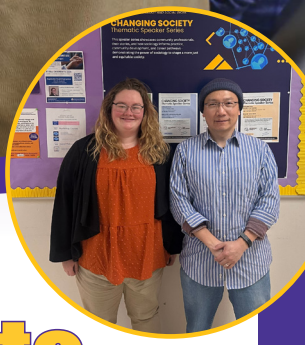

27th Annual

Undergraduate Research Symposium

College of Letters and Science
University of Wisconsin-Stevens Point

Haeni Chemistry Biology Building

Friday, May 1, 2026

2 p.m. Opening Program, Room 105

2:30 - 4:00 p.m. Research Presentations

Undergraduate Research Symposium Friday, May 1

Welcome

Haeni Chemistry Biology Building, Room 105

Opening Remarks 2:00p.m.
Dean Joshua Hagen
College of Letters and Science

"Feeding the Whole Child, Whole Family, Whole Community through Civic Engagement"
Maggie Bohm-Jordan, Associate Professsor
Department of Sociology and Social Work

Student Presentations

2:30 - 4:00 p.m. HCBB Floors 1-3

2:30 – 3:30 p.m.
Oral Presentations
*See pages 4-17 for oral presentation topics and room locations.

2:30 – 4:00 p.m.
Poster Session

Complimentary refreshments available outside of HCBB 105

University of Wisconsin
Stevens Point

Office of the Chancellor

2100 Old Main | Stevens Point, WI 54481-3897
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May 1, 2026

Welcome to the 27th Annual College of Letters and Science Undergraduate Research Symposium! Today you join a proud and longstanding tradition at the University of Wisconsin–Stevens Point—one that blends meaningful learning with a celebration of academic achievement.

To our student participants: I hope this symposium becomes one of the most memorable experiences of your undergraduate journey. Your research has deepened your understanding of the world, strengthened your grasp of the subjects you study, and opened doors to opportunities that will carry you well beyond your time at UW–Stevens Point.

To our attendees and observers: I invite you to join me in recognizing the dedication and initiative of these students. Their work represents exactly what our university means when we encourage our students to "Discover Your Purpose."

Whether you are presenting your work or here to support those who are, you are part of a community that values curiosity, creativity, and scholarly exploration. This event showcases an exceptional group of student researchers representing disciplines across the College of Letters and Science—a testament to the strong partnerships between faculty and students both inside and outside the classroom. I extend my sincere thanks to the faculty mentors whose guidance has helped make these projects possible.

Welcome, and congratulations to all. I wish you great success as you share your work today and as you continue to grow through future symposiums and conferences.

Sincerely,

Pratima Gandhi
Interim Chancellor

ABOUT US

As the largest college of the University of Wisconsin-Stevens Point, The College of Letters and Science offers more than 90 majors and minors among 13 academic departments—in academic disciplines ranging from biology to world languages—housed in four schools.

School of Behavioral and Social Sciences
Geography and Geology ▪ Political Science ▪ Psychology ▪ Sociology and Social Work

School of Biology, Chemistry, and Biochemistry
Biology ▪ Chemistry ▪ Biochemistry

School of Humanities and Global Studies
English ▪ History and International Studies ▪ Philosophy and Religious Studies
World Languages and Literatures

School of Mathematics, Computing, Physics and Astronomy
Mathematical Sciences ▪ Computing and New Media Technologies
Physics and Astronomy

Our college structure highlights shared research interests and teaching approaches, as well as common perspectives on career pathways for students. The college features a student-centered curriculum built around high impact learning opportunities that prepare students for success in the future. The college includes:

- More than 210 faculty and staff
- Labs with state-of-the-art instrumentation
- Study abroad programs in over 25 countries
- Planetarium and Observatory welcome 5,200 visitors annually
- Olson Museum of Natural History programming engaging 2,500 community members

Please consider joining the thousands of donors who help ensure that UW-Stevens Point students are ready to face the challenges of the future. Support a scholarship or UWSP giving opportunity at: https://give.uwsp.edu/g/cols-giving-page or connect with the UWSP Foundation office.

The University of Wisconsin-Stevens Point exists upon land inhabited by the indigenous people of this area, including the Ho-Chunk, Menominee, Ojibwe, Potawatomi, and the many other nations and groups that predate colonial borders. We acknowledge that with colonization Native American people have been dispossessed of their lands and irreparably changed by the actions of individuals and institutions. We acknowledge our responsibility to understand and respond to those actions. In partnership with the Native American Center, we commit to working together to honor the past, be intentional in the present, and to build our future with truth.

Dear Students, Faculty, Staff, Parents, and Friends of the College,

It is my honor to welcome you to the 27th annual College of Letters and Science Undergraduate Research Symposium! During those years, more than 2,300 students from all COLS majors have presented their research posters and presentations through the symposium. The symposium is a high point of our year and an impressive demonstration of the close collaboration between students, faculty and staff to engage in the discovery, dissemination and application of knowledge.

This year's symposium features 106 research projects, including poster presentations and oral presentations from across the college's departments. Ranging from the humanities and social and behavioral sciences to the STEM disciplines of science, technology, engineering, and mathematics, this research highlights the curiosity, dedication and passion of our students to pursue intellectual development in close partnership with faculty mentors. Please join me in congratulating and celebrating our students' research accomplishments.

I would like to thank Dr. Maggie Bohm-Jordan, associate professor in the Department of Sociology and Social Work, for sharing her research titled "Feeding the Whole Child, Whole Family, Whole Community through Civic Engagement." She has collaborated on over a dozen student presentations that will be shared later today.

To kick off the symposium. I also owe thanks to the members of the symposium organizing committee, professors David Barry, sociology and social work, Maryam Farzaneh, physics and astronomy, Cory Haala, history and international studies, Joe Mondloch, chemistry and biochemistry, and the college office staff for making this wonderful celebration of student research possible.

Sincerely,

Joshua Hagen

Dean, College of Letters and Science

Oral Presentations 2:30- 3:30 p.m.

HCBB ROOM 105 – BEGINS 2:30 PM

GROUP 1 – Moderator: David Chunyu, Sociology and Social Work

Bordering Security: The Historical Construction of the US Border Patrol as a National Security Institution - (Sociology and Social Work)
By: Elijah Geske, Sebastian Ollmann
Faculty Mentor: Dr. David Chunyu

This paper examines the historical evolution of the United States Border Patrol from its creation in 1924 to the present, with particular attention to how the agency developed into a national security institution. Using a qualitative content analysis of secondary sources - including government reports, policy documents, and scholarly literature - this study identifies key shifts in the Border Patrol's mission, authority, and enforcement practices over time. The analysis highlights how structural factors such as labor demand, racialized perceptions of migrants, public policy, and national security concerns shaped enforcement strategies across distinct historical periods. Our findings show that early practices of racial profiling and violence, combined with economic dependence on Mexican labor, laid the institutional foundation for later militarization. Subsequent developments, including the War on Drugs, post-9/11 security reforms, and the creation of the Department of Homeland Security, further solidified the Border Patrol's role as a security-oriented enforcement agency. This research demonstrates that the Border Patrol's contemporary practices are not abrupt departures but rather the result of a long historical process in which immigration enforcement increasingly became framed as a matter of national security, with lasting implications for migrants, civil liberties, and US immigration policy.

Resettlement and Transformation: The Hmong Experience in Wisconsin - (Sociology and Social Work)
By: Andrew Kruszka
Faculty Mentor: Dr. David Chunyu

This paper examines the settlement patterns of the Hmong population and the past and present socioeconomic conditions of the Hmong community in Wisconsin. Using data from the U.S. Census Bureau, a review of existing literature, and an interview with a second-generation Hmong individual, the study explores the historical context of Hmong immigration to the United States following their alliance with the U.S. during the Vietnam War. It analyzes the Hmong refugee resettlement policies, process, and patterns, as well as the factors influencing those patterns. Finally, this paper discusses the socioeconomic and linguistic conditions of the Hmong community within Wisconsin. The findings show that after the Vietnam War ended, many Hmong refugees fled Laos to come to the U.S. and the U.S. government sought to resettle and assimilate them as quickly and inexpensively as possible, partnering with and funding many private and religious organizations to place them across the country. Many were initially settled in cities in order to gain economic stability. However, many would later relocate outside of cities in search of a better quality of life. While the Hmong community

struggled socioeconomically through the early 2000s, their conditions have improved considerably in the years since.

Abuse in Foster Care and its Impact on Children - (Sociology and Social Work)
By: LaNae Gallegos, Star Heiting, Nora Lee
Faculty Mentor: Dr. Maggie Bohm-Jordan

This program (*Break the Cycle Project*) examines how trauma within the foster care system contributes to interpersonal violence later in life and explores what changes are needed to prevent these outcomes. By analyzing the effects of trauma, the capacity of the system to respond, and the effectiveness of current interventions which highlights the urgent need for reforms that support long term well-being. Understanding this connection between childhood trauma and adult interpersonal violence is essential for improving foster care practices. There is the need to emphasize stronger collaboration between systems (i.e., schools, courts, child welfare agencies, and healthcare providers) to reduce miscommunication and improve decision making.

The Foster Bridge Buddies: Intervention for Child Violence - (Sociology and Social Work)
By: Annie Achterberg, Samantha Budtke, Ava Gilbert
Faculty Mentor: Dr. Maggie Bohm-Jordan

The Foster Bridge Buddies (FBB) program was created to implement strategies on intervention for children that have experienced abuse within the foster care system. This program involves pinpointing the problematic practices within foster care homes and taking action to address issues, such as physical, emotional or sexual abuse and neglect. This includes not only the foundation of the foster care system but also foster parents and the children's behavior in response. One of the fundamental missions of the program is to create a mentor program targeted at elementary aged children who have experienced trauma in the foster care system. The mentorship relationship between child and peer mentor is aimed to create integral social support in conjunction with professional staff to help the child cope with foster care related trauma.

HCBB ROOM 135 – BEGINS 2:30 PM

GROUP 2 - Moderator:

Art and Activism with the Progressive Action Organization - (English)
By: Brian Larson
Faculty Mentor: Dr. Freesia McKee

Student activism has shaped many movements to advance human rights. Artistic expression has been an important part of having an impact on the hearts and minds of the public. At University of Wisconsin-Stevens Point, Progressive Action Organization (PAO) has been seeking to do this through a multitude of different projects including monthly zine workshops, a teach-in, a community organizing action meeting, and the Punks Against ICE benefit show where six bands performed for an audience of hundreds, raising $3,500 for Voces de la Frontera. Because PAO builds off of different organizations like Socialist Alternative, Punks for Palestine, and the local DIY and punk scenes in Stevens Point, PAO occupies a unique role in our campus and community ecosystem. This presentation, featuring student and faculty representation, will discuss PAO's origins in the 1990s, the importance of PAO's work in our current moment, and the group's intentions for the future.

Testimony at the Threshold: Hibakusha and the Struggle to Make Nuclear Memory Politically Consequential in Japan (1945-2025) - (History and International Studies)
By: Brayden Banks
Faculty Mentor: Dr. Valerie Barske, Dr. Jennifer Collins

This presentation investigates why *hibakusha* (atomic bombing survivors) remain publicly visible yet politically ineffective within nuclear governance. I argue that the problem lies not in survivor silence, but rather in a longer structure of political inaudibility that prevents testimony from becoming consequential. Through historical and interpretive analysis of postwar certification systems, the Atomic Bomb Casualty Commission, survivor advocacy, the 2023 G7 Hiroshima Summit, and descendant-centered relay, I show how institutions narrow what counts as credible harm, separate evidence from care, and limit ceremonial acknowledgements to keep policy detached from *hibakusha* lived experience. I demonstrate that nuclear memory becomes something more than simply preserved or lost. Nuclear memory represents an active struggle over who is listening, who can define harm, whose accounts count, and what obligations should follow when institutions face human consequences. Early recognition systems tied injury to exposure criteria rather than lived consequence, making many forms of nuclear harm harder to register politically (Sato 2022). I conclude by proposing Response, Review, Co-Definition, and Succession as a framework for understanding what political uptake would require and how nuclear memory might be transformed to make institutions more receptive and less able to render *hibakusha* testimony inaudible.

General Motors National Unionization: Janesville, Wisconsin Goes on Strike - (History and International Studies)
By: Alison Mehling
Faculty Mentor: Dr. Rob Harper

In the early twentieth century, America's automobile industry experienced national labor turmoil. To understand the unionization of General Motors (GM) in the 1930s, one must look at the experiences of smaller cities like Janesville, Wisconsin. Newspapers reveal that the union leadership of the Janesville GM plant played a pivotal role in securing national alliances and unified support. Additionally, newspapers disclose how the Janesville GM strike placed economic pressure on the community and strategically interfered with their lives. Lastly, newspapers uncover the deal the strikers made with city manager, Henry Traxier, regarding job security. The Janesville GM strike of 1937 contributed to GM recognizing collective bargaining rights for the UAW nationwide. GM was not just a factory built in Janesville. Rather, it provided a sense of identity for the city and its workers. This moment in history redefined the power of Americas automobile unions and reasserted Janesville's place in the national narrative.

Understanding Skunk Hill's Tax Records within Indigenous Land Forfeiture - (History and International Studies)
By: Elric Guldan
Faculty Mentor: Dr. Rob Harper

This research examines the property within sections thirty and thirty-one of the eastern side of the Arpin township. With exploring warranty deeds stretching from the creation of Wisconsin in 1848 to the forfeiture of this spot from people like the Potawatomi and Ho-Chunk to the town of Arpin a gap in common knowledge is filled. Particular attention is centered from the years 1905, when members of the Potawatomi and Ho-Chunk made their way back to Wisconsin from places like Kansas, to 1936 when the community at Tah-qua-kik officially became Powers Bluff County Park. By examining this location's land archives valuable insights are gained for understanding specific indigenous peoples' histories and their relation to local Wood County sites.

An analysis of specific landowners such as with Sr-qua-gish-go-quah, Cody Jackson, as well as Keo and Mitequa Komoguah demonstrates that this linear forfeiture of Indigenous land is not so clear. Factors in how certain individuals gained land in this location are also discovered. Such is the case with Mary Walters obtaining land from her husband who received it as so-called bounty land from his service in the War of 1812. These deeds are critical in identifying the exact parcels lost by native people.

HCBB ROOM 261 – BEGINS 2:30 PM

GROUP 3 – Moderator: Ismaila Odogba, Geography and Geology

Early Education on Interpersonal Violence - (Sociology and Social Work)
By: Dasonie Nelson
Faculty Mentor: Dr. Maggie Bohm-Jordan

Interpersonal violence education is often delayed or avoided in the United States school setting, leaving many children without language, skills or developmental framework to recognize harm, set boundaries, or seek help. This research proposal questions effective strategies to educate children about interpersonal violence. Drawing from evidence that school-based prevention programs can provide knowledge, attitudes, and some violence prevention outcomes especially when developed early across multiple levels of school environment. This proposal aims to educate K-12 guideline for age-appropriate instruction on healthy relationships, bodily autonomy, consent, boundary setting, and bystander intervention. Theoretical approach such as social learning theory will be explored along with a multi-year school base comprehensive study methodology to examine changes in school climate indicators and reported interpersonal violence outcomes in an intervention setting (K–12) relative to a demographically comparable control setting.

Implementing Text-to-911 Services Statewide in Wisconsin - (Sociology and Social Work)
By: Rowan Doran
Faculty Mentor: Dr. Maggie Bohm-Jordan

This program proposes the implementation of a statewide program, *Access-Ability-911 Wisconsin*, to expand and standardize text-to-911 services across all 72 Wisconsin counties. The proposed initiative focuses on improving accessibility for disabled residents, providing communication to emergency services for those who cannot speak on a phone call, enhancing dispatcher training, upgrading technological infrastructure, and increasing public awareness. These goals will be met through state-funded grants, standardized communication protocols and policies, multilingual capabilities, and a centralized support system through the program. This program aims to improve victim reporting, response outcomes, increase safety for vulnerable populations, and modernize Wisconsin's emergency response system and other multimedia messaging from NG911.

