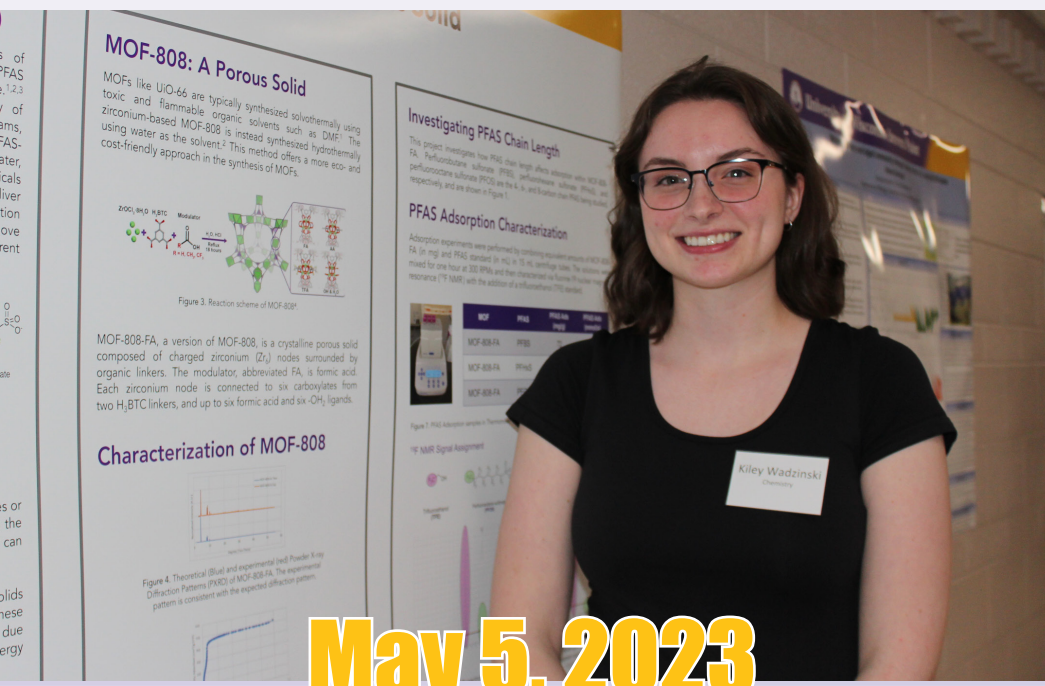


# College of Letters and Science Undergraduate Research Symposium

# 24th Annual College of Letters and Science Undergraduate Research Symposium



**May 5, 2023**

UW-Stevens Point Collins Classroom Center  
Stevens Point, WI 54481  
715-346-4224  
cols@uwsp.edu



College of Letters and Science  
University of Wisconsin - Stevens Point

Chemistry Biology Building, Room 101

1:45 p.m. Welcome

2:30 - 4:00 p.m. Presentations in CBB

Instagram/uwspcols | twitter.com/UWSPcols | facebook.com/UWSPCOLS

The University of Wisconsin-Stevens Point is an Equal Opportunity/Affirmative Action Institution



University of Wisconsin  
Stevens Point

## Welcome

Room 101, CBB  
May 5, 2023 • 1:45 – 2:15 p.m.

### **Opening Remarks:**

Dean Joshua Hagen, College of Letters and Science

•

### **The Collaborative and Multidisciplinary Nature of Doing Science: Cannabis as a Model Study System**

Brian Barringer, Associate Professor and Chair,  
Department of Biology

### **Presentations**

Floors 1-3 Chemistry Biology Building\*

2:30 – 3:30 p.m.

Oral Presentations

**\*See pages 4-12 for oral presentation  
topics and room locations**

---

2:30 – 4:00 p.m.

Poster Presentations

*Complimentary refreshments available  
outside of CBB 105*

# **Undergraduate Research Symposium 2023 Committee**



College of Letters and Science  
University of Wisconsin - Stevens Point

David Barry, Ph.D. – Sociology and Social Work

Carrie Hutton – COLS Assistant to the Dean for  
Communications

Lynn Ludwig, Ph.D. – English

Joe Mondloch, Ph.D. – Chemistry

---

Cody Wanta – Technical Support

Carrie Ziolkowski – Administrative Support

## Campus Parking

Across Fourth Avenue from the Chemistry Biology Building, the closest available parking is **Lot T**, circled in below map, or surrounding streets.



May 5, 2023

Welcome to the 24th Annual College of Letters and Science Undergraduate Research Symposium! You are about to participate in a rich tradition at the University of Wisconsin-Stevens Point, one that is both an educational experience and an academic celebration.

Student participants—I hope you will find the symposium to be one of your most memorable learning experiences. There is little question your research will enhance the academic value of your overall education at the University of Wisconsin-Stevens Point. You have gained a greater understanding of the world around you, a deeper learning of the subject matter taught in your classes and possibly the opening of new opportunities beyond college.

Attendees and observers, please join me in applauding the drive 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 here to make a presentation or to witness them, you will be participating in the celebration of these academic achievements. This is a special opportunity for students to share the results of their hard work participating in investigations, projects and research activities. This year’s event features an outstanding group of student researchers representing projects from across COLS majors, a fitting tribute to the level of faculty and student collaboration in and out of the classroom at UW-Stevens Point. Thank you to the faculty members for their mentorship to our students.

Welcome, and congratulations to all of you! I wish you success in presenting your work today and at future symposiums and conferences.

Sincerely,

A handwritten signature in black ink that reads "Thomas Gibson". The signature is written in a cursive style.

Thomas Gibson  
Chancellor

## ABOUT US

As the largest college of the University of Wisconsin-Stevens Point, the College of Letters and Science offers more than 80 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, across three campuses
- Labs with state-of-the-art instrumentation
- Study abroad programs in over 25 countries
- Planetarium and Observatory welcome 5,000 visitors annually
- More than 20,000 yearly visits to Museum of Natural History

Please consider joining the thousands of donors who help ensure that UW-Stevens Point students are ready to face the challenges of the future. **To make a gift visit: [give.uwsp.edu/cols-give-now](http://give.uwsp.edu/cols-give-now)**

*The University of Wisconsin-Stevens Point occupies lands of the Ho-Chunk and Menominee people. Please take a moment to acknowledge and honor the ancestral Ho-Chunk and Menominee land and the sacred land of all indigenous peoples.*

force which causes the bead to return to the center of the focused laser beam, effectively trapping it within the laser. We present the details of an optical tweezers set up that we designed and constructed in our lab. This set-up was used for the study of the Brownian motion of micrometer-sized fused silica beads in a water medium. By recording and tracking the random motion of the beads we determined the viscosity and resistive force of the medium. After successfully trapping a bead, we were able to determine the strength of the trapping force of our optical tweezers and calibrate our apparatus.

***Using SEAL and HARPOON to Find Potential Water-Splitting Oxide Semiconductor Electrodes -***  
(Physics and Astronomy)

By: Spencer Lindstrom

Faculty: Dr. Ken Menningen

The search for suitable electrodes for photoelectrochemical water splitting extends across the periodic table. While III-V semiconductors exhibit superior light gathering properties, metal oxide semiconductors generally cost less and are more robust. The Solar Energy Activity Laboratory (SEAL) and the Heterogeneous Anodes Rapidly Perused for Oxygen Overpotential Neutralization (HARPOON) are simple experiments that can quickly scan for suitable oxide semiconductors. The SEAL experiment measures photocurrent, and the HARPOON experiment measures oxygen production efficiency. An evaporative spotting procedure is used to prepare FTO plates with the desired metal oxide combinations. Plates made of oxides of Pd, Ru, Fe, In, and Ni were produced in our laboratory and evaluated using the SEAL and HARPOON experiments. This presentation will communicate the results for three plates.



open-source JavaScript library released in 2013 with the goal to help developers build more dynamic and interactive user interfaces for the web and mobile platforms.

My research of React focused on how it works and why it is a viable alternative to base HTML and JavaScript. Through my exploration of React, I determined that its component-based structure and virtual document object model (DOM) allow developers to build performant complex user interfaces. Additionally, its modular design allows React to work seamlessly with other libraries and full-stack frameworks, making it a powerful web development tool.

***The Effect of Education on Income Inequality in Wisconsin*** - (Mathematical Sciences)

By: Kyle Pulvermacher  
Faculty Mentor: Dr. Scott Wallace

Using cross-sectional data from each of Wisconsin's 72 counties, this research explores the effect of postsecondary educational attainment on income inequality in our state. To study this relationship using regression analysis, income inequality is measured as a ratio provided by the U.S. Census Bureau, and the variable of interest is the percent of each county's population with a bachelor's degree or higher. The results of this research suggest that there is currently a wage premium for college-educated workers in Wisconsin that is driving income inequality, only made worse by an imbalance in the supply and demand of these workers. To meet the growing demand, four-year universities, technical colleges, postsecondary certificate programs, and other educational alternatives will play a key role in preparing highly skilled workers to enter the labor force going forward.

