2026

SYMPOSIUM FOR

UNDERGRADUATE RESEARCH, SCHOLARLY & CREATIVE ACTIVITY

May 1, 2026
Student Union & Cleary Center
UW-La Crosse

UNIVERSITIES OF WISCONSIN

UWL UNIVERSITY OF WISCONSIN LA CROSSE

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LETTER OF WELCOME

From the Chancellor

Welcome to UWL!

Thank you for joining us as we celebrate the extraordinary work showcased at this year's Universities of Wisconsin Symposium for Undergraduate Research, Scholarly, and Creative Activity. We are proud to host this event, the culmination of countless hours of thoughtful inquiry and dedicated effort. Today, we honor our student presenters—their curiosity, discipline, creativity, and willingness to ask meaningful questions. The research, scholarship, and creative projects on display represent the very best of what a University of Wisconsin education makes possible.

Undergraduate research transforms learning into action. It is more than preparation for a future career; it is preparation for thoughtful lives and meaningful contributions. Through experiences like these, students become critical thinkers, problem solvers, and innovators—individuals equipped to engage real-world challenges with confidence and purpose. This is learning put into practice. This is where ideas take shape and curiosity leads to discovery.

We are also proud to recognize the faculty mentors, staff, and institutional support that make this work possible. Their guidance and commitment, together with the passion of our students, reflect a shared culture of inquiry and discovery that defines UW-La Crosse and extends across the Universities of Wisconsin. The symposium today is not only a celebration of individual achievement, but of a vibrant academic community working together to advance knowledge and inspire what comes next.

Enjoy the symposium and your time on our campus!

James Beeby
Chancellor, University of Wisconsin-La Crosse

UNIVERSITY OF WISCONSIN LA CROSSE UWL

KEYNOTE SPEAKER

Dr. Scott Cooper

University of Wisconsin-La Crosse

Dr. Scott Cooper has been a cornerstone of undergraduate education and research at the University of Wisconsin-La Crosse since joining the faculty in 1995, a commitment spanning more than 30 years. A professor of biology with a Ph.D. in Biochemistry from the University of Wisconsin-Madison, Dr. Cooper's impact on undergraduate research reaches far beyond UWL's campus. He was instrumental in organizing the first Universities of Wisconsin Symposium for Undergraduate Research and Creative Activity in 1999, an event hosted by UW-La Crosse that has since grown into an annual statewide tradition bringing together student researchers from across Wisconsin. That early effort helped lay the groundwork for the Wisconsin Council on Undergraduate Research (WisCUR), an organization founded to advance, enhance, and expand undergraduate research, scholarly, and creative activities across Wisconsin, and one that Dr. Cooper played a founding role in shaping.

Dr. Cooper's scholarly work centers on the effects of hibernation on blood clotting in 13-lined ground squirrels—research with significant implications for human medicine, particularly in the area of platelet cold storage. His lab, funded by multiple National Institutes of Health grants, routinely engages teams of undergraduate students as active contributors to original research, reflecting his deep commitment to hands-on, mentorship-driven science.

Beyond the laboratory, Dr. Cooper has been one of the most influential champions of undergraduate research at UWL and across the Universities of Wisconsin. From 2011 to 2022, he served as UWL's Director of Undergraduate Research and Creativity, a role in which he helped shape and expand opportunities for students across disciplines to engage in original scholarly and creative work. His efforts over the years have helped ensure that undergraduate research is not a privilege reserved for the few, but an opportunity available to any student willing to pursue it. Under his leadership, UWL became a 2021 recipient of the The Council on Undergraduate Research's Campus-Wide Award for Undergraduate Research Accomplishments (AURA).

His dedication to teaching and mentorship has not gone unrecognized. In 2014, Dr. Cooper was named the Wisconsin Professor of the Year, one of the most prestigious honors in higher education, a testament to the lasting impact he has made in the lives of his students and the broader academic community.

SYMPOSIUM SCHEDULE

8:15 am	**Registration/Attendee Sign-In Opens** (The Bluffs Foyer, Student Union – 2nd Floor) *Light breakfast will be provided*
9:15 - 9:30 am	**Opening Remarks** (The Bluffs, Student Union – 2nd Floor)
9:45 - 11:45 am	**Poster and Exhibit Sessions A & B** (Great Hall, Cleary Center) 9:45 - 10:40 am Poster and Exhibit Session A 10:50 - 11:45 am Poster and Exhibit Session B **Oral Presentations and Performances** (Student Union – 3rd Floor Rooms 3110, 3120, 3130)
11:45 - 12:45 pm	**Lunch and Keynote Presentation** (The Bluffs, Student Union – 2nd Floor) Keynote Speaker: Dr. Scott Cooper, University of Wisconsin-La Crosse
12:45 - 2:45 pm	**Poster and Exhibit Sessions C & D** (Great Hall, Cleary Center) 12:45 - 1:40 pm Poster and Exhibit Session C 1:50 - 2:45 pm Poster and Exhibit Session D **Oral Presentations and Performances** (Student Union – 3rd Floor Rooms 3110, 3120, 3130)
3:00 - 3:15 pm	**Closing Remarks and Acknowledgments** (The Bluffs, Student Union – 2nd Floor)

ACKNOWLEDGEMENTS

Gratitude and Appreciation

Professionals from across the Universities of Wisconsin collaborated to provide insight, perspective, and time for this important event. We thank them for their support and expertise!

We would like to extend our sincere appreciation to the following individuals for their support and for making this day possible:

From the Universities of Wisconsin:

Johannes Britz, Ph.D., *Interim Senior Vice President, Office of Academic and Student Affairs*

Sheryl Zajdowicz, Ph.D., *Director of STEM and Applied Research Initiatives*

Karin Wrzesinski, *Creative Manager, Office of Public Affairs, Communications, & Branding*

From the University of Wisconsin-La Crosse:

James Beeby, Ph.D., *Chancellor, Universities of Wisconsin-La Crosse*

Betsy Morgan, Ph.D., *Provost/Vice Chancellor, Academic Affairs*

Sandy Grunwald, Ph.D., *Associate Vice Chancellor, Academic Affairs*

Stacy Twite, M.P.P., *Chief of Staff, Chancellor's Office*

Mikaela Schneider, *Event Coordinator, Chancellor's Office*

All student presenters, mentors, faculty, administrators, staff, planning committee members, moderators, volunteers, and attendees.

UNDERGRADUATE RESEARCH, SCHOLARLY, & CREATIVE ACTIVITY UW UNIVERSITY REPRESENTATIVES

UW-Eau Claire	Erica Benson, David Jewett
UW-Green Bay	Renee Ettinger
UW-La Crosse	Nicholas Bakken**, Bryn Rouse**
UW- Madison	Cheri Barta Rossi, Catherine Chan
UW-Milwaukee	Kyla Esguerra, Jessica Schuld
UW-Oshkosh	Stewart Cole, Kathy Zuckweiler
UW-Parkside	David C. Higgs
UW-Platteville	Hannah Korell
UW-River Falls	Molly Gerrish
UW-Stevens Point	Troy Espe, Sarah Stajkowski
UW-Stout	Angela Ruppe, Heidi Smith
UW-Superior	Ilsa Hoeschen, Aaron Wainman
UW-Whitewater	John Frye

***Denotes symposium planning committee member*

PRESENTATION ABSTRACTS

Poster Presentations and Exhibits

An Evaluation of Collection Methods for Immature vs. Adult Aquatic Insect Orders along the Upper Mississippi River

Elizabeth Clemens (UW-La Crosse)
Co-author: David Ellefson
Mentor: Ross Vander Vorste, Biology

Researchers use different methods to sample aquatic insects depending on their life stage. Adult insects can be measured through floating emergent traps, while immature insects can be measured through Hester-Dendy multi-plate samplers. Few studies have compared these methods to determine how well adult sampling represents the abundance and presence of immature insects within the same habitat. Evaluating collection methods for immature versus adult stages can provide explanations on whether there are sampling biases and clarify whether adult aquatic insects will remain in the same habitat as their immature stage. Using data collected in previous experiments conducted in Pool 8 in the Upper Mississippi River, we compared the mean abundance and presence of eight aquatic insect orders collected using sticky traps and Hester-Dendy samplers using t-tests and multivariate statistical methods. We hypothesized that the abundance of aquatic insect orders would not differ significantly between these two life stages. Preliminary results suggest similarity between immature and adult insects collected using the two methods. These results can help determine whether adult sampling methods collect a representative amount of the aquatic insects from their natural environment.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #1, Cleary Great Hall**

The Relationship between Sediment Organic Content and Charcoal Accumulation over the Past 4000 Years

Melanie Weis, Elle Ziebarth, Emma Gibbons, Ryan Sneath, and Emily Shafron (UW-La Crosse)
Mentor: Joan Bunbury, Geography & Environmental Science

Lake sediments provide a continuous record of environmental changes since lake formation, as the physical, chemical, and biological processes occurring within the lake and surrounding area accumulate and are preserved in the sediments over time. A sediment core was collected in the summer of 2019 from Mud Lake in Jefferson County, WI. A chronology was constructed using 17 Lead-210 and four radiocarbon dates to assign ages to the sediment layers. Charcoal produced from the partial combustion of vegetation by fires in the surrounding area are preserved in lake sediments and act as a proxy of past fire history and climate conditions. This study aims to investigate the relationship between macroscopic charcoal accumulation and organic content within lake sediments. Preliminary results show that from 3000 to 1500 ka, organic peaks in charcoal accumulation rates appear to align with higher organic content. This will be investigated further by extending the record an additional 1000 years and conducting correlations between the variables. The results will provide insight into the environmental conditions that existed in southeastern Wisconsin over the past 4000 years.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #2, Cleary Great Hall**

Investigating New Solutions for Fully Organic Fluorophores in Light-Emitting Diodes

Luke Schneider (UW-La Crosse)
Co-authors: Caleb Tuley, Peyton Cappelle, Sam Kleisner, and Madelyn Rogstad
Mentor: Joe Hurley, Chemistry & Biochemistry

Despite being labeled as organic, the organic light-emitting diodes (OLEDs) typically used to illuminate screens employ harmful rare earth metals to function properly. The main goal of this project is to create several molecules that are capable of emitting colors in the correct ratio to produce white light without the help of rare earth metals. With these features, these light-emitting

molecules could be used as a replacement for harmful chemicals. To achieve this goal, a series of chemical reactions will be performed that slowly builds the molecule along with its desired structural features. Once molecules have been synthesized and purified, various analytical techniques such as nuclear magnetic resonance (NMR) and mass spectroscopy will be used to ensure all structural features were present. Following that, molecular spectroscopy like ultraviolet-visible spectroscopy (UV-Vis) and fluorescence emission spectroscopy can be used to determine its color and brightness. Currently, only results for the parent compound have been tested, but those results show promising signs that these molecules are capable of emitting the colors necessary for white light. After the creation of these molecules, future directions towards adding different structural features depending on the specific lighting application may be explored.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #3, Cleary Great Hall**

Evaluation of Binge Scrolling, Fear of Missing Out, and Problematic Technology Use

Ava Wise (UW-La Crosse)
Mentor: Alex Holte, Psychology

Binge scrolling, the consecutive viewing of digital content, may indicate the risk for maladaptive technology use. Examining if binge scrolling predicts Problematic Smartphone Use (PSU) or Problematic Social Media Use (PSMU) may recognize early signs of problematic technology use. Coming from a Compensatory-Internet Use Theory perspective, it is possible that Fear of Missing Out (FoMO) explains why binge scrolling is linked to problematic technology use. We recruited 428 adults from the United States of America to participate in this study. Structural Equation Modeling (SEM) was used to test two hypothesized models. Results showed that binge scrolling predicted higher FoMO, PSU, and PSMU. In addition, FoMO mediated the relationship of both binge scrolling and PSU and the relationship of binge scrolling and PSMU. Overall, the research suggests that FoMO acts as a self-regulatory monitoring mechanism within compensatory technology use.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #4, Cleary Great Hall**

Move to Manage: Improving Emotional Awareness and Regulation in Youth through Physical Activity

Maddie Jo Baumann, Alyse Viestenz, Brooke Soost, Julia Holst, and Taylor Dobush (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

Children and youth in the 6-11 age group are experiencing many developmental changes. Specifically, children and youth are learning to analyze their emotions and regulate them. This is a difficult skill to develop and can be hard to navigate. When these skills are not developed successfully, behavioral and social problems can emerge. In order to encourage the successful development of emotional regulation skills, we created the Move to Manage activity. The Move to Manage activity provides participants with the knowledge and skills to identify emotions and self-regulate through physical movement. Utilizing the Self-Determination Theory, which identifies competence, autonomy, and relatedness as basic needs, we aim to foster intrinsic motivation in children and youth to take control of their own well-being and emotional regulation. Ultimately, we aim to improve children and youths' mental health and well-being by equipping them with the skills and self confidence to regulate their emotions.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #5, Cleary Great Hall**

Coffee & Sustainability: A Systems Analysis Grounded in the Earth Charter

Chris Bory (UW-Green Bay)
Mentor: David Voelker, Humanities and History

Globally, coffee is among the most consumed beverages, the most traded commodities, and the most important tropical crops. Coffee cultivation is linked to colonialism and the exploitation of land and labor. In contrast, the consumption of coffee is associated with ritual, spirituality, academia, space-making, and community. The communities which grow coffee are, by definition, in the regions most at risk due to climate change. These regions are also rich with examples of communities leveraging the value of the crop for their benefit. The global coffee system can be assessed, and interventions can be made, from cherry to cup. Coffee's history is a story of humanity's highest ideals and most challenging realities. Viewing our shared future, The Earth Charter calls for a "sustainable way of life locally, nationally, regionally, and globally." Coffee, reimagined with this vision, can help manifest "a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace."

Poster Presentation **Session A (9:45 - 10:40 am), Poster #6, Cleary Great Hall**

Effects of Two PFAS on Cardiovascular Development and Function in Zebrafish

JoAnn Breier and Caroline Gabert (UW-La Crosse)
Mentor: Tisha King-Heiden, Biology

PFAS (per- and polyfluoroalkyl substances) are a group of over 15,000 synthetic compounds used in thousands of everyday products and industrial applications. The degradation-resistant carbon-fluorine bonds that make them useful in these products also lead to the bioaccumulation of PFAS within surface water and groundwater, affecting the health of both wildlife and humans. Previous studies show that exposure to high concentrations is linked to developmental malformations in fish, and exposure to PFAS-contaminated drinking water is linked to hypertension, increased cholesterol levels, and an increased risk of cardiovascular disease in humans. This study explored the cardiotoxic effects in zebrafish embryos following exposure to environmentally relevant concentrations of two PFAS (PFOS and PFHxS). Embryos were exposed to either 0, 0.8, 8, 80 or 800 ng/L of PFOS or PFHxS starting after fertilization through the end of embryonic development (4 days). To assess heart function, high-speed videos of the heart were used to calculate heart rate data (in BPM), stroke volume (SV), which was used to calculate cardiac output (BPM x SV). Preliminary findings suggest that PFAS exposure reduces heart rate, but that CO is not affected. Our findings underscore the need for more research approaches and future regulatory measures.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #7, Cleary Great Hall**

The Effect of Metastatic Breast Cancer Cells on the Proliferation and Adhesion of Megakaryocytes

Gracelyn Breitenstein and Sid Voss (UW-La Crosse)
Co-authors: Layne Aurit, Madeline Hedtke, Elizabeth Liker, and Abby Koepp
Mentor: Sierra Colavito, Biology

BACKGROUND: Breast cancer readily metastasizes to the bone marrow, where it is in the same compartment as are the platelet producing megakaryocytes. Circulating breast cancer cells can change platelet composition, however the interactions between metastatic tumor cells and megakaryocytes are not well understood, and there is conflicting evidence as to whether the interactions between cancer cells and megakaryocytes promote tumor growth or inhibit it. We have been investigating the interplay between metastatic breast cancer and megakaryocytes in cell-based experiments. METHODS: Single conditioned media was collected from four different triple-negative breast cancer cell lines. The effects of the conditioned media on the proliferation and PMA-induced adhesion of a megakaryocyte cell line was investigated. RESULTS: Conditioned media from two of the four breast cancer cell lines consistently resulted in decreased proliferation of the megakaryocytes. This could be due to increased apoptosis, decreased growth, or maturation of the megakaryocytes which slows proliferation and increases adhesion. We therefore are investigating the effects of the conditioned media on adhesion of the megakaryocytes, as increased adhesion is a necessary first step in megakaryocyte maturation and platelet production. FUTURE DIRECTIONS: We will conduct experiments to determine if the decreased proliferation of the megakaryocytes is due to increased apoptosis or the promotion

of maturation. We would like to identify the factors present in the conditioned media that are mediating these effects. We will test conditioned media from non-metastatic cells and see if the effects on proliferation of the megakaryocytes are decreased.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #8, Cleary Great Hall**

Academic Advising Chatbot

Avari Caya and Collin Borntreger (UW-La Crosse)
Mentor: Samantha Foley, Computer Science & Computer Engineering

This poster will present our academic advising chatbot. The chatbot is designed to address common advising questions students may have as they navigate the Computer Science & Computer Engineering (CS&CPE) programs at UW La Crosse (UWL). The chatbot consists of a website with curriculum information and an interactive form to provide context to the chatbot. The chatbot uses a LLM to process student questions and produce quality answers based on course catalog documents, curriculum descriptions, and FAQs that have been verified by faculty. The goal of this project is to make it easier for students to ask questions with simple answers and allow advising meetings to focus on big picture problems. The chatbot uses Retrieval-Augmented Generation (RAG) architecture to improve LLM accuracy using the relatively small number of documents over a general LLM approach needing more training data. The system uses instances of the open-source LLM provider Ollama hosted on department resources, along with other Python and web server utilities. Currently, the chatbot is able to answer questions about general advising topics and the CS&CPE curriculum. Future work involves testing with more users, improving the accuracy, and sharing with the CS&CPE department.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #9, Cleary Great Hall**

Transgenerational Inheritance of Avoidance Behaviors in *Caenorhabditis elegans*

Timothy Conner (UW-Whitewater)
Mentor: Kirsten Crossgrove, Biology

Caenorhabditis elegans are free-living nematodes that use olfactory cues to navigate their environment (chemotaxis). A chemical that triggers chemotaxis in *C. elegans* is benzaldehyde, a food additive with an almond-like odor. When exposed to benzaldehyde in various dilutions for a short time, worms display attractive behavior. Prolonged exposure to benzaldehyde causes attractive behaviors to be passed down through multiple generations. Exposing *C. elegans* to benzaldehyde at various dilutions for 5 consecutive generations is enough to continue to show enhanced attractive behavior for 40 generations. However, *C. elegans* exposed to undiluted benzaldehyde display avoidant behavior. It is unclear whether undiluted benzaldehyde causes the inheritance of avoidant behavior. My study is exploring how the timing of exposure within early development determines the strength/duration of inheritance of avoidance behaviors. I believe that worms exposed to benzaldehyde in high concentrations during early development will pass avoidant behavior to more generations, and the effects will be stronger, lasting more than 40 generations. I aim to understand when avoidant behavior occurs, what neurons are active when behavior is switched to stable inherited avoidant behavior, and what signaling pathways are affected. Since *C. elegans* shares similar conserved genes, signaling pathways, and neuronal circuitry as humans, this should provide a solid foundation for my future research.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #10, Cleary Great Hall**

Modern Day Marketing: The Marketing Experts' Choices on the Oversexualization of Women

Madyn Dron (UW-La Crosse)
Mentors: Nese Nasif, Marketing; and Sona Kazemi, Race, Gender, & Sexuality Studies

It was in the early 1900s that businesses used creativity in their targeting marketing communications en masse, as they discovered that brands could command higher prices than unmarked commodities as long as consumers perceived the brand to solve problems that they were either already aware of or were generated by these marketing communications (Schwarzkopf, 2009). Women in sexualized contexts comprised a notable proportion of the creativity in these ads, and while it has changed forms across the decades, these images are still just as present in the marketing communications that reach consumers today.

Although experts acknowledge that women are routinely subjugated in and by these images, the underlying question remains: why do sexualized images of women to sell products persists? This study examines the intersection between the sexualization of women in advertising and the ethical or even unethical decision making of marketing professionals who continue to uphold these practices. Building on existing multi-disciplinary research, individual interviews with marketing experts were collected and analyzed to understand why marketing teams veer away from their moral compass on this issue. The findings in this study point to insufficient education in university marketing departments that perpetuate a cycle of anti-intellectual business demand and hyper-normalization of the sexual objectification of women among consumers which can led to these unethical decisions made. These results are discussed, including implications for and guidance on more socially responsible marketing strategies.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #11, Cleary Great Hall**

Institutions in the Mind: Comparing Index-Based and Perceived Economic Freedom as Predictors of Entrepreneurship and GDP

Khang Duong, Joshua Schulze-Reimpell, and Grace Reek (UW-La Crosse)
Mentors: Adam Stivers, Finance; and Nabamita Dutta, Economics

Our project aims to examine how individuals and businesses perceive economic freedom and how those perceptions differ from traditional measures based on institutional characteristics. Existing indices, such as the Fraser Institute's Economic Freedom of North America (EFNA), rely entirely on quantifying policy variables, where data about government spending, taxation, labor regulation, legal quality, monetary stability, and trade openness are used to assess economic freedom. However, these indices overlook how these policies are experienced by entrepreneurs, consumers, and workers. Perceptions can substantially influence behavior, decision-making, and economic outcomes. In this project, we therefore aim to capture entrepreneurs' and managers' perceptions of economic freedom, to develop an index of perceived economic freedom, and to compare our index with the EFNA as predictors of entrepreneurship and GDP. For this purpose, we will design a survey containing items closely aligned with the EFNA's core areas, with a particular focus on government spending, taxation, and labor market freedom. Our survey will be rolled out using Prolific, a web service to connect researchers with participants nationwide. Participants will be American entrepreneurs and managers. We hypothesize that perceptions of economic freedom will significantly differ from the EFNA and that they will better explain variations in entrepreneurship and GDP in the United States than the EFNA alone. Our goal is to combine this new perceived index with existing EFNA data to inform policymakers more effectively.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #12, Cleary Great Hall**

Attachment Styles and Their Impact on Romantic Relationships

Lydia Feder (UW-La Crosse)
Mentor: Michael Tollefson, Communication Studies

This study examines how attachment styles influence communicative patterns and overall relationship quality in romantic relationships. Guided by Attachment Theory, the research explores how individuals with anxious and avoidant attachment styles engage in communication behaviors such as conflict management, self-disclosure, and expressions of affection through love languages. Because communication plays a critical role in relationship development and satisfaction, this study investigates how these communicative behaviors may strengthen or weaken romantic relationships. Through survey-based analysis of adults over the age of 18 who have been in at least one romantic relationship lasting longer than three months, the research aims to identify patterns between attachment styles, communication behaviors, and relationship satisfaction, contributing to existing literature on interpersonal communication and romantic relationship dynamics.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #13, Cleary Great Hall**

The Relationship between Heart Rate Variability Threshold Obtained from Running and Cycling

Kate Gillespie and Grace Albee (UW-La Crosse)
Co-authors: Danica Neville and Abigail Del Bianco
Mentor: Ward Dobbs, Health Professions

The intensity of aerobic exercise can be measured in a variety of ways including heart rate (HR) and its relation to oxygen consumption (VO_2). Heart rate variability threshold (HRVT) offers another way to measure intensity of aerobic exercise to allow for a means of exercise prescriptions as HRVT has been shown to correlate with ventilatory threshold (VT). PURPOSE: This study aims to examine the relationship between HR, VT, and HRVT across running and cycling modalities. METHODS: Healthy individuals will be recruited to participate in two VO_2 max tests, one on a treadmill and one on a cycle ergometer. The treadmill protocol will increase by both speed and grade every 3 minutes in a step fashion. The cycling protocol will increase intensity by 30 W every 3 minutes in a step fashion. The protocols will continue until the participant reaches maximal effort and opted to cease exercise. Through all trials, HR data will be continuously collected by means of a Polar H10 HR monitor, and expired gas will be analyzed 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.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #14, Cleary Great Hall**

Using Promoter Swaps to Understand How Transcription Factor Family Members Met31 and Met32 Regulate Yeast Sulfur Metabolism Gene Expression

Clare Halladay (UW-Parkside)
Co-authors: Bayleigh Tienhaara and Grace Verzal
Mentor: Traci Lee, Biological Sciences

Transcription (making RNA) is the critical first step in gene expression, and transcription factor (TF) families are groups of similar proteins that bind the same set of target genes to regulate RNA production of those target genes in different ways. TF families evolved via gene duplication and divergence. To better understand how groups of duplicated TFs diverged to perform different regulatory roles, we focused on the simple two-member family of Met31 and Met32, which regulates yeast sulfur metabolism gene expression. While Met31 and Met32 have similar protein sequences (especially at their DNA-binding domains), the timing and levels of *MET31* and *MET32* RNA (and protein) differ. In line with these differences, *MET31* and *MET32* contain distinct promoters (DNA sequences located in front of the gene that control when and how much that gene is expressed). To investigate how their different promoters (and expression profiles) contribute to their respective roles, we created yeast strains in which the promoters of *MET31* and *MET32* have been swapped. We are now characterizing the growth of promoter swap strains under conditions in which *met31Δ* (met31 deletion) and *met32Δ* (met32 deletion) strains exhibit different responses. For example, deficiencies in the *met32Δ* strain reveal roles performed by Met32 only. If the *met32Δ* promoter swap strain now behaves like a *met31Δ* strain instead of a *met32Δ* strain, it indicates that altering the levels and timing of Met31 to mimic those of Met32 can allow Met31 to perform Met32-specific roles. I will present our findings.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #15, Cleary Great Hall**

Applicant Perceptions of AI in Hiring Processes

Jenna Harrington and Riley Wood (UW-Green Bay)
Mentor: Dylan Polkinghorne, Marketing & Management

This study examines how applicants' attitudes, technology acceptance, and fairness perceptions influence job pursuit intentions in AI-driven hiring. Survey results (N=226) show that perceived usefulness and procedural justice strongly predict pursuit (R^2=0.58). The findings guide HR professionals in designing transparent, applicant-friendly AI hiring systems.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #16, Cleary Great Hall**

Investigating the Structural Stability of the DcrB Copper Resistance Protein from *Salmonella enterica* with Various Domain Swapping Mutations

Lillith Higgins (UW-La Crosse)
Mentor: John May, Chemistry & Biochemistry

Salmonella enterica causes foodborne bacterial illnesses. The human immune system may use copper ions as an antimicrobial agent. While these ions typically succeed in preventing infection, *S. enterica* can resist copper. A protein, named DcrB, in *S. enterica* is known to contribute to the bacteria's copper resistance. DcrB contains a unique structural component known as the hinge-loop region. This region provides structural flexibility which allows the protein to extend the hinge-loop out to interact with a separate DcrB protein, allowing them to bond and form a dimer-set of two proteins. This experiment began by altering the hinge-loop region of the DcrB protein to analyze the effects this has on its function. I designed two variants which were predicted to make the flexible hinge-loop region more constrained. One variant protein was purified and analyzed for stability and possible structural changes via circular dichroism (CD). We found that the variant protein had a significantly lower than wild-type observed Tm value for the mutated protein, indicating decreased stability for the overall protein. This suggests that flexibility in the altered hinge-loop region is critical for protein stability. In the future, this study's contributions to understanding *S. enterica* and its copper resistance may allow copper to be used more effectively as an antimicrobial agent and will advance understanding of how proteins form domain-swapped dimers.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #17, Cleary Great Hall**

Comparing the Toxicity and Efficacy of Cucurbitacin Isoforms

Samantha Imes (UW-River Falls)
Mentor: Cheng-Chen Huang, Biology

Cucurbitacin is a chemical compound found in plants such as squash, cucumbers, pumpkins, and guards. The chemical structure for cucurbitacin is C30H42O7 which is important due to its highly oxidized tetracyclic triterpenoid structure allowing for its toxic nature. During this research the effective dose at 50% or ED50 and toxicity dose at 50% or TD50 will be investigated for several cucurbitacin isoforms. The ED50 is explored to understand at what point the drug administered is effective. The TD50 is explored to understand at what point the drug will become harmful and hurt the subject being administered the drug. First, we tested the isoforms of cucurbitacin on different cancers. Mouse melanoma cells and breast cancer cells were prepared into a 96-well plate, treated with chemicals containing isoforms of cucurbitacin, incubated, analyzed using the MTT Cell proliferation assay, which measures the mitochondrial activity. With human melanoma, we found that the ED50 for isoform F9 is below 10 uM while the ED50 of isoforms F5, F6, F7, F8 is between 10-20 uM. Isoforms F2, F3, F4 showed no toxicity. Interestingly, cucurbitacin isoforms showed less toxicity to breast cancer, with ED50 for F9 being at ~15 uM. The cucurbitacin isoforms showed no toxicity in non-cancer myoblast cells and little or no toxicity on developing zebrafish embryos. Our results conclude that cucurbitacin F9 is the most potent anti-cancer cucurbitacin isoform, which could be a safe anti-cancer drug as it shows little or no toxicity to non-cancer cells or zebrafish embryos.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #18, Cleary Great Hall**

The Role of Gender and Power in Shaping Attitudes on Sexual Harassment

Jada Jahn (UW-La Crosse)
Mentor: Kristina LaPlant, Political Science & Public Administration

The release of Epstein Files has resurfaced the political conversation of protecting those in power vs. holding them accountable. This research aims to explore what factors influence public opinion about sexual harassment and the issue's importance. It examines whether the public's broader beliefs about who holds power (and who is trying to gain it) influence whether they think attention to sexual harassment goes too far or not far enough. Using American National Election Studies 2024 Time Series Study data, our study focuses on two independent variables: attitudes about women controlling men to gain power, and attitudes about the rich and powerful making it difficult for others to get ahead. Through Chi-Square and Cramer's V tests, this study finds statistically significant and moderately strong relationships for both. Respondents who believe women control men to gain power are more likely to feel the country is paying "too much" attention to sexual harassment. Conversely, people

who believe structural inequalities exist are more likely to think sexual harassment attention has gone "not far enough." These findings demonstrate that views on sexual harassment are closely linked with how the public understands gender hierarchies and institutional power on a broader scale. While there's more factors at play, these two factors play an important role in shaping how Americans judge the legitimacy of addressing sexual harassment as a contemporary issue.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #19, Cleary Great Hall**

Beyond Tradition: Assessing the Future of Wolf Depredation Compensation in Wisconsin

Alex Jahnke (UW-La Crosse)
Mentor: Jeremy Arney, Political Science & Public Administration

Wisconsin is the only U.S. state that has historically compensated for wolf related damage to livestock and hunting dogs, known as depredation. This sets it apart from other wolf range states where payments apply solely to livestock losses. This policy has raised concerns about fairness, fiscal responsibility, and its influence on human-wolf interactions. In some cases, generous compensation has drawn out of state hound handlers to Wisconsin, while practices such as bear baiting can inadvertently attract wolves and increase the likelihood of dog wolf encounters. These conflicts not only result in the deaths of hunting dogs but can also lead to wolves dying from exhaustion during prolonged pursuits, underscoring broader ecological and moral consequences. To evaluate potential alternatives and assess alignment with national wildlife management standards, this research reviews depredation compensation models across wolf range states and analyzes legislative proposals that have attempted to eliminate payments for hunting dogs. Correspondence with Wisconsin state legislators provides insight into political dynamics, opposition arguments, and the feasibility of future reforms. The project concludes with evidence based policy recommendations for state lawmakers to consider to develop a more consistent, equitable, and ecologically sound compensation system. Ultimately, the findings highlight pathways to reduce conflict, strengthen governance, and modernize Wisconsin's approach to wolf management.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #20, Cleary Great Hall**

The Effects of Annealing Temperature on Localized Surface Plasmon Resonances of Ion-Implanted Ag Nanoparticles

Cole Javens and Anthony Staryszak (UW-La Crosse)
Mentors: Eric Gansen and Shahid Iqbal, Physics

Silver (Ag) nanoparticles are of interest for metal-enhanced photoluminescence and absorption, which show great promise in the areas of bio-sensing, optical displays, and photodynamic therapy. In these applications metal nanoparticles are placed in close proximity to the photoactive material where they enhance the photoemission or absorption of the material as a consequence of the light coupling to the surface-charge oscillations of the nanoparticles. The properties of the localized surface plasmon resonance (LSPR) associated with this coupling has been shown to depend heavily on the material composition, density, and annealing temperature of the nanoparticles. In the structures we are studying, spherical Ag nanoparticles with dimensions of tens of nanometers are imbedded via ion-implantation into quartz substrates with various particle densities. Measured absorption spectra show that these nanoparticle arrays exhibit a well-defined peak in their absorption spectra characteristic of an LSPR with a central wavelength near 415 nm and in some cases exhibit multiple peaks and shoulders indicative of aggregation. We present absorption spectra as a function of annealing temperature, which show how the plasmon resonances evolve with elevated temperatures and explain the results in terms of the thermally induced migration of the nanoparticles within the quartz substrate.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #21, Cleary Great Hall**

Examining the First Step Act of 2018: A Pre-Post Analysis of Racial Disparities

Shacora Jennings (UW-Milwaukee)
Mentor: Danielle Romain Dagenhardt, Criminal Justice & Criminology

The First Step Act, enacted in 2018, was a major reform to the U.S. criminal legal system, designed to reduce sentencing disparities, expand rehabilitation opportunities, and lower recidivism rates. This study examines the historical development and policy context of the First Step Act of 2018 and evaluates its potential impact on federal sentencing practices, particularly on racial and ethnic disparities. We will review data collected across the federal district courts from 2014-2021. The study incorporates a pre–post design to compare sentencing patterns before and after the Act's implementation. The pre-policy period includes cases from 2014-2017, while the post-policy period covers 2018-2021, while acknowledging the impact of COVID-19. The study examines sentence lengths for prison terms and the likelihood of incarceration versus probation, comparing outcomes across time periods and racial and ethnic groups. In additionally, we'll take a subsample of drug cases and violent cases and look at potential changes in sentencing disparities for these cases. Results are not yet available, as analyses are currently underway. The findings will contribute to ongoing discussions about federal sentencing reform and the effectiveness of policies aimed at reducing disparities in the criminal justice system.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #22, Cleary Great Hall**

Omega-3 Fatty Acids as a Potential Link to Cardiovascular Health in Collegiate Athletes

Ava Kloehn and Taylor Molling (UW-La Crosse)
Mentors: Ward Dobbs, Health Professions; and Andrew Jagim, Exercise & Sport Science

Dietary habits and nutritional status of athletes have been shown to influence multiple aspects of athletic performance and overall health. Long-chain Omega-3 polyunsaturated fatty acids, a type of dietary fat commonly found in fish oils, have been proposed as an important nutrient for cardiovascular health in athletic populations. However, athletes have been shown to be at risk for presenting with low Omega-3 levels in the diet and bloodstream. The Omega-3 index (O3I) is a method used to quantify the amount of Omega-3 in the blood, with levels under 4% being suggested as a critical threshold. PURPOSE: The purpose of this study was to examine the relationship between Omega-3 index and risk factors for cardiovascular disease in collegiate athletes. METHODS: National Collegiate Athletic Association (NCAA) athletes medically cleared for participation in sport were recruited to complete a testing session that included measurements of height and weight, body composition analysis, resting hemodynamic evaluation, and a blood draw to assess clinical health markers and Omega-3 index status. RESULTS & DISCUSSION: This abstract is being submitted as a work in progress. Data collection is ongoing, but results will be prepared for dissemination before the symposium.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #23, Cleary Great Hall**

