

# Table of Contents

May 9, 2025

The Bluffs and 3<sup>rd</sup> Floor Student Union

7:45 a.m. - 1:00 p.m.

<b>SCHEDULE OF ORAL PRESENTATIONS.....</b>	<b>2</b>
<b>UNDERGRADUATE STUDENT ABSTRACTS.....</b>	<b>4</b>
UNDERGRADUATE POSTER PRESENTATION ABSTRACTS .....	5
UNDERGRADUATE ORAL PRESENTATION ABSTRACTS .....	53
<b>GRADUATE STUDENT ABSTRACTS.....</b>	<b>62</b>
GRADUATE POSTER PRESENTATION ABSTRACTS.....	63
GRADUATE ORAL PRESENTATION ABSTRACTS .....	88
<b>FACULTY &amp; STAFF ABSTRACTS .....</b>	<b>91</b>
FACULTY AND STAFF POSTER PRESENTATION ABSTRACTS.....	92
FACULTY AND STAFF ORAL PRESENTATION ABSTRACTS .....	93
<b>2024 RECIPIENTS OF STUDENT RESEARCH</b>	
<b>GRANTS.....</b>	<b>95</b>
2024 RECIPIENTS OF UNDERGRADUATE RESEARCH & CREATIVITY GRANTS .....	96
2024 RECIPIENTS OF THE GRADUATE RESEARCH, SERVICE, AND EDUCATIONAL LEADERSHIP AWARDS.....	103
<b>PRESENTER INDEX .....</b>	<b>105</b>

# SCHEDULE OF ORAL PRESENTATIONS – page 1

	Union 3105	Union 3110	Union 3120	Union 3130	Union 3310
<b>8:50 to 9:15</b>	<p><b>Skylar White (G)</b> <i>Microbiology</i> The Response of <i>Myxococcus xanthus</i> to Low Oxygen Conditions</p>	<p><b>Tristan Studer (G)</b> <i>Biology</i> Connection between Metastatic Breast Cancer and Megakaryocytes in Bone Marrow</p>	<p><b>Ashley Wachter (U)</b> <i>History</i> The Women's Hell: Ravensbrück Concentration Camp</p>	<p><b>Michael Malone (G)</b> <i>Biology</i> The Biogeography and Systematics of Xylariaceous Fungi on Polynesian Islands</p>	<p><b>Ariel Beaujot (F)</b> <i>History</i> On the Street: Empowering Marginalized Voices through <i>Hear, Here</i></p>
<b>9:20 to 9:45</b>		<p><b>Ethan Endres (U)</b> <i>History</i> The History of the University of Wisconsin-Whitewater's Wheelchair Basketball Program</p>	<p><b>Peyton Seiler (U)</b> <i>History</i> The Evolution and Development of Cultural Assimilation found within the Syrian-Lebanese Population throughout the 1880s-1920s (...)</p>	<p><b>Evan Sirianni (G)</b> <i>Biology</i> Capturing Instream Habitat Variability in Wisconsin Driftless Area Streams</p>	<p><b>Astrid Lorena Ochoa Campo (F)</b> <i>Global Cultures &amp; Languages</i> Podcasting with Purpose: Enhancing Student Engagement and Critical Thinking in Spanish</p>
<b>9:55 to 10:20</b>	<p><b>Mackenzie Noel &amp; Khloe Carothers (U)</b> <i>Sustainability &amp; Environmental Studies</i> Paving the Way for La Crosse's Sustainable Future</p>	<p><b>Elizabeth Scheerer (U)</b> <i>History</i> Alcohol's Influence on the Social Lives of UW-La Crosse Students in the 20th and 21st Centuries</p>	<p><b>Landon Hubert (U)</b> <i>History</i> Volunteer or Voluntold: Why They Fought</p>	<p><b>Quinn Rowley (U)</b> <i>Exercise &amp; Sport Science</i> Electronic Cigarette use Inhibits Post Exercise Hypotension Responses in Young Healthy Adults</p>	<p><b>Kendall Morgan, Astrid Lorena Ochoa Campo, Sydney Groehler, &amp; Josiah Hayes (F)</b> <i>Murphy Library</i> Amplifying Latinx Voices beyond Stereotypes (...)</p>
<b>10:25 to 10:50</b>	<p><b>Jackie Oetterer &amp; Nick Murray (U)</b> <i>Sustainability &amp; Environmental Studies</i> Evaluating Erosion Risks and Environmental Stewardship (...)</p>	<p><b>Maya Bieneman (U)</b> <i>History</i> Forgotten Legacies: Spinsters and Eligible Bachelors of the Colwell-Dorset Family</p>		<p><b>Sarah Dollak (U)</b> <i>English</i> Rights of Nature: Examining Nature's Rights in Law and Literature to Promote Legal Representation of the Natural World</p>	<p><b>Ellie Antonson, Allisa Hansen, &amp; Jill Knudsen (U)</b> <i>Psychology</i> Sexual Assault Awareness Program</p>

## SCHEDULE OF ORAL PRESENTATIONS – page 2

	Union 3105	Union 3110	Union 3120	Union 3130	Union 3310
<b>11:00 to 11:25</b>	<p><b>Shawn Wichelt &amp; Ella Waltman (U)</b> <i>Sustainability &amp; Environmental Studies</i> Visualizing the Environmental Change at ORA Trails and Hintgen Island</p>	<p><b>Audrey Langworthy (U)</b> <i>History</i> Domestic Drunkards: Family Violence and Alcohol Consumption in La Crosse, WI: 1890-1910</p>	<p><b>Jordan Kenyon (U)</b> <i>History</i> Down Memory Lane: Nostalgia, Jeffersonian Ideals, and Monetization in Gasoline Alley</p>	<p><b>Alexandra Staver (U)</b> <i>English</i> High School Students' Perspectives on Technology Policy and Pedagogy</p>	<p><b>Zackary Peterson (G)</b> <i>Recreation Management &amp; Recreational Therapy</i> Sexual Harassment in Recreation</p>
<b>11:30 to 11:55</b>	<p><b>Chloe Beckman &amp; Harry Stahn (U)</b> <i>Sustainability &amp; Environmental Studies</i> Integrating Agriculture and Transportation for a Greener Future</p>	<p><b>Isaac Olson (U)</b> <i>History</i> A Lasting Impact of German Culture in Wisconsin</p>	<p><b>Charlie Klawitter (U)</b> <i>Mathematics &amp; Statistics</i> Machine Learning-Based Cryptanalysis of Classical Ciphers</p>	<p><b>Beth Gannigan (G)</b> <i>Exercise &amp; Sport Science</i> Exploring General PE Teachers' Perceptions of Their Role in Serving Students with Disabilities in a Rural School District</p>	<p><b>Kerrigan Trautsch (U)</b> <i>Race, Gender, &amp; Sexuality Studies</i> Rooted Identities: Agrarian Culture's Influence of Identity in Queer, Disabled Folks of the Driftless Area</p>
<b>12:05 to 12:30</b>		<p><b>Marcus Cramer (U)</b> <i>History</i> An Analysis of the Political Development of La Crosse County</p>	<p><b>Adeline Hendrix (U)</b> <i>History</i> More than a Widow: How Johanna Heileman Overcame Traditional Gender Values in the 19<sup>th</sup> Century and Became the First Female CEO</p>	<p><b>Justin Poley (U)</b> <i>Political Science &amp; Public Administration</i> City Administrators and Tax Performance: Does Authority Make a Difference in Wisconsin?</p>	<p><b>Logan Edmonds (U)</b> <i>Race, Gender, &amp; Sexuality Studies</i> Investigating Aromanticism: Experiences, Lives, and Untold Stories</p>
<b>12:35 to 1:00</b>		<p><b>Gavin Stebbins (U)</b> <i>History</i> From "Better Babies" and Marriage Laws to Education and Mental Institutions (...)</p>	<p><b>Adrian Moreno (U)</b> <i>History</i> Between Overt and Subtle: Tracing the Evolution of Racial Practices in a Changing Midwest</p>	<p><b>Annaliese Bastyr, Ava Riehle, Kyra Schmitz, Mia Herro, &amp; Sydney Spang (U)</b> <i>Psychology</i> Disconnect to Reconnect</p>	<p><b>Alex Morris (U)</b> <i>Race, Gender, &amp; Sexuality Studies</i> Queer Legacy of Mary Shelley's <i>Frankenstein</i></p>

# **UNDERGRADUATE STUDENT ABSTRACTS**

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# UNDERGRADUATE POSTER PRESENTATION ABSTRACTS

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## Poster Session A 7:45 am – 8:40 am

### A.U.1 Seasonal Carbon and Phosphorus Availability in Cochran Lake, Vilas County, WI

Vera Hrdlicka  
Mentor: Eric Strauss, Biology

Phosphorus (P) is critical nutrient for primary producers in aquatic environments, yet it often acts as a limiting factor for these organisms. As an essential element for all life forms, phosphorus is vital for various biological functions and processes. In many aquatic ecosystems, phosphorus availability governs biomass production. Seasonal variations in nutrient bioavailability can drive fluctuations in biomass levels. Concerns about eutrophication and algal blooms in recent summers on Cochran Lake, Vilas County, highlight the need to investigate the underlying causes. Eutrophication, a result of nutrient imbalances, especially P and nitrogen (N), can lead to excessive biomass increases. This study aims to understand the seasonal variation of dissolved phosphorus and its correlation with algal biomass, measured through Chlorophyll *a* (Chl *a*) concentrations. Current results indicate the winter (end of January) sampling period has the highest levels of Chl *a*, with concentrations above 300 µg/L within the first meter, while summer and fall values were less than 25 µg/L. Highest levels of phosphorous have been found during the August sampling period (~0.015 mg P/L).

### A.U.2 Cardiotoxic Effects of 2 PFAS on Zebrafish Larvae

Josh Galvin and JoAnn Breier  
Mentor: Tisha-King Heiden, Biology

Per- and polyfluoroalkyl substances (PFAS) comprise a diverse group of over 15,000 synthetic polyfluorinated compounds widely used in consumer products and industrial applications. Their highly stable carbon-fluorine bonds, which confer durability, also contribute to environmental persistence and bioaccumulation. Rising PFAS levels in surface and groundwater pose health risks to both wildlife and humans. Previous studies have linked PFAS exposure to developmental and reproductive impairments, immune suppression, organ damage, and endocrine disruption in model organisms such as zebrafish and fathead minnows. In humans, PFAS-contaminated drinking water has been associated with hypertension, elevated cholesterol, endothelial dysfunction, and increased cardiovascular disease risk. This study investigates the cardiotoxic effects of chronic exposure to environmentally relevant concentrations (80 ng/L) of PFOS, PFHxS, and F53B in developing zebrafish larvae. Exposure begins 12 hours post-fertilization, with high-speed imaging performed at 96 hours post-fertilization to assess heart rate, ventricular volumes, stroke volume, and cardiac output. Preliminary data suggest that exposed larvae will exhibit reduced cardiac output, increased pericardial edema, and structural cardiac abnormalities. These findings could reinforce the urgency for further research and stricter regulatory measures on PFAS contamination.

### A.U.3 Fish Where They Fit: Predicting Rare Fish Species in the Mississippi River using Machine Learning

Peyton Cappelle  
Mentor: David Elzinga, Mathematics & Statistics

The Long-Term Resource Monitoring (LTRM) is a collaborative research effort headed by U.S. Army Corps of Engineers in congregation with U.S. Geological Survey (USGS), U.S. Fish and Wildlife Services, and the equivalents of the Department of Natural Resources (DNR) in the states that surround the Mississippi river. These agencies monitor and collect data on the Mississippi river to inform policy decisions for local, state, and federal agencies. Often, these agencies struggle to come to a clear consensus on where and how limited resources should be allocated to sustain a multi-purpose river such as the Mississippi River. It is therefore paramount that the data collected in the LTRM be contextualized in a robust manner to serve as many agencies as possible. Our project is focused on contextualizing fish surveys in two manners. First, there is a belief that certain fish species may be disproportionately undercounted in these surveys. This project aims to identify patterns in collection processes and water properties to indicate situations where these rare fish may be present but are undetected by surveys. Second, the project will aid in targeted habitat restoration plans by identifying habitat characteristics and fish communities that increase the diversity and abundance of fish.

#### **A.U.4 ARID3B Phosphorylation and Stemness Modulation by CAMKK1 in Glioblastoma**

Erin Oelke

Mentors: Sierra Colavito (Biology) and Karen Cowden Dahl, Ph.D. (Gundersen Health System)

Glioblastoma multiforme (GBM) is an aggressive primary grade IV brain tumor with an average life expectancy of 12-18 months and only 5% of patients surviving beyond five years. ARID3B is a transcription factor overexpressed in brain tumors such as GBM, the high expression of ARID3B correlates with a worse prognosis. ARID3B upregulates genes associated with cancer stem cells (CSCs), which drive self-renewal, differentiation, and treatment resistance. We found that ARID3B phosphorylation at serine 89 affects localization using site-directed mutagenesis. We generated phosphomimetic (S89D) and non-phosphorylatable (S89A) mutants. S89D localizes to the nucleus, while S89A is distributed between the nucleus and cytoplasm. Cells expressing S89D exhibited increased expression of stem target genes compared to S89A. We hypothesize that the phosphorylation of ARID3B drives a CSC phenotype in GBM cells compared to the non-phosphorylatable mutant (S89A). To test our hypothesis, phosphomutants will be overexpressed in the U87 GBM cell line to analyze the expression of stem cell genes. Additionally, flow cytometry will be conducted to analyze cell surface markers associated with stemness.

#### **A.U.5 xCT Protein Expression in Epstein-Barr Virus Infected Cells**

Anna Meilahn

Co-author: Kelly Gorres

Mentor: Kelly Gorres, Chemistry & Biochemistry

The Epstein-Barr virus (EBV), one of the most common viruses in the world, is a herpesvirus family that causes infectious mononucleosis (“mono”). EBV is also associated with several cancers, including Burkitt lymphoma and nasopharyngeal cancer. EBV resides in human cells for a lifetime in an inactive state, evading the immune system. EBV can reactivate into an active cycle, characterized by spreading other cells, increased symptoms and disease progression. Host genes and proteins play a key role in EBV reactivation and require further exploration. To understand how EBV reactivates, gene expression in EBV-infected human cancer cells was measured under treatment with EBV activators and inhibitors. Cells treated with inhibitors showed increased expression of the gene responsible for producing xCT, a protein that transports the amino acid, cystine, across cell membranes. xCT is known to regulate programmed cell death, a process, when disrupted, that can lead to tumor growth. Additionally, xCT reduces the amount of reactive oxygen species, which are known to induce EBV reactivation, suggesting a regulatory role of xCT. To investigate the significance of xCT in EBV reactivation, xCT protein expression was measured relative to EBV inhibition and activation. Understanding the influence of xCT on EBV provides valuable insight to development of possible therapeutic interventions.

#### **A.U.7 Lack of Recess in Middle Schools: How Do Teachers Adjust?**

Allie Bushre

Mentor: Rosalie DeFino, Educational Studies

This research project is to examine how teachers can adjust their recess protocols in order to benefit students. To examine this, three different teachers at the middle school/upper elementary level were interviewed regarding the structure of recess in their school. Interviews were recorded and transcribed to analyze findings across schools. The results demonstrated a variety of solutions to improve focus and behavior after a break time. Not all break time needs to include going outside, but simply a pause from schoolwork to reset. Results also revealed that some students do not get the opportunity to or have minimal recess once they reach a certain age. With this, current and future teachers are educated on the benefits of breaks and can create innovative ways to make sure students are well equipped with the break time they need throughout the day.

#### **A.U.8 Academic Advising Chatbot**

Avari Caya

Mentor: Samantha Foley, Computer Science & Computer Engineering

In the Computer Science & Computer Engineering department at the University of Wisconsin-La Crosse, faculty are responsible for academic advising for their majors. This means that students seek assistance from their advisors on what classes to take in the upcoming semester, and guidance on navigating their academic careers. Academic advising is labor-

intensive activity that often involves answering the same questions every semester, for each student. The goal of this research is to develop a locally hosted chatbot from open-source software that can answer common student advising questions. In this paper we will present a survey of chatbot platforms that we considered, followed by the design and implementation of our chatbot. The survey will present a variety of chatbot platforms ranging from no-code/low-code packaged cloud instances, open-source tools that use cloud services, and open-source projects that allow you to build and host your own chatbot. When looking for and evaluating the chatbot platforms, we wanted something that we could: (1) learn to use quickly and easily for novice programmers, (2) was accessible on a budget of zero dollars, (3) allowed us to dive into the details on how a chatbot works when we were ready for it, (4) allowed us to control the access to data, (5) trustworthy services so that the chatbot would give accurate results, and (6) ability to create a knowledgebase with our data.

#### **A.U.9 Breaking Barriers: Gender Law and Female Entrepreneurship**

Khang Duong and Aditya Anil

Mentors: Adam Stivers (Finance) and Nabamita Dutta (Economics)

Our research aims to examine how laws can impact female entrepreneurship across different contexts. We use a new measurement from the World Bank's Women, Business, and the Law (WBL) index 2.0, focusing on legal systems in place to help female entrepreneurs. The research will provide insights into how policymakers can enhance female entrepreneurship by improving legal frameworks, particularly in developing economies where women face significant financial and institutional barriers. We will also investigate potential moderating factors such as economic institutions and culture, which have been shown to affect female entrepreneurship outcomes. Empirical models like OLS, fixed effect, marginal effect plots, and matching models will be used to test our analysis. We will also present ideas for future related research, as the WBL index is fairly new and thus understudied. The contribution of our work is twofold: 1) we will examine the effectiveness of legal/policy frameworks as they relate to female entrepreneurship, and 2) we will examine how these systems interact with formal economic institutions and informal institutions such as culture. The latter will help to understand what frameworks must be in place for a nation to foster successful female entrepreneurs and promote an equitable entrepreneurial landscape.

#### **A.U.10 Connecting Clinically Observed Metabolic Deficiencies to Protein Structure and Function**

Megan Gregory

Mentor: Todd Weaver, Chemistry & Biochemistry

Human fumarase (FH), an enzyme in the citric acid cycle, is an essential component in the metabolic pathway that fuels the human body. When the FH enzyme is mutated (R444G), previous clinical cases have shown a decreased quality of life likely caused by the deficiency of FH function. There is minimal understanding between the structure and function of this mutation and how this impacts the decreased FH activity observed. To better understand the specific impacts this mutation had on the structure and function of FH, circular dichroism, non-denaturing gels, and Michaelis-Menten kinetics were conducted. These experiments resulted in the findings that this variant had quaternary structure, which is crucial to enzyme functionality. However, through the use of several additive screens, which encompass chemical compounds that are similar to FH substrate in shape and size, there were observed structural changes in the R444G mutation compared to the normal FH. Additionally, kinetic experiments showed this variant also had a 47.3-fold decrease in overall catalytic ability in comparison to the normal FH enzyme. This decreased catalytic ability results in a buildup of fumarate in cells which may cause decrease cellular functions such as DNA repair. Overall, this clinically observed mutation has highlighted the importance of conserved structure and function for essential metabolic enzymes and therefore the human body.

#### **A.U.11 The Analysis of French vs. American Culture**

Kaitlyn Engel, Chloe Harkins, Clare Matott, and Pang Khang

Mentor: Bixi Qiao, Psychology

The purpose of this presentation is to examine cultural similarities and differences between France and American culture. In this presentation, we will discuss four cultural topics related to these two countries: work-life balance, food, clothing attire, and cognition. We plan on using journal articles to support our hypothesis and research claims as we perform our research over the coming weeks.

### **A.U.12 Epstein Barr Virus: Identification of a Lytic Cycle Reactivation Inhibitor with Minimal Side Effects**

Gilbert Marquez

Mentors: Kelly Gorres and Joseph Hurley, Chemistry & Biochemistry

The Epstein Barr Virus (EBV) is a highly contagious virus that 95% of adults experience in their lifetime. Individuals with compromised immune systems are at risk for severe effects of prolonged infection. EBV infection is linked to stomach cancer and aggressive NK leukemia, among other complications. Valproic acid was recently found to inhibit the reactivation of the lytic cycle of EBV, the pathway to replicate in and kill the host cell. However, valproic acid is traditionally an anti-epileptic medication with rare but harmful side effects such as birth defects, liver, and nervous toxicity. Due to this, similarly shaped molecules to valproic acid are of interest. Thus, the research project aims to search for valproic acid analogs that are effective inhibitors of the reactivation of EBV. Specifically, ones that do not exhibit the presented side effects and cellular toxicity.

### **A.U.13 Changes in Histone Modifications and Epstein-Barr Virus Reactivation in Burkitt Lymphoma Cells due to Treatment with Ketone Bodies**

MJ Hennessey

Mentor: Kelly Gorres, Chemistry & Biochemistry

Epstein-Barr Virus (EBV) is a member of the human herpes viruses and is ubiquitous in the human population. EBV is associated with many human diseases, including mononucleosis and has been linked to various human cancers such as Burkitt lymphoma. EBV has a two-phase life cycle where it primarily resides in a dormant phase, known as a latent phase. EBV may reactivate into a lytic phase, where it replicates itself inside a host cell, eventually leading to lysis where viral prodigy are released to the environment to restart the cycle. The mechanisms and causes of EBV switching from the latent phase to the lytic phase are not well understood. One theory proposes that histone modifications, such as acetylation, could have a roll in the reactivation of EBV's lytic phase. Inside the host cell, EBV does not integrate itself into the host genome but rather keeps its viral DNA in a separate structure utilizing histone proteins to form an epigenome with similarities to eukaryotic chromosomes. The metabolite sodium butyrate (NaB) has been shown to cause EBV to reactivate into a lytic phase. NaB has also been shown to inhibit histone deacetylase enzymes (HDAC). This led to the proposal that HDAC inhibition may contribute to EBV reactivation. Ketone bodies are molecules involved in lipid metabolism and share similar chemical structures to NaB. This project aims to determine if ketone bodies can inhibit HDAC and reactivate EBV.

### **A.U.14 Happiness in “Actual” College Experiences vs. Social Media’s “Ought” College Experiences**

Kylah Jerome

Mentor: Kevin Zabel, Psychology

Social media's impact on modern college students' mental health is personal, obvious, and only growing. The current generation of college-age students are those a part of Generation Z, who also make up social media's largest group of users. Gen Z is the most likely cohort to be consuming and spreading social media trends and viral content (MSS Media, 2024), and most of them use platforms like TikTok as both a search engine and for news, even using it more than Google (Macready, 2024). Essentially, this generation uses, is susceptible to, and thinks about social media a lot. With these statistics, it may not come as much of a surprise that this significant level of usage begins to affect mental health, specifically in terms of self-esteem as well as self-perceived happiness. Social media is proven to create a more negative self-identification, with some studies claiming that 1 in 5 college students report high anxiety and blame social media as a contributor to that trend (Zwart, 2020). The availability heuristic involves relying on information that is most available to us in order to make assumptions (Higgins, 1987), and in a time where social media is such a common form of information to college students, it becomes quick and accessible to assume that the media's depiction of college is what reality will be. I hypothesize that having social media's idea of the “ought” college experience is positively correlated to feeling happier overall as a college student.



### **A.U.15 Isolating Cryoprotective Molecules in Squirrel Plasma**

Lydia Mack, Lakeyshi Xiong, Halle Derleth, and Charles Tempski  
Co-authors: Gabriel Simpson, Avery Werneburg, and Adam Boucher  
Mentor: Scott Cooper, Biology

Humans rely on small cell fragments in our blood called platelets for a variety of reasons, one of which is their blood clotting ability making them vital for transfusions in a clinical setting. However, these platelet donations lose viability after five days when stored at room temperatures and go through apoptosis (programmed cell death) when stored at refrigerator temperatures. Unlike human platelets, those from 13-lined ground squirrel's (*Ictidomys tridecemlineatus*) do not undergo apoptosis under refrigeration temperatures. This makes them an ideal model organism to study the cold storage of platelets. To evaluate these possible protective mechanisms within squirrel blood, techniques such as mixing and dialysis of plasmas were performed using Annexin binding protein and analyzed using flow cytometry. Preliminarily, contributions of the small molecules within plasma have been most notable.

### **A.U.16 The Viability of Platelets in Cold Storage with Trial Cryoprotectant Drugs**

Chase Tessness, Aiden Carney, Cyle Kowalski, Faith Keller, Katie Christensen, Tristan Anderson, and Claire Gabriel  
Mentor: Scott Cooper, Biology

Thirteen-lined ground squirrels undergo physiological changes during hibernation which extends the shelf-life of platelets when stored in the cold. The investigation of potential drug treatments was assessed on the viability of human platelets in cold storage. In collaboration with colleagues in Holland, we received the drug SUL, with the potential to inhibit cell lysis in cold storage. In addition, the drug DMSO was received in collaboration with the FDA for potential applications in frozen storage. Assays run to assess platelet viability, including Fibrinogen binding to assess platelet activation, Annexin binding to assess apoptosis, lipid peroxidation to assess cell membrane viability, and mitochondrial membrane depolarization to assess for mitochondrial damage. These findings could have potential medical applications for prolonging the storage of human platelets for transfusions in a variety of medical fields.

### **A.U.17 Identifying the Factor Released by Breast Cancer Cells or Osteoblasts that Increases Megakaryocyte Proliferation**

Jack Morrison  
Mentor: Jaclyn Wisinski, Biology

The incidence of breast cancer is currently increasing in the U.S. Metastasis is the main culprit in cancer death. Metastatic breast cancer usually spreads to the bone marrow first. Megakaryocytes are cells in the bone marrow that produce platelets. Osteoblasts are cells in the bone matrix that help form new bone tissue. Prior research has been conducted suggesting that some factor is secreted by osteoblasts or breast cancer cells that increases megakaryocyte proliferation. However, how this occurs is poorly understood, and the molecule type of this factor is unknown. We seek to identify this factor by growing breast cancer cells and osteoblasts on growth media and collecting the supernatant containing release molecules, termed conditioned media. Then, we will dialyze a portion of conditioned media to remove small molecules. Dialyzed or undialyzed conditioned media will be used to treat DAMI cell megakaryocytes in proliferation and adhesion assays. When megakaryocytes adhere to vessel surfaces, they proliferate and differentiate into platelets. Identifying the molecule type of this factor could help elucidate the mechanism by which an increase in megakaryocyte proliferation occurs in the body, which decreases the rate of metastasis. Further understanding the molecule type of the factor released could allow for future drugs to be developed that exploit the biochemical properties of this factor; this could allow for improved outcomes for patients with certain cancers.

### **A.U.18 Pro-inflammatory Molecule Production in RAW 264.7 Macrophages Mitigated by MHC Class I Stimulation**

Lily Radue, Renata Vaughn, and Miranda Svacina  
Mentor: Zachariah Tritz, Microbiology

MHC class I molecules are expressed on every cell in the body and are an important communicating tool for the immune system. The role of these proteins is to “show off” or “present” peptides made by the cell to nearby immune cells;

this allows immune cell to survey the protein products of cells throughout the body and scan for infected or mutated cells. While we know that immune cells that contact a peptide:MHC complex go through an orderly cascade of cell-signaling events, what impact this contact has on the MHC-presenting cell is unknown. MHC Class I, a very diverse molecule, is often a target of antibody attack during tissue rejection, we wanted to study how antibodies ligating this molecule altered cell behavior. Our primary interests were the production of Reactive Nitrogen Species by the cells and their production of TNF $\alpha$ , a pro-inflammatory cytokine. We found that macrophage production of these molecules was dampened in the hours following MHC class I stimulation and our future work aims to more fully investigate that finding.

#### **A.U.19 Effect of Sensory Strategies and Supports on Classroom Attention, Participation, and Behavior**

Anika Reiland

Mentor: Erin McCann, Health Professions

Children utilize input from their senses in all aspects of their daily lives, but children integrate this sensory input in different ways and require different amounts of sensory input. Sensory inputs from their surroundings and interactions affect how children function. The sensory qualities of a classroom have been found to have a direct impact on classroom performances. The purpose of this study was to determine the effect of movement and touch sensory strategies and supports on classroom attention, participation, and behavior. In the study, numerous sensory tools, such as fidgets and alternative seating, were offered to a local second grade teacher. Then, this teacher implemented the tools into her classroom. A weekly questionnaire was utilized to track the classroom's attention, participation, and behavior for pre-integration and post-integration of the tools.

#### **A.U.20 Cultural Comparisons: Australia and the U.S.**

Felicia Ritzke, Quinten Friess, Tyler Schaubroeck, and Ella Bancker

Mentor: Bixi Qiao, Psychology

The purpose of this presentation is to examine cultural similarities and differences between Australian culture and the U.S. In this presentation, we will discuss four cultural topics related to these two countries, including freedom and individualism, cultural diversity, values, and systems such as healthcare and education. Examples, research articles, and visual aid are used to support our analysis.

#### **A.U.21 Optimizing Electro-Polymerization Methods to Create Selective Polymer Co-catalysts for the CO<sub>2</sub> Reduction Reaction**

Reese Resheske and Jade Tomberlin

Co-author: Reilly Eiynek

Mentor: Sujat Sen, Chemistry & Biochemistry

Carbon Dioxide (CO<sub>2</sub>) is abundant in our atmosphere, and its conversion to value added chemicals (such as ethylene) using renewable electricity is an active area of investigation. Previous research has shown that copper-based catalysts can aid in producing a wide range of hydrocarbons through the electrochemical reduction of CO<sub>2</sub>. Herein, we report on the synthesis of polypyrrole (PPy) and polyaniline (PAni) thin films on the surface of copper. PPy and PAni are an important topic of research because they both have the ability to conduct electricity and can also be modified to have different properties through traditional organic synthesis. When electrodeposited on solid copper, these polymers have a co-catalytic effect that can create selectivity and efficiency variations during CO<sub>2</sub> conversion. We report on the use of electrochemical techniques such as cyclic voltammetry and chronoamperometry to deposit films of varying thicknesses and assess surface morphologies. Preliminary results show that varying the voltage used to create the polymer, concentration of the monomer (aniline or pyrrole) create disparity in the superstructure of the polymer film. We also report on the use of various analytical techniques such as x-ray diffraction (XRD), scanning electron microscopy (SEM) to characterize these thin film catalysts with respect to size, composition as well as preliminary tests on their performance as a catalyst for CO<sub>2</sub> conversion.

### **A.U.22 A Technological Turning Point: How the Rise of Artificial Intelligence Influences Trust in American Democracy**

Owen Scarpaci

Mentor: Adam Van Liere, Political Science & Public Administration

This study explores public trust in automated decision-making (ADM) within the contexts of local and state government. Specifically, it investigates how participants compare their trust in human-made versus automated decisions, their levels of AI anxiety, and their perceptions of how ADM affects democracy. By analyzing these factors, this research aims to deepen understanding of the public's nuanced views on automation in political decision-making. Participants, recruited through Amazon's Mechanical Turk, were presented with scenarios involving political decisions at the local (housing) or state (school funding for lunch programs) level, where decisions were either made by humans or through ADM. Participants then rated their trust in the decision-making process, completed an AI-anxiety scale, and answered an open-ended questionnaire regarding the relationship between ADM and democracy. It is hypothesized that: (1) ADM will be more trusted in the local government context, (2) participants will generally trust human-made decisions over ADM, (3) higher AI anxiety will negatively correlate with trust in ADM, and (4) lower trust in ADM will be associated with more negative views about its impact on democracy. Data is currently being collected.

### **A.U.23 DR. WAGS: Establishing a University Interprofessional Facility Dog Program for Use in Recreational Therapy Clinical Education Courses**

Emma Harvey and Abby Ausprung

Co-author: Mikayla Guldan

Mentor: Jennifer Taylor, Recreation Management & Recreational Therapy

While animal-assisted interventions (AAI) are widely recognized, few Recreational Therapy (RT) academic programs have systematically incorporated facility dogs into structured clinical education courses. Misconceptions about the distinctions between service animals, limited training opportunities, and a lack of research on best practices have hindered the development of these programs resulting in a lack of training for RT students. This is important because misinformation about working animals in human services may impact policy decisions and care practices, potentially resulting in inadequate treatment and negative health outcomes for clients who rely on service animals. Additionally, the absence of formalized procedures for establishing a facility dog program presents challenges for effective implementation. This poster provides information about establishing an interprofessional facility dog program to incorporate into Recreational Therapy (RT) clinical education courses in a university setting. Finally, it defines the role of facility dogs in RT, highlights their impact on clinical education and therapeutic outcomes, addresses common implementation barriers, and describes the 10-step framework used to establish a successful university facility dog program for future academic programs. Dr. Wags is the first collaborative project within the UWL Health Science Interprofessional Research Center and the first facility dog program in the Universities of Wisconsin.

### **A.U.24 IMPACT: Overcoming Barriers to PA Interprofessional Education at a Non-medical Center Campus**

Eva Snyder

Co-authors: Jennifer Taylor and Karen Hayter

Mentors: Jennifer Taylor (Recreation Management & Recreational Therapy) and Karen Hayter (Health Professions)

The Interprofessional Model of Patient Care Training (IMPACT) program provides Physician Assistant (PA) students at a non-medical center campus with the opportunity to engage in interprofessional education (IPE) alongside students from other allied healthcare fields. A collaboration between the University of Wisconsin-La Crosse (PA, Physical Therapy, Occupational Therapy, and Recreational Therapy programs), Viterbo University (Nursing, Dietetics, and Social Work departments), and Scenic Rivers Area Health Education Center, the annual event involves approximately 150 students in standardized patient scenarios. These scenarios promote the development of interprofessional competencies, including communication, collaboration, identification of social determinants of health, and a holistic approach to patient care. IMPACT uses the revised Interprofessional Collaborative Competencies Attainment Scale (ICCAS-revised) to assess changes in skills such as communication, roles, and team functioning. IMPACT aligns with the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) accreditation standards. Despite challenges like scheduling and space coordination, IMPACT successfully fosters teamwork and prepares students for diverse healthcare

settings. This model offers non-medical center institutions a framework for providing IPE, equipping PA and allied health students with the skills needed to collaborate effectively in their future healthcare careers.

#### **A.U.25 Tracking of Platelet Apoptosis through Fluorescently Labeled Antibody Fragments**

Gabriel Simpson, Avery Werneburg, and Adam Boucher  
Co-authors: Lydia Mack, Lakeyshi Xiong, Halle Derleth, and Charles Tempski  
Mentor: Scott Cooper, Biology

Platelets are small fragments of cell in blood with several essential functions, primarily inducing clotting, initiating healing, and facilitating immune responses. When stored at room temperature, they are only viable for use in transfusions for five days, however, when stored in refrigeration temperatures these cell fragments undergo apoptosis, or programmed cell death and are no longer viable. The platelets of hibernating mammals, such as 13-lined ground squirrels (*Ictidomys tridecemlineatus*), do not undergo apoptosis during refrigeration storage, making them an ideal model organism for this research. Glycoproteins on the surface of human platelets cluster when stored in the cold, triggering apoptosis. Using fluorescently labeled antibodies to tag these glycoproteins, this clustering can be determined using Fluorescence Resonance Energy Transfer (FRET) microscopy. This elucidates the mechanisms squirrels employ to avoid apoptosis and could have clinical implications on human platelet samples.

#### **A.U.26 Illuminating Your Screens through Organic Chemistry**

Sonya Tetzlaff  
Mentor: Joseph Hurley, Chemistry & Biochemistry

The project, Illuminating Your Screens Through Organic Chemistry, will follow a series of reactions that will produce a molecule that will contain specific structural features that allow the molecule to emit multiple colors of visible light. Synthesizing a molecule that is capable of emitting colors in the correct ratio to view white light is the main goal. The white light-emitting molecule would be used in screens that people use every day, like phone and computer screens. To achieve this goal, a set of reactions, followed by analysis, would be executed. The analysis would be done to ensure all structural features of the molecule are present. Nuclear magnetic resonance (NMR) and mass spectroscopy will be used to confirm that the goal molecule was synthesized. Molecular spectroscopy, such as ultraviolet-visible spectroscopy (UV-Vis) and fluorescence emission spectroscopy will be used to determine the color and brightness of the molecule. The final product of this synthesis can be used in lighting applications, or it can be used in further synthesis to produce other compounds that may be more suitable for this specific application.

#### **A.U.27 Synthesis of 1,3,4-Oxadiazoles via a Two-Step, One-Pot Reaction**

Hailey Thompson and Signe Begalske  
Mentor: Robin Grote, Chemistry & Biochemistry

A two-step, one-pot cyclodehydration reaction to synthesize 1,3,4-oxadiazoles has been developed. Common methods for synthesizing these molecules use hazardous reagents, high temperature reaction conditions, or costly reagents. The method presented utilizes cheaper starting materials and milder reaction conditions. Optimization studies are discussed including substrate scope of both reaction partners. Good yields are achieved, providing a variety of aryl substituted 1,3,4-oxadiazoles.

#### **A.U.28 Analysis of Copper Ion Binding to the Copper Resistance Protein DcrB**

Max True  
Mentor: John May, Chemistry & Biochemistry

*Salmonella enterica* is a common cause of food borne illness in the United States. *S. enterica* has a variety of different mechanisms that enable it to avoid the host immune system and cause infection. One mechanism that enables infection is resistance to toxic metal ions such as copper. The DcrB protein enables *S. enterica* to be resistant to toxic amounts of copper. However, it is unknown how this copper resistance protein enables copper resistance. The objective of this study was to test the hypothesis that DcrB directly interacts with copper ions. To address this question, we analyzed the effects of divalent metal ions on the stability of purified DcrB using circular dichroism, a method to measure secondary structure and thermodynamics of folding. We discovered that  $\text{Cu}^{2+}$  substantially affected protein folding, decreasing the melting

temperature of DcrB more substantially than any other divalent cations. This indicates that Cu<sup>2+</sup> directly affects DcrB structure, suggesting that copper binding may be important for DcrB to confer copper resistance. Additionally, DcrB does not confer resistance to other divalent cations, suggesting DcrB plays a specific in copper resistance. This discovery provides insight into how DcrB enables copper resistance in *S. enterica*, which could lead to the development of antibiotics to stop this process.

#### **A.U.29 Bracing for Impact: Do Prophylactic Knee Braces Affect Jump Performance?**

Megan Vandermause

Mentor: Naoko Giblin, Exercise & Sport Science

Knee injuries, particularly ligament sprains, are prevalent among young athletes and often require extensive rehabilitation. Prophylactic knee braces are commonly used to prevent injuries, but their effects on movement biomechanics remain unclear. This study investigated whether wearing a knee brace affects lower extremity kinematics, jump performance, and perceived stability during a countermovement jump (CMJ). Nineteen healthy individuals performed five CMJs in both braced and non-braced conditions while the 3-D motion capture system and force plates recorded joint angles, ground reaction forces, and jump height. Results showed no significant differences in knee or hip flexion angles, jump height, or landing forces between conditions, suggesting that knee bracing does not impede performance. Participants reported a perceived restriction in range of motion but no change in stability or pain. These findings indicate that prophylactic knee braces may serve as a viable preventive tool without negatively impacting movement mechanics. Future research should explore their effects in individuals with prior knee injuries and in dynamic sports movements. Understanding these impacts can help athletes, coaches, and clinicians make informed decisions about knee injury prevention and rehabilitation strategies.

#### **A.U.30 Understanding the Influence of Substrate Type on Chironomid Emergence in Laboratory Mesocosms**

Steven Verhaalen

Co-authors: David Ellefson and Ross Vander Vorste

Mentor: Ross Vander Vorste, Biology

*Chironomus spp.* are a genus of aquatic insects prevalent in freshwater environments, especially the Upper Mississippi River. The larvae of chironomids are used worldwide as feed in fish hatcheries, aqua-culture facilities, and research laboratories. Therefore, culturing chironomids using indoor aquatic mesocosms has many potential applications. Sustainable methods of culturing chironomids remain understudied. In our study, we developed an aquatic mesocosm system to culture chironomids throughout a complete life cycle. During this, we tested the effects of three different substrates on chironomid emergence rates using mesocosms (n = 18). Our substrate treatments included coffee filters, Mississippi River sediment, and municipal leaf compost. We placed 14 individual *Chironomus spp.*, collected from the outdoor fish rearing ponds, into each mesocosm and observed emergence over 41 days. All other variables were held constant to limit the possibility of confounding variables. We observed emergence of 18 adults during the experiment (7% of total larvae used). We found no significant difference in the emergence rate between the substrate treatments. Our results demonstrate laboratory mesocosms can be used to culture *Chironomus spp.* however production must be increased to meet the needs of fisheries and research applications. Future studies will aim to increase emergence rates by adjusting conditions such as feed type, water temperature, dissolved oxygen concentration, and water level.

### **Poster Session B 8:50 am – 9:45 am**

#### **B.U.2 Using Chick Embryos to Study Sudden Infant Death Syndrome (SIDS)**

Brielle Hachey

Co-authors: Dylan Motschenbacher and Cord Brundage

Mentor: Cord Brundage, Biology

Imidacloprid is a neonicotinoid insecticide that targets central nervous system nicotinic acetylcholine receptors (nAChRs) of invertebrates and works similar to nicotine. nAChRs are essential in neurotransmission and play critical roles in the action of breathing and heart regulation. This study examined the effects of nicotine and imidacloprid on embryonic chick brains to explore potential links to Sudden Infant Death Syndrome (SIDS). Chick embryos, from research-grade specific-

pathogen-free (SPF) eggs, were injected with 0, 3, or 10  $\mu\text{g/mL}$  of either compound and analyzed histologically to assess neurodevelopmental changes. Nicotine exposure significantly reduced survival, while imidacloprid exposure led to decreased embryo weight ( $P = 0.034$ ) and minor, non-significant limb length reductions ( $P = 0.086$ ). The p-values for front and hind limb lengths (0.841 and 0.975) suggest minimal skeletal impact. Heart, liver, and brain tissues were dissected for histological analysis to further assess neurotransmitter function and brain structure alterations. Findings contribute to understanding how environmental neurotoxins influence vertebrate development and their potential role in neurodevelopmental disorders, including SIDS.

### **B.U.3 Effects of Circadian Clock Disruption on Feeding Behaviors in *Drosophila melanogaster***

Liliana Ruiz

Mentor: Alder Yu, Biology

It is thought that experiencing a third-shift schedule is a source of circadian clock disruption. The disruption of the circadian clock can ultimately lead to an increased risk of metabolic disease. Food consumption is controlled by the circadian rhythm therefore, when it is disrupted, food preference may also be shifted. This could explain the increased risk for metabolic disease. We assessed whether the desynchronization of the circadian clock would alter preference for high-sugar vs. low sugar food. To evaluate the extent to which circadian clock disruption causes changes in food preference, *Drosophila melanogaster* were used. The flyPAD device presents *Drosophila* with a choice of high-sugar or low-sugar food and records sip count for each choice. Food preference was compared between flies raised on a normal light:dark (L:D) schedule and a disrupted L:D schedule that simulates an irregular shift work schedule. Preliminary results revealed that *Drosophila* on the disrupted L:D schedule have an increased preference for high-sugar food. This suggests that over time, a simulated shift work schedule affects the fly's metabolism and causes changes in feeding behavior.

### **B.U.4 Improving Oxygen Utilization of *Gluconobacter oxydans* by Genetic Modification**

Alexa Fleegal

Co-authors: Paul Schweiger and Daniel Bretl

Mentors: Paul Schweiger and Daniel Bretl, Microbiology

*Myxococcus xanthus* is a ubiquitous obligately aerobic soil bacterium. *M. xanthus* encodes at least two protein families that are known to bind oxygen and are predicted to help *M. xanthus* survive oxygen limitation: globins and hemerythrins. Given their role in *M. xanthus*, we hypothesize that the expression of these proteins will improve oxygen utilization of a second bacterial species, *Gluconobacter oxydans*. This bacterium is used to produce vinegar, vitamin C, the anti-diabetic drug miglitol, and a plethora of other products. However, due to its high oxygen demand, *G. oxydans* has a relatively slow growth rate under industrial-scale conditions. Therefore, genetic modification of *G. oxydans* to enhance oxygen-dependent growth is desirable for industry. In this study, we have amplified six distinct *M. xanthus* hemerythrin and two distinct globin genes and transferred them into *G. oxydans*. The modified *G. oxydans* will be assessed for improved growth. To date, we have tested one *G. oxydans* strain expressing a hemerythrin which exhibited three distinct phenotypes compared to wild type *G. oxydans*: faster doubling time, increased cell density, and delayed cell death. In future experiments, we will assay the production of industry-relevant molecules to determine if improved growth also improves production rates and yields. Overall, we expect the expression of all globins and hemerythrins in *G. oxydans* will positively impact growth, improve production rates, and yields of desired products.

