsen, Douglas; Riley, David	The Effect of Race, Income and Gender on Transportation Mode Choice
2:00 PM	29	Wallace, Camaya	Examining the Low Marriage Rate Among African American Women
2:00 PM	30	Payne, Robert	Activation of the NLRP3 Inflammasome by Titanium Dioxide Nanowires
2:00 PM	31	Poganski, Beth	Utility of Histopathological Endpoints in the Assessment of Endocrine Disruption in Resident Fish Populations
2:00 PM	32	Lund, Trista; Ricci, Angela; Spohn, Timothy; Tang, Chuol; Thapa, Sanskriti	A Closer Look at Parking Problems Within University Campuses

## STUDENT RESEARCH COLLOQUIUM PROGRAM

2:00 PM	34	Knutson, Lindsay	One Somali Parent's Perceptions of Intervention for Her Child with Autism Spectrum Disorder: Survey Research with the Somali Community
2:00 PM	35	Nadeau, Daniel	Source Water Protection
2:00 PM	36	Nandlal, Larita; Hobbs, Joseph	Flow Cytometric Analysis of Cytokine Profiles in Low-Dose-STZ (LDSTZ)-Induced Model of Autoimmune Diabetes
2:00 PM	37	McArthur, Terri	Estimating Hail Size by Using Cape
2:00 PM	38	Poudel, Sumeet; Joshi, Sunny	Histological and Immunohistochemical Analysis of Insulinitis Lesion in C57BL/6 Mice with Autoimmune Diabetes
2:00 PM	39	Derouin, Tyler	Expression of Annotated Xylanase Gene in Cellulomonas Flavigena in Different Carbohydrate Media

### Session H-GN Using Mathematics To Solve Problems

**Glacier North**

**Moderator** Susan Parault, Assistant Professor, Counselor Education, Higher Education and Educational Psychology

Time	Index	Presenter(s)	Project Title
3:30 PM	1	Peightal, Ashley; Saucedo, Frederico; Hardrath, Jacquelin	Analysis of Data from Stearns County Jail
3:50 PM	2	Kunde, Kristopher	Does the Hawk Make It Home or Become the First One in Outer Space?
4:10 PM	3	DeStefano, Anthony; Seppelt, Joshua	Cleaning Up the Great Lakes - a Mathematical Model
4:30 PM	4	Schaefer, Joshua; Loxtercamp, Nicholas; Vossen, Lucas; Peterson, Bradley	Mathematical Model for the Deer Population in Minnesota

### Session H-GS Optimizing Design

**Glacier South**

**Moderator** Hiral Shah, Assistant Professor, Mechanical and Manufacturing Engineering

Time	Index	Presenter(s)	Project Title
3:30 PM	1	Risal, Sanjay; Tiwari, Suraj; Raut, Suraj	Six Sigma Project for Sound Minimization
3:50 PM	2	Lakshman, Murali	Implementation of Radio Frequency Identification (RFID) Inventory Management for the Miller Center Library
4:10 PM	3	Gothe, Andrew; Wollak, Timothy; Kindel, Timothy	Moisture Separator Drain System
4:30 PM	4	Draper, Jason	Experimental Study of Bedforms Developed by Density Currents

### Session H-VN Behavioral Sciences II

**Voyageurs North**

**Moderator** Zengjun Peng, Assistant Professor, Mass Communications

Time	Index	Presenter(s)	Project Title
3:30 PM	1	Reiners, Lindsey	Lake Benton Prehistoric Ceramics Analysis
3:50 PM	2	Panchmatia, Neil	Faith-Based Social Service Organizations and Somali Immigrants in Central Minnesota
4:10 PM	3	Hansen, Jonathan	Anthropology and Performance in a Multi-User Domain

## STUDENT RESEARCH COLLOQUIUM PROGRAM

4:30 PM 4 Karim, Wara News Sources in the Coverage of 2008 Mumbai Terror Attacks: A Comparative Study of Indian, Chinese and American Newspapers

**Session H-VS Humanities II**

**Voyageurs South**

**Moderator** Ann-Gee Lee, Assistant Professor, English

Time	Index	Presenter(s)	Project Title
3:30 PM	1	Ahlers, Jonathan	Consonant Voicing Characteristics in Somali-Accented English
3:50 PM	2	Walter, John	His Religious Perspective: Chaucer's Beliefs on the Church and Christianity of Fourteenth-Century England
4:10 PM	3	Freeh, Adam	The Question of German Identity: A Study of German Immigrants to Stearns County from the Mid-nineteenth to Early-twentieth Century
4:30 PM	4	Bezanson, Katherine	Ethnic Settlement Patterns in Ely, Minnesota circa 1900

**Session I-B Poster Session III - All Disciplines**

**Ballroom**

**Moderator** Stuart Umberger, Assistant Director, Leadership Education and Development

Time	Index	Presenter(s)	Project Title
4:00 PM	1	Ahles, Amanda; Bianco, Casey; Johnson, Brittany	Influence Of Grandparents On College Students
4:00 PM	2	Bianco, Casey; Falkum, Thomas; Austin, Christopher; Ellis, Alexandra; Gritti, Ryan; Sullivan, Zane; Hill, Rachel	Groups in Space: Group Size and Locomotion
4:00 PM	3	Buerkley, Megan	Chemistry 160 Redesign: Implementing Learning Assistants in Introductory and Advanced Chemistry Courses
4:00 PM	4	Buerkley, Megan	Predator Avoidance Performance of Larval and Embryonic Fathead Minnows Following Exposure to Ammonia: The C-Start As a Toxicity Behavioral Endmarker
4:00 PM	5	Shawley, Chrystal; Lodermeier, Dana; Nolan, Lisa	Waiting Room or Funeral Home: Public Perceptions of Health Care Reform
4:00 PM	6	Lodermeier, Dana	Obesity Across the Life Spectrum
4:00 PM	7	Austin, Adam	Effects of Empathy and Social Behavior Videos On Compassion
4:00 PM	8	Wagner, Benjamin	Christian Religiosity and Happiness
4:00 PM	9	Mawilmada, Prasad	Effect of Anhydrous Sodium Sulfate On the Dehydration of Dicalcium Phosphate Dihydrate
4:00 PM	10	Mawilmada, Prasad	Use of Fluorescent Probes to Monitor the Dynamics in Vegetable Oils
4:00 PM	11	Mawilmada, Prasad; Xiong, Tong	Nanotoxicity of Iron Oxide Nanoparticles
4:00 PM	12	McDonald, Lori	Investigation of the Sedimentology and Stratigraphy of the Cleo-Meyer Farm in Little Falls, MN

## STUDENT RESEARCH COLLOQUIUM PROGRAM

4:00 PM	13	Ransbotham, Anna; Zuluaga, Juan	Differences in Education Services Among English-, Spanish-, Somali-, and Hmong-Speaking Children with Autism
4:00 PM	14	Ang, Su Fei; Zuluaga, Juan	Comparison of Early and Late Respondents in SCSU Surveys.
4:00 PM	15	Croghan, Katrina	Which Organism Would You Choose: Research on Social Construction
4:00 PM	16	Nylund, Jacob	A Lithologic Analysis of Glacial Sediments in Central Morrison County
4:00 PM	17	Hary, Joshua; Barnowsky, Corrie	Aggregation of Cholesterol: Investigations Using Viscosity Measurements and Scanning Electron Microscopy
4:00 PM	18	Yo, Souleymane; Obi, Daniel; Trajkovska, Sanja	Solar Powered Wireless Mailbox
4:00 PM	19	Karki, Adip; Shrestha, Ravi; Aryal, Bijendra	Ultrasound Vibrometry
4:00 PM	20	Tessier, Robin	Use of Prompts to Promote Separation of Recycled Materials
4:00 PM	21	Andrade Junior, Elias	The Effect of Alcohol Drinking on SCSU Campus
4:00 PM	22	Spector, Ivan	Synthesis and Analysis of Ferroelectric Liquid Crystals
4:00 PM	23	Knudson, Tyler	What is the Geography of H1N1?
4:00 PM	24	Tulloch, Alastair	An Exploration of the Reproductive Activity of Puya (puya clava-herculis) Plants Found in the Andes Mountain Range
4:00 PM	25	Lundquist, Gregory	SCSU: A Campus of Change
4:00 PM	26	Luke, Dennis	Anticancer Activity of RuCDTA and TiCDTA Complexes and Their Interactions with DNA
4:00 PM	27	Kunwar, Yejur	Inhibition of Alpha- and Beta-Glucosidase by Vanadium-Flavonoid Complexes and its Impact on Glucose Metabolism and Diabetes
4:00 PM	28	Harter, Joseph	Transformation of a Hermite-Gaussian Laser Mode to a Laguerre-Gaussian Mode via Cylindrical Lenses
4:00 PM	29	Backer, Brian; Swanson, Jacob	Single Crystal Growth Techniques For Perylenetetracarboxdiimide Derivatives
4:00 PM	30	Compaore, Hassane; Liu, Liangnan	An Introduction to Pulse Oximetry
4:00 PM	31	Srock, Charles; Mooney, Leigha; Uphoff, John; Svenkeson, D'Angelos; McBorrough, Edward	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University
4:00 PM	32	Schnaser, Aron	Comparison of Student Knowledge of Nuclear Waste Between Chemistry Majors and Non Majors
4:00 PM	33	Silva, Cecelia; Koktan, Aaron; Koffi, N'guessan	Factors Affecting Retention of SCSU Students
4:00 PM	34	Shrestha, Guinness; Ching, Yonghan; AlYami, Naif	Unmanned Aerial Vehicle
4:00 PM	35	Malone, Kayla	Methods of Stratification and Scarification for Breaking Dormancy in Corylus Americana

## STUDENT RESEARCH COLLOQUIUM PROGRAM

4:00 PM	36	Fuchs, Brody	Measuring Small Wavelength Shifts With a Spatial Heterodyne Spectrometer
4:00 PM	37	Kent, Elizabeth; Merten, Zachary	Culturing the Unculturables
4:00 PM	38	Gutknecht, Zachrie; Hawkins, Dawn	Kinzer Creek Stream Quality Analysis
4:00 PM	39	Leonard, Gerald	Comparative Morphological Selection: Waterfall-Climbing in Gobiid Fishes from Dominica

**Session J-GN    Effects of Societal Practices** **Glacier North**

**Moderator** Alexander Polacco, Professor, Management

Time	Index	Presenter(s)	Project Title
5:00 PM	1	McCoy, Patrick	Snow Plow, Know How.
5:20 PM	2	Hyndman, Katie	Examining Reproductive Effects of Endocrine Active Compounds on Fish

**Session J-GS    Behavioral Studies** **Glacier South**

**Moderator** Sarah Petitto, Assistant Professor, Chemistry

Time	Index	Presenter(s)	Project Title
5:00 PM	1	Chen, Wenjie	Elite Sweatshop
5:20 PM	2	Winter, Carole	Predictors of Success on the CRA Exam

**Session K-C    Reception and Awards Ceremony** **Cascade**

**Moderator** Dan Gregory, Interim Assistant Vice President for Research and Sponsored Programs

Time	Index	Presenter(s)	Project Title
6:30 PM	1		Reception
7:00 PM	2		Awards Ceremony

## FORMAL PAPER COMPETITION

### **Behavioral Effects of Galantamine in Scopolamine Treated Planaria**

- Christina Amatya

### **Calculus Requirements and the Popularity of the Economics Major**

- Matthew W. Nicklay

### **Effect of Galantamine and Riluzole on Beta-Amyloid (1-42) using Fluorescence and Atomic Force Microscopy**

- Rajan Thapa

### **Free Hugs: Random Acts of Kindness at SCSU**

- Jennina Johnson

### **Internationalization of MnSCU Universities: The Perspectives of Student Mobility**

- Xingcai Liu

### **Learning Grammar by Learning Languages: How L2 Aids in the Grammatical Understanding of L1**

- Rebecca Kitzman

### **Let's Dance: Promoting Good Cheer**

- Stephanie Swenson

### **Marijuana Use and Productivity**

- Trent Mielke

### **Market Efficiency and Profitability in the Gambling Market for the NFL from 1979 to 2009**

- Matthew Nicklay

### **My Father's Past, My Children's Future**

- John Byczynski

### **Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys**

- Cheyenne Marklowitz, Jacqueline Martin, Rebecca Sandhoefner, Madison Smith, Matthew Verwey

### **Restoring Invasive Plant Dominated Areas by Means of Assisted Succession**

- Jamie Hanson

### **Structured Hunger in Tanzania**

- Rebecca Matinda

### **Sustainable Development in Costa Rica**

- Carissa Johnson

### **The Affect of Urban and Natural Ambient Sound on Mental Restoration**

- Nicholas C. Allen

### **The Effect of an Atrioventricular Node Ablation and Dual Chamber Sensor Technology on the Well Being of Subjects with Atrial Fibrillation**

- April Kuschke

### **The Effects of Burning and Herbicide Treatments on Spotted Knapweed (*Centaurea maculosa*)**

- Alan Einck

## POSTER PRESENTATION COMPETITION

### **A Closer Look at Parking Problems Within University Campuses**

- Trista Lund, Angela Ricci, Timothy Spohn, Chuol Tang, Sanksriti Thapa

### **A Comparison of Two Methods for Isolation of CD4+ T Cells: Yield, Purity and Function of Isolated CD4+ Cells**

- Marin Olson, Andrew Van Bruggen

### **An Investigation of the Interaction Between Alzheimer's Disease Drugs and the Fluorescein-Labeled $\beta$ -Amyloid (1-42) Peptide**

- Ashley Feneis, Rajan Thapa

### **Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs**

- Nathaniel Hankes, Johannes Hovelson, Seth Kauffman

### **Analysis of the Applicability of a DNA Fingerprinting Method for Bacillus Cereus**

- Mark Gucinski, Alexander Hord

### **Behavioral Effects of Scopolamine in Planaria**

- Christina Amatya, Cassie DeSaer

### **Breeding of JAK3 Deficient Mice at SCSU**

- Brice Johnson, David McCarty

### **Comparing the Effects of Surgical Procedures to Pharmacological Intervention One Year Post Initial Intervention of Women over 50 Years of Age**

- Mary Maurer

### **Creatine Kinase Elevation Following Eccentric Exercise in Females as a Marker for Training Stress**

- Ashlee Ford

### **Design and Calibration of an Arm Ergometer for Nordic Skiers**

- Dennis Madden, Eric Wright

### **Flow Cytometric Analysis of Cytokine Profiles in Low-Dose-STZ (LDSTZ)-Induced Model of Autoimmune Diabetes**

- Joseph Hobbs, Sunny Joshi, Sumeet Poudel

### **Immunophenotyping of Immune Cells Involved in Pathogenesis of Mouse Type 1 Diabetes Induced by Streptozotocin**

- Yong Heng Lee, Jong Hoe Yee

### **Induction of Autoimmune Diabetes in Mice by Streptozotocin**

- Hwee Kiat Gong, Birendra KC

### **Investigation into Paternal Behavior in Sprague Dawley Rats**

- Lucas Vocolka

### **Isolation of the BceT Enterotoxin in Strains of Bacillus Cereus Isolated from Honey**

- Ashlie Zemien

### **Mutagenic Potential of Ethylene Glycol Ether Metabolites**

- Rekike Alem

### **Non-Invasive Measurement of Blood Glucose**

- Yu Liu

## POSTER PRESENTATION COMPETITION

### **Pre-Competition Hydration Status of High School Athletes Participating in Different Sports**

- Ashley Davenport, Chad Johnson

### **Role of Human Liver Aldehyde Dehydrogenases in Non-Alcoholic Steatohepatitis (NASH) Caused by High-Fructose Corn Syrup (HFCS)**

- Wei Loon Teoh

### **Synthesis, Characterization and DNA Interaction Studies of Titanium-Flavonoid Complexes**

- Sisay Kenfe Girmay

### **The Effect of an Atrioventricular Node Ablation and Pacing Device Sensor Technology on the Well Being of Subjects with Atrial Fibrillation**

- April Kuschke

### **The Effect of Race, Income and Gender on Transportation Mode Choice**

- Ellen Eden

### **The Impact of Vanadium Flavonoid Complexes on the Catalytic Activity of Phosphodiesterase I**

- Gudina Eticha

### **The Incidence of Streptozotocin (STZ)-Induced Autoimmune Diabetes in Janus Tyrosine Kinase (JAK) 3-Deficient Mice**

- Maisee Her, Alan Voegele

## STUDENT PRESENTER INDEX

<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Abfalter, Nathan	Ultrafast, High Voltage Electronics for Photoconductive Materials Characterization	Vogt, Timothy; Lidberg, Russell	2:00 PM	Ballroom
Acharya, Jyotindra	A Planaria Model for Epilepsy	Ramakrishnan, Latha	2:00 PM	Ballroom
Acharya, Subrat	The Role of Human Aldehyde Dehydrogenase 6 (ALDH6A1) in Resistance to Anticancer Drug Cyclophosphamide	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Achman, Amber	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Acker, Allison	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Ahlers, Jonathan	Consonant Voicing Characteristics in Somali-Accented English	Koffi, Ettien	3:30 PM	Voyageurs South
Ahles, Amanda	Correlating Migration Patterns Through the Presence of Economic Opportunity in Central Minnesota	Greider, Paul; Mueller, Isolde	11:00 AM	Glacier South
Ahles, Amanda	Influence Of Grandparents On College Students	Devoe, Marlene	4:00 PM	Ballroom
Alem, Rekike	Mutagenic Potential of Ethylene Glycol Ether Metabolites	Sreerama, Lakshmaiah	9:00 AM	Ballroom
Alfano, Anthony	Identification and Characterization of HECT Ubiquitin Ligase that Regulates PGC-1 alpha, a Protein Implicated in the Pathogenesis of Parkinson Disease.	Olson, Brian	9:50 AM	Voyageurs South
Allen, Brittani	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Allen, Nicholas	The Effect of Urban and Natural Ambient Sound on Mental Restoration	Jazwinski, Christine	2:00 PM	Voyageurs South
AlYami, Naif	Unmanned Aerial Vehicle	Hou, Ling	4:00 PM	Ballroom
Amargui, Youssef	IP Network Video Surveillance and Security System	Akkas, Ahmet	11:00 AM	Voyageurs North
Amatya, Christina	Behavioral Effects of Galantamine in Scopolamine Treated Planaria	Ramakrishnan, Latha	8:40 AM	Cascade
Amatya, Christina	A Planaria Model for Epilepsy	Ramakrishnan, Latha	2:00 PM	Ballroom
Amatya, Christina	Behavioral Effects of Scopolamine in Planaria	Ramakrishnan, Latha	2:00 PM	Ballroom
Anderson, Cassie	Correlating Migration Patterns Through the Presence of Economic Opportunity in Central Minnesota	Greider, Paul; Mueller, Isolde	11:00 AM	Glacier South
Anderson, Jonathan	A Numerical Simulation of Heat Loss from Coal Conveyor Gallery #51 Using ANSYS	Zhao, Yongli	9:30 AM	Voyageurs North
Anderson, Nicole	Do Looks Really Matter When Deciding to Help?	Edrisinha, Chaturi	11:00 AM	Granite
Andrade Junior, Elias	The Effect of Alcohol Drinking on SCSU Campus	Zerbib, Sandrine	4:00 PM	Ballroom

## STUDENT PRESENTER INDEX

<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Ang, Su Fei	Comparison of Early and Late Respondents in SCSU Surveys.	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	4:00 PM	Ballroom
Archer, Julie	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Aryal, Bijendra	Ultrasound Vibrometry	Zheng, Yi	4:00 PM	Ballroom
Austin, Adam	Effects of Empathy and Social Behavior Videos On Compassion	Illies, Jody	4:00 PM	Ballroom
Austin, Christopher	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Backer, Brian	Single Crystal Growth Techniques For Perylenetetra-carboxydiimide Derivatives	Neu, Donald; Lidberg, Russell	4:00 PM	Ballroom
Bajracharya, Anup	IP Network Video Surveillance and Security System	Akkas, Ahmet	11:00 AM	Voyageurs North
Barnowsky, Corrie	Aggregation of Cholesterol: Investigations Using Viscosity Measurements and Scanning Electron Microscopy	Ramakrishnan, Latha; Sivaprakasam, Kannan	4:00 PM	Ballroom
Bauer, Conrad	Web Design and Rhetoric	Davis, Glenn	9:30 AM	Oak
Baumgartner, Bridget	Facebook and Communication Apprehension	Anderson, Traci	9:50 AM	Granite
Beckers, Kayla	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Benie, Evelyne	An Empirical Analysis of Leadership and Transparency	Komai, Mana	8:40 AM	Glacier North
Berkesch, Paul	Quality in Education	Polacco, Alexander	10:30 AM	Oak
Bernard, Paul	Looking Beyond the Notes: A Music Research and Performance Colloquium	Vermillion, Terry; Moore, Albert	12:30 PM	Ruth Gant Recital Hall, Rm 230, Performing Arts Center
Betzold, Adam	Electronic Warehouse Inventory Control System	Akkas, Ahmet	2:00 PM	Ballroom
Bezanson, Katherine	Ethnic Settlement Patterns in Ely, Minnesota circa 1900	John, Gareth	4:30 PM	Voyageurs South
Bhattarai, Pallav	City of St. Cloud Surface Water Treatment Stages and Chemical Analysis	Bender, Michner	9:00 AM	Ballroom
Bialka, Susan	Lakeshore Landscaping	Simpson, Patricia	9:00 AM	Ballroom

## STUDENT PRESENTER INDEX

<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Bianco, Casey	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Bianco, Casey	Influence Of Grandparents On College Students	Devoe, Marlene	4:00 PM	Ballroom
Bigelbach, Brandon	A Case Study of the Orono/Long Lake Tornado Event of August 8, 2009	Weisman, Robert	10:30 AM	Glacier North
Blair, Cody	Electronic Warehouse Inventory Control System	Akkas, Ahmet	2:00 PM	Ballroom
Blenker, Tracy	Isolation of the BceT Enterotoxin in Strains of Bacillus cereus Isolated from Honey	Gulrud, Kristin	9:00 AM	Ballroom
Bosiacki, Amy	Helping Hands	Edrisinha, Chaturi	12:00 PM	Granite
Bradden, Gyangelo	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Braun, Zachary	The Effect of Race, Income and Gender on Transportation Mode Choice	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Brisley, Justin	SCSU Formula-Hybrid Electrical Systems	Glazos, Michael	9:00 AM	Ballroom
Bronder-Roznauer, Alexander	Quality in Education	Polacco, Alexander	10:30 AM	Oak
Brown, Amanda	Investigating the Effects of Aquatic Microbial Contaminants on Fish Health	Schoenfuss, Heiko	2:00 PM	Ballroom
Brummer, Katie	Helping Hands	Edrisinha, Chaturi	12:00 PM	Granite
Buerkley, Megan	Chemistry 160 Redesign: Implementing Learning Assistants in Introductory and Advanced Chemistry Courses	Krystyniak, Rebecca	4:00 PM	Ballroom
Buerkley, Megan	Predator Avoidance Performance of Larval and Embryonic Fathead Minnows Following Exposure to Ammonia: The C-Start As a Toxicity Behavioral Endmarker	Schoenfuss, Heiko	4:00 PM	Ballroom
Bushendorf, Erin	Should We Be Able to Own Exotic Animals as Pets?	Simpson, Patricia	9:00 AM	Ballroom
Buzzelli, Kristin	Fluorescence Characterization of Turbine Oils	Dvorak, Michael	9:00 AM	Ballroom
Byczynski, John	My Father's Past, My Children's Future	Wingerd, Mary	10:30 AM	Cascade
Campbell, Colleen	Topophilia in Absentia	John, Gareth	11:20 AM	Glacier North
Carman, Christopher	Do Looks Really Matter When Deciding to Help?	Edrisinha, Chaturi	11:00 AM	Granite
Castellano, Janna	The Effect of Matching Leg Masses and Moments Of Inertia on Gait using Vacuum Suspension	Street, Glenn	2:00 PM	Ballroom
Chamberlain, Rebecca	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Chan, Yee Mun	Measurement Equivalence of Multidimensional Aptitude Battery and Wonderlic Personnel Test across Cultures	Protolipac, Daren	9:00 AM	Ballroom
Chen, Wenjie	Redesign and Optimization of Steel Coil Storing Inventory Space at a Freezer Manufacturing Company	Shah, Hiral	9:30 AM	Glacier North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Chen, Wenjie	Elite Sweatshop	Berglund, Gena; Magnuson, Carla	5:00 PM	Glacier South
Ching, Yonghan	Unmanned Aerial Vehicle	Hou, Ling	4:00 PM	Ballroom
Compaore, Hassane	An Introduction to Pulse Oximetry	Zheng, Yi	4:00 PM	Ballroom
Correa, Mayra	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Croghan, Katrina	Which Organism Would You Choose: Research on Social Construction	Marcattilio, Anthony; Restani, Marco	4:00 PM	Ballroom
Cuevas Ruiz, Carlos	Wireless Electrocardiogram (ECG/EKG)	Zheng, Yi	2:00 PM	Ballroom
Dangol, Prabal	Fabrication of Micro Accelerometer Using MEMS Technology	Byun, Jeongmin	2:00 PM	Ballroom
Daniels, Melissa	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Das, Chelsea	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Dasanayaka, Neranjana	Teratogenic Effects of Ethylene Glycol Ethers and Their Metabolites of Oxidative Metabolism in <i>Xenopus levis</i>	Sreerama, Lakshmaiah; Schuh, Timothy	10:10 AM	Glacier North
Davenport, Ashley	Pre-Competition Hydration Status of High School Athletes Participating in Different Sports	Bacharach, David	9:00 AM	Ballroom
Deans, Carrie	The Stoichiometry of Enrichment in Detritus-Based Streams	Voelz, Neal	2:40 PM	Glacier South
DeLyser, Melissa	Personality, School and Life Satisfaction: The Mediation Role of Effort	Protolipac, Daren	2:20 PM	Voyageurs South
Derouin, Tyler	Expression of Annotated Xylanase Gene in <i>Cellulomonas Flavigena</i> in Different Carbohydrate Media	May, Barbara	2:00 PM	Ballroom
DeSaer, Cassie	Behavioral Effects of Scopolamine in Planaria	Ramakrishnan, Latha	2:00 PM	Ballroom
DeStefano, Anthony	Improving Teaching Effectiveness and Student Interest in Uniform Circular Motion	Liu, Zengqiang	2:00 PM	Ballroom
DeStefano, Anthony	Cleaning Up the Great Lakes - a Mathematical Model	Huang, Danrun	4:10 PM	Glacier North
DeZeeuw, Garrett	Myoelectric Prosthesis	Covey, Steven; Petzold, Mark	8:20 AM	Voyageurs North
Diedrichsen, Douglas	The Effect of Race, Income and Gender on Transportation Mode Choice	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Dols, Jade	Help: Take It or Leave It	Edrisinha, Chaturi	11:40 AM	Granite
Donovan, Moira	Visual Rhetoric in English Composition Textbooks	Mohrbacher, Carol	10:10 AM	Oak

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Douglas, JoAnna	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Draper, Jason	Experimental Study of Bedforms Developed by Density Currents	Fedele, Juan	4:30 PM	Glacier South
Dupay, Tony	Are Home Laboratory Experiments an Effective Tool for Online Chemistry Students	Krystyniak, Rebecca	9:00 AM	Ballroom
Dwyer, Cory	Changing Understandings of Imperialism and Nationalism in China	Philion, Stephen	2:00 PM	Oak
Dyce, Elizabeth	Healthcare Benefits for Speech-Language Pathologists	Whites, Margery	9:00 AM	Ballroom
Ecker, Jordan	Help: Take It or Leave It	Edrisinha, Chaturi	11:40 AM	Granite
Edberg, Lucas	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Eden, Ellen	The Effect of Race, Income and Gender on Transportation Mode Choice	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Einck, Alan	The Effects of Burning and Herbicide Treatments on Spotted Knapweed ( <i>Centaurea maculosa</i> )	Arriagada, Jorge	3:00 PM	Glacier North
Eischen, Erica	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Eisenstadt, Alicia	Looking Beyond the Notes: A Music Research and Performance Colloquium	Vermillion, Terry; Moore, Albert	12:30 PM	Ruth Gant Recital Hall, Rm 230, Performing Arts Center
Eliszewski, Billie	A Historical Comparative of Migration Patterns and Experiences of Immigrants to Central Minnesota	Greider, Paul	9:30 AM	Glacier South
Eliszewski, Billie	Changing Attitudes Toward Gender Roles, Identity, Relations, and Inequality In China Since The Mao Era	Philion, Stephen	12:30 PM	Oak
Ellis, Alexandra	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Ericksen, Elise	Healthcare Cost Effects on Speech-Language Pathologists and Their Clients	Whites, Margery	9:00 AM	Ballroom
Eticha, Gudina	The Impact of Vanadium Flavonoid Complexes on the Catalytic Activity of Phosphodiesterase I	Sreerama, Lakshmaiah	9:00 AM	Ballroom
Falkum, Thomas	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Feeny, Briana	Healthcare Benefits for Speech-Language Pathologists	Whites, Margery	9:00 AM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Feldick, Ashley	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Feneis, Ashley	An Investigation of the Interaction Between Alzheimers Disease Drugs and the Fluorescein Amyloid (1-42) Peptide	Ramakrishnan, Latha; Dvorak, Michael	2:00 PM	Ballroom
Flicek, Kira	Healthcare Cost Effects on Speech-Language Pathologists and Their Clients	Whites, Margery	9:00 AM	Ballroom
Fong, Chen Kwang	Redesign and Optimization of Steel Coil Storing Inventory Space at a Freezer Manufacturing Company	Shah, Hiral	9:30 AM	Glacier North
Ford, Ashlee	Creatine Kinase Elevation Following Eccentric Exercise in Females as a Marker for Training Stress	Bacharach, David	9:00 AM	Ballroom
Fortun, Todd	Investigations on the Sensitivity of Predicted Air Quality to the Uncertainty in Anthropogenic Emissions	Kubesh, Rodney	9:00 AM	Ballroom
Freeh, Adam	The Question of German Identity: A Study of German Immigrants to Stearns County from the Mid-nineteenth to Early-twentieth Century	Mueller, Isolde	4:10 PM	Voyageurs South
Friebe, Angela	Speech-Language Pathologists' Opinions About Healthcare	Whites, Margery	9:00 AM	Ballroom
Friedrichs, Sarah	Differences in Affectionate Communication Between Same-Sex and Cross-Sex Friendships	Anderson, Traci	9:30 AM	Granite
Fuchs, Brody	Measuring Small Wavelength Shifts With a Spatial Heterodyne Spectrometer	Harlander, John	4:00 PM	Ballroom
Gahm, Noah	Worlds Afire	Wells, Scott	2:40 PM	Voyageurs North
Gehling, Rebecca	Noise Affects on Memory Performance in Working Environments	Illies, Jody	9:00 AM	Ballroom
Gerdes, Randi	Lending a Helping Hand	Edrisinha, Chaturi	1:00 PM	Granite
Ggani, Rasin	Fighting and Dishonest Signaling Among Hermit Crabs When There is a Scarce Resource	Simpson, Patricia	8:00 AM	Voyageurs North
Gidlow, Sonja	Mobile Telephone Use and Student Development: How Frequent Communication with Parents Affects College Student Autonomy	Mills, Michael	12:00 PM	Voyageurs North
Giri, Sujan	Formula Hybrid Race Car	Miller, Kenneth; Meyer, Dan	9:00 AM	Ballroom
Girmay, Sisay Kenfe	Synthesis, Characterization and DNA Interaction Studies of Titanium-flavonoid Complexes	Mahroof-Tahir, Mohammad	2:00 PM	Ballroom
Glidden, Charlotte	Differences in Affectionate Communication Between Same-Sex and Cross-Sex Friendships	Anderson, Traci	9:30 AM	Granite
Goenner, Andrew	Dynamometer Modernization	Glazos, Michael; Goodner, Timothy	2:00 PM	Ballroom
Gong, Hwee Kiat	Induction of Autoimmune Diabetes in mice by Streptozotocin	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Gorres, Kandice	Help: Take It or Leave It	Edrisinha, Chaturi	11:40 AM	Granite
Gothe, Andrew	Moisture Separator Drain System	Zhao, Yongli; Covey, Steven	4:10 PM	Glacier South
Gritti, Ryan	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Gross, Broc	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Gross, Elizabeth	Globalization of Education in China	Philion, Stephen	8:20 AM	Oak
Gross, Melissa	China's Religious Reform and Globalization	Philion, Stephen	8:00 AM	Oak
Gruber, Nicholas	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Gucinski, Mark	Analysis of the Applicability of a DNA Fingerprinting Method for Bacillus Cereus	Gulrud, Kristin	2:00 PM	Ballroom
Guevara, Jason	Rapid Production Metal Replacement	Bekkala, Andrew; Byun, Jeongmin	8:40 AM	Voyageurs North
Gunderson, Tracie	Evaluation of Facial Expressions	Illies, Jody	9:00 AM	Ballroom
Gustafson, Bryce	Radiation-Induced Thermoluminescence Dosimetry	Ratliff, Steven	2:00 PM	Ballroom
Gustafson, Ronnie	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Gutknecht, Zachrie	Kinzer Creek Stream Quality Analysis	Bender, Michner	4:00 PM	Ballroom
Hagel, Kendra	Do Looks Really Matter When Deciding to Help?	Edrisinha, Chaturi	11:00 AM	Granite
Hageman, Jonathan	Should Minnesotans Start Farming Their CRP Acres?	Simpson, Patricia	9:00 AM	Ballroom
Hager, Alyse	Precipitation Distribution During Midwest Alberta Clipper Cases	Weisman, Robert	9:00 AM	Ballroom
Haggstrom, Brady	SCSU Survey Fall 2009 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	9:00 AM	Ballroom
Haggstrom, Brady	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Hankes, Nathaniel	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Hansen, Jonathan	Anthropology and Performance in a Multi-User Domain	Lavenda, Robert	4:10 PM	Voyageurs North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Hanson, Jamie	Restoring Invasive Plant Dominated Areas by Means of Assisted Succession	Arriagada, Jorge	11:00 AM	Cascade
Hanson, Scott	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Hardrath, Jacquelin	Analysis of Data from Stearns County Jail	Robinson, David; Xu, Hui	3:30 PM	Glacier North
Harter, Joseph	Transformation of a Hermite-Gaussian Laser Mode to a Laguerre-Gaussian Mode via Cylindrical Lenses	Bigelow, Matthew	4:00 PM	Ballroom
Hary, Joshua	Aggregation of Cholesterol: Investigations Using Viscosity Measurements and Scanning Electron Microscopy	Ramakrishnan, Latha; Sivaprakasam, Kannan	4:00 PM	Ballroom
Hasner, Michael	Use of Stereotypes of Race and Gender in the Perception of Facial Expressions	Buswell, Brenda	9:00 AM	Ballroom
Hathaway, Phoenix	Helping Hands	Edrisinha, Chaturi	12:00 PM	Granite
Hauser, Tim	Personality, School and Life Satisfaction: The Mediatlional Role of Effort	Protolipac, Daren	2:20 PM	Voyageurs South
Hawkins, Dawn	Kinzer Creek Stream Quality Analysis	Bender, Michner	4:00 PM	Ballroom
Heikkinen, Kyle	Ultrafast, High Voltage Electronics for Photoconductive Materials Characterization	Vogt, Timothy; Lidberg, Russell	2:00 PM	Ballroom
Helmin, Derrek	SCSU Survey Fall 2009 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	9:00 AM	Ballroom
Helmin, Derrek	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Hemming, Corey	High Performance/Green Computing	Guster, Dennis	11:40 AM	Voyageurs North
Henderson, Melissa	Looking Beyond the Notes: A Music Research and Performance Colloquium	Vermillion, Terry; Moore, Albert	12:30 PM	Ruth Gant Recital Hall, Rm 230, Performing Arts Center
Hendricks, Wesley	Solar Power: Moving to a Cleaner Green Energy	Simpson, Patricia	9:00 AM	Ballroom
Henning, Chantelle	Healthcare Cost Effects on Speech-Language Pathologists and Their Clients	Whites, Margery	9:00 AM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Her, Maisee	The Incidence of Streptozotocin (STZ)-Induced Autoimmune Diabetes in Janus Tyrosine Kinase (JAK) 3-Deficient Mice	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom
Herbst, Micaela	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison-Sandberg, Leslie	9:00 AM	Ballroom
Herold, Scott	Lending a Helping Hand	Edrisinha, Chaturi	1:00 PM	Granite
Hill, Rachel	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom
Hillukka, Gary	Non-invasive Measurement of Blood Glucose	Zheng, Yi	9:00 AM	Ballroom
Hinnenkamp, Theresa	Do Looks Really Matter When Deciding to Help?	Edrisinha, Chaturi	11:00 AM	Granite
Hirsch, Autumn	Minnesota Wolf Protection: Should It Be a Federal Issue?	Simpson, Patricia	2:00 PM	Ballroom
Hobbs, Joseph	Flow Cytometric Analysis of Cytokine Profiles in Low-Dose-STZ (LDSTZ)-Induced Model of Autoimmune Diabetes	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Hoelscher, Amber	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Hoffstrom, Christa	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Hogan, Tyler	Looking Beyond the Notes: A Music Research and Performance Colloquium	Vermillion, Terry; Moore, Albert	12:30 PM	Ruth Gant Recital Hall, Rm 230, Performing Arts Center
Holder, Molly	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Hord, Alexander	Analysis of the Applicability of a DNA Fingerprinting Method for Bacillus Cereus	Gulrud, Kristin	2:00 PM	Ballroom
Hovelson, Johannes	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Hyndman, Katie	Examining Reproductive Effects of Endocrine Active Compounds on Fish	Schoenfuss, Heiko	5:20 PM	Glacier North
Jacobs, Brian	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Jacobson, Jessica	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Janikowski, Breanna	Donating What Works? Goodwill Versus Tangibles	Edrisinha, Chaturi	11:20 AM	Granite
Jasso, Manuel	Dynamometer Modernization	Glazos, Michael; Goodner, Timothy	2:00 PM	Ballroom
Jawando, Abbey	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Jenkins, Austin	Precontact Resources in Northern Minnesota: A Synthesis of Information from Macro and Microscopic Investigations	Muniz, Mark	2:00 PM	Ballroom
Jensen, Alicia	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
John, Jacob	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Johnson, Aaron	Rapid Production Metal Replacement	Bekkala, Andrew; Byun, Jeongmin	8:40 AM	Voyageurs North
Johnson, Brice	Breeding of JAK3 Deficient Mice at SCSU	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Johnson, Brittany	Influence Of Grandparents On College Students	Devoe, Marlene	4:00 PM	Ballroom
Johnson, Carissa	Sustainable Development in Costa Rica	Butenhoff, Linda	11:20 AM	Cascade
Johnson, Chad	Pre-Competition Hydration Status of High School Athletes Participating in Different Sports	Bacharach, David	9:00 AM	Ballroom
Johnson, Cory	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Johnson, David	The Economic Origins of Participation: Class in the Yeomanry of the Revolutionary Waxhaws Settlement	Mullins, Jeffrey	11:40 AM	Glacier North
Johnson, Jennina	Free Hugs: Random acts of Kindness at SCSU	Edrisinha, Chaturi	8:00 AM	Cascade
Johnson, Lewis	Manufacturing Interface	Bekkala, Andrew; Sezen, Ahmet	9:50 AM	Glacier North
Johnson, Lukas	An Oral History of Diaspora from the Horn of Africa	Greider, Paul	10:30 AM	Glacier South
Johnson, Tyler	Trans Fats in St. Cloud Food Establishments	Simpson, Patricia	9:00 AM	Ballroom
Johnson, William	Psychological Correlates of Optimism and Test Taking	Illies, Jody	9:00 AM	Ballroom
Johnstone, Lucas	Investigation of the Decrease in Charge Carrier Mobilities at Low Temperature in Organic Semiconductor Materials	Lidberg, Russell	2:00 PM	Ballroom
Jonak, Cassandra	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Joshi, Sunny	Histological and Immunohistochemical Analysis of Insulinitis Lesion in C57BL/6 Mice with Autoimmune Diabetes	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Kampa, Kaelynn	SCSU Survey Fall 2009 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	9:00 AM	Ballroom