Stability and Function of *Salmonella* Copper Resistance Protein with Modifications to a Small Crossover Region

Kayla Krebs (UW-La Crosse)
Mentor: John May, Chemistry & Biochemistry

Copper ions are widely used as antimicrobial agents to kill bacteria since high levels are toxic to living cells. However, some bacteria have evolved mechanisms to survive copper exposure. In *Salmonella enterica*, a lipoprotein called DcrB has been found to show resistance to high levels of copper ions. The goal of this research is to investigate the specific structural features of DcrB that allow it to enable copper resistance. Previous research has shown that mutations to the N-terminal β-hairpin region of DcrB cause non-favorable interactions that decrease the overall function of the protein. This was specifically seen when we mutated several large non-polar residues within the β-hairpin to either medium length or short length residues. The stability of these variants was analyzed using circular dichroism and cross-linking assays with and without copper added in solution. For present experiments, several non-polar residues within the core of DcrB were mutated to polar serine residues predicted to interact with residues in the β-hairpin. These mutations were designed to test whether new stabilizing interactions within the β-hairpin could restore some stability and function to the protein. These findings will help us understand how the DcrB protein functions to resist the antimicrobial properties of copper ions. Ultimately, this will be the first step to developing strategies to

overcome bacterial resistance to metal ions such as copper.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #24, Cleary Great Hall**

Improving the Rigor of AI-Gen Curriculum: Mastering the Machine

Audrey Langworthy and Gracie Stifter (UW-La Crosse)
Mentor: Dean Vesperman, History

This poster session explores strategies for evaluating and enhancing AI-generated curriculum through the lens of educational learning theory. Grounded in the historical context of the 1967-1968 "long hot summer" and the Kerner Commission Report, participants examine lesson plans created by four leading generative AI engines: ChatGPT, Claude, Gemini, Co-Pilot, and MagicSchool AI. Each AI-engine was provided the same prompt and asked to create five versions of the lesson. These lessons were then coded by undergraduates using three critical frameworks: Bloom's Taxonomy (cognitive demand levels), Gardner's Multiple Intelligences (diverse learning modalities), and layers of discourse (student linguistic engagement). Research findings reveal significant variations in cognitive rigor across AI platforms. This poster will display the results of the coding and suggestions on how to improve the AI-Gen curriculum. This poster demonstrates how learning theory provides essential frameworks for improving AI curriculum quality, ensuring inclusive, intellectually demanding lessons that maximize student engagement and support diverse learners in the social studies classroom.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #25, Cleary Great Hall**

Measuring Metabolome Function at 4°C and Room Temperature of Human and 13-Lined Ground Squirrel Platelets

Nick Lemmens, Megan Haggart, and Sam Warneke (UW-La Crosse)
Co-authors: Grace Kern and Brooke Hansen
Mentor: Scott Cooper, Biology

Platelets are small cell fragments that function in the blood to form clots and prevent excessive bleeding. Human platelets are inactive when exposed to cold temperatures, whereas 13-lined ground squirrel platelets have the ability to function optimally while in cold temperatures and hibernation. The effect of temperature on thromboxane binding on human and ground squirrel platelets in both refrigerated (4°C) and room temperature conditions was analyzed throughout this study. In addition, the comparison of how platelet granule ATP release differs between human and ground squirrel platelets at these temperatures was also analyzed. The effects on thromboxane binding and ATP release were measured using absorbance and luminescence, respectively. Determining the mechanisms ground squirrels are equipped with that allow platelets to function in cold temperatures. These effects could have implications for improving storage duration and availability of human platelets in clinical use.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #26, Cleary Great Hall**

Spray-Based Method for Generating Alginate Iron Oxide Micro Beads Using a Tattoo Airbrush System

Anh Le (UW-Milwaukee)
Co-authors: Nymphia Nourin, Priyatha Premnath, and Ashwin Kumar Narasimhan
Mentor: Ashwin Narasimhan, Biomedical Engineering

Micro-scale polymer beads have gained significant attention in biomedical engineering for applications in drug delivery, cell encapsulation, and biosensing, owing to their tunable size and high surface-area-to-volume ratio. However, conventional fabrication methods frequently rely on sophisticated microfluidic instrumentation, limiting accessibility in resource-constrained settings. Sodium alginate is a biocompatible polysaccharide that undergoes mild ionic crosslinking in the presence of calcium chloride ($CaCl_2$), enabling the formation of stable hydrogel beads with controllable size and mechanical properties. In this study, we investigated the use of a low-cost tattoo airbrush system as an alternative droplet generation platform for fabricating

sodium alginate microbeads encapsulating superparamagnetic iron oxide nanoparticles (SPIONs). Alginate solutions containing dispersed SPIONs were aerosolized and sprayed into a $CaCl_2$ crosslinking bath, enabling simultaneous bead formation and nanoparticle encapsulation. Key fabrication parameters—including nozzle height (5–15 cm), alginate concentration, and spray air pressure—were systematically varied to evaluate their influence on bead size, size distribution, and population uniformity. A surfactant was incorporated into the alginate solution to reduce droplet coalescence and refine the size distribution, while continuous magnetic stirring of the $CaCl_2$ bath was employed to prevent bead aggregation. The resulting beads ranged from approximately 200 nm to 1 µm in diameter. This work demonstrates that a tabletop airbrush system can serve as a simple, scalable, and cost-effective platform for producing SPION-laden alginate microbeads, with potential applications in magnetic-guided drug delivery and point-of-care diagnostics.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #27, Cleary Great Hall**

The Influence of Lecture Difficulty and Captioning on Comprehension and Cognitive Load

Lian Lewis (UW-La Crosse)
Mentor: Tanvi Thakkar, Psychology

Research suggests that speech-to-text captions can improve listening comprehension and test scores, and reduce cognitive load, particularly for non-native English speakers. Cognitive load refers to the total amount of mental effort and working memory capacity required to accomplish a task or to learn something new. The increase in comprehension accuracy linked to captioning could be due to the reduced processing demands when both speech and text are presented at the same time. Presently, it is unclear how captioning presented across varying content difficulty influences cognitive load. This study examined how providing captions and manipulating the content difficulty influences comprehension accuracy and cognitive load. Participants viewed four short lecture videos, varying in difficulty level and presence of captions, while their pupil dilation (PD) was monitored to assess cognitive load. Results showed significant differences in cognitive load (measured via PD) depending on difficulty, with a reduction in PD for captioned content during an easier condition. Unexpectedly, the smallest PD increase appeared in difficult lectures without captions, suggesting that the task was too challenging for captions to have an effect in this context. These results suggest that captioning effectiveness may be dependent on the complexity of the material.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #28, Cleary Great Hall**

Subadult Burials in the Bronze Age Maros Culture

Madalyn Lilly (UW-La Crosse)
Mentors: Amy Nicodemus and Heather Walder, Archaeology & Anthropology

Mortuary practices are a key source of information for understanding social structure, identity, and belief systems in past societies. Choices surrounding burial treatment, grave goods, body positioning, and other aspects of funerary rites are often highly structured and socially regulated, making them especially valuable for interpreting cultural norms. In many cultures, mortuary practices differ by age and social roles. This research examines mortuary practices in the Bronze Age Maros culture (2000-1500 BCE), located in modern day Hungary, Serbia, and Romania. The analyses utilize previously published data from eight cemeteries and four settlements, supplemented by a small, self-collected dataset from the Maros settlement Pecica Şanţul Mare in Romania. Burial practices between adults and subadults (infants and children) were compared, as well as the frequency of inclusion in formal cemeteries and settlements, the presence and distribution of grave goods, and overall treatment of the body. This research demonstrates that burial rites in the Maros culture functioned as markers of social membership and life stage milestones, and how mortuary practices differed between cemeteries and settlements over time. By examining subadult burials, researchers can gain a more comprehensive understanding of the roles, treatment, and social life of children in past societies.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #29, Cleary Great Hall**

Is the "Gen Z Stare" Really a Thing?: An Exploration of Facial Expressions in Service Encounters

Lauren Maresh (UW-La Crosse)
Mentor: Nese Nasif, Marketing

Service marketing quality is difficult to measure, but Parasuraman et al.'s (1988) seminal work found that customers perceive quality based on five dimensions. This study focused on the empathy dimension, specifically on how customers perceive facial expressions. The recent phenomenon of the "Gen Z Stare" has implied that 'blank' expressions by younger employees have produced uncomfortable and antagonistic customer responses. This research examined whether there is a generational effect among consumers in their perception of the stare and eight other facial expressions. Gender and service context treatments were also considered. Significant findings include that, as customer age increased, the likelihood of appreciating an employee's 'fake smile' also increased, implying that younger generations are less appreciative of 'performative' expressions. Another finding was that the only instance in which the fake smile demonstrated weak to no significance was with a male service employee, suggesting that performance expectations are uniquely gendered, reinforcing the notion that female employees are subject to certain emotional expectations. No significant correlation was found for the Gen Z stare across any group. Future research is recommended to corroborate this finding or examine whether experimental bias in the generalization of the expression used to measure the stare was present.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #30, Cleary Great Hall**

Epstein-Barr Virus: Molecular Investigation into Developing an Optimal Lytic Cycle Inhibitor

Gilbert Marquez (UW-La Crosse)
Mentor: Kelly Gorres, Chemistry & Biochemistry

The Epstein-Barr Virus (EBV) is a type of Herpes virus that is highly contagious. About 95% of adults have experienced an EBV infection in their lifetime. Chronic complications of EBV can significantly increase the risk of various cancers, such as lymphoma, where thirty-one percent of cases are EBV-related. Previously published studies have shown that sodium butyrate induces the activity of EBV. Conversely, a molecule named valproic acid inhibits the activity of EBV. Historically, valproic acid has been prescribed to patients as an anti-epilepsy medication. However, it has rare but negative side effects when taken, including birth defects if taken during pregnancy, liver damage, and compromised nervous system function. Thus, the scope of this project is to identify what characteristics of a molecule inhibit EBV effectively while minimizing the risk of negative side effects. We have been interested in Sodium Butyrate and Valproic Acid derivatives and their effects on the EBV lytic cycle response. Western blotting for the viral BZLF1 protein is done on cell lysates treated in 24-hour experiments with Sodium Butyrate and Valproic Acid derivative exposures. This project aims to enhance the understanding of EBV lytic cycle inhibition. This understanding may culminate in safer preventative measures for those at risk of chronic EBV infection.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #31, Cleary Great Hall**

Mindfulness Movement

Hannah Meyer, Megan Chew, Sarah Hanson, Olivia Sampson, Kennedy Pafford, and Sawyer Clegg (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

We are designing a Mindfulness Movement to address the importance of sensory grounding and self-improvement techniques. Maslow's Hierarchy of Needs is a theory supporting the basic needs of children and youth to strengthen self-esteem, a sense of belonging, and the ability to feel safe and supported as they work towards personal growth.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #32, Cleary Great Hall**

Squirrel Platelet Phosphoproteome

Madeline McGuire, Lexi Christianson, and Brett Skaug (UW-La Crosse)
Mentor: Scott Cooper, Biology

Platelets are small blood cells involved in coagulation. During hibernation, the body temperature of 13-lined ground squirrels decreases to 4-8 °C, and heart rate drops to approximately 4–5 beats per minute. In most mammals, including humans, these physiological changes would promote severe clot formation. Human platelets cannot be stored at cold temperatures, or they undergo activation and apoptosis, whereas ground squirrel platelets are resistant to these effects. The objective of this project is to identify the mechanisms that allow ground squirrel platelets to survive cold storage without cell activation or apoptosis, and to apply this knowledge to improve human platelet preservation. Previously collected data on the analysis of squirrel platelet samples in summer and winter, with and without the clotting factor thrombin, were sent to external collaborators to generate a phosphoproteome. The phosphorylated proteins indicate signaling pathways that can be used to test various effects of inhibitors on activation sequences within a platelet. These experiments will evaluate the effects of specific inhibitors on platelet activation pathways to identify mechanisms that can be manipulated to reduce cell activation and apoptosis.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #33, Cleary Great Hall**

Terraced: Archaeological Investigation of Oneota Ceramics and Spatial Organization in La Crosse, WI

Meghan Morey (UW-La Crosse)
Mentors: Heather Walder and David Anderson, Archaeology & Anthropology

Oneota ceramic vessels that once stored food today store information about Oneota lifeways and settlement practices. This research analyzes ceramics from the Oneota Village and Cemetery Site (47LC288), a precontact archaeological site in Onalaska, WI, to investigate how people differentially used the environment. This site includes three occupation phases in the La Crosse region: Brice Prairie (AD 1300-1400), Pammel Creek (AD 1400-1500), and Valley View (AD 1500-1650). This riverside site is split between an upper and lower terrace, which is part of the six different resource zones that extend from the river to the bluffs. The terrace system influenced Oneota site use, as previous studies have indicated that inhabitants shifted their village site preference over time, from the lower to upper terraces. This study examines ceramics from the 2012 and 2025 excavations at 47LC288, comparing ceramics from the upper and lower terraces to understand if they indicate preferences for settlement practices. The ceramic analysis compares metric (size) and non-metric (stylistic) attributes to investigate patterns of differences in activity use or temporal differences in occupational preferences between the terraces. Overall, this research contributes to understanding variation within Oneota settlement structure and organization in the La Crosse locality.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #34, Cleary Great Hall**

The Importance of Unplugging for Youth

Lindsay Overell, Ashlyn Barker, Alayna Myren, Abby Mroz, and Carly Scholz (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

We are designing an interactive internet safety wellness walk to address the lack of internet competency and screen safety skills among today's generation. Family Systems Theory suggests that children need guidance from supportive adults to navigate their environments safely. These youth need more accessible education and interactive learning opportunities to gain safe internet habits.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #35, Cleary Great Hall**

Investigating the Role of FAM120A in Mantle Cell Lymphoma via the PI3K/AKT/mTOR Pathway

Victoria Obernberger (UW-Madison)
Mentors: Lixin Rui and Yunxia Liu, Medicine

Mantle Cell Lymphoma (MCL) is an aggressive B cell malignancy driven by Cyclin D1 overexpression. The PI3K/AKT pathway plays a critical role in MCL development. Recent studies suggest that *FAM120A* activates PI3K, initiating the PI3K/AKT pathway and promoting cell proliferation. Notably, suppression of *FAM120A* has been shown to reduce growth in several cancer types. This project aims to elucidate the role of *FAM120A* in MCL by generating shRNA mediated knockdown cell lines. The findings are expected to clarify how *FAM120A* contributes to MCL pathogenesis and may help identify potential therapeutic targets.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #36, Cleary Great Hall**

Nourish to Flourish

Sophia Piette, Elizabeth Olson, Abby Hahn, Scout Pertzborn, Dave Bernstein, and Seijin Klepp (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

We designed a Nourish to Flourish event with the goal of addressing the lack of nutritional education in children. We used Bronfenbrenner's Ecological Theory as a basis, as the theory suggests that the development of children and youth is influenced by the interconnected systems in their environment. We planned to work with children ages K-12 to teach them about healthy nutrition and eating habits. During our event, we completed a MyPlate activity, a Nutrition Label activity, a MythBusters activity, and a hands-on build your own nourishing fruit kabob snack. All of these activities were based on the developmental models of Piaget, Erikson, and Bandura, ensuring that the children will be able to comprehend nutritional lessons in an age-appropriate way. This intervention helped promote nutritional education among at-risk youth, resulting in positive health outcomes and long-term sustainable health habits.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #37, Cleary Great Hall**

Effects of Consonant and Dissonant Sounds on Cognitive Load in Adults

Colten Pergande and Ruth Uelmen (UW-La Crosse)
Mentor: Tanvi Thakkar, Psychology

The interplay between sound perception and cognitive effort represents a multifaceted phenomenon influenced by environmental and individual variables. Prior research indicates that complex sounds can increase cognitive demands and impact sound recognition. However, relatively little research has examined how these effects might interact when listeners are engaging in a cognitively demanding task. This research question is inspired by the common tendencies of adults to combine cognitively challenging tasks, such as listening to music while working. The present study examined how consonant (pleasant) and dissonant (unpleasant) tones influenced cognitive load in adult listeners. We expected that when listening to dissonant tones, cognitive load (measured through pupil dilation) would increase, compared to trials with consonant tones. Each participant listened to both consonant and dissonant stimuli while completing a cognitive matching task, varied at three difficulty levels. Cognitive load was measured by monitoring changes in pupil dilation simultaneously with performance accuracy on the matching task. Preliminary data shows that for difficult and moderate trials during dissonant tones, participants experienced increases in cognitive load. However, no differences in cognitive load were observed for easier trials, suggesting that when engaging in moderate-to-difficult tasks, dissonant sounds may increase one's mental effort.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #38, Cleary Great Hall**

From Hallucinations to Confabulations: Reframing Erroneous Outputs in Large Language Models

Aryan Patel (UW-Parkside)
Co-author: Kaelan McDonough
Mentor: Ignacio Rivero Covelo, Psychology, Professional Counseling, and Neuroscience

Large language models (LLMs) can produce erroneous outputs, which are commonly referred to as "hallucinations." We suggest that this is a categorical error, considering the clinical psychology definition of hallucination, which is based on perceptions without external stimuli. The term confabulation better suits these LLM outputs because they are defined by logically guided outputs that fill out missing information. LLMs also lack any sort of relatable perceptual mechanism which is required for hallucination. We compared literature examples of hallucinations and confabulations to propose that these erroneous outputs are better suited for labeling as "confabulations" and thus more consistent with psychiatry and neuroscience terminology. Specifically, confabulations are defined as false but coherent narratives that fill in gaps of knowledge, typically seen in amnesic disorders. Similarly, LLMs generate cohesive responses when working with incomplete information or incomplete response restraints. Additionally, we predict that if LLM errors are confabulation-like, then they should increase as prompts become more ambiguous or underspecified, and decrease when external constraints are strengthened. We also predict that errors will be schema-consistent rather than random, reflecting learned regularities. Correction of this terminology better clarifies the mechanisms involved when working with LLMs and guides us toward more accurate and efficient improvements in the future.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #39, Cleary Great Hall**

Developing Healthy Environmental Habits in Youth through Their Microsystem

Taylor Revoir, Ava Gallardo, Haley Schwind, Emma Mullins, and Abigail McLaughlin (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

This Child and Youth Care capstone project focuses on enhancing children's microsystems by promoting organization, healthy habits, and environmental responsibility. Grounded in Bronfenbrenner's ecological systems theory, our project emphasizes that children need structured skills to develop accountability, appreciate their surroundings, and positively influence the people who support them. By teaching practical skills such as organization, cleaning, and responsibility for their environment, the project aims to foster healthier daily habits and stronger connections to both their immediate and extended environments. The project includes hands-on activities that teach children practical ways to care for their environment, such as recycling, cleaning shared spaces, and expressing appreciation to support staff, like writing thank-you cards to custodial staff. These activities help children understand how their actions impact others in their microsystem, including peers, and educators, while reinforcing responsibility and community-minded behavior. The expected outcome of our project is that children will develop lifelong skills in organization and healthy routines, contributing to more positive, supportive, and responsible environments in their homes, schools, and communities. This project demonstrates how structured guidance, combined with environmental awareness, can strengthen children's sense of responsibility and foster growth within their microsystem.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #40, Cleary Great Hall**

Factors Influencing Post-Release Criminal Behavior: The Role of Gender and Parenthood

Aleyna Rosenow (UW-La Crosse)
Mentor: Nicholas Bakken, Sociology & Criminology

Research on recidivism has often examined men and women together, treating their pathways to reoffending as largely the same. As a result, gender-specific circumstances that shape men's and women's experiences may be overlooked, leading to gaps in treatment and reentry programming. This study focuses on how social bonds and also the aspect of parental influence shape recidivism outcomes differently for men and women that were formerly incarcerated. Using data from the Urban Institute's Returning Home Study and also drawing from Hirschi's Social Bond Theory, this study analyzes self-reported post-release criminal behavior and drug use across a range of demographic, psychosocial, criminal history, and structural measures. My study hypothesizes that attachment to children and family support will be more influential factors in recidivism for women, whereas structural factors like employment and housing will be more influential for men. This difference may reflect gendered

patterns in social relationships and the reintegration process after incarceration.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #41, Cleary Great Hall**

Mapping Mercury (Hg) Concentrations at Historic Archaeological Sites in the Upper Midwest

Ken Schwartzlow (UW-La Crosse)
Mentors: Heather Walder, Archaeology & Anthropology; and Niti Mishra, Geography & Environmental Science

This poster illustrates advanced mapping techniques applied at historic-era archaeological sites in the Upper Midwest by spatially visualizing mercury concentrations associated with fur trade activities. Vermilion pigment (mercury sulfide, HgS) also known as cinnabar, was a common trade item during the North American Fur Trade era ca. 1600-1830 AD. Research for this presentation consisted of three archaeological sites, Fort Charlotte, Grand Portage National Monument in Minnesota, Perrot's Post, Trempealeau, WI and the North West Company/American Fur Company Trading Post, Madeline Island, WI. Mapping was conducted using ArcGIS Pro emphasizing raster presentations and overall aesthetics. Historical and archaeological maps were georeferenced to soil chemistry maps to provide context. To help facilitate georeferencing, LiDAR derived Digital Elevation Models were added as a base layer to all maps. Core sample horizons were mapped and analyzed to determine the depth of anthropogenic activity. The results of this research demonstrate that mapped mercury levels spatially reveal activity areas associated with vermilion used at historic fur trade sites. This research in mapping techniques yielded a novel and minimally invasive method for other archaeologists seeking to identify activity areas at similar colonial sites worldwide.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #42, Cleary Great Hall**

Determining the Turbulence Intensity of a Low-Speed, Closed-Return Wind Tunnel at the University of Wisconsin-Platteville

Savannah Shropshire (UW-Platteville)
Mentor: Paulo Yu, Mechanical and Industrial Engineering

Experimental wind tunnels are widely used in fluid dynamics to investigate aerodynamic behavior under controlled conditions. The accuracy and reliability of wind tunnel experiments depend strongly on the quality of airflow within the test section, as significant velocity fluctuations or non-uniformity can cause experimental results to deviate from theoretical predictions. The low-speed closed-return wind tunnel in the Mechanical Engineering Department at the University of Wisconsin-Platteville has recently been restored, but its flow characteristics have not yet been fully quantified. The objective of this research is to experimentally determine the turbulence intensity and flow profile within the test section. A hot-wire anemometer will be integrated with a custom-designed mounting fixture for precise sensor positioning. The measurement system will be calibrated using a pitot tube and manometer in combination with a National Instruments data acquisition device and custom LabVIEW code. Velocity measurements will be collected at multiple locations along the vertical direction of the test section across a range of operating frequencies. Data will be post-processed using Python to calculate turbulence intensity and generate a detailed velocity distribution map. The resulting characterization will provide baseline data on airflow quality, supporting future aerodynamic experiments, enabling more accurate laboratory exercises, and identifying potential facility improvements.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #43, Cleary Great Hall**

Surface Modification of Silica Nanoparticles for the Preparation of Colloidally Stable Nanofluid Suspensions

Sam Stenberg and Nathan Cole (UW-La Crosse)
Co-authors: Krishna Ailani and Prince Kumar
Mentor: Sujat Sen, Chemistry & Biochemistry

Colloidal suspensions of nano-sized particles (NP) in aqueous media have been historically investigated for their superior thermal properties, but their use in electrochemical systems remains relatively novel. We report on the use of silica-based NPs as a model system that can be extended to more complex electrochemically active materials. We explore surface modification strategies using functionalized silanes to prepare stable nanofluids in aqueous base fluids. Nanofluid preparation of both pristine and surface-modified NPs uses a round bottom mixer, controlling temperature and mixing rate. Particle size, morphology, grain size, colloidal stability and crystallinity of the nanoparticle were tested and confirmed through various analytical methods such as electron microscopy (SEM), sedimentation tests, dynamic light scattering (DLS), X-ray diffraction (XRD), thermogravimetric analysis (TGA), and Fourier transformed infrared spectroscopy (FTIR). We demonstrate that the graft's presence minimizes the formation of aggregates, and the suspension is more stable towards settling under gravity. Aggregation, sedimentation, and the extent of surface modification were also quantified. Investigation into alternative silane graft molecules and their effects on nanofluid stability will reveal optimal modification conditions for electrochemical usage of nanofluids. Finally, we present preliminary computational models on how these nanofluids flow through an electrochemical cell.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #44, Cleary Great Hall**

The Belrose Farm Archaeological Project: Survey Results and Emerging Patterns of Occupation

Jadon Thornton (UW-Milwaukee)
Mentor: Peter Geraci, Anthropology

The Belrose Farm Archaeological Project (BAP) is an ongoing research project focused on documenting archaeological remains across a 193-acre property along the lower Fox River in LaSalle County, Illinois. The project is a collaboration between the University of Wisconsin–Milwaukee Department of Anthropology and The Conservation Foundation. Archaeological survey has identified 10 new sites representing more than 10,000 years of human activity on the property. The goals of the project are to document these sites, better understand long-term patterns of landscape use, and support future preservation and land management. This poster synthesizes results of archaeological survey, testing, and analysis of material culture recovered from selected sites. Artifact analysis conducted for this study suggests that the most intensive occupation occurred during the Woodland and Mississippian periods. In particular, this analysis highlights emerging patterns in artifact distribution and occupation across the property.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #45, Cleary Great Hall**

Dancing with the Dads: A Community Engaged Learning Partnership to Strengthen Father-Child Bonds during Incarceration

Lauren Tradewell, Alyssa Bailey, Avery Moioffer, and Molly Skrepenski (UW-La Crosse)
Mentor: Nicholas Bakken, Sociology & Criminology

Community Engaged Learning (CEL) courses at the University of Wisconsin-La Crosse provide students with opportunities to apply classroom knowledge to real-world community needs through partnerships with local organizations. As part of a CEL course, students collaborated with New Lisbon Correctional Institution (NLCI) to support a storybook program in which incarcerated fathers recorded themselves reading children's books to send to their children. The program was designed to help maintain parent-child connections during incarceration. Following the program, students conducted interviews with participating fathers to better understand their experiences and needs regarding family-centered programming. Based on the results of these interviews and research conducted throughout the semester, student groups developed novel parenting programs that were presented to NLCI. One program, Dancing with the Dads, was selected by NLCI for implementation. The

initiative is a structured dance and social event that allows incarcerated fathers to spend time with their children within the correctional setting. The program aims to foster positive parent–child relationships and strengthen family bonds. This project demonstrates how Community Engaged Learning courses can generate meaningful, community-informed programming while providing students with opportunities to translate research and community engagement into practical interventions that support families affected by incarceration.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #46, Cleary Great Hall**

Potential Acute Heart Failure (AHF) Drugs from Peanut Skin and Seahorse Extracts

Debby Vang (UW-River Falls)
Co-author: Cheng-Chen Huang
Mentor: Cheng-Chen Huang, Biology

Acute heart failure is a life-threatening, sudden onset or rapid worsening of the cardiac contraction leading to insufficient blood supply to the body. In response, the body activates compensatory mechanisms to maintain circulation by increasing heart rate, constricting blood vessels, and retaining fluid to raise blood volume. This temporary response could lead to heart strain, systemic congestion, and organ dysfunction. This study investigates whether compounds derived from dried seahorse and peanut skin influence AHF and inflammation using a zebrafish AHF model established by inducing 24-hour embryos with aristolochic acid (AA) for 48 hours of incubation. Results indicate that some samples from seahorse extract and peanut skin extract worsened heart failure phenotypes in the zebrafish model, suggesting that there is a possible presence of cardiotoxic compounds. Toxicity studies showed that none of the seahorse or peanut skin extracts alone showed observable morphological toxicity to developing zebrafish embryos, but one of the peanut skin extracts did have an increase in melanin production. Gene expression analysis using qPCR suggested that seahorse extracts produced mild effects on inflammation and cardiac protection, while peanut skin extracts showed possible compounds capable of inhibiting inflammation and promoting cardiac protection. These findings suggest that although certain extracts may worsen heart failure phenotypes, bioactive compounds like peanut skin and dried seahorse may influence inflammatory pathways relevant to cardiovascular health. Understanding these biological effects provides insight into natural compounds that may contribute to future therapeutic strategies and ways to inform and advance our understanding of AHF drug treatment.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #47, Cleary Great Hall**

Comparing Olivine Geochemistry from Two Volcanoes in Iceland to Understand Magma Sources

Andrew Veroeven (UW-Whitewater)
Co-author: Gwenyth Heidinger
Mentor: Prajukti Bhattacharyya, Geography, Geology and Environmental Science

Recent volcanic episodes in the Reykjanes Peninsula of Iceland began in 2021 in Fagradalsfjall and are continuing today in Sundhnúkur. The two neighboring eruptions are similar in style (effusive lava flows). Observing basalt lava hand samples from both eruptions shows the presence of magnesium-rich and iron-rich olivines in very close proximity. Preliminary differences in whole rock chemistry analyzed using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) show a higher average iron content from Sundhnúkur basalt and a higher average magnesium content in samples from Fagradalsfjall. Fagradalsfjall basalts have relatively larger olivine crystals than those from Sundhnúkur. Under a petrographic microscope, samples from Sundhnúkur basalt show large clusters of olivine, pyroxene, and plagioclase crystals. Olivine is the first mineral to form from cooling basaltic lava. The chemical and textural differences between olivine crystals in the lava from these volcanoes may indicate the location of the magma source and cooling history. Using data from Powder X-ray Diffraction (PXRD), ICP-OES, and textural analysis under a petrographic microscope, we can observe the differences between the olivine crystals in the same sample as well as differences in samples from Sundhnúkur and Fagradalsfjall. This poster will present data from hand samples, ICP-OES, and PXRD showing the differences between the basalt from the two volcanoes, along with an analysis of the olivine present in both.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #48, Cleary Great Hall**

Critical Window Identification of Hyperexcitability Suppression via Dietary Supplementation in a *Drosophila melanogaster* Model

Brady Weimer and Leah Hawbaker (UW-La Crosse)
Co-authors: Grace Doome, Rachel Krueger, and Allyson Davis
Mentor: Douglas Brusich, Biology

Epilepsy, a neurological disorder that impacts individuals of all populations, is heavily influenced by genetic and environmental factors. Treatment options for epilepsy are limited. Animals models for epilepsy allow discovery of basic biological mechanisms responsible for seizure behavior and testing of interventions that suppress hyperexcitability. Here, we used a fruit fly (*Drosophila melanogaster*) model of epilepsy (*para(Shudderer)* or simply *Shudderer*) that causes seizure activity during both larval and adult stages. We and others have shown that feeding *Shudderer* flies a dietary omega-3 fatty acid, alpha-linolenic acid (ALA), during larval development results in markedly reduced seizure activity in adults. Here we show that feeding also suppresses seizure activity during larval stages. We further test the critical period for which ALA supplementation must be provided by pairing embryo transfers between regular and ALA-supplemented food sources with seizure assessment at larval (larval electroshock) and adult (temperature-sensitive seizure behavior) stages. This project will contribute to an understanding of the relationship between diet and neurodevelopment in a genetic model of epilepsy.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #49, Cleary Great Hall**

An Analysis of Human Activity and Fire Occurrence in the Upper Midwest

Jack Wheeler, Brian Hayes, Dylan Trudell, Gabriel Lewis, and Nolan Seaberg (UW-La Crosse)
Mentor: Joan Bunbury, Geography & Environmental Science

Charcoal is a lightweight carbon residue produced through the incomplete combustion of vegetation, is deposited within lake sediments, and can be used to develop a record of fire history in an area. A sediment core was collected in June 2019 from Mud Lake in Mud Lake Fen and Wet Prairie State Natural Area, in Jefferson County, WI. A core chronology was established by integrating 17 lead-210 dates with 4 radiocarbon dates, and covers the last 4,000 years. This study will analyze quantities of macroscopic charcoal found in the sediments over time and compare this to human activity in the area to determine whether the fire occurrence is naturally caused or human induced. Understanding the drivers of historical fire regimes improves interpretation of anthropogenic impacts on Midwestern ecosystems. Charcoal accumulation rates aim to quantify fire history and will be compared with regional paleoclimate and archaeological records to evaluate whether fire regimes were primarily climate-driven or influenced by human activity. Preliminary results suggest that periods with higher fire frequency correspond with patterns of human settlement and activity.

Poster Presentation **Session A (9:45 - 10:40 am), Poster #50, Cleary Great Hall**

Flora and Fashion: Incorporating Biodiversity into Costume Design

Trinity Hobot (UW-La Crosse)
Mentor: Anna Wooden, Theatre & Dance

I conducted research to complete a theoretical costume design of Shakespeare's play, *A Midsummer Night's Dream*. I found inspiration for these pieces in London, UK. I decided on a Shakespeare play due to the wide history that London has to offer and I learned more about the playwright throughout this journey. The Kew Royal Botanic Gardens and the Sky Gardens are where I did research for my designs. I have found inspiration through the majesticness of plants and I have portrayed that in my renderings. The architecture of the conservatories and buildings at these places gave me ideas for the structure of the potential garment. The purpose of this project was to strengthen my skills as a beginning costume designer as well as discovering new places to find inspiration for a classic play.

Exhibit **Session A (9:45 - 10:40 am), Exhibit Table, Cleary Great Hall**

Effects of the Neonicotinoid Dinotefuran on Chlamydomonas Motility: Unraveling Ecological Consequences

Julia Della Penna (UW-La Crosse)
Mentor: Anton Sanderfoot, Biology

The widespread use of neonicotinoid insecticides, including dinotefuran, has raised serious concerns due to their harmful effects on non-target species. Research has shown a 30% decrease in pollinator populations linked to the use of these chemicals. This project investigated the effects of the pesticide dinotefuran on the movement of *Chlamydomonas*, a type of green algae at the base of many food chains. Although *Chlamydomonas* lacks the receptors typically targeted by neonicotinoids, preliminary studies indicated that dinotefuran may impair the ciliary movement of the algae, resulting in cell clumping and halted swimming. Cell health, structure, and cilia were evaluated to determine whether the observed effects resulted from direct interference with ciliary movement or problems with cell division.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #1, Cleary Great Hall**

Do Genetic Rescue and Heat Stress Influence Growth Patterns of Eastern Mosquitofish (*Gambusia holbrooki*)?