### **B.U.5 Stability and Function of a *Salmonella* Copper Resistance Protein with Changes to a Linker Region**

Ellie Schneider

Co-author: John May

Mentor: John May, Chemistry & Biochemistry

Copper ions are used in a variety of ways for its antimicrobial properties. However, bacteria can resist copper's antimicrobial properties by using several mechanisms. In *Salmonella enterica*, a protein named DcrB aids in copper resistance. Previous research indicates that mutating two residues in DcrB in a region that links a small N-terminal beta hairpin to its core structure causes the protein to have decreased function. The overall goal of this research is to better understand how the protein DcrB functions in copper resistance. If these residues in DcrB can be identified as a critical element of its functionality, we will be one step closer to understanding how the copper resistance protein works. To investigate the stability of the non-functional mutant, DcrB D57A M58A, we used differential scanning fluorimetry and circular dichroism. We found that detergent decreased the melting temperature. We also found that with or without the presence of copper ions, the mutant protein remained structured up to 95C, and that the mutant has more alpha helical

character than wild type DcrB. This finding is significant, given the location of the 2 residues in a linker region rather than an alpha helix or beta sheet. The findings highlight a critical role for these residues in the structure, stability and function of a bacterial copper resistance protein. This research was made possible by grants from UWL's Undergraduate Research & Creativity program.

#### **B.U.6 Examining Psychological Developmental Theory using an Anthropological Lens**

Nicole Rauls

Mentor: Elizabeth Peacock, Archaeology & Anthropology

This presentation explores the intersection of developmental psychology and anthropology, challenging the universality of psychological theories on childhood, parenting, and trauma. While developmental psychology often assumes universal stages of growth, anthropological research reveals that childhood and caregiving practices vary widely across cultures. This analysis critiques the dominance of WEIRD (Western, Educated, Industrialized, Rich, and Democratic) perspectives in psychological research and highlights how ethnographic evidence refutes or reshapes established psychological frameworks. By examining personhood, caregiving, and childhood trauma through a cross-cultural lens, this presentation advocates for an integrated approach that combines psychological insights with anthropological depth to create more culturally sensitive models of care and development.

#### **B.U.7 The Effects of Post Activation Performance Enhancement on Motor Unit Recruitment**

Jackson Biller

Mentor: Kari Emineth, Exercise & Sport Science

Postactivation performance enhancement (PAPE) could be the key to unlocking peak performance in strength-based athletics. Proper application of PAPE will allow athletes in maximal strength output sports to be able to recruit their peak muscle power in important moments. The purpose of this study will be to examine the use of post activation potentiation in a pre-lift warmup. Thirty adult powerlifters will be recruited to do a heavy 1 rep max (1RM) squat attempt on two separate days. To do this, an electromyography machine (EMG) will be used to determine peak amplitude (of muscles) during 1RM squat attempts. Motor unit recruitment will be shown by the peak amplitude recorded during the squat: higher peak amplitude recordings will suggest that higher threshold motor units are being recruited for contraction. On the first day the EMG measurement will be recorded during a 1RM squat after a rudimentary powerlifting warmup. Three days later the subjects will complete an experimental warmup, developed to enhance post activation performance, which will be completed prior to the heavy 1RM squat attempt. In addition to this the participants will verbally record their rate of perceived exertion (RPE) after their 1RM squat in each session. These results will show whether or not the experimental warmup was successful in producing higher motor unit activation.

#### **B.U.8 Conservation of the Spargel Gene Involved in the Insulin Signaling Pathway in *Drosophila* Species**

Audra Hutchins

Mentor: Alder Yu, Biology

The Pathways Project coordinated by the Genomics Education Partnership consortium focuses on the annotation of genes found in well-developed signaling and metabolic pathways such as the insulin signaling pathway. In the *Drosophila* genus, the insulin signaling pathway is well conserved, so network analysis is used to better understand these pathways. The goal is to analyze how the insulin signaling pathway genes evolve relative to their position in the signaling network. Genome browser tools were used to construct a gene model for spargel in *D. bipectinata*. The spargel gene in *D. melanogaster* acts as a negative regulator of the insulin receptor signaling pathway. Using the Genome browser, the genomic neighborhood of spargel in *D. melanogaster* was observed to see if there is synteny between the predicted ortholog in *D. bipectinata*. The coding sequence of spargel in *D. melanogaster* was used to conduct a BLAST search to find the ortholog in *D. bipectinata* along with a tblastn search to refine the coding exons in *D. bipectinata* which was used to determine if the spargel gene is conserved. We conclude that the spargel gene is conserved in *D. bipectinata*.

### **B.U.9 Influence of Stress on Body Composition**

Chloe Vogel

Mentor: Cord Brundage, Biology

This project will study how handling stressors impact the body composition and body mass index (BMI) of mice. The study consists of four groups of mice: male and female control groups, and male and female stressed groups. These results will analyze the difference between mice from the control group and mice from the experimental group. A comparison between the effects of stressors on female versus male mice will also be studied. The handling stressor consists of one hour per day, ongoing for five consecutive days. Analysis of the study will first look at body mass index (BMI) comparing height and weight. The length, weight, and age of mice will also be compared to their percentage of total body water. Overall, this study will aim to determine how stress influences body composition and body mass index (BMI) in mice, comparing male and female groups. By studying the effects stressors have on mice body composition and body mass index (BMI), it can provide valuable insight into the impact of stressors on human body composition and body mass index (BMI). This will further research on stress-induced weight changes, helping prevent and manage stress across both genders.

### **B.U.10 “What’s Making Headlines Today?” The Influence of Negative News Consumption on Feelings of Fear and the Cycle of News Over-Consumption**

Natalee Chiroff

Mentor: Katherine Kortenkamp, Psychology

As news consumption has been on the rise since the pandemic, research has found that greater news consumption is correlated with worse mental and physical health. This study extends previous research by experimentally testing if news consumption provokes feelings of fear and the over-consumption of similar topics after being exposed to them. This study also explores the contrast in how those who identify as feminine or masculine and those high or low in general anxiety process the news. College students viewed either a positive or negative news story about crime rates in Chicago. The story was written for the purpose of this study but based on real data. Participants were then asked to rate their levels of fear of going to the news story location, their intentions to over-consume news on this topic, their perceptions of themselves as they relate to masculine and feminine traits, and their general anxiety levels. I hypothesize that participants who view the negative news story will report more fear and future over-consumption of news. Also, those who report possessing masculine traits or have lower general anxiety levels will self-report less fear and over-consumption compared to those who report feminine characteristics or higher general anxiety.

### **B.U.11 The United States Workforce Experience for Argentines & Argentine Americans**

Evelyn Christofferson and Madelyn Oechsner

Mentors: Astrid Lorena Ochoa Campo (Global Cultures & Languages) and Kendall Morgan (Murphy Library)

The present research explores the experiences of Argentines and Argentine Americans in the United States specifically in the United States workforce. Many people in Latino populations experience work discrimination and Argentines are no different. Although there is a smaller Argentinian population in the United States than other Latin American populations, each community has individual experiences and stories. The Argentine community has a rich and complicated history of trauma, transitional government, and economic crisis that create various reasons for Argentines to emigrate, and some to move to the United States. Our research focused on first generation Argentines and Argentine Americans in the United States. Their overall circumstances, and their experiences in the U.S. workforce. Our research included peer reviewed sources and an interview process of a first generation Argentinian living and working in the United States. The conclusions were presented in a podcast that discussed the Argentine community in the United States and the complicated history of Argentina. As well as details from the interview with an Argentinian man, and an analysis of the role of Argentines in the U.S. workforce.



### **B.U.12 Impacts of Surfaces on Force while Running**

Rebecca Dray

Mentor: Naoko Giblin, Exercise & Sport Science

The purpose of this study is to investigate whether the surface type a person runs on has an impact on the ground reaction force created when a person strikes the ground with their foot. Excessive ground reaction force over an extended period can increase a person's likelihood of obtaining a lower body injury like stress fractures and tendinitis. Each participant who volunteered for the study attended one session where they ran at a 10-minute per mile pace for approximately 20 minutes. Peak vertical ground reaction force was measured using a LoadSol insert that was inserted into each participant's right shoe. Data was collected on three surfaces, track, concrete, and turf, in a random order for each participant. The participant ran on each surface for approximately 5 minutes for a total of 15 minutes of data collection. The data collected found that the peak vertical ground reaction force was not statistically significantly different across running surfaces ( $F = 0.260$ ,  $p = 0.779$ ). Based on the results from this study, it can be assumed running on different surfaces for extended periods of time will not increase or decrease the likelihood of obtaining a lower limb injury.

### **B.U.13 Microplastic Abundance in Bluegill from the Upper Mississippi River**

Bethany Fick

Co-author: Kassie Zimmer

Mentor: Eric Strauss, Biology

Pollution is a worsening issue causing disruptions in ecosystems both terrestrial and aquatic. As plastics land in our waterways, they fragment into smaller pieces called microplastics. These plastics, less than 5mm in size, can be ingested by aquatic organisms such as fish, and can cause a variety of health issues including reproductive issues, stunted growth, tissue damage, and other general health deterioration. This study investigates the presence of microplastics in Bluegill collected from the Upper Mississippi River (UMR). All fish analyzed ( $n = 15$ ) were collected via electroshocking for a Long Term Resource Monitoring (LTRM) study on UMR fish condition. Following their use for the LTRM study the fish were dissected and their digestive tracts were removed. The digestive tracts were then digested using a potassium hydroxide (KOH) solution to break down biological tissues and other non-plastic organic matter. The remaining matter was put through a density separation in a calcium chloride (CaCl) solution to separate the lighter microplastics from any remaining heavier material. Microplastics were then isolated on a filter for counting and measuring via microscopy. Every sample studied contained microplastics, varying from 4-15 particles per fish. These results confirm that Bluegill are consuming microplastics from the Mississippi River. The full effects of microplastics on Bluegill are not yet known, but the existence of plastics in a food source raises significant concern.

### **B.U.14 Assessing Sediment Dynamics and Channel Migration using UAV LiDAR in Plum Creek, WI**

Evan Garipey

Mentors: Niti Mishra and Colin Belby, Geography & Environmental Science

This study investigates sediment erosion, deposition, and channel migration along a reach of Plum Creek, a tributary within the lower Kickapoo River watershed in southwest Wisconsin. The region is part of the Driftless Area, characterized by alluvial floodplains that have undergone significant post-settlement sedimentation. Historical land use changes have resulted in extensive floodplain aggradation, altering channel morphology and hydrological connectivity. To analyze these geomorphic processes, a DJI Matrice 350 RTK drone equipped with a DJI L2 LiDAR sensor was used to collect high-resolution elevation data. Ground control points were established to enhance accuracy assessment. The collected LiDAR data were processed using DJI Terra to extract a point cloud, followed by further refinement in QT Modeler to generate a Digital Terrain Model, Digital Elevation Model, and Canopy Height Model. The DTM is critical for geomorphic change, especially in densely vegetated areas, where different processing algorithms were tested to optimize bare-earth surface extraction. Preliminary results indicate significant variability in floodplain elevation, with evidence of channel migration and sediment deposition that has contributed to the disconnection of the channel from its floodplain. The findings of this study provide valuable insight into the sediment dynamics and geomorphic evolution of Plum Creek, with potential applications for floodplain restoration and erosion control.

### **B.U.15 Microarchitectural Computer Processor Design Analysis using DPTV and DPTL**

Adam Grunwald

Mentor: Elliott Forbes, Computer Science & Computer Engineering

In computer architecture design, processor simulators are used to test computer processor designs before they are physically manufactured. Simulators commonly produce trace files – records of what instructions the simulated computer executed in what order, for how long, and what “steps” (stages) the processor had to go through to complete each instruction. Different processor configurations can shorten the time to execute different instructions or reduce the number of unnecessary instructions computed, but with the complexities of modern processor design it can be difficult to predict how altering the processor design will alter the processor’s behavior when executing a program. Visualization tools for pipeline traces are vital for understanding not only what the execution behavior of a processor is, but also the reasons why a change in configuration changed the behavior. We previously created a new visualization tool called “dual pipetrace viewer” (dptv) which provides added utility by matching and interlacing two pipeline traces from a single program running with two different processor configurations to easily comparing the execution differences between two designs. In this project, we added compatibility to dptv for reading traces produced by gem5, a popular processor simulator. We also created a library (dptl) to allow for other simulators to easily add support for outputting dptv trace files.

### **B.U.16 Bot or Not? Can Viewers Differentiate between AI Generated Faces and Real Faces?**

Shakira Brockhaus

Mentor: Alexander O'Brien, Psychology

Artificially generated (AG) images are found in multiple facets of life from popular media to fake news scams present on the internet. The importance of understanding how individuals perceive AG images will continue to increase as the prevalence and realism of such images increases. The purpose of this study was to investigate individual perceptions of trust and realism with artificially generated and real images of people. Participants viewed a randomized series of 60 images of human faces comprised of real photos, and AG images created from older and newer versions of AG software. After viewing each face, participants provided ratings on whether they trusted the individual and how real they perceived the image to appear. We hypothesized that a lower level of trust would be a better indication of realism when participants were unable to identify differences in perceived realism between the real and AG photos. Questions were presented at the end to find relevant correlations between participants’ internet usage and artificial intelligence usage, and their ability to correctly identify fake images.

### **B.U.17 Comparing Ground, Drone, and Spaceborne LiDAR-Derived Canopy Height in High-Elevation Vegetation of Nepal’s Annapurna Conservation Area**

Dominic Vanden Elzen, Zach Pielhop, and Grant Miller

Mentor: Niti Mishra, Geography & Environmental Science

Canopy height is a critical ecological parameter, yet data on forest canopy structure remains scarce in the Himalayas. This study aims to enhance the understanding of spatial patterns in vegetation canopy height along an elevation gradient in the Annapurna Conservation Area, Nepal. Using a quadcopter drone equipped with an L2 LiDAR sensor, we collected high-resolution data over three days and 17 flights in January 2025, covering 5.05 km<sup>2</sup> across elevations ranging from 1,900 m to 3,270 m. We analyze how elevation, slope, and aspect influence canopy height and assess potential altitudinal limits on forest structure. Additionally, we compare canopy height estimates derived from ground-based field measurements, drone-mounted LiDAR, and spaceborne data from NASA’s Global Ecosystem Dynamics Investigation (GEDI) mission. By validating L2-derived canopy height using field measurements and further evaluating GEDI-derived canopy height against L2 data, this study explores the potential and limitations of each method for characterizing forest structure in complex mountainous terrain. Preliminary results indicate that GEDI underestimates canopy height, while drone LiDAR provides more accurate estimates but faces challenges in steep terrain and dense vegetation, where canopy penetration and ground detection may be limited. These findings contribute to improving canopy height assessments in data-deficient regions and enhancing the applicability of remote sensing technologies for Himalaya.

### **B.U.18 Analysis and Sourcing of Oneota Clay Properties using X-ray Diffraction and X-ray Fluorescence**

Tyler Neuman

Mentors: Constance Arzigian and David Anderson, Archaeology & Anthropology

Pottery has been around in the Coulee Region of Wisconsin since 500 BC, and this required clay sources to support the long use. The Oneota cultural complex were the main inhabitants of the region from 1400-1625 AD and utilized clay to make shell-tempered vessels for cooking and storage. Many studies on Oneota clay use of the region tend to focus on fired and tempered pottery, but raw clay samples provide new data sources. The purpose of this research is to determine if there is a common source of clay along the La Crosse River that was utilized for both the Tremaine Site (47Lc95) located to the north, near Holmen, and the Pammel Creek Site (47Lc61) at the south end of the La Crosse terrace. The samples of raw clay, daub, and fired sherds were all tested using X-ray diffraction (XRD) and X-ray fluorescence (XRF) to examine the mineralogical and elemental properties. The results will contribute to our understanding of human behavioral choices for raw materials-how are factors such as travel distance versus material quality and suitability involved?

### **B.U.19 Spontaneous Neural Activity and Synaptic Modulation in *Drosophila melanogaster* Larvae Muscle Fibers**

Sam Kick and Andreea Bouruc

Mentor: Bradley Seebach, Biology

Background activity in neurons and muscle fibers plays a crucial role in modulating sensory processing and behavior. Its origins are often unclear, though intrinsic electrical properties and excitatory/inhibitory interactions contribute. Output patterns range from irregular, subthreshold potentials to regular, suprathreshold activity, influencing functional and behavioral roles. Using microdissection and electrophysiology techniques, we measured and characterized activity at the neuromuscular junction in *Drosophila melanogaster* larvae muscle fibers. While synaptic activity in this system is well-studied, background activity remains poorly characterized. Our approach advances studies of complex neural circuits by providing a framework for analyzing spontaneous activity. By recording excitatory postsynaptic potentials (EPSPs) and action potentials, we analyzed how neurotransmission is affected by different ion concentrations, neurotransmitters, and transmitter channel blockers. Our experiments demonstrated a significant decrease in neural activity when larvae were exposed to calcium-free extracellular saline and recovered upon reintroduction of calcium-containing saline, confirming calcium's role in synaptic transmission and muscle excitability. Additionally, increasing glutamate levels enhanced neural activity, suggesting its excitatory influence at the neuromuscular junction.

### **B.U.20 “Speak Up!” How In-class State Trait Anxiety and Distress Tolerance Levels Affect Class Engagement: A Cross Sectional Study between 400-level Course Students and 100-level Course Students**

Afonso Klein

Mentor: Ryan McKelley, Psychology

This study examined the relationship between State and Trait Anxiety, Distress Tolerance, and class engagement among students enrolled in 100- and 400-level courses. Data were collected from 164 undergraduate students at the University of Wisconsin-La Crosse to assess State and Trait Anxiety (STAI) and Distress Tolerance (DST), along with self-reported measures of class engagement. Results suggest that 400-level course students reported significantly higher State and Trait Anxiety than 100-level students,  $t(162) = -4.14$ ,  $p < 0.001$ , 95% CI [-10.15, -3.60],  $d = -0.72$ . While distress tolerance did not differ between groups,  $t(162) = 0.18$ ,  $p = 0.85$ , 95% CI [-3.29, 3.97],  $d = 0.03$ . One-way ANOVAs revealed no significant effects of year in school on anxiety, distress tolerance, or engagement behaviors. These findings suggest that while students in higher-level courses experience greater anxiety, distress tolerance remains stable, and engagement does not significantly vary by academic year or course level. Future research should explore potential academic and environmental factors contributing to increased anxiety in upper-level courses and identify strategies to support student engagement and well-being.

### **B.U.21 UWL without Borders: Let's Make It Global!**

Faizaan Islam

Mentor: Ryan McKelley, Psychology

The University of Wisconsin-La Crosse is one of the top destinations for an international student, where some prosper and some falter up a brick wall as they are faced with challenges. Therefore, this study will address: how does a shift to an individualistic American society from a communal one affect the international students? How can the institution(s) help make the transition smoother for them and give them an essence of “a home away from home?” International students at UWL will be asked to share their experiences, expectations, problems and possible solutions through introspection in an interview to help the international students properly accommodate to the new/foreign surrounding(s) and better integrate into American and UWL society. Meanwhile, local/domestic UWL students will be asked to share their expectations about international students, their perspective of a good and bad experience(s) of an international student(s), some possible benefit(s) of befriending an international student(s), problems/struggles faced by the international students from their viewpoint, and any advice/solutions to make life better for their international counterparts at UWL. This qualitative study aims to close the gap between local/domestic and the international students at UWL with respect to one another and facilitate a true “UWL without Borders.”

### **B.U.22 The Role of Reverberation in Sound Localization and Word Recognition**

Lian Lewis

Mentor: Tanvi Thakkar, Psychology

Reverberant environments pose challenges for cochlear implant (CI) users due to sound degradation which can impact cues that listeners with typical hearing (TH) use to accurately locate sounds. TH listeners generally perform well in such environments due to access to across-ear cues such as interaural time differences (ITDs). The ITD, or the delay in time it takes for a sound to reach each ear, is heavily influenced by reverberation. However, it is unknown whether the combination of sound degradation from a CI and from reverberation can impact performance. This study examined the effects of reverberation on sound localization and word recognition accuracy in TH individuals when presented with ITDs. Participants listened to two-syllable words for three conditions, no reverberation (0-ms), early-arriving echoes (30-ms), late-arriving echoes (80-ms) using CI-simulated speech. It was hypothesized that the late-arriving echoes would result in decreased localization and word recognition accuracy for ITDs, compared to the early-arriving echoes. Preliminary findings showed that localization accuracy was poorer with late-arriving ITDs, supporting the hypothesis that reverberation could further impair temporal cues conveyed through CI acoustics. These findings enhance the understanding of how reverberation impacts performance in TH individuals and offer a baseline for comparing challenges of CI users.

### **B.U.23 Soil Chemistry Analysis to Assess French-Era Colonial Activities at Perrot's Post Archaeological Site**

Jenna Jeske and Ken Schwartzlow

Mentors: Kristofer Rolffhus and Heather Walder, Chemistry & Biochemistry

Prior studies at an eighteenth-century fur depot site in Minnesota suggest that elevated mercury soil concentration may be associated with a vermilion pigment known as “cinnabar” or Mercury Sulfide (HgS), which was historically exchanged at fur trade sites. To test this hypothesis, soil cores from Perrot's Post archaeological site (47Tr30) near Trempealeau, Wisconsin were analyzed to determine if mercury can be used as a tracer of historically-documented late seventeenth to early eighteenth French colonial activity at this site. The core samples were analyzed for archaeological artifacts that would aid in detecting human presence, and one piece of stone toolmaking debris was recovered. Then, the site sediments were homogenized and then tested for mercury using a direct mercury analysis system. Concentrations of copper, lead, arsenic, and iron were also obtained using ICP spectroscopy to help identify any patterns relating to past human activity at the site. A loss on ignition test was also performed to determine the percentage of organic material in the samples to assess metals bound to organic matter. The resulting patterns of element spatial distribution were mapped using GIS. The results indicate that vermilion was not used widely at the site, as the mercury concentrations are within the range of a normal soil sample.

## **B.U.24 Prevalence and Magnitude Weight Loss among Collegiate Wrestlers: Have Practices Changed?**

Emily Schneider

Mentors: Andrew Jagim and Ward Dobbs, Exercise & Sport Science

This study aimed to examine the percentage of collegiate wrestlers who competed in their minimal weight class (MWC) and the magnitude of weight loss associated with it. Data from the 2023-2024 collegiate season were retrospectively analyzed, including 9,638 male wrestlers from the National Association of Intercollegiate Athletics (NAIA,  $n = 1,904$ ) and all three NCAA divisions ( $n = 7,734$ ). Skinfold assessments were performed at the start of the season to determine minimal wrestling weight (MWW), using a body fat percentage (BF%) threshold. Wrestlers' lowest recorded weight class (LRW) during the season was also recorded to assess weight loss. Results showed that 53.2% of wrestlers competed in their MWC. These wrestlers lost significantly more weight ( $8.7 \pm 5.6$  lbs.) than those who did not compete in their MWC ( $7.1 \pm 6.5$  lbs.;  $p < 0.001$ ) and had lower initial BF% ( $12.7 \pm 2.9\%$  vs.  $17.5 \pm 4.8\%$ ;  $p < 0.001$ ). On average, wrestlers weighed  $17.8 \pm 9.9$  lbs. more at weight certification compared to their MWW and lost  $8.0 \pm 6.5$  lbs., representing  $4.6 \pm 3.6\%$  of their initial body weight. Wrestlers typically competed in weight classes  $9.8 \pm 8.2$  lbs. above their MWW ( $p < 0.001$ ). Differences in BF% were observed across weight class divisions, with heavier classes exhibiting higher body fat percentages.

## **B.U.25 Mental Health Community Care: Caring for Ourselves and Each Other Research**

Jade Mulroy, Alyson Stanioch, Ilee Smith, and MJ Baumann

Co-authors: Sarah Johnson, LPC (The Joy Labs) and Anders Cedergren

Mentor: Michele Pettit, Public Health & Community Health Education

Mental Health is a growing concern that affects everyone in our communities. Approximately 1 in 5 adults in the United States, or 23.1% of the adult population, experience mental illness (NIMH, 2022). Due to the widespread impact of mental health, it is essential to have mental health training and programs that teach individuals of all ages the necessary skills and knowledge. Mental Health Community Care (MHCC) addresses this by offering a two-day training that combines group discussion and activity-based instruction to equip participants with the essential information. The Joy Labs, through their program Mental Health Community Care: Caring for Ourselves and Each Other, strives to create healthier communities, increase healthy mental health practices, promote resiliency actions among participants, and reduce negative stigma around mental health. This research aims to identify whether or not MHCC increases participants' confidence levels in delivering mental health community care as an informal support.

## **B.U.26 It's News to Me: The Effect of News Media Consumption on Perceptions of DEI Policies**

Rachel Steffen

Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

This poster presentation explores voting-age adults' favorable-unfavorable perceptions of current or former federal DEI Policy. Many Americans fail to critically think about the source of information spread via television or radio broadcast media. The objective of this study is to determine if there is a correlation between the participants' preferred broadcasted news source and their perception of five federal policies - Affirmative Action, the Americans with Disabilities Act, the Civil Rights Act of 1964, Veteran's Preference Act, and the Zero Tolerance Policy for Discrimination and Harassment. College-age participants will complete a two-part self-administered questionnaire, containing a demographics section: 1) identifying the participants' age, race, gender, political affiliation, and preferred journalistic media; and 2) a 5-point Likert section focusing on the participants' perceptions of DEI several, previously instated, DEI programs. My hypothesis is that a person's political orientation aligns with the political standpoint of the media they consume and influences their perception of DEI programs. My presentation will also address common themes in people's qualitative responses in section two of the survey.

### **B.U.27 Structural and Functional Consequences of Charge Conserving and Reversing Mutations within Fumarate Hydratase**

Lucas Strauss and Brandon Mudler  
Mentor: Todd Weaver, Chemistry & Biochemistry

Fumarate hydratase (FH) is a metabolic enzyme in the tricarboxylic acid cycle, an essential crux of metabolism. The regulation of metabolism is a very important process, as the accumulation of metabolites can cause enzyme dysfunction and cellular dysregulation, leading to the development of cancer and other diseases. Patients harboring a variant of FH, where the positively charged arginine amino acid at position 444 (R444) has been replaced with the charge removing glycine (G), experienced severely reduced FH function and quality of life. This so-called R444G variant has been shown to have altered structure and function. To further delineate the role at position 444, this project focuses on charge conserving and charge reversing variations, termed R444K and R444E. We conducted structural and functional studies to analyze the effect of each variant. Preliminary circular dichroism spectroscopy experiments in the presence of metabolic additives suggest that both charge conserving and charge reversing variants alter the structure of FH. Charge conserving R444K appears to unfold in two steps, contrary to unmodified FH denaturation. Additionally, the denaturation of charge reversing R444E does not seem to respond to the presence of mesotartrate, a known inhibitor of FH. Collectively, these observations describe substantial change in the structure of FH in response to charge conserving and charge reversing variations at position 444, which suggests possible impaired functionality.

### **B.U.28 Do Human Parainfluenza Virus Type 3 M Proteins with Flag Tag Inserts Bind to HN or F Proteins**

Arian Latifi  
Co-author: Michael Hoffman  
Mentor: Michael Hoffman, Microbiology

Human Parainfluenza Virus type 3 (HPIV3) is a lower respiratory tract pathogen that infects thousands of people every year. An individual virus particle (virion) of HPIV3 consists of six structural proteins and the RNA genome. My project is focused on one of the six structural proteins, specifically the protein facilitating the assembly and release process, the matrix (M) protein. During assembly, M protein facilitates gathering of the genome and other viral proteins at the inner surface of the plasma membrane of a host cell. Then, the M protein, the genome and these viral proteins “bud” out of cell, to create a virion. I am focused on manipulating the M protein to understand how it interacts with other viral proteins during assembly. A previous student identified external loops of the M protein that could be important for interacting with other proteins and inserted Flag tag sequences into those loops. My project is testing if these M proteins with the Flag insertions still bind to HN and/or F proteins during assembly and release. Failure to bind to HN and/or F would indicate that the inserted flag sequence is disrupting a region of the M protein needed for binding to HN and/or F.

### **B.U.29 Seasonal Variation in Neuronal Activity of PNN Dense Areas in the Brains of Hibernating Ground Squirrels**

Angelique Vega and Joseph Louis  
Co-author: Abbey Peterson  
Mentor: Christine Schwartz, Biology

Hibernation in ground squirrels involves profound physiological changes, alternating between torpor—characterized by a body temperature just above freezing and a heart rate of approximately three beats per minute—and interbout arousal (IBA), during which physiological parameters return to typical levels. Outside the hibernation period, their physiology resembles that of other mammals. These cyclical changes are accompanied by structural and functional modifications in the brain, with regions essential for hibernation, such as the hypothalamus and brainstem, showing distinct patterns compared to areas like the cerebral cortex, which may be less critical during this period. The areas of the hypothalamus as well as the cerebral cortex are linked with the presence of extracellular matrix structures called perineuronal nets (PNNs) in the brain of the ground squirrels as seen in other studies, among other areas. In this study, we aim to use this information, by performing immunohistochemistry staining with PNN and c-fos (a neuronal activity marker) paired with immunofluorescent microscopic imaging to look for overlaps of these signals. As of now, preliminary results show no overlap of these markers between torpor and non-hibernating brains, additional imaging and assessment of IBA brains is needed. However, even though neuronal activity is not detected in these regions, we are seeing activity in the articulate nucleus (ARC), suggesting this area may be worth studying further.

**Poster Session C**  
**9:55 am-10:50 am**

**C.U.1 Identification of the Mycorrhizal Fungal Partners of a Rare Terrestrial Orchid, *Cypripedium reginae***

Cassie Coats  
Co-author: Jaspreet Kaur  
Mentor: Jaspreet Kaur, Biology

Orchids require associations with specific mycorrhizal fungal partners to germinate, which limits their distributions and affect their rarity. Therefore, assessing the mycorrhizal diversity is fundamental to orchid conservation biology. This study aims to isolate and identify the mycorrhizal fungi associating with *Cypripedium reginae* (Showy Lady's Slipper), a rare orchid native to Wisconsin, so that the mycorrhizal partners could be used for *in situ* conservation programs. The roots of *C. reginae* were collected from Ridges Sanctuary in Door County in 2023 and 2024. Roots were surface sterilized and inspected for the presence of pelotons (mycorrhizal fungal coils). Root tissue was minced and used for DNA extraction or cultured on Melin-Norkrans medium for the isolation of orchid mycorrhizal fungi (OMF). Subsequently, fungal isolates were also subjected to DNA extraction. Root and fungal DNAs were subjected to PCR to amplify the ITS region of putative OMF with OMF-specific primers. We observed amplification in 5 root and 25 isolated fungal samples. The amplicons were then sent for Sanger sequencing. Data curation and processing through appropriate bioinformatic analysis tools in process for the identification of mycorrhizal partners.

**C.U.2 Mysterious Mississippi Mycoloop: Effects of Temperature and Nutrient Availability on Chytrid-Algae-Zooplankton Interactions**

Blair Miller  
Mentors: Arthur Grupe II and Ross Vander Vorste, Biology

The mycoloop is an essential pathway in aquatic food webs, facilitating nutrient transfer from large, inedible phytoplankton to zooplankton through parasitic chytrid fungi. This research investigates the presence and function of the mycoloop in the Mississippi River, focusing on how temperature and nutrient availability affect chytrid-diatom-zooplankton interactions. Stage 1 established stable zooplankton populations from a backwater channel sample of the Mississippi River. The main channel population collapsed midway through the process, while the backwater population thrived, providing a consistent source of zooplankton. Stage 2 attempted to isolate and identify chytrids by baiting river samples; however, the results were inconclusive, highlighting the need for reference cultures. Stage 3 involves a controlled mesocosm experiment that introduces known chytrid species capable of infecting *Navicula* sp. diatoms, alongside zooplankton from the established parent population. Each mesocosm will be maintained under three temperature regimes corresponding to the Mississippi River's coolest, average (mode), and hottest summer water temperatures. Half of the mesocosms will receive fertilizer to assess the impact of elevated nutrients on diatom populations and chytrid parasitism. Diatom, chytrid, and zooplankton densities will be monitored via light microscopy. The incidence of parasitism will be estimated by quantifying sporangia densities, and the resulting data will be analyzed.

**C.U.3 The Role of Rap1b in Modulating Gene Expression of Proteins Linked to Megakaryocyte Maturation**

Eden Jacobson  
Mentor: Jaelyn Wisinski, Biology

Megakaryocytes, which differentiate from hemopoietic stem cells, undergo distinct changes in morphology and gene expression during maturation. Among the proteins that increase in expression are Rap1b and von Willebrand factor (*vWF*). While Rap1b is known to activate various downstream signaling pathways, it remains unclear whether it contributes to elevated levels of *vWF* in mature megakaryocytes by regulating its gene expression. We expect that Rap1b indirectly induces *vWF* gene expression due to its increased expression during maturation and its extensive signaling capabilities. Quantitative reverse transcription polymerase chain reaction (qRT-PCR) was used to quantify *vWF* messenger RNA (mRNA) levels in maturing megakaryocytes with and without Rap1b, therefore indicating if Rap1b regulates its expression. Uncovering the regulatory mechanisms of *vWF* expression in megakaryocytes is important, as *vWF* has a role in the formation of blood clots, and increased levels have been linked to cardiovascular events such as heart attacks and strokes.

#### **C.U.4 The Impact of Amino Acid Substitutions on the Oligomerization of NmpR, an NtrC-Like Response Regulator from *Myxococcus xanthus***

Vanessa Giallombardo

Co-author: Daniel Bretl

Mentors: Daniel Bretl (Microbiology) and John May (Chemistry & Biochemistry)

Two-component systems (TCS) are signaling systems in bacteria consisting of cognate proteins that propagate specific extracellular signals to tune an appropriate cellular response. In a prototypical TCS, a signal is sensed by a transmembrane protein, and a downstream response regulator protein (RR) regulates gene expression. NtrC-like RRs function properly as oligomers. In the soil bacterium *Myxococcus xanthus*, the TCS NmpRSTU contains an NtrC-like RR, NmpR, that promotes the expression of *pilA* in low oxygen conditions which results in multicellular, type-IV pili-dependent motility. Under standard laboratory growth conditions, NmpR is considered “OFF”. A motility screen has identified over 30 NmpR variants that are constitutively “ON” in the same conditions. The objective of this research is to probe the biochemical effects of the amino acid changes in NmpR<sup>ON</sup> variants. We hypothesize that NmpR<sup>ON</sup> variants form higher order and more stable oligomers than NmpR<sup>WT</sup>. We used dynamic light scattering and thermal shift assays to characterize the size and stability of purified NmpR<sup>WT</sup> and NmpR<sup>ON</sup> variants. Current data suggest that NmpR<sup>ON</sup> variants are less stable than NmpR<sup>WT</sup>. Understanding the oligomeric order of NmpR<sup>ON</sup> may further our understanding of the mechanism by which NtrC-like RRs function, broadly. This may have important implications for antibiotic development due to the evolutionary conservation of the structure/function of NtrC-like RRs across bacterial species.

#### **C.U.5 The Binding of Oxidized LDL in Human and 13-Lined Ground Squirrel Platelets**

Nicole Inoue, MacKenzie Caya, and Megan Haggart

Co-author: Kendra Wilson

Mentor: Scott Cooper, Biology

Platelets are small blood cells involved in forming clots and are used clinically in transfusions. While human platelets cannot be stored in the cold as they are rapidly cleared after a transfusion, those from hibernating ground squirrels are resistant to cold storage. In human platelets, CD36 is a scavenger receptor that binds to LDL (low-density lipoprotein) and triggers apoptosis (programmed cell death), a process that is further exacerbated in cold storage conditions. Even though humans and squirrels contain oxidized LDL, with lower levels in squirrels, squirrels lack the CD36 receptor. To determine if squirrel platelets can bind to LDL and oxidized LDL, flow cytometry quantification was performed. Squirrel platelets had binding abilities even with the lack of the CD36 receptor. Furthermore, squirrel and human platelets displayed a dose-dependent response, where the increase of LDL and oxidized LDL demonstrated an increase in binding. Determining the receptor and mechanism of binding of LDL on squirrel platelets could provide further insight into prolonging the life of cold storage platelets.

#### **C.U.6 Former Foster Youth and College Success**

Ana De La Torre

Mentor: Lisa Kruse, Sociology & Criminal Justice

Following high school graduation, as little as two percent of the nearly 400,000 former foster youth go on to complete a bachelor’s degree despite 70-84% reporting a desire to attend college after high school. Unfortunately, former foster youth experience significant barriers that make it difficult for these youth to attend and graduate from college. Using the National Youth in Transition Database (NYTD), this study compares those foster youth who report attending an institution of higher education to those who did not to examine which factors may be key to success. Findings will be utilized to propose programming and policies that universities and colleges can implement to help assist former foster youth in completing a degree.



### **C.U.7 *Myxococcus xanthus* in Low Oxygen Conditions**

Natalie Schaller  
Co-author: Skylar White  
Mentor: Daniel Bretl, Microbiology

*Myxococcus xanthus* is a common soil bacterium. It has many complex behaviors such as type IV pili-dependent motility, development of fruiting bodies, and microbial predation. The type IV pili motility is regulated by a two-component system involving the transcriptional regulator PilR. When the *pilR* was deleted, the motility was abolished. However, it was found that some cells mutated to restore motility. This was because of missense mutations in another regulatory gene *nmpR*. This allowed the restoration of expression of *pilA* and bypassed the need of PilR. It was found that the NmpR system responds to low levels of oxygen and has been found to also regulate the transcription of a Cytochrome C oxidase complex, which has a high affinity for oxygen, so it is best suited for use in a low oxygen environment. We have found that in low oxygen concentrations, *M. xanthus* forms spore-like cells, and this transition is accelerated when *nmpR* is deleted. To determine the role of the NmpR-regulated genes with this phenotype and related phenotypes, we will systematically delete NmpR related genes. For example, it has been found that NmpR regulates the genes encoding a Cytochrome C Oxidase complex. Currently, we are constructing an in-frame deletion mutant of the cytochrome C oxidase. Future experiments will include testing the ability of the mutant strain to grow, survive, move, and create fruiting bodies compared to the wild type parental *M. xanthus* strain and a  $\Delta nmpR$  strain.

### **C.U.8 Using Ionic Liquids for Efficient ( $\pm$ )-Grandifloracin and Grandifloracin Analog Syntheses**

Shannon Aide  
Co-author: Robin Grote  
Mentor: Robin Grote, Chemistry & Biochemistry

Notoriously difficult to treat, pancreatic cancer is characterized by affected cells' ability to survive in low nutrient environments. (+)-Grandifloracin, a naturally occurring compound, has been proven to counteract the hardy nature of pancreatic cancer cells. This allows for better treatment. An existing synthesis is effective, but this research aims to make it more sustainable by eliminating the last two synthetic steps. It would do this by using an ionic liquid, [bmim]Br, instead of organic solvent. The ionic liquid is reusable, can allow for less extreme reaction conditions, and can provide high stereoselectivity in products. The proposed improvement to the synthesis of (+)-grandifloracin would make the molecule's creation more efficient and environmentally friendly. In addition, the research investigates the creation of potential analogs using azide-alkyne click reactions using reagents with varied functional groups.

### **C.U.9 Comparison of Continuous vs. Interval Exercise on Body Temperature Regulation in Dogs**

Anna Thompson and Hunter Heuer  
Mentor: Cord Brundage, Biology

This study examines the effects of continuous versus interval exercise on canine body temperature regulation. While extensive research exists on physiological responses to exercise, there is limited understanding of how different exercise techniques influence thermoregulation in dogs. By evaluating temperature fluctuations in dogs of various sizes and monitoring recovery rates, we aim to identify whether continuous or interval exercise has a greater impact on body temperature changes. Fifteen to twenty healthy dogs, aged 1-5 years, will be recruited. Using Anipill body capsules, internal temperatures will be recorded before, during, and after exercise. Dogs will undergo both exercise treatments but will be randomly assigned to either a continuous or interval exercise protocol to be tested first on a treadmill, with adjustments based on body weight. A standardized recovery period will follow to assess temperature regulation efficiency. Data collection is currently ongoing, and results have yet to be determined. However, we hypothesize that interval exercise will allow for more efficient thermoregulation and a shorter recovery period, while continuous exercise may lead to higher internal temperatures and prolonged recovery. This study will contribute to the understanding of canine exercise physiology, particularly in relation to temperature regulation, which has implications for canine health, performance, and wellbeing.

### **C.U.10 The Effects of Caffeine vs. a Meal Shake on College Students' Memory**

Abby Wagner, Ashley Effertz, Justine Duckart, and Lexie Wilberding  
Co-author: Hailey Jibben  
Mentor: Karen Skemp, Public Health & Community Health Education

Classes at most universities are offered in the mornings, an unfavorable time for students since memory tends to increase later in the day. Research indicates approximately 90% of North Americans use caffeine regularly to combat fatigue, which can influence cognitive function. Additionally, blood glucose levels play a critical role in cognitive performance, and well-regulated blood glucose is associated with improved concentration, focus, and memory. This study will use three subtests of the WAIS-IV memory test to measure the working memory of college-aged students in a fasted, caffeinated, and fed state. Participants will come in three separate times and will receive either a meal shake, caffeine (3 mg/kg BW), or remain fasted. We hypothesize that participants will perform better on the memory test after consuming caffeine or a meal shake compared to the fasted state, as stable glucose levels are crucial for optimal cognitive function. To explore this, researchers will compare glucose levels taken from participants to their scores on the WAIS-IV, determining which state has the most positive impact on students' cognitive performance. We anticipate that this study will offer valuable insights into strategies that can help college students enhance their memory and academic performance during early morning hours.

### **C.U.11 The Assessment of the Association of Bacterial Rhythmicity and Circadian Rhythm within the Species *Drosophila melanogaster***

Sophie Bast  
Mentor: Alder Yu, Biology

Circadian rhythm is a regulated internal process in which many organisms experience over a 24-hour cycle. Various factors, including eating patterns, sleep, and temperature can influence this biological process. In past research, it has been suggested that the levels of gut microbiota can be influenced by sleep and feeding rhythms in humans. In this research project, the oscillations of specific bacterial types within the gut microbiome of the species *Drosophila melanogaster* were analyzed to see if they are due to the host's circadian clock or some other factor. To test this theory in fruit flies, PER deficient fly pupae were utilized to track bacterial oscillations at specific times (8 am, 12 pm, 4 pm, 8 pm) throughout a 24-hour period. PER deficient fruit fly pupae do not have internal circadian rhythms and do not eat. Therefore, if rhythms are observed, they are due to some novel as yet unidentified. The types of bacterium observed were Lactobacillus, Sphingomonas, and Methylobacterium over this time period. They were chosen because they have been shown in past studies to exhibit oscillations in fruit flies with circadian rhythms. Quantitative PCR was used to determine the amount of bacterial DNA in the samples at each time period. Results suggested that bacterial levels may change throughout the day even in the absence of the host's circadian clock.

### **C.U.12 Analyzing Social Inequality from Faunal Remains at Rabe Anka Siget, Serbia**

Ryan Cooksey  
Mentor: Amy Nicodemus, Archaeology & Anthropology

The Maros are a culture group that lived in the Carpathian Basin during the European Bronze Age and ranged from 2700 to 1500 BC. The archaeological site of Rabe Anka Siget is located in northeastern Serbia. Excavations and surveys of the site have revealed three distinct mounds. Analysis of artifacts found within the residential areas of the mounds point towards the possibility that social inequality was present across the site. The goal of this project was to determine if fauna remains showed signs of inequality across residential areas at Rabe and if so, which areas were higher status compared to others. Faunal remains from 2018, 2022, 2023, and 2024 excavations at Rabe were analyzed to determine differences in taxon and body part representation. Differences between taxon representation and element utility values indicated that the western mound had higher value species and better cuts of meat, indicating that the western mound had occupants of higher status compared to the central and eastern mounds. This thesis provides more insight into socio-economic changes which can show that fauna remains can provide a complimentary route for studying social organization in Maros and other cultures.

### **C.U.13 An Examination of Degree Attainment on Reported Physical and Mental Health over Three Decades**

Ellie Dietrich

Mentor: Nicholas Bakken, Sociology & Criminal Justice

Previous empirical studies have examined the relationship between education and health, notably finding that education leads to better health outcomes; however, it is not clear how education leads to improved health outcomes. This study seeks to examine the pathways through which obtaining a college degree mediates physical and mental health outcomes. Further, this study seeks to examine how degree attainment has mediated physical and mental health outcomes across time by using three different years (1998, 2008, 2018) of the General Social Survey. Multiple structural path models were examined, and results indicate that education has a positive impact across time. While the direct effects examined largely confirm findings from the existing literature, indirect effects indicate that these relationships are more complex. The findings from this study can be used to better understand the changing effect education has on health. Conclusively, the research offers support for the pursuit of higher education. Policy implications are discussed.