Optimizing IEP Scheduling for Special Education Educators using Integer Linear Programming - (Mathematical Sciences)
By: Alexis Barker
Faculty Mentor: Dr. Andy Felt, Professor Emeritus

We address a common scheduling problem that special education teachers face: creating individualized education plan schedules (IEPs) for multiple students. The work began as a special project in an Optimization Modeling class and continued as an independent research project. The purpose was to develop a scheduling model that supports one special education teacher that works with 13 Fifth and Sixth grade students. The model can be adapted for additional teachers or grade levels as needed.

Currently, most IEP scheduling is a manual, iterative process that requires significant time and trial and error. This project aims to reduce the workload of special education teachers in creating IEP schedules through the usage of computational optimization.

The model uses mixed integer linear programming implemented in AMPL, using the Gurobi branch-and-bound solver. The model defines sets of students, subjects, days, grade levels, and time blocks, and incorporates constraints including: preventing student double-booking, preserving teacher workload boundaries, supporting subject-specific instructional formats, and differentiating core subject priorities such as reading and mathematics. The objective function then balances these factors to produce a workable, conflict-free schedule. The resulting schedules meet IEP requirements, limit conflicts, and make better use of classroom time.

HCBB ROOM 161 – BEGINS 2:30 PM

GROUP 4 – Moderator: Chris Diehm, Philosophy and Religious Studies

A Welfare Analysis of Pigeon Racing: Is Pigeon Loss Worth Fancier Gain? - (Philosophy)
By: Alphie Farr
Faculty Mentor: Dr. Chris Diehm

This presentation provides a welfare analysis comparing the benefits pigeon fanciers perceive that they gain from racing pigeons, and the losses pigeons suffer due to the sport of pigeon racing. Using scientific studies into behavior and disease in pigeons, statistical data, and social science surveys involving pigeon fanciers from multiple regions, the two parties' experiences involved are considered. Through this analysis, the argument is made that the perceived benefits pigeon fanciers receive from breeding, racing, and making profit from their pigeons, the suffering that racing pigeons experience in this sport do not outweigh said benefits. This is due to the significant stressors, dangers to life, and lack of any direct benefit pigeons gain from this relationship with their fanciers. Looking beyond welfare concerns, the paper concludes with concerns about instrumental attitudes towards pigeons, and further anthropocentric attitudes driving these practices.

Dwelling with Heidegger and Deep Ecology - (Philosophy)
By: Hailey Bay
Faculty Mentor: Dr. Chris Diehm

Heideggerian phenomenology and Deep Ecology have close connections, as illustrated in Bill Devall and George Sessions' classic text *Deep Ecology*. Devall and Sessions describe three such connections: both areas of thought criticize western phenomenologies, promote contemplative thinking, and motivate people to "dwell authentically." Devall and Sessions draw from Heidegger's "The Question Concerning Technology" to promote Heideggerian ideas as a way to develop an "ecological consciousness." While I agree with Devall and Sessions' account of these Heideggerian associations with Deep Ecology, I will argue that the associations could be strengthened with the application of Heidegger's notions of "*Dasein*" and "thrownness." By examining these ideas, I will illustrate how the "thrown" condition, as well as our understanding of our own being as *Dasein* promotes authentic dwelling and strengthened ecological responsibility.

Ecosystem Services and Indigenous Cultures - (Philosophy)
By: Elle Vandenelzen
Faculty Mentor: Dr. Chris Diehm

This project evaluates the appropriateness of examining Indigenous cultures within the "ecosystem services" (ES) framework by reviewing real-life examples covered in academic literature. Some argue in favor of incorporating Indigenous cultures within the ES framework, while others disagree, claiming that Indigenous values and relationships with nature are incompatible with the framework and cannot be accurately represented therein. Examining these two conflicting perspectives, I argue that the ES framework may be suitable for some Indigenous cultures but not for others. The diversity of Indigenous cultures makes it difficult to expect all cultures to conform to one framework.

More than Pets: The Narrative, Emotional, and Relational Roles of Cats in Contemporary Japanese Literature - (English)
By: Grady Roesken
Faculty Mentor: Dr. Lauren Gantz

This project examines the narrative, emotional, and relational roles of cats in contemporary Japanese literature, arguing that cats serve as emotional intermediaries who reshape the representation of companionship, loneliness, mortality, and memory. Moving from folklore and early visual culture to modern and contemporary texts, the study traces how cats shift from supernatural or symbolic figures to relational presences embedded within everyday life. Beginning with traditional representations such as the *bakeneko* and *nekomata*, and the satirical observer of Natsume Sōseki's *I Am a Cat*, the project establishes a foundation for understanding the cat as a liminal figure situated between familiarity and distance. Contemporary works such as *The Guest Cat*, *She and Her Cat*, *We'll Prescribe You a Cat*, *The Goodbye Cat*, *The Travelling Cat Chronicles*, and *If Cats Disappeared from the World* extend this tradition by presenting cats as companions who accompany solitude, witness grief, and participate in shared vulnerability without resolving emotional conflict. Rather than functioning as therapeutic substitutes or narrative catalysts, cats remain embedded within experiences of loneliness, mortality, and memory. By establishing presence, absence, and impermanence, these narratives challenge anthropocentric models of companionship and reimagine human–animal relationships as forms of coexistence shaped by uncertainty, finitude, and sustained relational attention.

HCBB ROOM 265 – BEGINS 2:30 PM

GROUP 5 – Moderator: Maggie Bohm-Jordan, Sociology and Social Work

Generational Trauma and Family Violence - (Sociology and Social Work)
By: Koua Yeng Moua
Faculty Mentor: Dr. Maggie Bohm-Jordan

This proposal examines generational trauma and the impact it has on individuals experiencing interpersonal violence. Researchers found the transmission and the continuous cycles of violence, but it does vary across culture and types of violence. Theoretical framework includes social learning theory and attachment theory were used to explore different demographic backgrounds. The goal is to provide prevention strategies and support to minimize the cycle of violence and trauma for the next generation. A preliminary questionnaire will be collected as well as individual or group interviews pending on participants' preferences. Future implications will address other strategies such as spiritual/religious support, and programs that promote awareness.

Medical Mistrust and Future Preventions on Endometriosis - (Sociology and Social Work)
By: Kyra Madson
Faculty Mentor: Dr. Maggie Bohm-Jordan

This research seeks to investigate the systematic diagnostic delay for patients with endometriosis, recontextualizing the 7–10-year period because of epistemic injustice and medical gaslighting. By synthesizing clinical data and sociological theories on how the normalization of chronic, pathological pain and historical prejudice facilitate institutional betrayal, fostering an environment of prolific medical mistrust and clinical avoidance. Additionally, it highlights the profound funding disparities within gendered conditions, despite the massive socioeconomic impact. To attempt to bridge this deficiency, methodology proposes to utilize the mandatory implementation of the Endometriosis Health Profile-30 (EHP-30) at the first mention of pelvic pain in the clinical setting. This research is significant as it shifts the burden of responsibility off the individual, arguing that clinical validation and equitable research funding are essential prerequisites for dismantling the mandated suffering of millions.

Prevention on Teen Violence - (Sociology and Social Work)
By: Hunter Hohenstein, Brianne Kieta
Faculty Mentor: Dr. Maggie Bohm-Jordan

This proposed prevention program focuses on teens experiencing interpersonal violence in high-risk urban environments. Research found that almost 20 percent of teens experience some type of sexual or physical dating violence; about half are stalked or harassed, and 65 percent reported psychological abuse. There are Wisconsin programs, such as 211 Wisconsin and End Domestic Abuse Wisconsin, but focus on interventions for adults. Our free program caters to teens in low-income communities and provides tools in helping them to identify key signs of IPV and how to safely report. We offer speakers of ex-law enforcement, social workers, and councilors who have had first-hand experience in these situations. Other risk factors such as victim's confidentiality, levels of

consent, and potential leveraging from others will need to be fully explored. The goal is to provide more teen violence awareness and other implications for resources and policies will be addressed.

Why do victims return to abusive relationships? - (Sociology and Social Work)
By: Jaylen Jones, Reegan Peterson, Jaylynn, Wilke
Faculty Mentor: Dr. Maggie Bohm-Jordan

This research proposal examines four research questions: 1) What psychological, emotional, and structural factors influence victims' decisions to return to an abusive partner? 2) How do cycles of power, control, and trauma bonding maintain victims' attachment to abusive partners over time? 3) How do fear, shame, and limited access to resources (financial, social, or institutional) interact to keep victims from leaving abusive relationships permanently? and 4) In what ways can increasing public understanding of these factors reduce stigma and improve the support systems available to survivors? Several theoretical frameworks will be utilized, attachment/social exchange/resource theories. A survey to assist with treatment will focus on attachment styles, trauma bonding, resource availability, and the effects of fear and stigma on decision-making processes. Future implications will address other demographic risk-factors and how existing programs engage with both survivors and perpetrators.

HCBB ROOM 131 – BEGINS 2:30 PM

GROUP 6 – Moderator:

Elder Abuse in Interpersonal Relationships - (Sociology and Social Work)
By: Alex Jourdan, Quinn Nelson
Faculty Mentor: Dr. Maggie Bohm-Jordan

This preliminary research examines elder abuse and how it impacts interpersonal relationships. Common forms of abuse include psychological, physical, sexual, with a primary focus on financial exploitation. Two research questions guide this study backed by social control theory, 1) Why is financial deception one of the most common forms of elder abuse? From our research, it ranked second in reports by adults at 6.8% and third in reports by older adults and their proxies at 13.8% (WHO 2024). While not the most common—psychological abuse affects about 1 in 3 elders—both remain serious concerns. Elder abuse is common because older adults may face cognitive decline, financial vulnerability, and are often targeted due to accumulated savings or assets. Question 2) What age range experiences the highest levels of abuse? Research shows that over 140 million people suffer from elder abuse each year, which can be explained utilizing routine activities theory. A cross-sectional survey of 10 questions was designed for high school and college-aged individuals to better understand awareness, with the goal of informing future prevention and support efforts.

Physiological Abuse in Relationships - (Sociology and Social Work)
By: Rory Ayers
This program examines the psychological abusive relationships among individuals between 18-25. Psychological abuse could take longer to identify as victim may not realize they are being manipulated. This program focuses on steps of healing. Outpatient programs provide therapy 2-3 times a week and 1-2 times weekly group discussions. The program will extend to the existing programs, such as Peaks Recovery in Colorado. It will also implement policies and help from police officers depending on the type of abuse. Resources and support will be provided in person and online to better assist individual's needs.

Prevention for Abused Men - (Sociology and Social Work)
By: Jakob Dorn
Faculty Mentor: Dr. Maggie Bohm-Jordan

This program proposal for the Wisconsin Male Abuse Prevention Program aims to provide new resources, care, and support for abused men. It focuses on the prevention of abuse towards men and educating the public on how society views men who are abused and the impact it has on them. There are some existing programs (i.e., South Denver Therapy, MenSafe, Gladiator Support Hotline) but only a few available in Wisconsin. The Wisconsin Male Abuse Prevention Program will provide classes for varies of age groups, 24/7 hotline, shelter, meals, and job search. Policies will be

implemented that take inspiration from Clare's law and will offer more preventions. Future implications with mandatory reporting and minimizing male abuse stigma will be addressed.

HCBB ROOM 490 – BEGINS 2:30 PM

GROUP 7 – Moderator: Jayda Harris

The Role of Media on the Stigmatization of Mental Health - (Sociology and Social Work)
By: Nicole Pingel
Faculty Mentor: Dr. David Barry

Our previous research found there a variety of different factors that impact stigma in mental health. Out of the three stigmas we examined, portrayals of mental illness was the only stigma to have any positive impact associated. While still negative overall, this topic generated the most discussion and had a very strong response from participants. This follow-up study further examines the influence of media on the stigmatization of mental health amongst college students. Our survey asked students questions about media usage, criteria for determining creditability of a source, and share the overall impact of five specific media selected based on discussion from our previous study. Findings from this follow-up survey will be discussed in detail following a complete analysis.

The Psychological and Physiological Consequences of Childhood Maltreatment - (Sociology and Social Work)
By: Kyla Potter
Faculty Mentor: Dr. Maggie Bohm-Jordan

This preliminary research examines the relationships between childhood maltreatment, psychopathology in adulthood, and basal cortisol levels. Childhood maltreatment (i.e., physical, sexual, emotional abuse, emotional, and physical neglect) may correlated with a variety of psychiatric conditions and HPA axis dysfunction in adulthood (e.g., Depression, PTSD, Anxiety, lower basal cortisol levels). Three research questions: 1) Do survivors of childhood maltreatment experience greater psychiatric conditions compared to those who do not experience childhood maltreatment? 2) Is there an association between specific types of childhood maltreatment and specific psychiatric conditions? and 3) Does childhood maltreatment lead to hypothalamic-pituitary-axis (HPA) dysfunction? Two questionnaires (CTQ-SF and SCL90) to assess the relationship between Childhood maltreatment and psychopathology in adulthood. Also proposed for basal salivary cortisol collection. Future implications for types of treatment, funding, and potential false reporting will be addressed.

When a Partner Calls: The Neural Substrate of Recognizing and Valuing Pair Bonds in Zebra Finches - (Biology)
By: Casey Wright, Brayden Banks
Faculty Mentor: Dr. Sarah Jane Alger

Pair bonding, which is central to survival and reproductive success in many social species, depends on both vocal recognition and the reward systems that reinforce attachment. In zebra finches (*Taeniopygia guttata*), a socially monogamous songbird, pair bonds form quickly and can be maintained through auditory contact alone, even after temporary re-pairing (Silcox & Evans, 1982).

Although these behavioral patterns are well established, the neural mechanisms underlying recognition and valuation of partners remain less clear. To examine this, we exposed zebra finches to recordings of calls from current partners, previous partners, or strangers while they were housed in darkness without other stimuli. Brains were then fixed, and neural activity was measured through staining for the immediate early gene ZENK. ZENK-labeled cells were quantified in auditory processing and social memory regions, including Field L subsections, the caudomedial mesopallium, and the caudomedial nidopallium, as well as dopaminergic regions linked to reward and valuation, including the nucleus accumbens and ventral tegmental area. Results showed greater VTA activity in response to current partner distance calls, a positive correlation between VTA activity and eggs hatched across previous and current partners, and an inverse relationship between VTA activity and co-activation in CMM and Field L3.

SYMPOSIUM NOTES:

Poster Session Abstracts on following pages

Poster Presentations 2:30 - 4:00 p.m.

Posters Located on 1st Floor and HCBB Atrium

School of Behavioral and Social Sciences

Developmental and Genetic Contributors to Anxiety-Like Behaviors in Mice - (Psychology)
By: Lindsay Nielsen, Nicole Pingel, Sidney Otto, Mya Gehle
Faculty Mentor: Dr. Sean Mooney-Leber

This study aims to further identify behavioral differences between two inbred mouse strains at different stages of life while considering genetic background and sex as potential influencing variables. Anxiety-like behaviors and memory were tested during adolescent and adult timepoints in C57BL/6J and DBA/2J strains of inbred mice. Mice were exposed to light-dark box, open field test, and novel object location behavioral tests. Results indicated a significant strain difference in anxiety-like behavior in both adult and adolescent mice. Specifically, anxiety-like behavior in DBA/2J mice was elevated at both timepoints compared to the C57BL/6J strain. No memory differences were observed between strains, sex, age, or an interaction of these variables. These findings suggest that enhanced anxiety-like behaviors observed in DBA/2J mice are not necessarily impacted by development. The presence of behavior differences between strains regardless of age indicates a strong possibility of genetic influences. A SNP analysis was also performed to evaluate potential genetic differences and their influence on behavioral outcomes. Further research should be performed to understand what genetic mechanisms account for dissimilarities between the strains of mice.