Cari Walker (UW-La Crosse)
Mentor: Jessica Judson, Biology

Climate change and habitat fragmentation drive biodiversity loss by creating small, isolated populations with reduced genetic diversity and increased inbreeding. Conservation strategies such as assisted migration, the introduction of individuals from larger, genetically diverse populations into endangered populations, may restore genetic variation (i.e., genetic rescue) and conserve declining populations. However, it remains unclear how assisted migration interacts with environmental stressors such as rising temperatures. This study examines how assisted migration and heat stress influence growth and morphology in eastern mosquitofish (*Gambusia holbrooki*), a small freshwater fish. Replicated populations were experimentally reduced to simulate endangered population declines. Individuals from a separate, larger population were then introduced to a subset of the "endangered" populations to simulate assisted migration for genetic rescue. Heat stress was then applied to a subset of control and experimental populations to test how conservation interventions interact with climate change to affect fish growth and fitness. To quantify these responses, size measurements were collected from photographs of individual fish using ImageJ across multiple time points throughout the experiment. Using statistical modeling, growth rates and size variation were compared across conservation and temperature treatments with the goal of elucidating how genetic and environmental factors jointly shape organismal fitness.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #2, Cleary Great Hall**

Sex-Specific Effects of Restraint Stress on Intestinal Mast Cell Activation, CRF Receptor Signaling, and Tight Junction Integrity in Mice

Ege Karadag and Benjamin Vandigo (UW-La Crosse)
Mentor: Sumei Liu, Biology

Stress-induced psychological changes have been shown to be a potent modulator of intestinal permeability, mainly through the activation of the hypothalamic-pituitary-adrenal (HPA) axis and the secretion of corticotropin-releasing hormone (CRH). The activation of CRH by CRF1 and CRF2 receptors in the intestinal tissue mediates mast cell activation and histidine decarboxylase (HDC) overexpression, the rate-limiting enzyme in histamine production, in addition to the secretion of tryptase and TNF-α, which are mediators of tight junction disruption. Although there is an increasing body of evidence that females are more susceptible to stress-induced intestinal permeability, the sex-specific molecular mechanisms involved in this sex difference are not well understood. The current study aims to explore the sex differences in the effects of restraint stress on CRF1/CRF2 receptor signaling, mast cell activation, and intestinal barrier function in C57BL/6J mice. By analyzing the colon tissue extracts of restraint-stressed mice, we are currently quantifying sex differences in the gene expression of CRF1, CRF2, HDC, and the tight junction proteins claudin and occludin by qPCR.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #3, Cleary Great Hall**

The Effect of Ableist and Racist Microaggressions on Bystander Behavior

Brooke Axelson (UW-La Crosse)
Mentors: Kevin Zabel and Ellen Rozek, Psychology

Today, explicit prejudicial attitudes have declined, while more subtle prejudicial attitudes, like microaggressions, remain the same. While prior research has focused on racism, less attention has been given to ableism. Findings suggest individuals more negatively perceive racial discrimination over ableist discrimination, and recognition of harm increases the likelihood of bystander intervention. Additionally, those who score high in the Honesty-Humility personality factor—characterized by sincerity, fairness, and cooperation—are more likely to provide bystander intervention. This study examines perceptions of ableist and racist microaggressions, factors that elicit bystander intervention, and the moderating role of Honesty-Humility. It is hypothesized that participants will recognize racist microaggressions as more negative and indicate greater intervention intention than in ableist microaggressions. Approximately 130 undergraduate students participated and data analysis is currently ongoing. Within a laboratory setting, participants completed a mixed-method experiment in which they completed a personality inventory, viewed randomized ableist, racist and neutral vignettes, and rated their perceptions and bystander intervention intentions. Using a 4 (condition) x 2 (Honesty-Humility) design analyzed through a two-way ANOVA, I predict to find significant main effects and an interaction suggesting high Honesty-Humility scores amplify negative perceptions and increased intervention, particularly for racist microaggressions. Findings may inform efforts to foster inclusive environments.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #4, Cleary Great Hall**

Determining the Oligomer Stability of NmpR and Its Variants from *Myxococcus xanthus*

Olivia Baus and Kate Fechner (UW-La Crosse)
Mentor: Daniel Bretl, Microbiology

Myxococcus xanthus is a soil-dwelling, obligately aerobic bacterium with several complex social behaviors such as coordinated social motility, that allow survival in dynamic environmental conditions. These behaviors are thought to be transcriptionally regulated through two-component systems, like NmpRSTU, which regulates social motility by sensing low oxygen conditions and promoting gene expression using the NmpR protein. Active NmpR is predicted to form an oligomer by binding five or six other NmpR monomers; this oligomer effectively binds DNA. The Bretl lab has cataloged numerous mutations in NmpR that allow it to be permanently active, but it is unknown why mutations cause the permanently "ON" state. We hypothesize $NmpR^{ON}$ variants have greater stability as an oligomer. A cross-linking experiment, which creates permanent chemical bonds between proteins, imitates the bonds that create a large oligomeric complex of NmpR. Subsequently, these complexes can be visualized as bands on a denaturing gel and can be interpreted as monomers, dimers, and so on based on their position in the gel compared to known size standards. This allows us to compare the oligomeric state of NmpRWT to $NmpR^{ON}$ variants. Understanding the NmpR oligomeric state will inform how proteins from the same family are activated in other bacteria.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #6, Cleary Great Hall**

Gene Editing *Chlamydomonas reinhardtii* with CRISPR-Cas9 for Biofuel Production

Olivia Beth (UW-Parkside)
Co-author: David C. Higgs
Mentor: David Higgs, Biological Sciences

Single-celled algae (microalgae) are good sources of triacylglycerol (TAG) lipids that can be converted to renewable biofuels, and researchers are working to increase production of TAGs in algae for this purpose. *Chlamydomonas reinhardtii*, a model microalga, accumulates high amounts of TAGs under nitrogen starvation; however, cell growth is sacrificed under these conditions. We are trying to identify strains of *Chlamydomonas* with increased TAGs but without decreasing growth. Our lab identified a new strain we called TLN1 that is tolerant to low nitrogen. This strain has a higher biomass and increased TAGs compared to the wildtype. Previously, we identified two genes with mutations that could be responsible for the TLN1 phenotype: *TAB2* and a predicted zinc-finger transcription factor (*zf-TF*). *TAB2* is a translation activator that functions in the chloroplast. We compared TLN1 to existing *TAB2* mutants, and they also have the TLN phenotype. To identify the gene responsible for the TLN1 phenotype we are using CRISPR-Cas9 gene editing to induce knock-out mutations in *TAB2*. We previously determined that *zf-TF* gene-edited mutations do not cause TLN phenotype. We are using Paromomycin resistance gene (*ParoR*) along with 50-bp homologous adaptors to generate *TAB2* knock-out mutations. We are screening transformants with PCR, gel electrophoresis, and sequencing to identify any mutations, and the results from these screenings will be presented. Currently, the data argue the *TAB2* mutation is likely the causative change in the TLN1 strain. The conclusions from this research could determine if *TAB2* is responsible for the TLN1 phenotype, and key to increased TAGs.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #7, Cleary Great Hall**

Effect of Doxorubicin-Treated Metastatic Breast Cancer Cells on Megakaryocyte Proliferation

Maya Biese and Jenna Krause (UW-La Crosse)
Co-author: Ethan Kouta-Lopatey
Mentor: Jaclyn Wisinski, Biology

Breast cancer affects many women in the U.S. Breast cancer diagnosis and treatment can also be accompanied by a dysregulation of platelet levels which can lead to various blood-related health complications. Metastatic breast cancer cells often metastasize to the bone marrow, where they release molecules into their environment that can influence the surrounding cells, such as platelet-producing megakaryocytes. Doxorubicin (DOX) is a clinically used chemotherapy drug used to treat aggressive types of breast cancer. However, DOX can cause side effects that directly and indirectly affect the bone marrow microenvironment, including megakaryocytes, thus altering platelet levels. To investigate the interaction between metastatic breast cancer and megakaryocytes, DOX is used in cell-based assays. Media collected from untreated and DOX-treated breast

cancer cells contain released molecules. That media is then placed on megakaryocyte-like DAMI cells, and cell survival is measured. The effect of this study can be used to look further into the relationship between metastatic breast cancer on megakaryocyte function and survival.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #8, Cleary Great Hall**

"Only Left-Handed People Are in Their Right Minds", or So We Thought?

Lydia Byers (UW-La Crosse)
Co-authors: Shakira Brockhaus, Brenna Thoen, and Kristen Roggenbauer
Mentor: Alexander O'Brien, Psychology

Being left-handed has historically been associated with bad luck and witchcraft. This history extends even to the Latin words for right and left: dexter and sinister, with the word sinister having a negative connotation in modern English. Due to this dark history, many left-handed children were forced to use their right hand instead, sometimes even being subjected to physical punishments for use of their naturally dominant hand. This study aims to determine if training individuals to write with their nondominant hand affects only fine motor skills or also induces measurable changes in brain function. Participants completed a series of tasks to assess visual processing, selective attention, and response inhibition, then were evaluated using the Edinburgh Handedness Inventory. They were asked to return one week later to repeat the testing. Between test dates, participants were given daily practice writing sentences with their nondominant hand. We hypothesized that left-handed people would show minimal differences following training due to lower levels of brain lateralization, while right-handed people would show a more exaggerated difference due to higher lateralization of their brains.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #9, Cleary Great Hall**

Identifying Hearing Loss, Cochlear Implantation, and Factors Influencing Hearing Healthcare among Patients in the La Crosse Region

Annika Carvell (UW-La Crosse)
Mentor: Tanvi Thakkar, Psychology

Despite the increasing prevalence of hearing loss, cochlear implants (CIs) remain underutilized, particularly among individuals from minority and low-income populations. CIs are implantable hearing devices that provide access to sound for individuals with severe-to-profound hearing loss who receive limited or no benefit from traditional hearing aids. Limited research has systematically examined the barriers that may contribute to disparities in CI use within these groups. The current study used a retrospective design to identify factors influencing CI utilization among individuals from minority backgrounds, focusing on patients in the La Crosse region. All participants received care through Emplify/Gundersen Audiology. Preliminary findings revealed that there are several key contributors to this disparity, including stress, healthcare access, technological challenges, and rural residence. These findings highlight the need for strategies to enhance access to hearing healthcare and improve the experiences of individuals with hearing loss from underrepresented communities.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #10, Cleary Great Hall**

Surface Plasmon-Driven Photoluminescence Enhancement of Rhodamine Using Ion Implanted Silver Nanoparticles

Tyler Demulling and Alex Notz (UW-La Crosse)
Mentor: Shahid Iqbal, Physics

Plasmonic nanoparticles can enhance the emission of fluorescent molecules, which is useful for sensing, imaging, and optoelectronic applications. This study examined the photoluminescence (PL) of rhodamine in the presence of silver nanoparticles and how different solvents affect PL enhancement. Rhodamine solutions in chloroform, methanol, ethanol, and toluene were applied to three silver-containing samples prepared at different beam energies (35 keV, 50 keV, 70 keV) and a reference

sample without nanoparticles. The PL spectra show that both solvent and sample conditions influence the enhancement, likely due to variations in nanoparticle distribution and interaction with rhodamine molecules.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #11, Cleary Great Hall**

Assessing Current Heavy Metal Concentration in Surface Sediments of Three Lakes in Northeastern Illinois

Tress Dorfler (UW-Whitewater)
Mentor: Pete Puleo, Geography, Geology and Environmental Science

Heavy metal pollution in Midwestern lake surface sediments presents a threat to human and ecosystem health, leading to various cancers, organ damage, impaired reproductive systems, and/or worsened development. Our goal is to assess how concentrations of lead, zinc, and arsenic vary across Banana Lake, Willow Lake, and Lucy Lake surface sediments in Lake County, Illinois due to differing sources of pollution in each watershed. The concentrations of lead, zinc, and arsenic in lake surface sediments are dependent on the variable land covers and management practices, so Banana Lake, Willow Lake, and Lucy Lake in Lake County, Illinois were chosen for their varying types of watershed land cover, differing management, and contrasting exposure to heavy metals. The sediment samples were collected in the field using an Ekman dredge and dried in an oven at 105°C for 28 hours. To extract zinc, lead, and arsenic, we added nitric acid and hydrogen peroxide to the samples, and placed them in a microwave digestor for 15 minutes at 200°C. We then used ICP-OES to quickly assess quantities of heavy metals in the samples. We hypothesize that each site will yield different quantities of zinc, lead, and arsenic because of differing point and non-point sources of heavy metal pollution in their watersheds. Depending on our findings, we'll be able to evaluate the need for further data collection and specific lake management plans. Quantifying heavy metal pollution in lake sediments can inform better prevention and recovery efforts that can minimize threats to human and ecosystem health.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #12, Cleary Great Hall**

How Do Coronal Currents Contribute to the Photospheric Magnetic Field?

Haylie Dumoulin (UW-Green Bay)
Mentor: Brian Welsch, Physics

Solar flares and coronal mass ejections (CMEs) can cause "space weather" impacts at Earth, harming satellites, interfering with radio communications, endangering flight crews, and disrupting power distribution systems. Flares & CMEs occur when coronal magnetic fields release energy stored in coronal electric currents. However, measuring either the coronal electric current density or the coronal magnetic vector as a function of space (needed to compute the electric current density) is not presently possible. Therefore, models of the coronal magnetic field, derived by upward extrapolation from observations of the photospheric magnetic field, are often used to study the structure of coronal currents. We have used currents derived from "non-linear, force-free" models of the coronal magnetic field in an active region that produced a large flare and CME to investigate which coronal currents generated the "coronal component" of this region's photospheric magnetic field. Here, we describe the Python software that we wrote and tested for our analysis, then characterize the contributions of coronal currents to the photospheric field as functions of source-current height (with respect to the photosphere) and spatial position within the active region. Dominant contributions arise from currents flowing at heights of 3 – 15 Mm, near the region's polarity inversion line (PIL).

Poster Presentation **Session B (10:50 - 11:45 am), Poster #13, Cleary Great Hall**

Targeting Herpesvirus Capsid Assembly: Investigating the Mechanism of the Antiviral Compound WAY-150138

Quinten Friess (UW-La Crosse)
Mentors: Robert Visalli and Melissa Visalli, Biology (University of Alabama)

Herpesviruses establish lifelong latency following primary infection and can periodically reactivate to cause asymptomatic or symptomatic disease. Current antiviral therapies primarily target viral DNA polymerase, and drug-resistant strains remain a concern. Identifying antiviral compounds with novel mechanisms of action is therefore a priority. WAY-150138 is a small-molecule thiourea compound that inhibits herpes simplex virus type 1 (HSV-1) replication in cell culture and has been proposed to inhibit viral DNA encapsidation. A major objective of this study was to develop an experimental system capable of evaluating capsid protein–protein interactions in the presence of small-molecule inhibitors. HSV-1 major capsid protein (MCP) and scaffold proteins were expressed and their interaction was analyzed using a mammalian two-hybrid protein–protein interaction assay. Strong MCP–scaffold interactions were detected in this system, demonstrating that this assay provides a useful platform for further evaluation. WAY-150138 did not significantly affect the interaction between MCP and scaffold proteins. This is consistent with previous studies suggesting that thiourea compounds target scaffold–portal interactions rather than MCP–scaffold interactions. The development of this assay provides a tool for future studies aimed at dissecting the molecular mechanisms of antiviral compounds that target herpesvirus capsid assembly and DNA encapsidation.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #14, Cleary Great Hall**

Increasing Protein Stability via Structure Guided Design: Evalutating Mutations in the *Salmonella enterica* Acid Phosphatase PhoN

Michael Guerrero (UW-La Crosse)
Mentor: John May, Chemistry & Biochemistry

PhoN is a nonspecific acid phosphatase from *Salmonella enterica* with potential applications in biotechnology and biomedicine due to its ability to function in acidic environments and hydrolyze phosphate-containing substrates. However, limited thermal stability restricts its utility under stressful or industrial conditions. Improving enzyme stability while preserving catalytic activity remains a challenge in protein engineering. This project investigates whether structure-guided mutations can enhance the stability of PhoN without compromising its function. An initial salt-bridge variant (A84D-W104R) was previously designed using structural modeling. Although this variant retained catalytic activity, reproducible expression/purification conditions did not yield sufficient soluble protein for reliable biophysical stability measurements. These limitations motivated the design of additional variants to strengthen stabilizing interactions. Using structural and sequence analysis, three new variants were designed: an extended salt-bridge substitution (A84E-W104R) and two hydrophobic-packing substitutions to improve core stability. Variants are expressed in Escherichia coli, purified using Ni-affinity chromatography, and evaluated through SDS-PAGE and enzymatic assays using p-nitrophenyl phosphate. Thermal stability is assessed using circular dichroism and differential scanning fluorimetry. By systematically comparing variants that target different stabilizing interactions, this work aims to clarify how specific structural modifications influence PhoN stability and to guide the development of robust enzymes for biochemical/technological applications.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #15, Cleary Great Hall**

What Makes a "Good Parent"? Trait Expectations and Parenting Stereotypes in the United States

Brielle Hachey (UW-La Crosse)
Mentor: Grace Deason, Psychology

In the United States, parenting is often associated with positive personality traits, shaping societal expectations of what it means to be a "good" parent. According to social role theory (Koenig & Eagly, 2014), stereotypes about personality traits emerge from the social roles individuals occupy, as people infer traits that appear necessary to successfully fulfill those roles. This study will investigate how the parental role translates into specific personality trait expectations and how these expectations contribute

to stereotypic judgments of parents. To examine this question, I will conduct a literature review of research on U.S. parenting expectations, gender roles, and stereotype formation. In addition, previously collected survey data from 135 U.S. adults will be analyzed to inform the research questions. Participants rated women, men, parents, mothers, and fathers on 41 personality traits. Analysis of this data will identify which traits are most strongly associated with parents and how these perceptions differ for men and women. These techniques are used to clarify how societal expectations of the parenting role shape trait-based stereotypes and reinforce cultural ideals surrounding parenthood.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #16, Cleary Great Hall**

Comparing the Effects of Exercise Type and Intensity on State Anxiety Reduction

Abby Hahn (UW-La Crosse)
Mentor: Ale Quartiroli, Psychology

Despite the prevalence of anxiety symptoms among college students, there is no universal method for managing state anxiety – a temporary, situation-dependent form of anxiety. In this experimental study, 60 participants (Mage=19.03, SD=1.03, 62% women) underwent state anxiety priming using the Stroop Color Word Test, and state anxiety was assessed with the State-Trait Anxiety Inventory Short (STAIS-5) and the State-Trait Anxiety Inventory (STAI). Participants were randomly assigned to complete a 20-minute high- or low-intensity aerobic or anaerobic exercise condition. State anxiety was reassessed at multiple intervals post-exercise with the STAI and STAIS-5. Data will be analyzed using a mixed-model ANOVA, with exercise type and intensity as the between-subjects variables and STAI scores across time as the within-subjects variable. It is hypothesized that a significant main effect of time will emerge, such that state anxiety is reduced across all exercise types and intensities. It is also expected that an interaction between exercise type and intensity will emerge, such that low-intensity aerobic exercise reduces state anxiety the most over time. Findings from this study will inform the development of evidence-based interventions for state anxiety, specifically for college students.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #17, Cleary Great Hall**

The Hidden Pathways to FoMO: Social Comparison Interpretations and the Need to Belong

Morgan Hahn (UW-La Crosse)
Co-author: Kennedy Poepping
Mentor: Alex Holte, Psychology

Fear of Missing Out (FoMO) can significantly impact people's lives. It is important to understand the variables that can affect an individual's feelings of FoMO. This study was conducted to examine how attachment anxiety influences feelings of FoMO in individuals. We measured Negative Upward and Negative Downward Social Comparison Interpretations, along with Need to Belong, as mediating variables in this study. This study is novel, as it is the first, to our knowledge, to incorporate Negative Social Comparison Interpretations in FoMO research. We developed a Structural Equation Model to test out the mediational role of both Negative Upward and Downward Social Comparison Interpretations and Need to Belong with the relationship of attachment anxiety and FoMO. The results suggest that Attachment Anxiety significantly predicted the need to belong, Negative Upward, and Negative Downward Social Comparison Interepations. Moreover, the Need to Belong significantly predicts Social Comparison Interpations and FoMO. Ultimately, it was revealed that Negative Upward Social Comparison Interpretations, Negative Downward Social Comparison Interpretations, the Need to Belong, and age significantly predicted FoMO, while sex and attachment anxiety did not. Moreover, it was revealed that Need to Belong and Negative Downward Social Comparison Interpretations mediated the relationship between attachment anxiety and FoMO, while Negative Upward Social Comparison Interpretations did not. The implications of this research, is an understanding, that when you consider the role of negative social comparison interpretations, attachment anxiety no longer predicts FoMO, which is an important finding as many research studies have identified that attachment anxiety predicts FoMO.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #18, Cleary Great Hall**

Assessing the Efficiency of Wildlife Cameras in Studying Flammulated Owl (*Psiloscops flammeolus*) Life History

Eli Haufle (UW-La Crosse)
Mentor: Markus Mika, Biology

Motion-activated trail cameras have become an increasingly important tool in wildlife monitoring because they are easily installed, relatively inexpensive, non-invasive, and provide large amounts of data. This study evaluates the efficiency of a modified camera system used to detect the provisioning patterns of the Flammulated Owl, a small, insectivorous, cavity-nesting bird that breeds in montane forests in western North America. As part of a long-term field project in the Wasatch Mountain Range in northern Utah, modified trail camera systems were installed in nest boxes across multiple canyons to collect nest activity recordings from 2020 through 2023 and again in 2025. These systems produce up to 59,000 video clips per breeding season. Although previous research on Flammulated Owl life history suggests these monitoring systems are highly effective, their reliability must be evaluated through a quality control. This study aims to test camera efficiency by comparing motion-activated recordings of parental provisioning to direct human observation. By assessing the quality and efficiency of automated monitoring systems, this study aims to validate the use of affordable camera technology for studying avian life history and parental investment. The findings will contribute to ongoing research on Flammulated Owl reproductive ecology and support the broader application of camera-based monitoring in wildlife research and conservation.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #19, Cleary Great Hall**

Non-traditional Endophytic Fungal Communities of *Cypripedium reginae* (Showy Lady's Slipper): Biological Reality or Technical Bias?

Olivia Heilman (UW-La Crosse)
Co-authors: Todd Osmundson and Scott Cooper
Mentor: Jaspreet Kaur, Biology

The family Orchidaceae hosts the highest number of threatened plant genera worldwide. One major driver behind the rarity of orchids is their obligatory reliance on mycorrhizal interactions during seed germination. In addition, orchids exhibit high specificity in recruiting fungal partners which could further restrict their distributions. In this study, we investigated whether *Cypripedium reginae* uses a more generalist approach in recruiting root fungi given its relatively widespread and common distributions. To answer this, we collected roots from 6 individual plants from Ridge's Sanctuary, Door County, WI. After surface sterilization, total DNA was extracted from roots. To assess fungal communities, we amplified fungal ITS region and sequenced it via nanopore sequencing. We identified 65 consensus clusters. The fungal communities were composed of mostly wood-decay fungi, such as *Irpex lacteus*, *Trametes pubescens*, *Peniophora incarnata*, *Polyporus spp.,* etc. Additional taxa included environmental fungi such as *Epicoccum nigrum* and *Fusarium spp.* Overall, our results suggest that *C. reginae* uses more generalist approach by associating with fungal taxa that are not commonly documented in orchid roots, which may contribute to its widespread and common distribution. However, it could also reflect methodological artifacts, originating from the use of primers, PCR bias, or sequencing-related technical limitations.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #20, Cleary Great Hall**

Sweet Alternatives: Elucidating Alternative Carbon Source Metabolism That Helps Enteric Bacteria Recover from Glucose-Phosphate Stress

Elaina Hintze and Angelina Palmer (UW-Parkside)
Mentor: Gregory Richards, Biological Sciences

All organisms need to deal with stress related to acquiring and metabolizing nutrients. One example is glucose-phosphate stress, a form of starvation encountered by beneficial and pathogenic enteric bacteria associated with the mammalian intestinal tract. This stress occurs when cells cannot properly metabolize sugar due to inhibition of glycolysis, which impedes growth. *Escherichia coli* and other enterics are able to deal with this stress and restore growth through a regulatory response involving the small RNA SgrS. While regulation by SgrS is well described, less is known about the alternative carbon sources

that cells use to circumvent the block in glycolysis and recover from stress. To gain more insight into the metabolic pathways needed for recovery, we deleted genes involved in alternative carbon source usage and screened the mutants for changes in growth during glucose-phosphate stress. Deleting *mtlR*, which encodes a regulator required for using the carbon source mannitol, appears to slightly improve the growth of an sgrS mutant during stress. Similarly, deleting *yhcB*, which encodes a regulator of fatty acid synthesis and cell envelope assembly, partially rescues the *sgrS* stress growth defect. The absence of these regulators may improve growth during stress by helping to redirect metabolism to other needed carbon sources. Future research will examine the role of mannitol and fatty acid metabolism in recovery from stress as well as the effect of MtlR and YhcB on induction of the SgrS regulatory response.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #21, Cleary Great Hall**

Approaching Success or Avoiding Failure: The Effects of Motivational Media Content on Undergraduate Student Motivation

Haley Hopperdietzel (UW-La Crosse)
Mentor: Kevin Zabel, Psychology

Students seek motivation in order to stay encouraged throughout their early adulthood and education. Digital media content has provided individuals the opportunity to access sources of motivation whenever and wherever they please. But, an important empirical question arises: To what extent does motivational media content influence undergraduate student motivation? The purpose of this research study was to examine how self-discipline- and self-compassion-focused media content influence the academic motivational orientations of college students. Undergraduate students attending the University of Wisconsin-La Crosse participated in a between-subjects experiment in which they were randomly assigned to view either a self-discipline or self-compassionate video and then measured on their approach motivation and failure avoidance motivation levels afterwards. I expected that motivational media content geared towards self-compassion would increase levels of approach motivation, whereas motivational media content focused on self-discipline would increase levels of failure avoidance motivation. Results will shed light on the consequences that different media messages have on student motivation, as well as inform efforts to bolster healthy motivation habits and positive morale among college students.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #22, Cleary Great Hall**

Cell/Cell Junctional Complexes in Breast Cancer Cells with Potential Impacts in Motility and Metastasis

Ruth Kosterman (UW-River Falls)
Co-author: Faith Cour
Mentor: Tim Lyden, Biology

Over the past three years our laboratory, the Tissue and Cellular Innovation Center (TCIC), has in part been focused on cancer cell motility, particularly in the breast adenocarcinoma cell line MCF-7. These studies have used timelapse microscopy and correlated scanning electron microscopy to observe and identify unique cancer-related cell motility morphologies. In the course of those studies, we have noted a tendency for MCF-7 to bind together with one or a few other tumor cells and to move as a single unit, even when multiple cells are present. This opens a whole set of questions surrounding the nature of the connections that these cancer cells display. These questions were further focused by a very significant recent report which connects the cell adhesion protein claudin-12 with cancer cell motility and metastasis in breast cancer. Furthermore, reports also connect the pro-inflammatory cyctokine IL-18 with the regulation of claudin-12. So, this presentation reports on a new research project in the TCIC which seeks to explore the potential role of both claudin-12 and IL-18 in the cell motility of MCF-7 cells. To do this, a series of studies are being undertaken to examine the presence of the protein claudin-12 in cells before and after exposure to IL-18. We are using both immunolabeling and Western blotting methods to compare the localization and levels of claudin expressed as proteins, with and without IL-18 treatment.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #23, Cleary Great Hall**

¡Habla Digital! How Spanish Majors Connect, Communicate, and Scroll toward Fluency across Classrooms and Cultures

Kaleigh Kunkel (UW-La Crosse)
Mentor: Michael Tollefson, Communication Studies

This study examines digital media techniques Spanish majors use to acquire a second language and cultural knowledge. Grounded in uses and gratifications theory, the research explores how Spanish majors navigate learning to speak the language through technology usage in conversational settings both in the classroom and during authentic cultural immersion in a Spanish-speaking country. Given the current digital age of second language acquisition (SLA) and the crucial need for fluent Spanish speakers in multiple professional settings, language learning apps significantly contribute to building community, improving language proficiency, and maintaining cultural education. Using qualitative analysis with 13 interviewees, this study aims to understand the acquisition methods of Spanish majors and for language and cultural development over time. By comparing internal and external classroom experiences, the research contributes to existing literature on foreign language pedagogical methods, SLA practices with learning technology tools, and cultural and linguistic competence. Findings from this study offer insight on Spanish majors' experiences using digital learning tools in the classroom when navigating diverse contexts in Spanish-speaking countries, and how conversational confidence is gained for communicating with classmates and native speakers.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #24, Cleary Great Hall**

Racial Disparities in Arrests in La Crosse County, WI

Katie Last (UW-La Crosse)
Mentor: Lisa Kruse, Sociology & Criminology

Racial disparities in arrest rates between black and white individuals are commonly found in agency reviews and related national research. This study will focus on these disparities in La Crosse County, WI. Only 2% of the population is black, yet the ratio of arrests between black and white individuals is severely skewed. Arrest reports were collected from the La Crosse County District Attorney's office for the years 2018 and 2022 (pre- vs. post-COVID) to evaluate any changes or identify if racial disparities became more prevalent. The purpose of this study is to provide insight to the La Crosse County Police Department and the District Attorney's office on when these disparities occur to inform future discussions addressing these issues.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #25, Cleary Great Hall**

Gene Expression Changes in DAMI Cells Exposed to Breast Cancer Conditioned Media

Emily Winter, Ava Throndson, and Rachael Cooper (UW-La Crosse)
Mentor: Jaclyn Wisinski, Biology

Breast cancer cells secrete molecules that influence neighboring cells, which can affect tumor growth and the body's overall response. Platelets that have been exposed to circulating tumor cells express different proteins than platelets that have not been exposed, suggesting that gene expression changes might happen in megakaryocytes where platelets are produced. Our project aims to determine how factors secreted by different breast cancer cell lines alter gene expression in DAMI cells, a megakaryocyte cell line. To study these effects, DAMI cells were treated with conditioned media from four different breast cancer cell lines (BT549, HCC, SUM, and 439) for three days. After treatment, DAMI cells were collected, RNA was isolated, and reverse transcribed into cDNA. Gene expression will then be analyzed by QRTPCR for specific genes including VEGFA, a key regulator of angiogenesis that has previously been identified in tumoreducated platelets, MMP9 and MMP2, both of which encode enzymes that break down the extracellular matrix and promote metastasis, and TGFβ which regulates cell growth and tumor progression. We expect to identify changes in these specific genes, suggesting that tumor secreted factors can influence megakaryocyte gene expression and potentially affect platelet production and function.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #26, Cleary Great Hall**

Assessing the Relationship between Fire Activity and Human Occupation in Southeastern Wisconsin

Sonny Lombardo, Max Byington, Max Krueger, Davis Miller, and Evan Exo (UW-La Crosse)
Mentor: Joan Bunbury, Geography & Environmental Science

Charcoal is produced when vegetation combusts during natural or anthropogenic fires and serves as a proxy for reconstructing past fire activity. Macroscopic charcoal preserved in lake sediments can provide valuable insight into the environmental and ecological history of a region by documenting changes in fire frequency through time. A sediment core collected from Mud Lake in Jefferson County, WI, in the summer of 2019 was examined to determine regional charcoal accumulation rates. The chronology of the core was established using seventeen lead-210 dates and four radiocarbon dates, spanning approximately 4,000 years before present. Patterns of fire activity can be influenced by human land-use practices, including vegetation management, agricultural development, prescribed burning, and fire suppression. This study will compare charcoal accumulation rates with known periods of human occupation to evaluate whether changes in fire activity correspond with shifts in human presence in the region. These results provide an understanding of the extent to which human populations have influenced long-term fire patterns in southeastern Wisconsin.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #27, Cleary Great Hall**

Who's That Organism?: A Comparison between iNaturalist User and Species Diversity in Urbanized vs. Natural Areas

Kaitlyn Lund (UW-Milwaukee)
Mentor: Chris Young, Conservation & Environmental Science

Access to the outdoors offers numerous positive effects, especially in the realm of public health and mental wellness. An increasing number of programs connect people with their community natural spaces, such as iNaturalist, an online science database that relies on users to upload observations of the widest range of plant and wildlife species. The purpose of this study is to compare the iNaturalist data for urbanized and natural areas of Milwaukee to see how these areas differ in diversity of organisms while analyzing user upload choices. The study includes the urbanized campus of the University of Wisconsin-Milwaukee (UWM) and the natural areas around the Urban Ecology Center (UEC) at Riverside Park. All the iNaturalist observations recorded at these two sites were analyzed for trends in biodiversity and user behavior. The UEC site had three times the number of observers compared to UWM but both sites had similar Shannon Diversity Index and distribution of taxonomic Classes observed, indicating similar types of organism data being recorded. Although users tend to put more effort into recording observations in natural areas, there is notable biodiversity found in urbanized settings, making conservation of both areas—urban and natural—vital to long-term species conservation.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #28, Cleary Great Hall**

Discovery and Characterization of Fungal Antimicrobials from Environmental Samples

Luke Markiewicz, Ramiro Cortez, Taylor Lepak, and Katie Bivins (UW-Green Bay)
Co-authors: Madeline Cornelius, Lindsey Coudron, and Mitchell Starry
Mentor: Julie Wondergem, Chemistry

The misuse and overprescription of antibiotics have contributed to a global health crisis as bacterial pathogens increasingly develop resistance to existing treatments. To help address this challenge, research was conducted in collaboration with the Tiny Earth program, which engages students in the discovery of novel antibiotic-producing microorganisms. This study focused on isolating and characterizing antibiotic-producing fungi from soil samples. One gram of serially diluted soil with sterile water was plated on Rose Bengal streptomycin agar or Potato Dextrose Agar (PDA) for selective fungal growth of isolated colonies that were later transferred for pure culture growth. Since summer 2024, a total of thirty-six antibiotic-producing fungi were isolated. Antibiotics were produced against six Gram-positive and three Gram-negative ESKAPE safe-relative bacteria. Five antibiotics showed broad spectrum activity. Fungal isolates were further characterized and identified by Sanger sequencing of the ITS rDNA and microscopy. Ongoing work focuses on isolating and identifying the bioactive compounds responsible for antimicrobial activity. Extraction, thin-layer chromatography (TLC), column chromatography, and gas chromatography–mass

spectrometry (GC-MS) are being used to purify and characterize these compounds. This work contributes to the search for new antibiotics from environmental fungal sources.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #29, Cleary Great Hall**

Confirmation of Amyloid Structures in the Acrosome of Ejaculated Mammalian Spermatozoa Using Fluorescence and Electron Transmission Microscopy

Helen Marty (UW-Whitewater)
Co-authors: Danielle N. Pouska, Kennady J. B. Wilson, and Megan Perkins
Mentor: Nathaly Cormier, Biology

Amyloids, aggregated proteins that form highly organized cross-beta sheet structures, are commonly associated with neurodegenerative diseases, amyloidosis and prionopathies. However, studies have also found amyloids in the sperm acrosome as well as in zona pellucida of ovulated eggs in mice. Because amyloids have been found in both the male and female reproductive systems it suggests they play a role in successful fertilization. Further, some recent studies using antibodies have suggested that these sperm functional amyloids are conserved among mammalian species. I hypothesized that the acrosomal matrix (AM) isolated from bovine, Rhesus macaque and human spermatozoa will be made of amyloid fibrils, as was previously observed in mouse. To test this hypothesis, I performed fluorescence microscopy on isolated AM and the detergent-resistant fractions from fresh sperm samples that were stained with specific amyloid dyes. Results indicated that the AM and its detergent-resistant fractions are made of amyloid-like structures in humans, Rhesus macaque, and bovine. Currently, negative-staining electron microscopy experiments are being conducted. We expect these results to show the fibrillar nature of these structures and confirm the presence of amyloids in ejaculated spermatozoa. These results would strongly suggest that amyloids function in mammalian fertilization.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #30, Cleary Great Hall**

The Impact of Sleep Variables on Reaction Time Performance among College Students

Savannah Miller and Alyssa Maroszek (UW-La Crosse)
Mentor: Teresa Hepler, Exercise & Sport Science

To gather our data, we accumulated several college student subjects through advertisement; we used 17 participants with Smart Watches in our study. We instructed participants to fully charge their Smart Watch and wear it to bed to track their sleep for 2 nights in a row, which correlates well with the days they can come into the Human Motor Behavior lab. On the days following a night where sleep is tracked, participants came into UWL's Mitchell Hall and completed 6 rounds on the MOART board (Multi-Operational Apparatus for Reaction Time), a device that measures simple reaction time. Upon entering, participants were given a survey asking for quantitative responses on questions where some were self-response, and others were from the Smart Watch sleep tracking, such as: how much caffeine they had consumed, total hours of sleep, and time in sleep stages (REM, deep, etc.). All subjects were numbered to ensure that their identities were kept anonymous. After our data was collected, we analyzed the correlation between sleep duration and reaction time. We also further explored the confounding variables of our study, including the effects of varied durations of sleep stages on reaction time.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #31, Cleary Great Hall**

The Use Life of Neolithic Tombs within the British Isles: A Comparison between Regions

Moss Mott (UW-La Crosse)
Mentors: Amy Nicodemus and Tim McAndrews, Archaeology & Anthropology

Neolithic tombs built between 4000 and 2500 BCE in the British Isles are widespread and larger than life. A variety of tomb types are used at this time, but the most common are barrows. Barrows are large earthen mounds that cover stone chambers and often have a passageway. Many of these tombs have been radiocarbon dated to determine when each stage of the monument was built as well as when people were interred. While this has been a subject of study, the question of a difference between

regions has not been addressed. The regions of Southern Britain, Ireland, and the Orkney Isles have distinct tomb styles and cultures, therefore leading one to believe that they might have a difference in the use-life of a tomb. I will be comparing radiocarbon dates to find out if there is a difference between these regions in terms of use-life for interments.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #32, Cleary Great Hall**

Remembrance/Return

Victoria Ratsch (UW-La Crosse)
Mentor: David Dies, Music

I wrote a musical composition in which I explored the sensory experiences of nature and how that relates to memory and emotion. *Remembrance/Return* is a two-movement work for string orchestra, horn and oboe that explores the cyclical nature of memory and emotional recollection. The first movement, "The Sun Remembers," presents a playful and nostalgic musical landscape shaped by buoyant rhythms and bright textures, evoking moments of warmth and familiarity. In contrast, the second movement, "But December Returns," shifts in a slower and more uncertain sound world. Sustained dissonant harmonies, an extended drone, and a fluid sense of meter create a feeling of suspended time and introspection. Though the movements do not share melodic material, they are unified through contrasting emotional perspectives and layered dynamic textures. Together, the movements suggest that memory often holds both light and weight simultaneously. The work concludes without a traditional resolution, reflecting the ongoing and unresolved nature of personal recollection. *Remembrance/Return* invites listeners to reflect on how past experiences continue to shape present emotional landscapes.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #33, Cleary Great Hall**

Examining the Use of Crotonic Acid as an Activator of Epstein-Barr Virus' Lytic State through the Acetylation and Deacetylation of Histone Proteins

Luke Raupp (UW-La Crosse)
Mentor: Kelly Gorres, Chemistry & Biochemistry

Present in 90% of the human population, the Epstein-Barr Virus (EBV) is relatively harmless on its own. However, EBV is widely associated with multiple other diseases, such as Burkitt lymphoma and nasopharyngeal carcinoma, both of which are cancerous, as well as non-cancerous diseases like systemic lupus erythematosus (CDC 2024). EBV has both a dormant and lytic state. Reactivation of its lytic state allows for spread of infection to occur (Li, 2004). Histones are proteins which DNA is wrapped around to be stored. This also makes the DNA less accessible. In EBV's lytic state, the DNA is unwrapped and accessible. Acetylase is responsible for modifying histones so that the DNA is less accessible, making EBV dormant. Deacetylase is responsible for making the DNA accessible again, making EBV lytic. My research proposes the use of crotonic acid to cause EBV's reactivation of its lytic state by targeting histone deacetylase activity. Once the virus begins to reactivate and its DNA becomes more accessible, our goal is to insert a viral replication inhibitor to prevent EBV from being able to replicate and spread. This would lead to death of the cancer cell.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #34, Cleary Great Hall**

Chromatic Creativity: Does Light Color Influence Cognitive and Creative Performance?