### **C.U.14 From Signs and Norms to Action: Encouraging Food Waste Separation in Whitney Center using the Theory of Planned Behavior**

Uranchimeg Erdenebat

Mentor: Katherine Kortenkamp, Psychology

The purpose of this research is to reduce the barriers for students in separating their food waste from the trash in Whitney Center. The identified problem is that most students discard their food waste without separating it from other trash, despite the signage and information in the food disposal area. Cross-contamination with trash makes it impossible to compost the food waste. To understand the motivations behind students' food waste separation behaviors, a survey and anonymous field observations were conducted. In the survey, 70% of students reported that they either had not noticed the signage or found it unhelpful for understanding food waste issues or for food separation. However, 96% of students support making Whitney Center more sustainable through food separation, which could lead to adopting food composting practices. To address this problem, Ajzen's (1985) Theory of Planned Behavior was used to develop interventions including clearer food separation signage and posters that utilize normative messages that will go into effect after spring break. A post-intervention survey and observational data collection will be used to test the effectiveness of the intervention. We hope these interventions will promote food separation and potentially lead to composting in the future.

### **C.U.15 Dietary Lipid Supplementation Suppresses Hyperexcitability in Fly Epilepsy Model**

Leah Hawbaker and Samantha Dinnel

Co-authors: Brady Weimer, Allyson Davis, and Meghan Shannon

Mentor: Douglas Brusich, Biology

Epilepsy, a neurological disorder that impacts individuals of all populations, is influenced heavily by genetics and environmental factors. As epilepsy influences the nervous system, it prevents those affected from living a normal life. Exploring the presentation and possible inhibitors of epileptic disorders within flies, can allude to potential therapies for higher animals, and eventually human populations. The para(Shu) mutation enhances seizure activity in fruit flies and selects for epileptic phenotypes. It is known that ketogenic diets in humans suppress seizure activity. Hyperexcitability in para(Shu) adult flies was also established to be reduced when incorporating alpha-linolenic acid (ALA) into the diet by temperature sensitive testing; however, to determine the presence of hyperexcitability in para(Shu) larvae exposed to ALA in diet, electroshock testing was performed. Our goal is to determine the critical period of ALA administration during development to see if larval hyperexcitability will also be suppressed.

### **C.U.16 An Examination of Material Quality and the Bifacial Reduction Sequence at Silver Mound, WI**

Kyle Kohlstedt

Mentors: Constance Arzigian and David Anderson, Archaeology & Anthropology

Stone tool production was a fundamental aspect of many precontact cultures in North America, with quarry sites offering valuable information on raw material procurement and the early stages of stone tool manufacture. Hixton Silicified Sandstone (HSS), sourced from the Silver Mound quarry in Wisconsin, has a long history of use, yet the criteria that guided its selection and usage remain understudied. This study analyzes the beginning stages of stone tool production

within a donated collection, which is made up of artifacts gathered from fields around Silver Mound. To assess the material properties of HSS, attributes such as grain size, sorting, and silicification were recorded through visual and microscopic analysis. Further measurements, including maximum length, width, thickness, weight, and edge angle, were taken to characterize three distinct stages of manufacture. Statistical analysis in this research aims to determine which of the material properties examined are most highly correlated with lithic quality to create inferences about how indigenous understanding of the variables may have affected procurement and discard decisions.

### **C.U.17 Using Spore Morphology and DNA Sequencing to Distinguish Species of Pacific Island Xylariaceous Fungi**

Eliza Link

Mentor: Todd Osmundson, Biology

The xylariaceous fungi are a group of macrofungi that play an important role in wood decay and have been documented, in many species, to live part of their life cycle in living plant leaves. There is a large diversity of xylariaceous fungi, and the evolutionary history (phylogeny) of these fungi is still being debated. One potential reason for the uncertainty is lack of data from remote islands, particularly the Hawaiian Islands. This study will provide some insight into the evolutionary relatedness of these fungi from the island of Kaua'i using morphological and genetic data. Sixteen specimens of xylariaceous fungi were obtained from Kaua'i through the Biodiversity Collective's Fungal Diversity Survey of 2023 and sent to UW-La Crosse for analysis of their spore morphology, specifically spore size. These specimens were also analyzed using PCR-amplification of the alpha-actin gene. The PCR products were purified and assigned unique genetic tags before being sent to the University of Wisconsin-Madison, where they will be sequenced. Two phylogenetic trees will be generated to show relatedness among the fungi using both spore size and alpha-actin sequences. This data will be used to assess whether spore morphology can be used to distinguish genetically-defined species. This study will contribute to a better understanding of the phylogeny for the xylariaceous fungi in future studies.

### **C.U.18 Grapheme-Color Synesthesia: Impact on Memory & Recall**

Lauren Maresh

Mentor: Nese Nasif, Marketing

Grapheme synesthesia is a cognitive phenomenon in which individuals perceive certain colors while imagining or being presented with a letter or number. Synesthetes are often studied to analyze the brain's processing methods and the interactions between various regions of the brain (specifically those in connection with sensory activities). This study follows another common extension of synesthetic studies, which specifically focuses on the suspected correlation between memory and recall performance of synesthetes in comparison to non-synesthetes. The current study used a number sequence in combination with either participant-selected colors to be applied to each number or an absence of color application to investigate the existence of a correlation between memory abilities and synesthetic recall. Preliminary findings are discussed, including contributions to existing scholarship, applications to pedagogy, and recommendations for future research.

### **C.U.19 How Traditional Masculinity Shapes Relationships**

Liv Murray

Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

This research project will be exploring how societal pressure to uphold traditional masculine ideals influence young men's perceptions of sex, power, and dominance in relationship? The study aims to understand how these societal pressures affect gender dynamics. I will be using textual analysis to explore this concept, including reading works by bell hooks and Jackson Katz. Along with other articles, I hope to compare their own findings with each other and find an answer to this question. In finding out this information, I hope to educate myself and others more on how we can lessen the pressure of harmful traditional masculine ideals in relationships.

### **C.U.20 Bioinformatic Analysis of the Circadian Clock in Desert-Adapted *Drosophila* Species**

Anika Oplanic  
Mentor: Alder Yu, Biology

Desert-adapted organisms have evolved unique changes to their behavior and physiology to better survive in extreme temperatures and periods of food and water scarcity. These changes can include alterations in an organisms' metabolism and behavior, like adapting foraging patterns to avoid extreme heat. Behavioral and physiological adaptations can be attributed to changes in the 24-activity pattern cycle, often termed the "circadian clock." Circadian clocks regulate 24-hour oscillations in gene expression, and these gene fluctuations influence organism behaviors and physiology, including metabolism, the circulatory system, sleep, endocrine secretion, and the immune system. Although physiological alterations to the circadian clock are well-documented in desert-adapted species, there has been little insight into analyzing the underlying genomic differences in the circadian clock between closely related non-desert-adapted and desert-adapted species. In order to focus on the differences between circadian clocks on a molecular level, gene models were created of circadian clock genes in various *Drosophila* species and the models were compared to better understand alterations of circadian clock genes. The sequence for the *period* gene was investigated in 5 different *Drosophila* species to compare expression in desert (3) and non-desert (2) adapted species. By comparing the sequences of the encoding genes for these proteins, a better understanding of how species evolve to be better adapted to the environment will be established.

### **C.U.21 Macrophage Phagocytosis Rate Impacted by MHC Class I Signaling**

Zhu Lan Ness and Damion Cherney  
Mentor: Zachariah Tritz, Microbiology

MHC Class I molecules are a family of proteins that are coded by some of the most diverse genes among humans; the abundance of different forms, or alleles, of these genes often make this protein a target of immune attack during graft rejection. The process of "finding a match" for a transplant is finding someone with similar enough MHC alleles in addition to matching blood type. Antibodies, immune system proteins generated in response to novel threats, can be created against mismatched MHC molecules. It is known that the binding of these antibodies to MHC-expressing cells on grafted tissue is an early step in graft rejection—with antibodies serving as a sort of "flag" or marker to recruit more immune cells. What has remained unexplored is whether these MHC Class I proteins are functional signaling proteins – we do not yet know whether antibody binding to these MHC Class I proteins send signals into the MHC-expressing cells to change their behavior and, perhaps, contribute to the process of graft rejection. We used a macrophage cell line to better understand the impact that MHC Class I signaling has on cell communication. Our preliminary findings suggest that MHC Class I signaling negatively regulates phagocytic function of these cells *in vitro*.

### **C.U.22 Exploring Nepal: A Student's Experience in a Faculty-Led Study Abroad Program to One of the Most Ecologically Important Countries**

Ryan Ochowski  
Co-authors: Niti Mishra, Emma Everett, Elizabeth Heying, and Alec Schuster  
Mentor: Niti Mishra, Geography & Environmental Science

In May 2024, we participated in a faculty-led study abroad program in Nepal as part of GEO 200: Conservation of Global Environments. This immersive experience took us from Kathmandu's urban landscapes to the immense wilderness of Chitwan National Park, and even to the rural villages of the Poon Hill trek, where we explored conservation and sustainability challenges firsthand. Through discussions with Nepali experts, visits to climate adaptation projects, and observations of human-wildlife conflict management, we gained deeper insights into global environmental issues. Trekking through Nepal's diverse landscapes further enriched our understanding of climate change impacts across different elevations. This poster highlights our key takeaways and the transformative impact of experiential learning.

### **C.U.23 Cross-National Comparisons of Health Care Access and Outcomes**

Matthew Nowell  
Mentor: Carol Miller, Sociology & Criminal Justice

This research compared access and outcomes of the United States and United Kingdom's healthcare systems. The 2021 Health and Healthcare II survey conducted by the International Social Survey Program (ISSP) was analyzed to examine

differences in attitudes around healthcare metrics in the two nations. This survey included robust demographic information that allowed thorough analysis of their impact on individual responses. A classification framework was used to assess the structure of these nations' healthcare systems. This allowed for the analysis of differences in attitudes from each sample with regard to their healthcare system's access and outcome measures. By applying Fundamental Cause Theory and Intersectionality, outcomes demonstrated the important role that socioeconomic status and the interplay of social statuses had on an individual's perception of their healthcare outcomes and access. Differences in how the healthcare systems were structured influenced perceptions of both access and outcomes beyond individual differences.

#### **C.U.24 Validity and Reliability of the GGET\***

Chris Seveska and Landon Dott

Co-authors: Jonah Zoschke and Zach Mommaerts

Mentors: Ward Dobbs (Health Professions) and Daniel Freidenreich, Ph.D.

Several graded exercise protocols have been developed to assess VO<sub>2</sub> max, the maximum amount of oxygen that a person can use during maximal exercise, an important indicator of aerobic fitness and cardiovascular health. The most widely used protocol, the Bruce protocol, has demonstrated strong validity and repeatability. However, its limitations include the requirement for a specialized treadmill ergometer capable of reaching a 22% incline and risk for early muscle fatigue of the lower limbs due to its initial steep incline, potentially affecting VO<sub>2</sub> max results. This study aims to evaluate the validity and reliability of a new graded exercise protocol, the Gradual Graded Exercise Test (GGET), which uses a maximal incline of 15% to eliminate the need for specialized equipment and provides a more gradual workload increase which may limit lower limb fatigue. Healthy adult participants will complete two identical testing visits to assess test-retest reliability. Each visit consists of performing the GGET, followed by a brief verification stage of similar, high intensity exercise to evaluate validity. Data collection is ongoing, and results will be presented at the symposium.

\*This project was also presented at D.U.24.

#### **C.U.25 Passive Stretching and Microvascular Function**

Michael Bruni and Kaleah Puskala

Mentor: Jacob Caldwell, Exercise & Sport Science

Background: Passive calf stretching increases small blood vessel dilation, but the mechanism behind this is unknown. Prostaglandins contribute to blood vessel dilation, which can be blocked with ibuprofen. Hypothesis: Ibuprofen will lower prostaglandin synthesis, limit small blood vessel dilation after passive stretch. Methods: 20 college-aged individuals will undergo a series of tests including vascular occlusion, rhythmic calf exercise, and passive calf stretch. Participants will complete 4 randomized sessions on different visits: 1) A stretch group and ibuprofen. 2) A sham stretch group and ibuprofen. 3) A stretch group and cellulose. 4) A sham stretch group and cellulose. Results & Conclusion: The IRB has been submitted, and approval is currently pending. Data collection is expected to begin in March.

#### **C.U.26 Behind the Bar: Exploring Organizational Identification in Bartender Communication**

Olivia Thompson

Mentor: Michael Tollefson, Communication Studies

This study examines how bartenders' organizational identification influences their communication with customers and coworkers. Rooted in organizational identification and sensemaking theory, the research explores how bartenders navigate workplace interactions and manage emotional labor in service-oriented environments. Given the interpersonal nature of bartending, communication plays a crucial role in job performance, customer satisfaction, and workplace dynamics. Through qualitative analysis, this study aims to understand how bartenders perceive their connection to their organization and how this perception shapes their verbal and nonverbal communication. By analyzing bartenders' experiences, the research seeks to contribute to existing literature on organizational identification, emotional labor, and workplace communication. Findings from this study will provide insight into the relationship between employee identity and workplace interactions, offering practical implications for service industry professionals and organizational leaders.

### **C.U.27 Role of Mast Cells in Stress-Induced Increase in Intestinal Permeability**

Lexi Valeri and Lauren Broman  
Mentor: Sumei Liu, Biology

Mast cells are immune cells that release chemical granules when stimulated by neuronal, hormonal, or paracrine signals. Prior experiments show mast cell deficient animals display no increased intestinal permeability after exposure to stress, suggesting that mast cells may play a crucial role in stress-induced disruption of the intestinal epithelial barrier. This research explored specific chemical mediators released by mast cells during stress and their roles in intestinal barrier function. Mice were divided into four groups (5/group): control male, control female, stress male, stress female. Stress mice were restrained for 1 hour/day for 5 days. Control mice were kept in their home cages with no restraint. Following the final restraint/control session, the proximal colon was dissected. The mucosa/submucosa of each preparation was mounted to an Ussing Chamber. Corticotropin-releasing factor (CRF) was added to the basolateral side of the chamber to stimulate mast cell degranulation. Samples were taken before and 30-min after addition of CRF. The levels of mast cell mediators (histamine and mast cell tryptase) were measured using enzyme-linked immunoassay (ELISA). The results showed no significant difference in baseline release or CRF-induced release of histamine and mast cell tryptase between control and stressed mice. Further research is needed to investigate the levels of mast cell mediators within the intestinal tissue.

### **C.U.28 Taking Care While Providing Care: Literature Review of Counselors' Experiences**

Greta Vollendorf  
Mentor: Erica Srinivasan, Psychology

Mental health counselors support individuals with various emotional and psychological challenges. This type of work puts counselors at higher risk for experiencing psychological demands both in and out of their careers. Considering situations of trauma or loss, it is incredibly important for counselors to manage their emotional and physical well-being as they provide support to others (Wilschke & Crepeau-Hobson, 2024). This literature review analyzes findings from multiple studies on counselors coping with bereavement, vicarious grief, countertransference, and compassion fatigue in their practice. Study participants reflected on effective and ineffective coping strategies as they continued providing support to clients. The review emphasizes the significance of self-care for counselors experiencing effects from trauma or loss and encourages more research on enhancing the resilience of professionals.

### **C.U.29 Influence of Floodplain Connectivity on Aquatic Insect Emergence in the Upper Mississippi River**

Presley Hasse  
Co-author: Katelynn Ripper  
Mentor: Ross Vander Vorste, Biology

Aquatic insects are essential to freshwater habitats, contributing to food webs, nutrient cycling, and energy transfer while serving as indicators of ecosystem health. They are diverse and abundant in the Upper Mississippi River, inhabiting the main channel and floodplains, which are vulnerable areas with fluctuating water levels. However, human activities have altered floodplains which could potentially impact biodiversity and ecosystem function. Little is known about the aquatic insects that emerge from floodplain habitats and the factors that influence their diversity and abundance. From 2020-2023, adult aquatic insect samples were collected from the Upper Mississippi and identified to the family level. We then compared mean richness and abundance across three connectivity categories. Connectivity categories corresponded to different flow path distances from the main river channel. Preliminary results indicate flow path distance does not have a strong effect on diversity and abundance of emerging aquatic insects. Determining how connectivity influences aquatic insect communities in the Upper Mississippi River could provide a better understanding of what factors influence floodplain biodiversity and ecosystem health. Identifying these factors may lead to better protection and restoration of river floodplains.

**Poster Session D**  
**11:00 pm-11:55 pm**

**D.U.1 Impact of a Surfactant on the Myrick Marsh Bacterial Community**

Justin Mangan  
Mentor: Bonnie Bratina, Microbiology

Crude oil spills pose a significant threat to aquatic ecosystems, including the locally relevant Myrick Marsh in La Crosse WI. This research investigates the impact of surfactants, used in oil cleanups, on the bacterial community in Myrick Marsh in the event of an oil spill. Using collected marsh water samples, bacteria were isolated on various growth media, including those incorporating surfactants. The isolates were assessed for sensitivity to surfactants using minimum inhibitory concentration (MIC) microtiter plate assays. Additionally, each isolate was characterized by sequencing the 16S ribosomal RNA gene, which is commonly used to identify or determine the closest relative for each of our bacterial isolates. Results showed variation in bacterial responses to the surfactants. Some members of the community exhibited tolerance to high concentrations of surfactants while some members failed to grow in its presence. By analyzing MIC data, this research can help identify appropriate surfactant concentrations that will be the least disruptive to the bacterial community, aiding in more effective oil spill mitigation strategies.

**D.U.2 Identifying Molecular Biomarkers to Investigate PFAS-Induced Disruption of the Innate Immune Response in Fish**

Anika Oplanic  
Mentor: Tisha King-Heiden, Biology

Exposure to emerging contaminants in the environment has become a pressing concern in the United States. PFAS, nicknamed “forever chemicals,” is the name given to per- and polyfluoroalkyl substances, has been associated with an ever-growing list of health issues, including decreased vaccine efficiency, increased risk of heart disease, various cancers, and increased issues surrounding development. Although past work has investigated the influence of PFAS-exposure on vertebrate immune systems, the exact signaling pathway PFAS disrupts in this system is not well described. Previous work has shown evidence of non-monotonic dose responses, calling for additional research into studying this subject under a molecular lens. In the proposed research, specific biomarkers for the simulation and inhibition of the innate immune response will be identified via a whole fish respiratory burst assay and molecular analysis. Identified biomarkers will be used in future studies of PFAS-exposure effects on the innate immune system on vertebrate species during early development.

**D.U.3 Tearing Off the Label: Labeling Bias, Race, and Perceptions of Individuals with Mental Health Disorders**

David Kieso and Owen Scarpaci  
Mentor: Katherine Kortenkamp, Psychology

Our study examined the effects of race and labeling bias on perceptions of trustworthiness towards those with mental health disorders. Specifically, we explored the interaction between race (Black and White), mental illness type (ADHD, PTSD, and Schizophrenia) and labeling bias (mental illness label or no label). This research allows for a better understanding of the nuanced impact of labeling bias, particularly among Black Americans in the context of mental health. Two samples, UWL students and participants recruited globally through Amazon’s Mechanical Turk, completed an online study where they read vignettes about an individual that manipulated the key study variables and rated the individual's trustworthiness on several dimensions. We hypothesized that labeled individuals and Black individuals would be rated as less trustworthy. Additionally, we predicted that individuals described or labeled as having ADHD would be perceived most favorably, followed by PTSD and Schizophrenia. Our hypotheses were partially supported. The results from the Mechanical Turk sample revealed that Black individuals were rated as significantly less trustworthy than White individuals. The results from the UWL sample indicated that individuals described or labeled as having Schizophrenia were rated as being the least trustworthy, followed by PTSD and ADHD.



#### **D.U.4 The Impact of Traumatic Childhood Experiences on the Likelihood of Future Arrest**

Hailey Repka

Mentor: Nicholas Bakken, Sociology & Criminal Justice

Existing research has explored various factors associated with criminal justice involvement, yet less is known about how childhood trauma mediates this risk. This study examines the relationship between adverse childhood experiences (ACEs), socio-structural factors, and the likelihood of future arrest. Using data from five waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health), we analyze a sample of 20,000 youth to assess these relationships. Bivariate and multivariate analyses indicate that traumatic childhood events and negative structural factors significantly increase the risk of arrest, whereas educational attainment serves as a protective factor. These findings highlight the need for policy interventions, particularly expanded access to secondary education that integrates trauma-informed support to mitigate justice system involvement.

#### **D.U.5 The Effect of Heat on Oligomerization of NmpR, a Response Regulator of *Myxococcus xanthus***

Olivia Baus

Co-author: Daniel Bretl

Mentor: Daniel Bretl, Microbiology

The bacterial species *Myxococcus xanthus* exhibits complex social behaviors that are regulated by cell signaling systems called two component systems, which allow bacteria to receive environmental signals and respond to them, usually through gene regulation. The Bretl lab is researching NmpRSTU, which modulates *M. xanthus* motility. NmpR, the response regulator protein of the Nmp system, binds DNA and regulates gene expression when it is in the active state, a result of phosphorylation by another protein in the system. When active, NmpR forms oligomers with other NmpR monomers, making a stable complex. We hypothesize certain variants of NmpR may form more stable oligomers compared to the wildtype protein. To test this hypothesis, wildtype NmpR and NmpR variants will be used in Electromobility Shift Assays (EMSAs). This assay uses gel electrophoresis to visualize the size of protein-DNA complexes; small complexes travel further in an acrylamide gel compared to large complexes. Some NmpR variants form larger oligomers compared to others. To determine the stability of these oligomers, I am heating samples prior to the EMSAs. Heat denatures proteins, so more stable proteins will stay intact at higher temperatures and maintain higher order oligomers that can be observed in the EMSA. Results will inform us on the heat stability of wildtype and variant NmpR oligomers, and how similar changes may influence gene regulation in other organisms that have NmpR-like proteins.

#### **D.U.6 The Effect of Spirituality and Religion on the Cessation of Drug Use and Crime among Reentering Offenders**

Patrick Brannon

Mentor: Nicholas Bakken, Sociology & Criminal Justice

The role of religiosity in post-release substance use and criminal activity has produced mixed findings in the prisoner reentry literature. While some studies highlight its protective effects, few have explored the distinct impacts of religiosity and spirituality on post-release behavior. This study addresses that gap by analyzing a contemporary sample of 352 formerly incarcerated individuals. Results indicate that spirituality significantly influences the cessation of substance use, though its effect on reducing post-release criminal activity is moderate. In contrast, religious involvement, while offering some protection, has a weaker impact on both outcomes. These findings offer valuable insights into how religiosity and spirituality shape the reentry process, with implications for policy.

#### **D.U.7 Microvascular Function Improves Following Passive Stretching without Changes in Running Economy**

Amanda Bratsch

Co-authors: Jacob Caldwell, Kaleah Puskala, and Gwen Stovall

Mentor: Jacob Caldwell, Exercise & Sport Science

**BACKGROUND:** Passive stretching (PS) of the calf muscles improves microvascular function, but its effects during exercise and on oxygen use during running (i.e., running economy) are currently unknown. Moreover, studies investigating stretching and running economy have had contentious results. **HYPOTHESES:** PS prior to exercise will improve microvascular function and running economy during submaximal exercise without impacting muscle force production. **METHODS:** 9 subjects (5 female, 4 male) completed maximal plantarflexion, a post occlusive reactive

hyperemia (PORH) test, and submaximal treadmill running at various speeds prior to and after an intervention. Subjects were randomized into either an intervention of PS, which consisted of passively stretching the calf muscles for 5-minutes “on” 5-minutes “off” four times through or a sham-control with minimal stretch. A paired samples t-test was performed for between subject comparison with significance set at  $p < 0.05$ ). RESULTS: Our preliminary results suggest increased microvascular function after passive stretching, not apparent in the sham-control, and no changes to maximal plantar flexion force, tissue oxygenation, or running economy during submaximal treadmill exercise. CONCLUSION: Acute PS increased microvascular function without impacting the cost of locomotion during treadmill exercise.

#### **D.U.8 Why Conversations around Racism End Prematurely: Predictive Factors of White Fragility**

Alyssa Carpenter  
Mentor: Kevin Zabel, Psychology

During conversations on race and racism, White individuals can use defense mechanisms to cope with racial discomfort (DiAngelo, 2011). This study investigated three possible underpinnings of White fragility: implicit attitudes, the Big Five personality traits (agreeableness, openness, neuroticism, conscientiousness, and extraversion), and motivation to control prejudiced reactions (concern with acting prejudiced and restraint to avoid dispute). Implicit attitudes are unconscious beliefs about a certain group that can shape behaviors (Shah and Bohlen, 2023). In total, 144 White undergraduate students completed the White Fragility Scale (Langrehr et al., 2021), Goldberg’s 50-item International Personality Item Pool (1999), the Motivation to Control Prejudiced Reactions Scale (Dunton and Fazio, 1997), and an evaluative priming measure of implicit racial attitudes (Fazio et al., 1995). As hypothesized, implicit bias was positively correlated with White fragility. While no personality traits correlated with overall White fragility scores, defensiveness (a construct of White fragility) correlated negatively with agreeableness. Regarding motivation to control prejudice, concern correlated positively with agreeableness and negatively with neuroticism, while restraint correlated negatively with extraversion, neuroticism, and openness. These results highlight predictive factors of White fragility and lay the groundwork for future research on interventions targeting White fragility.

#### **D.U.9 Food Relationship and the Impacts of Fear-Based Media**

Kaelee Coonen  
Mentor: Berna Gercek Swing, Psychology

The purpose of this research is to understand people’s relationships with food, and how fear-based food-related media influences perception and beliefs. This study tests the hypothesis that compared to people with a secure relationship with food, those with insecure relationships with food are more likely to respond with strong emotions to fear-inducing videos, and are much more likely to agree with the fear-inducing content. Participants viewed one of two videos, communicating varying levels of fear about potentially harmful foods. They then responded to questions measuring the emotional impact (McInley and Limbu, 2020), and their individual relationship with food (Strosser et al., 2018). We will analyze our data with a MANOVA, measuring the video, the individual’s relationship with food, and gender with emotional reactions to videos and belief in the video content as our dependent variables. Our preliminary results are finding potential significance between belief and gender, but we are still continuing to analyze the data. We hope our results will contribute to a better understanding of media’s role in shaping peoples’ food-related attitudes and behaviors. Our findings could provide insights into mitigating the negative impact of food-centered media, potentially contributing to preventive efforts aiming to protect individuals with insecurities.

#### **D.U.10 Phenotype of Activated Macrophages in the Presence of MHC Class I Signaling**

Brody Dion and Ben Drost  
Mentor: Zachariah Tritz, Microbiology

Major histocompatibility complex (MHC) molecules, along with their role in immune cell communication through antigen presentation to Cytotoxic T cells (CD8+ T-cells), might be a functional signaling protein that influences the antigen-presenting cell as well. This process is speculated to affect the activation of multiple cellular pathways in several different cell and tissue types, but the exact details of this signaling in antigen presenting cells like macrophages remain murky. We are determining if constitutively expressed MHC class I molecules attenuate MAPK signaling in activated RAW264.7 macrophages when stimulated by lipopolysaccharides. Thus far, the data collected has shown varying results on whether these pathways are inhibited by MHC class I reverse signaling. More trials are being run for conclusive data as to the impact MHC reverse signaling has on these critical pathways in inflammation and immune cell activation. Further studies

are needed on additional key pathways as the implications of this data are crucial for understanding the MHC molecule's role in host immune and epithelial cells and may lead to reveal novel therapeutic targets in cancer immunotherapies, bacterial infections, and transplantation rejection from this initial data.

#### **D.U.11 Effects of Ectomycorrhizal Fungi on Growth and Development on Seedlings of *Tsuga canadensis* (Eastern Hemlock)**

Andrew Hamilton  
Mentor: Anita Davelos, Biology

*Tsuga canadensis* (Eastern Hemlock) is a long-lived tree in the family Pinaceae with a wide distribution in northeastern North America. In south-western Wisconsin, disjunct relic populations of old growth Eastern Hemlock are located in Wildcat State Park in the middle of the Kickapoo Valley. Similar to all other species of Pinaceae, Eastern Hemlocks have a symbiotic relationship with ectomycorrhizal (ECM) fungi. ECM fungi form a mantle, or sheath, of hyphae (fungal filaments) that covers the outside of the fine root tips of their host tree. The fungi receive sugars from the plant host while the plant host receives nutrients and water from the fungal hyphae that explore the soil. The documentation and identification of how ectomycorrhizal fungi impact the growth and development of *T. canadensis* is critically important not only for their conservation but for the protection of entire ecosystems. Morphological ECM fungal diversity in root tip samples from Eastern Hemlock populations in the Kickapoo Valley was determined for three cores from each of nine sites. Diversity measurements (e.g., species richness, Shannon diversity index) among Eastern Hemlock sites will be compared.

#### **D.U.12 The Bidirectional Relationship of Circadian Disruption and Neurodegeneration in Alzheimer's Disease**

Gavin Hutchison, Olivia Christensen, and Hannah Kaiser  
Mentor: Alder Yu, Biology

Alzheimer's Disease (AD) is the most prevalent form of dementia. Unfruitful treatment efforts warrant investigations into quality-of-life improvement and slowing of disease progression. Circadian rhythms are daily periodic alterations in body physiology. Circadian dysfunction is associated with disease states, including AD. Yet, the AD progression-circadian dysfunction bidirectional relationship's nature remains elusive. The Drosophila Activity Monitoring system was used on AD model *D. melanogaster* for behavioral analysis. AD flies depend on time cues for circadian function, with time cue removal diminishing circadian behavior paired with phase shifting. The molecular function of the core circadian clock in AD model flies was assessed using RT-qPCR of period. Core circadian clock function is abolished in highly impacted tissues. These data suggest circadian function is diminished in AD model flies. Neurodegeneration was assessed by eye area of AD model flies with or without circadian clock function and in environments disrupting circadian function. Data suggests circadian clock abolishment does not contribute to accelerated disease progression, but disruption of an extant circadian clock does. Mechanistic analysis may reveal therapeutic targets to improve quality of life for AD patients, correcting their circadian rhythms. Additionally, encouragement of regular circadian rhythm for people with AD may provide a nonpharmacological intervention to slow disease progression.

#### **D.U.13 Projectile Points, Environmental Impacts, and Lithic Raw Material in the Driftless Area of Wisconsin through Time**

Stephen Peiffer  
Mentor: Constance Arzigian, Archaeology & Anthropology

This project is an analysis of lithic projectile points, environments, and lithic raw material in the Driftless Area of Wisconsin, focusing on a private collection of artifacts from the site 47-VE-1018. The study examines what attributes of a site in the Driftless Area that, Paleoindians and subsequent cultures may have sought. Analysis will include documentation of the projectile points and other stone tools from the private collection and from surface surveys of the site itself, as well as evaluation of the natural environment and raw materials available. Comparison will be made with two other sites in the Driftless Area to examine variability in artifact assemblages and environmental factors. The lithic projectile point collection will provide information on the time sequence and temporal length of occupation of the site, allowing for a base-line when comparing site artifacts. The collection will also be analyzed and compared against reference material collections at the Mississippi Valley Archaeology Center and online. Understanding what factors are considered when choosing a site will add to the knowledge of Driftless Area archaeology.

#### **D.U.14 Mussel Use in Oneota Culture through a Comparison of Cross-Site Analysis in the La Crosse Locality and Beyond**

Mallory Hudson

Mentors: Constance Arzigian and Amy Nicodemus, Archaeology & Anthropology

The pre-contact peoples occupying the La Crosse Locality from AD 1200-1650 are referred to by archaeologists as the Oneota. A diagnostic artifact of this group is a special type of pottery tempered with mussel shells. Mussel collection from the Mississippi River, and its daily usage was a common practice for these people. This research seeks to better understand Oneota mussel usage through the analysis of shell deposits across the region, while using and comparing data from a specific site (The Tremaine Site's Feature 559) as a case study. The identification of this and other features that contain mussels as either being a garbage pit (pit with miscellaneous cultural materials within it), mussel shell cache (pit with only mussel shells present), or general village debris can help me understand the daily use of mussels in Oneota culture and give me a holistic view of their material culture. Understanding the specific context of these mussel shells can help provide valuable information about the daily practices and cultural traditions of not only the Oneota, but all pre-contact people.

#### **D.U.15 Textile Tools and Technologies of Bronze Age Europe**

Kyndra Schuebel

Mentor: Amy Nicodemus, Archaeology & Anthropology

Textiles in Bronze Age Southeastern Europe offer insights into past cultural practices and social organization. The Bronze Age in Eastern Europe spans approximately from 3200 to 600 BC. Textiles are significant because they are material evidence of domestic craftsmanship that helps us understand the everyday tasks of the human past. Textiles are understudied due to their poor organic preservation. No standard classification of textile tools or comprehensive research exists for this region of Europe. There is a limited understanding of textile production in settlements and a deficiency in cross-cultural comparisons. My research aims to create a production model that can be utilized for future comparative archaeological studies. I will provide a synthesis that links different lines of indirect evidence of textiles across the surrounding regions. Data is drawn from various textile tools, including spindle whorls and loom weights, to demonstrate evidence of different tool usage, distribution, and social organization. Tools are crucial because they are not organic, and their characteristics can help predict the resulting textiles. My research will address the gaps in knowledge, demonstrate that textiles are significant, and establish a model that others can use to connect key indicators of textile use throughout human history.

#### **D.U.16 Do They See Me? Levels of Satisfaction and Trust in Racially Concordant and Discordant Patient-Physician Relationships**

Charis Jacob

Mentor: Grace Deason, Psychology

Systemic racism in healthcare, rooted in discriminatory policies and implicit bias, continues to create disparities in care for minority populations (Cuevas et al., 2016; Paradies et al., 2014). Racial concordance between patients and physicians has been associated with patient ratings of better care, mechanisms through which concordance leads to better outcomes (Street et al., 2008). This correlational study aimed to investigate the impact of racial concordance on patient trust and satisfaction. A diverse convenience sample of 238 U.S. adults was recruited through Prolific. Participants provided demographic information and their perceptions of experiences at their most recent doctors' appointment. They completed a measure of perceived similarity with their doctor (Street et al., 2008), the Patient Satisfaction Questionnaire Short Form (Marshall et al., 1994), and the Interpersonal Physician Trust Scale (Hall et al., 2002). Both attitudinal measures are 10-item, 5-point Likert scales, with higher scores indicating greater trust and satisfaction. Participants were coded as racially concordant or discordant based on their racial identity and that of their physician. Independent samples t-tests revealed that patients in racially discordant relationships reported significantly lower trust and satisfaction compared to those in concordant relationships. These findings underscore the need to address racial bias and promote diversity within the healthcare system to improve patient

### **D.U.17 Assessment of Trace Metal Exposure from Simulated Ingestion of Play Surface Materials**

Abigail Jahn and William Murphy  
Mentor: Kristofer Rolfhus, Chemistry & Biochemistry

Playground fill material is widely used for safety purposes but presents a pathway for the exposure of children to toxic trace metals through dermal contact, inhalation, and ingestion. Fill material may vary in metal content, depending upon source, composition, and age. We assessed ingestion as a route of trace metal exposure to local children with La Crosse, WI community members who aided in collection of samples. Thirty-nine samples were collected using clean techniques from 26 local playgrounds and parks, representing a variety of fill types (rubber chips, wood chips, sand, soil, crumb rubber, and pour-in-place rubber). To simulate ingestion, samples were added to solutions of de-ionized water and hydrochloric acid and extracted under gentle agitation. Extracts were then filtered and analyzed for seven toxic metals by atomic emission spectrophotometry. Results revealed that lead in rubber chip and pour-in-place extracts exhibited approximately 10-fold greater enrichment compared to wood chip extracts. While these results do not represent actual ingestion by children, our study provides a framework for assessing relative risk of the fill materials. The results suggest that the City of La Crosse may want to consider replacement of rubber-containing surfaces with natural alternatives that would lower the potential exposure of lead.

### **D.U.18 Comprehensive Sexual Education: Intersectionality and Availability**

Naomi Niesman  
Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

Sexual Education is a universal topic in our society that happens at all stages in life. From the first discovery of your reproductive organs to experiencing menopause, there is constant learning about our reproductive systems and what accompanies that. Comprehensive Sexual Education must have intersectional topics to accompany the intersecting identities of the growing generations. Additionally, there must be availability in this education, through resources that should be provided and available at all ages to understand what happens to their bodies through all stages and events that happen throughout their life. This project will identify the different models of Comprehensive Sexual Education and explore its availability, as well as trying ways to increase availability. There will be an analysis of previous research, involving what is missing and what is present, data analysis of STI rates and teen pregnancy, and how age matters in the benefits of learning. The goal of this project is to provide a template for a more intersectional approach to sexual education and further show how these topics need to be continuously taught throughout life.

### **D.U.19 Analysis of Gene Expression in SK-03-92 Treated Yeast Cells**

Evelyn Norton  
Mentor: Anne Galbraith, Biology

Antimicrobial resistance, which renders existing antimicrobials ineffective and makes infections difficult to treat, facilitates the need for the development of new antimicrobial drugs. Derived from a compound discovered by researchers from UW-Milwaukee and UW-La Crosse from *Comptonia peregrina* (sweet fern), SK-03-92 was found to be effective against bacteria and some species of fungi including *Saccharomyces cerevisiae* (yeast). SK-03-92 arrests the growth of 99% of yeast cells within 10 minutes of treatment, showing potential for SK-03-92 to be used as an antifungal treatment. An RNA-seq analysis of SK-03-92 treated wild-type yeast was performed to determine which genes are dysregulated in response to treatment. Each of these genes needs to be examined more carefully to confirm their role in the molecular response of yeast cells to SK-03-92 exposure. In this work, I examined the expression of several dysregulated genes in response to SK-03-92 treatment using RT-qPCR. The results of this work will be presented.

### **D.U.20 Examining the Effect of Copper Removal after SK-03-92 Treatment of Yeast Cells**

Emjay Hilliker  
Mentor: Anne Galbraith, Biology

Our lab uses *Saccharomyces cerevisiae* (baker's yeast) to determine the mechanism of an antimicrobial drug called SK-03-92 that was co-developed by researchers at UW-La Crosse and UW-Milwaukee. A recent study in our lab showed that the expression of yeast genes involved in copper homeostasis was affected by SK-03-92 treatment. I have been continuing the work on the putative role of copper dysregulation in the mechanism of SK-03-92. I previously determined that two

copper homeostasis mutants *cup2* and *mac1* respond to SK-03-92 treatment differently from wild-type cells. Currently, I am using bathocuproine disulfonate (BCS), a chemical that binds copper ions and removes them from the cell, to test if BCS affects the survival of these copper homeostasis mutants after SK-03-92 treatment. I have been using qPCR to measure the expression of these same two copper homeostasis genes (CUP2 and MAC1) in cells treated with SK-03-92 and will see if their expression is affected differently in cells co-treated with SK-03-92 and BCS versus SK-03-92 alone.

#### **D.U.21 Assessment of Seasonal Changes in Cell Number in the Hibernating Ground Squirrel Brain**

Abbey Peterson

Co-authors: Angelique Vega and Christine Schwartz

Mentor: Christine Schwartz, Biology

During hibernation, ground squirrels undergo drastic physiological changes, alternating between torpor with a body temperature just above freezing and a heart rate of 3 bpm, and interbout arousal (IBA) with normal heart rate and body temperature. Outside of hibernation, ground squirrel physiology is similar to a typical mammal. During hibernation, brain structure and function also change. Areas unimportant for hibernation, like the cerebral cortex, show different changes than presumably very important brain areas such as the hypothalamus. Previous studies looked at structural changes and neuronal damage during hibernation, but no work has quantified whether neuron quantities change during this time or seasonally. Neuron number could vary due to damage to existing neurons but could be related to a change in a particular brain region's seasonal importance. We quantified neuron number in the anterior cingulate cortex in ground squirrels from torpor, IBA, and summer to determine any seasonal differences using cresyl violet stained slides and found no difference in neuron quantity across the 3 time points ( $P = 0.58$ ). Neurons in the hypothalamus were tightly packed, so we examined nuclear counts using DAPI staining instead. We found lower counts in torpor in the paraventricular nucleus (PVN) of the hypothalamus compared to IBA and non-hibernating ( $P < 0.01$ ). This result supports previous PVN work and could indicate seasonal strategy related to the function of this area in hibernation.

#### **D.U.22 Mapping Geomorphic and Ecological Changes in a Driftless Region Trout Stream using LiDAR and Historical Imagery**

Ryan Ochowski

Co-authors: Colin Belby and Niti Mishra

Mentors: Colin Belby and Niti Mishra, Geography & Environmental Science

Wisconsin's streams provide critical habitats for native species, making their study essential for understanding long-term environmental changes and potential for restoration. This research focuses on Plum Creek, a trout stream in the Driftless Area of southwest Wisconsin, to assess geomorphic changes. High-resolution topographic and vegetation cover data were collected in December 2024 using a DJI Matrice 350 RTK drone equipped with a Zenmuse L2 LiDAR sensor. To analyze landscape evolution, a Digital Elevation Model (DEM), Digital Terrain Model (DTM), Digital Surface Model (DSM), and Canopy Height Model (CHM) were generated. Historical aerial photographs were georeferenced and analyzed in ArcGIS Pro to document changes in channel location since 1938. Results reveal limited shifts in Plum Creek's location in the study reach. Sinuosity has increased and a channel cutoff is developing. Additionally, CHM analysis highlights distinct vegetation patterns, with taller vegetation on adjacent bluffs and shorter, frequently disturbed grasses on the floodplain due to cattle grazing. This study provides valuable insights into the geomorphic and ecological dynamics of Plum Creek, contributing to long-term environmental monitoring and informing conservation efforts for regional trout streams.

#### **D.U.23 Heart Rate Variability Threshold as a Surrogate Marker of Exercise Intensity across Exercise Modalities**

Grace Albee and Kate Gillespie

Co-author: Ward Dobbs

Mentor: Ward Dobbs, Health Professions

When prescribing aerobic exercise, there are various methods used to measure and categorize intensity, including heart rate (HR) data as it is correlated with oxygen consumption ( $\dot{V}O_2$ ). Heart rate variability threshold (HRVT) is method proposed to estimate exercise intensity as HRVT has been shown to relate to ventilatory threshold (VT) and provides a more readily accessible modality for assessing exercise intensity. PURPOSE: The purpose of this study was to identify the relationship between HRVT, HR, and VT across the exercise modalities of running and cycling. METHODS: Healthy individuals participated in four  $\dot{V}O_2$  max tests, two on a treadmill and two on a cycle ergometer. The cycling protocol

increased intensity by 50 W every 2 minutes in a ramp fashion. The treadmill protocol increased intensity through both speed and grade every 2 minutes. Each protocol was increased until the participant's maximal effort was reached. Through all trials, a HR monitor is worn to continuously monitor HR, and expired gas was analyzed continuously using open circuit spirometry. RESULTS & DISCUSSION: This abstract is being submitted as a work in progress. Data collection is ongoing, but results will be prepared for dissemination prior to the symposium.

#### **D.U.24 Validity and Reliability of the GGET\*\***

Jonah Zoschke and Zach Mommaerts

Mentors: Ward Dobbs (Health Professions) and Daniel Freidenreich, Ph.D.

Several graded exercise protocols have been developed to assess VO<sub>2</sub> max, the maximum amount of oxygen that a person can use during maximal exercise, an important indicator of aerobic fitness and cardiovascular health. The most widely used protocol, the Bruce protocol, has demonstrated strong validity and repeatability. However, its limitations include the requirement for a specialized treadmill ergometer capable of reaching a 22% incline and risk for early muscle fatigue of the lower limbs due to its initial steep incline, potentially affecting VO<sub>2</sub> max results. This study aims to evaluate the validity and reliability of a new graded exercise protocol, the Gradual Graded Exercise Test (GGET), which uses a maximal incline of 15% to eliminate the need for specialized equipment and provides a more gradual workload increase which may limit lower limb fatigue. Healthy adult participants will complete two identical testing visits to assess test-retest reliability. Each visit consists of performing the GGET, followed by a brief verification stage of similar, high intensity exercise to evaluate validity. Data collection is ongoing, and results will be presented at the symposium.

\*\*This project was also presented at C.U.24.