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Kampa, Kaelynn	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Karim, Wara	News Sources in the Coverage of 2008 Mumbai Terror Attacks: A Comparative Study of Indian, Chinese and American Newspapers	Peng, Zengjun	4:30 PM	Voyageurs North
Karki, Adip	Ultrasound Vibrometry	Zheng, Yi	4:00 PM	Ballroom
Kauffman, Seth	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
KC, Birendra	Induction of Autoimmune Diabetes in mice by Streptozotocin	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Kellar, Donald	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Kent, Elizabeth	Culturing the Unculturables	Jensen, Ellen	4:00 PM	Ballroom
Khan, Niveen	Semiconductor Parameter Analysis Using LabView	Hossain, Md	2:00 PM	Ballroom
Kilanowski, Chelsea	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Kindel, Timothy	Moisture Separator Drain System	Zhao, Yongli; Covey, Steven	4:10 PM	Glacier South
Kinter, Philip	Glacial Place Names Mapping	John, Gareth	3:00 PM	Glacier South
Kitzman, Rebecca	Learning Grammar by Learning Languages: How L2 Aids in the Grammatical Understanding of L1	Kurinski, Elena	8:20 AM	Cascade
Knudson, Tyler	What is the Geography of H1N1?	John, Gareth	4:00 PM	Ballroom
Knutson, Kaitlin	Speech-Language Pathologists' Opinions About Healthcare	Whites, Margery	9:00 AM	Ballroom
Knutson, Lindsay	One Somali Parent's Perceptions of Intervention for Her Child with Autism Spectrum Disorder: Survey Research with the Somali Community	Estrem, Theresa	2:00 PM	Ballroom
Koffi, N'guessan	Factors Affecting Retention of SCSU Students	Robinson, David	4:00 PM	Ballroom
Koktan, Aaron	Factors Affecting Retention of SCSU Students	Robinson, David	4:00 PM	Ballroom
Korbol, Liz	Healthcare Benefits for Speech-Language Pathologists	Whites, Margery	9:00 AM	Ballroom
Kortekaas, Rachel	Earthquake Risk and Hazards: Looking at the 2010 Haitian Earthquake	John, Gareth	9:00 AM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Krebsbach, Vanessa	Let's Dance: Promoting Good Cheer!	Edrisinha, Chaturi	12:40 PM	Granite
Kremers, Stephanie	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Krznarich, Lauren	Second Language Acquisition: Immersion and the Concordia Language Villages	Mueller, Isolde	8:20 AM	Glacier South
Kunde, Kristopher	Does the Hawk Make It Home or Become the First One in Outer Space?	Huang, Danrun	3:50 PM	Glacier North
Kunwar, Yejur	Inhibition of Alpha- and Beta-Glucosidase by Vanadium-Flavonoid Complexes and its Impact on Glucose Metabolism and Diabetes	Sreerama, Lakshmaiah	4:00 PM	Ballroom
Kurtzbein, Courtney	The Aggregation of Snowflakes In the Presence of Banded Precipitation	Kubesh, Rodney	9:00 AM	Ballroom
Kuschke, April	The Effect of an Atrioventricular Node Ablation and Dual Chamber Sensor Technology on the Well Being of Subjects with Atrial Fibrillation	Bacharach, David	9:30 AM	Cascade
Kuschke, April	The Effect of an Atrioventricular Node Ablation and Pacing Device Sensor Technology on the Well-Being of Subjects with Atrial Fibrillation	Bacharach, David	2:00 PM	Ballroom
Lakshman, Murali	Implementation of Radio Frequency Identification (RFID) Inventory Management for the Miller Center Library	Shah, Hiral	3:50 PM	Glacier South
Lam, Amer	Rebuilding After Genocide: Women and Children of South Sudan	Zuo, Jiping	12:00 PM	Glacier South
Lang, Joseph	Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Larson, AnnaMarie	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Ledford, James	Formula Hybrid Race Car	Miller, Kenneth; Meyer, Dan	9:00 AM	Ballroom
Lee, Huey	Precise Semiconductor Measurement System	Hossain, Md	9:00 AM	Ballroom
Lee, Yong Heng	Immunophenotyping of Immune Cells Involved in Pathogenesis of Mouse Type 1 Diabetes Induced by Streptozotocin	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom
Leonard, Gerald	Comparative Morphological Selection: Waterfall-Climbing in Gobiid Fishes from Dominica	Schoenfuss, Heiko	4:00 PM	Ballroom
Li, Xue	Interactive Art	Gorcica, William	10:10 AM	Granite
Lieser, Elizabeth Ann	Isolation and Expression of the Trypanosoma Receptor in Trypanosoma brucei	Kvaal, Christopher; Jacobson, Bruce	9:00 AM	Ballroom
Lindstrom, Amy	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Liu, Liangnan	An Introduction to Pulse Oximetry	Zheng, Yi	4:00 PM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Liu, Xingcai	Internationalization of MnSCU Universities: The Perspective of Student Mobility	Silvestre, Gabriela	10:10 AM	Cascade
Liu, Yu	Non-invasive Measurement of Blood Glucose	Zheng, Yi	9:00 AM	Ballroom
Lodermeier, Dana	Obesity Across the Life Spectrum	Antunez, Hector	4:00 PM	Ballroom
Lodermeier, Dana	Waiting Room or Funeral Home: Public Perceptions of Health Care Reform	Greenberg, Phyllis	4:00 PM	Ballroom
Loxtercamp, Nicholas	Mathematical Model for the Deer Population in Minnesota	Huang, Danrun	4:30 PM	Glacier North
Lueck, Andrea	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison-Sandberg, Leslie	9:00 AM	Ballroom
Luke, Dennis	Anticancer Activity of RuCDTA and TiCDTA Complexes and Their Interactions with DNA	Sreerama, Lakshmaiah	4:00 PM	Ballroom
Lund, Trista	A Closer Look at Parking Problems Within University Campuses	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Lundeen, Christopher	Different Types of Adult Education on Best Management Practices Influences Subsequent Implementation	Bender, Michner	8:00 AM	Glacier South
Lundquist, Gregory	SCSU: A Campus of Change	John, Gareth	4:00 PM	Ballroom
Madden, Dennis	Design and Calibration of an Arm Ergometer for Nordic Skiers	Street, Glenn	9:00 AM	Ballroom
Maharjan, Prabin	Modification of Jig Design to Improve the Ergonomic Rating at a Home Appliance Manufacturing Company	Shah, Hiral	2:20 PM	Glacier North
Major, Chadwick	Formula Hybrid Race Car	Miller, Kenneth; Meyer, Dan	9:00 AM	Ballroom
Malla, Amit	IP Network Video Surveillance and Security System	Akkas, Ahmet	11:00 AM	Voyageurs North
Malla, Kailash	Symmetry, Attractiveness and Facial Emotions	Valdes, Leslie; Illies, Jody	9:00 AM	Ballroom
Malone, Kayla	Methods of Stratification and Scarification for Breaking Dormancy in <i>Corylus Americana</i>	Arriagada, Jorge	4:00 PM	Ballroom
Mandal, Ayush	Fermentation of Biomass Pretreated with Sulfuric Acid and Bleach via <i>Clostridium Phytofermentans</i>	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Mandal, Ayush	Single-Step Conversion of Cellulosic Biomass into Biofuels	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Mandal, Ayush	The Role of Human Aldehyde Dehydrogenase 6 (ALDH6A1) in Resistance to Anticancer Drug Cyclophosphamide	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Marklowitz, Cheyenne	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys	Edrisinha, Chaturi	12:20 PM	Granite
Marmolejo Davis, Alvaro	The DREAM Act and Higher Education: An Exploration of Its Outcomes and Impact	Silvestre, Gabriela	3:00 PM	Voyageurs North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Martin, Cory	Bureaucracy's Influence on China's Move to Privatisation	Philion, Stephen	2:20 PM	Oak
Martin, Jacqueline	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys	Edrisinha, Chaturi	12:20 PM	Granite
Matinda, Rebecca	Early Marriages in Maasai Culture: From the Native Perspective	Zuo, Jiping	2:40 PM	Voyageurs South
Maurer, Mary	Comparing the Effects of Surgical Procedures to Pharmacological Intervention One Year Post Initial Intervention of Women Over 50 Years of Age	Bacharach, David	9:00 AM	Ballroom
Mawilmada, Prasad	Effect of Anhydrous Sodium Sulfate On the Dehydration of Dicalcium Phosphate Dihydrate	Sivaprakasam, Kannan	4:00 PM	Ballroom
Mawilmada, Prasad	Nanotoxicity of Iron Oxide Nanoparticles	Sivaprakasam, Kannan	4:00 PM	Ballroom
Mawilmada, Prasad	Use of Fluorescent Probes to Monitor the Dynamics in Vegetable Oils	Sivaprakasam, Kannan	4:00 PM	Ballroom
Mboko, Wadzanai	Characterization of Bacillus cereus Honey Isolates and Pathogenic Effects on the Tobacco Hornworm (Manduca sexta)	Gulrud, Kristin; Cornell, John	2:40 PM	Glacier North
McArthur, Terri	Estimating Hail Size by Using Cape	Kubesh, Rodney	2:00 PM	Ballroom
McBorrow, Edward	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University	Woldeamanuel, Mintesnot	4:00 PM	Ballroom
McCarty, David	Breeding of JAK3 Deficient Mice at SCSU	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
McCoy, Patrick	Snow Plow, Know How.	Huang, Danrun	5:00 PM	Glacier North
McDonald, Lori	Investigation of the Sedimentology and Stratigraphy of the Cleo-Meyer Farm in Little Falls, MN	Pound, Katherine	4:00 PM	Ballroom
Meister, Andrew	Jaw Muscle Fiber Characteristics In Hawaiian Gobioid Fishes: Histochemica Basis For Feeding Ecology and Behavior	Schoenfuss, Heiko; Schrank, Gordon	10:10 AM	Voyageurs South
Merten, Zachary	Culturing the Unculturables	Jensen, Ellen	4:00 PM	Ballroom
Meyer, Andrew	A Planaria Model for Epilepsy	Ramakrishnan, Latha	2:00 PM	Ballroom
Meyer, Bowen	Rapid Production Metal Replacement	Bekkala, Andrew; Byun, Jeongmin	8:40 AM	Voyageurs North
Mielke, Trent	Marijuana Use and Productivity	MacDonald, Lynn	9:00 AM	Glacier North
Miller, Heather	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Miller, Karissa	Healthcare Benefits for Speech-Language Pathologists	Whites, Margery	9:00 AM	Ballroom
Minkler, Steven	The Cell Phone: A Criminal's Best Friend or Worst Enemy? Cell Phone Forensics Can Help to Uncover the Truth	Schmidt, Mark	11:20 AM	Voyageurs North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Mirza, Muhammad	Myoelectric Prosthesis	Covey, Steven; Petzold, Mark	8:20 AM	Voyageurs North
Moberly, Lance	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Moll, Michael	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Mooney, Leigha	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University	Woldeamanuel, Mintesnot	4:00 PM	Ballroom
Mortenson, Amanda	Mille Lacs County Community Clinic Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Mugo, Wanjiru	Rebuilding After Genocide: Women and Children of South Sudan	Zuo, Jiping	12:00 PM	Glacier South
Mulbah, Henry	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Muldowney, John	Manufacturing Interface	Bekkala, Andrew; Sezen, Ahmet	9:50 AM	Glacier North
Muschler, Robert	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Nadeau, Daniel	Source Water Protection	Bender, Michner	2:00 PM	Ballroom
Nandlal, Larita	Flow Cytometric Analysis of Cytokine Profiles in Low-Dose-STZ (LDSTZ)-Induced Model of Autoimmune Diabetes	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Neighbors, Shayna	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Neilson, Christopher	Myoelectric Prosthesis	Covey, Steven; Petzold, Mark	8:20 AM	Voyageurs North
Nelson, Daniel	College Students' Use of Online Pornography: A Review of the Literature	Livingston, Tina	2:00 PM	Ballroom
Nelson, Kelley	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Nicklay, Matthew	Calculus Requirements and the Popularity of the Economics Major	Rebeck, Kenneth	8:00 AM	Glacier North
Nicklay, Matthew	Market Efficiency and Profitability in the Gambling Market for the NFL from 1979 to 2009	Banaian, King	9:00 AM	Cascade
Nickolauson, Meghan	Migration to Central Minnesota Project	Greider, Paul; Mueller, Isolde	11:20 AM	Glacier South
Nintiema, Hermine	The Impact of Literacy, Poverty, and Access on the School Enrollment Rate for Girls in Burkina Faso	Hughes, Patricia	8:20 AM	Glacier North
Niraula, Suresh	City of St. Cloud Surface Water Treatment Stages and Chemical Analysis	Bender, Michner	9:00 AM	Ballroom
Nolan, Lisa	Waiting Room or Funeral Home: Public Perceptions of Health Care Reform	Greenberg, Phyllis	4:00 PM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Novotny, Marissa	Do Looks Really Matter When Deciding to Help?	Edrisinha, Chaturi	11:00 AM	Granite
Nylund, Jacob	A Lithologic Analysis of Glacial Sediments in Central Morrison County	Pound, Katherine	4:00 PM	Ballroom
Obi, Daniel	Solar Powered Wireless Mailbox	Hossain, Md	4:00 PM	Ballroom
O'Fallon, Eric	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Olson, Marin	A Comparison of Two Methods for Isolation of CD4+ T Cells: Yield, Purity and Function of Isolated CD4+ Cells	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom
Olson, Marin	Does the JAK3 Inhibitor Induce In Vitro Generation of Regulatory T (Treg) Cells?	Cetkovic-Cvrlje, Marina	2:00 PM	Glacier North
Ong, Wei	Effect of Klenz Pre-Moistened Towels on Bacterial Growth	Schrank, Gordon	9:00 AM	Ballroom
Opatz, Thomas	Laud Literacy	Wells, Scott	2:20 PM	Voyageurs North
Ostroot, Alissa	Facebook and Communication Apprehension	Anderson, Traci	9:50 AM	Granite
Panchmatia, Neil	Faith-Based Social Service Organizations and Somali Immigrants in Central Minnesota	Zerbib, Sandrine	3:50 PM	Voyageurs North
Pandey, Rajan	Ergonomic Design of a Workstation at a Freezer Manufacturing Company	Shah, Hiral	9:50 AM	Voyageurs North
Paruthi, Vidhi	Ergonomic Design of a Workstation at a Freezer Manufacturing Company	Shah, Hiral	9:50 AM	Voyageurs North
Patzer, Jeremy	Autonomous Vehicle Tracker with Obstacle Avoidance	Hou, Ling; Petzold, Mark; Julstrom, Bryant	9:00 AM	Ballroom
Paulin, Deborah	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Payne, Robert	Activation of the NLRP3 Inflammasome by Titanium Dioxide Nanowires	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Peightal, Ashley	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Peightal, Ashley	Use of Stereotypes of Race and Gender in the Perception of Facial Expressions	Buswell, Brenda	9:00 AM	Ballroom
Peightal, Ashley	Analysis of Data from Stearns County Jail	Robinson, David; Xu, Hui	3:30 PM	Glacier North
Peterson, Bradley	Mathematical Model for the Deer Population in Minnesota	Huang, Danrun	4:30 PM	Glacier North
Philippi, Jenna	Speech-Language Pathologists' Opinions About Healthcare	Whites, Margery	9:00 AM	Ballroom
Phuyal, Sandip	An Investigation of the Interaction Between Cholesterol Aggregates and Anticoagulants Using a Fluorescent Probe	Ramakrishnan, Latha; Sivaprakasam, Kannan	9:00 AM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Pickar, Michael	A Sociological History of Anarchist Resistance Movements in China from 1900 to Present	Philion, Stephen	2:40 PM	Oak
Pikus, Brendon	Bulk Viscosity of Subatomic Matter	Haglin, Kevin	2:00 PM	Ballroom
Poganski, Beth	Utility of Histopathological Endpoints in the Assessment of Endocrine Disruption in Resident Fish Populations	Schoenfuss, Heiko	2:00 PM	Ballroom
Popp, Amanda	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Poudel, Sumeet	Histological and Immunohistochemical Analysis of Insulinitis Lesion in C57BL/6 Mice with Autoimmune Diabetes	Cetkovic-Cvrlje, Marina	2:00 PM	Ballroom
Rakotz, Susan	FHSAE Simulation	Shah, Hiral; Miller, Kenneth	10:10 AM	Voyageurs North
Ranfranz, Genna	Lending a Helping Hand	Edrisinha, Chaturi	1:00 PM	Granite
Ransbotham, Anna	Differences in Education Services Among English-, Spanish-, Somali-, and Hmong-Speaking Children with Autism	Zhang, Shiju; Estrem, Theresa	4:00 PM	Ballroom
Raut, Suraj	Six Sigma Project for Sound Minimization	Baliga, Ben	3:30 PM	Glacier South
Rein, LeaAnn	Let's Dance: Promoting Good Cheer!	Edrisinha, Chaturi	12:40 PM	Granite
Reiners, Lindsey	Lake Benton Prehistoric Ceramics Analysis	Muniz, Mark	3:30 PM	Voyageurs North
Revier, Kevin	From Field to Factory: The Struggle of the Chinese Migrant	Philion, Stephen	12:50 PM	Oak
Ricci, Angela	A Closer Look at Parking Problems Within University Campuses	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Riddle, Megan	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison-Sandberg, Leslie	9:00 AM	Ballroom
Riley, David	The Effect of Race, Income and Gender on Transportation Mode Choice	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Ripplinger, Rhonda	Healthcare Cost Effects on Speech-Language Pathologists and Their Clients	Whites, Margery	9:00 AM	Ballroom
Risal, Sanjay	Six Sigma Project for Sound Minimization	Baliga, Ben	3:30 PM	Glacier South
Robasse, Amanda	The Effect of Race, Income and Gender on Transportation Mode Choice	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Rogers, Dustin	High Performance/Green Computing	Guster, Dennis	11:40 AM	Voyageurs North
Rotz, Sarah	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison-Sandberg, Leslie	9:00 AM	Ballroom
Saehr, Kelsey	Lending a Helping Hand	Edrisinha, Chaturi	1:00 PM	Granite
Sajevic, David	Real Estate Values and Golf Courses	John, Gareth	11:00 AM	Glacier North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Sandhoefner, Rebecca	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys	Edrisinha, Chaturi	12:20 PM	Granite
Sapkota, Puspak	Fabrication of Micro Accelerometer Using MEMS Technology	Byun, Jeongmin	2:00 PM	Ballroom
Saucedo, Frederico	Trailing Digit Distribution of St. Cloud State Survey	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	9:00 AM	Ballroom
Saucedo, Frederico	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Saucedo, Frederico	Analysis of Data from Stearns County Jail	Robinson, David; Xu, Hui	3:30 PM	Glacier North
Schadewald, Nicholas	Manufacturing Interface	Bekkala, Andrew; Sezen, Ahmet	9:50 AM	Glacier North
Schaefer, Joshua	Mathematical Model for the Deer Population in Minnesota	Huang, Danrun	4:30 PM	Glacier North
Schirmacher, Adam	Design of a Current-Feedback Operational Amplifier	Hossain, Md	9:00 AM	Voyageurs North
Schnaser, Aron	Comparison of Student Knowledge of Nuclear Waste Between Chemistry Majors and Non Majors	Krystyniak, Rebecca	4:00 PM	Ballroom
Schotl, Christine	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Schreifels, Heather	Nonverbal Communication: Are Writing Centers Part of the Conversation?	Mohrbacher, Carol	9:50 AM	Oak
Schueler, Brittany	Changes in Sexual Identity in China Since 1980	Philion, Stephen	1:30 PM	Oak
Schwartz, Lauren	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Schwichtenberg, Mark	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Seamans, Dottie	University Advancement DVD	Vorell, Matthew	2:00 PM	Voyageurs North
Seawell, Jennarae	Lending a Helping Hand	Edrisinha, Chaturi	1:00 PM	Granite

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Seppelt, Joshua	Cleaning Up the Great Lakes - a Mathematical Model	Huang, Danrun	4:10 PM	Glacier North
Sevilla Rubi, Francisco	Autonomous Vehicle Tracker with Obstacle Avoidance	Hou, Ling; Petzold, Mark; Julstrom, Bryant	9:00 AM	Ballroom
Sexton, Amanda	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Shawley, Chrystal	Waiting Room or Funeral Home: Public Perceptions of Health Care Reform	Greenberg, Phyllis	4:00 PM	Ballroom
Sherman, Sonny	Socialism: The way of the Chinesees People	Philion, Stephen	3:00 PM	Oak
Shrestha, Guinness	Unmanned Aerial Vehicle	Hou, Ling	4:00 PM	Ballroom
Shrestha, Ravi	Ultrasound Vibrometry	Zheng, Yi	4:00 PM	Ballroom
Shuck, Megan	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Silva, Cecelia	Factors Affecting Retention of SCSU Students	Robinson, David	4:00 PM	Ballroom
Sitaula, Rajiv	Fabrication of Micro Accelerometer Using MEMS Technology	Byun, Jeongmin	2:00 PM	Ballroom
Smith, Madison	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys	Edrisinha, Chaturi	12:20 PM	Granite
Sonbol, Hend	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Spector, Ivan	Synthesis and Analysis of Ferroelectric Liquid Crystals	Liu, Zengqiang; Mechelke, Mark	4:00 PM	Ballroom
Spohn, Timothy	A Closer Look at Parking Problems Within University Campuses	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Srock, Charles	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University	Woldeamanuel, Mintesnot	4:00 PM	Ballroom
Stahlback, Dustin	Wireless Electrocardiogram (ECG/EKG)	Zheng, Yi	2:00 PM	Ballroom
Stepanek, Joshua	From Micro to Macro: Examining the Hydrodynamic Properties of Stalk Forming Diatoms	Julius, Matthew	10:30 AM	Voyageurs South
Stewart, Eric	Dynamometer Modernization	Glazos, Michael; Goodner, Timothy	2:00 PM	Ballroom
Striegel, Sarah	Differences in Affectionate Communication Between Same-Sex and Cross-Sex Friendships	Anderson, Traci	9:30 AM	Granite
Sullivan, Dallas	The Economic Developmental Impact of the Underground Market Within the Americas	Butenhoff, Linda	3:00 PM	Voyageurs South
Sullivan, Trisha	H1N1 Preparedness In Meeker County	Lenz, Brenda; DeBruycker, Jo	9:00 AM	Ballroom
Sullivan, Zane	Groups in Space: Group Size and Locomotion	Jazwinski, Christine	4:00 PM	Ballroom

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Surat, Tess	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Svenkeson, D'Angelos	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University	Woldeamanuel, Mintesnot	4:00 PM	Ballroom
Swanson, Brent	SCSU Formula-Hybrid Electrical Systems	Glazos, Michael	9:00 AM	Ballroom
Swanson, Jacob	Single Crystal Growth Techniques For Perylenetetracarboxydiimide Derivatives	Neu, Donald; Lidberg, Russell	4:00 PM	Ballroom
Swanson, Rebekah	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Swenson, Stephanie	Let's Dance: Promoting Good Cheer!	Edrisinha, Chaturi	12:40 PM	Granite
Tamble, Patrick	A Numerical Simulation of Heat Loss from Coal Conveyor Gallery #51 Using ANSYS	Zhao, Yongli	9:30 AM	Voyageurs North
Tang, Chuol	A Closer Look at Parking Problems Within University Campuses	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Taraldsen, Matthew	Public Perception to Winter Weather Warnings: December 2007 to January 2010	Hansen, Anthony; Stangl-Erkens, Suzanne	2:20 PM	Glacier South
Tay, Yii Van	Role of Human Liver Aldehyde Dehydrogenases in Non-Alcoholic Steatohepatitis (NASH) Caused by High-Fructose Corn Syrup (HFCS)	Sreerama, Lakshmaiah	9:00 AM	Ballroom
Teoh, Jun-Kai	The Rise of the Middle Class in China	Philion, Stephen	1:10 PM	Oak
Teoh, Wei Loon	Role of Human Liver Aldehyde Dehydrogenases in Non-Alcoholic Steatohepatitis (NASH) Caused by High-Fructose Corn Syrup (HFCS)	Sreerama, Lakshmaiah	9:00 AM	Ballroom
Tessier, Robin	Use of Prompts to Promote Separation of Recycled Materials	Jazwinski, Christine	4:00 PM	Ballroom
Thapa, Rajan	Effect of Galantamine and Riluzole on Beta-Amyloid (1-42) using Fluorescence and Atomic Force Microscopy	Ramakrishnan, Latha	9:50 AM	Cascade
Thapa, Rajan	An Investigation of the Interaction Between Alzheimers Disease Drugs and the Fluorescein Amyloid (1-42) Peptide	Ramakrishnan, Latha; Dvorak, Michael	2:00 PM	Ballroom
Thapa, Sanskriti	A Closer Look at Parking Problems Within University Campuses	Woldeamanuel, Mintesnot	2:00 PM	Ballroom
Thell, Daniel	Quality in Education	Polacco, Alexander	10:30 AM	Oak
Therkilsen, Suzette	Help: Take It or Leave It	Edrisinha, Chaturi	11:40 AM	Granite
Thibodeau-Schuldt, Megan	How is China's Role Globally Impacting How Cubans See Capitalism?	Philion, Stephen	9:00 AM	Oak
Thibodeau-Schuldt, Megan	The Links Between Alcohol Use and Smoking	Zerbib, Sandrine	9:50 AM	Glacier South

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Timm, Ann	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Tiwari, Suraj	Six Sigma Project for Sound Minimization	Baliga, Ben	3:30 PM	Glacier South
Tokar, Joshua	In the Beginning Was the Word: The Foreign Language Translation Process	Mueller, Isolde	8:40 AM	Glacier South
Tong, Wai Yan	Gender and Spatial Distribution of Groups in a Library Environment	Jazwinski, Christine	9:00 AM	Ballroom
Trajkovska, Sanja	Solar Powered Wireless Mailbox	Hossain, Md	4:00 PM	Ballroom
Tran, Paul	Autonomous Vehicle Tracker with Obstacle Avoidance	Hou, Ling; Petzold, Mark; Julstrom, Bryant	9:00 AM	Ballroom
Traore, Mohamed	Fermentation of Biomass Pretreated with Sulfuric Acid and Bleach via Clostridium Phytofermentans	Sreerama, Lakshmaiah	2:00 PM	Ballroom
Tulloch, Alastair	An Exploration of the Reproductive Activity of Puya (puya clava-herculis) Plants Found in the Andes Mountain Range	Timmerman, Kristina	4:00 PM	Ballroom
Uphoff, John	Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University	Woldeamanuel, Mintesnot	4:00 PM	Ballroom
Vall, Andrew	Precise Semiconductor Measurement System	Hossain, Md	9:00 AM	Ballroom
Van Bruggen, Andrew	A Comparison of Two Methods for Isolation of CD4+ T Cells: Yield, Purity and Function of Isolated CD4+ Cells	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom
VanHecke, Matthew	Should We Use Food Based Crops For the Production of Biofuel?	Simpson, Patricia	9:00 AM	Ballroom
Veeramani, Viloshanakumara	Symmetry, Attractiveness and Facial Emotions	Valdes, Leslie; Illies, Jody	9:00 AM	Ballroom
Veeramani, Viloshanakumara	Use of Stereotypes of Race and Gender in the Perception of Facial Expressions	Buswell, Brenda	9:00 AM	Ballroom
Verwey, Matthew	Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys	Edrisinha, Chaturi	12:20 PM	Granite
Vocelka, Lucas	Investigation into Paternal Behavior in Sprague Dawley Rats	Tubbiola, Maureen	9:00 AM	Ballroom
Voegele, Alan	The Incidence of Streptozotocin (STZ)-Induced Autoimmune Diabetes in Janus Tyrosine Kinase (JAK) 3-Deficient Mice	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom
Vondal, Edward	Tibet, Globalization and Divorce	Philion, Stephen	8:40 AM	Oak
Vopatek, Rachel	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison- Sandberg, Leslie	9:00 AM	Ballroom
Vossen, Lucas	Mathematical Model for the Deer Population in Minnesota	Huang, Danrun	4:30 PM	Glacier North

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<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Vu, Quang	A Numerical Simulation of Heat Loss from Coal Conveyor Gallery #51 Using ANSYS	Zhao, Yongli	9:30 AM	Voyageurs North
Wade-Ferrell, Jessica	An Analysis of the Effect of Toxoplasma gondii Putative Cell Cycle Proteins on the Cell Cycle of Saccharomyces Cerevisiae	Kvaal, Christopher	9:30 AM	Voyageurs South
Wagner, Benjamin	Christian Religiosity and Happiness	Illies, Jody	4:00 PM	Ballroom
Wallace, Camaya	Examining the Low Marriage Rate Among African American Women	Zuo, Jiping	2:00 PM	Ballroom
Walsh, Jocelyn	Speech-Language Pathologists' Opinions About Healthcare	Whites, Margery	9:00 AM	Ballroom
Walter, John	His Religious Perspective: Chaucer's Beliefs on the Church and Christianity of Fourteenth-Century England	Mohrbacher, Carol	3:50 PM	Voyageurs South
Wambua, Angela	How Has Female Genital Mutilation Affected Immigrant Life in America	Zuo, Jiping	11:40 AM	Glacier South
Ward, Tamara	Buffalo Middle School Nutrition Assessment	Lenz, Brenda; Morrison-Sandberg, Leslie	9:00 AM	Ballroom
Warman, Jenna	Help: Take It or Leave It	Edrisinha, Chaturi	11:40 AM	Granite
Wester, Jason	Quality in Education	Polacco, Alexander	10:30 AM	Oak
Weygand, Martin	Precise Semiconductor Measurement System	Hossain, Md	9:00 AM	Ballroom
Wiehr, Jessica	Immigrants in the Military	Greider, Paul	10:10 AM	Glacier South
Willert, Michael	Stearns County: Smoking Assessment of St. Cloud State University	Lenz, Brenda; Zelenak, Mary	9:00 AM	Ballroom
Williams, Frederick	Helping Hands	Edrisinha, Chaturi	12:00 PM	Granite
Windschitl, Lauren	Underage Drinking in Kandiyohi County	Lenz, Brenda; Warner, Susan	9:00 AM	Ballroom
Winter, Carole	Predictors of Success on the CRA Exam	Macari, Daniel	5:20 PM	Glacier South
Wirtz, Nicholas	Electronic Warehouse Inventory Control System	Akkas, Ahmet	2:00 PM	Ballroom
Wollak, Timothy	Moisture Separator Drain System	Zhao, Yongli; Covey, Steven	4:10 PM	Glacier South
Worm, Sadie	Pain Management in Patients with a History of Chemical Dependency	Lenz, Brenda; Hiemenz, Melinda	9:00 AM	Ballroom
Wright, Eric	Design and Calibration of an Arm Ergometer for Nordic Skiers	Street, Glenn	9:00 AM	Ballroom
Xiong, Tong	Nanotoxicity of Iron Oxide Nanoparticles	Sivaprakasam, Kannan	4:00 PM	Ballroom
Yee, Jong Hoe	Immunophenotyping of Immune Cells Involved in Pathogenesis of Mouse Type 1 Diabetes Induced by Streptozotocin	Cetkovic-Cvrlje, Marina	9:00 AM	Ballroom

### STUDENT PRESENTER INDEX

<u>Student Presenter</u>	<u>Project Title</u>	<u>Sponsor(s)</u>	<u>Time</u>	<u>Room</u>
Yeoh, See Seong	Effect of Klenz Pre-Moistened Towels on Bacterial Growth	Schrank, Gordon	9:00 AM	Ballroom
Yimamu, Melat	SCSU Survey Spring 2010 Results	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	11:00 AM	Oak
Yo, Souleymane	Solar Powered Wireless Mailbox	Hossain, Md	4:00 PM	Ballroom
Yong, Shun Jie	Improving Teaching Effectiveness and Student Interest in Uniform Circular Motion	Liu, Zengqiang	2:00 PM	Ballroom
Yoshii, Tsuyoshi	Formula Hybrid Race Car	Miller, Kenneth; Meyer, Dan	9:00 AM	Ballroom
Zemien, Ashlie	Isolation of the BceT Enterotoxin in Strains of Bacillus cereus Isolated from Honey	Gulrud, Kristin	9:00 AM	Ballroom
Zuluaga, Juan	Modeling Sequence Similarity With Regression Methods	Robinson, David	2:00 PM	Glacier South
Zuluaga, Juan	Comparison of Early and Late Respondents in SCSU Surveys.	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	4:00 PM	Ballroom
Zuluaga, Juan	Differences in Education Services Among English-, Spanish-, Somali-, and Hmong-Speaking Children with Autism	Zhang, Shiju; Estrem, Theresa	4:00 PM	Ballroom

## SPONSOR INDEX

### St. Cloud State University

#### College of Education

##### ***Counselor Education and Educational Psychology***

<u>Sponsor</u>	<u>Student(s)</u>
Macari, Daniel	Winter, Carole
Silvestre, Gabriela	Marmolejo Davis, Alvaro; Liu, Xingcai

##### ***Educational Leadership and Community Psychology***

<u>Sponsor</u>	<u>Student(s)</u>
Edrisinha, Chaturi	Janikowski, Breanna; Brummer, Katie; Bosiacki, Amy; Hathaway, Phoenix; Williams, Frederick; Johnson, Jennina; Swenson, Stephanie; Marklowitz, Cheyenne; Sandhoefner, Rebecca; Verwey, Matthew; Smith, Madison; Martin, Jacqueline; Herold, Scott;
Livingston, Tina	Nelson, Daniel
Mills, Michael	Gidlow, Sonja

##### ***Health, Physical Education, Recreation and Sport Science***

<u>Sponsor</u>	<u>Student(s)</u>
Antunez, Hector	Lodermeier, Dana
Bacharach, David	Kuschke, April; Ford, Ashlee; Johnson, Chad; Davenport, Ashley; Maurer, Mary
Street, Glenn	Madden, Dennis; Wright, Eric; Castellano, Janna

##### ***Human Relations and Multicultural Education***

<u>Sponsor</u>	<u>Student(s)</u>
Berglund, Gena	Chen, Wenjie
Magnuson, Carla	Chen, Wenjie

#### College of Fine Arts and Humanities

##### ***Art***

<u>Sponsor</u>	<u>Student(s)</u>
Gorcica, William	Li, Xue

##### ***Communication Sciences and Disorders***

<u>Sponsor</u>	<u>Student(s)</u>
Estrem, Theresa	Ransbotham, Anna; Zuluaga, Juan; Knutson, Lindsay
Whites, Margery	Walsh, Jocelyn; Ripplinger, Rhonda; Flicek, Kira; Henning, Chantelle; Ericksen, Elise; Feeny, Briana; Miller, Karissa; Dyce, Elizabeth; Korbol, Liz; Friebe, Angela; Knutson, Kaitlin; Philippi, Jenna

##### ***Communication Studies***

<u>Sponsor</u>	<u>Student(s)</u>
Anderson, Traci	Glidden, Charlotte; Friedrichs, Sarah; Striegel, Sarah; Ostroot, Alissa; Baumgartner, Bridget
Stangl-Erkens, Suzanne	Taraldsen, Matthew
Vorell, Matthew	Seamans, Dottie
Wells, Scott	Opatz, Thomas; Gahm, Noah

## SPONSOR INDEX

### **English**

<u>Sponsor</u>	<u>Student(s)</u>
Davis, Glenn	Bauer, Conrad
Koffi, Ettien	Ahlers, Jonathan
Mohrbacher, Carol	Donovan, Moira; Schreifels, Heather; Walter, John

### **Foreign Languages and Literature**

<u>Sponsor</u>	<u>Student(s)</u>
Kurinski, Elena	Kitzman, Rebecca
Mueller, Isolde	Ahles, Amanda; Krznarich, Lauren; Holder, Molly; Kremers, Stephanie; Moberly, Lance; Nickolauson, Meghan; Larson, AnnaMarie; Muschler, Robert; Jensen, Alicia; Freeh, Adam; Anderson, Cassie; Tokar, Joshua

### **Mass Communications**

<u>Sponsor</u>	<u>Student(s)</u>
Peng, Zengjun	Karim, Wara

### **Music**

<u>Sponsor</u>	<u>Student(s)</u>
Moore, Albert	Eisenstadt, Alicia; Hogan, Tyler; Bernard, Paul; Henderson, Melissa
Vermillion, Terry	Eisenstadt, Alicia; Hogan, Tyler; Bernard, Paul; Henderson, Melissa

## **College of Science and Engineering**

### **Biological Sciences**

<u>Sponsor</u>	<u>Student(s)</u>
Arriagada, Jorge	Hanson, Jamie; Einck, Alan; Malone, Kayla
Cetkovic-Cvrlje, Marina	Olson, Marin; Van Bruggen, Andrew; Yee, Jong Hoe; Lee, Yong Heng; Nandlal, Larita; Her, Maisee; Voegele, Alan; Hobbs, Joseph; Poudel, Sumeet; Joshi, Sunny; Gong, Hwee Kiat; KC, Birendra; McCarty, David; Johnson, Brice
Cornell, John	Mboko, Wadzanai
Gulrud, Kristin	Zemien, Ashlie; Gucinski, Mark; Hord, Alexander; Mboko, Wadzanai; Blenker, Tracy
Jacobson, Bruce	Lieser, Elizabeth Ann
Julius, Matthew	Stepanek, Joshua
Kvaal, Christopher	Wade-Ferrell, Jessica; Lieser, Elizabeth Ann
Marcattilio, Anthony	Croghan, Katrina
Olson, Brian	Alfano, Anthony
Restani, Marco	Croghan, Katrina
Schoenfuss, Heiko	Poganski, Beth; Buerkley, Megan; Leonard, Gerald; Meister, Andrew; Brown, Amanda; Hyndman, Katie
Schrank, Gordon	Meister, Andrew; Ong, Wei; Yeoh, See Seong
Schuh, Timothy	Dasanayaka, Neranjana
Simpson, Patricia	Hirsch, Autumn; VanHecke, Matthew; Hageman, Jonathan; Bushendorf, Erin; Johnson, Tyler; Hendricks, Wesley; Ggani, Rasin; Bialka, Susan
Tubbiola, Maureen	Vocelka, Lucas
Voelz, Neal	Deans, Carrie

## SPONSOR INDEX

### **Chemistry**

<u>Sponsor</u>	<u>Student(s)</u>
Dvorak, Michael	Feneis, Ashley; Thapa, Rajan; Buzzelli, Kristin
Krystyniak, Rebecca	Buerkley, Megan; Schnaser, Aron; Dupay, Tony
Mahroof-Tahir, Mohammad	Girmay, Sisay Kenfe
Mechelke, Mark	Spector, Ivan
Neu, Donald	Backer, Brian; Swanson, Jacob
Ramakrishnan, Latha	Feneis, Ashley; Thapa, Rajan; Amatya, Christina; DeSaer, Cassie; Meyer, Andrew; Hary, Joshua; Barnowsky, Corrie; Phuyal, Sandip; Acharya, Jyotindra
Sivaprakasam, Kannan	Mawilmada, Prasad; Xiong, Tong; Hary, Joshua; Barnowsky, Corrie; Phuyal, Sandip
Sreerama, Lakshmaiah	Dasanayaka, Neranjana; Teoh, Wei Loon; Traore, Mohamed; Acharya, Subrat; Mandal, Ayush; Kunwar, Yejur; Eticha, Gudina; Luke, Dennis; Tay, Yii Van; Alem, Rekike; Payne, Robert

### **Computer Science**

<u>Sponsor</u>	<u>Student(s)</u>
Julstrom, Bryant	Patzer, Jeremy; Sevilla Rubi, Francisco; Tran, Paul

### **Earth and Atmospheric Sciences**

<u>Sponsor</u>	<u>Student(s)</u>
Fedele, Juan	Draper, Jason
Hansen, Anthony	Taraldsen, Matthew
Kubesh, Rodney	Fortun, Todd; Kurtzbein, Courtney; McArthur, Terri
Pound, Katherine	McDonald, Lori; Nylund, Jacob
Weisman, Robert	Hager, Alyse; Bigelbach, Brandon

### **Electrical and Computer Engineering**

<u>Sponsor</u>	<u>Student(s)</u>
Akkas, Ahmet	Malla, Amit; Bajracharya, Anup; Amargui, Youssef; Wirtz, Nicholas; Betzold, Adam; Blair, Cody
Glazos, Michael	Swanson, Brent; Stewart, Eric; Goenner, Andrew; Jasso, Manuel; Brisley, Justin
Hossain, Md	Schirmacher, Adam; Vall, Andrew; Weygand, Martin; Lee, Huey; Khan, Niveen; Yo, Souleymane; Obi, Daniel; Trajkovska, Sanja
Hou, Ling	Shrestha, Guinness; Ching, Yonghan; AlYami, Naif; Patzer, Jeremy; Sevilla Rubi, Francisco; Tran, Paul
Petzold, Mark	Patzer, Jeremy; Sevilla Rubi, Francisco; Tran, Paul; Mirza, Muhammad; DeZeeuw, Garrett; Neilson, Christopher
Vogt, Timothy	Heikkinen, Kyle; Abfalter, Nathan
Zheng, Yi	Stahlback, Dustin; Cuevas Ruiz, Carlos; Liu, Yu; Compaore, Hassane; Liu, Liangnan; Hillukka, Gary; Karki, Adip; Shrestha, Ravi; Aryal, Bijendra

### **Environmental and Technological Studies**

<u>Sponsor</u>	<u>Student(s)</u>
Bender, Michner	Niraula, Suresh; Bhattarai, Pallav; Lundeen, Christopher; Gutknecht, Zachrie; Hawkins, Dawn; Nadeau, Daniel
Goodner, Timothy	Stewart, Eric; Goenner, Andrew; Jasso, Manuel

## SPONSOR INDEX

### **Mathematics**

#### Sponsor

Huang, Danrun

#### Student(s)

DeStefano, Anthony; McCoy, Patrick; Kunde, Kristopher; Seppelt, Joshua; Schaefer, Joshua; Loxtercamp, Nicholas; Vossen, Lucas; Peterson, Bradley

### **Mechanical and Manufacturing Engineering**

#### Sponsor

Baliga, Ben

Bekkala, Andrew

Byun, Jeongmin

Covey, Steven

Miller, Kenneth

Sezen, Ahmet

Shah, Hiral

Zhao, Yongli

#### Student(s)

Risal, Sanjay; Tiwari, Suraj; Raut, Suraj

Johnson, Lewis; Muldowney, John; Schadewald, Nicholas; Meyer, Bowen; Johnson, Aaron; Guevara, Jason

Meyer, Bowen; Johnson, Aaron; Guevara, Jason; Sapkota, Puspak; Dangol, Prabal; Sitaula, Rajiv

Gothe, Andrew; Wollak, Timothy; Kindel, Timothy; Mirza, Muhammad; DeZeeuw, Garrett; Neilson, Christopher

Major, Chadwick; Giri, Sujay; Ledford, James; Rakotz, Susan; Yoshii, Tsuyoshi

Johnson, Lewis; Muldowney, John; Schadewald, Nicholas

Chen, Wenjie; Lakshman, Murali; Rakotz, Susan; Maharjan, Prabin; Fong, Chen Kwang; Paruthi, Vidhi; Pandey, Rajan

Gothe, Andrew; Wollak, Timothy; Kindel, Timothy; Vu, Quang; Anderson, Jonathan; Tamble, Patrick

### **Nursing Science**

#### Sponsor

DeBruycker, Jo

Hiemenz, Melinda

Lenz, Brenda

Morrison-Sandberg, Leslie

Warner, Susan

Zelenak, Mary

#### Student(s)

Hoelscher, Amber; Schotl, Christine; Sullivan, Trisha; Miller, Heather; Moll, Michael; Nelson, Kelley; Jacobson, Jessica

Popp, Amanda; Daniels, Melissa; Jawando, Abbey; Kilanowski, Chelsea; Lindstrom, Amy; Sonbol, Hend; Surat, Tess; Worm, Sadie

Hoelscher, Amber; Schotl, Christine; Sullivan, Trisha; Miller, Heather; Moll, Michael; Nelson, Kelley; Jacobson, Jessica; Douglas, JoAnna; Acker, Allison; Das, Chelsea; Windschitl, Lauren; Gustafson, Ronnie; Jonak, Cassandra; Beckers, Kayla;

Ward, Tamara; Lueck, Andrea; Mortenson, Amanda; Herbst, Micaela; Hanson, Scott; Gruber, Nicholas; Johnson, Cory; Riddle, Megan; Rotz, Sarah; Shuck, Megan; Timm, Ann; Schwartz, Lauren; Swanson, Rebekah; Vopatek, Rachel

Douglas, JoAnna; Acker, Allison; Das, Chelsea; Windschitl, Lauren; Gustafson, Ronnie; Jonak, Cassandra; Beckers, Kayla; John, Jacob; Jacobs, Brian

Eischen, Erica; Sexton, Amanda; Paulin, Deborah; Willert, Michael; Correa, Mayra; Chamberlain, Rebecca; Allen, Brittani; Achman, Amber; Hoffstrom, Christa

## SPONSOR INDEX

### ***Physics, Astronomy and Engineering Science***

<u>Sponsor</u>	<u>Student(s)</u>
Bigelow, Matthew	Harter, Joseph
Haglin, Kevin	Pikus, Brendon
Harlander, John	Fuchs, Brody
Lidberg, Russell	Heikkinen, Kyle; Abfalter, Nathan; Backer, Brian; Swanson, Jacob; Johnstone, Lucas
Liu, Zengqiang	DeStefano, Anthony; Yong, Shun Jie; Spector, Ivan
Ratliff, Steven	Gustafson, Bryce

### ***Statistics***

<u>Sponsor</u>	<u>Student(s)</u>
Robinson, David	Peightal, Ashley; Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Hardrath, Jacquelin; Silva, Cecelia; Koktan, Aaron; Koffi, N'guessan; Ang, Su Fei; Zuluaga, Juan; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichte
Xu, Hui	Peightal, Ashley; Saucedo, Frederico; Hardrath, Jacquelin
Zhang, Shiju	Ransbotham, Anna; Zuluaga, Juan

## **College of Social Sciences**

### ***Community Studies***

<u>Sponsor</u>	<u>Student(s)</u>
Greenberg, Phyllis	Shawley, Chrystal; Lodermeier, Dana; Nolan, Lisa
Woldeamanuel, Mintesnot	Robasse, Amanda; Eden, Ellen; Braun, Zachary; Diedrichsen, Douglas; Riley, David; Lund, Trista; Ricci, Angela; Spohn, Timothy; Tang, Chuol; Thapa, Sanskriti; Hankes, Nathaniel; Kauffman, Seth; Hovelson, Johannes; Lang, Joseph; Bradden, Gyang

### ***Economics***

<u>Sponsor</u>	<u>Student(s)</u>
Banaian, King	Nicklay, Matthew
Hughes, Patricia	Nintiema, Hermine
Komai, Mana	Benie, Evelyne
MacDonald, Lynn	Mielke, Trent
Rebeck, Kenneth	Nicklay, Matthew

### ***Geography***

<u>Sponsor</u>	<u>Student(s)</u>
John, Gareth	Kortekaas, Rachel; Bezanson, Katherine; Campbell, Colleen; Kinter, Philip; Lundquist, Gregory; Sajevic, David; Knudson, Tyler

### ***Global Studies***

<u>Sponsor</u>	<u>Student(s)</u>
Butenhoff, Linda	Johnson, Carissa; Sullivan, Dallas

### ***History***

<u>Sponsor</u>	<u>Student(s)</u>
Mullins, Jeffrey	Johnson, David
Wingerd, Mary	Byczynski, John

## SPONSOR INDEX

### ***Political Science***

<u>Sponsor</u>	<u>Student(s)</u>
Frank, Stephen	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Ang, Su Fei; Zuluaga, Juan; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie
Hammes, Michelle	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Ang, Su Fei; Zuluaga, Juan; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie
Wagner, Steven	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Ang, Su Fei; Zuluaga, Juan; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie

### ***Psychology***

<u>Sponsor</u>	<u>Student(s)</u>
Buswell, Brenda	Veeramani, Viloshanakumara; Peightal, Ashley; Hasner, Michael
Devoe, Marlene	Ahles, Amanda; Bianco, Casey; Johnson, Brittany
Illies, Jody	Gehling, Rebecca; Malla, Kailash; Gunderson, Tracie; Veeramani, Viloshanakumara; Austin, Adam; Wagner, Benjamin; Johnson, William
Jazwinski, Christine	Bianco, Casey; Peightal, Ashley; Feldick, Ashley; Mulbah, Henry; Tong, Wai Yan; Neighbors, Shayna; O'Fallon, Eric; Gross, Broc; Falkum, Thomas; Austin, Christopher; Ellis, Alexandra; Gritti, Ryan; Sullivan, Zane; Allen, Nicholas; Tessier, Ro
Kulas, John	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Ang, Su Fei; Zuluaga, Juan; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie
Protolipac, Daren	DeLyser, Melissa; Hauser, Tim; Chan, Yee Mun
Valdes, Leslie	Malla, Kailash; Veeramani, Viloshanakumara

### ***Sociology and Anthropology***

<u>Sponsor</u>	<u>Student(s)</u>
Greider, Paul	Ahles, Amanda; Eliszewski, Billie; Johnson, Lukas; Wiehr, Jessica; Holder, Molly; Kremers, Stephanie; Moberly, Lance; Nickolauson, Meghan; Larson, AnnaMarie; Muschler, Robert; Jensen, Alicia; Anderson, Cassie
Lavenda, Robert	Hansen, Jonathan
Muniz, Mark	Jenkins, Austin; Reiners, Lindsey
Philion, Stephen	Thibodeau-Schuldt, Megan; Eliszewski, Billie; Sherman, Sonny; Dwyer, Cory; Revier, Kevin; Martin, Cory; Pickar, Michael; Gross, Elizabeth; Gross, Melissa; Schueler, Brittany; Teoh, Jun-Kai; Vondal, Edward
Zerbib, Sandrine	Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Thibodeau-Schuldt, Megan; Ang, Su Fei; Zuluaga, Juan; Andrade Junior, Elias; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie; Panchmatia,
Zuo, Jiping	Wambua, Angela; Wallace, Camaya; Matinda, Rebecca; Mugo, Wanjiru; Lam, Amer

## SPONSOR INDEX

### G. R. Herberger College of Business

#### ***Business Computer Information Systems***

Sponsor

Guster, Dennis

Schmidt, Mark

Student(s)

Hemminger, Corey; Rogers, Dustin

Minkler, Steven

#### ***Management***

Sponsor

Polacco, Alexander

Student(s)

Wester, Jason; Bronder-Roznauer, Alexander; Thell, Daniel; Berkesch, Paul

### St. John's University

#### **College of Science and Engineering**

##### ***Biological Sciences***

Sponsor

Jensen, Ellen

May, Barbara

Timmerman, Kristina

Student(s)

Kent, Elizabeth; Merten, Zachary

Derouin, Tyler

Tulloch, Alastair

### Other

#### **International Precision Machining**

#### **College of Science and Engineering**

##### ***Mechanical and Manufacturing Engineering***

Sponsor

Meyer, Dan

Student(s)

Major, Chadwick; Giri, Sujan; Ledford, James; Yoshii, Tsuyoshi

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session A-C

Paper Competition-1

Cascade

### Free Hugs: Random acts of Kindness at SCSU

We modified the idea from the "FREE HUGS Campaign" started by Juan Mann in 2004. The hugs are meant to be random acts of kindness to make others feel better. We tested the following research questions: a) What is the frequency of the behavior (hugs) without and with visual prompting? B) Is there a gender difference? Who's more huggable, men or women? We did this by taking data on the frequency of the occurrence of hugs using an ABAB design. All sessions were videotaped, and data were coded by trained undergraduate students in Community Psychology, who took CPSY 433. During baseline, no visual prompting was present, whereas during the intervention phase we used an extra stimulus (a sign) that said "Free Hugs" and alternated gender to counterbalance for gender effects. Results indicated that the visual stimulus did increase the occurrence of hugs. Results furthermore indicated that there were gender differences with female participant receiving more hugs than the male participant.

**Presentation Index:** A-C 1

**Present Time:** 8:00 AM

**Student Presenter(s):**

Johnson, Jennina

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

### Learning Grammar by Learning Languages: How L2 Aids in the Grammatical Understanding of L1

My presentation is about second language acquisition and its potential effect on a person's grammatical understanding of their native language. As a future English teacher, I am very concerned with students' lack of grammar skills as well as their lack of interest in grammar. Why is it that even though we speak our native languages fluently, many of us have no idea why grammar is the way it is? My hypothesis is that second language learners, who learn L2 grammar rules within a classroom setting, may also have a better grammatical understanding of their native languages. Does learning L2 improve L1 grammar skills? To research this topic, I used case studies, interviews from immersion school students, and the results of a survey I conducted.