Kristen Roggenbauer (UW-La Crosse)
Co-authors: Shakira Brockhaus, Lydia Byers, and Brenna Thoen
Mentor: Alexander O'Brien, Psychology

Many people use LED colored lights in their everyday lives, turning their rooms into a plethora of colors to help with relaxation, studying, or enjoyment. However, past studies have found differing results about the effectiveness of these LED lights. Some studies found that red lights boost attention and concentration, while blue lights boost creativity. Other studies have found the opposite effects. The purpose of this study is to determine if differing light colors impact the attention, concentration, creativity, and mood of college students. Participants were placed in a room filled with red, blue, green, or white light, where

they then performed four tasks and a short mood questionnaire. Participants performed a letter deletion task, a remote associations task, an alternative uses task, and categorized strings of letters based on if vowels were present. I hypothesized that the red lights would increase performance of the attention and concentration tasks while decreasing the performance of creative tasks, blue light would increase performance of the creative tasks while decreasing the performance of attention and concentration tasks, and green and white lights would be near the middle. I hypothesized that white lights would tend to have a lower mood than the other light types.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #35, Cleary Great Hall**

Structural Studies of DcrB, a Copper-Resistance Protein from *Salmonella enterica*

Aria Schnurr (UW-La Crosse)
Mentor: John May, Chemistry & Biochemistry

DcrB is a small lipoprotein found in *Salmonella enterica* and other bacteria within the Enterobacteriaceae family, many of which express copper resistance that allows them to survive toxic copper concentrations encountered during infection. Previous studies suggest that DcrB contributes to this resistance. Published structural work used a polyhistidine (His6)-tagged protein, but His6 tags can bind copper ions and may interfere with metal-binding properties. Because of this, I worked with a Strep II-tagged variant of DcrB, for which no structure or crystallization conditions had been reported. The goal of this study was to identify crystallization conditions for Strep II-tagged DcrB to enable structural studies of metal-bound forms. Initial trials using conditions reported for the His6-tagged protein produced small clusters of needle-like crystals. I then screened a range of pH values and polyethylene glycol (PEG) concentrations and identified a new condition that produces reproducible, well-formed three-dimensional crystals. Using these optimized conditions, we solved the structure of Strep II-tagged DcrB, revealing a previously unobserved closed β-hairpin conformation. Comparison of open and closed conformations identified residues Lys64 and Gln61 as interacting residues in both forms, with interactions occurring within a single monomer in the open conformation and between monomers in the closed conformation.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #36, Cleary Great Hall**

Shrouded Procedures: The Effect of Procedural Transparency on Cooperation and Perceptions of Fairness and Trust

Joshua Schulze-Reimpell (UW-La Crosse)
Mentor: Katy Kortenkamp, Psychology

Trust in democratic institutions is declining alongside authoritarianism, and opaque bureaucratic procedures may worsen this trend by making decisions difficult to understand. Although procedural fairness predicts trust and acceptance, the effect of procedural transparency—the clarity with which a procedure is explained—has received limited attention. This study tests how transparency influences cooperation and perceptions of fairness and trust in an investment game modeled on the prisoner's dilemma. Approximately 75 participant dyads will be randomly assigned to a transparent versus opaque procedure (between subjects) and will complete three games that vary distributional fairness (within subjects; counterbalanced order). In each game, participants decide how many tokens to invest: mutual investment maximizes joint payoffs, whereas unilateral investment benefits the non-investor at the investor's expense. We will record investment behavior and measure perceived fairness and trust with post-game questionnaires. Main and interaction effects of transparency and fairness will be evaluated using a two-way mixed-design ANOVA. We hypothesize that transparency will increase cooperation and perceived fairness/trust in fair distribution conditions but decrease these outcomes when distributions are unfair; fairness should increase cooperation and perceived fairness/trust in both transparency conditions. If supported, the results suggest that simplifying and clearly communicating fair bureaucratic procedures could help rebuild trust.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #37, Cleary Great Hall**

How Do Risk and Protective Factors of Substance Use Differ between Different Stages of Development?

Kyana Servais (UW-La Crosse)
Mentors: Enilda Delgado and Nicholas Bakken, Sociology & Criminology

Substance use has been and remains a significant public health concern. This issue does not only cause concern for individuals, but for parents, siblings, peers, doctors, educators, and researchers as well. Using data from 2011 in a Delaware secondary school survey as well as existing literature on substance use among youth, the study examines whether demographics, familial relations, school connectedness, peer relations, as well as community connectedness present as risk or protective factors against substance use. Both risk and protective factors differ across developmental stages. This research will also provide insights into the differences in factors between middle school and high school students. For middle schoolers, risk and protective factors are typically related to family dynamics, such as having a positive relationship with a parent(s). This might look like a degree of parental monitoring and open communication between child and parent(s). While high schoolers, risk and protective factors are typically related to their peers, or who they surround themselves with. A positive peer relationship might look like involvement in groups of peers who do not engage in delinquent behaviors like substance use, or avoiding peers who might use peer pressure. Generally speaking, the purpose of the research is to further understand why a young person might use substances and to provide useful prevention methods, in hopes of reducing this public health issue.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #38, Cleary Great Hall**

Sex Differences in Omega-3 Fatty Acid Index among Collegiate Athletes

Benjamin Skramstad (UW-La Crosse)
Mentors: Ward Dobbs, Health Professions; and Andrew Jagim, Exercise & Sport Science

Athletes are often encouraged to consume a well-balanced diet consisting of lean meats, healthy fats, and fruits and vegetables. Of these nutrients, Omega-3 polyunsaturated fatty acids have exhibited varying positive effects in reducing risk factors associated with cardiovascular disease, often prevalent in athletic populations. Despite its importance and dietary availability, athletes have shown to have diminished concentrations in the blood. Recent research has developed the Omega-3 Index (O3I) as a clinical interpretation of Omega-3 fatty acid nutritional status, with 4% being the critical threshold. PURPOSE: The purpose of the study was to examine the potential sex differences in O3I found within collegiate athletes. METHODS: Approximately 70 male (n=35) and female (n=35) collegiate athletes were recruited participate in a single testing session. Each session will include assessments of height, weight, body composition, resting hemodynamic analysis, and a blood draw for determination of laboratory markers of clinical health and Omega-3 index status. RESULTS & DISCUSSION: This abstract is being submitted as a work in progress. Data collection is ongoing, but results will be prepared for dissemination before the symposium.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #39, Cleary Great Hall**

Understanding Work Identity in the Municipal Workplace

Makenna Slaminski (UW-La Crosse)
Mentor: Grace Deason, Psychology

Little research has examined blue-collar employees' workplace experiences or the relationships between blue-collar employees and their employers. This study explores municipal workers' perceptions of the significance of their work, their work experiences, and the dynamics of relationships within the municipal workplace. I conducted six quasi-standardized intensive interviews with public works crew members and their director. I posed open-ended questions and followed up with probing questions whenever a response suggested thematic significance, aiming to better understand the meaning participants attached to their comments. The interviews ranged from 25 minutes to two hours, and were and transcribed for analysis. A grounded theory qualitative analysis revealed that the largest desire from municipal workers was to be heard: to have people understand their work and the day-to-day experiences they have while on the job. Informal hierarchies exist among the crew members, their supervisors, and the surrounding communityand dictates how they interact with each other and the expectations that are held for different crew members and themselves. This understanding will broaden research on the workplace to include blue-collar workers and help people gain a better understanding of workers' needs and experiences. It contributes to existing psychology

research on how people construct their identity.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #40, Cleary Great Hall**

Investigating Mechanisms of *NimB2* Gene Cycling in the Absence of the Circadian Clock

Samantha Spencer (UW-La Crosse)
Mentor: Alder Yu, Biology

The circadian clock is a 24-hour internal cycle that drives the behavior of organisms. Daily oscillations in gene activation have generally been believed to depend on the circadian clock. If changes in gene expression level are due to the circadian clock, no cycling would be expected to be found in circadian-rhythm-deficient flies. However, preliminary data obtained in our lab suggest that in mutant fruit flies lacking a circadian rhythm, *NimB2*, a gene with a role in embryonic development and immunity, begins to cycle, whereas it does not in wild-type flies. This cycling, if consistent, may indicate a new, unknown influence on gene cycling and circadian rhythmicity in *Drosophila*. In this study, two different strains of circadian-rhythm-deficient *Drosophila* (Per0 and timeless) were analyzed for *NimB2* expression levels over a 24-hour time course. Every 4 hours, RNA from a sample of flies of each strain of mutant *Drosophila* was purified and reverse transcribed into DNA. Then, using primers specific for the *NimB2* gene and primers for the housekeeping gene *RPL*, quantitative PCR was performed, and gene activation levels were analyzed.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #41, Cleary Great Hall**

Factors Affecting Life Satisfaction

Maija Streitz (UW-La Crosse)
Mentor: Enilda Delgado, Sociology & Criminology

This study examines factors influencing life satisfaction by using the 2024 National Wellbeing Survey. The sample includes 7,027 survey respondents between the ages of 18 and 64. Through Fundamental Cause Theory, this research hypothesized that the factors proposed will have varied effect on individuals' feelings of life satisfaction in relation to accessibility, resources, and socio-demographics. The dependent variable being life satisfaction, is measures through questions relating to how an individual feels about their life. Multivariate, bivariate, and ordinary least squares (OLS) regression analyses were conducted on the independent variables social belonging, health, health behaviors, income, and socio-demographics and the dependent variable of life satisfaction.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #42, Cleary Great Hall**

A Green Chemistry Approach to the Knoevenagel Condensation of Naturally Occurring Aldehydes

Peter Tagalakis (UW-Parkside)
Co-authors: Jacob Christensen, Mark Mamalakis, Regiah Cosey, and Olivia Imhoff
Mentor: Ilirian Dhimitruka, Chemistry

The Knoevenagel condensation is a variation of the aldol condensation where an aldehyde or ketone reacts with an activated enolate in the presence of an amine. The mild basic conditions enable the coupling of unprotected phenolic benzaldehydes with enolates of alkyl cyanoacetates and dialkyl malonates. To promote the reaction, especially with less electrophilic benzaldehydes and ketones, a longer reaction time, ranging from hours to over 24 hours, and the removal of water may be necessary. A typical Knoevenagel condensation is performed using amines such as piperidine, often combined with organic solvents like toluene. In this work, we describe the synthesis of Knoevenagel products from naturally occurring hydroxy-substituted benzaldehydes, including vanillin, syringaldehyde, veratrole, piperonal, p-anisaldehyde, and p-hydroxy benzaldehyde, with ethyl cyanoacetate under microwave conditions. Green chemicals such as L-proline as an amine base, ethanol, and water are used. An optimization study was conducted to determine the best molar ratios, reaction times, and temperatures. Another goal was to refine the procedure to obtain pure, high-yield products that can be easily isolated by simple crystallization. Typically, benzaldehyde is

reacted in a microwave synthesizer for 15 to 30 minutes with 2 to 3 molar equivalents of ethyl cyanoacetate and 0.5 molar equivalents of L-proline in ethanol. The resulting product is precipitated with ice-cold 5% aqueous HCl solution, filtered under vacuum, and dried. UV absorbance measurements of diluted ethanolic solutions of the products were performed to evaluate their potential as broadband UV filters.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #43, Cleary Great Hall**

Media Narratives and Agricultural Perceptions

Gabriella Tessman (UW-La Crosse)
Mentor: Michael Tollefson, Communication Studies

This project explores how members of the non-farming community who have varying knowledge of agriculture, engage and consume agricultural media content. Utilizing the uses and gratifications theory, this study aims to understand why the non-farming community engages with agricultural content. There are numerous reasons why members of the non-farming community may engage with agricultural content including learning, entertainment, or relaxation. Using qualitative interviews, this study can understand the reasons agricultural content is consumed through personal experiences. By analyzing these personal experiences it can be interpreted how agricultural content helps the non-farming community understand farming life. Findings will determine the gratifications the non-farming community receives and why they engage with agricultural content.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #44, Cleary Great Hall**

A Preliminary Study of Pelvic Floor Dysfunction in Female DIII Athletes

Amaya Thesing (UW-La Crosse)
Co-author: Lisa VanWiel
Mentor: Lisa VanWiel, Health Professions

INTRODUCTION: Pelvic floor dysfunction (PFD) refers to a collection of neuromuscular disorders associated with reductions in physical activity, poorer sport performance, pain, injury, poorer mental health, and poor quality of life. Recent studies show nulliparous female athletes have alarming rates of pelvic floor dysfunction. The purpose of this study was to assess the prevalence of pelvic floor dysfunction across female athletes across a DIII athletic program as a whole and within teams to inform future training needs. METHODS: A digital survey was used to assess presence and bother related to symptoms of PFD (PFDI-20), energy availability (LEAF-Q), and demographic information. Prevalence information was assessed using simple frequencies, and descriptive information was assessed using means and standard deviations. RESULTS: A total of 98 female athletes from five teams at the University of Wisconsin-La Crosse participated in the study. Across all teams, 68% reported urinary incontinence, 12% reported prolapse, and 10% reported fecal incontinence. Additionally, 71%, 45%, and 29% reported back, hip, or pelvic pain respectively. DISCUSSION: PFD symptoms were highly prevalent across this Division III athletic program. These findings reinforce that PFD is common in young, nulliparous athletes and may impact performance, injury risk, and overall well-being. Routine screening and integration of pelvic health education within collegiate athletics may be warranted.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #45, Cleary Great Hall**

Menstruation Inequity: An Unseen Bias in Education and Beyond

Zoe Tietz (UW-Superior)
Mentor: Khalil Dokhanchi, Social Inquiry

Period poverty, the lack of access to menstruation supplies and facilities, creates inequality within everyday life. Previous research looks at urban areas to assess the inequality faced (Sector-Turner et al., 2020). A deeper understanding of the availability of educational resources related to menstruation and the challenges faced by those who menstruate is needed. This study analyzes the Midwest, with a secondary analysis of Wisconsin. Accessing areas such as Duluth and Superior, a metropolitan rural area, allows for a better understanding of the effect of menstruation inequalities. Multi-stage research collected data from students, many being undergraduates with differing socioeconomic backgrounds. These surveys were

distributed electronically. A qualitative and quantitative Qualtrics survey was provided to the public for a two-week period. This survey was distributed in the Summer of 2022 and the Spring of 2023. A continuing study of menstruation education in Wisconsin was conducted in the Summer of 2024. Survey results highlighted the inequalities faced by those who menstruate. College-age survey data (2022–2023) determined menstruators miss school or work, widening opportunity gaps and lowering quality of life. Menstruation inequality was experienced by groups above and below the poverty line. Implementing change allows menstruators to have a higher quality of life.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #46, Cleary Great Hall**

Optimization of Rare Earth Elements Recovery from Digestate Biosolids by Room-Temperature Acid Leaching

Hannah Tysse and Elijah Lamers (UW-Platteville)
Mentor: John Rey Romal, Civil and Environmental Engineering

Municipal biosolids are conventionally used as soil amendment and fertilizer. Accumulation of new generations of contaminants such as PFAS, microplastics, and lanthanide metals in biosolids raise growing concerns of contaminants leaching to the environment. This work presents an optimization of a novel approach to the removal of lanthanide metals, also known as rare earth elements (REEs), by desorption from digestate biosolids sourced from a Water Resource Recovery Facility in southwestern Wisconsin. REEs are critical materials with high market value and are identified as critical to technology and national security. REEs recovery is approached by a room-temperature acid leaching. The method involves agitation of the grinded biosolids with 5% nitric acid on a shaker by batch desorption at a solid-to-liquid ratio of 0.13 g/mL at room temperature. Following the desorption is the settling stage to allow the separation of biosolids and leachate supernatant, then filtration of the leachate for analysis of metal constituents by Inductively Coupled Plasma Spectroscopy. Preliminary experiments show the REEs removal from the biosolids was not affected by the stirring time but can be improved by increasing the number of washing cycle. Further investigation must be pursued to determine the effects of acid type and acid concentration to establish the optimal conditions for the leaching of REEs from biosolids by room-temperature acid leaching.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #47, Cleary Great Hall**

The Court of Public Opinion: Americans' Views on U.S. Domestic Courts and Their Role in Global Enforcement

Max Van Asten (UW-La Crosse)
Mentor: Adam Van Liere, Political Science & Public Administration

This study examines public perceptions of the U.S. government's role in addressing human rights violations abroad, focusing on domestic courts' exercise of jurisdiction. Although the United States often frames itself as a global defender of rights, institutional responses vary, raising questions about alignment between public expectations and government behavior. Employing a between-groups factorial survey, participants evaluate scenarios in which different branches respond to a federal court preparing to hear a case with foreign actors and transnational conduct. Respondents also report broader foreign policy orientations and attitudes toward U.S. institutions. I hypothesize that domestic judicial remedies will attract greater public support than alternative enforcement mechanisms; that confidence in domestic judicial remedies will be higher among isolationist and unilateralist respondents; and that public preferences will diverge from actions typically pursued by elected officials. Findings will clarify how Americans expect government institutions to navigate human rights and related international challenges.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #48, Cleary Great Hall**

De-stress Diaries: A Preliminary Comparison of Journaling Methods on College Students' Mental Health

Lyd Voss (UW-La Crosse)
Mentor: Bixi Qiao, Psychology

High levels of psychological stress, or perceived stress, continue to negatively impact university students through worse academic performance and mental and physical health risks (Pedrelli et al., 2015). Journaling (i.e., expressive journaling and gratitude journaling) has been proposed as an adaptable and accessible solution to reduce stress among university students (Sohal et al., 2021). The current preliminary study investigates the effects of 6-week long expressive journaling and gratitude journaling on the perceived stress levels of university students, in three conditions: control group (n=4), expressive journaling group (n=6), and gratitude journaling group (n=5). Participants were measured through their mental health, including perceived stress level, emotional competence, emotional regulation, and life satisfaction, before (T0), immediately after the 6-week intervention (T1), and one month later (T2). It is expected that both expressive journaling and gratitude journaling have effects on positive impacts on stress level, emotional regulation, and emotional competence, but gratitude journaling will have a positive effect for life satisfaction compared to expressive journaling. Overall, expressive journaling would have stronger positive effect compared to gratitude journaling and last over time.

Poster Presentation **Session B (10:50 - 11:45 am), Poster #49, Cleary Great Hall**

Scaling the Ancient: Modern Adaptations for Larger Scale Chasing and Repoussé

Danny Ness (UW-La Crosse)
Mentor: Bradley Nichols, Art

Chasing and repoussé is an ancient metalsmithing technique with some of its oldest known examples dating back 6,500 years (Curry). Despite some of the world's most recognized works of art—like the gold funerary mask of Tutankhamun, or the Statue of Liberty—being created through chasing and repoussé, few people are familiar with the process. This may be perpetuated by a common notion of metal as this rigid structural material that cannot be easily shaped, but chasing and repoussé defies these misconceptions by showcasing metal's unbeknownst malleability. Current practices of chasing and repoussé consist of small-scale works intended for use as jewelry. I have expanded upon this ancient technique by creating a piece that is larger than what is typically produced in the jewelry field today. By increasing the scale, I have developed new techniques and tools for chasing and repoussé that challenge traditional expectations of what is possible. My research has focused on the development of new tools to make this process possible at a larger scale, including: a matrix die to easily create the initial relief, soft hammers to repoussé copper into the die, and chasing tools more suitable for the larger scale. By conducting this research, my findings directly contribute to UWL's metalsmithing curriculum, offering other students new methods to explore increased scales in chasing and repoussé.

Exhibit **Session B (10:50 - 11:45 am), Exhibit Table, Cleary Great Hall**

Interactive Effects of Stratification, Light, and Gibberellin on *Tsuga canadensis* (Eastern Hemlock) Seed Germination

Andrew Hamilton (UW-La Crosse)
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 Kickapoo Vally. In recent years the species has become "near threatened" from the introduction of Hemlock Wooly Adelgid (HWA), an aphid-like creature that feeds and reproduces on the branches of the tree, causes major limb die-back leading to tree death and severe consequences to the forest community. With the death of mature trees, an important consideration is the survival and success of Eastern Hemlock seeds and seedlings. Understanding environmental factors affecting recruitment and the growth and development of young *T. canadensis* is critically important to the health and regeneration of strands of Eastern Hemlocks that are already impacted by HWA. A germination experiment testing the interaction of length of cold treatment

(stratification), light availability, and gibberellin (a plant growth hormone) was conducted to examine impacts on *T. canadensis* seed germination. Results suggest that these factors have interactive effects on Eastern Hemlock seed germination success.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #1, Cleary Great Hall**

Isolation and Characterization of Carbapenem Resistant Aeromonas from Irrigation Water

Thomas Grachan (UW-La Crosse)
Mentor: Xinhui Li, Microbiology

Antibiotic-resistant bacteria, particularly the carbapenem-resistant bacteria, pose a public health crisis as treatment options remain limited for infections caused by these bacteria. Fresh vegetables have been found to be a reservoir of carbapenem-resistant bacteria. To assess whether irrigation water is a contributing factor, we collected and analyzed water samples from a field trial investigating potential factors contributing to antibiotic resistance in fresh vegetables. Water samples were collected twice monthly during the growth periods of a 2-year field trial to isolate carbapenem-resistant bacteria. Isolates were tested for carbapenemase production and carbapenemase type using mCIM/eCIM assays. Carbapenem-resistant isolates were found in 58 of 76 valid sampled plots. At least one isolate from each positive plot was sequenced, identified, and subjected to bioinformatic analyses. The predominant species identified was *Aeromonas veronii*, while two isolates were *A. dhakensis*; and both species are clinically relevant. Bioinformatic analyses identified various carbapenemase genes. Phylogenetic analyses indicated year-to-year persistence of carbapenem-resistant bacteria in the irrigation water, and close relatedness of the isolates from this study to those from other sources, including human and animal sources. In conclusion, our study suggests that irrigation water is a contributing factor to carbapenem resistance in fresh vegetables.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #2, Cleary Great Hall**

Investigating the Effects of Reconstituted Water on Slimy Sculpin (*Cottus cognatus*) Growth and Survival

Katelynn Ripper (UW-La Crosse)
Co-author: Morgan Schmidt
Mentor: Ross Vander Vorste, Biology

Sentinel benthic vertebrate species, including slimy sculpin (*Cottus cognatus*), can be used in laboratory studies to test the effects of environmental changes on the growth and survival of organisms. However, using aquatic species in laboratory settings requires special protocols to ensure normal growth and behavior compared to natural settings. Slimy sculpin growth and survival may be different in mesocosms using municipal water as opposed to reconstituted water, in which chemicals can be adjusted to match the conditions where the organisms were collected. We used laboratory mesocosms (n=18) to study the effects of reconstituted water treatments on slimy sculpin (n=3 fish per mesocosm) growth and survival. A hard reconstituted water solution (pH>8.0), prepared according to EPA protocols, was introduced into half of the tanks while the remaining tanks received dechlorinated municipal water. Slimy sculpin length and weight measurements were recorded at the start of the experiment and at the end of the four-week study. Identifying which water type most effectively promotes sculpin growth and survival provides valuable insight into optimizing their laboratory husbandry protocols to support their continued use as a sentinel species for detecting ecological change.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #3, Cleary Great Hall**

Optimization of 1,3,4-Oxadiazole Synthesis through a Green Chemistry Lens

Signe Begalske and Shannon Aide (UW-La Crosse)
Mentor: Robin Grote, Chemistry & Biochemistry

Oxadiazoles are organic molecules often used in treatments for tumors, viruses, and inflammation. An efficient 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 temperatures, or costly reagents. The method presented utilizes cheaper starting

materials and milder reaction conditions. Optimization studies, including substrate scope of both reaction partners, were conducted with a focus on disubstituted versions. Exploration of a greener synthesis via replacement of column chromatography with recrystallization was demonstrated as a viable method for particular workups. The redesign of the isolation and purification steps along with the exploration of the disubstituted molecule catalog reduces the time and resources involved while exploring other potentially useful oxadiazoles. These results make this method more efficient, scalable, and more widely impactful to the chemical community and the world.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #4, Cleary Great Hall**

Active Site Determinants of SCFA Kinase Activity

Lexi Bugajski and Jonathan Jung (UW-Parkside)
Co-authors: Adrianna Rodriguez, Radika Ramesh, Snigdha Reddy, Stefinie Washington, and Joseph Hall
Mentor: Robert Barber, Biological Sciences

Numerous studies reveal the importance of gut microbiome-derived short chain fatty acids (SCFA), such as acetate, propionate and butyrate, in signaling, metabolic, and health outcomes for animal hosts. Colonic SCFA production is dominated by species belonging to two bacterial phyla, Firmicutes and Bacteroidetes. One SCFA metabolic pathway recognized within these species involves two distinct enzymes: 1) an SCFA kinase and 2) an acyltransferase. Together, these enzymes can reversibly interconvert SCFA with their acyl-CoA derivatives in an ATP-dependent manner. Notably, SCFA kinases can exhibit significant substrate promiscuity; an observation consistent with various enzymes exhibiting distinct amino acid profiles among active site residues. In this study, SCFA kinase variants have been identified among key gut microflora species, including B*acteroides mediterraneensis* (BM), *Bacteroides thetaiotaomicron* (BT), *Phocaeicola vulgatus* (PV), and *Roseburia intestinalis* (RI). Heterologous expression and purification of histidine-tagged variants of the BM, BT, PV, and RI enzymes in *E. coli* has allowed characterization of biochemical properties regarding these variants. Moreover, novel, commercially-unavailable substrates have been synthesized and utilized in this study to enhance characterization of these enzymes. Among SCFA kinases a clear distinction is evident between enzymes that exhibit preference for acetate and propionate versus longer or branched chain fatty acids. Results from these experiments provide insights regarding active site dynamics as well as potential physiological roles for these enzymes in short chain, branched-chain, and medium chain fatty acid metabolism, as well as SCFA metabolism, that may influence gut community dynamics and human health.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #5, Cleary Great Hall**

Understanding the Reproductive Success of Tadpole Shrimp in Warming Temperatures of Ephemeral Wetlands

Jace Bezzo, Brianna Lawson, Kaycee Peterson, and Holly Shannon (UW-Whitewater)
Co-author: Ryan DeBruin
Mentors: Andrea Romero and Brian O'Neill, Biology

Few studies have evaluated the relationship between aquatic macroinvertebrate egg geometry and warming temperatures. Triops longicaudatus, commonly known as tadpole shrimp, have eggs that are typically spherical or atypically deflated and helmet-like. Little is understood about the potential effects of atypical egg shape on viability. This study evaluates the hatch rates of typical and atypical eggs in rising water temperatures, which simulates how they may react to a changing climate in their natural environment. In the lab, eggs were separated by shape and incubated in dishes of spring water under heat lamps at incrementally warmer temperatures. The results indicate that hatch rate is influenced by water temperature and potentially affected by egg geometry. This study furthers the understanding of how climate change impacts ephemeral wetlands, in which tadpole shrimp are a keystone species.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #6, Cleary Great Hall**

Mutations to EcAP's Salt Bridge in the Active Site May Allow the Enzyme to Become More Dynamic and Efficient

Lucy Dahlk (UW-La Crosse)
Mentor: Dan Grilley, Chemistry & Biochemistry

E. coli alkaline phosphatase (EcAP) is a tissue nonspecific enzyme that catalyzes the reversible cleavage of a phosphate from different kinds of molecules via water. Its active site is highly conserved, besides amino acid residues D153 and K328. These residues form a strong ionic bond due to their charges, with aspartate (D) being negative and lysine (K) being positive. This project tested the necessity for the wild-type residues and if mutating to a different type of bond changed the interactions within the active site. In theory, mutations to the residues with glutamine (Q) and asparagine (N) were able to create a double hydrogen bond network. The lengths of the side chains in the different combinations of mutations allowed for the most ideal interaction to be found. For comparison, calf intestinal alkaline phosphatase (CIAP) lacks a strong interaction between positions 153 and 328 and has shown differences in metal interactions and catalytic ability. Therefore, we tested how the strength of interaction between positions 153 and 328 impacted the function of alkaline phosphatases, specifically the stability of the enzyme, the ability to interact with metal ions, and the ability to catalyze its reaction.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #7, Cleary Great Hall**

Adult Perspectives on Living with Selective Mutism

Rachel Davidson (UW-La Crosse)
Mentor: Jessica Schweigert, Psychology

Selective mutism (SM) is a psychological condition characterized by a situational inability to speak. Now classified as an anxiety disorder in the DSM-5, SM was previously misunderstood as a willful refusal to speak and often viewed as limited to childhood. This qualitative study will explore the experiences of adults with SM using open-ended surveys. Patterns and insights will be identified from participants' responses through thematic analysis. This research is expected to illuminate realities of living with SM in adulthood, including barriers in social and occupational contexts. Findings may contribute to a deeper understanding of SM and inform potential support strategies for affected adults.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #8, Cleary Great Hall**

Structural Racism and Black Maternal Mortality in the United States

Morgan Dayton (UW-La Crosse)
Mentor: Richard Breaux, Race, Gender, & Sexuality Studies

Maternal mortality in the United States remains a serious public health issue and reflects broader inequalities within the healthcare system. The United States has the highest maternal mortality rate among developed countries, and Black women experience pregnancy-related deaths at nearly three times the rate of white women. These disparities remain even when factors such as income, education, and insurance coverage are similar. This research examines how structural racism and bias within the healthcare system contribute to these differences in maternal health outcomes. It also explores how chronic stress related to experiences of racism may affect maternal health through physiological responses such as elevated cortisol levels. In addition, this project considers how the quality of care, provider bias, and unequal access to healthcare resources influence maternal outcomes for Black women in the United States. Using a qualitative approach, this research analyzes peer-reviewed literature, national maternal mortality data, and case studies of preventable maternal deaths. The goal is to better understand how systemic factors shape maternal health outcomes and why maternal mortality remains an important indicator of health inequality in the United States.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #9, Cleary Great Hall**

The Effects of Ethanol Extracts of *Echinacea purpurea* on Superoxide Anion Production by HL-60 Cells

Haylie Dumoulin, Garrett Gardner, Erica Barlament, Luke Markiewicz, and Ramiro Cortez (UW-Green Bay)
Co-authors: Madeline Cornelius and Lindsey Coudron
Mentors: Brian Merkel, Human Biology; Amanda Nelson, Human Biology; Julie Wondergem, Chemistry; and Dhanamalee Bandara, Math & Statistics

