

*11<sup>th</sup> Annual*  
**undergraduate  
research  
conference**



**SOUTHWEST MINNESOTA STATE UNIVERSITY**

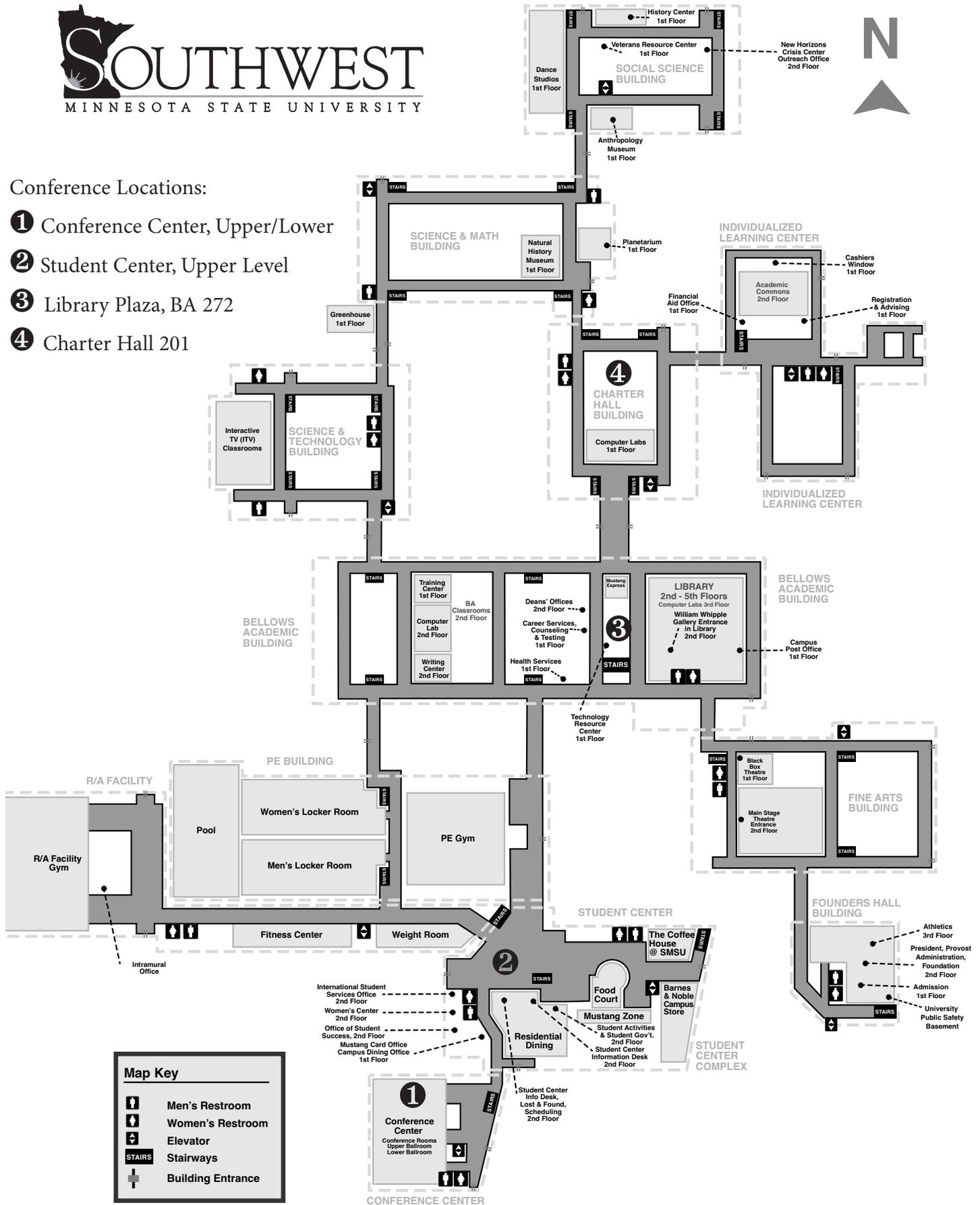
**Wednesday, November 30, 2016**

Starting at 8:30 a.m. | SMSU Conference Center

**ABSTRACT BOOKLET**

Conference Locations:

- 1 Conference Center, Upper/Lower
- 2 Student Center, Upper Level
- 3 Library Plaza, BA 272
- 4 Charter Hall 201



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### Purpose

The purpose of the Annual SMSU Undergraduate Research Conference is to highlight the original and creative work done by SMSU undergraduate students at a one-day conference to be held annually at the SMSU campus. The public, including the university and Marshall community, friends, parents, alumni, prospective students and employers are all encouraged to attend and enjoy the excitement of intellectual accomplishments of our students.

### How the Conference Started

The conference was initiated fall of 2006 by Dr. Emily Deaver, Professor of Environmental Science. After she and Dr. Thomas Dilley conducted an Environmental Science program review in 2005-2006, it was clear that our science students needed more experience conducting research and communicating the results of that research to the broader community. The 1st Annual SMSU Undergraduate Research Conference was designed as a mechanism for SMSU science students to engage in a professional exchange of scientific ideas, as well as a means to showcase and celebrate their hard work and accomplishments. The first year program included 21 oral and 27 poster presentations from science students in Environmental Science, Biology, Physics and Chemistry. Because of the positive feedback from the academic community the conference was expanded to include **all** disciplines across campus. Fall 2007 the 2<sup>nd</sup> Annual SMSU Undergraduate Research Conference doubled the number of presenters with 13 different programs across campus participating. This year, the 11<sup>th</sup> year of the SMSU Undergraduate Research Conference, there are 21 different programs participating with 33 different faculty advisors. There are also 285 different undergraduate students presenting 45 orals and 124 poster presentations.

The hope is that the conference will continue to grow each year as we celebrate the intellectual achievements of SMSU undergraduates.

**Welcome and Keynote**

SMSU Conference Center Upper Level

- 8:30..... Dr. Connie J. Gores, SMSU President, Opening Remarks  
8:45..... Michael Justice, PhD  
Keynote Address: "Light Pollution and Urban Ecology: Taking Advantage of Research Opportunities"

**Oral Session A**

SMSU Conference Center Upper Level

- 9:45..... Tong Yang & Colten Bristle, Biology, A comparison of terrestrial invertebrate densities in a prairie and coniferous forest  
10:00..... Jessica Jacob & Sandra Thao, Biology, Measuring the Rate of Chlorophyll Degradation in Norway and Sugar Maple Trees  
10:15..... Sheri Woitalewicz & Breanna Ahlers, Biology, Ecological Footprints: A Comparison of SMSU Student Responses  
10:30..... BREAK  
10:45..... Patsy Doering, Nursing, Hospital-Acquired Infections: Preventing CAUTIs and CRBSIs  
11:00..... WITHDRAWN  
11:15..... Michaela J. Nelson, Chemistry & Agronomy, Developing a Regression Model to Estimate Soil Organic Matter (SOM) in Southwestern Minnesota Soil  
11:30..... Michelle Masog, Nursing, The effectiveness of harm reduction treatment towards managing opioid addictions  
11:45..... Talitha Black, Literature, "No Coward Path": Mythology and Archetypes in *Lord of the Rings* and *Beowulf*  
12:00-1:15.. Talitha Black, Andrew Bradley & Jacob Gilmore, Creative Writing- Original Works, The Warrior, the Mage and the Rogue: A Senior Portfolio Reading  
1:15..... Nicole Kimberly Schwing, Literature, "Our Stories are the Tellers of Us": Perspectives of Women in Contemporary World Literature  
1:30..... Sarah Keppler, Lacey Prescott & Britany Reiersen, Biology, A Comparison of Human Cases of West Nile Virus in Minnesota to the Midwest  
1:45..... Meagan Nelsen, Cristian Artiga & Morgan Weyer-Coates, Biology, Microbial community-level analysis of grassland and coniferous forest soil in Southwest Minnesota  
2:00..... Jordan Deuel & Okeleamaka Joshua Chukwuyem, Biology, The effect of galls on hackberry leaves on SMSU campus  
2:15..... Justin Hill & Austin LaFollette, Biology, Effects of Gallling Insects on the Resource Allocation of Two Species of Goldenrod Plants  
2:30..... Katelynn Nohner & Krishna Ghimire, Biology, The Effects of Prairie Dock on Native Plant Species in an SMSU Restored Prairie  
2:45..... BREAK  
3:00..... Ashley Clement, Agronomy, International Plant Resistance to Insects  
3:15..... Darcy A. Lowman-Craig, Psychology, Maximizing the Army Resiliency Program for Senior Officers and NCO's  
3:30..... Jennifer Homan, Theatre, Volpone and its Culture, Customs and Fashion  
3:45..... Cameron Henning, Agronomy, Breeding for Anthocyanins in Corn  
4:00..... Daniel Ferrian, Mary Jo Bose, Monica VanOtterloo, Nursing, Modern Nursing Interventions for Cyberbullies  
4:15..... Peter Scholtes, Agronomy, IPRI (International Plant Resistance to Insects) Conference 2016 South Africa  
4:30..... Garrett Wee & Gus Molina, Biology, A comparison of aerial insect density & diversity in the SMSU prairie and coniferous forest  
4:45..... KaLea DeSmet, Political Science, Pathways to Prosperity for Young Women in Greater Minnesota  
5:00..... Awards Ceremony

**Oral Session B**  
SMSU Charter Hall 201

- 9:45..... Chad Conway, Philosophy, Abortion: Benefits or Consequences? *A logical analysis*  
 10:00..... Jason Wischnak, Political Science, Buffer Zones: An Attempt to Preserve Minnesota Waterways  
 10:15..... Emilie Baartman, Theatre, The Acropolis of Athens  
 10:30..... BREAK  
 10:45..... Talitha Black, History, Preserving Myth: The Transition from Oral to Written Tradition in *Beowulf*  
 11:00..... Caleb Herrlich, Theatre, The Eyes of Euripides  
 11:15..... Caitlyn Sanow, Literature, "Yellowing Madness" a look at Charlotte Perkins Gilman's "The Yellow Wallpaper"  
 11:30..... Annie Magnuson, Theatre, Ancient Greece in the World of Antigone  
 11:45..... Jacob Fager, History, The Great Heathen Army; The Viking Invasion of England  
 12:00-1:00 . Lunch Break  
 1:00..... Kayla Miller, Sociology, Asexuality: An Overview and the Importance of Visibility  
 1:15..... Jacob Fager, Theatre, The World of Macbeth  
 1:30..... Morgan Benson, Theatre, The World of Doctor Faustus  
 1:45..... Taylor Engel, Theatre, Creating the World of The Second Shepherd's Play  
 2:00..... Joshua Chism, Theatre, Hamlet Dramaturgy  
 2:15..... Anne Marie Bell, History, Heroes of the Holocaust  
 2:30..... Jenna Lee-Skramstad Miller, Theatre, Christianity and Roman Culture in the Time of Hrosvitha's Dulcinius  
 2:45..... BREAK  
 3:00..... Kayla Miller, History, Women in the Navy: A War of Their Own  
 3:15..... Timothy Meyering, History, Bloomington Bound: America's Pastime Expands to Minnesota  
 3:30-4:30 ... Kathryn Kaiser & Angie Stucker, English, Inventing for Positive Outcomes in Social Media  
 Benjamin Fick, Sara Peterson & Fernando Tabares, English, Rhetoric in Film  
 Kevin Danielson & Jillian Hoppe, English, The Evolution of Persuasion in Print Advertisements

**Poster Presentation Session A**

SMSU Conference Center Lower Level

Posters displayed 8:30 am to 5:00 pm, Authors available at times listed after title

*Agriculture, Agribusiness, Agronomy, Biology, English,  
Environmental Science, History, Mathematics, Psychology*

- 1..... Britany Reiersen, Biology, Cognitive Behavioral Therapy as an Effective Treatment Method for Insomnia, Formal 3:15-3:45, Informal 9:30-10:00  
 2..... Sabrina Ley, Megan Williams & Katie Wenisch, Agriculture, Evolution of Dairy as a Commodity, Sabrina 2:00-2:45, Megan 9:30-10:15, Katie 3:45-4:30  
 3..... Deewan Bajracharya, Biology, Does Triclosan stimulate or inhibit prostate cancer cells?, Formal 1:30-2:00, Informal 2:00-2:30  
 4..... Randi Voegele, Environmental Science, Marshall Minnesota AmericInn Wetland, 10:00-11:30  
 5..... Ashley Millerbernd, Biology, The Relationship Between Landscape Diversity and Bee Pollination Success, Formal 2:45-3:15, Informal 10:30-11:00  
 6..... WITHDRAWN  
 7..... Marissa Eben, Abby Einck & Felicia Pineda, Agriculture, Collapse of Feeder Cattle Prices, Marissa 3:45-4:30, Abby 1:00-1:45, Felicia 1:45-2:30  
 8..... Hailey Neubauer & Erin McDurmont, Agronomy, Weed Presence vs Cropping System, 9:30-10:15  
 9..... Emily Heesch, Biology, Effectiveness of Concerta® treatment for ADHD versus treatment with its generic (Novo-methylphenidate ER-C®), Formal 1:00-1:30, Informal 1:30-2:00  
 10..... Joshua Leach, Agronomy, Comparing Conventional Tillage and Reduced Tillage, 3:15-4:00  
 11..... Lacey Prescott, Environmental Science, Water quality and biological changes in Anderson Lake wetland in Franklin, MN, 9:30-11:00  
 12..... Cristian Artiga, Biology, Reducing obesity by inhibiting or deficiency of Group 1B phospholipase A2, Formal 11:30-12:00, Onformal 3:45-4:15  
 13..... Robert Gordon Reinking, Agronomy, Effects of cold water stresses on corn, 10:30-11:15

- 14..... Beau Swenson, Environmental Science, Observation and Data Analysis of a Deep Roadside Marsh, 1:00-2:30
- 15..... Austin LaFollette, Biology, CoQ10 depletion as the primary mechanism for statin-induced myopathy, Formal 9:45-10:15, Informal 1:00-1:30
- 16..... WITHDRAWN
- 17..... Brayden Anderson, Environmental Science, Seasonal Changes in the Clifton Wetland, 9:30-11:00
- 18..... Rhiannon Sears, Biology, The Role of the Immune System in Parkinson's Disease, Formal 11:00-11:30, Informal 2:45-3:15
- 19..... Ashley Millerbernd, Environmental Science, Seasonal Changes in the Marshall Mall Wetland, 3:15-4:45
- 20..... Mercy Jolo, Maria Baleng, Sociology, The Joys of Parenthood, 12:30-1:30
- 21..... Aditya W. Harsono, Environmental Science, Observation & Data Analysis of a Type 5 (Shallow Open Water Community) Wetland in Marshall, MN, 2:45-4:15
- 22..... Megan Bruns, Biology, Lysostaphin is an Effective Antimicrobial against Multiple Drug Resistant *Staphylococcus aureus* Infection, Formal 10:15-10:45, Informal 3:15-3:45
- 23..... Lozililo Moyo, Biology, Malaria Vaccine Development: Immune Responses That Lead to Protection, Formal 2:00-2:30, Informal 2:30-3:00
- 24..... Tate Andrew Colwell, Agronomy, Stress effect on soybean yield, 10:15-11:00
- 25..... Deanna Honnold, Jakob Hicks, Ashley Clement & Bradley Jansma, Biology, Allelopathic Effect of Coffee Extract on Corn Growth, Deanna & Ashley 9:30-10:15, Jake & Brad 11:00-11:45
- 26..... Ryan R. Riebel, Environmental Science, Seasonal Study of Horseshoe Pond at SMSU Fall 2016, 1:00-2:30
- 27..... Melissa Klecker, Environmental Science, Riparian Wetland Monitoring in Marshall Minnesota, Fall 2016, 10:15-11:45
- 28..... Brad Jansma, Agriculture, The evaluation of a feed mill batching system to determine necessary changes to increase mill capacity, 9:30-10:15
- 29..... Garrett Wee, Environmental Science, Evaluating Seasonal Changes in Lone Tree Lake Wetland in Northeastern Lyon County, 1:30-3:00
- 30..... Trevor Serbus, Agronomy, How Do Different pH Soil Values Affect Corn and Soybeans?, 2:30-3:15
- 31..... Samson Chen, Mathematics, The Gamma Function and Volumes in Higher Dimensions, 9:30-10:30
- 32..... Deanna Honnold, Agronomy, Cover cropping strategies for weed and soil management, 3:00-3:45
- 33..... Courtney Tolifson, Mathematics, Evaluating Rubik Solutions, 1:30-2:30
- 34..... Steven Yang & Michelle "Micki" Williams, Biology, The Allelopathic Effects of Garlic on Tomato Plants, 2:30-3:15
- 35..... Selena Herr & McKenzie Besel, Biology, Tolerance to Salt Stress in Barley and Cabbage, 9:30-10:15
- 36..... Michaela Fassler, Mathematics, The Mathematics of a Vibrating Drum, 10:00-11:00
- 37..... Caleb Postma, Savannah Ramirez, Tou Soua Vue & Tong Yang, Biology, Allelopathic effect of mint extract on tomato plants, Caleb & Tong 11:00-11:45; Savannah & Tou 1:00-1:45
- 38..... Hayley Winklepleck & Art Baur, Biology, Accelerated Age Testing Effects on Germination & Vigor of Corn, Hayley 2:00-2:45, Art 10:00-10:45
- 39..... Justin Hill, Environmental Science, Seasonal Changes in the Biota and Water Quality at Black Rush Lake WPA, 2:45-4:15
- 40..... Danial Slowey, English, From Literature to Media: Remaining Relevant through the Ages, 10:30-11:30
- 41..... Deanna Honnold & Marissa Ebben, Agribusiness, Development of Haiti, Deanna 10:30-11:15, Marissa 3:00-3:45
- 42..... Shannon Gorter, Mathematics, A Study of the Evolutionary History of Species Through the Construction and Analysis of Phylogenetic Trees, 10:00-11:00
- 43..... Sean Donohue, Brayden Anderson & Troy Filzen, Biology, Allelopathic Effects of Lemon Juice on Valley Girl Tomato Plants, Sean 11:15-12:00, Brayden & Troy 3:15-4:00
- 44..... Anja Bjorklund, Mathematics, A Mathematical Analysis of a Malaria Outbreak, 1:30-2:30
- 45..... Robert Reinking, Rabina Saud & Coury Popowski, Biology, The Allelopathic Effects of Sunflower Seed Extract on the Sweet Corn, Rob & Coury 9:45-10:30, Rabina 2:30-3:15
- 46..... Benjamin Ryan, History, Germans in Rural Southwest and Central Minnesota, 11:00-12:00
- 47..... Makenzie Moes, Katheryn Kindvall & Lauren Kerr, Biology, What are the effects of salt stress comparing tomatoes and cabbages?, Makenzie 9:45-10:30, Katie & Lauren 1:15-2:00
- 48..... Vernel Wingate, Destiny Fredricks, Kayla Chisum, Kevin Rubin & Mohammed Faqhi, Psychology,