**Presentation Index:** A-C 2

**Present Time:** 8:20 AM

**Student Presenter(s):**

Kitzman, Rebecca

**Sponsor(s):**

Kurinski, Elena

**Department(s)**

Foreign Languages and Literature

### Behavioral Effects of Galantamine in Scopolamine Treated Planaria

Planarians are recently recognized as a cost-effective and useful animal model in neuroscience research. In spite of having a primitive nervous system, the planarian nervous system has been shown to have the ultrastructural features and the various neurotransmitters found in vertebrates, including humans. The withdrawal behavior of a number of drugs such as cocaine, amphetamines,  $\mu$ cannabinoids, and opiates on planaria has been reported widely. We are interested in testing the behavioral effects of scopolamine in these worms. Scopolamine is an *anticholinergic* drug and acts as a competitive inhibitor of muscarinic acetylcholine receptor protein and is shown to cause dementia in mice. The objectives of the research were to study the planarian locomotor velocity (pLMV) and hyperkinesias-like activity as a function of different concentrations of scopolamine (from  $1\mu\text{M}$  to  $1500\mu\text{M}$ ) and also to determine the optimal concentration of scopolamine for the conditional memory training experiments using the planarians. The results obtained showed that the pLMV and hyperkinesias-like activity was not significantly affected when the planarians were exposed up to  $500\mu\text{M}$  of scopolamine, whereas there was certainly some extent of drug withdrawal effect that resulted in lower pLMV and higher hyperkinesias-like activity when the worms were exposed to  $1000\mu\text{M}$  scopolamine. Also, there was significant memory loss when planarians were exposed to  $1000\mu\text{M}$  scopolamine during conditioning training, compared to the control runs in the same experiment. When the scopolamine treated planarians were treated with  $10\mu\text{M}$  Galantamine, an Alzheimer's disease drug, the planarians exhibited an improvement in the scopolamine-induced memory loss.

**Presentation Index:** A-C 3

**Present Time:** 8:40 AM

**Student Presenter(s):**

Amatya, Christina

**Sponsor(s):**

Ramakrishnan, Latha

**Department(s)**

Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Market Efficiency and Profitability in the Gambling Market for the NFL from 1979 to 2009

This presentation discusses the efficient market hypothesis (EMH) in the gambling market for the NFL by making use of two different statistical estimators as well as a separate test for profitability. The first statistical estimator is standard test for unbiasedness and the second estimator is a log likelihood ratio test of whether a bet is fair. Testing a betting rule for profitability in a gambling market is another way to test a gambling market for efficiency. That is, if a bettor has information in a gambling market which allows him or her to make an above-normal return, then the EMH is said to be violated. Thus, this presentation also discusses a number of different betting rules for profitability. The data contains nearly 10,000 games from the pre-season, regular season and post season of the 1979 to 2009 NFL seasons. To the best of the author's knowledge, this is the largest sample of games ever used to conduct tests of market efficiency in the gambling market for the NFL. The data contains the outcome, spread and closing totals for each game. Tests for market efficiency are conducted on the entire sample of available data and for certain subsamples. The subsamples are selected to test for differences in the existence of market efficiency in games with different average closing totals and spreads, games during select time periods and games during the pre-season, regular season and post-season.

**Presentation Index:** A-C 4

**Present Time:** 9:00 AM

**Student Presenter(s):**

Nicklay, Matthew

**Sponsor(s):**

Banaian, King

**Department(s)**

Economics

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**Session A-GN**

**Economics**

**Glacier North**

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### Calculus Requirements and the Popularity of the Economics Major

Approximately fifty percent of undergraduate economics programs in the United States require calculus to be taken by all of their majors. Many of these departments have had a calculus requirement in place for decades and, given the general academic aptitude of their students, do not think twice about the possibility of calculus discouraging students from majoring in economics. Other departments would like to require calculus, but do consider the potential drop in recruitment of new majors. In this study we first report the findings from a case study of principles of microeconomics students at a less-selective university who were asked if calculus might discourage them from majoring in economics. We then examine a cross section of over 600 U.S. universities that graduated at least one economics major during the 2007-08 academic year to test whether or not requiring calculus reduces the percentage of a school's degrees that are awarded to economics majors. Although a significant fraction of students surveyed said calculus might discourage them from majoring in economics, we found no evidence that requiring calculus negatively influenced the number of economics majors, regardless of the school's enrollment standards. Our findings suggest that calculus might even increase economics majors at the most selective schools where some students might enjoy the social sciences but desire a quantitative degree.

**Presentation Index:** A-GN 1

**Present Time:** 8:00 AM

**Student Presenter(s):**

Nicklay, Matthew

**Sponsor(s):**

Rebeck, Kenneth

**Department(s)**

Economics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **The Impact of Literacy, Poverty, and Access on the School Enrollment Rate for Girls in Burkina Faso**

This research investigates the issues associated with female enrollment in elementary schools in Burkina Faso from 1998 to 2008. The study investigates the impact of literacy, poverty and school access on girls' enrollment rate. Patterns of enrollment are analyzed. The description of the trends of the variables associated with girls' enrollment with each region is examined. A fixed effects regression is used to estimate the impact of each variable on girls' enrollment. This thesis also presents information on a historical overview of female education in developed and developing countries, information on development of policies, and strategies for increasing girls' enrollment. The major finding is that girls' enrollment shows some disparities across regions. In high income regions, girls' enrollment rate is high (70%) compared to low income regions (60%). In main cities, girls' enrollment rate is as high as 85%. The annual growth rates for enrollment of females and males are significantly different. The rate is 2.85% for males and 3.64% for females. We have also found that the variables, such as access, poverty, war and time (year), have an impact on girls' enrollment. Other immeasurable variables, such as culture, impact enrollment rate. At the national level, the average girls' enrollment is 70% with a current growth of approximately 4% each year. This means that the country will not be able to meet the commitment of the Millennium Challenge Corporation's goal of basic Education for All (EFA) in 2015 if other scenarios are not developed to assure the schooling of all children.

**Presentation Index:** A-GN 2

**Present Time:** 8:20 AM

**Student Presenter(s):**

Nintiema, Hermine

**Sponsor(s):**

Hughes, Patricia

**Department(s)**

Economics

### **An Empirical Analysis of Leadership and Transparency**

We are desperately working hard to emerge from the current economic crisis besieging the United States, in particular and the world, in general, the cause of which many analysts have attributed to the absence of transparency in the financial industry. Indeed, the media is surfeit with rhetoric by politicians, top managers, and administrators who state that they value transparency and assure their intention to make full disclosure of information and their undertakings. This project will test experimentally whether or not leaders, when given the opportunity, actually reveal a preference for transparency, whether their preferences for transparency differ by circumstances, and whether preferences differ by socioeconomic characteristics or gender disparity. The objective of this project is to use experimental economics methods to analyze leaders' preference for transparency. Experimental economics enables us to observe student subjects in a controlled environment that replicates a leader-follower setting in an organization. This allows us to monitor how their preferences for transparency differ by the controlled circumstances and their socioeconomic characteristics in relation to gender. This is realistic in many real world situations because in many business or political settings the leaders have exclusive access to critical information and are in charge of deciding whether or not to disclose unedited information and account of their actions to their constituencies or stakeholders. Without their doing so willingly, it is common knowledge that in many circumstances it is practically difficult for stakeholders to verify the real information or the leaders' actions. We are interested to see what information regime is chosen by the leaders and how this choice is affected by the payoff scenarios and/or the leaders' socioeconomic characteristics, especially with regard to their genders. We are also interested to see the implications of the choices made by the leaders.

**Presentation Index:** A-GN 3

**Present Time:** 8:40 AM

**Student Presenter(s):**

Benie, Evelyne

**Sponsor(s):**

Komai, Mana

**Department(s)**

Economics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Marijuana Use and Productivity

Marijuana legalization is often dismissed without research or consideration. Media and public announcements focus on the harmful effects of marijuana without mention of possible benefits. Marijuana offers prospects of medical benefits as well as tax revenues. Both of these benefits warrant consideration for marijuana legalization. However, the effects of marijuana on the user's productivity must be considered prior to the discussion of legalization. If marijuana transforms a user into a proverbial zombie then the medical or tax benefits are inconsequential. Current research has shown contradicting relationships between marijuana and productivity. Data from Australia's National Drug Strategy Household Survey, with weekly earnings as an indicator of productivity, has resulted in the conclusion that marijuana has no effect on productivity. Conclusions of an insignificant productivity effect provide support for research into marijuana legalization.

**Presentation Index:** A-GN 4

**Present Time:** 9:00 AM

**Student Presenter(s):**

Mielke, Trent

**Sponsor(s):**

MacDonald, Lynn

**Department(s)**

Economics

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**Session A-GS**

**Learning and Community**

**Glacier South**

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### Different Types of Adult Education on Best Management Practices Influences Subsequent Implementation

Land use practices and the lack of knowledge of Best Management Practices (BMPs) by lakeshore property owners often results in degradation of water quality. There is a need for better understanding how different types of adult education about BMPs will influence implementation of BMPs. Many studies examine how BMPs improve water quality of lakes or streams by; decreasing the amount of runoff, decreasing nutrients entering the waterway, stabilizing banks, and/or decreasing the amount of sediment entering the water. BMPs also increase the amount and quality of natural habitat around the waterway, which ultimately leads to increasing populations of wildlife. Most BMPs can also be visually appealing to landowners. Over time, improvement through BMPs increase water quality and natural habitat around water bodies such as Little Birch Lake, in central Minnesota. By educating the lake landowners, they will better understand BMPs; including how and why BMPs work. Through different forms of education, such as pamphlets or shoreline restoration workshops, the landowners will learn the importance of their part in restoration of water front property and ultimately water quality of their lake. A letter along with a short survey will be mailed out to each landowner on Little Birch Lake. After the survey information is gathered, the interested landowners will be broken up into three equal groups. These three groups will be exposed to different kinds of adult education: BMP workshop, BMP handouts, and a control group that does not receive additional education. The relationship between the type of BMP education and landowners' implementation of BMPs will be correlated. There will be a shoreline survey completed before and after the education, to see the number of residents that actually implement shoreline BMPs.

**Presentation Index:** A-GS 1

**Present Time:** 8:00 AM

**Student Presenter(s):**

Lundeen, Christopher

**Sponsor(s):**

Bender, Michner

**Department(s)**

Environmental and Technological  
Studies

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Second Language Acquisition: Immersion and the Concordia Language Villages

Learning a foreign language is increasingly important in our globalized society. However, learning a foreign language can be difficult. There are many different forms and ways to learn a foreign language, and it can be hard to choose which way is the best. This presentation focuses on immersion as a way for learning a foreign language. Immersion is a way of surrounding a student in the language they are learning. All activities and teaching is done in the foreign language. Immersion allows foreign language students to learn the language as they use the language in various settings and everyday experiences. The presentaton advocates for the use of immersion as the best way to learn a foreign language. As an example, Concordia Language Villages of Bemidji, MN, will be used to illustrate the effectiveness of immersion for foreign language learning. The Concordia Language Villages offer camps in sixteen different languages for language learners of all ages. The success of the use of immersion at the Concordia Language Villages is used to illustrate the benefits of using immersion in any setting to learn a foreign language.

**Presentation Index:** A-GS 2

**Present Time:** 8:20 AM

**Student Presenter(s):**

Krznarich, Lauren

**Sponsor(s):**

Mueller, Isolde

**Department(s)**

Foreign Languages and Literature

### In the Beginning Was the Word: The Foreign Language Translation Process

Foreign language translation is about overcoming barriers and bringing different worlds together. From works such as the Bible, the greatest and most widely translated book ever, to the simplest translations of words and phrases, translation is the key that opens the doors into otherwise foreign worlds. It bridges the gap that separates cultures and ideas. It can lead to greater understanding between peoples and it unites those who would otherwise have no reason or capacity to associate with one another. This presentation will examine what it takes to translate, including project selection, publication, content, complications, and consultation with an emphasis on difficulties associated with foreign language translation. Examples will be drawn from the completed translation of Dr. Werner Gitt's book "Am Anfang war der Urknall?" (In the Beginning was the Big Bang?) from German to English.

**Presentation Index:** A-GS 3

**Present Time:** 8:40 AM

**Student Presenter(s):**

Tokar, Joshua

**Sponsor(s):**

Mueller, Isolde

**Department(s)**

Foreign Languages and Literature

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**Session A-O**

**Globalization and Social Change in China**

**Oak**

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### China's Religious Reform and Globalization

This research will focus on China's religious revival during the transition from the Maoist era to the Post-Maoist era trying to uncover how socio-economic forces played a role in this resurgence. This will progress in the presentation of ideologies from both eras toward religious freedom and policies that came forth due to these philosophies. The starting point is the regulation of religion in the Maoist era that allowed individuals the freedom to believe or not believe in religion but controlled and organized practices of that choice. Along with this regulation came the conviction that religion is to be practiced in private sectors so that it would not violate the freedom of nonbelievers. With Mao's death and the reign of a new government, a transition began that allowed for a tolerance of religious practice. The Post-Maoist government focused on economic growth as opposed to social beliefs. Economic growth developed toward open markets and foreign economic influence. With this shift in focus from the Maoist 'social beliefs' to Post-Maoist 'economic growth', religion is viewed not as social force to reckon with but as a commodity. Once it becomes a commodity it plays a role in the market.

**Presentation Index:** A-O 1

**Present Time:** 8:00 AM

**Student Presenter(s):**

Gross, Melissa

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Globalization of Education in China

This research aims to address globalization in China as it affects the people of the country. A focus is made on how privatization and China's immersion into global markets has played a role in reforming and shaping areas such as education and healthcare, both vital to the survival and success of the Chinese people. First an examination of the concepts of globalization and privatization as they apply to the situation in China is made. Then a closer look at the specific development of healthcare and the various implications privatization has had on the accessibility and quality of healthcare present in China. Also addressed is education, as it is influenced by open markets and the competitiveness that accompanies China's involvement. Lastly a focus on public attitudes and reactions to the influences of globalization on these and other areas with a brief view on how they have changed over time and possible explanations for that change.

**Presentation Index:** A-O 2

**Present Time:** 8:20 AM

**Student Presenter(s):**

Gross, Elizabeth

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### Tibet, Globalization and Divorce

Market reforms in China which have generated exponential economic growth have also created exponential social issues. One of the many social ills that has reared its ugly head is the issue of divorce. This presentation focuses on the transformation from socialist markets and solid infrastructure which consists of centralized government whom made most, if not all, the decisions. It also covers aspects in an environment comprised of egalitarian ideals and ethos to a capitalistic open market. Moreover, how has the economic growth affected Tibet in terms of marriages, divorces, and remarriages in a transition from traditionalism to modernity? The presentation will also cover what it is that has exacted the tolls on divorce and family and how this applies to globalization. The other aspect of this presentation is the effect of the presence of China in Tibet and its corresponding effects on divorce and globalization. With the move to modernity from traditionalism and migration of agrarian society to urban, how has this affected choices of marriage as well as the laws that pertain to marriage in China?

**Presentation Index:** A-O 3

**Present Time:** 8:40 AM

**Student Presenter(s):**

Vondal, Edward

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### How is China's Role Globally Impacting How Cubans See Capitalism?

In the past decade American citizens have become strongly aware of their economic situation. Now, not only can Americans explain their own personal economic standing, but also the position their country has fallen. Though, most people are not economists and may not be able to articulate an in-depth explanation of their situation, most people understand how this recession has affected them. But this recession was not just any recession, it was a global economic crisis. It hit the United State hard, rising the unemployment rate to near 10%, yet China still grows economically. For this reason the policies used in China are worth looking into. For a country known to be communist, it has become very tied up in capitalist practices. So, how does communist China compare to other communist countries such as Cuba? What are the major similarities and differences between Mao's China and Castro's Cuba? Cuba is a country deeply engaged in how China interacts in the global economy and is looking to China as a model. This brings up the questions of, how is China's role globally impacting how Cubans regard capitalism? And how are Cubans utilizing the Chinese model to enact social policies dealing with healthcare, education and crime?

**Presentation Index:** A-O 4

**Present Time:** 9:00 AM

**Student Presenter(s):**

Thibodeau-Schuldt, Megan

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session A-VN

Natural Science and Engineering I

Voyageurs North

### Fighting and Dishonest Signaling Among Hermit Crabs When There is a Scarce Resource

Hermit crabs fight over shells which act as a shelter for them. When a smaller hermit crab takes the attacker and a larger crab is defending a shell in good condition, it exhibits more cheliped extension bluffing about the actual size of its cheliped. However, when the smaller is in the defending role of a shell in poor condition, it does not put up and readily gives up the shell. In this research I am trying to look at how the frequency of fights over shells and of cheliped extension by smaller crabs will change when a set of smaller and larger crabs have more poor shells available at their disposal and fewer shells in good condition. My prediction is that when smaller crabs are defending the few good shells available, their frequency of cheliped extension will increase and the frequency of fights will increase since the larger crabs would fight the smaller crabs to evict them from the shells in good condition. I also predict that the cheliped extension of the smaller crabs will increase when the larger crabs occupy the few available shells that are in good condition.

**Presentation Index:** A-VN 1

**Present Time:** 8:00 AM

**Student Presenter(s):**

Ggani, Rasin

**Sponsor(s):**

Simpson, Patricia

**Department(s)**

Biological Sciences

### Myoelectric Prosthesis

The myoelectric prosthesis project's aim is to build a robotic arm using nitinol that will be completely controlled by electromyographic (EMG) signals. The motivation for this project is to improve the quality of life for users of prosthetic devices by making them more quiet and indiscernible. Electromyography is the study of the electrical currents present within muscles of the human body. Each time a muscle moves in a body, a minute electrical current is generated within that muscle. This is measured and recorded in this project by placing sensors on the skin's surface and amplifying the tiny electrical currents to a useable level. This EMG information is then used to control the robot. A goal is to build a prototype prosthetic model which could operate silently, without using motors. To do this the robot will mainly be moved by a material called nitinol, also known as muscle wire. Nitinol is an alloy of nickel and titanium which contracts by up to 5% of its length when heated. This contraction simulates the contraction of a real muscle, creating the movement of mechanical parts.

**Presentation Index:** A-VN 2

**Present Time:** 8:20 AM

**Student Presenter(s):**

Mirza, Muhammad; DeZeeuw, Garrett;  
Neilson, Christopher

**Sponsor(s):**

Covey, Steven; Petzold, Mark

**Department(s)**

Electrical and Computer Engineering,  
Mechanical and Manufacturing  
Engineering

### Rapid Production Metal Replacement

The scope of the project is to look into the possibility of replacing conventional metal parts with a ceramic compound. The benefits of doing this are in the process of making the parts and in the material properties of the ceramic. With new technologies, the part can be made faster, and more cost effective than the conventional metal workings. The injection molding process can be a continuous process; this has the potential for large scale production. Another benefit of the injection molding process is that there is a potential for a net part, this would mean there are no post injection molding machining process required. At the same time, the specific application of the ceramic may yield a longer part life than that of the conventional metal counterpart. Ceramics are well known for their compressive strengths. This high strength ceramic has a compressive strength several times higher than the metal counterpart.

**Presentation Index:** A-VN 3

**Present Time:** 8:40 AM

**Student Presenter(s):**

Meyer, Bowen; Johnson, Aaron; Guevara,  
Jason

**Sponsor(s):**

Bekkala, Andrew; Byun, Jeongmin

**Department(s)**

Mechanical and Manufacturing  
Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Design of a Current-Feedback Operational Amplifier

This project concerns a relatively new design for an operational amplifier which is faster (higher bandwidth) than conventional designs. Operational amplifiers are the most widely used electronic devices in the world. They are essentially like a little calculator on a chip; they perform algebraic operations. They are used in TV screens, cell phones, computer mice and alarm clocks. They propel high-speed internet networks. They help your electronic fuel injection push fuel into your car's engine, your doctor use an x-ray machine, and a person's pacemaker keep rhythm. If you are using a computer to view this document, you are making use of thousands of op-amps. The world markets are always pushing for faster technology and faster communication. Essentially the speed of communication comes down to the bandwidth of its parts. Larger bandwidth is faster communication. That is the motivation behind the research into the current-feedback operational amplifier (CFOA). It is an op-amp which makes drastic improvements over conventional voltage-mode operational amplifiers, which compose the majority of op-amps in use. A typical voltage-feedback operational amplifier such as the LM741 has a bandwidth of about 1MHZ. This bandwidth is what limits its usage in communications and other high-speed applications. The current-feedback operational amplifier, by contrast, will be shown here to have a bandwidth of over 35MHz, even with cheap, practical components.

**Presentation Index:** A-VN 4

**Present Time:** 9:00 AM

**Student Presenter(s):**

Schirmacher, Adam

**Sponsor(s):**

Hossain, Md

**Department(s)**

Electrical and Computer Engineering

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**Session B-B**

**Poster Session I - All Disciplines**

**Ballroom**

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### A Comparison of Two Methods for Isolation of CD4+ T Cells: Yield, Purity and Function of Isolated CD4+ Cells

T-cells are implied in immunopathogenesis of autoimmune diseases, such as autoimmune type 1 diabetes. There are three major types of T-cells: T-helper (Th), T-cytotoxic (Tc), and T-regulatory (Tregs). Each T-cell type is defined by its unique immunophenotype (cell surface markers). Th cells are characterized by expression of CD4, while Treg cells contain CD25 as well as CD4 markers. In order to study the role of particular T-cells type in development of disease, it is a prerequisite to separate those T-cells from the entire cell population. Our current studies have been focused on finding the optimal method for isolation of CD4+ T-cells. We have used widely accepted Myltenyi Biotec (MB) method for positive magnetic selection of CD4+ T-cells in mice. The preliminary data (n=8 separations) showed that the purity of CD4+ cells obtained by MB method from the mice splenocytes was only 87±7%, which was lower than expected. We are currently testing a different, StemCell Technologies (SCT) method for positive magnetic isolation of CD4+ T-cells. Both MB and SCT methods will be used in parallel to isolate CD4+ cells from the splenocytes of C57BL/6 mice. The yield of isolated cells will be evaluated by comparing the number of isolated versus the initial cell number. The purity of CD4+ population will be tested post isolation by MB and SCT method by staining with anti-CD4 antibody. Finally, the function of isolated cells will be tested in proliferation assay by culturing cells with addition of anti-CD3 plus anti-CD28 antibodies.

**Presentation Index:** B-B 1

**Present Time:** 9:00 AM

**Student Presenter(s):**

Olson, Marin; Van Bruggen, Andrew

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Noise Affects on Memory Performance in Working Environments

Concern has risen about everyday cognitive activity being challenged by auditory distractions in workplace environments. This phenomenon is known as the 'irrelevant sound effect' (ISE). Extraneous speech and noise are often mentioned as the most common sources of disturbance in the working environment. Office noise inflicts feelings of being disturbed, especially when it consists of background speech. Excessive background sounds have been found to have a detrimental impact on many aspects of cognitive performance including mental arithmetic, the counting of visually presented dots, paired associate learning of words, proofreading, learning of a prose text, and reading comprehension and text recall. Applied psychology literature has also suggested discomfort and stress, lack of concentration, low levels of performance and reduced efficiency to be possible consequences. This study aimed to investigate memory performance within different noise environments, and to find a correlation between continuous noise and performance increase. Campbell and partners emphasized the disruptive effect related to non-speech noise known as the changing-state hypothesis - for disruption to occur, there must be segmentation between each physical unit within the sound stream, and each unit must be different from the one that preceded it. This study examined the affect of continuous steady-state noise on performance to conclude the possibility of performance facilitation in working environments. Participants were randomly assigned to one of the three conditions: ambient noise, office noise, or the control condition. They performed a working memory task while be subjected to noise according to the condition. Analyses showed the noise manipulation to have a significant influence on how distracted participants reported being ( $F(2,28)=7.96$ ,  $p<.05$ ). There was no significant main effect for noise on memory performance, possibly due to small sample size ( $F(2,28)=1.26$ ,

**Presentation Index:** B-B 2

**Present Time:** 9:00 AM

**Student Presenter(s):**

Gehling, Rebecca

**Sponsor(s):**

Illies, Jody

**Department(s)**

Psychology

### SCSU Survey Fall 2009 Results

Last fall, the SCSU Survey did a study of Minnesota residents based on their views and opinions on a variety of topics including their views on the president's first year in office, health care issues, the Minnesota Vikings and their push for a new stadium, problems facing the state, the current economy, illegal immigration, welfare and so on. What we will be looking at and presenting in our poster is what we felt was the most important findings from our survey and what we think people will be most interested in.

**Presentation Index:** B-B 3

**Present Time:** 9:00 AM

**Student Presenter(s):**

Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn

**Sponsor(s):**

Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John

**Department(s)**

Political Science, Psychology, Sociology and Anthropology, Statistics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Creatine Kinase Elevation Following Eccentric Exercise in Females as a Marker for Training Stress**

Creatine kinase is an enzyme used by various tissue types to produce the energy substrate phosphocreatine (PCr). Cytosolic creatine kinase (CKc) is found within skeletal, cardiac as well as brain tissue and is responsible for catalyzing the phosphorylation of creatine to PCr when muscles are at rest. Observed CKc elevation following eccentric loading has previously been reported as an indicator for muscle adaptation or damage. The purpose was to determine the degree and duration of CKc elevation post-eccentric loading in females as a marker for training stress. Baseline CKc levels were measured in four female subjects (22±2 yrs) prior to eccentric loading. Approximately 30 minutes of eccentric gymnastics strengthening activities were performed by all subjects. CKc was measured pre-exercise, 24 and 48 hours post-exercise (Reflotron®). Although a one-way Repeated Measures ANOVA was not significant ( $p>0.05$ ), baseline CKc increased 23.96%, 130.97%, 442.53% and 133.66% at 24 hours. The insignificant difference is likely due to the high degree of CKc variability seen between subjects. All CKc values did follow the elevation trend expected at 24 hours post-exercise. Measures of CKc alone appear too variable to rely upon for a sole marker of training stress. When coupled with other parameters to account for variability between individuals, such as cortisol and/or a perceived effort or muscle soreness scale, CKc could provide a relevant measurement to help assess training stress.

**Presentation Index:** B-B 4

**Present Time:** 9:00 AM

**Student Presenter(s):**

Ford, Ashlee

**Sponsor(s):**

Bacharach, David

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

### **Gender and Spatial Distribution of Groups in a Library Environment**

Groups are a critical part of human society; they are simply all around us. On a college campus groups organize and dissolve for many different reasons however their descriptive quality's are important to understand. This study seeks to understand the descriptive qualities of groups (i.e. size, general purpose, majority gender, minority gender, and sitting arrangements) through observation of all four levels of the Miller Center Library on St. Cloud State University campus.

**Presentation Index:** B-B 5

**Present Time:** 9:00 AM

**Student Presenter(s):**

Peightal, Ashley; Feldick, Ashley; Mulbah,  
Henry; Tong, Wai Yan; Neighbors, Shayna;  
O'Fallon, Eric; Gross, Broc

**Sponsor(s):**

Jazwinski, Christine

**Department(s)**

Psychology

### **Use of Stereotypes of Race and Gender in the Perception of Facial Expressions**

Previous research has established that cultural stereotypes for gender and facial expressions exist such that men are believed to experience and express anger and pride more than women, whereas women are thought to experience and express fear, embarrassment, happiness, and sadness more than men. Buswell and Staples have found that cultural stereotypes for race and facial expressions exist such that blacks are believed to experience and express anger more than whites, while whites are believed to experience and express embarrassment, fear, guilt, and happiness more than blacks. Further research has shown that the gender stereotypes of facial expressions affect the interpretation of both unambiguous facial expressions as well as ambiguous facial expressions. However, it has yet to be determined whether the cultural stereotypes of race and facial expressions affect the interpretation of unambiguous and neutral facial expressions of blacks and whites.

**Presentation Index:** B-B 6

**Present Time:** 9:00 AM

**Student Presenter(s):**

Veeramani, Viloshanakumara; Peightal,  
Ashley; Hasner, Michael

**Sponsor(s):**

Buswell, Brenda

**Department(s)**

Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Symmetry, Attractiveness and Facial Emotions

Whenever you interact with people their face is the first thing you notice. Facial expressions are perceived universally. However, the degree of perception of facial expressions might change from person to person. Different people have different facial structures. Do the facial structures play any role in the perception of the facial emotions and attractiveness? There have been several studies on symmetry and attractiveness. However, the role of symmetry on perception of emotions is not well understood. This study explored the relationship between symmetry and the perception of attractiveness and the perception of facial emotions. For emotions, only happiness and sadness were studied. It was found that symmetry did not affect emotional perception of the faces ( $F(1,27) = 0.90$ , ns). However, emotion had an effect on the perception of faces ( $F(1,27) = 5.75$ ,  $p < .05$ ). Strength of the perception of happy faces was stronger ( $M = 4.55$ ) than the perception of sad faces ( $M = 4.36$ ). We also found that symmetry had an effect on the perception of attractiveness ( $F(1,27) = 8.98$ ,  $p < .05$ ). Symmetrical faces were perceived to be more attractive ( $M = 3.28$ ) than asymmetrical faces ( $M = 3.03$ ) thereby supporting past studies. We also found that emotion had an effect on the perception of attractiveness ( $F(1,27) = 12.30$ ,  $p < .05$ ). Happy faces were perceived to be more attractive ( $M = 3.58$ ) than sad faces ( $M = 2.73$ ).

**Presentation Index:** B-B 7      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Malla, Kailash; Veeramani, Viloshanakumara	Valdes, Leslie; Illies, Jody	Psychology

### Immunophenotyping of Immune Cells Involved in Pathogenesis of Mouse Type 1 Diabetes Induced by Streptozotocin

Type 1 diabetes (T1D) is an autoimmune disease induced by the body's own immune cells, T-cells, that attack the insulin producing pancreatic beta-cells. There are three major types of T-cells which play a role in the autoimmune attack: T-helper (Th), T-regulatory (Tr), and T-cytotoxic cells (Tc) that express CD4, both CD4 and CD25, and CD8 surface marker, respectively. All of the T-cells express the surface marker called CD3. It is believed that Th cells play both pathogenic and protective roles in immunopathogenesis of T1D. Tc cells are considered as pathogenic, while Tregs exhibit the protective functions during the disease development. In this study, we used a mouse streptozotocin (STZ)-induced T1D experimental model in order to evaluate the involvement of different T-cell types during development of disease. STZ-treated and control mice ( $n=6-11$ /group) were sacrificed on day 7, 14 and 28 post STZ injection, splenocytes immunophenotyped (stained by appropriate monoclonal antibodies against surface markers), and analyzed by flow cytometer (FACSCalibur). Our preliminary data showed a significant decrease of the CD3+, as well as CD4+ and CD8+ T-cell percentages on day 14 in STZ-treated compared to the control group. Interestingly, there were no differences observed on day 30 in percentages of CD3+, CD4+ and CD8+ cells. These data suggest that the most prominent differences in T-cell populations of STZ-treated compared to control mice are observed on/around day 14 when the T-cell attack is on its peak and >50% of STZ-treated mice become diabetic.

**Presentation Index:** B-B 8      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Yee, Jong Hoe; Lee, Yong Heng	Cetkovic-Cvrlje, Marina	Biological Sciences

### Isolation of the BceT Enterotoxin in Strains of Bacillus cereus Isolated from Honey

*Bacillus cereus* is a spore forming bacterium that is often associated with numerous non-gastrointestinal diseases as well as food poisoning. Multiple brands of honey were investigated to test if the *B. cereus* isolates recovered from the honey had a virulence potential. Previous studies have suggested that *B. cereus*-related enterotoxigenic protein T (BceT) is correlated with virulence. To review the process, test tubes of Luria-Burtani broth were prepared and inoculated with isolates and then incubated overnight. The cells were isolated from culture by centrifugation and the genomic DNA was then extracted from the individual isolates using the ChargeSwitch DNA Mini Bacteria kit. Once genomic DNA extraction was complete, polymerase chain reaction was performed on the extracted template DNA using a Qiagen kit to amplify the toxin sequence tenfold if present. After samples were prepared they were visualized by agarose gel electrophoresis to verify if each strain was positive for the bceT gene. A positive result was indicated by a band forming at approximately 450 bps.

**Presentation Index:** B-B 9      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Zemien, Ashlie; Blenker, Tracy	Gulrud, Kristin	Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Trailing Digit Distribution of St. Cloud State Survey

Surveys aim to be accurate representations of the populations they sample. There are several standards set to ensure a survey is statistically sound. To measure a survey's validity you can read the methodology of a survey to see how it was conducted. The results of a survey can be just as telling as the methodology. The trailing digit distribution from a statistically accurate survey would be expected to have a uniform distribution. The trailing digit is the digit in the ones' place of a survey result. An analysis of St. Cloud State University (SCSU) Survey results was conducted to determine if the trailing digit distribution was uniform. The results show a skewed distribution; however, the lower amount of data suggests the distribution is acceptable. Further analysis in the coming years should indicate if there is a possible flaw in the way SCSU Survey is conducted or if the trailing digits are uniform.

**Presentation Index:** B-B 10      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Saucedo, Frederico	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	Political Science, Psychology, Sociology and Anthropology, Statistics

### H1N1 Preparedness In Meeker County

This study was done in partnership with Meeker County Public Health, to assess the county's preparedness for the H1N1 flu pandemic. The survey assessed each participant's means of preparation for H1N1 and assessed whether they had a continuity of operations plan in place. A continuity of operations plan(COOP) are guidelines that ensure that the entities can carry out all essential functions in case of a natural or manmade disaster, or in this case the H1N1 pandemic. The H1N1 preparedness plan is an issue of concern due to the current worldwide pandemic. By assessing the county's readiness researchers can provide interventions in areas of weakness in businesses and county offices. A quantitative, descriptive research design was used. The researchers sample consisted of 15 county offices and businesses within Meeker County. A non-random, convenience sampling method was used. Researchers asked personnel to complete an 11-question survey. Researchers found that 40% of the participants somewhat agree that they have a continuity plan in place. Forty-seven percent of participants have not made changes to existing plans based on H1N1 recommendations. Forty-seven percent somewhat agree that they are prepared to continue operations if such an outbreak were to occur in their community. Through our surveys, researchers found that 67% gained information related to H1N1 from internet sources. Less frequently, sources such as newspapers, radio, and television were used. County officials were another source used. Power points were very likely to be used by 50% of the participants as educational means. The following implications contributed to the survey results: a)denial of the current pandemic within Meeker County; b)the population of Meeker County believes it is occurring exclusively in larger cities due to media misconception; c)Meeker County has false information or has not been personally affected by the current pandemic.

**Presentation Index:** B-B 11      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Hoelscher, Amber; Schotl, Christine; Sullivan, Trisha; Miller, Heather; Moll, Michael; Nelson, Kelley; Jacobson, Jessica	Lenz, Brenda; DeBruycker, Jo	Nursing Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Design and Calibration of an Arm Ergometer for Nordic Skiers

Ergometers are a useful means of measuring work and power. The upper body motion of cross country skiers requires specially designed equipment. A unique single or double poling cross country skiing arm ergometer was designed, constructed, and calibrated. The ergometer's flywheel is spun by pulling on one or both ropes to allow for any poling technique. Each rope is attached to an independent take-up spool. These spools contain clutch bearings that grab and spin the flywheel shaft when the rope is pulled. As the rope is pulled, a return spring is stretched. This elongated spring rewinds the rope during the recovery phase of poling. A friction belt is used to apply resistance to the flywheel. Velocity is recorded electronically with an optical sensor and reflective strips applied to the flywheel (accurate ~1.5%). A friction belt resistance scale was created by hanging weights from 0 to 5 kg in 1 kg increments on the friction belt idler pulley. Power in watts was calculated as the product of resistance (N) and flywheel velocity (m/s). A pilot test was conducted using 2 kg (19.6 N) applied to the tension belt with a velocity of 4.58 m/s at the flywheel. Power was predicted and calculated to be 90 W. The current model accurately measures power output to overcome belt friction but not stretch of the return springs. Additional measurements will be conducted using cinematography and force transducers to determine a correction factor that accounts for stretch of the return springs.

**Presentation Index:** B-B 12      **Present Time:** 9:00 AM

**Student Presenter(s):**

Madden, Dennis; Wright, Eric

**Sponsor(s):**

Street, Glenn

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

### Underage Drinking in Kandiyohi County

Underage drinking in Kandiyohi County is a growing problem with an increasing number of youth reporting drinking at an earlier age and more frequently. Adolescent alcohol use contributes to intentional and unintentional injuries, social and family disruption, lack of educational attainment, chronic disease, and law enforcement costs. A retrospective survey regarding alcohol use and obtainment was distributed at Ridgewater College in Willmar, MN. The survey was administered to general education classes to gain a representative sample of the student body. Of the 205 participants, 57 students met inclusion criteria and were used for data analysis. Results of the survey showed that 86% of females and 77% of males reported drinking underage. On average, females began drinking between ages 13-14 and males between ages 15-16. Friends over and under 21-years-old were a minor's primary source of alcohol. With a high percentage reporting drinking underage, community interventions targeting those supplying alcohol to minors is necessary to decrease adolescent alcohol use.

**Presentation Index:** B-B 13      **Present Time:** 9:00 AM

**Student Presenter(s):**

Douglas, JoAnna; Acker, Allison; Das, Chelsea;  
Windschitl, Lauren; Gustafson, Ronnie; Jonak,  
Cassandra; Beckers, Kayla; John, Jacob;  
Jacobs, Brian

**Sponsor(s):**

Lenz, Brenda; Warner, Susan

**Department(s)**

Nursing Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Evaluation of Facial Expressions

Many studies have investigated gender differences in smiling. However, there has not been as much research conducted that has actually evaluated gender differences in observer judgments of smiling individuals and the cause of those differences. Mehu, Little, and Dubar concluded that female participants avoided showing a significant inclination towards smiling faces because they are more selective in mate selection and strive (more strongly than men) to avoid dangerous social relationships. Scharlemann and partners theorized that men are more influenced by smiles because they are more often in positions of dominance and that women do not give as much consideration to smiles as men because they have been shown to smile more frequently than men. This study investigated the idea that male participants would be more largely influenced by smiles and that female participants would be more discriminatory and less likely to be influenced by smiles. Participants viewed a total of eight black and white photographs presented individually in randomized order. After viewing the photographs for as long as necessary, participants rated the person in the photograph on a scale regarding the likelihood that the person in the photograph had of embodying the following attributes: generosity, agreeableness, extraversion, trustworthiness, and conscientiousness. As expected, analyses showed that participants rated smiling faces more positively ( $M=3.56$ ) than neutral faces ( $M=2.71$ ) ( $F(1, 56) = 181.69, p < .05$ ) although male and female participants did not rate the smiling and neutral faces differently ( $F(1,56) = 1.79, p < .05, ns$ ). This study may indicate that more research is needed to conclude that males and females differ in observer judgment but confirms that it may significantly benefit individuals to smile more often in social settings.

**Presentation Index:** B-B 14

**Present Time:** 9:00 AM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Gunderson, Tracie

Illies, Jody

Psychology

### Psychological Correlates of Optimism and Test Taking

This research explores how differences in the trait of optimism affect performance in test-taking situations. Participants included in the study are university undergraduates that are enrolled in psychology courses. The study explored how optimism affects various factors associated with taking a test, including measures of stress, anxiety and confidence. Participants used these measures to indicate the degree to which they were experiencing these feelings before, during, and after taking a cognitive abilities test. My hypothesis was that those higher in optimism will indicate higher confidence in their performance and lower levels of stress and anxiety. The results indicated that there was no significant correlation between confidence and optimism, which was contrary to predictions. There were significant relationships that were found between optimism and the level of stress felt before, during, and after taking the test, and also for anxiety after taking the test. There were some significant correlations that were found for the test score that participants obtained as well. Confidence tended to be higher for those that did better on the test. Confidence was also negatively correlated with levels of anxiety that were indicated before and during the test.

**Presentation Index:** B-B 15

**Present Time:** 9:00 AM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Johnson, William

Illies, Jody

Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Incidence of Streptozotocin (STZ)-Induced Autoimmune Diabetes in Janus Tyrosine Kinase (JAK) 3-Deficient Mice

Type 1 Diabetes Mellitus (T1D) is an autoimmune disease where T-cells attack insulin producing pancreatic  $\beta$ -cells resulting in insulin deficiency. Streptozotocin (STZ) is a chemical found to create changes on the surface of mouse  $\beta$ -cells when administered in low doses over several days, therefore inducing immune attack by T-cells. The Janus tyrosine kinase (JAK)3 protein is involved in the signaling pathways of T-cells. It has been shown that an absence or inhibition of JAK3 affects T-cell function, therefore we hypothesized that T1D development would be affected by non-functional T-cells in mice that lack expression of JAK3 (JAK3<sup>-/-</sup> mice). In order to test our hypothesis, we studied development of low-dose STZ-induced diabetes (40 mg/kg/day, 5 days) in JAK3<sup>-/-</sup> C57BL/6J male mice. Three groups of 2-3-months-old mice were utilized in the experiment: STZ-treated JAK3<sup>-/-</sup> (n=5), STZ-treated JAK3<sup>+/+</sup> (n=5), and control, vehicle-treated JAK3<sup>+/+</sup> group (n=5). Glycemic levels (blood glucose levels  $\geq 220$  g/dl or more indicates diabetes), body weight measurements, and immunophenotyping of different populations of T-cells were performed on days 7, 14, and 21 post first STZ injection. At day 21, diabetes was evident in 80% of the STZ-treated JAK3<sup>-/-</sup> compared to 40% of the JAK3<sup>+/+</sup> mice. The JAK3<sup>-/-</sup> group had an average glucose level of  $322.8 \pm 123.9$  g/dl and an average body weight of  $33.4 \pm 2.9$  g as compared to  $193.4 \pm 29.7$  g/dl and  $35.9 \pm 3.6$  g in the JAK3<sup>+/+</sup> group. Our preliminary studies suggest that the absence of JAK3 aggravates the STZ-induced autoimmune diabetes development in a mouse model.

**Presentation Index:** B-B 16      **Present Time:** 9:00 AM

**Student Presenter(s):**

Her, Maisee; Voegelé, Alan

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

### Buffalo Middle School Nutrition Assessment

In Minnesota 23% of children ages 10 to 17 are overweight or obese. As obesity rates continue to climb, more research is needed to identify causality and the child's relationship with food and exercise in schools. Buffalo Community Middle School (BCMS) recently received a SHIP grant. Administrators and staff are currently deciding where to allocate these funds. Methodology of the study was the use of a convenient sample of 141 students in grades six through eight. 47 students were surveyed per grade using an eight item survey questionnaire. The students voluntarily completed the survey in the cafeteria. Four available lunch lines on the survey day were soft tacos, pizza, soup/salad, and chicken nuggets. Pizza was the most frequently chosen line. Vegetable intake was greater than fruit intake. Milk intake was greater than juice. The majority of students surveyed (55%) participated in more than one hour of physical activity after school. On average, the students participated in 1.64 sports throughout the academic year. Based on the data, there are deficiencies in the amount of fruits and vegetables consumed by students during the school day. Milk intake and activity among this population were shown to be adequate. Implications of findings were healthy eating habits, obesity, cost/resource allocation, and lack of variety. Frequently students did not choose vegetables for their lunch. Data indicated more than 50% of students surveyed ate less than one serving of vegetables for that lunch. Results showed 62% of children surveyed did not eat fruit. It was found children drank milk rather than juice. Over 75% of children reported engaging in one hour or greater of physical activity on the previous evening of the study. This indicated that children at BCMS reported receiving an adequate amount of daily recommended physical activity for the evening of November 2, 2009.

**Presentation Index:** B-B 17      **Present Time:** 9:00 AM

**Student Presenter(s):**

Ward, Tamara; Riddle, Megan; Rotz, Sarah;  
Shuck, Megan; Timm, Ann; Schwartz, Lauren;  
Swanson, Rebekah; Vopatek, Rachel

**Sponsor(s):**

Lenz, Brenda; Morrison-  
Sandberg, Leslie

**Department(s)**

Nursing Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### City of St. Cloud Surface Water Treatment Stages and Chemical Analysis

An undergraduate research study was conducted to monitor different stages of water treatment process, chemical addition in each stage and the quality of the treated water. This research will help understand the water treatment process, chemical used and water quality test that is vital in the campaign to provide better water for the people living in the city of St. Cloud. By monitoring the water treatment process and water quality of the Mississippi River, the treated water, a snapshot of the public water distribution system can be analyzed. Findings from the completed research study will be presented to the members of source water protection teams from the city of St. Cloud to discuss on contaminants, contaminant sources, and water quality within or near the sample sites. The city of St. Cloud Water Treatment Facility treats the Mississippi River water in seven different stages. Water samples from each stage are being analyzed at the Water Treatment Facility Laboratory for some primary quality variables namely pH, turbidity, *E. coli*, total organic carbon (TOC), taste and order, chlorine, color and hardness. Other certain nutrients that are being analyzed are manganese, iron and phosphorus. It is important for the users of the public drinking supply to know the susceptibility of the source water to contamination, potential contaminants of concern to the source water intake and to the extent practical, sources of the potential contaminants of concern.

**Presentation Index:** B-B 18      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Niraula, Suresh; Bhattarai, Pallav	Bender, Michner	Environmental and Technological Studies

### Formula Hybrid Race Car

A critical and required portion of the mechanical Engineering curriculum at Saint Cloud State University is MME 480 & 481. This is commonly known as the capstone project. Every 4th year student must be involved in research, design, analysis and proof of an engineering system. It is a group project that teaches students how to use and apply the knowledge they learned from their textbooks to real life situations. One of the more popular design projects in engineering is the FHSAE open wheeled race car that brings together students from Mechanical and Electrical engineering departments. Students first prepare preliminary designs, analyze them for satisfaction of engineering criteria, revise the designs, and then actually build the entire car from the ground up. This year's car is a series hybrid design; this means we will have an all electric drive train with a gas engine driving a generator to maintain a constant supply of electricity. The drive train has an electric motor and a limited slip differential with independent rear trailing arm suspension and inline spring and damper, the front is a basic double unequal length A-arms, with a vertically position spring and damper. The car is then entered into the SAE Student Collegiate competition in May, where we will be judged on design and performance aspects. We will be competing against universities from the U.S, Russia, Taiwan and a couple other international universities.

**Presentation Index:** B-B 19      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Major, Chadwick; Giri, Sujun; Ledford, James; Yoshii, Tsuyoshi	Miller, Kenneth; Meyer, Dan	Mechanical and Manufacturing Engineering

### Mutagenic Potential of Ethylene Glycol Ether Metabolites

Metabolic intermediates of ethylene glycol ethers (EGEs), viz., EGE-aldehydes and EGE acids exhibit a variety of toxicities. The mutagenic potential of EGEs is established, but not those of their aldehydes and acids. EGEs are readily metabolized to their corresponding aldehydes and acids during their metabolism. When present in high concentrations the aldehydes and acids, are believed to cause severe toxicities including incidence of stomach cancers, teratogenic effects and severe bone marrow toxicities in some animal models. Accordingly, the goal of this research project is to determine the mutagenic potential of EGE aldehydes and acids using *Salmonella typhimurium* and the Ames test. These tests are now being performed in our laboratory. A positive test would give merit to further investigation of these chemicals for their carcinogenic potential.