Echinacea purpurea is the third-most popular herbal supplement on the market, generating over 100 million dollars of annual sales in the United States alone. Echinacea is widely marketed for its health benefits, including stimulation of the immune system to combat upper respiratory infections such as the common cold and influenza; however, only a limited number of preliminary studies have directly demonstrated these claims. To investigate the potential immunostimulatory effects of Echinacea, the HL-60 promyelocytic cell line was cultured in the presence of dimethyl sulfoxide (DMSO) to be used as a model to study neutrophil function. Neutrophils contribute to the innate immune response by eliminating infectious agents through phagocytosis and exposure to reactive oxygen species, such as superoxide anion. Following differentiation, HL-60 cells were treated with either 55% ethanol, 100% ethanol, or 100% water extracts of Echinacea. Subsequent superoxide anion production was measured as an indicator of neutrophil activation. Superoxide anion production was also measured in the presence of a known stimulant, phorbol 12-myristate 13-acetate (PMA), as well as vehicle-treated controls. A potential direction of future studies includes the characterization of compounds that contribute to the immunostimulatory properties of Echinacea. Furthermore, although Echinacea may alleviate respiratory infections through its stimulation of superoxide anion production, the mechanisms underlying this effect are yet to be fully understood.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #10, Cleary Great Hall**

Examining Accelerometer-Based Measures of Cadence, Stance Time, and Impact Force Measures in Running Compared to an Instrumented Treadmill

Abigail Ellison, Nathan Gunderson, Garrett Heying, and Nicholas Devine (UW-La Crosse)
Co-author: Molly Heinert
Mentor: Thomas Kernozek, Health Professions

Running is a popular form of physical activity, but it exposes the lower extremities to repetitive impact forces associated with running related injuries. Laboratory based gait analysis relies on instrumented treadmills and three dimensional motion capture systems to quantify impact loading, step characteristics, and joint mechanics with high accuracy. Wearable sensor technologies, particularly accelerometer based systems, offer a potential solution by enabling continuous data collection in more natural running environments at a lower cost and greater practicality. Our purpose was to compare accelerometer derived cadence and impact-related variables to those obtained from an instrumented treadmill in running. A convenience sample of 10 participants ran on an instrumented treadmill at 6mph while wearing an accelerometer device attached to a waist strap. Intraclass correlation coefficients and Bland-Altman analyses were performed on cadence, stance time, peak ground reaction force, and asymmetry of stance time and peak ground reaction force. Cadence exhibited excellent reliability (ICC>0.9) between the instrumented treadmill and wearable accelerometer with good agreement (95% CI [-1.6, 1.3 bpm]). Stance time, asymmetry of stance time, peak ground reaction force and asymmetry of peak ground reaction force exhibited poor reliability and much less agreement. It appears that accelerometer-based measures contain limitations compared to laboratory measurements.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #11, Cleary Great Hall**

Expression of Hemerythrin-Like Genes from the Obligate *Aerobe Myxococcus xanthus* Improves the Growth of the Industrially Relevant *Gluconobacter oxydans*

Alexa Fleegal (UW-La Crosse)
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 six predicted hemerythrin-like proteins that are known to bind oxygen and are thought to help *M. xanthus* survive oxygen limitation. Despite the name, hemerythrin-like proteins do not contain heme, but rather a diiron binding site that facilitates oxygen-binding. Four of these

proteins were biochemically confirmed to bind oxygen in vitro using UV-spectroscopy. We hypothesized that expression of these hemerythrin-like genes would improve oxygen utilization of *Gluconobacter oxydans*, which is used industrially to produce vinegar, vitamin C, the anti-diabetic drug miglitol, tanning agents, 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. Thus, genetic modification to enhance oxygen-dependent growth is desirable for industry. Each hemerythrin-like expression strain exhibited two distinct phenotypes compared to wild-type *G. oxydans*: faster doubling time and increased cell density. We are currently assessing growth at larger culture volumes to better approximate industrial conditions and quantifying production of industry-relevant bioproducts. Overall, we expect that expressing these proteins in *G. oxydans* will similarly enhance growth at larger volumes and that this improvement will be accompanied by increased production.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #12, Cleary Great Hall**

Longitudinal Comparison of Short Portable Mental Status Questionnaire Scores in Assisted Living Residents

Jesse Gromowski (UW-La Crosse)
Mentor: Casey Tobin, Psychology

Cognitive screening is commonly used in assisted living facilities to monitor changes in residents' cognitive functioning over time. One tool frequently used for this purpose is the Short Portable Mental Status Questionnaire (SPMSQ), a brief screening instrument designed to assess orientation, memory, and general cognitive functioning in older adults. This study examines changes in SPMSQ scores among assisted living residents by comparing current scores with those obtained at the time of facility admission. Approximately 30 assisted living residents aged 55 to 95 will be invited to participate. Participants are expected to be medically stable, though varying levels of cognitive functioning, including mild to moderate impairment, may be present. Participation will involve a single 10–15 minute session during which the researcher administers the SPMSQ. The researcher will also access each resident's SPMSQ score recorded at admission. Differences between admission and current scores will be analyzed to identify patterns of cognitive stability or decline among assisted living residents. Findings may provide insight into cognitive trajectories within assisted living populations and highlight the value of routine cognitive screening in supporting early identification of cognitive change.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #13, Cleary Great Hall**

Social Media Use, Empathy, and Reactions to Political Violence

Grace Fredricksen (UW-La Crosse)
Mentor: Grace Deason, Psychology

In today's ever-changing world, technology has been theorized to have an impact on the expanding polarization of the political landscape. It is unknown how political violence in online spaces intersects with empathy and may manifest into acceptance of political violence. This project surveyed U.S participants about their social media use, political affiliations, rates of empathy, and violent content they see on each platform. Then looked at the colorations between empathy, polarization, and perceptions of political violence. This study also looked to compare how different platforms have different rates of perceived violence and different rates of polarization. Further implications of this study look to explore political extremism in relation to high social media use. As well as how high rates of social media use might affect empathy levels.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #14, Cleary Great Hall**

Looking at Locality in Lifeways: Subsistence Differences within the Onalaska Terrace

Blake Hanfeld (UW-La Crosse)
Mentor: Amy Nicodemus, Archaeology & Anthropology

The Oneota were an Indigenous culture living in the Upper Midwest, including the La Crosse area, from ca. AD 1300-1600. Their economy used both hunting-gathering and farming. The La Crosse area is comprised of different environmental zones, which the Oneota exploited differently. However, it has not been studied in detail how subsistence practices varied within the same environmental zones. This research examines faunal material from contemporary Oneota sites within the same ecological zone to infer how unique geographic and environmental factors may influence subsistence practices on a small scale. Specifically, this study uses the Tremaine site (47LC-95) and the Onalaska Village and Cemetery site (47LC-288) as case studies for how a community's proximity to waterbodies of different types affects local foodways. These sites are contemporary and both are situated on the Onalaska Terrace, a flat prairie elevated above the Mississippi River flood plain. However, they differ in their proximity to water bodies. Tremain sits 3 kilometers away from the Black River, while the Onalaska Village is adjacent to the Mississippi River. While the two communities show similar foodways, the Onalaska Village settlement had a greater exploitation of aquatic resources, especially from deep-water bodies.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #15, Cleary Great Hall**

The Effects of SK-03-92 Treatment on Copper Homeostasis Genes in Yeast Cells

Emjay Hilliker (UW-La Crosse)
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 continued this work on the putative role of copper dysregulation in the mechanism of SK-03-92 using three approaches. First, I determined that two copper homeostasis mutants respond to SK-03-92 treatment differently from wild-type cells. Second, I used bathocuproine disulfonate (BCS), a chemical that binds and removes metal ions such as copper from cells, to test if BCS affects the survival of yeast cells after SK-03-92 treatment. Third, I used qPCR to measure the expression of several copper homeostasis genes in cells treated with SK-03-92 to see if their expression is affected differently in cells co-treated with SK-03-92 and BCS versus SK-03-92 alone.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #17, Cleary Great Hall**

Personality and Communication Competence in First-Year College Students' Interpersonal Relationship Development

Julia Holst (UW-La Crosse)
Mentor: Sara Docan-Morgan, Communication Studies

This literature review examines how personality traits and communication competence influence the development of interpersonal relationships among first-year college students. Rooted in interpersonal communication theories, including social penetration theory, the review explores how students form friendships and navigate social adjustment during the first-year of college. As first-year students work to establish new social networks, communication behaviors such as self-disclosure and conversational engagement become key factors in forming interpersonal relationships. By analyzing existing research on personality, communication competence, and friendship development, this review highlights factors that contribute to successful social adjustment in university settings and emphasizes the role of communication skills in shaping early college relationships.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #18, Cleary Great Hall**

Do Ethnic Groups Think Fast Differently? Nudging Diverse Consumers

Nainil Jariwala (UW-La Crosse)
Co-author: Adam Stivers
Mentor: Adam Stivers, Finance

In consumer decision-making, nudges often guide choices by triggering well-established cognitive biases such as loss aversion, framing, affective heuristics, and processing fluency (Kahneman & Tversky, 1981; Slovic et al., 2007). Although these "fast thinking" mechanisms are typically assumed to be universal, surprisingly little empirical work has examined whether the magnitude, or even the direction, of these biases varies across cultural or ethnic groups (Henrich et al., 2010). This absence of comparative evidence represents a meaningful gap in both behavioral economics and consumer psychology. To address this gap, we conducted a mixed experimental survey (N≈400), using a between-subjects factor of self-identified ethnicity and a within-subjects factor that captured multiple behavioral nudges. Across all nudges, participants displayed classic bias patterns, yet the intensity of several effects—particularly affect-driven choices, fluency preferences, endowment gaps, and framing sensitivity under risk—varied systematically by ethnicity. These cross-group differences emerged reliably across both binary-choice and continuous-rating measures. At the same time, several biases typically treated as universal, including diminishing sensitivity and urgency-based scarcity cues, showed striking cross-cultural stability. Notably, we also observed unexpected pattern reversals, such as anchoring scenarios in which the absence of a reference price produced higher willingness-to-pay than either low or high anchors. Together, these results provide the first broad empirical comparison of multiple consumer-relevant biases across ethnic groups. The findings refine assumptions about the universality of behavioral biases and offer actionable guidance for cross-cultural marketing, communication strategy, and policy design in increasingly diverse consumer contexts.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #19, Cleary Great Hall**

Alcohol and Feeding-Time Misalignment Reshape the Microbiome to Promote Inflammaging

Madelyn Jensen and Annette Barzano (UW-Parkside)
Co-authors: Holly Skinner, Izabella Demarest, Sean Wienke, and Fabian Preuss
Mentor: Fabian Preuss, Biological Sciences

Chronic low-grade inflammation coupled with epithelial barrier dysfunction, collectively termed inflammaging, characterizes age-related intestinal vulnerability. Circadian disruption from irregular eating habits and alcohol exposure independently promote gut inflammation through barrier leakage, microbial dysbiosis, and loss of short-chain fatty acid (SCFA) production, though their synergistic interactions with aging remain undefined. Young (3 months) and aged (12 months) C57BL/6 mice underwent 6 weeks of normal or abnormal feeding followed by ethanol administration. Time-resolved analyses including colonic transcriptomics, microbiome profiling, metabolomics, and intestinal function assays were performed, with parallel human studies integrating RNA-seq of colon biopsies and fecal 16S rRNA sequencing from individuals stratified by eating timing

and alcohol intake. Aging and abnormal feeding synergistically disrupted colonic circadian architecture, reducing rhythmically expressed genes and activating inflammatory pathways, barrier gene dysregulation, and reduced ZO-1/E-cadherin expression. Alcohol further attenuated transcriptome rhythmicity, amplified pro-inflammatory programs, and exacerbated barrier and clock disruption in both mice and humans, while jointly driving dysbiosis marked by loss of rhythmic SCFA-producing taxa and reduced SCFA biosynthetic capacity. A short prebiotic intervention restored rhythmic SCFA-producing bacteria and rescued epithelial barrier networks in aged mice despite persistent clock disruption. Together, these findings suggest rhythmic SCFA-producers act as peripheral zeitgebers capable of rescuing epithelial homeostasis independently of central clocks, validating microbiome-targeted prebiotics as circadian-agnostic therapeutics to restore barrier resilience.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #20, Cleary Great Hall**

Comparative Analysis of Marketing Strategies in the American, German, and Japanese Auto Industries

Alyssa Junkins (UW-La Crosse)
Mentor: Christine Ascencio, Management

The global automotive industry operates within diverse cultural, economic, and regulatory environments that significantly shape marketing strategies. This research examines key marketing trends in three of the most influential automotive markets: the United States, Germany, and Japan. Through comparative analysis, the study evaluates how consumer behavior, brand positioning, digital engagement, and sustainability initiatives vary across the countries while also identifying shared patterns. The findings show that the U.S. market heavily promotes lifestyle branding and vehicle size, Germany emphasizes premium engineering and heritage, and Japan prioritizes compact efficiency and technological innovation. Despite differing approaches, sustainability, safety, and digital transformation emerge as universal concerns. The study concludes with strategic recommendations for automakers seeking global brand consistency while maintaining regional relevance.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #21, Cleary Great Hall**

The Discrete Fourier Transform Applied to Vertical Ground Reaction Force Data of UWL Runners

Charlie Klawitter (UW-La Crosse)
Co-author: Omar Rodriguez
Mentor: Chad Vidden, Mathematics & Statistics

In this research, we investigate the properties of the Discrete Fourier Transform (DFT) and apply it to running data collected in the University of Wisconsin–La Crosse running laboratory. Our dataset consists of discrete Vertical Ground Reaction Force (vGRF) measurements from 100 runners. Using the DFT, we decompose each vGRF signal into its high and low frequency components to analyze the characteristics of running gait. From these signals, we extract biomechanical metrics including the Impact Peak Force and Vertical Average Loading Rate. This study evaluates the effectiveness of the DFT as a tool for analyzing biomechanical signals and explores its applications to running gait and injury-related metrics.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #22, Cleary Great Hall**

The Viking Ships of Norway and Denmark

Bryce Konwinski (UW-La Crosse)
Mentors: Amy Nicodemus and Tim McAndrews, Archaeology & Anthropology

In order to raid, trade, and explore distant lands, Vikings would heavily rely on the use of their ocean-worthy ships. This research examines Viking ships that were found in Norway and Denmark to determine how Viking ship technology differs between Norwegian and Danish regions. It does this by comparing construction techniques and ship equipment between the two regions and between ship types. This analysis explores these differences to better understand how Viking ship builders used regionally-specific technologies and construction techniques. It also identifies construction variation between ships of different types such as materials, hull measurements, and sailing equipment. The different ship types include war ships, cargo ships, and smaller, fishing vessels. Variation in shipbuilding techniques reflect both differences in local environmental, as well as regional cultural traditions. There are also significant differences in construction methods that reflect functional requirements of specific ship types.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #23, Cleary Great Hall**

Suicide Prevention: Understanding the Factors That Influence Intervention

Alexis Krueger (UW-La Crosse)
Mentor: Kevin Zabel, Psychology

In 2023, 1.5 million Americans attempted suicide (CDC, 2025). Although prior research has examined factors influencing bystander intervention, these variables are often studied in isolation or in contexts not directly applicable to suicidality. The present study examines how one's personality perception of a person disclosing suicidal ideations and the bystander's relationship with that person interact with situational factors such as group size to predict likelihood of intervention. Approximately 220 undergraduate students participated in in-person laboratory sessions. A 2 (Number of Bystanders: Self Only vs. Group) x 2 (Relationship to Person Expressing Suicidal Ideation: Friend vs. Stranger) x 2 (Extraversion of Person Expressing Suicidal Ideation: Low vs. High) between-subjects design was used with likelihood of intervention as the dependent variable. Participants completed measures of empathy (Davis, 1996) and personality (Soto & John, 2017), as well as read a vignette about a character who varied in each of the three independent variables listed above. Then, participants completed a measure of likelihood to intervene (Aldrich & Cerel, 2024). A between-subjects factorial ANOVA will examine effects of group size, relationship, and extraversion level on likelihood of intervention. Intervention is expected to be highest when a low-extraversion friend discloses suicidal ideation to the participant alone.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #24, Cleary Great Hall**

Colombia: Cartels, Corruption, and Conflict

Grace Walker-Ross (UW-Whitewater)
Mentor: Peter Wagner, Politics, Government, and Law

Colombia is often associated with drugs, cartels, and civil war. It is also a place of notable poverty and general conditions associated with continuing underdevelopment. Do these drug cartels impact the Colombian institutional ability to address these issues? Has Colombian sociopolitical development been hindered by the presence and activity of these organized criminal groups? If so, to what degree? While many qualitative investigations of this topic exist, there are too few quantitative analyses of the relationship between organized crime in Colombia and sociopolitical development and changes over time. By examining the years from 1970 to 2025, we will be able to examine the initial rise, peaks, falls, and recoveries of Colombian drug cartels through the lens of seizure data in comparison with developmental indicators such as infant mortality rate (per 1,000 live births), preprimary school enrollment (% gross), and unemployment (% of total labor force, national estimate), and we will be able to conclude a correlative relationship, or lack thereof, between variables. The case of Colombia can offer other countries guidance in facing their own challenges against criminal networks.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #25, Cleary Great Hall**

Systematic Characterization of the Chemical and Mineral Compositions of Two Wild Clays and Their Influences in Glaze and Claybody Results

Flynn Lenzen (UW-River Falls)
Mentor: Andrew Haveles, Biology

Wild clays are a source of clay found in nature used by artists. Unlike purchased or mixed clay, wild clays, due to their natural formation, come with many complexities that are worth taking the time to understand. Wild clay compositions will vary because they are dependent on the local Earth history and geologic materials, such as geochemistry and mineralogy, that have accumulated in a location over millennia. Different clay types can react very differently to things such as kiln firing temperatures or surface treatments. In order to understand these two wild clays, I systematically characterized the chemical and mineral compositions of two wild clay types in order to track and understand their influences in glaze. Clay was collected from the weathered section of the Glenwood Formation and from local glacial sediments, which have two different geologic histories. I quantified elemental abundances (pXRF) for three powdered replicate samples of both clay bodies at different stages of firing and determined mineralogy (XRD) for two others in raw clay form. I compared the elemental and mineralogical composition pre and post firing. After firing, I have a geochemical, mineralogical, and visual descriptions that will allow me to add new materials to the wild clays in order to receive consistent and desired results in glaze, as well as be used as a baseline comparison for similar datasets collected from local ancient ceramic shards to understand clay sourcing and the methods used in ancient pottery.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #26, Cleary Great Hall**

Platelet Apoptosis Induced by Plasma Mixing and Protein Isolation

Lydia Mack, Lakeyshi Xiong, Halle Derleth, and Avery Werneberg (UW-La Crosse)
Mentor: Scott Cooper, Biology

Platelets are small cells involved in blood clotting that undergo apoptosis, or programmed cell death, when stored in the cold. Many platelet units are discarded after 3–5 days due to potential bacterial contamination during room temperature storage, contributing to a global shortage despite large donor numbers. In contrast, 13-lined ground squirrels (*Ictidomys tridecemlineatus*) have evolved platelets that maintain functionality and recirculate after refrigeration (4°C) or hibernation, making them an ideal model organism for improving platelet preservation. Mixing human and squirrel plasma with human and squirrel platelets is an experimental method to determine whether squirrel mechanisms prevent apoptosis or human mechanisms induce it during cold storage. In samples stored for 5-, 12-, and 21-day periods with regular and dialyzed plasma, platelet apoptosis was measured using an Annexin binding assay and flow cytometry. Previous data suggest that a protein in human plasma induces apoptosis, while a small molecule in squirrel plasma prevents it in human platelets. Human platelets in undialyzed squirrel plasma showed lower apoptosis than those in dialyzed plasma, suggesting a small molecule with protective properties. Using anion exchange column chromatography, human and squirrel plasma will be fractionated to isolate large molecules and determine whether they induce apoptosis in cold-stored human platelets.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #27, Cleary Great Hall**

PFAS Exposure Has Slight Impact on Jaw Structure and Foraging Efficiency in Zebrafish Larvae

Carissa Maske (UW-La Crosse)
Mentor: Tisha King-Heiden, Biology

Per- and poly-fluoroalkyl substances (PFAS), otherwise known as "forever chemicals", are one of the major classes of pollutants found in fish. PFAS is persistent within the environment due to the strong carbon-fluorine bonds that make them resistant to degradation. Previous research has determined that exposure to relatively high concentrations of PFAS results in craniofacial malformations and reductions in foraging success. However, it is unclear whether exposure to environmentally relevant concentrations would result in similar craniofacial malformations, and whether this is correlated with impaired feeding. To address this, zebrafish larvae will be exposed to 800 ng/L of PFOS or PFHxS for the first 5 days of embryonic development. A

feeding assay will be performed with six-day-old zebrafish larvae to determine the proportion of prey items they can capture. This will be correlated with the assessment of the ultrastructure of the jaw and other potential malformations. Our findings will tell us about potential impacts on the foraging success of early larval fishes, which, if reduced, could impact recruitment of fish, posing a risk to fish populations.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #28, Cleary Great Hall**

From Doubt to Conviction: Personality and Persuasion in Jury Decision-Making

Jenna Miller (UW-La Crosse)
Mentor: Melanie Cary, Psychology

According to the Innocence Project (2025), roughly 1 in 25 people convicted of a crime are innocent. One factor contributing to wrongful convictions is jury decision-making and the social influences that affect judgments. Research on group conformity shows that individuals may conform to incorrect answers to avoid conflict (Asch, 1951). Personality traits, specifically high agreeableness, have also been linked to increased conformity (Goldberg, 1981). However, limited research has examined how agreeableness interacts with conformity pressure in jury decision-making. This study examines how conformity pressure influences verdict decisions among individuals with high and low agreeableness. This quasi-experimental study uses a between-subjects design with 120 participants aged 18-23. Participants complete three Big Five personality measures, read a mock court transcript, and provide an initial verdict. They are then placed into deliberation groups where three trained confederates apply opposing conformity pressure using distinct roles: a dominant enforcer, friendly persuader, and hesitant participant. Participants then state a final verdict, allowing conformity rates to be measured. Chi-square and regression analyses will examine relationships between agreeableness, initial verdicts, and conformity. Findings may inform jury selection and improve understanding of social influence in legal decision-making.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #29, Cleary Great Hall**

Expression of *Brugia malayi* DAF-2 in Eukaryotic Cell Culture

Megan Miller (UW-Whitewater)
Mentor: Kirsten Crossgrove, Biology

Brugia malayi are parasitic worms that can infect humans and cause lymphatic filariasis. We are studying the role of the insulin/insulin-like growth factor receptor signaling (IIS) pathway in *B. malayi* development. IIS regulates entry into the dauer stage in the free living model nematode *Caenorhabditis elegans*. The dauer hypothesis states that the dauer stage of *C. elegans* is similar to infective third-stage larvae (iL3) of parasitic nematodes like *B. malayi*. This study aims to confirm that proteins found in the respective IIS pathways of *B. malayi* and *C. elegans*, *Bma*-DAF-2 and *Ce*-DAF-2, serve similar functional purposes. In *C. elegans*, DAF-2 functions as a receptor for insulin-like ligands. We are using HiFi assembly to combine fragments of the *Bma-daf-2* gene with a eukaryotic expression vector. We will express *Bma*-DAF-2 in cultured HepG2 cells to test whether it can also respond to insulin-like ligands. This will help us to have a deeper understanding of whether the IIS pathway helps regulate iL3 development in *B. malayi*. The cells expressing *Bma*-DAF-2 may be able to be used to test potential drugs that can activate or deactivate the IIS pathway in *B. malayi*.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #30, Cleary Great Hall**

Sweet Talk: Decoding Sugar Transport in *G. oxydans*

Jackson Nichol (UW-La Crosse)
Co-author: Brianna Mikaelian
Mentor: Paul Schweiger, Microbiology

Gluconobacter oxydans is a gram-negative bacillus that thrives in high sugar environments. Its metabolism is used in industrial biotechnology to produce a wide array of products including vinegar, vitamin C, the antidiabetic drug miglitol, and the self-tanners dihydroxyacetone and erythrulose. *G. oxydans* oxidizes most of its carbon sources (e.g., sugars, polyols, alcohols) in

the periplasm using a series of membrane-anchored dehydrogenases that shuttle electrons directly into the electron transport chain. Yet, sugars must be transported into the cell for anabolic reactions. How sugars are transported into the cell remains a mystery. These bacteria encode predicted simple transporters and ABC systems. However, *G. oxydans* lacks group translocation systems such as the well characterized PTS system. We identified a set of predicted sugar transporters from a whole-genome transposon knockout collection. An initial survey of five predicted sugar transporters revealed defects in growth on glucose and fructose, giving initial insights into sugar transport in *G. oxydans*. We are working to characterize the substrate spectra of the identified sugar transporters through genetic complementation and functional biochemical assays. Defining the sugar transporters will deepen our understanding of these economically important bacteria and aid genetic engineering to optimize carbon flow for current and future production routes.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #31, Cleary Great Hall**

U.S. Nurses' Commitment to a Healthcare Organization: A Cross-Sectional Survey

Olivia Sanders (UW-Green Bay)
Co-author: McKenna Metropulos
Mentor: Myunghee Jun, Nursing & Health Studies

BACKGROUND: Today retaining qualified nurses has become a priority for healthcare systems. Nurses' organizational commitment has emerged as a critical factor influencing nurse retention. OBJECTIVES: This study identifies factors that significantly enhance organizational commitment among U.S. nurses. METHODS: Following IRB approval, a cross-sectional survey was conducted among 435 American nurses employed in healthcare organizations in Wisconsin. Data were analyzed using independent t-tests, ANOVA, Pearson correlations, and multiple linear regression analysis. RESULTS: Nurses' organizational commitment was significantly correlated with psychological contract breach, person–organization fit, needs–supplies fit, demands–abilities fit, and job satisfaction ($p<0.05$). Nurses aged 45 and older reported significantly higher commitment than those aged 25-34 ($p=0.002$). Multiple regression analysis revealed that higher needs-supplies fit, person-organization fit, and job satisfaction, lower psychological contract breach, and older age significantly predicted higher organizational commitment. The model explained 72% of the variance (adjusted $R^2=0.72$; $F[8, 426]=142.95$; $p<0.001$), with needs-supplies fit emerging as the strongest predictor. CONCLUSIONS: Age-specific strategies that enhance needs-supplies fit, job satisfaction, organizational fit, and reduce perceived contract breach may improve nurses' organizational commitment. Aligning compensation, staffing, workloads, managerial communication, and organizational transparency with nurses' competencies and specialties may support long-term retention.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #32, Cleary Great Hall**

Phosphoproteomics of 13-Lined Ground Squirrel Platelets

Hally Pearson-Holker, Matthew Adams, Caleb Radart, Cole Anderson, Evan Steffen, and Jack Tracey
Mentor: Scott Cooper, Biology

When exposed to low temperatures, 13-lined ground squirrels temporarily store a portion of their platelets in the liver while also maintaining reduced levels of functional circulating platelets, a condition that would rapidly impair platelet function in humans. To identify molecular mechanisms behind this, we compared proteins involved in phosphorylation from hibernating (Hib) and non-hibernating (NH) squirrels in the presence and absence of thrombin. Overall, hibernating platelets showed lower phosphorylation levels and a significantly reduced response to thrombin in proteins involved in integrin-mediated adhesion and cytoskeletal regulation, with the protein ITGB2 (Integrin Subunit Beta 2) displaying the strongest decrease across multiple sites. This pattern of reduced integrin activation suggests a naturally maintained antithrombotic state that protects against cold-induced platelet aggregation and mechanical stress. In contrast, proteins involved in apoptosis and survival pathways, such as BAD (BCL-2-Associated Death), kept relatively stable phosphorylation levels in hibernating squirrels, indicating that prosurvival signaling is preserved despite broad suppression of platelet activation pathways. Further assays will be run on both proteins using inhibitors to discover more information on how squirrel platelets tolerate the hibernation period.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #33, Cleary Great Hall**

Does Timing Matter?: Effects of Regular Event Timing on Recognition Memory

Erin Sotelo (UW-Milwaukee)
Mentor: Deborah Hannula, Psychological & Brain Sciences

There have been different reports of whether temporal regularity, defined as structured timing of events, results in improved recognition. The claim is that predictable event timing permits us to build expectancies that guide attention and behavior. One study showed better memory performance for scenes encoded in a temporally structured framework. However, these findings were not replicated in experiments that tested memory for item-specific details when the presented stimuli were objects, or when the original scenes were used. Images in the experiments were presented in mini sequences of four objects or scenes and presented twice in encoding blocks. In temporally structured blocks, set durations between each image (inter-stimulus intervals) were presented in a repeating pattern. Inter-stimulus intervals in temporally unstructured blocks were presented in a pseudo-randomized order. Participants were instructed to remember objects in the encoding task for a later memory task but not informed of the timing differences between blocks. I will describe factors that may determine whether regular event timing improves recognition memory and propose a new experiment to help adjudicate between competing outcomes. If the proposed changes result in expected recognition memory improvements, this design could be used to investigate whether temporal entrainment has similar benefits in older adults.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #34, Cleary Great Hall**

"So, the Boats Come Regular to Ephraim Now?": A Deeper Dive into Door County's Maritime Economy

Isabella Pahl (UW-La Crosse)
Mentor: Penelope Hardy, History

At the turn of the twentieth century, the commercial boom that put maritime Door County, WI, on the map was poised to undergo another significant evolution that would alter local economic practices far into the future. Communities that had long relied on extracting and shipping the peninsula's natural resources now faced a new opportunity: the growing tourist industry. Local politics, economics, and identities converged at the end of the 1800s to foreshadow an intense shift as market and consumer demands of the Midwest reached small peninsula towns such as Ephraim and Sturgeon Bay. Such swift changes did not occur without cultural implications, and while visitors and historians alike have long been fascinated with Door County's history, these accounts focus on intrepid settlers and sailors on the Great Lakes. Therefore, this project has used library, archival, and newspaper collections not only to analyze the overlapping causes of economic shifts during the twentieth century, but to synthesize their effects on local identities. The results will assist in reevaluating the peninsula as a dynamic symbol of adapting maritime communities in the context of greater Midwest history, in an interdisciplinary effort to understand how the destination many know and love today came to be.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #35, Cleary Great Hall**

The Impact of Environmental Conditions on Subsistence in the Nordic Bronze Age

Elias Schuetz (UW-La Crosse)
Mentors: Amy Nicodemus and David Anderson, Archaeology & Anthropology

The Nordic Bronze Age provides a unique case for the study of subsistence practices, as the relative similarity of chiefdoms during this period allows insight into how local culture groups adapt to varying environments. Contemporary sites were chosen from three distinct regions: the temperate south with abundant arable land, the mountainous west with many fjords and coastlines, and the sub-arctic north with notable climate variance between its coast and inland. This study explore the impact of environmental factors such as climate, latitude, and water proximity on the food ways of Nordic communities, including crop production, animal husbandry, fishing, hunting, and foraging. Frequency comparisons were made between regions on subsistence materials, including plant and animal remains, and other food-related artifacts. Results indicate that proximity to water correlates with increased usage of aquatic resources, a temperate climate (typically in southern latitudes) correlates with significant reliance on crop and livestock husbandry, and an arctic climate (typically in northern latitudes) correlates with a continued reliance on hunting and foraging. This analysis provides a baseline for future settlement studies within Scandinavia

and other northern sub-arctic regions.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #36, Cleary Great Hall**

Evaluating the Effectiveness of the Mental Health Community Care (MHCC) Training Program

Skylar Schug, Abby Buschmann, Emma Buschmann, Brandon Hale, Aspen Duhm, and Hallie Cobian (UW-La Crosse)
Mentor: Michele Pettit, Public Health & Community Health Education

Mental health is a growing public health concern affecting individuals and communities in the United States. Approximately 1 in 5 adults in the U.S. (23.1%), experience mental illness each year (NIMH, 2022). With the widespread impact of mental illness, accessible mental health training is needed to equip individuals with the skills and knowledge to support themselves and others. Mental Health Community Care: Caring for Ourselves and Each Other (MHCC), a program developed by The Joy Labs, aims to create positive mental health behaviors, build resilience, and reduce stigma surrounding mental health. The program consists of a two-day training course that incorporates group discussion and activity-based learning to provide participants with practical mental health support skills. The purpose of this study was to evaluate the effectiveness of the MHCC training by analyzing participants' responses from pre-surveys, post-surveys, and follow-up post-post surveys measuring participants' confidence and perceived ability to apply MHCC skills. Pre- and post-surveys measure immediate changes following the training, while the follow-up assessment evaluates longer-term retention and application of these skills.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #37, Cleary Great Hall**

Testing the Tools: Experimental Replication and Microanalysis of Late Archaic Period Turkey Bone Tattooing Needles

Elizabeth Scott (UW-La Crosse)
Mentor: Heather Walder, Archaeology & Anthropology

Tattooing has existed for more than five thousand years, and archaeological evidence is found around the world in a variety of forms. This research project investigates tattooing in Eastern North America during the Late Archaic period, 3,500-1,600 BCE, based on findings from the Fernvale site in Tennessee, where, in 1985, modified turkey wing bones (radii) were found in a mortuary feature. Using microanalysis, the turkey radii revealed charcoal and blood residues on the tips, which is consistent with other known tattooing materials found in the archaeological record. This poster demonstrates the experimental archaeological recreation of six turkey radii needles and natural charcoal and ochre pigments. Then, with the help of a master tattoo artist and her apprentice, we evaluated, on synthetic skin, how long the radii tattooed effectively before they could no longer be used and the best method of application. Microscopic examination of the replicated tools shows usewear patterns, including polishing up to 1mm of the tip, breakage, and pigment staining. This experiment will help future researchers recognize possible tattooing tools as distinct from other worked bone tools such as awls or sewing needles.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #38 Cleary Great Hall**

Perineuronal Net Formation in the Pre-hibernating Ground Squirrel Brain

Abbey Peterson and Jackson Lescamela (UW-La Crosse)
Co-author: Joseph Louis
Mentor: Christine Schwartz, Biology

Prior to hibernation, ground squirrels undergo an observable behavioral change where they eat substantially less food and become more lethargic, indicating hibernation readiness. Some ground squirrels will go into shallow torpor bouts during this time, but ambient temperature is consistent in the lab, so no squirrels will enter deep torpor. Previous work has established this behavioral change through assessment of food consumption and observations. Paired with this behavioral change, transcriptomic data also shows shifts in hypothalamic gene expression, comparing hyperphagic and hypophagic ground squirrels. Hyperphagic ground squirrels consumed approximately 25g of food per day, and hypophagic ground squirrels consumed approximately 7g of food per day. Importantly, hypophagic ground squirrels exhibited a hyperphagic phenotype prior to becoming hypophagic.