#### **D.U.25 Collegiate Wrestlers Show Increased Resting Metabolic Rate throughout a Season**

Michael Bruni

Co-authors: Makayla Gedrose, Ward Dobbs, and Andrew Jagim

Mentor: Ward Dobbs, Exercise & Sport Science

Wrestling often includes phases of weight cycling paired with rigorous physical training. This combination makes wrestlers susceptible to low energy availability (LEA), and possibly relative energy deficiency in sport (RED-s) which can lead to maladaptation. PURPOSE: This project aimed to examine changes in resting metabolic rate (RMR) throughout competitive wrestling seasons and identify those at risk for LEA. METHODS: 33 male NCAA Division III collegiate wrestlers participated in this observational study. RMR and body weight were assessed multiple times throughout two competitive seasons and a questionnaire to screen for LEA was completed during the second competitive season. A multilevel model was utilized to evaluate the potential change in RMR across the respective seasons and descriptive statistics were used to assess the questionnaire data. RESULTS: RMR significantly increased during mid-season and post-season, and 79.7% of the LEA questionnaire responses were classified as potential signs of LEA. DISCUSSION: The physical demands of wrestling and weigh cutting showed the presence of elevated RMR and potentially LEA, which warrants a periodized nutrition plan. Practitioners should account for the increase in energy requirements throughout a competitive wrestling season to mitigate the potential effects of LEA that may make individuals susceptible to RED-s.

#### **D.U.26 Body Composition Differences across Weight Class Divisions in Collegiate Wrestlers**

Benjamin Skramstad

Mentors: Andrew Jagim and Ward Dobbs, Exercise & Sport Science

Wrestling is widely recognized as a sport that demands strength, endurance, and effective weight management strategies due to its classification as a weight category sport. Therefore, proper weight management is crucial for optimizing performance and maintaining consistency throughout long seasons. PURPOSE: The purpose of the current study was to examine differences in body composition parameters across each weight class in wrestlers. METHODS: National Collegiate Athletic Association (NCAA) collegiate male wrestlers participated in the current study (n = 177; Age: 19.6 ± 1.4 yrs.; Height: 176.6 ± 6.6 cm; Weight: 77.6 ± 12.7 kg; Body fat: 12.7 ± 4.2 %). Body fat percentage (BF%) was estimated via skinfold measurements. Fat-free mass (FFM), FFM %, and a ratio of FFM to each weight class was calculated. Fat-free mass index (FFMI) was calculated by dividing FFM by height (in meters squared). RESULTS: Significant differences (p < 0.05) were observed for all body composition parameters across weight class divisions (Table 1). Wrestlers competing in 141 lbs. class and above, had a higher BMI than those competing at 125 lbs. Those wrestling

at weight classes above the 125 lbs. weight class exhibited a higher amount of FFM, with a higher BF% ( $p < 0.05$ ).  
CONCLUSIONS: Findings from the current study indicate that those wrestling at heavier weight classes tended to have a higher amount of FFM, albeit with a higher BF%.

#### **D.U.27 Succeed by Any Means: Perfectionism in College Athletes and Non-athletes**

Tyler Smith

Mentor: Tracie Blumentritt, Psychology

Athletes often face immense pressure from coaches, fans, and themselves, leading to perfectionism through intense training and strict health regimens. While this promotes physical health, it can undermine mental well-being, potentially resulting in issues like depression and eating disorders. This study examines the link between perfectionism and help-seeking behaviors, comparing college athletes with non-athlete peers. Utilizing Frost's (1990) and Hewitt and Flett's (1991) Multidimensional Perfectionism Scales, it explores perfectionistic tendencies in both groups. Given the competitive nature of college sports, it is hypothesized that athletes will show higher perfectionism and a lower propensity for seeking mental health support. This research aims to enhance mental health services in sports, emphasizing the importance of addressing athletes' mental challenges alongside physical training. Participants will complete a set of online surveys and the data will be collected and analyzed prior to presenting. Data collection is currently active and in progress.

#### **D.U.28 Analyzing the Effectiveness of the Madison Health Education Advocacy Experience at Increasing Legislative Advocacy Confidence among UWL Students**

Lauren Steien and Gianna Rath

Co-author: Kyra Lard

Mentor: Anders Cedergren, Public Health & Community Health Education

Public health advocacy is a required competency among public health education specialists; more importantly, public health advocacy is an essential driver of health policy and social change at the local, state, and national level. The purpose of this research is to assess individual advocacy perceptions, particularly related to public health advocacy skills and knowledge of college students attending the Madison Health Education Advocacy Experience (HEAE) in February of 2025. Student participants will complete pre- and post-assessment surveys before and after attending the Madison HEAE; in addition, students will also evaluate their visits with legislative persons and attend a focus group debrief the week after. Participant legislative persons will review how well students advocate for public health and the public health profession. Our results will help gauge the effectiveness of, and need for, cooperative health advocacy initiatives like the Madison HEAE at increasing individual advocacy skills in the generation of health change at the policy level. The hypothesis is that perceptions of health advocacy confidence will increase among participants after attending the Madison HEAE in 2025.

#### **D.U.30 Fluid-Weight Illusion: How Transparency and Fluidity Affect Perceived Heaviness**

Joshua Schulze-Reimpell

Mentor: Alexander O'Brien, Psychology

Weight illusions are illusions wherein one object is perceived to be heavier than another, although both weigh the same amount and only differ in a non-weight-related characteristic. Only around eight weight illusions have been discovered so far. The purpose of this study was to expand the literature by examining whether transparency and fluidity elicit weight illusions. Eighty-one University students were presented with pairs of freezer bags (each weighing 138g) in a randomized order and were asked to give heaviness estimations of each bag. The freezer bags were filled with fluids and solids varying in terms of transparency. Each pair was presented twice in alternating positions. Two experiments were conducted with this methodology. Participants in the second experiment were blindfolded. Overall, for both experiments, there was a significant effect of comparison type on difference in heaviness perception. While there was no effect of transparency on heaviness perception, fluids were generally perceived as lighter than solids. Results also showed a significant main effect of vision status on difference in heaviness perception, with blindfolded participants producing significantly lower difference estimates.



### D.U.31 Long Paths in Polynomial Divisor Graphs: Lower Bound

Kayla Traxler

Co-authors: Jay Calkins (Towson University), Jonathan Pareltt (Drexel University), and Nicole Froitzheim (Baruch College)

Mentors: Nathan McNew, Ph.D. (Townson University) and Angel Kumchev, Ph.D. (Townson University)

The divisor graph  $D(n)$  has vertices  $\{1, 2, \dots, n\}$ , and an edge between two vertices  $u, v$  if  $u|v$  or  $v|u$ . The length of the longest path,  $f(n)$ , in such a graph has been studied by Pollington, Pomerance, Tenenbaum, and Saias. After the work of Saias, it is known that there exists constants  $c_1, c_2$  such that for sufficiently large  $n$ ,  $f(n)$  can be bounded by  $c_1 \frac{n}{\log n} \leq f(n) \leq c_2 \frac{n}{\log n}$ . We have investigated the analogous question for polynomials over a finite field  $\mathbb{F}_q$  of order  $q$ . The divisor graph  $D_q(n)$  has a vertex for each monic polynomial in  $\mathbb{F}_q[x]$  of degree at most  $n$ , and an edge between vertices  $F, G$  if  $F|G$  or  $G|F$ . We constructed a lower bound for the longest path in  $D_q(n)$  based on work by Tenenbaum in the integers. The structure of this path then allowed us to apply the ideas of Weingartner which showed that the length of the longest path,  $f_q(n)$ , in  $D_q(n)$  can be bounded below by  $k \frac{q^n}{n} \leq f_q(n)$  for a constant  $k$ .

### D.U.32 Do Common Breast Cancer Treatments Kill Megakaryocytes?

Juliann Will and Emily Winter

Mentor: Jaclyn Wisinski, Biology

Breast cancer treatments such as chemotherapy and radiation are commonplace practices used to neutralize cancerous cells. Breast cancer is one of the most prevalent malignancies affecting women worldwide with a significant morbidity and mortality rate. Our project aims to develop an understanding of the specific impact of chemotherapy (Daunorubicin) and radiation on breast cancer cells (BT549). Specifically, how that affects the adhesion of megakaryocytes (DAMI cells) and osteoblasts. To test this theory, we are exposing DAMI cells to a set of treatments which include categories such as control (no cells), chemotherapy-treated breast cancer cells, radiation-treated breast cancer cells, osteoblast conditioned media, and double conditioned media. After designated treatments, the cells undergo an adhesion assay, and crystal violet staining over subsequent days along with spectrophotometry. So far, we have run three assays and our results have been inconclusive with further testing needed. However, from past experiments and our limited data, we expect the Osteoblast groups to produce high adhesions. We plan to continue running this crystal violet adhesion assay to gather about six trial runs throughout the semester. After that, we hope to continue work in the following school year.

### D.U.33 Exploring the Mechanism of the Anthelmintic Drug, CL-5

Isabelle Haeft and Julia Chirillo

Co-author: Lauren Johnson

Mentor: Jennifer Miskowski, Biology

Helminths are parasitic worms that infect people, plants, and livestock. Anthelmintics are drugs used to eliminate or inhibit these worms. The misuse of anthelmintics has led to drug resistance and created an urgent need for new drugs. *Caenorhabditis elegans* is a nonparasitic model worm used to explore new anthelmintics. It was used to screen a library of chemicals derived from a medicinal plant, sweet fern (*Comptonia peregrina*). One chemical, CL-5 has demonstrated anthelmintic properties by causing paralysis and death in *C. elegans* through an imbalance of metal ions, leading to oxidative stress. It is hypothesized that mutant *C. elegans* strains with defects in the oxidative stress response will have different sensitivities to CL-5. To investigate this, mutant and wildtype worm strains are separately tested on culture plates with CL-5 and monitored for paralysis and death. The age-1 strain is noted to have a longer lifespan and more stress tolerant than the wildtype, while mdt-15 and ctl-1 mutants are more toxin sensitive. Lastly, glo-1 mutants have defects in storage granules that help regulate metal ion balance and are predicted to be more sensitive to CL-5. These data will help pinpoint the exact molecular mechanism by which CL-5 elicits its anthelmintic effects.

### **D.U.34 Embryotoxic Effects of Nicotine and Imidacloprid on Chick Embryo Development**

Dylan Motschenbacher  
Co-authors: Cord Brundage and Brielle Hachey  
Mentor: Cord Brundage, Biology

Nicotine is a known teratogen. Imidacloprid is a neonicotinoid designed to target the nicotinic acetylcholine receptors of invertebrate insects but may affect the development of vertebrates. We evaluated the developmental impact of environmental relevant imidacloprid (10 µg/mL) exposure on vertebrate development using a chicken embryo assay and compared that with the effects of saline or nicotine exposure (0, 10 and 100 µg/mL). Research grade, specific-pathogen-free (SPF) eggs were injected on day 0 and harvested on day 14 of development. Egg weight, embryo weight, and body morphometrics were compared between the treatment groups. Eggs treated with nicotine had an overall (10 - 20%) lower survival rate ( $P < 0.05$ ). Embryos exposed to 10 µg/mL nicotine that remained viable at 14 days did not differ significantly from controls. Embryos exposed to 100 µg/mL exhibited reductions in limb development ( $P < 0.01$ ) and altered head circumference ( $P < 0.009$ ). The imidacloprid-exposed embryos' weight was significantly reduced relative to controls ( $P = 0.034$ ). Tissues were harvested to determine histological changes as a result of imidacloprid. The use of the chicken embryo assay highlights the potential effects of developmental neonicotinoid exposure in vertebrates. Avian species may also be at particular risk of exposure from environmental pesticides and ingestion of contaminated insects and freshwater species.

### **D.U.E Identity Entwined: An Exhibition of Artwork about Motherhood and Identity**

Trinity Rietmann  
Mentors: Kathleen Hawkes and Jennifer Williams, Art

This series of artworks combine photography, performance art, and painting. The central theme is rediscovering my identity after becoming a mother, and how life events like parenthood shape who you are as a person. While this body of work reflects my personal experience, everyone can relate to the theme of identity in flux. The resulting artworks consist of large-scale photographs which will be displayed in an exhibition. To create these pieces, I have painted abstract backgrounds and then photographed models who are costumed, body-painted, and posed to interact with the backgrounds. The final project engages viewers from across campus, prompting self-reflection and growth in everyone who experiences the work.

### **Poster Session E 12:05 pm-1:00 pm**

### **E.U.1 Effects of Body Size on Egg Dimensions in a Utah Flammulated Owl Population**

Evelyn Johnson  
Co-author: Markus Mika  
Mentor: Markus Mika, Biology

The Flammulated Owl (*Psiloscoops flammeolus*) is a North American insectivorous owl that migrates yearly from Mexico to breeding locations in the western mountains of the United States and Canada. In northern Utah, the owl's life history has been documented in a project for 17 years by tracking the condition of breeding females and males with the juvenile's growth cycle. However, few studies have documented the correlation between parental health and the dimensions of their eggs. Olsen and Cockburn (1993) used a modified equation by Hoyt (1979) to estimate egg volume based on dimension variables such as length and width to relate it to the female condition. We established the volume of 46 Flammulated Owl eggs in 2024 by applying the Hoyt method. We then correlated the egg volumes to parental sizes and a dimorphism index between the sexes. Preliminary data suggest that female owls in greater health conditions, as determined by weight, will produce eggs with larger volumes. This contradicts Olsen and Cockburn's (1993) conclusion that healthier females with larger bodies will produce smaller eggs. Additionally, mating pairs that have a larger reversed sexual dimorphism index will produce larger eggs between the pair. Our work reflects measurements from a single season during adequate conditions. However, expanding the collection of these data across multiple seasons may provide a more rigorous perspective on egg production in this species under varying environmental conditions.

### **E.U.2 Isolation, Identification, and Characterization of Plant Growth-Promoting Bacteria (PGPB) from *Solanum lycopersicum* Roots Cultivated in Semi-arid Ecosystems**

Tyler Kaiser  
Co-author: Jaspreet Kaur  
Mentor: Jaspreet Kaur, Biology

Semi-arid regions of the US and worldwide have low soil fertility and drought-like conditions, which necessitate the excessive use of fertilizers and groundwater for irrigation to get optimum crop yields. These practices affect soil health and threaten the sustainability of groundwater resources. This project aims to isolate, identify, and characterize bacteria from *Solanum lycopersicum* (tomato) roots, with a final goal of finding PGPB that, when inoculated with tomato plants, will reduce the reliance on synthetic fertilizers and groundwater irrigation. For this, we first isolated bacterial endophytes from surface-sterilized tomato plant roots grown in Lubbock, TX. The isolates were identified based on the sequencing of a 16S rDNA region and then characterized for five plant growth-promoting (PGP) traits. We obtained 64 bacterial isolates from tomato roots and 53 of these were successfully identified. While most of the isolates belonged to *Bacillus* spp., other taxa such as *Enterobacter*, *Rhizobium*, *Paraburkholderia* were also represented. These isolates exhibited the ability for phosphorus solubilization (12), nitrogen fixation (14), and production of IAA (10), ACC-deaminase (28), and siderophores (4). Based on this, we made three microbial consortia with differential phylogenetic and functional diversity, which will be tested in the field for tomato cultivation.

### **E.U.3 Isolation of Pre-symbiotic Signaling Fungal Ligands from Orchid Mycorrhizal Fungi and Their Role in Affecting Orchid Seed Germination**

Cailyn Storter (presenting on behalf of Doohee Lee)  
Co-authors: Jyotsna Sharma, Ph.D. (Texas Tech University) and Jaspreet Kaur  
Mentor: Jaspreet Kaur, Biology

In the first step of mycorrhizal establishment, called pre-symbiotic signaling, fungi secrete Mycorrhization factors (Myc-factors) that comprise of mixture of various LCOs (lipochitooligosaccharides) and COs (chitooligosaccharides). These Myc-factors are then recognized by host plants to identify the presence of preferred fungi in soil. Whether Myc-factors establish specificity in mycorrhizal systems, especially orchid mycorrhizae, is not known. This study aimed to identify whether Myc-factors from orchid mycorrhizal fungi (OMF) contain LCOs and COs and whether they affect orchid seed germination. We hypothesized that OMF Myc-factors will contain LCOs and COs and Myc-factors extracted from preferred vs. non-preferred fungi will have differential effect on seed germination. To test this, we first isolated Myc-factors from preferred and non-preferred fungi of *Platanthera chapmanii* using butanol extractions. The presence of LCOs and COs in the extracts was ascertained by root branching assays with *Vicia sativa* plants. Finally, we conducted a seed germination experimental to identify the role of Myc-factors in establishing specificity. The branching of root hairs of *V. sativa* and production of secondary roots confirmed the presence of both, LCOs and COs in OMF Myc-factors whereas no such branching was observed in negative control. The data collection on seed germination is under processing.

### **E.U.4 Predicting Athletes Who Benefit from Feedback to Reduce Their ACL Injury Risk**

Sophie Pope  
Mentor: Chad Vidden, Mathematics & Statistics

This project found novel ways to analyze force plate data from the UWL Health and Science Center. Force plate data from one hundred and forty-seven female athletes was used to test the effectiveness of augmented feedback in reducing their vertical ground reaction force (VGRF), loading rate, and impulse. Reducing these three variables reduces the risk of anterior cruciate ligament (ACL) tear. Data was collected on each athlete's baseline, post-feedback, and transfer task jumps. Statistical analyses were conducted with metrics from the athlete's baseline jump and normalized by body weight before creating a model to predict post-feedback and transfer task results. This study predicts female athletes who would benefit less from this training by finding groups that this feedback technique does not significantly reduce max force, impulse, and loading rate.

### **E.U.5 Effects of Histamine on Intestinal Epithelial Permeability**

Ege Karadag  
Co-author: Benjamin Vandigo  
Mentor: Sumei Liu, Biology

Stress is closely linked with changes in the intestinal barrier function, resulting in increased permeability. Increased permeability of the intestinal barrier is recognized as an important factor in the development of gastrointestinal disorders, such as irritable bowel syndrome (IBS) and inflammatory bowel diseases (IBD). During stress, mast cells are activated to release several mediators, including histamine, mast cell tryptase, and tumor necrosis factor-alpha (TNF- $\alpha$ ), each of which can affect the structural integrity of the intestinal barrier. While histamine is an important mediator released from mast cells, its exact role in the modulation of intestinal permeability is poorly defined. In the current study, we analyzed the direct actions of histamine on intestinal permeability in isolated intestinal tissues of ground squirrels. Permeability was assessed by measuring transepithelial electrical resistance (TER), a reliable measure for determining barrier integrity. The findings showed that histamine significantly reduced TER, thus reflecting an increase in paracellular permeability. Future studies will continue to address the involvement of histamine in transcellular permeability pathways and the molecular mechanisms involved, with the aim of defining its ultimate contributions to the regulation of the intestinal barrier in a general context. Understanding how histamine affects intestinal permeability may help develop new treatments for stress-related GI illnesses.

### **E.U.6 Cranial Extracellular Electrophysiology**

Grace Ellingson  
Co-author: Cord Brundage  
Mentor: Cord Brundage, Biology

This study of neural development and function provides us valuable insight into important topics such as brain activity and brain development. Since bullfrog tadpoles (*Lithobates catesbeianus*) share key aspects of neural development of humans, this research can be valuable in determining how neural development in humans can be manipulated. We began this research with a dissection of the brain of bullfrog tadpoles, removing the forebrain, to determine how environmental toxins can cause an onset of altered ventilation including decreased oxygen (hypoxia) or an increase in carbon dioxide (hypercapnia). Nicotine, which we will be using to manipulate the brains exterior environment, has been shown to induce significant changes in neural function and development. Previous research indicates a correlation between nicotine and disruptions in respiratory control. Investigating these effects in bullfrog tadpoles, we aim to better understand mechanisms that are relevant to human health.

### **E.U.7 The Effects of Atrial Natriuretic Peptides on the Amphibian Heart**

Jordan Ichen  
Mentor: Cord Brundage, Biology

This project takes a closer look at the importance of the Atrial Natriuretic Peptide (ANP) in amphibian hearts. It is not often that we use frogs as a competitive model to be used against humans, but here we would like to change that. I will be looking at both the amounts and effects that ANP has on frog hearts and comparing it to the human heart. ANP is known to lower blood pressure in humans, and I am curious to know if it offers the same effect in frogs as well. Western blots can be used to identify and quantify proteins. I will be running a Western Blot technique to identify the amount that the frogs actually have in their hearts. Western blotting techniques identify how much of some protein is in a specific area (the heart) of the animal being tested. In order to do so, the hearts must be ground up with a solution that separate the proteins out from each other. This allows for identification and separation of ANP from other proteins also found in the blood and heart. The goal is that this will hopefully introduce the importance that amphibians hold in the world of comparative physiology.

### **E.U.8 Cultivation of Host Adapted *Borrelia* in Sprague Dawley Rats**

Andrew Momsen  
Mentor: Cord Brundage, Biology

*Borrelia burgdorferi* is the bacteria that causes Lyme disease. Like most pathogens, *Borrelia* triggers an immune response which leads to the creation of specific antibodies that bind to antigens on the surface of the bacteria. One of these antigens, OspC7, has been identified as the antibody binding site that has been effective at producing an immune response. One important characteristic about OspC7 is that it changes its structure based on the host it infects. This host adaptation is different for different species, and is not present on the bacteria *in vitro*. Producing host adapted *Borrelia* is essential to create a vaccine, and this project aims to do just that. A previous study showed that growing host adapted *Borrelia* inside of a dialysis membrane within a Sprague Dawley rat allowed for the creation of host adapted OspC7 in *Borrelia burgdorferi*, and this study will attempt to recreate this procedure with other species of *Borrelia*, and potentially improve on the procedure for creating the host adapted *Borrelia* species.

### **E.U.9 Walking and Internal Mentation on Creativity in Individuals with ADHD**

Elizabeth Chisick  
Mentor: Ellen Rozek, Psychology

Research on the cognitive capabilities of individuals with ADHD has yielded mixed results, with some studies indicating deficits and others not. This study explores the effect of internal mentation on cognitive flexibility, and whether internal mentation acts as a moderating factor in the cognitive flexibility of individuals with ADHD. Participants engaged in walking tasks designed either to encourage or discourage internal mentation. Afterward, participants completed the Alternative Uses Task, in which they listed as many uses as possible for two common objects: a brick and a pen. Finally, participants completed the ADHD Self Report Scale (ASRS-v1.1). It is hypothesized that encouraging internal mentation will enhance cognitive flexibility scores across all participants, and that internal mentation will play a critical role in determining the presence of cognitive flexibility deficits in individuals with ADHD. The results will be analyzed using a two-way independent measures ANOVA. If internal mentation acts as a moderating variable, participants with ADHD may exhibit cognitive flexibility deficits when internal mentation is not prompted, but may exhibit no deficit when internal mentation is prompted. The outcomes of this research could inform the development of more targeted and effective therapeutic interventions for those with ADHD.

### **E.U.10 The Value of Pets: Experiences & Interactions with Animal Rescues**

Cortlyne Froehlich  
Mentors: Elizabeth Peacock and David Anderson, Archaeology & Anthropology

Animal shelters and rescues not only play a critical role in addressing the welfare of animals, but they also fulfil a deeper emotional and social purpose for the individuals who allocate their time and resources to them. The value that people place in their pets has the potential to dramatically influence how they interact with animal shelters and rescues, while shaping their experiences with animal welfare. Through participant observation with Saving Paws Animal Rescue, semi-structured interviews, and over 1,500 online surveys, this research has found that people who interact with animal welfare organizations associate their pets as kin of their own. This reassignment of companionship animals as members of the immediate family results in a deeper emotional connection, thus establishing a desire to contribute to animal shelters and rescues. In particular, female-identifying individuals are more likely to initiate experiences with animal welfare organizations, likely to fulfill a caregiving role in the lives of the animals which are closely associated with human children. The results of this study allow for a deeper understanding of the value of pets, thus helping others understand that strengthening the relationship between an animal welfare organization and its community can be mutually beneficial.

### **E.U.11 The Association between Pediatric Medical Exposure and Pursuing a Medical Profession as a Future Career**

Chloe Handrich  
Mentor: Kevin Zabel, Psychology

Childhood medical experiences can significantly influence long-term psychological outcomes. Adverse experiences may lead to avoidant healthcare behaviors but may inspire medical career choice. This study investigates the correlation

between pediatric medical exposure and the propensity to pursue a medical career. Early exposure to medical environments may enhance interest in healthcare professions. Research shows many choose careers reflecting childhood experiences, for instance, clinical psychology professionals often experienced psychological help as a child. However, this has not been studied in the medical field. It's unclear if pediatric medical exposure increases interest in medical professions. This study involved 100 UWL undergraduate students from pre-medicine, pre-physician assistant, and pre-occupational therapy clubs. Participants completed questionnaires assessing their pediatric medical exposure, career and education motivations, parental careers, and resilience which will be entered as independent variables. A multivariate regression will analyze the relationship between these variables and the dependent variable of future career aspirations in the medical field. I expect that higher instances of pediatric medical experiences will predict greater interest in a medical career, suggesting that early medical exposure can shape career choice. This research aims to fill gaps in research regarding how childhood medical experiences influence professional trajectories.

#### **E.U.12 Use of Visual, Auditory, and Tactile Cues to Influence Cadence and Achilles Tendon Loading in Running**

Emma Heinert

Mentor: Thomas Kernozek, Health Professions

Running has a high incidence of Achilles tendon (AT) injuries that may be due to high forces and repetitive loading. Running cadence may influence AT loading. To promote a 10% cadence increase, auditory, visual, and tactile cues were used. Thirty-four male and female runners ran on an instrumented treadmill at 7.5 mph where kinetic and kinematic data were obtained. AT cross-sectional area was measured with ultrasound imaging. Inverse dynamics then static optimization were used to calculate muscle forces and AT loading. All cued conditions increased cadence from the baseline run condition. Auditory and visual cues yielded a cadence increase closest to 10%. There was no difference between auditory and visual cues to increase cadence ( $p < 0.05$ ). AT-related loading variables such as peaks in ground reaction force, AT force, and soleus muscle force were lower when cadence increased to near 10%. Visual and auditory cues reduced AT loading most compared to the run (baseline) condition. Understanding the relationship between the use of cues and increasing cadence may aid in the treatment and prevention of AT injuries.

#### **E.U.13 Effects of Real-Time Impact Force-based Augmented Feedback on Running Patterns of Novice Recreational Runners**

Nora Stroh and Ella Wonser

Co-authors: Sydney Smith and Kelly Hierl

Mentor: Thomas Kernozek, Health Professions

Running related injuries may be related to excessive ground reaction forces (GRF). The study's purpose was to see if participants could lower their peak GRF via augmented concurrent feedback while running on an instrumented treadmill. We examined healthy male and female novice runners ages 19-23. Retro-reflective markers were placed on 54 selected anatomical landmarks and body segments. After a standardized warmup, we collected baseline peak GRF to determine 5% and 10% reduction goals. We utilized a PowerPoint video to portray how feedback would be shown on a digital display while the participants were running. They received augmented feedback while running to provide a visual representation of whether they were above or below their 5% and 10% peak GRF reduction goals. We then took away the visual display and examined their retention. Kinematics were measured with 3D motion capture and kinetics were measured on the instrumented treadmill. We plan to analyze peak GRF, foot strike angle, cadence, and vertical center of mass excursion. Preliminary data analysis showed cadence increased 4.2% with GRF feedback. In addition, we expect to see smaller foot strike angles and reduced vertical center of mass excursion to effectively reduce peak GRF.

#### **E.U.14 Barriers or Bridges: Immigrant Entrepreneurship in the U.S. and Wisconsin**

Nainil Mukesh Jariwala

Mentor: Adam Stivers, Finance

This study examines the economic impact of immigrant entrepreneurs in Wisconsin and identifies barriers limiting their contributions. Despite outperforming native-born counterparts in business formation nationwide, Wisconsin's immigrant business formation rate ranks 31st, significantly lower than neighboring states. Analysis of national data and regional case studies reveals key obstacles—limited access to capital, complex licensing requirements, and the absence of targeted support programs. Examples such as Michigan's Global Detroit Initiative and Minnesota's licensing reforms demonstrate that tailored interventions increase business creation, survival rates, and job growth. Immigrant-owned businesses in the

U.S. generate \$775 billion in revenue annually and employ 10% of the workforce, yet Wisconsin fails to leverage this potential. The research estimates that introducing immigrant-focused microloan programs, accelerators, and regulatory reforms could add over \$30 million in economic activity and expand employment. Findings suggest that addressing these barriers is essential for strengthening Wisconsin's entrepreneurial ecosystem and closing regional economic gaps. This paper provides policy recommendations designed to improve immigrant business formation rates and enhance the state's economic competitiveness.

#### **E.U.15 Prompting Profits? Exploring ChatGPT-4's Power in Technical Indicators, Excel, and Statistical Methods**

Nainil Mukesh Jariwala  
Mentor: Adam Stivers, Finance

This research explores the predictive potential of GPT-4 in financial markets by comparing its performance across technical indicators. The study integrates large-scale OHLCV (Open, High, Low, Close, Volume) data. A framework was developed to evaluate how effectively the model processes numerical financial data and generates forecasts based on statistical reasoning. GPT-4 was tasked with calculating key technical indicators, interpreting financial reports, and assessing news sentiment to predict short-term price movements. Notably, the model demonstrated 92% precision in performing statistical analyses, including regression testing, on an extensive financial dataset of OHLCV data points. This level of quantitative processing validated GPT-4's capacity to handle complex financial datasets with consistency and accuracy. The findings reveal that while GPT-4 is not designed as a traditional forecasting model, its ability to combine market sentiment, technical signals, and financial fundamentals provides valuable insights. The model showed strong performance in momentum detection and trend reversal identification. Ultimately, this study highlights GPT-4's promising role as a supplementary tool for financial and data analysts.

#### **E.U.16 LGBTQIA+ Media Representation: Impact on the Identity Development of LGBTQIA+ College Students**

Ashlyn Jones  
Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

People in the LGBTQIA+ community have been increasingly represented in the media over the past few decades. This is important, as representation can validate and normalize diverse identities, which can help LGBTQ+ individuals feel seen and accepted. I am asking the research question, how have representations of LGBTQIA+ people and identities in the media impacted the identity development of LGBTQIA+ young adults (18-25 years)? What are these LGBTQIA+ young adults' perspectives on these representations? Using Queer Theory as a theoretical framework, I hope to conduct a qualitative study that examines how LGBTQIA+ young adults' perceptions and expressions of their own sexual and gender identities have been impacted by representations of the LGBTQIA+ community in the media. I will conduct personal interviews that explore how LGBTQIA+ young adults experiences with LGBTQIA+ representation in the media have impacted them in connection to Cass' Model of LGBTQIA+ Identity Development. This research will have potential implications toward the impact of LGBTQIA+ representation in media on the identity development of LGBTQIA+ college students.

#### **E.U.17 Laken Riley Act: An Analysis of the Concepts of an Ideal Victim and Ideal Perpetrator in Relation to Policy and Media**

Morgan Holliday  
Mentors: Richard Breaux and Terry Lilley, Race, Gender, & Sexuality Studies

Laken Riley was a 22-year-old white female who was murdered in Georgia when she was on a jog by blunt force trauma and asphyxiation by an illegal immigrant in February of 2024. After she was murdered, there was a bill named after her titled the Laken Riley Act. What made her case so special that there was an act named after her? This work is important because it uses textual and data analysis of congressional testimony, transcripts of interviews, arguments made in favor of policies, controlling images within the media, and how this has been repeated throughout history, to explore ideas about who is our mainstream media's perfect victim and the ideal perpetrator. Laken Riley is one example of how people rely on assumptions of gender and race to not only create legislation but reinforce the idea of who is an ideal victim, and who is an ideal perpetrator: the ideal victim being a young, white woman, and an ideal perpetrator being a man of color. The research that has been conducted is to show that not only is there injustice in media coverage, but also policy.

### **E.U.18 A Fire History Reconstruction from a Lake in Southern Wisconsin**

Melanie Weis and Madison Spychalla  
Mentor: Joan Bunbury, Geography & Environmental Science

Over the past couple of centuries, environmental and climatic changes have occurred in the Upper Midwest. Understanding past climate regimes can provide insight into how a changing climate will affect our societies and the environment in the future. A record of fire history is being developed using macroscopic charcoal from a lake sediment core collected from Mud Lake in Jefferson County, Wisconsin. This will aid in our understanding of climate and fire history in the region over the past 3,000 years. Periods of higher charcoal accumulation indicate more fire activity, implying drier and hotter conditions, while lower charcoal quantity suggests periods of wetter and cooler conditions in the region. The findings of this project will be compared with other paleoenvironmental studies from the area.

### **E.U.19 Exploring Membrane Influences on Cytotoxin HpmA using Styrene-Maleic Acid (SMA)**

Megan McDonald  
Mentor: Daniel Grilley, Chemistry & Biochemistry

Hemolysin HpmA causes red blood cells (RBC) to burst when secreted by the bacterium *Proteus mirabilis*, a common cause for urinary tract infections. HpmA secretion requires a two-partner secretion pathway wherein a partner protein is utilized to transport HpmA across the exterior membrane of the bacterium. This project strives to gain understanding of the physical conformation HpmA takes while inside the RBC membrane, which results in the cell's rupture. To achieve this, styrene maleic acid (SMA) copolymer will be used to extract membrane-spanning proteins from RBC membranes treated with HpmA. The SMA-HpmA complex will then be isolated, and its structure will be examined. Further research could build upon this knowledge to determine the components within RBC membranes necessary for HpmA targeting. The membrane insertion of HpmA has yet to be observed, and the current models for HpmA conflict with the proposed lysis mechanism, creating room for this project to build a new branch of knowledge.

### **E.U.20 Gathering Perspectives of UWL School of Education Alumni and Current Students**

Sara Oppermann  
Mentor: Rosalie DeFino, Educational Studies

As an Elementary/Middle Level Education major, I wanted to gather perspectives from both current UWL education majors and recent graduates to explore how their experiences in the program are beneficial to classroom practices. I conducted a series of interviews to gain insight into how teacher education programs impact the development of strong teachers. In this study, I analyzed and compared the reflections of both alumni and current pre-service teachers' experiences in UWL's teacher education program and how these may shift over time. Some preliminary insights from interviews with recent graduates highlight the importance of gaining field experience early on, having professors with experience in education, and the strong community base in the School of Education. Additionally, since many current UWL students may struggle with the unknowns of their future in teaching, gaining perspective on the real-life impact of this program will allow preservice teachers to better understand purpose within the School of Education.

### **E.U.21 Analyzing the Impact of Changing Planet Location on Large Orbiting Mirrors Experiencing Radiation Pressure**

Kelvin Scheurer  
Mentor: Shauna Sallmen, Physics

One way to make a planet more habitable is to use large, lightweight mirrors in orbit around the planet to redirect starlight. An extraterrestrial civilization on a potentially habitable, tidally locked planet might also wish to direct starlight onto the planet's permanently dark side. However, light reflecting on mirrors causes a force, and the effects of this radiation pressure (RP) on the orbit stability of large, lightweight mirrors are not well known. Our research group is studying the stability of mirror orbits through simulations of mirrors orbiting planets located in the habitable zone (HZ) of various types of stars. Mirror survival under RP depends on physically important factors, including the RP acceleration compared with the gravitational accelerations of the star and planet, and the ratio of planetary and mirror orbit periods. We began by simulating mirrors in initially circular orbits at different distances from Earth-sized planets at the inner edge of the HZ for different star types. Initial mirror orbit orientations varied. We were previously unable to statistically model the



outcomes as a whole because of gaps in the values of the physical factors described above. I expanded the simulation parameter space to include planets at the middle and outer edge of the HZ. I will describe how a planet's location within the HZ affects mirror orbit stability, and evaluate how much these simulations have filled the gaps in values of the physically relevant quantities.

### **E.U.22 Extinct but Integral: Revisiting the Native American Dog as an Overlooked Biotechnological Asset to Precontact Societies**

Alexander Silver

Mentors: Constance Arzigian and Amy Nicodemus, Archaeology & Anthropology

Some of the oldest dog burials in the world are located in western Illinois, less than 17 miles from the Mississippi River. These burials are unique, chiefly because they are the oldest known individually buried domestic dogs, dating back over six thousand years. During the Early Archaic period, these dogs were highly valued, and their morphological features remained largely unchanged over thousands of years, until the shift to agriculture. The consistency of their shape and presence throughout much of the human history on this continent highlights their role as a vital tool. These dogs were an invaluable piece of technology, spanning hundreds of cultures and thousands of miles, requiring minimal adaptation. By employing tools such as isotopic analysis to study the diets of domestic dogs, and ethnological research to understand hunting practices, dog remains can provide valuable ancillary data for nearly any archaeological culture in which they were present.

### **E.U.23 Livestock Management at the Bronze Age Settlement of Rabe Anka Siget, Serbia**

Nora Woolley

Mentor: Amy Nicodemus, Archaeology & Anthropology

The Maros culture existed during the Early-Middle Bronze Age (2700-1500 BC) in modern-day regions of Hungary, Romania, and Serbia. They were an agricultural group of people who relied heavily on crops and domesticated animals. While the Maros culture is one of the more well-researched cultures in this region, there are still aspects with limited information, such as the role of livestock in Maros culture and how they spend their day-to-day lives, i.e. their daily and annual rhythms. This thesis focuses on zooarchaeological analysis of faunal remains from three Maros sites, Klárafalva-Hajdova, Rabe Anka Siget, and Pecica Șanțul Mare. Through this analysis, I will assess the relative importance of different wild animals and livestock species and how the Maros people utilized each animal (food, wool, dairy, riding, etc.). Based on those analyses, I will show how human-animal interactions differ by site. This thesis will expand the limited knowledge about the Maros' animal economies and the influence of different animals on the rhythms of daily life.

### **E.U.24 Quantifying Training Load for Collegiate Wrestlers**

Jonah Streveler

Co-author: Landin Ahrenholz

Mentor: Ward Dobbs, Health Professions

Wrestling involves training that incorporate high intensity and volume to prepare the athlete to meet the physical demands of the sport. Due to the imposed stressors, it is imperative to monitor training load to quantify the strain on the athlete and modulate training regiments. Purpose: The purpose of this study was to utilize session rating of perceived exertion (sRPE) to quantify the training loads exhibited by collegiate wrestlers. Methods: 30 male collegiate wrestlers participated in this observational study. Over the course of a training cycle (including preseason, intraseason, and postseason) sRPE was acquired following each training session and used to quantify training strain, monotony and the acute to chronic workload. Additionally, training load was compared with performance outcomes to identify if potential relationships. Results & Discussion: This abstract is being submitted as a work in progress. The data collection is complete, but data analysis is ongoing. However, the results will be prepared for dissemination prior to the symposium.

### **E.U.25 Student Perceptions of Exam Type Based on Identity**

Christina Tondo and Amelia Fortner  
Mentor: Eugenia Turov, Chemistry & Biochemistry

We are investigating the relationship between student identity and their perception of Multiple-choice exams. We are trying to understand whether measures such as disability status, gender, race, first gen status as well as others affect student comfort and performance on multiple-choice and other exam types. The data were collected using anonymous, self-reported Qualtrics surveys implemented in various classes across campus at different course levels. Data collection is ongoing, and the results will aid professors in understanding how exam types might (dis)proportionately affect students based on their identity. Conclusions will be presented at the Symposium in Spring 2025.

### **E.U.26 Does AXL in Metastatic Breast Cancer Cells Indirectly Regulate Megakaryocyte Survival?**

Maya Biese and Avery Amenson  
Mentor: Jaclyn Wisinski, Biology

Platelet production by bone marrow-resident megakaryocytes and clearance by hepatocytes regulate blood platelet counts. Low platelet counts delay cancer treatment due to bleeding risk, while high platelet counts can correlate with increased metastasis of some cancers. Metastatic breast cancer (BC) can make its way into the bone marrow and may influence megakaryocyte proliferation and consequently increase platelet production. AXL is a type of protein found on the cell surface that responds to signals from the cell environment to grow and divide. When AXL is overactive, it can cause a cell to grow and divide too quickly leading to cancer. Previous data suggests that AXL can promote interaction between cancer cells and the bone marrow microenvironment to enhance metastasis. To measure if DAMI cell adhesion as a marker of maturation can be influenced by AXL, crystal violet assays were conducted on DAMI cells with conditioned media from BC cells and/or osteoblasts with and without treatment with an AXL inhibitor and activator, Gas6. We hypothesize that stimulation of AXL in BC cells will decrease the release of molecules that will promote megakaryocyte maturation. Conversely, inhibition of AXL in BC cells may promote or have no effect on the release of molecules. At this time, we do not have enough results to form a conclusion. If altering the activity of AXL in breast cancer cells leads to indirect changes in megakaryocyte function, this could identify AXL as a therapeutic drug.

### **E.U.27 Effect of Rap1b Phosphorylation on Megakaryocyte Adhesion**

Karissa Valitchka, Leah Tomaz, and Elena Kozich  
Mentor: Jaclyn Wisinski, Biology

Rap1b is a signaling protein involved in an array of cellular processes and functions. Little is known about the exact role that Rap1b plays in regulating the maturation and adhesion of megakaryocytes - the cells that produce platelets within the bone marrow - but we suspect that its function may be significant in activating surface proteins that mediate adhesion of megakaryocytes to a nearby surface. When Rap1b becomes phosphorylated, it detaches from the cell membrane and becomes free floating in the cytosol. The goal of our project was to investigate how the phosphorylation of the Rap1b protein and its differing locations within the cell affects the ability of megakaryocytes to adhere. To accomplish this, we conducted adhesion assays using three different Rap1b cell lines – wild-type, phospho-mimetic Rap1b-EE, and phospho-deficient Rap1b-AA. We found that the phospho-deficient cell line caused the most significant increase in adhesion, likely due to its proximity to the plasma membrane.

### **E.U.28 Demographic and Genomic Consequences of Genetic Rescue in a Changing Climate**

Cari Walker, DeeDee D'Antonio, and Cecelia Harms  
Co-authors: Sarah Fitzpatrick, Ph.D. (Michigan State University) and Jessica Judson  
Mentor: Jessica Judson, Biology

The conservation strategy of assisted migration with the purpose of genetic rescue has been successful in reducing extinction risk in several well-known case studies. However, concerns regarding loss of local adaptation and uncertainty in the repeatability of the positive outcomes of genetic rescue have led to hesitancy to use genetic rescue to recover small populations. In this study, we experimentally manipulated populations of eastern mosquitofish (*Gambusia holbrooki*) by inducing repeated bottlenecks, similar to the decline in population size faced by many endangered species, to create small populations with low genetic diversity and increased inbreeding. We then introduced individuals into a subset of these

bottlenecked populations to simulate the process of assisted migration for genetic rescue. Finally, we introduced heat stress in a subset of these populations to understand the interplay of genetic rescue, demography, and adaptive response to heat. We performed DNA extractions to send for whole-genome sequencing, which will be used to understand the outcomes of genetic rescue, and how environmental stress interacts with genetic rescue. We used census information and preliminary sequencing to assess initial differences between genetic treatments and temperature treatments.

### **E.U.29 Photoluminescence Quenching of Fluorescein by Embedded Silver Nanoparticles**

Spencer Sivertson  
Co-authors: Griffin Wierzba and Shahid Iqbal  
Mentor: Shahid Iqbal, Physics

In this work, we discussed the photoluminescence (PL) of fluorescein in the presence of ion implanted silver nanoparticles. Fixed ion beam energy (70 keV) and different ion beam fluences were used for silver nanoparticles synthesis. The silver nanoparticles implanted in the samples were studied using optical absorption spectroscopy. Steady state photoluminescence measurements were carried out to investigate the effect of silver nanoparticles on the photoluminescence of fluorescein. The PL quenching of fluorescein has been observed to increase with increased ion beam fluence and increased concentration of silver nanoparticles. The PL quenching was attributed to possible energy transfer from fluorescein to silver nanoparticles.

### **E.U.30 The Effect of Silver Nanoparticles on Photoluminescence of Rhodamine-6G**

Griffin Wierzba  
Co-authors: Weiyi Chen and Shahid Iqbal  
Mentor: Shahid Iqbal, Physics

The Photoluminescence (PL) signals of Rhodamine-6G fluorophore in the proximity of embedded silver nanoparticles were investigated through experiments to determine if silver nanoparticles enhanced or quenched Rhodamine's PL. Rhodamine is useful for various applications including bioimaging and environmental monitoring, however the signal could use enhancement in some scenarios. Silver nanoparticles could potentially be used to increase the signal strength. The silver nanoparticles used were synthesized in soda lime glass fixed at 70 keV energy and prepared with different ion beam fluences, resulting in samples with different amounts of nanoparticles across the implanted region. Changes in the PL enhancement were studied by spin coating all silver implanted samples and a reference sample with Rhodamine-6G, then exciting each sample at certain wavelengths and analyzing the resulting emission spectra to determine if the silver nanoparticles quenched, enhanced, or had no effect on the signal from the fluorophore. The PL measurements were recorded using steady state photoluminescence spectroscopy and the existence of the silver nanoparticles was confirmed by optical absorption spectroscopy. The results demonstrated that at certain excitation wavelengths, various distributions of embedded nanoparticles produced stronger PL signals, possibly attributed to plasmonic field enhancement of the nanoparticles.