SMSU Students' Understanding of Civic Engagement: A Qualitative Analysis, Vernel and Kevin 11:00-12:00; Destiny 11:30-12:30; Kayla 2:30-3:30; Mohammed 3:00-4:00

**Poster Presentation Session B**

Student Center Upper Level (SC 216),

Posters displayed 8:30 am- 5:00 pm, Authors available at times listed after title

*Accounting, Computer Science, Hospitality Management, Interdisciplinary, Mathematics, Political Science, Psychology, Sociology*

- 49..... Samantha Pardy, Jade Malecha, & Maren Malakowsky, Hospitality Management, Satisfaction Analysis of Faculty Luncheon, Samantha 10:00-11:00, Jade 1:00-2:00, Maren 2:00-3:00
- 50..... Natalie Zobel, Samantha Flack & Nicholas DiMarco, Hospitality Management, SMSU Student-Athletes Perception on Dining Services, 11:30-12:30
- 51..... Karma Gurung, Tshering Sherpa & Toussaint Tindal, Hospitality Management, Accessing competitive attributes of the campus dining services using importance –performance analysis, Karma 11:00-12:00, Toussaint 11:30-12:30, Tshering 12:00-1:00
- 52..... Nicholas DiMarco, Hospitality Management, Marketing strategy evaluation of the Music Man Square in Mason City, Iowa, 1:30-2:30
- 53..... Sanjay Shrestha, Hospitality Management, Technology trends in the lodging industry, 11:00-12:00
- 54-60 ..... Katherine Speiker, Lexie Vande Hoef, Melissa Akland, Mu Mu Aye, Gus Hiivala, Steven Yang, Nydak Kur, Ruth Chilton, Larissa Jones, Brianna Staton, Sarah Parker, Leah Bernard, Kelsey Boelke, Brittany Buesgens, Jacqueline Buhmann, Stephanie Byers, Hannah Chaddock, Tianna Cselovszki, Alex Dequaine, Alyssa Dobie, Rebecca Drietz, Mikaela DuFrane, Jamie Flynn, Jenna Gannott, Amanda Grengs, Maelee Gutierrez, Shelby Haff, Nickolas Haupt, Tamara Hellendrung, Affiny Her, Benson Her, Maria Hinojosa, Shelby Horner, Tiffani Juarez, Melanie Kedl, Seth Oolman, Anna Pommier, Mathew Robb, Tara Roiger, Megan Schmidt, Davion Shelton, Janine Steidl, Colton Stoddard, Michelle Stoner, Shannon Tell, Christine Torborg, Chong Vang, Molly Verhelst, Emily Wajer, Rebecca Winkelman, & Racquel Winters, Sociology, Me, Us, and Them: An Investigation of Self-Attitudes and Group Dynamics among College Students, Katherine 1:30-2:30, Lexie 11:00-12:00, Melissa 1:30-2:30, Mu Mu 10:30-11:30, Gus 10:30-11:30, Steven 3:30-4:30, Nydak 1:30-2:30, Ruth 3:00-4:00, Larissa 3:00-4:00, Brianna 2:30-3:30, Sarah 2:30-3:30
- 61..... Melody Boakye, Patrick Rhoads & Ruth Chilton, Interdisciplinary, Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City, 1:30-2:30
- 62..... Wyatt Albers, Interdisciplinary, Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City, 3:00-4:00
- 63..... Nydak Kur, Ayan Nur & Samuel Wreh, Interdisciplinary, Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City, Sam & Nydak 11:00-12:00, Ayan 3:00-4:00
- 64..... Andrew Austin, Accounting, Dropping the Billable Hour, 11:30-12:30
- 65..... Abigail Reichmuth & Kali Pohlmann, Accounting, Corporate Tax Avoidance, 10:30-11:30
- 66..... Brianna Massman & Ryan Coombe, Accounting, Tax Evasion and What Offshore Banking Does to the U.S. Economy, 10:30-11:30
- 67..... Glenn Nelsen, Accounting, Cash Accounting vs. Accrual Accounting in Agriculture, 2:30-3:30
- 68..... Anja Bjorklund, Accounting, Student Loan Debt Forgiveness by Employers, 3:30-4:30
- 69..... Bethany Lee, Accounting, Bitcoin as an Alternative Currency, 1:00-2:00
- 70..... Cassandra Stromberg, Accounting, Tax Refund Identity Theft, 11:00-12:00
- 71..... Jon Johnson & Brianna VonWahlde, Accounting, Cabin Tax, 1:00-2:00
- 72..... Megan Williams, Accounting, Minnesota Seasonal Residential Recreational Property Tax, 1:30-2:30
- 73..... Sara Degroat, Sydney Stewart, Erin Nelson, Cole Miska, Mackenzie Vogt, Marketing, An exploration of body art in retail advertising, Sara, Sydney & Mackenzie 2:30-3:30 Erin 11:00-12:00; Cole 1:00-2:00
- 74..... Dallin Finley, Brianna Staton, Vernel Wingate, Psychology, The Effect of Bias on Perceptual Illusions, Dallin & Brianna 1:00-2:00 Vernel 9:30-10:30
- 75..... Hollie Christensen, Clawsondy Cayo, Tegan Ramstad, Jordan Stangeland, Psychology, The Effects of Change Detection on Memory, Hollie and Jordan 10:30-11:30, Clawsondy & Tegan 1:30-2:30
- 76..... Melissa Akland, Chris Baune, Brenna Giddings, Emily Score, Psychology, The Effects of Familiar and Unfamiliar Genres of Music on Memory, Melissa & Brenna 10:30-11:30 Chris & Emily 1:00-2:00

- 77.....Darby Kilkelly, Zachary Peterson, Katie Schultz, Zachary Kilian, Psychology, The Effects of Anxiety and Risky Decisions, Darby & Zachary Kilian 9:30-10:30 Katie and Zachary Peterson 1:00-2:00
- 78.....Brianna Holmquist, Amanda Kolstad, Lexie Vande Hoef, Alex Gawarecki, Psychology, Effects of Sleep Deprivation on Cognitive Processing, Brianna & Amanda 9:30-10:30 Lexie & Alex 12:00-1:00
- 79.....Amanda Kolstad & Kaitlin Vos, Psychology, The Effects of Immersion Schools on Development of Secondary Language Learning, 2:00-3:00
- 80.....Shane Vogt, Political Science, Minnesota community windfarms adjust to market changes, 11:00-12:00
- 81.....Brandon Fritz, Political Science, The Cost and Benefits of Expanding Broadband Access to Greater Minnesota, 10:30-11:30
- 82.....Cheick Traore, Political Science, Challenges in building a long-term care workforce in Greater Minnesota, 2:30-3:30
- 83.....Christopher Ross, Political Science, The Decline of Child Care in Greater Minnesota, 10:30-11:30
- 84.....Ashley Livermore, Sociology, Sociologists' definitions of rape: What are the difficulties in defining rape in today's society?, 10:00-11:00
- 85.....Tehra Christianson, Sociology, What Constructs Gay and Lesbian Hate Crimes and how do they affect the LGBT Community?, 11:00-12:00
- 86.....Emmanuel Giwa, Sociology, Patterns of Interracial Sexuality & Relations in Historic and Contemporary America, 10:30-11:30
- 87.....Carter Barker, Mathematics, Mathematical Model to Estimate the Minimum Fraction of People to Get Vaccinated in a Given Population to Prevent Influenza, 1:30-2:30
- 88.....Redell King, Psychology, The Psychological Adjustments of International College Students, 11:00-12:00
- 89.....Michael Dombrowski & Anders Faaren, Psychology, Consent on Campus, Michael 2:00-3:00, Anders 10:00-11:00
- 90.....Chucky Her, Sociology, Being Different Hurts: The Importance of Supportive Environments, 9:30-10:30
- 91.....Victoria Garza, Sociology, Male Prison Rape: Examining the Causes and Preventatives, 10:00-11:00
- 92.....Zachary Samuelson & Kyle Begin, Computer Science, Tower Defense Application, Zachary 11:00-12:00, Kyle 10:00-11:00
- 93.....Santosh Chaulagain, Computer Science, Souvenir web store , 2:00-3:00
- 94.....Subash Pathak, Biplov Bajracharya, Computer Science, Attendance Management System using bar code scanner, 2:00-3:00
- 95.....Andrew Alsworth, Computer Science, Java Based Class Scheduler, 10:00-11:00
- 96.....Cameron Parus, Computer Science, Interacting with Web Services from a Raspberry Pi, 1:30-2:30
- 97.....Amoye-Olaniyan Olawale, Kelsey Keenan, Computer Science, Maze Daze, Amoye 10:30-11:30, Kelsey 2:30-3:30
- 98.....Samson Chen, Computer Science, Complex Analysis Calculator, 10:30-11:30

**Poster Presentation Session C**

SMSU Library Plaza (BA 272)

Posters displayed 8:30 am to 5:00 pm, Authors available at times listed after title

*Nursing and Sociology*

- 99.....Catherine Drietz, Andrew Petersen, Sociology, Romantic vs. Realistic Love, 12:30-1:30
- 100.....Maren Malakowsky, Clarissa Geisel, Sociology, Are you going to be with the right mate: Relationship deal breakers in dating!, 12:30-1:30
- 101.....Andrea Fuerstenberg, Jacqueline Buhmann, Mariah Henry, Vernel Wingate, Sociology, The Quality of My Dating Experience, 12:30-1:30
- 102.....Joel Gay, Shawn Jensen, Megan Larson, Leah Schneider, Michelle Stoner, Sociology, The Effects of Social Media on Relationships in College, 12:30-1:30
- 103.....Derek Soupir, Okeleamaka Chukwuyem, Jocelyn Garcia Malorie Hudson, Daytona Arends, Sociology, College Student Views of Cohabitation, 12:30-1:30
- 104.....Emma Grote, Samantha Flack, Sociology, Is Your Love Language in Trouble?, 12:30-1:30
- 105.....Lauren Johnson, Jada Hill, Jenifer Willemsen, Kylee Wroblewski, Sociology, The Effects College has on Hookups vs. Relationships, 12:30-1:30
- 106.....Anthonia Ameho, Tajanea Vaughn- Davis, Sociology, Long Distance Dating Relationships, 12:30-1:30
- 107.....Elizabeth Bunjer, Nursing, "Being PrEPared": Pre-exposure prophylaxis or PrEP medication for at risk

- individuals to reduce chances of HIV infection, 2:30-4:00
- 108.....Kassandra VanHecke, Maisie Renneke, Malary Richter, Nursing, Prevention of Hospital Acquired Infections of ICU Patients, 10:00-11:30
- 109.....Amanda Cadwell, RN, Stacy Jacobson, RN, Tami Johnson, RN, Nursing, Can bright lights improve sleep?, 10:30-12:00
- 110.....Lyndsey Brown, Tabitha Harazin, Carly Kramer, Paige Sabe, Brittany Fisher-Rossell, Nursing, Can Ofirmev Reduce the Need for Opioids?, 9:30-11:00
- 111 .....Courtney L. Holden, RN, Nursing, The Use of Mupirocin to Prevent the Spread of Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections in Hospitals, 12:00-1:30
- 112.....Holly Heitzman, Nursing, Depression in Adolescents: Talk, Tools, and Treat!, 10:00-11:30
- 113.....Jessica Teichert, Nursing, Diabetes II: An American Epidemic, 11:00-12:30
- 114.....Danielle Adamietz, Allan Johnson, Nursing, Assessing the Risks for Nurses with Accidental Exposure to a Patient's Blood, 10:30-12:00
- 115.....Timothy K. Muge, Nursing, Reduction of Sepsis in short term care facilities, 1:00-2:30
- 116.....Isaac Mabururu, Fenis Mogere, Daniel Moegi, Nursing, Pressure Ulcer Prevention in Spinal Cord Injury Patients, 11:00-12:30
- 117.....Terri Anderson, RN, Nursing, Communication Issues, Needs and Solutions Affecting Quality Care for Deaf Patients, 10:00-11:30
- 118.....Mary Retzlaff, Nursing, No Narcotics for Migraines? Non-Narcotic Treatment of Migraines for Adult Patients in the Emergency Department, 11:12:30
- 119.....Robert Owusu, RN, Nursing, Is Aromatherapy effective in controlling chemotherapy induced nausea and vomiting among adult cancer patients undergoing chemotherapy treatment?, 10:00-11:30
- 120.....Amy Bipes, Nursing, In acute care what effect does bedside nursing report have on patient safety when compared with traditional reporting methods, 10:00-11:30
- 121.....Sondra Grimm & Jennifer Macik, Nursing, Catheter Acquired Urinary Tract Infection: Reductions with Key Interventions, 10:00-11:30
- 122.....Samuel S. Barlue, Nursing, Evidence Based Approach and Sudden Infant Death Syndrome, 1:00-2:30
- 123.....Stephanie Kravik, Peggy Rosik, Nursing, *Hey Sugar Daddy*: Strategies in insulin therapy management, 10:00-11:30
- 124.....Hannah Ehalt, Nursing, Warfarin and Direct Oral Anticoagulants and Their Effectiveness to Decreased Blood Clots, 2:00-3:30

**Keynote Address:** “Light Pollution and Urban Ecology- Taking Advantage of Research Opportunities”

**Keynote Speaker:** Michael J. Justice, PhD

Michael Justice is a behavioral ecologist who is primarily interested in animal sensory systems. As a student he trained in both Psychology and Biology departments, and as a professor he stayed at the intersection of the two fields. He has worked primarily with birds and most recently with insects and spiders. His current research is evaluating the effects of light pollution on insects.

Dr. Justice received his BA in Psychology from the University of Massachusetts at Lowell, and MA and PhD degrees in Experimental Psychology, with a concentration in Behavioral Ecology, from the University of North Carolina at Greensboro. He has done extensive additional graduate coursework in both Biology and Biostatistics at East Carolina University. Dr. Justice taught at the university level from 1993 until 2014, at which time he retired from full-time teaching to run a family business. He has, however, continued to conduct and publish high quality research. His recent research presentation at the prestigious meeting of the American Association for the Advancement of Science (AAAS) in Washington, D.C. was highlighted in news stories in The New York Times, AAAS's *Science News*, Gizmodo and more.

Dr. Justice will discuss how he got involved in research as an undergraduate and outline the path he took to where he is today with his current research. He will stress the importance of taking advantage of opportunities that arise and lifelong skills that can be developed through research experiences.

## Abstracts

### Oral Session A – Upper Level Conference Center Agronomy, Biology, Chemistry, Creative Writing, Environmental Science, English Literature, Marketing, Nursing, Political Science, Psychology, Theatre

1

**Title:** A comparison of terrestrial invertebrate densities in a prairie and coniferous forest

**Presenter(s):** Tong Yang & Colten Bristle

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** The purpose of this study was to compare terrestrial invertebrate densities within a prairie and coniferous forest. These areas were located within the Southwest Minnesota State University (SMSU) environmental learning area. Throughout late September early October, we collected six soil samples from each area. Each sample was loaded into Berlese funnels to collect and subsequently identify invertebrates present. Results showed higher density of invertebrates in the coniferous forest area (0.22 per cm<sup>2</sup>) compared to the prairie area (0.04 per cm<sup>2</sup>). We found 13 orders of terrestrial invertebrates; seven of those are found in both areas. Both areas had high densities of ticks and mites.

2

**Title:** Measuring the Rate of Chlorophyll Degradation in Norway and Sugar Maple Trees

**Presenter(s):** Jessica Jacob & Sandra Thao

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Leaves of many plants change color in the fall season. Much research has focused correlation of chlorophyll absorption and the transformation in pigmentation of leaves. The breakdown of chlorophyll results in leaves coloration to change during the fall. The purpose of our study was to determine the rate of change in light absorption of chlorophyll as the leaves of the Norway maple (*Acer platanoides*) and Sugar maple (*Acer saccharum*) trees change in pigmentation during the fall. Acetone was used to extract the pigments from the leaves. The pigments were separated using thin layer chromatography and the light absorbance of chlorophyll was found using ultra violet visible spectroscopy. Overall, chlorophyll decreased in light absorbance in both Sugar and Norway maple trees over a twelve-day period as the

leaves changed colors. The decrease in chlorophyll absorbance suggests that the breakdown of chlorophyll did occur within the leaves, thus exposing other pigment colors.

3

**Title:** Ecological Footprints: A Comparison of SMSU Student Responses

**Presenter(s):** Sheri Woitalewicz & Breanna Ahlers

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Ecological footprints (EF) are studies that estimate the amount of resources used to sustain a population (Cordero et al. 2008). The human population growth rate for Earth is dramatically increasing. The purpose of our study was to compare EFs of specific groups of SMSU students. We collected 200 survey responses during Fall 2016 and compared the results by gender, international students, and non-international students. A random sample of EF survey responses showed that 2.32 earths are needed to sustain current resource use by our population.

4

**Title:** Hospital-Acquired Infections: Preventing CAUTIs and CRBSIs

**Presenter(s):** Patsy Doering

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Catheter-associated urinary tracts infections (CAUTIs) and catheter-related bloodstream infections (CRBSIs) are common and costly healthcare associated infections (HAIs). Both CAUTIs and CRBSIs are considered preventable hospital complications. Preventable deaths due to HAIs are often attributed to poor hand hygiene of health care workers. Hand hygiene is a critical component to the prevention of infection and spread of disease. Health care workers consistent compliance with strategies to prevent infections is essential for effective reduction of HAIs. Management and prevention of HAIs have become a priority of most health care facilities, as these infections are associated with increased length of hospital stay and increased cost of care. As busy as the daily work can be within health care facilities, it is important for all health care workers to be mindful of their own practices and consistently implement interventions to prevent infection.

5

**Title:** Differences in lichen distribution on various granitic rock outcrops, Minnesota River Valley, southwest Minnesota

**Presenter(s):** Nahom Tsegaye

**Advisor:** Drs. Thomas Dilley & Emily Deaver, Environmental Science

**Abstract:** Lichen are a symbiotic relationship between a fungus and algae with over 18,000 species worldwide. Lichen abundance and diversity were measured at four different granitic rock outcrops in the Minnesota River Valley to determine if differences in rock mineralogy controlled lichen distribution. Lichen were identified and species' areal distribution at each outcrop was sampled in two randomly selected 1m<sup>2</sup> grids, each with three replicates. Thirteen lichen species were identified growing on rocks for the four sites. While several species were found at three of the four sites, only 1 species was found at all four sites and several species were found at only 1 site. Lichen communities were different between rock types suggesting rock mineralogy may control lichen communities. However, other factors such as local microclimates, site disturbances, and fire frequency must be considered as well. Additional sampling between the rock types could help clarify these relationships in the future.