Notably, there is an increase in aggrecan, a component of perineuronal nets that is also increased during hibernation. We see an increase in perineuronal net deposition in the paraventricular nucleus of the hypothalamus during hibernation. This work will examine perineuronal nets during the pre-hibernation transition. Currently, we are splicing brains from the two groups, and we will use lectin histochemistry to examine perineuronal nets in the brain using previous methods. We predict we will see an increase in perineuronal nets in the hypophagic group.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #39, Cleary Great Hall**

DAMI Cell Apoptosis by Doxorubicin-Treated Breast Cancer Conditioned Media

Annabelle Stang and Ellen Heimermann (UW-La Crosse)
Mentor: Jaclyn Wisinski, Biology

Understanding the role of megakaryocytes in breast cancer progression is important for determining how chemotherapy affects tumor cell signaling. This study examines how molecules released by doxorubicin-treated breast cancer cells can induce apoptosis in megakaryocytes. DAMI cells were treated with varying concentrations of doxorubicin conditioned media and ABT or DMSO, then incubated with FLICA green. Flow cytometry was then performed to detect fluorescence levels, as increased fluorescence indicates the presence of apoptosis. By comparing fluorescence between treated and control cells, this study evaluates how signaling in doxorubicin-treated breast cancer cells affects megakaryocyte activity and apoptosis.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #40, Cleary Great Hall**

The Role of Father-Child Attachment in Successful Reentry after Incarceration

Lydia Stumpf (UW-La Crosse)
Mentor: Nicholas Bakken, Sociology & Criminology

Each year, thousands of fathers are released from prison in the United States and must navigate through the challenges of community reentry while attempting to rebuild relationships with their children. Although the majority of incarcerated parents are fathers, much of the existing research has focused on mothers, leaving a significant gap in our understanding of how father-child relationships influence successful reintegration after incarceration. This study examines how child involvement during incarceration shapes key reentry outcomes such as depression, employment, criminal behavior, and substance use. Data for this study are drawn from a sample of 319 formerly incarcerated fathers who participated in a longitudinal study related to prisoner reentry. The analysis utilized path analysis models to examine father-child attachment as a mediating factor between a range of pre-release conditions and post-release outcomes. The results highlight the need for programs and policies to help fathers maintain relationships with their children and improve reintegration outcomes following release.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #41, Cleary Great Hall**

Correlation of Mansur Equation SPF Estimates with *In Vivo* SPF Values

Peter Tagalakis and Magnus Schroeder (UW-Parkside)
Co-authors: Jacob Christensen, Mark Mamalakis, Regiah Cosey, and Olivia Imhoff
Mentor: Ilirian Dhimitruka, Chemistry

The Mansur equation is an inexpensive method often used to assess whether a new UV filter or plant extract is a suitable candidate for further development. The equation by Mansur and co-workers was introduced in 1987. At the time, the authors were able to correlate the values of UV absorbance of UV filters mathematically in solution with the *in vivo* SPF of sunscreen emulsion. The measurement of SPF *in vivo* involves human volunteers and is an expensive clinical procedure. *In vitro* methods to estimate SPF via transmission spectra of emulsions are also expensive, requiring specialized UV spectrophotometers for sunscreen testing, such as the LabSphere UV2000S, a solar simulator, and expensive polymethylmethacrylate plates to obtain reliable SPF values. The Mansur equation is a convenient alternative requiring only UV absorbance measurements of UV filters in alcoholic solutions. Because of the FDA's stringent requirements for approving new UV filters, manufacturers have focused on developing non-active ingredients such as emollients, emulsifiers, and rheology modifiers. Such modifications boost SPF

and the broadband capacity of sunscreen emulsions *in vivo* by scattering rather than absorbing UV radiation. As a result, SPF values of emulsions measured according to the Mansur equation underestimate the protection that UV filters offer when incorporated into commercial formulations. The purpose of this study is to calculate SPF values using the Mansur equation in commercial sunscreens and to determine new correlation factors to estimate SPF values closer to *in vivo* measurements.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #42, Cleary Great Hall**

Training Associations and Predicting Behaviors: An Examination of the IAT

Brenna Thoen (UW-La Crosse)
Co-authors: Shakira Brockhaus, Kristen Roggenbauer, and Lydia Byers
Mentor: Alexander O'Brien, Psychology

Research on the development of implicit associations and the extent to which they influence behaviors is somewhat inconsistent. Study 1 trained participants to associate neutral stimuli with affective terms and verified the effectiveness of training using an IAT. Results indicate that implicit associations detectable by the IAT can be trained, and subsequently bias behavioral preferences. Studies 2 and 3 measured influences on applied behavior and duration of the influence of training.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #43, Cleary Great Hall**

Achievement Gaps in Wisconsin Schools after the Pandemic

Bry Thoreson (UW-La Crosse)
Mentor: Regina Goodnow, Political Science & Public Administration

The COVID-19 pandemic is something that significantly disrupted education for students across the country. However, research has shown that minority and poorer students were affected to a much greater extent (Gee et al., 2023). The purpose of my study is to uncover whether or not the return to in-person learning made any difference in education outcomes for the students most impacted by the pandemic. Specifically, I look at performance indicators – including grades and standardized test scores – across several demographically diverse school districts in Wisconsin. Although my focus is on Wisconsin, I also assess scholarship on national trends to help determine which policy recommendations may be the best solutions for our state. This research is significant because if these gaps persist then already-existing social inequities will likely perpetuate, unless the right policy change occurs.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #44, Cleary Great Hall**

Utilizing Photovoice to Answer: Why Public Health?

Emma Thurner (UW-La Crosse)
Mentor: Sarah Pember, Public Health & Community Health Education

As a Department of Public Health & Community Health Education (PHCHE), we are interested in the question, "Why public health?" This question is multifaceted and has several potential directions, including "Why does public health matter?" "Why should students still study public health?" "Why do specific students stay in the major and stay driven to do this work despite challenges facing them now and in the future?" To answer these questions, we undertook a well-established form of Community-Based Participatory Research (CBPR) called Photovoice with undergraduate students as the active participants. Photovoice is a photography-based method to prompt participants to share their experiences, perspectives, and feelings after taking pictures.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #45, Cleary Great Hall**

Impact of Gradation Change on the Volumetric Properties of Asphalt Mixture (Phase II)

Oliver Vanden Heuvel, Mohammad Ameen, and Nick Burkard (UW-Platteville)
Co-author: Aidan Lackas
Mentors: Danny Xiao, Civil and Environmental Engineering; and Mark Putzi

Gradation, or the particle size distribution of aggregates in an asphalt mixture, plays a critical role in determining the performance and durability of pavement. Therefore, adjustments should be made in the asphalt plant whenever significant changes of gradation are detected. However, the current practice is reactive and delayed due to the lengthy testing process. The objective of this study is to investigate the impact of gradation changes on the volumetric properties of a typical Wisconsin asphalt mixture. In Phase II of this study, the variation of sieve 3/8, #4, #200 was adjusted beyond the specification limit, simulating unacceptable variation that requires countermeasures. This presentation summarizes the testing results, volumetric properties, and theoretical analysis using packing theory. It is envisioned that results from this study will contribute to the ultimate goal of helping asphalt plants react to gradation changes in a much faster and timely manner so that high-quality asphalt mixtures are produced at all times.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #46, Cleary Great Hall**

Wings of Remembrance: A UWL Tribute to Hmong Americans

Yia Vue (UW-La Crosse)
Mentor: Joshua Doster, Art

This project centers on the creation of a culturally symbolic sculptural centerpiece for the Hmong Exodus: 50th Commemoration to the End of the Secret War exhibit. The exhibit honors those lost during the CIA-led Secret War in Laos (1959-1975) and bridges Hmong history, community identity, and spiritual tradition through a three-dimensional eagle sculpture constructed from ceremonial joss paper. The eagle symbolizes both ancestral reverence and the UW–La Crosse mascot, representing remembrance, strength, and unity. Joss paper—traditionally burned in Hmong funerals to support souls in the afterlife—transforms the sculpture into a sacred offering, making it both a visual focal point and a communal act of cultural preservation and healing. Methods include design, sculptural construction, cultural research, and narrative integration. The outcome is an educational and emotionally resonant artwork that invites reflection on Hmong American displacement, resilience, and contributions, while laying groundwork for future interdisciplinary collaboration on campus and within the La Crosse community.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #47, Cleary Great Hall**

The Effect of Breast Cancer Cell Secretions on DAMI Cell Apoptosis

Julia Wagner, Chloe Yager, and Corvin Haake (UW-La Crosse)
Mentor: Jaclyn Wisinski, Biology

In its worst forms, breast cancer is able to metastasize in the bone marrow. When it does this, it disrupts the bone marrow microenvironment and may cause changes in platelet-producing megakaryocytes. Platelets are known for their hemostatic properties but recent findings show they may play a role in cancer cell death. Previous experiments showed that some breast cancer cell lines release molecules that inhibit DAMI cell (megakaryocyte) proliferation while other breast cancer cell lines have no effect. For our experiment, we are looking to see if breast cancer cell lines release molecules to promote DAMI cell death. DAMI cell lines are treated with different conditioned medias from different breast cancer cell lines and apoptosis is monitored for with FLICA (Fluorescence inhibiting caspase activation) using flow cytometry. We anticipate that the cell lines that inhibit DAMI cell proliferation will cause an increase in DAMI cell apoptosis.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #48, Cleary Great Hall**

Which Wisconsin Universities Do Wisconsin CPA Firms Prefer to Hire from and Why?

Michael Westbrook (UW-Whitewater)
Mentor: Jill Weber, Accounting

This study examines the hiring preferences of Wisconsin CPA firms regarding graduates of Wisconsin-based universities. Using survey data from accounting firms, we analyzed responses on preferred schools and university- and student-related factors that influenced hiring decisions. Results indicate that firms most often favor graduates from UW-Whitewater, UW-Madison, and Marquette, while UW-Platteville and UW-River Falls are less frequently preferred. Key student-related considerations included cultural fit, work ethic, and trustworthiness, while university-related factors such as alumni connections and familiarity with campus influenced firm preferences. These findings provide new insights into the Wisconsin accounting job market and may assist employers, educators, and students in aligning recruitment and career-preparation strategies.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #49, Cleary Great Hall**

Ion Beam-Engineered Gold Nanoparticles for Photoluminescence Modulation of Semiconductor Nanocrystals

Griffin Wierzba (UW-La Crosse)
Co-authors: Alex Notz and Tyler Demulling
Mentor: Shahid Iqbal, Physics

The Photoluminescence (PL) signals of various InP/ZnS quantum dots (QDs) in the proximity of embedded gold nanoparticles were investigated through experiments to explore the plasmonic interaction between them. InP/ZnS QDs are useful for various applications, including optics and optoelectronic devices; however, in some cases, their PL emission signals need enhancement. Gold nanoparticles could potentially be used to amplify signal strength. The gold nanoparticles used in these experiments were synthesized in single-crystal sapphire glass slides using ion implantation at a fixed fluence but varying ion beam energies. To examine the interaction between the nanoparticles and the quantum dots, all gold implanted samples, along with a reference sample, were drop coated with InP/ZnS QDs dissolved in toluene. Each sample was then excited at certain wavelengths, after which the resulting emission spectra were analyzed to determine if the gold nanoparticles quenched, enhanced, or had no effect on the signal from the fluorophore. PL measurements were recorded using steady-state photoluminescence spectroscopy, and the presence of the gold nanoparticles was confirmed by optical absorption spectroscopy.

Poster Presentation **Session C (12:45 - 1:40 pm), Poster #50, Cleary Great Hall**

My WISCO Home

Hailey Reseburg (UW-La Crosse)
Mentor: Kathleen Hawkes, Art

I'm Wisconsin born and raised. Who better to create a project about my homeland than a local? When I look at Wisconsin, I see more than cheese, beer, and the Packers. I see friendly people, beautiful landscapes, lakeside living, dedicated farmers, diverse political views, and a unique culture. I plan to create a solo art exhibition of photographs of my home town, Appleton, Wisconsin. My experience as a traveling photojournalist, my photography coursework at UWL, and my experience living in Appleton have all prepared and inspired me to take on this project. It will showcase the landscape, nature, street scenes, and people of my home town. Every state has a story, and I want to capture a unique story about Wisconsin. Though I plan for the scope of this project to focus only on Appleton, in the future I would like to make a larger series of photographs that features many towns in Wisconsin. This is just the beginning.

Exhibit **Session C (12:45 - 1:40 pm), Exhibit Table, Cleary Great Hall**

Neurotoxic Impact of Nicotine and Imidacloprid on the Encephalon of Chicken Embryos

Elizabeth Dietz and Brielle Hachey (UW-La Crosse)
Co-author: Calvin Majchrzak
Mentors: Anton Sanderfoot and Christine Schwartz, Biology

This project will examine and compare the encephalon of chick embryos exposed to nicotine or imidacloprid, a synthetic insecticide that targets nicotinic acetylcholine receptors (nAChRs), to investigate how these substances may disrupt normal neurodevelopment. Nicotine and imidacloprid are both widely used chemicals with potential neurological effects, and studying their impact on developing chick brains may provide insight into possible risks for human brain development. NAChRs play an important role in neurotransmission; exposure to these compounds may interfere with cellular density, quality, and overall brain structure. A sample of 24 developing chick embryos was injected with 0, 3, or 10 µg/mL nicotine, imidacloprid, or a control treatment and allowed to develop for two weeks. We then dissected, harvested, and analyzed the brains using cryostat sectioning and direct and indirect immunofluorescence to assess structural and cellular changes. By using histological techniques, this study will determine whether early exposure to nicotine and imidacloprid causes neurological damage with implications for brain function and human health.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #1, Cleary Great Hall**

Effect of Water Temperature on the Growth of Sculpin (*Cottus spp.*) in a Controlled Environment

Morgan Schmidt (UW-La Crosse)
Co-author: Katelynn Ripper
Mentor: Ross Vander Vorste, Biology

Freshwater ecosystems are increasingly affected by rising water temperatures due to climate change. Cold-water fish species, such as slimy sculpin (*Cottus cognatus*), may be particularly vulnerable to even small increases in temperature because of their narrow thermal tolerances. This study examines how incremental warming affects growth and survival under controlled conditions. We hypothesized that incremental increases in temperature will reduce growth rates and potentially decrease survival as metabolic demands increase under warmer conditions. Slimy sculpin collected from the Kickapoo Watershed in Wisconsin using backpack electrofishing were placed in mesocosms at the Prairie Springs Science Center. Fish were exposed to three temperature treatments: 16°C (baseline), 18°C (moderate increase), and 22°C (elevated stress condition). All other environmental variables, including dissolved oxygen, food availability, and water quality, were be kept constant. Growth was measured through recordings of total length and body mass over a four-week period, and survival and behavior were monitored daily. Data were be analyzed using ANOVA to compare growth and survival across treatments. This study will help clarify how gradual warming may impact cold water fish populations in natural stream ecosystems.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #2, Cleary Great Hall**

Evaluating The Effectiveness of Nutrient Addition for Prairie Restoration

Bethany Fick (UW-La Crosse)
Co-author: Anita Davelos
Mentor: Anita Davelos, Biology

Before Europeans arrived in Wisconsin, native prairies were common. There were around 2.1 million acres, but less than 0.5 percent of native prairies remain. The remaining native prairies vary dramatically in quality, resulting in decreased plant, bird, and mammal diversity. Some organizations such as ORA Trails are trying to reestablish prairies for educational, environmental, and recreational purposes. However, it is unclear what the best restoration strategy is. The first step to reestablishing habitats is reintroducing the native plants. To give the native prairie plants the best chance of success, two options have been suggested to increase soil nutrients before reintroduction: cover crops and fertilizer. This experiment determines the effects of fertilizer, cover crops, and both together on germination, growth, and overall biomass of two native prairie plants. The results of this experiment will provide guidance for restoration efforts in the field. Two types of soil were tested with two different species of prairie plants: little bluestem and purple coneflower. A total of 24 different treatments were used, with six replicates of each.

Cover crops were grown, analyzed, and mixed into the soil. Fertilizer was used, and the prairie species were grown. Overall germination, height, and biomass were compared between treatments.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #3, Cleary Great Hall**

How Do Solar Magnetic Fields Change as a Result of Solar Flares?

Hanna Arvay (UW-Green Bay)
Mentor: Brian Welsch, Physics

Solar flares cause "Space Weather" impacts at Earth, including radio blackouts and degraded Global Positioning System performance. Flares are powered by the sudden release of magnetic energy stored in electric currents flowing in the magnetic field of the corona. Thus, understanding how magnetic fields evolve around flare times can provide insights into flare mechanisms – a major research problem in helio- and astrophysics. A magnetic field's energy depends on *current* flowing within the field and the field's *length scale*, and decreasing either (or both) can lower the field's energy. Observations of flares suggest that currents do not systematically weaken afterward, leading us to hypothesize that the decrease in magnetic energy in flares likely arises from overall, field-strength-weighted *shortening* of field lines (in general, some will lengthen). Unfortunately, the magnetic field vector in the corona cannot presently be measured observationally, so this hypothesis cannot be tested directly. Instead, we test this hypothesis using model coronal magnetic fields extrapolated upward from observations of the photospheric field, by comparing statistical properties of field lines before and after flares.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #4, Cleary Great Hall**

Before the Scare: How Medical Discourses Enabled Federal Anti-homosexual Policies and Surveillance

Alison Bishop (UW-Whitewater)
Mentor: Karl Brown, History

This research project examines how the medicalization of homosexuality in the late nineteenth and early twentieth centuries laid the conceptual groundwork for surveillance and exclusionary policies that accumulated in the 1950s Lavender Scare, the systematic exclusion of homosexuals from the federal government during the Cold War. While existing scholarship often emphasizes national security anxieties, bureaucratic procedures, or the influence of medicalized language on gay rights, this study demonstrates the pattern of using medical language to frame homosexuals as 'deviant,' 'security risks,' and 'unsafe' before and during the Lavender Scare. Cold War policies amplified practices of exclusion by building upon years of policing, university purges, and legal prosecution of homosexuality. During the Lavender Scare, congressional investigations, surveillance programs, and Executive Order 10450 drew directly on medicalized assumptions about weakness, instability, and susceptibility to blackmail to legitimize widespread dismissals of homosexual employees. By tracing the connections between medical discourse, pre-Cold War persecution, and federal security policy, this paper argues that the Lavender Scare was not an abrupt response to Communist concerns rather, it was a culmination of decades of socially entrenched pathologization that allowed legitimization to exclusionary policies.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #5, Cleary Great Hall**

Active Site Hydrogen-Bonding Residues Serine 98 and Threonine 100 Are Critical for Fumarase Catalysis

Maria Benz and Delaney Benson (UW-La Crosse)
Mentor: Todd Weaver, Chemistry & Biochemistry

Fumarate Hydratase is an essential enzyme present in all living things that catalyzes the reversible hydration of fumarate to malate in step seven of the tricarboxylic acid (TCA) cycle. The enzyme contains four active sites hallmarked by the presence of a structurally dynamic loop and an active site water. Each active site contains a network of well-conserved residues around

the water molecule, though their function is unknown. This project focuses on two residues from a FumC active site, which is the *E. coli* version of Fumarate Hydratase. These residues, Serine (S) at position 98 and Threonine (T) at position 100 have the characteristic ability to form hydrogen bonds with water molecules due to their hydroxyl groups. Alanine variants were generated, S98A and T100A, to examine how an elimination of hydrogen bonding ability in the active site residues will alter structure and therefore function of FumC. In these variant enzymes, there is nearly a 2000-fold decrease in catalytic efficiency. However, T100A appears to be more stable than the wild-type enzyme and has a slightly higher affinity for its substrate. The results presented demonstrate a key role for both serine 98 and threonine 100 during both fumarate binding and catalysis.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #6, Cleary Great Hall**

Annotation of Curly Su, an Insulin Signaling Pathway Gene in *D. ananasae*, for the GEP Pathways Project

Colton Blank (UW-La Crosse)
Mentor: Alder Yu, Biology

Annotation of genes is a critical component of understanding evolutionary biology and has an influence on developments made in human health through identifying genes in model organisms responsible for genetic diseases plaguing society. Gene annotation uses DNA sequences of a model organism, a well-researched species, to identify important proteins and biological processes encoded within less well-understood species. The GEP Pathways Project is a collaboration of researchers with a desire to better understand evolutionary biology. The project's end goal is to understand how regulatory regions of genes evolve within their positions in a network. The current focus of the project is on the insulin signaling pathway. This is because the conservation of the pathway across animals is high and how critical it is to growth and metabolic homeostasis within those animals. Annotation of the gene curly su (cysu) within the species *Drosophila ananasae* will be conducted for the pathways project. The annotation will be conducted using the GEP genome browser provided through the GEP Pathways Project and the NCBI BLAST sequence alignment program. Curly su is the gene responsible for encoding a protein that enables peroxidase activity in a cell. Peroxidase activity uses peroxides, such as hydrogen peroxide, to protect cells from oxidative stress, or reactive oxygen species (ROS). ROS is known to interfere with the insulin signaling pathway and damage proteins, lipids, and DNA.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #7, Cleary Great Hall**

#almonddaughter: How Pro-anorexic Rhetoric is Represented, Commercialized, and Amplified by Fitness and Healthy Lifestyle TikToks

Sikora Bretsch (UW-La Crosse)
Mentors: Bryan Kopp and Darci Thoune, English

The purpose of this study is to understand how pro-anorexic rhetoric may manifest in popular, health-related video content on TikTok. A mixed-methods approach was used, combining qualitative analysis of textual and visual content with statistical testing to examine pro-anorexic rhetoric, identify recurring patterns in fitness and healthy lifestyle TikToks, and ultimately explore the relationship between these discourses. This research began by investigating the textual elements and patterns of interaction on a pro-anorexia site. This was done using a dataset consisting of posts and replies collected from the online forum currently known as "ED Support Forum" (EDSF), previously "MyProAna." Forum post data were coded and underwent word frequency analysis to derive current themes of pro-anorexic rhetoric. The fitness and healthy lifestyle TikTok dataset were collected in a manner which replicated the user experience of seeking out such content. Video data underwent textual and visual qualitative analyses. EDSF and TikTok video results underwent comparative analyses to investigate thematic similarities, differences, and potential for amplification of pro-anorexic rhetoric via TikTok. Discussion will center around the function and implications of pro-anorexic rhetoric manifesting in fitness and healthy lifestyle content, as this may pose elevated risk for eating disorder development in TikTok audiences.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #8, Cleary Great Hall**

Impact of Cryoprotectants on Human Blood Platelet Viability

Aiden Carney (UW-La Crosse)
Co-authors: Claire Gabriel, Charles Tempski, and Autumn Bonti
Mentor: Scott Cooper, Biology

Thirteen-lined ground squirrels undergo physiological changes during hibernation. One of these is that platelets in their blood are resistant to storage in cold conditions. The effects of various cold storage treatments were assessed on human platelets. In collaboration with colleagues at the Federal Drug Association (FDA), the cryoprotectant DMSO (Dimethyl Sulfoxide) was tested in frozen storage of human and ground squirrel platelets. In the past, assay results have confirmed that after varying periods of cold storage (7, 14, 21 days), platelets treated with DMSO before freezing maintain stable levels of mitochondrial polarization. Future Assays will be run to assess platelet viability, specifically observing fibrinogen binding to evaluate platelet activation after periods of cold storage. These findings could have potential medical applications for prolonging the storage of human platelets for transfusions in a variety of medical fields.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #9, Cleary Great Hall**

Conductive Pyrrole-Imidazole Copolymers as Co-catalysts for Enhanced Electrochemical CO_2 Conversion on Copper

Jayden Chaney and Reese Resheske (UW-La Crosse)
Mentor: Sujat Sen, Chemistry & Biochemistry

Increasing atmospheric carbon dioxide (CO_2) levels and growing demand for energy prompt the development of technologies that convert CO_2 into fuels using renewable electricity, and this is an active area of research. Previous work has shown that copper-based catalysts can aid in producing a wide range of hydrocarbons through the electrochemical conversion of CO_2 but cannot selectively produce a product of choice, such as ethylene or propanol. We have recently demonstrated that pyrrole can be polymerized on the surface of copper to create thin films of a polymer called polypyrrole, which supports the primary catalyst and enhances the selectivity of the CO_2 conversion reaction. Herein we report on recent attempts to design a new conductive polymer composed of pyrrole and imidazole, which, when polymerized together, form a copolymer (pPyIm) film. Because this plastic-like material produced can conduct electricity, it provides a modifiable framework for tailoring catalyst surfaces. Further electrochemical techniques (i.e., cyclic voltammetry and chronoamperometry) allow us to adjust the deposition procedure, while changes in the catalytic surface morphology are assessed via electron microscope. Understanding how conductive polymer–copper interfaces influence catalytic performance guide the design of improved materials for efficient electrochemical conversion of CO_2 into hydrocarbon fuels.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #10, Cleary Great Hall**

Regulation of Monocyte Cytokine Production by MHC Class I Stimulation

Damion Cherney and Caley Nell (UW-La Crosse)
Co-author: Kylie Mayer
Mentor: Zachariah Tritz, Microbiology

The major histocompatibility complex (MHC) class I molecule is present on every cell in the human body. The main function of this protein is to communicator to the immune system by presenting intracellular peptide fragments to cytotoxic T lymphocytes (CD8+ T cells). Preliminary publications suggest that the MHC class I also functions as a signaling protein that influences the antigen-presenting cell when bound by the CD8+ T cells, though this mechanism is still under-explored. The stimulation of MHC class I was seen to induce an anti-inflammatory response in some innate immune cells. We are determining the impact of the MHC class I on Pattern Recognition Receptor (PRR) activated inflammatory response on RAW264.7 macrophages and THP-1 monocytes when stimulated by lipopolysaccharides (LPS) and other microbially-derived "danger signals". Many microbial products drive powerful inflammatory pathways in monocytes and the release of pro-inflammatory cytokines or reactive oxygen species. Because we believe that these pathways might be regulated by MHC Class I signaling, we used multiple techniques to measure the activation of these monocytes secreted inflammatory mediators.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #11, Cleary Great Hall**

Hydrogen Peroxide Treatment for Cyanobacteria and Its Impact on Microbial Communities

Lillian Dalbey and Izzy Breit (UW-Platteville)
Co-authors: Stella McGowan, Rachel Dorn, and Chloe Eckhart
Mentor: Rebecca Doyle-Morin and Mark Horton, Biology

Wisconsin's freshwater is a vital resource in electrical power production, agriculture, fishing, and other leisure activities. Aside from human use, these waterways are important habitats housing complex ecosystems. Every summer, these ecosystems are at risk of disaster. Cyanobacteria, also known as blue-green algae, are best known for their freshwater blooms. In life, these organisms may produce toxins and block sunlight from reaching aquatic plants, and in death, they release irritating gases and consume massive amounts of oxygen in the water, creating "dead zones" where aquatic life can not survive. The primary cause for algal blooms is nutrient pollution, typically traced to overuse of fertilizer in agriculture, fossil fuel emissions, urban runoff, and wastewater. Though prevention is the best option to protect freshwater ecosystems, multiple different treatments have been developed to control these algal blooms, with hydrogen peroxide becoming a popular solution. This chemical oxidizes the algae, causing them to die. While an effective algaecide, there are concerns regarding its effect on other organisms in the ecosystem. Our study investigates the impact of hydrogen peroxide treatments on the microbial community by studying its effect on water chemistry and various algae species, bacteria, and Daphnia.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #12, Cleary Great Hall**

Experiences of Workers and Volunteers at a Warming Center

Rachel Davidson (UW-La Crosse)
Mentor: Timothy Gongaware, Sociology & Criminology

This study explores perspectives toward their work and the residents they serve for warming center staff and volunteers. Warming centers offer temporary shelter from cold weather, often for unhoused individuals. Previous research has primarily explored more permanent shelters, while the current study addresses the overlooked setting of warming centers through intensive interviews with staff and volunteers. Interview transcripts are coded and analyzed for themes. These front-line service workers are directly tasked with addressing increasing homelessness in the United States. Understanding their perspectives is important for supporting both service providers and the vulnerable population they serve. This study may identify unmet needs for warming center staff and volunteers, potentially informing policies and practices regarding training, support, and work-life balance.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #13, Cleary Great Hall**

From Learners to Leaders: Exploring the Early Years of Language Teaching

Grace Debbink (UW-La Crosse)
Co-author: Kimberly Morris
Mentor: Kimberly Morris, Global Cultures & Languages

Teaching is a rewarding yet challenging profession with a high turnover rate, particularly within the first five years (Machtig, 2024). World language teachers face additional challenges due to limited disciplinary support and resources (Stephens, Hall, & McCampbell, 2015). This study examines the experiences of early-career world language teachers, with the goal of supporting their retention and informing the curricular design of the UWL teacher preparation program. Specifically, this project explores how language teachers' experiences evolve within their first three years. The participants were five recent graduates from the UWL World Language Education program who are in their third year of teaching and have engaged in longitudinal research since completing the program. Data was collected via semi-structured Zoom interviews with each participant, which were transcribed and coded thematically. Major factors that continued to impact participants' experiences in year three included pedagogical agency, workplace support, workload, and perceived impact. Although there was some thematic continuity from the first year, new themes from year three surfaced including increased confidence and advocacy skills, additional professional development, and expertise in relationships with students, staff, and families. Because these findings reveal the experiences that ultimately contribute to language teacher retention, they have important implications for the field.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #14, Cleary Great Hall**

Access to Grocery Store and Employment Locations Using MTU Bus Transit

Gabrielle Dickey (UW-La Crosse)
Mentor: Gargi Chaudhuri, Geography & Environmental Science

This research aims to evaluate access to the grocery store and employment locations using MTU bus transit. I will develop an origin-destination matrix (which includes block groups, selected workplaces, and food stores based on GTFS database) to evaluate space-time accessibility of MTU buses, then conduct three types of analysis: average travel time to/from selected locations, best average round-trip travel time for morning/evening rush hour time windows, and ratio of car to bus travel time.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #15, Cleary Great Hall**

Regulation of TLR Signaling Pathways by MHC Class I Stimulation

Brody Dion (UW-La Crosse)
Co-authors: Ben Drost and Audrey Quackenbush
Mentor: Zachariah Tritz, Microbiology

The major histocompatibility complex (MHC) class I molecule is present on every cell in the human body. The main function of this protein is to communicator to the immune system by presenting intracellular peptide fragments to cytotoxic T lymphocytes (CD8+ T cells). Preliminary publications suggest that the MHC class I also functions as a signaling protein that influences the antigen-presenting cell when bound by the CD8+ T cells, though this mechanism is still under-explored. The stimulation of MHC class I was seen to induce an anti-inflammatory response in some innate immune cells. We are determining the impact of the MHC class I on Pattern Recognition Receptor (PRR) activated inflammatory response on RAW264.7 macrophages and THP-1 monocytes when stimulated by lipopolysaccharides (LPS) and other microbially-derived "danger signals". Many microbial products drive powerful inflammatory pathways in monocytes and there is previous research from another group that contains hints that these might be regulated by MHC Class I signaling. We used western blots to measure the change in protein phosphorylation in these pathways following MHC Class I ligation and aim to expand upon this work further by generating an MHC Class I KO cell line next academic year.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #16, Cleary Great Hall**

Ethics in Translation: Ideology and Domestic Hierarchy in English and Japanese Translations of the *Odyssey*

Aidan Eberle (UW-Parkside)
Mentor: Dana Oswald, Literature and Languages

This project examines how translators' cultural and ideological assumptions—what André Lefevere calls their "Universe of Discourse"—shape modern readers' understanding of shame, hierarchy, and moral order in Homer's *Odyssey*. I focus on two scenes that raise difficult questions about gender and power: Helen's self-description in Book 4 and the execution of enslaved women in Book 22. By comparing four translators—Robert Fagles, Emily Wilson, Matsudaira Chiaki, and Nakatsukasa Tetsurō—I show how translation choices reframe Homeric ideas about shame, domestic authority, and enslavement. Placing English and Japanese translations side by side reveals patterns that would be difficult to see within a single linguistic tradition. The project combines close reading of the Greek with comparison of each translator's word choices and tone. I focus on key terms such as κυνώπιδος ("dog-faced"), ἀναιδείη ("shamelessness"), and words for enslaved women like δμῳαί and ἀμφίπολοι. These terms carry specific social meanings in Homer's world, and even small shifts in translation can change how readers judge characters and actions. Ultimately, the project argues that translation is inherently interpretive and shapes how the *Odyssey's* moral universe is understood.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #17, Cleary Great Hall**

Organic Light Emitting Diodes: Modeling of Molecular Components

Lily Estermann (UW-La Crosse)
Mentor: Robin Grote, Chemistry & Biochemistry

An organic light emitting diode (OLED) is a type of organic material that can radiate visible light when an electric current flows through it. OLEDs are used in numerous technologies, and their chemical composition has several benefits. Unfortunately, these chemical components suffer from issues such as degradation, color inaccuracy, and dark spots. The goal of this research was to gain a deeper understanding of the molecular components of organic light-emitting diodes to see potential influences on physical properties. This was achieved by studying a range of disubstituted 1,3,4-oxadiazoles using computational chemistry modeling techniques on the program *Spartan Student*. The primary components studied were highest occupied molecular orbital (HOMO), lowest unoccupied molecular orbital (LUMO), the energy difference between HOMO and LUMO (delta E), electrostatic potential mapping, torsion angle, position effects, and R-group identity. Our experiments did not produce the anticipated results and the data failed to display many of the expected trends. Limitations of the program made further experimentation challenging. Future work will involve redesigning the experimental protocols and exploring alternative software with fewer restrictions.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #18, Cleary Great Hall**

Investigating the Effects of Ibuprofen on Microvascular Function Post Passive Stretching

Nathan Gehm, Gavin Hanke, and Jackson Preusse (UW-La Crosse)
Mentor: Ward Dobbs, Health Professions

Passive stretching is a common technique used by physical therapists to improve range of motion and to increase blood vessel function. However, it is currently unknown how Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), such as ibuprofen, affect the increased blood vessel response following passive stretching. PURPOSE: The study aims to examine the influence of ibuprofen on the ability of passive stretching to stimulate improvements in blood vessel function. We hypothesize that ibuprofen will block the vasodilatory response of passive stretching of the calf muscle to a significant degree. METHODS: Approximately 10 healthy male and female participants with no history of vascular disease will be recruited to participate. This will utilize a randomized crossover design, where each participant will undergo four treatment conditions (passive stretch with ibuprofen, passive stretch without ibuprofen, sham stretch with ibuprofen, and sham stretch without ibuprofen). Testing of microvascular function and oxidative capacity will occur before and after passive or sham stretching using Near-Infrared Spectroscopy (NIRS) to measure tissue oxygenation of the calf. RESULTS AND 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.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #19, Cleary Great Hall**

Iron-Based Green Catalysis for Economically Valuable Oxidations

Davin Evans (UW-La Crosse)
Co-authors: Matthew Deering, Clare Yoerger, and Michael Murphy
Mentor: Robert McGaff, Chemistry & Biochemistry