**Presentation Index:** B-B 20      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Alem, Rekike	Sreerama, Lakshmaiah	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Mille Lacs County Community Clinic Assessment

An assessment of the need for a community clinic was requested by the Mille Lacs County Public Health Department (MLCPHD) and Rum River Health Services (RRHS). A 10-question key informant survey was developed to assess the need for a community clinic, barriers to healthcare access, and needed services. Seventy surveys were completed. The majority of informants indicated that only some of the residents in southern Mille Lacs County were able to afford adequate healthcare. Barriers to access included having no health insurance, being underinsured, and lack of financial resources. Over half of the respondents felt that a community clinic would provide great benefit. Mental health, chemical dependency, and family planning were the services most frequently indicted as being needed. Prenatal care was ranked the most important need. Our results were similar to those of a community survey conducted by the MLCPHD in 2009. Healthcare access was a major concern. The most important health issues were lack of health insurance, drugs, teen pregnancy, and mental health. Access barriers identified by our survey were confirmed by statistics from the Minnesota Department of Health (MDH). Compared to the state, the median income in Mille Lacs County is lower, the unemployment rate is higher, and more residents have publicly-funded insurance and less have private insurance. MDH statistics supported the need for more chemical dependency, family planning, and prenatal services. The impaired driving incident rate is higher than that of the state. The county has one of the highest teen pregnancy rates in the state and fewer mothers had adequate or better prenatal care. Based on the results of our assessment, we recommended developing a community clinic or a formal provider network to reduce barriers to healthcare access and to provide needed mental health, chemical dependency, family planning, and prenatal services.

**Presentation Index:** B-B 21      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Lueck, Andrea; Mortenson, Amanda; Herbst, Micaela; Hanson, Scott; Gruber, Nicholas; Johnson, Cory	Lenz, Brenda; Morrison-Sandberg, Leslie	Nursing Science

### SCSU Formula-Hybrid Electrical Systems

SCSU will make its debut in the Formula-Hybrid International Competition for 2010. The focus of the electrical team will be the high voltage system required to drive the vehicle. We will be using an Advanced DC motor powered by a Ni-MH battery pack and controlled by a Curtis controller. To ensure safe operation of the vehicle, we will be implementing appropriate fusing, relays, warning lights, battery charge monitoring, high voltage wire protection and wire routing. The vehicle will also be monitoring various sensor inputs.

**Presentation Index:** B-B 22      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Swanson, Brent; Brisley, Justin	Glazos, Michael	Electrical and Computer Engineering

### Role of Human Liver Aldehyde Dehydrogenases in Non-Alcoholic Steatohepatitis (NASH) Caused by High-Fructose Corn Syrup (HFCS)

Over the past 35 years in the western countries, the consumption for sucrose has been substituted with High-Fructose Corn Syrup (HFCS) and this has been linked to a steady increase in obesity. HFCS consumption has also been shown to cause non-alcoholic fatty liver disease (NAFLD) in obese individuals. Further, obesity is associated with development of liver (hepatic) steatosis and non-alcoholic steatohepatitis (NASH). The latter condition is further complicated by high dietary HFCS. The conditions above are believed to be caused by oxidative stress and reactive oxygen species (ROS) formation due to the generation of reactive aldehydes such as glyoxal and methylglyoxal, the byproducts of high fructose intake. In this study, we show that aldehyde dehydrogenase (ALDH) enzymes catalyze oxidation of glyoxal and methylglyoxal aldehydes. In this regard, we have purified four major human ALDHs and tested with glyoxal and methylglyoxal as substrates and/or inhibitors. Of the enzymes tested, ALDH2 appears to be most efficient in oxidizing glyoxal and methylglyoxal; the  $K_m$  (substrate affinity constant) values of glyoxal and methylglyoxal are 6.5 mM and 7.4 mM, respectively. These aldehydes appear to be relatively poor substrates for ALDH1A1, ALDH3A1 and ALDH9A1. The results also show that glyoxal and methylglyoxal does not inhibit ALDH1A1 or ALDH2. However, ALDH3A1 appears to be inhibited by glyoxal and methylglyoxal. The role of ALDHs, if any, in the origination of NASH is not quite clear at this time.

**Presentation Index:** B-B 23      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Teoh, Wei Loon; Tay, Yii Van	Sreerama, Lakshmaiah	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Measurement Equivalence of Multidimensional Aptitude Battery and Wonderlic Personnel Test across Cultures

Measurement equivalence (ME) is an important property in instruments, particularly when comparing cognitive ability cross-culturally. Only when ME is established, one can confidently say that (a) the measured construct can be generalized to other cultural context; (b) the measured construct is conceptually perceived in the similar manner in other cultural context; (c) the calibration of scores are similar across cultural context; (d) true differences across cultural groups are reflected in the observed difference between group means; and (e) there are minimal sources of bias and error.

Researchers, I-O psychologists, and organizations often utilize different instruments without attempting to assess the measure equivalence of instruments. This also applies to cognitive ability tests. However, relatively little is known about the ME of cognitive ability tests although cognitive ability tests are highly used as a selection tool in organizations and proven to be a valid predictor of performance. The present study will address the ME of Multidimensional Aptitude Battery II (MAB-II) and Wonderlic Personnel Test (WPT) across nine countries. Recruitment of 210 undergraduate students at Saint Cloud State University would take place. The students would be administered the MAB-II, WPT, and individualistic-collectivistic scale. Information on their TOEFL scores and first language would also be requested. ME of MAB-II and WPT would not be expected across individuals of different nationality, individualists and collectivists, and English and non-English speakers. The differences on CATs scores would also be examined.

**Presentation Index:** B-B 24      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Chan, Yee Mun	Protolipac, Daren	Psychology

### Should Minnesotans Start Farming Their CRP Acres?

This research was done to see what students at SCSU in Bio 152 know, believe, and how they interact with acreage in Minnesota that has been enrolled in the Conservation Reserve Program. The study was done to see if students knew about the C.R.P. and what their thoughts were on the recent farming bill, which will drastically lower the amount of C.R.P acres here in MN and in the entire United States.

**Presentation Index:** B-B 25      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Hageman, Jonathan	Simpson, Patricia	Biological Sciences

### Healthcare Cost Effects on Speech-Language Pathologists and Their Clients

Rising healthcare costs that outpace the rate of inflation have left employers with difficult decisions regarding employee healthcare benefits. Limited access to healthcare and reduced benefit coverage are a cause of concern for speech-language pathologists (SLPs) and their clients. This study sought to discover (1) how healthcare costs and availability influence SLPs in various work settings, (2) how client healthcare availability affects SLPs, and (3) SLPs' concerns regarding healthcare costs and availability for themselves, their families, and their clients. Participants included 25 female SLPs from the Upper Midwest who were working clinically in both medical and educational settings. All participants had Master's Degrees. Work experience varied from 4 to 28 years. Participant demographics were characteristic of the field at the time of the study. All respondents had health insurance when the study was conducted. The participants were interviewed and surveyed about healthcare costs and availability. Results indicate that SLPs are concerned with rising healthcare costs for themselves and their clients. In the medical setting, clients' healthcare coverage influences professional roles; conversely, all clients have equal access to services in the educational setting. Results suggest that SLPs in all settings need to advocate for quality healthcare coverage for themselves, their families, and their clients.

**Presentation Index:** B-B 26      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Ripplinger, Rhonda; Flicek, Kira; Henning, Chantelle; Ericksen, Elise	Whites, Margery	Communication Sciences and Disorders

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Impact of Vanadium Flavonoid Complexes on the Catalytic Activity of Phosphodiesterase I

Diabetes is one of the most widespread diseases in the world and a major public health burden. According to statistics, about 20 million Americans suffer from diabetes. Diabetics often suffer from complications such as renal failure, hypertension, and cataracts. The molecular basis for the disease is relative or absolute lack of insulin hormone (type 1 diabetes) or resistance to it (type 2 diabetes). Many studies have shown that certain vanadium salts and organo-vanadium complexes exhibit promising anti-diabetic properties. Although not clear, the molecular basis for the action of these compounds appears to be via activation of insulin signaling pathways past insulin receptors by modulating various enzymes. Organo-vanadium complexes have been shown to modulate several enzymes, including phosphatases, ATPases, nucleases, and kinases. In this study we investigate the impact of vanadium-flavonoid complexes on phosphodiesterase enzymes. This enzyme hydrolyses cyclic adenosine monophosphate (cAMP) and inhibits the signaling pathways which may have direct impact on glucose mechanism, given cAMP activates enzymes that facilitate catabolism of glycogen to glucose. To study the effect vanadium-flavonoid complexes on phosphodiesterase activity we will use a phosphate probe;  $[Zn_2(H-bpmp)]^{3+}$  as a receptor and pyrocatechol violet as chromogenic signal, and change in absorbance will be monitored by spectrophotometry. We have just completed the synthesis of the phosphate probe and are in the process of studying the effect of vanadium-flavonoid complexes on the activity of phosphodiesterases.

**Presentation Index:** B-B 27      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Eticha, Gudina	Sreerama, Lakshmaiah	Chemistry

### Investigations on the Sensitivity of Predicted Air Quality to the Uncertainty in Anthropogenic Emissions

The U.S. Environmental Protection Agency collects annual emission data. Using the Alaska emission allocation model, hourly emission rates are determined based on point and area source emission data, assumptions of human behavior, load data, and Alaska Department of Transportation traffic count data. The procedure to determine hourly emission rates from annual emissions total as a function of space leads to uncertainties in daily average concentrations simulated by chemistry transport models. These activity allocation functions could be steeper or shallower than assumed. In order to improve model simulations, the impact of these activity allocation functions on simulated daily average concentrations needs to be analyzed. Simulations used the WRF/Chem model centered on the city of Fairbanks, Alaska using derived hourly emission data from November 1-7, 2005. Results show the hourly emissions given by the activity allocation functions have little impact on the daily average results, but rather, the total amount emitted is a determining factor. Weekend simulations, although having little impact from the activity allocation function, see large discrepancies compared to weekday simulations. Finally, the steepness or shallowness of the activity allocation function causes difficulties in determining whether a borderline concentration value is indeed above or below the 24-h National Ambient Air Quality Standard.

**Presentation Index:** B-B 28      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Fortun, Todd	Kubesh, Rodney	Earth and Atmospheric Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Pain Management in Patients with a History of Chemical Dependency**

A number of veterans suffer from a history of chemical dependency in addition to chronic pain. The St. Cloud Veterans Affairs Medical Center (SCVAMC) identified that nurses may feel uncomfortable giving narcotics to this population and may need further education. The purpose of this study was to identify the attitudes and beliefs of nurses regarding pain management in individuals with a history of chemical dependency. Veterans with a history of substance abuse may encounter stigma and discrimination, affecting their care. In many clinical settings, the term "drug seeking" is used synonymously with addiction. However, seeking drugs for pain relief is not the same as addiction. Behaviors such as requesting higher doses of narcotics, asking for analgesics before they are due, and frequently visiting the ER, may be interpreted as drug seeking behavior. A provider's lack of knowledge, experience, or skill in identifying and addressing drug use may affect decision-making. It is important to assess these beliefs and attitudes in nurses to advocate for proper pain management in these clients. A Likert survey was developed and approved by two St. Cloud State University nursing professors, the Nurse Executive/Associate Director for Patient Care Services at SCVAMC, and was sent to the VA employees' union and Minneapolis VA for final approval. A convenience sample of 122 nurses from several departments participated in the study. The research group completed the data analysis; frequency, mean, and percentage were included. All survey questions were examined independently according to three demographic variables: age, education level, and area of work. Significant findings included that 63% of those surveyed believed that SCVAMC has adequate resources available to help patients manage their pain. 18-24 year olds were more likely to label patients as drug seeking, feel less comfortable administering narcotics, and more likely to administer the lowest prescribed dose.

**Presentation Index:** B-B 29      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Popp, Amanda; Daniels, Melissa; Jawando, Abbey; Kilanowski, Chelsea; Lindstrom, Amy; Sonbol, Hend; Surat, Tess; Worm, Sadie	Lenz, Brenda; Hiemenz, Melinda	Nursing Science

### **Investigation into Paternal Behavior in Sprague Dawley Rats**

Parental behavior in animals varies drastically from species to species. Some animals exhibit a strong parental bond with their offspring while other animals' parental behavior is non-existent. The focus of this research is to identify some of the hormonal and behavioral parameters behind the parental, specifically paternal, behavior in Sprague Dawley rats (*Rattus norvegicus*). By investigating the paternal behavior of a certain species, we can further our understanding of why other animals may or may not display similar characteristics. Certain parameters, such as the age of the pup and the age of the adult or adolescent rat, will be manipulated in order to identify which social and behavioral actions regulate paternal behavior in male rats. The tests will include placing rat pups inside an aquarium containing similar bedding and food the rat pups are familiar with. An adolescent rat will then be placed in the aquarium after several minutes and observations will be made in regards to his paternal behavior towards the rat pups. Rat pups will be removed once their eyes begin to open or when they begin to exhibit excessive voluntary movement throughout the aquarium. Based on previous research and reviewed literature, we expect to observe paternal behavior in adolescent rats of approximately 22 to 27 days old.

**Presentation Index:** B-B 30      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Vocelka, Lucas	Tubbiola, Maureen	Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Healthcare Benefits for Speech-Language Pathologists

The purpose of this study was to examine employer-provided healthcare benefits of speech-language pathologists (SLPs) and discover changes that have occurred over the years in SLPs' healthcare costs and coverage as well as what their employers are doing to make healthcare more affordable and accessible. Participants included 25 female SLPs from the upper Midwest who worked in educational and medical settings. Participants varied in age, years of experience, marital status, and number of dependents. Open-ended interview questions and follow-up surveys were administered to each participant and later analyzed for response themes. The results indicated that more than half of the participants felt they were given minimal to no information about their insurance plan at the time of hire. Currently, however, the majority of SLPs reported feeling informed about their healthcare benefits. Over half of the participants responded that other insurance plans were available as alternative options, but few had options in regard to insurance companies. The majority of the SLPs receive their health insurance through Blue Cross Blue Shield, Health Partners or Medica. Nearly half of the participants have neutral feelings regarding the confidence they have in their employer's ability to manage their personal healthcare information. Most participants indicated that their employers were taking action to address concerns about health costs and coverage. Many SLPs reported that increased cost was the most significant, recent change to their healthcare plan. Very few SLPs indicated that their satisfaction with their healthcare coverage has risen significantly over the years. Results suggest that despite attempts to make healthcare more affordable, SLPs have seen increased costs without rising satisfaction. This study raises an important issue for those entering the profession or changing jobs.

**Presentation Index:** B-B 31      **Present Time:** 9:00 AM

**Student Presenter(s):**

Feeny, Briana; Miller, Karissa; Dyce, Elizabeth; Whites, Margery  
Korbol, Liz

**Sponsor(s):**

**Department(s)**

Communication Sciences and  
Disorders

### Pre-Competition Hydration Status of High School Athletes Participating in Different Sports

Billions of dollars are spent annually on sports drinks by high school (HS) athletes attempting to enhance performance without perhaps a realistic understanding of hydration requirements for their activity. Many athletic performances can be compromised with as little as a 1% rapid weight loss through dehydration, which in turn can lead to significant decreases in blood plasma volume and a decrease in blood flow to the working muscle. Because of this, it is critical to properly educate teenage athletes on fluid consumption. Our purpose is to test the hydration status of a sample of HS athletes from three different sports just prior to a competition to help determine if these athletes adhere to the common recommendations for staying hydrated. Three groups of HS male athletes (n=35; football, n=11; soccer, n=12; alpine skiing n=12) volunteered to participate by providing a pre-competition urine sample. Football and soccer athletes provided samples one hour prior to a home game and the alpine skiers provided a sample one hour prior to a fitness assessment used in their regional team selection process. Urine osmolarity was obtained using the Advanced Micro-Osmometer Model 3MO. Athletes with urine osmolarities greater than 800 mOsm were considered dehydrated. Average urine osmolarity of football, soccer, and alpine skiers of 554, 622, and 936 mOsm, respectively, were significantly different ( $p=0.004$ ). Post-hoc tests revealed only alpine skiers as a group was dehydrated compared to football and soccer athletes who were not different from one another. Despite recommendations from coaches and the perceived popularity of sports drinks, most alpine skiing athletes and several other fall sport athletes still come into competition dehydrated. This would suggest HS athletes need better education on the importance of proper hydration prior to competition to ensure hydration is not a factor negatively affecting their performance.

**Presentation Index:** B-B 32      **Present Time:** 9:00 AM

**Student Presenter(s):**

Johnson, Chad; Davenport, Ashley

**Sponsor(s):**

Bacharach, David

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Earthquake Risk and Hazards: Looking at the 2010 Haitian Earthquake

This research looks at the geography of natural hazards with a focus on the devastating earthquake that hit the Haitian capital of Port-au-Prince on January 12, 2010. In order to understand why this earthquake was so devastating to the people of Haiti, I look at several factors, both natural causes and human ones. Haiti is well known as being the poorest country in the western hemisphere and, therefore; with poor development of buildings and its infrastructure, Haiti has been and continues to be unable to cope with such a devastating earthquake. This has led to tremendous loss of life that would likely be less severe in a more developed region. While considering the natural and developmental challenges of Haiti as a way of interpreting the recent disaster, this research seeks to understand why in this particular instance, a large population would live in an earthquake prone area so that we might better appreciate the motivations and opportunities that would factor into calculating risk that would explain this geographically.

**Presentation Index:** B-B 33      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Kortekaas, Rachel	John, Gareth	Geography

### Should We Be Able to Own Exotic Animals as Pets?

The survey was conducted to obtain data from SCSU genetics students regarding exotic pet ownership. The population that was surveyed was the spring 2009 SCSU genetics class students. The total population in the class is 88 students. The demographic results were 29 males, 25 females, and 34 non-responses. Forty-four of the 88 students said they owned a pet, nine of them did not, and the remaining 35 students did not respond. The three variables surveyed were the students' knowledge, beliefs, and experiences with exotic pet ownership.

**Presentation Index:** B-B 34      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Bushendorf, Erin	Simpson, Patricia	Biological Sciences

### Should We Use Food Based Crops For the Production of Biofuel?

The question of whether to use petroleum based fuel or biofuel goes back over 100 years to Henry Ford's Model T, first build in 1908. The Model T was a flex-fuel vehicle that could run on ethanol and gasoline. Biofuel comes from a variety of biomass products such as corn, sugar beets and soybeans. The two common types of biofuel are ethanol and biodiesel. Ethanol is an alcohol derived from sugar and starch, and biodiesel is derived from plant oils. Popularity has increased recently for the use of biofuels as the price of gasoline continues to rise and leads to the realization that oil will someday be a limited resource. Bio fuel is considered a renewable resource and can be produced at anytime. The federal government has even stepped in and mandated the use of biofuel to be increased from 9 billion in 2008 to 36 billion by 2022.

**Presentation Index:** B-B 35      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
VanHecke, Matthew	Simpson, Patricia	Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Comparing the Effects of Surgical Procedures to Pharmacological Intervention One Year Post Initial Intervention of Women Over 50 Years of Age

Coronary artery disease (CAD) is the leading cause of death among adults in the United States. In 2006 the American Heart Association reported that the incidence of CAD is nearly identical in men and women, 34.4% and 33.9% respectively. Each year more than 2.5 million U.S. women are hospitalized for cardiovascular issues and 250,000 die from CAD. Despite nearly equal prevalence of CAD in women, most research on the effectiveness the three common techniques of treating CAD has been on men. The two most common surgical techniques used to partially re-establish normal coronary blood flow are coronary artery bypass graft (CABG) and percutaneous transluminal coronary angioplasty (PTCA). Drug therapy (DT) is sometimes used in lieu of these invasive techniques. Due to the lack of female subject participation in past studies, and recent research findings on the effects of menopause, researchers are left wondering whether the recommendations given in the past should still be applied to women. This research review will analyze past and present literature in an attempt to try to determine gender differences in the effectiveness of CABG, PTCA and DT in treating CAD.

**Presentation Index:** B-B 36

**Present Time:** 9:00 AM

**Student Presenter(s):**

Maurer, Mary

**Sponsor(s):**

Bacharach, David

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

### Stearns County: Smoking Assessment of St. Cloud State University

The poster presentation highlights the perceptions of 441 St. Cloud State University students regarding cigarette smoking on campus. Data collected will enable Student Health Services, university leaders, Stearns County, and the student body to raise awareness regarding implementation of a smoke free policy on campus. The study is aligned with the goals of the State Health Improvement Program (SHIP). Exposure to second-hand smoke has proven to be a health care concern. It not only affects the health of individuals, but it has a great impact on the community as a whole. Almost 66,000 Minnesotans seek medical treatment, and nearly 600 die each year from second-hand smoke related diseases. Second-hand smoke increases the risk of health problems including heart disease, bronchitis, pneumonia, hypertension, and lung cancer to name only a few. St. Cloud State University student participants completed a 16-question survey regarding opinions and beliefs about smoking on campus. Cluster sampling was used to obtain the 441 voluntary student participants age 18 and older. Through research, we found that 65% either agreed or strongly agreed to the statement "I would prefer a smoke free campus." We also found that 80% agreed or strongly agreed that a smoke-free campus would be beneficial to their health. Further research and surveys of St. Cloud State students and staff have the potential to identify a need for the initiation of a smoke-free campus policy. Creating a smoke-free campus would have short and long term health implications. Our future plan for the university includes continuing data collection, further analysis of student/staff opinions, and presenting ideas and data to student government for policy initiation. In addition, we believe it is vital to incorporate the opinions and thoughts of the community that surrounds the university.

**Presentation Index:** B-B 37

**Present Time:** 9:00 AM

**Student Presenter(s):**

Eischen, Erica; Sexton, Amanda; Paulin,  
Deborah; Willert, Michael; Correa, Mayra;  
Chamberlain, Rebecca; Allen, Brittani;  
Achman, Amber; Hoffstrom, Christa

**Sponsor(s):**

Lenz, Brenda; Zelenak, Mary

**Department(s)**

Nursing Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Trans Fats in St. Cloud Food Establishments

Trans fats have been the subject of some great debates throughout the United States for the past several years. Critics argue trans fat should be completely eliminated from foods, while supporters contest that getting rid of trans fat will not solve the nationwide obesity crisis. Trans fat, for the most part, is an artificially made fat through a chemical process that adds hydrogen to a vegetable oil. This process is referred to as hydrogenation, through hydrogenation trans fats are able to have an increased shelf life and flavor compared to other fats. For this reason trans fats are the most ideal source of fat for restaurant and other food distributing places. However, according to the Food and Drug Administration (FDA) trans fats increase low-density lipoproteins (LDLs) cholesterol levels in the blood and decrease the "good" high-density lipoproteins (HDLs). If too many LDLs are accumulated in the blood, there is a greater increase chance of heart disease, stroke, and heart attack. The purpose of this experiment was for people to gain a better understanding of the chemical make-up of a trans-fatty acid, the effects of consuming them, sharing other people's views on trans-fats in restaurants, along with nationwide headlines regarding this issue, and to see what a selected population of SCSU students' knowledge, beliefs, and behaviors are regarding trans fats in food establishments in St. Cloud.

**Presentation Index:** B-B 38

**Present Time:** 9:00 AM

**Student Presenter(s):**

Johnson, Tyler

**Sponsor(s):**

Simpson, Patricia

**Department(s)**

Biological Sciences

### Fluorescence Characterization of Turbine Oils

Fluorescence is used as a useful tool to examine the dynamics of turbine oils. Fluorescence is the emission of radiation from an excited singlet state to the ground state. In this research, turbine oils were analyzed using a fluorescence spectrometer. The research found that different types of turbine oils will have different fluorescence spectra. There was evidence that the used oils had differences when compared to the unused oils. These differences were because of dirt and the breakdown of the natural additives in the oil. Further research could look at the affects of using a nonpolar solvent such as cyclohexane, since polarity affects fluorescence.

**Presentation Index:** B-B 39

**Present Time:** 9:00 AM

**Student Presenter(s):**

Buzzelli, Kristin

**Sponsor(s):**

Dvorak, Michael

**Department(s)**

Chemistry

### Non-invasive Measurement of Blood Glucose

Diabetes was one of the leading causes of death. To be healthy, the human body has to keep the glucose within a certain range. Therefore, non-invasively measuring the blood sugar level in time is highly required. In this presentation, a circuit board based on AD8302 is developed to test the transmission coefficient of the blood sugar, which is corresponded to the difference of the sugar level. A glucose sensor was made to measure the impedance of different depth of tissue. The non-invasive measurement of the blood sugar showed the reasonable result, which is similar to the commercial invasive glucose meters.

**Presentation Index:** B-B 40

**Present Time:** 9:00 AM

**Student Presenter(s):**

Liu, Yu; Hillukka, Gary

**Sponsor(s):**

Zheng, Yi

**Department(s)**

Electrical and Computer Engineering

### Precise Semiconductor Measurement System

This project's goal is to design a system capable of extracting semiconductor parameters. Parameter extraction is used to build better models of transistor behavior. Precise modeling plays a pivotal role in IC design. Better models enhance predictability of response, and allow for better understanding of device behavior. To extract the semiconductor parameters, first, the Current-Voltage characteristics must be measured. Then, temperature's affects on these characteristics are determined. Finally, that information is used to calculate the parameters of the device. The final result will be a complete system, at reasonable cost and useful for multiple measurement applications.

**Presentation Index:** B-B 41

**Present Time:** 9:00 AM

**Student Presenter(s):**

Vall, Andrew; Weygand, Martin; Lee, Huey

**Sponsor(s):**

Hossain, Md

**Department(s)**

Electrical and Computer Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Solar Power: Moving to a Cleaner Green Energy

Solar power is a growing part of the alternative energy market. It is important to know about and understand solar energy as it becomes more common. In 2008, record increases on fossil fuel prices led to an explosion of exploration into alternative fuels by individuals and as a nation. Many states are now passing laws requiring a certain amount of power supplied by utilities to come from renewable resources. In 2008, California said the state would increase renewable energy use to 20% by 2010 and 33% by 2033. This sparked a debate over the development of the Mojave Desert. The Mojave Desert is a prime location for solar production because of the consistent sunshine. The problem is the Mojave Desert supports a delicate ecosystem for endangered species like the desert tortoise and Mojave ground squirrel. Other parties involve desert agriculture (farmer), recreation (tourism), and environment degradation (environmentalists). The purpose of my investigation was to research renewable energy requirements and the potential use of solar power as a replacement for fossil fuels. Part of this research involved surveying a group of St. Cloud University students on March 5, 2008. I surveyed the Water Environment (EAS 105) class for spring 2009. The survey was designed to collect evidence on SCSU student's knowledge, opinions, and experiences with solar power. The research questions studied were: What do SCSU students know about renewable energy requirements? What do SCSU students think about solar power? What are SCSU student's experiences with solar power?

**Presentation Index:** B-B 42      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Hendricks, Wesley	Simpson, Patricia	Biological Sciences

### The Aggregation of Snowflakes In the Presence of Banded Precipitation

The project was designed to determine the effect banded precipitation has on snowflakes. To determine the amount of aggregation on individual snowflakes, a scale was done to classify them into three categories: low, medium, and high aggregation. Pictures were taken of the snowflakes, along with measurements, to determine the amount of aggregation and the size of each individual snowflake. Together with the degree of aggregation, snowfall totals were collected hourly to determine the snowfall rate of each individual snowstorm. In addition, radar images were collected to determine whether the snowstorm was producing banded precipitation. Once that was determined, snowstorms were categorized as banded or non-banded precipitation and separated according to degree of snowflake aggregation. Data was compared, and the result of aggregation on banded precipitation was determined.

**Presentation Index:** B-B 43      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Kurtzbein, Courtney	Kubesh, Rodney	Earth and Atmospheric Sciences

### Autonomous Vehicle Tracker with Obstacle Avoidance

Autonomous vehicle control is the future of automobile navigation. These vehicle control systems must incorporate an array of sensor technology to achieve their task efficiently and safely. The Autonomous Vehicle Tracker with Obstacle Avoidance demonstrates some of the basic functions required of such a system. These functions include monitoring the operation environment with image processing and acoustic sensors, identification of targets and obstacles, and safe navigation from the starting point to the target destination. This project used image processing as the primary mode of target identification to control navigation of the tracking vehicle toward the target vehicle. Acoustic transducer pairs were used to identify obstacles within the tracking units path of motion and avoid collisions. To monitor path travel, our system uses an opto-mechanical device to allow path retrace. These integrated technologies represent the groundwork for a fully functioning autonomous vehicle control system.

**Presentation Index:** B-B 44      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Patzer, Jeremy; Sevilla Rubi, Francisco; Tran, Paul	Hou, Ling; Petzold, Mark; Julstrom, Bryant	Computer Science, Electrical and Computer Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Speech-Language Pathologists' Opinions About Healthcare

Availability and quality of healthcare are major issues in the United States. Unlike many other countries, the United States' healthcare system is complicated due to a combination of publicly-provided healthcare (e.g., Medicare), private insurance, and out-of-pocket payment for medical services. Healthcare availability and quality affect speech-language pathologists (SLPs) not only personally but also on the job in dealing with their clientele, many of whom have medical issues. Thus, it is possible that SLPs have strong opinions about healthcare. Little research has been done to explore these issues with SLPs. Therefore, the purpose of this study was to find out SLPs' opinions about healthcare. Participants included 25 female SLPs from the Upper Midwest who were working clinically. Experience ranged from 4 to 28 years (mean=13.93 years). Over half (60%, 15/25) worked in educational while 40% (10/25) worked in medical settings. All respondents had health insurance. Students in a graduate research methods class developed interview and survey questions. Interview questions were open-ended while the survey consisted of statements with 1–5 Likert-type responses or ranking type questions. The results of this study suggest that SLPs believe it is a necessity to have healthcare coverage and that access to healthcare is a basic human right. A change that many would like to see in the healthcare system of the United States is for affordable universal coverage. SLPs indicated they would like to see more coverage for themselves, especially for vision and dental. SLPs disliked the high cost of healthcare. Finally, SLPs recommended to students that they should research healthcare coverage options when considering employment.

**Presentation Index:** B-B 45      **Present Time:** 9:00 AM

**Student Presenter(s):**

Walsh, Jocelyn; Friebe, Angela; Knutson, Kaitlin; Philippi, Jenna

**Sponsor(s):**

Whites, Margery

**Department(s)**

Communication Sciences and Disorders

### Effect of Klenz Pre-Moistened Towels on Bacterial Growth

The "Klenz XXL Shower in a Towel" can be described as an alternative full body cleaning method when one does not have access to fresh water facilities for showering. The "shower in a towel" is fragrance- and alcohol-free, durable, and portable. The towel is popular among campers, bikers, medical and military personnel, and others. The purpose of this study was to determine if the towel as formulated contained compounds that would inhibit bacteria. The organisms chosen for study included *Bacillus megaterium*, *Escherichia coli* (ATCC strain 25922), *Staphylococcus epidermidis* (ATCC strain 12228), and *Mycobacterium smegmatis*. The selected organisms may be found on the skin either transiently or as part of the normal microbiota. Double layers of Klenz towels (rectangles approximately 10 x 15 mm) were used to assess inhibition of bacterial growth on nutrient agar plates. Overnight pure cultures of organisms were swabbed across the entire surface of the agar plate and then double layers of towel were aseptically transferred to the agar surface. Plates were incubated for 24 hours at 37°C to determine if any inhibition of growth occurred around the towel pieces. Growth of *B. megaterium*, *S. epidermidis*, and *M. smegmatis* was consistently inhibited by the ingredients contained in towel. No inhibition of growth was seen with *E. coli*. Future studies will include determination of which specific components of the towel product inhibit bacterial growth.

**Presentation Index:** B-B 46      **Present Time:** 9:00 AM

**Student Presenter(s):**

Ong, Wei; Yeoh, See Seong

**Sponsor(s):**

Schrank, Gordon

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### An Investigation of the Interaction Between Cholesterol Aggregates and Anticoagulants Using a Fluorescent Probe

Investigation of the molecular basis of cholesterol aggregation is of utmost importance because these aggregates are implicated in a number of cardiovascular diseases. Aggregation of cholesterol is driven by both hydrogen bonding and hydrophobic interactions. The goal of this research project is to study the aggregation of cholesterol by fluorescent probe (Anthracene) and determine the effect of different anticoagulants (aspirin, warfarin, heparin) on the aggregation process. The electronic transitions from ground state to excited singlet states were closely monitored at various cholesterol concentrations (ranging from 10 mM to 400 mM). It is interesting to note that the transition from ground state to the higher energy singlet transition undergoes spike in intensity with aggregates formation. On the other hand, the low energy singlet transition was largely unaffected. This shows that the higher energy transitions are very sensitive to the environment and reflects the molecular changes surrounding it. We will present cholesterol concentration-dependent variation of fluorescence. We will also show the effect of temperature on these electronic transitions and size-dependent sensitivity of the fluorescent probe.

**Presentation Index:** B-B 47      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Phuyal, Sandip	Ramakrishnan, Latha; Sivaprakasam, Kannan	Chemistry

### Isolation and Expression of the Trypanosoma Receptor in *Tyrrpanosoma brucei*

The parasite *Trypanosoma brucei* is carried by the tsetse fly and causes African trypanosomiasis or sleeping sickness. This parasite continually evades the immune system by changing its surface antigens making prevention extremely difficult. However, targeting conserved essential surface proteins may be a possible route to successful vaccination. Epitopix (Willmar, MN) has demonstrated that proteins involved in stealing iron (a growth limiting nutrient) from host organism can be exploited to produce successful vaccines. By targeting the siderophore and siderophore receptor systems, Epitopix has demonstrated protection against many bacterial strains including Salmonella and recently *E. coli* O157. In *T. brucei*, the equivalent system is the transferrin receptor. This heterodimer complex has a high affinity for host transferrin that the parasite uses to steal iron from the host. This transferrin-binding complex found in *T. brucei* is made up of two proteins: ESAG6 and ESAG7. ESAG6 is a glycosolated, 50-60 kDa protein that is GPI anchored to the cell membrane at the C terminus. ESAG7 is a 42 kDa protein, covalently attached to ESAG6 that has an unmodified C terminus. Using the method of polymerase chain reaction, the genes encoding ESAG6 and ESAG7 were isolated from TREU927 and cloned into an *E. coli* expression vector.

**Presentation Index:** B-B 48      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Lieser, Elizabeth Ann	Kvaal, Christopher; Jacobson, Bruce	Biological Sciences

### Are Home Laboratory Experiments an Effective Tool for Online Chemistry Students

As technology continues to develop, it becomes necessary for chemistry education programs to improve methods to keep pace. It has now become possible to provide introductory chemistry courses online allowing students the freedom to learn at their own pace in the comforts of the home. However, textbook learning offers only a portion of the experience needed to grasp some science concepts. Laboratory work is an effective tool needed by students to fully understand some chemistry concepts. This research was designed to determine whether laboratory exercises could be performed safely in the students' own home and if that experience provided was useful in helping the students learn. Two labs were designed to be carried out in the students' home with common household items. Subjects were first given a short paper test based on the objectives covered in the labs to determine what knowledge the subjects already had. The subjects were then allowed to perform the labs on campus in a controlled environment under supervision. After they completed the two laboratory exercises, subjects then took another paper test based on the same objectives. Subjective observation of the labs being performed as well as the comparison of the pre and post paper tests indicated that, although safe for the home, these labs provided no statistically significant learning for the subjects. It is evident that more research is needed in order to be beneficial for online chemistry students.

**Presentation Index:** B-B 49      **Present Time:** 9:00 AM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Dupay, Tony	Krystyniak, Rebecca	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Lakeshore Landscaping

Minnesota lakeshore landscaping is an inquiry project designed to examine science, technology and society. It is a Minnesota academic standard for secondary education students. This inquiry project examines alterations to a shoreline and how lakeshore property owners landscape their properties. This places the whole lake ecosystem at risk including: erosion of shorelines, excessive rainwater runoff, runoff of fertilizers and dead organic material that causes algae blooms, loss of native vegetation, loss of native wildlife, decreased water quality, spawning of aquatic organisms, and loss of natural habitat. All methods of scientific inquiry were used to complete this project, which include background research, how it is a STS project, purpose, research questions, survey, demographics, results, and presenting findings.

**Presentation Index:** B-B 50

**Present Time:** 9:00 AM

**Student Presenter(s):**

Bialka, Susan

**Sponsor(s):**

Simpson, Patricia

**Department(s)**

Biological Sciences

### Precipitation Distribution During Midwest Alberta Clipper Cases

The maximum precipitation during Alberta Clippers is expected to be a few hundred kilometers to the north of the system's track. During the cold seasons (October-March) from 1986/1987 to 2000/2001, 177 cases of Alberta Clippers were determined by. This poster takes a look at the area of maximum precipitation during Alberta Clippers in comparison to the track of the low pressure system. The cases used were then broken down using new criteria that was created due to limited data available. The low pressure center had to be printed on the Daily Weather Map series maps or a closed isobar analyzed on the maps. The low pressure center must track far enough south towards the United States border, in order to collect data. The area of maximum precipitation was defined as having a minimum of .01 inch of melted snowfall in a 24-hr period. The stations where this criteria was met were then connected together to create an area of maximum precipitation. The systems were tracked every 24 hrs then compared to the area of maximum precipitation over a 24-hr period as well. The results will be presented in this poster as to where the area of maximum precipitation is located in comparison to the track of the system.

**Presentation Index:** B-B 51

**Present Time:** 9:00 AM

**Student Presenter(s):**

Hager, Alyse

**Sponsor(s):**

Weisman, Robert

**Department(s)**

Earth and Atmospheric Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session C-C

Paper Competition-2

Cascade

### **The Effect of an Atrioventricular Node Ablation and Dual Chamber Sensor Technology on the Well Being of Subjects with Atrial Fibrillation**

Medications are often ineffective in relieving symptoms caused by atrial fibrillation, and patients are left symptomatic of their rapid and irregular heart beat. Therefore, an atrioventricular node ablation and pacemaker implantation is a common treatment modality for these individuals. Permanently dependent of a pacemaker, patients rely on the sensors within their devices to provide an appropriate rate response with a corresponding change in activity. Sensors that do not provide an appropriate response to an increase in activity will also leave them symptomatic. The study includes devices with accelerometers as sensors and a second group that consists of an accelerometer and minute ventilation detection for sensors. The objective was to assess the effect of atrioventricular node ablation on the well being of subjects suffering from atrial fibrillation. Also, to determine if a difference exists between two different groups of sensor technologies within dual chamber devices: accelerometer and accelerometer/minute ventilation detection. Atrial fibrillation patients of Central Minnesota Heart Center who are scheduled for an atrioventricular node ablation were asked to participate in the study. Patients were asked to complete a six minute walk and a questionnaire on the day of their procedure, as well as one week post ablation. Although data collection is still in progress, all patients PGWB scores and symptoms have improved. The distance walked within the six minutes increased in all subjects. The heart rate response for both the accelerometer group and the accelerometer + minute ventilation detection group was more appropriate post ablation. There is not enough data yet to determine if a difference exists between the two different device groups. Atrioventricular node ablation and implantation of a dual chamber pacemaker helps to improve quality of life and reduce symptoms. There is not enough data at this point to determine if a difference exists between device groups.

**Presentation Index:** C-C 1      **Present Time:** 9:30 AM

**Student Presenter(s):**

Kuschke, April

**Sponsor(s):**

Bacharach, David

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

### **Effect of Galantamine and Riluzole on Beta-Amyloid (1-42) using Fluorescence and Atomic Force Microscopy**

Alzheimer's disease (AD) is characterized by the deposition of amyloid $\beta$  peptide (A $\beta$ ) plaques in the brain. Patient suffering from AD has severe loss of cholinergic neurons synthesizing the neurotransmitter acetylcholine. Hence, efforts have been made to increase the levels of acetylcholine in the brain. Five drugs approved by FDA for treatment of AD, namely Galantamine, Tacrine, Rivastigmine, Donepezil, and Memantine reduce the late symptoms of dementia. However, it is not clear if these hydrophobic compounds play a role in mechanism leading to development of AD. The formation of A $\beta$  aggregates involves interaction between the core hydrophobic amino acids in the polypeptide. So, it is proposed that addition of small hydrophobic drugs such as, Galantamine and Riluzole would inhibit the aggregation by disturbing the hydrophobic interaction between the peptide fibrils. The interaction between A $\beta$  (1-42) peptide aggregates with the drugs will be investigated using Fluorescence spectroscopy and Atomic force microscopy (AFM).

**Presentation Index:** C-C 2      **Present Time:** 9:50 AM

**Student Presenter(s):**

Thapa, Rajan

**Sponsor(s):**

Ramakrishnan, Latha

**Department(s)**

Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Internationalization of MnSCU Universities: The Perspective of Student Mobility

Internationalization of higher education, pushed by globalization, has been increasingly prevalent on university campuses of the United States. International enrollment and study abroad participation are important components of internationalization of an institution. Internationalization of a campus, in return, promotes international enrollment and study abroad participation. This research investigated the internationalization process of the MnSCU (Minnesota State Colleges and Universities System) universities over the period of 2004 through 2008 with a focus on student mobility. Having analyzed the quantitative data, the researcher found that while the overall international enrollment of the system increased during the five-year period and demonstrated a momentum for continued growth, imbalance existed among the seven universities. Study abroad participation did not change significantly as international enrollment did in spite of fluctuations. Through analysis of the available qualitative data, the researcher figured out an interpretation for the differences across campuses in international enrollment and the study abroad scenario different from that of the nation. Finally, the researcher identified challenges facing the university system as well as the specific institutions in terms of internationalization and provided recommendations.

**Presentation Index:** C-C 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Liu, Xingcai

**Sponsor(s):**

Silvestre, Gabriela

**Department(s)**

Counselor Education and  
Educational Psychology

### My Father's Past, My Children's Future

An unknowing observer who traverses west-central Minnesota might be under the impression that the high voltage power line that stretches from Underwood, North Dakota to Delano, Minnesota, had always been part of the landscape. Cows graze and crops grow underneath the lines and towers that now show their age. Rust has overtaken most of the thirty-year old towers. This unknowing observer probably does not reflect much on such a line's construction. It is like the many that cross the American landscape. But locals know a different story. They know that just the mention of "that line" still stirs up, even after thirty years, passionate, bitter, memories. Many of these locals, in fact, tried to stop "that line" from being constructed. They opposed the line because of what the line symbolized, an attack upon the personal and collective identity of the farmers who led the movement to stop its construction. Between 1974 and 1980, a widespread farmer-led movement arose in Minnesota over the construction of a high-voltage power line. This presentation addresses two questions. First, what motivated many traditionally conservative, "law and order" farmers, to acts of civil disobedience and vandalism? Second, how was commitment maintained in light of the numerous setbacks encountered? This presentation argues that a deeply rooted popular ideology formed on agrarian ideals was the cornerstone of the creation of the personal and social identity of the farmers. The farmers perceived that their identity was under assault, which generated a strong sense of injustice over the proposed power line that led to a condition of moral outrage. The deep-seated moral outrage sustained commitment despite repeated setbacks, and the movement continued even after the towers and lines were built.

**Presentation Index:** C-C 4

**Present Time:** 10:30 AM

**Student Presenter(s):**

Byczynski, John

**Sponsor(s):**

Wingerd, Mary

**Department(s)**

History

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session C-G

Facilitating Human Communication

Granite

### Differences in Affectionate Communication Between Same-Sex and Cross-Sex Friendships

This research examines affectionate communication in non-romantic relationships. A survey was conducted online with 100 volunteer participants from a public mid-western university in the United States. This study looks at the differences between affectionate communication in cross-sex and same-sex relationships. The independent variable for this study is type of friendship that each participant is involved in (i.e. cross-sex or a same-sex friendship). The dependent variable is the level of affectionate communication displayed by the participants within the friendship. It was found that participants in cross-sex friendships displayed a higher level of affectionate communication than any other pairing of friends. Female to female friendships closely rivaled the level of affectionate communication reported by cross-sex friendships; while male to male friendships reported the lowest level of affectionate communication.

**Presentation Index:** C-G 1      **Present Time:** 9:30 AM

**Student Presenter(s):**

Glidden, Charlotte; Friedrichs, Sarah; Striegel, Sarah

**Sponsor(s):**

Anderson, Traci

**Department(s)**

Communication Studies

### Facebook and Communication Apprehension

Communication apprehension is the anxiety associated with communicating with another person or persons. Individuals who suffer from communication apprehension often feel they do not have the skills needed to effectively communicate with others. When an individual feels inadequate or restricted by their communication abilities, they may seek the means necessary to communicate with others. The recent growth in social networking sites gives individuals with communication apprehension one such outlet. This study strives to find the connections between the uses of social networking sites, Facebook in particular, and the levels of communication apprehension individuals feel. One-hundred ninety-eight Facebook users were surveyed using the McCroskey PRCA-24 communication apprehension scale and a Facebook use scale. Results indicated that a significant relationship existed between communication apprehension and how often individuals access their Facebook account.

**Presentation Index:** C-G 2      **Present Time:** 9:50 AM

**Student Presenter(s):**

Ostroot, Alissa; Baumgartner, Bridget

**Sponsor(s):**

Anderson, Traci

**Department(s)**

Communication Studies

### Interactive Art

This project is about turning Wiimote Program into interactive art. Wiimote program is to build a low-cost interactive whiteboard. It is based on Johnny Lee's original WiimoteWhiteboard program. The way it works is to turn any surface that can be projected on into an interactive whiteboard. All it needs is a Wii remote connecting to the computer and a LED light pen to control your computer program as a "mouse". This program allows us to use "whiteboard" to create a piece of artwork. Instead of drawing on a piece of paper, we can draw on the whiteboard in a drawing application that can be made out of Adobe Flash or java script. It allows users to draw lines and shapes with different colors. Users can also erase what they have on the screen. It encourages users to be more interactive in a public space.

**Presentation Index:** C-G 3      **Present Time:** 10:10 AM

**Student Presenter(s):**

Li, Xue

**Sponsor(s):**

Gorcica, William

**Department(s)**

Art

**Redesign and Optimization of Steel Coil Storing Inventory Space at a Freezer Manufacturing Company**

There was a lack of design and improper management in the inventory space used to store steel coils that caused overstocking at a freezer manufacturing company. Therefore, the focus of this project was to redesign the inventory area and improve the management for stocking the steel coils. The steel coils are mainly used to manufacture boxes and doors of different types of refrigerators. Since the usage of steel coils could vary from month to month or based on season, the first thing to do was to gather the data log of the steel coil usage in the past. The steel coil usage data were then analyzed using the most suitable statistical chart from the MiniTab program. After analyzing the statistical data, a suggested starting amount of each steel coil was determined for the first day of each month. Then a method to manage the inventory for the rest of the days was developed to keep the amount of steel coils low and sufficient at the same time. The redesign of the inventory layout was based on the space availability and steel coil sizes. The Solidworks 2010 software program was used to draw the 3D drawing of the inventory space and steel coil sizes to analyze the space optimization. Other manufacturing concepts taught in the MME 470-Facility Design and Material Handling class were used to aid this project. This presentation will discuss the solutions obtained from the analysis of the problems.