***The Weakest Link: Phishing and Cyber Awareness in the 2020s*** - (Computing and New Media Technologies)

By: Jacob Tracy  
Faculty Mentor: Chad Johnson

Humans are the weakest link in any secure computer system: why spend days penetrating a network when you can trick someone into sharing their password? This act is a form of social engineering known as phishing. Over the past decade, phishing attacks have grown exceedingly sophisticated and extensive. Especially in the modern digital age, corporations must train their employees to guard against phishing attacks. In this presentation, I will analyze the sociological basis of phishing, emerging trends in cyber awareness training, and the overall effectiveness of training programs.

***Trapping of Micrometer-sized Fused Silica Beads by Optical Tweezers*** - (Physics and Astronomy)

By: Nolan Naniot, Tyler Rhodes  
Faculty Mentor: Dr. Maryam Farzaneh

Optical tweezers are optical traps which use high power, highly focused laser light to trap small particles. Optical tweezers are used extensively as research tools in biology and biophysics to trap and manipulate viruses, bacteria, organelles, and even DNA. The tweezers work based on the momentum transfer of the laser radiation to a small particle like a bead. This creates a restoring

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

It is my honor to welcome you to the 24<sup>th</sup> annual College of Letters and Science Undergraduate Research Symposium! During those years, nearly 2,000 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 nearly 100 research projects, including 80 poster presentations and 16 oral presentations representing all of the college's schools and departments. Ranging from the humanities and social and behavioral sciences to the STEM disciplines of science, technology, engineering and mathematics, these presentations and posters highlight the curiosity, dedication and passion of our students to pursue research and intellectual development in close partnership with faculty mentors. Please join me in congratulating and celebrating our students' research accomplishments. Well done!

I would like to thank Brian Barringer, associate professor of biology, for sharing his research work focusing on collaboration, "The Collaborative and Multidisciplinary Nature of Doing Science: Cannabis as a Model Study System." Like so many presentations we will learn about today, his research is made possible because of the contributions of a number of dedicated UWSP faculty, including assistant professor Ann Impullitti, associate professor Shannon Riha, associate professor Bryant Scharenbroch, and Barringer's research students.

To kick off the symposium. I also owe thanks to the members of the symposium organizing committee, professors Joe Mondloch, chemistry, Lynn Ludwig, English, and David Barry, sociology, and the college office staff for making this wonderful celebration of student research possible.

Sincerely,



Joshua Hagen

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

1<sup>st</sup> and 2<sup>nd</sup> Floors

### Group 1 Room 131

***Poverty Amidst Plenty: Why Panama's Economic Boom has Left the Indigenous Behind*** - (Political Science)

By: Kendall Anderson

Faculty Mentor: Dr. Jennifer Collins

Moderator: Dr. Brad Mapes-Martins

Economic development and modernization are often assumed to be linear and beneficial to a whole society. However, the reality is that in many developing countries the benefits of economic growth and modernization are not equitably distributed. Even when countries “develop”, many citizens are left behind. This paper explores this phenomenon through a case study of Panama's indigenous population. While Panama is a developing country with a history of war, colonization, invasion, and foreign intervention, in recent years it has made great strides in social, economic, and human development. Panama today is a global leader in addressing climate change and protecting the environment. However, progress in these areas has not brought significant improvements to indigenous communities. Panama's indigenous population continues to experience lower levels of education, life expectancy, and now displacement due to rising sea levels caused by climate change. This paper traces the evolution of Panama's economic booms and busts and analyzes how indigenous people have fared through these economic cycles. Racism and discrimination explain the history of indigenous marginalization even during times of economic growth and prosperity. Indeed, this paper concludes that Panama's development has often come at the expense of indigenous people's suffering.

***Rectifying the Environmental and Human Rights Abuses of the Bolsonaro Administration*** - (Political Science)

By: Lexi Kurszewski

Faculty Mentor: Dr. Jennifer Collins

Moderator: Dr. Brad Mapes-Martins

This paper examines the fate of the Yanomami, an Amazonian indigenous tribe, under the administration of Jair Bolsonaro who served as president of Brazil from 2019-2022. During his tenure, Bolsonaro demonstrated complete disregard and disrespect for the Yanomami's territorial sovereignty encouraging encroachment on their lands by mining interests and other settlers. Mining expansion—legal and illegal—had devastating environmental and social impacts. The extent of the damage and disregard for the Yanomami by the Bolsonaro government was so grave as to constitute a genocide. After unpacking these abuses, the paper details Bolsonaro's successor Luis Inacio Lula da Silva's decisive actions to address the crisis facing the Yanomami. This includes the declaration of a medical emergency in the region and initiatives to expel illegal miners. I analyze the political constraints facing Lula and how they limit his policy options. This paper also proposes other important steps the government should take to ensure a future for the Yanomami including providing job opportunities to incentivize miners to leave the Amazon as well as the creation of education-based policies designed to change Brazilians' attitudes towards indigenous peoples in ways that will assure societal consensus around recognition of their rights and territorial sovereignty.

galaxies found in other environments (samples of isolated and loose group galaxies). We use red (i) filter images from SDSS for our analysis.

***Fluorescent Photons Emitted by a Dye Molecule Captured Using a Single Photon Detector and Fast Electronics*** - (Physics and Astronomy)

By: Mitchell Imlah, Kaylee Wilker

Faculty: Dr. Palash Banerjee

Dye molecules emit a burst of photons when illuminated by a laser pulse. These fluorescent photons are emitted randomly, but their arrival times at the detector contain statistical correlations that reveal important information about the environment surrounding the dye molecule. We describe an instrument that is designed to detect and extract these statistical correlations by measuring the arrival times of these emitted photons. The instrument consists of a green laser, optical filters, a high magnification objective, a single photon detector, fast electronics, and a pulse counter that records the arrival time of each photon using a 10 MHz reference clock. Crucially, the statistical correlations are experimentally measurable and can be extracted only if the solutions are extremely dilute and there are at most only a few molecules within the focal volume of our instrument. Therefore, our instrument is designed to have a focal volume of roughly 1 femtoliter and our samples are prepared to have concentrations in the nano molar range. We calibrate our newly designed instrument by studying the photons emitted by two different dye molecules — 100 nanometer diameter beads of Alexa F880 and rhodamine 6G and we describe preliminary results obtained from these two different molecular species.

***Randomly Walking in a Circle*** - (Physics and Astronomy)

By: Meghan Taylor

Faculty: Dr. Brad Hinaus

When a particle randomly moves through a fluid, what is the average time for it to move across a circle? To find this time, called the diffusion time, the process is simulated in the programming language LabView. The simulation performs a random walk of particles and keeps track of each time a particle is within the circle. Afterwards an autocorrelation is performed, which is a histogram of the wait times between the different moments in time a particle is in the circle. The best fit line of the autocorrelation yields the diffusion time, the average time to move across the circle. The simulation is then run to see how the diffusion time varies with changes in particle density, circle radius, and the diffusion length, the distance the particle moves each random step. This simulation can be directly applied to experimental fluorescence spectroscopy, which determines the dynamics of particles moving in a solution and measures the diffusion length and diffusion time.

***React: An Alternative Way to Build Interactive User Interfaces*** - (Computing and New Media Technologies)

By: Chayton Sutton

Faculty Mentor: Tomi Heimonen

In today's world of web development, there are diverse options available for implementing user interfaces (UI), starting from base HTML, CSS, and JavaScript, and stretching all the way to complex UI frameworks. React – a library for building component-based user interfaces – stands out as a powerful and efficient approach that has gained widespread adoption by developers. React is an

School of Mathematics, Computing,  
Physics, and Astronomy

***A Magnetic Field Apparatus to Trap and Levitate a Neutral Object in Space*** - (Physics and Astronomy)

By: Jessica Ryun  
Faculty: Dr. Palash Banerjee

The design and construction of an electromagnetic trap is described that uses magnetic fields to confine a neutral object in space. The magnetic fields are generated using a combination of ring magnets and ac coils. The ring magnets produce a field gradient to oppose gravity but this gradient alone is not sufficient to provide stable confinement. Therefore, in addition, we use four ac coils to generate time varying fields with a large curvature. If the curvature is large enough, the trap is stable and the neutral object can be confined indefinitely. The behavior of the trap object is described by a second order differential equation known as the Mathieu equation. The solutions of the Mathieu equation depend on the curvature of the field along the axial and radial direction respectively. We find the trap provides stable confinement only if the ac field curvature exceeds a certain critical value. These ac field curvatures need a large continuous current of at least 6 Amperes. We describe our efforts at constructing and operating this trap and understanding its behavior using the Mathieu equation.

***All Radio Loud Quasars Are Not the Same!*** - (Physics and Astronomy)

By: Jose Monroy  
Faculty Mentor: Dr. Sebastian Zamfir

Quasars are Active Galactic Nuclei. Their structure includes a supermassive black hole (BH; millions to billions of solar masses) and matter accreting onto it, presumably forming a flattened disk geometry. The overheated disk produces strong and twisting magnetic fields. Matter loads up onto these fields and relativistic plasma jets can pierce through the host galaxy and out into the intergalactic medium. The jets eventually dissipate and produce diffuse lobes as they impinge onto the external ambient medium. These large-scale structures are best observed in the radio domain. In some extreme cases, the jets can advance over distances that exceed the size of the host galaxy by a factor of twenty or more, and they became Giant Radio Quasars (GRQ). Modern surveys have measured almost a million quasars, both photometrically and spectroscopically. Direct imaging of quasars is unattainable due to their relatively small scale (light-weeks to light-months in size) coupled with cosmological distances. Spectroscopy, nonetheless, offers insights into their kinematics, structure, and geometry. We explore the BH masses, accretion rates, colors, and spectral line shifts of GRQs to understand what sets them aside in the context of the larger “family” of quasars.