### **E.U.31 Detecting Geomorphic Change and Sediment Dynamics in Plum Creek, Crawford County, WI**

Cade Rundle  
Co-authors: Colin Belby and Niti Mishra  
Mentor: Colin Belby and Niti Mishra, Geography & Environmental Science

Historical agricultural practices in the Driftless Area contributed to significant sediment deposition in valley-bottom streams, altering their geomorphic and hydrologic characteristics. Plum Creek, located in Crawford County, Wisconsin, has experienced extensive sediment accumulation, leading to floodplain disconnection and restricted lateral channel migration. This study examines the stream's geomorphic evolution by assessing patterns of erosion, deposition, and channel migration over time. To assess multidecadal planform changes and lateral migration, a combination of georeferenced historical aerial photos and orthorectified aerial imagery from 1938 to 2022 were used to digitize the stream channel. To quantify recent erosion and deposition, high-resolution LiDAR data were collected in 2024 using a DJI Matrice 350 RTK drone equipped with a Zenmuse L2 LiDAR sensor. The newly acquired LiDAR dataset was compared to airborne LiDAR collected in 2011 and 2021 to detect volumetric changes in sediment within the Plum Creek floodplain and channel banks. Results from this analysis provide valuable insights into the impact of floodplain disconnection on sediment transport and channel mobility. These findings can inform future restoration efforts aimed at reconnecting Plum Creek to its floodplain, mitigating erosion, and enhancing ecological resilience in the watershed.

### **E.U.32 #almonddaughter: How Pro-anorexic Rhetoric is Represented, Commercialized, and Amplified by Fitness and Healthy Lifestyle TikToks**

Sikora Bretsch

Mentors: Bryan Kopp and Darci Thoune, English

This study aims to identify where and understand how pro-anorexic rhetorical elements manifest in mainstream, health-related, short-form video content on TikTok. This research begins by analyzing textual and discourse patterns, as well as fundamental genre qualities, of self-identified pro-anorexia communities. This is done through posts collected from the online forum currently known as ED Support Forum, previously MyProAna. Data collected from forum posts are inductively coded and undergo word frequency analysis to derive patterns from pro-anorexia rhetoric. This study then moves into TikTok, where short form videos are collected via purposeful, systematic “personas” that replicate users seeking out health-related content. Collected video data is then coded via the original pro-anorexia code, word frequency analysis, and a visual semiotic analysis. The results of the video data are then compared to the pro-anorexia forum (ED Support Forum) results to understand similarities and differences between these forms of media and discourse. Discussion will center around the ethical and wellbeing related implications of pro-anorexic rhetoric manifesting in the mainstream, as these media genres may pose a heightened risk for eating disorder development.

### **E.U.33 The Impact of Sleep Duration on Reaction Time Performance among College Students**

Alyssa Maroszek, Savannah Miller, and Jamie Sessody

Mentor: Teresa Hepler, Exercise & Sport Science

To gather our data, we plan on accumulating several college student subjects through advertisement; our goal is to find approximately 20 participants in our study. We will set 3 days during the week of March 3rd for subjects to come into the human motor behavior lab in UWL’s Mitchell Hall and complete a survey involving their sleep the night prior. Subjects will then partake in 3 rounds on the MOART (Multi-Operational Apparatus for Reaction Time), a device that measures simple reaction time. All subjects will be numbered to ensure that their identities are kept anonymous. After our data has been collected, we will analyze the correlation between sleep duration and reaction time. We also plan on further exploring confounding variables of our study, including the effects of sleep quality.

### **E.U.34 That Dang Phone! How Phone Usage Affects Stress Levels during and after a Stressful Event**

Samantha Ankeny

Mentor: Ryan McKelley, Psychology

This study was designed to assess stress levels during a break from a stressful event while doing nothing, using a smartphone, or practicing mindfulness. Participants were then reintroduced to a stressor to investigate how effective these strategies are once the break ends. 65 participants were told that the study was on job preparedness to keep them unaware of the nature of the study. Participants were connected to biofeedback equipment throughout the experiment. Participants were given five minutes to prepare a speech and were told that their speech will be recorded as they give it from memory. Participants were then given a five-minute wait period in which they were randomly assigned to one of three conditions: doing nothing, free use of phones, or mindful breathing. Once the wait period ended, participants gave their speech to a camera and then completed surveys. Data has been collected and is currently being analyzed. I anticipate that phone use will temporarily reduce stress during the wait period, but stress levels will revert upon re-exposure to the stressor. Conversely, it is expected that mindfulness and inactivity will only slightly reduce stress during the waiting condition but result in lower stress levels upon stressor re-exposure. The findings aim to reveal the efficacy of phone use as a stress management tool through avoidance, particularly among college students.

## UNDERGRADUATE ORAL PRESENTATION ABSTRACTS

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### Oral Session A1 8:50 am-9:15 am

#### **O.U.3 The Women's Hell: Ravensbrück Concentration Camp**

Ashley Wachter  
Mentor: Penelope Hardy, History

From May 1939 until late April of 1945, Ravensbrück concentration camp, also known as “the women’s hell”, held over 140,000 women prisoners from 40 different nations. This constituted one of the largest women concentration camps in the German Reich during the Holocaust genocide in World War II. Ravensbrück prisoners experienced brutal work, horrible overcrowding, medical experiments, and work in brothels. The most impactful guards in Ravensbrück were Aufseherins, female Nazi guards. These were the most powerful women in the camp yet convicted of crimes at rates much less than their male counterparts during the postwar Ravensbrück trial. While scholars have examined the structure, and their impact of other concentration camps, none have analyzed gender roles and psychological differences within Ravensbrück. In this paper, I will explore why the majority female Ravensbrück concentration camp was established and why female Nazi guards played such an impactful role in the camp. The vast psychological gap between the nurturing prisoners and the coldblooded guards in the concentration camp lets us examine what life was like in Ravensbrück, which makes an important contribution to understanding the Holocaust.

### Oral Session A2 9:20 am-9:45 am

#### **O.U.6 The History of the University of Wisconsin-Whitewater's Wheelchair Basketball Program**

Ethan Endres  
Mentor: Penelope Hardy, History

From coaches to players to administrators, University of Wisconsin-Whitewater’s wheelchair basketball program has a culture that breeds charisma, competitiveness, professionalism, and determination that carries far beyond the sport. UWW’s wheelchair basketball program owes its existence to the grit of wheelchair-bound World War II veterans who wanted to continue playing a sport they had passion for prior to the onset of the war. This dedication to finding their joy in life regardless of their injuries set the groundwork for the National Wheelchair Basketball Organization (NWBA), the addition of a new event in the Paralympics, and the development of UWW’s wheelchair basketball program. This paper considers a plethora of influential figures who created a wheelchair basketball culture that transcends the sport and gives UWW an international reputation. This history of this program stems that wheelchair-bound athletes are highly talented in many walks of life attributable to the wheelchair-bound pioneers of World War II. This project explores how a smaller Midwestern college created waves in a sport that is often underrecognized.

#### **O.U.7 The Evolution and Development of Cultural Assimilation Found within the Syrian-Lebanese Population throughout the 1880s to the 1920s in the La Crosse Area and the Greater Midwest**

Peyton Seiler  
Mentor: Tiffany Trimmer, History

The migration of the Syrian-Lebanese population into the United States between the 1880s and the 1920s represented a significant cultural shift in global migration history. This population was driven away by a series of economic hardships and political instability under the Ottoman Empire's rule in the early twentieth century. Historians have analyzed how Syrian-Lebanese migration evolved and can be analyzed through reflections of scholarly focus on economic motivations and assimilation to identity formation, transnational networks, and the role of race and religion in creating the immigrant experience formed in the United States. This presentation will explore the different historical debates, including narratives of economic mobility studies emphasizing diaspora and cultural hybridity within the typical American society, and more recent approaches of incorporation of gender and sexuality in the early frameworks of immigration of the Syrian-Lebanese into the United States. The framework of this presentation will mainly focus on the American Midwest and the Greater La Crosse Area using the Syrian-Lebanese population as an opportunist to develop while engaging in the process of

becoming American or Americanized. Analyzation of each city's Syrian population is to cultural change bridged by the American government and how each conformed or resisted against it.

### **Oral Session B1 9:55 am-10:20 am**

#### **O.U.10 Paving the Way for La Crosse's Sustainable Future**

Mackenzie Noel and Khloe Carothers

Mentors: Alysa Remsburg (Sustainability & Environmental Studies) and Nancy Tribble (Habitat for Humanity-ReStore)

Our projects strive to build community through sustainable actions by fostering collaboration, education, and hands-on initiatives that empower individuals to make a difference. By connecting people through resources, knowledge, and opportunities for action, we aim to create an environmentally conscious community. Mackenzie's project works with the La Crosse Habitat for Humanity ReStore, mentored by Nancy Tribble, the ReStore Director, and Taylor Olsen, the Restore Manager. The Habitat for Humanity ReStore is a non-profit organization that works to keep the La Crosse area sustainable by keeping items out of landfills through donations and repurposing. This project aims to get an inside look at what goes on at the ReStore and the community impacts that follow, by participating in the everyday functions of the store, and collaborating on future initiatives. Khloe's project works with Casey Meehan at the Sustainability Institute in La Crosse. The Sustainability Institute is a 501(c)3 that focuses on educating, advocating, and inspiring the community towards a more sustainable future. Workshops, community outreach, and education materials work to bridge the gap between knowledge and action. This project's purpose is to educate the community on youth climate action grants, good life goals, and local sustainability initiatives that empower individuals to take meaningful action toward a greener future.

#### **O.U.11 Alcohol's Influence on the Social Lives of UW-La Crosse Students in the 20th and 21st Centuries**

Elizabeth Scheerer

Mentor: Penelope Hardy, History

Alcohol consumption is a common pass time for those who call La Crosse home, this is no different for the college students living in La Crosse. The presence of student drinking culture among the students of UW- La Crosse is stronger than ever, from the annual celebration of Oktoberfest that creates a binge drinking weekend that spans the neighborhoods closest to the university, to the lure of the downtown bar scene that pulls students in. UW-La Crosse students did not always have this relationship with drinking, each decade there are shifts in how students view and consume alcohol. Starting in the 1920s with little to no students drinking to the 90's and early 2000's where drinking is extremely common. With time this student relationship with alcohol morphed and came to a head with the drinking age changing in Wisconsin on September 1st, 1986, leaving incoming freshmen unable to consume alcohol with the rest of the student body. With this, underage drinking emerged, and students learned how to get around rules and continue the tradition of drinking not only on campus, but in the public. By exploring how UW-La Crosse students' drinking habits have evolved over the decades, we can come to understand how the drinking culture among the university students has become so ingrained within the social lives of students.

#### **O.U.12 Volunteer or Voluntold: Why They Fought**

Landon Hubert

Mentor: Penelope Hardy, History

Often called "the war that killed the draft," the Vietnam War is synonymous with the military draft, a contentious aspect of the era. However, contrary to popular belief, over two-thirds of those who served in Vietnam were volunteers rather than draftees. For many years, the U.S. government has cited this key statistic to counter both criticisms received over its use of the draft and the general unpopularity of the war. While factually accurate, what actually constituted a volunteer in Vietnam is far more complex. For many, the looming threat of conscription blurred the lines between volunteering and coercion. As a result, many enlisted preemptively to choose their branch of service or secure a more favorable military occupation. Others were motivated by patriotism, duty, or the promise of educational and career opportunities, among many others. This project focuses on the experiences of Wisconsin veterans who volunteered to serve in Vietnam. Drawing upon an extensive archive of letters and oral interviews, this project aims to uncover the diverse and often

multifaceted motivations behind their enlisting decisions. By examining these personal accounts, this project seeks to highlight how societal pressures and individual agency intersected, providing a deeper understanding of what it truly meant to "volunteer" during the Vietnam War.

### **O.U.13 Electronic Cigarette Use Inhibits Post Exercise Hypotension Responses in Young Healthy Adults**

Quinn Rowley

Co-author: Salvador Jaime, Ph.D. (Oregon State University-Cascades)

Mentor: Ward Dobbs, Health Professions

Cardiovascular (CV) disease remains the leading cause of death in the modern world; fortunately, many CV risk factors can be prevented via lifestyle adjustments. Electronic Nicotine Delivery Systems (ENDS) are devices that vaporize an e-liquid containing nicotine, a sympathomimetic drug, inhaled by users. Originally marked as a safer alternative to tobacco cigarettes, ENDS have become increasingly popular among a young otherwise healthy population that, prior, had never used nicotine products. **PURPOSE:** This study aimed to find the impact ENDS has on exercise-induced vascular benefits and exercise capacity. **METHODS:** Regular ENDS users, and a nicotine naive control group all between the ages of 19 and 35 attended a total of 2 or 3 trials respectively. Trial one served as a familiarization session whereas trials two and three followed one-hour of ad libitum ENDS use or time-control (rest). After ENDS use (or time-control rest), participants completed a maximal treadmill exercise test to measure exercise capacity. CV measures, such as heart rate, blood pressure, and arterial stiffness were taken at rest and 10-, 20-, and 30-minutes after the voluntary cessation of exercise. The vaping trial was omitted from the control group. **RESULTS:** ENDS users displayed an elevation in aortic systolic blood pressure and mean arterial pressure following exercise, compared to the control group. **CONCLUSION:** Data suggests that ENDS may contribute to the attenuation of post-exercise hypotension.

### **Oral Session B2 10:25 am-10:50 am**

### **O.U.15 Evaluating Erosion Risks and Environmental Stewardship: Pre-construction of a BEHI for Pine Creek Restoration Project in La Crescent, MN & Wastewater Treatment Process and Education in Kendall, WI**

Jackie Oetterer and Nick Murray

Mentor: Alysa Remsburg, Sustainability & Environmental Studies

This project focuses on environmental stewardship and sustainability in small communities through two key initiatives. The first involves educating and performing day-to-day operations that protect the environment, including wastewater treatment and the upkeep of public recreational areas such as parks, trails, and campgrounds. Proper wastewater management is critical to prevent negative impacts on both community health and the environment. The goal of this first initiative is to maintain the health of the community and environment while maintaining public recreational areas, making them desirable places for the locals and others. The second initiative aims to calculate the Bank Erosion Hazard Index (BEHI) as a pre-construction assessment for the Pine Creek restoration project in La Crescent, Minnesota. The process involves walking all 16 miles of the creek to take measurements and observations that assess bank vulnerability to erosion. Establishing a BEHI baseline before restoration will allow the city to evaluate the project's success by conducting the same assessment post-construction. The ultimate goal is to improve stream health, enhance ecosystem stability, and support long-term environmental sustainability along Pine Creek. Both components aim to enhance sustainability and stewardship through supporting small communities' efforts towards clean waters and a healthy environment.

### **O.U.16 Forgotten Legacies: Spinsters and Eligible Bachelors of the Colwell-Dorset Family**

Maya Bieneman

Mentor: Penelope Hardy, History

How does someone leave a legacy? For the average person, the daunting task starts with one thing: Children. Having children of your own seems like a surefire way to have your name be known for at least a few generations. From the late nineteenth to the early twentieth century, the Colwell-Dorset family clearly wanted to make a legacy in La Crosse, Wisconsin. What held them back was not that they did not do enough; it was that they did not produce any children to carry on their legacy. The family lived in La Crosse from 1857 until 1965, when the last family member passed away. Despite the family's work as teachers, ministers, and philanthropists and the donation of their family home to the Christ

Episcopal Church that earned them a series of four articles in *The La Crosse Tribune*, the family has generally been forgotten. Their legacy came crashing down, as the family home was demolished in 1966 after plans to convert it to a home for the elderly fell through. This paper considers the differences between spinsters and eligible bachelors by looking at the last four family members and how those statuses prevented them from establishing a legacy that survived them.

### **O.U.18 Rights of Nature: Examining Nature’s Rights in Law and Literature to Promote Legal Representation of the Natural World**

Sarah Dollak  
Mentor: Kelly Sultzbach, English

Rights of Nature play a key role in the legal systems that protect our present and future living world through their effect on the regulation of air, water, the climate, and the communities these impact. To show how Rights of Nature apply to future environmental policy, examining legal frameworks and environmental literature through an Indigenous lens is essential to navigate their role within society. Robin Wall Kimmerer’s chapter "Grammar of Animacy" in her book *Braiding Sweetgrass* illustrates the central idea that nature is animate and deserving of legal recognition. These principles have been integrated into policy in other governing bodies; contrasting the ineffectiveness of the United Nations “Global Pact for the Environment” with Ecuador’s constitutional recognition of the Rights of Nature highlights variability of success in legal frameworks. Literature plays a vital role in shaping public perceptions and policy regarding nature’s rights. Analysis of the rich narratives of a contemporary Indigenous author alongside the Enclosure Movement author John Clare’s “Swordy Well”, exemplifies a cultural foundation for these legal shifts. This research highlights the importance of integrating Indigenous voices and shaping future environmental policies to foster a deeper, more holistic connection with the natural world which challenges conventional Western views and emphasizes a kinship with nature.

### **O.U.19 Sexual Assault Awareness Program**

Ellie Antonson, Allisa Hansen, and Jill Knudsen  
Mentor: Ryan McKelley, Psychology

Our research aims to educate First Year students on the stranger danger phenomenon and destigmatize the topic of sexual assault. Our goal is to bring more awareness to the issues of sexual assault and how it is most commonly carried out by someone that is known to you. Through our extensive research, we created a program that is presented to first year seminar courses that describes the stranger danger phenomenon along with bystander intervention methods. We intend to analyze and compare survey responses from individuals who have either received the program or not received the program to address the impact the presentation had on their understanding of the topic. We aim to use this research to show that an expanded knowledge on the topic of sexual assault and the stranger danger phenomenon can have positive influence on safety throughout campus culture.

## **Oral Session C1 11:00 am-11:25 am**

### **O.U.20 Visualizing the Environmental Change at ORA Trails and Hintgen Island**

Shawn Wichelt and Ella Waltman  
Mentor: Alysa Remsburg, Sustainability & Environmental Studies

The first project looks to produce a visualization of the change and biodiversity that can be found on Hintgen Island. ArcGIS Pro, Adobe Illustrator, Excel, and open-source GIS data portals have been used to acquire and interpret data. The objective of this is to be used by Hintgen island visitors to help them honor the area while also serving as inspiration or a tool to allow future visitors, researchers, or historians to create works of their own regarding the island. The second project with ORA Trails focuses on organizing data and information based on the current landscape of the Community Trail Farm to identify the areas where careful management is required. A key aspect involves mapping the property’s current landscape, emphasizing invasive species and areas of needed land restoration. Visuals will serve as an educational and interpretive tool to help those visiting the island and the ORA property. They will also guide the employees through these management practices by ensuring everyone is on the same page and their progress is recorded. Both projects are serving as a plan to help those who visit these areas in the future to steward the land. It will remind those of why this land is important and inform people of the ecological, biological, and historical significance of the island and farm.



### **O.U.21 Domestic Drunkards: Family Violence and Alcohol Consumption in La Crosse, WI: 1890-1910**

Audrey Langworthy  
Mentor: Penelope Hardy, History

From the late 1800s to the early 1900s, women and children in La Crosse, Wisconsin, often suffered a challenging reality framed by physical and psychological traumas. This aggression is frequently associated with the alcohol consumption of their husbands. La Crosse developed a working-class culture in the mid-to-late 1800s; men and women alike worked long shifts to make ends meet in a growing metropolis. The male residents of La Crosse enjoyed unbridled access to hard liquor and plenty of beer at local taverns to cope with this reality. With this influx of commerce, alongside residual political tensions of the American Civil War, dark aspects of humanity corrupt the illusion of frontier life. Heavy alcohol consumption coupled with the above stressors led manifestations of masculinity down a path paved with violent outbursts, creating unsafe conditions for children and mothers alike. How is the illusion of frontier enterprise interrupted by alcohol consumption in this charming yet disorderly symbol of the American Midwest? This research is necessary to amplify the voices of historical women while also responding to current movements surrounding women's liberation and autonomy. I define the correlation linking an emerging city dependent on alcohol consumption, the alcohol industry, and the physical and psychological horrors inflicted upon women and children.

### **O.U.22 Down Memory Lane: Nostalgia, Jeffersonian Ideals, and Monetization in Gasoline Alley**

Jordan Kenyon  
Mentor: Penelope Hardy, History

This historical research project analyzes the works of Frank King of Tomah, Wisconsin and his most prolific work Gasoline Alley. From 1918-1956 Frank King created a slice of life comic strip for the Chicago Tribune, drawing inspiration from a newly emerging automotive industry. Looking through the lens of public history, I explain how Gasoline Alley came to be, what impact it had on the American public, and how King viewed the world through his illustrations. I tie King's other pieces as an artist into his most prominent piece and explore the messages he sent through his various projects and efforts. Gasoline Alley revolutionized comics by introducing the concept of real time aging and that ties into the themes of memory and nostalgia. King used these ideas to great effect in order to cultivate a loyal fan base, who grew up and aged alongside their favorite characters from the comic strip. This exploration of King's undertakings reveals how King promoted Jeffersonian ideals of rural America in terms of community, family, and simplicity juxtaposed against the perceived complexity of urban environments. King's upbringing in a rural Wisconsin community shaped his worldview; as he grew up at the turn of the twentieth century.

### **O.U.23 High School Students' Perspectives on Technology Policy and Pedagogy**

Alexandra Staver  
Mentor: Merideth Garcia, English

In the fall of 2024, a local high school introduced new policies regarding cell phone and AI usage as well as new classroom technology in the form of iPads issued to every student. This project investigates students' perspectives on these changes through classroom forums held at the beginning and end of the school year. Preliminary findings suggest that the majority of students had apprehensions about the new phone restrictions and iPad requirements but had less to say about AI policy changes. Common concerns included the waste of time and resources needed to uphold the phone policy, the lack of applications and tools available on iPads, and worries over disconnection from peers and entertainment. These concerns were especially prevalent in the group responses studied, while individual journal responses often brought more ambivalence and nuance to the issue. Most individual students conceded that a phone policy could be beneficial for reducing distractions in the classroom but expressed outrage at the extreme level to which the policy consumed their school hours, citing scheduled breaks, free time after finishing work, and most prevalently emergencies as reasons to keep their phones close. The main thread running through both group and individual responses was disappointment in the policy for refusing the students technology they have come to rely upon.

**Oral Session C2**  
**11:30 am-11:55 am**

**O.U.25 Integrating Agriculture and Transportation for a Greener Future**

Chloe Beckman and Harry Stahn  
Mentor: Alysa Rensburg, Sustainability & Environmental Studies

This project brings together two sustainability initiatives that, while distinct in focus, share a common goal of fostering environmental awareness and implementing data-driven solutions for long-term impact. Whether in sustainable agriculture or transportation planning, both efforts emphasize education, strategic decision-making, and community engagement to drive positive change. One initiative focuses on sustainable agriculture through a GIS-based project that maps data for a private company. This work involves collecting, analyzing, and visualizing spatial data to enhance understanding of agricultural sustainability efforts. By mapping key factors such as land use, resource management, and environmental impact, the project aims to improve transparency, support better decision-making, and encourage more sustainable farming practices. The second initiative centers on sustainable transportation. In collaboration with Andrew Ericson, UWL's Sustainability Program Manager, efforts support the Bicycle Friendly University (BFU) application, which evaluates campus bike accessibility. This includes gathering data on infrastructure, education, and engagement, as well as conducting a student bicycle satisfaction survey if needed. Achieving a gold award would strengthen the university's sustainability reputation and encourage more students to bike.

**O.U.26 A Lasting Impact of German Culture in Wisconsin**

Isaac Olson  
Mentor: Penelope Hardy, History

German immigration to La Crosse, Wisconsin, as well as in cities such as Green Bay and Milwaukee, has left traces throughout society that are visible to this day. Germans had varied reasons for immigrating, but one thing that ties together German populations is their culture. From breweries, to singing and social clubs, to language practices, almost every immigrant in these cities found ways to reconnect to their culture and heritage. This paper will focus on the singing clubs and other remnants of German culture in La Crosse. The events, themes, and trends of German culture practices in La Crosse left lingering effects on the city itself. This paper will examine events from 1850 to 1910, ending before German cultural practices became diluted by anti-German sentiment during World War I. Despite this dilution, residual impacts remain into the twenty-first century. By focusing on major cultural themes, such as the singing clubs and cultural festivals, I will provide a deep understanding of the persistent cultural impact of German immigration on cities across Wisconsin.

**O.U.27 Machine Learning-Based Cryptanalysis of Classical Ciphers**

Charlie Klawitter  
Mentor: Chad Vidden, Mathematics & Statistics

Cryptanalysis focuses on exploiting weaknesses in ciphers to obtain the original plaintext. The great complexity of modern ciphers requires a fast and efficient way to exploit weaknesses and acquire the hidden message. This paper explores the potential of machine learning algorithms in cryptanalysis. Supervised machine learning models are trained on input data that identify the weaknesses of classical ciphers. Using the data, the models predict the key for any ciphertext. This research evaluates the effectiveness of machine learning algorithms on classical ciphers with the intent of improving upon standard cryptanalysis techniques.

**O.U.29 Rooted Identities: Agrarian Culture's Influence of Identity in Queer, Disabled Folks of the Driftless Area**

Kerrigan Trautsch  
Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

Previous research of rural queerness and disability is shrouded in narratives of backwardness, social regression, and peculiarity by urban institutions. This harmful narrative centers urban embodied experiences as being more 'proper' or 'progressive,' and pathologizes local/rural expressions of queerness and disability that do not fit the ideas and standards of urban queerness and disability. My research uses interviews with contemporary queer/disabled rural folks to explore how their identities and experiences interact with their community and environment in an agrarian culture. This work is

crucial as it offers nuanced perspectives that reframe rural queerness/disability as holistic instead of pervasive and regressive. This not only affects the visibility and support of these identities in larger discourse, it also acknowledges how past and present research and harmful narratives affect non-disabled, non-queer people in the rural, Driftless Midwest, something yet to be studied.

### **Oral Session D1 12:05 pm-12:30 pm**

#### **O.U.30 An Analysis of the Political Development of La Crosse County**

Marcus Cramer  
Mentor: Penelope Hardy, History

The modern American political climate is plagued by ideological partisanship, where certain states such as Texas and California can reliably be assumed to vote for one party. So-called 'swing states' have become increasingly important in deciding the outcome of presidential elections. Wisconsin finds itself among these 'swing states,' putting local political affiliations under increased scrutiny on the national stage. La Crosse County is of particular interest, as it underwent a profound political shift between the 1984 and 1988 presidential elections, in which the county broke with decades of Republican voting trends to cast their ballots overwhelmingly for the Democratic candidate, a pattern which holds true to this day. This paper will analyze how the political affiliations of La Crosse County have developed over time in relation to larger national socio-political movements. I also consider how changes within La Crosse County have manifested in different voting patterns by studying local demographic changes, the impacts of college education on student opinions and values, the increased opportunities for women in education, the political gender and racial divides, and local political appeals.

#### **O.U.31 More than a Widow: How Johanna Heileman Overcame Traditional Gender Values in the Nineteenth Century and Became the First Female CEO**

Adeline Hendrix  
Mentor: Penelope Hardy, History

Women held few socially acceptable occupations in the nineteenth century. The few jobs where women could hold leadership roles, such as innkeepers or boardinghouse managers, still involved domesticity and homemaking. La Crosse, Wisconsin, was no exception. In 1890, there were ten female business proprietors in the city, and all but three were innkeepers or boardinghouse managers. The exceptions, while small in number, represent a broader trend of women gradually gaining financial independence, freedom, and professional recognition in the later 1800s, in a society that more often restricted their opportunities. Johanna Heileman was one of these women. She was the first female president and CEO of a brewery in the United States after the death of her husband in 1878, and she would remain in her position at G. Heileman Brewery for almost thirty years until she died in 1917. Yet, despite her accomplishments, her obituary only mentions her as Gottlieb's widow. Using tax records, property deeds, and licensing records, this paper will explore how Johanna navigated societal limitations and became a female proprietor in the nineteenth century.

#### **O.U.32 City Administrators and Tax Performance: Does Authority Make a Difference in Wisconsin?**

Justin Poley  
Mentor: John Kovari, Political Science & Public Administration

This research examines the relationship between the strength of city administrators' hiring and firing authority and local tax performance in cities across Wisconsin. Specifically, it investigates whether cities with city administrators possessing greater control over personnel decisions (including hiring and firing) exhibit better tax outcomes, such as lower tax levels or more efficient tax policies, compared to cities where city administrators have limited authority. Through a comparative analysis of cities with varying degrees of administrative control, this study aims to shed light on the potential role of city administrator autonomy in influencing local fiscal management. The findings may offer valuable insights for policymakers seeking to optimize local governance structures for more effective tax management and fiscal stability.

### **O.U.33 Investigating Aromanticism: Experiences, Lives, and Untold Stories**

Logan Edmonds

Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

This project seeks to examine the importance of Aromantic community experiences. Aromanticism is a romantic orientation in which a person experiences little to no romantic attraction to others. This orientation has been overlooked in most areas of research and discourse, and its history is entangled with the Asexual community. This entanglement has contributed to numerous smaller issues that impact Aromantic people every day, especially those who are not also Asexual. Through a combination of surveys and interview, this study highlights the lives of Aromantic people and shed light on the experiences of this often-forgotten romantic orientation. Particularly navigating the complex relationship between the Aromantic and Asexual communities, the impacts of anti-single bias, and the impacts of Amantonormativity.

### **Oral Session D2 12:35 pm-1:00 pm**

### **O.U.35 From “Better Babies” and Marriage Laws to Education and Mental Institutions: An Analysis of the Eugenics Movement In La Crosse, Wisconsin, 1913–1950s**

Gavin Stebbins

Mentor: Penelope Hardy, History

In 1883, Sir Francis Galton, cousin to Charles Darwin, thought he knew how to genetically improve the human race by selectively deciding who would and wouldn't reproduce. Over the following decades, this concept spurred a multi-national movement, and nowhere was it more prominent than in the United States. In 1913, the state of Wisconsin passed its eugenics marriage law, launching a nearly half-century long effort to root out criminals and people with mental disorders who were deemed genetically unfit and prevent their reproduction. Wisconsin served as an early leader to the nation in its adoption and implementation of eugenics policies, and La Crosse was no exception. From the La Crosse County clerk, county nurse, and circuit court judge to professors at La Crosse State Teacher's College and the 4-H Club, multiple prominent actors played a role in implementing eugenics in La Crosse. In this paper, I explore the eugenics movement in La Crosse, Wisconsin from the 1910s to the 1950s, specifically focusing on four main aspects: government control over who could marry, the nutrition/health movement concerned with improving the health and genetic superiority of children, the role education played in the perpetuation of the movement, and the role mental institutions played in the care and separation of people deemed to be genetically inferior.

### **O.U.36 Between Overt and Subtle: Tracing the Evolution of Racial Practices in a Changing Midwest**

Adrian Moreno

Mentor: Penelope Hardy, History

Acknowledgement of “Jim Crow” practices in the United States has inadvertently led to a belief that this alone is what racism looks like, but historical scholarship has also exposed more nuanced practices. For example, the Midwest has a complex history of racial segregation, exemplified by so-called “sundown towns”—communities that deliberately excluded Black residents. This study investigates whether La Crosse was indeed a sundown town, or whether its patterns of exclusion represent a distinct modern iteration of racist practices. Using oral histories, archival documents, and legal frameworks to explore La Crosse's racial dynamics since the 1960s, this research contextualizes the lived experiences of Black residents, demonstrating how racist practices such as microaggressions and institutional biases contribute to isolation, economic disparities, systemic bias, and subtle discriminatory practices persisting to this day. To lend a human face to abstract concepts of exclusion, I refer to the case of Gretchen Lockett—a Black woman who faced alleged racial discrimination at the University of Wisconsin-La Crosse, leading to her resignation and a subsequent lawsuit. Acknowledgment of marginalized experiences helps us to distinguish between the overt exclusionary practices of the Jim Crow era, sundown towns, and subtler contemporary forms of exclusion, and thus to better understand what racism looks like and where it occurs.

### **O.U.37 Disconnect to Reconnect**

Annaliese Bastyr, Ava Riehle, Kyra Schmitz, Mia Herro, Sarah Baumgartner, Emma Kindler, Emily Riley, and Sydney Spang  
Co-authors: Eryn Meece, Daniela Gomez-Meza, and Nashreena Sidhu  
Mentor: Bixi Qiao, Psychology

Our capstone project, “Disconnect to Reconnect,” is a multi-faceted initiative that includes a research study, publicity efforts, and the hosting of a two-part event for college-aged students at UWL. The main goals of the project are to promote physical and mental well-being and foster the creation of meaningful connections. The event portion of the project consists of two days: one focused on engaging the creative mind through various art activities, and the other centered on connecting participants with nature and peers through nostalgic physical games, utilizing behavioral activation. The publicity team created social media pages on two different platforms (@mindfulminutesoffline) to promote our initiatives. We have shared content related to mindfulness, screen time, green time, and event updates. The team goal is to inform UWL students and provide resources, along with mini challenges, which encourage healthier habits both on and off-screen. Meanwhile, the research team developed a survey through Qualtrics to investigate UWL students' behaviors and knowledge regarding screen time and green time opportunities available in the La Crosse area. The team goal is to raise awareness about outdoor activities and resources on campus, advocate for greater access to these resources, and explore the potential correlation between screen time, green time, and mental health outcomes (e.g., impacts on mood and life satisfaction). We will share our project details and findings.

### **O.U.38 Queer Legacy of Mary Shelley's *Frankenstein***

Alex Morris  
Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

Mary Shelley's *Frankenstein* (1818) leaves a queer legacy by the characters expressions of autonomy and search for identity. Through film analysis and autoethnography focusing on queer theory, feminist theory, and camp theory, this research will analyze and examine the queerness of *Frankenstein* (1931), *The Bride of Frankenstein* (1935), and various adaptations such as *The Rocky Horror Picture Show* (1975), *Poor Things* (2023), and *Lisa Frankenstein* (2024). Preliminary research indicates audiences are connecting the emphasis of queerness from Mary Shelley's life, the lives of queer-identifying directors of the various films, and the complexities of societal anxieties of normativity. This project hopes to explore the continued queerness of *Frankenstein's* legacy to demonstrate how deeply horror resonates with queer horror fans.

# **GRADUATE STUDENT ABSTRACTS**

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## GRADUATE POSTER PRESENTATION ABSTRACTS

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### Poster Session A 7:45 am – 8:40 am

#### **A.G.31 Gentle Sensations: An Evidence-Based Recreational Therapy Sensory Stimulation Program for Older Adults with Alzheimer's and/or Dementia in a Skilled Nursing Facility**

Morganne VanCamp

Mentor: W. Thomas Means, Recreation Management & Recreational Therapy

Dementia, a general term for degenerative brain diseases, is characterized by cognitive decline, including impaired thinking, memory, emotional regulation, and language. The most common form of dementia is Alzheimer's disease, accounting for approximately 60-80% of all cases, alongside vascular dementia, Lewy body dementia, and frontotemporal dementia. This cognitive decline is often accompanied by behavioral and psychological symptoms, such as depression, anxiety, agitation, and social withdrawal, which further reduce the quality of life for both individuals living with the disease and their caregivers. Research indicates that sensory stimulative activities could potentially improve cognitive function and depressive symptoms in older adults with Alzheimer's and/or dementia at skilled nursing facilities. To address these needs, Gentle Sensations, an evidence-based (EBP) recreational therapy curriculum, was developed alongside the PERMA Well-Being Model to enhance sensory awareness while increasing the quality of life in older adults diagnosed with Alzheimer's and/or dementia. This is crucial for older adults because each stimulative session will keep participants engaged and present while enhancing their quality of life and well-being. The 8-week curriculum will be implemented by a Certified Therapeutic Recreation Specialist (CTRS). Subsequently, the development of Gentle Sensations will advance the field of RT and the need for EBP.

#### **A.G.32 Sled Strong: An Evidence-Based Recreational Therapy Curriculum for Children with Physical Disabilities to Build Resilience**

Ryann Burger

Mentor: Lisa Savarese, Recreation Management & Recreational Therapy

Sled hockey serves as more than just a sport; it symbolizes resilience and empowerment for athletes with physical disabilities. While research on sled hockey's specific impact on resilience is limited, the broader literature on adaptive sports suggests its effectiveness in fostering resilience, emotional growth, identity formation, and disability acceptance. Adaptive sports are crucial in enhancing athletes' confidence, communication skills, and ability to overcome adversity through resilience. Sled Strong is an 8-week evidence-based curriculum that builds on this foundation, using sled hockey as a modality to build resilience in young athletes with disabilities. Grounded in the Protective Factor Model of the Resiliency Theory and informed by adaptive sports research, the curriculum emphasizes fostering social support, increased confidence, communication skills, and overall resilience. Through structured activities, teamwork, and reflective practices, Sled Strong equips athletes with practical tools to build lifelong resilience and thrive both on and off the ice.

#### **A.G.33 WHEEL Adapted Cycling: Promoting Independence through Adaptive Recreation**

Emily Higgins

Mentor: Thomas Means, Recreation Management & Recreational Therapy

Bicycling, requiring balance and trunk control for proper operation, can be challenging for individuals with motor impairments or mobility aid users. As a rehabilitation tool, adapted cycling improves physical functioning, often exceeding traditional physical therapy outcomes by promoting independent activity. Research highlights cycling as a safer, more effective alternative to walking or wheelchair propulsion, fostering autonomy and mobility for individuals with physical disabilities. To address these needs, WHEEL: Adaptive Cycling, an 8-week evidence-based recreational therapy program, was developed for individuals with primary physical disabilities. The program enhances independence through skill development, equipment fitting and adaptation, support for equipment procurement, and ongoing training. Grounded in the Leisure Ability Model, WHEEL improves functional mobility, fosters positive leisure attitudes, and encourages continued recreational participation beyond structured programming. By providing a structured, skill-building environment, WHEEL supports riders in achieving greater mobility and independence, reinforcing adapted cycling as a

sustainable, inclusive form of recreation and transportation. Through this approach, WHEEL expands adaptive sports opportunities, enhances participant well-being, and advances evidence-based practice in recreational therapy.

#### **A.G.34 Ageless Connections: An Evidence-Based Recreational Therapy Curriculum for Older Adults with Early Onset Dementia at an Intergenerational Respite Program**

Annika Hellenbrand

Mentor: Jennifer Taylor, Recreation Management & Recreational Therapy

Dementia is a neurocognitive disorder that encompasses various types, including Alzheimer's, Vascular Dementia, Lewy Body Dementia, and others. It affects an older adult's memory, thinking, behavior, and emotions. *Ageless Connections* is an evidence-based recreational therapy curriculum providing structured sessions for older adults and daycare-aged children at a partnering agency that provides both respite care for adults with dementia as well as daycare services for children focused on intergenerational programming. Utilizing Contact Theory as a foundation ensures participants have equal status by encouraging cooperation and sharing common goals. *Ageless Connections* will measure social behaviors and affect using the Intergenerational Observational Scale (IOS) developed by Jarrott et al. in 2008. The 8-week program is implemented in weekly 45-minute sessions by a Certified Therapeutic Recreation Specialist (CTRS). The curriculum aims to further develop evidence-based practice within the field of recreational therapy. *Ageless Connections* program outcomes include participants creating friendships, connections, and positive intergroup contact with daycare-aged children, ultimately aiming to increase positive affect and behaviors.

#### **A.G.35 SPEAK UP! An Evidence-Based Recreational Therapy Curriculum: Supporting Community Participation through Self-Advocacy Training**

Shea Dooley

Mentor: Tara Delong, Recreation Management & Recreational Therapy

Adults with intellectual and developmental disabilities (IDD) encounter numerous obstacles to meaningful community participation, including underdeveloped self-advocacy skills. IDD is a group of conditions that affect cognitive functioning, learning, and everyday life skills. In this context, self-advocacy refers to the ability to communicate one's needs and wants, make informed decisions, and navigate social spaces with confidence. Promoting community inclusion through self-advocacy training requires a multi-level approach using person-centered planning, evidence-based practices, and engaging in community integration. SPEAK UP! was designed using these guidelines, with the Flourishing Through Leisure Model and Empowerment Theory as a framework. Empowerment Theory focuses on how individuals or groups can take control of their lives and guide decisions that affect them. Using expressive interventions like art and storytelling, this recreational therapy program helps participants build awareness of their personal rights and capacity for self-advocacy in the community. This curriculum is designed for use by a Certified Therapeutic Recreation Specialist as an evidence-based program to support participants with IDD.

#### **A.G.36 Shine: Community Integration**

Madeline Bridge

Mentor: Lindsey Kirschbaum, Recreation Management & Recreational Therapy

Individuals with intellectual or developmental disabilities (IDD) face challenges that impact their independence and quality of life. Community Integration (CI) programs empower participants through activities that foster relationships, enhance independence, and promote meaningful engagement. These programs support skill development in self-care, communication, and daily living, helping individuals become active community members. Research shows they also promote long-term independence through social connections and partnerships. The Shine program increases independence, awareness of resources, decision-making skills, and social connections. Participants will develop safety awareness, complete independent transactions, and confidently navigate their environments. They will engage with leisure resources, build friendships, and practice informed decision-making. The 8-week program consists of weekly 60-minute in-person sessions. Grounded in empowerment theory, Shine reduces barriers, builds essential life skills, and encourages autonomy. By combining practical training with meaningful community involvement, Shine helps individuals with IDD achieve personal goals and long-term independence.



### **A.G.37 Menstrual Cycle Influence on Jump-Landing Force Production and Fatigue Response in Female Volleyball Athletes: A Preliminary Investigation**

Reece Eickhoff and Erin Greschner  
Mentors: Megan Litster and Ward Dobbs, Health Professions

With growing female sport participation and injury rates, understanding the menstrual cycle's potential impact on performance is crucial. This study aims to investigate the potential influence of female hormonal fluctuations on jumping and landing characteristics in volleyball athletes as they fatigue. Six volleyball players underwent a newly developed protocol consisting of repetitive cycles of 10 maximal countermovement jumps and three drop landings to induce fatigue and compare results between menstrual cycle phases. The study aims to determine the relationship between hormonal variations and sport-specific force parameters. Data collection and analysis are ongoing. This research will contribute to the limited body of evidence examining the interaction between menstrual cycle phases and athletic performance, addressing a critical gap in literature. Results have the potential to influence optimal training interventions and introduce safety considerations for training female athletes.

### **A.G.38 Pelvic Floor Muscle Fatigue Assessed via Bladder Base Displacement: Comparison of Hook-Lying vs. Standing Kegels in Healthy Adult Women using Transabdominal Ultrasound**

Chloe Hendrickson, Abby Ambrosius, Katie Hall, Lauren Roff, and Lauren Vosters  
Co-authors: Brandon Murphy and Patrick Grabowski  
Mentor: Patrick Grabowski, Health Professions

**INTRODUCTION:** Pelvic floor muscles (PFM) support and lift many organs such as the bladder. Dysfunction of PFMs is associated with risk of incontinence and pelvic organ prolapse. Function can be assessed through transabdominal ultrasound (TAUS) measurement of cranially directed bladder base displacement (BBD), and exercise is the treatment of choice to improve PFM performance. However, little is known about the effect of position on PFM activation. In this study, participants performed prolonged Kegel contractions in standing and hook-lying to assess differences in BBD. **METHODS:** 26 healthy females performed 10 PFM contractions in each position (10s contract:10s rest), with the order of positions randomized, resulting in 20 contractions. TAUS assessed BBD for each repetition. A two-way position x repetition (1st, 5th, 10th) mixed ANOVA analyzed BBD, while Chi-square analysis determined the frequency of trials with cranial BBD. **RESULTS:** Standing resulted in 0.16 cm greater BBD than hook-lying ( $p < 0.05$ ). There was no effect of repetition. Subjects were 1.2x more likely to achieve cranial BBD in standing ( $p < 0.05$ ), however more subjects reported that standing was more difficult. **CONCLUSION:** Standing resulted in more frequent and greater cranial BBD during PFM exercise compared to hook-lying. This will guide more effective assessment and treatment of PFM activation in physical therapy.