**Presentation Index:** C-GN 1**Present Time:** 9:30 AM**Student Presenter(s):**

Chen, Wenjie; Fong, Chen Kwang

**Sponsor(s):**

Shah, Hiral

**Department(s)**Mechanical and Manufacturing  
Engineering**Manufacturing Interface**

Whirltronics Inc., located in Buffalo, MN, is a company that specializes in manufacturing precision lawn mower blades for a variety of distinguished companies. Whirltronics strives to continually increase production rates and lower production costs by following lean manufacturing principles. Whirltronics receives the raw material and then each blade must go through a series of processes before it is considered a finished product. There are two particular processes among the series of processes that do not interact very smoothly: heat-treatment and straightening. The blade must be heat-treated to harden the material, so that it can withstand heavy use, but the heat-treatment process deforms the blade. A deformed blade will not spin properly so it must be straightened. The heat-treatment process produces roughly 500 parts per hour (pph) and the straightening process produces roughly 400 pph. Since the straightening process is slower, the blades tend to accumulate between the two processes. The accumulation creates manufacturing wastes such as unnecessary storage, transportation, and more added work which wastes time and money. The scope of this senior design project was to bridge these two processes so that the manufacturing wastes currently observed between the processes would be reduced or eliminated. The solution to the problem lies in a combination of process changes and implementation of a mechanical component to aide in the part-flow from heat-treatment to straightening. By closely matching the production rates of the adjacent processes and eliminating the manufacturing wastes within the two processes, it is possible to increase the overall blade production capability of the company which will lead to significant revenue increases.

**Presentation Index:** C-GN 2**Present Time:** 9:50 AM**Student Presenter(s):**Johnson, Lewis; Muldowney, John;  
Schadewald, Nicholas**Sponsor(s):**

Bekkala, Andrew; Sezen, Ahmet

**Department(s)**Mechanical and Manufacturing  
Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Teratogenic Effects of Ethylene Glycol Ethers and Their Metabolites of Oxidative Metabolism in *Xenopus levis*

Ethylene glycol ethers are a family of organic solvents widely used in industrial and household products including carpet cleaners, shampoos, fabric cleaners, degreasing agents, floor finishes, stain removers, etc. They are ultimately discharged into the environment, especially the waterways. The toxicity due to ethylene glycol ethers in humans and mammalian systems has been well understood. However, the toxicity of ethylene glycol ethers in aquatic life is not very clear. In vivo, ethylene glycol ethers are oxidized to their respective aldehydes and then to the corresponding carboxylic acids by aldehyde dehydrogenase and the carboxylic acid formed is believed to cause the known toxicities due to these compounds. In a previous study we have shown that ethylene glycol ethers cause teratogenic toxicities in *Xenopus levis*. In this investigation we explore the possible role of aldehyde dehydrogenases in ethylene glycol ethers induced teratogenic effects of in *Xenopus* model. Our studies show differential expression of aldehyde dehydrogenases in various stages during *Xenopus* development and we are in the process of determining the identity of these enzymes by immunohistochemical methods. These studies are expected to result in better understanding of the role of aldehyde dehydrogenases in ethylene glycol induced teratogenic effects.

**Presentation Index:** C-GN 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Dasanayaka, Neranjana

**Sponsor(s):**

Sreerama, Lakshmaiah; Schuh,  
Timothy

**Department(s)**

Biological Sciences, Chemistry

### A Case Study of the Orono/Long Lake Tornado Event of August 8, 2009

The day of August 8, 2009 brought severe weather to the Southwest metro of the Twin Cities. A small EF-1 tornado touched down near Orono and made its way through Long Lake and finally dissipated in the Wayzata area. The tornado caused damage to houses and a strip mall. While the environment in the area was very favorable for supercell formation and maintenance in the fields of instability and moisture, it is the source of lift for thunderstorm initiation that was not so obvious. The research, through objective analyses of calculations of the environmental conditions, shows that the main cause of lift was the enhanced area of surface convergence caused by the synoptic scale frontal system that propagated into the area throughout the day.

**Presentation Index:** C-GN 4

**Present Time:** 10:30 AM

**Student Presenter(s):**

Bigelbach, Brandon

**Sponsor(s):**

Weisman, Robert

**Department(s)**

Earth and Atmospheric Sciences

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**Session C-GS**

**Sociology and Immigration**

**Glacier South**

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### A Historical Comparative of Migration Patterns and Experiences of Immigrants to Central Minnesota

This presentation includes an analysis of several interviews of Somali and East African immigrants and refugees currently residing in the St. Cloud and Central Minnesota area. Utilizing the Stearns County History Museum's oral history archives, the experiences of Somali and East African immigrants and refugees are compared to those of German and other Europeans that have immigrated to Central Minnesota over the past century and a half. The interviews cover a variety of subjects including, but not limited to, the experiences of immigrants from their country of origin to Central Minnesota, the immigrants' experiences living in Central Minnesota, and traditions, customs, and occupations before and after immigration.

**Presentation Index:** C-GS 1

**Present Time:** 9:30 AM

**Student Presenter(s):**

Eliszewski, Billie

**Sponsor(s):**

Greider, Paul

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Links Between Alcohol Use and Smoking

The American College Health Association has recognized tobacco smoke as a Class-A carcinogen. This category contains chemicals such as asbestos, methyl ether (found in industrial polymers), and benzene (found in gasoline). All are pollutants which have significant data indicating their ability to cause lung cancer. For this reason, cigarette smoke is considered unsafe at any level, yet there continues to be a high percentage of cigarette smokers on college campuses in the United States. In the U.S., 28% of college students smoke, compared to the 21% of total adult smokers. Though these numbers have been decreasing over the years, there are still debates over where people can smoke. With cities across the nation banning smoking in restaurants, bars and government buildings, the debate has moved to college campuses. At the University of Kentucky, a newly enacted campus wide smoking-ban brought forth a "smoke-out" in protest. Students gathered on campus and lit up to show their disapproval of the new ban. Today, over 365 colleges around the U.S. have smoking-bans. So, how do the students really feel about these smoking-bans, and what effects do they hold? These questions may be answered for the students of St. Cloud State University in the Spring 2010 survey. Questions regarding smoking habits and attitudes will help reveal important information on how students on campus feel about smoking-bans and the behaviors which go along with smoking. Before the results of the survey come in, a few questions should be answered. How does smoking affect other behaviors, such as alcohol consumption, and what are the pros and cons to a campus wide smoking-ban?

**Presentation Index:** C-GS 2

**Present Time:** 9:50 AM

**Student Presenter(s):**

Thibodeau-Schuldt, Megan

**Sponsor(s):**

Zerbib, Sandrine

**Department(s)**

Sociology and Anthropology

### Immigrants in the Military

I am part of the Somali Immigration in Central Minnesota Research Project with Professor Paul Greider, Professor Ajay Panicker and other students; however, I am focusing my research towards the military. By examining the patterns of non-citizens, immigrants, and the children of immigrants in the military, I hope to find the process by which immigrants assimilate through the military. Data have been collected from archives, interviews, newspapers, surveys, and museums. With this information, I will be able to identify social patterns of past immigrants and the effect the military has on them. I will contrast and compare the data with the Somali immigrants.

**Presentation Index:** C-GS 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Wiehr, Jessica

**Sponsor(s):**

Greider, Paul

**Department(s)**

Sociology and Anthropology

### An Oral History of Diaspora from the Horn of Africa

For this work I am looking at the history of immigrant populations from the Horn of Africa in Minnesota. I am going to conduct one short formal oral history interview, and pair it with a broader analysis of secondary material on the Somali, Ethiopian, and Eritrean Diaspora. Within this broader context, I will seek to address questions of national and ethnic identity within this population. How do immigrants from the Horn of Africa view their own history? What historical forces do they believe, if any, have led to their immigration to Minnesota?

**Presentation Index:** C-GS 4

**Present Time:** 10:30 AM

**Student Presenter(s):**

Johnson, Lukas

**Sponsor(s):**

Greider, Paul

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session C-O

Communication

Oak

### Web Design and Rhetoric

This project focused on improving the online presence of St. Cloud State University's English Department. Concepts of contemporary web design and rhetoric came together to create a prototype web page that demonstrates effective online promotion. Throughout the project, two primary objectives surfaced: 1) the evaluation and improvement of the SCSU English Department web site and 2) the application of rhetorical theory to online media. Throughout many stages of the project, I spoke with a number of faculty members in the English Department in order to specify the primary needs of the department web page. It was determined the department web presence needed improvement in its promotional and informational aspects. In developing a web page mock-up, many sources helped to develop concrete design elements and provide their theoretical backing. This presentation will present a web page mock-up, the reasons behind certain design elements focusing on the fulfillment of promotion, and a section that could serve as a proposal to the university requesting changes to the web site or possible future steps in the project.

**Presentation Index:** C-O 1

**Present Time:** 9:30 AM

**Student Presenter(s):**

Bauer, Conrad

**Sponsor(s):**

Davis, Glenn

**Department(s)**

English

### Nonverbal Communication: Are Writing Centers Part of the Conversation?

According to literature in the field, conversation is an essential part of writing centers. Stephen North, one of the fathers of writing center theory said, "writing centers are simply one manifestation-polished and highly visible-of a dialogue about writing that is central to higher education." During a tutoring session consultants discuss writing techniques, while students talk about professor's expectations, paper requirements, and their fears. Though the definition of communication is often associated with speech, 80% of a conversation's meaning is derived from nonverbals. Nonverbals, or body language, are the communication of unspoken messages that are sent and received, conveying additional information that is often not expressed through speech. This information is vital in the establishment of the unique tutor/client relationship within writing centers. For the purpose of this presentation I focused on the concept of nonverbal cues. This study was motivated by two questions: a) why is a tutor's body language important? b) and is it necessary for tutors be aware of their clients' body language? Participants' nonverbal cues were examined at three interaction points in the writing center: the tutor's greeting, the environment, and the tutorial. These nonverbal cues are further identified in this study as: gaze, proxemics, chronemics, haptics, posture, body orientation, kinesics and gestures. My research was performed in the writing center located at St. Cloud State University. I gathered my data through a variety of methods including observing tutorials and a survey of consultants. This presentation does not address the effects of body language, the result of the tutorial, or the individual backgrounds of participants. This collection of data incorporates the non-directive approach of writing centers to provide ways for writing center staff to improve and create awareness of their nonverbal communication with clients.

**Presentation Index:** C-O 2

**Present Time:** 9:50 AM

**Student Presenter(s):**

Schreifels, Heather

**Sponsor(s):**

Mohrbacher, Carol

**Department(s)**

English

### Visual Rhetoric in English Composition Textbooks

The intensified integration of technology in everyday life presents a pressing need for students to learn how to communicate in multiple ways so they will be able to participate in a multimodal society and the multimodal academy. However, college programs, specifically english composition programs, could put more emphasis on effective multimodal communication. The study contained in this presentation will feature the examination of five English composition textbooks for the presence and quality of visual literacy content. Additionally, this study will determine how well these textbooks answer the call for a more diversified English composition textbook in terms of visual communication and suggest ways that these textbooks may better heed that call.

**Presentation Index:** C-O 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Donovan, Moira

**Sponsor(s):**

Mohrbacher, Carol

**Department(s)**

English

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Quality in Education

Our research will examine and compare the top ten traits in new hires that are of value to companies, to the traits that are considered of value at St Cloud State University. Based on current literature on the subject, a survey will be conducted using a Likert scale and be supplemented with open-ended questions. We are going to survey the HCOB students trying to get a minimum of 100 surveys. We will measure the top ten skills employers look for (teamwork problem-solving/reasoning/creativity, planning/organizing, multicultural sensitivity/awareness, leadership/management skills, interpersonal abilities, flexibility/adaptability, computer/technical literacy, analytical/research skills, and communication skills) and how well students think they are prepared for them. Also, we will measure how well students think that HCOB meets some quality criteria (class size, diversity, facilities, ect.). We also want to research and see if students involved in organizations see the factors differently. The results of the survey will be valuable in aligning SCSU education with the values of employers, and will also help to improve teaching methods.

**Presentation Index:** C-O 4

**Present Time:** 10:30 AM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Wester, Jason; Bronder-Roznauer, Alexander;  
Thell, Daniel; Berkesch, Paul

Polacco, Alexander

Management

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**Session C-VN**

**Engineering**

**Voyageurs North**

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### A Numerical Simulation of Heat Loss from Coal Conveyor Gallery #51 Using ANSYS

The project will address an issue stated by Xcel Energy regarding the Sherco Coal Power Plant in Becker, MN. This project is focused on utilizing thermal simulations in ANSYS to determine the significant sources of heat loss in coal conveyor gallery #51. The gallery has aluminum siding and roofing approximately one-sixteenth of an inch thick and a corrugated concrete floor to support the conveyor structure. This gallery is roughly 325 feet long by 14 feet 6 inches wide. Knowing the main sources of heat loss will enable our team to determine the best possible solution for maintaining heat inside the gallery. Once the main sources of the heat loss are located, possible insulation or heating solutions will be proposed and analyzed. The gallery is kept on a strict cleaning schedule. The most effective cleaning method is to spray it down with a water hose. In the winter months water freezes on the gallery floor during this cleaning process. This is a significant safety hazard considering the incline and length of the gallery. At this point the best way to prevent the water from freezing on the floor would be to lay heated wire just below the concrete surface. This solution is being analyzed in order to determine the power requirements for the heated wire. The findings and simulations will then be given to Xcel Energy enabling them to better assess the problem with the floor freezing inside the gallery.

**Presentation Index:** C-VN 1

**Present Time:** 9:30 AM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Vu, Quang; Anderson, Jonathan; Tamble,  
Patrick

Zhao, Yongli

Mechanical and Manufacturing  
Engineering

### Ergonomic Design of a Workstation at a Freezer Manufacturing Company

The purpose of this research was to study the stress and the discomfort felt by workers while working at carton thrower section on line 1 and 2 at a freezer manufacturing company. The ergonomic score was found to be 50 which is above the threshold limit of 40 coupled with complaints of stress on wrist, elbows, and shoulders from the operators. Therefore the objective of the project was to reduce the ergonomic level to 40 or less and suggest a solution to relax the stress experienced by the operators. This presentation will present the analysis of the problem and offer alternative solution to the problem using ergonomics principles.

**Presentation Index:** C-VN 2

**Present Time:** 9:50 AM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Paruthi, Vidhi; Pandey, Rajan

Shah, Hiral

Mechanical and Manufacturing  
Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### FHSAE Simulation

The FSAE race car is a popular senior design project every year at SCSU, with the addition of the hybrid category this year. In order to assist in the design process, a simulation of effects on a hybrid car for given specifications would prove useful. Effects simulated will include: weight distribution, acceleration/braking forces, cornering forces, gas consumption, and battery level. MATLAB will be the software used for the simulation. A graphical user interface will be used to receive the needed inputs from the user. A user's manual will be provided containing formulae and assumptions used. Also in the manual will be a validation of the simulation based on data taken from this year's current FHSAE car. Once complete, the simulation can be used to aid future design teams.

**Presentation Index:** C-VN 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Rakotz, Susan

**Sponsor(s):**

Shah, Hiral; Miller, Kenneth

**Department(s)**

Mechanical and Manufacturing  
Engineering

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**Session C-VS**

**Biological Sciences**

**Voyageurs South**

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### An Analysis of the Effect of *Toxoplasma gondii* Putative Cell Cycle Proteins on the Cell Cycle of *Saccharomyces Cerevisiae*

The progression of the parasitic organism *Toxoplasma gondii*'s complex cell cycle is regulated by a number of different genes. It is thought that if these genes were able to be manipulated and understood in greater detail, it could lead to the development of improved therapies to treat toxoplasma infection. In order to study the cell cycle genes of *T. gondii*, the budding yeast *Saccharomyces cerevisiae* was chosen as a model organism. Here, the Gal-1 galactose inducible promoter system was utilized to regulate gene expression. The cyclin-dependent kinase inhibitor, FAR1 of *S. cerevisiae* was used as a positive control to illustrate complete cell cycle arrest due to gene over-expression. The wild type yeast along with an insert which had a known "null effect" were used as negative controls. The genes of interest were cloned using the Gateway system and once transformed, were systematically grown in raffinose based media to which 2% galactose was added to induce gene expression. The optical density of these cultures was monitored for a 50-hour period to identify any deviation from normal growth. Periodic samples will then be taken during growth and analyzed by flow cytometry to determine DNA content and cell cycle position. Preliminary results show that when FAR1 is over-expressed, it is able to arrest yeast growth when induced by galactose, and that the genes tested appear to have some effect on the yeast growth. Further investigation of the impact of these genes on yeast growth will allow for a greater understanding of the link between the functional roles of *T. gondii* genes and their effect on cell cycle.

**Presentation Index:** C-VS 1

**Present Time:** 9:30 AM

**Student Presenter(s):**

Wade-Ferrell, Jessica

**Sponsor(s):**

Kvaal, Christopher

**Department(s)**

Biological Sciences

### Identification and Characterization of HECT Ubiquitin Ligase that Regulates PGC-1 alpha, a Protein Implicated in the Pathogenesis of Parkinson Disease.

Parkinson disease is an incurable neurodegenerative disorder that afflicts approximately 150 million people above the age of 65. The hallmarks of Parkinson disease include the impairment of motor skills, loss of speech and muscle control that may lead to pneumonia, death by choking and falls that can cause a patient's death. Frequently, Parkinson disease is characterized by the unregulated destruction of PGC-1a, a protein that protects neural cells against oxidative damage. Our lab has recently discovered at least two proteins in human cells that assist in the destruction of PGC-1a. Our goal is to identify these proteins, characterize them to determine a good antagonist for future drug therapies, and slow or halt the destruction of PGC-1a in brain tissue.

**Presentation Index:** C-VS 2

**Present Time:** 9:50 AM

**Student Presenter(s):**

Alfano, Anthony

**Sponsor(s):**

Olson, Brian

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Jaw Muscle Fiber Characteristics In Hawaiian Gobioid Fishes: Histochemical Basis For Feeding Ecology and Behavior

The muscle fiber type distribution in axial musculature of Hawaiian gobioid stream fishes has previously been linked to locomotor performance and behavior. Similarly, different feeding styles among these gobies may be, at least in part, related to fiber type differentiation in their jaw musculature. Diet and feeding styles found among these gobies are diverse and include an algae grazing specialist (*Sicyopterus stimpsoni*), opportunistic omnivores (*Lentipes concolor* & *Awaous guamensis*), a detritivore (*Stenogobius hawaiiensis*), and a piscivorous predator (*Eleotris sandwicensis*). We examined muscle fiber types of jaw closing muscles (adductor mandibulae A1, A2, and A3) and the jaw opening sternohyoideus with use of ATPase assays. In spite of individual variability, the four muscles exhibited consistent differentiation in fiber type among species. For example, the adductor mandibulae A3 had a greater proportion of white muscle fiber than A2, while the sternohyoideus had a higher proportion of white muscle fiber than jaw closing muscles. Among species, *A. guamensis* and *S. hawaiiensis* had a low proportion of white muscle fibers in all jaw muscles when compared with, *L. concolor*, *S. stimpsoni*, and *E. sandwicensis* who shared similar proportions of white fibers. The latter three species may share similarly fast muscles related to the demands of rapid predatory strikes or feeding in fast flowing water. Thus, like the axial muscle system, the different functional demands imposed by variation in the feeding styles of Hawaiian stream gobies may be reflected in the proportions of muscle fiber types.

**Presentation Index:** C-VS 3

**Present Time:** 10:10 AM

**Student Presenter(s):**

Meister, Andrew

**Sponsor(s):**

Schoenfuss, Heiko; Schrank,  
Gordon

**Department(s)**

Biological Sciences

### From Micro to Macro: Examining the Hydrodynamic Properties of Stalk Forming Diatoms

Diatoms are an important and widespread part of the aquatic primary production community, and are unique among microalgae in the production of a rigid silica cell wall known as a frustule. Since the earliest descriptions, cell shape has been the predominant metric for delineation of diatom taxa. Diatom populations across geographical regions and environmental conditions have been shown to segregate into narrow and discrete shape categories which are conserved throughout generations and size diminution. Having such rigid consistency in shape implies the potential for stabilizing selective forces acting on diatom shape. Although a small handful of studies have examined the potential selective advantages of diatom frustules, they have largely overlooked the hydrodynamic pressures placed on organisms living in moving fluids. Although the fluid dynamic methodology is well established, due to their small size (50-200  $\mu\text{m}$ ), it has been difficult to quantitatively investigate the hydrodynamic properties of diatoms. This investigation will examine the impact of cell morphology on the hydraulic function of diatom cells through the use of the atomic force microscope and three dimensional rapid prototype printer. This will create enlarged scale model replicas of individual diatom cells from which standard hydrodynamic techniques may be applied.

**Presentation Index:** C-VS 4

**Present Time:** 10:30 AM

**Student Presenter(s):**

Stepanek, Joshua

**Sponsor(s):**

Julius, Matthew

**Department(s)**

Biological Sciences

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**Session D-C**

**Paper Competition-3**

**Cascade**

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### Restoring Invasive Plant Dominated Areas by Means of Assisted Succession

A thesis project at Camp Ripley Army National Guard Training Site will address the effectiveness of using assisted succession as a means of restoring areas dominated by perennial invasive species: Common tansy (*Tanacetum vulgare*), spotted knapweed (*Centaurea maculosa*), and leafy spurge (*Euphorbia esula*). Restoring these areas into a native plant community is necessary for this federally maintained study site to be in compliance with Executive Order 13112. The value of using an ecology-based method of restoration has not been tested for these three perennial invasive species. If successful, these methods may be applied on a larger scale in other restoration endeavors. This restoration will take place in Spring 2010 through Fall 2012 and will incorporate site manipulation of four seedbed preparations, two cover crop types, and two seed dispersal methods for each of these three invasive species.

**Presentation Index:** D-C 1

**Present Time:** 11:00 AM

**Student Presenter(s):**

Hanson, Jamie

**Sponsor(s):**

Arriagada, Jorge

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Sustainable Development in Costa Rica

This research examines the Costa Rican Fair Trade Coffee industry as a model for sustainable development within Central America, a region of great inequity. Through an examination of the political history of the region, this presentation will illustrate the need for an alternative trading system that is beneficial environmentally, economically, and socially to the rural poor in this part of the world. Benefits and criticisms will be gathered through empirical evidence. Upon this, the argument will be made that aspects of a Costa Rican model of Fair Trade Coffee can indeed be implemented in Guatemala, but that there are political tensions that make this more difficult that need to be taken into account. This research will be conducted through a dependency theory perspective in order to see that class exploitation has long been a factor in the coffee industry and continues to play a part today.

**Presentation Index:** D-C 2

**Present Time:** 11:20 AM

**Student Presenter(s):**

Johnson, Carissa

**Sponsor(s):**

Butenhoff, Linda

**Department(s)**

Global Studies

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**Session D-G**

**Are We A Helpful Community?**

**Granite**

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### Do Looks Really Matter When Deciding to Help?

The purpose of this informal inquiry was to see if people's willingness to lend their phone to a stranger will change according to how the stranger is dressed. We were interested in this study because our society is so focused on how people dress and how they look and were wondering if it would influence their willingness to help a stranger in need. For this we had a male and a female dress business casual and scruffy and ask people if they could borrow their phones to call a friend because their car died. We had a car parked nearby with the hood up to indicate that the car was not working. Our sample for this study were the staff, faculty and students at SCSU who park in N lot. We videotaped sessions to help tally who did and did not lend their phone. We used an alternating treatments design to implement sessions and counterbalanced for gender to avoid carry over effects. We hypothesized that people would be more likely to lend their phones to someone dressed business casual.

**Presentation Index:** D-G 1

**Present Time:** 11:00 AM

**Student Presenter(s):**

Anderson, Nicole; Carman, Christopher;  
Hagel, Kendra; Hinnenkamp, Theresa;  
Novotny, Marissa

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

### Donating What Works? Goodwill Versus Tangibles

Would you still care to donate if there are no benefits? We examined this question by testing see if the SCSU community would be willing to donate money towards breast cancer awareness by sponsoring the Susan Coleman Walk. We wanted to see if participants would be more likely to donate when they received a tangible benefit. We tested two test conditions in an ABAB reversal design. During baseline passers bys were exposed to a kiosk with advertising pertaining to the walk and breast cancer awareness literature. A donation till was placed visibly and participants were encouraged to donate any amount that they felt they could part with. During Intervention we added the reinforcement of "free water" for any donation amount. Persons who donated any amount of money were given bottle of water. Frequency data were collected by trained observers who recorded the number of individuals willing to donate money. The money that was collected was ultimately donated to sponsor a participant in the Susan Coleman Walk. We hypothesized that not only will some people be willing to help, but that more people will help if they received a tangible reinforcer in return.

**Presentation Index:** D-G 2

**Present Time:** 11:20 AM

**Student Presenter(s):**

Janikowski, Breanna

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Help: Take It or Leave It

In the current study we tested if gender differences have an effect on perceptions of accepting help from a stranger in the form of free rides. We did this using a multi element design and counterbalanced male and female drivers to test gender perceptions. We used a mid size, mid range car to offer rides from K lot to the library during the winter months, when SCSU students are more likely to want a ride. Data were collected using ratio to calculate occurrence and non-occurrence of accepting rides. Data were, coded and analyzed by trained undergraduate students in Behavior Analysis who all took CPSY 433. Sessions were video taped as well as coded using real time recording. We hypothesized that males would be more accepting of free rides, and furthermore that more males would accept rides when offered by a female participant.

**Presentation Index:** D-G 3      **Present Time:** 11:40 AM

**Student Presenter(s):**

Dols, Jade; Ecker, Jordan; Therkilsen, Suzette;  
Gorres, Kandice; Warman, Jenna

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

### Helping Hands

How helpful is the person passing you in the hallway? Using a real-life scenario, we asked this question from students at St. Cloud State University. Our study was designed to see how helpful a stranger would be. We dropped a large bundle of books and papers at a busy hallway and examined how many students, if any, would stop by to help. Two group members, one male and one female acted as the book carrier. We tested two conditions, a) "requesting help" and when b) "no request was made." In both conditions the book carrier clearly needed help. Test conditions were run in an alternating treatments design. Frequency data were collected by trained observers who recorded the number of individuals willing to help. We hypothesized that not only will some people be willing to help, but that the female book carrier would attract more helpers.

**Presentation Index:** D-G 4      **Present Time:** 12:00 PM

**Student Presenter(s):**

Brummer, Katie; Bosiacki, Amy; Hathaway,  
Phoenix; Williams, Frederick

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

### Positive Reinforcement as a Way to Increase Helping Behavior in Informal Surveys

In the current study survey completion will be used as the dependent measure in a multi element design aimed at assessing the effect of magnitudes of reinforcement. Four test conditions were tested: a) no reinforcement, b) low reinforcement, c) medium reinforcement, and d) high reinforcement. We did a preference assessment with a wide array of stimuli to select our reinforcers. We did this with random SCSU student body participants who were solicited to sample our reinforcers. The survey experiment was conducted using a multi element design. Ten minute sessions were conducted and students were asked three questions on their perceptions of "helpfulness." Reinforcement was offered in concurrence with the above mentioned test conditions. Data were coded using a frequency by trained undergraduate students.

**Presentation Index:** D-G 5      **Present Time:** 12:20 PM

**Student Presenter(s):**

Marklowitz, Cheyenne; Sandhoefner,  
Rebecca; Verwey, Matthew; Smith, Madison;  
Martin, Jacqueline

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Let's Dance: Promoting Good Cheer!

We will be examining experimentally if we can inspire spontaneous dance around the SCSU campus. We will do this by running two test conditions: a) adding a visual model of two persons dancing and b) when no visual model is present. Over the course of several days we will play music at the Atwood mall. The visual model will be two of our group members dancing in an open area, easily seen by others in close proximity to the music. We will be using popular dance music, the Macarena, in order to try to elicit dance from a wider variety of people. We hope that the majority of people around the SCSU campus know the song and are familiar with the dance moves. Using an ABAB reversal design, we will alternate having our visual stimulus and return back to baseline of only playing music in order to replicate our results. We will be using video recording to collect data. Two group members trained in data collection will code and analyze the data.

**Presentation Index:** D-G 6

**Present Time:** 12:40 PM

**Student Presenter(s):**

Swenson, Stephanie; Rein, LeaAnn;  
Krebsbach, Vanessa

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

### Lending a Helping Hand

What is the frequency of people helping an individual after they have fallen? Does it matter if they have crutches? Is there a gender difference? Are males or females more willing to stop and help? Does it matter if the person who has fallen is male or female? We examined these questions in an ABAB reversal design. We picked a busy location on campus and had a male and female student with a back-pack simulate two test conditions: 1) fall with crutches and 2) fall without crutches. We counterbalanced our conditions to avoid sequencing effects. Data were collected by video taping sessions. Two undergraduate students trained in data coding and analysis coded the data using a frequency count. We hypothesized that people would be willing to help a person on crutches more than someone who falls without the visual stimulus crutches. In addition we expected to see more persons willing to help the female participant more than the male participant.

**Presentation Index:** D-G 7

**Present Time:** 1:00 PM

**Student Presenter(s):**

Herold, Scott; Seawell, Jennarae; Saehr,  
Kelsey; Ranfranz, Genna; Gerdes, Randi

**Sponsor(s):**

Edrisinha, Chaturi

**Department(s)**

Educational Leadership and  
Community Psychology

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**Session D-GN**

**Geography**

**Glacier North**

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### Real Estate Values and Golf Courses

A large proportion of high-end real estate properties are located on golf courses. A large proportion of high-end real estate properties are located on golf courses. One might assume, therefore, that there exists a close correlation between real estate value and proximity to a golf course. The objective of my study is to determine the magnitude of the increase of real estate property values created by golf courses. A statistical analysis is undertaken using a sample of twenty-one real estate properties in Prestwick Golf Course in Woodbury, Minnesota. For comparative purposes, I sampled properties in different locations. For example, I collected data from properties near the clubhouse, near the entrance, and along the golf course itself. The data was collected through the Washington County City Center. By analyzing property taxes and square footage, I determined the value of select real estate properties on Prestwick Golf Course.

**Presentation Index:** D-GN 1

**Present Time:** 11:00 AM

**Student Presenter(s):**

Sajevic, David

**Sponsor(s):**

John, Gareth

**Department(s)**

Geography



## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### How Has Female Genital Mutilation Affected Immigrant Life in America

The purpose of this research was to see how Somali women in America deal with Female Genital Mutilation (FGM). This subject is not discussed much, so I wanted to reveal how immigration plays a part with changing practices and in-depth feelings of Somali women and how they feel about their own FGM and how it affects their lives in America. I am doing this research to create additional information to fill in the gaps of research done on Somali women, immigration and their lives in America with FGM, so it may become more comprehensive. By conducting qualitative research, I developed questions for interviews that gave me a good perspective about the issues women face after having FGM. I hope to further see how FGM is affecting my target population, Somali Women and more specifically central Minnesota in large Somali communities such as St. Cloud, Rochester and Minneapolis where I will be conducting more of my research later. With the help of students who have been informants for me, I used a snowballing method to find and interview the women who have undergone FGM. I interviewed approximately five women who have undergone any of the five types of FGM. I took notes and also used a tape recorder and attained written consent of the interviewee. The findings from my research can help draw cultures closer together by helping us better understand the ways in which we all vary in the ways we live our lives.

**Presentation Index:** D-GS 3

**Present Time:** 11:40 AM

**Student Presenter(s):**

Wambua, Angela

**Sponsor(s):**

Zuo, Jiping

**Department(s)**

Sociology and Anthropology

### Rebuilding After Genocide: Women and Children of South Sudan

This presentation looks at the historical context for the Sudanese genocide, and it addresses the aftermath; in particular, it examines the experiences of the Sudanese women in Minnesota and abroad. Due to over 50 years of warfare, much of Southern Sudan's population live as refugees, some displaced internally, millions of others have been displaced internationally, with a significant population residing in the USA. Genocide is a difficult subject to comprehend, and in the wake of the enormous destruction of life, to property and to society, how can people rebuild after genocide? What are the present issues facing the women and children of Southern Sudan as they work to rebuild their communities and society? This presentation seeks to bring forward a gendered discussion on the issue locally by addressing case studies of Sudanese women in Minnesota as they work on building alliances and supporting other women in Sudan, especially those in Southern Sudan, in rebuilding efforts.

**Presentation Index:** D-GS 4

**Present Time:** 12:00 PM

**Student Presenter(s):**

Mugo, Wanjiru; Lam, Amer

**Sponsor(s):**

Zuo, Jiping

**Department(s)**

Sociology and Anthropology

**Session D-O**

**SCSU Survey Center**

**Oak**

### SCSU Survey Spring 2010 Results

The SCSU Survey is currently in the process of finalizing our spring student survey. Our group of nine student directors, along with our six faculty directors have been hard at work figuring out what topics are at the front of SCSU students' minds. We will be asking students their opinions on such topics as a campus wide smoking ban, the dry campus policy of the university, campus safety, teacher issues, online classes, class availability, the economics of attending SCSU, student life and campus activities. We will be presenting our most recent findings for this year's survey at the colloquium.

**Presentation Index:** D-O 1

**Present Time:** 11:00 AM

**Student Presenter(s):**

Helmin, Derrek; Haggstrom, Brady; Kampa, Kaelynn; Saucedo, Frederico; Yimamu, Melat; Kellar, Donald; Edberg, Lucas; Schwichtenberg, Mark; Archer, Julie

**Sponsor(s):**

Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John

**Department(s)**

Political Science, Psychology, Sociology and Anthropology, Statistics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session D-VN

Engineering and Communication

Voyageurs North

### IP Network Video Surveillance and Security System

Video Surveillance and Security System is surveillance equipment you can access through your cell phone. The live stream video captured from the motion detector IP cameras allows you to monitor your home or business from anywhere, at any time. The unit designed can be used to prevent theft, to watch employees or even to simply monitor a baby or an elderly patient. In today's busy world, it is not possible for people to stay home or have people look after their home at all times. People may go to work on a busy schedule, go to school or go to a late night party or maybe even spend a leisurely day out. During these times, anyone may break into their homes and steal their valuables, causing threat for both property and life. To discourage these criminal activities and to apprehend the criminals, different kinds of surveillance systems are available these days. The idea that we have come up with is to design a surveillance system that will not require a computer to operate. It would make things a lot easier to have a system that could be remotely monitored without having to sit in front of a desktop computer or open up a portable laptop. To add to that, we have decided to add motion detectors and burglar alarms to it so as to make it a complete surveillance and security system. Instead of using computers, we have decided to design a system that will stream video on a Windows Mobile powered cellular phone. This will enable the user to remotely monitor their home or property from any location wherever there is an internet connection available for the phone.

**Presentation Index:** D-VN 1

**Present Time:** 11:00 AM

**Student Presenter(s):**

Malla, Amit; Bajracharya, Anup; Amargui, Youssef

**Sponsor(s):**

Akkas, Ahmet

**Department(s)**

Electrical and Computer Engineering

### The Cell Phone: A Criminal's Best Friend or Worst Enemy? Cell Phone Forensics Can Help to Uncover the Truth

I will be giving a presentation that demonstrates how computer forensics is used to assist in criminal cases, specifically, in regards to cell phone evidence.

**Presentation Index:** D-VN 2

**Present Time:** 11:20 AM

**Student Presenter(s):**

Minkler, Steven

**Sponsor(s):**

Schmidt, Mark

**Department(s)**

Business Computer Information Systems

### High Performance/Green Computing

Today's computer hardware is very diverse and has varying levels of performance and power consumption. It is generally assumed that the more energy conservative a machine is reported to be, the higher the purchase price. The cost associated with the initial purchase and operation over time, commonly referred to as total cost of ownership (TCO), varies however. Therefore, determining the best choice for an intensely used computer, or many computers, becomes a very difficult, and time consuming process. It is our belief that these types of comparisons are generally done privately, and the knowledge acquired is kept as such. The goal of this project will be to compare and contrast the TCO and performance factors of three computers of varying factory classifications; High-wattage, consumer-grade hardware, low-wattage, consumer-grade hardware, and finally low-wattage, server-grade hardware. For comparison, performance will be measured in two different quantities; energy consumption and data computation. Data computation is measured by recording the completion time of the same, advanced mathematical calculations on each machine. Energy consumption is measured with a standard 'plug-in power meter'. This device is placed in-line between computer and the wall outlet to measure the electricity being drawn by the device. The literature review of comparable work reveals while there is not a great deal of material available directly related to this type of analysis, there is a wealth of information promoting the importance of green computing.

**Presentation Index:** D-VN 3

**Present Time:** 11:40 AM

**Student Presenter(s):**

Hemminger, Corey; Rogers, Dustin

**Sponsor(s):**

Guster, Dennis

**Department(s)**

Business Computer Information Systems

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Mobile Telephone Use and Student Development: How Frequent Communication with Parents Affects College Student Autonomy**

In previous decades, students leaving home to attend college expected that their move would result in diminished contact with parents. Technological developments of recent years have changed this expectation. Mobile telephones, text messaging, and e-mail make it possible for college students and their parents to communicate frequently and nearly instantaneously. This heightened ability to communicate has implications for the manner in which a college student fulfills developmental tasks of autonomy. With this study I seek to explore the type, frequency and content of student mobile telephone communication with parents and their affects on student autonomy development. Participants include approximately 4,000 undergraduate students attending a private, residential, liberal arts college in Central Minnesota who own mobile telephones. Each participant will complete two instruments: Student Development Task and Lifestyle Assessment and Frequency and Type of Mobile Telephone Communication with Parents Questionnaire. An analysis of correlation will be conducted on the results.

**Presentation Index:** D-VN 4

**Present Time:** 12:00 PM

**Student Presenter(s):**

Gidlow, Sonja

**Sponsor(s):**

Mills, Michael

**Department(s)**

Educational Leadership and  
Community Psychology

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**Session** E-O

**Gender and Class in China Since Globalization**

**Oak**

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### **Changing Attitudes Toward Gender Roles, Identity, Relations, and Inequality In China Since The Mao Era**

This research addresses gender roles, identities, and inequalities among Chinese men and women before, during, and after China's transition to market socialism. Utilizing dozens of previous studies, the author argues that China's exposure to markets has caused changes in gender role and identity within the family structure, and has increased gender inequality within the labor markets. Furthermore, economic globalization has largely impacted gender distribution among male and female workers in China and has triggered a mass migration of largely female workers from rural to urban China. The market economy in China has also contributed to large earning gaps and the feminization of low-skilled, manufacturing jobs.

**Presentation Index:** E-O 1

**Present Time:** 12:30 PM

**Student Presenter(s):**

Eliszewski, Billie

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### **From Field to Factory: The Struggle of the Chinese Migrant**

China's neoliberal techniques for modernizing have opened the country's doors to the global market. This entrance has had an immense effect on all parts of China, one being the emergence of a new kind of class, the "urban migrant." Due to the decentralization of government control on the market and the emergence of foreign investment, a new work force was brought from the fields of China to the cities, the peasant labor force. The peasant found them self thrown into a new class, a class of individuals that aren't citizens and lack the opportunities to advance in their line of work. For decades this class has evolved along with China. I will follow this development through a diverse range of regions and time periods starting in Shenzhen during the 1980's.

**Presentation Index:** E-O 2

**Present Time:** 12:50 PM

**Student Presenter(s):**

Revier, Kevin

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Rise of the Middle Class in China

China's economic reforms have always been aimed towards creating a consumption-capable middle class in its society. This presentation presents a macro to micro look at the effects of globalization and the purported growth of a middle class in China.

**Presentation Index:** E-O 3

**Present Time:** 1:10 PM

**Student Presenter(s):**

Teoh, Jun-Kai

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### Changes in Sexual Identity in China Since 1980

This research seeks to explore the societal changes since 1980 in urban China, regarding sexual identity. In the early 1980's China was going through a political, economic and cultural transition. The country was shifting from Mao's socialism to a system that looks a lot like capitalism. The Chinese people were moving from the rural areas to the urban areas in record numbers and learning how to become consumers of the world markets. This transition was one that changed some political and cultural ideas of what was right and wrong. Since 1980 a lot of things have changed in China, now the question remains, what does this mean for gay, and lesbian people living in the urban areas of China?

**Presentation Index:** E-O 4

**Present Time:** 1:30 PM

**Student Presenter(s):**

Schueler, Brittany

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

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**Session E-R**

**Looking Beyond the Notes**

**Ruth Gant Recital Hall, Rm  
230, Performing Arts  
Center**

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### Looking Beyond the Notes: A Music Research and Performance Colloquium

Students from the SCSU Music Department will perform and discuss the creative process of performance. Students were selected to present based on faculty nomination. Tyler Hogan will perform the 3rd movement from Paul Creston's Concertino for Marimba and Orchestra and will discuss the use of Finale™ notation software in his preparation for both the SCSU Orchestra and St. Cloud Symphony Orchestra's concerto competitions. Tyler won first place in both events; his advisor is Dr. Terry Vermillion. Paul Bernard, assisted by Melissa Henderson, will perform a series of colonial drum and fife marches and will discuss the role of the drummer and fifer in colonial military heritage; his advisor is Dr. Terry Vermillion. Alicia Eisenstadt, a senior trumpet performance major, will present "Getting into a Good Graduate School: A Journey of Planning, Preparation and Performance." Alicia was the 1st place winner in the St. Cloud Symphony Concerto Competition in 2009 and was chosen as a finalist in the Schubert Club Collegiate Brass and Woodwind Competition in 2008 and 2010. Her advisor is Dr. Albert Moore.

**Presentation Index:** E-R 1

**Present Time:** 12:30 PM

**Student Presenter(s):**

Eisenstadt, Alicia; Hogan, Tyler; Bernard, Paul; Henderson, Melissa

**Sponsor(s):**

Vermillion, Terry; Moore, Albert

**Department(s)**

Music

**Does the JAK3 Inhibitor Induce In Vitro Generation of Regulatory T (Treg) Cells?**

Targeting Janus tyrosine kinase (JAK) 3 with the inhibitor WHI-P131(P) has been shown to exhibit a beneficial effect on development of type 1 diabetes in NOD mice. In this study, we asked whether generation of Tregs is the mechanism of preventative WHI-P131 action. Isolated CD4+ T cells were stimulated by anti-CD3 plus anti-CD28 antibodies and cultured for three weeks (three rounds of stimulation) with addition of P (6, 3 and 1.5 µg/ml), and Rapamycin (R) (1000, 100, and 10 nM), chosen as a control drug known for induction of Tregs. Both P and R suppressed the proliferation of CD4+ cells and significantly increased apoptotic cell death (flow cytometric analysis, Annexin V/PI) during a short-term culturing (48h) compared to control cells. In contrast, viability of cells exposed to either P or R was significantly increased post long-term culture. Flow cytometric analysis, performed post three weeks of culturing, revealed that R increased the percentage of CD4+CD25+Foxp3+ T-cells, while P did not. P-exposed cells secreted decreased amount of IFN G, IL-4, and IL-10 (ELISA), compared to controls, while IL-2 was not detected at all. In summary, it is found that under described in vitro conditions, the addition of P does not induce generation of either CD4+CD25+Foxp3+ or Tr1-type Treg cells.

**Presentation Index:** F-GN 1**Present Time:** 2:00 PM**Student Presenter(s):**

Olson, Marin

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

**Modification of Jig Design to Improve the Ergonomic Rating at a Home Appliance Manufacturing Company**

Ergonomics is the study of the job, equipment and workplace in order to make them suitable and convenient to the workers. The ergonomic rating of hands and arms movement was 62 which was above the desired value of 40. Moreover, there were accidents that occurred on these lines every three months. This project was carried out on Line 1 and Line 2 at a home appliance manufacturing company to make the platform and jig more ergonomic to the operators. Line 1 and line 2 perform foam injection operation into the refrigerators and involved many non-ergonomic activities that resulted in fatigue and strain injuries to the operators. In this project, the study and analysis of those activities were carried out to make them efficient and ergonomic. This project will discuss about the changes that were suggested which includes modification of the handle bar with a D-type structure at the end, construction of supporting structure for the other hand while the handle is being pulled to unlock the jig and installation of a hook to pick up the plastic disc from the refrigerator casing after it is filled with foam.

**Presentation Index:** F-GN 2**Present Time:** 2:20 PM**Student Presenter(s):**

Maharjan, Prabin

**Sponsor(s):**

Shah, Hiral

**Department(s)**

Mechanical and Manufacturing Engineering

**Characterization of Bacillus cereus Honey Isolates and Pathogenic Effects on the Tobacco Hornworm (Manduca sexta)**

*Bacillus cereus* is a gram positive spore-forming organism which occasionally contaminates food and is routinely implicated in food poisoning outbreaks. Virulence of *B. cereus* has been attributed to several toxins including Non hemolytic toxin (Nhe), Hemolytic toxin (HBL), enterotoxin FM (EntFM), cytotoxin K (CytK) and enterotoxin T (BceT). The purpose of this study was to characterize *B. cereus* strains isolated from honey for their toxin-gene profile and virulence. Forty-five isolates were characterized by multiplex PCR for toxin genes; nheA, nheB and nheC, hbl A, hblC and hblD, entFM and cytK. A separate PCR was done for bce-T. All 9 toxin genes were present in sixteen (36%) of the isolates. Twenty-five of the isolates (56%) contained all of the toxin genes except cytK. Two of the strains (4%) were missing hblC, hblD, hblA and bceT, while another two isolates (4%) lacked only cytK and bceT. One isolate (2%) had nheA, nheC, hblC, hblD, and entFM, but nheB, hblA, cytK and bceT were not present. Experiments are underway to assess the virulence of the *B. cereus* honey isolates. Oral infection of 4th instar tobacco hornworm (*Manduca sexta*) larvae with *B. cereus* resulted in a transient retardation in growth suggesting pathogenicity.

**Presentation Index:** F-GN 3**Present Time:** 2:40 PM**Student Presenter(s):**

Mboko, Wadzana

**Sponsor(s):**

Gulrud, Kristin; Cornell, John

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Effects of Burning and Herbicide Treatments on Spotted Knapweed (*Centaurea maculosa*)

Previous research has shown biological controls for invasive species are effective, but it takes several years to see results. Herbicides and mechanical controls have been studied and shown to work, but they can be costly and labor intensive. The best approach for controlling invasives has been an integrated approach. The purpose of this study is to test a combination of herbicide and burning treatments to help reduce the spread and control spotted knapweed (*Centaurea maculosa*). The burning treatments will use a catalyst of invasive free hay. The herbicide treatments will use Milestone, a chemical produced by DowAgro. I expect that the combination of the burning and herbicide treatment will have the greatest reduction in post treatment stem count and percent cover when compared to the control. The burning only treatments will have higher post treatment stem count when compared to the control. Once this study is complete, it will demonstrate a new integrated management strategy for spotted knapweed.