Effects of Parenting Styles on Cognitive Flexibility in Adulthood - (Psychology)
By: Zachary Roe
Faculty Mentor: Dr. Sean Mooney-Leber

Authoritarian (ATN), Authoritative (ATV), and Permissive (PRM) are the three most discussed parenting styles in the literature. Previous studies have implicated these styles in predicting life outcomes, particularly across academic, behavioral, and psychological domains. The current study sought to examine how cognitive flexibility, a component of executive functioning, is influenced by parenting style(s) individuals report experiencing during adolescence. The literature routinely indicates that children of parents who demonstrate ATV parenting have more favorable outcomes, including better academic performance, self-reliance and confidence, and elevated emotional regulation. In the present study, college students were asked to respond to a series of questions from the Cognitive Flexibility Scale (CFS) and the Parental Authority Questionnaire (PAQ) to determine if the perceived parenting style(s) they report experiencing during their youth are relevant to their present cognitive flexibility. Analysis of the response data showed a significant association between authoritative parenting from the primary caregiver and cognitive flexibility, with higher authoritative parenting scores predicting greater cognitive flexibility. No significant relationship was found for the other parenting styles and cognitive flexibility. These results expand the literature demonstrating the impacts of parenting on executive functioning skills, and that these effects extend into young adulthood.

Hmong Settlement Patterns and Socioeconomic Change in Wisconsin - (Sociology and Social Work)
By: Andrew Kruszka
Faculty Mentor: Dr. David Chunyu

This research examines the settlement patterns of the Hmong population and the past and present socioeconomic conditions of the Hmong community in Wisconsin. Using data from the U.S. Census Bureau, a review of existing literature, and an interview with a second-generation Hmong individual, the study explores the historical context of Hmong immigration to the United States following their alliance with the U.S. during the Vietnam War. It analyzes the Hmong refugee resettlement policies, process, and patterns, as well as the factors influencing those patterns. Finally, this paper discusses the socioeconomic and linguistic conditions of the Hmong community within Wisconsin. The findings show that after the Vietnam War ended, many Hmong refugees fled Laos to come to the U.S. and the U.S. government sought to resettle and assimilate them as quickly and inexpensively as possible, partnering with and funding many private and religious organizations to place them across the country. Many were initially settled in cities in order to gain economic stability. However, many would later relocate outside of cities in search of a better quality of life. While the Hmong community struggled socioeconomically through the early 2000s, their conditions have improved considerably in the years since.

Ingroup Bias in the Allocation of Infrastructure Projects - (Psychology)
By: Quinlyn Mack
Faculty Mentor: Dr. Mark Ferguson

Two studies examined whether ingroup bias affects the allocation of infrastructure projects. Across studies, we found that participants located more positive and less negative projects in their own cities, rather than in other cities or the larger county. These results suggest that ingroup bias might influence the allocation of infrastructure.

The Impacts of Developmental Exposure to Bisphenol-S on Drinking Behavior in Female and Male Rats - (Psychology)
By: Kyla Potter, Jackson Carter, Logan Gordon Elliot Fey, Kylie Hoeffs, Tristin Jantz, Sydney Kafka, Abbie Paulson, Addilyn Seep, Marli Waltz, Zachary Roe, Nicole Pingel, Lynn Witzel
Faculty Mentor: Dr. Heather Molenda-Figueira

While the role of bisphenols has been extensively investigated in disorders that are tied to gonadal hormones, such as cancers, obesity, and infertility, fewer studies have focused on disorders not typically associated with endocrine disruption, such as excessive alcohol consumption. We wished to determine how developmental bisphenol-S (BPS) impacts voluntary alcohol consumption in rats, with a focus on sex-dependent outcomes. Additionally, we explored whether developmental BPS exposure affects alcohol intake across the estrus cycle in female rats. Rats were exposed to BPS through gestation and up through postnatal day 14. Seven days prior to experimentation, rats were acclimated to 10% grape juice mixed with water solution and female rats had their estrus cycles tracked, which continued throughout experimentation. Throughout experimentation, rats were given a two-bottle choice between water mixed with grape juice, and water mixed with grape juice and ethanol for 5 consecutive days/week for a total of 4 weeks. For weeks 1 and 2, the baseline alcohol percentage was set at 10%, increasing by 5% for weeks 3 and 4. Alcohol intake and body weight was

measured every 24 hours. We predict there will be sex- and BPS treatment-dependent differences in alcohol consumption, and data are currently under analysis.

Pilot Study Investigating Genetic, Sex, and Environmental Differences on Ethanol Consumption and Anxiety-Like Behavior in Adult DBA2 and C57 Mice - (Psychology)
By: Jackson Carter, Nicole Pingel, Lindsay Nielsen, Sidney Otto, Kaylin Peryam
Faculty Mentors: Dr. Sean Mooney-Leber, Dr. Jennifer Bray

Alcohol is a drug used by a significant number of Americans during adulthood. Although legal, alcohol consumption during adulthood is known to produce impairments in brain and behavioral outcomes. However, the exact factors that contribute to these impairments are unknown. Here we explored the role that genetics, sex, and housing play on ethanol drinking and anxiety-like behaviors in two inbred mouse strains: C57BL/6J and DBA/2J. To examine drinking behaviors, we utilized the drinking in the dark (DID) paradigm, and anxiety-like behavior was assessed using open field test (OFT). Within the DID model, mice were given 10%EtOH/90%H2O on days 1-3 for two hours and 20%EtOH/80%H2O on day 4 for four hours. Immediately following DID on day 3, mice were assessed in the OFT. When examining total distance traveled, we saw a significant increase in total distance traveled within the DBA/2J strain compared to the C57BL/6J strain. Moreover, findings of ethanol consumption show significant effects of strain, sex, and housing; however, follow-up analysis showed only housing to be significant with group housed mice having increased ethanol consumption. As this was a pilot study, further exploration is necessary to examine these ideas with a larger sample size to determine validity of these results.

Sex and Genetic Influences on Biobehavioral Outcomes Following Acute Restraint Stress -
(Psychology)
By: Nicole Pingel
Faculty Mentor: Dr. Sean Mooney-Leber

Survivability in certain environments can be dependent on internal signals mediated by physiological systems. One of these functions is stress exposure. Interestingly, the impacts of stress are not uniform with individuals displaying either vulnerability, resilience, or no effects at all. Certain biological aspects of the stress system have been previously validated; however many remain unknown. Here, we aim to examine the role that genetics and sex play on various behavioral outcomes immediately following stress using two common inbred mouse strains: C57BL/6J and DBA/2J. Prior to behavioral testing, mice were exposed to either one hour of restraint stress or undisturbed. Anxiety-like behavior was determined using the light dark box and open field test, depressive-like behavior was evaluated using the forced swim test, and acute spatial reference memory was assessed using the y-maze. Our findings indicate that the impact of acute stress on anxiety-and depressive-like behaviors are modulated by background genetics and sex. Conversely, we did not see any impact of acute stress on acute spatial reference memory. These findings support the idea that the ability of stress to alter behavioral functioning is dependent on additional biological factors such as genetics or sex. Further exploration is necessary to identify potential biological explanations for individual factors that lead to behavioral deficits following stress exposure.

Violence Against Pregnant Women - (Sociology and Social Work)
By: Lily Meeks, Sydney Waech
Faculty Mentor: Dr. Maggie Bohm-Jordan

This proposed program (Mother and Infant Help Center, MIHC) focuses on violence against pregnant women and prenatal/ postpartum women and newborn through 5 years old. Research found programs like Aurora Healthcare's Safe Mom Safe Baby, provide care for mothers and babies; 81% of mothers who finished the program gave birth to full-term babies. MIHC will offer shelter and living situations, daycare, meals and community resources in person and virtual. Wisconsin has programs (e.g. Trinity House, Hannah Center Inc.) that focus on short-term support and housing for mothers and their children. MIHC aims to implement policies to assist individuals' living situations and screening for level of violence through surveys and interviews. Future implications will address resources and support for prenatal and postpartum depression and psychosis.

Poster Presentations 2:30 - 4:00 p.m.

Posters Located on 1st Floor and HCBB Atrium

School of Mathematics, Computing, Physics and Astronomy

Exploring Open Questions in Quasar Phenomenology Using a Python Code FANTASY and Sloan Digital Sky Survey Spectra - (Physics and Astronomy)
By: Jaxom Blaser
Faculty Mentor: Dr. Sebastian Zamfir

We use a Python code called FANATSY (Fully Automated pythoN Tool for AGN Spectra analYsis) to investigate three open questions related to the: 1) asymmetries of the Balmer broad emission lines, 2) internal shifts of the FeII lines in the vicinity of the Balmer Hb line, and 3) connection between the large scale radio properties of the co-called Giant Radio Quasars (GRQ) and the spectra of their active galactic nuclei (quasars). We show that the asymmetries of the Balmer lines in many cases could be explained by invoking significant contributions arising from Ti and Cr. We also confirm previous reports that the FeII lines show systematic internal redshifts, and thus, they may support the notion of matter inflowing toward a putative supermassive black hole. We also report preliminary findings pertaining to GRQ, however, our sample of good quality spectra is too small at this time to permit bold conclusions.

"Forensic Astronomy" or "Celestial Sleuthing" Applied to Art and History - (Physics and Astronomy)
By: Lukas Petroski
Faculty Mentor: Dr. Sebastian Zamfir

"Celestial Sleuthing" is a form of forensic astronomy popularized by Texas State University physics professor Donald Olson, using astronomical calculations (moon phases, star positions, tides, etc.) to determine precise dates, times, and locations for historical events, masterpieces in art, and scenes in literature. I am playing "the astro detective" by employing specific tools, techniques and strategies, in the spirit of the work detailed in Donald Olson's books, in order to determine the precise location and date when 1) the "View of Dresden by Moonlight" was painted by the Norwegian artist Johan Christian Dahl, 2) the "Great Comet of 1680 over Rotterdam" was painted by the Dutch artist Lieve Verschuier. I am also briefly presenting the famous case of the 1858 "Almanac trial" when the attorney Abraham Lincoln used published astronomical data to defend his client.

Photometric Analysis of Early-Type Spiral Galaxies using GALFIT Code - (Physics and Astronomy)
By: Grace Wilson
Faculty Mentor: Dr. Adriana Durbala

We investigate the relative influence of "nature versus nurture" – intrinsic versus environmental factors – in shaping the morphology and evolution of galaxies. Our study focuses on a sample of isolated early-type spiral galaxies (S0a/Sa/Sab), for which we perform data reduction and photometric analysis using red/near-IR i-band images from the Sloan Digital Sky Survey Data Release 18. We use the GALFIT code to decompose each galaxy into its bulge, disk, and bar components and to derive the structural parameters of each component. Our work will provide

insights into the balance between intrinsic and environmental influences in galaxy formation and evolution.

Splitting Water with Sunlight: Evaluating Oxides of Copper Alloys for Green Hydrogen Production -
(Physics and Astronomy)
By: Gavin Dillingham
Faculty Mentor: Ken Menningen

Photoelectrochemical water splitting offers a promising pathway for sustainable hydrogen production by converting solar energy directly into chemical energy. This study investigates the photoelectrochemical performance of three copper-based metal oxide photocathodes — copper bismuth oxide ($Cu_xBi_{2-x}O_4$), copper iron oxide ($Cu_xFe_{2-x}O_4$), and copper cobalt oxide ($Cu_xCo_{2-x}O_4$) — with the goal of identifying the most effective material for driving the water splitting reaction. Fluorine-doped tin oxide conductive glass plates were prepared by spotting each metal oxide precursor solution onto the substrate, followed by calcination to oxidize and crystallize the photoactive film. Each electrode's ability to produce photocurrent and drive water oxidation was assessed by separate measurements. Electrodes were ranked based on the combined results of these two evaluations. The findings indicate measurable differences in photoelectrochemical activity among the three metal oxide compositions, and the final performance rankings will be presented.

Poster Presentations 2:30 - 4:00 p.m.

Posters Located on 3rd Floor

School of Humanities and Global Studies

The Assassin Consents to Die with No Voice from Beyond the Grave: The Revolutionary Memory of Charlotte Corday (1793–1939) - (History and International Studies)
By: Elliott Zell
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how artists and writers commemorate the "angel of assassination" Charlotte Corday (1768-1793) across French revolutionary memory 1793-1939. Historical sources indicate that Corday's passport listed her as a chestnut-haired brunette and contemporary portraits by Jean-Jacques Hauer consistently depicted her with dark hair (Archives Nationales, W277/82/8; Gelbart 2004). Yet from the early 1800s, textual accounts increasingly transformed her into a blonde, fair-haired figure. More specifically, I argue that this "blonding" functioned as a gendered commemorative practice through which writers including Romantic historians like Jules Michelet and Alphonse de Lamartine and twentieth-century biographers like Jean de La Varende recast Corday to fit everchanging ideological ideals of feminine purity and virtue. Drawing on textual analysis of biographies, poetry, medical writings, and newspaper accounts, alongside art-historical examination of portraits and engravings, this research innovatively bridges discourse analysis and visual culture studies to reveal how hair color became a contested site of memory. Using a framework of symbolic hair coding and theories of revolutionary gender exclusion, I address intersections of gender, class, body, and nation. Corday's legacy matters by demonstrating that even seemingly trivial physical details such as hair color carry profound political and gendered meanings in how societies remember their own past.

Chilean Gendered Political Memory: Comparing State-Manufactured Narratives to Victim-Led Initiatives (2010-2026) - (History and International Studies)
By: Sage Besemer
Faculty Mentor: Dr. Valerie Barske

In this project, I argue that Chile's state-sponsored memorials of the Pinochet dictatorship frame women's involvement as apolitical, a narrative contested by victims' testimonies. Patricio Aylwin's administration, after Augusto Pinochet's dictatorship from 1973 to 1990, provided recognition of human rights abuses against political dissidents. The Rettig Commission, released in 1991 to facilitate democratization, decontextualized the coup by omitting the Cold War ideological conflict. By centering the narrative on victims' experiences rather than the historical context that influenced Pinochet's rise to power, victims were represented as neutral martyrs (Bakiner 2015). Arpilleras, a permanent exhibit at the Museum of Memory and Human Rights established in 2010 under the Michelle Bachelet government, embodies a feminine art form that protested the dictatorship by memorializing life under Pinochet (MOLAA 2020). I maintain that the exhibit portrays women's activism as primarily motivated by mourning male victims. In contrast, I claim that the testimonial

advocacy of survivors Beatriz Bataszew and Alejandra Holzapfel documents sexual torture, emphasizing that their persecution by Pinochet's regime was fueled by affiliation with the Revolutionary Left Movement, a leftist political group. This project displays the capacity of state-led commemorations to portray women within a limiting one-dimensional framework, which victim-led memory work challenges.

Commemorating Failed Revolutions: Celebrating Loss in Soviet Controlled Hungary (1989-2026) - (History and International Studies)
By: Lilly Kovach
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how Hungarians commemorate the 1956 Revolution against the Soviet Union. On October 23, 1956, peaceful protesting began in Budapest with 20,000 protesters listing demands against the communist government and singing the national song of Hungary, Nemzeti dal banned by the Soviet Union. A firefight erupted and Soviet troops retreated on October 28th but returned on November 4th to completely crush the revolution (Cox 2006). I investigate how commemoration of this "failed" revolution by Hungarians continues to evolve. Since becoming a national holiday recognized by the independent democratic government in 1991, this event includes celebrating those who fought and died for freedom. Through this research, I seek to understand why Hungarians celebrate a revolution that ended in failure and bloodshed. I consider how "The House of Terror Museum" in Budapest represents the horrors of Soviet rule and the Second World War while also hosting free commemorative events to the public every year on October 23rd (Terror Haza 2002). Considering the anticipation of the 70th anniversary in 2026, I contend that understanding the historic struggle for freedom and independence against oppression holds lasting significance in our present-day global context.