### **A.G.39 Relationship of the Menstrual Cycle Phases on Physiological Fatigue in Female Volleyball Players**

Jen Beattie, Jenna Nelson, Emily Lange, and Dylana Schreiner  
Mentors: Megan Litster and Ward Dobbs, Health Professions

The menstrual cycle consists of three phases (follicular, ovulatory, and luteal) typically over a 28-day period. Hormones such as estrogen and progesterone typically vary between and within each phase. Different levels of these hormones can affect physiological fatigue. **Purpose:** This study aims to determine the potential relationship of the menstrual cycle phases on physiological fatigue in female volleyball players. **Physiological fatigue** was examined using a heart rate monitor. **Methods:** Participants included six female Division III NCAA or recreational volleyball players between the ages of 18 to 25 years old. Participants utilizing hormonal birth control were included. Three testing days included collection of Salimetrics data to measure hormone levels in that phase. Participants repeated ten countermovement jumps followed by three drop landings for as many rounds until they requested to stop, or the researchers determined form failure. **Results and Discussion:** Data collection and analysis is ongoing. This abstract is submitted as a work in progress and will be ready for dissemination prior to the symposium.

#### **A.G.40 Methods for Immunohistochemical Analysis of Hypothalamic Orexin in Stressed Mice**

Alexis McMahon and Aubree Caya  
Co-authors: Cord Brundage and Christine Schwartz  
Mentor: Cord Brundage, Biology

Orexin plays a critical role in regulating feeding behavior, and its expression may be influenced by stress. This study explores how restraint stress affects orexin expression in the hypothalamus of mice and its potential connection to body mass index (BMI) changes. Twenty C57BL/6 male mice, aged 8 weeks, were divided into four groups of five. One group served as a non-stressed control, while the other three underwent a daily 1-hour restraint stress session for five consecutive days. After the final stress exposure, all mice were euthanized, and body composition measurements were recorded, including weight, BMI, fat mass, and bioimpedance analysis. Stressed mice exhibited a reduction in BMI, likely due to a decrease in fat mass. To examine orexin expression, brain tissues were extracted, sectioned using a cryostat, and subjected to immunohistochemical staining. A primary anti-orexin A antibody (ab6214, rabbit) and a fluorescently tagged secondary antibody (Alexa 488, anti-rabbit) were used to localize orexin expression. Confocal microscopy was used to visualize fluorescence signals, and controls were included to confirm specificity. This study provides the framework for assessing changes in orexin expression following stress exposure and establishes a foundation for further research into the metabolic consequences of stress-induced changes in orexin signaling.

#### **A.G.41 A Comparative Analysis of Whole Bowel Irrigation and Chelation Therapy to Treat Pediatric Lead Poisoning**

Madison Bill and Chloe Gates  
Mentor: Karen Hayter, Health Professions

Lead poisoning is a detrimental condition that alters bodily mechanisms and can manifest with symptoms such as abdominal pain, bone pain, seizure activity and microcytic anemia. In children, lead poisoning can be life-threatening and requires emergent medical treatment. Patient presentation is dependent on the degree of elevation in the serum blood lead levels, a value that is determined by blood lead level (BLL) testing. This applied research discusses both chelation therapy and whole bowel irrigation as treatment options for lead poisoning and microcytic anemia in a pediatric patient. A literature search included databases such as, Clinical Key, PubMed, Cochrane Library and Google Scholar were reviewed and included systematic reviews, randomized control trials and case series. The conclusion of this applied research recommends common chelators such as CaNa<sub>2</sub>EDT and Dimercaptosuccinic Acid (DMSA) as the treatment for pediatric patients. These forms of chelation therapy are effective in patients with blood lead levels higher than 70 µg/dl. Additionally, research suggests that whole bowel irrigation is not effective in removing lead toxins. In the case of the presenting 3-year-old male patient, chelation therapy is recommended for treatment rather than whole bowel irrigation.

#### **A.G.42 Comparison of Treatment with Levothyroxine vs. Selenium and Myo-inositol in Treating Hypothyroidism**

Maya Brantner and Lily Mesyk  
Mentor: Karen Hayter, Health Professions

Hypothyroidism, a hypoactive thyroid, causes under-secretion of thyroid hormones triiodothyronine (T3) and thyroxine (T4), vital in regulating metabolism. Thyroid stimulating hormone (TSH), secreted by the pituitary, stimulates the thyroid to produce T3 and T4. Diagnosis is dependent on thyroid testing which would show high TSH and low T3 and T4 levels. Complications include weight gain, depression, fatigue, cold intolerance, and hair loss. In the case of a 27-year-old female with recent diagnosis of hypothyroidism experiencing the aforementioned complications, levothyroxine is considered the standard treatment. Levothyroxine is a supplier of T4. PubMed was utilized to obtain research on alternative treatment with selenium and Myo-inositol and its effectiveness in increasing T3 and T4 while subsequently decreasing TSH levels. The studies were selected based on validity, individualized patient data, and confounding factors. Research data displayed that the combination of selenium and Myo-inositol supplements decreased TSH values from 5.9 to 4.6 µIU/ml over a 6-month period. Due to inconsistent research results regarding the effects of combination treatment with selenium and Myo-inositol on T3 and T4 levels, it is not recommended to replace levothyroxine for treating hypothyroidism. Though, combination treatment may be beneficial as a supplementation to augment levothyroxine's efficacy.

#### **A.G.43 Treatment of Uncontrolled Type 2 Diabetes with a GLP-1 Agonist vs. SGLT-2 Inhibitor**

Lily Eklund and Emily Garfoot  
Mentor: Karen Hayter, Health Professions

Type 2 Diabetes Mellitus (T2DM) is a complex medical condition resulting in the improper regulation of glucose levels. Treatment options vary from insulin, metformin, sulfonylureas, glucagon-like peptide-1 receptor agonists (GLP-1RA) and sodium-glucose transport inhibitors (SGLT-2 inhibitors). In the case of an adult with uncontrolled hemoglobin A1C levels (HbA1C) with T2DM utilizing metformin, sulfonylurea, and a GLP-1RA for management, alongside lifestyle modifications, it can be difficult to determine the next step in treatment. This study compares the efficacy of GLP-1RA compared to SGLT-2 inhibitors on lowering HbA1C. PubMed, Cochrane Review, and Medline were searched for systematic reviews and meta-analyses comparing the effect of GLP-1RA and SGLT-2 inhibitors on glycemic control. GLP-1RA medications bind to receptors that stimulate the release of insulin and help suppress appetite to aid in weight loss. SGLT-2 inhibitors bind receptors to prevent renal reabsorption of glucose, thereby increasing glucose excreted in the urine. The data outlined that patients treated with SGLT-2 inhibitors did not have a statistically significant reduction in HbA1C compared to GLP-1RA. At this stage of the patient's treatment status, utilization of SGLT-2 inhibitors would not significantly lower the patient's HbA1C compared to the current use of GLP-1RA. Due to the uncontrolled state of the patient's T2DM, the recommendation is to suspend current therapy and start insulin monotherapy.

#### **A.G.44 Procalcitonin-Guided Therapy: Reducing Antibiotic Usage in Acute COPD Exacerbations**

Marina Hart and Jenna Nichols  
Mentor: Karen Hayter, Health Professions

Chronic obstructive pulmonary disease (COPD) is an irreversible and inflammatory obstructive airway disease. A COPD exacerbation occurs when there is worsening cough, dyspnea, and sputum changes. Antibiotics are a common treatment for exacerbations, as respiratory bacterial infections are a common etiology. Currently, the decision to administer antibiotics for adults with a COPD exacerbation is based on sputum purulence, specifically by visual inspection of color. With rising rates of antibiotic resistance across the globe, this applied research study examined an alternative diagnostic method for reducing antibiotic prescription rates for adult patients with a COPD exacerbation. Procalcitonin is a serum biomarker that elevates in the presence of bacterial infection and has potential to be utilized in place of sputum-purulence guided antibiotic therapy. The literature search was conducted through the PubMed and Cochrane Review databases. This topic is limited by heterogeneity among samples and older data. The research indicates procalcitonin-guided antibiotic therapy reduced antibiotic prescriptions by 20% without impacting re-exacerbation rates compared with sputum purulence-guided therapy. For this case however, due to limitations of the studies, procalcitonin-guided antibiotic therapy should not be utilized in place of sputum purulence-guided therapy.

#### **A.G.45 Detection of Epileptiform Discharges on EEG: Artificial Intelligence vs. Expert Opinion**

Austin Heim and Brooke Presny  
Mentor: Karen Hayter, Health Professions

First-time unprovoked seizures require prompt medical attention. Thorough clinical evaluation includes a gold standard EEG to determine risk and management of future seizures. Epilepsy is one of the most common neurological conditions at 7.60 per 1000 persons and is commonly misdiagnosed due to expert misinterpretation of epileptiform discharges, which are abnormal electrical wavelengths indicating seizure activity on EEGs. Research suggests artificial intelligence (AI) algorithms could reduce the risk of misinterpretation and lead to better patient outcomes. A literature search was performed on PubMed and five studies were reviewed and analyzed. One study analyzing three different AI models showed comparable accuracy of correct identification of epileptiform discharges between expert visual assessment (Accuracy: 83.33%) and the hybrid approach (Accuracy: 76.6-93.33%). The accuracy of fully automated AI models was significantly lower (Accuracy: 51.67-65.00%). Currently, fully automated AI models are not reliable for interpreting EEGs in adults presenting with first time seizures because of the varying levels of accuracy. For this case, the recommendation is to utilize hybrid models including AI and expert interpretation which show promising evidence for decreasing time spent reading EEGs, especially in settings where expert interpretation is limited.

### **A.G.46 Does Exercise prior to Ice Bucket Immersion Therapy Affect Skin Temperature?**

Katie Saladin

Mentor: Cordial Gillette, Exercise & Sport Science

CONTEXT: Ice bucket immersion is defined as a bucket filled with cold water and ice, where an individual submerges a specific body part to induce an analgesic effect with tissue cooling. This study's purpose is to determine the effects of exercise and skin temperature when utilizing ice bucket immersion therapy. METHODS: 10 active college individuals who participated in 4 trials, A) exercise, functional test, ice bucket, functional test. B) Exercise, functional test, no-ice bucket, functional test. C) no exercise, functional test, ice bucket, functional test. D) no exercise, functional test, no-ice bucket, functional test. During these trials, participants had skin temperature recorded via thermocouple probes at two different locations. RESULTS: Site 1 results: There was a statistically significant difference between trial B and C, with a p-value = 0.009. Trials A and B, A and D, B and C, as well as C and D were also statistically significant with a  $p < 0.001$ . Site 2 results: No significant results. CONCLUSION: Since there was no significant difference in skin temperature within ice bucket trials, it can be concluded that whether exercise is performed prior to ice bucket or not, skin temperature will drop at the same rate.

### **Poster Session B 8:50 am – 9:45 am**

### **B.G.30 Abundance of Microplastics in Avian Species across Varying Trophic Levels Collected from the Upper Mississippi River Watershed**

Kassandra Zimmer

Co-authors: Eric Strauss and Markus Mika

Mentors: Eric Strauss and Markus Mika, Biology

Microplastics are nonbiodegradable particles (250 $\mu$ m-5mm) polluting environmental systems. Birds are model organisms for microplastic analysis due to high mobility, their distribution across trophic levels, and as examples of biomagnification for pollutants. This study recorded abundance and locations of microplastic accumulation in digestive tracts and how species-specific microplastic accumulation varies with mass and trophic level. Specimens (n = 59) from 38 species were collected postmortem in WI with salvage permits. Digestive tracts were removed and treated with KOH to break down organic matter. The solution was density separated in CaCl to remove heavier materials. We isolated microplastics on filters for enumeration and general characterization via microscopy. Furthermore, Fourier Transform Infrared (FTIR) Spectroscopy will verify microplastic polymer type. In total, 1069 microplastic particles were found in 59 bird digestive tracts (mean[range] = 18.1[0-83] particles/bird). Smaller birds exhibited a higher abundance of microplastics/gram of body weight. There was no significant difference in the site of microplastic accumulation within digestive tracts and abundance did not vary significantly among trophic guilds. These results confirm birds ingest microplastics, however harmful thresholds remain unknown. Regardless, the prevalence of microplastics in birds highlights the importance of reducing plastic pollution and need for monitoring microplastics in ecological systems.

### **B.G.32 Taking Care of Teachers**

Amy Sloan

Mentor: Jocelyn Newton, Psychology

Research suggests that teacher wellbeing has a significant impact on students' perceived support, academic achievement, and motivation. As school psychologists, it is important that we consider teacher wellbeing as an important tier one support for student success. The following study examines the relationships between teacher burnout and wellbeing with professional support as a moderator of this relationship.

### **B.G.33 A Comparison of Parent and Teacher Beliefs Regarding ADHD in Students**

Xander Jansen  
Co-author: Daniel Hyson  
Mentor: Daniel Hyson, Psychology

As public schools continue to include more children in individual classrooms, sometimes having as many as 30 students to one educator, teachers will more than likely be addressing the needs of at least one student with ADHD each year. Despite this need to better understand students with ADHD, past research has shown the existence of discrepancies between teacher and parent beliefs regarding the symptoms, causes, and treatments of students with ADHD. This study attempts to better understand these discrepancies.

### **B.G.34 Latiné Students: What Influences Belonging?**

Taylor Tolppi  
Mentor: Rob Dixon, Psychology

When you go into any room, whether it is your work, a classroom, or a restaurant, what makes you feel like you are meant to be there? What influences your sense of belonging? For students, sense of belonging includes whether they feel respected, included, accepted, and supported by others in their school environment and what they personally feel about each of those factors. There is also a strong connection between belonging and students' academic achievement (Goodenow, 1993). Minoritized populations are defined as "social groups that are relegated to the margins of society because of their race, ethnicity, sexual orientation, or other social identity and therefore have less power than the dominant social group" (Griffin & Parker, 2023, p.53). As a minoritized population, Latiné students face challenges which are also perpetuated in research gaps. Specifically, there is a gap in the research with Latiné student sense of belonging in rural schools.

### **B.G.35 Sense of Belonging: What SPED Parents Really Want**

Brooke Voelz  
Co-author: Robert Dixon  
Mentor: Robert Dixon, Psychology

The purpose of this study was to provide insight into what factors predict perceived SPED parent sense of belonging and how to foster and improve family-school partnerships. This study found that the best predictor of parent sense of belonging was the school's activities that create a welcoming and inclusive environment. Implications for future research and school psychology practice are discussed.

### **B.G.36 Comparing Alteplase vs. Tenecteplase in Reducing Rates of Adverse Outcomes in the Treatment of Acute Ischemic Stroke**

Alexandra Burke and Michael Tinguely  
Mentor: Karen Hayter, Health Professions

In the United States, 140,000 people die from a stroke each year, with the vast majority of these being due to a blockage of blood flow to the brain, known as an ischemic stroke. Ischemic strokes cause a lack of oxygen and nutrient supply, which leads to both focal and widespread deficits and, occasionally, death. The case in question is relevant to populations of advanced age and with comorbidities such as hypertension, hyperlipidemia, and atrial fibrillation. The standard of care for ischemic stroke, approved by the FDA, includes the administration of IV alteplase within 3 hours of the onset of symptoms. An applied research study was performed to determine if tenecteplase, a tissue plasminogen activator similar to alteplase, is more efficacious in reducing morbidity and mortality outcomes. This included searching databases for the highest quality systematic reviews and meta-analyses to make conclusive findings that apply to the patient demographic. The primary outcomes of the studies established that tenecteplase was not inferior to alteplase in the safety and efficacy of treatment for an acute ischemic stroke. However, preliminary research suggests that tenecteplase may have increased efficacy, but further research with larger patient populations is needed to confirm these findings. Therefore, the final recommendation is to continue the standard practice of alteplase until more established clinical evidence and guidelines are provided by the FDA.

### **B.G.37 The Role of Antibiotics in Acute, Uncomplicated Diverticulitis Management**

Brooke Hartwig and Jackson Lewison  
Mentor: Karen Hayter, Health Professions

Diverticulitis, an inflammatory disorder of the diverticulum, is the most common cause of lower GI bleed (LGIB). It affects half of people over 60-years-old, and 25% of those affected will have an acute episode. In the case of a 62-year-old female presenting with a LGIB resulting from acute diverticulitis, conventional inpatient treatment includes bowel rest, liquid diet, rehydration, analgesics, and antibiotics. However, with increasing antibiotic resistance and recent research on antibiotic efficacy in uncomplicated cases, there exists a need to examine antibiotic clinical practices for diverticulitis. Literature was gathered from PubMed and Cochrane Library databases. Searches were limited to meta-analyses and systematic reviews regarding acute diverticulitis and antibiotics. Articles were chosen based on relevance, outcomes measured, publication within five years, and level of evidence. Comparison of systematic reviews and meta-analyses shows slight improvement or no difference in outcomes with omission of antibiotics. A 2024 systematic review found a statistically significant lower risk of recurrence [OR: 0.66 (0.94,0.090) 95% CI, P = 0.01] and a shorter length of stay compared to antibiotic treatment [ $3.2 \pm 2.2$  vs  $4.1 \pm 3.2$  days]. Therefore, antibiotics should be withheld in this case of acute uncomplicated diverticulitis.

### **B.G.38 Optimizing Cystic Fibrosis Diagnosis: Evaluating Combined Sweat Chloride and Genetic Testing in Children**

Preksha Kedilaya Isaiah Brindamour  
Mentor: Karen Hayter, Health Professions

Cystic fibrosis (CF) is a multisystem genetic disorder predominantly affecting children of caucasian descent. Dysfunction of the Cystic Fibrosis Transmembrane Conductance Regulator (*CFTR*) gene often leads to respiratory failure and gastrointestinal complications. Due to these complications, patients often do not survive into adulthood, making early diagnosis and treatment crucial. Current diagnosis requires both clinical and laboratory evidence of *CFTR* gene dysfunction. The gold-standard diagnostic method is sweat chloride testing (SCT), however *CFTR* genetic testing can be used as an alternative. The patient case focuses on a 2 ½ year old male presenting with respiratory distress who is diagnosed with CF via unknown methods. A review of systematic studies and evidence-based research evaluated the diagnostic accuracy of SCT alone versus the combination of SCT and *CFTR* genetic testing. Genetic testing not only identifies *CFTR* mutations for tailored CFTR modulator therapy but can diagnose or exclude CF in cases with indeterminate sweat chloride results. In one study, 37.5% of CF suspects had intermediate SCT results. In addition, another study found significant variability in SCT between repeat tests, leading to reclassification in 27.9% of cases. This highlights the unreliability of a single SCT for CF diagnosis, thus it is strongly recommended to integrate sweat chloride testing with genetic testing to reduce diagnostic uncertainty for this patient.

### **B.G.39 Syndesmotic Ankle Sprain Treatment: Screw Fixation vs. Suture Button**

Allison Ronk, Audrey Ganser, and Megan Rebholz  
Mentor: Karen Hayter, Health Professions

Syndesmotic ankle sprains—or high ankle sprains—occur when the distal tibiofibular syndesmosis, a complex of ligaments joining the distal tibia and fibula, stretches or tears. These injuries can occur due to sudden external rotation and dorsiflexion of the ankle and are frequent in athletes. This research surrounds a 22-year-old female collegiate basketball player who failed first-line conservative treatment looking to return to play. In this case, surgical treatment is needed. Syndesmotic screw fixation is the current gold standard surgical treatment; however, suture-button dynamic fixation has shown promising results. Syndesmotic screw fixation involves drilling screws through the tibia and fibula to stabilize the joint, while suture-button dynamic fixation threads a strong but flexible suture through the joint with anchoring on both sides. Cochrane Review and PubMed databases were used to gather systematic reviews comparing the efficacy of these two techniques. Literature findings were narrowed based on validity, clinical importance, level of evidence, and application to the patient. Suture-button dynamic fixation demonstrates lower incidence of implant failure and reoperation with faster time to full weight-bearing. Faster return to play is of particular importance to athletes, whose careers are significantly impacted by down time. As such, suture-button fixation is recommended for this patient, whose goal is to play basketball professionally following graduation.

#### **B.G.40 REACHing Your Potential**

Tess Hauer, Shelby Flesher, and Katlyn McCarty  
Mentor: Kim Servais, Health Professions

“REACHing Your Potential” is designed to provide support and peer engagement among the underserved population of the La Crosse, WI community. In La Crosse County, currently 248 people are experiencing homelessness/housing instability (Homelessness, 2024). Our program will provide valuable opportunities for learning and engagement in meaningful activities to foster a sense of belonging in their community. The REACH Center does not currently host any groups that offer support of this type. This program features goals related to improving participants' overall wellness and sense of belonging. The individuals this group aims to serve, deserve opportunities to participate in meaningful occupations the same way that the general population does, but often lack the resources to do so. Our goals are that participants actively attend and participate in conversation with peers and UWL students to increase social participation, explore wellness activities, and identify and utilize stress management techniques and coping strategies. These goals relate to increasing overall quality of life through various wellness exploration topics. Goals will be measured utilizing a short form questionnaire given at the beginning of the program as well as a weekly mood rating scale to assess if the participants are seeing improvement in their overall quality of life.

#### **B.G.41 The Safe and Savory Program**

Kiley Akey, Macie Schmeiser, Tori Bott, and Carissa Konop  
Mentor: Kim Servais and Erin McCann, Health Professions

The Safe and Savory program is a proposed 5-week program for adults with intellectual disabilities to increase their knowledge, safety awareness, and abilities within the kitchen. Individuals with disabilities are at a higher risk of obesity, unhealthy habits, poor safety awareness, and decreased independence (Finlayson et al., 2010; Koritsas & Lacano, 2015; Subach & Sullivan, 2022). The program will be run at Aptiv in La Crosse, Wisconsin, where a significant need was found as the adult participants rely on their caregivers for quick, easy, and unhealthy meal options. Aptiv participants' dependence on others shows the need to educate these participants through the Safe and Savory program.

#### **B.G.42 UWL-OT Neuro Empowerment Group**

Meghan Timler, Dawson Ringhofer, Haleigh Rehrauer, and Morgan Harrison  
Mentor: Erin McCann, Health Professions

“UWL-OT Neuro Empowerment Group” is a program intended for individuals with neurological conditions in the greater La Crosse area and Coulee Region facilitated by graduate students in the UWL- Occupational Therapy program. The goal of this program is to empower individuals with neurological conditions by fostering integration into the community, promoting learning through lived experiences, and alleviating the burden on caregivers. We strive to create a supportive environment where members can share their journeys, gain valuable insights, and find strength in unity. When researching and conducting a need assessment, there are only diagnosis specific support groups in the La Crosse community, such as the stroke and spinal cord injury support group facilitated by Gundersen Hospital or STAR Center Parkinson's support groups, however, there are currently no support groups in the La Crosse area that target a wide variety of neurological diagnoses within one group. For four of the five sessions, classrooms on the 4th floor of the Health Science Center (4014 and 4008) will be used to accommodate our sessions. Our fifth and final session will occur in the community in either the Myrick Park Eco Center or Black Beach Community Center. To fully experience community integration and promote social participation within the community, our final session will occur at an accessible event center within the La Crosse area. The plan will be utilized the Neurological Quality of Life Satisfaction

#### **B.G.43 Promoting Social Participation among Residents in Public Housing**

Megan Hill, Madeline Anderson, and Claire Hoge  
Co-author: Camryn DeSando  
Mentor: Erin McCann, Health Professions

“Mix & Mingle” is a 5-week program that will be hosted at Stokke Tower for residents of the La Crosse Housing Authority to promote social engagement and improve quality of life and well-being. Individuals residing in public housing are at risk for developing mental health problems and social isolation (Simning et al., 2012; Malani, 2023). Occupational therapy

students in their second year at the University of Wisconsin-La Crosse (UWL) will be implementing this program to provide activities and education to develop skills related to community and social participation to carry over to other environments. Our programming addresses the components identified in the needs statement to support the residents of the La Crosse Housing Authority. Outcomes include improving social participation and well-being in order to provide opportunities for engagement in social situations that offer individuals a sense of belonging in an inclusive environment. Data will be collected on outcomes during each session to gain objective data on participants' perception of their well-being comparing pre-and post-intervention. During each session, the students will make a record of each group member's participation in the conversation. Long-term outcome measures will be used to evaluate the effectiveness of a group-based program to facilitate social engagement.

#### **B.G.44 UWL Occupational Therapy Mind and Body Program at Hillview Terrace**

Christian Kiepke, Maija Fredrick, Amber Shedivy, and Madelyn Devos  
Mentors: Erin McCann and Brandon McCauley, Health Professions

The "Mind and Body Program" is a group that will help increase physical and physiological wellness within the older adult population at Hillview Terrace Assisted Living. The group is led by 4 students and supervised by 1 faculty member from the UW-La Crosse Occupational Therapy program. The program will consist of 5 sessions for 90 minutes each. Residents will be led through an ice-breaker event, an interactive exercise and activity, and a wrap-up of the session. The program's objective is to improve quality of life, social engagement, physical activity, and overall cognitive and physical well-being through various activities. The core values include health management, social interaction, and education to support wellness for the older adult population. Activities will be conducted in a group setting, with modifications made for individuals with varying abilities when needed. From our needs assessment, we noted an increase in sedentary behavior in the older adult population, which may lead to secondary conditions and decreased health (Loprinzi, 2015). This concern, as well as the feedback from Hillview Terrace residents, was taken into consideration when developing the program. Outcome measures, including a quality-of-life scale and self-report physical activity measure, will be utilized to track progress and program effectiveness.

#### **B.G.45 Self & Service: Growing Together**

Alexa Pomerleau, Trinity Janowski, Noah Ecclestone, and Olivia Drummer  
Mentors: Laura Schaffer and Erin McCann, Health Professions

"Self & Service: Growing Together" is a 5-week program for older adults residing at Hillview Terrace Assisted Living facility located in La Crosse, WI. The aim of this program is to provide various activities that promote an increase in socialization, self-appreciation, autonomy, and improved quality of life. Each session will have skilled occupational therapy students facilitating both volunteer opportunities and activities for self growth. In efforts to maximize the impact of this program and the benefits it will provide for the residents at Hillview, we will be working with local families in the La Crosse community to fill a need for intergenerational programming. Collaboration with current supervising Occupational Therapists and a trained service dog will improve the efficacy of the program. Outcomes will include quality of life, increased mood, and social participation. These outcomes will be achieved through increased self-efficacy developed during programming, self-growth opportunities, and both generational and intergenerational interaction. Data will be collected on these outcomes through three measures: The Positive Effect and Well-being shortform, a mood scale, and a participation tally system. Our vision is to address the isolation often experienced within this population by utilizing evidence-based interventions to promote increased well-being and social participation.

#### **B.G.46 Accuracy and Precision of Four Calcified Structures for Grass Carp Age Estimation**

Max Monfort  
Co-authors: Cody Henderson (U.S. Fish and Wildlife Service), Mark Fritts (U.S. Fish and Wildlife Service),  
James Wamboldt (U.S. Geological Survey), and David Schumann  
Mentor: David Schumann, Biology

Aquatic ecosystems within the Mississippi River and Great Lakes basin are at risk due to the proliferation and amplification of Grass Carp *Ctenopharyngodon idella*. Grass Carp can negatively affect trophic dynamics and food web interactions via consumption of aquatic macrophytes. Often, to understand population dynamic rates (i.e., recruitment, growth, and mortality) of fishes requires age demographics which can be achieved with age estimation methods from calcified structures. Current Grass Carp age demographics within the Upper Mississippi River (UMR) are non-existent.



Currently there is no literature to support a single suitable calcified structure for Grass Carp age estimation. We aim to evaluate age-bias relationships among sectioned lapillus otoliths, anterior pectoral fin ray lobes, anterior dorsal fin rays, and vertebrates from annuli counts among three experienced readers based on percent exact agreement, percent agreement within one year, and coefficient of variation. Grass Carp ( $n = 70$ ) were collected in conjunction with state, federal, and commercial harvesters from pools 8, 10, and 19 of the UMR throughout 2024 and ranged from 702-1123 mm. Although preliminary, these results can provide insight into age-biases among structures and possible suitable structures for Grass Carp age estimation within the UMR and other invasion fronts.

#### **B.G.47 Impact of Megakaryocytes on Metastatic Triple Negative Breast Cancer Cells**

Seth Holden

Mentor: Sierra Colavito, Biology

Breast cancer has the highest rate of mortality among all cancers in females. Of these deaths most occur due to bone metastasis. To gain a better understanding of the mechanisms driving breast cancer metastases to the bone I will be researching the role of megakaryocyte (MK), a prominent cell found in the bone marrow, in this process. I will be looking to see if MKs have effects on the biological phenotypes of cancer cells and/or influence epithelial-to-mesenchymal transition (EMT) in these cells. To test the changes to phenotypes biological assays were performed using various conditioned medias to mimic the interaction of these cells in the body. The biological assays performed were proliferation assays and colony formation assays. To test the effect on EMT a RT-qPCR will be performed to analyze gene expression of key markers for EMT. Results so far have shown a slight decrease in cancer cell proliferation when exposed to the conditioned media in proliferation assays and an increase in cancer cell plate coverage in the colony formation assays. Future tests we look to run are migration and invasive assays. Understanding this relationship between megakaryocytes and breast cancer cells will help bring understanding to the dangers of bone metastasis.

### **Poster Session C 9:55 am-10:50 am**

#### **C.G.30 Evaluation of an Underwater Camera Method to Sample Freshwater Fish Assemblages under the Ice**

Ben Patschull

Co-authors: Ross Vander Vorste, David Schumann, Patrick Kelly (Wisconsin Department of Natural Resources), and Kristen Bouska, Ph.D. (U.S. Geological Survey)

Mentors: Ross Vander Vorste and David Schumann, Biology

Ice cover has long restricted our understanding of the habitat use patterns of fishes in temperate aquatic ecosystems by preventing the use of conventional sampling methods. Standardized underwater camera surveys are not frequently applied in freshwater environments; however, technological advancements may now permit the use of this gear in freshwater systems. Using methods developed for shallow marine ecosystems, we described the suitability of camera sampling for fish assemblages in backwaters on the Upper Mississippi River across two winters (e.g., Pettibone, Airport Bay, Stoddard Island Complex and Lawrence Lake). To assess the effectiveness of the gear in various environments, water clarity (cm), vegetation cover indices, sky cover, and ice depth (cm) were measured at randomly selected sampling points throughout each lake. Using AICc model selection techniques we found that water clarity was included in the most top performing models during the first sampling winter. The top performing model to estimate viewing radius included only water clarity; although substantial support for three additional models was apparent ( $\Delta AICc < 2$ ). Additional analyses will be used to evaluate the effectiveness of the gear across the two sampling winters.

#### **C.G.31 Spatiotemporal Heterogeneity of Microplastics and River Hydrology in the Upper Mississippi River**

Megan Adams

Co-author: Eric Strauss

Mentor: Eric Strauss, Biology

Microplastics have emerged as a widespread contaminant in marine and freshwater ecosystems, raising concerns about their impact on water quality, aquatic life, and human health. While marine environments are well-studied, freshwater systems, like lakes and rivers, need greater attention as they transport and accumulate microplastics, underscoring the need for further investigation on their environmental implications. This study collected 97 surface water samples from

main channel and backwater habits in the Upper Mississippi River Pool 8 throughout 2024 to assess microplastic pollution. Water samples (100L) were filtered to concentrate particles, chemically digested to rid of non-plastic organic material, and analyzed via microscopy. Subsamples were analyzed with Fourier Transform Infrared spectroscopy to verify the polymer type of potential microplastics. Turbidity and river discharge data were gathered for each sample to evaluate hydrologic influences on microplastic concentration. 932 microplastics were identified ( $0.078 \pm 0.114$  particles/L), ranging from 250 $\mu\text{m}$  to 4992 $\mu\text{m}$  at their largest dimension ( $\bar{x} = 1429\mu\text{m}$ ). Fibers were the predominant particle type, comprising 71.6% ( $n = 667$ ) of examined particles. Clear, black, and blue were the most common particle colors. Polyester (PE) and polyethylene (PET) were the predominant polymer types. This research suggests temporal and hydrologic influences on microplastic transport and distribution in the Upper Mississippi River

### **C.G.32 Impact of *bolA* Gene on Cellulose Production in the Acetic Acid Bacterium, *Komagataeibacter xylinus***

Elizabeth Dickey, Lindsey Zimmerman, and Laxmi Dangal  
Mentor: Paul Schweiger, Microbiology

Cellulose is the most abundant polymer in the world. It is commonly associated with plant cells but is also synthesized by bacteria, such as *Komagataeibacter xylinus*. Bacterial cellulose is especially valued as a wound dressing in burn centers. Unlike plant cellulose, bacterial cellulose is produced as a single polymer of pure cellulose and does not require laborious processing to remove lignin and hemicellulose. Despite progress in optimizing culture conditions to enhance bacterial cellulose production, less is known about the regulation of its synthesis. The regulatory molecule c-di-GMP binds the synthesis machinery needed for cellulose production. In *Escherichia coli*, c-di-GMP levels are repressed by the BOLA protein. Two *bolA*-like genes have been identified in the *K. xylinus* genome. This study aims to investigate the role of these genes in modulating c-di-GMP levels and cellulose production by knocking down their expression using an inactive CRISPR system. Unlike the active CRISPR system, the inactive dead Cas9 (dCas9) system binds DNA without cutting, selectively inhibiting gene expression. We hypothesize that inhibiting the *bolA*-like genes in *K. xylinus* will increase c-di-GMP levels and enhance cellulose production. Results will characterize the function of these genes in cellulose synthesis and potentially lead to improved production yields.

### **C.G.33 Impact of the Bottleneck Effect on Influenza A Replicative Fitness**

Julia Gall  
Mentor: Peter Wilker, Microbiology

Influenza A virus (IVA) has high genetic diversity and mutates rapidly but the population is heavily influenced by bottleneck events, or when population sizes is suddenly reduced, occurring when the virus is transmitted between hosts. To determine the impact of these events, an influenza virus, A/Victoria/361/2011 (H3N2), was repeatedly exposed to bottleneck events with strict bottlenecks producing a virus with dilapidated viral fitness, referred to as the “dilapidated virus” (DV). The DV was passed through a series of larger bottlenecks which produced a “recovered virus” (RV). To characterize the RV, next-generation sequencing (NGS) is used. NGS is more sensitive than Sanger sequencing, giving a higher discovery capacity. Sequences from the RV, DV, and parent virus are compared to understand any mutational pattern. To assess the viral fitness, I am developing a long-range reverse-transcription quantitative polymerase chain reaction (LR-RT-qPCR). Long-range PCR is typically used for genomic segments too long to be read with conventional PCR. IVA segments are not long, instead the ability to accurately amplify whole segments is targeted. This method has shown comparable results to plaque assays when shortened IVA segments and I am applying it to mutations with unknown effects. Both objectives will improve the efficiency of the future of this project.

### **C.G.34 Examining the Relationship between Phone Use and Student Behavior**

Avrie McQuade  
Co-author: Daniel Hyson  
Mentor: Daniel Hyson, Psychology

This study examines the relationship between adolescent phone use and school behaviors among middle and high school students in grades 6-12. Using self-reported screen time data from students' device tracking features and the Strengths and Difficulties Questionnaire (SDQ), the research aims to identify correlations between phone usage patterns and behavioral outcomes in educational settings. Additionally, the study investigates potential differences in phone usage and behavioral patterns between students with and without Individualized Education Plans (IEPs), exploring how demographic factors may moderate these relationships. Through an opt-out consent model, data collection will provide

schools with valuable insights to inform policy decisions regarding device use in educational environments. Understanding these relationships could help educators develop more effective interventions and support systems for students in an increasingly digital learning environment, potentially improving academic outcomes and student well-being.

### **C.G.35 In the Eyes of Students: Assessing Perceptions of School Safety**

Erin Thiede  
Co-author: Robert Dixon  
Mentor: Robert Dixon, Psychology

School psychologists and other school personnel have the essential role of providing and assuring safety for students when they are at school (NASP, 2015). An obstacle for this topic is understanding what really makes a school safe, and how to balance protecting students without creating excessive and severe security measures. The purpose of this study is to amplify the voice of students in regards to their feelings surrounding school safety. This study also aims to identify themes of school safety perceptions, primarily across gender.

### **C.G.36 Immediate Effect of Percutaneous Neuromuscular Electrical Stimulation on Lower Extremity Neurogenic Pain**

Brenna Mahoney, Gretchen Renz, and Sarah Hulstedt  
Mentor: Hanni Cowley, Health Professions

**BACKGROUND:** Dry needling (DN) and electrical stimulation (ES) are commonly used treatment methods in physical therapy practice to treat neuropathic pain. DN involves a fine wire being inserted into muscles to produce a therapeutic effect. DN can be combined with ES to provide percutaneous electrical neuromuscular stimulation (PENS). Although this treatment is common clinically to modulate symptoms and improve muscle activation, little research has shown the direct, objective effects of these treatment methods. This study aims to measure the immediate effect of DN with PENS on LE neuropathic symptoms. **METHODS:** 76 participants volunteered for this study and were placed into an intervention group: DN or control. Pre-intervention neuromuscular testing included the slump test and the straight leg raise test on bilateral lower limbs. The more symptomatic or restricted side received DN. Five needles were inserted into the multifidus, hamstring, and gastrocnemius. PENS was applied for 5 minutes. The control received no treatment, laying prone for 5 minutes. Post-testing measures included slump and straight leg raise tests on both lower extremities. Statistics were run on 20 gender, age, and ROM matched groups. **RESULTS AND DISCUSSION:** Statistics are still being calculated but will be ready to present for the research symposium.

### **C.G.37 Systemic Effect of Percutaneous Neuromuscular Electrical Stimulation on Lower Extremity Neurogenic Pain**

Kaylie Mayer, Austin Westra, and Sam Bach  
Mentor: Hanni Cowley, Health Professions

**BACKGROUND:** Dry needling (DN) is a skilled physical therapy intervention used to target muscle tissues with filiform needles, aiming to reduce pain and restore muscle function. When combined with electrical stimulation, it becomes percutaneous electrical neuromuscular stimulation (PENS). Although commonly used in clinics, there is limited evidence on DN's effects on neurodynamic mobility in the lower extremity (LE). Most research has focused on DN's local effects, but its potential to modulate the nervous system on a systemic level has yet to be investigated. Therefore, this study aims to evaluate the systemic effects of DN with PENS on sciatic nerve neurodynamic mobility. **METHODS:** 76 participants ( $\leq 30$  years, no LE injuries in past year) volunteered for this study and were divided into DN and control groups. Pre-intervention, participants underwent neuromuscular testing including slump and straight leg raise (SLR) tests. The more symptomatic or range of motion (ROM) restricted leg received DN, with 5 needles inserted in the multifidus, hamstrings, and gastrocnemius, followed by 5 minutes of electrical stimulation. The control group received no treatment and rested in a prone position for 5 minutes. Post-intervention, the neuromuscular testing was repeated. **RESULTS and DISCUSSION:** Statistics are still being calculated but will be ready to present for the research symposium.

### **C.G.38 Treatment Options for Molluscum Contagiosum in Children**

Matthew Bruder and Ryan Bartol  
Mentor: Karen Hayter, Health Professions

Molluscum contagiosum is a highly contagious viral dermatologic disorder caused by the poxvirus - leading to painless, skin-colored lesions. This condition primarily affects children and immunocompromised adults. Although the disease is self-limited and typically resolves within a year, various treatments can shorten its duration. This case involves a 4-year-old female diagnosed with Molluscum contagiosum with lesions that have spread across both lower extremities as well as the buttocks area. The patient did not undergo treatment, ultimately resulting in a longer course of a highly contagious disease. Due to the absence of a standardized first-line therapy, a literature review was conducted comparing evidence-based outcomes of three treatment options in children: cryotherapy, topical cantharidin, and topical cantharidin applied with a VP-102 vehicle. The primary outcome of complete lesion resolution and secondary outcomes related to treatment side effects were evaluated. Cryotherapy and topical cantharidin with the VP-102 vehicle have been found to be the most effective treatments for achieving the primary outcome. However, due to the painful side effects of cryotherapy, we recommend avoiding this treatment with young children. Therefore, the final recommendation is topical cantharidin applied with the VP-102 vehicle as the preferred treatment for children with Molluscum contagiosum.

### **C.G.39 Noninvasive Oxygenation as Initial Treatment for Acute Hypoxemic Respiratory Failure vs. Conventional Oxygen Therapy**

Haley Groskopf and Peyton Siroin  
Mentor: Karen Hayter, Health Professions

Acute hypoxic respiratory failure (AHRF) is a life-threatening complication that can occur in septic patients. Upon diagnosis, AHRF can quickly progress to organ failure, irreversible lung damage, and mortality. Therefore, early intervention is crucial. Currently, patients diagnosed with AHRF are placed on conventional oxygen therapy (15 L non-rebreather mask). However, despite this intervention, some patients will require more invasive ventilation, such as intubation, posing a risk for further complications and mortality. Recent research has explored noninvasive ventilation (BIPAP/CPAP) to improve patient outcomes and prevent the need for invasive intervention. This applied research study compares intubation rates in patients with AHRF when treated with noninvasive ventilation compared to conventional oxygen therapy. Search methods included several academic databases (PubMed, Cochrane Library) to identify relevant studies. In one randomized control trial of 1,230 participants, results found that the CPAP treatment group required tracheal intubation in 36% of the participants. This is a reduction from the conventional oxygen therapy group, who required tracheal intubation in 44% of the participants. In light of these promising results, it is recommended that noninvasive ventilation be utilized to treat AHRF in place of conventional oxygen therapy.

### **C.G.40 Anticoagulants vs. Antiplatelets in Atrial Fibrillation: Differences in Stroke Outcomes**

Grace Rogers and Quinn Steinbrecher  
Mentor: Karen Hayter, Health Professions

Atrial fibrillation is a cardiovascular condition causing an irregular, rapid heartbeat that leads to issues in blood flow and thus can predispose patients to thromboembolic outcomes, such as stroke. Preventing the formation of blood clots is paramount in managing patients with a diagnosis of atrial fibrillation. This study analyzes the effect of oral antiplatelets compared to oral anticoagulants on stroke outcomes in those diagnosed with atrial fibrillation. To investigate these outcomes, we conducted applied research via the Cochrane Review Database and Pubmed to obtain literature. The research focused on patients with atrial fibrillation without a history of prior stroke. However, these patients still had typical risk factors such as hypertension or increased age. It was found that oral anticoagulants were associated with a lower risk of all-cause stroke in comparison to antiplatelets (odds ratio 0.68, 95% confidence interval 0.54 to 0.85, 2312 participants,  $I^2 = 0\%$ ). Comparing these two regimens, the recommendation for this case would be to utilize anticoagulants over antiplatelets to help reduce stroke risk in patients with atrial fibrillation if they do not have a prior history of stroke.

### **C.G.41 SQ Insulin vs. IV Insulin for the Treatment of Diabetic Ketoacidosis**

Makenna Vickery and Claudia Walter  
Mentor: Karen Hayter, Health Professions

Diabetic Ketoacidosis (DKA) is an emergent complication of diabetes due to insufficient levels of insulin to break down glucose. This results in hyperglycemia and the breakdown of fat to ketones creating excessive acidity in the blood. The standard treatment includes intravenous insulin (IV), rehydration, and electrolyte replacement. This applied research study is aimed at the possibility of treating DKA with subcutaneous (SQ) insulin. Pubmed, Cochrane Review and Journal of Emergency Medicine databases were used to investigate the effectiveness of SQ insulin use for DKA. The selected articles were critiqued accordingly. One meta-analysis investigated the difference between the SQ and IV insulin groups in the length of hospital stays MD -0.44 days; (95 % CI -0.97 to 0.09); P = 0.11; 8 randomized control trials; high risk bias. Another study showed a p-value of 0.001 with the rates of hypoglycemia for SQ insulin being 60%, and IV insulin being 83.3%, demonstrating lower rates of hypoglycemia for the SQ insulin group, showing more desirable results as hypoglycemia is a negative complication of DKA treatment. Based on this research, more studies are needed to determine the statistical benefit of SQ insulin for DKA resolution. However, some evidence suggests that SQ could be implemented to avoid ICU admission and decrease the length of stay for the patient. Based on the lack of evidence, the patient should adhere to IV insulin administration to treat DKA.

### **C.G.42 Impact of Different Cueing on Gait Mechanics During Sit-to-Walk in Individuals with Parkinson's Disease**

Amber Shedivy, Morgan Harrison, Dawson Ringhofer, Christian Kiepe, Katlyn McCarty, Meghan Timler, and Tori Bott  
Mentor: Naghmeh Gheidi, Health Professions

Parkinson's Disease (PD) is one of the fastest growing neurological conditions in the world and greatly affects the lives of individuals who are diagnosed, particularly their gait mechanics. The purpose of this study is to examine the effects of external cues including visual, tactile, auditory and an internal cue of singing on PD patient's gait mechanics during sit to walk compared to an aged matched healthy control group. It is hypothesized that internal and external cues impact the gait mechanics of individuals with PD in comparison to healthy older adults of similar ages. Data was collected from 10 healthy older adults and 10 older adults with PD using 15 motion capture cameras at 180 Hz and a force platform at 1800 Hz. Each participant was fitted with the same model of footwear and equipped with 54 markers for 3D motion capture. Participants performed 3 trials of sit to walk condition and were offered a practice trial for each condition. Future analysis will examine the effectiveness of internal and external cues on kinematic and kinetic variables. This information will help clinicians, caregivers, and individuals with PD to understand which of the cues may impact on PD older adults gait mechanics.