**Presentation Index:** F-GN 4

**Present Time:** 3:00 PM

**Student Presenter(s):**

Einck, Alan

**Sponsor(s):**

Arriagada, Jorge

**Department(s)**

Biological Sciences

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**Session** F-GS

**Studying Complex Systems**

**Glacier South**

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### Modeling Sequence Similarity With Regression Methods

The analysis of longitudinal sequences of categorical outcomes is a very common problem in applied statistics in many fields in social sciences and economics. This presentation reviews traditional and new approaches. An exciting new development is the clustering analysis of sequences by means of Optimal Matching, a common technique in computational genetics. I propose furthering this exploratory approach, making it a tool for estimation and prediction. The similarity matrix among N sequences, calculated by Optimal Matching, is seen as a dependent variable and modeled in a linear regression, as a linear combination of other explanatory variables represented as NxN matrices, as done in the tradition of the Mantel-Hubert Quadratic Assignment Procedure, well known in the psychometric and biometric literature. This proposed technique is implemented combining existing software tools, and evaluated using simulations. Some caveats for its use will be discussed.

**Presentation Index:** F-GS 1

**Present Time:** 2:00 PM

**Student Presenter(s):**

Zuluaga, Juan

**Sponsor(s):**

Robinson, David

**Department(s)**

Statistics

### Public Perception to Winter Weather Warnings: December 2007 to January 2010

On March 1st, 2007, Duluth Minnesota was impacted by an intense blizzard. Blizzard watches and warnings were issued by the local National Weather Service (NWS) weather forecast office (WFO), with a lead time of over twenty four hours. Despite the excellent forecasts and lead time, editorials in local news papers and media reports indicated that many people did not anticipate the severe impacts that the blizzard would cause. In December 2007, St. Cloud State University (SCSU), as well as several meteorologists from the NWS office in Duluth, MN collaborated to develop a Post Storm Survey (PSS) to be available online following winter storms. The objective of the Post Storm Survey is to gain insight into decision-making related to hazardous winter weather. The PSS questions are aimed to gather local customer input, and gauge how the public understands and reacts to weather forecasts and information regarding winter storms. This presentation will discuss the process of developing and disseminating the Post Storm Survey, gathering data, and the findings from over 6,000 survey responses.

**Presentation Index:** F-GS 2

**Present Time:** 2:20 PM

**Student Presenter(s):**

Taraldsen, Matthew

**Sponsor(s):**

Hansen, Anthony; Stangl-Erkens,  
Suzanne

**Department(s)**

Communication Studies, Earth and  
Atmospheric Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Stoichiometry of Enrichment in Detritus-Based Streams

Ecological stoichiometry (ES) is a field of ecology that views food-web interactions as complex chemical reactions. According to the law of conservation of matter and energy, nutrients present in resources must balance with nutrients assimilated and excreted/egested by consumers. Acknowledging the constraints that control the flow of elements through food webs has allowed researchers to simultaneously consider how food quantity and quality impacts the growth of consumers. ES has also allowed researchers to conceptualize food-web interactions in predictive and mechanistic ways. Homeostatic consumers have rigid nutrient requirements that are determined by the relative amount of nutrients in their body tissues, and these requirements must be met for growth to ensue. Therefore, resources with nutrient ratios that diverge from consumer elemental ratios are considered low quality and may be growth-limiting. The relationship between consumer-resource imbalance has been studied extensively in autotrophic systems, such as lakes, but low nutrient detritus-based systems have received less attention. This study used artificial streams to replicate light-limited detritus-based systems and tested the effect of resource nitrogen (N) to phosphorus (P) ratios on the growth of *Baetis* mayfly nymphs. It is expected that mayfly growth will be higher in treatments where the resource N to P more closely matches the elemental ratio of the mayflies themselves, or where consumer-resource imbalance is the lowest.

**Presentation Index:** F-GS 3

**Present Time:** 2:40 PM

**Student Presenter(s):**

Deans, Carrie

**Sponsor(s):**

Voelz, Neal

**Department(s)**

Biological Sciences

### Glacial Place Names Mapping

My research explores the geography of place names in Minnesota and how it relates to past glacial impact. I specifically study the potential correlation between places that are named after glacial terms and references and the extent of the area that ancient glacial activity physically impacted the landscape. This study therefore looks at the human interpretation and identification with physical features in the landscape. Using a gazetteer of Minnesota, places named after glacial features will be recorded and mapped as well the line of maximum glacial extent. The analysis will involve observing patterns on the map. The resulting research may shed light on Minnesotan's awareness of and unique relationship to their physical environment that might serve the interests of state tourism and foster stronger ties between the people of Minnesota and the geographical and historical aspects of the landscapes they inhabit.

**Presentation Index:** F-GS 4

**Present Time:** 3:00 PM

**Student Presenter(s):**

Kinter, Philip

**Sponsor(s):**

John, Gareth

**Department(s)**

Geography

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**Session F-O**

**Big Processes, Big Change and Globalization in China**

**Oak**

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### Changing Understandings of Imperialism and Nationalism in China

The development of China has occurred in a completely unique manner surrounding the understandings and effects of imperialism and nationalism. Through historical analysis of events over the course of the last century we may begin to see just how the evolving understandings of these things have changed the Chinese experience of Socialism and Capitalism, via globalization. Prior to the Maoist era, imperialism by western powers through military force and market dominance left China economically underpowered in the global schema. Furthermore, internal issues of class held back the development of Chinese nationalism, which hindered a response to this foreign domination. As Chinese nationalism developed so did a response to foreign imperialism, yet the two are not static and as globalization has increased they are constantly in flux. It is this constant change which is examined herein.

**Presentation Index:** F-O 1

**Present Time:** 2:00 PM

**Student Presenter(s):**

Dwyer, Cory

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Bureaucracy's Influence on China's Move to Privatisation**

In every large state bureaucrats inevitably play a large role in the political economy. This has to do with the very nature of what it means to administer the day to day functions of a large state. However, this phenomenon manifests itself in a slightly different fashion in every country's formation. This role is shaped by historical circumstances specific to individual countries and regions. This presentation will examine how the role of the bureaucrat has formed in the People's Republic of China (PRC). Specifically I will be comparing the differences between the roles played by the bureaucratic class under the leadership of Mao Zedong and that of the new neoliberal regime of China. I also will contrast the modern manifestation in China to that of other advanced countries in the global market. Even more specifically I will examine how the bureaucrats in PRC appropriate surplus labor value. Bureaucrats often times carve out their own niche within the division of labor to secure status and financial well being. How this has played out in China is of much interest. These classic sociologists' teachings provide the backbone of theory that is needed for critical examination of state formations.

**Presentation Index:** F-O 2

**Present Time:** 2:20 PM

**Student Presenter(s):**

Martin, Cory

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### **A Sociological History of Anarchist Resistance Movements in China from 1900 to Present**

This presentation will both explore and analyze examples of anarchist movements in China resisting the hegemonic ideology of global capitalism. Historically, I will review examples occurring in the pre-Socialist (pre-Maoist) period from 1900 until 1949, the Maoist period from 1949 until 1976, the Dengist period from 1976 until 1989, the Jiang Zemin period from 1989 until 2002, and from current president Hu Jintao's rule from 2002 through the present. Theoretically, I will explore the intellectual basis influencing anarchist current in China by comparing Chinese anarchists (i.e. Liu Shifu, Ba Jin) with Russian anarchists (Mikhail Bakunin, Peter Kropotkin) as well as with anarchists in France (Pierre-Joseph Proudhon) and the United States (Emma Goldman, Alexander Berkman). Additionally, I will explore exactly what anarchists in China are resisting; how anarchist movements organize, strategize, and mobilize who the stakeholders are; and how capitalist organizations and government cohorts aim to quell anarchist dissent. Moreover, I will analyze the intersections between class, ethnicity, gender and sexual identity within anarchist movements in China as well as analyze the forms of media used by anarchists along with media representations of anarchists from mainstream sources. Furthermore, I will expose and analyze what prevents anarchist movements in China from succeeding. With this, I will argue that anarchist movements, not only in China but also throughout the entire globe, actually further capitalist and advanced capitalist (neoliberal) modes of production. In conclusion, I will explain why most anarchist movements in China have failed, as well as offer suggestions for how anarchist movements could achieve their goals successfully by revealing examples of successful and long-running anarchist movements.

**Presentation Index:** F-O 3

**Present Time:** 2:40 PM

**Student Presenter(s):**

Pickar, Michael

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

### **Socialism: The way of the Chinese People**

I am doing the research for my presentation in an attempt to find out the validity of China's market socialism. In doing so I hope to explore debates on the topic about how socialist/capitalist China truly is. I also wish to uncover and explore alternative methods that would work for China. In doing so, I will hopefully glean some information about socialism as a whole in both theory and practice.

**Presentation Index:** F-O 4

**Present Time:** 3:00 PM

**Student Presenter(s):**

Sherman, Sonny

**Sponsor(s):**

Phillion, Stephen

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session F-VN

Humanities I

Voyagers North

### University Advancement DVD

University advancement is a department on college or university campuses many may know little about. Through the use of interviews with the vice president of university advancement and staff members for both alumni relations and the foundation, the St. Cloud State advancement department is explained so that both on-campus and off-campus people have a better understanding of the role St. Cloud State's University advancement department plays on campus. Also explained is where university advancement fits into the overall administration of the university in general.

**Presentation Index:** F-VN 1

**Present Time:** 2:00 PM

**Student Presenter(s):**

Seamans, Dottie

**Sponsor(s):**

Vorell, Matthew

**Department(s)**

Communication Studies

### Laud Literacy

As college students we spend hours reading and writing for class, or at least we are supposed to. Yet, according to a Wired Magazine article for January 2008, 40% of Americans read one book, or less a year. This shows that people just aren't reading anymore. We are too caught up in our Tiger Woods scandals, and fancy texting technology to pick up a book. Today we are going to pick up this book, read aloud some literature and practice the literacy we have worked so hard to achieve.

**Presentation Index:** F-VN 2

**Present Time:** 2:20 PM

**Student Presenter(s):**

Opatz, Thomas

**Sponsor(s):**

Wells, Scott

**Department(s)**

Communication Studies

### Worlds Afire

On Thursday, July 6, 1944, as the afternoon performance of the Ringling Bros. and Barnum and Baily Circus in Hartford, Connecticut, had just begun, fire broke out in the southwest corner of the big top. The fire was fast and angry, killing 176 people, mostly women and children, in a matter of minutes and injuring about 500 others. The canvas tent had been waterproofed with gasoline and paraffin, like one big candle just waiting for a light. But who couldn't miss the "Greatest Show on Earth."

**Presentation Index:** F-VN 3

**Present Time:** 2:40 PM

**Student Presenter(s):**

Gahm, Noah

**Sponsor(s):**

Wells, Scott

**Department(s)**

Communication Studies

### The DREAM Act and Higher Education: An Exploration of Its Outcomes and Impact

This research examines the educational outcomes of the Development, Relief, and Education for Alien Minors (DREAM) Act, a bill reintroduced in the United States Senate on March 26, 2009, by Duck Durbin (D-IL) and Richard Lugar (R-IN). The bill attempts to eliminate a federal provision that penalizes states that provide in-state tuition without regard to immigration status. It also will provide undocumented students with a provisional resident status that will grant them better access to higher education, and a chance, under certain circumstances, to apply for permanent residence. This presentation analyzes the effects that the DREAM Act will have in the higher education system if it passes. The presentation focuses on five issues in which the legislation could unfold positive outcomes in higher education: enrollment and retention, funding, diversity, federal and state policies for public institutions, and the social value of education as a tool for success. This analysis examines the improvements that could take place in those specific areas, and the measures that will be taken by higher education institutions to accommodate those improvements. Finally, the presentation explores the potential broader impact of the bill beyond higher education, in terms of educational benefits to the American society.

**Presentation Index:** F-VN 4

**Present Time:** 3:00 PM

**Student Presenter(s):**

Marmolejo Davis, Alvaro

**Sponsor(s):**

Silvestre, Gabriela

**Department(s)**

Counselor Education and  
Educational Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session F-VS

Behavioral Sciences I

Voyageurs South

### The Effect of Urban and Natural Ambient Sound on Mental Restoration

Exposure to nature themed environments has been found to restore cognitive fatigue and nature themed environments have been found to be preferred over urban themed environments. Little research has been conducted to test the relationship between restoration of cognitive fatigue and ambient sound environments; previous research has focused on the visual qualities of environments. This experiment was designed to test the hypothesis that exposure to urban and natural ambient sound environments would influence the restoration of cognitive fatigue; natural ambient sound would restore cognition, and urban ambient sound would further impair it. To test the hypothesis, participants were first cognitively fatigued through a task that demanded close attention, exposed to either urban ambient sound, natural ambient sound, or control (no external ambient sound) condition, and then completed a similar cognitive task to compare results. General data patterns found the results followed predicted patterns; however, performance on the main dependent variable was not found to be statistically reliable as a measure of restoration.

**Presentation Index:** F-VS 1

**Present Time:** 2:00 PM

**Student Presenter(s):**

Allen, Nicholas

**Sponsor(s):**

Jazwinski, Christine

**Department(s)**

Psychology

### Personality, School and Life Satisfaction: The Mediational Role of Effort

This study examines the mediational role of effort between personality, specifically core self-evaluations, and school and life satisfaction. Self-verification and self-concordance theory are proposed to explain the role of effort in determining personality's influence on school and life satisfaction. Implications and limitations of the study will be discussed.

**Presentation Index:** F-VS 2

**Present Time:** 2:20 PM

**Student Presenter(s):**

DeLyser, Melissa; Hauser, Tim

**Sponsor(s):**

Protolipac, Daren

**Department(s)**

Psychology

### Early Marriages in Maasai Culture: From the Native Perspective

The Maasai are one of the well-known indigenous ethnic groups of Africa. They are semi-nomadic who lives in East Africa mainly in Kenya and Tanzania. They are well-known for keeping their traditions despite the pressure from external influences. They follow age-set as a system of division of labor. In recent researches on early marriages, Maasai people seem to be one of the groups that practice early marriages. According to the United Nations Declaration of Human Rights of 1948 (2001) forcing children under eighteen years of age to marry is a Human Rights violation. This project seeks to present the perspective of early marriages from Maasai natives themselves. It will cover various responses from Maasai women, girls and men on the issue of early marriage.

**Presentation Index:** F-VS 3

**Present Time:** 2:40 PM

**Student Presenter(s):**

Matinda, Rebecca

**Sponsor(s):**

Zuo, Jiping

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### The Economic Developmental Impact of the Underground Market Within the Americas

The thesis question that I've opted for my research is: In an era that is dominated by globalization what are the factors that led to the creation and current existence of the black market, and what are the direct implications this informal underground market has on legally regulated economic activity? The topic is narrow enough to have a concentrated focal point, yet enough historical facts will have to be uprooted to uncloak the truths behind the underground market of products, services, and human trafficking. Everyday millions of dollars are spent on border patrol deterrence and regulation of international legal and illegal trade; it's a complex process that many have made honorable careers enforcing and investigating. The regional studies section of the global studies major that I've chosen is the America's and naturally I've chosen Brazil, Colombia, Mexico, and the United States as the model countries to pivot the research around. Initially I'll cover the complete history and process of trading, touching upon each step of the evolution of trade; from small town bartering to the present day international free trade system. Explaining how technology advancements have accelerated the rate and degree of international trading; the information media age and the evolution of transportation. Unveiling what the black market is in comparison to the legal market, and how it functions successfully under the radar. Answering questions such as, has globalization caused the black market to flourish in all corners of the world and who's behind the organization of this underground trade operation? Revealing which services and resources are sought after on the black market and how these underground purchases affect the real market prices of goods and services (inflation or sustainability). I'll be reflecting on border control policies including the protection and security (punishments) placed to stabilize the black market. What are the techniques and efficiency of capturing illegal goods and services being transported internationally?

**Presentation Index:** F-VS 4

**Present Time:** 3:00 PM

**Student Presenter(s):**

Sullivan, Dallas

**Sponsor(s):**

Butenhoff, Linda

**Department(s)**

Global Studies

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**Session G-B**

**Poster Session II - All Disciplines**

**Ballroom**

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### The Effect of an Atrioventricular Node Ablation and Pacing Device Sensor Technology on the Well-Being of Subjects with Atrial Fibrillation

Individuals with a chronic, rapid and irregular heart beat due to atrial fibrillation are given medications; however, these meds are often ineffective in relieving symptoms. Therefore, an atrioventricular (AV) node ablation and pacemaker implantation is a common treatment modality for these individuals. Permanently dependent on a pacemaker, these patients rely on the sensors within the device to provide an appropriate rate response to a corresponding change in activity. The objective of the study was to determine the effect of an AV node ablation on the well being of subjects with atrial fibrillation, as well as determining possible differences between sensor technologies. This study included devices with an accelerometer as the sensor and devices with an accelerometer and minute ventilation detection module. Atrial fibrillation patients of Central MN Heart Center scheduled for an AV node ablation were asked to participate in the study. Patients were asked to complete a six minute walk and a Well Being Questionnaire (WBQ) on the day of their procedure, and the same one week post ablation. Although data collection is still in progress, all patients' WBG scores and symptoms improved. The distance walked within the six minutes increased in all subjects by an average of 34.3 feet ( $P < .05$ ). The heart rate response for both the accelerometer group and the accelerometer minute ventilation detection group had a more appropriate response to activity post ablation. Additional data are required to determine if a difference exists between the two sensor technologies. AV node ablation and implantation of a dual chamber pacemaker improves perceived quality of life, reduces symptoms, and improves functional capacity. Currently, possible differences in sensor technologies would require a larger sample size for a statistical comparison to be

**Presentation Index:** G-B 1

**Present Time:** 2:00 PM

**Student Presenter(s):**

Kuschke, April

**Sponsor(s):**

Bacharach, David

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### A Planaria Model for Epilepsy

Epilepsy is a chronic neurological disorder that is typically identified by random, unprovoked seizures. Seizures are caused by abnormal electrical current within the brain. Epilepsy is a growing concern worldwide as approximately 60 million people were treated for the disorder last year alone. Approximately 2.5 million people were treated for epilepsy over the past five years domestically. Our objective was to investigate the mechanism and effectiveness of Rufinamide, an anti-epileptic drug using planaria as a model of testing. Preliminary testing consisted of developing a baseline model to compare the effectiveness of Rufinamide against a number of chemo convulsant seizure models in planaria. The three chemicals that were used to induce seizures were, picrotoxin, NMDA (N-methyl-D-aspartic acid), and pentylentetrazole. Rufinamide was introduced along with varying concentrations of each convulsant and observations were made on the amount of seizures that occurred in a five-minute testing period. The planarian seizure activity was measured and compared with and without Rufinamide in the presence of the various convulsants. Reductions in seizure activity were shown when Rufinamide was introduced with NMDA and pentylentetrazole. Further testing will include examining the effects that Rufinamide will have on the locomotion of planaria to determine the drug withdrawal effect and we will present the results of these investigations in this poster.

**Presentation Index:** G-B 2      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Amatya, Christina; Meyer, Andrew; Acharya, Jyotindra	Ramakrishnan, Latha	Chemistry

### Behavioral Effects of Scopolamine in Planaria

Planarians are recently recognized as a cost-effective and useful animal model in neuroscience research. In spite of having a primitive nervous system, planarian nervous system has been shown to have the ultrastructural features and the various neurotransmitters found in vertebrates, including humans. The withdrawal behavior of a number of drugs such as cocaine, amphetamines, cannabinoids, and opiates on planaria has been reported widely. We are interested in testing the behavioral effects of scopolamine in these worms. Scopolamine is an anticholinergic drug and acts as a competitive inhibitor of muscarinic acetylcholine receptor protein and is shown to cause dementia in mice. The objectives of the research were to study the planarian locomotor velocity (pLMV) and hyperkinesias-like activity as a function of different concentrations of scopolamine (from 1  $\mu\text{M}$  to 1500  $\mu\text{M}$ ) and also to determine the optimal concentration of scopolamine for the conditional memory training experiments using the planarians. The results obtained showed that the pLMV and hyperkinesias-like activity was not significantly affected when the planarians were exposed up to 500  $\mu\text{M}$  of scopolamine, whereas there was certainly some extent of drug withdrawal effect that resulted in lower pLMV and higher hyperkinesias-like activity when the worms were exposed to 1000  $\mu\text{M}$  scopolamine. In addition, we are interested to see if these behavioral effects resulting in low pLMV can be improved by exposing the planarian to memantine. Memantine is a FDA approved Alzheimer's disease drug that is an uncompetitive N-methyl-D-aspartic acid (NMDA) receptor antagonist.

**Presentation Index:** G-B 3      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Amatya, Christina; DeSaer, Cassie	Ramakrishnan, Latha	Chemistry

### Improving Teaching Effectiveness and Student Interest in Uniform Circular Motion

The goal of this project is to create a physics lab that will help students learn more efficiently in a uniform circular motion lab. Experiments are carried out by recording video of objects with a camera and analyzing the frames. By using familiar objects, such as the camera, students will have more time to focus on concepts and experiments. Throughout the research, the optimum ranges and settings were found. Exposure, voltages, lighting, and set-up are a few examples of what was addressed. Software was also developed to guide in the students' data analysis. With the completion of this research, a new lab will be available to introductory physics students. Other future physics labs can also be made by following similar techniques.

**Presentation Index:** G-B 4      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
DeStefano, Anthony; Yong, Shun Jie	Liu, Zengqiang	Physics, Astronomy and Engineering Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Single-Step Conversion of Cellulosic Biomass into Biofuels

Production of biofuels from cellulosic biomass via pretreatment processes is accomplished by several processes; however, conversion of biomass to biofuels in a single step has not been documented. In this regard we have identified *Clostridium phytofermentans* strain known to have fermenting capabilities that may be utilized to convert biomass directly to ethanol. As part of this study we have fermented wood dust and switchgrass before and after pretreatment. Biomass pretreatment was accomplished using sodium hypochlorite (commercial bleach, 12-16 hrs) at room temperature. The biomass was thoroughly washed with water to remove bleach and other impurities. The cellulosic preparations were characterized IR and compared to previously reported data. The above cellulosic preparations and untreated but finely ground wood and switchgrass samples, were fermented for a week under anaerobic conditions at 37°C using *Clostridium phytofermentans* bacteria. The fermented samples were treated with trichloroacetic acid to precipitate proteins and filtered through 0.22 µm membrane to remove particulate matter and the supernatant was subjected to gas chromatography analysis to determine alcohol levels. Each of the above procedures resulted in formation of ethanol. The efficiency with which these procedures produce alcohol is now being evaluated. In summary, we have for the first time demonstrated that alcohol biofuel can be produced from biomass in a single step.

**Presentation Index:** G-B 5      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Mandal, Ayush	Sreerama, Lakshmaiah	Chemistry

### Fermentation of Biomass Pretreated with Sulfuric Acid and Bleach via *Clostridium Phytofermentans*

Production of ethanol from cellulosic biomass is one of the recent methods being explored in the field of green energy. Cellulosic biomass is a complex metric that has to be pretreated to produce lignocelluloses that may be fermented to alcohol. In this project we have explored several such pretreatment methods using wood dust and switch grass as cellulosic source with the aim of determining effect of pretreatment on fermentability of cellulose. Wood dust and switch grass were first subjected to grinding and sieving to generate a granular product. The granulated biomass was then treated with sulfuric acid and/or commercial bleach, for 2 hr at 100 degrees separately. In each of the treatments the concentration of sulfuric acid or commercial bleach was varied (0.01- 0.05 M sulfuric acid or 0.11 to 0.6 M sodium hypochlorite). The phenolic impurities were decanted and remaining lingo-cellulosic fraction was thoroughly washed with water and characterized by IR. The purified cellulosic samples were then fermented with the *Clostridium phytofermentans* for a week at room temperature under anaerobic conditions. The fermented broth was treated with trichloroacetic acid to remove proteins, filtered through 0.22 µm membrane and the filtrate was subjected to Gas Chromatography analysis. The GC analysis showed the presence of the ethanol. We are in the process of establishing the effect of pre-treatment on the efficiency of fermentation.

**Presentation Index:** G-B 6      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Traore, Mohamed; Mandal, Ayush	Sreerama, Lakshmaiah	Chemistry

### The Role of Human Aldehyde Dehydrogenase 6 (ALDH6A1) in Resistance to Anticancer Drug Cyclophosphamide

Aldehyde dehydrogenases (ALDH) enzymes catalyze oxidation of xenobiotic aldehydes to carboxylic acids and this process is generally considered a detoxification process. Several anticancer drugs, e.g., cyclophosphamide, during its metabolism also produce reactive aldehydes that are oxidized by ALDHs. Among the 17 known human ALDHs, ALDH1A1, ALDH3A1, ALDH5A1 and ALDH9A1, but not ALDH2, catalyze the oxidation of cyclophosphamide derived aldehydes. This process when it occurs in cancer cells leads to resistance to cyclophosphamide. Of particular interest to this study is ALDH6A1 because its role in detoxification of cyclophosphamide is not known. To investigate this, we have recently cloned ALDH6A1 into a bacterial expression vector and are in the process of expressing and purifying the protein. Thus far, the *E. coli* BL21 strain carrying the ALDH6A1 clone has been grown in the presence of isopropyl thiogalactoside (IPTG) to over produce the protein. The bacteria have been lysed and checked for enzyme activity using acetaldehyde as a substrate. The bacterial lysates will be subjected to affinity chromatography to isolate pure ALDH6A1. Once the purified enzyme is obtained, we will determine the role of ALDH6A1 in detoxification of cyclophosphamide.

**Presentation Index:** G-B 7      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Acharya, Subrat; Mandal, Ayush	Sreerama, Lakshmaiah	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **An Investigation of the Interaction Between Alzheimers Disease Drugs and the Fluorescein Amyloid (1-42) Peptide**

The incorrect folding of the beta-amyloid (1-42) peptide is one of the major hallmarks of Alzheimer's disease (AD). Prior to the misfolding the peptide is found in soluble form, but once the folding has occurred the peptide becomes insoluble and contains an over abundance of beta-sheets. The objective of this study was to investigate the interaction between riluzole, a small molecular drug used for treating Lou Gehrig's disease, with the fluorescein-labeled beta-amyloid (1-42) peptide. The effect of riluzole concentrations ranging from 10-1000  $\mu$ M on the fluorescence emission intensity of 10  $\mu$ g/mL FAM-A $\beta$ (1-42) was determined to understand the mechanism of interaction. The fluorescence emission spectra and lifetime decays were recorded at both 25 degrees Celsius and 37 degrees Celsius at Fluorescence Innovations in Bozeman, MT with the use of a modified Varian Cary Eclipse Spectrofluorometer. The results from these studies showed that the riluzole significantly increased the fluorescence emission intensity in a concentration-dependent manner; however, the effect was independent of the incubation duration and temperature. The fluorescence lifetimes measurements showed that the lifetime was independent of the presence or absence as well as the concentration of riluzole and the lifetimes ranged from 3.4 to 3.8 ns. Currently, we are investigating the possible reasons for this increased fluorescence emission intensity without a change in fluorescence lifetime caused by riluzole and we will present the results of these investigations in this poster.

**Presentation Index:** G-B 8

**Present Time:** 2:00 PM

**Student Presenter(s):**

Feneis, Ashley; Thapa, Rajan

**Sponsor(s):**

Ramakrishnan, Latha; Dvorak,  
Michael

**Department(s)**

Chemistry

### **Induction of Autoimmune Diabetes in mice by Streptozotocin**

There are several experimental models for studying autoimmune type 1 diabetes (T1D). Streptozotocin (STZ)-induced autoimmune T1D in C57BL/6 mice is one of them. In order to characterize development of T1D in this model, we set up five experiments where 3 to 4-month-old C57BL/6J males were treated with either five low doses of STZ or vehicle control (5-6 mice/group/experiment). STZ was injected in a dose of 40 mg/kg/day, intraperitoneally, for five consecutive days. The body weight was recorded on day 1, 7, 14, 21, and 28 post first STZ injection. At the same time, blood glucose levels were measured from the samples obtained from the mouse tail vein. A mouse was considered as diabetic when the glucose level of 220 mg/dL was reached. Our data, presented as a summary of five experiments, showed that diabetes incidence increased from 0 to 94 % from day one to day 28 in STZ-treated mice. Glycemic level also increased from  $175.6 \pm 22.2$  to  $328.6 \pm 70.8$  during the same course of time. The body weight monitoring showed that the body weights of STZ-treated mice increased from  $25.1 \pm 1.5$  to  $29.3 \pm 1.1$  g, while control mice increased their body weights from  $24.4 \pm 1.6$  to  $30 \pm 1.2$  g. In conclusion, these data confirm that we successfully induced autoimmune T1D by low-dose STZ administration in C57BL/6 mice.

**Presentation Index:** G-B 9

**Present Time:** 2:00 PM

**Student Presenter(s):**

Gong, Hwee Kiat; KC, Birendra

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Minnesota Wolf Protection: Should It Be a Federal Issue?

The research was done to find out what 8th grade science students at Milaca Middle School believe, have experienced, and know about gray wolves in Minnesota. What are the 8th grade science students at Milaca Middle School's beliefs regarding wolves in Minnesota? This question will be answered by questions numbered one through three on the instrument. What are the 8th grade science students at Milaca Middle School's knowledge regarding Minnesota Wolves? This question will be answered by the questions four through seven on the instrument. What are 8th grade science students at Milaca Middle School's experiences with wolves? This question will be answered by questions eight through ten on the instrument. A combination opinionnaire was developed by the researcher in conjunction with her faculty advisor. The instrument was field tested on 5 students and modified according to the results. A sample of the whole population of 8th grade science students at Milaca Middle School was taken on October 13th, 2009. The instrument was handed out at the beginning of the period by the 8th grade teacher. The students were told to fill out this survey for a college study. After five minutes the surveys were then collected by the teacher. A total of 102 students are enrolled in 8th grade science at Milaca Middle School and 94 total surveys were completed by 52 females and 39 males. The total number of responses were compiled and presented as graphs.

**Presentation Index:** G-B 10      **Present Time:** 2:00 PM

**Student Presenter(s):**

Hirsch, Autumn

**Sponsor(s):**

Simpson, Patricia

**Department(s)**

Biological Sciences

### Ultrafast, High Voltage Electronics for Photoconductive Materials Characterization

This project will consist of high voltage switching at fast nanosecond timescales in order to test photoconductive materials in a process called Interrupted Field Time of Flight (IFTOF). This test reveals impurities in the material that inhibit charge flow and gives information about its charge mobility. There are two main challenges of this project. One challenge involves switching 1000 volts off and on again in ten nanoseconds while suppressing equipment-damaging current spikes. The other challenge is automating the entire measurement process, which involves coordinating a switching circuit, laser, power supply, and oscilloscope. The duration of this process lasts under 1000 nanoseconds. To conduct an IFTOF measurement, a voltage bias is applied across the material being tested, creating an electric field. A laser is pulsed, which excites the electrons in the material. Due to the strong electric field, the excited electrons travel through the material. When the electrons are near the middle of the material, the voltage is cut completely, stopping the electrons. A very short time later (down to ten nanoseconds in our case) the voltage is reapplied and the electrons continue flowing through the material. However, some electrons remain stuck in the middle of the material due to "deep traps". These are simply impurities in the material that impede electrons' travels. By using our automated system, photoconductive materials researchers can perform measurements more efficiently and with more precision while gaining information currently unattainable due to the extremely small timescale.

**Presentation Index:** G-B 11      **Present Time:** 2:00 PM

**Student Presenter(s):**

Heikkinen, Kyle; Abfalter, Nathan

**Sponsor(s):**

Vogt, Timothy; Lidberg, Russell

**Department(s)**

Electrical and Computer Engineering,  
Physics, Astronomy and Engineering  
Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Radiation-Induced Thermoluminescence Dosimetry

Radiation-induced thermoluminescence is a process in which energy from radiation incident on a material is stored in metastable states in the material and then later released as light via heating. The amount of light given off is proportional to the radiation incident upon the material. This process can be used to measure the amount of ionizing radiation incident upon, or absorbed by, a material. As donated equipment, we obtained an annealing furnace and a Thermoluminescent Dosimetry (TLD) reader. The annealing furnace is used to prepare material samples by heating them to 400 degrees Celsius to clear them of any initial stored energy. After a sample has been exposed to ionizing radiation, the TLD reader heats the sample while accurately measuring the light given off. Several materials were examined including lithium fluoride (solid and powder) and optical fibers. Various tests were performed to check the TLD reader, including exposing some materials at varied distances to a Cs-137 source and fitting the readings to an inverse-square law curve.

**Presentation Index:** G-B 12      **Present Time:** 2:00 PM

**Student Presenter(s):**

Gustafson, Bryce

**Sponsor(s):**

Ratliff, Steven

**Department(s)**

Physics, Astronomy and Engineering  
Science

### Fabrication of Micro Accelerometer Using MEMS Technology

Manufacturing is more of an art than pure engineering, the process of creating/manufacturing goods for a wide variety of engineering applications is Manufacture engineering. The goods manufactured can range from a huge aircraft which weighs in tons to something as small as a micro accelerometer which is as light as 0.25 grams. Our research focuses on nano fabrication of these micro accelerometer using Micro electro mechanical systems (MEMS). In other words we research on how something that light and small is actually produced. For our research we will be visiting the Nano Fabrication Center of University of Minnesota. The demonstrations that we will get there will be the base for our research.

**Presentation Index:** G-B 13      **Present Time:** 2:00 PM

**Student Presenter(s):**

Sapkota, Puspak; Dangol, Prabal; Sitaula, Rajiv Byun, Jeongmin

**Sponsor(s):**

**Department(s)**

Mechanical and Manufacturing  
Engineering

### College Students' Use of Online Pornography: A Review of the Literature

The pornography industry has become powerful since the development of the Internet. Online pornography has a few key features that increase the appeal: affordability, ease of access, and anonymity. In college students, the rate of use has grown significantly within the last decade with some studies suggesting that students are using pornography as an outlet for stress. The use of online pornography has been linked to many harmful behaviors such as sexual assault, rape, controlling attitudes toward women, and increased sexual promiscuity, many of which are occurring on college campuses. Understanding specific motivators and the impact that online pornography is having on college students provides academic institutions a start to providing services to reduce sexual aggression.

**Presentation Index:** G-B 14      **Present Time:** 2:00 PM

**Student Presenter(s):**

Nelson, Daniel

**Sponsor(s):**

Livingston, Tina

**Department(s)**

Educational Leadership and  
Community Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Bulk Viscosity of Subatomic Matter

Heated and compressed subatomic matter expands unexpectedly rapidly in particle accelerator experiments. Viscosity is expected to slow the expansion but is evidently not particularly effective. We seek an answer to the question why is viscosity ineffective? How large is the viscosity? We estimate the bulk viscosity of an interacting gas of light hadrons using analysis from kinetic theory. We find that the viscosity is proportional to the relativistic momentum, the particle density, and to the mean free path. Numerical results in this simple picture are consistent with field-theoretic approaches.

**Presentation Index:** G-B 15      **Present Time:** 2:00 PM

**Student Presenter(s):**

Pikus, Brendon

**Sponsor(s):**

Haglin, Kevin

**Department(s)**

Physics, Astronomy and Engineering  
Science

### Analysis of Stopping Behaviors of St. Cloud Area Motorists at Stop Signs

The purpose of this study is to investigate the behaviors of motorists at stop signs and distractions that may inhibit them from making a complete stop in the greater Saint Cloud area. The study also examines transportation policies and recommends possible solutions and new direction. To be answered by this study is the question of who is and who is not making a complete stop where posted as mandatory by law and what are the factors influencing stopping behavior. As it will play an essential role in this study, what constitutes a complete stop will be clearly defined. Several intersections with stop signs in multiple zonal types (commercial, residential and industrial) will be examined. These intersections will be studied throughout the week at different times of the day. Days of the study will include both weekdays and weekends in order to see the temporal effect of stopping behavior. On each of these days, the chosen intersections will be monitored in the morning, mid-day and the evening. These times have been selected due to the fact that the behaviors of motorists may change depending on what time of day and which day of the week they are traveling. Notes, while observing each intersection, are to be taken on road conditions, visibility, location of stop sign, driver demographics and vehicle type.

**Presentation Index:** G-B 16      **Present Time:** 2:00 PM

**Student Presenter(s):**

Hankes, Nathaniel; Kauffman, Seth; Hovelson, Johannes; Lang, Joseph; Bradden, Gyangelo

**Sponsor(s):**

Woldeamanuel, Mintesnot

**Department(s)**

Community Studies

### Investigating the Effects of Aquatic Microbial Contaminants on Fish Health

The release of contaminants such as endocrine disrupting chemicals and personal care products into the aquatic environment via treated wastewater effluent is of growing concern. Triclosan and triclocarban are two antimicrobial agents commonly used in hand soaps. Due to presence of these compounds in aquatic environments, many organisms are continuously being exposed with unknown consequences. In this study we used an innate larval fish behavior, predator escape, to assess whether these compounds at environmentally relevant concentrations adversely affect fish behavior. Predation is a primary source of mortality of all life-stages, but is most pronounced in larval fish. To escape predators, larval fish perform a C-start. Larval fathead minnows were exposed to triclosan and triclocarban singularly and in mixture to test our hypotheses that (1) exposed larval fathead minnows will perform a delayed escape response when faced with a threat stimulus and that (2) effects will worsen when larvae are exposed to a mixture of the compounds. Escape behaviors were collected using a high-speed video camera and then transferred to NIH Image v4.1 for frame-by-frame analysis of latency period, escape velocity, and total escape response. Fathead minnow larvae exposed to low concentrations of triclosan (TS-L) and triclocarban (TC-L) and their mixtures (Mix) showed no statistical difference among body length. Larvae in TC-L and Mix-L treatments took longer to respond to a threat than control larvae. The total escape response of TC-H and TS-H treatments were significantly slower than in the control, thus supporting our first hypothesis. Our second hypothesis that exposure to a mixture of triclosan and triclocarban worsened effect was rejected.

**Presentation Index:** G-B 17      **Present Time:** 2:00 PM

**Student Presenter(s):**

Brown, Amanda

**Sponsor(s):**

Schoenfuss, Heiko

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Precontact Resources in Northern Minnesota: A Synthesis of Information from Macro and Microscopic Investigations**

The purpose of this study was to recover phytoliths, the microscopic mineral remains of plants, from sediments, ceramic artifacts, and lithic artifacts from an archaeological site in Beltrami County, Minnesota. The material from the archaeological site represents continuous usage for up to 3,000 years. Using morphometric data collected from the recovered phytoliths, various taxa have been identified and quantified. A thorough analysis of the recovery of phytoliths from the aforementioned contexts and what archaeological knowledge was gained in the process of the study will be presented. This study has ramifications to the understanding of how reliance upon food resources changed over the 3,000 year period.

**Presentation Index:** G-B 18

**Present Time:** 2:00 PM

**Student Presenter(s):**

Jenkins, Austin

**Sponsor(s):**

Muniz, Mark

**Department(s)**

Sociology and Anthropology

### **The Effect of Matching Leg Masses and Moments Of Inertia on Gait using Vacuum Suspension**

The masses of trans-tibial prosthetic legs are typically half that of a normal unaffected leg. Manufacturers produce these lightweight prostheses to reduce sliding and levering of the residual limb in the socket. This movement is a result of the use of the traditional modes of suspension (straps, wedges, pins, sleeves, suction). With traditional suspensions, when prosthesis mass is increased to match the unaffected limb trans-tibial amputees became less symmetrical in their gait. With the recent introduction of vacuum suspension, where there is no sliding or levering, we posed the following question: Would gait symmetry remain unchanged or improve when the mass and inertial properties of the two legs are matched? A male trans-tibial amputee using vacuum (-78 kPa) suspension walked on a treadmill at 1.67 m/s and 0% grade under two conditions: 1) unmatched and 2) matched masses and moments of inertia. The values of his unaffected leg, as estimated from cadaver data, were 5.13 kg and 0.489 kg m<sup>2</sup>. The combined mass and moment of inertia of the unmatched condition were 2.49 kg and 0.254 kg m<sup>2</sup>, and 5.09 kg and .489 kg m<sup>2</sup> for the matched condition. The combined masses and moments of inertia were estimated using an oscillation technique, parallel axis theorem, geometric modeling and cadaver data. Both trials were filmed and analyzed for step (half a stride) length and single leg stance duration. A total of 10 steps were analyzed and averaged for each condition. The average step lengths for the unmatched condition were 0.81 plus or minus .02m for the unaffected leg, and 0.72 plus or minus .02m for the affected leg. The average step lengths for the matched condition were 0.81 plus or minus .02m for the unaffected leg, and 0.75 plus or minus .02m for the affected leg. The average stance durations for the unmatched condition were 0.61 plus or minus .02s for the unaffected leg, and 0.56 plus or minus .01s for the affected leg. For the matched condition the average stance durations were 0.61 plus or minus .01s for the unaffected leg, and 0.57 plus or minus .02s for the affected leg. These results suggest vacuum suspension may prevent the loss of gait symmetry typically seen when using heavier prostheses; matched to the unaffected leg's mass and moment of inertia. Further research is needed to confirm this case study is representative of all trans-tibial amputees.

**Presentation Index:** G-B 19

**Present Time:** 2:00 PM

**Student Presenter(s):**

Castellano, Janna

**Sponsor(s):**

Street, Glenn

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Breeding of JAK3 Deficient Mice at SCSU

The JAK3 gene encodes a tyrosine-kinase enzyme that functions in signal transduction and is predominantly expressed by T-lymphocytes. The JAK3 enzyme is critical for the activation of T-lymphocytes in response to cytokines and individuals deficient in the JAK3 gene will exhibit characteristics of SCID (severe combined immunodeficiency disease). Type 1 Diabetes Mellitus is an autoimmune disease in which the insulin-producing pancreatic beta cells are destroyed by the host's own activated T-lymphocytes. It can then be expected that individuals deficient in the JAK3 gene should not develop autoimmune diabetes. JAK3 knockout mice are thus very useful when comparing data using drug-induced Type 1 Diabetic models and immunosuppressive drugs. It is, however, very difficult to sustain a JAK3 knockout mouse colony as two such mice will not breed successfully. Therefore, it is necessary to perform controlled breeding of knockout and wild type mice to obtain a knockout progeny of sufficient number for experimental testing. By selectively breeding male JAK3 knockout mice purchased from Jackson Laboratories with female C57BL/6J mice at SCSU, it is anticipated that roughly 25% of all second generation (F2) offspring will be deficient for the JAK3 gene. The genotypes of all offspring birthed were determined using PCR and gel electrophoresis assays—the protocols for which were researched and written at SCSU. The vast majority of all mice birthed were successfully genotyped and sufficient numbers of JAK3 deficient mice were found, although some data resulted inconclusive.

**Presentation Index:** G-B 20

**Present Time:** 2:00 PM

**Student Presenter(s):**

McCarty, David; Johnson, Brice

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

### Dynamometer Modernization

The objective of this project is to employ digital circuitry to modernize a hydraulic dynamometer. The design will incorporate various sensors and a user-friendly interface that will allow the user to carry out more sophisticated tests. Once completed, the dynamometer will be used in courses and research conducted at the university.

**Presentation Index:** G-B 21

**Present Time:** 2:00 PM

**Student Presenter(s):**

Stewart, Eric; Goenner, Andrew; Jasso, Manuel  
Glazos, Michael; Goodner,  
Timothy

**Sponsor(s):**

**Department(s)**

Electrical and Computer Engineering,  
Environmental and Technological  
Studies

### Analysis of the Applicability of a DNA Fingerprinting Method for *Bacillus Cereus*

*Bacillus cereus* bacteria are aerobic, gram-positive, spore forming rods. They have been determined to be the cause of food contaminations that lead to vomiting and diarrhea. *B. cereus* can be isolated from many foods that come off the grocery store shelf, such as honey, rice, and dried spices. Being able to track the source of bacterial contamination would be a key step in preventing future illness. Repeats in DNA sequences called Variable Number Tandem Repeats, or VNTR are commonly used to genetically fingerprint humans and bacteria. VNTRs are short DNA sequences that are repeated a variable number of times in a DNA region. The number of times a VNTR sequence is repeated directly affects the length of the repeat region. By utilizing polymerase chain reaction (PCR) *vrrA* and *BCMS 20* were amplified (replicated) and sized by gel electrophoresis. A number of alleles were identified in both repeat regions in the isolates examined. Our preliminary data suggest that VNTR genetic fingerprinting is an applicable method for distinguishing between isolates of *B. cereus*.

**Presentation Index:** G-B 22

**Present Time:** 2:00 PM

**Student Presenter(s):**

Gucinski, Mark; Hord, Alexander

**Sponsor(s):**

Gulrud, Kristin

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Wireless Electrocardiogram (ECG/EKG)

The principles of electrocardiography are well understood and monitoring devices have existed since the late 1920's, yet it is today's technology that allows for a more cost effective, wireless monitoring solution. The purpose for the presentation is to summarize a prototype for a wireless ECG/EKG device using off the shelf components. The presentation has been divided into three distinct parts. The first component pertains to the background and motivation to develop and implement a wireless ECG/EKG device. The second component contains some fundamental principles pertaining to electrocardiography (ECG/EKG). The third component provides a detailed description of the wireless ECG/EKG device we have developed.

**Presentation Index:** G-B 23      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Stahlback, Dustin; Cuevas Ruiz, Carlos	Zheng, Yi	Electrical and Computer Engineering

### Semiconductor Parameter Analysis Using LabVIEW

In order to understand the device mechanism of different combination of transistors, the HP 4145 Semiconductor Parameter Analyzer can be programmed to display the Current Voltage Characteristics of a particular design. For this project, the HP 4145 is controlled using LabVIEW so that the input output ports of the analyzer can be set using the software. Also, the analyzer does not allow data to be stored so storage of the data are to be implemented using the LabVIEW program. Further, it is to be determined how to implement other variable changes such as temperature, to observe the effect on the performance of the devices.

**Presentation Index:** G-B 24      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Khan, Niveen	Hossain, Md	Electrical and Computer Engineering

### Synthesis, Characterization and DNA Interaction Studies of Titanium-flavonoid Complexes

Chemotherapy is an important weapon for combating cancers. Numerous compounds have been developed as potential candidates for anticancer drugs, but only a handful of them have become effective in clinical protocols. The need of developing new drugs in order to effectively treat various forms of cancer is widely recognized. Metal-based drugs such as Cisplatin are effective for cancer treatment which is known to exhibit anticancer properties by interacting with DNA. Cisplatin works by binding to DNA and causing conformational changes. This prevents DNA replication, causing cell death. Titanium complexes and flavonoids have been shown to possess anti-cancer properties as well. Several titanium complexes have been synthesized at SCSU chemistry laboratory including a titanium-flavonoid complex that I have synthesized using the flavonoid quercetin. Therefore, the objective of this research is to characterize the synthesized titanium- flavonoid complex by using Infrared; a technique which is used to identify compounds and investigate sample composition, Nuclear magnetic resonance (NMR); used to help determine the structure of the compound and UV-Visible Spectroscopy and investigate the interactions of various titanium-flavonoid complexes with DNA using Viscometry.