***Exploring the Properties of Late-Type Spiral Galaxies in Pairs*** - (Physics and Astronomy)

By: Bryan Monroy  
Faculty Mentor: Dr. Adriana Durbala

We explore the relative role of “nature versus nurture” (intrinsically versus environmentally driven influences) in shaping the morphology and evolution of galaxies. We select a sample of late-type spiral galaxies (Sb/Sbc/Sc) in pairs found in the Sloan Digital Sky Survey (SDSS). The goal is to perform a detailed photometric analysis and to compare the properties of galaxies in pairs with

Group 2  
Room 265

***Julia Grignon Mayrond and the Central Wisconsin Ho-Chunk, 1874-1894*** - (History and International Studies)

By: Jarita Bavido  
Faculty Mentor: Dr. Rob Harper

Julia Grignon Mayrond was a woman of Ho-Chunk, Menominee, and French descent. She lived through the Black Hawk War, forced removals, remote reservation life, and the Dakota War, before moving to Stevens Point in 1875 to support the Ho-Chunk return to east-central Wisconsin. Tapping into networks of fur trade acquaintances and kin, Julia helped secure and defend homestead claims, advocate for justice in cases of settler violence, and build relationships between the Ho-Chunk and Stevens Point townsfolk. Julia’s story provides a unique lens into the Indigenous history of the Gilded Age, while complicating established scholarship about cultural brokers, public mothers, and citizenship. Furthermore, literature about the Ho-Chunk has focused on western Wisconsin communities and Nebraska, while Ho-Chunk communities on the Upper Wisconsin and Wolf River watersheds remain understudied. This paper explores how Julia Mayrond leveraged her identity, experiences, and qualifications to help the post-removal, off-reservation community of eastern Wisconsin Ho-Chunk navigate both traditional culture and hostile Anglo-American institutions.

***Stoicism and Stephen King: Sometimes 'Dead' is Better*** - (Philosophy)

By: Lindsey Dashner  
Faculty Mentor: Dr. Joshua Horn Moderator: Dr. Joshua Horn

Western philosophies traditionally lead us to having a negative and fearful approach to death which is a mistake. Stoicism contrasts these views held by western philosophers, often viewing death in a neutral or even positive manner. Within this exploration I will emphasize the similarities and influence of Stoicism on Stephen King’s works. I will highlight examples from King’s works and show that negative consequences could have been avoided or managed better by following the Stoic principles towards death and dying instead. I intend to prove that King’s stories show that fearing and denying death is wrong and that we should accept death as the naturally occurring phenomenon that it is, utilizing his storytelling abilities to convey arguments of Epicurus and Stoic philosophers. Within this exploration I will analyze the following filmed versions of King’s works including *Carrie*, *Gerald’s Game*, *Doctor Sleep*, *The Shining*, *It*, *Misery*, and *Pet Semetary*. I will give a brief synopsis of each film and give evidence of stoicism within King’s various works. I will also address possible objections to my thesis that the views of Stoicism are preferred over western views and that King’s various works serve as examples of evidence of these Stoic arguments.

***The Value-Free Ideal in Science: An Unsatisfying Treasure*** - (Philosophy)

By: Bill Taylor

Faculty Mentor: Dr. Jason Zinser

Moderator: Dr. Jason Zinser

The traditional view of science is called the value-free Ideal. The value-free ideal is where non-epistemic (ethical) values have little to no place within the scientific process. This stance has come under significant criticism within the philosophy of science as the scientific community has become more intimate with policy implications and other reactions to their research. Some critiques of the value-free ideal point to the scientific process already innately composed of non-epistemic values. This paper aims to argue that there are significant implications for scientists which seek to take on non-epistemological values. Firstly, by casting off the at least perception of value-free science you foster public distrust. Secondly, the level of responsibility which scientists would be accountable for would create significant negative repercussions.

systematic forced labor of local immigration practices known as kafala (sponsorship system). Key stakeholders including the Qatari government and FIFA fail to acknowledge these human rights violations. FIFA President Sepp Blatter disavowed the culpability of FIFA by claiming that in Qatar “big companies” employ migrant workers and are thus responsible for them. I analyze how intersectional issues of nation, class, and culture shape the ways in which Qatar 2022 continues to be remembered. I contend that commemorating the history of vulnerable populations should play a more central role in this process of remembrance.

***The Good, the Bad, and the Ugly of Political Propaganda and Sports: Olympic Legacies and Commemorations (1936-2021)*** - (History and International Studies)

By: Patrick Hanson

Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the legacies and commemorations of Olympics at the intersection of political propaganda, war, nationalism, and sports. For example, I consider the fallout of the 1936 Berlin Games during Germany’s Third Reich regime as well as the “missing” Olympics in 1940 imperial Japan. The Olympics provide a chance for countries to celebrate in the moment and remember in subsequent generations the legacy of individual athletes as a means of elevating the global status of the nation. However, in 1936 and 1940, the commemorative aspects of the Olympics were coopted by powerful war-related propaganda. During this research, I uncovered notable yet smaller regional sporting events such as the June 1940 East Asian Games held in Japan and a “special Olympics” celebrated by prisoners of war near Nuremberg, Germany in August 1940. In the end, my research considers how countries utilize the Olympics in contemporary commemorative practices both to remember specific depictions of the past as well as building positive images of the nation for the future.

***The Rock n’ Roll of Music and Commemorations of the Falklands Islands War in Post-1982 Argentina*** - (History and International Studies)

By: Maverick DeLain

Faculty Mentor: Dr. Valerie Barske

In this research project, I assess the role of Argentinian rock music, first-hand accounts, and physical art in the collective memory of the Falkland Islands War. In 1982, Argentina invaded the United Kingdom’s Falkland Islands. After Argentina’s failed invasion, then General and acting President Leopoldo Galtieri banned the use of English music, which led to the rise of Argentina’s national music. Argentinian artists, such as musician Raul Porchetto and muralist Martin Ron, sparked dissent in a dictator-controlled country. With time, first-hand accounts corroborated these stories against the dictatorship. In this context, the collective memory of the people shifted to emphasize challenging the dictatorship. From 1982 into the twenty-first century, the use of songwriting and artistic murals educated individuals about the tragedy of the war. Songs such as “Algo de paz” (Some Peace) and the mural work done by Martin Ron in 2012 changed the narrative around the collective memory of the war. Modern-day collections of veteran accounts of the war also shaped the way citizens view the conflict in the Falklands. The use of rock music, mural art, and first-hand accounts demonstrates the impact of art as central to the politicization of cultural history and the construction of contested collective memory.



as historical sources from Tor Einar Fagerland (2011-2014), the leading historian of the project "July 22 and the Negotiation of Memory." More specifically, I argue that commemorative practices, both informal and formal, shape collective memory and national identity formation. The practice of "terror tourism" (Salomonsen 2021) may attract unwanted attention to the area, creating ongoing chances of re-traumatizing local survivors. I focus on the years 2011-2021 to mark the 10-year anniversary of the event. The nature of the attack encourages an intersectional analysis of religion and race, especially given tensions between constructions of national identity and practicing Muslims in Norway. With my research, I highlight the many ways that a country engages in a traumatic time and how the collective memory of this terrorist attack generated a greater sense of national unity.

***The Estonian Song Festival: Unification Under Foreign Occupations (1941-1991)*** - (History and International Studies)

By: Mason Holz

Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the cultural and nationalistic importance of the Estonian Song Festival to the people of Estonia and efforts to retain their identity. Estonia has been historically dominated by foreign powers, including by both the German empire and the Soviet Union during WWII. However, its unique cultural practices and language have united the people throughout the centuries. First created in 1865, the Song Festival helped to establish a national story and to construct a shared sense of national identity under years of political change. More specifically, I argue that Estonia's tradition of cultural commemoration through song festivals helped remind, educate, and reinvent the basis of a shared Estonian cultural heritage at historical moments when these practices were threatened. Soviet efforts to rewrite Estonia's national story into a story of class division was balanced by Estonian musicians who emphasized the traditional desire to rid Estonia of outside influences. Utilizing writings by influential Estonians and interpreting musical lyrics composed by Estonian artists, I conclude that the Estonian Music Festival served as a space to create and recreate meaningful notions of "the nation." Increasing aggression in Eastern Europe proves that the need to stay unified and fight outside threats remains as important through the present-day.