6

**Title:** Developing a Regression Model to Estimate Soil Organic Matter (SOM) in Southwestern Minnesota Soil

**Presenter(s):** Michaela J. Nelson

**Advisor:** Dr. Lee French, Agronomy and Dr. Frank Schindler, Chemistry

**Abstract:** Dichromate oxidation (Walkley-Black) of soil organic carbon (SOC) is the accepted procedure in estimating soil organic matter (SOM), but it is undesirable due to the safety and disposal concerns of the reagent. The loss-on-ignition (LOI) method is commonly regressed against dichromate oxidation and the resulting model used to estimate SOM. No regression model has been developed for Southwestern Minnesota soil. The objective of this study was to develop a regression model for the estimation of SOM to be used by Southwest Minnesota State University's (SMSU) Soil Testing and Characterization Laboratory. Regression of LOI and dichromate oxidation was carried out using Southwestern Minnesota soils ranging from 1.4 - 6.9% SOM. Results show positive correlation ( $r^2 = 0.95$ ) with %SOM =  $0.791(\% \text{ LOI}) - 0.2863$ . The model is similar to that used by South Dakota, and will be used by SMSU Soil Testing to estimate SOM for Southwestern Minnesota.

7

**Title:** The effectiveness of harm reduction treatment towards managing opioid addictions

**Presenter(s):** Michelle Masog

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Opioid addiction is a growing epidemic around the world with most intense abuse of opioids

in the United States. Pain management standards have increased, causing increased use of prescription opioids to treat pain. Once the pain medication is unavailable, some turn to street drugs such as heroin. With a lack of treatment centers to treat addictions, the growing prevalence continues among young adults (20-40 years old). With effective treatment via opioid antagonists, prescribed management treatment is effective in treating those with opioid addiction; improving patient's physical health by reducing risk behaviors. Is harm reduction treatment a more effective management of opioid addiction versus intensive inpatient treatment in young adults in the United States able to demonstrate improvement towards patient health with a decrease in chemical dependency? With continued studies, more proof may be evident that intensive treatment or detoxification to abstinence is ineffective.

8

**Title:** "No Coward Path": Mythology and Archetypes in *Lord of the Rings* and *Beowulf*

**Presenter(s):** Talitha Black

**Advisor:** Dr. Ruthe Thompson, Literature

**Abstract:** J.R.R. Tolkien was a scholar of medieval languages at Oxford University and had a passionate interest in *Beowulf*, writing essays and lectures on the epic, and even doing a full translation from the original manuscript. While only briefly acknowledging the influence of this ancient story on his own writing, the numerous parallels between the epic poem *Beowulf* and Tolkien's magnum opus *The Lord of the Rings* demonstrate the profound influence of *Beowulf* on *Lord of the Rings*. Present in both are the hero myth, and many classic mythological elements and archetypes. The journey from monster-fighting warrior to king that is completed by both *Beowulf* and Aragorn, and seemingly benign details such as the number of members in a company that faces a dragon, exemplify undeniable parallels between *Lord of the Rings* and *Beowulf*.

9

**Title:** The Warrior, the Mage and the Rogue: A Senior Portfolio Reading

**Presenter(s):** Talitha Black

**Advisor:** Marianne Zarzana, Creative Writing

**Abstract:** Talitha Black is a double major in Creative Writing and History. Primarily a writer of longer prose works, she has produced a selection of short stories and poetry while at SMSU. Through her writing, she explores difficult topics, such as mental illness, addiction, and loss in the aftermath of a tragedy. She will read her short story "Superhero," which is about a teenage sidekick suddenly forced to deal with her superhero uncle's struggle with mental illness and the

addiction he uses to combat it. She will also read her poem "Postscripts," written in imitation of a T.S. Eliot poem.

**10**

**Title:** The Warrior, the Mage and the Rogue: A Senior Portfolio Reading

**Presenter(s):** Andrew Bradley

**Advisor:** Marianne Zarzana, Creative Writing

**Abstract:** Andrew Bradley, a Creative Writing major, will be reading from his collection of short stories. "Part of the Whole" is about Nick, a recent college graduate juggling his family life, personal life and a job to pay for rent and his student loans. With a Bachelor's degree in art, Nick struggles with whether to make money with his art or simply let it be a hobby. His father gives him an opportunity to make art and money. Nick now must decide what path he will pursue. Andrew will also read a flash fiction story titled "Loser." In this magical realism piece, Alan forgets about a casino token in his pocket. He throws it into a nearby fountain only to have it launch back at him. The story mirrors his failures in the casino when the crowd thinks he is a magician.

**11**

**Title:** The Warrior, the Mage and the Rogue: A Senior Portfolio Reading

**Presenter(s):** Jacob Gilmore

**Advisor:** Marianne Zarzana, Creative Writing

**Abstract:** Jacob Gilmore is a Creative Writing major. His passion lies in storytelling. He enjoys the fantastic yet realistic, the strange yet familiar, combining them in ways that are not garden variety in nature. Frankly, He crafts his stories like a mixed wine - blended with different elements to create a whole that is notable among the many. He will be reading an assortment of short fiction pieces and some poetry.

**12**

**Title:** "Our Stories are the Tellers of Us": Perspectives of Women in Contemporary World Literature

**Presenter(s):** Nicole Kimberly Schwing

**Advisor:** Dr. Ruthe Thompson, Literature

**Abstract:** While women in many western nations have seen great improvement in gender equality over the last century, the same cannot be said of women in third-world countries and developing nations. A great number of women in such locations face gender inequality and discrimination in their daily lives. While this inequality may not be prominent in today's daily news and appears not to affect the lives of others throughout the world, contemporary world literature can introduce readers to the struggles faced by women on a global scale, and can make the argument

these women cannot: gender equality needs not only to exist in thriving western nations, but throughout the world as a whole. Contemporary authors Nadia Hashimi, Chris Cleave, and Kamala Nair, through their respective novels, voice this argument, and speak up for women across the globe who cannot speak up for themselves.

**13**

**Title:** A Comparison of Human Cases of West Nile Virus in Minnesota and the Midwest

**Presenter(s):** Sarah Keppler, Lacey Prescott & Britany Reiersen

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Since 1999, West Nile Virus (WNV) has affected thousands of people in the U.S. every year. It is spread by *Culex* mosquito vectors. The purpose of our study was to compare and contrast human cases of WNV in Minnesota and Midwestern states for the years 2005-2015. We gathered data from the SMSU library database, Centers for Disease Control and Prevention, Department of Natural Resources, and Department of Health for each state. We found distinct oscillations of WNV cases in each Midwestern state. These oscillations could be potential indicators for future outbreaks of the disease.

**14**

**Title:** Microbial community-level analysis of grassland and coniferous forest soil in Southwest Minnesota

**Presenter(s):** Meagan Nelson, Cristian Artiga & Morgan Weyer-Coates

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Functional diversity of the microbes in an ecosystem or community can help determine the specific processes in an environment, including metabolic activities, plant productivity and diversity. The purpose of this experiment was to analyze the functional diversity of microbial communities in three different environmental areas at SMSU in Southwest Minnesota: a newer grassland, an older grassland, and a coniferous forest. Soil samples were collected, diluted, and plated onto Ecoplates. We were then able to examine the functional diversity, variation, and similarities within samples. The highest functional diversity was seen in the older grassland with 90% diversity, and the lowest was seen in the coniferous forest sample at 77.4%. When comparing the areas, the coniferous forest and older grassland had the highest percent similarity, and the newer and older grasslands had the lowest percent similarity.

**15**

**Title:** The effect of galls on hackberry leaves on SMSU campus

**Presenter(s):** Jordan Deuel & Okeleamaka Joshua Chukwuyem

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** On the stems and leaves of some select plants, there is development of tumor-like growths called galls. Galls are unusual plant growths that provide nourishment, shelter and protection to the inducer (which are usually insects) or its offspring. Gall-inducing insects are specialist plant feeders with most species confined to one specific host plant, and can occur as localized structures on functional plant modules. The purpose of our study was to identify the gall-forming insect and to determine the distribution and abundance of galls on hackberry (*Celtis occidentalis*) leaves. All samples were obtained through a random selection method by breaking one branch from each hackberry tree in our sample area. Of the 185 total leaves observed approximately 32% contained at least one gall of the galled leaf, 57% had 1-2 galls, 20% had 3-4 galls and 23% had over 5 galls. We identified the gall forming insect as *Pachypsylla* sp., which was the only nymph inhabitant within our collected samples.

**16**

**Title:** Effects of Galling Insects on the Resource Allocation of Two Species of Goldenrod Plants

**Presenter(s):** Justin Hill & Austin LaFollette

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Gall-forming insects have the potential to significantly affect their host plants. When a gall forms it may cause the redistribution of the resources being transported through the host plant, at times resulting in adverse effects. The purpose of this study was to determine if the presence of stem galls affects height, dry weight, and reproductive dry weight of two species of goldenrod plants. In addition, we identified each type of gall-forming insect. We collected 120 goldenrod plants from two areas around Marshall, Minnesota. The presence of stem galls significantly affected the height and stem dry weight of Canada goldenrod but not Giant goldenrod. In conclusion, galls can influence resource allocation in goldenrod plants. However, interspecies differences and other environmental factors also may play a role.

**17**

**Title:** The Effects of Prairie Dock on Native Plant Species in an SMSU Restored Prairie

**Presenter(s):** Katelynn Nohner & Krishna Ghimire

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Prairie dock (*Silphium terebinthinaceum*) grows natively throughout the Midwest and eastern United States; although it is not native to Minnesota. Many invasive species such as prairie dock, can compete with native species for resources. We

hypothesized that prairie dock competes with native plant species resulting in lower coverage and frequency of native plants in the SMSU Wildlife Area. We used the quadrat method to collect data from 52 random sites. At each point, the percent coverage and frequency of prairie dock and native plant species was recorded. We found that prairie dock had a higher coverage value compared to native plant species. Prairie dock also had the highest frequency of all plant species recorded.

**18**

**Title:** International Plant Resistance to Insects

**Presenter(s):** Ashley Clement

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** The International Plant Resistance to Insects Conference is open to the public worldwide. This conference allows students, professors, and researchers see what recent studies are being conducted in the agronomy department. This conference is a four-day symposium that allows researchers present to the audience the most recent study that they have conducted at their university or employment. These studies include experimenting with pesticides that will best benefit wheat in a safe manner for human consumption and animals in the wild. At this conference, I was able to learn a lot about the wheat crop and the insects that infest wheat.

**19**

**Title:** Maximizing the Army Resiliency Program for Senior Officers and NCO's

**Presenter(s):** Darcy A. Lowman-Craig

**Advisor:** Dr. Scott Peterson, Psychology

**Abstract:** The Army's Comprehensive Soldier Fitness Program, aimed at improving the resilience of Soldiers, has been shown to be most effective for early-career Soldiers between the ages of 18 and 24. When faced with a military unit made up of older, medical professionals in mid-to-late career stages, what can be done to enhance their resilience? By building on research focused on trauma response and physician burn-out, we can find some simple steps that might help us "teach an old dog some new tricks", including mindfulness training, gratitude journaling, and building personal connections.

**20**

**Title:** Volpone and its Culture, Customs and Fashion

**Presenter(s):** Jennifer Homan

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** My research is on the culture/customs, and fashion of 17<sup>th</sup> century Venice in which my play Volpone is set. I will talk about what the culture/customs were for Venice and how it pertains to my play and the characters' lives in my play and

how knowing it helps the actors understand the play better. I will also talk about the fashion of different levels of class during the time the play is set so that for the play Volpone audiences and actors can better distinguish the differences of the characters and how they dress showed their status in the play.

## 21

**Title:** Breeding for Anthocyanins in Corn

**Presenter(s):** Cameron Henning

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** Conventional plant breeding can be a process of trial and error in order to achieve desired results. Anthocyanin and antioxidant content is expressed primarily by red to purple coloring but there are many different color variations that anthocyanins can be expressed in. Research and experiments were conducted in improving the antioxidant content within red corn as well as improving other crop traits and qualities. Some of the qualities that were examined throughout the growing season were coloring, plant height, standability, stalk diameter, and other traits that are desired in a strong corn plant.

## 22

**Title:** Modern Nursing Interventions for Cyberbullies

**Presenter(s):** Daniel Ferrian, Mary Jo Bose, Monica Van Otterloo

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** As bullying progresses into the 21<sup>st</sup> century there is increased frequency in cases of cyberbullying. Bullying is no longer an event that is limited to schools during the school year, adding to the severity of continuous bullying. The research compiles analyses of 10-18-year-old boys and girls in schools located within the United States. This research looks into how school nurses can help intervene to reduce bullying and the severity of bullying in schools. Theories used are aimed at reducing bullying through intervening with the bully, and theories on how to help the victim. Results show females are often most targeted, and methods used by modern day bullies tend to be more passive-aggressive through cyberbullying. Also, bullies tend to target students that appear more different. School nurses are able to intervene by educating staff, educating students, counseling, and utilizing public health resources to help reduce bullying and the severity of bullying.

## 23

**Title:** IPRI (International Plant Resistance to Insects) Conference 2016 South Africa

**Presenter(s):** Peter Scholtes

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** The purpose of this presentation is to share with those in attendance information about the International Plant Resistance to Insects Conference of 2016. I was fortunate enough to be able to attend this conference last March in South Africa with Dr. Lee French. One of my main goals for attending this conference was to see the differences in crops grown and agricultural practices outside the US. I also wanted to learn more about the different types of research being conducted in the fields involving Plant resistance to Insects. This presentation will contain a general history of agriculture in South Africa as well as a general history of the IPRI Conference. Finally I will share with everyone my experiences and thoughts having attended this conference this last march.

## 24

**Title:** A comparison of aerial insect density & diversity in the SMSU prairie and coniferous forest

**Presenter(s):** Garrett Wee & Gus Molina

**Advisor:** Dr. Betsy Desy, Biology

**Abstract:** Density and diversity is an important factor that gives rise to ecosystem stability (McCann 2000). The purpose of our study was to determine density of aerial insects in the SMSU prairie and coniferous forest. Insects were collected daily from September 24, 2016 through October 1, 2016 using pan traps and insect sweep nets for four days at each site in a 41m by 41m area. Our study found ten orders in the prairie and nine in the coniferous forest. A total of 2,135 insects were collected from the coniferous forest with homopteras as the largest group and 2,338 from the prairie with diptera being the largest group. This study indicated that the number of individuals varied by order between the coniferous forest and prairie area.

## 25

**Title:** Pathways to Prosperity for Young Women in Greater Minnesota

**Presenter(s):** KaLea DeSmet

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** Pathways to Prosperity seeks to increase life opportunities for women in Greater Minnesota by documenting barriers to their progress. Areas of concern include substandard health outcomes, limited leadership opportunities, and lingering wage gaps, often regardless of education, age, race, ethnicity, or region of the state. These problems are complicated by such factors as harassment and bullying, domestic violence, teen pregnancies, and limited access to affordable child care. For many young women in Greater Minnesota, these problems leave them struggling, disadvantaged, and even hopeless. Our findings show that the most effective

remedies involve access to education, employment, workforce development, healthcare and childcare. When systems encourage and support girls and young women in reaching their full potential, the benefits of their success will multiply throughout their communities.

## Oral Session B- CH 201 English, History, Literature, Philosophy, Political Science, Sociology and Theatre

26

**Title:** Abortion: Benefits or Consequences? *A logical analysis*

**Presenter(s):** Chad Conway

**Advisor:** Dr. Maureen Sander-Staudt, Philosophy

**Abstract:** Pro-Life advocates often assume the fetus is a person with human rights, whereas Pro-Choice advocates often assume the opposite. However, arguing over assumptions has allowed this debate to go on for almost half of a century. Moreover, our vehement attempts to affirm our own beliefs often results in misunderstanding and misrepresenting our opposition's position. As long as we continue to argue over assumptions, there will be no end to this debate. Therefore, I propose we set aside our attempts to substantiate or invalidate the personhood status of the fetus. Instead, we will analyze the consequences of accepting fetal personhood, as well as those resulting from its denial. I will then argue that if one accepts the personhood status of the fetus, then one is required to also accept the consequences of that belief. Likewise, if one denies fetal personhood, one must also accept the consequences of that belief.

27

**Title:** Buffer Zones: An Attempt to Preserve Minnesota Waterways

**Presenter(s):** Jason Wischnak

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** For years, Minnesota agricultural producers have had little regulation related to how close they can plant crops related to waterways. However, starting November, 2017 they will have to abide by a new law that sets up buffer zones between cropland and water sources. The research presented in the following work is an in depth look in to this legislation. It lists the research that was done leading up to the law as well as the key institutions that had a hand in the formation of the final piece. Additionally, it looks at the different arguments that were against the enactment as well as the ones for it. The final

sections of this research examine the goals lawmakers and other officials are hoping for as well as what the future might hold for future waterway protection.

28

**Title:** The Acropolis of Athens

**Presenter(s):** Emilie Baartman

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** The Acropolis in Athens, Greece, is one of the most notable settlements in Europe. It has been used for many purposes, such as to house statues of gods, or to entertain the public with Theatre productions. It was also used as the setting for the Greek comedy, *Lysistrata*. The uses of the Acropolis between 431 and 404 B.C and the uses of the Acropolis today have changed throughout history. There are also many buildings at the Acropolis, such as the Parthenon, which is the most notable and the first building when someone thinks about the Acropolis, and the Temple of Athena. Each of these buildings were used with a different purpose, and each building had a significant meaning to it as well, such as the Parthenon, which, at first seems to only be known to house the statue of Athena, but once Parthenon is translated, it has a completely different meaning.

29

**Title:** Preserving Myth: The Transition from Oral to Written Tradition in *Beowulf*

**Presenter(s):** Talitha Black

**Advisor:** Dr. Thomas J. Williford, History

**Abstract:** When Germanic and Norse raiders came to Britain in the eighth century, they brought their own stories with them. Oral poetry was the standard way to relate history and myth at the time, but stories began to be written down as Christianity spread throughout the British Isles, bringing the Roman alphabet to stay, and making literacy far more simple. The great epic poem *Beowulf* is one of these stories that was adopted by the Anglo-Saxon people and written down for the first time in Old English in the tenth century. As well as showing the transition from oral to written tradition in Northern Europe, this ancient story of the good mortal defeating the evil monster offers a good look at the shift from paganism to Christianity as a large portion of pagan religious language was changed to Christian wording.

30

**Title:** The Eyes of Euripides

**Presenter(s):** Caleb Herrlich

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** The Cyclops was written by Euripides in the mid to early fifth century B.C.E. As well as being the

only satyr play to survive from antiquity The Cyclops offers a cynical view of a civilization that everyone else believes to be in the throes of an artistic awakening. Political, economic, social, religious, marital, and even historic beliefs are explored and ridiculed within 30 pages of wit and uncensored humor. Long considered one of the greatest playwrights of the Ancient Greeks, Euripides proves why in a series of quick scenes that draw laughs, while also drawing parallels with his own philosophies of the time.