Composition as an Act of Remembrance in Post-WWII Europe: Analyzing Commemoration in Post-Modern Musical Works (1940-1990) - (History and International Studies)
By: Brian Larson
Faculty Mentor: Dr. Valerie Barske

Amidst the political and social instability of post-WWII Europe, composers within the avant-garde and postmodern schools drew inspiration from the traumas of the Holocaust and Jewish pogroms to produce works that memorialize their respective subjects. Works such as Henryk Górecki's Symphony No. 3 (1976), Olivier Messiaen's Quatour Pour la Fin du Temps (1941), Mikhail Gnesin's Sonata-Fantasia Op. 64 (1947) and Dmitri Shostakovich's Strong Quartet No. 8 (1960) utilize poetry, Jewish musical aesthetics, and aural elements as acts of historical and cultural remembrance. These works exist in fundamentally different political-artistic spaces. Quatour Pour la Fin du Temps, composed and premiered in Stalag 8A, uses atonality and aural allusions to biblical passages to communicate the experience of internment in the camp (Sprout 2005). In the Eastern Bloc, the Soviet state art philosophy of Socialist Realism suppressed themes within Shostakovich and Gnesin's work (Tompkins 2013). In contrast, the Polish government's relatively liberal attitudes towards artistic works resulted in a more explicit representation of Holocaust memorialization within Górecki's Symphony No. 3 (Loeffler 2014). I argue in this project that examining these works and music more broadly as a commemorative practice provides insight into the influences of identity and state censorship on memorialization.

Embodying Memory: The Global Commemoration and Reinterpretation of Russian Ballet (1917–2024) - (History and International Studies)
By: Bella Harriman
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine Russian ballet as a commemorative practice that preserves and performs cultural memory across the Soviet Union and post-Soviet Russian Federation as well as reinterpretations in transnational contexts from 1917 to 2024. Since the late nineteenth century, ballets such as Swan Lake (1877) and The Nutcracker (1892) became central to imperial cultural prestige and aristocratic aesthetics (Wiley 1985). After the 1917 Revolution, the Soviet state retained classical ballet institutions, reframing them as symbols of Soviet excellence rather than imperial luxury. More specifically, I argue that Russian ballet functions as an embodied living archive that negotiates tensions between imperial nostalgia, Soviet ideology, and post-1991 nationalism within Russia and in transnational contexts. By examining commemorative practices such as anniversary performances, state-sponsored galas, international touring companies, and public memory surrounding figures including Mikhail Baryshnikov (b. 1974), I assess how ballet operates as both cultural continuity and political adaptation across national boundaries. Drawing on memory studies and performance theory, this project demonstrates how diverse groups mobilize and reimagine Russian ballet to shape cultural identity for domestic and global audiences.

Desde Bomba hacia Bad Bunny: Música Afro-caribeña y la conmemoración de la resistencia al colonialismo, gentrificación, y explotación de Puerto Rico (2017-2026) - (History and International Studies)
By: Amayo Bardeguez
Faculty Mentors: Dr. Valerie Barske, Dr. Lara Garrido

En este proyecto de investigación analizo cómo Bad Bunny combina música afrocaribeña con reggaetón moderno para conmemorar la resistencia de Puerto Rico frente al colonialismo, la explotación y la marginalización política. Aunque la isla continúa siendo legalmente un territorio de los Estados Unidos, persisten debates sobre la independencia, la identidad cultural y el orgullo puertorriqueño. En años recientes Bad Bunny se ha convertido en uno de los símbolos culturales más representativos de Puerto Rico, utilizando el reggaetón y otros ritmos latinos para visibilizar problemáticas como la gentrificación, la diáspora y los efectos de los huracanes. Este proyecto sostiene que la música de Bad Bunny funciona como una plataforma de descolonización en la que los ritmos afrocaribeños se transforman en memoria cultural que desafía narrativas coloniales e impulsa reflexiones sobre soberanía e identidad nacional. Me enfoco en la representación musical de géneros como la bomba, la plena, la salsa y la música jíbara y en su vínculo histórico con comunidades negras y de clase trabajadora. Asimismo examino canciones, videos musicales y presentaciones en vivo, incluyendo El Apagón: Aquí Vive Gente, entre otros, para demostrar el papel central de la música en la preservación y conmemoración de la historia y cultura de Puerto Rico.

Bomba to Bad Bunny: Afro-Caribbean Music and the Commemoration of Colonialism, Gentrification, and Exploitation of Puerto Rico (2017-2026) - (History and International Studies)
By: Amayo Bardeguez
Faculty Mentor: Dr. Valerie Barske

In this research project, I analyze how Bad Bunny uses traditional Afro-Caribbean beats, mixed with modern reggaetón to commemorate Puerto Rico's resistance to its deep history of colonialism, exploitation, and political marginalization. While legally Puerto Rico continues as a U.S. unincorporated state, debates over Puerto Rican independence, statehood, and national pride shape the island's political and cultural identity. Recently, Bad Bunny represents one of the most famous Puerto Rican symbols, utilizing reggaetón and other Latin rhythms to address major issues such as gentrification, displacement, and the long-term effects from hurricanes. This project addresses Bad Bunny's representation of Afro-Puerto Rican music traditions such as bomba, plena, salsa, and jíbaro and their association with black working-class communities on the island. My research also examines songs, music videos such as "El Apagón: Aquí vive gente" (2022), and performances including his 2026 Super Bowl half time show and 2023 Grammy performance to show how music plays a central role in commemorative practices. I conclude that Bad Bunny employs Afro-Caribbean traditional music as a platform for decolonization, which transforms Latin rhythms into a form of remembrance that challenges settler-colonial narratives and inspires pro-independence movements from the people on the island.

Forward Power: Student Radio, Closure, and Organizing at WLBL and WCSB (1950-2025) - (History and International Studies)
By: Brian Larson
Faculty Mentor: Dr. Valerie Barske

In July of 1950, the Wisconsin Department of Agriculture cut the phone line from WLBL's studio at the Central State Teacher College Training School, ending nearly twenty years of joint programming with the college's students (The Pointer 1950). To the Department of Agriculture, WLBL represented a high-tech method of communicating market information to rural Wisconsin farmers, rendering student programming "incidental" in the words of one administrator (McDowell 1950). After the closure, broadcasting still continued under the closed-circuit WDSN station, and later the full-power 90FM station. Over seventy years later, existential threats to student broadcasting remain. The most recent campus radio closure occurred in 2025 at Cleveland State University. In this poster, I examine student response, power, and organizing as the current station manager of 90FM and future educator. I argue that campus radio stations act as unique reflectors of popular and counter culture, and ask the question, "who really owns college radio?"

Harmonizing Eras: Commemorating Korean Song and Dance in a Postcolonial World (1910-2026) - (History and International Studies)
By: Ruth Jankovic
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how traditional songs and dances shape postcolonial commemoration in contemporary South Korea. For the 2026 Oscars staging of the song Golden from the movie K-Pop Demon Hunters (2025), performers infused traditional hanbok dances and Pansori songs (Soo-Jung 2026). When the K-Pop group BTS released their comeback album this March 2026, their new song Body to Body embeds the Korean folk song Arirang. Originating during the Joseon Dynasty of Korean history (1392-1897), this song commemorates pre-colonial cultural identity and collective memory of shared "Koreanness." During the Japanese occupation of Korea (1910-1945), song and dance served as a mechanism for "survivance," a powerful tool of cultural resistance, and a way to remember national resilience. Drawing from historical and popular cultural sources, I examine Korea's colonial context, threats to eradicate Korean identity under Japanese imperialism, and Korean resistance through the use of traditional folk music and dance as central to postcolonial commemorative practices. I argue that these arts remain rooted deeply in Korean nationalistic expressions and recall previous historical contexts. I conclude that in postcolonial contexts song and dance play a central role in commemorative practices on an international stage.

Japanese State Memory and Diplomatic Justice: The Politics of Remembering the "Comfort Women" (1991–2026) - (History and International Studies)
By: Tara Zanon
Faculty Mentor: Dr. Valerie Barske

Through this research, I examine the construction of state memory and diplomatic remembrance regarding Japan's institutionalized system of sexual slavery, euphemistically known as the "ianfu" (comfort women). Beginning in the early 1930s, the Japanese military developed a system that forced primarily Korean women, along with women from China, the Philippines, and other occupied territories into sexual slavery. The system subjected these women to extreme physical violence, psychological trauma, and lifelong stigma in an effort to boost military morale, control venereal disease, and reduce acts of mass sexual violence (Soh 2000). Regrettably, the Japanese government remains strategically ambiguous in its apologies and recognition of these crimes, as seen in official statements by leaders such as Prime Minister Shinzo Abe in 2015 following the Japan–ROK Foreign Ministers' Meeting (MOFA 2015). This refusal of accountability contributes to ongoing global discontent and unresolved historical tensions. I argue that such state-sponsored ambiguity and denial not only shape international legal and diplomatic responses but also perpetuate the social stigma, marginalization, and gendered violence experienced by survivors, while reinforcing existing discriminatory attitudes towards women. Thus, this research highlights how contested state memory continues to influence international justice and the lived realities of affected women.

Kurentovanje Carnival in Slovenia: Chasing Winter Out, Bringing Tourists In (1960-2026) - (History and International Studies)
By: Grace Habermehl
Faculty Mentor: Dr. Valerie Barske

In this research, I examine the Kurentovanje Carnival and how Slovenia's tourism industry utilizes the commemoration of folk characters and customs. Kurentovanje represents an eleven-day Shrovetide (pre-Lenten) festival in the city of Ptuj that centers on a procession of dancers led by the korants, supposed demons chasing out winter (Simonic 2007). In 1960, the Historical Society of Ptuj formalized Kurentovanje to develop local tourism and preserve local folk customs in Slovenia (Simonic 2007). Kurentovanje's purpose remains today; if anything the festival continues to grow and to include more folk characters from the region. Using the Slovenian tourism site, "I Feel Slovenia" maintained by the Slovenian government along with various blog sites, this research investigates how the Slovenia's government employs commemoration of folk characters in Slovenian tourism. Although Kurentovanje promotes tourism, its main purpose allows people to embody ancient folk customs and expands to a broader cultural celebration shared by both viewers and participants. Kurentovanje illustrates how local communities negotiate authenticity and economic need, revealing the complex ways intangible heritage becomes both a cultural practice and a strategic resource. Studying this dynamic shows how modern nations use tradition to build cultural visibility and sustain local economies.

Liberté, Égalité, Fraternité: Contradictions of Commemorating Democracy in Postcolonial Tahiti (1984-2025) - (History and International Studies)
By: Bobby Wing
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the ways in which the Indigenous Mā'ohi people of French Polynesia resisted French cultural assimilation by utilizing mindful reappropriation of "Bastille Day" celebrations, turning a colonial holiday into the national holiday called "Heiva i Tahiti" as an assertion of indigenous identity. Bastille Day marks the beginning of the French Revolution, a celebration of democracy replacing an imperial monarchy. France annexed French Polynesia formally in 1880, and subsequent colonial policies systematically suppressed Mā'ohi language, dance, and religious practices under the guise of civilizing reform (Saura 2008). More specifically, I argue that Heiva i Tahiti functions not as a symbol of continued French rule, but as a deliberate act of cultural reclamation in which Tahitians legitimize and amplify native dance, song, and sport. Drawing from personal accounts, archived festival programs, and postcolonial scholarship, this project focuses on the revival of Tahitian culture from 1984 to 2025, a period of time marked by a growing movement toward autonomy and renewed pride in national and cultural identity. I expand philosopher Nedim Nomer's notion of "cultural hybridity" as a framework alongside analysis of nation identity expressed in ori Tahiti (indigenous dance) and himene (indigenous choirs) competitions.

Memory as Resistance: Commemorative Acts as Activism by "Ianfu" Survivors in Postcolonial South Korea (1991-2026) - (History and International Studies)
By: Becca Heibler
Faculty Mentor: Dr. Valerie Barske

In this project, I explore the lasting effects of Japanese colonialism, specifically related to the "comfort women system," which enslaved primarily Korean women to service the Japanese Imperial Army during WWII. In 1991, the first Korean comfort woman survivor voiced her experiences publicly, leading to many inspiring commemorative practices that continue today around the world (Li 2022). I argue that the trauma endured by survivors cannot be removed from the context of colonial and patriarchal institutions. I examine how sexual violence under Japanese colonial rule resulted in deep emotional wounds while also creating means for survivors to recall, suppress, or reclaim their pasts. These efforts challenge erasure from the Japanese government and restore dignity to survivors. Commemorations related to comfort women also demonstrate how Korean society works through grief by using culturally embedded traditions such as the folk song Arirang for collective healing (Ko 2016). My research explores today's commemorative practices including statues of peace, weekly demonstrations, Seoul's "Women and War Museum," and international activism as acts of cultural remembrance. Using collective memory, gender studies, and postcolonial theory, my research asserts that the status of Korean comfort women remains critical in understanding ongoing postcolonial struggles in our contemporary world.

Nationalism and Memory 100 Years after the Great War: France and Britain's Commemoration of Armistice Day 2018 - (History and International Studies)
By: Allison Steiner
Faculty Mentor: Dr. Valerie Barske

In this research, I consider the commemorative practices in Europe surrounding the ending of World War I. Commemorations of WWI play a central role in shaping national memory across Europe. Issues arise over commemorations occurring at sites of memory, especially battlefields located within the borders of former enemies that require careful performance of "memory diplomacy" (Beaumont 2015). The practices on Armistice Day to remember the end of WWI represent seemingly unchanged traditions, appropriating the symbol of poppies and holding moments of silence (Macleod and Inall 2020). However, states continue to reshape these events to create national causes for the public to rally emotional support. More specifically, I examine similarities and differences in the day-of events and commemorations in France and Britain, including speeches and music performed during the ceremonies. Using theories of nationalism as a framework, I consider how the centenary impacts the collective memories in France and Britain. The event provides a unique opportunity to analyze how the two countries mobilize historical memory in service of reconstituting national narratives. The Armistice centenary evokes lessons of remembrance and honor of WWI that carry international importance beyond France and Britain particularly given ongoing contemporary conflicts.

Neutrality or Occupation: Complicated Histories and Differences in Scandinavian Holocaust Education (1945-2026) - (History and International Studies)
By: Connor Pingel
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the differences in Holocaust education throughout Scandinavia. While culturally similar countries, Sweden, Denmark, and Norway articulate competing histories in the 20th century. Denmark and Norway both fell under Nazi occupation while Sweden remained independent during World War II and became a safe haven for Jewish refugees, many fleeing from other occupied nations including 7000 Jews from Denmark (Sørensen 2005). This project explores the relationship between memories of WWII in Scandinavia and later Holocaust education. More specifically, I consider whether the cultural memories in invaded Norway and Denmark lead to greater efforts in Holocaust education. Through the analysis of stories of resistance from World War II, the Swedish Holocaust Museum, Danish Jewish Museum, the Jewish Museum Trondheim, and current Holocaust education efforts, I explore whether the memories of resistance and occupation lead to a difference in Holocaust education effort and quality. This research seeks to understand the complexities behind Holocaust education and what motivates state effort. As the world continues to move further away from the Holocaust, strengthening collective memory and shared consciousness becomes ever more important to ensure that humanity does not once again allow for such grave historical mistakes.

¡No Olvidado!: Migrant Memory, Border Deaths, and Counter-Commemoration at the U.S.–Mexico Border (1990–2026) - (History and International Studies)
By: Aaron Taylor
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how families and activists commemorate migrants lost crossing the U.S.–Mexico border through crosses, desert shrines, burial sites, and public memorial artwork. Since the mid-1990s, border enforcement policies push migrants into remote deserts where thousands perish and end buried in unmarked graves, often unidentified (Soto 2026). More specifically, I argue that memorial practices created by families, religious groups, and activist organizations transform mourning into political resistance against state erasure of migrant deaths. Drawing on anthropologist Robin Reineke's research (2022), I analyze how grieving families engage in personal acts of remembrance that differ from the organized, public activism of groups like No More Deaths and Border Angels (Sostaita 2016; Carroll 2015). I also examine how these practices connect to cultural traditions like Día de los Muertos, showing how mourning rituals shape collective memory of migration and loss. This research views border memorials as acts of counter-commemoration that restore dignity to those erased by enforcement policies. While activist organizations seek broader public awareness of the humanitarian crisis, families and communities use remembrance to assert that migrant lives matter. To humanitarian organizations, affected families, and borderlands communities, these memorials represent sites of grief, resistance, and belonging.