***The Forgotten Architects of Sporting Mega-Events: Remembering the World Cup in Qatar 2022 as Synonymous with Migrant Worker Exploitation and Abuse*** - (History and International Studies)

By: Kyle Beyersdorf

Faculty Mentor: Dr. Valerie Barske

In this research, I examine the remembering of the 2022 Qatar FIFA World Cup as synonymous with a legacy of exploiting migrant workers. FIFA announced in 2010 that Qatar would become the first Middle Eastern country to host their flagship tournament. Qatar sought to challenge Orientalizing stereotypes by emphasizing their nation as a highly developed country. Unfortunately, Euro-American representations reified Orientalist perspectives by calling the "Middle Eastern" or "Arab" World Cup, rather than acknowledging the individual history or advanced cultural development of Qatar. Additionally, media articles equated the exploitation of migrant workers with "slavery" (The Guardian, September 25, 2013). And yet, based on oral testimonies and local humanitarian groups, 6,500 migrant workers lost their lives due to the inhumane working conditions exacerbated by the

### Group 3 Room 261

***Creativity, Community, and Critical Consciousness Among College Students*** - (Sociology and Social Work)

By: Olivia Voge

Faculty Mentor: Dr. Maggie Bohm-Jordan

Moderator: Dr. Maggie Bohm-Jordan

This study explores the relationship between identity and critical consciousness in college students. Research has neglected the role of collective identity in the discussion of those concepts. Through group identity, people gain the collective power to address social conditions. Utilizing social cognitive theory, the study hypothesized creative self-efficacy will be positively correlated with critical motivation and critical action. Similarly, social identity theory can support another hypothesis that group membership and collective identification processes positively influence social action and encourage individuals to act typically of the group. Therefore, a sense of university community and identity as either a scientist or artist should be positively correlated to critical consciousness, as well as creative self-efficacy. A Qualtrics survey was distributed to the current students at UWSP. Questionnaires included measures of creative self-concept, art and science identity, sense of community to university, and critical consciousness. Future implications addressed the need to recognize social injustice which is crucial to making changes; and critical consciousness which measures the analysis of structural inequalities, the capacity and motivation to effect change, and social action to remedy inequality.

***How Family Structure Influence Children's Mental Health and Sleep Pattern*** - (Sociology and Social Work)

By: Sierra Eckardt

Faculty Mentor: Dr. Maggie Bohm-Jordan

Moderator: Dr. Maggie Bohm-Jordan

This preliminary research proposes the effect of children's mental health and sleeping patterns. In other words, how does sleeping too much or too little impacts a child's likelihood of developing a mental illness? It is important to understand how family structure impacts a child's mental health, and discover how children's mental health can be improved. Researchers tend to focus on one aspect, such as environmental factors, but there is the need for multivariate factors. Applying the family systems theory to help explain the position that many functions/dysfunctions can be seen in the members of the family "are manifestations of disturbances in the family". A survey consisting of questions assessing participants' family structure, mental health, and sleep pattern will be utilized. Findings could identify triggers and potential patterns, which can help increase areas of prevention and interventions.

***Mentoring Effects on the Mentor in Relation to the Seven Dimensions of Wellness*** - (Mathematical Sciences- TLC)

By: Melanie Springstroh

Faculty Mentor: Dr. Trisha Lamers, Dr. Maggie Bohm-Jordan

Moderator: Dr. Maggie Bohm-Jordan

Near-peer mentors are a vital part of first-year students' academic success and campus engagement. Many previous research studies focus on the benefits and challenges that a mentee in a peer-mentoring program might experience. While this is an important part of the success of such programs, the mentor experience is also important. Few research studies aim to understand the experience of the near-peer mentor. The purpose of this study is to understand the experience of the

near-peer mentor in relation to the seven dimensions of wellness (emotional, physical, spiritual, environmental, social, intellectual, and career). The participants consist of 20 current and former mentors from three UWSP mentoring programs for first-year students. Participants in the program were selected based on perceived risk-factors for student retention (e.g., first-generation, low income, under-represented minorities, LGBTQ+, etc.). Former and current peer mentors completed a survey which focused on aspects of each of the seven dimensions of wellness. They rated whether they agreed or disagreed with each statement using a Likert scale and responded to open-ended questions. Participants were then invited to join a focus group discussion, where two participants delved deeper into responses from the initial survey. The findings of this study show that while the mentoring experience can increase stress and decrease overall mental health wellbeing for the mentors, mentors overwhelmingly said that they would become a mentor again.

***Remembering The Troubles: The Product of Northern Ireland's Social and Political Identity After the Constitutional Conflict (1960s-Present)*** - (History and International Studies)

By: Jacinda Marquis

Faculty Mentor: Dr. Valerie Barske

In this research, I examine the role and significance of commemorating The Troubles, a period of conflict and violence in Northern Ireland from the late 1960s to 1998, which resulted in the loss of over 3,500 lives and significantly impacted both sides of the border. More specifically, I explore how different forms of commemoration have been used to remember and honor those who died, as well as to reflect on the causes and consequences of the conflict. Through an analysis of memorialization initiatives such as murals, monuments, and commemorative events, I consider how these efforts have been shaped by broader political, social, and cultural contexts. Furthermore, I discuss the impact of commemoration on healing and reconciliation in post-conflict societies. Ultimately, my argument is that commemoration plays a critical role in shaping collective memory and identity as well as in promoting understanding and tolerance in divided societies.

***Stand Up and Be Counted: Commemorating the Australian Civil Rights Movement through Music (1957-2023)*** - (History and International Studies)

By: Casey Kassien

Faculty Mentor: Dr. Valerie Barske

In this project, I evaluate the social power of music in the Australian Civil Rights Movement to express collective memories and emotions. Indigenous and non-Indigenous Australians, starting in the 1950s, sought to return political power stripped from the Indigenous peoples, analogous to the Civil Rights and American Indian Movements in the U.S. In Australia, the constitution denied rights to native inhabitants, namely the Aboriginal and Torres Strait Islander peoples. After a long-fought battle against racial backlash, systemic injustice, and lengthy legal processes, the Aboriginal people of Australia reclaimed their right to equal footing and control over their homeland, especially the Northern Territory. Throughout this research, I examine lived accounts as primary sources through the intersectional lens of race, gender, and indigeneity to unpack the movement's goals and accomplishments. I consider the Warumpi Band and their song "Blackfella/Whitefella" as a direct call for equality, namely calling for Indigenous Australians to "stand up and be counted." More specifically, I demonstrate that the music of the Australian Civil Rights Movement can serve as a powerful means of accessing historical triumphs and trepidations, thereby commemorating Australian history in a format that no written work can entirely emulate. The way in which music echoes throughout the ages serves as a vital tool for all global citizens to access our world's shared history.

***Terror Tourism: Remembering the July 22nd Attacks in Norway (2011-2021)*** - (History and International Studies)

By: Zach Toelle

Faculty Mentor: Dr. Valerie Barske

In this research project, I assess the various ways that the Norwegian government and citizen organizations commemorate the terrorist attacks that occurred on July 22, 2011. Anders Behring Breivik, a self-declared white supremacist, detonated a bomb outside a government building in Oslo. He then proceeded to the island of Utøya to a youth summer camp and opened fire, killing sixty-seven people mostly children. Unpacking this tragedy, I examine testimonies from survivors as well

meanings of Midsommar in comparison and contrast with the culturally specific celebrations of Midsummer as a form of commemorative practice in contemporary Sweden.

***Ni Una Lengua Menos: Commemorating Indigenous Narratives in Mexico through Dance and Music for the International Day of Indigenous People (2013-2023)*** - (History and International Studies)

By: Lizeth Reyes

Faculty Mentor: Dr. Valerie Barske

In this research project, I analyze the Mexican government's effort to revitalize indigenous narratives with commemorative practices like music and folklore dance especially for the International Day of Indigenous People. The fight for indigenous rights arose particularly in Chiapas, Mexico during the Zapatista Movement (1994) led by Emiliano Zapata (1879-1919), founder of the Zapatista Army of National Liberation. Since the Zapatista Movement, the concept of mestizaje, the idea of Eurocentrism and racial mixing, has been challenged in creating counternarratives on the history of indigenous people. Historians and scholars focus on intersectional issues such as nation-building, religion, and colonialism that target native practices and facilitate the loss of indigenous components in folklore dancing. Additionally, scholars also emphasize bodily memory seen in ritualized performances of Mexican folklore that conceal indigenous narratives through attire and body movements. The revitalization of indigenous people serves as a significant stepping-stone for a country like Mexico that grapples with the loss and erasure of indigenous roots. Thus, the new attempts by the Mexican government provide hope and relief to the many indigenous people who had to continuously fight for recognition. Mexico can become a representative of the indigenous people and influence other countries to take further steps for commemorating and acknowledging their indigenous populations.

***No Drones in the Hive, but a Strong Army of Workers-- The Women Behind Waupaca's Carnegie Library*** - (History and International Studies)

By: Taylor Schmidt

Faculty Mentor: Dr. Nancy LoPatin-Lummis

Through the analysis of the Waupaca women's clubs, as well as their meeting minutes, booklets, and newspaper clippings, this work provides a comprehensive account of the foundation of the Waupaca Free Public Library and sheds light on the broader impact of women's clubs in the creation of public libraries. The active part taken by these women in the solicitation of a Carnegie grant, as well as the involvement of the local community in supporting those efforts, speaks to municipal housekeeping's role in the encouragement of women's education and suffrage movements through the strategic use of social norms to forward potentially transgressive ideals. The actions of the Woman's Club of Waupaca and the Monday Night Club were preceded and echoed by similar accounts spanning across Wisconsin and the United States of America. Despite their significant role in the establishment of public libraries, the contributions of women's clubs and organizations are often overlooked or taken for granted. This research aims to bring more attention to the impact and efforts of these groups in creating the public library as we know it.