### 31

**Title:** "Yellowing Madness" a look at Charlotte Perkins Gilman's "The Yellow Wallpaper"

**Presenter(s):** Caitlyn Sanow

**Advisor:** Dr. Ruthe Thompson, Literature

**Abstract:** Yellow is often associated with happiness and hope; not normally is it associated with a dark spiral into madness. However, in Charlotte Perkins Gilman's short story "The Yellow Wallpaper," yellow signifies women's oppression through social expectation, familial relations, and medical practices. The story is based on Gilman's reaction to the rest cure after being prescribed it for post-partum depression. In the story a female narrator is taken on a curative holiday by her husband, John, a physician. John takes her to a colonial mansion to rest and chooses a bedroom that has yellow wallpaper peeling off of the walls. It is here the narrator succumbs to the darkness that is insanity. Gilman presents many themes throughout the narrator's journey, including women's oppression and insanity, through the use of character, setting, and, most importantly, the color yellow.

### 32

**Title:** Ancient Greece in the World of Antigone

**Presenter(s):** Annie Magnuson

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** Learn about the social structure, gods, and hierarchy through the play *Antigone*. We will be exploring the Oedipus family tree and how it relates to Antigone herself, as well as how the patriarchy worked, and how the succession of King was passed down. Also, learn about what gods and goddesses you really didn't want to offend in ancient Greece.

### 33

**Title:** The Great Heathen Army; The Viking invasion of England

**Presenter(s):** Jacob Fager

**Advisor:** Dr. Thomas J. Williford, History

**Abstract:** From 793 to around 1000 C.E. the peoples of Europe lived in vigilance of a great threat that for close to 200 years swept down from Scandinavia.

This threat was the Viking raiders. At the height of the Viking Age, a large force of Vikings landed in England in 865 C.E. This force went on to take control of almost all of what is now present-day England and had control over parts of southern Scotland and eastern Ireland. From 865 to 878 C.E. this force, known as the Great Heathen Army, not only conquered but controlled a vast part of England which became known as the Danelaw. While the causes of these events are shrouded in mystery their effects on the history of England can be clearly seen to this day.

### 34

**Title:** Asexuality: An Overview and the Importance of Visibility

**Presenter(s):** Kayla Miller

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** Education, visibility, and inclusion is an important issue for LGBT students and student organizations. More recently, students who identify as asexual have joined campus LGBT organizations and the acronym "A" has been added. Asexuality is the sexual orientation in which a person does not experience a sexual desire or attraction to a partner for the purpose of sexual stimulation. This paper explores the misconceptions and myths surrounding those who self-identify as "Ace". Education on the spectrum of sexual practices and gender identities is key to inclusion and securing a safe and secure environment on college campuses.

### 35

**Title:** The World of Macbeth

**Presenter(s):** Jacob Fager

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** William Shakespeare's play Macbeth was written and performed in the early 1600's C.E. in England. The play itself is set in Scotland during the mid-11<sup>th</sup> century. Scotland during the 11<sup>th</sup> century had many differences compared to the country today. From climate to culture it is important for actors and designers to understand what life was like in 11<sup>th</sup> century Scotland before staging a production of Shakespeare's Macbeth.

### 36

**Title:** The World of Doctor Faustus

**Presenter(s):** Morgan Benson

**Advisor:** Sheila Tabaka, Theatre

**Abstract:** In order to put on a production, you must understand the world of the play. Understanding this is important because the story needs to be told accurately out of respect for the author, Christopher Marlowe, and to make the story authentic to the audience. This project is coming from the perspective of a dramaturg. The job of the dramaturg is to inform

Twins. Griffith had his mind set on planting America's Pastime in this populated region which lacked a Major League Baseball team. His team chemistry, lackluster front office, and failure to sell tickets was more than enough reason for Griffith to start over and move from Washington, D.C. He would have a fresh start and immediately spark a new regime in Minneapolis, paving the way for successful years to come. Not only this, but Griffith's drive for triumph caught the attention of the soon-to-be fans, catapulting the Twin Cities into Major League Baseball recognition.

#### 43

**Title:** Inventing for Positive Outcomes in Social Media

**Presenter(s):** Kathryn Kaiser & Angie Stucker

**Advisor:** Dr. Teresa Henning, English

**Abstract:** Social media has become a primary focus for the majority of Americans today. Each social media platform requires digital writing. From invention to delivery, it is important to understand the rhetorical situation. Through this process, it has become evident that poor social media interactions have become common to the point of diminishing an individual's or organization's brand. These examples prove that digital writing and rhetoric have become disconnected. As students, it is crucial to maintain an online presence while carefully considering the digital rhetorical situation to ensure a positive delivery.

#### 44

**Title:** Rhetoric in Film

**Presenter(s):** Benjamin Fick, Sara Peterson & Fernando Tabares

**Advisor:** Dr. Teresa Henning, English

**Abstract:** Film contains many different rhetorical elements, despite the typical belief that rhetoric is only applicable in an academic setting. The purpose of this study is to analyze examples of rhetoric in three distinct films: *Crash*, *Supersize Me*, and *All the President's Men*. We applied Aristotle's persuasive techniques, Burke's Pentad, and visual rhetoric to show multiple applications of rhetoric in film. We found that each film successfully used one of these devices to bring attention to its respective social issue. This methodology could be applied to show the use of rhetoric in other films.

#### 45

**Title:** The Evolution of Persuasion in Print Advertisements

**Presenter(s):** Kevin Danielson & Jillian Hoppe

**Advisor:** Dr. Teresa Henning, English

**Abstract:** For a print advertisement to succeed, it needs to be persuasive. The purpose of this study is

to analyze print advertisements in terms of their artistic proofs and era of advertising to determine how and why advertisers' use of persuasion has changed over time. To do this, we selected two long-running American brands: Pepsi and Colgate. For each, three examples of print advertisements were selected from various eras of advertising ranging from the WWII era to today. We found that print advertisements have changed according to what society values and that each advertising era adapts to an evolving consumer market. Future research could entail how print advertisements are adapting to an online presence.

# Abstracts

## Poster Session A – Agriculture, Agribusiness, Agronomy, Biology, English, Environmental Science, History, Mathematics & Psychology

1

**Title:** Cognitive Behavioral Therapy as an Effective Treatment Method for Insomnia

**Presenter(s):** Britany Reierson

**Advisor:** Drs. Vaughn Gehle and Pam Sanders, Biology

**Abstract:** Insomnia is characterized by difficulty initiating or maintaining sleep. Insomnia affects 1 in 3 people in the United States. Lack of sleep adversely affects memory, attention, reaction time, and other areas of cognitive function. Cognitive behavioral therapy (CBT) is an emerging treatment method for insomnia. Zavesicka *et al.* (2008) used polysomnography to test the effects of CBT on hypnotic (sleeping pill) abusing and non-abusing patients and determined that CBT improved most sleep parameters for insomnia patients. Okajima *et al.* (2013) used the Pittsburgh Sleep Quality Index (PSQI) and the Athens Insomnia Scale (AIS) to determine if cognitive behavioral therapy paired with behavioral analysis (CBT-BA) is more effective than treatment as usual in treating insomnia symptoms. They found that CBT-BA significantly improved PSQI and AIS results compared to treatment as usual. These studies indicate that CBT is an effective treatment method for insomnia.

2

**Title:** Evolution of Dairy as a Commodity

**Presenter(s):** Sabrina Ley, Megan Williams & Katie Wenisch

**Advisor:** Dr. Sang Jung, Agriculture

**Abstract:** Dairy foods and products have become a regular part of our society today, however where did dairy as a commodity come from? Dairy has an active and dynamic trading market with unique background knowledge. This project explains aspects such as dairy's chart analysis and where a proper margin call would be. Other important concepts to understand are support and resistance trends, momentum calculation and stock to use ratio. Due to dairy's complexity and perishability, price trends are

interesting to follow and reflect according to opening and closing prices. Finally, through the information as a whole, tips will be provided to become a successful trader in dairy.

3

**Title:** Does Triclosan stimulate or inhibit prostate cancer cells?

**Presenter(s):** Deewan Bajracharya

**Advisor:** Drs. Vaughn Gehle and Pam Sanders, Biology

**Abstract:** Prostate cancer is second largest cause of cancer mortality in males in USA (Kim *et al.*, 2015). Confirmation regarding whether Triclosan is a carcinogen responsible for prostate cancer or possible approaches to prostate cancer treatment is crucial since entire human population is constantly at risk of exposure to Triclosan, a common antibacterial agent found in handwashes and toothpastes. Kim *et al.*, 2015 claims Triclosan to be an exogenous carcinogen. Significant decrease was found in growth of prostate cancer cell cultures exposed to Triclosan in presence of Bicalutamide. On the contrary, Shadowski *et al.*, 2014 suggests that Triclosan has cytotoxic response to prostate cancer cells. Inclusion of Palmitate resulted in significant drop in apoptosis of prostate cancer cell exposed to Triclosan. Hence, while part of research is inclined towards treatment aspect of Triclosan, majority of research is dedicated towards confirming androgen dependent carcinogenic response of triclosan.

4

**Title:** Marshall Minnesota AmericInn Wetland

**Presenter(s):** Randi Voegele

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands act as natural water purification systems and can be used to clean up runoff and overland flow. A small runoff retention pond and wetland near the AmericInn in Marshall, MN was sampled for water quality and biota once a week from August 31- October 19, 2016. Water temperature, pH, dissolved oxygen, alkalinity, nitrate, and phosphate were measured using the LaMotte test kits. The dissolved oxygen of the water was measured at 0 ppm on two different dates. Low dissolved oxygen which makes it hard for some biota to survive. Narrow-leaved cattails, *Typha angustifolia*, was the dominant species of plant found in this wetland, and it covered >90% of the vegetated area. Changes in water quality parameters over time will be examined in the wetland.

5

**Title:** The Relationship Between Landscape Diversity and Bee Pollination Success

**Presenter(s):** Ashley Millerbernd

**Advisor:** Drs. Betsy Desy and Pam Sanders, Biology

**Abstract:** About 75% of crops that are used for food throughout the world require insect pollination. However, the abundance of pollinators within agricultural fields is declining, which may be due to decreasing natural habitat surrounding agriculture fields. Petersen and Nault (2014) investigated the relationship between landscape diversity, bee visitation frequency and pumpkin fruit yield. They found that the interaction between landscape diversity and bee visitation significantly increased pumpkin fruit yield. Similarly, Blaauw and Isaacs (2014) research showed a positive effect on blueberry fruit yield when bee visitation frequency increased. Future research needs to be done to determine if the effect of declining bee populations can significantly impact other crops.

6

**Title:** Ecological Changes in a Freshwater Marsh in Marshall, MN

**Presenter(s):** Nahom Tsegaye

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Freshwater marshes are home to a variety of organisms and help purify water as well as control flooding. Ecological changes in a Minnesota-shaped freshwater marsh were monitored over the course of 48 days during fall 2016. Water quality was measured using LaMotte test kits (oxygen, pH, nitrate, phosphate, alkalinity and turbidity). In general, the water level dropped over the study period, and dissolved oxygen remained very high, likely affected by the aerator in the pond. There was no phosphate measured and nitrate dropped from 4.4 ppm measured the 1<sup>st</sup> and 2<sup>nd</sup> week to 0 ppm every week after. The pH was stable and ranged from 7 to 8. Narrow-leaved cattail dominated the wetland vegetation. Canada geese and other migratory birds passed through the wetland near the end of the observational period.

7

**Title:** Collapse of Feeder Cattle Prices

**Presenter(s):** Marissa Eben, Abby Einck & Felicia Pineda

**Advisor:** Dr. Sang Jung, Agriculture

**Abstract:** The market price for feeder cattle has been on a spiraling downward trend in the past few years. With an increase in the supply of beef there is an overstock of beef driving the prices down. Cattle feeders have better quality pastures, which is putting

out more total head year to year. Also feeders have been able to feed cattle longer because of record low corn prices, allowing feeder cattle to be sold at higher weights, increasing the total carcass weight. Even with the supply growing, the demand is still about the same. This leaves many pounds of unwanted beef, driving the prices downward to try and move the beef. Many farmers are starting to see red trying to feed cattle but not having high market prices.

8

**Title:** Weed Presence vs Cropping Systems

**Presenter(s):** Hailey Neubauer & Erin McDurmont

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** This project will be addressing the amount of weeds found in the different types of cropping system. As Agronomy majors, this topic directly relates to our fields and will apply to our careers later on. More specifically, we will be looking into the presence of certain weeds in soybean fields in Southern Minnesota. The main differences I will be looking for are the types of weeds (dicot or monocot) and what type of tillage (no till, conservation till, conventional till) they appear most and the frequency. The hypothesis is that weeds will be suppressed where crop rotation, herbicides and conservation tillage are present in the same cropping system.

9

**Title:** Effectiveness of Concerta® treatment for ADHD versus treatment with its generic (Novo-methylphenidate ER-C®)

**Presenter(s):** Emily Heesch

**Advisor:** Drs. Sandy Craner and Pam Sanders, Biology

**Abstract:** Concerta® (OROS-methylphenidate) is a once-daily extended-release stimulant used to treat Attention-Deficit/Hyperactivity Disorder (ADHD), a psychiatric disorder characterized by significant impairment in psychological, occupational and social functioning, persisting into adulthood in 60% of patients. Concerns have been raised about a generic form's (Novo-methylphenidate ER-C®) ability to treat ADHD effectively. Fallu *et al.* (2016) used a randomized, double-blind, crossover study to test effectiveness of Concerta versus its generic. While on the generic, results showed patients had worsening of symptoms, higher adverse effects, and decreased effectiveness overall. Shram *et al.* (2012) evaluated the generic and brand-name's differences *in vivo* and *in vitro*, finding that the pharmacokinetic profiles differed significantly. The generic released a large portion of medication in the first 3 hours and wore off faster than Concerta, eliminating the intended 8-12 hour longevity. Both studies indicate Novo-

methylphenidate ER-C is not therapeutically equivalent to Concerta for the treatment of ADHD.

**10**

**Title:** Comparing Conventional Tillage and Reduced Tillage

**Presenter(s):** Joshua Leach

**Advisor:** Dr. Lee French, Agronomy

**Abstract:**

**11**

**Title:** Water quality and biological changes in Anderson Lake wetland in Franklin, MN

**Presenter(s):** Lacey Prescott

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Oxbow lakes are formed when a meander in a river channel is cut off and begins to develop into a small lake with marsh vegetation. The Minnesota River developed an oxbow lake in Anderson Lake Park that contains a shallow marsh ecosystem. A Type 3 Shallow Marsh provides floodwater storage, protects water quality, and provides habitat for organisms. Seasonal changes in water quality parameters (dissolved oxygen, nitrates, phosphates, pH, and alkalinity) were measured weekly in Anderson Lake Park wetland in Franklin, Minnesota from September 1 to October 20, 2016 using LaMotte test kits. Dissolved oxygen increased from 4.6 to 7.8 mg/L as water temperatures decreased. Phosphates ranged from 0.5 to 1.2 ppm and nitrates remained at 1 ppm during the study period. Water level changed from +14.5 to -4.9 cm despite being near the Minnesota River.

**12**

**Title:** Reducing obesity by inhibiting or deficiency of Group 1B phospholipase A2

**Presenter(s):** Cristian Artiga

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Obese individuals have an increased risk of developing several chronic diseases. Phospholipase A2 enzymes hydrolyze fatty acids from the sn-2 position of phospholipids. Thus generating free fatty acids and lysophospholipids. Inhibiting the phospholipase A2 is considered a possible way to decrease obesity. This poster reviews two studies which the main focus is to determine and understand PLA deficient mice when fed a high calorie diet. Huggins et al. (2002) suggests that PLA2 deficient mice are resistance to weight gain; when fed a high calorie diet, because of decreased levels of fat absorption. Labonté et al. (2010) demonstrates metabolic recalibration mechanism in PLA2 deficient mice is the actual reason weight was not gained. These experiments lead to believe inhibiting PLA2

activity may be a strategy to suppress diet-induced obesity.

**13**

**Title:** Effects of cold water stresses on corn

**Presenter(s):** Robert Gordon Reinking

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** This study illustrates the damage that may occur within the early planting season of corn. Even though the soil temperature is at optimum conditions (10°C), this doesn't mean that the environmental conditions are suitable for the development of the corn seeds. The experiment consisted of two treatment groups: a control which was supplied with room temperature water (21°C), and a stress induced treatment that was supplied with freezing water (0°C-5°C). Both treatment groups contained 10 subjects. The data collected was analyzed both qualitatively by looking at the overall plant health, and quantitatively by measuring the swollenness of the seeds. My hypothesis is that the freezing water treatment will negatively affect most of the corn plants by presenting symptoms of imbibitional chilling injury. My results helped support the hypothesis that freezing water will negatively affect most corn plants. The corn treated with freezing water had 30% of the seeds fail to germinate and 50% displayed symptoms of imbibitional chilling injury. In comparison, the control had 100% healthy germination. There was no significant difference between the seed sizes after water absorption. In conclusion corn producers, should wait until air temperatures are also adequate for greater success.

**14**

**Title:** Observation and Data Analysis of a Deep Roadside Marsh

**Presenter(s):** Beau Swenson

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Water quality and vegetation can change in a wetland as seasons change. Observation and sampling of a wetland adjacent to a major road near Marshall, MN was done weekly September 3<sup>rd</sup> through October 20<sup>th</sup>, 2016. Vegetation was identified and relative abundance calculated. Macroinvertebrates found were also identified. Water quality (dissolved oxygen, alkalinity, phosphate, nitrate, temperature and pH) was measured weekly. Narrow-Leaved Cattail was the dominant vegetation. There was little change in phosphate and nitrate measurements while alkalinity rose slightly. Water temperature and dissolved oxygen were related inversely. However, nearing the end of the sampling time, a change was seen in that relationship- as water temperature decreased, so did the dissolved oxygen

concentration. It may be that decomposition of dying vegetation resulted in a reduction of available oxygen.

**15**

**Title:** CoQ10 depletion as the primary mechanism for statin-induced myopathy

**Presenter(s):** Austin LaFollette

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Statins are a highly effective treatment for lowering high cholesterol, and have greatly reduced deaths caused by coronary heart disease. However, approximately 10% of statin users experience myopathic symptoms. The exact mechanism for statin-induced myopathy is unclear, although much research suggests that Co-enzyme Q10 depletion is the cause. In 2014, Skarlovnik *et al.* tested whether CoQ10 supplementation could decrease statin-associated muscle pain. Patients experiencing statin-induced myopathy were carefully selected and supplemented with CoQ10. The results showed significant benefits from CoQ10 co-treatment. El-Ganainy *et al.* (2016) investigated the mechanism of statin-induced myopathy in rats. Rats treated with both statins and CoQ10 were tested for myopathic symptoms and mitochondrial dysfunction. All of the tests showed CoQ10 supplementation significantly reversed the myopathic effects of statins. The combined results of these articles validate the mechanism for statin-induced myopathy as CoQ10 depletion leading to mitochondrial dysfunction.

**16**

**Title:** WITHDRAWN

**Presenter(s):**

**Advisor:**

**Abstract:**

**17**

**Title:** Seasonal Changes in the Clifton Wetland

**Presenter(s):** Brayden Anderson

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands are a beneficial part of the environment by protecting against erosion, filtering the water, serving as habitat for many organisms, and can help protect against flooding. Seasonal changes were measured in a wetland in the Clifton Wildlife Management Area, near Marshall, MN fall 2016. Changes in dissolved oxygen, water temperature, nitrate, phosphate, depth, pH, and alkalinity were measured with LaMotte test kits. The water level increased every week indicating there was no significant output of water, and significant runoff entered the wetland due to high rainfall. A correlation was seen between water temperature and dissolved oxygen concentration. This wetland was strange because it had almost no submerged vegetation, but

there were still a few invertebrates able to survive there. This wetland, like many, is open for the public for recreation, so we need to make sure any negative human impact is to a minimum so future generations can continue to enjoy it.

**18**

**Title:** The Role of the Immune System in Parkinson's Disease

**Presenter(s):** Rhiannon Sears

**Advisor:** Drs. Vaughn Gehle & Pam Sanders, Biology

**Abstract:** Parkinson's disease (PD) is the second most common neurodegenerative disorder, affecting millions globally. PD results in a progressive loss of voluntary motor control, ultimately leading to death. Accumulation of the neuronal protein  $\alpha$ -synuclein ( $\alpha$ -syn) is associated with PD pathogenesis, specifically by increasing neuroimmune responses in the substantia nigra (SN), a brain nucleus involved in motor control. The use of passive immunotherapy to eradicate  $\alpha$ -syn from the brain is a potential treatment. Van der Perren *et al.* (2015) evaluated effects of the immunosuppressant FK506 on a rat model of PD. FK506 reduced the number of activated microglia, a neural macrophage. Shahaduzzaman *et al.* (2015) investigated the protective effects of using anti- $\alpha$ -syn antibodies in a different rat model of PD. The antibodies reduced SN  $\alpha$ -syn levels and lowered the amount of activated microglia. These studies indicate passive immunotherapy is a promising approach to slowing the progression of PD symptoms.

**19**

**Title:** Seasonal Changes in the Marshall Mall Wetland

**Presenter(s):** Ashley Millerbernd

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands may act as natural water purification systems and may change as seasons change. Weekly measurements of water quality, such as phosphate, nitrate, dissolved oxygen and pH, were done using the LaMotte test kits from September 1, 2016 to October 20, 2016. Water temperature and level change were also measured. Plants and animals were identified and relative abundance was assessed. There was 0 ppm phosphate measured and only 1 ppm nitrate measured on 2 dates. Dissolved oxygen dropped below 5 ppm on 3 dates, but returned to above 5 ppm by the next week. Despite adjacent construction and activity from the nearby mall, the wetland had abundant plants and macroinvertebrates

## 20

**Title:** The Joys of Parenthood

**Presenter(s):** Mercy Jolo & Maria Baleng

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** College students who are parents face the added challenge of parenting along with the demands of college. The objective of our research is to explore how college students with children handle the pressures of parenting and academic demands and the differences between single mothers and married mothers. Our assumption is that married mothers face fewer challenges and difficulties than single mothers in parenting a child. This could be due to the fact that married mothers receive more support from their husbands whereas single mothers may have fewer people on whom to rely. The common themes from the interviews will be identified to give voice to these college student mothers. The purpose of this research is to inform individuals about the realities of raising children while attending college. Five single mothers and five married mothers who are students will be interviewed about the challenges and difficulties they face juggling parenting and school.

## 21

**Title:** Observation & Data Analysis of a Type 5 (Shallow Open Water Community) Wetland in Marshall, MN

**Presenter(s):** Aditya W. Harsono

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** A wetland is an area of land that is inundated with water and supports flora and fauna adapted to transitional areas. The aim of this research was to observe seasonal changes (September, 1 – October 20, 2016) in water quality and vegetation of a Type V Shallow Open Water Community in Marshall, MN. Water quality, water temperature, and depth were measured using LaMotte test kits to measure dissolved oxygen, nitrate, phosphate, alkalinity, and pH. Results showed changes in water temperature, water depth, alkalinity, and dissolved oxygen. Nitrate, phosphate, and pH values of the water changed very little. Vegetation was dominated by narrow-leaved cattail (*Typha angustifolia L.*), spike rush (*Eleocharis spp*), and Canada goldenrod (*Solidago canadensis*). Aquatic insects and crustaceans activity dwindled as temperature decreased over time.

## 22

**Title:** Lysostaphin is an Effective Antimicrobial against Multiple Drug Resistant *Staphylococcus aureus* Infection

**Presenter(s):** Megan Bruns

**Advisor:** Drs. Tony Greenfield and Pam Sanders, Biology

**Abstract:** 60% of diagnosed *Staphylococcus aureus* infections are multiple drug resistant (MDR). Increasing antibiotic resistance creates the need for alternative antibacterials such as enzybiotics or protiens with antimicrobial properties. Lysostaphin an enzybiotic has been used effectively to lyse *Staphylococcus aureus* cells for DNA purification. Schmelcher 2015 compared Lysostaphin with 8 other enzybiotics using in vitro assays and an in vivo mouse model. Confirming Lysostaphin to be the most effective against both MDR and non MDR Staph. Sebala 2012 examined Lysostaphin on the molecular level showing it's optimal conditions allow it to be combat Staph infections. Both studies show key information into why Lysostaphin is the enzybiotic of choice for mass production and distribution. However Lysostaphin does not eliminate the possibility of resistance and should be used conservatively.

## 23

**Title:** Malaria Vaccine Development: Immune Responses That Lead to Protection

**Presenter(s):** Lozililo Moyo

**Advisor:** Drs. Tony Greenfield and Pam Sanders, Biology

**Abstract:** Malaria infects and kills millions of people every year. Current control and treatment measures have proved ineffective therefore it is imperative that an efficient vaccine be developed. Competent vaccines must utilize and boost the body's natural immune response to an infection. This poster reviews two articles that evaluate immune responses due to natural Malaria exposure and those from vaccination. Kester et al. (2009) showed that the RTS, S a pre-erythrocyte vaccine, induced high anti-CSP antibodies and even higher levels of CSP-specific multifunctional CD4+ T cell such as INF $\gamma$  either co-produced with TNF- $\alpha$ , IL-2 or CD40L. Jagannathan et al. (2014) showed that INF $\gamma$ /IL-10 co-producing CD4+ T cells limit cell death by autoregulation Cytokine production and the proliferation of CD4+ T cells. Together, these studies demonstrate possible immune responses that may be exploited in creating a decisive Malaria vaccine.

## 24

**Title:** Stress effect on soybean yield

**Presenter(s):** Tate Andrew Colwell

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** The research conducted was to determine the yield reduction on soybeans due to early season defoliation. Field trials were conducted in the months of May through November 2016, to determine the artificial effects of weather, and insect defoliation on the soybean plant. Plant vigor and yield rates were measured throughout the growing season. To

simulate defoliation, 75% of the newest trifoliolate were removed at various stages of growth. The experiment consisted of a control group along with the growth stages of V2, V4, and R1. My hypothesis was that in the early stages of growth, yield would be reduced due to the simulated defoliation on the soybean plant. In my results, I had found that defoliation at these various stages of growth had no result in yield loss, and plant vigor in comparison to the control group.

## 25

**Title:** Allelopathic Effect of Coffee Extract on Corn Growth

**Presenter(s):** Deanna Honnold, Jakob Hicks, Ashley Clement & Bradley Jansma

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Caffeine has the ability to inhibit the growth and reproduction of lettuce, Malaysian cabbage, and beggars tick seeds. We predicted that higher concentrations of coffee (*Coffea arabica*) extract would inhibit the 'Vision' corn plant (*Zea mays*) height and shoot dry weight. Each treatment group of six plants were watered with 0, 10, 20 or 30 g/L of coffee extract. Over a 4-week period, plant height was measured bi-weekly. Plants treated with 10-30g/L coffee extract showed 13%, 7% and 20% decreased height and 14%, 13%, and 31% decreased shoot dry weight respectively. Our results show that coffee abstract does inhibit corn plant height and shoot dry weight.

## 26

**Title:** Seasonal Study of Horseshoe Pond at SMSU Fall 2016

**Presenter(s):** Ryan R. Riebel

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands are important to study because they are unique ecosystems and they can be affected by the surrounding landscape. This is especially true in the Marshall area, because many of the wetlands are near agricultural fields which can significantly influence water quality. The seasonal changes in the SMSU Horseshoe Pond were measured from September 2 to October 21, 2016. Water quality (dissolved oxygen, nitrates, phosphate, alkalinity, turbidity and pH) was measured using La Motte test kits, and the change in depth and identification of animals and plants were also recorded. Over the course of this study period the dissolved oxygen remained between 6.8 and 10.4 ppm, the pH ranged between 8.00-7.75, and the alkalinity ranged from 92 and 128 mg/L as CaCO<sub>3</sub>. The dominant vegetation was the narrow-leaved cattail. This wetland showed no indications of affects from nearby farms or impacts from nearby roadways.

## 27

**Title:** Riparian Wetland Monitoring in Marshall Minnesota Fall 2016

**Presenter(s):** Melissa Klecker

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Across Minnesota many wetlands have been drained by the agricultural industry. Drainage ponds and ditches have been created to control flood run-off from fields and streets in Marshall, Minnesota. Over time, one of these drainage ditches, County Ditch #62 has developed a riparian wetland along the bank. Seasonal changes were measured in this wetland over eight weeks during fall 2016. Water quality was measured once a week using LaMotte test kits for pH, alkalinity, dissolved oxygen, water temperature, turbidity, nitrate, and phosphate. Dominant vegetation was identified and relative abundance determined, and water depth was measured weekly. Data collected showed that dissolved oxygen levels increased as the water temperature decreased. Alkalinity and phosphate levels increased during harvest. Turbidity and water depth increased due to precipitation events. The result of this study showed that temperature, precipitation, street and field run-off impacted the changes of the overall water quality of the wetland.

## 28

**Title:** The evaluation of a feed mill batching system to determine necessary changes to increase mill capacity

**Presenter(s):** Brad Jansma

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** There is opportunity to increase feed mill efficiency and maximize tonnage of feed output by feed mills. Time (s), pounds (lbs), and amount of product all factor into the equation of maximizing a feed mill's abilities. Each feed order records lbs of product, amount of time it takes to move to the weigh scale, and the complete time it takes to mix the feed. It currently takes 43.94 seconds to move 4,038.36lbs of corn at 91.91 lbs/s. With the improvement of current conveyers, timing will be reduced to 23.06 seconds. It takes 16.54 seconds to move 840 lbs of soybean meal at 50.8 lbs/s. With the improvements it will take 8.7 seconds. Distillers take 15.24 seconds at 900 lbs at 59.04 lbs/s. With the improvements it will take 9.91 seconds. With the additions of larger compares this feed mill will increase its efficiency.

## 29

**Title:** Evaluating Seasonal Changes in Lone Tree Lake Wetland in Northeastern Lyon County

**Presenter(s):** Garrett Wee

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands are valuable ecosystems that

provide habitat for a wide variety of organisms and provide an important transition from land to water. Lone Tree Lake is a large, Type 3 shallow marsh located just north of Cottonwood in Lyon County, Minnesota. From September 2<sup>nd</sup> through October 22<sup>nd</sup>, 2016 water quality (pH, alkalinity, nitrate, phosphate, and dissolved oxygen) was measured using LaMotte Test kits. Water temperature, water depth and total number of species of biota were also recorded. Lone Tree Lake was heavily influenced by agriculture revealing a spike in nitrate levels up to 5 ppm and alkalinity jumping to 264 mg/L as CaCO<sub>3</sub> on October 9<sup>th</sup>, which correlated with harvest activity. Despite this, 62 bird species as well as many invertebrates, plants and animals were found and remained abundant throughout the study.

### 30

**Title:** How Do Different pH Soil Values Affect Corn and Soybeans?

**Presenter(s):** Trevor Serbus

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** I tested for soil pH values to see if yields would differ compared to different soil PH. This project was comparing corn and soybean fields. A neutral pH value is 7.0 and none of my results were 7.0 so they were slightly acidic or basic. I had to take samples from each field in the spring before crops were planted. These samples had to be tested in the SMSU labs of the science and math building. This process took a few days to determine the PH values. This information will help me determine if PH affects corn and soybean yields.

### 31

**Title:** The Gamma Function and Volumes in Higher Dimensions

**Presenter(s):** Samson Chen

**Advisor:** Dr. Heather Moreland, Mathematics

**Abstract:** Special functions are an area of advanced mathematics that are prolific in the fields of physics, chemistry, and engineering. These functions arise from considering relatively simple problems. For example, if we know the volume of a 3-dimensional sphere, can we compute the volume of a higher dimensional sphere? Following the work of Azose and Nunemacher, we present a solution to this problem that involves special functions. This solution involves one of the more famous examples of a special function called the Gamma function, also known as the factorial function. We introduce the Gamma function and look at some of its interesting properties. Then, along with another special function called the Beta function, we seek to answer the question "What is the volume of a higher dimensional sphere?"

### 32

**Title:** Cover cropping strategies for weed and soil management

**Presenter(s):** Deanna Honnold

**Advisor:** Dr. Lee French, Agronomy

**Abstract:** Inclusion of a cover crop into corn-based systems can offer environmental benefits, but adoption of the practice in the U.S. Midwest is still low. This region produces one-third of corn and one-quarter of soybean grain globally, and the area is projected to experience increasing rainfall variability. One way to manage climate impacts is to utilize cover crop and soil management practices that enhance soil water storage and reduce the risks of flooding as well as drought water stress. Another potential benefit of cover crops is that nitrogen mineralization from decomposing cover crop residues may reduce the nitrogen fertilizer requirement of a following crop. Cover crop species may penetrate compacted soils better than fibrous-rooted species and therefore be better adapted for use in biological tillage. Cover crop practices offer a wide range of benefits to this area with corn cropping systems.

### 33

**Title:** Evaluating Rubik Solutions

**Presenter(s):** Courtney Tolifson

**Advisor:** Dr. Heather Moreland, Mathematics

**Abstract:** Many popular games could be played more efficiently using a mathematical approach. While most everyone is familiar with a standard Rubik's Cube, a Rubik's Slide may be unfamiliar. It is an electronic puzzle where the goal is to transform a given initial state into a given final state. The display is a three by three grid of lights that is comparable to a single face of a standard cube. By applying allowed moves on the puzzle, the grid can be seen to be topologically equivalent to a torus (a donut). We use a mathematical approach to solve the puzzles of the Rubik's Slide. The squares of the puzzle are equated to the numbers in a permutation thereby allowing a player to solve the puzzle efficiently using ideas from group and graph theory.

### 34

**Title:** The Allelopathic Effects of Garlic on Tomato Plants

**Presenter(s):** Steven Yang & Michelle "Micki" Williams

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Garlic (*Allium sativum*) is known to have allelopathic properties affecting plant growth. The aim of our experiment was to determine if aged garlic extract had a positive effect on tomato (*Solanum lycopersicum*) plant height and dry weight. 24 Bell-

Star tomato plants were split into 4 groups. Each group was watered with either water, 1.25g/L, 5g/L, or 12.5g/L of garlic extract for 23 days. Height was measured during watering and dry weight was taken at the end. We were able to determine that the application of concentrated garlic extract decreased the overall average tomato plant height by 83.6% and dry weight by 43.5%. We concluded that concentrated garlic extract has a negative effect on tomato height and dry weight.

### 35

**Title:** Tolerance to Salt Stress in Barley and Cabbage

**Presenter(s):** Selena Herr & McKenzie Besel

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Poor irrigation practices can potentially increase salt water concentrations which can inhibit the growth of plants. We hypothesize that NaCl solution will cause greater inhibition of leaf growth in cabbage than in barley plants. Barley (*Hordeum vulgare*) and cabbage (*Brassica oleracea* var. *capitata*) 'gonzales' were watered with NaCl solution of 0g/L and 3.5g/L when needed and leaf length was measured over a four-week period. Dry weight was measured at the end of the experiment. Results from both dry weight and leaf length concluded that cabbage plants had a greater growth inhibition than barley.

### 36

**Title:** The Mathematics of a Vibrating Drum

**Presenter(s):** Michaela Fassler

**Advisor:** Dr. Heather Moreland, Mathematics

**Abstract:** Have you ever seen a drummer in a band and wonder how the drum works? This project looks at how the drum head vibrates to make sound. Using the 2-D wave equation and Bessel's equation, we can model the distinct patterns of vibration called modes of a drum. The graphical representations of our model represent snapshots of the drum head vibrating through time.

### 37

**Title:** Allelopathic effect of mint extract on tomato plants

**Presenter(s):** Caleb Postma, Savannah Ramirez, Tou Soua Vue & Tong Yang

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Certain species within the *Mentha* genus have been analyzed and found to possess several phenolic compounds (Tang, 2016) which likely contribute to the allelopathic properties that they exhibit (Pashoutan, 2014). Allelopathy is what occurs when compounds from one plant influence the growth of other plants with which they come into contact. We

predicted that treating growing tomato (*Solanum lycopersicum*) plants with increasing concentrations of mint extract would result in greater inhibition of height and dry weight. Plants were divided into four groups, and each group was treated with one of four mint leaf extracts; 0g/L, 5g/L, 10g/L, and 20g/L. Height was measured every three days for a period of three weeks, and dry weight was recorded at the end of the experiment. None of our treatments caused a significant reduction in height or dry weight of the tomato plants.

### 38

**Title:** Accelerated Age Testing Effects on Germination & Vigor of Corn

**Presenter(s):** Hayley Winklepleck & Art Baur

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Each year farmers head out to plant their crops not knowing the vigor of their seeds unless they were freshly bought. Successful germination and vigor is usually linked to many important factors: 1) suitable cultivar; 2) seed treatments; 3) soil temperatures. The purpose of this experiment was to determine seed vigor and percent germination for developmental corn seed cultivar 1259, by performing a series of dry heat accelerated age test on 200 seeds. This experiment was done to see if there would be a decline in vigor or germination rate of aged seeds, and to also discuss current and future tests for corn seed. The emphasis of the presentation will be on seed germination and vigor for aged corn seeds.

### 39

**Title:** Seasonal Changes in the Biota and Water Quality at Black Rush Lake WPA

**Presenter(s):** Justin Hill

**Advisor:** Dr. Emily Deaver, Environmental Science

**Abstract:** Wetlands are highly productive ecosystems that are defined by having saturated soils or shallow water along with organisms adapted to hydric conditions. A seasonal study was conducted to document changes at Black Rush Lake WPA, a type 4 Deep Marsh located 8 miles southwest of Marshall, MN. LaMotte test kits were used to measure water quality weekly from August 31<sup>st</sup> to October 19<sup>th</sup>, 2016. Observations and identification of biota in the wetland were also recorded weekly. Dissolved oxygen increased as water temperature decreased. Alkalinity, pH, and water depth showed slight fluctuations while nitrate, phosphate and turbidity exhibited little to no variation. Twelve taxa of aquatic invertebrates, 32 species of birds, and 33 species of plants were recorded throughout the study. Narrow-leaved Cattail (*Typha angustifolia*) and Soft-Stem Bulrush (*Schoenoplectus tabernaemontani*) were the dominant vegetation. Results indicate that this

wetland is a very diverse ecosystem with minor changes in water quality during the fall season.

**40**

**Title:** From Literature to Media: Remaining Relevant through the Ages

**Presenter(s):** Danial Slowey

**Advisor:** Marianne Zarzana, English

**Abstract:** Over the centuries, authors have written literature, such as poetry, plays, short stories, and novels, which continue to inspire writers today. By reviewing selected works from classical, horror, and world literature alongside contemporary works, we can gain a deeper appreciation for both the originals and the pieces they inspired. From Shakespeare's *Hamlet*, to Dante's *Inferno*, up to horror novels such as Stephen King's *The Shining*, strong writing endures and has relevance today. Examples include musicals, such as *The Phantom of the Opera* and *Les Misérables*, movies such as *Don Quixote* and TV series such as "The Simpsons." Consumers of contemporary media may be unaware of the literature that influenced current movies, musicals and TV shows, but the best literature is continually reborn in new forms. This presentation shows how the threads in literature's grand tapestry are rewoven time and again.

**41**

**Title:** Development of Haiti

**Presenter(s):** Deanna Honnold & Marissa Ebben

**Advisor:** Dr. Sang Jung, Agribusiness

**Abstract:** The focus of building a stable and economically viable Haiti revolves around promoting economic growth, job creation and agricultural development, providing basic health care, and improving the effectiveness of the government. Land in Haiti was distributed into small scale farms, but these units devoted only a fraction of their resources to growing export crops like sugar and coffee and often the output is consumed domestically. In recent decades the low wage rates of Haiti have attracted manufacturing assembly operations. Haiti is one of the few countries that has pay scales low enough to compete with China. The development of manufacturing assembly operations in Haiti was helped greatly by changes in the tariff rules. These allowed Haitian operations to function much like the products assembled from the United States. While changes are being made in Haiti there is still room for improved development.

**42**

**Title:** A Study of the Evolutionary History of Species Through the Construction and Analysis of Phylogenetic Trees

**Presenter(s):** Shannon Gorter

**Advisor:** Dr. Heather Moreland, Mathematics

**Abstract:** The work of Darwin created an explosion of science related to the study of evolutionary history; scientists have since been building the "Tree of Life" that would link all species together. From this, Phylogenetics was developed to find the similarities in the genetic makeup of different species which could help explain speciation and extinction. Phylogenetic trees are used to link together similarities through tree construction. The shapes of these trees and its' features provide information on how different species are related. The amount of data used to build and analyze these trees can be too large to be studied individually and mathematics is needed to organize and analyze the information that the trees provide. Statistics and combinatorics are needed to study tree shapes, branch lengths, patterns and splits. This is a study on the mathematical techniques used to help determine the evolutionary history of our planet's species.

**43**

**Title:** Allelopathic Effects of Lemon Juice on Valley Girl Tomato Plants

**Presenter(s):** Sean Donohue, Brayden Anderson & Troy Filzen

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** An allelopathy is when a plant produces a biochemical that can have a beneficial or negative effect on the growth, survival, or reproduction of another plant. We tested the hypothesis that the lemon extract would reduce the height and dry weight of tomato plants, because citrus is an inhibitor. We watered the tomato plants in the greenhouse with 0%, 1%, 5%, and 10% lemon extract over 22 days. We measured the height from the soil to the shoot tip every 3-5 days and the dry weight at harvest. The heights of the lemon extract percentages were not significantly different, while the 1% lemon extract's dry weight was significantly higher than the controls.

**44**

**Title:** A Mathematical Analysis of a Malaria Outbreak

**Presenter(s):** Anja Bjorklund

**Advisor:** Dr. Heather Moreland, Mathematics

**Abstract:** Mathematical models have been widely developed to study the spread of diseases like smallpox, influenza, and malaria. Malaria is a mosquito-borne disease that causes fevers, chills, and flu-like symptoms which may result in severe complications or death. The first such model is credited to Ross and Macdonald around the start of the 20<sup>th</sup> century. This is an example of an epidemiological compartment or SIR model. Here S represents the fraction the population that is

susceptible to infection, I represents the infectious individuals, and R represents the recovered population. By studying such a model, we can simulate and understand how an outbreak of malaria may spread throughout a population as well as what factors could assist in controlling the spread of the disease. We analyze the Ross-Macdonald model, including certain environmental parameters, in an effort to understand the dynamics of a malaria outbreak and how to control the epidemic.

#### 45

**Title:** The Allelopathic Effects of Sunflower Seed Extract on the Sweet Corn

**Presenter(s):** Robert Reinking, Rabina Saud & Coury Popowski

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** Weeds are becoming resistant to today's synthetic herbicides. The usage of these herbicides is raising questions about the safety of our health and environment. Sunflowers have the Sundiversifolide chemical, which has beneficial Allopathic effects. We designed an experiment to test the effects of sunflower seed extract on the inhabitation of the overall growth of corn plants (*Zea mays*). We used 13 day old corn plants and transplanted them into 4 groups of 6. They were treated with 0g/L, 50g/L, 100g/L, and 150g/L and under optimal greenhouse conditions. Height was measured for 3 week then harvested for dry weight. We found that the average dry weight and height of the control was 7.097g and 118.27cm, 5% extract was 5.035g and 102.62cm, 10% was 4.37g and 97.87cm, 15% was 4.168g and 90.87cm. Our data showed that the overall growth was actually decreased with higher potencies of extract.

#### 46

**Title:** Germans in Rural Southwest and Central Minnesota

**Presenter(s):** Benjamin Ryan

**Advisor:** Dr. Tom Williford, History

**Abstract:** The daily life and experience of Minnesotans with German ancestry in the rural regions directly west and southwest of the metropolitan cities has reflected the societal tendencies of immigrants assimilating into another culture. Initial hostility towards newcomers is shown by the established culture (which was created from those who were once also immigrants themselves). German migrants who settled in Minnesota locations such as Stearns County and New Ulm did not face the same cultural pressure to rapidly assimilate as their urban counterparts. The first waves in the late 1800s recreated Deutschland in their own ethnic enclaves. Subsequent world wars antagonized

German immigrants and ethnic identity and pride were suppressed due to fear or shame. Identifying as an American first, and not a German, became more commonplace.

#### 47

**Title:** What are the effects of salt stress comparing tomatoes and cabbages?

**Presenter(s):** Makenzie Moes, Katheryn Kindvall & Lauren Kerr

**Advisor:** Dr. Pam Sanders, Biology

**Abstract:** About 40% of farming land is affected by high salinity. Salt stress changes the osmotic pressure, imbalances ions, and changes how enzymes work. 14 old tomato and cabbage seedlings were watered with 0.12 molar NaCl solution. The height and leaf length was measured at every watering and dry weight at harvest. Salt-stressed tomato's height only differed at day 14 by 21.67%. Salt-stressed cabbage was 32% smaller compared to the control. Leaf lengths for the salt-stressed groups weren't significantly different compared to the controls. The dry weights of the salt-stressed tomatoes were 52.41% smaller compared to the control, while the cabbage was 40.84% smaller compared to the control. Salt stress inhibits growth in both tomatoes and cabbage, however it inhibits the tomatoes dry weights more than cabbages, and cabbages' heights more than tomatoes.

#### 48

**Title:** SMSU Students' Understanding of Civic Engagement: A Qualitative Analysis

**Presenter(s):** Vernel Wingate, Destiny Fredricks, Kayla Chisum, Kevin Rubin & Mohammed Faqhi

**Advisor:** Dr. Christine Olson, Psychology

**Abstract:** This study made use of qualitative and quantitative analyses to assess students' understanding of civic engagement before and after having completed an upper division course titled "Contemporary Issues: Self as Citizen". Data from one in-class section (Sp2013) and one online section (Su2016) were analyzed. Students responded at Pre-test (first week) and Post-test (last week) for up to ten minutes to a one question prompt, "What does civic engagement mean to you?" In coding for themes, three emerged: differentiated understanding of civic engagement; efficacy for social change; and motivation for civic engagement. Pre- and Post-test responses were reanalyzed, using Likert Scales specific to each of these civic engagement constructs. Gains on the primary construct of interest, differentiated understanding of civic engagement, were found at Post-test. Likewise, there were increases in efficacy for social change and motivation for continued civic engagement. Implications for

curriculum development and limits of the study are discussed.

## Poster Session B – Accounting, Computer Science, Hospitality Management, Interdisciplinary, Mathematics, Marketing, Political Science, Psychology, Sociology

49

**Title:** Satisfaction Analysis of Faculty Luncheon

**Presenter(s):** Samantha Pardy, Jade Malecha, & Maren Malakowsky

**Advisor:** Dr. Yumi Lim, Hospitality Management

**Abstract:** This research investigated the satisfaction level of the faculty who regularly attend faculty luncheon for their assembly meeting. The study was conducted in order to provide better products and services for the faculty luncheon. Specifically, the relationship between food quality, satisfaction, the SHO club students' service and the total satisfaction of the faculty luncheon were examined. Initially, an online survey was distributed via the faculty listserv. Then, a paper survey was distributed in person before the faculty assembly meeting. In total, 28 were collected via online and 11 were completed via in-person distribution. The results indicated that with an increase in quality there is an increase in satisfaction among faculty members. And the quality of taste, freshness, and portion are all positive amenities to the faculty luncheon, however, the beverage aspect is the lowest rated. Positive student appearance and sanitation provides an overall more positive experience.

50

**Title:** SMSU Student-Athletes Perception on Dining Services

**Presenter(s):** Natalie Zobel, Samantha Flack & Nicholas DiMarco

**Advisor:** Dr. Yumi Lim, Hospitality Management

**Abstract:** The purpose of the research was to investigate the nutritional perception of SMSU student-athletes on SMSU dining services. In addition, the motivation of not purchasing a meal plan of SMSU student-athletes and their overall satisfaction were examined. A self-administered questionnaire was developed and distributed to the SMSU student athletes with a small reward. In total,

83 useable surveys were collected. The results indicated that SMSU student-athletes perceived the nutritional value of SMSU dining services food as fair but more nutritious to provide on their own. Although SMSU dining services is more convenient, student-athletes believe it is cheaper to find food elsewhere. Other factors include student-athletes preferring their own taste of food. Also, most Student-athletes are somewhat satisfied with their overall experience at the SMSU dining services. Based on the results, managerial recommendations to improve SMSU dining services are provided.

51

**Title:** Accessing competitive attributes of the campus dining services using importance-performance analysis

**Presenter(s):** Karma Gurung, Tshering Sherpa & Toussaint Tindal

**Advisor:** Dr. Yumi Lim, Hospitality Management

**Abstract:** The objective of this research was to explore perceived importance and performance of the attributes of Southwest Minnesota State University (SMSU) campus dining services. A self-administered questionnaire was distributed to the students in some classes at SMSU. A total of 147 completed responses were collected. An Importance-Performance Analysis regarding attributes when dining at SMSU's dining services was conducted. The results indicated portion sizes, convenient operational hours, affordable items for purchase, friendly staffs, good value for purchase, flavor & taste of food to be the most important attributes. However, the performance of these attributes, beside convenient operational hours and friendly staffs were below average. Moreover, other managerial implications and recommendations were discussed.

52

**Title:** Marketing strategy evaluation of the Music Man Square in Mason City, Iowa

**Presenter(s):** Nicholas DiMarco

**Advisor:** Dr. Yumi Lim, Hospitality Management

**Abstract:** This study was to evaluate marketing strategy of the Music Man Square in Mason City Iowa. In addition, their effective strategy for using their spaces was examined. A personal interview with the vice president of the Music Man Square was conducted and their website was explored to investigate their products, price, and place and promotion strategy (4Ps). The research provided knowledge on where their business has been in the past and where it should go for the future. It was found that they have fundamental problems in managerial positions but they are striving every day to become a good organization. They have strengths and

weaknesses in their 4Ps. Recommendations on the weaknesses were provided based on the assessment of their marketing strategy.

**53**

**Title:** Technology trends in the lodging industry

**Presenter(s):** Sanjay Shrestha

**Advisor:** Dr. Yumi Lim, Hospitality Management

**Abstract:** The purpose of this research is to reveal the trends and importance of technology in the lodging industry. Understanding technology is critical these days to compete in the current market with other competitors. I conducted this research based on the literature related with the technology trends in the lodging industry. This research discusses the current technology trends in social media, smartphones and mobile application, cloud computing, and E-commerce. By identifying new technology trends in the lodging industry, it helps the industry to find out value drivers and position themselves in competitive strategic positions for their success.

**54 - 60**

**Title:** Me, Us, and Them: An Investigation of Self-Attitudes and Group Dynamics among College Students

**Presenter(s):** Katherine Speiker, Lexie Vande Hoef, Melissa Akland, Mu Mu Aye, Gus Hiivala, Steven Yang, Nydak Kur, Ruth Chilton, Larissa Jones, Brianna Staton, Sarah Parker

**Additional Authors:** Leah Bernard, Kelsey Boelke, Brittany Buesgens, Jacqueline Buhmann, Stephanie Byers, Hannah Chaddock, Tianna Cselovszki, Alex Dequaine, Alyssa Dobie, Rebecca Drietz, Mikaela DuFrane, Jamie Flynn, Jenna Gannott, Amanda Grengs, Maelee Gutierrez, Shelby Haff, Nickolas Haupt, Tamara Hellendrung, Affiny Her, Benson Her, Maria Hinojosa, Shelby Horner, Tiffani Juarez, Melanie Kedl, Seth Oolman, Anna Pommier, Mathew Robb, Tara Roiger, Megan Schmidt, Davion Shelton, Janine Steidl, Colton Stoddard, Michelle Stoner, Shannon Tell, Christine Torborg, Chong Vang, Molly Verhelst, Emily Wajer, Rebecca Winkelman, & Racquel Winters

**Advisor:** Dr. Kerry Livingston, Sociology

**Abstract:** This class research project involves three studies that aim to evaluate the role race plays in the daily lives of SMSU students: 1) an observational study looking at the racial composition of small groups in the Student Center; 2) an unobtrusive evaluation of the relationship between race and students' seating preferences within classrooms; and 3) survey research assessing students' sense of self, particularly the salience of racial identity. The data for this project was collected over a three-week period in October. A total of 380 qualitative surveys, as well as

seating charts from 12 different campus locations were analyzed. The findings from the first study suggest that although students from different racial and ethnic groups are sharing spaces on campus, friendship groups within these spaces are largely segregated. The relationship between race and classroom seating preferences is not as clear. Researchers found differences in seating preferences by race, but only when front row seats were coded separately. Front seats aside, in five out of the eight seating charts analyzed, students of color were more likely than not to sit along the outer margins of the classroom, while white students were more likely to sit in the center of the classroom. As for the survey results, students of color were nearly twice as likely as white students to mention their race when describing their sense of self. Implications for students and the university are discussed.

**61**

**Title:** Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City

**Presenter(s):** Melody Boakye, Patrick Rhoads & Ruth Chilton

**Advisors:** Cassie Williams, Academic Specialist; Dr. Richard Herder, Communication Studies; Dr. Kerry Livingston, Sociology

**Abstract:** Field-based learning is a central component of the Summer Bridge Program at SMSU. These posters highlight some of what students from the Summer Bridge Program learned during a recent trip to Kansas City. Working in small groups, students identified a particular person, place, or social issue they learned about during the trip and prepared a research presentation that included details pertaining to their topic. Each of the posters also include sociological concepts and/or theories applicable to their research. The titles of these posters include: 1) What We Learned about Racial Segregation in Kansas City, 2) The Rise of the Black Middle Class, and 3) Empowerment through Music and Art in the Jazz/Civil Rights Era.

**62**

**Title:** Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City

**Presenter(s):** Wyatt Albers

**Advisors:** Cassie Williams, Academic Specialist; Dr. Richard Herder, Communication Studies; Dr. Kerry Livingston, Sociology

**Abstract:** Field-based learning is a central component of the Summer Bridge Program at SMSU. These posters highlight some of what students from the Summer Bridge Program learned during a recent

trip to Kansas City. Working in small groups, students identified a particular person, place, or social issue they learned about during the trip and prepared a research presentation that included details pertaining to their topic. Each of the posters also include sociological concepts and/or theories applicable to their research. The titles of these posters include: 1) What We Learned about Racial Segregation in Kansas City, 2) The Rise of the Black Middle Class, and 3) Empowerment through Music and Art in the Jazz/Civil Rights Era.

**63**

**Title:** Summer Bridge and the Traveling Classroom: Examples of On-Site Research Conducted in Kansas City

**Presenter(s):** Nydak Kur, Ayan Nur & Samuel Wreh  
**Advisors:** Cassie Williams, Academic Specialist; Dr. Richard Herder, Communication Studies; Dr. Kerry Livingston, Sociology

**Abstract:** Field-based learning is a central component of the Summer Bridge Program at SMSU. These posters highlight some of what students from the Summer Bridge Program learned during a recent trip to Kansas City. Working in small groups, students identified a particular person, place, or social issue they learned about during the trip and prepared a research presentation that included details pertaining to their topic. Each of the posters also include sociological concepts and/or theories applicable to their research. The titles of these posters include: 1) What We Learned about Racial Segregation in Kansas City, 2) The Rise of the Black Middle Class, and 3) Empowerment through Music and Art in the Jazz/Civil Rights Era.

**64**

**Title:** Dropping the Billable Hour

**Presenter(s):** Andrew Austin  
**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**65**

**Title:** Corporate Tax Avoidance

**Presenter(s):** Abigail Reichmuth & Kali Pohlmann  
**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**66**

**Title:** Tax Evasion and What Offshore Banking Does to the U.S. Economy

**Presenter(s):** Brianna Massman & Ryan Coombe  
**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**67**

**Title:** Cash Accounting vs. Accrual Accounting in Agriculture

**Presenter(s):** Glenn Nelsen

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**68**

**Title:** Student Loan Debt Forgiveness by Employers

**Presenter(s):** Anja Bjorklund

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**69**

**Title:** Bitcoin as an Alternative Currency

**Presenter(s):** Bethany Lee

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**70**

**Title:** Tax Refund Identity Theft

**Presenter(s):** Cassandra Stromberg

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**71**

**Title:** Cabin Tax

**Presenter(s):** Jon Johnson & Brianna VonWahlde

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**72**

**Title:** Minnesota Seasonal Residential Recreational Property Tax

**Presenter(s):** Megan Williams

**Advisor:** Dr. Will Thomas, Accounting

**Abstract:**

**73**

**Title:** An exploration of body art in retail advertising

**Presenter(s):** Sara Degroat, Sydney Stewart, Erin Nelson, Cole Miska, Mackenzie Vogt

**Advisor:** Dr. Denise Gochenouer, Marketing

**Abstract:** The rise of tattoos in our modern society have become an area of contention in the workplace, specifically between professional models and the advertising agencies who employ them (Hennessey, 2013). This study is aimed at uncovering whether tattoos or body art is a deterring factor in advertising or if they enhance the creativity that the younger generation desires (Kosut, 2006). The question then becomes, is advertising and probable purchasing impacted by a tattooed model vs. a non-tattooed model? To collect this information, illustrated comparative photos of the same models with and without tattoos were viewed by respondents. Our

results showed that Baby Boomers found the tattoos distracting and unappealing. It appeared that they could not recall what the models were wearing, but instead were focused on the body art. But, the millennial group favored the tattoos and thought that they could be effective in complementing the items being sold.

**74**

**Title:** The Effect of Bias on Perceptual Illusions

**Presenter(s):** Dallin Finley, Brianna Staton, Vernel Wingate

**Advisor:** Dr. Ben Anderson, Psychology

**Abstract:** The purpose of our study was to examine whether a given bias has an effect on the perception of ambiguous figures. Prior research suggests that when you read a story priming them about one side of an ambiguous figure, participants will be more likely to see the perspective they are biased toward. We have selected two ambiguous figures that will be shown: the duck/rabbit figure and the person/face figure. Students from Southwest Minnesota State University were split them into three different groups. We expect the results to show that a given bias has an effect on the perception of ambiguous figures. The experimental data should inform our understanding of how bottom-up and top-down processes influence the perception of ambiguous figures.

**75**

**Title:** The Effects of Change Detection on Memory

**Presenter(s):** Hollie Christensen, Clawsondy Cayo, Tegan Ramstad, Jordan Stangeland

**Advisor:** Dr. Ben Anderson, Psychology

**Abstract:** This study aimed to determine how picture recognition memory is influenced by change detection. Participants first completed 15 trials of change detection where they went through pictures (half of which had a flicker) and decided if the pictures had been changed or not. Next they went through 30 trials of picture recognition, which included 15 of the picture shown previously and 15 new pictures. We expect that picture recognition will be more accurate when a flicker is included between the pictures. The flicker added should increase searching. When the picture is changed there should be a pop-out affect, which makes the change more visible. This study should help to further our understanding and add to previous research on how perceptive people are in everyday situations.

**76**

**Title:** The Effects of Familiar and Unfamiliar Genres of Music on Memory

**Presenter(s):** Melissa Akland, Chris Baune, Brenna Giddings, Emily Score

**Advisor:** Dr. Ben Anderson, Psychology

**Abstract:** Do different genres of either familiar or unfamiliar music affect college student's memory? The relationship between music and memory has been a topic of interest for many people, for many years. The experimental design included a recognition memory test for different words along with different genres of familiar and unfamiliar music. We also designed and gave a questionnaire to students at Southwest Minnesota State University, ultimately showing whether or not memory is affected by the music. We expected that the group attempting to retain the information provided while not having to listen to any music would have the best results. We expected that the group listening to familiar country music will have the next best results, followed by the group listening to familiar hip-hop, then the group listening to unfamiliar country, and finally, with the worst results for memory, the group listening to unfamiliar hip-hop.

**77**

**Title:** The Effects of Anxiety and Risky Decisions

**Presenter(s):** Darby Kilkelly, Zachary Peterson, Katie Schultz, Zachary Kilian

**Advisor:** Dr. Ben Anderson, Psychology

**Abstract:** Anxiety is the fear of something that could happen, and it is a feeling that we all feel at one point in our lives. Anxiety can affect how we live our lives and it can also affect our decisions as well. Levels of anxiety could explain why individuals make more risky decisions compared to others. Our experimental group was required to give a speech and were then asked to blow up a balloon as big as they could without popping it. The participant then took an experiment that measured risk-taking in decisions. Once finished, they were asked to fill out the GAD-7 questionnaire. Our control group followed these same procedures, but did not give a speech. Our expected results are that the control group will take more risks during the risk taking task and blow up the balloon more than the experimental group.

**78**

**Title:** Effects of Sleep Deprivation on Cognitive Processing

**Presenter(s):** Brianna Holmquist, Amanda Kolstad, Lexie Vande Hoef, Alex Gawarecki

**Advisor:** Dr. Ben Anderson, Psychology

**Abstract:** One issue many college students have faced during the school year is not getting enough sleep. Many college students have complained of feeling tired and experiencing sleep deprivation. The question of whether or not this lack of sleep was affecting their abilities in the classroom is a concept that many psychologists have studied recently and in

the past. Our experiment was designed to look at the effects sleep has on cognition and students' reaction times. Using the Stroop Test and an app called Concentration Grid, our experiment helped to determine how the amount of sleep a college student got affected their cognitive processes. We predicted that fewer hours of sleep will result in a lower performance on these tasks.

**79**

**Title:** The Effects of Immersion Schools on Development of Secondary Language Learning

**Presenter(s):** Amanda Kolstad & Kaitlin Vos

**Advisor:** Dr. Scott Peterson, Psychology

**Abstract:** Immersion programs in Elementary schools are beneficial to both the child academically and the school financially. In this poster we describe what immersion programs are (specifically Minnetonka Public school's immersion program), provide various statistics on immersion programs, and summarize other research studies on this topic. We also discuss early versus late immersion, and the results of an interview with a principal of a school with an immersion program. Our poster includes our recommendation for schools in the area. Based on the research, we have found that implementing an immersion program into your school has great benefits versus few costs.

**80**

**Title:** Minnesota community windfarms adjust to market changes

**Presenter(s):** Shane Vogt

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** The wind energy industry is very prominent in Southwest Minnesota. A notable feature of this industry is role played by community windfarms. A community windfarm is a wind energy project that is owned by many local farmers, investors, businesses, schools, or utilities. Community windfarms are facing issues which will require some action and innovation if they are to survive. Many firms want contracts to buy energy at higher quantities than the community windfarms can produce. There are higher costs for these windfarms due to this smaller output of energy. There are also many instances where these community windfarms do not generate enough funding for maintenance throughout the life of the project, which creates more output issues for them. In response to the first problem some community windfarms are partnering with larger firms to sell their energy. Also, to generate a larger output some windfarms are investigating wind/solar hybrid locations to increase energy capabilities. The last issue can be helped by hiring more professional staff with experience in the industry.

**81**

**Title:** The Cost and Benefits of Expanding Broadband Access to Greater Minnesota

**Presenter(s):** Brandon Fritz

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** The purpose of this research is to understand the costs and benefits of expanding broadband access to the residents of rural Minnesota. Broadband is defined as internet speeds faster than twenty-five megabits per second for a download speed and an upload speed faster than four megabits per second. The cost of giving every rural resident in Minnesota broadband access is estimated to cost over a billion dollars using traditional infrastructure. To help alleviate the costs of expanding broadband access, the Minnesota legislature has given tens of millions of dollars in grant money to rural internet providers to help alleviate those costs. Benefits of expanding broadband access will give rural residents access to education prospects, new technologies, and it can help expand the rural economy.

**82**

**Title:** Challenges in building a long-term care workforce in Greater Minnesota

**Presenter(s):** Cheick Traore

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** After World War II (1946-1964), the United States of America has experienced a massive increase in birth. As the baby boomers started retiring (since 2011), the workforce is also taking a hit with fewer people available to hire to fill those jobs. Greater Minnesota is also facing this problem yet with greater challenges; besides losing some labor force due to the baby boom, Greater Minnesota is losing his young workforce. In fact, the young generation tends to leave their cities for major cities. It may be the cause for many concerns such as: how to take care of the growing number of seniors; how to make sure new generations of workers are trained to fill those jobs and more importantly, how to reduce the migration of the young people to larger cities.

**83**

**Title:** The Decline of Child Care in Greater Minnesota

**Presenter(s):** Christopher Ross

**Advisor:** Dr. David Sturrock, Political Science

**Abstract:** Child care in Minnesota has been in decline over the last few years due to many reasons. This project will dive into a few of those reasons to determine what can be done to help fix this problem. The main focus of this project will be the policies that have affected people in the child care industry. Increasing safety regulations within the house, food regulations, and other general policies have made it difficult for many people to start a child care business

or to keep it going, leading to the decline of child care that has hit Greater Minnesota the hardest.

**84**

**Title:** Sociologists' definitions of rape: What are the difficulties in defining rape in today's society?

**Presenter(s):** Ashley Livermore

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** The cultural and legal meaning of rape has changed dramatically over the last 30 years. My research focuses on how traditional definitions of rape have been challenged. A variety of approaches towards defining rape will be examined. Finally, the implications of these definitions in the criminal justice system and rape prevention programs will be explored. It is important to have a common definition and understanding of rape because definitions are crucial to identifying and creating successful education and prevention programs.

**85**

**Title:** What Constructs Gay and Lesbian Hate Crimes and How Do they Affect the LGBT Community?

**Presenter(s):** Tehra Christianson

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** Hate crimes towards gay and lesbian men and women are a frequent and common act in the United States. These crimes towards the LGBT community have affected their daily lives, physical health, and living situations. The purpose of this presentation is to define how the concept of hate crimes have been socially constructed and report the effects the crimes have on gay and lesbian men and women.

**86**

**Title:** Patterns of Interracial Sexuality & Relations in Historic and Contemporary America

**Presenter(s):** Emmanuel Giwa

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** In my interactions with Caucasians and people of color, interracial relations and sexuality is a pivotal issue. People have a variety of different views on the subject and my motivation is to find out the sociological origins of these views. In the United States the racial-sexual boundaries that have historically been most strictly and violently upheld are those between African Americans and Whites, because of this my poster focuses mainly on the sexual relations between heterosexual & homosexual relations between African Americans and Whites.

**87**

**Title:** Mathematical Model to Estimate the Minimum Fraction of People to Get Vaccinated in a Given Population to Prevent Influenza

**Presenter(s):** Carter Barker

**Advisor:** Dr. Tumpa Battacharyya, Mathematics

**Abstract:** Influenza, also known as "flu", is an infectious disease, caused in mammals and birds which affects the respiratory system. People infected with the disease, experience fever, coughing, headache that may lead to mild or serious outcomes resulting in hospitalization or even death. People at higher risk may include the young children, the elderly population or pregnant women. To prevent the spread of seasonal influenza, one should get flu vaccination every year. NIAID Influenza Genome sequencing Project involves the study of more than 7,600 human and avian genome sequences of varied influenza strains which are also made publicly available. In this poster, we investigate the dynamics of a simple differential equation model of the spread of influenza in a given population. We estimate model parameters viz. the infection rate and the rate of cure by using The Least Square Fitting Technique that implements Excel.

**88**

**Title:** The Psychological Adjustments of International College Students

**Presenter(s):** Redell King

**Advisor:** Dr. Scott Peterson, Psychology

**Abstract:**

**89**

**Title:** Consent on Campus

**Presenter(s):** Michael Dombrowski & Anders Faaren

**Advisor:** Dr. Scott Peterson, Psychology

**Abstract:** Recently, there have been movements to raise awareness for the necessity of consent through slogans like "no means no" or "yes means yes." On the opposite end are students like members of the Stanford Fraternity that popularized the chant "No means yes and yes means anal." The question then becomes what exactly is consent, and how and where do college students present it. In this study, students from Southwest Minnesota State University are surveyed asking about their own beliefs, understandings, and ideas of consent. This then is compared to previous research performed to see where SMSU students are roughly placed in the spectrum. The goal of this research is to help raise awareness for this issue and present a potential standard baseline for consent. This then would ideally reduce incidents of sexual assault on campus, or at least underscore the importance of talking about consent before engaging in sexual behavior.

**90**

**Title:** Being Different Hurts: The Importance of Supportive Environments

**Presenter(s):** Chucky Her

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** Bullying towards LGBTQ teenagers has been on the rise in recent years, particularly in a high school setting. Types of bullying include homophobic name calling/verbal harassment, physical play, and more. Many educational institutions have responded with whole school anti-bullying initiatives in an effort to change the culture of bullying. This poster will examine these initiatives and focus on the importance of providing a safe and supportive environment for the victims of bullying.

**91**

**Title:** Male Prison Rape: Examining the Causes and Preventatives

**Presenter(s):** Victoria Garza

**Advisor:** Dr. Vicky Brockman, Sociology

**Abstract:** Male prisoners who are victim of rapes often face institutional obstacles to securing medical and counseling services. This poster focuses on the incidence and prevalence of sexual assault within the nation's correctional facilities and the impact of prison rape on vulnerable male sexual assault victims. Issues of supervision and victim services pathways for vulnerable adults will be explored. Special supervision and service provision to incarcerated people with disabilities, many of whom may never self-disclose their disability or may not know to request an accommodation will insure dignity, respect and safety for victims.

**92**

**Title:** Tower Defense Application

**Presenter(s):** Zachary Samuelson & Kyle Begin

**Advisor:** Dr. Dan Kaiser, Computer Science

**Abstract:** In our fast-paced society, not everyone has the luxury to sit down, relax and play a game on a computer or a console. We are creating a tower defense game that people can play with whatever free time they may have. It has the simple objective of having the player last as long as possible while trying to achieve a high score, but it can be paused or started over if the player loses or has to turn it off. We are making it a 3D game so that it is visually appealing. The game will be available to both Android and iPhone users so that anyone with a smart phone can play.

**93**

**Title:** Souvenir web store

**Presenter(s):** Santosh Chaulagain

**Advisor:** Dr. Daniel Kaiser, Dr. Shushuang Man, Prof. Kourosh Morteza-pour, Computer Science

**Abstract:** The purpose of this research is to understand the costs and benefits of expanding

broadband access to the residents of rural Minnesota. Broadband is defined as internet speeds faster than twenty-five megabits per second for a download speed and an upload speed faster than four megabits per second. The cost of giving every rural resident in Minnesota broadband access is estimated to cost over a billion dollars using traditional infrastructure. To help alleviate the costs of expanding broadband access, the Minnesota legislature has given tens of millions of dollars in grant money to rural internet providers to help alleviate those costs. Benefits of expanding broadband access will give rural residents access to education prospects, new technologies, and it can help expand the rural economy.

**94**

**Title:** Attendance Management System using Bar Code Scanner

**Presenter(s):** Subash Pathak, Biplov Bajracharya

**Advisor:** Dr. Daniel Kaiser, Dr. Shushuang Man, Prof. Kourosh Morteza-pour, Computer Science

**Abstract:** We are developing a method of monitoring the presence of student on school premises. For this purpose, we are using a technology called Android application. This Android application has the capability of accessing the camera of an Android based smart phone. Barcodes are scanned using the camera, which captures the image of the barcode and decodes it to give the college ID number of the student. This ID is then sent to the database search engine by making http request to the server. The database search engine after accessing the ID number searches for the page which is linked to that ID. After this, the web page containing the profile of the student including time of arrival and departure of the student is stored in the database and that can be accessed later.

**95**

**Title:** Java Based Class Scheduler

**Presenter(s):** Andrew Alsworth

**Advisor:** Dr. Dan Kaiser, Computer Science

**Abstract:** The project is a Java based scheduler written as a Java FX application which will allow a user to create a schedule for a semester of courses. The program enables the user to create or recall a saved schedule. They can then open a dialog that lets them load crucial information like name, course number, and instructor into a course. Once created, courses can be dragged onto a scheduling grid which will check the room and professor of the course to ensure there are no time conflicts and reject the drop if a conflict is found. Once the schedule is complete reports can be generated in CSV to export the schedule. The schedule can also be saved for future reference and modification.

**Title:** Interacting with Web Services from a Raspberry Pi

**Presenter(s):** Cameron Parus

**Advisor:** Dr. Dan Kaiser, Computer Science

**Abstract:** This project involves using a Raspberry Pi, a tiny, dynamic computer that can be used to teach programming and create a wide range of practical projects. For this particular project, the Raspberry Pi will be used to interact with popular web services that people use on a daily basis. The project is aimed at providing the capability of sending emails or posting updates to their favorite websites such as Twitter and Facebook from a common location, the Raspberry Pi. The sites will be able to be accessed individually or simultaneously if the user so chooses. Along with user updates, the project will also send out weather updates for a selected location across all of the social media platforms on a selected time interval. This project will show the flexibility of a Raspberry Pi and how it can be used to interact with the internet and multiple web services from a single location.

**97**

**Title:** Maze Daze

**Presenter(s):** Amoye-Olaniyan Olawale, Kelsey Keenan

**Advisor:** Dr. Dan Kaiser, Computer Science

**Abstract:** Maze Daze is an android app game, in which a player has to get from the start to the finish in a randomly generated maze. There is an NPC that will chase the player. The goal is to get to the end before the NPC catches the player. As the player advances the levels will increase in difficulty. The levels will get harder and the NPC will get faster. Inside the maze there will be coins that the player can pick up as the player tries to get to the end.

**98**

**Title:** Complex Analysis Calculator

**Presenter(s):** Samson Chen

**Advisor:** Dr. Daniel Kaiser, Dr. Shushuang Man, Prof. Kourosh Mortezapour, Computer Science

**Abstract:** Computer automation is an applied area of computer science that is prolific in the processes of automating tedious and error-prone actions. In the vast and broad field of mathematics, regardless of the level and difficulty, there exist special theorems that allow a mathematician find unique properties of equations. For example, in the specified field of complex analysis, special properties like the polarity and the residue of a complex variable can be found by applying the Theorem of Poles and Cauchy's Residue Theorem. Since these special properties must adhere to rigid criteria, computer programs like a digital calculator can be created to automate this

calculator by parsing the input variables and designing algorithmic processes to find special properties of the tokenized inputs.

## Poster Session C – Nursing, Sociology

**99**

**Title:** Romantic vs. Realistic Love

**Presenter(s):** Catherine Drietz, Andrew Petersen

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** Have you ever been jealous in a relationship? In our project, we are researching jealousy in relationships and what factors may be involved to cause jealousy. Our hypothesis is that college aged women are more likely to get jealous in a relationship than college aged men. We also believe that our results will show that people in long-term relationships are less likely to get jealous of their partners in the given situations. We will survey 50 different college students in relationships, both male and female, to study both genders reactions to and triggers of jealousy. Our survey asks participants to look at certain scenarios and rate their attitude based on a 1 to 4 scale of being okay with the situation to being uncomfortable with the situation. The findings on jealousy and college students along with their correlations, will add to the body of literature on relationships and their outcomes.

**100**

**Title:** Are you going to be with the right mate: Relationship deal breakers in dating!

**Presenter(s):** Maren Malakowsky, Clarissa Geisel

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** The purpose of this project was to investigate the main relationship deal breakers in dating for college age students. This topic is important for many reasons and often is overlooked. In our studies we have found that deal breakers are often more important to people than the "deal makers". We collected survey data from about 50 students at Southwest Minnesota State University. The results will show what SMSU college students do not want in their partners. In doing this we wish to learn what deal breakers are considered the worst and which ones are less important.

**101**

**Title:** The Quality of My Dating Experience

**Presenter(s):** Andrea Fuerstenberg, Jacqueline Buhmann, Mariah Henry, Vernel Wingate

**Advisor:** Dr. Cindy Aamlid, Sociology

out whether Southwest Minnesota State University students have positive or negative attitudes towards dating. We are also interested in the average attitude of men and women to see who has more positive or negative attitudes about dating and compare the results. To do this we have surveyed sixty SMSU students. The students in our sample have been or are in a relationship and were asked to complete the *Quality of My Dating Experience survey* from *The Marriages and Families Activities Workbook* by Ron J. Hammond and Barbara Bearson. The purpose of this research is to bring self-awareness to students attending college about their dating experience and whether or not they need to evaluate their current or past relationships.

### 102

**Title:** The Effects of Social Media on Relationships in College

**Presenter(s):** Joel Gay, Shawn Jensen, Megan Larson, Leah Schneider, Michelle Stoner

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** The purpose of this study is to determine how social media influences the norms of dating in college. We hypothesize that an increasing number of college students are using social media to help initiate a relationship. Times are changing, and we are aware that forming relationships has become a new process due to the use of social media. To gather information on recent dating norms for this study, a survey was given to 50 random SMSU students. The survey asked various questions including which types of social media students used to initiate a relationship, why they used social media for this purpose, and how long the relationship lasted. From this study we hope to learn more about how social media has impacted the dating norms in college.

### 103

**Title:** College Student Views of Cohabitation

**Presenter(s):** Derek Soupir, Okeleamaka Chukwuyem, Jocelyn Garcia, Malorie Hudson & Daytona Arends

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** The purpose of our study is to investigate how college students at SMSU view cohabitation. Research shows that adults with higher levels of education do not cohabit as much as adults with lower levels of education. We want to explore if there is a link between the views of students on cohabitation and the level of education. Our hypothesis is that students who are juniors and seniors will have more positive views on cohabitation than students who are freshmen and sophomores. We also hypothesize that students that do have a

either economic reasons or to "test" their relationship. An anonymous survey will be given to about 100 students of varying ages and years of education. What we hope to learn from the research and statistics is to see how SMSU students view cohabitation based on their education. Also, we would like to learn why SMSU students would choose to cohabit or not, and to see if they have similar reasons for both being for cohabitation or against it.

### 104

**Title:** Is Your Love Language in Trouble?

**Presenter(s):** Emma Grote, Samantha Flack

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** The purpose of our research is to investigate if relationship status affects a student's perception of his/her own love language. Love language is a term coined by Gary Chapman and refers to how you give and receive love. Fifty SMSU students will be completing a pre/ post test along with the official Love Language survey online. We will be able to compare the findings by age, gender, level of education, and relationship status. Our hypothesis is that students in current relationships can better predict their love language than students not in a relationship. With this information we can see the trend in SMSU students predicting their own love language with their background information. If students have a better understand of how they give and receive love, their current and future relationships may benefit because they may become more compatible.

### 105

**Title:** The Effects College has on Hookups vs. Relationships

**Presenter(s):** Lauren Johnson, Jada Hill, Jenifer Willemsen, Kylee Wroblecki

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** In this day and age, more college students are becoming increasingly involved in college "hookups." To be more specific, a hookup is a non-frequent, sexual encounter that generally has no expectations of seeing one another again. The main purpose of our study will be to explore what effects college has on hookups versus relationships and whether or not college actually increases the frequency of hookups in these young adults. The anonymous survey was completed by 100 college students. The results will be shared on what effects the college atmosphere (partying, drinking, drugs, social/ peer pressure) has put on hookups and relationships.

106

**Title:** Long distance dating relationships

**Presenter(s):** Anthonia Ameho & Tajanea Vaughn-Davis

**Advisor:** Dr. Cindy Aamlid, Sociology

**Abstract:** The purpose of our research is to explore the perceptions of college students who are in long distance dating relationships (LDDR). Long distance dating relationships involved being separated by 500 miles or more. It is important to study this for a better understanding of the benefits and drawbacks of maintaining a LDDR. Some people may be hesitant to get involved in a LDDR due to the apparent "struggles" of them. We hypothesize that college-aged women would be more open to long distance dating relationships than college-aged men. We will be conducting a survey of students in a LDDR. The results will be shared at the conference.

107

**Title:** "Being PrEPared": Pre-exposure prophylaxis or PrEP medication for at risk individuals to reduce chances of HIV infection

**Presenter(s):** Elizabeth Bunjer

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:**

108

**Title:** Prevention of Hospital Acquired Infections of ICU Patients

**Presenter(s):** Kassandra VanHecke, Maisie Renneke, Malary Richter

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Proper hand hygiene is one of the most important things that can aid in the prevention and the spread of hospital associated infections. This is especially prevalent for nurses working in Intensive Care Units (ICU's) due to the patient's acuity. Being nurses are the majority of healthcare workers in constant contact with patients, they may be the first defense of infection prevention. The implementation of proper hand hygiene practices by nurses that incorporate evidence-based protocols may result in the reduction of hospital acquired infections. By implementing proper hand hygiene practices by nurses and or protocols may results in the reduction of spread of hospital acquired infections. Education about hand hygiene for nurses results in improved compliance with hand hygiene protocols. The empowerment of nurses with proper hand hygiene protocols will reduce the rates of hospital acquired infections in the ICU.

109

**Title:** Can Bright Lights Improve Sleep?

**Presenter(s):** Amanda Cadwell, RN, Stacy Jacobson, RN, Tami Johnson, RN

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** The majority of geriatric patients, with dementia, suffer from sleep disturbances. The current treatment of sleep disorder in geriatric patients, with dementia, has been primarily use of psychotropic medications. Psychotropic medications have been found to be, not only ineffective at treating sleep disturbances, but also have many adverse side effects, especially in this population. Researchers have new evidence to show that environmental interventions are promising to increase sleep quality in geriatric dementia patients. Light therapy is one of the environmental interventions that has shown to produce increased sleep quality in this population. The use of light therapy is an easy intervention the nurse can provide to increase sleep quality in this population.

110

**Title:** Can Ofirmev Reduce the Need for Opioids?

**Presenter(s):** Lyndsey Brown, Tabitha Harazin, Carly Kramer, Paige Sabe, Brittany Fisher-Rossell

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Opioid misuse and abuse is becoming a pandemic in the United States. Stories are appearing almost daily in the media about people overdosing on opioids. Opioid analgesics are the most commonly prescribed medication for postoperative adult patients. Ofirmev given preoperatively has shown to decrease patients' pain postoperatively. In 36 of 44 patients, pain was effectively managed when given Ofirmev preoperatively and no opioid analgesics were needed postoperatively. Managing patients' pain with the use of Ofirmev decreases the need of opioids to manage pain which in turn decreases the chance of adverse side effects and possibility of addiction.

111

**Title:** The Use of Mupirocin to Prevent the Spread of Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections in Hospitals

**Presenter(s):** Courtney L. Holden, RN

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Methicillin-Resistant *Staphylococcus aureus* (MRSA) can lead to serious or even deadly infections among patients in hospitals. The use of nasal mupirocin in the nares reduces the number of MRSA infections in adult inpatients in both step down units and Intensive Care Units (ICU) in hospitals. Reducing MRSA infections is also shown to reduce cost. Universal decolonization compared to targeted colonization is more cost effective. Educating patients about MRSA and decolonization is shown to help with compliance and

effectiveness. MRSA infection reduction needs to be done in all areas of healthcare.

### 112

**Title:** Depression in Adolescents: Talk, Tools, and Treat!

**Presenter(s):** Holly Heitzman

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Depression in adolescents is a subject that virtually touches everyone somehow whether it be a family member, a friend, schoolmate, co-worker or even ourselves. Depression is serious as millions of children and teens struggle with this disorder. In 2014 there were 5,079 suicides completed by Americans age 15-24. There is no gold standard on how to treat our teens and this is concerning. Typical treatment consists of medications and follow-ups with a physician but there is evidence to support Cognitive Behavioral Therapy (CBT) in addition to usual psychiatric care does provide the best outcome for adolescents. The COPE (Creating Opportunity for Personal Empowerment) program is based on CBT and was constructed specifically for teens. Any professional involved in adolescent care can learn to instruct these therapy sessions which means nurses will be able to provide this additional care to our teenagers.

### 113

**Title:** Diabetes II: An American Epidemic

**Presenter(s):** Jessica Teichert

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Diabetes mellitus type two is a public health crisis facing American society. Our entire population is at risk. This disease is effecting people of all ages in both genders and all races. Diabetes is so dangerous because of the damaging effects that it has on both neurological and vascular systems of the body. Nurses have noted a concerning increase in the number of patients with diabetes and hospitalization due to symptoms related to this disease such as visual disturbance, ulcers, neuropathic pain and kidney disease. Finding a solution to control disease development has been a goal of medical research. The results of this research suggest that lifestyle change especially interventions related to diet and weight loss have been effectively postponing, reversing and preventing a diagnosis of diabetes.

### 114

**Title:** Assessing the Risks for Nurses with Accidental Exposure to a Patient's Blood

**Presenter(s):** Danielle Adamietz, Allan Johnson

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** This paper presents a review of literature concerning nurses' risks to accidental blood exposure. For the safety of nurses and their patients, nurses need to adhere to policy and procedure when it comes to personal protective equipment (PPE). Exposure rates are compared from novice nurses to experienced nurses. Reported studies look at nurses of all ages, gender, and knowledge regarding exposure risks. The review of literature shows that nurses are putting themselves at risk even though they are knowledgeable about the risks of blood and body fluids. Reasons for non-adherence are discussed, along with the rates of non-adherence and their consequences. This review of literature is important for nursing practice because it shows that nurses need reinforcement regarding exposure risk, and the need to adhere to guidelines when performing procedures that pose a high risk for exposure.

### 115

**Title:** Reduction of Sepsis in short term care facilities

**Presenter(s):** Timothy K. Muge

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Sepsis has been identified as the 11<sup>th</sup> leading cause of death in the United States, with a mortality rate of between 15-30%. Early recognition and prevention of sepsis is paramount to every health care facility. This case study seeks to establish ways of reducing sepsis in patients admitted to short-term stay facilities. The focus of the study is review of existing research into identify the most effective methods that reduce cases of sepsis, evaluation of the effectiveness of these interventions and recommendations based on the findings. Following a comprehensive search, the study identifies three of the best programs that were developed to assess ways of reducing sepsis in patients admitted to short-term care. Major factors for identifying the occurrence of sepsis are noted, emphasizing the need for nurse's knowledge of the signs and symptoms and interdisciplinary actions for management of sepsis.

### 116

**Title:** Pressure Ulcer Prevention in Spinal Cord Injury Patients

**Presenter(s):** Isaac Mabururu, Fenis Mogere, Daniel Moegi

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** People with spinal cord injuries (SCI) have a higher risk of suffering pressure ulcers (PUs). Prevalence of SCI is higher among military personnel, sports people, certain careers such as construction, and outdoor goers than the general population. SCI often results in immobility, poor skin health related to incidents of incontinence, poor perfusion due to

impaired vascular system, and challenged nutritional status as major contributing risk factors for PUs development starting from acute to chronic stages. This is an evidence-based project paper on PUs prevention using better support surfaces such as Air-cell based (ACB) mattresses or cushions for horizontal and seated positions, versus the use of standard flat foam mattresses or cushions. Since the adoption of better support surfaces is not a silver bullet, but a major improvement, a practice of using a set of nursing interventions to tackle both magnitude and duration of pressure loads is necessary in PUs prevention.

#### 117

**Title:** Communication Issues, Needs and Solutions Affecting Quality Care for Deaf Patients

**Presenter(s):** Terri Anderson, RN

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Healthcare staff may not recognize the barriers faced by deaf patients seeking medical attention and may not explore solutions or even follow organization policies to ensure care is comparable to what hearing patients receive. These patients experience limited access, avoid seeking care and become subject to increased risk factors related to miscommunicated health information. The focus of this literature review is the adult patient who was either born with or acquired their profound deafness before they learned language skills. Unfortunately, hearing people assume they have the same command of the language, even though they do not hear or speak it. Through historical references and a variety of studies, this review demonstrates how communication barriers go beyond the hearing deficit. The lesson for nurses is that all patients understand respect and compassion, especially when their caregiver is motivated to communicate with them despite their limitations.

#### 118

**Title:** No Narcotics for Migraines? Non-Narcotic Treatment of Migraines for Adult Patients in the Emergency Department

**Presenter(s):** Mary Retzlaff

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Migraines are a leading cause of emergency room visits annually in the United States, costing millions of dollars to treat. Traditionally, narcotic and opioid pain medication have been used in the emergency department to treat acute migraines. Both these medications have been shown to provide suboptimal relief, increase risk for addiction, and increased repeat visits for headaches. The interventional goal would be to provide optimal headache relief with non-narcotic medications and

treatment for acute headache to reduce risk of addiction and repeat visits. Interventions include triptans, antiemetics, anti-histamines, and non-pharmacological treatment such as relaxation techniques and guided imagery during emergency department visit and upon discharge.

#### 119

**Title:** Is Aromatherapy effective in controlling chemotherapy induced nausea and vomiting among adult cancer patients undergoing chemotherapy treatment?

**Presenter(s):** Robert Owusu, RN

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Chemotherapy Induced Nausea and Vomiting (CINV) affects thousands of adult cancer patients, they lose weight and their quality of life decreases. Efforts are made by clinicians to curb this by giving these patients non-pharmacological remedies. A data base searches was completed of MEDLINE, PubMed and CINAHL on the use of aromatherapy for control of CINV, but data were limited so the search was expanded to include the use of ginger extracts to control CINV. Some studies have shown that ingestion of ginger/aromatherapy for prevention of CINV is effective whereas others were not as convincing and cautious. Ginger/aromatherapy use may not only represent cost savings over more expensive pharmacological preparations but also help prevent the side effects of antiemetic drugs and their possible interactions. For nurses taking care of adult cancer patients on chemotherapy, a knowledge of non-pharmacological remedies to control CINV may help improve their patient's quality of life.

#### 120

**Title:** In acute care what effect does bedside nursing report have on patient safety when compared with traditional reporting methods

**Presenter(s):** Amy Bipes

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** The provision of care to patients provided by nurses occurs on a continuum that require the communication of important key data to other staff members during change of shift. This communication plays a vital role in allowing nurses to ensure that effective and safe care is being provided. Multiple research studies conducted in the hospital setting have shown that using bedside reporting has increased patient safety and has improved communication between staff members and the patient. In addition, bedside report has also improved patient satisfaction with the care that is being provided through being able to actively participate during shift changes. With the implementation of a

new method of reporting staff members need to adapt to the change in process and receive continued support for the changes being made.

#### 121

**Title:** Catheter Acquired Urinary Tract Infection: Reduction with Key Interventions

**Presenter(s):** Sondra Grimm & Jennifer Macik

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Catheter associated urinary tract infections (CAUTI) continue to account for most hospital acquired infections and records for up to 50% of hospitalized patients who receive an indwelling catheter lack proper documentation of evidence based criteria for the insertion decision (Welden, 2013). Effective evidence based interventions were implemented with the utilization of the CAUTI rounding tool showing a significant decrease in cost and reduction of catheter related infections. In the review of the literature evidence based interventions were researched and examined to develop a protocol to assist with the reduction of CAUTI and improve patient outcomes. The CAUTI intervention rounding tool includes specific interventions such as appropriate indicators for placement, non-invasive alternatives, buddy system approach, strict aseptic hygiene, daily surveillance, and education with nursing staff show great improvement. Evidence based interventions support that the standardization of the catheter insertion method results in improvement of costs and a marked reduction in CAUTI.

#### 122

**Title:** Evidence Based Approach and Sudden Infant Death Syndrome

**Presenter(s):** Samuel S. Barlue

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Sudden infant death syndrome (SIDS) is sudden death of an infant less than 1 year of age that remains unexplained after thorough investigation. SIDS and other sleep-related infant deaths, account for >3,500 deaths annually in the US. SIDS continues to be a problem with some ethnic groups still at higher risk for SIDS despite marked reductions in rates over past decade. Most SIDS affect both male and female infants anytime during the first year of life. However, SIDS is more prevalence in male, infants between 1 month and 4 months of age. This literature review of SIDS discussed evidence based approach of safe infant sleep interventions and their effectiveness. Environmental factors including bedsharing, prone sleeping, and maternal smoking are unsafe practices and can increase the risk for SIDS. Back-to-sleep is the recommended safe approach during sleep.

Nurses and parents' awareness and adhering to infant positioning and sleep environment is important

#### 123

**Title:** *Hey Sugar Daddy*: Strategies in insulin therapy management

**Presenter(s):** Stephanie Kravik, Peggy Rosik

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** The comparison of sliding scale and Basal-bolus insulin therapies are necessary. Increased comorbidity occurs with age and the best option needs to be utilized to treat long-term care residents with diabetes mellitus II (DMII) that are over 65 to improve quality of life. A search of PubMed and CINAHL electronic databases was conducted from 2011 through 2016 using the search terms "Sliding scale insulin", "basal-bolus insulin", "long-term care", and, "diabetes mellitus 2". The research articles presenting comparisons were utilized primarily, others for fundamentals. Basal-bolus insulin was found to be safer and more effective than sliding scale insulin. The guidelines used for the geriatric population did not meet the needs of the majority of long-term care residents. Future studies are needed utilizing individualized, patient-centered care. Long-term care residents with DMII have increased hospitalizations and emergency department visits. With better glycemic control these instances drop considerably, making implementing the best methods of glycemic control imperative to nursing care.

#### 124

**Title:** Warfarin and Direct Oral Anticoagulants and Their Effectiveness to Decreased Blood Clots

**Presenter(s):** Hannah Ehalt

**Advisor:** Dr. Nancyruth Leibold, Nursing

**Abstract:** Deep Vein Thrombosis and Pulmonary Embolisms are two very common types of clots that patients can experience. Patients are can be at risk for recurrence, other complications related to the clots, or in some cases death from delayed treatment. Proper anticoagulation ensures effective treatment for these patients so venous thromboembolism (VTE) or further complications do not occur. Five evidence based practice articles were reviewed. Literature review supported adults on indefinite anticoagulation maintained using an interdisciplinary approach on direct oral anticoagulants (DOACs) and Warfarin resulted in decreased clots. Factors such as education, costs, adverse reactions, and alternative anticoagulation medications were explored. Patients using DOACs including, Dabigatran, Apixaban, Edoxaban, and Rivaroxaban or Warfarin were anticoagulated as effectively as those on low molecular weight heparin (LMWH) or other conventional medications. DOACs and Warfarin proved to be effective in reduction of clots.

## NOTES

## NOTES



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