Green chemistry is a growing methodology in the chemistry community whose main goals are to reduce the detrimental impacts of chemical processes on the planet and to eliminate hazards wherever possible. Many traditional oxidation reactions that are used in industrial syntheses of bulk chemicals are not 'green' and suffer from the need for expensive catalysts or harsh reaction conditions. To provide a better alternative to conventional methods, we have utilized an inexpensive and easily produced iron-based catalyst known as FeLX in combination with thiols to facilitate both alcohol and alkene oxidation under mild reaction conditions. These substrates are versatile building blocks and can be oxidized to create many classes of compounds such as aldehydes, carboxylic acids, epoxides, and ketones, all of which have unique relevance in manufacturing and industry. In creating these compounds, we can offer a safer, planet-friendly option to produce economically valuable products.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #20, Cleary Great Hall**

The Plot to Remove Men: Married and Single Women's Agency in *Fingersmith*

Emily Goode (UW-Green Bay)
Mentor: Rebecca Nesvet, Applied Writing & English

The Victorian Era is generally regarded as a time of great gender inequality. Upper- and middle-class Victorians upheld the doctrine of separate spheres, which delegated married women to the role of homemaker in the private sphere while men dominated the public sphere. The doctrine of coverture made women into legal wards of their husbands. However, some single women experienced more freedoms than their married counterparts. My research explores the differences in agency between married women and single women in Sarah Waters' acclaimed neo-Victorian novel, *Fingersmith*. I relate historical evidence concerning the differences in agency between married and single women in the actual Victorian era, to the plot of *Fingersmith*. In *Fingersmith*, Maud plots to obtain a husband to find freedom from an oppressive family. She learns that being married becomes a new kind of oppression. This novel reveals the reality for married women in the Victorian Era. At the novel's end, the heroines are able to imagine a world in which they don't need to rely upon men.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #21, Cleary Great Hall**

Stenotrophomonas testudinis sp. nov., Isolated from the Fecal Material of a Painted Turtle Living in the Wild

Thomas Grachan (UW-La Crosse)
Mentor: Xinhui Li, Microbiology

Stenotrophomonas is a genus of bacteria commonly found in the environment, and *S. maltophilia* is a well-studied opportunistic pathogen with intrinsic resistance to carbapenems. A bacterial isolate designated $9A^T$, was recovered from the fecal material of a wild turtle in Wisconsin. The isolate was sequenced using Illumina whole-genome sequencing, and ribosomal multilocus sequence typing was unable to identify its species but indicated that it belonged to the genus *Stenotrophomonas*. Several common bioinformatic tools were used to identify $9A^T$ with inconclusive results. Genomic and phylogenetic analyses showed that strain $9A^T$ represented a novel species within *Stenotrophomonas*. The genome length of $9A^T$ was 4.27 Mbp, and the G+C mol% was 67.21%. The other known *Stenotrophomonas* species with the highest dDDH and ANIb values when compared to strain $9A^T$ were both *S. forensis*, with values of 34.4% and 87.29%, respectively. Both values were below the accepted species cutoff values. Fatty acid analysis concluded that the most prevalent cellular fatty acid was iso-$C_{15:0}$ (32.4%), which is consistent with other members of the genus *Stenotrophomonas*. Based on these results, $9A^T$ represents a novel species of *Stenotrophomonas* for which the name *Stenotrophomonas testudinis sp. nov.* is proposed.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #22, Cleary Great Hall**

The Effects of CL-5, a Potential Anthelmintic, on Mutant *C. elegans* with Increased Oxidative Stress

Isabelle Haeft (UW-La Crosse)
Mentor: Jennifer Miskowski, Biology

Helminths are parasitic worms which infect people, plants, and livestock, contributing to disease and production loss. Anthelmintic resistance is the ability of helminths to survive drugs meant to eliminate or inhibit them. This resistance drives an urgent demand for new anthelmintics. A library of chemicals derived from the sweet fern (*Comptonia peregrina*), a medicinal plant native to Wisconsin, was screened with *Caenorhabditis elegans*, a nonparasitic model worm. One chemical, CL-5, was identified for its anthelmintic properties in *C. elegans* and shown to cause oxidative stress. Oxidative stress is triggered by molecules called reactive oxygen species, which are generated through the mitochondrial electron transport chain (ETC) and damage critical components of cells. Two mutant strains of *C. elegans* with defects in the ETC, *gas-1* and *clk-1*, were exposed to CL-5 to determine if they had altered sensitivity to the drug. Oxidative stress is also caused by imbalances in metal ions such as copper, iron, and zinc, and our lab has shown that CL-5 might impact copper levels. Therefore, *cua-1* mutants, which are defective in copper transport, were also tested. Wildtype or mutant worms were tested on culture plates with different concentrations of CL-5 and monitored at specific timepoints for paralysis.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #23, Cleary Great Hall**

The Effect of Co-occurring Disorders on Offenders' Lives after Incarceration

Danielle Hurley (UW-La Crosse)
Mentor: Nicholas Bakken, Sociology & Criminology

The United States' era of mass incarceration has prompted growing scholarly attention to the challenges of prisoner reentry; however, formerly incarcerated individuals with co-occurring mental health and substance use disorders (CODs) remain an understudied population. Research consistently demonstrates that both mental health and substance use disorders are disproportionately prevalent among incarcerated populations relative to the general public, yet correctional facilities are ill-equipped to address these treatment needs. Critically, reentry is not a uniform experience, and existing research illustrates that men and women navigate distinctly different pathways shaped by gendered histories of trauma, caregiving responsibilities, and systemic barriers to housing and employment. This study utilizes a contemporary sample of formerly incarcerated individuals to examine how CODs affect three critical reentry outcomes: housing stability, employment attainment, and recidivism. Gender-specific models are employed to assess whether the relationship between CODs and reentry outcomes differs meaningfully

across gender, with findings aimed at informing the development of more targeted, gender-responsive reintegration strategies for this population.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #24, Cleary Great Hall**

A Qualitative Study on Online and In-Person Activism

Emma Kettelson (UW-La Crosse)
Mentor: Sara Docan-Morgan, Communication Studies

This qualitative study examines the relationship between social media communication and traditional forms of activism. As social media platforms have become increasingly important in everyday communication, they have also become an important tool for raising awareness about political and social issues. This study explores how social media influences people's involvement in these issues and aims to better understand how individuals use social media to support social movements. Findings from this study highlight how online communication and traditional activism often work together, showing that social media can act as a tool that supports and strengthens traditional efforts of activism.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #25, Cleary Great Hall**

Studying the Intersection of Prime Factorizations, Linear Equations, and Ramsey Theory

Charlie Klawitter (UW-La Crosse)
Co-authors: Alex Hansen and Jordan Pellett
Mentor: Nathan Warnberg, Mathematics & Statistics

Prime numbers and linear equations have been studied by mathematicians for thousands of years. Despite this long history, there remain connections between primes and linear equations that remain unexplained. One of these relationships lies at the intersection of two areas of mathematics, called Ramsey Theory and anti-Ramsey Theory. For example, consider the set {1,2,3,4,5} colored with the three colors red, blue, and green as follows: 1 (red), 2 (blue), 3 (red), 4 (green), 5 (red). Now, consider the linear equation x+y=2z. A rainbow solution to the equation is {2,3,4} since each number is colored distinctly and (2)+(4)=2*(3). A monochromatic solution is {1,3,5} since each number is colored the same and (1)+(5)=2*(3). In this talk, we will discuss deep connections between prime factorizations of numbers and rainbow and monochromatic solutions to x+y=2z. In particular, we use modular arithmetic, which adds an extra level of complexity but also extra structure to rainbow and monochromatic solutions. We apply results from Abstract Algebra and Combinatorics to gain new insights into Ramsey Theory.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #26, Cleary Great Hall**

Predictors of Polycystic Ovary Syndrome in Fifteen- to Fifty-Year-Old Women

Natalie Koestler (UW-La Crosse)
Mentor: Enilda Delgado, Sociology & Criminology

Using data from the 2022-2023 National Survey of Family Growth with sample of 5,586 females ranging from 15- to 49-year-olds, this research explores the relationship between demographic and stress-related factors and the prevalence of Polycystic Ovary Syndrome (PCOS). Using fundamental cause theory, the research hypothesized that many of the factors in this study impact the likelihood of PCOS diagnosis. Univariate and bivariate and logistic regression analyses were conducted on the relationship between socioeconomic status, race, education, contraceptive use, body mass index, and prevalence of violence in childhood on the dependent variable of PCOS diagnosis.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #27, Cleary Great Hall**

Fabrication and Surface Functionalization of AZ91D Gyroid Magnesium Scaffolds via Pressure Infiltration Casting for Enhanced Bone Regeneration

Mohith Kumar (UW-Milwaukee)
Co-authors: Anna Jeanne Nikolich, Sri Kavya Durga Devineni, Kaustubh Kishore Rane, Mehran Zare, and Fatemeh Mahmoudi Kouchaksaraei
Mentor: Pradeep Rohatgi, Materials Science & Engineering

Magnesium alloys have gained increasing interest as biodegradable materials for orthopedic implants due to their bone-like mechanical properties and ability to resorb safely in the body. AZ91D provides a balance of castability, biocompatibility, and corrosion behavior suitable for early-stage scaffold development. This project focuses on creating AZ91D gyroid-based tissue scaffolds using a novel mold-making approach that supports reliable casting of complex porous structures for bone regeneration. Molds were 3D-printed to capture a gyroid architecture, chosen for its uniform stress distribution, interconnected porosity, and biomimetic stiffness. Initial PLA and plaster-of-Paris molds failed during sintering at 700°C due to excessive thermal expansion. Wax-enhanced PLA was subsequently introduced for its negligible thermal expansion, enabling stable sintering, high-fidelity negatives, and successful pressure infiltration casting of AZ91D into intricate gyroid structures. Scaffolds were characterized through SEM–EDS, XRD, and ICP-based chemical analysis to evaluate microstructure, phase distribution, and elemental stability. Biological testing included degradation studies and in-vitro assays including MTT cell-proliferation, Live/Dead viability staining, and cell-attachment evaluation. Early results demonstrate consistent magnesium degradation profiles and promising cell adhesion, indicating potential suitability for osteoconductive applications. This work establishes a repeatable workflow for producing gyroid magnesium scaffolds and contributes to the development of resorbable metallic implants combining controlled degradation, structural integrity, and enhanced biological response for orthopedic tissue-engineering applications.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #28, Cleary Great Hall**

Law, Identity, Language: Linguistic Patterns in Supreme Court Dissents

Grace Lundie (UW-La Crosse)
Mentor: Kristina LaPlant, Political Science & Public Administration

This study examines how the identity of Supreme Court Justices influences the linguistic and rhetorical patterns in dissenting opinions. Using a corpus of dissenting opinions from the Robert's Court (2005-2025), a Linguistic Inquiry and Word Count (LIWC) was applied to quantify emotional and cognitive word usage across a multitude of legal issue areas. While prior research has explored ideological differences in judicial opinions, few studies have systemically examined how identity impacts language patterns. The primary interest of the study is to offer insight on how these language patterns vary by sex and ideology within legal discourse.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #29, Cleary Great Hall**

Lessons from the Past: Leveraging Museum Specimens to Advance Freshwater Biomonitoring

Andrew Malacara (UW-Parkside)
Co-authors: Cole Kupsch, Natalie Diller, Hannah Kay Cantin, Jack Stecker, Elyse Upthagrove, Skylar Johnston, and Mickayla Denis
Mentors: Jessica Orlofske, Biological Sciences; Craig Brabant, Entomology (UW-Madison); and Jeff Dimick, Wisconsin Cooperative Fishery Research Unit (UW-Stevens Point)

Biomonitoring is used to complement other measures of water quality because the distribution of biological organisms can predicably shift in response to environmental change. The work of William Hilsenhoff was fundamental to the application of benthic macroinvertebrates for biomonitoring. The Hilsenhoff collection and other reference material continues to provide a vital resource for future biomonitoring innovation, but its data remain largely inaccessible. Fundamentally, the accurate interpretation of biomonitoring data requires updated taxonomic information so changes in assemblages can be appropriately linked to environmental perturbations. Furthermore, shifts in occurrence patterns may reflect fluctuations in geographical distributions indicative of larger scale change or management actions. Therefore, we aim to 1) harmonize taxonomic data for sensitive invertebrate taxa and 2) document changes in occurrence by comparing records available from partner institutions

and publicly available data. These activities will support the accurate calculation of metrics for regulatory and community science monitoring efforts while also identifying locations for contemporary sampling needed for evaluating long-term trends. In addition, the digital records of specimens generated from across the state will, like the Hilsenhoff collection itself, become an on-going and growing asset for regulatory professionals, members of the public involved in community science, and other researchers.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #30, Cleary Great Hall**

Structural and Functional Consequences of Charge-Altering Mutations at a Clinically Relevant Site within Fumarate Hydratase

Brandon Mudler and Samuel Shikenjanski (UW-La Crosse)
Mentor: Todd Weaver, Chemistry & Biochemistry

Clinical mutations in the metabolic enzyme fumarate hydratase have been observed in which the amino acid arginine was replaced with a glycine at position 444. In addition to this clinically relevant mutation, a charge conserving, charge reversing, and neutralizing mutations were examined and studied kinetically and structurally. R444 is positioned between symmetry-related subunits in the FH structure, forming bridging interactions with two water molecules. This bonded bridge creates a route for communication between the dynamic active site loop and a flexible domain, which was previously shown to be important during the fumarase reaction. We propose that the replacement of arginine at amino acid position 444 with glycine, lysine, glutamate, or glutamine, will have varying effects on the function and structure of human fumarase. In particular, the glycine and glutamate variants will impact the ability of FH to conduct its metabolic reaction, while the glutamine and lysine variants will have lesser impact.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #31, Cleary Great Hall**

Beyond the Portraits: Reframing Madame Élisabeth Vigée Le Brun's Legacy from the French Revolution to American Pop Culture

Isabella Pahl (UW-La Crosse)
Mentor: Dany Jacob, Global Cultures & Languages

In 2019, nearly 200 years after her death in 1842, one of Élisabeth Vigée Le Brun's paintings became the most expensive work done by a pre-modern female artist to be sold at auction. It sold for $7.8 million, and in 2024 another painting was marketed for just under $4 million. As she continues to capture the hearts of the public, it is not forgotten that she created some of the most recognizable portraits of controversial 18th century French aristocrats, and in pursuing an artistic career, she became one herself. Today, she is heralded as both an early feminist and Grand Master painter, yet also as a selfish, untalented woman who catered to the aristocracy, and everything in between. A reevaluation of current and past scholarship, including old newspapers, academic articles, and museum exhibits, combined with an analysis of her own retelling in her memoirs, will help understand her sudden reemergence into popular culture and trace her evolution across history. Overall, this research will draw on topics such as feminism and femininity, agency and gender, and cultural memory to depict Le Brun beyond just a celebrated painter, but a figure whose interpretations reflect greater historical and intellectual trends.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #32, Cleary Great Hall**

Chemical and Textural Differences in North-Central Wisconsin Granites

Kybie Roys and Andrew Veroeven (UW-Whitewater)
Co-author: Ghost Stoner
Mentor: Prajukti Bhattacharyya, Geography, Geology and Environmental Science

Red granite, Wisconsin's state rock, is associated with 1.5-billion-year-old granitic intrusions across north-central Wisconsin. Previous work has shown that these intrusions might have formed from melting of the lower crust, however no detailed analysis

has been conducted. Analyzing the chemical and textural composition of samples from different outcrops can provide insight into the magma that formed the intrusions, and how it cooled. This information is useful when exploring for minerals with modern technological applications. We used multiple techniques to study selected granitic samples from quarries and outcrops from the study area. Hand sample analysis shows that these rocks have cooled slowly, but that there are differences in mineral size and composition. Data from Powder X-Ray Diffraction (P-XRD) and petrographic thin sections provide further information about the composition and texture of our samples. Preliminary analysis using P-XRD and an optical microscope shows variance among mica minerals, specifically biotite. Additionally, the differences in crystal size show that not all of the samples cooled at the same rate. These data will be complimented by chemical analysis using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) to identify any existing traces of economically viable elements. Here we present our preliminary findings and implications for future research.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #33, Cleary Great Hall**

Valproate Derivatives and Effect on the EBV Lytic and Latent Cycle

Ryann Schwarz (UW-La Crosse)
Mentor: Kelly Gorres, Chemistry & Biochemistry

The Epstein-Barr virus (EBV) is a contagious human virus in the herpesvirus family. Herpesviruses are unique in that they switch between an active (lytic) state and a dormant (latent) state. While in the lytic state, EBV presents symptoms such as fatigue, fever, sore throat, and swollen lymph nodes. While in the latent state, however, EBV neither produces symptoms nor is easily detectable. Several drugs have been tested to examine the switching between states. Butyrate has been found to activate the lytic state, and valproate has been found to repress the lytic state. Although previous studies have attempted to determine what makes these two compounds unique in their interactions with EBV, the mechanisms remain largely unknown. To investigate this further, we are using a chemical derivative of valproate with a modified carboxylic group to examine its effects on the EBV cycle. This work will improve our understanding of which structural features make the known activators distinct, as well as provide modern research for better understanding EBV and guiding future research.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #34, Cleary Great Hall**

Assessing whether CidA is the Lethal Factor Protein Induced by SK-03-92 Treatment

Erin Slominsky (UW-La Crosse)
Mentor: William Schwan, Microbiology

Staphylococcus aureus (*S. aureus*) is the leading cause of skin and soft tissue infections in humans. The bacterial species has become more resistant to antibiotics, so new drugs are needed. A novel drug labeled SK-03-92 kills *S. aureus* by releasing a lethal factor protein that can be found in drug treated culture supernatant, but the identity of this protein has not been elucidated. We hypothesized that the lethal factor protein might be the CidA holin protein that lyses bacterial cells. To test whether CidA might be the lethal factor, supernatants from SK-03-92 treated and untreated wildtype and *ΔcidA S. aureus* were collected from cells grown in brain heart infusion broth containing 1% glucose. The filtered supernatants were then cultured with fresh *S. aureus* cells and viable counts assessed. The kill assays showed no statistical difference in bacterial counts when comparing treated and untreated wildtype and *ΔcidA* strains. Because there was no statistical difference in the viable counts between the wildtype and *ΔcidA* strain culture supernatants treated with SK-03-92 drug, CidA is likely not the lethal factor protein.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #35, Cleary Great Hall**

Selectively Labelling Engrams in the Entorhinal Cortex of a Mouse Model of Schizophrenia

Isabella Souvannarath and Jennifer Andjelic (UW-Milwaukee)
Co-authors: Davis Lesperance, Alexis Becerra Casillas, Jose Martinez Cabral, and Luis Marquez Garcia,
Mentor: Jeffery Lopez-Rojas, Psychological & Brain Sciences

Social recognition memory (SRM) is the cognitive ability to recognize familiar conspecifics and is heavily reliant on the projections between the lateral entorhinal cortex (LEC) and the dorsal CA2 (dCA2). The dCA2 is a subregion of the hippocampus involved in processing social memory. Most notably, schizophrenia is linked to impaired social memory that is associated with reduced firing of CA2 neurons in response to social novelty cues. The Df(16)A+/- mouse model mimics the genetic risk factors, structural, and physiological brain abnormalities associated with schizophrenia in humans. The Tet-Tag system is a technique that labels memory engrams in an activity-dependent manner. Engrams are ensembles of neurons that hold physical traces of stored stimuli. This study aimed to label engrams in the LEC that are necessary for SRM in wild-type male mice. It was expected that there would be differentiated cell expressions seen within the LEC when exposed to distinct social and nonsocial experiences. Establishing these baseline measures would ultimately lead to the future employment of the Tet-Tag technique in combination with optogenetic and chemogenetic manipulations to activate or inhibit targeted engrams. Combining these techniques will help advance circuit-based treatments targeting specific engrams behind neurodegenerative and neuropsychiatric disorders.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #36, Cleary Great Hall**

Site-Specific Lysine Acylation Disrupts Fumarate Hydratase Assembly and Catalytic Activity

Lucas Strauss (UW-La Crosse)
Mentor: Todd Weaver, Chemistry & Biochemistry

Fumarate Hydratase (FH), a core tricarboxylic acid cycle enzyme, undergoes post-translational modifications (PTMs) such as lysine acylation that can alter its structure and function, affecting energy production, DNA repair, and tumor growth. In a line of paraganglioma cancer cells with succinate dehydrogenase loss, FH levels and acylation PTM levels were altered. This project aims to uncover the effect of these PTMs on FH structure and function. Mimetic variants modeling acetylation and succinylation at lysine residues K292 and K230, along with charge-conserving controls, were analyzed through functional kinetics and structural assays including limited proteolysis, cross-link mapping, circular dichroism, differential scanning fluorimetry, mass photometry, and crystallization. Although the K292 variants show minimal PTM-induced changes in local FH structure, both K292 and K230 variants exhibit significant alterations in oligomerization and catalytic activity. In the presence of a known competitive inhibitor, the charge-conserving controls retain tetramerization similar to unmodified FH, whereas the acyl mimetics show a marked loss of tetramer assembly, corresponding with severely reduced catalytic activity. The acetylation and succinylation mimetics showed a three-fold and six-fold decrease in kcat relative to controls. The findings demonstrates that FH acylation disrupts both enzymatic structure and catalysis, offering insight into metabolic dysfunction in cancerous cells.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #37, Cleary Great Hall**

Genetic Mapping of the bas(1) Seizure Mutant in Fruit Flies

Elijah Stringer (UW-La Crosse)
Co-author: Inae Hwang, Meghan Shannon, Grace Doome, Allyson Davis, and Leah Hawbaker
Mentor: Douglas Brusich, Biology

The bang-sensitive 1 (bas1) mutant is one of the earliest discovered seizure mutants, originally identified in 1973. The bas1 mutant exhibits both bang-sensitive and temperature-sensitive seizure behavior. However, identification of the gene responsible for its seizure behavior has never been identified. We used a series of X-chromosome deficiencies for complementation mapping of the bas1 gene region and assayed by the larval electroshock method and adult bang-testing. We found the bas1 phenotype mapped to Df(1)ED7289. Subsequent complementation testing with transposon insertion or mutant lines eliminated several candidate genes as the likely cause for bas(1) seizure behavior.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #38, Cleary Great Hall**

Effects of Real-Time Impact Force-Based Augmented Feedback on Running Patterns of Novice Recreational Runners

Nora Stroh (UW-La Crosse)
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 concurrent augmented feedback while running. We examined healthy male and female novice runners ages 19-23. Running data were collected for baseline peak GRF to determine 5% and 10% concurrent visual feedback reduction goals. We removed the visual display and examined their short-term retention. Kinematics were measured with 3D motion capture and kinetics were measured on the instrumented treadmill. All data were compared from the stance phase of running. Statistical differences were obtained in the following variables for both the 5% and the 10% reduction goals: center of mass vertical excursion (decreased by 15%), hip extension moment (increased by 6.5% and 11.5%), knee extension moment (decreased by ≈11%), ankle plantarflexion moment (decreased by 8.3%), hip flexor extensor range of motion (increased by 4.3% and 6.4%), foot reach (increased by ≈16%), cadence (increased by 4.3%), peak vertical GRF (decreased by 9.5% and 11.7%), peak anterior posterior GRF braking (decreased by ≈12%), and peak anterior posterior GRF propulsion (decreased by ≈4%). Providing augmented feedback may be effective in reducing variables relevant to running related injury.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #39, Cleary Great Hall**

Exploration of Alternative Energy Sources for a Suzuki Reaction for an Undergraduate Green Chemistry Laboratory Course

Rebekah Taepke (UW-River Falls)
Mentor: Stacey Stoffregen, Chemistry and Biotechnology

The Suzuki reaction lends itself well to green chemistry since it not only forms valuable carbon-carbon bonds, but it can be conducted on a small scale with innocuous solvents. This research focused on evaluating energy sources as alternatives to a traditional reflux which could be more efficient for the Suzuki synthesis of 4-phenylphenol and applying those conditions to other Suzuki reactions using different reactants. The synthesis of 4-phenylphenol was performed by reflux, microwave irradiation, mechanochemistry, and sonication, and the yields were compared. All the methods successfully produced 4-phenylphenol, however, the reflux and microwave reactions had similar yields of about 47% while the ball mill and sonication reactions had lower yields of 36.5% and 32.9% respectively. Further testing is needed to quantitatively compare the energy efficiency of the different methods as well as evaluate the application to other Suzuki reactions.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #40, Cleary Great Hall**

Mild TBIs and Executive Function: Changes in the Temporal Neurodynamics of Inhibition

Michael Thompson (UW-Green Bay)
Co-authors: Ella Schaefer, Natalie Ponce, Shayla Warren, Karsten Cowan, and Taylor Zuleger
Mentor: Jason Cowell, Psychology

Mild traumatic brain injury (mTBI), or concussion, is often characterized by blunt force trauma to the head followed by physical symptoms including dizziness, nausea, and blurred vision. Many symptoms can persist well beyond the initial injury and may not be readily observable, including deficits in working memory, attention, and inhibitory control (Xu et al., 2017; McCrea et al., 2009). These neural mechanisms, collectively recognized as executive functions, manifest in the prefrontal cortex and related cortical regions (Bigler, 2023). Research in the anterior cingulate cortex has associated these processes with N200 and ERN amplitudes (Nieuwenhuis et al., 2003). In this study, event-related potentials were used to assess the effects of mTBI on executive function using a go/no-go EEG task, where N200 amplitude modulates in response to inhibitory control and ERN amplitude reflects error-monitoring. A preliminary sample of 38 subjects from the University of Wisconsin-Green Bay completed a questionnaire detailing mTBI history and demographics, were fitted with a 32-channel EEG cap, and completed the Go/NoGo task. Results showed that participants with a history of mTBI required higher recruitment of inhibitory resources and exhibited diminished ERN amplitudes, indicating reduced error detection. These findings suggest mTBIs alter neural networks

associated with inhibitory control and error processing, warranting further study to explore long-term impacts.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #41, Cleary Great Hall**

How Does Doxorubicin-Treated BT549 Conditioned Media Affect the Gene Expression Levels of DAMI Megakaryocytes?

Leah Tomaz, Samantha Edge, and Olivia Goldthorpe (UW-La Crosse)
Mentor: Jaclyn Wisinski, Biology

Megakaryocytes are bone marrow cells that produce platelets, the anucleate cell fragments responsible for blood clotting. Because breast cancer can metastasize to the bone marrow, breast cancer cells and megakaryocytes may interact in ways that affect platelet function. To explore these interactions, we examined how gene expression in megakaryocytes (DAMI cells) changed when grown in conditioned media from breast cancer cells (BT549) treated with increasing concentrations of doxorubicin. One gene of focus is PD-L1, which promotes immune evasion by reducing T-cell proliferation and limiting cytokine production; we hypothesize it will be downregulated as doxorubicin concentrations increase. A second gene, CLEC-2, activates platelets upon binding to podoplanin, a ligand found on both lymphatic endothelial cells and cancer cells; we hypothesize its expression will be altered in response to doxorubicin treatment. The final gene, CAP-1, regulates actin filament assembly and disassembly, is upregulated in cancer cells and tumor-educated platelets, and is linked to platelet-induced tumor metastasis; we hypothesize its expression in DAMI cells will change with varying BT549 conditioned media exposure. Understanding megakaryocyte–breast cancer cell interactions may clarify how breast cancer behaves in the bone marrow and inform improvements to future treatment methods.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #42, Cleary Great Hall**

Effect of Doxorubicin-Treated Metastatic Breast Cancer Cells on Megakaryocyte Maturation

Karissa Valitchka and Carver Nelson (UW-La Crosse)
Mentor: Jaclyn Wisinski, Biology

Megakaryocytes are resident cells of the bone marrow that are responsible for platelet production. As part of their maturation process, these cells become adherent to the endothelial lining of blood vessels within the bone marrow, and fragment pieces of their cytoplasm to produce platelets. The regulation of platelet production is essential for normal clotting processes within the body, and can lead to heart attacks, strokes, and bleeding disorders if not properly maintained. Metastatic breast cancer is strongly correlated with disruption of platelet regulation when it makes its way to the bone marrow, leading to elevated platelet counts that are associated with poorer prognosis and faster metastasis. We used a triple negative breast cancer cell line (BT549) to test our hypothesis that metastatic breast cancer cells would increase megakaryocyte maturation and adhesion, leading to increased platelet production. To accomplish this, we treated the BT549 cells in varying concentrations of doxorubicin and performed crystal violet adhesion assays by combining the treated BT549 cells with a DAMI megakaryocytic cell line. After a three-day incubation, absorbance measurements were taken to quantify the adhesion of the DAMI cells. The varying degrees of adhesion were also used to determine the effective dose of doxorubicin treatment to inhibit the effect of BT549 breast cancer cells on megakaryocyte maturation.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #43, Cleary Great Hall**

Bathocuproine Disulfonate (BCS) Ameliorates the Effect of Cell Growth, but Not Mitochondria Morphology in Yeast Cells

Kayla Vanderhoef (UW-La Crosse)
Mentor: Anne Galbraith, Biology

Pathogenic bacteria and fungi can become resistant to antimicrobial compounds, making it difficult to treat infections. Use of natural antimicrobials from plants has been a common practice dating back thousands of years, with an increased number of

approved drugs from natural products in recent years. Researchers at UW- La Crosse and UW- Milwaukee derived a stilbenoid compound, SK-03-92, from Comptonia peregrina (sweet fern), which effectively kills several species of Gram-positive bacteria. However, the exact mechanism of action of SK-03-92 is unknown. Our lab showed that SK-03-92 affects the growth of Baker's yeast (Saccharomyces cerevisiae), disrupting their mitochondrial morphology. Through a large-scale RNA sequence analysis done by our lab, copper homeostasis genes appeared to be dysregulated in cells treated with SK-03-92. We showed that bathocuproine disulfonate (BCS), a chelator of metals such as copper, can ameliorate the effects of SK-03-92 on cell growth. In this work, BCS was used in conjunction with SK-03-92 to see if BCS also ameliorated the effects of SK-03-92 on mitochondria morphology.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #44, Cleary Great Hall**

The American Wars in Southeast Asia: Remnants of UXOs and Agent Orange Impact on the Peoples of Laos and Vietnam

Yia Vue (UW-La Crosse)
Mentor: Todd Osmundson, Biology

Between 1955 and 1975, the United States waged two interconnected wars in Southeast Asia: the publicly recognized Vietnam War and the covert, CIA-operated Secret War in Laos. During these campaigns, approximately 12 million gallons of dioxin-contaminated Agent Orange and 8 million gallons of additional herbicides were sprayed across the region, while 2.5 million tons of bombs were dropped on Laos alone, making it the most heavily bombed country per capita in history. Nearly fifty years later, the environmental, health, and social consequences remain ongoing. This research examines war memory, intergenerational health effects, and postwar recovery in Vietnam and Laos. In collaboration with local NGOs, I conducted interviews with survivors, their children, UXO clearance teams, and aid workers in heavily affected regions. The project documents disabilities, chronic health conditions, economic disruption, and community resilience, while analyzing how unexploded ordnance (UXO) and dioxin contamination continue to shape rural safety, land use, and development. By centering lived experience within broader environmental and political histories, this study contributes to understanding the long-term impacts of chemical warfare and explosive remnants of war in Southeast Asia, with implications for U.S. Vietnam veterans and Southeast Asian American refugee communities.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #45, Cleary Great Hall**

Cold Plasma-Activated Water as a Replacement for Chemical Solutions in the Sterilization of Food Contact Surfaces

Gillianne Wagner (UW-Platteville)
Co-authors: Max Schneider and Myjah Drews
Mentor: Zifan Wan, Animal, Dairy and Veterinary Sciences

Sterilizing food contact surfaces is an important step in food production processes, as it prevents the cross-contamination of food products sold for public consumption. Yet, current sterilization techniques heavily rely on chemical-based solutions, which can leave behind harmful residues on food contact surfaces. This demonstrates the need for safer, eco-friendly sterilization techniques. In this study, the use of plasma-activated water (PAW) for sterilization purposes has been explored with the goal of finding a sterilization method that can replace chemical cleaners. Plasma system (HVACP), PAW solutions were produced using single and multidonut electrodes at two voltage levels (50 kV and 60 kV) for varying time intervals (2, 4, and 6 minutes). Physicochemical parameters such as pH, conductivity, and reactive species concentrations were determined for the PAW samples. Stainless steel (SS) coupons (40×20×1 mm) were inoculated with Listeria monocytogenes from a pure culture with an original colony density of 7.5 log10 CFU/mL. The prepared coupons were immersed in the PAW solutions for varying time intervals (3, 5, and 7 minutes) under constant shaking (600 RPM). DI water and sodium hypochlorite (100 ppm) were used as controls. Immediately after interaction, the coupons were analyzed for survival microbial load.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #46, Cleary Great Hall**

Absorption Spectra of ZnO/ZnMgO Quantum Wells: Investigating Suitability for UV Optical Switching

Liam Wolbers and Andrew Krzysik (UW-La Crosse)
Mentors: Eric Gansen and Seth King, Physics

Zinc oxide (ZnO) has a band gap energy of ~3.3 eV and is a promising semiconductor material for ultraviolet (UV) electro-optic devices such as optical switches based on the Quantum-Confined Stark Effect. In these devices, the signal light is tuned to the band gap energy of the switching material and modulated by a Stark shift of the absorption edge caused by an induced DC electric field. In electrically controlled devices, the electric field is produced by an applied voltage whereas for optically controlled devices, it is produced by the excitation of electron-hole pairs by an optical control pulse. In this work, we investigate the absorption spectra near the band edge of ZnO/ZnMgO quantum-well structures. The polycrystalline layers comprising the structures are grown by DC sputter deposition and are designed to be integrated with GaN UV lasers which typically have a wavelength of 375 nm. For this purpose, it is crucial for the quantum wells to have a sharp band edge near the design wavelength. We present absorption spectra for ZnO/ZnMgO quantum-well structures with well widths varying from 30-400 nm and for temperatures of 78 and 293 K and discuss the suitability of these structures for switching applications at the standard GaN wavelength.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #47, Cleary Great Hall**

A Feasibility Study to Develop a Protocol for Socially Assistive Robots in Radiation Therapy Clinical Rotations in Patient Waiting Rooms

Bennett Wray-Raabolle (UW-La Crosse)
Co-author: Lori Ann Eldridge
Mentor: Jennifer Taylor, Recreation Management & Recreational Therapy

Socially assistive robotics (SARs) are lifelike robotic animals that can be used in various healthcare settings to decrease anxiety, depression, and isolation. A recent study demonstrated that positive distraction in waiting rooms, such as coloring books for children, may reduce perceived wait times, increase satisfaction and perception of the quality of care, and decrease waiting room anxiety. While SARs have been used in healthcare settings, to our knowledge, SARs have not been used in patient waiting rooms. Importantly, as the research evidence continues to expand for SARs use in healthcare, to our knowledge no standardized protocols for use in patient waiting rooms utilizing students during their clinical education courses have been developed. Development, evaluation, and refinement of a standardized protocol aims to inform radiation therapy faculty about effective SARs use while also providing students hands-on practice in patient communication and rapport building. Therefore, our study goals include: 1.) Development of a protocol for SARs use by radiation therapy undergraduate students in clinical education courses. 2.) Determine an evaluation tool to measure the effectiveness of the protocol. By developing a protocol, we aim to standardize utilizing SARs for use in waiting rooms to reduce patient anxiety through this innovative therapeutic approach.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #48, Cleary Great Hall**

Student Perceptions on Antibiotic Resistance

Izi Zarcone (UW-La Crosse)
Mentor: Maggie Laufenberg, Health Professions

Antibiotic resistance, as a global health concern, has the potential to affect individuals of all ages and levels of health, yet much of the general public is not educated or aware of this topic. Though there isn't one population of individuals that is most affected, children and college aged students are more prone to infections and likely to be exposed to antibiotics. This study seeks to examine student perceptions of antibiotic resistance. A qualitative survey will be utilized to collect and analyze student perception themes with the outcome to provide hypotheses on student knowledge and guide further research or education on this topic.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #49, Cleary Great Hall**

Examining Opposing Political Discourse within Families and Close Social Networks in Wisconsin

Ellie Estermann (UW-La Crosse)
Mentor: Irene Awino, Communication Studies

This study examines opposing political discourses within families and close social networks. Particularly, the communication strategies of avoidance, accommodation, and confrontation are studied to figure out which is most prevalent among young adults. Through semi-structured interviews, young adults ages 18-29 are asked about the impact of political disagreements and their choice of responsive communication, and are asked to delve into the topic of affective polarization. The study also touches on opposing political disagreement in online forums and communication style on the internet.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #50, Cleary Great Hall**

Characterization of the C Isoform of the DAF-16 Gene in *Brugia malayi*

Cameron Zehr (UW-Whitewater)
Mentor: Kirsten Crossgrove, Biology

Brugia malayi is a parasitic nematode that is transmitted by mosquitoes and causes human lymphatic filariasis. We use the free-living nematode *Caenorhabditis elegans* as a model to study pathways regulating the *B. malayi* infective (iL3) stage. *C. elegans* has an alternative third larval stage called dauer, which is evolutionarily related to the iL3 stage of parasitic nematodes. Because dauer in *C. elegans* is regulated by the insulin/insulin-like growth factor signaling (IIS) pathway, we hypothesize that infective stage molting in *B. malayi* is similarly regulated by IIS. The IIS pathway in *C. elegans* uses phosphorylation by AKT to negatively regulate DAF-16, a transcription factor which activates genes associated with dauer formation. We have cloned the recently characterized c isoform of *Bma-daf-16* into a eukaryotic expression vector. We showed that three *Bma*-DAF-16 isoforms can increase activity of a luciferase reporter gene in HepG2 cells. We also showed that *Bma*-DAF-16c activation ability is affected when cotransfected with the *Bma-akt-1*, *Bma-pdk-1*, and *Bma-ftt-2* IIS pathway genes. We have cloned mutant *Bma-daf-16c* DNA coding for a protein that cannot be phosphorylated on one or both phosphorylation sites, but cell culture experiments with these constructs have not yet yielded conclusive results. This research could eventually work towards developing a way to keep DAF-16 active in *Brugia malayi* and other parasites, thus arresting them at the infective stage indefinitely.