Reclaiming Irish Heritage, Reviving the Irish Language (2016-2026) - (History and International Studies)
By: Lizzy Gould
Faculty Mentor: Dr. Valerie Barske

With recent commemorative practices and restoration efforts, the Irish language "Gaeilge" escaped extinction. In this project, I examine why the restoration of the Irish language remains essential, who continues these efforts, and why Irish citizens care about linguistic preservation. Initiatives such as Seachtain na Gaeilge (Irish Language Week) steadily contributed to the increase in Irish speakers, up 6% from 2016-2022, adding 112,557 individuals who identify as speaking Irish (Irish CSO 2023). When England colonized Ireland, Irish citizens faced education oppression and linguistic injustices. Their indigenous language declined further after the 1800s potato famine when millions died and thousands migrated. Reclaiming cultural identity, various organizations, activists, and community groups work to revive the language and implement changes to everyday life. Organizations such as Coláiste Gael Linn Machaire Rabhartaigh, an immersive summer camp in Donegal, plays an essential role in encouraging younger generations to learn Irish, countering demographic trends that highlight older men as the main Irish speaking population. More specifically, I analyze Gael Linn's programs and courses to address the extensive efforts required for language preservation. Language preservation reinforces the importance of cultural memory, collective identity, and the impact on Irish communities, while simultaneously inspiring other groups striving for language reclamation.

Remembering Human History: Commemorating Akrotiri, Greece as a Historical Snapshot Taken 3,500 Years Ago (1967-2026) - (History and International Studies)
By: Sarah Pizon
Faculty Mentor: Dr. Valerie Barske

In this project, I explore the burial, rediscovery, and commemoration of Akrotiri, Greece. Millenia ago, the residents of ancient Akrotiri fled the city. Ash and pumice covered the empty streets during the eruption of Mount Thera. Nobody touched the ruins until 1967 in the search for Atlantis (Fenton 1967). More specifically, I analyze how historians and tourists alike honor the forgotten way of life in Thera. Although experts have yet to decipher Linear A script, archaeologists determine much about the way people lived in ancient Thera through salvaged pottery and frescoes (Thera Prehistoric Museum 2026). Historians and tourists appreciate the embodiment of Akrotiri's former life through the preservation of its artifacts in museums and experience of the architecture in situ. From the rediscovery of this historically significant space, human beings may begin to cultivate a shared sense of collective memories. Since a majority of the city remains buried, Akrotiri holds many more secrets. Its preservation remains unmatched due to the layers of pumice that retained the structure of items and buildings, enabling historians to learn more than ever before about life in the ancient Aegean. Therefore, Akrotiri deserves our protection, careful exploration, and celebration as a precious historic site.

Re-Membering Gender and Race in SIX the Musical (2017-2026) - (History and International Studies)
By: Anna Franzen
Faculty Mentor: Dr. Valerie Barske

In this research project, I analyze SIX the Musical and how the show's approach to commemorating the wives of Henry VIII (1491-1547) not only redefines each queen but facilitates audience connection to the past and application to the present day. Henry VIII married in rapid succession Catherine of Aragon (1485-1536), Anne Boleyn (circa 1501-1536), Jane Seymour (circa 1509-1937), Katherine Howard (circa 1523-1542), Anne of Cleves (1515-1537), and Catherine Parr (1512-1548) between 1509 and 1543. Traditionally, popular historical narratives remember these women in stereotypes and defined by their deaths and marriage. SIX first premiered at Edinburgh Festival Fringe in 2017 and continues today on the West End running since 2019. The musical "re-members" the individual historical women and reconfigures collective memory through racially blind casting of female and nonbinary performers. SIX calls "attention to how several injustices are shared by women regardless of race, class…and the time and place in which they live" (Violini 2024). I contend that SIX represents not only a step forward in commemorating women in history, but also a crucial example of how introducing new versions of collective memory brings attention to social issues and the intersection of more complex human identities and historical counternarratives.

The Savage Display: Navigating the Commemoration of Colonial Cruelty of European Human Zoos (2010-2024) - (History and International Studies)
By: Ashley Fries
Faculty Mentor: Dr. Valerie Barske

In this research, I examine the controversial, often ignored commemoration and public remembrance of ethnographic exhibitions called "human zoos" in modern Europe. Through the early 1900s, millions of Europeans attended these exhibitions, which displaced Indigenous peoples from colonized territories to validate imperial expansion and racial hierarchies. I explore the tension between historical erasure of these events in European public memory by analyzing recent activist performances and institutional acknowledgments as a dynamic shift in public remembrance. I highlight 2010-2024, which marks the reopening of the Belgian AfricaMusuem, films like Abdellatif Kecheche's Venus Noire (2010), and artist-based public activism inspiring renewed interest in these injustices and the erasure of colonial histories in European media. I view the intersectional structures of race, nation, and power to analyze how the lineage of colonized peoples and modern European citizens interact with these cultural spaces of remembrance today. I highlight the continuing tensions between institutional willful ignorance and grassroot social activism. Researching public remembrance of "human zoos" impacts commemoration and memory studies by revealing how formal imperial powers navigate their darkest chapters. Finally, this research matters by addressing historical accountability as essential to dismantling systemic scientific racism and restoring dignity to the victims of colonial exploitation.

Still Divided: Issues and Conflicts in Commemorating the Legacy of the East German State in Berlin (1990-2025) - (History and International Studies)
By: Nicholas Laliberte
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how groups in Berlin commemorate the legacy of East German culture and the German Democratic Republic (GDR). The city was functionally reunited November 9, 1989, with the fall of the Berlin wall and officially reunited along with the rest of the country October 3, 1990. However, remnants of the GDR and effects of division still permeate the city's sociopolitical and physical fabric to this day (Bach 2020). I analyze the historical context behind the demolition of the Palast der Republik, creation of the Hohenschönhausen Prison Memorial museum, and appropriation of everyday consumer objects as symbolic of East German Identity. By using conceptual frameworks previously established by scholars in the fields of museum, memory, and national studies, I argue that these memorials and museums represent sites of collective memory and cultural importance for Germans. I contend that contemporary memory politics and social justice play a significant role in how advocates of museums and monuments in Berlin continue to memorialize and reinterpret the legacy of the GDR. Beyond Berlin and Germany, the politicization of collective memory highlights the broader potential for weaponizing history for political influence and gain.

Stolpersteine as Enduring Memories and Artistic Remembrance: Stumbling Stones for Commemorating Collective and Individual Loss (1992-2026) - (History and International Studies)
By: Sybella Thomas
Faculty Mentor: Dr. Valerie Barske

In this research project, I evaluate the restoration of individuality to all victims of the Third Reich. Beginning in 1992, German artist Gunter Demnig, concerned with individual remembrance, created the Stolpersteine (stumbling stones), bringing the victims' names back to European cities where they once lived (Demnig 2026). The Stolpersteine consists of brass plated memorial stones, each labeled with the name of a victim, birth and death date, and the date and place of deportation. Every person or family member receives their own stone, which brings awareness to victim individuality, but also to their history and everyday life, while also creating a lasting and continuous remembrance. Using posts by Gunter Deming's official Stolpersteine website, blogs, and media reports from the German DeutscheWelle, this research employs theories of memory studies related to collective memory, cultural memory, and sites of memory. This research analyzes the Stolpersteine Project, intended to continue over several years, allowing future generations to engage in the process of remembrance. This long-term artistic, cultural, and historical project enables close cooperation between survivors, relatives, historical societies, foundations, residents, municipalities, as well as students. Together, they all dedicate themselves to the continuous memory of the victims of National Socialism (Demnig 2026).

"Who Owns History?": Commemorating the Elgin Marble Debates in Relation to Cultural Identity and Public Opinion (1983-2026) - (Philosophy and Religious Studies)
By: Sophia Webb
Faculty Mentor: Dr. Valerie Barske

In this research project, I analyze debates on repatriating the Parthenon Marbles, displayed at the British Museum. Obtained through "legal means" by British imperial representative Thomas Bruce Lord of Elgin in the early 1800s, these marbles represent original creations by Athenians made for the Acropolis Complex in Athens Greece 447-432BCE (Williams 2009). Contemporary scholars including Yianni Cartledge and Catharine Titi argue that the original firman (edict) issued to Elgin by the Ottoman Empire is now outdated. Therefore, they contend that the marbles should be returned to the original cultural owners, the Greeks (Cartledge 2025). More specifically, I examine these debates and how global media sources represent public opinion on the reparation of objects looted during historical imperial conquests. In social media spheres, including Tik-Tok and Instagram, creators generate informative pieces that humanize the story of these objects and bring attention to the debate. I consider how these modern-day commemorations encourage cultural communities to embrace their heritage and to examine how public discourse shapes the reparation process. This research highlights the intersection of popular historical narratives with academic discussions. This project calls attention to ongoing debates of who should tell the history of people in a globalized contemporary context.

Writing National Identity: State Power and the Commemoration of Russian Authors (1880-2026) - (History and International Studies)
By: Hayden Arnoldi
Faculty Mentor: Dr. Valerie Barske

In this research project, I compare the commemoration of Russia's most celebrated authors Alexander Pushkin, Leo Tolstoy, and Fyodor Dostoevsky from 1880-2026, a period spanning the early Soviet Union to contemporary Russia under Vladimir Putin. Commemoration of Pushkin established him as a "fitting symbol of a modern, culturally and politically respectable, Russia" (Martin 2016). Museums at the once homes of Tolstoy and Dostoevsky, monuments for each author in major cities, and Pushkin Day held annually on June 6th commemorate these authors. The specific authors chosen for state-sanctioned commemorations highlight ideals that construct and impose specific notions of Russianness on the people. The Communist Party celebrated Tolstoy for his universalism and resilience. After the death of Stalin, the Communist Party began commemorating Dostoevsky who proposed Russian uniqueness as tied to Russian Orthodox Christianity. The Pushkin Monument in Moscow depicts his Afro-heritage. I examine how these examples highlight Russian views on race as Pushkin's ancestry "distinguished him from his peers" (Wang 2023), yet was still "fully, even supremely, Russian" (Nepomnyashchy 2006). This research develops a broader understanding of how Russianness developed since the 1880s, exploring how governments appropriate literary figures to create a collective national identity.

Worlds, Words, and Meaning: Rigid Externalism vs. Linguistic Relativity - (Philosophy and Religious Studies)
By: Hailey Bay
Faculty Mentor: Dr. Jason Zinser

The Sapir-Worf hypothesis argues in favor of *linguistic relativity,* which is the view that language actually shapes how one perceives reality and that meaning is structured by the language created in the mind, not something that is already in existence in the world. In contrast, the Kripke/Punam view (*externalism*) argues that meaning is something external, already existing in the world. For example, externalists would say that the meaning of water is "discovered" by its chemical composition, but the Sapir-Worf hypothesis would claim that the meaning of water will be processed differently based on one's own linguistic understanding. I will be contributing to this debate, by arguing in favor of the Sapir-Worf hypothesis as a rebuttal to Kripke's Putnam Twin Earth, and that meaning is based in linguistic categories rather than objectively.

Poster Presentations 2:30 - 4:00 p.m.

Biology Posters Located on 2nd Floor
Chemistry/Biochemistry Posters Located on 1st Floor

School of Biology, Chemistry, and Biochemistry

A Protecting Group Strategy for Generating Small Libraries of EDA Complexes - (Chemistry and Biochemistry)
By: Mystique Stueck, Kaleb Bannach
Faculty Mentor: Dr. Nate Bowling

To form an electron donor-acceptor (EDA) complex, an electronic interaction between an electron-rich aromatic moiety and an electronic-poor aromatic moiety occurs. The donor and acceptor of the complex often mix orbitals, which results in electronic properties that are distinct from the individual components, often characterized by a low energy charge transfer band in the visible range of the electronic spectrum. Organic light-emitting diodes (OLEDs) and organic photocatalysis are among the fields that benefit from this charge transfer (CT) behavior. However, CT behavior in organic photocatalysis is difficult to study because of fast separation of electron donors and acceptors in solution. In our previous studies, electron donors and acceptors were connected to tolane-based arylene ethylene templates to force continual EDA complex formation. The route developed for those compounds was very specific to a single donor/acceptor pair, however, limiting the utility of the synthetic sequence. In this study, a new protecting group strategy is employed that allows for greater flexibility in the synthetic process and greater crystallization opportunities, while still maintaining charge transfer behavior.

Adsorption of Short-Chain PFAS in MOF-808-AA - (Chemistry and Biochemistry)
By: James Pollock, Zander Egan
Faculty Mentor: Dr. Joe Mondloch

Per- and polyfluorinated substances (PFAS), also known as "forever chemicals," persist in aquatic environments and resist most conventional treatments, necessitating the development of new techniques to capture and adsorb anionic PFAS species from aqueous samples. A solution to this problem would be to use nanoporous solids termed metal–organic frameworks (MOFs), which provide identifiable ion-exchange sites where PFAS species could be absorbed. Our study utilized MOF-808-AA (AA = acetate) to investigate the absorbance of perfluorobutanesulfonic acid (PFBS) and perfluoropentanoic acid (PFPeA) two fully fluorinated short chain PFAS molecules whose only difference is the sulfonate vs carboxylate functional group present. 19F NMR was used to determine the concentration of PFBS and PFPeA in solution. We also compared the number of acetate ions on the nodes on MOF-808-AA, via 1H NMR analysis, before and after PFAS absorption to determine how many cci's were exchanged due to the adsorption of PFAS.

Black-spot (Trematoda: Diplostomatidae, Heterophyidae) Parasitism Rates in Wisconsin Creek Chub (Semotilus atromaculatus: Catostomidae), a 70-Year Perspective - (Biology)
By: Aidyn Dorzok, Grace Coppo, Kayla Schwoch, Breanna Shefchik, Madelynn Przybylski, Kenzie Crowley, Brent Radobicky
Faculty Mentor: Dr. Justin Sipiorski

Creek Chub *(Semotilus atromaculatus)*, a widespread species in flowing waters, have been collected from Wisconsin for over 100 years and many specimens are housed in the Becker Memorial Ichthyological Collection in the UWSP Olson Museum of Natural History. Over 1000 individuals have been analyzed in an effort to determine a correlation between aspects of Creek Chub growth, body condition and black-spot infestation rates. These variables include location (Latitude, Longitude), type of waterbody, collection year, sex, age, length and weight. Very little research has been done previously on Wisconsin Creek Chub regarding black-spot parasitism. This research seeks to understand how geographical, climatological and ecological factors may have influenced black-spot parasitism rates in the State over the past 70 years.

Blue-Light Mediated Clumping and Interdomain Conjugation Between Escherichia coli and Saccharomyces cerevisiae - (Chemistry and Biochemistry)
By: Zachary Roe
Faculty Mentor: Dr. Kevin Stindt

Interdomain conjugation (IDC) is a method of horizontal gene transfer involving species from different domains, such as bacteria and fungi. During IDC, genetic material from one cell is directly transferred to a neighbor cell, modifying its genetics, offering a promising mechanism for in situ modification of fungal populations. However, IDC is rarely observed due to the distance between neighboring cells in the absence of “clumping”, a mechanism by which Escherichia coli binds to mannoproteins in yeast cell walls via the fimH adhesin protein. This binding facilitates cell proximity for a prolonged duration, allowing for the efficient facilitation of IDC. The present research seeks to bring this clumping, and thereby IDC, under optogenetic control—a means of activating genes with light—allowing for blue-light mediated clumping and gene transfer. The present research removes fimH from the genome of E. coli to bring it under optogenetic control. After insertion of the light-dependent clumping mechanism, the strain will demonstrate clumping, and thus IDC, only in the presence of blue light. Such a strain has wide-ranging implications, such as in clinical settings where antibiotic resistant fungal and bacterial biofilms are a growing concern.

Body Condition of Creek Chub (Semotilus atromaculatus: Leuciscidae) in Wisconsin: a 70-year, Multiple-Drainage, Latitudinal Perspective - (Biology)
By: Madelynn Przybylski, Brent Radobicky, Kenzie Crowley, Joseph Kern, Alison Hesse, Henry Reimann, Jaden Koeller, Graham Zdrodowski
Faculty Mentor: Dr. Justin Sipiorski

We investigated growth patterns of Creek Chub (Semotilus atromaculatus) inhabiting flowing waters in Wisconsin. The Becker Memorial Ichthyological Collection of the UWSP Olson Museum of Natural History has thousands of creek chubs collected over the past 70 years. We compared length, weight and body condition in populations of chubs from northern, central and southern Wisconsin. We measured length and weight on nearly 2000 individuals and calculated body condition indices. We

observed differences in growth patterns among water bodies and latitudinally. This work will inform future similar studies on current fish populations to compare growth and body condition patterns over time in the face of potential climatic shifts and changes in land use practices.