**Presentation Index:** G-B 25      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Girmay, Sisay Kenfe	Mahroof-Tahir, Mohammad	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Investigation of the Decrease in Charge Carrier Mobilities at Low Temperature in Organic Semiconductor Materials

The promise that organic semiconductors have shown for use in new and existing electro-optical devices, has spurred an interest in the solid state structure property relationship of these materials. Charge carrier mobility is a figure of merit, given to semiconductors, to describe how well it transfers charge. Mobility is a key determining factor in the quality of a semiconductor for its potential use in a given device. Mobility has been shown to increase with decreasing temperature in some organic semiconductor materials. At low temperatures a sharp decrease in mobility can be observed. This decrease in mobility may be due to a structural change in the material or to shallow traps in the bandgap of the material. The effects of these process in the organic semiconductor materials tetracene and rubrene are addressed in this work.

**Presentation Index:** G-B 26      **Present Time:** 2:00 PM

**Student Presenter(s):**

Johnstone, Lucas

**Sponsor(s):**

Lidberg, Russell

**Department(s)**

Physics, Astronomy and Engineering  
Science

### Electronic Warehouse Inventory Control System

The Electronic Warehouse Inventory Control System (EWICS) will consist of a database, as well as a LCD to display information and a keypad for user input. Such input could be adding/removing inventory items, making product inquiries, and creating product lists. The EWICS will be designed to incorporate both a standard UPC/barcode scanner and a Radio Frequency Identification reader (RFID). These devices will be interchangeable on a user device, which will have wireless access to a database. This database will store all necessary information for a product, including locations, quantities, and basic product storage information. This system will have a security system that consists of security levels each accessible based on employee title within a company. These security levels can be modified by a company to fit their needs. In general, EWICS will be composed of both software and hardware engineering elements that meet Senior Design project requirements. This particular inventory system will have a major advantage over others, in that it is versatile. The system will be able to read both RFID and UPC/barcode tags to maintain inventory. For instance, RFID's are becoming very popular in shipping, whereas UPC/barcode tags are mainly dominant on the sales floor. So instead of having to buy two separate devices to handle these different tags, a company could purchase only one.

**Presentation Index:** G-B 27      **Present Time:** 2:00 PM

**Student Presenter(s):**

Wirtz, Nicholas; Betzold, Adam; Blair, Cody

**Sponsor(s):**

Akkas, Ahmet

**Department(s)**

Electrical and Computer Engineering

### The Effect of Race, Income and Gender on Transportation Mode Choice

This study will include all types of transportation mode choices both public and private to investigate how they are used by people of a specific race, income and gender. The purpose of our study is to determine what type of mode each gender chooses to use during different periods of the day and if race and income plays a factor. This research will examine a specific six block geographical region of North St. Cloud metro area where there is a mix of household types as it pertains to accessibility to multiple mode choices. The data used in this portion of the study will come from the US Census Bureau. The variety of mode choices will range from Metro bus, automobiles, bicycles, and walking. Also, data from the city of St. Cloud would help us determine the different mode choices available for the area in our study. A multiple question survey will be handed out to individuals sixteen years of age and older to this specific area which will determine individual choices as it pertains to the preferred mode of choice. A single question specific to race will be on the survey to determine how it correlates to the mode of transportation that is chosen. The survey will also include a question pertaining to gender to determine how it correlates to mode choice. From our survey data, we will produce multiple models showing the relationship between household types, gender, race and mode choice.

**Presentation Index:** G-B 28      **Present Time:** 2:00 PM

**Student Presenter(s):**

Robasse, Amanda; Eden, Ellen; Braun,  
Zachary; Diedrichsen, Douglas; Riley, David

**Sponsor(s):**

Woldeamanuel, Mintesnot

**Department(s)**

Community Studies

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Examining the Low Marriage Rate Among African American Women

The low marriage rate among African American women is a direct result of many structural and social factors that prevent or hinder them from committing to the legal ties of marriage. The social and economic conditions of both African American men and women are key explanations for the low marriage rate. While acknowledging the significance of these conditions, my research primarily focuses on establishing a link between classism and the low marriage rate among African American women. The research question that guides my study is: "what are the connections between classism and the low marriage rate among African American women?" The initial part of my study concentrates on junior and senior African American female college students and their beliefs and attitudes about marriage. The extended part of my research draws a comparison between the low marriage rates among both African American and Jamaican women. The social and economic conditions of both groups of women have differences and similarities; my research seeks to demonstrate how classism contributes to these women's choices about marriage. For this research poster project, I employ a sociological analysis which strives to explore how the socioeconomic classes of African American women and their partners or potential partners determine whether or not they commit to marriage.

**Presentation Index:** G-B 29      **Present Time:** 2:00 PM

**Student Presenter(s):**

Wallace, Camaya

**Sponsor(s):**

Zuo, Jiping

**Department(s)**

Sociology and Anthropology

### Activation of the NLRP3 Inflammasome by Titanium Dioxide Nanowires

Titanium Dioxide Nanowires (TNW) exhibit many properties that make them a promising material for medical applications. Nanowire assemblies for medical implantable devices are especially promising. Many different particles activate the NLRP3 inflammasome including uric acids crystals, asbestos, and silica crystals. However, the mechanism of NLRP3 inflammasome activation is not clearly known. Our hypothesis is that TNW share a common mechanism with other fibers, including asbestos, and that the enzymes Cathepsin B and Syk are included in this mechanism. This mechanism involves phagocytosis of the fiber, the subsequent rupture or increased permeability of the lysosomal membrane, which in-turn releases the protease Cathepsin B, which activates the NLRP3 inflammasome. It has been proposed that Syk, a tyrosine kinase, is intricately involved in phagocytosis of particles. Our approach used an in-vitro model with human THP-1 monocytes. NLRP3 inflammasome activation was determined using an ELISA assay that measured IL-1a production. Caspase-1 activation was measured by Western Blot and fluorescent assay. The catalytic activity of the enzymes Cathepsin B and Syk was blocked using inhibitors. Our studies demonstrate that Cathepsin B is essential for TNW activation of the NLRP3 inflammasome; while Syk may not be essential for phagocytosis of TNW. By knowing the mechanism in which the NLRP3 inflammasome is activated, more effective treatments for gout, asbestosis, and silicosis could be developed; and more effective medical implantable devices could be constructed using TNW.

**Presentation Index:** G-B 30      **Present Time:** 2:00 PM

**Student Presenter(s):**

Payne, Robert

**Sponsor(s):**

Sreerama, Lakshmaiah

**Department(s)**

Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Utility of Histopathological Endpoints in the Assessment of Endocrine Disruption in Resident Fish Populations

"Intersex", the synchronous occurrence of male and female reproductive tissues is an emblematic indicator of estrogenic endocrine disruption and has made histopathological evaluations of fish tissues a prominent tool in aquatic toxicology. However, the linkage of estrogenic exposure, physiological responses such as vitellogenin induction and histopathological endpoints has been difficult to accomplish. This study attempts to answer four questions related to the utility of histopathological studies in the context of endocrine disruption assessment: 1) Which histopathological endpoints are most sensitive to detect estrogenic endocrine disruption? 2) Does the expression of endocrine disruption differ between resident fish species exposed in a common environment? 3) Is vitellogenin induction indicative of histopathological changes? 4) Do source-characteristic mixtures of endocrine disrupting compounds result in differential patterns of histopathological occurrences? To answer the above questions, we analyzed three species of fish (sunfish, shiners, fathead minnows) collected from four Minnesota lakes with differing land-use characteristics and well-characterized occurrence of endocrine active compounds. The four lakes represent a subset of sampled lakes that fulfilled several selection criteria, including available water chemistry, adequate samples of all three species, and availability of organ samples from concurrently caged male fathead minnows. Fish that lacked complete data sets for any of the measured variables, including length, weight, organ weight, plasma vitellogenin concentrations, liver and gonad tissues, were excluded from the analysis. Indications of low-level of endocrine disruption were evident in many fish samples in form of elevated vitellogenin concentrations in male fish and alterations in gonadal histology. However, linkage between endpoints remained elusive and highlights the difficulties in linking exposure and population level effects in field studies.

**Presentation Index:** G-B 31

**Present Time:** 2:00 PM

**Student Presenter(s):**

Poganski, Beth

**Sponsor(s):**

Schoenfuss, Heiko

**Department(s)**

Biological Sciences

### A Closer Look at Parking Problems Within University Campuses

All over the United States there is a problem dealing with the amount of available parking for both on and off campus students. Our intent with this research project is to take a closer look at the different parking problems within campuses and look at possible solutions. We believe that if more campuses use funding to build parking ramps and provide shuttle services from parking areas further from the center of the campus, parking will become less of a problem and an easier task for both on and off campus students. Campuses could also improve biking and walking environments and encourage the use of public transportation. In order to find the information needed for this project we intend to use student surveys of on campus students with cars and commuter students who use their cars. We will try to get public, private, large and small campuses and compare their differences and similarities in hopes of finding a possible solution to their needs.

**Presentation Index:** G-B 32

**Present Time:** 2:00 PM

**Student Presenter(s):**

Lund, Trista; Ricci, Angela; Spohn, Timothy;  
Tang, Chuol; Thapa, Sanskriti

**Sponsor(s):**

Woldeamanuel, Mintesnot

**Department(s)**

Community Studies

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **One Somali Parent's Perceptions of Intervention for Her Child with Autism Spectrum Disorder: Survey Research with the Somali Community**

Few studies have examined services for children with autism who are culturally and/or linguistically diverse (CLD), or parent perceptions of the appropriateness of those services. The purpose of this research was to gain a broader understanding of the values and perspectives of Somali parents of children with autism. One Somali parent of a child with autism was interviewed with the aid of a cultural mediator using a survey style of open-ended interview questions. Responses to the questions were transcribed and compared to extant research. Responses indicated that mothers of children with autism, regardless of racial distinction, have concurrent themes, such as behavioral expectations, interactions with professionals, concern about vaccinations, and overall treatment decisions. The largest concern of the mother in this study was the cultural and linguistic barriers that often impeded communication with professionals from whom she sought help. The implications of these findings and for speech-language pathologists' ability to assess and provide services for CLD children are discussed.

**Presentation Index:** G-B 34      **Present Time:** 2:00 PM

**Student Presenter(s):**

Knutson, Lindsay

**Sponsor(s):**

Estrem, Theresa

**Department(s)**

Communication Sciences and Disorders

### **Source Water Protection**

Surface and groundwater contaminants pose a potential risk to public water supplies. These risks often begin from anthropogenic land-use changes such as stormwater management, streambank erosion, manure management, individual treatment sewage systems, and hazardous waste management. Potential risks have increased over time because of the urban development expansion and lack of focus on protecting source water. Increased costs for municipalities to operate water treatment facilities along with a renewed focus on protection of public water supplies have resulted in an effort to prioritize contaminants. In identifying and prioritizing these contaminants within the eight hour travel time area to the St. Cloud water treatment facility intake, a potential contaminant source inventory will be established. The knowledge of where these contaminants are located adjacent to the Sauk River, Watab River, and Mississippi River is critical so priority areas can be established.

**Presentation Index:** G-B 35      **Present Time:** 2:00 PM

**Student Presenter(s):**

Nadeau, Daniel

**Sponsor(s):**

Bender, Michner

**Department(s)**

Environmental and Technological Studies

### **Flow Cytometric Analysis of Cytokine Profiles in Low-Dose-STZ (LDSTZ)-Induced Model of Autoimmune Diabetes**

Type I diabetes (T1D) is an autoimmune disease where pancreatic beta cells that produce insulin are attacked and destroyed by their own immune cells. The immune cells that initiate/protect against the attack of pancreatic beta cells secrete different cytokines. It is believed that TNF-alpha, IL-6 (secreted by macrophages), IL-2, IFN-gamma (secreted by Th1 cells), and IL-17 (secreted by Th 17 cells) exhibit pro-inflammatory effect, in contrast to anti-inflammatory effects of IL-4 and IL-10 (secreted by Th2 and regulatory T-cells). A streptozotocin (STZ)-induced T1D model can be induced in a particular mouse strain (C57Bl/6J) by consecutive injections of low-doses of STZ over the period of five days. In order to study an involvement of different immune cell types in immunopathogenesis of LDSTZ mouse T1D, we evaluated cytokine secretion of splenocytes, isolated from STZ-treated and control (vehicle-treated) 3-4-month-old C57BL/6J male mice, on day 7, 14, and 21 post first STZ injection. The splenocytes were cultured for 48 hours and cytokine levels were detected in cell culture supernatants by flow cytometry (FACSCalibur) using the BD Cytometric Bead Array Mouse Th1/Th2/Th17 cytokine kit. This kit allows simultaneous detection of following cytokines: IL-2, IL-4, IL-6, IFN-gamma, TNF-alpha, IL-17a, and IL-10. Our preliminary results showed a decrease of IFN-gamma, IL-6, IL-2 and IL-17 in STZ-treated mice during the first 14 days post STZ injection. IL-10 secretion was found elevated on day 7, but diminished at later time points. These data suggest that secretion of pathogenic cytokines in spleen does not reflect ongoing destructive process in pancreas.

**Presentation Index:** G-B 36      **Present Time:** 2:00 PM

**Student Presenter(s):**

Nandlal, Larita; Hobbs, Joseph

**Sponsor(s):**

Cetkovic-Cvrlje, Marina

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Estimating Hail Size by Using Cape

Knowing the size of hail that has the potential to reach a particular location can help protect people and property and in return could save lives. Convective Available Potential Energy (CAPE) from a Skew-T is used to estimate the hail size. The CAPE is used to find the updraft speed in the cloud, which will then be used to estimate the final hail stone size. The time and location of hail occurrences were retrieved from the Storm Prediction Center website. This information was categorized according to proximity of the hail to the radiosonde being launched. The project will show what the data revealed about how hail size correlates to the CAPE on a Skew-T.

**Presentation Index:** G-B 37      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
McArthur, Terri	Kubesh, Rodney	Earth and Atmospheric Sciences

### Histological and Immunohistochemical Analysis of Insulinitis Lesion in C57BL/6 Mice with Autoimmune Diabetes

Insulinitis is a characteristic histopathologic lesion of autoimmune type 1 diabetes (T1D). It is characterized by the accumulation of so-called mononuclear cells inside and outside of the pancreatic islets of Langerhans. It actually reflects destruction of pancreatic insulin-producing beta cells by the immune cells such as T-cells and macrophages. Different stages of insulinitis reflect different levels of islets' destruction [from stage 0 (normal islet) to 4 (completely destroyed islet)]. Higher level of destruction and higher insulinitis level are expected in mice that are closer to becoming diabetic. In this study insulinitis lesions were followed in 3 to 4-month-old C57BL/6J male mice where autoimmune T1D was induced by administration of low doses of chemical streptozotocin (n=25 mice). The control mice, of the same strain, sex and age, received vehicle only (n=25). The insulinitis stages of STZ-treated and control mice were studied at several time points post injection of streptozotocin (day 7, 14, 21 and 28). The mice were sacrificed, pancreata removed, fixed in formalin, embedded in paraffin, sectioned and stained by hematoxylin and eosin stain (H&E). Insulinitis was graded (stage 0, 1, 2, 3, and 4, based on the level of mononuclear cell infiltration) in three different H&E-stained sections of the pancreas/mouse. In conjunction to this, an additional section of pancreas was immunostained with insulin antibodies in order to detect the amount of remaining insulin-positive beta cells. This study allowed us to gain knowledge about the histopathological changes in mice that progress from normal to diabetic stage in STZ-induced model of T1D.

**Presentation Index:** G-B 38      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Poudel, Sumeet; Joshi, Sunny	Cetkovic-Cvrlje, Marina	Biological Sciences

### Expression of Annotated Xylanase Gene in *Cellulomonas Flavigena* in Different Carbohydrate Media

With growing dependence and depletion of current energy resources, cellulose, a highly prevalent plant material, is being investigated as a usable biofuel. Enzymes have been extracted from various microbial resources that can break down cellulose into its valuable sugars for biofuel production. However, there is a need for alternative enzymes that can break down cellulose under different pH and temperature ranges. In a program sponsored by the Department of Energy Joint Genomic Institute of Undergraduate Research in Microbial Genome Annotation, we identified several putative cellulose degradation enzymes in the genome of bacterium *Cellulomonas flavigena*. To identify these genes, we used various search engines to look for amino acid domain and protein similarities in large protein databases. We chose to examine genes 2500485580 and 2500486900, both potential xylanases. We have begun our functional analysis by examining *C. flavigena* gene expression (mRNA) of both gene 2500485580 and 2500486900 in cellulose, xylan, and glucose media. Using a reverse transcriptase polymerase chain reaction (RT-PCR) to amplify our specific gene, we can verify the gene is expressed in these culture conditions. We hope with this information and future protein expression and knockout analysis to better elucidate the important pathways for polysaccharide breakdown.

**Presentation Index:** G-B 39      **Present Time:** 2:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Derouin, Tyler	May, Barbara	Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session H-GN

Using Mathematics To Solve Problems

Glacier North

### Analysis of Data from Stearns County Jail

With a steady stream of inmates, jails are becoming overcrowded. To try and lessen the burden on the jail system it is important to look at who frequents the jail, why inmates are there, as well as what changes can be made to lessen jail occupancy. Statistical analysis was applied to Stearns County jail data. Analysis focused on booking characteristics and recidivism of inmates of inmates. The analysis showed the distribution of the jail population, who is in the jail most frequently, and why inmates are there. This presentation may provide useful guidance in determining changes that can be made to lessen jail occupancy, lessening the strain on jail systems.

**Presentation Index:** H-GN 1

**Present Time:** 3:30 PM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Peightal, Ashley; Saucedo, Frederico;  
Hardrath, Jacquelin

Robinson, David; Xu, Hui

Statistics

### Does the Hawk Make It Home or Become the First One in Outer Space?

Using differential equations, I am going to examine the way a hawk makes it to the nest based on its velocity and the wind velocity. For a hawk to make it back to the nest, it has to adjust its velocity constantly based on the wind. Our model will tell when the hawk can make it and when it will be "gone with the wind". I will also investigate whether the hawk can catch a mouse that was running away to its shelter. All of these will be discussed with graphs and technology to help explain the mathematics. Does the hawk make it home? Does it catch the mouse finally?

**Presentation Index:** H-GN 2

**Present Time:** 3:50 PM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

Kunde, Kristopher

Huang, Danrun

Mathematics

### Cleaning Up the Great Lakes - a Mathematical Model

Cleaning up the Great Lakes by pumping clean water to replace the polluted water is one method to clear the pollution. Our method of cleaning the Great Lakes is to set up five intertwined differential equations (one for each of the Great Lakes). They are solved using the eigenvalue method. The goal is to find the pollution concentration in each of the Great Lakes at any time after the clean water is added. We show the final results using a graph of the concentration of pollution in each of the Great Lakes as a function of time. This allowed for the determination of the time required to reduce the pollution to below a specified level. This project continues previous research on this subject, in particular, we use real life values of initial pollution concentrations, as well as a linear algebra approach. Also, the results based on the assumption that no pollution was entering the great lakes during the clean-up process are compared to results that assumed small levels of pollution entering the lakes during the clean-up process.

**Presentation Index:** H-GN 3

**Present Time:** 4:10 PM

**Student Presenter(s):**

**Sponsor(s):**

**Department(s)**

DeStefano, Anthony; Seppelt, Joshua

Huang, Danrun

Mathematics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Mathematical Model for the Deer Population in Minnesota

The goal of our research project is to create an accurate seasonal model for the Minnesota Whitetail deer population using differential equations. We will do this by starting with a basic general population equation and then adding harvesting terms to account for the carrying capacity of the environment and the annual deer hunt. Eventually we will create a model that will approximate the Minnesota deer population month by month. We will create this model with the aid of technology such as Math CAD and MAPLE. This information is important because it could be a useful tool in determining ideal numbers for the Minnesota Whitetail deer hunt, while maintaining a healthy herd size and preventing overcrowding.

**Presentation Index:** H-GN 4

**Present Time:** 4:30 PM

**Student Presenter(s):**

Schaefer, Joshua; Loxtercamp, Nicholas;  
Vossen, Lucas; Peterson, Bradley

**Sponsor(s):**

Huang, Danrun

**Department(s)**

Mathematics

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**Session H-GS**

**Optimizing Design**

**Glacier South**

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### Six Sigma Project for Sound Minimization

The sound levels of refrigerator produced by the company are higher than the EPA standard. The company is having numerous product recalls because of excess sound. The sound could be caused because of various reasons: compressor, fan, or air ducts. A refrigerator has a built in fan and ducts to drive air out for cooling purpose. This air travels through the air duct and comes out of different outlets. The process can be noisy if the air flow is turbulent. Improper design of the air duct or fan can worsen the problem. The compressor unit of a refrigerator itself produces enough sound on its own. A Six Sigma DMAIC approach was used for figuring out the problem. After taking sound readings at various locations of the refrigerator, it was found that the compressor and fan play no significant role in producing the sound. Necessary changes need to be made in the basic design of the air duct to reduce excess sound.

**Presentation Index:** H-GS 1

**Present Time:** 3:30 PM

**Student Presenter(s):**

Risal, Sanjay; Tiwari, Suraj; Raut, Suraj

**Sponsor(s):**

Baliga, Ben

**Department(s)**

Mechanical and Manufacturing  
Engineering

### Implementation of Radio Frequency Identification (RFID) Inventory Management for the Miller Center Library

The Miller Center Library at St. Cloud State University currently uses bar-coding technology for the inventory management process (shelving process) which is time consuming and inefficient. The shelving process is a very important process in a library since the shelves have to be scanned continuously throughout the year and has to be kept in order. The shelving process can be efficiently done in less time and more efficiently using radio frequency identification (RFID). The books can be tagged using the RFID tags and a RFID reader can be used to read the data from the tag. This presentation focuses on the use of RFID for the shelving process. A pilot study was conducted on 100 books which were randomly selected. This presentation will discuss the results of the pilot study and the advantages and disadvantages of using an RFID system for inventory management in a library, considering the time, labor, and cost savings of a full-level implementation.

**Presentation Index:** H-GS 2

**Present Time:** 3:50 PM

**Student Presenter(s):**

Lakshman, Murali

**Sponsor(s):**

Shah, Hiral

**Department(s)**

Mechanical and Manufacturing  
Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Moisture Separator Drain System

In the Monticello Nuclear Plant there are four moisture separators that segregate the saturated water from the steam. This process in the moisture separators occurs after exiting the high pressure turbine and before entering the low pressure turbine. Each of these moisture separators has a pipe on the bottom that is connected to a drain tank. The flow in this pipe is free flowing and gravity induced. The saturated water leaves the moisture separator at the bottom and enters the drain tank. Once the water in the drain tank reaches a controlled height, a control valve is opened to release the water and is forced up in elevation to the feed water heater. In this elevation rise, the pressure drops and causes a two-phase flow where the saturated water turns into superheated vapor. This superheated vapor causes the flow to become unstable and restricted by the large volume increase in the phase change from liquid to gas. The moisture separating drain system has a two-phase flow that occurs between the drain tank and feed water heater as well. This two-phase flow is undesirable and needs to be eliminated. The goal of this project is to eliminate the two-phase flow in the system. The team will concentrate solely on the moisture separator drain system and evaluation of the dynamic flow within this system. The system includes all components and system states from the moisture separator to the condenser. The team will not assess the effect that the proposed system changes have on other external system components other than those from the moisture separator to the condenser.

**Presentation Index:** H-GS 3

**Present Time:** 4:10 PM

**Student Presenter(s):**

Gothe, Andrew; Wollak, Timothy; Kindel, Timothy

**Sponsor(s):**

Zhao, Yongli; Covey, Steven

**Department(s)**

Mechanical and Manufacturing Engineering

### Experimental Study of Bedforms Developed by Density Currents

An understanding of basic fundamental processes associated with density underflows commonly present on the ocean floor is important for many fields such as geology and sedimentology, and of extensive practical use in the oil industry. In particular, the relationships between different types of bedforms and their parent gravity underflows is an area poorly explored experimentally, but of great use for geologists and oceanographers when interpreting flow paleoconditions or past climates (i.e. the inverse problem). We present here the results of more than 350 experimental runs performed with the purpose of investigating bedform patterns created by saline density currents. Through varying the slope, sediment size and the density of the underflow, a wide range of flow conditions and bedforms have been obtained. An emphasis will be placed on presenting the methods used to conduct experiments and collect data, the relationship of the determined Richardson number (a governing parameter of the process that includes several major flow parameters) to bed-form type and development, and a comparison of our experimentally derived bedform regimes compared to previously assumed regimes. Among the major findings, we highlight our experimental observation that density flow bedform regimes are in general much richer than thought before and secondly, that bedforms developed in deep water systems are somewhat different from those developed by subaerial flows (rivers). Therefore, inversion based on shallow water (rivers) bedform diagrams and regimes, as currently practiced, is likely to be incorrect.

**Presentation Index:** H-GS 4

**Present Time:** 4:30 PM

**Student Presenter(s):**

Draper, Jason

**Sponsor(s):**

Fedeles, Juan

**Department(s)**

Earth and Atmospheric Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session H-VN

Behavioral Sciences II

Voyageurs North

### Lake Benton Prehistoric Ceramics Analysis

My research will look at the prehistoric Lake Benton culture (A.D. 700-1200) and analyze ceramics from three archaeological sites in Douglas County, Minnesota in order to better understand the range of human response to the steadily warming climate (Medieval Warm Period) that affected Minnesota and much of North America between A.D. 800-1300. Archaeologists recognize that these people made at least three different styles of pottery that are distinct from their neighbors. By studying their ceramics, archaeologists can reveal whether or not Lake Benton culture is a local development or an immigrant population, which is an important question that concerns archaeologists about Lake Benton culture. My research will identify and analyze the minerals within a nearby natural clay source and 28 ceramic sherds from the sites using two different, but complimentary techniques, thin-sectioning and x-ray diffraction. By comparing the mineral composition of the ceramic sherds with a naturally occurring clay source close to the sites, it will provide a test of whether or not the site occupants were local and thus familiar with local clay sources, or if they immigrated into the area and brought with them ceramics made from exotic clays. The results will be analyzed statistically to determine if there are significant correlations between each of the three ceramic styles and specific minerals within the local clay sources and ceramic sherds. It is the presence of non-local clays that are most critical to evaluating the origin of the Lake Benton culture. By understanding the relationship of the ceramics to the three sites we can better understand the relationship of the site occupants to the larger region and their response to the Medieval Warm Period.

**Presentation Index:** H-VN 1

**Present Time:** 3:30 PM

**Student Presenter(s):**

Reiners, Lindsey

**Sponsor(s):**

Muniz, Mark

**Department(s)**

Sociology and Anthropology

### Faith-Based Social Service Organizations and Somali Immigrants in Central Minnesota

Central Minnesota has witnessed an economic and politically-based influx of Somali immigrants who often turn to local faith-based charities for assistance. Catholic charity organizations play a leading role in assisting with everything from housing to legal guidance and representation, English classes, and job placement. This presentation focuses on the social justice and social service engagement of the Catholic Church. In studying the work of locally-based Catholic organizations, it explores the experiences of Somali immigrants, who are primarily Muslim, in their interactions with the Christian groups. By exploring the communication and reconciliation of religious differences and similarities between the immigrants and the organizations, it discerns the consequent identity negotiation of these immigrants. The presentation discusses the role of social institutions in immigrant adaptation, the negotiation of identity pertaining to vital personal beliefs, as well as the mutual exchange of ideas between the organizations as the providers and the immigrants as the recipients of services.

**Presentation Index:** H-VN 2

**Present Time:** 3:50 PM

**Student Presenter(s):**

Panchmatia, Neil

**Sponsor(s):**

Zerbib, Sandrine

**Department(s)**

Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Anthropology and Performance in a Multi-User Domain**

A Multi-User Dungeon or MUD is a type of website where users interact with each other in a virtual environment composed of text. It is an example of what Tom Boellstorff calls a "virtual world," in his ethnography of Second Life. My research is based on his ethnographic model and focuses on the performative nature of communication within the MUD known as Yiffchat. Data was gathered over a four month period of participant observation and online interviews. All interactions were carried out using a textual avatar that represented me as an anthropology student in order to fully participate in the community I was studying. Yiffchat was a socially rich environment that was dependent on interpersonal interaction for its very existence as a virtual world. It catered to a specific online subculture, the furry fandom, by providing a place for people to interact as the human-animal characters they had created to represent themselves. By focusing on user representations and interactions as performances, I was able to identify a number of important properties I believe could be inherent to other successful virtual worlds as well. These properties include emotional investment in online social interactions and therefore in virtual relationships, the inherently performative nature of all online interaction, user creativity and adaptability, and the development of unique social norms.

**Presentation Index:** H-VN 3

**Present Time:** 4:10 PM

**Student Presenter(s):**

Hansen, Jonathan

**Sponsor(s):**

Lavenda, Robert

**Department(s)**

Sociology and Anthropology

### **News Sources in the Coverage of 2008 Mumbai Terror Attacks: A Comparative Study of Indian, Chinese and American Newspapers**

From November 26 to 29, 2008, a group of armed terrorists killed more than 170 people over a period of three days in India's financial capital Mumbai. The attacks received coverage in the major dailies of the world. This research analyzed three dailies from three different countries: the New York Times of the United States, the China Daily of China and the Times of India of India. Specifically, this presentation examines the dissimilarities or similarities in the news sources used by these three newspapers in their coverage of the 2008 Mumbai terror attacks. For the United States and China, the Mumbai attacks were an international terror incident; for India this was a domestic terror event. Very few studies have been carried out in the past to address the sources used by newspapers in their coverage of international terrorism, and how these sources are similar or dissimilar to the sources used by the newspapers of the country that experienced the incident. This presentation looks into the news sources used by three countries with different media systems. While the United States and India have libertarian press models, China has an authoritarian press model. News sources are an important consideration in news stories, especially those that deal with complex issues, because the choice of sources often determines whether the information disseminated by the sources is impartial or motivated by personal and political interests. Results are expected to shed light on the sources that these newspapers resorted to when a series of terror attacks shook Mumbai, an important financial city of the world.

**Presentation Index:** H-VN 4

**Present Time:** 4:30 PM

**Student Presenter(s):**

Karim, Wara

**Sponsor(s):**

Peng, Zengjun

**Department(s)**

Mass Communications

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

Session H-VS

Humanities II

Voyageurs South

### Consonant Voicing Characteristics in Somali-Accented English

This study looked at the voice onset timing (VOT) characteristics of Somali-accented English. VOT refers to the lapse, either positively or negatively, between the articulation of a speech sound and the onset of vocal fold vibration. English utilizes a large VOT delay for distinguishing voiceless stops (plosives) (/p/, /t/, /k/) from voiced ones (/b/, /d/, /g/), which use a shorter VOT. Although, according to Lieberman, about 25 msec. of delay should be sufficient for perceiving voicing as separate from articulation (described by Kent and Read as a "boundary region"), to indicate voiceless initial stops, English uses a 50-60 msec. delay after articulation before the onset of the voicing of following constituents. Somali, on the other hand, separates its voiced from voiceless stops using different phonological criteria. This study examined the application of Somali VOT characteristics to English speech by recording the pronunciation of selected English words by native Somali speakers and then measuring the delay characteristics of voicing for the stops. These values were compared to those obtained by native English speakers producing the same words. In addition, the speech produced by the native Somali speakers was played back to the native English speakers to measure the degree to which the application of Somali VOT values on English words could affect comprehension by native users of English. Understanding the roles of Somali phonological processes in speaking English and, especially, the affect the application of these processes may have on the intelligibility of native Somali speakers to native English speakers, can serve to inform decisions regarding the teaching of English as a second language.

**Presentation Index:** H-VS 1

**Present Time:** 3:30 PM

**Student Presenter(s):**

Ahlers, Jonathan

**Sponsor(s):**

Koffi, Ettien

**Department(s)**

English

### His Religious Perspective: Chaucer's Beliefs on the Church and Christianity of Fourteenth-Century England

Over the years, Chaucerian scholars discussed various subtexts found in Geoffrey Chaucer's writings. The Canterbury Tales, while entertaining readers since its publication, is no exception. What could Chaucer be claiming or commenting with his many characters and tales? My presentation focuses on the religious turmoil in England occurring before, during, and after Chaucer's issuing of the Canterbury Tales. Religious in tone, not all pilgrims, particularly the pious ones, follow their duties properly. From my research, I see some connections between Chaucer's pilgrims and the historical events of late fourteenth-century England. The main issues I address in this presentation concern how religious hypocrisy and Lollardy, a precursor to the English Reformation, affected Christianity, the church, and people in England. By looking at the ways that Christianity was viewed by these parties, it is possible to find religious hypocrisy at work. Establishing this foundation is key in identifying how Chaucer related such issues to his characters and tales in the Canterbury Tales.

**Presentation Index:** H-VS 2

**Present Time:** 3:50 PM

**Student Presenter(s):**

Walter, John

**Sponsor(s):**

Mohrbacher, Carol

**Department(s)**

English

### The Question of German Identity: A Study of German Immigrants to Stearns County from the Mid-nineteenth to Early-twentieth Century

In my study I will be looking specifically at the Germans of Stearns County, MN from the mid-1800's to the mid-1900's. What my study will seek to answer is why the Stearns County Germans came here, what they did when they arrived, and most importantly how they held onto their German identity after they came here. To do this my study will look at U.S. census records, newspaper articles from *Der Nordstern*, and interviews from first, second, and third generation immigrants. Overall, it is my main purpose to give the audience an overall understanding of how ethnic identity has even shaped the people of Stearns County.

**Presentation Index:** H-VS 3

**Present Time:** 4:10 PM

**Student Presenter(s):**

Freeh, Adam

**Sponsor(s):**

Mueller, Isolde

**Department(s)**

Foreign Languages and Literature

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### **Ethnic Settlement Patterns in Ely, Minnesota circa 1900**

The late nineteenth and early twentieth centuries brought enormous change to Minnesota's Iron Range region. The physical landscape was altered first via logging, then by iron ore mining. But the region's cultural landscape was also transformed, as immigrants from Europe settled in the wilderness. The city of Ely on the Vermilion Range was no exception, where immigrants from Slovenia, Croatia, Italy, Finland, Sweden and Great Britain came to work in the logging camps and underground mines. Language barriers, cultural nuances, occupation and economics played a role in determining where the newcomers would live, often creating ethnic neighborhoods and enclaves. This presentation examines the factors that led these immigrants to Ely, their settlement patterns at the turn of the century and the historical context behind those patterns.

**Presentation Index:** H-VS 4

**Present Time:** 4:30 PM

**Student Presenter(s):**

Bezanson, Katherine

**Sponsor(s):**

John, Gareth

**Department(s)**

Geography

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**Session I-B**

**Poster Session III - All Disciplines**

**Ballroom**

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### **Influence Of Grandparents On College Students**

The purpose of the study was to determine if values, morals, and personality characteristics are transmitted from grandparents to grandchildren who are currently college students. We hypothesized that students' emotional development will be predicted based on their relationship quality and values transmitted from their grandparent. Undergraduate students voluntarily completed an online 53-question survey via sona-system for extra credit. The survey was taken by 233 students between the ages of 18-24. Sixty-six males and 157 females completed the survey. The survey contained multiple choice questions, Likert scale questions, and open-ended questions. Students were asked to choose a grandparent, and then answered questions with that grandparent in mind. The survey measured the emotion intensity when with the grandparent, the quality of the relationship between grandparent and grandchild, and the values that were transmitted. The results of the survey showed that students most frequently chose their maternal grandmother as their grandparent of choice. Students reported feeling more intense feelings of love, affection and respect when with the grandparent with whom they are closest. Students reported that the values transmitted from the grandparent were in the following order of frequency: family, education, personal, work ethic, culture, and religion. The strength of these values was influenced by the amount of contact the student had with their grandparent of choice. In conclusion, the relationship with the grandparents may have a significant influence on the emotional development of college students and the values they receive.

**Presentation Index:** I-B 1

**Present Time:** 4:00 PM

**Student Presenter(s):**

Ahles, Amanda; Bianco, Casey; Johnson, Brittany

**Sponsor(s):**

Devoe, Marlene

**Department(s)**

Psychology

### **Groups in Space: Group Size and Locomotion**

The spatial locomotion of groups is of theoretical as well as practical interest. Locomotion speed in natural groups was examined as a function of group size and gender composition. Pairs of observers unobtrusively recorded the walking speeds of groups traversing both indoor and outdoor campus pathways. Group size and gender composition were recorded. Speed of locomotion was related to group size. Implications for group dynamics are examined.

**Presentation Index:** I-B 2

**Present Time:** 4:00 PM

**Student Presenter(s):**

Bianco, Casey; Falkum, Thomas; Austin, Christopher; Ellis, Alexandra; Gritti, Ryan; Sullivan, Zane; Hill, Rachel

**Sponsor(s):**

Jazwinski, Christine

**Department(s)**

Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Chemistry 160 Redesign: Implementing Learning Assistants in Introductory and Advanced Chemistry Courses

At St. Cloud State University the teaching of introductory chemistry courses transitioned from small classrooms to large lecture halls. To keep students engrossed in the subject in this setting, learning assistants were integrated into the class. The organization of the introductory chemistry course used primarily small-group activities overseen by the learning assistants, leaving less than 20% of class time actually spent as traditional lecture. Learning assistants during the semester, partook in a course that presented a variety effective pedagogies for student groups. To assess the effects of the learning assistants on student's success in the introductory chemistry course, final exam scores were juxtaposed against final exam scores with parallel sections and sections from previous semesters. Evaluation included interviews with instructors, focus groups with both the students and learning assistants, and attitudinal and efficacy data from students.

**Presentation Index:** I-B 3

**Present Time:** 4:00 PM

**Student Presenter(s):**

Buerkley, Megan

**Sponsor(s):**

Krystyniak, Rebecca

**Department(s)**

Chemistry

### Predator Avoidance Performance of Larval and Embryonic Fathead Minnows Following Exposure to Ammonia: The C-Start As a Toxicity Behavioral Endmarker

The effects of acute and chronic exposure to ammonia in fish have been well established and have resulted in U.S. EPA regulatory limits for ammonia discharge through treated wastewater effluent. However, these limits were developed using a set of guidelines that focus mainly on lethal and reproductive endpoints but largely ignore behavioral alterations in the exposed organism. Survival to adulthood, however, requires adequate predator avoidance responses, which are mediated by neurological structures and physiological factors and may be delayed by ammonia exposure. Evaluating non-reproductive, behavioral and physiological endpoints provides a further understanding of the effects of ammonia exposure across ontogeny. Larval fishes utilize an innate escape mechanism, the C-start behavior, to rapidly move away from any threat stimulus. The aim of this research was to test the hypotheses that 1) larval fathead minnows exposed to ammonia singularly suffer reduced ability to perform an innate C-start behavior when faced with a threat stimulus; that 2) the response is more sensitive to disruption by ammonia exposure than traditional lethality and reproductive endpoints; and that 3) exposure at different windows of sensitivity will produce distinct effects. In this study, larval fathead minnows were exposed to ammonia concentrations of 0 ppm/L NH<sub>3</sub>-N control, 200 ppm/L NH<sub>3</sub>-N low, 400 ppm/L NH<sub>3</sub>-N medium, and 800 ppm/L NH<sub>3</sub>-N high. High-speed (1,000 frames/second) video recordings, transferred to NIH Image for frame-by-frame analysis, measured latency period and escape velocities of exposed larvae and embryos.

**Presentation Index:** I-B 4

**Present Time:** 4:00 PM

**Student Presenter(s):**

Buerkley, Megan

**Sponsor(s):**

Schoenfuss, Heiko

**Department(s)**

Biological Sciences

### Waiting Room or Funeral Home: Public Perceptions of Health Care Reform

Healthcare reform has become a growing concern throughout the United States. A larger concern regarding healthcare reform may be the misinformation that is being distributed throughout the mainstream media. This study sought to examine individual perceptions of healthcare reform. Forty-four participants (ages 18-95) were recruited from St. Cloud State University and a local senior center. They completed a ten item survey (open-and closed-ended questions) addressing satisfaction with their current healthcare coverage and how healthcare reform will impact them and their health insurance coverage. It was hypothesized that age would have an influence on perceptions of healthcare reform. Contrary to this hypothesis, the results demonstrated that gender has a more significant influence on perceptions of healthcare reform. Women felt more positive about their current health insurance coverage and tended to believe that healthcare reform would have a more positive impact on health insurance benefits as well as quality and access to healthcare. Men expressed more neutral feelings about their current insurance coverage and the potential of healthcare reform to have a positive impact on health insurance benefits, quality, and access. This study provides information regarding public attitudes about healthcare reform; it suggests that women may view healthcare reform more positively than men and age may not have an impact on public perceptions of healthcare reform.

**Presentation Index:** I-B 5

**Present Time:** 4:00 PM

**Student Presenter(s):**

Shawley, Chrystal; Lodermeier, Dana; Nolan, Lisa

**Sponsor(s):**

Greenberg, Phyllis

**Department(s)**

Community Studies

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Obesity Across the Life Spectrum

Obesity, which is an excess of body fat (a Body Mass Index of 30-39.9), is highly prevalent in all age groups throughout the life spectrum. It is one of the leading causes of preventable disease, and death in the United States, contributing to more than 400,000 deaths each year. The rate of obesity in the United States has rapidly increased in the past ten years, making obesity a serious public health issue. The objective is to create awareness of the severity of the obesity problem and its health related complications. Research was conducted to find current information. Obesity is caused by an imbalance of energy consumption and energy expenditure. Many health risks are associated with obesity, such as coronary heart disease; type-II diabetes, many cancers, hypertension, stroke, liver disease, gallbladder disease, sleep apnea, and many more. Obesity has been shown to decrease the life expectancy in both men and women by over two years. Adapting a healthy lifestyle, medications and different surgical procedures are current options that are used to loose weight, or treat obesity in individuals. Obesity is a serious public health issue that must be properly addressed in order to improve the health, and quality of life of millions of Americans affected by this problem.

**Presentation Index:** I-B 6

**Present Time:** 4:00 PM

**Student Presenter(s):**

Lodermeier, Dana

**Sponsor(s):**

Antunez, Hector

**Department(s)**

Health, Physical Education,  
Recreation and Sport Science

### Effects of Empathy and Social Behavior Videos On Compassion

In this study, empathy and self-compassion were examined in different social behavior groupings. Empathy can be defined as the ability to place yourself in someone else's shoes. Self-compassion can be explained as how well a person can comfort himself or herself when faced with experiences of suffering or personal failure. Self-compassion entails three basic components: (a) self-kindness, (b) common humanity, and (c) mindfulness. The sample size was 19 undergraduate students, 11 females and 8 males. Participants completed the Interpersonal Reactivity Index and the Self-Compassion Scale. I predicted that those who showed low empathy would show less compassion towards an individual who is engaging in a wanted negative behavior. I also predicted those who have low self-compassion would show less compassion towards an individual who is engaging in a wanted negative behavior. In the unwanted negative behavior and in the positive behavior condition, compassion was expected to be high regardless of empathy and self-compassion. It was found that the effect of empathy on compassion was significant,  $r = .40$ ,  $p < .05$ , and the effect of self-compassion on compassion was not significant,  $r = .08$ , ns. Also there was a significant main effect for video on compassion,  $F(2, 26) = 36.61$ ,  $p < .05$ . Compassion was higher for those who had high empathy.

**Presentation Index:** I-B 7

**Present Time:** 4:00 PM

**Student Presenter(s):**

Austin, Adam

**Sponsor(s):**

Illies, Jody

**Department(s)**

Psychology

### Christian Religiosity and Happiness

In the pursuit of happiness that Thomas Jefferson wrote about during the Revolutionary War, many people have struggled to find out what brings that state about. However, there has been a link that involves an individual's religiosity. That link has shown itself on the trait level, with the state level being considered insignificant. This study looks to test that notion by manipulating the state level, and looking at both total happiness and state happiness to see if there is a relationship. Participants were placed in one of three mood conditions: positive, negative, and neutral. The participants then were asked to read a series of statements that was meant to induce either a positive or negative mood, with the control group having no such manipulation. The analyses show a positive correlation between religiosity and happiness, regardless of state ( $r = .34$ ,  $p < .05$ ) or total happiness ( $r = .34$ ,  $p < .05$ ). This study shows that the link between religiosity and happiness may not be significant due to trait solely.

**Presentation Index:** I-B 8

**Present Time:** 4:00 PM

**Student Presenter(s):**

Wagner, Benjamin

**Sponsor(s):**

Illies, Jody

**Department(s)**

Psychology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Effect of Anhydrous Sodium Sulfate On the Dehydration of Dicalcium Phosphate Dihydrate

Dicalcium phosphate dihydrate (DCPD) is one of the widely used additives in food and pharmaceuticals. It also serves as a source of calcium and phosphorus in nutritional supplements, cheese and meat products. However, DCPD is prone to dehydration and the mechanism is not clear. When DCPD is used in formulation with active ingredient that is susceptible to hydrolysis, as in the case of acetylsalicylic acid or beta-lactam antibiotics, the water released from DCPD can cause degradation of drug substance leading to failure of drug product. Understanding the factors influencing the dehydration under pharmaceutically relevant conditions can help to stabilize it and lead to formulation of stable pharmaceutical compositions. The main objective of our research is to study the dehydration of DCPD and find means to stabilize it. The dehydration of DCPD is sensitive to relative humidity (RH) and it reaches a maximum between 30-70% RH. Hence compounds that can potentially alter the microenvironmental humidity could be good candidates to inhibit dehydration of DCPD and thereby stabilize it. We had chosen to investigate the effect of anhydrous sodium sulfate (AnSS), a widely used drying agent, on the dehydration of DCPD. The presence of a drying agent in the neighborhood of DCPD is expected to change the microenvironmental humidity and influence the dehydration process. Equilibrium water sorption studies with 1:1 wt/wt mixture of DCPD and AnSS at two different RH conditions (33 and 42% at 37 degrees Celsius) indicate that the latter stabilizes DCPD. This is the first report of inhibition of dehydration of DCPD at conditions where it is most unstable. We had also examined the inhibitory effect of 1:1 wt/wt of dicalcium phosphate anhydrate (DCPA) and hydrated sodium sulfate on the dehydration of DCPD.