**Group 4**  
**Room 101**

**\*\*Zoom Presentation\*\***

**Integer Linear Programming for Class Scheduling at Gdansk Tech** - (Mathematical Sciences)

By: Wiktoria Baziak, Dorian Falecki, Artur Gańcza and Seweryn Gdowik

Faculty Mentor: Dr. Andy Felt

Moderator:

Students studying under UWSP Department of Mathematical Sciences Prof. Andy Felt will show their progress in creating an integer linear programming model for class scheduling based on the requirements of the Faculty of Electronics, Telecommunications and Informatics of Gdansk Tech, Poland. We will present the complexity of creating schedules at the faculty. We will also present different stages of the development of the model and discuss in detail the challenges we had to overcome. Lastly, we will discuss further improvements that need to be implemented in order to make the model more accurate.

**Intensity and Diversity of Parasites on Diving vs. Dabbling Duck Species** - (Biology)

By: Maryah Cook, Morgan Marty, Logan Maier, Josey Wolf, Samantha Wegger, Mick Krug

Faculty Mentor: Dr. Sarah Orlofske

Moderator: Dr. Robert Jadin

*Aythya collaris*, the Ring-necked Duck, is a species of diving duck common to North America. These birds feed on aquatic vegetation and invertebrates including snails, which are a common intermediate host for many parasites. For this research, hunter-donated Ring-necked Ducks were collected from Mead Wildlife Area (Central WI) and used to compare the parasite burden and diversity to those of dabbling and diver species of ducks collected from the same area. The dabblers include Wood ducks, Blue-winged Teals, and Green-winged Teals, and the other diver Lesser Scaup. The data for dabblers and Lesser Scaup were taken from past records at the University of Wisconsin-Stevens Point (UWSP) and compared to novel data collected from Ring-necked Ducks. All Ring-necked Ducks were dissected, and all organs, body, and gut washes were examined under dissecting microscopes. Parasites found quantified and preserved for further identification. Across Ring-necked ducks that were dissected a high diversity and abundance of parasites were recovered including ectoparasites such as lice and mites and endoparasites, specifically tapeworms and flatworms. This evidence suggests that diver ducks have a comparable or potentially higher parasite infection level than dabbling ducks in central Wisconsin.

## Haemosporidian Diversity of Waterfowl in Green Bay, WI - (Biology)

By: Gina Magro

Faculty Mentor(s): Dr. Sarah Orlofske and Dr. Robert Jadin Moderator: Dr. Robert Jadin

As Greater (*Aythya marila*) and Lesser Scaup (*Aythya affinis*) populations have declined, research focused on trematode and cestode diversity, linking die-offs to non-native trematodes in the Mississippi flyway. Our objective is to survey haemosporidian prevalence and diversity in understudied diving ducks in Green Bay, WI. Samples included 67 Scaup and 15 other waterfowl representing seven species collected over the 2019-21 seasons. Birds were dissected, liver samples collected, preserved in 95% ethanol, and frozen. From livers we extracted DNA and amplified sequences using established protocols to detect and identify parasites to the genus level, including *Haemoproteus*, *Leucocytozoon*, *Parahaemoproteus*, and *Plasmodium*. Greater Scaup had lower overall prevalence (15.8%) than Lesser Scaup (27.6%). Scaup overall had 18 infections from 14 birds, the majority (61%) being *Leucocytozoon*. Four new lineages were discovered from two Scaup, Goldeneye, and Wood duck. To investigate diversity patterns and host-associations, we constructed a phylogenetic tree revealing a lack of host-specificity across species. A generalized linear model showed that our demographic factors (species, age, sex, or year of collection) were not statistically associated with parasite infection ( $p > 0.05$ ). Monitoring parasites is important for waterfowl management; our study may be representative of the larger Scaup population using the Mississippi flyway.

against their government's inaction and refusal to enact any meaningful change. Over 70,000 people participated in the protest and one month later, the Berlin Wall fell. At the same time, the people of Dresden engaged in protests by forming a 5,000-person human chain along Prager Strasse (Prague Street). On October 9, 2009, the city of Leipzig started Lichtfest, a commemoration of the Monday Protestors and German democracy that happens every year. In Dresden, Die Welt Der DDR is a museum that shows the daily life of the average GDR citizen. While claiming to be non-political, the museum ignores the threat of the Stazi (secret police) and the instability that caused the Peaceful Revolution. As the center of the Monday Protests, Leipzig serves as the model for how to remember the former GDR and to commemorate German Reunification.

**Memorial Movements: Women, Gender, and the Wall in Post-1948 Israel** - (History and International Studies)

By: Lucy Alzuhairi

Faculty Mentor: Dr. Valerie Barske

In this research, I examine the Women of the Wall (WoW) movement from 1988-present. These international Jewish women seek the right to lead prayer services at the women's section of the Western Wall in Jerusalem. The last part of the Jewish Temple that remained in Jerusalem after destruction by the Romans in 70 CE became known as the Western Wall. My project examines how the Women of the Wall activists commemorate the past while seeking religious rights for the present and future. More specifically, I examine primary sources from the official website of the WoW including court orders, images, and documents about the movement. Another key primary source is the film *Sex and the Wailing Wall: The Battle of the Sexes at the Holiest of Sites* (2011). This documentary depicts key leaders of the movement including Anat Hoffman who has been arrested and can no longer return to the Wall. Today, the WoW continue to fight for their beliefs, commemorating their past and remembering the original leaders of the movement. They face opposition from ultra-Orthodox supporters including a counter-protest women's group known as Women for the Wall (W4W). In the end, my research highlights the importance of considering intersectional issues such as gender, religious practice, and political identities as central to understanding commemorative practices and specific cultures of remembrance.

**Midsommar (2019): A Folk Horror Story and Sweden's Traditional Festival** - (History and International Studies)

By: Lydiah Styczynski

Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the traditional celebrations of Sweden's Midsummer as a form of commemorative practice that creates a shared sense of collective memory. More specifically, I analyze how Midsummer and Maypole celebrations relate to new forms of remembrance such as contemporary films. In Sweden, the celebrations surrounding the Maypole focus on Midsommer, the start of solstice, where national invented traditions focus on the roots of a cultural heritage and emphasize the creation of a nostalgic environment that celebrates folkloric traditions. In contrast, the film *Midsommar* (2019) by U.S. director Ari Aster utilizes the genre of a "folk horror film" to explore themes such as grief, community, and cultism. The film exploits occult folkloric images and arguably participates in direct cultural appropriation without careful consideration of the traditional practices, productions, and developments of the festival in the Swedish cultural context. *Midsommar* offers an immersive and distorted depiction of the Hårga village. I seek to unpack the complex

practice. Finally, Pope John Paul may also be remembered through more recent controversies. His comments on abortion and his alleged knowledge of abuses within the church have caused women's rights activists to protest against him to the present-day. On the other hand, anti-abortion activists continue to stage counter-protests in defense and support of his legacy. In this research, I examine how intersectional issues such as ethnicity, gender, and religious practice shape how different groups of people commemorate the past pope and create a lasting impression of him. With my research, I seek to emphasize the historical and social impacts of the Pope as a religious leader even years after his passing.

***Fire, Flowers, and Franquismo: Self-Commemoration of the Valencian Identity in the Fallas Festival (1939-2023)*** - (History and International Studies)

By: Isabella Cronce  
Faculty Mentor: Dr. Valerie Barske

I examine the cultural significance of the Fallas Festival in Valencia, Spain and how Valencians annually deconstruct and reconstruct their collective identity through the festival. Valencian culture and festivities experienced suppression by Francisco Franco's regime from 1939-1975. However, the Fallas remain a longstanding tradition for Valencians that relates to pagan celebrations for the arrival of spring and for remembering St. Joseph. I explore the ways in which Valencian regional identity and collective memory are constructed and represented in the Fallas as a form of self-commemoration. I address primary sources of the fire-burning festival including photos of the ninots (sculptures), the flower offering, and the cremà to showcase how Fallera commissions and funders construct the dominant Valencian identity. This study also addresses important ramifications of the dominant Valencian identity shared in the Fallas, such as the shaping of women's roles in the Fallas and regional identity politics with neighboring communities. Overall, this project analyzes the Fallas Festival as a unique representation of Valencian identity and what it means to "be Valencian" in modern Spain as a form of self-commemoration through festivity and celebration of their traditional culture.

***From Monsters to Miyazaki: Memorializing the Nuclear Debate in Post Hiroshima/Nagasaki Japanese Films*** - (History and International Studies)

By: Brittany Lange  
Faculty Mentor: Dr. Valerie Barske

In this research project, I study the creation of post-WWII Japanese films that focus on nuanced cautionary themes and nuclear anxiety in reaction to the atomic bomb strikes of Hiroshima and Nagasaki in 1945. Through the lens of fantasy and sci-fi films spanning from Gojira (1954) to Akira (1988), then contemporary works of Hayao Miyazaki and Studio Ghibli such as Princess Mononoke (1997) and Howl's Moving Castle (2004), I examine how Japanese popular media serves as a vital tool for grappling with national collective memory and commemorative practices in the aftermath of nuclear tragedy. I investigate hibakusha (atomic bomb survivors) accounts and activism to construct a cohesive discourse of how postwar films fit into the greater pathos of Japanese anti-nuclear protest as the only nation to have suffered a nuclear attack. This topic continues to resonate given global nuclear power debates and the resurgence of protest in Japan post-3/11. By presenting fantastical media depictions in the aftermath of the nuclear bombings, these filmmakers ensure that the interpretation of trans-generational trauma endures through lasting artforms and legacies of such films, reminding the nation and the world of the potential for atrocity represented by the ongoing reliance on nuclear power.

**Group 5**  
**Room 161**

***Regional Integration in Latin America and the Caribbean: CELAC as a new EU*** - (Political Science)

By: Morigan McCoy  
Faculty Mentor: Dr. Jennifer Collins  
Moderator:

This paper examines the structure and functioning of the regional organization the Community of Latin American and Caribbean States or CELAC, which was founded in 2011 as an alternative to the Organization of American States (OAS). Unlike the OAS, CELAC's membership is restricted to Latin American and Caribbean nations and excludes the U.S. and Canada. It was structured this way to ensure proper consideration of Latin American and Caribbean issues and to avoid US and Canadian domineering of the organizational agenda and railroading of policy against the interests of smaller and less powerful Latin American and Caribbean nations, which has been a critique of the OAS. In recent years, however, there has been growing criticism of CELAC for failing to meet its foundational goals. This policy brief analyzes CELAC's structural strengths and weaknesses and suggests possible revisions to the organization's structure and mission statement. Specifically, it suggests that CELAC should be restructured such that it can serve as a vehicle for deeper regional integration along the lines of the European Union. Deeper integration through an invigorated CELAC would strengthen Latin American and Caribbean independence and sovereignty and bolster the region as an important player on the world stage.

***Mirror Images: A Comparative Analysis of the Cuban and Puerto Rican Economies and their Relations with the U.S.*** - (Political Science)

By: Genesis Santos  
Faculty Mentor: Dr. Jennifer Collins  
Moderator:

On the surface, the relationship Cuba and Puerto Rico each have with the United States could not be more different. While the U.S. has treated Cuba as an enemy seeking to isolate and economically strangle it, Puerto Rico is under U.S. jurisdiction as an unincorporated territory. This paper makes a counterintuitive argument: despite their starkly different statuses, U.S. policies have crippled both country's economies in strikingly parallel ways resulting in similar patterns of economic crisis. Specifically, the U.S. economic embargo against Cuba in place since 1962 is compared with the impact of the Jones Act which imposed cabotage laws on Puerto Rico. Cabotage ensure absolute U.S. control over the island's airspace and maritime ports and prevents Puerto Rico from trading freely with other large states. Similarly, the U.S. embargo severely limits Cuba's trading partners and its ability to develop. Puerto Rico's lack of economic independence has impeded its ability to develop a strong economy and supersede its debt and the embargo has had a similar impact on Cuba. Given their deleterious impacts, the paper argues for the rescinding of these policies to allow both countries to enter an era of greater economic prosperity.



**Group 6  
Room 165**

***Dynamics of Two Milwaukee Neighborhoods*** - (Sociology and Social Work)

By: Ryan Bagatta

Faculty Mentor: Dr. David Chunyu

Moderator:

My neighborhood research paper was written about the many differences between the Shorewood and Bay View neighborhoods in the city of Milwaukee. In this research paper I discussed and provided facts about the differences in the makeups of both neighborhoods and the people who live in them. The bulk of the information I gathered for this project was of my own experiences and I also gathered census tract data from the U.S. Census Bureau as well as school district data. In detail I wrote about the education, incomes, rents, housing cost and other social activities in these neighborhoods. Comparison of these elements of the neighborhoods gives the reader a better sense of understanding the small differences. In the broad sense, these two neighborhoods are very similar in many ways, although the small differences I described show just how different the two really are. Without understanding and experiencing these differences one could confuse one neighborhood for the other with just a glance. Not only did my paper describe the cold hard facts and statistics of both neighborhoods showing their differences, but I also gave detailed reports on how more social, cultural, and behavioral aspects of these neighborhoods differ from each other.

***Literary Censorship: The Challenges Through the Years and the Impact it Holds*** - (English)

By: Beau Jordan

Faculty Mentor: Dr. Erica Ringelspauh

Moderator:

Literary censorship has stood as a long-running conflict for teachers, students, and librarians. The targets of the challenges to libraries and school curriculum have dramatically changed over the past few decades. From the 1990s to present day, parents and stakeholders raising challenges, as well as the content being censored, have shifted along with the political and social atmosphere of the country. The frequent challenges against racial conflict and sexual content have taken the backseat, while the assumed “pornographic” content of LGBTQ romance novels have faced a new, unrelenting wave of criticism. Meanwhile, the pushback against “anti-religious” texts has grown to become more prevalent than ever. Literary censorship, while consistent over many decades, has taken a new face, and with it comes the question of the importance and impact it bears on our society.

***The Impact of Immigration and Education Policies on Nigerian Youth*** - (Sociology and Social Work)

By: Chiamaka Obinna

Faculty Mentor: Dr. Maggie Bohm-Jordan

Moderator:

This research proposes a program and policy to assist Nigerian children and youth to adapt to the US educational system. The focus is on educational attainment to avoid children being held back from excelling in their schooling with the Milwaukee Public School districts. Also, the program will assist families through immigration process and understand policies that may provide challenges to Nigerian students. The goal of the program will be to provide support and strategies to help with students’ adjustment to the US educational curriculum.

practice. Finally, Pope John Paul may also be remembered through more recent controversies. His comments on abortion and his alleged knowledge of abuses within the church have caused women's rights activists to protest against him to the present-day. On the other hand, anti-abortion activists continue to stage counter-protests in defense and support of his legacy. In this research, I examine how intersectional issues such as ethnicity, gender, and religious practice shape how different groups of people commemorate the past pope and create a lasting impression of him. With my research, I seek to emphasize the historical and social impacts of the Pope as a religious leader even years after his passing.

***Fire, Flowers, and Franquismo: Self-Commemoration of the Valencian Identity in the Fallas Festival (1939-2023)*** - (History and International Studies)

By: Isabella Cronic

Faculty Mentor: Dr. Valerie Barske

I examine the cultural significance of the Fallas Festival in Valencia, Spain and how Valencians annually deconstruct and reconstruct their collective identity through the festival. Valencian culture and festivities experienced suppression by Francisco Franco’s regime from 1939-1975. However, the Fallas remain a longstanding tradition for Valencians that relates to pagan celebrations for the arrival of spring and for remembering St. Joseph. I explore the ways in which Valencian regional identity and collective memory are constructed and represented in the Fallas as a form of self-commemoration. I address primary sources of the fire-burning festival including photos of the ninots (sculptures), the flower offering, and the cremà to showcase how Fallera commissions and funders construct the dominant Valencian identity. This study also addresses important ramifications of the dominant Valencian identity shared in the Fallas, such as the shaping of women’s roles in the Fallas and regional identity politics with neighboring communities. Overall, this project analyzes the Fallas Festival as a unique representation of Valencian identity and what it means to “be Valencian” in modern Spain as a form of self-commemoration through festivity and celebration of their traditional culture.

***From Monsters to Miyazaki: Memorializing the Nuclear Debate in Post Hiroshima/Nagasaki Japanese Films*** - (History and International Studies)

By: Brittany Lange

Faculty Mentor: Dr. Valerie Barske

In this research project, I study the creation of post-WWII Japanese films that focus on nuanced cautionary themes and nuclear anxiety in reaction to the atomic bomb strikes of Hiroshima and Nagasaki in 1945. Through the lens of fantasy and sci-fi films spanning from Gojira (1954) to Akira (1988), then contemporary works of Hayao Miyazaki and Studio Ghibli such as Princess Mononoke (1997) and Howl’s Moving Castle (2004), I examine how Japanese popular media serves as a vital tool for grappling with national collective memory and commemorative practices in the aftermath of nuclear tragedy. I investigate hibakusha (atomic bomb survivors) accounts and activism to construct a cohesive discourse of how postwar films fit into the greater pathos of Japanese anti-nuclear protest as the only nation to have suffered a nuclear attack. This topic continues to resonate given global nuclear power debates and the resurgence of protest in Japan post-3/11. By presenting fantastical media depictions in the aftermath of the nuclear bombings, these filmmakers ensure that the interpretation of trans-generational trauma endures through lasting artforms and legacies of such films, reminding the nation and the world of the potential for atrocity represented by the ongoing reliance on nuclear power.

***Creative Commemoration: The Fall of the Berlin Wall, Art, and National Identity in Post-World War II Germany*** - (History and International Studies)

By: Olivia Sykes

Faculty Mentor: Dr. Valerie Barske

In this research project, I evaluate art and national identity in post-World War II Germany after the fall of the Berlin Wall in 1989. The Berlin Wall separated families and friends for nearly 30 years. Eventually, when the Berlin Wall fell, Germans came together as one reunified nation. Commemorative artworks showed the national identity of unification of Germany as one country. After the wall fell, the former East and West did not officially unify until almost a year later, highlighting the complexities of combining life under the former Soviet Union with influences from Great Britain, France, and the U.S. Although commemorative practices related to retelling this history include many different forms, art remains one of the most popular forms of commemorating the Berlin Wall. More specifically, I examine the East Side Gallery opened in 1990 with over 100 different paintings related to the Berlin Wall, made to celebrate freedom from oppression and division in Berlin. In addition, I consider the outdoor Berlin Wall Memorial and the Window of Remembrance, a sculpture with windows for photos of the victims of national division.

***Easter Marches as Commemorative Practices: Histories of Protest, Cold War, and Re-Appropriating Religious Holidays in Post-WWII Germany (1960-2023)*** - (History and International Studies)

By: Monica Jones

Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the history of re-appropriating Easter in Germany during the Cold War and beyond as a chance to celebrate peace and to protest against war. As one of the most sacred religious holidays in Christian practices, the celebration of Easter originally served to commemorate death and resurrection. Easter or Ostern in German originally started as a pagan ritual to symbolize the coming of springtime through customs that date back to the second century including giant bonfires, songs, markets, and games. When the Cold War began, many people were frustrated by ongoing violence. In 1960 Hamburg, German citizens began staging demonstrations against war and the rise of nuclear weapons. These Easter Marches peaked in 1968 to 1983 when a student movement in West Germany gathered hundreds of thousands of people against U.S. involvement in Vietnam and the nuclear arms race with the Soviet Union. Over the years, the peace marches remained popular, leading to a re-appropriation of the religious holiday of Easter as a cultural and political protest. On April 8, 2023, the Easter Marches included 2,000 activists in Berlin demanding peace talks between Russia and the Ukraine. More specifically, I analyze how these peace marches alter the commemorative meaning of Easter as a religious, cultural, and political event.

***Exploring the Legacy of Pope Saint John Paul II: Collective Memory, Canonization, Controversy, and Defense (2005-2023)*** - (History and International Studies)

By: Chuck Czapski

Faculty Mentor: Dr. Valerie Barske

Throughout this research project, I explore the remembrance of Pope Saint John Paul II (1920-2005), the first non-Italian pope in hundreds of years and the first from a Slavic nation. After his death, there was a collective mourning in the global Catholic community. As with many figures of international magnitude, he is remembered through monuments and buildings named after him at various schools around the world as well as statues like the one in Czestochowa Poland erected in 2013. He also has a day dedicated to him as a form of remembrance in October. Eventual canonization as a saint by Pope Francis in 2014 represents the quintessential commemorative

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

1<sup>st</sup> and 2<sup>nd</sup> Floors

**School of Behavioral and Social Sciences**

***Bolivia, Chile, and the Green Transition: Prospects for Transforming a Conflictive Relationship*** - (Political Science)

By: Will Scheder

Faculty Mentor: Jennifer Collins

This paper examines relations between Bolivia and Chile, especially as they relate to mineral resources in the Atacama Desert. The paper begins by describing the countries' long and conflictive history. The War of the Pacific, which ended in 1883, saw Chile acquire coastal land from Bolivia leaving the latter a landlocked nation. Since then Bolivia has lagged behind Chile in terms of economic development. The paper considers the difficulties for Bolivia presented by its lack of access to the sea, especially in relation to its ability to extract hydrocarbon and mineral deposits in the Atacama Desert. Both Bolivia and Chile lie in what is now known as the "lithium triangle", an area in South America spanning Argentina, Chile, and Bolivia that contains some of the world's largest deposits of lithium, a critical resource for the green energy transition. The final section explores and suggests ways that Bolivia and Chile can cooperate for mutual benefit to extract this vital resource. The author contends that cooperation will be more beneficial than competition and makes the case that the imperatives to decarbonize the world's economy may offer an opportunity for these countries to overcome their historical conflict and achieve mutually beneficial cooperation.

***Creating a Paleontology Collection for Earth History Instruction*** - (Geography and Geology)

By: Emily Beckstrand

Faculty Mentor: Dr. Samantha Kaplan

The Wisconsin Department of Public Instruction teacher certification requirements include geology coursework on Earth and evolutionary history. Faculty retirements and a move to online instruction resulted in the paleontology collections falling into disarray. Fossil specimens were dropped in drawers or boxes without labels or other identifying information. The aim of the project is to identify and catalog the fossils and organize them in a pedagogically appropriate manner for Earth history instruction. The fossils are being identified using taxonomic keys and existing UWSP Museum of Natural History collections, sorted by taxonomic group, and when possible, grouped by geological age. The greatest proportion of specimens are invertebrates from the Paleozoic – the geologic Era with fossil bearing strata in Wisconsin. A smaller number of fossils represent vertebrates, as well as the Mesozoic and Cenozoic Eras. Because little information is available on the fossil localities, consistently organizing samples by geologic age is challenging. Many of the Paleozoic fossils were time transgressive existing through multiple geological periods. Their biostratigraphic utility will be at an assemblage-level when combined with other fossils representative of a specific time period. The last step is to create teaching sets based on the fossils available. The sets will focus on fossil assemblages, using comparative anatomy to identify differences between key taxonomic groups, and in applicable situations, how certain index fossils can be used to identify geological periods (for example, how Scaphites ammonites can be used to identify a rock as being Late Cretaceous in origin).

***Effects of Developmental Exposure to Bisphenol-S on Reproduction in Rats*** - (Psychology)

By: Carmen Morgan, Mike Ayensu-Mensah, Madeline O'Hara, Matthew Kopplin, Elijah Wibben, Kyla Potter, Jackie Winemiller

Faculty Mentor: Dr. Heather Molenda-Figueira

Developmental exposure to endocrine disruptors may play a role in diverse disorders. This has prompted the removal of chemicals, such as BPA from products. However, BPA has been replaced with Bisphenol-S (BPS), which also alters hormone actions in a variety of tissues. We are investigating the impact of developmental BPS exposure on brain development and reproduction in rats, as a marker of hormone action. BPS was administered to rat dams throughout pregnancy at a dose of 50µg of BPS /kg body weight/day orally. Control dams received saline. Offspring continued with dosing until 45 days of age. Estrous cycles in females were tracked for 15 days before ovariectomy. Two weeks later, females were primed with estrogen and progesterone to induce sexual receptivity. We then video recorded females' reproductive behavior to assess lordosis posture frequency and intensity, as well as frequency of solicitation behaviors. Male reproductive behaviors, including frequency of mounts, intromissions and ejaculations were also recorded beginning at 120 days of age. Each male received 6 sexual behavior tests. As this is an ongoing experiment, we have yet to quantify sexual behaviors, but will present our methodology and predicted outcomes of the study.

***¡El hambre no espera!: The Role of Radical Food Sovereignty Movements in Reshaping our Food Systems*** - (Political Science)

By: Zoe Boyd

Faculty Mentor: Dr. Jennifer Collins

Food sovereignty movements have emerged worldwide in response to social, economic, and environmental crises brought on by the dominant corporate food regime. One especially important moment was the 2007-2008 world food price crisis. While some movements seek to operate within the framework of neoliberal food systems to address present and urgent issues such as hunger, food insecurity, and environmental degradation, other more "radical" movements aim to reshape food systems through profound social change. This can include structural reforms to market and property regimes as well as class-based redistributive demands for resources and land. This paper focuses on approaches to food sovereignty in the Global South, specifically the social advancements of the transnational movement La Via Campesina. Ongoing examination and scholarly debate of the internal structures and actions of La Via Campesina and its sub movements sometimes call into question their efficacy in generating desired social change. Utilizing specific examples from the Mexican food sovereignty movement "Sin Maíz no Hay País," this paper asserts that radical food sovereignty movements have the power to generate meaningful systemic change to food regimes at the local level but struggle to do so as effectively on national and global scales.

community in these new spaces required adapting to different cultures and at times risking a loss of their own cultural identities. To better demonstrate the perseverance of cultural identity through commemorative practices, I analyze ethnic dresses in diasporic Hmong communities, collected surveys on herbal medicine in Northern Thailand, and image collections of embodied practices in the United States. Through these commemorative practices, the Hmong ethnic groups continue to share their historical narratives and maintain their cultural identities while residing in Southeast Asia countries and in diasporic communities.

***Commemoration through Adaptation: The Enduring Way Formula One Racing Remembers Lost Drivers (1968-2020)*** - (History and International Studies)

By: Thomas Coady

Faculty Mentor: Dr. Valerie Barske

This research project explores how Formula One Racing and the Fédération Internationale de l'Automobile (FIA), the governing body of international motorsport, remembers drivers who have died during competition. Specifically, I examine the way these organizations employ the legacies of individual drivers to create change. Since FIA first established rules for their inaugural race in England in 1950, Formula One has become one of the most popular motorsports anywhere in the world. However, like any form of motorsport, Formula One remains dangerous. Out of several hundred drivers, over thirty have died while competing. I emphasize three drivers who lost their lives at the wheel as examples, as I believe that the commemoration of their deaths had the biggest impact on Formula One. Therefore, I analyze case studies related to Jim Clark (1930-1968), Ayrton Senna (1960-1994), and Jules Bianchi (1989-2015). While all three drivers have traditional memorial sites, the FIA also remembers each of them in a unique way. They use every tragedy as an opportunity to re-evaluate safety and invent lifesaving devices and policies, hoping to prevent any future casualties. While statues and other types of memorials are a wonderful way to remember those we have lost, seeing someone survive due to the advancements made following tragedy is a far more impactful and beautiful way to preserve their memories.

***Commemorative Practice: —Lighting the Olympic Torch, Our Inclusive Planetary Commemoration*** - (History and International Studies)

By: Greg Koepel

Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the growth of the modern Olympic movement and the corresponding development of the opening ceremony featuring the Olympic Torch Lighting. The torch lighting signifies the opening of the Olympic games and commemorates the "spirit" of the Olympic movement. The torch lighting ceremony concludes by igniting the Olympic flame in the cauldron created by the host city of the games to house the flame during the course of the games. The ceremony has three primary components: acquiring the flame in Olympia Greece, relaying the flame to the location hosting the games, and lighting the host city's cauldron. I show how the torch lighting ceremony – an obscure practice from ancient Greece – became the inspiration for what has become a worldwide phenomenon: people actively participating in the "torch relay" across multiple continents and passive participation in the ceremony by upwards of half the human population of planet earth. Analyzing histories, professional journals, and mass media I show how politics, commercialism, gender, ability, and disability meet on the ultimate "stage" of intersectionality. I also argue that this intersectionality has driven positive change that has been generally peaceful, joyous and offers a powerful example of humanity coming together through commemoration as celebration and shared hope.

***Collective Trauma and Victim Activism in Japan from the Aum Shinrikyo Sarin Gas Attacks of 1995 -***  
(History and International Studies)

By: Holly Bittner  
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the cultural and political effects of the 1995 Tokyo sarin gas attacks, both in shaping victim activism and the experience of collective trauma in Japan. In 1995, the new religious doomsday group Aum Shinrikyo (Supreme Truth) released deadly sarin nerve gas into the Tokyo subway station, injuring over 6,000 people and killing 14, making it the most catastrophic domestic terroristic attack in Japanese history. As a result of the attack, new organizations appeared advocating for victims and their families. In my research, I examine the work of one organization, Chikatetsu Sarin Jiken Higaisha no Kai (Subway Sarin Incident Victims' Association), and their efforts to remember the victims, their demands for justice against the perpetrators, and their advocacy for government aid for victims of crime. By comparing the public response from media sources and public memory, I examine how collective trauma allowed for change in politics because of the pressure from such organizations and the public. As a result of victim activism, the Japanese government has made steps towards victim aid and memorializing the tragic memory.

***Collectivized Memory of Japanese Imperialism and Korean Independence (1910-1945) in Contemporary South Korean Film and Dramas -*** (History and International Studies)

By: Brayden Hulce  
Faculty Mentor: Dr. Valerie Barske

The history of Japanese colonization and the Korean Independence Movement from 1910 to 1945 remains a critical and sensitive issue in contemporary South Korea. The period marks a tragic time in Korean history when the country was "annexed" or more accurately colonized by Japan, resulting in the loss of political autonomy and cultural identity. Today in South Korea, the commemoration of this period remains a critical component of national cultural and historical identity. In my analysis of South Korean films and dramas, I apply historian Alison Landsberg's theory of "prosthetic memory" (2004) as a way of reinforcing national identity, constructing cultural history, and at times generating "false" memories. South Korean films and dramas often showcase the bravery and resilience of the Korean people during this period, highlighting the sacrifices made by the independence fighters, including those tortured, imprisoned, and executed for their actions. Some critics argue that these depictions sometimes fuel Korean nationalism and even anti-Japanese sentiment, implicit or not. In this paper, I argue that contemporary South Korean films and dramas depicting the historical events of the colonial and independence movement period provide a meaningful framework for understanding the past and commemorating the nation in the present.

***Commemorating Hmong Identities through Fashion, Medicine, and Embodied Performances in the 21st Century -*** (History and International Studies)

By: Pa Chai Yang  
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine how Hmong ethnic groups in Southeast Asia and in diasporic communities around the globe maintain their cultural identities by focusing on fashion, medicine, and embodied performances as commemorative practices. As a result of genocide, persecution, and subsequent migrations, Hmong ethnic groups who have lost their homeland now live in areas such as China, Vietnam, Laos and Thailand. When the Hmong were sought out to aid the CIA during the Vietnam Wars (1954-1975), they were faced with mass genocide forcing them to seek asylum in many other countries such as the United States, France, Australia, etc. Establishing a sense of

***Factors Influencing Happiness, Stress, and Aggression in College Students -*** (Psychology)

By: Amanda Klasinski, Luke Fisher  
Faculty Mentor: Dr. Erica Weisgram

Levels of perceived happiness, levels of stress, and aggression levels are influenced by outside factors. This study is examining how social support, social media usage, and physical activity impact happiness, stress, and aggression. Regarding physical activity, research suggests there is a positive relationship with happiness and a negative relationship with stress and aggression. Regarding social media use, research suggests there is a positive relationship with stress and a negative relationship with happiness. Research on the relationship between aggression and social media use has been inconclusive. Regarding social support, research suggests a positive relationship with happiness as well as a negative relationship with stress and aggression. No research has been conducted regarding college students' happiness, stress, and aggression levels in relation to our three factors. Based on the research, we predict that, for college students, high levels of social support and physical activity with low levels of social media use will produce high levels of happiness and low levels of stress and aggression. The survey we are conducting has been posted on UWSP's SONA System to collect data from current college students at the university. We will be running a linear regression analysis to determine our results. Results will be discussed.

***How Attractiveness and the Stigma of Depression Leads to Perceptions of Individuals' Job Performance and Overall Well-Being -*** (Psychology)

By: Ban Lor, Maddy Miller  
Faculty Mentor: Dr. Erica Weisgram

People can be regarded very differently based on how they look and the labels they are given. Within this study, we consider the perceptions of a person's attractiveness level and examine how these perceptions relate to participants' ratings of various job skill capabilities. We also examine how the stigma of mental illnesses, specifically depression, affects perception of performance in the workplace and a person's overall well-being. We used pictures of previously established conventionally attractive and not conventionally attractive people who were described as having received treatment for depression, and asked participants to rate the person on how they believed this individual would perform on various workplace related skills. Our participants include roughly 100 college age students from the PSYC 110 research pool of various ethnic backgrounds. Data will be analyzed in a 2X3 factorial design and these results can be used to generalize findings within the general population.

***How Family in a Gang Impacts Childrens' Well-Being -*** (Sociology and Social Work)

By: Ruthie Zahm  
Faculty Mentor: Dr. Maggie Bohm-Jordan

This research examines how children with family members in gangs are affected. Factors that greatly impact the development of youth include mental health, emotional health, personal relationships, school performance, and risky behaviors. The study hypothesized that if children did grow up with family members in a gang, many of them would also join the gang. Social learning theory, labeling theory, and theories of trauma abuse and neglect were used to enhance why these children would

make the decision to join a gang. A short survey was distributed to the current student population at the University of Wisconsin-Stevens Point. The purpose of the survey was to determine if having a family member in a gang could possibly impact any of these important developmental factors. Future implications were to examine programs and organizations that specialize in gang prevention and rehabilitation that provides education and inform youth on the risk of gang involvement.

***How Parental Mental Illness and Abuse Impact Childrens' Well-Being*** - (Sociology and Social Work)

By: Milana Becchetti, Heaven Bento  
Faculty Mentor: Dr. Maggie Bohm-Jordan

This study proposes a community/clinical program that offers mental health and substance use providers for both children and adults, as well as family sessions and support groups. This program would offer educational courses for parents and children such as classes on de-escalation, boundaries, ACEs, childhood mental health/substance use, and many other educational opportunities for parents and children to engage in. Support groups/community bonding opportunities would also be offered and encouraged. Having a sense of community is a positive supportive factor for all individuals. The clinical work would focus on individual care (i.e., behavioral health) and family treatment to create cohesion. The overall goal is to provide a space for both parents and children who are being affected by mental health illnesses/ substance use to gain support and treatment that promotes a healthy and safe living space for both the parents and children to thrive. This program's aim is to decrease the risk of the Intergenerational cycle of child abuse and neglect, trauma, and ACE's. Prevention and intervention resources will be provided to minimize barriers and stigmas for families impacted by mental illness and substance use/abuse.

***How the Bridgetown Initiative is Changing the Way we Fight Climate Change*** - (Political Science)

By: Kalli Mikkonen  
Faculty Mentor: Dr. Jennifer Collins

This paper examines the Bridgetown Initiative, a policy designed to fight climate change introduced by Mia Motley the Prime Minister of Barbados at COP27 in November 2022. The paper describes the initiative, compares it to earlier climate accords, and considers its viability. The Bridgetown Initiative focuses on climate change's impact on developing countries and how wealthier countries can assist poorer countries as they try to mitigate and adapt. The Initiative has received praise from countries of varying sizes and wealth. This paper compares the Initiative to the Kyoto Protocol, the Montreal Protocol, and Green Finance in Asia. By comparing it with these other climate accords, the paper aims to understand the ways in which it is different and whether it has a realistic shot of succeeding. After looking at past policies the paper describes the mechanics of the Bridgetown initiative and how it is expected to work. The paper concludes by analyzing the Initiative's likelihood of adoption by societies and governments around the world and its prospects for success. