Seven Rivers
Undergraduate
Research
Symposium

Abstract Book

November 14, 2014
Important Information

- Abstracts are listed by presentation type (abstracts for oral presentations appear first, followed by those for poster presentations).
- Within each presentation type, abstracts are listed alphabetically by presenter.
- The subsequent spreadsheets detail presenters and presentation titles by time and poster number.
- More information is available online at www.viterbo.edu/sevenrivers.
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<tr>
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<tr>
<td>12noon</td>
<td>RC 127</td>
<td>Biology</td>
<td>Ashley Mulholland</td>
<td>Viterbo University</td>
<td>Determining the emphasis of evolution across disciplines in four year university curricula</td>
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<td>12:20pm</td>
<td>RC 127</td>
<td>Chemistry</td>
<td>Melissa Delaney</td>
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<td>Determination of the Leaching Rate of Florfenicol from Top-Coated and Incorporated Fish Feeds at 27 °C</td>
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<td>12:40pm</td>
<td>RC 127</td>
<td>Physics</td>
<td>Rehman Eon</td>
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<td>Optimal SNR Measurement for Certainty of Shear Stiffness in MR Elastography</td>
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<td>1pm</td>
<td>RC 127</td>
<td>Biology</td>
<td>Brandon Larsen</td>
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<td>Glutathione S-transferase expression in livers of in utero exposed Mus musculus</td>
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<td>RC 127</td>
<td>Biology</td>
<td>Kelsey Haugh</td>
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<td>TBX2 Causes the Suppression of the EphB2 Receptor in MCF10A Cells</td>
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<td>RC 127</td>
<td>Biology</td>
<td>Daniel Carroll</td>
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<td>The Impact of Sucralose Consumption on Spatial Memory in Mus musculus</td>
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<tr>
<td>12noon</td>
<td>RC 130</td>
<td>Education</td>
<td>Katrina Flasch, Robbie Deering</td>
<td>Winona State University</td>
<td>Preliminary Assessment of the Effectiveness of an Inquiry Based Basic Biology Curriculum in Middle Level Students</td>
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<td>RC 130</td>
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<td>Stacy Humfeld</td>
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<td>Music Therapy for Autistic Students in the Classroom</td>
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<td>Austin Mahlum</td>
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<td>Generalized Factorization of Integers Modulo-N</td>
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<td>RC 130</td>
<td>Math</td>
<td>Austin Riedl, Zach Forster, Hengzhou Liu, Thao Tran</td>
<td>University of Wisconsin-Eau Claire</td>
<td>Deformations of 5-dimensional Complex Associative Algebras</td>
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<td>RC 201</td>
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<td>Amy Zawacki</td>
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<td>The effect of Splenda, containing sucralose, on the humoral immune response in Mus musculus</td>
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<td>Jacquelyn Bongard</td>
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<td>The effects of Splenda on interleukin (IL)-2 and tumor necrosis factor (TNF)-α production by splenocytes from Mus musculus</td>
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<td>Van Nguyen</td>
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<td>Designing a medicinal chemistry experiment that bridges organic and biochemistry laboratories</td>
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<td>Megan Wimmer</td>
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<td>The Tail of Two Domains</td>
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<td>Erin Isaacson</td>
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<td>Determining the functions of unknown metal ion transport genes ydfM and ydfL in Bacillus subtilis</td>
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<td>NRC 101</td>
<td>History</td>
<td>Phillip Becker</td>
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<td>Understanding the growth of Alexander and his Empire through history and his shaping the world that lay around him.</td>
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<td>Jessica Hiles</td>
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<td>The Catholic School Girl Stereotype</td>
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<td>Cameron Segura</td>
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<td>Argentine Dirty War in Film</td>
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<td>Janelle Randall, Carlie Von Arx</td>
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<td>Margaret Moyer</td>
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<td>Becoming Juliet: An Exploration of Juliet in Shakespeare and French Opera</td>
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<td>Joseph Gay</td>
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<td>Contemporary Irish Theatre Practices: A Culture of Storytelling</td>
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<td>Nikki Richard</td>
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<td>The Printmaking Workshop Community: Motivation, Experimentation, and Artistic Growth</td>
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<td>A Multimethod Examination of Attention in Middle Childhood: Frontal EEG and Maternal Report</td>
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<td>Grace Peterson</td>
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<td>Efficacy of Forgiveness Education in a Swiss Sample</td>
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<td>Norwegian Prisons: A Model for Change?</td>
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<td>Vital Signs: Taking the Pulse of Hospitals as Good Neighbors</td>
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<td>Major Genomic Expansions in Annelids: Evidence from an Earthworm Genome</td>
<td>Viterbo University (research completed at University of Florida Whitney Laboratory for the Marine Biosciences)</td>
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<td>Mapping Trails using GPS and Geographical Information Systems at Villa St. Joseph</td>
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<td>Alexandra Garbers and Alexis Reget</td>
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<td>Muscle strength of contraction and fatigue rate of Mus musculus when treated with creatine mono-hydrate</td>
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<td>Oviposition Site Preference in Drosophila melanogaster: Influences of Adult Fly Density and Food Quality</td>
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<td>The Use of CEL1/Surveyor Nuclease Assay to Determine the Efficiency of CRISPR/Cas9 TCF12-Targeted pU6 Plasmids</td>
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<td>One Day at a Time: Drug Court Speaks Out</td>
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<td>Academic, Personal and Professional Impacts of Service</td>
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<td>Wendy Davey, Rachel Grelle, Jordan Knapp, Sara Koresh, Emily Morrison, Tara Powless, Nieves Seaman, Olivia Skildum, Kayla Thoma, Ashley Bright, Kathryn Davis, Abigail Gillies, Olivia Leavitt, Marissa Miller, Courtney Nelson, Kassandra Schmitt, Jenna Speltz, Rebecca Tronick, Tairyn Velie, Eve Viner, Cortney Wesela</td>
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<td>Do Dog Parks Influence Human Connections and Create a Healthier Community?</td>
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<td>Coding Trauma: The Impact of Trauma Type on Perceived Trauma Levels, Meaning in Life, and Forgiveness</td>
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<td>Openness as a Moderator for the Relationship Between Intervention Types and Forgiveness</td>
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<td>An Archival Analysis of War on Children</td>
<td>University of St. Thomas</td>
<td>Kendra Nugent, Jillian Sirany, Maxine Johnson</td>
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<td>Perceptions of Forgiveness Intervention on Liberal Arts College Campus</td>
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<td>Perceived Stress and Alcohol Problems in College</td>
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<td>The Effects of Race, Gender, and Social Class on Diagnosis and Treatment in Mental Institutions: A Historical Analysis</td>
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<td>Katelyn Sandvold, Brianna Snoddy, Caitlin Steele, Rachel Nielson</td>
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<td>Academic Advising Convenience: Undergraduate Perspectives</td>
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<td>Carissa Gutsmiedl, Kathryn Scherber</td>
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<td>What Happens After The Competition Season?: Exploring Student-athlete Stress In The Off-season</td>
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<td>Kaila Vento</td>
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<td>Acculturation of Chinese Immigrants in America from 1849 -1941</td>
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<td>Mia Kracht, Claire Decelles, Tanesha Williams</td>
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<td>Ratio of opposite- to same-sex friendships and its relation to depressive and anxious symptoms in college students</td>
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<td>Alyssa Radichel, Katie Gruman, Katherine Matthews</td>
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<td>Measuring Trauma, Forgiveness, and Meaning in Life in the Middle East</td>
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<td>Explaining How Autonomous Motivation Affects Diabetes Self-Care Behaviors: The Self-as-Doer Identity</td>
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Vital Signs: Taking the Pulse of Hospitals as Good Neighbors

Jed Barton
Viterbo University

Faculty Mentor: Matthew Bersagel Braley

Presentation Type: Oral Presentation
Presentation Location: 1:40pm in NRC 104

ABSTRACT:
How does Mayo Health System – Franciscan Health Care function as a community partner and how does the surrounding neighborhood interpret this involvement? The methods used to address these questions were adopted from ethnographic research techniques and included conducting interviews with key informants from the Washburn Neighborhood Association. Data collected included over 100 pages of single-spaced interview transcripts. From that information an interesting and representative incident emerged as important results. This event was the building of a sign for the neighborhood garden, which has and continues to impact individuals’ perceptions of Mayo Clinic Health System - Franciscan Healthcare. The tendency seems to be to conflate the individual with the institution when reflecting on the role of Mayo as a community partner.
Understanding the growth of Alexander and his Empire through history and his shaping the world that lay around him

Phillip Becker
Viterbo University

Faculty Mentor: Andrew Hamilton

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in NRC 101

ABSTRACT:
When we think back to Alexander the Great, we look at him through the eyes of a victor, not just because he won every military engagement he was in, but also because for his time he was the essence of what would become Hellenistic culture. In his Laws Plato proclaimed that peace is nothing but a word. He declares that every state was, by nature, in an undeclared war with every other state. This description can be used to define the period of Alexander the Great, before his birth and after his death. Alexander was indeed great, not only for his own military genius, but because he was not afraid of the knowledge of others. Alexander also shaped his empire by the use of culture, he allowed many of his conquered people to keep their customs and religions, but only if they had learned the Greek language and were made aware of Greek traditions. Alexander is not great because he conquered so much on his own; he is great because of how he left the world. Alexander introduced the Persian idea of absolute Monarchy to the Greco-Roman world, a national standardized language, Greek, facilitated commerce and the movement of knowledge. Alexander shaped his empire and the modern world. We find Alexander’s legacy from the Greco-Roman world to even the Middle-east, where there have been coins found with images of their own rulers with the world “king” in Greek. In Alexander’s wake, the world emerged a more closely connected. Trade and communication with more people was more effective and efficient than it ever was before. Alexander did not personally make those changes happen, but if it was not for him it would never have happened, and the world would be far different than what we have today.
The effects of Splenda on interleukin (IL)-2 and tumor necrosis factor (TNF)-α production by splenocytes from Mus musculus

Jacquelyn Bongard  
Saint Mary's University of Minnesota

Faculty Mentor: Jeanne Minnerath

Presentation Type: Oral Presentation  
Presentation Location: 12:40pm in RC 201

ABSTRACT:

Sucralose, normally found in Splenda, is an artificial sweetener used to sweeten food and beverages without the added calories of sucrose. Studies have been completed to determine the effects that sucralose has on body systems, but few studies have focused on the effects that sucralose has on the immune system. The purpose of this study was to determine the effects of sucralose consumption on cytokine production using mice (Mus musculus) as an animal model. More specifically, the objective was to assess production of interleukin (IL)-2 and tumor necrosis factor (TNF)-α secreted by splenocytes from mice treated with Splenda, which contains sucralose. This was done by providing CD1 mice with drinking water supplemented with varying concentrations of Splenda. After 16 weeks, splenocytes from the mice were harvested and stimulated with Concanavalin A to induce IL-2 production by T cells or lipopolysaccharide to induce TNF-α production by macrophage cells. Supernatant was collected from the cell cultures, and ELISAs were completed to determine the levels of cytokines (IL-2 or TNF-α) secreted by the cells. Statistical analysis (ANOVA) indicated that there was no significant difference in IL-2 production by splenocytes from mice treated with sucralose compared to control mice that did not receive sucralose. However, it was found that splenocytes from mice treated with sucralose produced significantly reduced levels of TNF-α compared to splenocytes from control mice.
Norwegian Prisons: A Model for Change?

Joshua Davis
Luther College

Faculty Mentor: Britt Rhodes

Presentation Type: Oral Presentation
Presentation Location: 1pm in NRC 104

ABSTRACT:
Among its many social achievements, Norway boasts one of the most fantastical prison systems of any nation. In 2012, Time magazine lauded it as “The Most Humane System in the World.” With this understanding, this researcher chose to undergo a month long study of the Norwegian Correctional System (NCS) from the nation’s capital: Oslo. This presentation will share this researcher’s experiences from that study. Specifically, the NCS will be compared with our American Correctional System to determine new ways of understanding how our system works and, more importantly, where it can go.
Determination of the Leaching Rate of Florfenicol from Top-Coated and Incorporated Fish Feeds at 27 °C

Melissa Delaney
Viterbo University

Faculty Mentor: Kyle Backstrand

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in RC 127

ABSTRACT:
Florfenicol (FFC) is a broad-spectrum antibiotic that is used in the aquaculture industry to help treat bacterial infections in fish. FFC is added to fish feed by incorporating or top-coating the feed. The objective of this study was to determine the leaching rate of FFC from the two medicated feed types in order to help aquaculture farmers to better apply treatment. The leaching rates of both feed types were compared at time intervals spanning one hour. Florfenicol was extracted and detected via HPLC-UV to determine the concentration of residual FFC in the fish feed. The leaching rate data obtained from HPLC demonstrated first-order kinetics allowing us to determine the rate constant (k) followed by the calculation of FFC half-life. In this study, we found that incorporated fish feed had a lower rate constant (0.0177 min⁻¹ ± 0.00561 min⁻¹) and a greater half-life (39.1 min ± 7.28 min) when compared to the top-coated feed (0.0629 min⁻¹ ± 0.0261 min⁻¹ and 11.0 min ±4.01 min respectively). The concentration of FFC in top-coated feed declined rapidly; whereas, FFC in incorporated feed declined in concentration at a slower rate.
Optimal SNR Measurement for Certainty of Shear Stiffness in MR Elastography

Rehman Eon
Viterbo University

Faculty Mentor: Armando Manduca

Presentation Type: Oral Presentation
Presentation Location: 12:40pm in RC 127

ABSTRACT:
Magnetic Resonance Elastography (MRE) is a phase-contrast MRI based technique that allows quantitative, noninvasive assessment of the mechanical properties of tissues by the introduction of shear waves into the body and measurement of the resulting displacements. In MRE, the calculated stiffness values are affected by noise, which is amplified by the inversion process. It is beneficial to have an ideal SNR threshold for which the stiffness calculations can be trusted. Several methods have been developed to calculate SNR values in MRE. The most common method is a motion-based SNR measure, which approximates the noise in the displacement. More recently, the SNR of the octahedral shear strain (OSS) has been proposed as a more appropriate estimation, since shear deformation is the signal in MRE. We also here propose a measure based on the SNR of the Laplacian of the data, since this is the quantity calculated when performing direct inversion of the Helmholtz equation. The three SNR measurements were validated on simulated data at three different wavelengths with varying amounts of noise. The stiffness was calculated for this simulated data using three inversion algorithms commonly used in MRE (phase gradient, local frequency estimation, and direct inversion). Analysis of the data shows that for stiffness calculations done using local frequency estimation and phase gradient, SNR estimation based on OSS provides a reliable measure for the calculation. However, for the direct inversion algorithm, the Laplacian SNR seems to be the better measure.
A Preliminary Assessment of the Effectiveness of an Inquiry-Based Biology Curriculum for 3rd-8th Grade Education

**Katrina Flasch and Robbie Deering**
Winona State University

Faculty Mentor: Bruno Borsari

**Presentation Type:** Oral Presentation
**Presentation Location:** 12noon in RC 130

**ABSTRACT:**
An inquiry based learning curriculum is an alternative teaching strategy to the classical lecture model. Inquiry or investigative learning requires attentive engagement on the part of the student and promotes skills such as critical thinking and problem solving, while encouraging comprehension. The effectiveness of an inquiry-based biology curriculum was investigated using a pretest/posttest assessment before and after instruction. The biology curriculum employed for the study consisted in a weeklong summer class that met for ninety minutes daily. The students’ (n= 21) school grade ranged between third and eighth. The assessment tool was developed using a jury panel system methodology. The assessment scores (M= 8.52; SD=1.43) after completion of the week long class improved on average by 24.76% collectively, for all students involved. A t-test of the pre and post-test scores showed a significant difference in learning at the completion of the program (t=4.18, p<0.05). Although more studies could be done with larger students’ samples, an inquiry based biology curriculum appeared to be effective to enhance students’ learning of basic biological concepts.
**Deformations of 5-dimensional Complex Associative Algebras**

*Zach Forster, Austin Forster, Hengzhou Liu, and Thao Tran*

University of Wisconsin - Eau Claire

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**Faculty Mentor: Michael Penkava**

*Presentation Type: Oral Presentation*

*Presentation Location: 1pm in RC 130*

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**ABSTRACT:**

We have computed the space of all complex 5-dimensional non nilpotent associative algebras. There are 285 of them, including some families of algebras which are parametrized by complex projective space modulo an action of the symmetric group. We also have studied the deformations of these algebras, which tell how the space is naturally glued together. In order to do this, we computed what is called the versal deformation of these algebras, which contains all the information about what an algebra deforms to. This turns out to be a very complicated process, and we used the computer algebra system Maple to carry out the calculations. We will give a description of how we did the computations, to give the flavor of our work.
Contemporary Irish Theatre Practices: A Culture of Storytelling

Joseph Gay
Viterbo University

Faculty Mentor: Janet McLean

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in NRC 196

ABSTRACT:
This research project is an exploration of current Irish theatre practices. It focuses on the role of the playwright as a storyteller, and how theatre is a crucial part of social/political development in Ireland. The purpose of this research is to bring new ways of practicing theatre into the United States in order to continually develop ways in which theatre can stay relevant to current populations. Ireland is an ideal place to learn theatre practices because of the history of value that its culture places on the passing of stories through dramatic literature. The United States is not founded with the same value for theatrical arts, therefore performing artists, arts administrators, and the population as a whole still has a lot to learn about how theatre fits into the development of our society. This research began to open a cross-cultural conversation in which ideas, new practices, and innovative forms of writing can be exchanged.
The effects of creatine supplementation on serum testosterone response in Mus musculus

Cody Gill
Saint Mary's University of Minnesota

Faculty Mentor: Debra Martin

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in RC 201

ABSTRACT:
Creatine is a natural produce that stores energy in a variety of cells but more specifically, the muscles. A study has shown the consumption of creatine with exercise (swimming) had an increase in testosterone serum levels, decrease in serum cortisol, and no response in growth hormones. The purpose of this study was to determine if creatine supplementation without exercise would give a similar response. Twenty-three CD1 male mice were used. One group (n=5) consumed creatine monohydrate (CMH) but did not exercise; the second group (n=7) consumed CMH and exercised; the third group (n=5) exercised but did not consume CMH while the fourth group (n=6) did not consume CMH and did not exercise. The exercised mice were on a workout schedule consisting of a five day schedule of ten minutes of swimming each day. Serum was collected at three different points in time; week 0, week 3, and week 7. These sera were tested through ELISA for testosterone response and compared between groups and within group (by week) and over the seven week treatment. Through ANOVA and post-hoc testing, significant differences were found in the levels of the testosterone throughout these 7 weeks.
A Multimethod Examination of Attention in Middle Childhood: Frontal EEG and Maternal Report

Abbey Hammell
Winona State University

Faculty Mentor: Martha A. Bell

Presentation Type: Oral Presentation
Presentation Location: 12noon in NRC 104

ABSTRACT:
Attention acts as a catalyst for our goals by selecting and prioritizing information necessary for everyday life. Posner and colleagues have developed a theory of three attention networks: alerting, orienting, and executive attention. These three networks involve different brain systems, but also work together and are functionally mature by middle childhood. Parent rating scales are traditionally used to assess children’s attentional behaviors. However, little neuropsychology research has been done to examine the neural and behavioral validity of these questionnaires. Seventy children (ages 9-11) from an ongoing longitudinal study participated. During the lab visit, children wore an EEG cap while performing the Attention Network Test (ANT). Mothers also completed the Early Adolescent Temperament Questionnaire (EATQ). We examined the attention scale of the EATQ. Regression analyses demonstrated that task-related changes in frontal EEG and maternal ratings on the EATQ uniquely predicted alerting, but not orienting or executive attention. However, the EATQ by itself did not predict ANT scores or task related changes in EEG. Furthermore, this study revealed that the F8 electrode significantly predicted alerting, which can be useful in further examination of the alerting network.
TBX2 Causes the Suppression of the EphB2 Receptor in MCF10A Cells

Kelsey Haugh
Saint Mary's University of Minnesota

Faculty Mentor: Matthew Rowley

Presentation Type: Oral Presentation
Presentation Location: 1:20pm in RC 127

ABSTRACT:
Breast cancer is one of the leading cancers diagnosed in women under the age of 50. In approximately 40% of breast cancer cases, it was found that TBX2 was overexpressed. TBX2 is a transcription factor that aids in the development of many aspects of the body, including the development of mammary glands. TBX2 is thought to be an oncogene due to its ability to promote bypass senescence, creating an immortal cell which may ultimately lead to cancer development. Recent data shows that when TBX2 is overexpressed in MCF10A cells, there is an increase in activation of Erythropoitin-producing heptacellular (Eph) receptors, specifically EphB2, EphB3, and EphB6. EphB2, EphB3, and EphB6 receptors have already been linked to cancer growth, but it has not been looked at in correlation to overexpression of TBX2. In this study, TBX2 was overexpressed in the MCF10A mammary epithelial cell line using a lentivirus and cDNA was synthesized for use in reverse-transcriptase PCR (RT-PCR). Preliminary data via RT-PCR suggests that TBX2 causes a suppression of the EphB2 receptor.
The Catholic School Girl Stereotype

Jessica Hiles
Viterbo University

Faculty Mentor: Laura Nettles

Presentation Type: Oral Presentation
Presentation Location: 12:40pm in NRC 101

ABSTRACT:
The Catholic School Girl Stereotype (CSGS) is comprised of a promiscuous female of the Catholic faith who wears heels, white knee socks, a short, plaid, pleated skirt, a tied oxford top, and donning a ponytail. The research goal has expanded into three. These include, how the stereotype began, why the stereotype began, and when the stereotype began. To answer these questions an exploration of general trends in the 50’s and 60’s was hypothesized as when the stereotype began, which was found to be the case. Next, an exploration of the teaching of students and the instruction of teachers took place. It was found through this research that there were massive differences between how males and females were taught from their first years to their graduation. In their younger years, students were taught through the instruction of the Baltimore text, which taught a very narrow version of the love of Jesus Christ and ignored his companionship with women (his mother, prostitutes, Mary Magdalene, and all of his female followers). Female pronouns were neglected while male pronouns were in excess, and an overall portrayal of boys and men was one of piety, and good, which is parallel to Adam and Jesus Christ. Whereas females are again seen as temptresses, and sinful akin to the way that Eve is portrayed. To follow through with this, a few interviews have taken place with Sisters of Perpetual Adoration. The interviews thus far support our hypothesis from the very small sample we have gathered. The Sisters knew nothing of the stereotype, explained a Catholic school girl as pious, obedient, good, and hard-working. The sisters seemed very disappointed, saddened, and even a little angry that this is how society has decided to portray something that is supposed to be spiritually based and holy.
Music Therapy for Autistic Students in the Classroom

Stacy Humfeld
Viterbo University

Faculty Mentor: Vicky Eiben

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in RC 130

ABSTRACT:
Autism is a disorder that affects three areas of cognition: communication, social interaction, and repetitive behaviors. Music therapy, which provides a secure environment for patients and works toward communication and social goals through music, is a growing trend for treating the symptoms of autism. Behaviors such as hand-flapping, screaming, eye contact, and attention have been improved through music therapy. Applying music therapy techniques to the music classroom could benefit students with autism whose guardians may not be able to afford the cost of separate music therapy sessions. Findings show that techniques such as singing through transitions, improvisation, reflecting the individual’s mood through music, and using visuals to communicate with students can be beneficial to this particular population.
Determining the functions of unknown metal ion transport genes ydfM and ydfL in Bacillus subtilis

Erin Isaacson
Viterbo University

Faculty Mentor: Scott Gabriel

Presentation Type: Oral Presentation
Presentation Location: 1:40pm in RC 201

ABSTRACT:
Bacillus subtilis is a commonly used organism when studying metal ion homeostasis. Its natural competency allows it to take up and introduce exogenously supplied DNA into its genome, a necessary step in disrupting specific genes within an organism. While the majority of metal influx/efflux genes and proteins have been determined for Bacillus subtilis, a Mn2+ system has not yet been discovered. Two unknown genes in B. subtilis, ydfM and ydfL, have been categorized as a cation efflux transport gene and a transcriptional regulator, respectively. Their adjacent positions on the genome suggest that they are connected in function. Additionally, previous research by Viterbo students found that ydfM transcriptional activity is connected to Mn2+ levels and not other divalent metal ions. Therefore, this research aimed to determine ydfM’s and ydfL’s functions, if any, in the transcriptional response in manganese efflux, as well as their relationship to one another. Strains with knockouts of each gene were obtained and tested against different metals and concentrations via a spot-on-the-lawn assay. Concentrations were used so that a distinct zone of inhibition was visible. The radius of the zones were measured for the ydfM and ydfL knockouts and a wild-type strand. Significance tests were run on the ydfM/ydfL knockouts versus the wild-type. Only the knockouts tested against Mg2+ showed statistically significant differences. The ydfM knockout showed a significantly higher zone of inhibition, meaning that ydfM is a necessary component in manganese efflux. The ydfL knockout zone was significantly lower, which concludes that ydfL is a regulator for ydfM and actually inhibits Mg2+ influx when it is present. Therefore, the results supported the hypothesis that ydfM and ydfM work together in the process of Mg2+ efflux.
Effective Teaching Strategies for Cultural Diversity

Sheila Juricic
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Oral Presentation
Presentation Location: 12:40pm in NRC 104

ABSTRACT:
The two questions presented: "what are effective teaching strategies for cultural diversity" and "how do students develop their learning, awareness, and communication about cultural diversity will be discussed. The following topics will be discussed: how teachers incorporate diversity into classrooms, how teachers encourage students to engage in diversity, how effective it is for the teacher to be engaged in diversity through course design and preparation, and how students' development changes through the cultural diversity course.
Glutathione S-transferase expression in livers of in utero exposed Mus musculus

Brandon Larsen
Saint Mary's University of Minnesota

Faculty Mentor: Debra Martin

Presentation Type: Oral Presentation
Presentation Location: 1pm in RC 127

ABSTRACT:
Atrazine (ATR) is common herbicide used in the much of the Midwest United States. This herbicide is unique in that it can remain in a water sources and is not easily broken down for months to even years. The EPO has set 3 ppb as the safe concentration. Watershed monitoring has found when atrazine concentrations surpass this amount. Multiple studies have shown atrazine can have an array of negative physiological effects on organisms, but few have looked at developmental effect in utero. The current study used the offspring of female Mus musculus exposed during gestation to three different doses of atrazine. A previous study gave preliminary evidence that Glutathione S-transferase (GST), a major protein in cellular detoxification, had varying expression in in utero exposed mice (n=3/group). Using a protein immunoblot assay, the levels of GST in the liver samples will be determined.
Exploring Tonal Intaglio

*Sidney Liddell*
Viterbo University

Faculty Mentor: Lisa Schoenfelder

*Presentation Type*: Oral Presentation
*Presentation Location*: 1pm in NRC 196

ABSTRACT:
Generalized Factorization of Integers Modulo-N

Austin Mahlum
Viterbo University

Faculty Mentor: Chris Mooney

*Presentation Type:* Oral Presentation

*Presentation Location:* 12:40pm in RC 130

**ABSTRACT:**
We broke the integers modulo n into three separate cases (with each being a more generalized version than the last) and then tested the ring cases for various forms of atomicity. The first consists of a single prime number raised to the first power (for example the integers modulo 3). We found this ring to always be the following atomicities: atomic, strongly atomic, very strongly atomic, m-atomic, tau-n-atomic, tau-n-strongly atomic, tau-n-very strongly atomic, and tau-n-m-atomic. The second consists of a single prime number raised to a power greater than or equal to one (for example the integers modulo 27=3^3). We found this ring to always be the following atomicities: atomic, strongly atomic, very strongly atomic, m-atomic, tau-n-atomic, tau-n-strongly atomic, tau-n-very strongly atomic, and tau-n-m-atomic. The third consists of any number of prime numbers with each prime number raised to a power greater than or equal to one (for example the integers modulo 108=3^3×2^2). We are still working on this ring but we have figured out thus far that the following atomicity’s hold: atomic, strongly atomic, very strongly atomic, atomic, and m-atomic. The atomicity that does not hold is very strongly atomic. The four different tau-n-atomicities are still being researched at this point for this ring. We have answered various other questions as well, but none as big as the above three cases.
Psychological Wellbeing of the Urban Chinese Elderly

William Michel
University of Wisconsin - Eau Claire

Faculty Mentor: Jianjun Ji

Presentation Type: Oral Presentation
Presentation Location: 1:20pm in NRC 104

ABSTRACT:
Using the 2006 China National Rural and Urban Elderly Survey data, this research examines the variations of the socioeconomic-demographic characteristics, the psychological wellbeing of the Chinese elderly, as well as the associations between them. It examines demographic characteristics of age, gender, fertility, and marital status of the Chinese elderly have impact on their psychological wellbeing of memory, health, loneliness, family harmony, and life satisfaction. It is also hypothesized that socioeconomic statuses of education and income have an impact on psychological wellbeing. By using statistical methods for this analysis that include cross–tabulation, significance test of Chi–Square, and strength measure of Cramer's V/Tau–c, the findings mostly support the hypothesis. A demographic variable, gender, show a significant gap in psychological wellbeing. Also, the socioeconomic variables, education and income, explain some effect on wellbeing.
ABSTRACT:
The story of Romeo and Juliet is a timeless classic that has often been told, retold, and adapted. The modern cultural perception of Juliet matches the perception of her throughout history: that of a simple, naïve, passive, submissive, and lovesick girl. My research explores this portrayal of Juliet as a misconception in both Shakespeare’s play (1597) and Gounod’s French Romantic opera, Roméo et Juliette (1867). In my research, I employed intertextual and feminist analysis of both Shakespeare’s play and Gounod’s opera. My work explored the differences and similarities between the two texts and looked for feminist themes in both. I also looked at the historical and cultural contexts of both works, especially in terms of societal perceptions and expectations of young females. Throughout both works, Juliet (or Juliette, as she is in the opera) develops from a young girl into a woman who fights for what she wants. Two specific moments from the story that demonstrate her transformation and the true complexity of her character are the famed balcony scene and the scene in which Juliet takes the false poison that will make her appear to be dead. Despite the common belief that the balcony scene is merely the epitome of two young, irrational lovers caught up in passion, Juliet is able to manipulate Romeo so that he will do what she wants him to do, effectively asserting her own will and not merely submitting to the wills of the adults or males around her. Through this reversal of interpretation, Juliet becomes a complex woman who is in fact assertive, manipulative, and passionate, despite her inexperience. In this way, the timeless classic story of star-crossed lovers presents a more admirable female character than some may expect.
Determining the emphasis of evolution across disciplines in four year university curricula

Ashley Mulholland
Viterbo University

Faculty Mentor: Jennifer Sadowski

Presentation Type: Oral Presentation
Presentation Location: 12noon in RC 127

ABSTRACT:

Evolution provides a strong scientific base for the study of life sciences. Evolution influences all forms of life, making it key in unifying the curriculum of biology. However, it can also be used to form an integrative framework in other disciplines. The differences between the emphasis placed on evolution within the disciplines of biology, chemistry, biochemistry, psychology, anthropology, and sociology were examined. The emphasis each discipline places on evolution was measured through quantifying the term ‘evolution’ in both course titles and course descriptions in university catalogs. Overall, as predicted, the field of biology showed the highest focus on evolution in course curriculum. Also, within the discipline of biology, analyses were performed to determine if school size, region, or public vs. private schools placed a greater emphasis on evolution. It was found that a significant difference exists for all comparisons made among school sizes; bigger schools showing the greatest emphasis on evolution and smaller schools showing the least emphasis. Significant differences were also found based on region; schools located in the west had the greatest emphasis on evolution and schools in the south had the least emphasis. Public schools had significantly higher emphasis than private schools. This study demonstrates that various factors influence the prevalence and emphasis of evolution in course curriculum among disciplines and different types of academic institutions.
ABSTRACT:
A medicinal chemistry laboratory experiment was designed to connect organic chemistry and biochemistry. This novel approach focuses on demonstrating the importance of organic chemistry in biochemistry. Our goal was to design an experiment that produces potential lactate dehydrogenase (LDH) inhibitors via a two-step synthesis. Potential LDH inhibitors were generated and tested in an LDH inhibition assay to observe the biological effect. The experiment was optimized to fit in three lab periods in organic chemistry and one lab period in biochemistry. Implementation of this laboratory project will allow students to select amines that result in an array of potential LDH inhibitors. It enables students to design and test their own potential inhibitors, which requires them to practice different laboratory skills and engage in a critical thinking process to provide an explanation for their results. The inhibition data will be collected as a class to consider structure-activity relationships; as a result, students will be able to understand the critical role of organic chemistry in biochemistry.
Efficacy of Forgiveness Education in a Swiss Sample

Grace Peterson
Luther College

Faculty Mentor: Loren Toussaint

Presentation Type: Oral Presentation
Presentation Location: 12:20pm in NRC 104

ABSTRACT:
Previous research indicates that having high levels of forgiveness has positive impacts on various psychological components of life. The purpose of the study is to examine the effectiveness of a specific forgiveness intervention--created by Ruedi Brodbeck, MD--on a variety of positive psychosocial outcomes. The present study had a sample size of approximately 40 men and women. The individuals were recruited from various churches across Switzerland. Participants completed a pretest, midpoint, end, and three month follow up self-report survey to assess change over time on multiple measures. Assessments included: unforgiveness with subscales of revenge and avoidance. Additional measures included anger, depression, life satisfaction, assertiveness, religious centrality. The analytic strategy was to employ repeated measures analysis of variance (with least significant difference post hoc tests) to examine changes in levels of all the constructs across time. Consistent with previous research, this study did show that the forgiveness intervention was effective in decreasing anger, depression, and avoidance. The data also supports that this intervention increased life satisfaction and religious centrality. There was no change in assertiveness or revenge in this sample of participants. It is encouraging that of the variables that did change significantly, none of them changed from Time 3 to Time 4, indicating that the education had a lasting affect for up to 3 months after it was completed.
Sustainability and the FSPA (Franciscan Sisters of Perpetual Adoration) Organic Garden

Janelle Randall and Carlie Von Arx
Viterbo University

Faculty Mentor: Lucy Slinger

Presentation Type: Oral Presentation
Presentation Location: 1:20pm in NRC 101

ABSTRACT:
Our main goal this summer was to complete a trail map for the Villa St. Joseph Convent. We wanted to be able to provide a detailed map of the trails at the Villa by highlighting the three main trails, giving a summary of the trails intensity, and what one would find. The land manager would then be able to provide this map of the forest area at the Villa to the sisters and other visitors to use. In addition to the main map, our goal was to create multiple other maps highlighting different environmental features at the Villa. The maps would illustrate points of interest, camera trap locations, elevation, invasive species, property boundaries, and additional features.
The Printmaking Workshop Community: Motivation, Experimentation, and Artistic Growth

Nikki Richard
Viterbo University

Faculty Mentor: Lisa Schoenfielder

Presentation Type: Oral Presentation
Presentation Location: 12:40pm in NRC 196

ABSTRACT:

The purpose of this research was to examine printmaking workshops. My theoretical approaches to the study were through the study of workshops written about in the history of printmaking. This included discussions with Dr. Lisa Schoenfielder who studied with Mauricio Lasansky. Mr. Lasansky was a member of the Atelier 17 and taught in a way that reflected his experience in Atelier 17. My other method of research was through practical applications; I attended Frogman’s Print Workshop, one of the most recognized printmaking workshops in the US, helped organize a printmaking workshop at Viterbo during the last week of summer, and began a new print that I will continue to work on at school with other printmakers. I approached this research through the scope of a participant observer by participating in workshops, organizing a workshop, and observing through the scope of an artist/teacher. I found that because the printmaking community is smaller than I originally knew, and that the community can be made stronger by the many connections made between its members. There is room for serious experimentation in this community and the inspiration gathered from others working diligently ignited my passion and motivation to work as I saw how successful they were. The community of a workshop for printmakers is beneficial for the inspirational, productive, and economic welfare of the group. The sharing of materials provides an economic benefit and the community provides knowledge of the content that will be passed to one another. This research has impacted my career goals as a teacher by inspiring me to set up a workshop atmosphere in my future classroom where students are supported to make and share discoveries for the benefit of the group. I also have made a plan to attend more workshops to advance my work as an artist.
ABSTRACT:
In summary, my goals were to first better understand the junta and the atmosphere they cultivated during the dictatorship. Second, to explore this horrific historical moment via cinema and ultimately to develop a critical analysis for the films selected which revolve around the appropriation of children. Comparing these films in juxtaposition showed the diversity of the medium and the nuances within the dialogue of each. Acting as a vehicle for historical analysis, personal discovery, entertainment, distraction, experimentation and intergenerational transmission of tragedy film has provided a way to glean valuable information about an elusive past.
The Tail of Two Domains

Megan Wimmer
University of Wisconsin - La Crosse

Faculty Mentor: Todd Weaver

Presentation Type: Oral Presentation
Presentation Location: 1:20pm in RC 201

ABSTRACT:
Two-partner secretion (TPS) systems, harboring both A and B-components, are present in nearly all gram-negative bacteria. TpsB components selectively secrete their cognate TpsA exoprotein in an energy independent and vectorial manner across the outer membrane. Upon secretion, TpsA proteins function as adhesins, cytolysins, and heme binding proteins. In order to more fully understand the structure and folding of the TpsA protein family, a truncated form of hemolysin (HpmA265) was investigated. HpmA265 harbors a right-handed, parallel beta-helix structure that is topped and flanked via segments of anti-parallel beta-sheet. Previous structural studies have suggested a variety means to stabilize the beta-helix structure including inner core electrostatic interactions and an inner core disulfide bond shared between cysteine 144 and 147. Equilibrium unfolding studies were implemented to investigate the impact of replacing glutamine 125 and the two cysteine residues on the stability of the HpmA265 beta-helix structure. Multi-transitional denaturation results reported within this study provide evidence that the beta-helix is comprised of two distinct and thermodynamically independent domains, termed the amino cap and beta-helix core. The $\Delta G^*H_2O$ for folding the amino-cap is much larger than the beta-helix core, implicating the buried and insulated hydrogen bonds as a primary means to stabilize the domain. Functionally, we propose the free-energy contribution from the stability within the amino-cap provides substantial selectivity and stability during the energy independent and vectorial folding of two-partner secretion pathway family members. This work was supported, in whole or in part, by National Science Foundation Grants MCB1050435 (to TMW) and MCB1434473 (to MRW), and a University Wisconsin – La Crosse Faculty Research Grant (to TMW).
The effect of Splenda, containing sucralose, on the humoral immune response in Mus musculus

Amy Zawacki  
Saint Mary's University of Minnesota

Faculty Mentor: Jeanne Minnerath

Presentation Type: Oral Presentation  
Presentation Location: 12noon in RC 201

ABSTRACT:

Artificial sweeteners are commonly found in a variety of foods and beverages including yogurts, desserts, sodas, and juices. Splenda, containing sucralose, is one of the five artificial sweeteners approved by the FDA in the United States. Over 100 scientific studies have been completed on sucralose to examine the potential effects this artificial sweetener has on systems of the body. One area that has had little focus is the effect of sucralose on the immune system. The purpose of this study was to determine whether sucralose consumption impacted humoral immunity in an animal model (Mus musculus). To do this, CD1 mice were provided with drinking water supplemented with varying concentrations of Splenda, containing sucralose, for a period of fourteen weeks. After eight weeks of treatment, the mice were immunized with the foreign protein, ovalbumin. Serum samples were then collected at 0, 2, 4, and 6 weeks post-immunization, and anti-ovalbumin antibody titers were measured by indirect ELISA. Statistical analysis (ANOVA) indicated there was no significant difference in the anti-ovalbumin antibody titers between mice that received Splenda, containing sucralose, and control mice that did not. This suggests that sucralose does not have an impact on antibody production (humoral immunity) in mice.
C-terminus Disruption of HpmA265 Caused by Trypsin and its Effect on Stability and Activity

Kyle Adamczak
University of Wisconsin - La Crosse

Faculty Mentor: Todd Weaver

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #1

ABSTRACT:
Proteus mirabilis, a gram-negative bacterium, implements the two-partner secretion pathway to produce a hemolytically active exoprotein, hemolysin A (HpmA). The full-length HpmA was cloned and truncated to contain the first 265 amino acids (HpmA265) in order analyze the structure and function more readily. In the native crystal structure, a dimer was observed to form via on-edge stacking of carboxy-terminal parallel beta-strands. The enzyme trypsin was used to study how disrupting the C-terminus would impact the protein stability and function. Specifically, trypsin cleaved after R249 and was shown to still exist in the dimer form. The fragment from the trypsin cleavage was analyzed via template-assisted hemolysis assay, dynamic light scattering, circular dichroism, SDS-PAGE, and a native gel. The results indicate that the gain of hemolytic activity can be correlated with the loss of the last 16 amino acids of HpmA265. Additionally, there appears to be less well-defined beta-sheet structure in the fragment. Further study will aim to conclude what the crystal structure of the cleaved fragment is via X-ray crystallography and what purpose the cleavage does to make the altered HpmA265 increasingly hemolytic. The research was supported in part by NSF-RUI 1050435 (to TW).
ABSTRACT:
Creatine is a naturally occurring molecule utilized by the body to help convert ADP to ATP. In the muscle creatine is phosphorylated to creatine phosphate during resting; but during muscle need, the phosphate is transferred to ADP creating ATP. Creatine is mostly found in meats and fish products but it can also be a sport supplement, creatine monohydrate, that is taken by athletics under the assumption it will increase the energy available to muscles during high-intensity exercise and it will increase the size of the muscle. The objective of this experiment was to test the effects of creatine supplementation had on muscle strength of contraction and muscle fatigue rate with and without high-intensity exercise using Mus musculus. When comparing the four treatment groups (n=5/group), creatine with workout (15 minute swim), creatine without workout, no creatine with workout and no creatine without workout groups, the results showed no significant difference for both muscle fatigue rate (p=0.473) and strength of contraction ( p=0.446). This indicates that creatine did not have an affect on muscle strength or fatigue rate.
Openness as a Moderator for the Relationship Between Intervention Types and Forgiveness

Anuradha Anantharaman, Logan Kochendorfer, Allison Weber, and Alexander Erickson
Luther College

Faculty Mentor: Loren Toussaint

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #32

ABSTRACT:
Previous research demonstrated that several types of interventions can reduce unforgiveness and improve forgiveness (Wade et al., 2005). In order to compare the effectiveness of specific interventions, several were compared in a short (12 minute) side-by-side study by Anantharaman et al (2013). Prayer, meditation, and expressive writing, with the addition of affect as a second outcome measure were compared, and it was found that meditation was the most effective in significantly reducing negative affect. The present study sought to expand upon previous findings, and sought to explore the moderating effect of personality variables and their relationship to intervention type and forgiveness. College-aged students were randomly assigned to one of four conditions: prayer, meditation, writing, or control. Each participant was asked to take a survey that asked questions about a recent event in which he/she was offended/hurt by a close friend or relative. The Big Five Inventory (BFI) was taken pre-intervention. Pre- and post-intervention measures included the Transgression-Related Interpersonal Motivations Scale (TRIM-12). Univariate Analysis of Variance results showed statistical significance for the moderation effect Openness on the relationship between Intervention techniques and TRIM total ($F(6,79)=3.072, p = 0.009$) and TRIM avoidance ($F(6,79)=2.606, p = 0.023$). Results support the effectiveness of meditation, on individuals with moderate levels of openness, in reducing avoidance and general motivation toward their aggressor. A better understanding of forgiveness through personality and brief psychological interventions would be effective and beneficial in a variety of settings. Future work should seek to establish a true control group and a better general understanding of intervention and personality interactions.
ABSTRACT:
The Sauk County WIC Project understands breastfeeding mothers experience problems when returning to work. This study needed to determine appropriate and effective approaches to help support breastfeeding mothers as well as the employers of breastfeeding mothers.
Organizational Communication and Employee Retention

Ray Bielawski
Viterbo University

Faculty Mentor: Derek Cortez

Presentation Type: Poster Presentation
Presentation Location: Nursing Center Foyer, Poster #51

ABSTRACT:
The purpose of this research is to determine the factors that may lead to successful long term relationships with organizations. We hope to learn how to better understand and adjust the needs of the employee to improve the work experience.
Schuh-Mullen Homes Asset Mapping

Bridget Brummet, Lacey Quale, and Kaitlyn Hamann
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #20

ABSTRACT:
The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
A Qualitative Study to Describe School Cooks' Motivation in Protective Action Against Food Tampering

Ali Burtraw, Kara Kerrigan, Christine Nichols, & Marni Shumaker
Viterbo University

Faculty Mentor: Carol Klitzke

Presentation Type: Poster Presentation
Presentation Location: Nursing Center Foyer, Poster # 53

ABSTRACT:

Food tampering is contamination of food with chemical, biological, or physical agents with the intention to cause harm to those who consume it. Contamination may occur during storage, preparation or service. School foodservice operations have characteristics that magnify the hazard of food tampering. Food is stored and prepared in bulk quantities in school foodservice operations, then served to large numbers of children, who are more vulnerable to the effects of contaminants than adults. Restriction of access to foodservice areas is a key practice in preventing food tampering. Production employees are the individuals most likely to observe the entry of unauthorized persons to vulnerable areas. Two cooks in each of six Wisconsin school districts were interviewed about perceptions of the threat of food tampering in their school foodservice operations, knowledge of how to reduce the threat, and ability to restrict unauthorized persons from the operation. Questions were related to Rogers’ Protection Motivation Theory that assesses threat appraisal and coping response appraisal in response to a threat. Interviews were recorded, transcribed and themes identified from the transcripts by the team of researchers. Knowledge, Consequences, Job Priorities, Worker Confidence, Authorization, and Physical Security emerged as themes from the interview data. Cooks had received little training about food tampering. They understood the consequences to be sickness, death, and loss of reputation, but believed food tampering unlikely to happen at their schools. They perceived that parents and students should not be in foodservice areas, but showed less agreement that other school personnel should be restricted. Cooks were confident they could restrict access by unauthorized visitors, but other aspects of their jobs were more important. Locks were used to maintain physical security, but cooks reported effectiveness was hampered because many individuals had keys.
Social Work Alumni Survey

Wendy Davey
Viterbo University

Faculty Mentor: Debra Daehn Zellmer

*Presentation Type*: Poster Presentation  
*Presentation Location*: Fine Arts Center Main Theatre Lobby, Poster #26

**ABSTRACT:**
Education is beneficial to employment through application of skills learned in particular classes. Viterbo University is accredited by the Council on Social Work Education to teach students to become generalist social workers. Surveys were sent to 46 Viterbo social work alumni from the previous three (3) years to examine the education they received and determine what social work courses they felt were the most useful in their current positions. A comparison of education received at Viterbo and any continuing education was looked at for evaluating purposes. An electronic survey sent to alumni email addresses resulted in a 35% response rate. All respondents stated the education they received at Viterbo was useful to extremely useful in their current career. Alumni that continued their education responded that the education they received at Viterbo was good if not better than their subsequent education. When asked about their core classes, 100% found field placement very useful and all respondents felt that the practice, policy, theory, and research courses were useful or extremely useful. Participants shared that more information on grant writing, Medicaid and Medicare would have been useful to them. More than one half of the respondents are employed in the medical/mental health/disability field. A limitation of this research survey was that no respondents were from the graduating class of 2012. Future research of interest could include a quasi-experimental study comparing freshmen, seniors and alumni’s views about their educational experience at Viterbo.
Academic, Personal and Professional Impacts of Service

*SOWK 340 Class: Wendy Davey, Rachel Grelle, Jordan Knapp, Sara Koresh, Emily Morrison, Tara Powless, Nieves Seaman, Olivia Skildum, Kayla Thoma, Ashley Bright, Kathryn Davis, Abigail Gillies, Olivia Leavitt, Marissa Miller, Courtney Nelson, Kassandra Schmitt, Jenna Speltz, Rebecca Tronick, Tairyn Velie, Eve Viner, and Cortney Wesela*

Viterbo University

Faculty Mentor: Jennifer Anderson-Meger

*Presentation Type: Poster Presentation*

*Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #28*

**ABSTRACT:**

This is a class-based descriptive survey research project that examined the personal, professional, and academic influence of service for Viterbo University students (n= aprox. 200). The research question is: How do service requirements at Viterbo impact students academically, personally, and professionally? Face-to-face, pen/paper surveys were be distributed in VUSM 300 and 400 classes and SOWK 275 fall semester 2014. Permission was obtained from course instructors in order to collect data. Quantitative data will be analyzed using SPSS. Qualitative data will be coded and categorized for themes. The project was approved by the IRB at Viterbo. This project is in progress. Data collection and analysis occurs in November. The poster will highlight the literature review, research question and design, data collection instrument, and proposed data analysis.
ABSTRACT:
With the amount of money that is being spent on endorsement deals, it is critical to understand the financial logistics of these investments. The goal of my research project is to determine whether endorsement deals with high profiled athletes affected the stock prices of publically traded companies. The research process began with collecting a sample size of twenty athletes that were endorsed by various companies. The sample size we collected was randomly selected by using the top 100 paid athletes from their endorsements and gave each athlete a separate number from 1 to 100. From here, we used a random number generator to decrease our sample size down to twenty. Once we had our sample size, we researched what companies were endorsing the athletes, when the endorsement deals took affect, and how much the endorsement was worth. It was found that the majority of the endorsement deals do positively affect company’s stock prices. The positive affect that the endorsement deals had on the stock prices were also significant. With the millions of dollars companies are spending on athletes to endorse their product, we knew there was purpose behind this marketing strategy. The purpose to this strategy is to get more consumers to purchase their product that will yield to more revenue. The more revenue the company creates, the greater chance investors will see more value in the company that will drive the stock price up.
Acculturation of Chinese Immigrants in America from 1849 -1941

Claire Decelles, Mia Kracht, Tanesha Williams
University of St. Thomas

Faculty Mentor: Jean Giebenhain

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #40

ABSTRACT:
This study investigates Americans’ views of the assimilation of Chinese immigrants into American culture from 1849 until 1941. We used both scholarly psychological and sociological journals as well as historically relevant texts to track professional and public perceptions across time. This research is important because it offers a historical lens into stereotypes about Chinese-Americans that persist today. Our procedure consisted of extracting quotes from relevant historical resources. Research materials were accessed through the PsycINFO, SocINDEX, and The Library of Congress. Search terms included acculturation, Chinese Americans, Chinese immigrants, prejudice, and Chinese assimilation. Using content analysis (based on Grounded Theory) each researcher identified potential themes that emerged from the data. Final themes were reached via group consensus. Results indicate that the assimilation of the Chinese immigrants was complex and several significant themes emerged from the data. Our primary themes include the exclusion of Chinese immigrants, how Americans viewed Chinese immigrants, and the Chinese self-perception within American culture. Results are discussed in historical context and also provide perspective on current attitudes toward Chinese-Americans.
Changes in Maternal Behavior Due To Fetal Ethanol Exposure and Stressed Environment

Valerie Donahue
Viterbo University

Faculty Mentor: Charles Lawrence

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #6

ABSTRACT:
Early-life trauma, such as exposure to drugs or maternal maltreatment, leave lasting imprints which can cause behavioral deficits. Using a Long-Evans rat model, the effect of maltreatment and ethanol exposure during development on maternal behavior was investigated. Pr-impregnated dams were placed in either a stressed or non-stressed environment. A stressed environment causes dams to exhibit poor maternal behavior. Ethanol treatments were given to neo-natal rat pups which were separated into three treatment groups, ethanol-treated, intubation-control, and non-treated control. An ethanol/milk mixture was given to the ethanol-treated group, whereas the control groups received only intubation or no treatment. Ethanol treatments were administered on post-natal days 4 through 9. Dam maternal behavior such as licking and grooming, nursing posture and pup retrieval time were recorded on post-natal days 2, 4, 6, 8, and 10. On day 25, pup drop testing was done to view spontaneous maternal behavior differences between the ethanol-treated and control groups from both stressed and non-stressed dams. It was observed on post-natal day 10 there was a split in maternal retrieval times with stressed dams indicating that stressed dams had a quicker retrieval time than non-stressed dams. Additionally, pups from stressed dams showed less time to retrieve than the non-stressed counterparts. In pup drop tests, there was no significant differences in time to retrieve between the ethanol-treated and control groups. This indicates that maternal behavior is more affected by childhood maternal maltreatment caused by stressed environments rather than ethanol exposure during development.
Maslow's Hierarchy of Needs: Is it Enough?

Claire Doughman
Viterbo University

Faculty Mentor: Vickie Wodzak

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #33

ABSTRACT:
I will critique Maslow's theory of the hierarchy of needs with concepts from St. Francis of DeSales' book; The Introduction To the Devout Life. I will point our discrepancies and shortcomings of Maslow's theory, and provide alternative ideas.
Aspartame Induces Depressive Behaviors in a Murine Model

Matthew Dwyer
Winona State University

Faculty Mentor: John Holden

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #45

ABSTRACT:
We identified 250 homeobox genes, and 33 Hox genes in the earthworm, Eisenia fetida. This number of Hox genes is the highest ever reported in Annelids (eg. Helobdella robusta: 19 Hox and Capitella teleta: 11 Hox) indicating a series of major evolutionary expansions. This analysis helps time the gene duplications and losses that have taken place as well as understanding the body plan diversity of Annelids and other Bilaterians. We present a whole genome assembly of E. fetida with the identification of homeobox genes and major evolutionary expansions that led to the Hox gene identity.
One Day at a Time: Drug Court Speaks Out

Denise Filter, Lacey Mahoney, and Jack Rice
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #24

ABSTRACT:
The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
ABSTRACT:
My research was a literature review that facilitated my exploration of the evolution of Post-Traumatic Stress Disorder (PTSD), and how it was affected by the Vietnam War. I learned a great deal about the causes and effects of PTSD. Examining the Vietnam War itself proved to be an essential foundation, I would say even a turning point, for how the medical and psychological establishments treat PTSD. During the Vietnam War, veterans were treated for PTSD only upon their returned to the United States. I started this project with the preconceived notion that PTSD had not even been recognized, to say nothing of being addressed, until our soldiers began coming back from Vietnam. I learned that PTSD has been recognized as a medical/psychological condition for over a century. However, it had different names and was not always taken seriously. The soldiers returning from Vietnam faced many challenges from what developed into a negative public opinion of the war as the United States became bogged down in an unexplainable combat situation. The literature also allowed me to examine the significant number of people who were denied treatment because they were thought to be faking a condition that has only recently become more fully understood. As a result of this research I intend to become professionally involved with soldiers and others who suffer from PTSD.
Perceived Stress and Alcohol Problems in College

Ashley Forman
Winona State University

Faculty Mentor: Amanda M. Brouwer

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #36

ABSTRACT:

More than 80% of college students reported consuming alcohol in the past year (Larimer, 2004). Drinking may serve as a coping mechanism for handling stress. Many discover problems as a result of drinking; for college students, drinking represents a leading cause of death and is associated with higher rates of sexual assault and a variety of health, academic, and interpersonal problems (Rice, 2010). Social support acts as buffer to negative outcomes of stress, but the effect of different types of social support on stress have been understudied. Therefore, we explored how different types of social support (i.e., belonging, esteem, tangible, and appraisal) can explain the relationship between perceived stress and alcohol problems. Methods: College students (N = 212), age 18-44 years (M=21.51, SD= 2.56) were emailed a survey and answered questions regarding demographics, stress, alcohol problems, and social support. Mediation analyses using bootstrapping procedures (Preacher & Hayes, 2008) were conducted to test the indirect effect of stress on alcohol problems through social support. Results:There was a significant indirect effect of perceived stress on alcohol problems through appraisal support, b= .0033 BCa CI [.0006, .0074]. There was not a significant indirect effect for tangible, belonging, or esteem support. Discussion: Findings demonstrate that actual support (i.e., belonging, tangible, and esteem) does not buffer the effect of stress on alcohol problems, but the perception of having support does. College students only need to feel that they had social support rather than actually receive support to mitigate the negative effects of stress on alcohol problems. Many college students drink socially with friends, whom they most likely would perceive to be their social support. Since their friends are drinking as well, they probably are not able to provide actual support at that time, but participants see them as someone who would.
Mapping Trails using GPS and Geographical Information Systems at Villa St. Joseph

*Alexandra Garbers and Alexis Reget*

Viterbo University

**Faculty Mentor:** Michael Alfieri

*Presentation Type:* Poster Presentation  
*Presentation Location:* Reinhart Center Boardroom, Poster #12

**ABSTRACT:**

Our main goal this summer was to complete a trail map for the Villa St. Joseph Convent. We wanted to be able to provide a detailed map of the trails at the Villa by highlighting the three main trails, giving a summary of the trails intensity, and what one would find. The land manager would then be able to provide this map of the forest area at the Villa to the sisters and other visitors to use. In addition to the main map, our goal was to create multiple other maps highlighting different environmental features at the Villa. The maps would illustrate points of interest, camera trap locations, elevation, invasive species, property boundaries, and additional features.
ABSTRACT:
In college, many students seek guidance for making important academic decisions. A common technique used by undergraduate students is to meet individually with their entitled academic mentor, also known as an advisor. Another alternative technique that some schools are beginning to adapt is the online advisor, which is a web-based program that provides information and resources to help students with general academic issues. The purpose of this study is to evaluate student views on the effectiveness, efficiency, and satisfaction of online and in person advising. One goal is to promote alternative advising techniques that are more convenient for college faculty and students. To test this, we will provide an online survey where participants will view a short video on the two types of academic advising. The online software, Qualtrics, randomly assigned participants either to the online or in person advising conditions. Participants made judgments (very inadequate to very adequate) on how appropriate the techniques are for solving situation of general education, declaring a major, and internship issues. Results indicate that students view in person advising as more efficient, effective, and satisfying than online advising. Findings indicate that online advising is an efficient supplement for in person advising.
Ratio of opposite- to same-sex friendships and its relation to depressive and anxious symptoms in college students

Abbey Hammell
Winona State University

Faculty Mentor: Amanda M. Brouwer

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #41

ABSTRACT:
Social support promotes adaption to stressful life events and mental health. With greater overlap of men and women in professional and social spheres, opposite-sex friendships (OSFs) are increasing. However, research has focused on the outcomes of OSFs only in romantic relationships and not friendships. Optimal Matching Theory suggests that support given is most effective when it is that which the recipient wanted and/or suggested. The need for matched support is critical for mental wellness because it assists in effective coping more than does unmatched support. Previous research demonstrates gender differences in type of support given, suggesting that relying on just same-sex friendships (SSFs) or OSFs alone may degrade matched support. Therefore, the purpose of this study was to explore the relationship between opposite-to same-sex friend ratios and anxiety and depression symptoms to better grasp the clinical implications of OSF. Participants (N=216 college students, 18-33 years) completed questions about friendship-gender ratio, anxiety, and depression. Those with a higher ratio of OSFs showed significantly more depressive symptoms than did those with a higher ratio of SSFs (t(191)= 2.68, p= .02) and those with an equal ratio of SSFs to OSFs (t(191)= 2.49, p= .03). There were no significant differences for anxiety. Follow-up tests revealed no differences in depression or anxiety due to gender. Overall, regardless of the gender of the participant, those who had more OSFs reported higher depressive symptoms, demonstrating that mental well-being may be connected to the type of gendered friendships one has. This may have major implications for females in particular, with previous research indicating that females receive the most support in general from their SSF. If social support given by SSFs is a large part of females’ coping strategies, a lack of supportive SSFs in their life may be associated with decreased wellbeing.
Measuring Trauma and Meaning in Life: Impact on Populations Experiencing Calamities

*Kaley Herman, Alexandra Hein, Catherine Lewis, & Njabulo Maseko*
Luther College

**Faculty Mentor:** Loren Toussaint

*Presentation Type:* Poster Presentation
*Presentation Location:* Nursing Center 195, Poster #44

**ABSTRACT:**
The purpose of this study is to determine if there is a relationship between trauma and meaning in life. Our research includes data from Armenia, Haiti, Africa (Rwanda, Burundi, and Kenya), and the Middle East. These countries and regions have experienced a variety of difficulties from a devastating earthquake to war to outright genocide. Due to increasingly severe traumas, our team speculated a connection between perceived trauma and meaning in life. This study was conducted in partnership with Meaningful World, an organization that leads mission trips in countries experiencing severe adversity. Meaningful World conducted surveys using the Meaning in Life Questionnaire and the Harvard Trauma Questionnaire. Our research team coded, scored, and analyzed the data received from this organization. In Armenia, Haiti, and the regions in Africa and the Middle East, our team found significant negative correlations between perceived trauma and presence of meaning in life at the .01 level. In Haiti and the regions in Africa, there are significant positive correlations between perceived trauma and search for meaning in life at the .01 level. This suggests that the meaning and significance of one’s life may be greatly influenced by the perception of a traumatic event. Awareness of the consequences of trauma can help identify post-traumatic interventions. This research suggests that it may be beneficial for therapy to focus on regaining meaning in one’s life in order to recover from traumatic experiences.
Measuring Trauma, Forgiveness, and Meaning in Life in the Middle East

*Kaley Herman, Alexandra Hein, Catherine Lewis, & Njabulo Maseko*
Luther College

Faculty Mentor: Loren Toussaint

*Presentation Type: Poster Presentation*
*Presentation Location: Nursing Center 195, Poster #43*

**ABSTRACT:**

The purpose of this research is to explore a possible relationship between Forgiveness, Trauma, and Meaning in Life in the Middle East. Since 1947, the Middle East has been experiencing conflict as a result of the development of the state of Israel, which has led to disputes over land, politics, and religion. Due to the conflict, we hypothesized that there would be significant perceived trauma in the Middle East, leading to a potential relationship between level of perceived trauma, forgiveness and meaning in life. This study was conducted in partnership with Meaningful World, an organization that leads psychosocial healing workshops and mission trips in countries experiencing severe adversity. Meaningful World conducted surveys using the Meaning in Life Questionnaire, Harvard Trauma Questionnaire, and Hartford Forgiveness Scale. Our research team coded, scored, and analyzed the data received from this organization. We then found that trauma and forgiveness are negatively correlated at the .01 level ($r=-0.388$), trauma is negatively correlated with presence of meaning in life at the .01 level ($r=-0.349$), and forgiveness and presence of meaning in life are correlated at the .01 level ($r=0.466$). Our team also found that forgiveness of God and presence of meaning in life are negatively correlated at the .05 level ($r=-.320$), and forgiveness of God and search for meaning in life are negatively correlated at the .05 level ($r=-0.361$). This research has implications involving targeted therapy for those who have experienced trauma. If therapy is used to help a person re-establish the presence of meaning in their life and forgive themselves, others, God, and the situation, their perception of the trauma they experienced may decrease, leading to a greater sense of healing after experiencing devastating trauma.
Epigenetic Effects of Developmental Ethanol on Thyroid Function of Long-Evans Rats

Alayna Holderman  
Viterbo University

Faculty Mentor: Charlie Lawrence

Presentation Type: Poster Presentation  
Presentation Location: Reinhart Center Boardroom, Poster #10

ABSTRACT:
Fetal alcohol spectrum disorders (FASD) are known to change the genome at the molecular level. These changes in gene expression result in the dysfunctions may be associated with FASD. One system at risk of epigenetic change is the thyroid system. Though thyroid hormones critical for development throughout the body’s systems including metabolism, growth, maturation, and organ specific functions, it is the essential promotion of cell differentiation, growth, and maturation overall, especially the brain, during early fetal development where FASD can cause epigenetic and molecular changes. Imbalances of neonatal thyroid hormones may lead to cognitive and physical disorders if untreated. Research has been conducted connecting FASD to thyroid dysfunction but have not identified the location of the thyroid feedback system where the FASD directly effects it. Thyrotropin, thyroid stimulating hormone (TSH), is a part of the thyroid hormone feedback system and is responsible for the release of hormones: triiodothyronine (T3) and thyroxine (T4). These two hormones circulate throughout the body and when imbalanced, disorders of the thyroid occur. Impregnated Long Evans rat pups were divided into three groups: ethanol treated (ET), intubated (stressed) control (IC), and no treatment control (NC). Once matured, the blood, pituitary glands, and thyroid glands were removed. The TSH levels of the blood were measured to determine the effect of ethanol on thyroid function. Mean TSH levels were determined to be 29.34 ng/ml in the ET, 5.51 ng/ml in the IC, and 18.50 ng/ml in the NC. The difference in TSH levels between the ET and IC groups was statistically different therefore the ethanol may have had an effect on the thyroid system.
Perceptions of Forgiveness Intervention on Liberal Arts College Campus

*Kristin Housholder*
Luther College

**Faculty Mentor:** Loren Toussaint

**Presentation Type:** Poster Presentation  
**Presentation Location:** Nursing Center 195, Poster #35

**ABSTRACT:**
Forgiveness allows for a greater quality of relationships with others. With interpersonal conflict being an unfortunate, but inevitable part of life, forgiveness is often easier said than done. Resulting anger, hostility, and hurt feelings from interpersonal conflict detracts from healthy relationships and general quality of life. Replacing said negative emotions with positive emotions such as benevolence, love, and gratitude is part of the forgiveness process. Past research studies suggest that any form of legitimate forgiveness workshops successfully promotes forgiveness within individuals, small groups, or communities. In the past, community-wide forgiveness interventions have been executed on two Christian college campuses. The efficiency of these treatments has never been examined, leaving many unanswered questions about the potential success of a community-wide forgiveness intervention. Present research examines the efficacy of a community-wide forgiveness intervention at a Midwestern Christian college. Initial findings suggest mixed support for a community-wide intervention.
Oviposition Site Preference in Drosophila melanogaster: Influences of Adult Fly Density and Food Quality

*Stephanie Ihde*
Clarke University and Loras College

*Faculty Mentor: Andrea Bixler and Fred Schnee*

*Presentation Type: Poster Presentation*
*Presentation Location: Reinhart Center Boardroom, Poster #14*

**ABSTRACT:**

Oviposition site preference is an important factor in the reproductive success of Drosophila melanogaster. This decision-making process is influenced by many factors including nutrient availability, presence of toxins such as heavy metals, and density of adult females. This research focuses on density of adult females and the avoidance of cadmium chloride (CdCl2), a heavy metal, in oviposition site preference. Females prefer to aggregate eggs. This is beneficial because resultant larvae are better able to eliminate harmful fungi on food. However, when aggregation is too extreme, food sources become limited leading to increased mortality. Food quality is another important factor in oviposition site preference. The presence of cadmium in food sources can cause developmental delays and decrease larval survival. Both increased density of females in an oviposition site and the presence of cadmium are factors reducing the fitness of Drosophila offspring, but their exact roles in aggregation of eggs remains unclear. To test this, groups of 12 or 24 females were placed in chambers containing six petri dishes on which to lay eggs. One chamber held six dishes of grape agar without CdCl2, one held six dishes of grape agar with CdCl2, and the final chamber held five dishes of grape agar with CdCl2 and one dish of grape agar without CdCl2. Flies were given 15 hours to oviposit. An ANOVA showed that females were significantly less likely to oviposit on agar containing CdCl2. In addition, those tests in which flies were presented with variation in quality of agar produced significantly higher levels of aggregation than in those in which the agar was uniform. Furthermore, larger numbers of females laid significantly more eggs, tending to distribute eggs across the available dishes rather than aggregate them in one dish. These results suggest that food quality and adult female fly density are important in oviposition site preference.
The effects of photoirradiation on the quantification of cytochrome c oxidase

Taryn Jankowski
Viterbo University

Faculty Mentor: David Bauer

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #19

ABSTRACT:
Recent research evaluating the effects of light in the 600 – 1000 nm range on biological tissue have revealed therapeutic physiological changes following photoirradiation. The putative substrate driving these effects has been identified as cytochrome c oxidase (CcOX), also known as Complex IV of the mitochondrial electron transport chain, and in vitro studies of cultured neurons have revealed upregulation of CcOX after 670 nm photoirradiation. The current experiment sought to replicate these findings in vivo by treating Long Evans rats with daily 670 nm photoirradiation (10 min at 50 mW/cm2) and measuring CcOX in brain and retina after two months. Half of the rats (n = 10) received treatment while the other half (n = 10) received none. Brains and retinas were extracted on day 70 after sacrifice with CO2 and perfusion with saline. Tissue samples were homogenized through sonication and CcOX levels measured via enzyme immunoassay, standardized to protein. Contrary to expectations, CcOX levels did not differ across treatment conditions in either brain or retinal tissue. Possible reasons for null findings and recommendations for future studies are explored.
YdfL: A proposed efflux regulator of YdfM

William Jeffries
Viterbo University

Faculty Mentor: Scott Gabriel

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #17

ABSTRACT:
Transcriptional control is a crucial component for cells as they respond to various changes within their environment. Assemblages of transcription regulator proteins mediate this response and allow organisms to effectively respond to a multitude of environmental stressors and conditions. Controlling intracellular metal ion concentrations is one of these stressors critical for cells to regulate since metals act as cofactors for many essential enzymes yet extreme high levels of metals can cause oxidative stress and even cell death. Previous results from our lab show ydfM, a predicted cation efflux gene, to be up regulated by increased manganese concentration. This result has led us to search for a protein that controls its transcriptional activity. Directly downstream from ydfM, ydfL is hypothesized to be a metal-efflux regulator. Based upon bioinformatics predictions and its proximity to ydfM, we hypothesize YdfL is the regulator of ydfM expression. To test this hypothesis, knockout strains of ydfM, ydfL and a wild type strain of Bacillus subtilis were exposed to various metal ion concentrations and zone of inhibitions were measured to test the organisms’ ability to survive in high metal environments. Through statistical analysis it is suggested that ydfL may act as a repressor for ydfM expression, due to the knockout strain of ydfL having the largest statistical relevant difference in radius size. As a result the data significantly suggests ydfL is a regulator for ydfM transcription. To further investigate YdfL’s connection to ydfM expression, molecular cloning strategies to insert the ydfL regulator gene into the expression vector p-ET 16b are planned. After protein expression and purification we will directly measure YdfL’s ability to bind the ydfM promoter through a gel-shift assay allowing us to better understand YdfL’s role in the regulation of ydfM transcription.
Salt induced changes to the structural and thermodynamic stability of poly-A tract DNA

Jaimi Jensen
University of Wisconsin - La Crosse

Faculty Mentor: Daniel Grilley

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #2

ABSTRACT:

Inside the nucleus of eukaryotic cells, the majority of DNA is wrapped around proteins known as nucleosomes. This protein scaffolding prevents transcription factors from binding, which implicates nucleosomes as important factors in regulating gene expression. The exact placement of nucleosomes is influenced by the underlying DNA sequence. For example, based on whole genome nucleosome positioning studies, the DNA sequences that most disfavors nucleosome formation are poly-A tracts. These tracts contain stretches of repeated deoxy-adenine nucleotides on one strand and deoxy-thymine nucleotides on the other. Poly-A tracts differ from generic sequence DNA in that they interact with a network of hydrogen-bonded water molecules inside their minor groove. We hypothesized that these interactions produce unique characteristics for poly-A tracts, including a stabilization of the double helix structure and a narrowing of the minor groove. This structural change was exemplified by testing the effects of a variety of cations on the structure of a polyA-tract 30 nucleotides in length. Using circular dichroism (CD), we confirmed that the degree of structural change, interpreted as a narrowing of the minor groove, is cation dependent and increases with increasing cation concentration. Based on these CD observations, we predicted that the stability of poly-A tracts would depend on the cation identity and concentration. DNA melting experiments were utilized to measure this increase in stability by monitoring the changes in melting temperature (Tm) of poly-A tracts. Based on the observed, cation-dependent increase in Tm values, the stability of poly-A tracts is correlated with the measured structural changes observed in CD. Nucleosome formation is contingent upon the competition between cations and proteins vying for the same DNA sequence. Our work demonstrates that poly-A tracts respond differently to specific cations. These observations have implications for the placement of nucleosomes and therefore transcriptional regulation.
Do Dog Parks Influence Human Connections and Create a Healthier Community?

Haleigh Johnson
Viterbo University

Faculty Mentor: Janet Holter

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #29

ABSTRACT:

Dogs play an important role and have an impact on their human companions. Humans refer to their dogs as “almost human”, “more than a gerbil”, “a part of the family”, and “like children” showing that dogs play a significant role in human life (Gomez, 2013). The requirement of daily care needed by dogs influence the amount of contact humans have with other humans. Dogs tend to increase the amount of human interaction, frequency of exercise, and physical and mental health of humans (Bueker, 2013). The research question is; Do dog parks influence human connections and a healthier community? There are approximately 73-78 million dogs in the United States and approximately one half of all American households have companion animals. There are as many dogs in the United States as there are children (Bueker, 2013). Dogs also serve as catalyst for human-human interaction. In recent research, it was reported that 77% of dog park users believed that dog parks helped them meet neighbors and build a sense of community. Other benefits of the dog park were that it created higher levels of activity in humans which could influence the general health of the community (Bueker, 2013). The purpose of this study is to see if the dog park located in the Washburn neighborhood of La Crosse, Wisconsin has an impact on human connections and well-being of humans in the La Crosse community. This study will focus on the dog park located in the Washburn neighborhood. A survey instrument will be used to ask members of the community how the dog park impacts their life involving their community and overall health.
ABSTRACT:
Previous research has looked into the impact of specific types of trauma on health. Schnurr and Greene (2004) explored the relationship between PTSD, health status and disease and concluded that poor physical health should be recognized along with mental health problems and impaired physical functioning, as an outcome of traumatic exposure. While this research has been critical to the understanding of trauma, it only looks at the impact of one kind of trauma on health. The present research seeks to answer the question of whether or not the different types of trauma experienced impacts reported trauma levels, ability to forgive, and levels of meaning in life. In 2013, Meaningful World conducted a mission trip in Haiti. The researchers collected data via a series of questionnaires in order to discover if trauma was related to forgiveness and meaning in life. Team members surveyed people who had been through traumatic events ranging from earthquakes to genocide to religious conflict. These trauma types were coded into 6 different categories, and were compared using the Harvard Trauma Questionnaire, the Heartland Forgiveness Scale, and the Meaning in Life Questionnaire. Using three one-way ANOVAs, it was found that trauma type significantly impacts trauma level, but not levels of forgiveness or meaning in life. These findings show that the more severe the trauma type, the higher the level of trauma that person will experience. Even more interestingly, despite these significant findings, people with high levels of trauma are still able to find the same level of meaning in their lives, and are able to forgive others, themselves and God to the same degree as those experiencing a lesser amount of trauma. Future research should seek to replicate these findings and focus on testing the validity and reliability of the coding mechanisms used in the present study.
The Use of CEL1/Surveyor Nuclease Assay to Determine the Efficiency of CRISPR/Cas9 TCF12-Targeted pU6 Plasmids

Zoe Lautz
Hamline University

Faculty Mentor: Jodi Goldberg

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #15

ABSTRACT:

Human colorectal cancers (CRCs) can be genetically caused by mutation in select genes that interrupt cellular function. Previous research by Starr et. al. was able to identify 17 novel genes that drive colorectal cancer in mice using transposon-based insertional mutagenesis. These genes may be causes of cancer in humans as well. Of those 17 novel genes, our lab looked at TCF12 in three different human colorectal cancer cell lines. We performed a knockout by transfection using the CRISPR/Cas9 system which permanently mutates genomic DNA. The method utilizes a U6 plasmid RNA that guides the the Cas9 endonuclease to the gene of interest. Two targeting U6 plasmids with specificity for the TCF12 gene were used to knockout TCF12 in the human colorectal DLD-1, HT-116, and HT-29 cells lines. Knockout was then assessed using the CEL1/Surveyor Endonuclease Mutation Assay, which detects mutation by endonuclease cutting at the site of mismatches between annealed mutated and unmutated DNA. Results of the gene knockout were inconclusive for both U6 TCF12 constructs, despite positive confirmation of the effectiveness of the CEL1/Surveyor Assay. Regardless of these inconclusive results, further research will characterize the effects of TCF12 knockout on CRC cell line growth.
ABSTRACT:
The brain is uniquely susceptible to alcohol, affecting both its fundamental processes as well as harmful alterations to offspring if pregnant. Fetal Alcohol Syndrome (FAS) occurs with fetal exposure to alcohol, causing abnormal development of the nervous system and behavioral problems, specifically with stress management. It is also known that maternal care directly affects stress management behavior as well. Using a rodent model with Long-Evans rats, the effects of these two situations was observed. Two groups of rat pups: one group birthed to a mother in a healthy environment (ample quantity of bedding) resulting in good maternal care, and another group birthed to a mother in a stressful environment (little quantity of bedding) resulting in poor maternal care were further divided into three additional groups. One group of pups was intubated and fed an ethanol-formula mixture (3.0 g/kg ethanol mixture in a 27.8 mL/kg milk formula), the second group was solely intubated, and the third group was neither intubated nor fed ethanol. On postnatal day 25, with all receiving their respective intubation and treatment daily, they underwent stress testing. They were placed in an open field test, which looks at a rat’s willingness to explore open areas, and observed for five minutes. Normal rats in this situation will exhibit behavior based upon thigmotaxis by staying near the walls for the duration of this test whereas less anxious rats will venture into the center. After analyzing the three groups of rats born to a good mother, it is suggested that these rats will exhibit normal behavior and stay near the walls of the test, displaying anxiety for being out in the open. Anxiety is a normal behavior of rats to display in this environment. However, those fed ethanol were less anxious, showing an alteration in behavior.
ABSTRACT:
Social media sites have undoubtedly changed the way Americans socialize and share information; however, it has also opened a new frontier for gathering personal information. Currently, the United States has roughly 170 million social network users. Tweets, wall posts, and photos all provide glimpses into user’s personal lives that, with just a click of the mouse, can be available to nearly all Internet users. As the Internet becomes saturated with user’s personal information, questions arise about the privacy of social media content. The majority of social media users believe they have a reasonable expectation of privacy in the personal information that they post online. However, the vast majority of courts value discovery of information over the privacy concerns of social media users. This delicate divide amongst social media users and the courts has ignited debates regarding the admissibility of user’s online information.
Ownership of Kitchen Tools and Food Knowledge at WAFER

Courtney Meidenbauer
Viterbo University

Faculty Mentor: Carol Klitzke

Presentation Type: Poster Presentation
Presentation Location: Nursing Center Foyer, Poster #52

ABSTRACT:
The ownership of common kitchen tools is surveyed and analyzed of the participants of the WAFER program, a food bank in La Crosse, Wisconsin. From there, participants were assessed on readiness to increase cooking, specifically with fruits and vegetables.
Waste Away: Analysis of Middle School Food Waste

Amanda Emilee Moder
Viterbo University

Faculty Mentor: Carol Klitzke

Presentation Type: Poster Presentation
Presentation Location: Nursing Center Foyer, Poster #55

ABSTRACT:
This study was conducted to determine the amount of fruit and vegetable waste in school lunchrooms and motivation for wasting it. As of 2010 when the Healthy, Hunger-Free Kids Act was set into place, school cafeterias are required to “offer” instead of “serve” food. This major change in the way that school lunch is done also impacts the amount of waste being produced, as it results in some students taking items to fill a requirement for the fruit or vegetable category but not eating it. What students choose to consume or throw away has significant financial, nutritional and environmental impacts.
Utilizing MTS to Verify the CRISPR/Cas 9 Transfection in Driver Genes of Colorectal Cancer

Fathima Mohamed and Maija Jedynak
Hamline University

Faculty Mentor: Jodi Goldberg

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #16

ABSTRACT:
Cancer occurs when a series of mutations within a cell lead to loss of regulation of the cell’s growth cycle, causing tumor formation. Five to ten driver mutations are required to cause cancer. Previous studies have identified 77 genes as potential drivers of colonrectal cancer in mice. Our lab is studying the importance of four of those 77 genes identified in mice (TCF12, PPM1H, CUL3, and RSPO2) in human colorectal cancer cell lines. Understanding the importance of individual genes on cancer cell growth could lead to the development of new cancer therapies that target the function of those genes. We will knockout each of the four genes using the Cas9 nuclease and CRISPR guide RNA to perform insertion or deletion mutations within the gene of interest. To assess the effects of knocking out a particular gene’s function on the function of the cancer cell lines, we will compare the growth of the cancer cells before and after gene knockout. This study aimed to characterize the baseline growth rates of three separate human colon cancer cell lines (DLD-1, HTC-116, and HT-29) using the MTS reagent. Cells incubated with this reagent form a colored product when they are metabolically active, i.e. proliferating. That relative amount of colored product can be determined by measuring light absorbance in a spectrophotometer. All three cells lines showed increasing growth over the four-day assay period. However, DLD-1 and HTC-116 cells showed enhanced absorbance over the four days, suggesting a faster baseline growth rate. HT-116 also appeared to still be growing in a linear fashion at the end of the assay, while DLD-1 and HT-29 cell growth seemed to be plateauing between days 3 and 4. This baseline data will be compared to cells with gene knockouts to determine the importance of each gene in cancer cell growth.
Empowering Women of Ophelia's House

Emily Morrison, Nieves Seaman, and Haleigh Johnson
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #25

ABSTRACT:
The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
Development of a Cellular Assay to Determine Cytotoxicity in Fish Cells

Justine Nelson
Viterbo University

Faculty Mentor: Tammy Clark

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #9

ABSTRACT:
The Asian Carp are an invasive species that have a high probability of causing ecological and economic effects to the fishing industry where inhabitants are found. As a result, efforts are underway to develop a selective toxicant that could be used to control the populations in the streams and rivers that lead to the Great Lakes. The objective of this project was to create bighead and silver carp liver cell lines to be used in biological assays. Using in vitro cytotoxicity assays should provide a high-throughput method of screening compounds to determine toxicity in fish cells. Healthy hepatocyte cell lines have yet to be fully developed; however, efforts to grow primary cell cultures have produced invaluable information regarding extracellular matrix additives and splitting techniques.
The Effects of Race, Gender, and Social Class on Diagnosis and Treatment in Mental Institutions: An Historical Analysis

Rachel Nielsen, Caitlin Steele, Brianna Snoddy, & Katelyn Sandvold
University of St. Thomas

Faculty Mentor: Jean Giebenhain

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #37

ABSTRACT:
Our research focuses on the diagnosis and treatment of mental illness in institutions as dependent upon gender, race, and social class between the late 1800s and the early 1960s. Throughout this time period, patients were treated differentially based on these demographic characteristics. These groups varied greatly in the reasons for institutionalization, attributions of the causes of entry into institutions, and methods utilized for treatment. We employed content analysis based on Grounded Theory to investigate the variations in diagnosis of mental disorders among these groups and how perceptions of their causes changed over time, related to how these groups were treated in an institutional setting. We searched archival databases and used search terms such as "institutionalization," "mental illness," and "mental hygiene." We noted themes that emerged and decided which were most apparent by a process of group consensus. Our research provides insight into the biases directed toward these social groups during this time period, which reflect the social norms of the time. Women were initially often institutionalized for prostitution or so-called feeblemindedness. By the end of this period, they were being admitted less often and for more recognized mental disorders. This time period also saw the transition in attribution of delinquency in African Americans from biological causes to external environmental and social factors that needed to be addressed. Throughout this entire time period, poverty was linked to institutionalization for everyone regardless of gender or race because of its strong detrimental effects on mental and physical health; however, it disproportionately affected and still affects minorities and women. This knowledge allows current professionals in the field to become aware of this history of differential treatment and incorporate this knowledge into the development of sensitive techniques and interventions for these at-risk groups. Results are discussed in light of historical context.
An Archival Analysis of War on Children

Kendra Nugent and Jillian Sirany
University of St. Thomas

Faculty Mentor: Jean Giebenhain

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #34

ABSTRACT:

Over the past century our world has encountered the devastation of several significant wars (e.g., WWI, WWII, Vietnam, and the War on Peace). It is known that wars affect many aspects of human life (Despert, 1944). The purpose of this archival study is to investigate both how war has affected children and how this has been documented from the 1940’s to present day. What is of interest for our research is how these effects have been documented historically and how it has changed over time. What is of interest for our research is how wars effect children. Knowing that childhood is an influential and crucial time period and times of great stress can be detrimental to a child’s development lead us to study the influence of war and the future development of children. Research has shown that children who go through the traumas of war go through a variety of changes in their life; whether that is an absent father (Despert, 1944), working mother (Gerard, 1943), or the changes of their environments around them (Akbulut-Yuksel, 2014). Our procedure consisted of content analysis (based on grounded theory) to find themes that emerged from the data. Each researcher explored this field of research and extracted relevant quotes from the material. We were then able to identify emerging themes throughout the literature. These themes included both indirect and direct impacts. Primary themes that emerged included: psychological and behavioral consequences, as a result of absent parents and wartime devastation/lack of resources. Research across time has shown that children experience various disadvantages when subjected to wartime. Future research can focus on interventions that can better prepare and protect children from the affects of war.
Bridging the Gap

*Tara Powless, Karlene Jensen, and Alexis Murray*

Viterbo University

Faculty Mentor: Connie Fossen

*Presentation Type*: Poster Presentation

*Presentation Location*: Fine Arts Center Main Theatre Lobby, Poster #22

**ABSTRACT:**

The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
Prostitution: Historical Archival Analysis across the 1800s and 1900s

Alyssa Radichel, Katherine Matthews, and Katie Gruman
University of St. Thomas

Faculty Mentor: Jean Giebenhain

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #42

ABSTRACT:
Prostitution is one of the most disconcerting social problems in the United States today. The purpose of this qualitative, archival study is to explore both scholarly and public attitudes toward prostitution across the late 1800s to the late 1900s. The study used primary sources from professional journal articles and newspaper articles from the popular press. Sources were examined using content analysis (based on grounded theory) and primary themes including: economic condition, perceptions, health concerns, and legal issues. Primary themes that emerged: Economic Condition: Historically, in the United States, women have struggled to earn a living wage on their own. Many women saw prostitution as the only way to make enough money to support themselves. Women of the lower social strata were more likely to fall victim to this livelihood. Perceptions: Archival research provided various perceptions of prostitution including attitudes of professionals seen in scholarly articles and the attitudes of the public seen in newspaper and magazine articles. Perceptions of prostitutes shifted from compassion in early years to fear due to venereal disease after WWI. Health Concerns: Venereal disease became a major concern after WWI after many soldiers contracted disease from prostitutes. Years later, during the 1970’s there was “…evidence that venereal disease had reached “virtually epidemic proportions”” (Curran, 1975, p. 180). Legal Issues: Decriminalization was favored over legalization after Nevada legalized prostitution in 1971. Legalizing prostitution was believed to lift the need “…for covert police operations leading to coziness and corruption” (Bode, 1978, p. 25). This analysis of prostitution across the 1800s and 1900s is a disturbing depiction of how little has been done to help women over the years. Prostitution remains a major issue to this day to which young women continue to fall victim. Implications for today will be discussed in terms of historical context.
ABSTRACT:
There have been many important discoveries in the sciences throughout the years, and amongst the most impressive is the discovery of radioactivity. Found by Madame Marie Curie and her husband, Pierre, in the late 20th century, radioactivity opened up a realm of possibilities to the world, particularly in the medical field. By looking at multiple sources surrounding Madame Curie’s life, I compiled the story of the discovery of radioactivity in the context of this pioneering woman’s experience. This includes the struggle Madame Curie faced to get an education in 19th century Europe, the genius of her work, and the oppression society placed on her for being a woman scientist. One major point of interest is Henri Becquerel’s association with the discovery of radioactivity. Having contributed only partially to the discovery itself, he was initially given full credit for radioactivity, along with Pierre Curie, while Madame Curie almost received none, due to the fact that she was a woman. Despite all of this, Madame Curie rose to be respected as one of the greatest scientists ever. Her contributions led to many advances in science and medicine, one of the most notable being radiation therapy for cancer patients. Through all of this hard work and perseverance, Madame Curie has emerged as a compelling role model, especially for women in the sciences.
Explaining How Autonomous Motivation Affects Diabetes Self-Care Behaviors: The Self-as-Doer Identity

Alex Russell and Angela Miller
Winona State University

Faculty Mentor: Amanda M. Brouwer

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #46

ABSTRACT:
Diabetes affects more than 29.1 million Americans. Non-compliance to self-care behaviors (SCBs) can lead to serious health complications. Autonomous motivation, characterized by self-initiation and self-endorsement of behaviors, has been associated with increased adherence to SCBs. Additionally, a newer construct, the self-as-doer identity, a construct wherein action and self are combined in working memory to provide motivation for behaviors, is also associated with increased SCBs. The relationships among autonomous motivation, self-as-doer identity and diabetes SCBs is understudied. Therefore, we hypothesize that the self-as-doer may act as a mediator between autonomous motivation and SCBs. That is, as autonomous motivation increases, doer identity will increase, which may lead to an increase in diabetes SCBs.
Characterizing TCF12 Gene Loci in Human Colorectal Cancer Cell Lines Through Polymerase Chain Reaction and Gel Electrophoresis

**Jennifer Scalze and Mathew Yang**
Hamline University

**Faculty Mentor:** Jodi Goldberg

**Presentation Type:** Poster Presentation
**Presentation Location:** Reinhart Center Boardroom, Poster #7

**ABSTRACT:**
Cancer is the loss of control of cell division, which is caused by genetic mutations known as driver mutations. Identification of new genetic mutations is a critical step in the development of new cancer therapies. Previously, a transposon-based insertional mutagenesis approach was used to identify 77 potential colorectal cancer driver mutations in mice. Our lab is assessing the importance one of those genes, Transcription Factor 12 (TCF12), as a potential driver mutation in human colorectal cell lines. The TCF12 gene will be knocked out of the cell lines using the plasmid based CRISPR/Cas9 gene knockout system. However, we first needed to confirm the presence of the TCF12 gene locus within DLD-1, HCT-116, and HT-29 human colorectal cancer cell lines using Polymerase Chain Reaction (PCR), gel electrophoresis, and gel imaging. TCF12-specific primers were designed for Exon 2 and Exon 16 of the TCF12 gene. The PCR products amplified by the primers were expected to be 146 base pairs (bp) and 218 bp for Exon 2 and Exon 16, respectively. The actual PCR product sizes were calculated from a standard curve using a 50 bp Hyperladder to be 136 bp and 197 bp for all three cell lines. These discrepancies could be due to use of a 50 bp ladder instead of a 25 bp ladder and/or too much PCR product that led to measuring issues. Given the discrepancies, we will verify the TCF12 PCR product fragments by sequencing them. The TCF12 gene loci will then be knocked out and PCR will be performed again to confirm the gene knockout. The effects of a successful TCF12 knockout on human colorectal cancer cell function, including cell growth rates and susceptibility to chemotherapy drugs will then be determined to ascertain the importance of TCF12 in a human colorectal cancer cell lines.
Handicap Accessibility in Historical La Crosse, Wisconsin