**Presentation Index:** I-B 9      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Mawilmada, Prasad	Sivaprakasam, Kannan	Chemistry

### Use of Fluorescent Probes to Monitor the Dynamics in Vegetable Oils

Vegetable oils are an important source of vital ingredients and micronutrients. Good health rests, in part, on an adequate and balanced supply of these critical components. The main objective of our research project is to understand the factors affecting stability of the commercially available vegetable oils in presence of various additives that are present in food materials (e.g., sugar, salt and cholesterol). What changes take place when the vegetable oils are subjected to simulated frying conditions in presence of these additives? We use a combination of techniques namely absolute viscometry (Brookfield), nuclear magnetic resonance spectroscopy (NMR), gas chromatography-mass spectroscopy (GC-MS) and fluorescence probes to monitor the changes in the physical and chemical characteristics as results of addition of these compounds to soybean oil when they are heated. Soybean oil minus additives system (10% w/v) when heated to 250°C for 4 hours, degrade to black/brown char; on the other hand, the system is stable at 100°C for up to 48 hours. Salt and sugar in soybean oil (10% w/v) forms a two-component system, whereas identical concentration of cholesterol results in a homogenous medium. When cholesterol plus soy bean oil system (10% w/v) is heated to 150°C for 5 hours, it solidifies on cooling. What is the mechanism of this solidification? In order to probe this change, absolute viscosity and fluorescence probe measurement tools were used. While the macroscopic changes in the viscous behavior is expected to be revealed by absolute viscosity, the microscopic changes were obtained by fluorescence probe. We found that chloroform solutions containing 1 M anthracene, a fluorescent probe, to be a sensitive probe to determine the dynamics of oil. In presence of 10% v/v soybean oil in chloroform, the four characteristic peaks of anthracene peaks in the excitation and emission spectral profile merge into one peak. As the concentration of soybean oil is reduced to 5% v/v and 1% v/v, the spectra is resolved into four peaks. Among the Singlet excited state transitions, the high energy transition was more selectively affected by the viscosity changes.

**Presentation Index:** I-B 10      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Mawilmada, Prasad	Sivaprakasam, Kannan	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Nanotoxicity of Iron Oxide Nanoparticles

Iron oxide nanoparticles are widely administered to combat iron deficiency in patients. In spite of their extensive use, their physical and toxicological properties are not well understood. Nanoparticles of akaganeite (beta-FeOOH) coated by gluconic acid in sucrose medium (Ferrlecit®) are approved by the Food and Drug Administration (FDA) to augment iron supply. Akaganeite is metastable and can transform into thermodynamically stable hematite (alpha-Fe<sub>2</sub>O<sub>3</sub>) over time. The main objectives are to: 1) Understand the thermodynamic phase transformation of akaganeite to hematite and 2) Study impact of the phase transformation on the in-vitro toxicological properties (using human embryonic kidney cell lines (HEK) and animal models (planarians and diatoms)). Optimization of synthesis of iron oxide nanoparticles in terms of variations in concentration of ferric chloride, temperature concentration of stabilizing agent and pH has been studied. Characterization of the nanoparticles by scanning electron microscope (SEM), X-ray diffraction, XRD and quantitative FT-IR reveals their particle size distribution and phase composition.

**Presentation Index:** I-B 11      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Mawilmada, Prasad; Xiong, Tong	Sivaprakasam, Kannan	Chemistry

### Investigation of the Sedimentology and Stratigraphy of the Cleo-Meyer Farm in Little Falls, MN

Surficial sediment in central Minnesota is dominated by glacial and glacio-fluvial deposits. These sediments are associated with landscape features that record the advance and retreat of ice lobes into Minnesota during the Pleistocene. Sedimentology is the study of the composition of sediments such as sand, silt and clay and the processes that lead to their deposition. Stratigraphy is the study of the arrangement of sedimentary layers in a given area. The investigation of the sedimentology and stratigraphy of a glaciated area such as the Cleo-Meyer farm near Little Falls, Minnesota reveals the local glacial history. Three different outcrop areas of the Cleo-Meyer locality were investigated. At each location, every unique sedimentary layer was measured and recorded. Samples of each sedimentary layer were gathered in the field and analyzed in the lab to determine the color, size distribution of the grains, and relative percentages of sand silt and clay. Then, the one to two millimeter grain size portions from the sorted grains were sorted into different lithologic categories. Once they were sorted, the grains were counted and the relative percentage of each lithology represented was recorded. When combined, these data allow for the stratigraphic correlation of the units present at each different location. The sediments present at the main section of the Cleo-Meyer location are outwash and till deposits associated with either the St. Croix or the Wadena moraines. These sediments were deposited in sequence in a variety of different glacial processes associated with the ablation of the ice lobes that once covered this area of Minnesota.

**Presentation Index:** I-B 12      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
McDonald, Lori	Pound, Katherine	Earth and Atmospheric Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Differences in Education Services Among English-, Spanish-, Somali-, and Hmong-Speaking Children with Autism

The Department of Communication Sciences & Disorders at St. Cloud State University is investigating if children with autism whose primary language is not English are placed in special education settings differently than English-speaking children with autism. There have been several studies performed in the past regarding the relationship of autism and ethnicity in diagnosis. However, the association between the primary language that a child speaks and the educational placement for special education services has not been examined. Dr. Theresa L. Estrem of Saint Cloud State University has acquired a large data set that includes many attributes of children receiving autism services in Minnesota public schools between 2001 and 2008. As statistical consultants, Juan Zuluaga and I have explored the utilization of Dummy Variable Regression in an attempt to describe the relationship between primary language spoken and the age of a child at first entry into services. We have also implemented a statistical analysis, Markov Chain, to analyze the probability that a child may increase or decrease the restrictiveness of his instructional setting. We will discuss the implications of conducting these types of analyses to assist other disciplines in understanding changes over time and their ability to make recommendations that acknowledge and accommodate the increasing cultural and linguistic diversity of Minnesota public school students with special education needs.

**Presentation Index:** I-B 13      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Ransbotham, Anna; Zuluaga, Juan	Zhang, Shiju; Estrem, Theresa	Communication Sciences and Disorders, Statistics

### Comparison of Early and Late Respondents in SCSU Surveys.

The response rate to phone surveys has been decreasing nationally in recent years. Furthermore, the response rate is particularly low among cell phone users. Survey organizations are concerned and want to know about the people who are hard to reach, and if survey organizations should insist on repeated calls to people who are hard to reach, even at an increased expense, in order to maintain samples of adequate size and representativity. The SCSU Survey is analyzing two of its recent phone survey datasets to discover systematic demographic and ideological differences among respondents who completed the survey on an early attempt and the respondents who completed the survey on a later attempt.

**Presentation Index:** I-B 14      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Ang, Su Fei; Zuluaga, Juan	Frank, Stephen; Wagner, Steven; Zerbib, Sandrine; Hammes, Michelle; Robinson, David; Kulas, John	Political Science, Psychology, Sociology and Anthropology, Statistics

### Which Organism Would You Choose: Research on Social Construction

Social construction is defined as the value the public ascribes to a particular thing. For example, society appears to value cute and cuddly animals (e.g., koalas) more than creepy and slimy animals (e.g., salamanders). The purpose of this experiment was to determine: 1) the value ascribed to each species by an individual; 2) the responding value an individual gave the species when an ecological description was present. I hypothesized that the participants would be affected by the ecological description I provided. A survey was conducted in two stages. The first stage used photographs from six organisms, and reflected the value individuals assigned to a given species. The second stage of the survey used the same pictures (from the previous stage) along with an ecological description of each of the organisms. A chi-square test was conducted, the results of which suggested that the null hypothesis was not rejected. However, there might be a possible trend between endangerment and the number of students choosing (i.e., valuing) an organism. Nevertheless, the trend was difficult to determine due to the small sample size of the number of participants.

**Presentation Index:** I-B 15      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Croghan, Katrina	Marcattilio, Anthony; Restani, Marco	Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### A Lithologic Analysis of Glacial Sediments in Central Morrison County

The landscape in Central Minnesota has been altered and sculpted by glaciers during the Quaternary period. Several areas of high land are located south and east of Little Falls, MN. Sediments at these locations appear to have been direct consequences of multiple glaciations. At the Cleo Meyer farmstead, an exposure is accessible that is fifteen meters thick and has obvious stratigraphic layers. Using field observation techniques, each unit of the exposure was measured. The sedimentology lab at St. Cloud State University was used to determine the grain size range and the percent compositions of the sand, silt, and clay content for each sample. The 1-2 millimeter grains were saved and subjected to a lithologic analysis to determine the source location of the sediment. It was found that the exposure studied includes sediments derived from the Superior Basin as well as the Canadian Shield. This structure is interpreted as a drumlin that was created during the advance and retreat of both the Rainy and Superior lobes, and may also have been influenced by the Wadena lobe.

**Presentation Index:** I-B 16

**Present Time:** 4:00 PM

**Student Presenter(s):**

Nylund, Jacob

**Sponsor(s):**

Pound, Katherine

**Department(s)**

Earth and Atmospheric Sciences

### Aggregation of Cholesterol: Investigations Using Viscosity Measurements and Scanning Electron Microscopy

Cholesterol, an abundant steroid in biological systems, plays an important role in atherosclerosis. The primary cause of atherosclerosis is the aggregation of cholesterol on blood vessel walls. Studies have shown that cholesterol-cholesterol interactions can occur via hydrogen bonding interactions between the cholesterol hydroxyl groups. Anticoagulants, such as aspirin, heparin, warfarin, and Plavix, contain functional groups that could interact with the cholesterol hydroxyl groups and interfere with the cholesterol aggregation. Therefore, we are investigating the effect of anticoagulants on cholesterol aggregation using solution viscosity studies with a Brookfield Viscometer and morphology analysis using scanning electron microscopy (SEM). The solution viscosity of cholesterol was studied in the presence of lecithin and soybean oil to determine their effect on cholesterol viscosity. As expected, they both increased the viscosity of the cholesterol when water saturated chloroform was used as the solvent. A method for precipitating cholesterol from chloroform has been developed and the morphology of precipitated cholesterol was studied using SEM. The results from these control experiments, as well as the effect of anticoagulants on the viscosity and morphology of cholesterol aggregates, will be presented in this poster.

**Presentation Index:** I-B 17

**Present Time:** 4:00 PM

**Student Presenter(s):**

Hary, Joshua; Barnowsky, Corrie

**Sponsor(s):**

Ramakrishnan, Latha;  
Sivaprakasam, Kannan

**Department(s)**

Chemistry

### Solar Powered Wireless Mailbox

The physical mailbox will have a locking mechanism that will operate with radio frequency identification (RFID). The system will alert the user if any mail needs to be picked up. The system's power will be supplied by batteries which will be recharged with solar energy. This product will use a wireless channel to allow communication between the outside and inside of the house that will have a display screen for mail presence, temperature and battery energy level. The RFID circuitry would operate the locking mechanism of the circuit; the user would have to scan a valid RFID tag in order for the solenoid latching to unlock the mailbox. The sensors in the mailbox would sense the presence of new mail, and with the help of the wireless module in the box, this information would be transmitted to the receiver inside the house along with some other information, such as the temperature outside, and battery level for the battery in the mailbox. In order to save the battery life, we would recharge the battery with a solar panel which would be incorporated into this circuit. This project would help its user know when mail is put into the mailbox, provide security for the content of the mailbox, and give the user real-time temperature outside.

**Presentation Index:** I-B 18

**Present Time:** 4:00 PM

**Student Presenter(s):**

Yo, Souleymane; Obi, Daniel; Trajkovska, Sanja Hossain, Md

**Sponsor(s):**

**Department(s)**

Electrical and Computer Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Ultrasound Vibrometry

The main objective of this project is to design devices for ultrasound vibrometry system, which is a medical system that can be used to estimate the properties of tissues like viscosity and elasticity. These properties of tissues can be used by doctors to diagnose the diseases in the tissue. The ultrasound vibrometry system is an integration of various devices, most of it will be designed by us, and some of the commercial components will be used. The main goal would be to design the devices according to the specifications and integrate them to a single unit. The system will be able to vibrate the tissue and detect the vibration in the tissue. The detected vibration signals will be processed to obtain the properties of tissue such as elasticity and viscosity. The devices and equipments in the system will be controlled by the software called LabVIEW.

**Presentation Index:** I-B 19      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Karki, Adip; Shrestha, Ravi; Aryal, Bijendra	Zheng, Yi	Electrical and Computer Engineering

### Use of Prompts to Promote Separation of Recycled Materials

This study examines whether using prompts to promote recycling will encourage people to recycle. The area that has been examined is in Riverview at St. Cloud State University. Riverview is a two story academic building. There are eight classrooms with a set of three receptacles, one black trash receptacle, one blue receptacle for paper and one blue receptacle for glass/aluminum/plastic that have been placed by the door. Four classrooms were presented with recycling information placed about four feet from the floor. The information for prompting people was placed above each set of recycling receptacles. Results show an overall improvement of recycling by forty percent. The rooms that used prompts for recycling had an increase of thirty-six percent and the rooms that did not have prompts had an increase of twenty-five percent which suggests that educating people of the importance of recycling does encourage slightly. The increase in the rooms without prompting may be due to a cross contamination effect. Students and instructors that have more than one class in the building could have seen the prompting from another classroom. Properly labeled containers are a must to guide people where to dispose of waste.

**Presentation Index:** I-B 20      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Tessier, Robin	Jazwinski, Christine	Psychology

### The Effect of Alcohol Drinking on SCSU Campus

My research wants to know why binge consumption of alcohol has not yet been significantly eradicated from American colleges, especially from St. Cloud State University. I review in this literature, the best research I found about how a large problem of binge drinking, defined as five or more drinks a day for a male and four or more for a female person, is for SCSU. The results are astonishing and reveal how this behavior is related to collective categories such as gender, color, race, and in addition, to another very sober reason of business.

**Presentation Index:** I-B 21      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Andrade Junior, Elias	Zerbib, Sandrine	Sociology and Anthropology

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Synthesis and Analysis of Ferroelectric Liquid Crystals

Ferroelectric liquid crystals are organic compounds that display an ordered structure in the liquid phase. When these compounds are chiral they respond to an external magnetic field. The manner in which they respond is dependent on their structure, temperature, voltage applied, and mixture of compounds if applicable. Manner of response is analogous to properties. These compounds have a wide variety of photo-electric properties. This is a project of synthesis of a series of homologues and study of their properties. Because these compounds are made from organic building blocks there are endless possibilities for synthesis. The goal of this project is to develop new liquid crystals with smooth phase transition proportional to applied voltage.

**Presentation Index:** I-B 22

**Present Time:** 4:00 PM

**Student Presenter(s):**

Spector, Ivan

**Sponsor(s):**

Liu, Zengqiang; Mechelke, Mark

**Department(s)**

Chemistry, Physics, Astronomy and Engineering Science

### What is the Geography of H1N1?

This presentation will examine the geography of H1N1, in regards to how the virus spread last year starting in Mexico. Medical geography is a key component to my research. By seeing how past diseases and viruses have spread, I can compare how they spread versus H1N1 itself. I will also look at death rates from H1N1, specifically in the U.S., and then the rest of the world. After I analyze my data, I will make maps that show diffusion of the disease, along with death rates. My analysis will provide data that shows if there are patterns to the spread of H1N1 with past diseases, or if this virus was different. Also, I will see if there are any specific patterns with death rates.

**Presentation Index:** I-B 23

**Present Time:** 4:00 PM

**Student Presenter(s):**

Knudson, Tyler

**Sponsor(s):**

John, Gareth

**Department(s)**

Geography

### An Exploration of the Reproductive Activity of Puya (puya clava-herculis) Plants Found in the Andes Mountain Range

Puya, an interesting monocarp which produces hundreds of thousands of seeds on a large inflorescence, is a ground bromeliad plant found in the high-altitude páramo of Ecuador. Each inflorescence is composed of clusters of seedpods, all containing hundreds of seeds. Because of this food and nutrient-rich environment, the inflorescence of Puya are home to many organisms. Despite its importance to the ecosystem of the páramo, many characteristics and functions of the reproductive period have been neglected, which is the primary investigation of this study. This experiment examines correlations between the number of clusters, seedpods, and seeds on a plant with the plant/inflorescence height and width as well as the seed maturity. There were many factors that were observed which affected the data, including the presence of parasites, location of the plants, and stage of reproductive growth. The data provided evidence for coupled growth of clusters, seedpods, and seeds, requiring an abrupt release of carbohydrates to support this rapid growth. The relatively low seed viability before dispersal validates the high number of seeds produced. This plant is important as it is a significant source of nutrients for the Andean bear and may be a keystone species in this region.

**Presentation Index:** I-B 24

**Present Time:** 4:00 PM

**Student Presenter(s):**

Tulloch, Alastair

**Sponsor(s):**

Timmerman, Kristina

**Department(s)**

Biological Sciences

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### SCSU: A Campus of Change

Historical GIS is a new and exciting approach to mapping the past and integrating it into the world that we now know. GIS has been a great tool to show the accuracy and scale of historical maps. In this project, I will use GIS to show the way that the campus of St. Cloud State University has changed since being the "Normal School" in 1869 to the way the present campus is laid out today. This will include changes to the campus boundaries, buildings, and the construction of the transportation system in and around campus. To aid in showing these transformations, aerial photos and maps from a time near the inception of St. Cloud State will be displayed and shown against current maps to show the ever changing campus.

**Presentation Index:** I-B 25      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Lundquist, Gregory	John, Gareth	Geography

### Anticancer Activity of RuCDTA and TiCDTA Complexes and Their Interactions with DNA

The mechanism of therapeutic cancer drugs are based on their interaction with the DNA to change its properties so that the cancer cells can be destroyed by apoptosis or other mechanisms. *Cis*-Diaminodichloroplatinum(II), or commonly known as cisplatin is a clinically important anticancer drug which forms coordination complexes with single atom cross links between N-7 atom of adjacent G bases in the major groove of the double stranded DNA helix. Though it is effective drug clinically, it has numerous side effects including systemic toxicity. For this reason efforts are being made to develop similar metal center chemotherapeutics with minimal systemic toxicities. The chelating agent trans-1, 2-diaminocyclohexane-N, N, N prime, N prime - tetracetic acid (CDTA) is considered a good ligand to prepares such metal complexes because they are believed to have properties similar cisplatin. In the proposed research, [Ti(trans-1,2-diaminocyclohexane-N,N,N prime,N prime-tetracetic acid)]<sub>3</sub>H<sub>2</sub>O, or TiCDTA and [Ru(trans-1,2-diaminocyclohexane-N,N,N prime,N prime-tetracetic acid)]<sub>3</sub>H<sub>2</sub>O, or RuCDTA have been examined. We have previously shown that these compounds exhibit anticancer activities. In their study their interactions with DNA is being explored. UV-Vis and Fluorescence spectroscopic studies suggest that they interact with DNA and we are in the process of determining the strength of this interaction. These studies are ultimately expected to reveal the mode of action of TiCDTA and RuCDTA complexes.

**Presentation Index:** I-B 26      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Luke, Dennis	Sreerama, Lakshmaiah	Chemistry

### Inhibition of Alpha- and Beta-Glucosidase by Vanadium-Flavonoid Complexes and its Impact on Glucose Metabolism and Diabetes

Diabetes is a chronic metabolic disease with emerging health complications and a common cause of death. Currently, oral anti-diabetic drugs such as Alpha-glucosidase inhibitors are in use to prevent digestion of carbohydrates. Vanadium salts and its complexes are also being assessed clinically and the results appear to be promising. Vanadium and flavonoids, each individually, have also been promising anti-diabetic agents. Combining the properties of the two via the preparation of vanadium-flavonoid complexes is expected to show synergistic and/or additive anti-diabetic effects. In this study, we have tested the inhibitory effect of 3-hydroxyflavone, 5-hydroxyflavone, vanadyl sulfate, vanadyl-3-hydroxyflavone, vanadyl- 5-hydroxyflavone, and vanadyl acetyl acetonate on two important glucose generating enzymes, viz., Alpha- and Beta-glucosidase. The inhibition assay was performed spectrophotometrically. The above compounds inhibit Beta-glucosidase to varying extents. Inhibition of Alpha-glucosidase is being performed. The results of this study are expected to provide the broader picture of how vanadium-flavonoid complexes exert their anti-diabetic properties.

**Presentation Index:** I-B 27      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Kunwar, Yejur	Sreerama, Lakshmaiah	Chemistry

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Transformation of a Hermite-Gaussian Laser Mode to a Laguerre-Gaussian Mode via Cylindrical Lenses

We demonstrate a technique to convert a Hermite-Gaussian (HG) laser beam into a Laguerre-Gaussian (LG) beam using cylindrical lenses. HG beams have the appearance of two elliptical spots that are parallel to each other and LG beams tend to have a doughnut shaped appearance whenever they are shone on a flat surface. Both HG and LG beams are solutions of the wave equation with LG beams having cylindrical symmetry and HG beams having rectangular symmetry. In addition, LG or HG beams both form a basis set so that a linear superposition of two components of an HG beam produces an LG beam. It is difficult to produce LG beams efficiently, but HG beams can be simply produced by introducing a strand of hair inside a laser cavity so that the laser beam will be converted into a HG beam. An HG beam can then be converted to LG beam via two cylindrical lenses by the Gouy phase shift on one component of the HG beam. LG beams are of interest to us because they have applications in quantum cryptography and storage of information in materials. In addition, photons within LG beams carry integer values of orbital angular momentum and when particles are trapped within an LG beam, they can take on the orbital angular momentum from those photons causing them to rotate.

**Presentation Index:** I-B 28

**Present Time:** 4:00 PM

**Student Presenter(s):**

Harter, Joseph

**Sponsor(s):**

Bigelow, Matthew

**Department(s)**

Physics, Astronomy and Engineering  
Science

### Single Crystal Growth Techniques For Perylenetetracarboxdiimide Derivatives

We are exploring perylene tetracarboxdiimide (PTCDI) derivatives for use in organic semiconductor devices. The electrical and optical properties of PTCDI derivatives are affected by the molecular packing in the solid state. The addition of different functional groups to the parent PTCDI molecule affects this molecular packing. One can effectively fine tune the properties of the material by changing the attached functional groups. The effect of the changes in molecular packing in the solid state can be observed more readily by examining the properties of well-ordered high purity single crystals of these materials. We report our efforts in the synthesis and characterization of selected PTCDI derivatives and different methods to obtain well ordered solid state structures.

**Presentation Index:** I-B 29

**Present Time:** 4:00 PM

**Student Presenter(s):**

Backer, Brian; Swanson, Jacob

**Sponsor(s):**

Neu, Donald; Lidberg, Russell

**Department(s)**

Chemistry, Physics, Astronomy and  
Engineering Science

### An Introduction to Pulse Oximetry

Pulse oximetry is a non-invasive way to measure the heart rate and the oxygenation of a patient's hemoglobin. The basic idea of oximetry is to calculate the oxygenation of blood (SaO<sub>2</sub>) by measuring the intensity of light that has been attenuated by body tissue. A sensor is usually placed on a patient's finger, and a light containing both red and infrared wavelengths is passed from one side to the other. By excluding the absorbance caused by venous blood, skin, bone, muscle, fat, and fingernail polish, the absorbance due to artery blood can be determined. As a result, the oxygenation of blood is obtained.

**Presentation Index:** I-B 30

**Present Time:** 4:00 PM

**Student Presenter(s):**

Compaore, Hassane; Liu, Liangnan

**Sponsor(s):**

Zheng, Yi

**Department(s)**

Electrical and Computer Engineering

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Campus Congestion: An In Depth Look at Traffic Issues Facing St. Cloud State University

Recently, congestion and parking has been an issue at St. Cloud State University. While the university has made attempts to address the parking issue with the completion of an on-campus parking ramp in 2008, moving around as a pedestrian or in a car still proves to be a challenge all around SCSU campus. In addition to increased student enrollment, the city of St. Cloud is planning sweeping changes to the properties along Fifth Avenue, which is a main collector road on the west side of the campus. Corborn's Plaza, SCSU's newest student housing complex, is scheduled for completion in time for Fall semester, 2010. This complex is located just northwest of campus and will include street-level retail, an information center, and will serve as a new gateway to SCSU. All of these recent developments will undoubtedly put increased demands on both vehicle and pedestrian traffic on and around SCSU campus. Having this in mind, the main goal of our research is to determine the current and future travel demands on campus. Our research will include observational data based on visual counts of vehicles traveling at key nodes throughout the University. We intend to compare the observational data to the data produced from the APO (Area Planning Organization). With the plethora of changes and growth planned on and around SCSU campus, it is important for policy-makers to consider how the changes in land-use will affect the safety and efficient movement of the students as well as the residents in the South Side University Neighborhood. The information produced by our research should prove useful to the planners; policy-makers and university administrators involved in the future growth and development of the SCSU campus and the South Side University Neighborhood.

**Presentation Index:** I-B 31      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Srock, Charles; Mooney, Leigha; Uphoff, John; Svenkeson, D'Angelos; McBorrough, Edward	Woldeamanuel, Mintesnot	Community Studies

### Comparison of Student Knowledge of Nuclear Waste Between Chemistry Majors and Non Majors

St. Cloud State University students were asked to complete a brief survey that measures their knowledge and beliefs regarding nuclear waste and nuclear waste storage. Responses between science majors and non-science majors were compared to gauge how well science classes teach scientific issues in society.

**Presentation Index:** I-B 32      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Schnaser, Aron	Krystyniak, Rebecca	Chemistry

### Factors Affecting Retention of SCSU Students

This research attempts to explain the retention of students at St. Cloud State University and what factors affect these retention rates. Our analysis will be used to guide in the improvement of the recruitment and retention of the SCSU student body. The data consists of 23 quantitative variables and 19 categorical variables. Of these variables the factors we will focus on are GPA, attempted credits, earned credits, living on campus vs. not living on campus during the first semester, and participation in First Year Experience. Further analysis will be done to compare students based on race and ethnicity. The students will be split into 4 groups consisting of international students, students of color, white students, and unknown. The results will then be used in an attempt to find any indicators that may predict if a student is at risk for leaving school.

**Presentation Index:** I-B 33      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Silva, Cecelia; Koktan, Aaron; Koffi, N'guessan	Robinson, David	Statistics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Unmanned Aerial Vehicle

Flight control of unmanned helicopters is an area that poses interesting problems for control researchers. The proposed aircraft is a quad-copter which has four propellers mounted equidistant from the center. This kind of aircraft is dynamically unstable and is affected by various sources of disturbances such as wind, ground effect, etc., and hence a robust control algorithm will be implemented for its stabilization. Stability is achieved when the pitch, roll and yaw angles are balanced, which will be controlled using the feedback from 6-degrees of freedom sensor. A non-linear control algorithm will be implemented and its performance will be tested and simulated to evaluate dynamic data calculation. The final product will be a prototype of a quad-rotor helicopter that will be autonomous as well as user controlled remotely.

**Presentation Index:** I-B 34      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Shrestha, Guinness; Ching, Yonghan; AlYami, Naif	Hou, Ling	Electrical and Computer Engineering

### Methods of Stratification and Scarification for Breaking Dormancy in *Corylus Americana*

American Hazelnut (*Corylus americana* Walter) is a native shrub found in the transition zone between dry forest and prairie lands. Little has been published regarding seed coat dormancy or strategies for breaking dormancy for this species. American hazels naturally undergo a 4-6 month freezing period (winter) before conditions are correct for successful germination. This study attempted to trigger germination without a lengthy freezing cycle. Attempts to break dormancy included: storing hazel seed in various temperatures for a time period of two or four weeks, physical removal of the outer seed coat, treatment with gibberilic acid (germination hormone), or a combination of seed coat removal and gibberilic acid. There were successful germinations at all temperature and time treatments. The highest germination rate was recorded in hazel seeds that physically had their seed coat removed and received gibberilic hormone.

**Presentation Index:** I-B 35      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Malone, Kayla	Arriagada, Jorge	Biological Sciences

### Measuring Small Wavelength Shifts With a Spatial Heterodyne Spectrometer

A key to gaining a better understanding of upper atmospheric dynamics is accurate measurements of upper atmospheric winds. As part of a NASA funded program, we have developed a laboratory prototype of a small and rugged optical instrument that has the capability to measure atmospheric winds from a satellite. The instrument contains a Spatial Heterodyne Spectrometer which produces interference fringes from incoming light. The wind speed is derived from the phase change of these fringes. Our ability to accurately measure the fringe phase and therefore wind speed, is limited by practical difficulties such as thermal drifts in the lab and signal-to-noise ratios of the fringe patterns. In the poster we will describe our laboratory setup for generating interference fringes, techniques for mitigating measurement errors, and computer and laboratory tests showing that the accuracy of the fringe phase can be measured.

**Presentation Index:** I-B 36      **Present Time:** 4:00 PM

<b>Student Presenter(s):</b>	<b>Sponsor(s):</b>	<b>Department(s)</b>
Fuchs, Brody	Harlander, John	Physics, Astronomy and Engineering Science

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Culturing the Unculturables

Microbiologists have known for about 40 years that growth media developed to grow clinical isolates commonly used in microbiology labs only allow about 0.1% of the viable bacteria visible in samples from natural environments to grow. Kim Lewis and his group from Northeastern University have shown that *Micrococcus* species found in soil act as "nurse" colonies and allow other unculturable microbes to produce small colonies adjacent to the edge of the *Micrococcus* colony. The *Micrococcus* were shown to be producing siderophores that allowed the unculturable microbes to obtain iron present in low concentrations in the media. We were curious to see if *Micrococcus* would have a similar effect for unculturable bacteria found in freshwater. Freshwater samples were obtained from a lake on campus and then plated on a variety of different media to see which supported the highest growth. Surprisingly, we discovered that the general purpose media (TSA) supported significantly less bacterial growth and also fewer colony types than media with much lower concentrations of nutrients. Neither *Micrococcus luteus* nor a potential "nurse" bacteria isolated from lake water act as feeders for unculturable bacteria from freshwater. Serial dilutions of lake water, like soil, do not give the expected 1:10 colony ratio between plates. However, the lake water samples had fewer colonies than expected indicating that the interaction between cells/colonies in water is competition, not synergy as seen with soil. Lake water itself is not inhibitory. Many of the current antimicrobial drugs are produced by microbes that were isolated from soil. The unculturable bacteria found in nature have the potential to be the source of new classes of antimicrobial drugs. But before we can tap into that potential, we must be able to grow the unculturables.

**Presentation Index:** I-B 37

**Present Time:** 4:00 PM

**Student Presenter(s):**

Kent, Elizabeth; Merten, Zachary

**Sponsor(s):**

Jensen, Ellen

**Department(s)**

Biological Sciences

### Kinzer Creek Stream Quality Analysis

Kinzer Creek is a designated trout stream located in south central Stearns County, approximately two miles south of the city of Cold Spring, Minnesota. Kinzer Creek drains approximately 4,200 acres during its 2.72 mile journey into Knaus Lake. Trout, a highly sought after game fish, and the water bodies they reside within are rare throughout the Central Minnesota region. This research project started in November 2008 when stream bank erosion, soil texture, bulk density, dissolved oxygen, and temperature data were obtained from nine erosion sites along Kinzer Creek. In October 2009 this project was expanded upon, when in addition to the above data, orthophosphate, ammonium, and pH tests were conducted on both the previous and current year's soil samples. Comparing the data from 2008 and 2009 will help provide a better understanding of what is happening within Kinzer Creek. It is the goal of this project to continue to collect data yearly in an effort to gain a more concise picture of this stream's health.

**Presentation Index:** I-B 38

**Present Time:** 4:00 PM

**Student Presenter(s):**

Gutknecht, Zachrie; Hawkins, Dawn

**Sponsor(s):**

Bender, Michner

**Department(s)**

Environmental and Technological  
Studies

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Comparative Morphological Selection: Waterfall-Climbing in Gobiid Fishes from Dominica

The amphidromous gobiid fish *Sicydium punctatum* from the island of Dominica has a life history that includes the need to scale waterfalls thousands of body lengths in height. It shares this amphidromous migration with gobies in the Hawaiian Islands. Larvae hatch upstream, but are swept downstream into the ocean by currents, where they develop for several months before returning to adult freshwater habitats. This extraordinary behavior places considerable demands on the locomotor systems of these species. These demands might be expected to restrict the range of locomotor mechanisms that these fishes employ, or require all species that undertake this task to achieve a similar level of performance. We tested the hypothesis that the diversity of locomotor function is limited in the fishes that traverse this extreme environment by comparing climbing performance from *S. punctatum* with previously published data from our laboratory for waterfall climbing Hawaiian gobiid fishes. Both juvenile and adult *S. punctatum* were captured in Dominican streams and allowed to climb an artificial waterfall at the Archibold Research Station in Dominica. Fish were filmed while climbing using a standard digital video camera (33 Hz frame rate) concurrently with a high-speed camera (500 Hz frame rate). Standard videos were assessed to determine the velocity of climbing and the frequency of rest periods in *S. punctatum* across 20 body length. High-speed videos were digitized across a single locomotor cycle to calculate thrust, acceleration and lateral displacement. Analysis revealed patterns in Dominican climbing gobies that differed substantially from Hawaiian gobiid fishes suggesting that even in extreme habitats multiple locomotor styles can evolve.

**Presentation Index:** I-B 39

**Present Time:** 4:00 PM

**Student Presenter(s):**

Leonard, Gerald

**Sponsor(s):**

Schoenfuss, Heiko

**Department(s)**

Biological Sciences

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**Session J-GN**

**Effects of Societal Practices**

**Glacier North**

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### Snow Plow, Know How.

I will revisit the snow plow problem, a popular differential equation problem. This problem is of particular interest here in Minnesota where accidents involving snow plows are part of our life. I plan on demonstrating some new aspects of this problem. Including the minimum separation of snow plows at cross streets, head on collisions, and a new way to look at multiple plows headed in the same direction, including when and if they crash into each other. This coupled with animation and video will make for an interesting and engaging discussion of the mathematics behind Snow Plow, Know How.

**Presentation Index:** J-GN 1

**Present Time:** 5:00 PM

**Student Presenter(s):**

McCoy, Patrick

**Sponsor(s):**

Huang, Danrun

**Department(s)**

Mathematics

## STUDENT RESEARCH COLLOQUIUM ABSTRACTS

### Examining Reproductive Effects of Endocrine Active Compounds on Fish

Two exposure studies were conducted to investigate differences in biomarker expression between basic laboratory exposures and more environmentally-relevant exposures. In the first study, male fathead minnows were exposed to environmental realistic concentrations of 17 beta-estradiol in steady (30ng/L), high to low (gradual decrease 65 to 0 ng/L), low to high (gradual increase 0 to 65 ng/L), intermittent (0 and 65 ng/L at 3 day intervals), and variable (random from 7 to 70 ng/L) patterns. Temporal variation in concentrations was intended to simulate varying environmental conditions due to rain events, droughts, and changes in effluent discharge. Vitellogenin concentrations were significantly elevated in all treatments. Differences in the expression of vitellogenin mRNA and ELISA endpoints were also addressed. A second study was performed to investigate estrogenic potency of 17 alpha-estradiol as compared to 17 alpha-estradiol through several common biomarkers in male and female fathead minnows. Three treatment groups were exposed to 50 ng/L, 150 ng/L, or 300 ng/L 17 alpha-estradiol (alpha-low, alpha-medium, alpha-high, respectively). The 17 beta estradiol treatments were exposed to 10 ng/L, 25 ng/L, or 50 ng/L (beta-low, beta-medium, beta-high, respectively). Vitellogenin data suggested that, although less potent, 17 alpha estradiol can still elicit significant vitellogenin production in male fish. These two studies illustrate several important issues that are often overlooked in the regulation of chemicals of concern. One, the impact of a chemical on aquatic life may be greatly affected simply by local environmental conditions. Second, variations of compounds, such as stereoisomers and metabolites, often have significant effects on aquatic life and should not be disregarded when assessing overall hazard of a chemical.

**Presentation Index:** J-GN 2

**Present Time:** 5:20 PM

**Student Presenter(s):**

Hyndman, Katie

**Sponsor(s):**

Schoenfuss, Heiko

**Department(s)**

Biological Sciences

---

**Session J-GS**

**Behavioral Studies**

**Glacier South**

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### Elite Sweatshop

In this presentation I will discuss the concentration of how foreign elite survive in the Corporation in the U.S. The sweatshop doesn't only happen in the developing countries. Sometimes the corporations in the developed countries will take advantage of elites' foreign status to push them to contribute more with less pay and welfare. Under most situations, this exploiting is on the edge of the law. The purpose of my presentation is to hope more and more people to be aware of the sweatshops maybe happens just around us and hope the foreign elite's basic rights be protected.

**Presentation Index:** J-GS 1

**Present Time:** 5:00 PM

**Student Presenter(s):**

Chen, Wenjie

**Sponsor(s):**

Berglund, Gena; Magnuson, Carla

**Department(s)**

Human Relations and Multicultural Education

### Predictors of Success on the CRA Exam

The credentialing exam or registry for radiologic and imaging administrators called the Certified Radiologic Administrator (CRA), like others in the radiology and imaging sciences, has the support of multiple professional organizations, the American Healthcare Radiology Administrators (AHRA), being the most recognized of these professional organizations. However, unlike other registries, the CRA exam does not have a curriculum or educational programs to support it. The purpose of this study is to produce information pointing to indicators of success on the exam. This information, when presented to members of academia, will assist in the development of a curriculum. This will be a tool to assist educators to better prepare individuals seeking entry into the Healthcare administrative professions and/or candidates for achieving the Certified Radiologic Administrators credentials while lacking in extensive experience in radiologic management roles.

**Presentation Index:** J-GS 2

**Present Time:** 5:20 PM

**Student Presenter(s):**

Winter, Carole

**Sponsor(s):**

Macari, Daniel

**Department(s)**

Counselor Education and Educational Psychology

## ACKNOWLEDGEMENTS

### Student Research Colloquium Committee

- Linda Donnay, Chair of Committee, Director of Grants and Contracts, Office of Sponsored Programs
- Jen Foley, Director of Applied Research and Development Center
- Dr. Balsy Kasi, Professor, Environmental and Technological Studies
- Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development
- Dr. Leslie Valdes, Associate Professor, Psychology
- Rachel Wexelbaum, Collection Management Librarian, Learning Resources & Technology Services

### Formal Paper Judges

- Rachel Wexelbaum, Chair of Committee, Collection Management Librarian, Learning Resources & Technology Services
- Judith Dorn, Professor, English
- Cari Kenner, Assistant Professor, Academic Learning Center
- Susan Parault, Counselor Education And Educational Psychology
- Sarah Petitto, Assistant Professor, Chemistry
- Leslie Valdes, Associate Professor, Psychology

### Paper Presentation Judges

- Rachel Wexelbaum, Chair of Committee, Collection Management Librarian, Learning Resources & Technology Services
- Linda Gensheimer, Assistant Professor, Social Work
- Dan Gregory, Interim Assistant Vice President for Research and Sponsored Programs
- Pamm Minden, Emeriti, College of Education
- Brian Olson, Assistant Professor, Biological Sciences

### Poster Presentation Judges

- Dr. Balsy Kasi, Chair of Committee, Professor, Environmental and Technological Studies
- David Bacharach, Professor, HPL Director, Health, Physical Education, Recreation and Sport Science
- Mick Bauer, Alumnus, Master of Sciences for Information Assurance Program Advisory Board
- Phillip Godding, Interim Associate Dean, College of Social Sciences
- Hsueh-I (Martin) Lo, Assistant Professor, Teacher Development
- Dale Williams, Emeriti, College of Science and Engineering

### Registration Desk

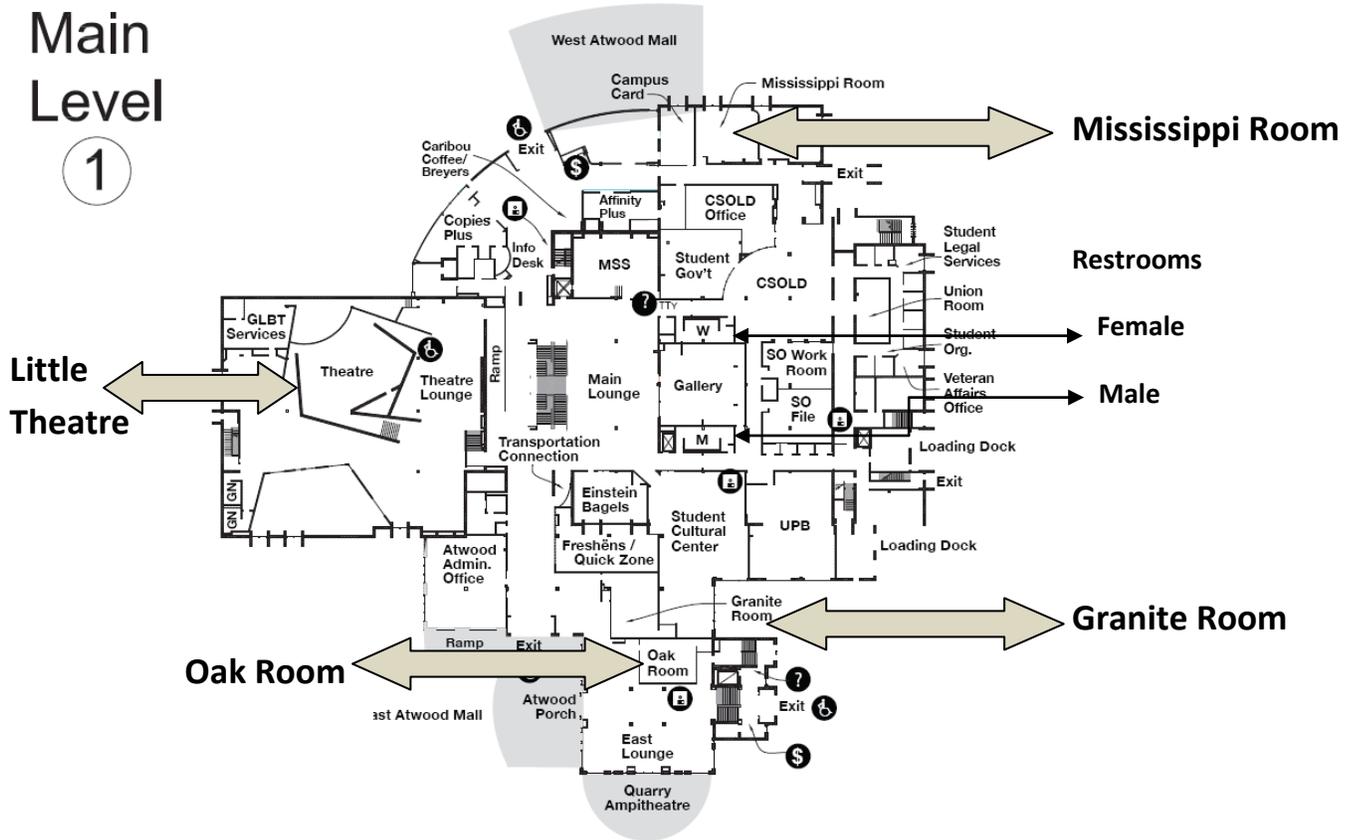
- Roger Belisle, Assistant Professor, Psychology
- Mitch Bender, Associate Professor, Environmental and Technological Studies
- Linda Donnay, Director of Grants and Contracts, Sponsored Programs
- Betty Lommel, Office and Administrative Specialist, Biology
- Joyce Simones, Professor, Nursing
- Amy Trombley, Alumna, College of Education

*Names are included based on the information available as of the publishing date. We regret any omissions.*

# Floor Plan for Atwood Memorial Center

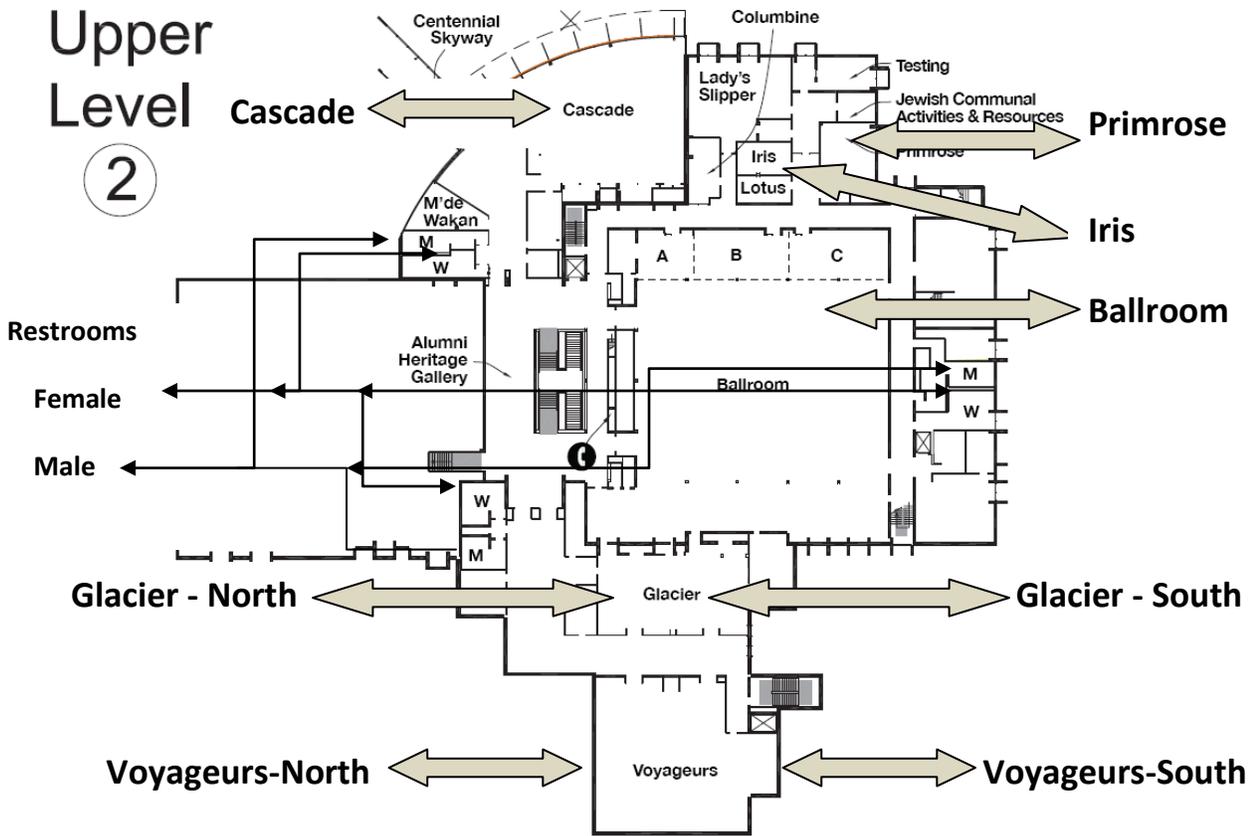
## Main Level

1



## Upper Level

2



“Most of us are familiar with recycle and reusing, but how often do we think of the third R – REDUCE? ‘Reduce’ is probably the most important of the three Rs because, if we reduced, it would limit the need to recycle and reuse.” Catherine Pulsifer from The “Reduce” of Recycle and Reuse

As a “green” initiative, we are providing project abstracts on the CD below as well as on the Student Research Colloquium website: <https://www.stcloudstate.edu/src/proceedings/default.asp>.

Thank you for joining us at the 13<sup>th</sup> Annual Student Research Colloquium!

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