Poster Presentation **Session D (1:50 - 2:45 pm), Poster #51, Cleary Great Hall**

Creative Research in Advanced Techniques of Haunt Character Construction and Design

Miranda Logan (UW-La Crosse)
Mentors: Anna Wooden and Mandy Kolbe, Theatre & Dance

Live entertainment is the beating heart pumping the lifeblood into a variety of artistic industries, fostering creatives and breeding innovation that can be applied across genres and mediums. My particular focus is, and always has been, horror. Watching a monster movie is one thing– and certainly, many of the same effects and artistic techniques utilized in live performance spaces can be applied to bring nightmares to life on the silver screen– but being confronted in close proximity to something that plucks at the strings of palpable fear is a kind of magic that can be enjoyed by all ages. The collaboration between talented costume and makeup artists and the dedication of actors to embody fear is what convincingly turns a normal person into a monster. The Transworld Halloween and Attractions Show connects the artistic, technical, and business sides of putting together this type of experience. Over four days, it explores innovations in the field and allows access to the best professionals working today. By attending this convention, I hope to invest in skills and information to further my educational growth and to share with UWL's theater and dance department. My long-term career goal is to eventually open a unique attraction knitting together realism and artistic prowess combining elements of professional interactive theater with the visceral allure of a haunted house.

Exhibit **Session D (1:50 - 2:45 pm), Exhibit Table, Cleary Great Hall**

Oral Presentations

When Law Becomes Power: Justice in Shakespeare's Political World

Karlie Gerke (UW-La Crosse)
Mentors: Darci Thoune and Rebekah Fowler, English

This research project examines representations of justice in the works of William Shakespeare and argues that his dramatic treatment of justice remains deeply relevant to modern political discourse. Although Shakespeare wrote in the late sixteenth and early seventeenth centuries, his plays consistently interrogate how power shapes legal systems, moral judgment, and public perception. Justice in Shakespeare's works is rarely simple or purely virtuous; instead, it is entangled with authority, gender expectations, religious bias, and political self-preservation. By focusing on *Measure for Measure*, *The Merchant of Venice*, and *Troilus and Cressida*, this project explores how Shakespeare exposes the instability of justice when it is placed in the hands of flawed individuals and politicized institutions. The study centers on three interconnected forms of justice. *Measure for Measure* presents a model of gendered justice in which male authority figures manipulate the law while women struggle to be heard, believed, or protected. *The Merchant of Venice* dramatizes religious justice, revealing tensions between legal fairness and religious prejudice in a Christian-majority society that marginalizes Jewish identity. *Troilus and Cressida* depicts the collapse of justice, illustrating how wartime rhetoric and political ideology justify moral corruption and institutional decay. Taken together, these plays demonstrate how justice operates within political systems as something negotiated, manipulated, and frequently compromised. By placing Shakespeare's early modern drama in dialogue with contemporary American political discourse, this research shows how classical literature can serve as a critical lens for examining modern debates surrounding sexual misconduct, religious discrimination, credibility, executive power, and institutional accountability.

Oral Presentation **9:45 - 10:00 am, 3110 Student Union**

The Efficacy of Developer Obligations in Tax Increment Financing Development Agreements in Wisconsin

Ethan Fitzgerald (UW-La Crosse)
Mentor: John Kovari, Political Science & Public Administration

The use of Tax Increment Financing (TIF) has become an increasingly prominent tool in the toolbox of municipal economic development specialists. While the effects of city-level demographic data and major policy initiatives on Tax Increment District (TID) health are well documented, questions remain regarding the effects of smaller procedural variables. The preliminary legal impetus of any TID is the development agreement, a legal contract between a host municipality and a developer seeking TIF assistance for a project. Do variations in the obligations found within such development agreements impact the health of TIF districts? If so, what can cities do to improve their practices?

Oral Presentation **9:45 - 10:00 am, 3120 Student Union**

From the Classroom to the Plaza: How University Students' Language Learning Perceptions Compare in the U.S. and in Spain

Noelle Hackenmueller (UW-La Crosse)
Co-author: Kimberly Morris
Mentor: Kimberly Morris, Global Cultures & Languages

Although U.S. university students believe bilingualism is important (D'Amico & Sterling, 2023), enrollment in university world language (WL) classes has declined significantly in recent years (Lusin et al., 2023), even though there are more languages spoken in the U.S. now than ever before (Dietrich & Hernandez, 2022). To discover which factors influence a university student's decision to enroll in a WL course, a Qualtrics survey was completed by 282 first-year students at the University of Wisconsin-La Crosse (UWL) in the Fall of 2023 and then thematically analyzed. Subsequently, an equivalent survey was completed by 48

university students in Alcalá de Henares, Spain in Summer 2025 to provide a cross-cultural comparison of the factors that influence multilingualism. When comparing the results from both data sets, findings show that while there are similarities such as comparable WL course content, perceived benefits of multilingualism, motivational factors, and effort exerted, the participants in Spain identified as multilingual at a much higher rate than their UWL counterparts (90% vs 26%), likely due to their early language study. These findings reveal how linguistic ideologies within the education system impact students' opportunities and motivation for WL study, thereby influencing their proficiency and perceived value of multilingualism.

Oral Presentation **9:45 - 10:00 am, 3130 Student Union**

Determining Residues Important for Differentiating Mammalian and Bacterial Alkaline Phosphatase Activity

Taylor Budzien (UW-La Crosse)
Mentor: Dan Grilley, Chemistry & Biochemistry

Alkaline phosphatase (APase), an enzyme found in nearly all living organisms, catalyzes hydrolysis of phosphoester bonds, resulting in phosphate group removal from molecules. For optimal enzymatic function, two zinc and one magnesium ion are located in the active site where the reactions occur. Proteins are made of amino acid residues with different properties. The exact sequence of residues determines enzyme function. Except for 3 residues, the active site of *Escherichia coli* and human APase are completely conserved; despite this, the enzymes interact differently with the metal ions required for catalysis and have significantly different turnover rates. We hypothesize that variation of two residues directly interacting with the metal ions contribute to differences in metal ion binding and catalysis. We hypothesize that additional residues interacting with the primary residues also contribute to differences observed. Understanding if the residues we have identified are necessary and/or sufficient to explain the differences is the goal of our research. We engineered and purified variant proteins with site specific residue changes. With the variants, we performed metal ion screenings to determine if interactions with the metal ion are affected; we ran kinetic tests to determine if molecules interacting with the metals gain the ability to affect enzyme activity; and we performed crystallography to confirm the changed amino acids participate in interactions we predict they do.

Oral Presentation **10:05 - 10:20 am, 3110 Student Union**

Mapping Rural Access: GIS-Based Transportation Models to Improve Hazard Evacuation Planning in Wisconsin

Devin Devine (UW-Platteville)
Mentor: Jieya Yang, Civil and Environmental Engineering

NOAA indicates a 40% probability that a strong El Niño pattern may develop during summer 2026, which for Wisconsin may increase the likelihood of severe heat waves or tornadoes. According to WisDOT, the percentage of pavement in good condition has declined 6% since 2013, leaving more pavement in fair condition vulnerable to rapid deterioration under extreme environmental stress. Tornadoes present significant evacuation challenges, particularly in rural communities where road networks and facilities are sparse. This study quantifies evacuation accessibility to shelters considering travel distance and time, pavement condition, and demographic differences across counties, with a primary case study in rural southwestern Wisconsin. GIS-based network analysis and Floating Catchment Area methods were used to estimate accessibility to potential tornado shelters. Results indicate clear spatial disparities in accessibility, with smaller rural towns exhibiting lower accessibility and greater evacuation vulnerability. Demographic vulnerability mapping identifies populations most at risk during evacuation, including elderly residents, low-income households, and individuals without reliable vehicle access. Integrating these vulnerability layers with transportation network analysis provides a more comprehensive understanding of where evacuation challenges are most severe. The modeling framework has also been applied to hurricane evacuation in southern states to evaluate transferability across different hazard types and urban contexts, demonstrating how GIS spatial analysis can support emergency planning and identify infrastructure improvements that enhance community resilience.

Oral Presentation **10:05 - 10:20 am, 3120 Student Union**

A Search for Joy and Belonging: How Black Girls and Young Black Women Find Their Way in a Predominantly white City

Hailey Schock (UW-La Crosse)
Co-authors: Jada Young and Angela Fitzgerald
Mentor: Jessica Stovall, African American Studies (UW-Madison)

This qualitative study builds on the foundational work of Black Girlhood Studies and Black Feminist Scholars to examine where Black girls, and young Black women find belonging and joy in a mid-sized, predominantly white city. By placing Black geographies in conversation with theories from Black Feminism and Black Girlhood Studies, we prioritize and affirm Black girls' and young Black women's experiences with placemaking and recognize them as knowledge creators. We lean on Toni Morrison's Beloved (2004) to conceptualize rememory as a praxis and understand how both Black girls and young Black women construct space. In our preliminary data analysis, we examine the necessary conditions for creating Black-affirming spaces in K-12 schools and higher education. We contend that intentionally creating and sustaining Black Girl Spaces and Black Women Spaces are imperative to imagining liberatory futures where Black girls and Black women can flourish.

Oral Presentation **10:05 - 10:20 am, 3130 Student Union**

Development of an Artificial Metalloenzyme to Study Bioinorganic Cofactors

Sarah Benes (UW-Milwaukee)
Co-authors: Faija Atker and James Linzel
Mentor: Jarett Wilcoxen, Chemistry & Biochemistry

Artificial metalloenzymes (ArMs) integrate metal-based reactivity within a protein framework, bridging bioinorganic and enzymatic catalysis. Among ArM platforms, the biotin-streptavidin system has proven particularly powerful due to its remarkable affinity ($Kd \approx 10^{-15} M$) and structural stability, providing a versatile host for incorporating synthetic cofactors. This project explores the potential of the biotin–streptavidin scaffold to serve as a model system for studying bioinorganic cofactors and the influence of the protein environment on metal center behavior. The primary objective was to establish foundational methods for protein expression, purification, and preparation of a streptavidin variant suitable for cofactor incorporation. Streptavidin was expressed in *E. coli*, purified through affinity chromatography, and will eventually be evaluated for crystallization under varying buffer and pH conditions. In parallel, biotinylated cofactors were explored as potential anchoring groups for introducing metal centers into the protein host. While this study remains in the exploratory phase, it provides critical groundwork for future structure-function analyses and cofactor reconstitution experiments. The biotin-streptavidin framework offers a unique opportunity to investigate how the secondary coordination sphere in hydrogen bonding, electrostatics, and local geometry, can be systematically tuned through protein engineering to modulate metal reactivity. By establishing reliable methods for preparing and characterizing this modular system, this work contributes to a growing toolkit for designing artificial metalloenzymes. The long-term goal is to apply these systems toward understanding natural metallocofactor chemistry and creating novel catalysts that extend beyond nature's repertoire. This project thus lays the experimental and conceptual foundation for future studies at the interface of coordination chemistry and enzymology.

Oral Presentation **10:25 - 10:40 am, 3110 Student Union**

Using Weathered Basalts from Iceland to Study Maghemite Formation: Implications for Martian Surface Processes

Gwenyth Heidinger (UW-Whitewater)
Co-author: Andrew Veroeven
Mentor: Prajukti Bhattacharyya, Geography, Geology and Environmental Science

Maghemite is a secondary mineral more stable on Mars. On Earth, maghemite forms as a relatively unstable intermediate mineral when magnetite originally present in basalt ultimately oxidizes into hematite due to weathering. Therefore, weathered basalt from Iceland still containing maghemite can be used as a proxy to study Martian surface processes. The goal of this research is to identify controlling factors for maghemite formation. For this purpose, we analyzed basalt samples containing

maghemite collected from two locations within southwest Iceland. We created powdered basalt samples representing varying stages of weathering to compare mineralogical and chemical differences. Preliminary mineralogical data from powdered X- Ray Diffraction (PXRD) analyses imply that the surface conditions of the last 800-years in the study area facilitated maghemite formation. There are multiple hypotheses proposed for maghemite formation, but no clear consensus on how it might form naturally from basaltic protolith. This research aims to provide insight into maghemite formation processes on Earth and use that to extrapolate Martian surface processes. This presentation will share preliminary data from mineralogical, chemical, and textural analyses of weathered and unweathered Icelandic basalts and how these findings can be applicable to study Martian geology.

Oral Presentation **10:25 - 10:40 am, 3120 Student Union**

Tuberculosis in the Midwest: The Forgotten Plague

Jack Alexander (UW-La Crosse)
Mentor: Penelope Hardy, History

Although tuberculosis concerns have gone down in the last couple of decades—and rightfully so, as modern medicine has made tuberculosis treatable and preventable--tuberculosis remains well known and generally understood by the public. However, when people think about tuberculosis, they often associateit with the American Southwest in the late 19th and early 20th century, or romanticized literature of a pale, misunderstood, struggling artist. However, the Midwestern United States played a forgotten role in humanity's fight against tuberculosis. My research, presented as a website, establishes a timeline of key events in the history of tuberculosis in the Midwest, alongside key moments from the rest of the world that were happening simultaneously. I provide a brief explanation of the sanatorium movement, with a historical map of all sanatoriums in the Midwest, including their names and dates of operation. I also show popular home treatments suggested in place of sanatorium care. Finally, visitors can explore the personal stories of tuberculosis survivors in the Midwest. Together, this research provides a greater understanding of Americas struggle in the fight against tuberculosis, through the lens of the Midwest, a viewpoint that has seldom been explored in the study of the history of tuberculosis.

Oral Presentation **10:25 - 10:40 am, 3130 Student Union**

Decoding Dances: Honey Bee Communication Analysis

Jenna Emons and Marc Pipp (UW-La Crosse)
Mentor: Barrett Klein, Biology

Honey bees (*Apis mellifera*) communicate the distance and direction of food resources through a waggle dance, a behavior critical to foraging efficiency and overall colony fitness. Understanding how environmental and physiological stressors affect this communication could be useful for assessing pollinator resilience under increasing pressures like climate change and colony collapse disorder. This research examines how sleep restriction may impact honey bee communication behavior. Thermal, auditory, and physical behaviors are being examined to see how sleep loss might affect waggle dance precision and subsequent follower behavior. These findings contribute to our understanding of honey bee behavioral plasticity and provide insight into how stress may influence communication efficiency and colony health.

Oral Presentation **10:50 - 11:05 am, 3110 Student Union**

The Makeup of Aardman Animations: Newplast Clay Study in STEAM

Sophie Lescamela (UW-Whitewater)
Mentor: Rex Hanger, Geography, Geology and Environmental Science

Newplast Clay was considered to be the industry standard for Claymation-animated film work, due to its ability to stay fresh when exposed to air over long periods of time under studio lighting. As traditional Newplast is no longer manufactured, there is a need to secure a replacement that mimics the properties of Newplast. The central purpose of this project was to make clay mixtures in the lab and test them for a suite of chemical metrics versus a standard sample of Newplast, then iteratively

alter each recipe to match or approximate that standard. The Newplast sample was tested to determine the standard. Over 25 different clay mixtures were created with slightly altered compositions then also tested. Tests were run in triplicate and then means were calculated from each run of three. Newplast standard plus clay mixture means were then subjected to Euclidean similarity coefficient and unweighted pair group method cluster analyses. Simultaneously, armatures for holding Claymation figures were built. The clay mixtures were then used to mold figures for preliminary Claymation production. It is Newplast Clay that has been studied thoroughly and used to create these new batches of clay that are potentially better than Newplast ever was.

Oral Presentation **10:50 - 11:05 am, 3120 Student Union**

Predictors of Stigma as a Reason for Unmet Substance Use Treatment Needs

Rachel Davidson (UW-La Crosse)
Mentor: Enilda Delgado, Sociology & Criminology

Substance use is a widespread and often damaging problem, yet many with substance use disorders (SUDs) in the United States receive no treatment. Stigma, a negative social attitude toward those with certain discrediting attributes, is one potential barrier contributing to avoidance of disclosure and treatment. Analyzing data from the 2022-2023 National Survey on Drug Use and Health (NSDUH), this study examines the social and demographic factors that predict reporting stigma as a treatment barrier among those with unmet SUD treatment needs. Univariate, bivariate and multivariate logistic regression analysis is employed to examine the impact factors such as sex, education level, and substance use characteristics have on reporting stigma as a treatment barrier.

Oral Presentation **10:50 - 11:05 am, 3130 Student Union**

Investigating the Influence of Butyrate Metabolism on *Bacteroides thetaiotaomicron* Physiology

Jonathan Jung (UW-Parkside)
Co-authors: Lauren Prochnia and Ilirian Dhimitruka
Mentor: Robert Barber, Biology

The human gut microbiome plays a critical role in metabolic homeostasis and intestinal health through interactions among members of the colonic microbial community. Bacteroides thetaiotaomicron is a prominent symbiont of the human colon that converts complex polysaccharides into carbohydrates, which serve as energy sources for other species, including members of the phylum Firmicutes that ferment carbohydrates into butyrate. Butyrate is a short-chain fatty acid that serves as the primary energy source for colonocytes and is critical to supporting the intestinal epithelial barrier, immunoregulation, and protection against inflammation and colorectal cancer. Previous work has demonstrated that growth of certain Bacteroides species is inhibited by butyrate, suggesting a feedback regulatory mechanism controlling metabolic balance. Characterization of a predicted butyrate kinase (Buk) and phosphotransbutyrylase (Ptb) in B. thetaiotaomicron suggests these enzymes participate in branched-chain amino acid (BCAA) metabolism, catalyzing ATP-dependent conversion of BCAAs to branched-chain fatty acids rather than butyrate. Exposure of B. thetaiotaomicron to butyrate redirects BCAA-derived metabolites toward lipid production containing branched-chain fatty acids, altering bacterial cell membrane composition. These findings reveal a connection between microbial amino acid metabolism, butyrate signaling, and B. thetaiotaomicron physiology, highlighting the importance of metabolic regulatory mechanisms in sustaining microbiome balance essential for intestinal health.

Oral Presentation **11:10 - 11:25 am, 3110 Student Union**

Water Memories and Stewardship among Residents of Wisconsin

Holly Shannon (UW-Whitewater)
Mentor: Benjamin Agbemor, Geography, Geology and Environmental Science

Wisconsin is a water-rich state in the US, ranking fourth nationally in total water area. Water resources have long supported recreation, economic development, and a sense of place for many generations of residents and visitors alike. However, the water resources that have become a symbol of Wisconsin's wealth and identity now appear frequently in narratives that describe a state of concern. For example, there are growing incidents of surface and groundwater contamination, as well as rising levels of neurotoxins and other carcinogenic compounds in the state's water resources. Despite these threats and changes, questions regarding how people feel about water and how these connections continue to shape sense of place, identity, and attitudes have remained largely undocumented. Studies have demonstrated that people's affective connections to nature, including blue and green spaces, influence both well-being and environmental stewardship. Building on this foundation, this research will examine how place-based storytelling generates feelings of interconnection that could foster empathy and stewardship for protecting water resources. This research will adapt the "watershed storytelling" methodology for exploring people's affective ties with blue spaces. The study will examine the following questions: How do residents experience and express their attachment to water? How could storytelling foster empathy and a sense of care for water? The research will adopt both purposive and snowball sampling techniques for data collection. The researchers will collect and analyze qualitative data that explores sentiments relating to sense of place, sense of responsibility, perceptions of water quality change, emotions, and the willingness to act.

Oral Presentation **11:10 - 11:25 am, 3120 Student Union**

High School Students' Perspectives on Evolving Technology Policies and A.I. Use in the Classroom

Alexandra Staver (UW-La Crosse)
Mentor: Merideth Garcia, English

In the spring of 2025, students at a local high school participated in a follow up survey regarding the recent adoption of iPads, new technology policies for cell phones, and their attitudes about the role of AI in the classroom. This project analyzes student responses and contrasts them to students' beginning-of-year attitudes to better understand their evolving perspectives on these changes. Common concerns surrounding the switch to iPads included increased distractions, less functionality than the laptops used previously, and other technological concerns commonly associated with cell phones. As for the technology policies around cell phone use, most students agreed that classroom engagement levels only improved based on enforcement by educators. Contrary to previous data collected at the beginning of the school year (Fall 2024), students had more to say about AI, with a mix of enthusiastic and fearful responses. The main thread from preliminary findings gathered at the beginning of the school year suggested that students were disappointed in the adoption of iPads and in restrictions placed on cell phone use. However, in these follow up surveys conducted at the end of the school year, students demonstrated increased concerns about the use of AI and technology in general within classrooms.

Oral Presentation **11:10 - 11:25 am, 3130 Student Union**

The Role of xCT Protein Expression in Epstein-Barr Virus Infected Cells

Anna Meilahn (UW-La Crosse)
Mentor: Kelly Gorres, Chemistry & Biochemistry

The Epstein-Barr virus (EBV) is one of the most common viruses in the world, infecting an estimated 95% of the world's population. EBV causes infectious mononucleosis and is associated with several cancers. As a member of the herpesvirus family, EBV persists in the body for a lifetime, avoiding the immune system by entering an inactive state after infection. EBV can reactivate in response to various stimuli, including stress and chemical exposure, spreading infection, and elevating cancer risk. The mechanism behind EBV reactivation is not completely understood and has important clinical implications. When EBV-infected cells were treated with EBV inhibitors, the gene that encodes for the protein xCT was upregulated. xCT transports

cystine into the cell, which feeds into downstream reactions that promote cell survival. To study the possible role of xCT in EBV inhibition, EBV-infected human cancer cells were treated with EBV inhibitors, and both xCT and EBV activation were measured. xCT was upregulated by two EBV inhibitors, indicating a plausible role for xCT in EBV inhibition. Future research establishing the importance of and mechanism behind xCT-mediated EBV inhibition is needed. Understanding how host and viral proteins interact is critical for developing effective therapeutic interventions for EBV and related cancers.

Oral Presentation 12:45 - 1:00 pm, 3110 Student Union

Assessing Accessibility to Fresh Food in La Crosse County: Integrating Food Prices, Socioeconomic Disadvantage, and Spatial Access

Alex Jahnke (UW-La Crosse)
Co-author: Gargi Chaudhuri
Mentor: Gargi Chaudhuri, Geography & Environmental Science

This research examines how food accessibility varies across neighborhoods and census tracts in La Crosse County by analyzing socioeconomic factors that shape access to nutritious, affordable food. The study focuses on how socioeconomic status, food prices, and physical proximity to food retailers interact to influence local food environments. Access to food is defined as time-based distance to fresh fruits and vegetables. To investigate these relationships, the cost of basic nutritious fruits, vegetables, and meat was collected from local grocery stores, convenience stores, and other food retailers during Spring 2026. These prices were standardized to allow comparison across store types. Additionally, socioeconomic conditions were assessed using the Social Disadvantage Index and linked to census tracts to identify areas experiencing heightened structural vulnerability. Spatial accessibility was evaluated using network-based distances to the nearest grocery store as a measure of physical access. Multiple linear regression was also used to assess the relationship among socioeconomic status, food costs, and store proximity, with the goal of understanding how the built environment contributes to food accessibility. By integrating price, socioeconomic, and spatial measures, this study provides a more comprehensive understanding of food access disparities and informs policies addressing both economic and geographic barriers.

Oral Presentation 12:45 - 1:00 pm, 3120 Student Union

Queering the Air: How Space and Structure Influenced the Development of Separate Subcultures in Queer Identity between Rural and Urban Areas

Sarah Hendrix (UW-La Crosse)
Mentor: Heather Walder, Archeology & Anthropology

Space, material culture, and the built environment are theorized to have shaped the expression of marginalized identities. This research applies this concept by examining how queer bar spaces functioned as material and social landscapes that enabled community formation and identity expression. In La Crosse, WI, bars such as the Hotel Stoddard (1970s), Tattoos (1980s), and Rainbow's End (1990s) operated as important cultural centers for queer individuals in the largely rural Driftless Area of the Midwest. In contrast, establishments such as Cubbyhole (1970s) and The Saint (1980s) in New York City served as urban hubs for queer community life. Drawing on theories from queer theory, historical archaeology, and materiality this study analyzes how the design and organization of these spaces influenced patterns of visibility, privacy, and social interaction. Using oral histories, artifacts, blueprints, archival documents, and photographs, this study investigates how spatial configuration and visual imagery shaped the public expression of queer identity within bar environments. By comparing rural Wisconsin and urban New York case studies, this research argues that regional context and the material organization of space significantly shaped how queer culture was expressed, experienced, and negotiated.

Oral Presentation 12:45 - 1:00 pm, 3130 Student Union

Investigating an Interchain Salt Bridge Network in the Dimerization and Structural Stability of the *Salmonella* Copper Resistance Protein, DcrB

Ellie Schneider (UW-La Crosse)
Mentor: John May, Chemistry & Biochemistry

Copper ions, at high concentrations, are toxic to cells. Copper is used to stop the spread of disease in healthcare settings and by our immune systems. *Salmonella enterica* uses the homodimeric protein DcrB to resist copper's antimicrobial properties, however, its mechanism of function is unknown. Previous research indicates that two residues within a tether region that links DcrB's N-terminal β-hairpin to the protein core are necessary for function. We hypothesize this to be a result of the loss of a salt bridge network between chains of DcrB. This hypothesis was explored using mutational analysis to probe the salt bridges. We investigated the salt bridge network's role in stability and copper interaction using the biophysical technique of circular dichroism. We examined the salt bridges' contribution to the dimerization of DcrB using a cross-linking assay. Our findings indicate that the salt bridge network is important for the overall protein stability, dimerization, and copper interaction of DcrB. Identifying these salt bridges as a critical element of DcrB's functionality adds to our understanding of its mechanism and may allow for antibiotic development in the future. This research was supported by UWL's Undergraduate Research and Creativity grants, and by the National Institute of General Medical Sciences of the National Institutes of Health under award number R15GM152892.

Oral Presentation **1:05 - 1:20 pm, 3110 Student Union**

Storm Chasing Documentary: The Making of a Film on Severe Great Plains Storms

Peyton Walz (UW-Whitewater)
Mentor: John Frye and Brian Schanen, Geography, Geology and Environmental Science

The Storm Chasing Documentary explores the University of Wisconsin–Whitewater's field-based course GEOGRPY 492: Forecasting and Verification of Severe Weather, a program that provides hands-on training for future meteorologists and storm chasers. This project aims to document how the course enhances weather literacy, fosters collaboration between students and mentors, and deepens understanding of severe weather forecasting through experiential learning. The film captures students as they apply classroom knowledge to real-world storm environments, using forecasting tools, safety protocols, and data collection techniques. Through a combination of interviews, field footage, and reflective commentary, the documentary showcases how students analyze storm systems, navigate unpredictable weather conditions, and develop a scientific appreciation for atmospheric phenomena. The purpose of this project is not only to highlight the educational value of storm chasing but also to illustrate the ethical considerations and personal growth associated with participating in such high-risk, high-reward experiences. The documentary emphasizes mentorship, showing how experienced meteorologists guide students through both technical and emotional aspects of storm observation. By integrating storytelling and science communication, this project demonstrates how media can serve as a bridge between academic research and public understanding of weather. Ultimately, the Storm Chasing Documentary aims to inspire future students to engage with environmental sciences and to promote awareness of the power and beauty of severe weather while underscoring the importance of safety, ethics, and preparation in the field.

Oral Presentation **1:05 - 1:20 pm, 3120 Student Union**

The Second Generation in the Classroom: A Framework for Upward Mobility

Brian Larson (UW-Stevens Point)
Mentor: David Chunyu, Sociology and Social Work

Immigration scholars have focused on the educational and economic outcomes of the second generations to assess integration for decades. While many children of immigrants experience better economic prospects than their parents, a pattern of downward assimilation still occurs. While the prevalence and characteristics of downward assimilation are debated (Portes et. al 2007; Alba et al. 2011), empirical data indicates that the pattern still exists. Because all students within the United States have a right to a free public education, K-12 schooling is uniquely able to address this pattern as an institution. To address

structural barriers, public education for children of immigrants must prepare students for economic participation, develop socioemotional skills, and disrupt the school-to-prison-pipeline while keeping students in the least restrictive environment.

Oral Presentation **1:05 - 1:20 pm, 3130 Student Union**

Understanding How the Structure and Function of Mammalian Alkaline Phosphatases Influence Targeting of Proinflammatory Factors

Brady Horstmann (UW-La Crosse)
Mentor: Dan Grilley, Chemistry & Biochemistry

Alkaline phosphatases (ALPs) are enzymes that are critical for different organisms' phosphate metabolism, with mammalian and bacterial forms exhibiting distinct substrate specificities, as well as functions. The placental ALP (HPAP) is important for antibody transfer from mother to fetus. While intestinal ALP (CIAP) is important for dephosphorylating lipopolysaccharides and modulating intestinal inflammation response. These two mammalian ALPs specifically target nonpolar (greasy) molecules. Escherichia coli alkaline phosphatase (EcAP) lacks this targeting of nonpolar molecules and works as a general phosphate scavenging enzyme. This project aims to determine the molecular basis of these differences in specificity by comparing structural and biochemical properties of CIAP, HPAP, and EcAP. Initial structural and conservation analysis of the mammalian enzymes suggested four residues that potentially determined the differences in specificity for nonpolar molecules, however this analysis indicated that post-translational modifications (PTMs) could also be critical for correct folding. Thus, a new yeast expression system is being utilized to account for the PTMs present in the mammalian version. We are also using protein crystallography and x-ray diffraction to determine the structures of the variant proteins. This research contributes to the understanding of enzyme specificity and may have broader implications for drug design, inflammatory disease treatment, and management.

Oral Presentation **1:25 - 1:40 pm, 3110 Student Union**

Transforming the Paradigm: The Uncanny Valley

Eli Wenig (UW-Whitewater)
Mentor: John Frye, Geography, Geology and Environmental Science

To explore the Uncanny Valley, the phenomenon ascribing natural aversion to certain "eerie" entities, to its truest extent requires thoughtful additions to the intense work completed by Masahiro Mori et al. since Sigmund Freud and Ernst Jentsch initialized the concept over a century ago. Although it, by convention, refers to uneasy feelings found by observing particular robots, androids, and other computerized faces, I grapple with the idea that the Uncanny Valley applies to more than just that. I employ philosophical ideas to the Uncanny Valley by understanding its implications in subtle prejudicial attention. Namely, I posit that, to grasp its mysterious nature, we must approach it from a new perspective and acknowledge that, while it exists in most of us, we all exist in it. To instantiate this, I coined the Latin and Greek combination noumenon afflatus to ascribe meaning to the significance in differences between race, sex, nationality, sexuality, and ability as inadvertently experienced by many as compared to each of our interpretations of the "perfect person." My contributions lie pertinent amidst a ubiquitously inflamed salience of said differences. The uneasiness of such is often unavoidable for some people when they observe anomalous qualities in others, thus eliciting the uncanny effect. The potentiality of each of us being those ambiguous stimuli is the unfamiliar angle which I elucidate.

Oral Presentation **1:25 - 1:40 pm, 3120 Student Union**

All around Me Are Familiar Faces: Testing the Influence of Familiarity on Judgements of Real and A.I. Generated Faces

Shakira Brockhaus (UW-La Crosse)
Co-authors: Kristen Roggenbauer, Lydia Byers, and Brenna Thoen
Mentor: Alexander O'Brien, Psychology

Artificially generated (AG) images are becoming increasingly more sophisticated and prevalent. As these images become more common, it's important that the factors influencing a person's perception of an AG face are investigated. Preliminary research in our lab found that participants rated AG images of faces as more realistic and trustworthy than real images. The current study expands these findings by investigating the impact of familiarity and a paired comparison design on those same judgements. Participants evaluated both celebrity and unknown faces. In total, participants rated 40 individual faces and 20 paired face comparisons, with each pair containing one real face and one AG face generated from the same face. After each paired comparison, participants were asked to identify why they rated a face as more realistic than the other. We hypothesized that participants would be better at identifying the AG celebrity images as fake due to familiarity, therefore creating a larger difference in ratings compared to the unknown faces. When viewing the faces in a paired comparison design, we hypothesized that participants would rate the real images as more realistic overall with the strongest effect existing for the celebrity faces compared to the unknown faces.

Oral Presentation **1:25 - 1:40 pm, 3130 Student Union**

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