### **C.G.43 The Impact of a Holistic, Self-Led Occupational Therapy Intervention on Pelvic Floor Dysfunction in Postpartum Women**

Madeline Anderson, Trinity Janowski, Claire Hoge, and Kiley Akey  
Mentors: Naghmeh Gheidi and Kim Servais, Health Professions

Pelvic floor dysfunction (PFD) following childbirth is common and impacts quality of life (QoL) and participation in activities of daily living. Pelvic floor muscle training has been suggested as an effective treatment for PFD, however, a more holistic approach to account for the complexity of PFD in postpartum women is needed. This study evaluated the impact of a holistic educational self-led occupational therapy (OT) intervention on PFD symptoms, occupational participation, and QoL in postpartum women. Ten healthy, pre-menopausal women aged 30-43 who were at least 3 months postpartum, experiencing at least 1 PFD symptom, and not currently receiving PFD therapy participated. Our intervention included a 90-minute educational session followed by an 8-week structured program to complete at home. Our intervention addressed physical, psychosocial, and behavioral components offering a flexible, low-cost alternative that addresses barriers to traditional care. In this repeated measure design, the Pelvic Floor Disability Index (PFDI)-20 (measuring PFD symptoms) and Pelvic Floor Impact Questionnaire (PFIQ)-7 (measuring impact of PFD on QoL and activity participation) were compared between the pre intervention, at 4 weeks, and after 8 weeks of intervention. The results of this study may help address PFD symptoms, QoL, and activity participation in women with PFD.

#### **C.G.44 Current Lymphedema Interventions and Assessments Used by Lymphedema Specialists in the United States: Questionnaire**

Alexa Pomerleau, Madelyn Devos, Macie Schmeiser, and Tess Hauer  
Co-authors: Naghmeh Gheidi, Brandon McCauley, and Camryn DeSando  
Mentors: Naghmeh Gheidi and Brandon McCauley, Health Professions

Lymphedema is a progressive condition that affects many individuals nationwide and impacts overall health, quality of life, independence, and psychological well-being. There is currently limited research on evaluation and treatment methods, with no definitive therapeutic approach. Management of lymphedema-related care varies based on knowledge and experience, practice setting, client situations, and clinical protocols. A 63-question survey, in collaboration with American Lymphedema Framework Project (ALFP), was administered to clinicians across the United States using the Qualtrics system. The data collected in this survey aimed to compare common evaluation and treatment methods for lymphedema, clinicians' perceptions, background knowledge, and awareness of the Lymphedema Treatment Act (LTA) across disciplines. The survey is a follow-up from the 2018 ALFP survey to determine the change of lymphedema-related care overtime and clinicians' perception of the newly passed LTA. This survey was sent through the EXXAT, ALFP, and Lymphology Association of North America (LANA) database to reach many clinicians treating lymphedema nationwide. The results may enhance clinician's awareness and ability to provide quality and comprehensive care. This may improve the health outcomes and quality of life for patients experiencing lymphedema.

#### **C.G.45 Effects of Different Cueing Strategies on Sit-to-Stand in Individuals with Parkinson's Disease during Sit-to-Walk**

Noah Ecclestone, Olivia Drummer, Carissa Konop, Maija Fredrick, Megan Hill, Haleigh Rehrauer, and Shelby Flesher  
Mentor: Naghmeh Gheidi, Health Professions

Parkinson's disease (PD) is a progressive neurological disorder that has been shown to cause performance deficits in areas such as postural stability and balance in many individuals over age 60. These performance areas are crucial for the sit-to-stand (STS) sequence needed to rise from a chair, a common task that is required for many daily activities. It has been shown that cueing improves STS, however the effect of cueing on STS during sit-to-walk (STW) performance is unclear. The aim of this study was to measure the impact of different cueing modalities on STS biomechanics during STW in individuals with PD compared to age-matched healthy controls. Participants completed STW with no cues, and cues including auditory, visual, tactile, and singing. We then compared mechanical variables of STS performance between the cues provided using analysis of variance to identify the effect of cues on mechanical factors during STS performance. The results of this study can be used by occupational therapists and other clinicians to address the safety and functional mobility of individuals with Parkinson's disease to improve occupational performance.

#### **C.G.46 Pickleball Strokes Vary in Impact Forces, Emphasizing the Need to Address Stroke-Specific Demands**

Hannah Braatz, Tristan Langer, Charlie Ravanelli, Caitlyn Myers, and Julia Scharinger  
Co-authors: Shane Murphy (Health Professions) and Thomas Gus Almonroeder, Ph.D. (Trine University)  
Mentor: Steni Sackiriyas, Health Professions

**PURPOSE:** Pickleball is a rapidly growing sport, but little is known about the physical demands of different strokes. This study compared the impact accelerations of four fundamental strokes: serve, forehand, backhand, and overhead smash. **METHODS:** Sixteen experienced pickleball players (skill level > 3) performed eight repetitions of each stroke on a standard court using their dominant hand. A pelvis-mounted inertial measurement unit recorded three-dimensional accelerations. The peak resultant acceleration ("impact acceleration") was identified for each stroke. A repeated measures ANOVA analyzed differences among strokes, followed by pairwise comparisons. **RESULTS:** Significant differences were found ( $p < 0.001$ ). The serve had the lowest impact acceleration ( $4.99 \pm 2.62 \text{ m/s}^2$ ), while the forehand ( $8.44 \pm 3.07 \text{ m/s}^2$ ) and backhand ( $9.72 \pm 4.56 \text{ m/s}^2$ ) exhibited moderate impact. The overhead smash had the highest acceleration ( $11.44 \pm 6.31 \text{ m/s}^2$ ). Pairwise comparisons showed all strokes had significantly greater acceleration than the serve ( $p < 0.001$ ), with the overhead smash higher than the forehand ( $p = 0.02$ ). **CONCLUSION:** The serve is the least demanding, while the overhead smash imposes the highest forces. These findings provide insight into injury risk and training strategies for pickleball players.

**Poster Session D**  
**11:00 am-11:55 am**

**D.G.29 Parenting Styles and Their Impact on Motivation**

Katie Fochs  
Co-author: Jocelyn Newton  
Mentor: Jocelyn Newton, Psychology

School psychologists play a pivotal role in helping to structure K-12 learning environments that promote positive development of motivation skills. These skills become critical for children as they enter young adulthood and learn to navigate complex academic and social situations more independently (Morris et al., 2017). Given the significance of these skills, it is important to understand how adult caregiver behaviors contribute to positive development during the early years. Specifically, how do parenting styles relate to motivation skill development?

**D.G.35 Measuring the Healing Process to Understand Variables Correlating with Wound Inflammation in Companion Animals**

Adam Aker  
Co-author: Cord Brundage  
Mentors: Cord Brundage and Faye Ellis, Biology

The healing rate of companion animals is difficult to determine after surgery due to the lack of standard collectable data available to indicate a healthy wound site. Animals are unable to give feedback on their wound status using the pain scales that are typical in human medicine. To provide a basis for scoring healing rates this study will focus on measuring variables that correlate with the cardinal signs of inflammation including redness, skin hydration level, skin elasticity, and skin surface temperature. Measurements will be taken with dermatological tools that objectively provide numerical values for each variable. These tools have been purchased by UWL and Dr. Brundage's lab, and they will stay with UWL at the conclusion of the project. Surgical wound sites will be analyzed on a total of 24 cats and dogs currently residing at the Coulee Region Humane Society who are recovering from necessary procedures such as spays and neuters. Individuals will be repeatedly measured and compared with their previous measurements every 24 hours for 10 days. Statistical analysis will be performed to determine significance. With objective numerical data linked to healing rates, post-operative healing treatments can be more successfully assessed. With reliable correlations established, the vast field of wound treatments in animal care can be more accurately scrutinized.

**D.G.36 Comparative Analyses of Stilbene Compounds on Growth, Morphology, and Gene Dysregulation in *S. cerevisiae***

Tyler Wiese  
Mentor: Anne Galbraith, Biology

Antifungal resistance has become a growing concern, made worse by limited understanding, a lack of new treatments, and the improper use of antifungal drugs. Stilbenes, a specific antimicrobial, may provide relief from antifungal resistance. The stilbene SK-03-92 shows promise as an antifungal due to its effectiveness on the model organism *Saccharomyces cerevisiae* while remaining safe in a mouse model. Like other stilbenes, SK-03-92's exact mechanism of action is not well understood, and this work was designed to extend what was known about SK-03-92 and compare that with other stilbenes. First, I showed synergistic effects between SK-03-92, curcumin, and pterostilbene using yeast survival assays. Second, I used qPCR to determine if the same genes dysregulated in yeast cells treated with SK-03-92 were similarly dysregulated in yeast cells treated with other stilbenes. Finally, morphological changes had been previously characterized in SK-03-92 treated cells by microscopy. These studies were repeated to determine if these same morphological changes were observed in yeast treated with other stilbenes. Yeast cells treated with stilbenes will help us understand the mechanism of action of this class of stilbene compounds, leading to potential treatments for patients with fungal infections.

### **D.G.37 Characterizing the Growth and Morphology of *C. albicans* after SK-03-92 Treatment**

Shadia Escorcia Cure  
Mentor: Anne Galbraith, Biology

*Candida albicans* is a pathogenic fungus that can cause life-threatening infections. Its ability to change morphology, switching from the circular yeast form to the filamentous hyphal form, allows *C. albicans* to penetrate host tissue, enter the bloodstream, reach and damage multiple organs, and ultimately cause death. A novel compound, SK-03-92 was shown in our lab to inhibit the development of *C. albicans*' hyphal form. To further investigate the ability of SK-03-92 to inhibit hyphal formation, *C. albicans* was treated with SK-03-92 while exposed to three hypha-stimulating media. Each medium uses a distinct signaling pathway, encoded by different subsets of genes, to induce the hyphal form of *C. albicans*. Therefore, inhibition of hyphal growth after SK-03-92 treatment on each media revealed both the affected yeast-to-hypha signaling pathways and the genes associated with each pathway. The expression of genes associated with each SK-03-92 affected pathway was measured using RT-qPCR. This study provides answers about the ability of SK-03-92 to inhibit hyphal morphogenesis in *C. albicans*, the gene dysregulation that may aid in that hyphal inhibition, and about SK-03-92's potential to be used as a tool to fight *C. albicans* infections.

### **D.G.38 Fat in School: School Psychologist Knowledge & Attitudes of Fatness**

Faith Moser  
Mentor: Jocelyn Newton, Psychology

School psychologists play a crucial role in fostering equitable educational practices, yet implicit biases, including fatphobia, may unconsciously influence their high-stakes decision-making. Despite the National Association of School Psychologists (NASP) advocating for equity, there is little emphasis on fatphobia within its guidelines. Fat Studies challenges societal perceptions of body weight and highlights fatphobia's intersectionality with racism, ableism, sexism, and classism. Given that weight stigma is pervasive—even among young children—school psychologists' awareness of fatphobia is essential in reducing bias and stigma in schools. This study aims to: (a) examine fatphobic attitudes among school psychologists and (b) explore how fatphobia influences their decision-making. Using an experimental design, participants will read one of two case studies—one priming fatphobia, the other a control—before selecting an intervention. They will also complete the Fat Attitudes Assessment Toolkit (FAAT) and qualitative questions on their experiences with Fat Studies and body perception. A t-test will analyze how the fatphobia prime affects intervention choices, while FAAT results will describe overall attitudes. Findings will provide insight into fatphobia's impact in school psychology and inform efforts to promote more equitable practice.

### **D.G.39 Comparison of Lower Extremity Biomechanics and Muscle in Overground vs. Treadmill Running in Community Runners**

Makenna Carpenter, Sam Friederichs, Austin Kopacz, Adam May, and Emory Weeden  
Mentor: Drew Rutherford, Health Professions

The purpose of this study was to examine lower extremity biomechanics and muscle force differences when running on overground compared to treadmill running. The use of treadmill training by therapists is common in clinical settings and may present with inconsistent joint loadings relative to overground training. Prior studies have identified differences in kinematics between overground and treadmill running, warranting further investigation. Thirty-three participants, ages 22-53, were examined in one condition using a Treadmetrix instrumented treadmill (Park City, UT) and a second condition using timing gates and force platforms (Bertec Corp, Columbus, OH) during overground running. Both used a 3-D motion capture system (Motion Analysis Corp., Rohnert Park, CA). Inclusion criteria included running at least 10 miles per week. Exclusion criteria included any lower extremity pathologies, surgeries, or pain limiting activity in the last 12 months, history of patellofemoral joint pain, or any history of serious cardiovascular or medical condition. Future analysis will be investigating bilateral joint angles, torques, and muscle forces at the hip, knee, and ankle to understand variations between overground and treadmill running. The findings from this study are expected to provide valuable insights into clinical application of treadmill training and its relation to overground training.



#### **D.G.40 Associations of Urinary Incontinence and Postpartum Physical Activity: A Qualitative Exploration**

Olivia Butler  
Co-author: Lisa VanWiel  
Mentor: Lisa VanWiel, Health Professions

**INTRODUCTION:** Urinary incontinence (UI) is a prevalent postpartum condition associated with low physical activity (PA) levels. The postpartum period is associated with low PA, and increased risk of activity-related adverse health conditions. Due to the protective effects of PA on postpartum health there is an urgent need to understand influences on postpartum PA. **METHODS:** Postpartum participants (n = 30) were recruited from a larger quantitative study investigating UI and postpartum PA. Semi-structured in-depth interviews were conducted to provide insight on postpartum PA level, experience with UI, and ideal intervention design. Interview transcripts were dual-coded using Dedoose qualitative software and thematically analyzed using an interpretive phenomenology framework. **RESULTS:** Six themes emerged. 1) PA decreases in the postpartum period 2) UI is one of many influences on postpartum PA. 3) Postpartum women stop activity, decrease intensity of activity, or use compensatory strategies in response to UI. 4) UI is a threat to women's identity, mental health, and social health. 5) Women with UI have unmet needs 6) Postpartum women with UI want PA interventions designed by pelvic floor physical therapists. **CONCLUSIONS:** UI negatively influences PA in the postpartum period and impacts postpartum mental health. Interventions are needed to treat UI and improve postpartum PA.

#### **D.G.41 Associations of Urinary Incontinence with Postpartum Physical Activity**

Grace Conway  
Mentor: Lisa VanWiel, Health Professions

**INTRODUCTION:** Urinary incontinence (UI) is a common type of postpartum pelvic floor dysfunction. The postpartum period (12 months after birth) is characterized by a marked and concerning decline in moderate-to-vigorous physical activity (MVPA) compared to pre-pregnancy. Little is known about postpartum trends in muscle-strengthening activities (MSA). The purpose of this study is to determine the associations of UI with postpartum MVPA and MSA. **METHODS:** This cross-sectional study utilized electronic surveys to gather self-reported data on UI, postpartum physical activity, and participant demographic information from 244 postpartum women. Multiple linear regression and multiple logistic regression statistics were used to support the research objectives. **RESULTS:** Participants were on average 32.9 years old and 7.2 months postpartum. Of the participants, 31.2% met MVPA guidelines, 48% met MSA guidelines, and 21.3% met both guidelines. Those with MUI had the lowest MVPA among participants with UI. Those with severe UI had the greatest MSA among participants with UI. **CONCLUSION:** It appears that UI presence alone does not influence postpartum physical activity behaviors. High symptom bother seems to influence MVPA, while lower UI symptom bother seems to influence MSA. Future qualitative studies are needed to further contextualize the association of UI with postpartum physical activity.

#### **D.G.42 Pelvic Floor Dysfunction in Division III Women's Lacrosse Players**

Anna Edsill  
Co-author: Lisa VanWiel  
Mentor: Lisa VanWiel, Health Professions

**INTRODUCTION:** Pelvic floor dysfunction (PFD) encompasses a spectrum of symptoms and disorders of the neuromuscular structures of the pelvic floor. Athletes appear to experience a higher prevalence of PFD compared to the general population, yet research investigating the epidemiology and etiology of PFD in collegiate athletic populations remains limited. The objective of this study is to assess pelvic floor health in Division III women's lacrosse athletes and develop an evidence-based, interdisciplinary intervention incorporating athletic trainers and pelvic floor physical therapists to promote student-athlete health. **METHODS:** Participants completed three validated self-report questionnaires prior to arriving at the laboratory for the ultrasound assessment including the Pelvic Floor Disability Index (PFDI-20) to assess pelvic floor dysfunction symptoms, the Visual Analog Scale (VAS) Questionnaire to evaluate back, hip, and pelvic pain intensity, and the Low Energy Availability in Females Questionnaire (LEAF-Q) to screen for potential energy availability deficits. Demographic and anthropometric data was also gathered. Transabdominal ultrasound imaging of bladder base displacement during contraction and deep breathing was performed on each participant to assess movement patterns of the pelvic floor. **RESULTS AND DISCUSSION:** Data collection and analysis is ongoing. Results will be ready for dissemination prior to the symposium.

#### **D.G.43 The Relationship between Foot Posture and Whole-Body Balance**

Grace Johnson  
Co-authors: Hannah Powers and Shane Murphy  
Mentor: Shane Murphy, Health Professions

Balance, as measured by center of pressure (CoP), is widely used to quantify the ability to maintain upright posture, redirect for sport, and avoid tripping or falling. This whole-body strategy is defined by the CoP path and used to calculate explicit metrics of quiet stance balance. Within the global balance strategy, the medial longitudinal arch conforms as more weight is distributed to the limb. This phenomenon can be quantified with a foot posture index (FPI) to assess pronated, supinated, and neutral feet. The study aimed to identify correlations between foot posture and whole-body balance metrics. Physically active females ( $n = 43$ ,  $22 \pm 1$  year,  $66 \pm 10$  kg,  $228 \pm 79$  min/week) were recruited to participate in a single session data collection. Both feet were assessed and averaged for statistical analyses. Excursion, velocity, frequency, and complexity of both the anteroposterior and mediolateral CoP time series were calculated from a 30 second trial. No significant correlations ( $p > 0.05$ ) were identified between FPI and CoP measures. This homogenous sample of young active persons does not support previous findings that whole-body balance strategies would correlate to the pliability of the medial longitudinal arch. Clinicians should not widely assume the foot morphology falls within the causal pathway of balance deficiencies.

#### **D.G.44 Impact of Foot Type on Countermovement Jump Kinetics in Physically Active College-Aged Females**

Kayla Lass  
Co-author: Shane Murphy  
Mentor: Shane Murphy, Health Professions

The navicular drop test evaluates the medial longitudinal arch to classify foot types (pes planus and pes cavus) and assesses foot pronation and arch collapse. The countermovement jump is an effective movement to study athletic performance and injury risk. **PURPOSE:** Determine the effect of foot type category on countermovement jump kinetic metrics in physically active college-aged females. **METHODS:** Age, weight, height, and physical activity-matched cohorts (pes planus:  $n = 9$ ,  $22 \pm 1$  yr,  $66 \pm 2$  kg,  $168 \pm 6$  cm,  $200 \pm 50$  min/week; pes cavus:  $n = 9$ ,  $23 \pm 1$  yr,  $67 \pm 2$  kg,  $171 \pm 6$  cm,  $220 \pm 70$  min/week) completed questionnaires along with foot and ankle assessments. Kinetic metrics such as force development, impulse, and landing force were compared using independent t-tests and effect size calculations. **RESULTS:** No significant differences were noted for all kinetic variables ( $p \geq 0.23$ ); considering this, pes planus individuals required 7% more positive net impulse to achieve similar jump heights. This suggests foot structures may influence movement strategies to propel the body. **CONCLUSION:** Our sample is insufficient to identify a statistical difference; however, small to moderate effects suggest that some biomechanics of the foot impact jump mechanics. Training programs tailored to foot type may enhance performance and reduce injury risk.

#### **D.G.45 Impact of Activity Level on Achilles Tendon and Plantar Fascia Thickness in Physically Active College-Aged Females**

Keegan Olin and Kayla Lass  
Mentor: Shane Murphy, Health Professions

A minimum threshold of 150 minutes of moderate to vigorous physical activity per week is suggested to mitigate comorbidities. Tissue adaptations are expected where tissues that are loaded more than others will see relatively more adaptation. Thickening of tissues, such as the achilles tendon (AT) and plantar fascia (PF), can be protective; however, too much thickening coincides with symptoms of pain and loss of function. **Purpose:** This study aims to identify the effect of exceeding the suggested physical activity threshold on tissue thickness. We hypothesize that the cohort with high physical activity will have thicker AT and PF compared to those with low physical activity. **Methods:** A sample of 43 female participants ( $22 \pm 2$  years,  $169 \pm 6$  cm,  $66 \pm 10$  kg) was divided into participants that met ( $n = 7$ ,  $150 \pm 15$  min/week) or well exceeded ( $n = 8$ ,  $310 \pm 45$  min/week) physical activity guidelines. Tendon thickness was derived from two ultrasonographic images. Prior to statistical analyses, average tissue thickness was normalized to participant body mass. **Results:** Moderate effects (Hedges'  $G = 0.5$ ) were observed for PF and AT thickness. **Conclusion:** When controlling for mass, both the PF and AT adapt with physical activity, supporting Davis' Law of tissue adaptation. High physical activity levels contribute to clinical observations of thick AT or PF.

#### **D.G.46 Long-Term Impact of Lower Extremity Injury on Postural Control: Center of Pressure Adaptations in Physically Active College-Aged Females**

Elizabeth Williams and Jared Dvorak  
Co-author: Shane Murphy  
Mentor: Shane Murphy, Health Professions

Center of pressure (CoP) during quiet stance is clinically valuable for understanding the severity of balance deficits following a lower extremity injury. Acute reductions in center pressure are well documented; however, less is known about how balance is affected after returning to activity without symptoms. This study aims to provide insight into the chronic effects of lower extremity injuries on CoP-derived balance metrics during quiet stance. Forty-three females completed four 30-second quiet stance trials, including nineteen with a history of lower extremity injury (Age  $22.5 \pm 1.2$  yrs, Physical Activity:  $233 \pm 77.4$  min/wk) and twenty-four without (Age:  $22.3 \pm 1.7$  yrs, Physical Activity:  $224 \pm 81.5$  min/wk). Excursion, velocity, and frequency of the planar (i.e., mediolateral and anteroposterior) CoP time series were calculated and averaged across trials. Hedge's *g* revealed moderate effects across all metrics in the anteroposterior plane (Velocity = 0.57, Excursion = 0.57, Frequency = 0.56). Present data demonstrates that college-aged females with a history of lower extremity injury reduced COP strategies in the sagittal plane relative to those without a history of injury. The altered balance strategy supports the notion that a history of injury will continue to affect the person despite returning to physical activity.

#### **D.G.47 Transcriptional Regulation of *Staphylococcus aureus* Biofilm-Associated Genes in a *brpR* Mutant Compared to Wild Type**

Hailey Dyce and Isabelle Sharp  
Co-authors: Paul Schweiger, Robin Patel, and Steven Johnson  
Mentor: William Schwan, Microbiology

*Staphylococcus aureus* causes a wide range of diseases in humans, including bloodstream and skin infections. New drugs are needed to treat *S. aureus* infections. A novel antimicrobial drug labeled SK-03-92 was previously shown to affect transcription of the *brpR* and *brpS* genes in *S. aureus*. BrpR/BrpS may regulate biofilm formation and late-stage competence in *S. aureus*. In this study, an RNA sequencing analysis was performed on a *brpR* mutant versus wild-type strain. A total of 459 genes were shown to have significant transcriptional changes (193 upregulated and 266 downregulated) in the *brpR* mutant compared to wild type. Using bioinformatic analyses, 10 genes (*metE*, *citC*, *pdhA*, *pdhC*, *mraY*, *bacA*, *mw1254*, *mw1287*, *cap8G*, and *trpB*) were chosen for quantitative reverse transcription polymerase chain reaction (qRT-PCR) analysis to confirm the transcriptional differences. These genes are tied to peptidoglycan synthesis, capsule formation, tryptophan synthesis, the citric acid cycle, and methionine synthesis pathways in *S. aureus*. Genes *mraY*, *MW1287*, *trpB*, *MW1254*, and *cap8G* displayed upregulation and the *bacA*, *pdhA*, *pdhC*, *citC*, and *metE* genes were shown to be downregulated in the *brpR* mutant versus wild type. From this study, we have more information on how BrpR may regulate biofilm formation and late-stage competency in *S. aureus*.

#### **D.G.48 PilR2 Involvement in Promoting Minor Pilin Gene Expression in *Myxococcus xanthus***

Anna Jensen  
Co-author: Daniel Bretl  
Mentor: Daniel Bretl, Microbiology

*Myxococcus xanthus* is a gram-negative, rod-shaped bacterium that exhibits extensive cooperative social behavior, dependent on type IV pili (T4P), and known as social (S) motility. Other complex behaviors of this bacterium, including multicellular development and microbial predation, require S-motility. Specifically, *M. xanthus* moves via this mechanism by extension of their T4P from one pole of the cell, adherence of the T4P to a surface or neighboring cells, and then retraction of the T4P back into the cell body to pull themselves forward. To regulate this behavior, *M. xanthus* uses a two-component system (TCS) called PilSR, of which PilR is a response regulator that promotes expression of *pilA*, the major pilin protein. Another TCS involved in regulation of proper pili formation for S-motility is PilS2R2. This TCS does not regulate *pilA*, since  $\Delta pilR2$  still results in *pilA* expression. However,  $\Delta pilR2$  results in a lack of pili on the cell surface, suggesting this TCS regulates genes involved in proper T4P assembly. Minor pilin proteins have been previously demonstrated to generate priming complexes for T4P assembly, and are located at the pili tips, which has led to the hypothesis that PilR2 might regulate expression of these minor pilins. To investigate, I am conducting electromobility shift assays (EMSAs) to determine if PilR2 is binding to candidate minor pilin promoter DNA fragments.

**Poster Session E**  
**12:05 pm-1:00 pm**

**E.G.36 Family Matters: A Comparative Analysis of Involvement Dynamics**

Kendall Hazen  
Co-author: Robert Dixon  
Mentor: Robert Dixon, Psychology

This study examines the correlation between family involvement and student outcomes, emphasizing the impact of family units and socio-economic status (SES) on engagement. Using the Family Involvement Questionnaire – Short Form (FIQ-SF), data will be collected from urban and suburban families to assess three domains: home-based, school-based, and home-school conferencing involvement. The research aims to explore barriers and facilitators of family involvement across different family structures and SES levels. Results will provide insights for schools to enhance family-school partnerships, offering school psychologists key strategies to address gaps and foster stronger collaborations for student success.

**E.G.37 Deconstructing White Norms: Assessing Cultural Encapsulation and Rethinking Classroom Expectations**

Haley Scholten  
Co-author: Jocelyn Newton  
Mentor: Jocelyn Newton, Psychology

This research aims to analyze how education is based in White cultural values and identify student recommendations for more culturally inclusive teaching practices.

**E.G.38 Comparisons of Patellofemoral Joint Loading Variables and Kinematics across Split Squat Variations**

Brandon Bernardo, Grace Rudek, and Teaera Fabian  
Co-author: Thomas Kernozek  
Mentor: Thomas Kernozek, Health Professions

Patellofemoral pain (PFP) is common in active females, and increased patellofemoral (PF) force may exacerbate symptoms. Understanding PF loading during split squat (SS) variations could help guide therapeutic exercise progression. **PURPOSE:** Examine PF joint loading and kinematics during different SS variations. **METHODS:** 31 college-aged, recreationally active females performed SS variations in a random order: baseline (both feet on the floor), posterior foot elevated on a 41 cm box, and posterior foot elevated on a 61 cm box. Stance width was 75% of leg length. Each participant completed seven repetitions per variation at 60bpm. Kinematic and kinetic data were collected with a 16-camera motion analysis system (180Hz) and a force platform (1800Hz). Inverse dynamics and static optimization with a 16-segment musculoskeletal model were used to calculate PF force. Repeated measures ANOVA ( $\alpha = 0.05$ ) was performed. **RESULTS:** PF joint loading differed among SS variations ( $p < 0.05$ ). Compared to baseline (SS), PF stress increased by 11% and 16% for the 41cm and 61cm box, respectively. PF force decreased by 10% and 16% for the 41cm and 61cm box compared to baseline. Variations in knee flexion may have influenced PF stress, although Knee ROM was not statistically different. **CONCLUSION:** PF force decreases as rearfoot height increases, but PF stress increases. Exercise progression for patients with PFP should start at split squats, and progress to rearfoot elevation to match the PF stress curve.

**E.G.39 Concurrent Tactile Feedback Cueing and Estimated Cadence Effect on Achilles Tendon Loading in Runners**

Grace Rudek  
Co-authors: Emma Heinert, C. Nathan Vannatta, and Drew Rutherford  
Mentor: Thomas Kernozek, Health Professions

Cadence manipulation has been shown to change Achilles tendon (AT) loading. Running watch technology can deliver vibratory tactile cues that may change running cadence. **PURPOSE:** To determine if watch delivered tactile cues or a runner's estimated 10% cadence increase effectively changed AT loading variables. **METHODS:** 34 participants ran on an instrumented treadmill where kinematic (180 Hz) and kinetic data (1800 Hz) were obtained, and their preferred cadence was measured (baseline run). All ran with the runner's estimated 10% cadence increase and a vibratory tactile cue from a

GPS smart watch set at a 10% cadence increase. Inverse dynamics and static optimization were used in a 16-segment musculoskeletal model to calculate muscle forces to measure AT force. Ultrasound imaging was used to determine AT cross sectional area to calculate AT stress. RESULTS: Cadence increased 6% for the estimated condition and 4.6% for tactile cueing (Table 1). Neither the estimated or the tactile cued running condition decreased peak ground reaction force (GRF), AT force, gastrocnemius force, or AT stress compared to the baseline. Soleus force decreased 4.6% and 2.9% for the estimated condition and tactile cue, respectively. There were no differences in soleus force between the two cadence conditions. CONCLUSION: Tactile cueing using vibration from a GPS watch may not be perceived enough to effectively increase running cadence by 10% to reduce AT loading.

#### **E.G.40 Comparison of Asymmetry in Achilles Tendon Loading Variables Between Male and Female Recreational Runners**

Sidney Smith and Kellie Hierl  
Co-author: Thomas Kernozek  
Mentor: Thomas Kernozek, Health Professions

Achilles tendon (AT) injuries often occur unilaterally in running with males having a higher reported incidence compared to females. PURPOSE: Examine asymmetry between limbs based on gender in AT-related loading variables during running. METHODS: 16 female and 16 male recreational runners participated in a single session. Each runner ran for 3.5 minutes at 3.3m/s. Data were recorded for the last 30 seconds of the run. 3D-kinematics (180 Hz) from a 16-camera motion analysis system and kinetics (1800 Hz) from an instrumented treadmill were measured. These data were input into a 16-segment musculoskeletal model to calculate muscle forces from each limb. Ultrasound measures were taken to determine AT cross sectional area (CSA). AT stress and percent asymmetry were calculated. Independent samples t-tests were run to examine gender differences in all asymmetry variables ( $\alpha = 0.05$ ). RESULTS: Asymmetry between gender was shown in AT stress with a large effect size (Cohen's  $d = 0.96$ ) and peak gastrocnemius muscle force with a medium effect size (Cohen's  $d = 0.63$ ). Females had an 8.83KPa higher AT stress asymmetry and a 3.31BW larger peak gastrocnemius muscle force asymmetry compared to males. CONCLUSION: Differences were shown in AT stress and peak gastrocnemius muscle force asymmetry based on gender. Further research appears warranted to understand how asymmetry may be different based on gender in the AT stress of healthy and injured runners.

#### **E.G.41 Reducing Bias through Interaction: UWL Graduate Students' Engagement with Individuals with Intellectual Disabilities**

Brandon Murphy  
Co-author: Patrick Grabowski and Hanni Cowley  
Mentor: Patrick Grabowski and Hanni Cowley, Health Professions

Individuals with intellectual disabilities experience limitations in cognitive functioning and daily life skills, which may affect their social interactions and self-care. These limitations often lead to societal misconceptions and stereotypes, rooted in a lack of awareness about their true capabilities. As a result, individuals with intellectual disabilities frequently face negative attitudes, stigma, and even bullying (Scior, 2011). The purpose of this study was to assess change in perceptions of UWL graduate students after a Special Olympics ALL-STAR event fostering direct engagement between participants and individuals with intellectual disabilities. It is hypothesized that such interactions will shift perceptions from seeing intellectual disabilities as limitations to recognizing individuals' abilities for meaningful societal participation. Participants completed pre- and post-event surveys assessing their perceptions before and after volunteering. Results showed notable shifts, particularly in views on independence in daily activities, public transportation use, following directions, and confidence in communication. Inclusive events such as the Special Olympics and community outreach programs, play a vital role in facilitating these perspective shifts. Ultimately, active involvement in such initiatives fosters an inclusive society by encouraging acceptance, reducing stigma, and inspiring advocacy for individuals with intellectual disabilities.

#### **E.G.42 Using the Angiosperms353 Probe Kit to Resolve Species Complexes within the Genus *Aphyllon* (Orobanchaceae)**

Kiona Leeman  
Co-author: Adam Schneider  
Mentor: Adam Schneider, Biology

*Aphyllon* is a genus of approximately 27 species of non-photosynthetic, root-parasitic plants in the family Orobanchaceae. The genus is divided into two sections: section *Aphyllon* and section *Nothaphyllon*. Species within section *Nothaphyllon* pose significant taxonomic challenges and are informally grouped into the *A. californicum*, *A. cooperi*, and *A. ludovicianum* complexes. Previous research suggests that these complexes result from a complicated gene history via hybridization and/or incomplete lineage sorting. To explore the evolutionary history of these complexes and address taxonomic difficulties, the Angiosperms353 DNA probe kit was used to capture 353 target genes from a preliminary data set of 25 samples across the genus. We hypothesize that using more genes will yield a more accurate phylogenetic tree compared to previous studies that used fewer genes. Our preliminary phylogenetic analysis supports the distinction between the two sections of genus *Aphyllon* and confirms the relationships among the five species in section *Aphyllon*. However, species in section *Nothaphyllon* remain problematic, as some members of the informal complexes do not group with their previously associated complex to form monophyletic groups. Further research with a larger data set will focus on these problematic complexes and investigate the potential role of hybridization in their evolution.

#### **E.G.43 Proteomics in Comparative Physiology: Use of Immunoblotting to Study Tryptophan Hydroxylase 2 and 5HT1A Receptor Levels in the Bullfrog Brainstem**

Tyler Billman  
Mentors: Cord Brundage and Scott Cooper, Biology

Bullfrog, *Lithobates catesbeiana*, is a vertebrate animal model that can be used to study toxicology and developmental physiology. My research aims to examine the brainstem and the pathology of sudden infant death syndrome (SIDS) in humans using a comparative model. Past research demonstrated that caudal raphe neurons send serotonergic fibers that terminate near respiratory neurons in the brainstem. Additional research suggests that late metamorphic tadpoles increase lung burst activity with exposure to low serotonin concentrations mediated by 5-HT<sub>1a</sub> receptor (5HT<sub>1a</sub>R) and tryptophan hydroxylase 2 (TH<sub>2</sub>). I propose that nicotine exposure during the development of respiratory neurons changes serotonin signaling. Nicotine is a stimulant and paralytic that may interrupt serotonin signaling and impair respiration during larval development. To examine the similarities and differences between humans and bullfrogs, I used the NIH BLAST reference to compare the DNA and amino acid sequences of 5HT<sub>1a</sub>R and TH<sub>2</sub>. I am performing quantitative western blot analysis of both proteins in adults and tadpoles to determine a baseline. Repeating the analysis on nicotine-exposed developing bullfrogs may show shifts during metamorphosis. Impairments to the maturing serotonin network may underlie toxicity in developmental nicotine exposure and further support an increased risk of SIDS.

#### **E.G.44 Effects of Topical Capsaicin on the Metaboreflex and Microvascular Responsiveness in Aging**

Nik Carpenter  
Mentor: Jacob Caldwell, Exercise & Sport Science

**BACKGROUND:** Aging leads to exaggerated blood pressure responses during physical activity, driven by the metaboreflex, and is associated with microvascular dysfunction, both of which increase cardiovascular risk. Topical capsaicin has been shown to attenuate the metaboreflex and improve microvascular responsiveness in young individuals. However, these effects have not been studied in older adults. This study investigated the effects of topical capsaicin on metaboreflex and microvascular responses in young and aged healthy males and females. **HYPOTHESES:** 1) Capsaicin would reduce mean arterial pressure (MAP) during post-exercise circulatory arrest (PECA) in both age groups; 2) Capsaicin would increase microvascular responsiveness in young but not aged participants. **METHODS:** 19 participants (13 young, 6 aged) underwent rhythmic handgrip exercise followed by blood flow restriction, with capsaicin applied to the exercising or non-exercising arm. MAP and microvascular responses were measured 30- and 60-minutes post-treatment. **RESULTS:** Capsaicin did not significantly reduce MAP during PECA in either group. Microvascular reperfusion was significantly increased in young participants at T60 (CAP-EX:  $2.84 \pm 0.82$  %/sec vs. CONTROL:  $2.34 \pm 0.77$  %/sec,  $P = 0.032$ ), but not in aged participants ( $P > 0.05$ ). **CONCLUSIONS:** Capsaicin improved microvascular reperfusion in young individuals, but did not affect blood pressure responses to exercise in either group.

#### **E.G.45 The Impact of Menstrual Cycle Phases on Exercise Performance**

Sydney Gentilli

Mentors: Naoko Giblin and Andrew Jagim, Exercise & Sport Science

**CONTEXT:** The purpose of this study is to examine changes in body composition, body water, exercise performance, and psychological measures throughout the menstrual cycle including the follicular, ovulatory and luteal phases, in the athletic population. **METHODS:** A cross-sectional study design was utilized and has a mix of 8 recreational and Division-III eumenorrheic female athletes. Participants tracked their menstrual cycle for two months, tracking their basal body temperature every day and their ovulation with a provided test kit for about 7-10 days. There were three separate data collection sessions that took place within each phase. Each data collection utilized HD force plates and a body composition analysis. An electronic survey collecting subjective data concluded the data collection. **RESULTS:** Due to late recruitment of participants, we were unable to finalize subject data before the abstract deadline. However, 7 of the subjects' data will be completed by the time of the symposium. Data was analyzed using pairwise comparisons. No significance was found with the information obtained at the current time. **CONCLUSION:** Results from the study even though currently found insignificant prompts for further methodology into gaining more insight into understanding how the menstrual cycle may impact body composition, exercise performance and psychological status.

## GRADUATE ORAL PRESENTATION ABSTRACTS

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### Oral Session A1 8:50 am-9:15 am

#### O.G.1 The Response of *Myxococcus xanthus* to Low Oxygen Conditions

Skylar White  
Co-author: Daniel Bretl  
Mentor: Daniel Bretl, Microbiology

*Myxococcus xanthus* is a soil bacterium with a complex life cycle that is regulated by numerous two-component systems (TCS) that sense and respond to varying environmental conditions. These TCS regulate *M. xanthus* behaviors including motility, microbial predation, development, and sporulation. Recently, the Bretl lab characterized a multi-component two-component system named NmpRSTU, which senses oxygen concentrations and regulates genes to facilitate growth and survival. Despite requiring oxygen to produce energy, *M. xanthus* must encounter soil environments with reduced oxygen levels. However, almost all research on this bacterium has been done under ambient oxygen conditions. Therefore, little is understood about *M. xanthus* behaviors in low-oxygen, and there is no understanding of the impact of NmpRSTU in these environments. I have used low-oxygen assays to assess growth, survival, and motility. Thus far, we have observed a significant decrease in growth and motility between wild-type *M. xanthus* and a  $\Delta nmpR$  mutant in low oxygen conditions, indicating NmpR-dependent regulation is necessary for optimal growth and motility during low oxygen conditions. For survival, the only finding thus far is a difference in morphology between wild-type (rods) and  $\Delta nmpR$  mutant (rounded up). The morphological difference is intriguing because it indicates that NmpRSTU system may play a role in maintaining the rod shape in low oxygen. Future directions will investigate how limited oxygen, the NmpRSTU system, and downstream gene expression influence growth, survival, and social behaviors.

#### O.G.2 Connection between Metastatic Breast Cancer and Megakaryocytes in Bone Marrow

Tristin Studer  
Mentor: Jaelyn Wisinski and Sierra Colavito, Biology

Breast cancer is the second leading cause of cancer death in women. Approximately 13% of women will develop breast cancer in their lifetime and rates continue to rise. Megakaryocytes produce platelets and have primarily been shown to help the spread of breast tumors. When these tumor cells break off, they are more likely to spread to the bone more than other organs of the body. However, current literature suggests that megakaryocytes may help prevent the spread of breast cancer metastasis. To bridge this knowledge gap, we attempt to determine if breast cancer influences megakaryocytes ability to mature and grow. A key characteristic of this maturation is megakaryocytes ability to adhere. We believe there is 'something' being released from either osteoblasts or breast cancer cells that affects megakaryocyte proliferation or maturation. Conditioned media from an invasive breast cancer cell line (BT549) and an osteoblast cell line were collected and used in proliferation and adhesion assays. Preliminary data shows that megakaryocytes exposed to conditioned media have a lower level of adhesion compared to normal media. Despite there being a change in adhesion, proliferation remains relatively the same. These findings suggest that there is 'something' that is causing change in adhesion, what's causing this change remains unknown and future studies will be conducted to answer these questions.

#### O.G.4 The Biogeography and Systematics of Xylariaceous Fungi on Polynesian Islands

Michael Malone  
Co-author: Todd Osmundson  
Mentor: Todd Osmundson, Biology

The xylariaceous fungi are an enigmatic group of macrofungi with scant knowledge of their biodiversity and evolutionary relatedness, especially on Pacific Islands. In total, 82 specimens of xylariaceous fungi from Mo'orea (n = 35), Kaua'I (n = 25), Oahu (n = 13), Hawai'i (n = 9) were borrowed from herbaria for this study. All specimens were morphologically identified to species when possible. DNA extractions were performed for all specimens and four genetic loci (ITS, beta-tubulin, alpha-actin, and LSU) were PCR-amplified and the products were purified with SpeedBeads™. The final PCR products will be pooled into a DNA library that will be sequenced by the University of Wisconsin-Madison. After the sequences are read, they will be sent back for alignment with MAFFT and MUSCLE computer code. Querying via a BLAST search in the NCBI database will be used for species identification based on % similarity to sequences of



known species. A phylogenetic tree will be constructed using the aligned sequences of each specimen and RAxML computer code. The resulting cladogram will provide insight into the relatedness of the fungi among one another. This study is among the few comprehensive studies of xylariaceous fungi in the South Pacific and the first to document the biodiversity of these fungi on Mo'orea.

**Oral Session A2**  
**9:20 am-9:45 am**

**O.G.8 Capturing Instream Habitat Variability in Wisconsin Driftless Area Streams**

Evan Sirianni  
Co-authors: David Schumann, Jason Freund, and Brandon Thill  
Mentors: David Schumann and Jason Freund, Biology

Instream and environmental features are often measured by subsampling wadable stream reaches with time consuming transect protocols. The subsamples include 11 to 31 equidistant transects that describe the habitat needs of fishes and generate a basis for management projects. We used habitat transect data to identify stagnation (leveling off) in the variability of 11 different instream habitat features at 18 coldwater dolostone and sandstone streams in southwestern Wisconsin. At each stream reach, 31 transects were sampled and used to develop hypothetical transect resampling scenarios to represent the variation (i.e., coefficient of variation [CV]) of each habitat feature if between 5 and 31 equidistant transects were sampled. The CV values for each of the habitat variables were calculated for each sampling scenario and the breakpoints (i.e., when the slope of the line becomes 0) were estimated using piecewise linear regression. The collective mean breakpoint of all habitat models was 13.74 (standard deviation [SD] = 6.34). No significant difference among habitat feature transect breakpoints (Kruskal-Wallis test; test statistic = 10.50, p-value = 0.40) and between stream geology (Wilcoxon rank sum test; test statistic = 4074.50, p-value = 0.26) further suggest the use of 15 equally spaced transect measurements to collect representable habitat data in wadable streams across southwestern Wisconsin.