Call it Love: Zebra Finch Hippocampus Response to Mate Vocalization - (Biology)
By: Mallory Wanta
Faculty Mentor: Dr. Sarah Jane Alger

Vocal memory is crucial for the survival of a social species, especially in animals that pair bond through vocalization. The call of a monogamous species' mate activates brain regions responsible for sound recognition, social behavior, and pleasure. Zebra finches (Taeniopygia guttata), a monogamous songbird species, use auditory signals to create and maintain pair bonds. Little is known about the brain's response to hearing the calls of its current partner, previous partner, or familiar stranger in animals that pair bond. Zebra finches listened to recorded distance calls from their current partner, previous partner, or stranger. Their brain activity was measured by staining for ZENK, an immediate early gene. Neural response was measured by recording the number of ZENK-labeled cells in the ventro-dorsomedial subregion of the hippocampus (DMv), a brain area involved in memory. The number of ZENK-labeled cells in the DMv was compared among zebra finches exposed to their current partner's, previous partner's, or stranger's calls. Zebra finches that heard their current partners' calls had more ZENK-labeled cells than those that heard a previous partner's or stranger's calls, indicating that the zebra finches are remembering their current partners' calls and that the DMv is involved in this process.

Companion Planting with Hemp - (Biology)
By: Angela Ambriz Zermeno, Abbie Paulson
Faculty Mentor: Dr. Brian Barringer

Hemp (Cannabis sativa) is a versatile crop with rapidly expanding commercial and industrial importance. As a nutrient-intensive species, hemp may benefit from companion planting, an intercropping strategy that promotes beneficial plant interactions. Reported effects of companion planting include changes in terpene profiles, growth patterns, and bud production, while also reducing chemical inputs, enhancing biodiversity, and improving soil health. This study investigates the effects of selected companion plants on hemp growth and yield, as well as intraspecific competition among hemp plants. Three companion treatments were evaluated: white clover (Trifolium repens), basil (Ocimum basilicum), and fava bean (Vicia faba). Morphological traits and bud production were recorded. Results indicate that each companion species influenced hemp morphology, while competition among hemp plants produced dominant individuals with increased vigor. These findings improve our understanding of both cooperative and competitive plant interactions in hemp systems and provide insights for optimizing cultivation in commercial, industrial, and environmental contexts.

Comparative Analysis of Feral and Modern Hemp Under Salt Induced Environmental Stress - (Biology)
By: Bella Lucero, Cece Szyman, Joe Warpechowski
Faculty Mentor: Dr. Brian Barringer

Cannabis (hemp, marijuana; Cannabis sativa) is a plant species that can be found growing in feral populations across Wisconsin, where environmental conditions include long winters with significant snow and ice accumulation. Roadways in these areas are often treated with sodium chloride (NaCl) to melt snow and improve safety. It is common for subsequent snow to melt and carry dissolved salt into roadside ditches. This process introduces elevated salinity into the surrounding soil, exposing ditch-dwelling plants to salt stress through the contaminated groundwater. This study investigates whether feral lineages have evolved tolerance to high salt concentrations. To test this, lineages of both feral and modern hemp were grown under three salt treatments (0%, 0.35%, and 0.7% NaCl). Response variables include height, canopy width, stem diameter, and biomass. Our results contribute important data that increases the agronomic knowledge of cannabis in relation to salt exposure and the evolution of tolerance to environmental stress.

Comparing Windward and Leeward Reef Fish Communities on the Big Island of Hawai'i - (Biology)
By: Taylor Weynand, Logan Hannah, Karissa Rettler
Faculty Mentors: Dr. Justin Sipiorski, Dr. Stephanie Lyon

Coral reef ecosystems support high biodiversity and provide essential ecological services, yet community composition can vary across locations due to environmental and human influences. This study compares reef fish diversity between Richardson Beach (windward) and Two Step (leeward) on the island of Hawai‘i. Both sites are popular for snorkeling, but differ in habitat structure, exposure, and levels of disturbance. Underwater video footage was collected using GoPro and handheld cameras, organized into multiple sampling events, and analyzed to identify species presence and compare diversity and abundance between sites. Results showed that overall species richness was similar between Richardson Beach and Two Step. However, total fish abundance varied across sites and sampling events. Reef fish communities at both locations were dominated by surgeonfishes, while other groups such as butterflyfishes, parrotfishes, and goatfishes were present in lower numbers. Using a logarithmic scale helped reveal patterns of variation that were less apparent in raw abundance data. These findings suggest that while species diversity may remain consistent between sites, differences in abundance and community structure still occur. Video-based sampling proved to be an effective method for documenting reef fish communities and assessing spatial variability in reef ecosystems.

Comparison of Synthetic and Cloned Standards for qPCR Quantification of Soil Microbial Communities - (Biology)
By: Anna Hurtado, Makayla Kester
Faculty Mentor: Dr. Ann Impullitti

Per- and polyfluoroalkyl (PFAS) compounds, or "forever chemicals," are contaminants that do not naturally break down in the environment and are used in many industrial processes. Bacterial-fungal ratios can serve as indicators of soil health to identify the impact of PFAS. We used real-time quantitative polymerase chain reaction (qPCR) to evaluate two standard curve methods for quantifying bacteria and fungi in greenhouse soil samples containing 0, 0.5, or 1 ppm PFAS. Standard curves were created with either a synthetic gBlock sequence or a cloned DNA fragment. The synthetic gBlock standard demonstrated less variability compared to the cloned fragment standard, suggesting it may provide more consistent quantification of bacterial-fungal ratios in PFAS-contaminated soils.

Competition Between Epiphytic Ferns and Bryophytes on the Hawai'i Island - (Biology)
By: Sara Dawe, Maya Muth, Sienna Cianciola
Faculty Mentor: Dr. Stephanie Lyon

Epiphytic ferns grow on host organisms rather than soil, and in the cloud forests of Hawai'i's in Pu'u Maka' Ala Natural Area Reserve, they primarily grow on Ohi'a trees (Metrosideros polymorpha) and species of Hapu'u tree ferns (Cibotium spp). Previous research has explored how epiphytic fern growth is affected by bark texture, edge effects, and aspect, but little has been done measuring competition with another epiphyte. Our objective was to investigate whether bryophytes growing on these trees affect fern abundance and diversity. Our results indicated that the relationship between fern and bryophyte abundance and diversity was not competitive, contributing to the idea that epiphytic ferns may be more sensitive to changes in light, weather, and aspect rather than in foliage.

Conspecific Audio Enrichment Influences Stress Behavior in Zebra Finches - (Biology)
By: Mystique Stueck
Faculty Mentor: Dr. Sarah Jane Alger

Social isolation stress and mental stimulation are important considerations for the well-being of social captive animals. Audio stimulation is a common method of increasing mental stimulation and decreasing social isolation stress. However, many captive animals are neophobic (fearing the unknown) and little is known about foreign noises' true effect on these animals. We exposed zebra finches (a social but neophobic songbird species) to recordings of their own colony and a foreign zebra finch colony while measuring stress and stimulation behaviors. There were sizable differences in the activity of male and female zebra finches, with females exhibiting much more stimulative behaviors. Overall, Zebra finches exhibited more stimulative behaviors listening to recordings of their own colony than of the foreign colony or the control. This suggests that familiarity does play a role in how social but neophobic animals respond to audio stimulation and that sex plays a role in response as well.

The Curious Case of the Nitrosyl Ligand - (Chemistry and Biochemistry)
By: Elijah Randazzo, James Pollock
Faculty Mentor: Dr. Jason D'Acchioli

Nitrosyl ligands are biologically relevant, with studies linking nitrous oxide deficiency to Alzheimer's Disease and excess nitrous oxide to neuronal damage. Yet oxidation states of metal nitrosyl compounds are difficult to predict. The M-N-O bond angles lead to many possible charges on the nitrosyl ligand, affecting the metal oxidation state. Our study aims to explore this problem by developing a relationship that can better predict metal oxidation states based on the M-N-O bond angle of nitrosyl ligands in a given complex. Our current study involves calculations on a series of $Fe(CO)_x(NO)_{5-x}$ complexes, with all permutations of nitrosyl bonding modes. The oxidation states of iron in these complexes is explored.

Developing a Standard Operating Procedure for Zebrafish Embryo Production at UW–Stevens Point to Extend the WInSTEP SEPA Program to Central and Rural Schools in Wisconsin - (Biology)
By: Taylor Weynand
Faculty Mentors: Dr. Krista Slemmons, Dr. Justin Sipiorski, Sandie LaVake

Zebrafish (Danio rerio) are small freshwater fish that are able to produce hundreds of eggs weekly. These fish reproduce via external fertilization over a pebbly substrate. Embryos are easy to collect and fast-developing, making them excellent model organisms for studying vertebrate embryonic development for medical and environmental health applications. University of Wisconsin-Milwaukee's WInSTEP initiative, part of the NIH's SEPA program, provides zebrafish embryos to middle and high school students for environmental health experiments to encourage interest in research careers. While UWM's program serves southeastern Wisconsin, University of Wisconsin-Stevens Point has been developing a standard operating procedure (SOP) to serve rural and central districts. This study evaluates the efficacy of UWSP's Live Fish Collection laboratory in producing and delivering zebrafish embryos to middle and high schools in central Wisconsin. UWSP's dedicated fish lab provides suitable housing and breeding environments for zebrafish. Spawning chambers were constructed for a colony of 50 fish, with sexes separated except during controlled breeding in varied ratios. Regular production yielded approximately 1,400-1,700 embryos per twelve adult female fish. Preliminary SOP development for this project indicates a promising opportunity for the expansion of the WInSTEP SEPA program to central Wisconsin, providing educational and research opportunities for young scientists.

Diatom Biovolume Response to Experimental Acidification in a Freshwater Ecosystem, Little Rock Lake, Wisconsin - (Biology)
By: Ruby Nelson
Faculty Mentor: Dr. Krista Slemmons

Freshwater, a vital and limited resource, is highly sensitive to chemical and physical changes brought on by anthropogenic activities such as acidification. Diatoms, a type of algae and essential primary producers, are common ecosystem indicators and provide a view into the health of a lake. Acidification of aquatic systems often leads to lower diatom species diversity and impairs the ability of diatoms to build silica cell walls (frustules), resulting in thinner, smaller cells. This study examines the effects of experimental acidification on diatom community structure and biovolume in Little Rock

Lake over the last century. The lake was divided into an acidified northern basin and a controlled southern basin for a long-term ecological experiment initiated in 1985. Sediment cores were extracted from both the northern and southern basins to compare changes in diatom biovolume pre and post acidification. Preliminary data indicates that the acidified north basin had lower average diatom biovolume compared to the southern basin post acidification. Although the artificial acidification of this lake occurred more than 40 years ago, the lasting shift in aquatic community structure demonstrates that human-induced pollutants can have long-term effects on ecosystem composition, while also highlighting the resiliency required for recovery after disturbance.

Effects on Invasion and Removal Strategies of Snails (Helisoma sp.) for Disease Prevention - (Biology)
By: Lily Truchon, Kodi Rizzo, Abby Rosell, Aven Durrant-Bobbe, Grace Torma
Faculty Mentor: Dr. Sarah Orlofske

Aquatic snails are organisms of concern in certain ecosystems and captive environments because they are the first intermediate host for parasites and can spread infections to other taxa. This study examined what environmental conditions are more likely to lead to snail invasion and tested different trapping methods to remove snails. For the invasion experiment, multiple snail tanks were created with different water levels and cleaning frequencies to simulate conditions in natural or captive environments. After completing the first experiment, we standardized all treatments and investigated the removal efficiency of different trap sizes for adult and baby snails. For the invasion experiment, we found that the different water treatments were not significant and there was no important interaction between them. We expected egg production to increase over time, but by day 8 it was 2.5 times higher than on day 1 ($p<0.000$) which likely reflects a biological cycle or adjustment period. For the trapping experiment, we found that the trap type was not significant for removal, but the traps did remove 11 times more babies than adult snails ($p<0.0000$). These findings suggest that these traps would be best used in high reproductive areas where there is an excess of baby snails.

Engineering Saccharomyces cerevisiae for Xylose Fermentation Via Multi-Gene Plasmid Construction - (Chemistry and Biochemistry)
By: Olivia Combs
Faculty Mentor: Dr. Kevin Stindt

Saccharomyces cerevisiae is a widely used eukaryotic microorganism in the production of bread, beer, and wine; however, it lacks the natural ability to ferment xylose, a major sugar found in agricultural byproducts. This study aimed to construct a plasmid capable of enabling xylose fermentation in S. cerevisiae through the incorporation of key metabolic genes. Plasmid assembly was performed using PCR, gene cloning, and multi-part plasmid construction. The resulting constructs were transformed into Escherichia coli for propagation, followed by colony PCR (cPCR) to verify successful assembly. These genes will then be tested in combinations of varying expression levels, and S. cerevisiae cells carrying these plasmids will be evaluated for survival in xylose. The results from these evaluations would indicate if the optimization of xylose fermentation genes was successful, therefore expanding its utility in biofuel production and the conversion of agricultural waste into valuable products. This work highlights the potential of genetic engineering approaches to modify yeast fermentation pathways for industrial applications.

Environmental Correlates of Invasive Alga Acanthophora Spicifera Abundance in Hawai'i Island Tide Pools - (Biology)
By: Sydney Steffens, Ava Meinert, Allie Zerilli
Faculty Mentor: Dr. Stephanie Lyon

Macroalgae (seaweeds) are the foundation of many marine ecosystems and serve as important indicators of environmental conditions. Over the past several decades, a number of introduced seaweeds have become invasive in the Hawaiian islands, outcompeting native algal species and negatively impacting animal life. We sought to determine the extent of invasion by Acanthophora spicifera (Rhodomelaceae) on the island of Hawai'i and identify factors correlated with its presence and abundance. We systematically sampled intertidal pools at three widely separated sites along the leeward (western) coast, measuring water temperature, depth, and salinity at low tide, estimating algal species diversity and coverage using quadrats, and quantifying the abundance of A. spicifera. We also conducted informal surveys of algal diversity at three additional sites on the windward (eastern) coast. We collected representative samples of algal morphotypes at each locality and used a digital microscope to photograph and identify taxa with help from the iNaturalist community. We found A. spicifera at two of the six sites we visited. Our data suggest A. spicifera is found at localities with greater macroalgae diversity, higher salinity, and shallower depths. Both localities with A. spicifera were adjacent to major urban centers with high shipping traffic. The co-occurrence of taxa such as Bryopsis spp. suggest that excess nutrients may also favor invasive by A. Spicifera.

Exploring the Competition Between Halogen Bonding and CH Hydrogen Bonding in Bromoarenes Using an Aryldiyne Template - (Chemistry and Biochemistry)
By: Maggie Schultz
Faculty Mentor: Dr. Nate Bowling

Hydrogens connected to benzene rings functionalized with electron-withdrawing groups are found to provide attractions with electron donors that are competitive with halogen bond attractions to bromines on the same rings. An aryldiyne bridge that adequately templates this CH hydrogen bonding along with the competing halogen bonding provides an experimental pathway for looking at these interactions. Halogen bonding is widely recognized as a driving force for crystal design, and polarized CH hydrogen bonding interactions have proven useful in anion recognition and catalysis. Samples were constructed using a Sonogashira coupling reaction, purified using flash chromatography, and identified by thin layer chromatography, nuclear magnetic resonance (1H NMR, 13C NMR, and 19F NMR) spectroscopy, and mass spectrometry. Calculations, along with mapping of the molecular electrostatic potentials, support the experimental conclusion that CH hydrogen bonding to bromoarenes can be preferred to halogen bonding due to the greater positive potential on the surface of the hydrogen compared to the bromine. Experimental evidence aligns with calculations that CH hydrogen bonding is competitive with halogen bonding. Computational evidence suggests preference for the CH hydrogen bond conformer of the templated system regardless of the arrangement of electron-withdrawing (-F or -CF3) substituents on the haloarenes.

From Soil to Chemistry: How Compost Affects Phytochemical Composition in Hemp - (Chemistry and Biochemistry)
By: Jacob Millner, Morgan Gurney, Zachary Roe, Wayne Walter
Faculty Mentors: Dr. Laura Cole, Dr. Shannon Riha, Dr. Bryant Scharenbroch, Dr. Brian Barringer

In 2018 the United States Government enacted the 2018 Farm Bill, which legalized the production of hemp, resulting in an increased interest in understanding how growing conditions impact the production of valuable plant compounds. Hemp (Cannabis sativa) produces cannabinoids and terpenes, which have a wide array of uses in health, wellness, and industrial products. However, the relationship between soil management practices and these compounds in an agricultural setting is widely unexplored.

This study explored and evaluated how increasing compost application rates affect cannabinoid and terpene production in field-grown hemp. Hemp plants were grown in central Wisconsin utilizing four compost treatments: 0(control), 5, 7.5, and 10 gallons. At harvest, following measurements for separate projects, plant samples were collected and analyzed for cannabinoids and terpenes of interest by high performance liquid chromatography (HPLC) and gas chromatography with mass spectrometry (GC-MS).

Results showed that increasing compost application had little effect on cannabinoid and terpene production, without increasing THC-A production. These findings suggest that compost could possibly be an effective and sustainable management practice for hemp production while maintaining the composition of cannabinoids and terpenes.

Green Isolation of ar-Turmerone and Curcumin from Turmeric Spice - (Chemistry and Biochemistry)
By: Ethan Theoharopoulos
Faculty Mentor: Dr. Robin Tanke

Turmeric, derived from the rhizome of Curcuma longa, contains bioactive compounds including curcuminoids and turmerones that make up 3–5% and 1–2% of Turmeric's mass. Both classes exhibit medicinal properties but differ significantly in polarity and fluorescence behavior. To isolate ar-turmerone and curcumin, literature methods used large quantities of carcinogenic halogenated solvents, some of which are banned. Consequently, in efforts to apply green chemical principles, a halogen-free procedure was developed for Dr. Robin Tanke's Chem 326 course. However, it required large volumes to move the curcuminoids through the column. So, in order to apply more green chemical principles, Thin-Layer Chromatography was used to make the optimal solvent system of 60% ethyl acetate: 39% hexane: 1% methanol. The column yielded relatively pure fractions where the major components were ar-turmerone (25mg, 1.2% isolated) and curcumin (90mg, 4.4% isolated). These results are comparable to literature ar-turmerone isolation yields (0.8% to 1.5%) and curcumin isolation yields (~4%) while using greener chemical alternatives and reducing column chromatography solvent waste by 60% (405mL to 162mL). Characterization of both compounds was done via NMR spectroscopy, IR Spectroscopy, GC-MS, and UV-VIS Spectrophotometry.

Impact of Inorganic Counterions on PFAS Adsorption in MOF-808 - (Chemistry and Biochemistry)
By: Brody Berens
Faculty Mentor: Dr. Joe Mondloch

Metal-organic frameworks (MOFs) have emerged as promising candidates for the remediation of per- and polyfluoroalkyl substances (PFAS) due to their tunable porosity and surface chemistry. This study investigates the synthesis and adsorption performance of MOF-808 derivatives, specifically exploring the impact of different counterions on the sequestration of perfluorobutanesulfonate (PFBS). Three variations of MOF-808 were synthesized by replacing the standard acetic acid counterion with sulfate, nitrate, and chloride sources to tailor the chemical environment of the zirconium nodes. This work demonstrates that fine-tuning counterion exchange is a viable strategy for optimizing MOFs for the targeted removal of short-chain PFAS from aqueous environments.

Interactions of Bovine Serum Albumin and Food Dyes via Fluorescence Quenching - (Chemistry and Biochemistry)
By: Kate Bergmann, Wyatt Lind
Faculty Mentor: Dr. Amanda Jonsson

Serum albumins are the major soluble protein in the bloodstream and have many functions, including binding to a wide variety of small molecules we ingest. Understanding how compounds interact with serum albumin proteins can help us understand how ingested small compounds behave in the body. We use bovine serum albumin (BSA) as our model protein to explore how food dyes bind to the protein and whether ligand binding impacts the stability of the albumin protein. Currently, our work involves common food dyes, Acid Red 1 (AR1) and Acid Green 50 (AG50). We titrated BSA in phosphate buffer (pH 4.8 and 7.4) at different NaCl concentrations (0 M and 0.15M) with AR1 and AG50 independently. We used fluorescence spectroscopy and Stern-Volmer plots to evaluate the characteristics of the quenching and evaluate binding modes of the ligand. When comparing to published studies, we've produced consistent and accurate fluorescence intensities and Stern-Volmer constants with AG50 and BSA at pH 7.4; however, other variations of the titrations have resulted in more variable data inconsistent with previous research. Our results confirm that BSA interacts with AG50 and AR1 under a variety of conditions.

Investigating Blood Parasite (Haemosporidian) Infection Levels in Wood Ducks (Aix sponsa) - (Biology)
By: Lane Boucher, Emma Latza, Bradley Neve, Allie Zerilli
Faculty Mentor: Dr. Sarah Orlofske

Avian haemosporidians are a group of blood parasites that infect a wide range of bird species worldwide. Wood Duck (Aix sponsa) habitat in woodland edges, nest in cavities, and exhibit a diverse feeding strategy. These life history and behavioral traits may increase vulnerability to haemosporidian infection. Our research objective is to examine the prevalence of avian haemosporidian infections in Wood Ducks, specifically considering age, sex, and year harvested to identify infection patterns. Forty-five hunter-donated Wood Duck specimens, harvested from 2021 to 2024 from George W. Mead State Wildlife Area, were dissected. Dissection includes opening the body cavity, removing liver samples, and preserving in 95% ethanol. Molecular diagnostic methods were used, including DNA extraction and Polymerase Chain Reaction (PCR) to distinguish lineage-

level haemosporidian prevalence. In total, 16 out of 45 birds tested positive for infection (36%). Of the males, 14 of 36 were infected (39%) compared to 2 of 9 females (22%). Thirty adults were sampled, and 10 tested positive (33%) compared to 5 of 12 juveniles being infected (42%). Statistical differences were not significant due to small sample size. Describing Wood Duck haemosporidian infection levels provides a baseline to monitor future changes and maintain conservation efforts of the species.

Least Darter (Etheostoma microperca) Population Delineation and Status in the Central Sands Region of Wisconsin - (Biology)
By: Sydney Steffens, Gethin Wallace
Faculty Mentor: Dr. Justin Sipiorski

The Least Darter *(Etheostoma microperca)* inhabits lakes and streams throughout the Midwest. In the "Central Sands" of Wisconsin, this species resides in clear cool waters with moderate flow and vegetated shorelines. They occupy similar habitats in small, glacial lakes. We are delineating current populations throughout the Wisconsin Central Sands Ecoregion. Initial analyses indicate that Least Darters prefer to reside near springs mixing with surface water in areas dominated by sand, silt, muck, and marl substrates--higher in pH, hardness, and alkalinity. Least Darters also appear to congregate in areas with flooded vegetation, particularly areas with Swamp Loosestrife *(Decodon verticillatus)*. The Wisconsin DNR lists Least Darters as "Special Concern." Recent studies have shown a significant impact on Central Wisconsin groundwater quality due to increasing numbers of high-capacity wells as well as agricultural runoff. We measure total length and body weight from all holdings of the Becker Memorial Ichthyological Collection of the Olson Museum of Natural History. We are estimating age of individuals, and we are quantifying infestations of the "Blackspot" fluke, an ectoparasite. We will conduct length-weight regressions and length-at-age analyses for historical Wisconsin populations. We will compare these past life history parameter values to those of present-day populations.

Length-at-age Analysis of Creek Chub (Semotilus atromaculatus: Leuciscidae) in Wisconsin: a 70-year, Multiple-Drainage, Latitudinal Perspective - (Biology)
By: Madelynn Przybylski, Anna Hurtado, Sarah Dawe, Autumn Visgar, Brent Radobicky, Kenzie Crowley
Faculty Mentor: Dr. Justin Sipiorski

We investigated growth patterns of Creek Chub (Semotilus atromaculatus) inhabiting flowing waters in Wisconsin. The Becker Memorial Ichthyological Collection of the UWSP Olson Museum of Natural History has thousands of creek chubs collected over the past 70 years. We estimated chub age using scale annuli. We compared age estimates, length, weight and body condition in populations of chubs from northern, central and southern Wisconsin. We analyzed nearly 2000 individuals. We observed differences in growth patterns among water bodies and latitudinally. This work will inform future similar studies on current fish populations to compare growth and body condition patterns over time in the face of potential climatic shifts and changes in land use practices.

Length-at-age Analysis of Logperch (Percina caprodes caprodes: Percidae) in Wisconsin: a 75-year, Multiple-Drainage, Latitudinal Perspective - (Biology)
By: Delenn Kier, Elijah Oates, Collin Styers, Jennifer Kahn, Kristen Pagel
Faculty Mentor: Dr. Justin Sipiorski

Logperch *(Percina caprodes caprodes)* have been collected from Wisconsin waters for over 100 years and many specimens are housed in the Becker Memorial Ichthyological Collection in the Olson Museum of Natural History in COLS, UWSP. Over 2,000 individuals have been analyzed in an effort to determine a correlation between aspects of Logperch growth, body condition and age. These variables include location (Latitude, Longitude), type of waterbody, collection year, sex, age, length and weight. Very little research has been done previously on Wisconsin Logperch regarding body condition and length-at-age. This research seeks to understand how geographical, climatological and ecological factors influence Logperch body condition and growth in the state over the past 75 years.

Let's Talk About Sex(ual Knowledge and Definitions) - (Biology)
By: Keatan Zimmerman
Faculty Mentor: Dr. Karin Bodensteiner

How people define 'having sex' and 'virginity' may vary with respect to sexual behavior, gender, and sexual orientation. This study compared upper-level and lower-level undergraduate students' knowledge of reproductive/sexual health and definitions of sex and virginity. University of Wisconsin-Stevens Point biology students completed a survey consisting of true-or-false knowledge questions, Likert-scale ratings of sexual behaviors, and an open-ended definition. Upper-level students were more likely to correctly answer that emergency contraception does not affect an established pregnancy ($p=0.004$). Lower-level students, however, were more confident in answering a condom-use question; answering 'I don't know' less often ($p=0.04$) than upperclassmen. When responses were combined across class standing, students were more likely to classify oral contact with breasts/nipples ($p= 0.014$) and genitals ($p=0.019$), non-penile anal insertion ($p=0.018$), genital-to-genital contact without penetration ($p=0.005$), and outercourse ($p=0.037$) as 'losing virginity' rather than 'having sex.' In written definitions of virginity, students cited LGBTQ+ relationships (7.6%), recognition of virginity as a social construct (8.6%), and importance of consent (7.6%). Some described strictly heterosexual relationships (5%), while others mentioned oral (3.8%), anal (2.9%), and requirement of orgasm/completion (4.8%). Similar patterns appeared in free-response definitions of sex. These data highlight the need for reproductive health education that accounts for varying definitions of sex.

Phenology of Spawning Times Assayed by Gonadal-Somatic Index of Creek Chub (Semotilus atromaculatus: Leuciscidae) in Two Central Wisconsin Drainages - (Biology)
By: Cece Szyman, Mya Kreul, Addilyn Seep, Levi Hendrickson
Faculty Mentor: Dr. Justin Sipiorski

We investigated spawning patterns of Creek Chub *(Semotilus atromaculatus)* inhabiting two drainages (Plover River and Tomorrow River) in Central Wisconsin. The Becker Memorial Ichthyological Collection of the UWSP Olson Museum of Natural History has thousands of creek chubs collected over the past 70 years. We computed the gonadal-somatic index (GSI) for specimens collected throughout the open water period (March through October). Seasonal drops in

GSI connotate spawning activities. We also measured length and weight and calculated body condition indices. We observed differences in GSI patterns in both sexes in both drainages. This work will inform future similar studies on current fish populations to compare spawning phenology patterns over time in the face of potential climatic shifts and changes in land use practices.

Phylogeny and Seed Morphology of North American Platanthera - (Biology)
By: Lilith Totzke
Faculty Mentor: Dr. Stephanie Lyon

Platanthera is a large genus of terrestrial orchids distributed across the northern hemisphere. Despite previous phylogenetic studies on this genus, relationships among the North American and Eurasian taxa are still poorly understood. The main goals of this project were 1) to construct the most complete phylogeny of Platanthera to date and 2) reconstruct the evolution of seed morphology across the genus, focusing on characters that have previously been used to inform subgeneric taxonomy. Samples provided by the North American Orchid Conservation Center helped to expand our geographic and taxonomic sampling to include most US Platanthera species. We used maximum likelihood methods to estimate phylogeny using three different data sets: 1) nuclear ribosomal DNA sequences, 2) chloroplast DNA sequences, and 3) a combined data set. We also used scanning electron microscopy to image seeds of several new species, expanding our data on seed traits including size, shape, number of cells, intercellular gaps, and periclinal wall texture. Analyses include reconstruction of ancestral character states, tests of phylogenetic signal, and seed trait correlations conducted in a phylogenetic framework.

Physiological Recovery and Morphological Reversion of Cannabis sativa Following Environmental Stress and Nutrient Lockout - (Biology)
By: Jenna Pudder
Faculty Mentor: Dr. Brian Barringer

This study investigates the resilience and metabolic recovery of Cannabis sativa (Colorado Cherry Wine) mother plants following a dual-stress event: a systemic nutrient lockout and an environmental growth chamber failure. Initial observations revealed significant physiological distress, including interveinal chlorosis, necrotic leaf margins, and apical "clawing, indicative of a pH-induced nutrient antagonism. To address these deficiencies, a targeted rescue protocol was implemented using organic pH adjusters (citric acid), calcium carbonate, and magnesium sulfate to restore nutrient uptake pathways. The project further documents the transition of the specimens from an early reproductive phase back to a vegetative state (re-vegging) triggered by a 24-hour photoperiod. This phase focuses on the observation of hormonal resetting, characterized by the emergence of non-serrated, single-lobed "mutant" leaves and the abortion of floral pistils. Data collection tracks the timeline of chlorophyll density restoration in the apical meristems and the stabilization of turgor pressure on shelf-based grow lights. By documenting the kinematics of this recovery, this research aims to establish a standardized protocol for rehabilitating high-value botanical stock after equipment failure. The findings from this recovery phase will serve as the baseline for a subsequent cloning and propagation study scheduled for Fall 2026.

Phytoremediation of PFAS from Soil Using Hemp and Native Grass - (Chemistry and Biochemistry)
By: Luke Dongarra, Grace Geils, Morgan Harwood, Jenna Muenchow, Cody Mussell, Benjamin Opaneye, Sophie Ryf, Olivia Schwarz, Alexandra Silavanh
Faculty Mentor: Dr. Shannon Riha

Per- and polyfluoroalkyl substances (PFAS) are environmentally persistent chemical contaminants. One potential way to combat this is phytoremediation, the use of plants to remove contaminants from soil. This study evaluated the ability of hemp (Cannabis sativa) and native grass species to phytoremediate PFAS. Plants were grown in a field with a history of fiber cake fertilizer application, a known PFAS source. PFAS were extracted from both the soil and plant tissues and quantified using Liquid Chromatography-Mass Spectrometry (LC-MS) with a radiolabeled internal standard. Results showed that hemp accumulated 1.25 times the concentration of PFAS that native grass, indicating that hemp is a more efficient phytoremediator on a concentration basis. However, native grass removed a larger total mass of PFAS due to its greater plant biomass. This data demonstrates that both hemp and native grass are viable options for PFAS phytoremediation, though additional studies are required to further evaluate their effectiveness.

Prevalence of Blood Parasites in Alder Flycatcher (Empidonax alnorum) from Minnesota - (Biology)
By: Katie Garcia, Abigail Middleton, August Newman
Faculty Mentor: Dr. Sarah Orlofske

Alder flycatchers are small migratory songbirds. Empidonax alnorum are difficult to distinguish using their physical traits but can be identified using their songs, habitat, and some small plumage and wing measurements. Alder flycatchers can be infected by blood parasites of the genera Plasmodium, Leucocytozoon, and Haemoproteus, which are transmitted by dipteran vectors. Alder flycatchers have a significant role as an indicator species in wetlands. Infected birds can be asymptomatic but undergo stress, which can impact the ability of Alder flycatchers to migrate and can impact their overall fitness. This study will provide information on the prevalence of blood parasites in Alder flycatchers. We examined a total of 36 blood samples collected from eighteen banded Alder flycatchers at Minakwa Golf Course in Crookston, Minnesota between June and July 2025. We used the Olympus BX41 microscope to identify blood parasites using their morphological features. Their prevalence was quantified by observing 100 views at 1000x magnification using ZIESS Labscope Microscope Software. Out of the eighteen specimens, 44% tested positive for any parasite. Surveying infection in Alder flycatchers helps us determine how blood parasites can affect their fitness and how a decline in host populations can impact the ecosystem.

Probing Inner- vs. Outer-Sphere Ion Exchange of Perfluorinated Ions in MOF-808 - (Chemistry and Biochemistry)
By: Isabel Bauer, Mckenzie Osowski, Michael Upson
Faculty Mentor: Dr. Joe Mondloch

Per- and Polyfluoroalkyl substances (PFAS) are a class of manmade chemicals that's use is widespread. PFAS do not degrade easily over time, which can lead to their accumulation in the environment. Metal–organic frameworks (MOFs) are a nanoporous solid that can adsorb PFAS from water. This study examined the mechanisms in which different MOFs adsorb PFAS, to determine whether they do so by inner- or outer-sphere ion exchange. Various MOFs were added to PFAS solutions with increasing concentrations of NaCl or NaNO3 to observe how the presence of counterions affects the adsorption of PFAS. The experiments showed that the adsorption of perfluorobutanesulfonate (PFBS) by MOF-808 significantly decreased when ions were present in solution. In contrast, the adsorption of perfluorononanoate (PFNA) is largely unaffected by the presence of counterions. These findings suggested that PFBS adsorption occurs through outer-sphere ion exchange while PFNA adsorption occurs through inner-sphere ion exchange.

Richness and Abundance of Endoparasites in Dabbling Ducks at George W. Mead Wildlife Area - (Biology)
By: Madisen Miller, Kylie Lieven, Alexis Thao, Will Garcia-Heinrich, Ella Niles
Faculty Mentor: Dr. Sarah Orlofske

Wetlands provide essential sites for waterfowl. Dabbling ducks utilize shallow waters to feed on aquatic plants and small organisms. These feeding habits result in accumulation of parasites. We surveyed endoparasites of dabbling ducks from the George W. Mead Wildlife Area to identify infection patterns reflected by their feeding habits. Hunters donated breasted-out carcasses, including location and collection date. All host organs were examined under microscopes using standardized procedures. Parasites were identified to the lowest possible taxonomic level and we quantified total parasite abundance and taxa richness. We examined 12 Mallards, 13 Blue-winged Teal, 10 green-winged Teal, and 98 Wood Ducks. Average total parasites per host species ranged from 39-192, with an overall average of 91. Mallards had the highest infection and differed significantly from GWTE ($p=0.0178$) and WODU ($p=0.0006$), but not BWTE ($p=0.4862$). Average total richness per host species ranged from 2 to 6 parasite taxa, with an overall average of 4 taxa. Blue-winged Teal had significantly higher parasite richness than WODU ($p=0.00578$) and GWTE ($p=0.00160$), but not MALL ($p=0.28215$). More equal sampling of species will improve comparison. Understanding parasite infection baselines can help wildlife managers better predict the effects of habitat management on host diet and parasite transmission.

Robinson Annulation to Synthesize Substituted Cyclohexenones - (Chemistry and Biochemistry)
By: Ethan Theoharopoulos
Faculty Mentor: Dr. Robin Tanke

Robert Robinson discovered a method to create a six-membered ring by forming three new carbon-carbon bonds in 1935. The reaction was later named Robinson Annulation ("annulation" is Latin for "ring"). This reaction gained notoriety for its use in making the backbones of steroid hormones like testosterone and estrogen. Furthermore, Robinson Annulation became a staple in Organic Chemistry II coursework. So, this project explored the Robinson Annulation by evaluating a diverse set of α-β unsaturated ketones. These ketones, known as Michael acceptors, are trans-chalcone, S- (+)-carvone, and [4-(4'-hydroxy-3'-methoxyphenyl)-3-buten-2-one]. These Michael acceptors were reacted with deprotonated ethyl acetoacetate. Trans-chalcone reacted to produce 4-Carboxyethyl-1,3-diphenyl-1,5-hexanedione, 2-Carboxyethyl-3,5-diphenyl-5-hydroxy-1-cyclohexanone, and 2-Carboxyethyl-3,5-diphenyl-5-cyclohexen-1-one highlighting each step of the Annulation reaction. S-(+)-carvone and [4-(4'-hydroxy-3'-methoxyphenyl)-3-buten-2-one] did not react. The chalcone compounds were purified by recrystallization and characterized by NMR and IR Spectroscopy and Melting Point analysis.

Separation and Isolation of Antimicrobial Compounds in Lentinula edodes - (Biology)
By: Aidan Arbaugh, Elliona Staves
Faculty Mentors: Dr. Matt Rogge, Dr. Katie McGarry

The rise of antibiotic resistance poses a significant problem for medicine and agriculture, driving demand for the development of novel antimicrobial agents. While antibiotic design methods have changed greatly, natural products continue to show great promise in providing scaffolds for drug development. Historically, fungi have contributed significantly toward the repository of antimicrobial natural products. Despite being used for centuries in traditional Eastern medicine, relatively little research has been conducted to evaluate the presence and properties of antimicrobial compounds in shiitake mushrooms (Lentinula edodes). This work details the ultrasound-assisted extraction (UAE) of Shiitake mushroom powder and the separation of compounds contained in these crude extracts via column chromatography. Isolate antimicrobial activity was evaluated by spectrophotometric bacterial growth inhibition assays. Finally, we detail some future steps toward characterizing compounds in the active fractions we identify.

Starch Distribution in Grapevine Stem: A Comparison Across Cell Types and Xylem Age - (Biology)
By: Alexander Nelson, Vy Tran
Faculty Mentor: Dr. Qiang Sun

Starch storage in grapevine stem plays a critical role in seasonal carbon cycling and berry yield and quality. This study examines starch distribution in the secondary xylem of grapevine (Vitis vinifera) stems across two axes: cell type (ray parenchyma cell vs. fiber cell) and tissue age (current-year growth, and up to seven years old) by using grapevine spur and cordon samples from a vineyard in Washington State. All secondary xylem samples exposing transverse, radial, and tangential surfaces were examined under a scanning electron microscope. Our results indicate that starch deposition declines in xylem tissues older than five years, though ray parenchyma continues to maintain starch deposits across all ages examined. In contrast, fiber cells in older secondary xylem show

comparatively reduced starch presence. These findings reveal cell-type-specific differences in long-term starch metabolism dynamics, with ray parenchyma appearing to serve as the primary site of starch storage in aged secondary xylem. Quantitative analyses on the starch deposition and morphology also show some interesting differences between the cell types and among tissue ages. These should contribute to a better understanding of the starch metabolism related to the grape berry development, potentially helping improve viticultural practices and vineyard management.

A Statewide, 70-year Perspective on Spawning Phenology, Age and Growth of the White Sucker (Catostomus commersoni: Catostomidae) in Wisconsin - (Biology)
By: Lizzie Heimerl
Faculty Mentor: Dr. Justin Sipiorski

We are studying the life history of Wisconsin populations of white suckers (*Catostomus commersoni)*, an abundant and important forage fish. Length, preserved weight, and gonad weight were taken for each individual specimen in the Becker Memorial Ichthyology Collection of the Olson Museum of Natural History and the Wisconsin Fish Distribution Collection obtained from the Milwaukee Public Museum. Age will be estimated from scale annuli. Length-weight regression and length-at-age analyses will be performed to determine the size and age structure of the past and present white sucker communities represented in the preserved specimens. Gonadal-somatic index (GSI) will also be determined across all time periods to estimate the average time of spawning activity in white suckers over the past 70 years. In the future we also hope to compare historical spawning dates phenologically to spawning activities of present populations.

Storage of Oxytocin in Transgenic and Non-Transgenic Mouse Posterior Pituitaries - (Biology)
By: MacKenzie Hardy, Jackson Carter
Faculty Mentors: Dr. Karin Bodensteiner, Dr. Jennifer Bray, Dr. Sol Sepsenwol

An engineered transgenic mouse, CCL2-tg (TG), continuously overexpresses CCL2, an important chemokine that recruits immune cells to sites of inflammation. Studying TG reproduction, we found that pups of TG mothers gained weight faster by 2 weeks postpartum, indicating enhanced lactation. Lactation is under control of two hormones, oxytocin and prolactin, released, respectively, from the posterior (PP) and anterior (AP) lobes of the pituitary gland. Previously, we used electron microscopy of the PP to look for ultrastructural evidence of increased storage of oxytocin in TG females. There was no gross alteration of hypothalamic-PP axons, their transported hormone vesicles, or vesicle-filled dilatations. But ultrastructure alone could not distinguish dilatations containing oxytocin from the other PP hormone, vasopressin. We could not, therefore, exclude an overabundance of oxytocin storage in PPs of TG vs. non-TG mice. Here, we set up a method to immunohistochemically visualize oxytocin storage in the mouse PP, using an anti-oxytocin polyclonal antibody. Pituitaries were rapidly removed and immersed in fixative. TG and non-TG pituitaries were mounted together using a unique “kebab” technique, held in place by an alginate gel so that all are compared in the same section. After processing to paraffin, blocks were sectioned, mounted on slides, deparaffinized and treated with anti-oxytocin antibody. The antibody reaction product was clearly concentrated in discrete dilatations of the PP of TG and non-TG, so that stored oxytocin can be assessed in different glands using image software. Similar immunohistochemistry could be used to assess the stored levels of prolactin in the AP.

Stressed? Only Time Will Tell: Level of Stress Behavior to Time of Day for a Rhesus Monkey - (Biology)
By: Henry Gabrielski
Faculty Mentor: Dr. Sarah Jane Alger

Stress behavior of research animals can have a negative effect on their lives and the research they might be involved in. Circadian rhythms might play a part in stress levels of research animals. Some gaps in knowledge are at what times of a normal day cause higher levels of stress, specifically for primates who are retired from research. The animal being studied is a retired rhesus monkey housed at Primates Incorporated, a sanctuary for primates. The animal in question showed high levels of recorded stress behaviors at Primates Incorporated, allowing data on stress and circadian rhythms to be studied. I am analyzing stereotypic behavioral data, a type of behavior that can indicate stress and includes repetitive, invariant, and seemingly purposeless actions. I suspect that the primate will show a higher amount of stress behavior during the early morning and late afternoon, and a lower amount of stress behavior during late morning and early afternoon. What is learned can be used to better understand at what time during the day stress behavior of captive primates are highest. Which can show at what time during the day we should try and help lower stress behaviors and when caregivers should conduct research.

Structure and Bonding Preferences in a Series of Triple-Decker Metallocenes - (Chemistry and Biochemistry)
By: Icarus Fortenberry, Paige Koenecke
Faculty Mentor: Dr. Jason D'Acchioli

Organometallic sandwich complexes, or metallocenes, have shown promising use in the synthesis of molecular wires. Using computational models of methylated triple-decker metallocenes, we studied their electronic structures to determine how methylation contributes to stability, reactivity, and electron density. With a combination of natural bond orbital (NBO) theory and electron population analysis, we compare how methylated rings contribute to overall molecular stability for rings in the terminal versus bridging positions. This aids in rationalizing synthetic preferences and furthers our understanding of how to build up these complexes into molecular wires.

Survey of Tapeworm Prevalence and Abundance in American Woodcock Hunted in Wisconsin - (Biology)
By: Kylie Lieven, Madisen Miller
Faculty Mentor: Dr. Sarah Orlofske

American Woodcock are migratory birds inhabiting early successional forests of the eastern United States. Their forest habitat and selective diet of earth worms distinguish them from other shorebirds. The distinct life history of the American Woodcock also affects the cestodes (tapeworms) specific to American Woodcock. Our research objective was to survey the tapeworms in American Woodcock in Wisconsin. Hunter donated carcasses were measured, external characteristics noted, organs removed and examined for parasites. Parasites were separated and fixed in 80% ethanol for future morphological and molecular identification. Based on preliminary morphological identification, 56 of the 79 woodcock surveyed had tapeworms present, belonging to the families Hymenolepididae and Dilepididae. Intensity of infection ranged between one tapeworm to upwards of 100 tapeworms per

bird. We analyzed infection as present or absent using a generalized linear model of sex, age, and collected year. We used a X^2 test to identify patterns of coinfection between different tapeworms and trematodes (Pseudapatemon spp). We collected three unique species of tapeworms, but there were no significant patterns with any explanatory variables. The presence of multiple tapeworm species belonging to different genera could indicate that there are other prey items that may constitute a significant proportion of woodcock diet.

Through-Space and Through-Bond CT in a Pyridine-Based EDA Clamp - (Chemistry and Biochemistry)
By: Ava Meinert, Sebastain Sczygelski
Faculty Mentor: Dr. Nate Bowling

Interactions between electron donors and acceptors are of great importance to a number of fields. Electron donor-acceptor (EDA) complexes and through-space charge-transfer (CT) are under investigation for their importance to photochemical processes and in advancing the field of organic light-emitting diodes (OLEDs). Binding with the metal cation Ag+ was explored as a strategy to induce intramolecular, through-space charge transfer (CT) between an electron donor (N,N-dimethylaniline) and acceptor (1,3-dinitrobenzene) pair in an EDA complex via clamping. Several structural isomers with these moieties were designed for comparison. 1H-NMR studies were performed and found to support donor-acceptor interaction in the expected isomer; findings further supported by computational studies regarding HOMO-LUMO overlap. UV-vis studies showed the clamp is extremely sensitive to the presence of acids. Through-bond, rather than through-space, CT is evidenced by absorption bands when small concentrations of HCl formed from slow decomposition of CH2Cl2 protonate the central pyridine. Several studies were performed to differentiate the very similar CT signatures of the through-space N,N-dimethylaniline/1,3-dinitrobenzene and through-bond N,N-dimethylaniline/pyridinium donor-acceptor pairs.

Zebra Finch is an Excellent Experimental Model and it Needs a Reliable PGC Platform - (Biology)
By: Mitchell Mayers
Faculty Mentor: Dr. Jianan Liu

The zebra finch is an excellent model organism for studying the genetic basis of learned behavior, but the lack of an integrated germline manipulation platform constrains its utility. This poster reviews the current literature on zebra finch primordial germ cells (PGC) biology and experimental manipulation, focusing on progress toward a mature germline engineering system. Existing studies show that this is feasible through multiple sources. For example, blood-derived PGCs have supported ex vivo expansion, genetic modification, embryo transfer, and recovery of transgenic offspring. In addition, gonad-derived PGCs have supported short-term culture, characterization of post-migratory cells, in vitro genome editing, and homing to recipient gonads. What is still missing is a single process that connects purified source cells, a clearly defined developmental state, genetic engineering, and viable offspring. Currently, evidence for germline competence and for state characterization comes from different source populations rather than a unified platform. Integration would permit the introduction of stable alleles and tracking of their effects across embryogenesis, song-circuit development, and adult learned behavior.

Group Poster Presentations - ***Biol 107: Introduction to Scientific Inquiry*** - (Biology)

Student presenters: Giovanni Alonzo, Avery Burk, Allison Chicos, Holland Davis, Finn Hanley, Adam Kaukl, Mya Kreul, Hannah Luedtke, Diego Rodriguez, Mila Sanheim, Cece Szyman, Ann Thao, Gao Che Vue, Aubrey Witcpalek
Faculty Mentor: Dr. Ann Impullitti

Campus Parking

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