Brienne Shaker, Renee Walton, Sheila Juricic, & Jenny Clark
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #21

ABSTRACT:
The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
Nutrition Assets in the Washburn-Hamilton Neighborhoods

Kayla Thomas, Sara Koresh, and Rachele Serres
Viterbo University

Faculty Mentor: Connie Fossen

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #23

ABSTRACT:
The Social Work Practice II students will provide a Gallery of their PhotoVoice posters. PhotoVoice is an innovative participatory photography and digital storytelling method that provides an opportunity to create tools for advocacy and communication to achieve positive social change. The PhotoVoice posters will present to the Seven Rivers attendees an innovative research method that uses photography to highlight a community issue in a way that promotes change within that community. This method of participatory research is used to advocate on behalf of marginalized or issue-affected communities and involves community members in the development and implementation of effective change campaigns. Six student teams will present their PhotoVoice posters that visualize and describe their social work community practice projects.
Adverse Childhood Events: The Relation to Substance Use and Abuse Later in Life

Lucas Timmons
Viterbo University

Faculty Mentor: William Bakalars

Presentation Type: Poster Presentation
Presentation Location: Nursing Center Foyer, Poster #47

ABSTRACT:
In today’s society the average age that a child will first experiment with a drug is thirteen years old, and for alcohol the age is much younger (Facts about alcohol and drug abuse, n.d.). The statistics on the numbers for drug and alcohol abuse are staggering and one cannot help but wonder where this need to use these substances originates from (Doweiko, 2015). This research examined the correlation between adverse childhood experiences (ACEs) and substance use and abuse later in life. ACEs are defined as very stressful or traumatic experiences, such as, abuse, sexual assault, witnessing domestic violence, growing up with substance use and abuse, mental illnesses, or crimes within the child’s household (Felitti, et.al., 1998). This poster will also incorporate previous research examining the correlation between ACEs and the use of substances and identify next steps in the research process.
The Role of Anger in Families with Substance Abuse Issues: A Pilot Study

*Drew Turnquist*
Viterbo University

**Faculty Mentor: Bill Bakalars**

*Presentation Type: Poster Presentation*
*Presentation Location: Nursing Center Foyer, Poster #48*

**ABSTRACT:**

Substance abuse is a significantly major issue in the United States and across the world. According to Harold Doweiko, researchers believe that approximately 9.6 million children are living in a home where at least one parent currently has a substance use disorder (Doweiko, 2009). A correlation between anger and substance use disorders exists. According to Fredy Aviles(2005) and company, alcohol increases aggression whereas the aggression is pointed towards a particular individual, but if readily available, can be directed towards an innocent third party. This project examines the recovery narrative project conducted over the last five years by the addiction studies department at Viterbo University, and the use of quantitative research to support the findings. This project utilizes archival data analysis from the recovery narratives project which includes the conducting of interviews, and processing the data to find specific themes related to the research. This pilot study examines anger within families dealing with substance abuse issues to see if there is a theme between anger within a family, and family relationships. The archival data is examined in terms of numbers of references to the constructs of anger and or resentment by the participants in relation to family members. Next steps for the archival data analysis related to anger, substance abuse, and family relationships will be identified.
What Happens After The Competition Season?: Exploring Student-athlete Stress In The Off-season

Kaila Vento
Winona State University

Faculty Mentor: Amanda M. Brouwer

Presentation Type: Poster Presentation
Presentation Location: Nursing Center 195, Poster #39

ABSTRACT:
Exploring Student-athlete Stress In The Off-season Kaila Vento & Amanda M. Brouwer, PhD
Winona State University

Background: Stress is the physiological and/or psychological response experienced by an individual when challenged or threatened (Lazarus 1976; Lazarus & Folkman, 1984). College student-athletes encounter more stress than the average college student (Wilson & Pritchard, 2005). Much is known about the stress experience in the competition season, but less is known about stress experienced in the off-season. Off-season stresses may affect athletic and academic performance, relationships, and well-being of the athlete for the upcoming season. Therefore, the purpose of this study was to explore stressors college student-athletes experience during the off-season and how they differ from those experienced during the competition season.

Methods: A semi-structured interview was created and seven football players from two universities in the Midwest participated. Data were analyzed using grounded theory.

Findings: Participants off-season stressors included academics, coaches, time-management, relationships, sport pressure, and physical concerns. Athletes noted important differences between seasons. In the off-season, players reported more time for relationships and more time and energy to focus on academics. However, athletes still felt pressure from football responsibilities. Motivation and coping strategies were discussed and identified as ways to relieve stress or encourage players to continue under pressures.

Discussion: Athletes generally experienced similar stressors during the competition and non-competition seasons. Prominent stressors in the off-season included academics, relationships, and time. For the off-season, the majority of athletes expressed concerns of managing due dates for academics, finding time to focus on relationships, and upholding football responsibilities. Although players are not in competition season, they expressed similar amounts of strain as if they were in competition season. Findings warrant future investigations of how to approach the stressors experienced in the off-season and develop effective coping methods to improve performance, academics, and health.
Cognitive Function and Anxiety in a Y-Maze With Postnatal Ethanol Treated Long-Evans Rats

Cullen Vos
Viterbo University

Faculty Mentor: Charlie Lawrence

*Presentation Type:* Poster Presentation  
*Presentation Location:* Reinhart Center Boardroom, Poster #8

**Abstract:**
Roughly 1% of the population in the United States is affected by Fetal Alcohol Spectrum Disorders. One of these disorders, Fetal Alcohol Syndrome, can harm the infant’s cognitive function, behavior, and health. Animal models for Fetal Alcohol Spectrum Disorders help us to understand effects that are similar in humans. Long-Evans rats were randomly separated into groups on PD 4; control groups were separated into a group without any treatment (NC), and one group that was intubated without any fluid (IC), while the experimental group (ET) was intubated with a 3.0g/kg ethanol mixture in a 27.8mL/kg milk formula on postnatal days 4-10. That group was intubated twice daily at 0800 hours and at 1000 hours. On the 25th postnatal day, the pups were subjected to a Y-maze; the rat pup was placed in one end of the Y-maze and their movement was recorded for 5 minutes. This was in order to test anxiety in decision-making and also impulsivity which is The results of the maze were recorded and analyzed, and there was a significant difference that separated the ET group and the IC/NC group. On average, the ET group took half as long to make a decision about what arm to first enter, and they also made roughly twice as many choices, or arm entries. This evidence leads to the conclusion that the ethanol exposure increases the impulsivity of the ET group versus the NC group. This is consistent with studies in humans and animals that have shown impulsivity is increased after an early exposure to alcohol (Dick et al. 2010).
Social Work and Temperament

Renee Walton
Viterbo University

Faculty Mentor: Jennifer Anderson-Meger

Presentation Type: Poster Presentation
Presentation Location: Fine Arts Center Main Theatre Lobby, Poster #27

ABSTRACT:
Research conducted by Renee Walton sought to answer the question “Which aspects of various temperaments are the best fit for social workers?” Lack of literature regarding temperament and social work prompted research into various characteristics of temperament and social workers. The research was conducted through semi-structured interviews. Thirteen participants answered eight questions and were recorded with a device. After the interviews were conducted, the researcher listened to the interviews, and picked out keywords to the answers of each participant. The researcher then used first level coding to determine the frequency of the key words. Second level coding required the researcher to begin identifying categories for the key words. Finally, during third level coding the researcher identified major themes. These final themes concluded that overall, social workers believe that trust, compassion, self-awareness, and social justice are aspects of temperament that benefit social workers in practice.
Reinvestigation of an Acetylenic Poly(aryl ether)

Kristen Weiler  
Winona State University

Faculty Mentor: Thomas Nalli

Presentation Type: Poster Presentation  
Presentation Location: Reinhart Center Boardroom, Poster #18

ABSTRACT:
Poly(aryl ether)s (PAEs) are very robust polymers that contain diphenyl ether links. PAEs most commonly have been synthesized by nucleophilic aromatic substitution (SNAr), a reaction that requires an electron-withdrawing group (EWG) to activate the benzene rings. In 1993, Allan Hay and coworkers reported that alkynes could act as an electron withdrawing activating group and accordingly monomers such as bis(4-fluorophenyl)acetylene could be reacted with bisphenoxides to synthesize acetylenic poly(aryl ether)s. For this work, bis(4-fluorophenyl) acetylene was prepared using a two-step literature procedure and then reacted with bisphenol A (BPA) and K2CO3 in NMP following Hay and coworkers protocol. The resulting PAE was characterized by 1H NMR and will also be analyzed for molecular weight determination by light scattering measurements.
ABSTRACT:
Since the discovery of penicillin, antibiotics have become an essential tool in the treatment of bacterial infections and diseases. With the appearance of many resistant bacterial strains over the past several decades, there has been growing concern. β-lactams, such as ampicillin, make up the largest portion of the global market for antibiotics. Ampicillin is a broad spectrum antibiotic that is able to inhibit growth of many bacterial species. Gram-negative and gram-positive bacteria, the two major classes, employ a variety of different antibiotic resistance mechanisms. These differences could result in differing frequencies of resistance amongst gram-positive and gram-negative bacteria. To test this, soil samples were collected, serially diluted, and plated on various media types. Samples were plated on eosin methylene blue agar (EMB), which select for gram-negative bacteria; phenylethyl alcohol agar (PEA), which selects for gram-positive organisms; and LB agar, which allows both gram-negative and gram-positive bacteria to flourish. Plates were incubated for 24 hours at 37°C, then for another 24 hours at 32°C. By growing bacteria from soil on plates with and without ampicillin, we were able to identify differences in the ampicillin resistance of gram-negative and gram-positive organisms in the environment. About 1.82 percent of bacteria from the soil grown on LB were resistant to ampicillin. This differs greatly from the 10.0 percent on EMB and 0.120 on PEA. According to our data, there was a statistically significantly higher proportion of ampicillin resistant bacteria that grew on EMB than on PEA (P= 0.001669) or LB (P= 0.001213). Also, PEA had a lower fraction of resistant bacteria than LB, though the difference was not quite significant (P = 0.06678). Having an understanding of the difference in resistance of gram-negative and gram-positive bacteria could someday help lead to a better knowledge of the spread of resistance genes between the two types.
π-system stabilization of a 220 Å³ buried solvent network

Christopher Woods
University of Wisconsin - La Crosse

Faculty Mentor: Todd Weaver

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #3

ABSTRACT:

Two-partner secretion (TPS) systems are ubiquitous among gram-negative bacteria, such as E. coli, and are composed of an A-component (TpsA) and B-component (TpsB). The subject of this study is hemolysin A, a TpsA component from P. mirabilis, which is secreted and concomitantly activated by its TpsB partner. Once activated, hemolysin A functions to lyse red blood cells. Previous work in our lab has revealed the structure of truncated hemolysin A (HpmA265), which forms a right-handed parallel beta-helix. Peculiarly, a buried solvent, which forms hydrogen bonds with Q125 and Y134, and a 38 Å³ anhydrous void were found near the first two complete beta-circuits of HpmA265. In this work, site-directed mutants, which replace Q125, Y134 or both Q125 and Y134 with serine residues, have been built into the HpmA265 framework to disrupt both the hydrogen bond network and expand the internal void. The thermodynamic unfolding results for each mutant support the preservation of native stability and the two-domain architecture. Of most importance, the double serine replacement crystal structure fills the unoccupied space left by the removal of the Q125 carboxamide and Y134 aryl functional groups with six completely solvent inaccessible waters. The unprecedented organizational arrangement of these six water molecules (1) occupies a completely solvent inaccessible volume of 220 Å³ and (2) involves π-bonding to two buried phenylalanine residues, F80 and F149. The adaptations in this region have led to the preservation of the inherent beta-helix stability and structural water, S1, as observed in the wild type HpmA265 crystal structure. The research was supported by NSF-RUI award 1050435 (TW), ASBMB UAN Summer Research Award (CW), and a UW-La Crosse URC grant (CW).
Major Genomic Expansions in Annelids: Evidence from an Earthworm Genome

Allison Zwarycz
Viterbo University (research completed at University of Florida Whitney Laboratory for the Marine Biosciences)

Faculty Mentor: Joseph Ryan

Presentation Type: Poster Presentation
Presentation Location: Reinhart Center Boardroom, Poster #11

ABSTRACT:
Extensive body plan diversity has been shaped and molded by genomic evolution. In Bilaterians, body plan development is driven by homeobox genes, specifically Hox genes. By looking at the homeobox genes we can time evolutionary events such as gene duplication and loss. Vertebrates have several Hox clusters with multiple genes on each cluster, while invertebrates tend to have a single cluster. In Annelids, some organisms have a single cluster, whereas others have multiple clusters. Because Hox genes are highly conserved, they are used as indicators for regional and whole genome expansions. Understanding the diversity of Hox genes in Annelids can help us understand body plan diversity because Hox genes are pivotal for establishing the vertebrate body plan.