**Oral Session C1**  
**11:00 am-11:25 am**

**O.G.24 Sexual Harassment in Recreation**

Zackary Peterson  
Co-authors: Katherine Evans, Dorothy Shmalz (University of Utah), Erin Morris (State University of New York at Cortland), and Sasha Mader (University of Utah)  
Mentor: Katherine Evans, Recreation Management & Recreational Therapy

Sexual harassment, as defined by the U.S. Equal Employment Opportunity Commission, is harassment based upon a person's sex including, but not limited to, unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature. Sexual harassment is prevalent in all professional settings, including the field of recreation. Recreation is a foundational aspect of society utilized by all to promote positive wellbeing. With the sole purpose of promoting positive wellbeing, it is imperative to maintain an environment where participants are able to safely improve their wellbeing and employees are able to adequately provide services that do so. However, sexual harassment against recreation professionals harms the wellbeing of both employees and participants as employees who face sexual misconduct are not able to provide adequate services that promote positive wellbeing. Within the field of outdoor recreation, a predominantly masculine area of recreation, this type of behavior is often expected and overlooked. This study examines the experiences of outdoor recreation professionals to further analyze what can be done to prevent sexual harassment. Because sexual harassment is detrimental to wellbeing of employees and participants, a new industry standard of prevention, policy, and reporting needs to be created alongside identifying current issues and creating a culture that regards sexual misconduct in contempt.

**Oral Session C2**  
**11:30 am-11:55 am**

**O.U.28 Exploring General PE Teachers' Perceptions of Their Role in Serving Students with Disabilities in a Rural School District**

Beth Gannigan

Mentor: Brock McMullen, Exercise & Sport Science

Physical education (PE) teachers in rural school districts play a critical role in ensuring students with disabilities receive appropriate physical education services, yet their responsibilities in this area often lack clarity. The Individuals with Disabilities Education Act (IDEA) mandates that students with disabilities receive specialized instruction in the least restrictive environment, but implementation varies widely across rural districts. Limited research exists on how students in rural districts receive specialized PE instruction, and no studies have explored PE teachers' perceptions of their roles in providing services to students with disabilities in these settings. This study aims to explore PE teachers' perceptions of their roles in serving students with disabilities in a rural school district. Additionally, it examines how role ambiguity and role overload impact their ability to provide specialized physical education instruction. Data will be collected through in-depth interviews and classroom observations of three PE teachers in the Coleman School District. Thematic analysis will be used to identify patterns and challenges in their experiences. My hypothesis is that GPE teachers in rural districts will experience significant role ambiguity and role overload when serving students with disabilities, which may impact their ability to provide specialized instruction effectively. Findings from this study will be analyzed and reported by May 9th.

# **FACULTY & STAFF ABSTRACTS**

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## FACULTY AND STAFF POSTER PRESENTATION ABSTRACTS

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### Poster Session E 12:05 pm-1:00 pm

#### **E.F.46 Conquering Machine Learning: How Do We Improve AI-Generated Curriculum?**

Dean Vesperman (History), Terra Clark, Audrey Langworthy, and Zach Powley

Co-authors: McKylie Green, Anne Aydinian-Perry, Ed.D. (University of Wyoming), Matt Missias, Ph.D. (Grand Valley State University), and Whitney Blankenship, Ph.D. (San Antonio College)

The purpose of our research was to find tools we could teach other teachers to improve AI-generated curriculum. To accomplish this task, we utilized several generative AI platforms: MagicSchool AI, ChatGPT, Claude, Co-Pilot, DeepSeek, and Gemini AI. Our choice of AI platforms prioritizes the ability to compare free platforms (ChatGPT) to paid platforms specifically designed for educational use. A standardized prompt was created for the initial queries on each platform and results were compared across all four AI platforms. The lessons were coded by the four undergraduate researchers using three sets of open codes. First, the lessons were coded using Gardner's Frames of Mind (multiple intelligences): linguistic, interpersonal, intrapersonal, mathematical-logical, visual-spatial, kinesthetic-bodily, musical, naturalist, and existential. Next, they were coded using Bloom's Taxonomy of cognitive tasks: knowledge, comprehension, application, analysis, evaluate, and create. Lastly, the lessons were coded for layers of discourse: individual v. group, low-level v. high-level. Preliminary findings found significant differences between AI tools, which we will present.

## FACULTY AND STAFF ORAL PRESENTATION ABSTRACTS

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### Oral Session A1 8:50 am-9:15 am

#### **O.F.5 On the Street: Empowering Marginalized Voices through *Hear, Here***

Ariel Beaujot, History

Co-authors: Michelle Hamilton (University of Western Ontario) and Joëlla Van Donkersgoed (University of Luxembourg)

*Hear, Here* is an innovative audio-documentary project utilising oral histories to insert underrepresented narratives into urban space. By calling a dedicated phone line displayed on a street sign, passersby can engage with the hidden histories of their neighbourhood. The act of presenting marginalised voices challenges conventional historical records which are dominated by Christian, white, elite, and settler-colonial narratives. Using open-access technology, *Hear, Here* democratises storytelling, and fosters community engagement and critical dialogue. Its global expansion underscores its adaptability and capacity to mobilise social change by confronting uncomfortable truths and promoting inclusivity through oral history. Ultimately, *Hear, Here* serves as a vanguard for the scholarly exploration of storytelling and technological mediation in forging a more equitable societal landscape.

### Oral Session A2 9:55 am-10:50 am

#### **O.F.9 Podcasting with Purpose: Enhancing Student Engagement and Critical Thinking in Spanish**

Astrid Lorena Ochoa Campo (Global Cultures & Languages)

Co-author: Liv Sarasio Meyer

This Scholarship of Teaching and Learning (SoTL) project investigates the impact of the Transparency in Learning and Teaching (TILT) approach on students' perceptions of belonging and critical thinking in an intermediate-level Spanish course. The course aims to foster deep connections between students and Hispanic and Latinx communities through a relationship-rich classroom environment (Felten and Lambert, 2020). A key component of the course is a podcast project that allows students to create narratives about minority groups (Kernahan, 2019). Research indicates that transparent assignments enhance students' sense of belonging and critical thinking skills (Artze-Vega et al., 2023). The podcast assessments are designed to clearly outline what, why, and how tasks should be completed. Preliminary quantitative data from the fall 2024 surveys show improvements in students' sense of belonging, peer-to-peer relationships, and confidence in their critical thinking skills. Qualitative data suggest that the TILT approach provided the necessary scaffolding to complete the podcast project and motivated students to excel due to its relevance to their lives and future careers. Two surveys conducted during the semester assess students' sense of belonging, while qualitative analysis of assignment reflections evaluates the development of critical thinking skills. Data collection commenced in October 2024 and will conclude in May 2025.

### Oral Session B1 9:55 am-10:50 am

#### **O.F.14 Amplifying Latinx Voices beyond Stereotypes: Enhancing Research Skills through Multimodal Learning in SPA 332**

Kendall Morgan (Murphy Library), Astrid Lorena Ochoa Campo (Global Cultures & Languages), Josiah Hayes, and Sydney Groehler

In summer 2024, SPA 332, Spanish Speakers in the U.S.: Language, Community, (In)justice, was redesigned with a CATL course improvement grant. Major assignments were restructured to scaffold research skills, aiming to enhance students' critical thinking, digital literacy, and metacognition. The course culminates in a multimodal deliverable: a podcast episode. The instructor collaborated with Murphy Library's Information Literacy Course Integration Librarian

and the Director of the Communication and Media Lab (CaML) to develop content and resources for students. Indirect, formative assessment through reflection questions helped understand students' conceptualization of the research process, while direct assessment was conducted via an annotated bibliography and final podcast episodes. This IRB-approved study qualitatively explores students' experiences during the first year of these changes. Key observations include students' expressed tension between their experiences with humanities and science research and their comfort level with creating a multimedia research product at the intersection of academic and creative work. The researchers, comprising faculty and student researchers who took the class, aim to share successful strategies and identify areas for improvement.

# **2024 RECIPIENTS OF STUDENT RESEARCH GRANTS**

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**2024 RECIPIENTS OF  
UNDERGRADUATE RESEARCH & CREATIVITY GRANTS**

<b>Name</b>	<b>Department</b>	<b>Mentor</b>	<b>Title</b>
Cecilia Ahlers	Biology	Todd Osmundson	Phylogenetic Analysis of Pacific Island Xylariaceae using Nanopore Sequencing
Samantha Ankeny	Psychology	Ryan McKelley	That Dang Phone! How Phone Usage Affects Stress Levels during and after a Stressful Event
Valliammai Arunachalam	Computer Science & Computer Engineering	Dipankar Mitra	Efficient Reinforcement Learning for Optimized Antenna Beam Steering in Space
Maya Biese	Biology	Jaclyn Wisinski	Does AXL in Metastatic Breast Cancer Cells Indirectly Regulate Megakaryocyte Survival?
Jackson Biller	Exercise & Sport Science	Kari Emineth	The Effects of High Intensity Warmups on Motor Unit Activation
Patrick Brannon	Sociology & Criminal Justice	Nicholas Bakken	The Effect of Religiosity and Spirituality on the Cessation of Drug Use among High-Risk Reentering Offenders
Amanda Bratsch	Exercise & Sport Science	Jacob Caldwell	Investigating the Impacts of Passive Calf Stretching on Running Economy and Force Production
Sikora Bretsch	English	Bryan Kopp	MyProAna and the Amplification of Health Misinformation
Lauren Broman & Lexi Valeri	Biology	Sumei Liu	Role of Mast Cells in Stress-Induced Increase in Intestinal Permeability
Peyton Cappelle	Mathematics & Statistics	David Elzinga	Fish Where They Fit: Predicting Rare Fish Species in the Mississippi River using Machine Learning
Alyssa Carpenter	Psychology	Kevin Zabel	Why Conversations around Racism End Prematurely: Predictive Factors of White Fragility
Elizabeth Chisick	Psychology	Ellen Rozek	The Impact of Walking and Internal Mentation on Creativity in Individuals with ADHD
Katherine Christensen, Tristan Anderson, & Chase Tessness	Biology	Scott Cooper	Determining if Ground Squirrel Platelets are Resistant to Freezing
Cassandra Coats	Biology	Jaspreet Kaur	Understanding Whether Combined Introductions of Orchid Seeds and Their Mycorrhizal Fungal Partners Enhance the Success Rate of Orchid <i>In Situ</i> Programs
Ryan Cooksey	Archaeology & Anthropology	Amy Nicodemus	Analyzing Social Inequality from Faunal Remains at Rabe Anka Siget, Serbia



Name	Department	Mentor	Title
Kaelee Coonen	Psychology	Berna Gercek Swing	It's Eating Me: Food Relationships and the Impacts of Fear-Based Media
Michael D'Amico	Physics	Seth King	Composite Zinc Oxide Nanolaminate Films for Optoelectronic Communication
Ellie Dietrich	Sociology & Criminal Justice	Nicholas Bakken	An Examination of Degree Obtainment on Physical and Mental Well-Being over Three Decades
Khang Duong & Aditya Anil	Finance; Economics	Adam Stivers & Nabamita Dutta	Breaking Barriers: Gender Law and Female Entrepreneurship
Ashley Effertz, Abby Wagner, Lexie Wilberding, Justine Duckart, & Hailey Jibben	Public Health & Community Health Education	Karen Skemp	The Effect of Caffeine vs. a Meal Shake on College Student's Memory
Reilly Eiyneck	Chemistry & Biochemistry	Sujat Sen	Modification of Copper-Thin Films with Conductive Polymers for the Catalytic Conversion of Carbon Dioxide (CO <sub>2</sub> )
Zoe Engebos	Biology	Ross Vander Vorste	Sticky Traps and Floating Traps: A Comparison of Two Methods to Sample Aquatic Insects
Alexa Fleegal	Microbiology	Daniel Bretl & Paul Schweiger	Improving Oxygen Utilization of <i>Gluconobacter oxydans</i> by Genetic Modification
Josh Galvin	Biology	Tisha King-Heiden	Determining the Level of PFAS (Per- and Polyfluoroalkyl Substances) Exposure That Causes Adverse Cardiotoxic Effects in <i>Danio rerio</i> (zebrafish) Larvae
Vanessa Giallombardo	Microbiology	Daniel Bretl & John May	The Impact of Amino Acid Substitutions on the Oligomerization of NmpR, an NtrC-Like Response Regulator from <i>Myxococcus xanthus</i>
Daniela Gomez-Meza	Psychology	Berna Gercek Swing	Factors Influencing Outcomes for First-generation College Students
Megan Gregory	Chemistry & Biochemistry	Todd Weaver	Connecting Clinically Observed Metabolic Deficiencies to Protein Thermodynamics
Adam Grunwald	Computer Science & Computer Engineering	Elliot Forbes	dptl: A New Library for Multitrac Microarchitectural Analysis
Alison Gunderson	Chemistry & Biochemistry	John May	Investigating the Stability of Variants of a <i>Salmonella enterica</i> Copper Resistance Protein DcrB to Monitor Changes in Protein-Protein Interactions
Brielle Hachey	Biology	Cord Brundage	Toxicity of Nicotine and Imidacloprid on Chick Brains and Implications for Sudden Infant Death Syndrome (SIDS)

Name	Department	Mentor	Title
Andrew Hamilton	Biology	Anita Davelos	Effects of Ectomycorrhizal Fungi on Growth and Development on Seedlings of <i>Tsuga canadensis</i> (Eastern Hemlock)
Chloe Handrich	Psychology	Kevin Zabel	The Association between Pediatric Medical Exposure and Pursuing a Medical Profession
Adeline Hendrix	History	James Longhurst & Ariel Beaujot	Protection and Exhibition of DCM-L chairs in Murphy Library
MJ Hennessey	Chemistry & Biochemistry	Kelly Gorres	Does Acetoacetate Cause Completion of Epstein-Barr Virus Lytic Life Cycle
Anika Henning	Microbiology	Michael Hoffman	HPIV3 Proteins and Their Role in the Viral Lifecycle
Emjay Hilliker	Biology	Anne Galbraith	Examining the Effect of Copper Removal after SK-03-92 Treatment of Yeast Cells
Vera Hrdlicka	Biology	Eric Strauss	Seasonal Carbon and Phosphorus Availability in Cochran Lake, Vilas County, WI
Gavin Hutchison & Olivia Christensen	Biology	Alder Yu	Period Gene Expression in Tissue with High Amyloid-Beta 42 Expression
Nicole Inoue & MacKenzie Caya	Biology	Scott Cooper	The Binding of Oxidized LDL in Human and 13-Lined Ground Squirrel Platelets: Determination of CD36 Receptor Presence
Charis Jacob	Psychology	Tanvi Thakkar	Do They See Me? Comparing Discordant Patient-Physician Relationships vs. Concordant and Levels of Satisfaction and Trust
Eden Jacobson	Biology	Jaclyn Wisinski	Determining the Effect of PGE2 Signaling on The Activation of Rap1b
Nainil Jariwala	Finance	Adam Stivers	Analyzing GPT-4's Predictive Power in Stock Market Markets: A Comparative Study of Individual Technical, Fundamental, and Sentimental and Multi-Modal Analyses across Diverse Financial Data Sets
Jenna Jeske & Ken Schwartzlow	Chemistry & Biochemistry; Archaeology & Anthropology	Kristofer Rolfhus & Heather Walder	Soil Chemistry Analysis to Determine Human Activity at Fur Trade Depot Sites
Evelyn Johnson	Biology	Markus Mika	The Effects of Habitat Quality on the Health of Female Flammulated Owls ( <i>Psilosops flammeolus</i> ) and Egg Development

<b>Name</b>	<b>Department</b>	<b>Mentor</b>	<b>Title</b>
Tyler Kaiser	Biology	Jaspreet Kaur	Identifying the Transcriptomic Responses of Orchid Protocorms When Inoculated with Preferred vs. Non-Preferred Combinations of Bacteria and Mycorrhizal Fungi
David Kieso & Owen Scarpaci	Psychology	Tanvi Thakkar	Tearing Off the Label: Labeling Bias and Race on Perceptions towards Individuals with Mental Health Disorders
Afonso Klein	Psychology	Ryan McKelley	“Speak Up!” How In-class State Trait Anxiety and Distress Tolerance Levels Affect Class Engagement: A Cross-Sectional Study Between 400-level Course Students and 100-level Course Students
Arian Latifi	Microbiology	Michael Hoffman	Do Human Parainfluenza Virus Type 3 M Proteins with Flag Tag Inserts Bind to Viral HN and/or F Proteins
Doohee Lee	Biology	Jaspreet Kaur	Could Pre-symbiotic Signaling between <i>Platanthera chapmanii</i> Seeds and Fungi Establish Mycorrhizal Specificity?
Madeline Lee	Psychology	Tesia Marshik & Melanie Cary	College Students’ Susceptibility to Misinformation
Eliza Link	Biology	Todd Osmundson	Untangling the Evolutionary History of Pacific Island Xylariaceae Using Genetic Analyses and Spore Characteristics
Miranda Logan	Theatre & Dance	Amanda Kolbe	Creative Research in Advanced Techniques of Haunt Character Construction and Design
Lydia Mack & Lakeyshi Xiong	Biology	Scott Cooper	Apoptosis of Conversely Mixed Squirrel and Human Platelets
Justin Mangan	Microbiology	Bonnie Bratina	Impact of a Surfactant on the Myrick Marsh Bacterial Community
Gilbert Marquez	Chemistry & Biochemistry	Kelly Gorres	N-Methoxy-Valpromide: A Synthesis for a Better Epstein Barr Virus Inhibitor
Megan McDonald	Chemistry & Biochemistry	Daniel Grilley	Exploring Membrane Influences on Cytotoxin HpmA using Styrene-Maleic Acid (SMA)
John McEwing	Biology and Exercise & Sport Science	Jennifer Klein & Daniel Freidenreich	Extracellular Vesicle Influence on Macrophage Polarization
Alexis McMahan	Biology	Cord Brundage	Immunohistochemical Analysis of Stressed Induced Changes in Hypothalamic Orexin
Anna Meilahn	Chemistry & Biochemistry	Kelly Gorres	xCT Protein Expression in Epstein-Barr Virus Infected Cells

<b>Name</b>	<b>Department</b>	<b>Mentor</b>	<b>Title</b>
Anna Meilahn	Chemistry & Biochemistry	Kelly Gorres	Time Dependence of Epstein-Barr Virus Reactivation on xCT Expression
Blair Miller	Biology	Arthur Grupe II & Ross Vander Vorste	Mysterious Mississippi Mycoloop
Andrew Momsen	Biology	Cord Brundage	Evaluating the Efficiency of Xylazine and Ketamine Mixtures in Anesthetizing Sprague Dawley Rats
Jack Morrison	Biology	Jaclyn Wisinski	Determining the Factor Released by Breast Cancer Cells or Osteoblasts that Increases Megakaryocyte Proliferation
Jack Morrison	Biology	Jaclyn Wisinski	Using Dialysis to Determine the Factor Released by Breast Cancer Cells or Osteoblasts that Increases Megakaryocyte Proliferation
Matt Nowell	Sociology & Criminal Justice	Carol Miller	Cross-National Comparisons of Health Care Access and Outcomes
Erin Oelke	Biology	Sierra Colavito & Karen Cowden Dahl	ARID3B Phosphorylation and Stemness Modulation by CAMKK1 in Glioblastoma
Anika Oplanic	Biology	Tisha King-Heiden	Identifying Molecular Biomarkers of PFAS-Induced Disruption of the Innate Immune System in Fish
Alyssa Poncius	Biology	Anita Davelos	Evaluating the Role of Cover Crops on Prairie Restoration at ORA Trails
Sophie Pope	Mathematics & Statistics	Chad Vidden	Using Multidimensional Statistical Analysis and Machine Learning to Predict Training Effectiveness from Baseline Vertical Ground Reaction Force in Adolescent Female Athletes
Trinity Rietmann	Art	Kathleen Hawkes & Jennifer Williams	Identity Entwined: An Exhibition of Artwork about Motherhood and Identity
Quinn Rowley	Health Professions	Ward Dobbs	The Impact of Nicotine Vaping Devices on Exercise Capacity and Exercise-Induced Vascular Benefits
Liliana Ruiz	Biology	Alder Yu	Effects of Circadian Clock Disruption on Feeding Behaviors in <i>Drosophila melanogaster</i>
Owen Scarpaci	Political Science & Public Administration	Adam Van Liere	A Technological Turning Point: How the Rise of Artificial Intelligence Influences Trust in American Democracy
Ellie Schneider	Chemistry & Biochemistry	John May	Function of a <i>Salmonella</i> Copper Resistance Protein with Systematic Changes to Single Parts of a Functional Region

<b>Name</b>	<b>Department</b>	<b>Mentor</b>	<b>Title</b>
Ellie Schneider	Chemistry & Biochemistry	John May	Structure and Stability of a <i>Salmonella</i> Copper Resistance Protein with Changes in a Functional Region
Addison Schoepski	Psychology	Tanvi Thakkar	Listen Up! Effects of Consonant and Dissonant Sounds on Cognitive Load in Different Age Groups
Owen Schuler	Finance	Nicholas McFaden & Adam Stivers	Economic Value Added by Habitat for Humanity
Monika Scott	Sociology & Criminal Justice	Shanna Felix	Inclusion and Exclusion within the Trans Community
Isabelle Sharp	Microbiology	William Schwan	Transcriptional analysis of a <i>Staphylococcus aureus</i> <i>brpR</i> Mutant vs. Unmutated Strain using Quantitative Reverse Transcribed-Polymerase Chain Reaction
Gabriel Simpson & Avery Werneburg	Biology	Scott Cooper	Platelet Apoptosis in Relation to Fluorescently Tagged Glycoproteins
Tyler Smith	Psychology	Tracie Blumentritt	Succeed by Any Means: Perfectionism in College Athletes vs. Non-Athletes
Rachel Steffen	Psychology	Jocelyn Newton & Jessica Schweigert	Shrinking the Gap: How Perception of Care Differs by College-Provided Counselors at Predominantly White Universities (PWIs) in Relation to Student Race
Lauren Steien, Kyra Lard, & Gianna Rath	Public Health & Community Health Education	Keely Rees & Anders Cedergren	Analyzing the Effectiveness of the Madison Health Education Advocacy Experience at Increasing Legislative Advocacy Confidence among UWL Students
Vivek Tara	Physics	Shahid Iqbal	Photoluminescence Enhancement of Fluorophores Assisted by Ion Implanted Gold Nanoparticles
Eric Teh, Avin Truman, & Sophia Tamez	Psychology	Suthakaran Veerasamy	Examination of Sense of Belonging among International Students of Color through the Lens of Racism, Community, and Resilience in a Predominantly White Institution
Sonya Tetzlaff	Chemistry & Biochemistry	Joseph Hurley	Illuminating Your Screens through Organic Chemistry
Hailey Thompson	Chemistry & Biochemistry	Robin Grote	Increasing Organic Chemists' Toolbox One Ring at a Time
Maxamilian True	Chemistry & Biochemistry	John May	Investigating the Importance of a Positioning Residue in the Function of the Copper Resistant Protein DcrB
Maxamilian True	Chemistry & Biochemistry	John May	Investigating the Structural Characteristics of DcrB in the Presence of Copper

<b>Name</b>	<b>Department</b>	<b>Mentor</b>	<b>Title</b>
Karissa Valitchka	Biology	Jaclyn Wisinski	Effect of Rap1b on Megakaryocyte Adhesion
Dominic Vanden Elzen, Grant Miller, & Zachary Pielhop	Geography & Environmental Science	Niti Mishra	Integrating LiDAR-Derived 3D Vegetation Structure to Understand Tiger Movement Patterns and Habitat Use in Chitwan National Park
Steven Verhaalen	Biology	Ross Vander Vorste	Determining the Ideal Substrate for Chironomid Life Cycles
Yia Vue	Archaeology & Anthropology; Biology	Vincent Her & Todd Osmundson	The American Wars in Southeast Asia: Remnants of UXOs and Agent Orange Impact on the Peoples of Laos and Vietnam
Zion Wallace	Biology	Anita Davelos	Occupancy and Growth Rate of Eastern Hemlock Seedlings, Saplings, and Mature Trees
Emily Winter & Juliann Will	Biology	Jaclyn Wisinski	Do Common Breast Cancer Treatments Kill Megakaryocytes?
Nora Woolley	Archaeology & Anthropology	Amy Nicodemus	Livestock Management at the Bronze Age Settlement of Rabe Anka Siget, Serbia
Lindsey Zimmerman	Microbiology	Paul Schweiger	Using CRISPR to Explore the Influence of the <i>bolA</i> Gene Has on Cellulose Production on <i>Komogataeibacter xylinus</i>

**2024 RECIPIENTS OF THE GRADUATE RESEARCH,  
SERVICE, AND EDUCATIONAL LEADERSHIP AWARDS**

<b>Name</b>	<b>Program or Department</b>	<b>Faculty Sponsor</b>	<b>Title</b>
Megan Adams	Biology - Aquatic Science	Eric Strauss	Microplastic Quantification and Characterization in Pool 8 of the Upper Mississippi River
Molly Barnhardt	Occupational Therapy	Polly Berra	Meta-Analysis: TBI & SCI Strong Evidence-Based Practice among Children Living Through Health Disparities in New Orleans
Tyler Billman	Biology - Physiology	Cord Brundage	Changes in Tryptophan Hydroxylase 2 and 5HT1A Receptor Density May Contribute to Developmental Variation in Response to Serotonin in the <i>In Vitro</i> Bullfrog Brainstem
Ericka Bjorngaard	Biology	Barrett Klein	Exploring Sleep in Monarch Butterflies and Investigating the Impact of Nighttime Light Pollution
Elizabeth Dickey	Clinical Microbiology	Paul Schweiger	Impact of the <i>bolA</i> Gene on Cellulose Production in the Acetic Acid Bacterium, <i>Komagataeibacter xylinus</i>
Hailey Dyce	Clinical Microbiology	William Schwan	Assessing the Global Transcriptional Regulation Effect of BrpR in <i>Staphylococcus aureus</i>
Reece Eickhoff, Erin Greschner, Jen Beattie, Jenna Nelson, Emily Lange, & Dylana Schreiner	Physical Therapy	Megan Litster & Ward Dobbs	Menstrual Cycle Effects on Fatigue Response to Vertical Jump Testing in College Female Athletes: A Quasi-Experimental Study
Shadia Escorcia Cure	Clinical Microbiology	Anne Galbraith	Characterizing the Growth and Morphology of <i>Candida albicans</i> after SK-03-92 Treatment
Amanda Ferguson, Leamae King, & Brody Sipiorski	Athletic Training	Kari Emineth	Comparative Effects of Dry Cupping and Stretching on Perception and Functional Movement Screening Scores
Julia Gall	Microbiology	Peter Wilker	Artificial Bottleneck Impact on Dilapidated Influenza A Replicative Ability
Seth Holden	Biology	Sierra Colavito	Determining the Effects of Megakaryocytes on Breast Cancer Cells
Dirk Lueck	Biology	Adam Schneider	Refinement of Deep Learning Models for Inventorying Endangered Hill Prairie Ecosystems
Samantha Lyons	Biology	Tisha King-Heiden	Comparative Immunotoxicity of F53B, PFHxS, and PFOS in Larval Zebrafish and Fathead Minnows
Michael Malone	Biology	Todd Osmundson	Biodiversity Survey and Systematics of the Xylariaceae on Moorea Island
Max Monfort	Biology	David Schumann	Precision and Accuracy of Four Unique Grass Carp Age Structures in the Upper Mississippi River

Name	Program or Department	Faculty Sponsor	Title
Gwendolyn Olson	Microbiology	Xinhui Li	Isolation and Characterization of Antibiotic-Resistant Bacteria in Irrigation Water for Vegetables
Hannah Powers, Grace Johnson, Keegan Olin, Jared Dvorak, Liz Williams, & Kayla Lass	Physical Therapy	Shane Murphy	The Physiological Response to Asymmetrical Walking
Kaleigh Roeder & Allison Cuddihy	Occupational Therapy	Laura Schaffer	SOTA (Student Occupational Therapy Association)
Skylar Theisen	Biology—Aquatic Science	Eric Strauss	Effect of Agriculture on Driftless Stream Food Webs Using Stable Isotope Analysis
Skylar White	Clinical Microbiology	Daniel Bretl	Impact of Low Oxygen Concentrations and the NmpRSTU system on <i>Myxococcus xanthus</i> Social Behaviors
Tyler Wiese	Biology	Anne Galbraith	Synergistic Antimicrobial Effects of SK-03-92 with Other Stilbenes



# PRESENTER INDEX

A, B, C, D, E are the poster sessions

P= Poster; O=Oral Presentations; E=Exhibits

F=Faculty & Staff; G=Graduate Students; U=Undergraduate Students

NAME	ABSTRACT(s)	NAME	ABSTRACT(s)
Adams, Megan	C.G.31	Bruni, Michael	C.U.25, D.U.25
Aide, Shannon	C.U.8	Burger, Ryann	A.G.32
Aker, Adam	D.G.35	Burke, Alexandra	B.G.36
Akey, Kiley	B.G.41, C.G.43	Bushre, Allie	A.U.7
Albee, Grace	D.U.23	Butler, Olivia	D.G.40
Ambrosius, Abby	A.G.38	Cappelle, Peyton	A.U.3
Amenson, Avery	E.U.26	Carney, Aiden	A.U.16
Anderson, Madeline	B.G.43, C.G.43	Carothers, Khloe	O.U.10
Anderson, Tristan	A.U.16	Carpenter, Alyssa	D.U.8
Anil, Aditya	A.U.9	Carpenter, Makenna	D.G.39
Ankeny, Samantha	E.U.34	Carpenter, Nik	E.G.44
Antonson, Ellie	O.U.19	Caya, Aubree	A.G.40
Ausprung, Abby	A.U.23	Caya, Avari	A.U.8
Bach, Sam	C.G.37	Caya, MacKenzie	C.U.5
Bancker, Ella	A.U.20	Cherney, Damion	C.U.21
Bartol, Ryan	C.G.38	Chirillo, Julia	D.U.33
Bast, Sophie	C.U.11	Chiroff, Natalee	B.U.10
Bastyr, Annaliese	O.U.37	Chisick, Elizabeth	E.U.9
Baumann, MJ	B.U.25	Christensen, Katie	A.U.16
Baus, Olivia	D.U.5	Christensen, Olivia	D.U.12
Beattie, Jen	A.G.39	Christofferson, Evelyn	B.U.11
Beaujot, Ariel	O.F.5	Clark, Terra	E.F.46
Beckman, Chloe	O.U.25	Coats, Cassie	C.U.1
Begalske, Signe	A.U.27	Conway, Grace	D.G.41
Bernardo, Brandon	E.G.38	Cooksey, Ryan	C.U.12
Bieneman, Maya	O.U.16	Coonen, Kaelee	D.U.9
Biese, Maya	E.U.26	Cramer, Marcus	O.G.30
Bill, Madison	A.G.41	Dangal, Laxmi	C.G.33
Biller, Jackson	B.U.7	D'Antonio, DeeDee	E.U.28
Billman, Tyler	E.G.43	De La Torre, Ana	C.U.6
Bott, Tori	B.G.41, C.G.42	Derleth, Halle	A.U.15
Boucher, Adam	A.U.25	Devos, Madelyn	B.G.44, C.G.44
Bouruc, Andreea	B.U.19	Dickey, Elizabeth	C.G.32
Braatz, Hannah	C.G.46	Dietrich, Ellie	C.U.13
Brannon, Patrick	D.U.6	Dinnel, Samantha	C.U.15
Brantner, Maya	A.G.42	Dion, Brody	D.U.10
Bratsch, Amanda	D.U.7	Dollak, Sarah	O.U.18
Breier, JoAnn	A.U.2	Dooley, Shea	A.G.35
Bretsch, Sikora	E.U.32	Dott, Landon	C.U.24
Bridge, Madeline	A.G.36	Dray, Rebecca	B.U.12
Brindamour, Isaiah	B.G.38	Drost, Ben	D.U.10
Brockhaus, Shakira	B.U.16	Drummer, Olivia	B.G.45, C.G.45
Broman, Lauren	C.U.27	Duckart, Justine	C.U.10
Bruder, Matthew	C.G.38	Duong, Khang	A.U.9

NAME	ABSTRACT(s)	NAME	ABSTRACT(s)
Dvorak, Jared	D.G.46	Hartwig, Brooke	B.G.37
Dyce, Hailey	D.G.47	Harvey, Emma	A.U.23
Ecclestone, Noah	B.G.45, C.G.45	Hasse, Presley	C.U.29
Edmonds, Logan	O.U.33	Hauer, Tess	B.G.40, C.G.44
Edsill, Anna	D.G.42	Hawbaker, Leah	C.U.15
Effertz, Ashley	C.U.10	Hayes, Josiah	O.F.14
Eickhoff, Reece	A.G.37	Hazen, Kendall	E.G.36
Eklund, Lily	A.G.43	Heim, Austin	A.G.45
Ellingson, Grace	E.U.6	Heinert, Emma	E.U.12
Endres, Ethan	O.U.6	Hellenbrand, Annika	A.G.34
Engel, Kaitlyn	A.U.11	Hendrickson, Chloe	A.G.38
Erdenebat, Uranchimeg	C.U.14	Hendrix, Adeline	O.U.31
Escorcia Cure, Shadia	D.G.37	Hennessey, MJ	A.U.13
Fabian, Teaera	E.G.38	Herro, Mia	O.U.37
Fick, Bethany	B.U.13	Heuer, Hunter	C.U.9
Fleegal, Alexa	B.U.4	Hierl, Kellie	E.G.40
Flesher, Shelby	B.G.40, C.G.45	Higgins, Emily	A.G.33
Fochs, Katie	D.G.29	Hill, Megan	B.G.43, C.G.45
Fortner, Amelia	E.U.25	Hilliker, Emjay	D.U.20
Fredrick, Maija	B.G.44, C.G.45	Hoge, Claire	B.G.43, C.G.43
Friederichs, Sam	D.G.39	Holden, Seth	B.G.47
Friess, Quinten	A.U.20	Holliday, Morgan	E.U.17
Froehlich, Cortlynne	E.U.10	Hrdlicka, Vera	A.U.1
Gabriel, Claire	A.U.16	Hubert, Landon	O.U.12
Gall, Julia	C.G.33	Hudson, Mallory	D.U.14
Galvin, Josh	A.U.2	Hulstedt, Sarah	C.G.36
Gannigan, Beth	O.U.28	Hutchins, Audra	B.U.8
Ganser, Audrey	B.G.39	Hutchison, Gavin	D.U.12
Garfoot, Emily	A.G.43	Ichen, Jordan	E.U.7
Gariepy, Evan	B.U.14	Inoue, Nicole	C.U.5
Gates, Chloe	A.G.41	Islam, Faizaan	B.U.21
Gentilli, Sydney	E.G.45	Jacob, Charis	D.U.16
Giallombardo, Vanessa	C.U.4	Jacobson, Eden	C.U.3
Gillespie, Kate	D.U.23	Jahn, Abigail	D.U.17
Gregory, Megan	A.U.10	Janowski, Trinity	B.G.45, C.G.43
Greschner, Erin	A.G.37	Jansen, Xander	B.G.33
Groehler, Sydney	O.F.14	Jariwala, Nainil Mukesh	E.U.14, E.U.15
Groskopf, Haley	C.G.39	Jensen, Anna	D.G.48
Grunwald, Adam	B.U.15	Jerome, Kylah	A.U.14
Hachey, Brielle	B.U.2	Jeske, Jenna	B.U.23
Haft, Isabelle	D.U.33	Johnson, Evelyn	E.U.1
Haggart, Megan	C.U.5	Johnson, Grace	D.G.43
Hall, Katie	A.G.38	Jones, Ashlyn	E.U.16
Hamilton, Andrew	D.U.11	Kaiser, Hannah	D.U.12
Handrich, Chloe	E.U.11	Kaiser, Tyler	E.U.2
Hansen, Allisa	O.U.19	Karadag, Ege	E.U.5
Harkins, Chloe	A.U.11	Kedilaya, Preksha	B.G.38
Harms, Cecelia	E.U.28	Keller, Faith	A.U.16
Harrison, Morgan	B.G.42, C.G.42	Kenyon, Jordan	O.U.22
Hart, Marina	A.G.44	Khang, Pang	A.U.11

NAME	ABSTRACT(s)	NAME	ABSTRACT(s)
Kick, Sam	B.U.19	Mudler, Brandon	B.U.27
Kiepk, Christian	B.G.44, C.G.42	Mulroy, Jade	B.U.25
Kieso, David	D.U.3	Murphy, Brandon	E.G.41
Klawitter, Charlie	O.U.27	Murphy, William	D.U.17
Klein, Afonso	B.U.20	Murray, Liv	C.U.19
Knudsen, Jill	O.U.19	Murray, Nick	O.U.15
Kohlstedt, Kyle	C.U.16	Myers, Caitlyn	C.G.46
Konop, Carissa	B.G.41, C.G.45	Nelson, Jenna	A.G.39
Kopacz, Austin	D.G.39	Ness, Zhu Lan	C.U.21
Kowalski, Cyle	A.U.16	Neuman, Tyler	B.U.18
Kozich, Elena	E.U.27	Nichols, Jenna	A.G.44
Lange, Emily	A.G.39	Niesman, Naomi	D.U.18
Langer, Tristan	C.G.46	Noel, Mackenzie	O.U.10
Langworthy, Audrey	E.F.46, O.U.21	Norton, Evelyn	D.U.19
Lass, Kayla	D.G.44, D.G.45	Nowell, Matthew	C.U.23
Latifi, Arian	B.U.28	Ochoa Campo, Astrid L.	O.F.9
Lee, Doohee	E.U.3	Ochowski, Ryan	C.U.22, D.U.22
Leeman, Kiona	E.G.42	Oechsner, Madelyn	B.U.11
Lewis, Lian	B.U.22	Oelke, Erin	A.U.4
Lewison, Jackson	B.G.37	Oetterer, Jackie	O.U.15
Link, Eliza	C.U.17	Olin, Keegan	D.G.45
Louis, Joseph	B.U.29	Olson, Isaac	O.U.26
Mack, Lydia	A.U.15	Oplanic, Anika	C.U.20, D.U.2
Mahoney, Brenna	C.G.36	Oppermann, Sara	E.U.20
Malone, Michael	O.G.4	Patschull, Ben	C.G.30
Mangan, Justin	D.U.1	Peiffer, Stephen	D.U.13
Maresh, Lauren	C.U.18	Peterson, Abbey	D.U.21
Maroszek, Alyssa	E.U.33	Peterson, Zackary	O.G.24
Marquez, Gilbert	A.U.12	Pielhop, Zach	B.U.17
Matott, Clare	A.U.11	Poley, Justin	O.U.32
May, Adam	D.G.39	Pomerleau, Alexa	B.G.45, C.G.44
Mayer, Kaylie	C.G.37	Pope, Sophie	E.U.4
McCarty, Katlyn	B.G.40, C.G.42	Powley, Zach	E.F.46
McDonald, Megan	E.U.19	Presny, Brooke	A.G.45
McMahon, Alexis	A.G.40	Puskala, Kaleah	C.U.25
McQuade, Avrie	C.G.34	Radue, Lily	A.U.18
Meilahn, Anna	A.U.5	Rath, Gianna	D.U.28
Mesyk, Lily	A.G.42	Rauls, Nicole	B.U.6
Miller, Blair	C.U.2	Ravanelli, Charlie	C.G.46
Miller, Grant	B.U.17	Rebholz, Megan	B.G.39
Miller, Savannah	E.U.33	Rehrauer, Haleigh	B.G.42, C.G.45
Mommaerts, Zach	D.U.24	Reiland, Anika	A.U.19
Momsen, Andrew	E.U.8	Renz, Gretchen	C.G.36
Monfort, Max	B.G.46	Repka, Hailey	D.U.4
Moreno, Adrian	O.U.36	Resheske, Reese	A.U.21
Morgan, Kendall	O.F.14	Riehle, Ava	O.U.37
Morris, Alex	O.U.38	Rietmann, Trinity	D.U.E
Morrison, Jack	A.U.17	Ringhofer, Dawson	B.G.42, C.G.42
Moser, Faith	D.G.38	Ritzke, Felicia	A.U.20
Motschenbacher, Dylan	D.U.34	Roff, Lauren	A.G.38

NAME	ABSTRACT(s)	NAME	ABSTRACT(s)
Rogers, Grace	C.G.40	Stroh, Nora	E.U.13
Ronk, Allison	B.G.39	Studer, Tristin	O.G.2
Rowley, Quinn	O.U.13	Svacina, Miranda	A.U.18
Rudek, Grace	E.G.38, E.G.39	Tempski, Charles	A.U.15
Ruiz, Liliana	B.U.3	Tessness, Chase	A.U.16
Rundle, Cade	E.U.31	Tetzlaff, Sonya	A.U.26
Saladin, Katie	A.G.46	Thiede, Erin	C.G.35
Scarpaci, Owen	A.U.22, D.U.3	Thompson, Anna	C.U.9
Schaller, Natalie	C.U.7	Thompson, Hailey	A.U.27
Scharinger, Julia	C.G.46	Thompson, Olivia	C.U.26
Schaubroeck, Tyler	A.U.20	Timler, Meghan	B.G.42, C.G.42
Scheerer, Elizabeth	O.U.11	Tinguely, Michael	B.G.36
Scheurer, Kelvin	E.U.21	Tolppi, Taylor	B.G.34
Schmeiser, Macie	B.G.41, C.G.44	Tomaz, Leah	E.U.27
Schmitz, Kyra	O.U.37	Tomberlin, Jade	A.U.21
Schneider, Ellie	B.U.5	Tondo, Christina	E.U.25
Schneider, Emily	B.U.24	Trautsch, Kerrigan	O.U.29
Scholten, Haley	E.G.37	Traxler, Kayla	D.U.31
Schreiner, Dylana	A.G.39	True, Max	A.U.28
Schuebel, Kyndra	D.U.15	Valeri, Lexi	C.U.27
Schulze-Reimpell, Joshua	D.U.30	Valitchka, Karissa	E.U.27
Schwartzlow, Ken	B.U.23	VanCamp, Morganne	A.G.31
Seiler, Peyton	O.U.7	Vanden Elzen, Dominic	B.U.17
Sessody, Jamie	E.U.33	Vandermause, Megan	A.U.29
Seveska, Chris	C.U.24	Vaughn, Renata	A.U.18
Sharp, Isabelle	D.G.47	Vega, Angelique	B.U.29
Shedivy, Amber	B.G.44, C.G.42	Verhaalen, Steven	A.U.30
Silver, Alexander	E.U.22	Vesperman, Dean	E.F.46
Simpson, Gabriel	A.U.25	Vickery, Makenna	C.G.41
Sirianni, Evan	O.G.8	Voelz, Brooke	B.G.35
Siroin, Peyton	C.G.39	Vogel, Chloe	B.U.9
Sivertson, Spencer	E.U.29	Vollendorf, Greta	C.U.28
Skramstad, Benjamin	D.U.26	Vosters, Lauren	A.G.38
Sloan, Amy	B.G.32	Wachter, Ashley	O.U.3
Smith, Ilee	B.U.25	Wagner, Abby	C.U.10
Smith, Sidney	E.G.40	Walker, Cari	E.U.28
Smith, Tyler	D.U.27	Walter, Claudia	C.G.41
Snyder, Eva	A.U.24	Waltman, Ella	O.U.20
Spang, Sydney	O.U.37	Weeden, Emory	D.G.39
Spychalla, Madison	E.U.18	Weis, Melanie	E.U.18
Stahn, Harry	O.U.25	Werneburg, Avery	A.U.25
Stanioch, Alyson	B.U.25	Westra, Austin	C.G.37
Staver, Alexandra	O.U.23	White, Skylar	O.G.1
Stebbins, Gavin	O.U.35	Wichelt, Shawn	O.U.20
Steffen, Rachel	B.U.26	Wierzba, Griffin	E.U.30
Steien, Lauren	D.U.28	Wiese, Tyler	D.G.36
Steinbrecher, Quinn	C.G.40	Wilberding, Lexie	C.U.10
Storter, Cailyn	E.U.3	Will, Juliann	D.U.32
Strauss, Lucas	B.U.27	Williams, Elizabeth	D.G.46
Streveler, Jonah	E.U.24	Winter, Emily	D.U.32

<b>NAME</b>	<b>ABSTRACT(s)</b>	<b>NAME</b>	<b>ABSTRACT(s)</b>
Wonser, Ella	E.U.13	Zimmer, Kassandra	B.G.30
Woolley, Nora	E.U.23	Zimmerman, Lindsey	C.G.33
Xiong, Lakeyshi	A.U.15	Zoschke, Jonah	D.U.24

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### **ABSTRACT BOOK EDITORS**

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### **COMMENTS OR SUGGESTIONS?**

We welcome your comments and suggestions about the Symposium.  
Please send them to [srcel@uwlax.edu](mailto:srcel@uwlax.edu).



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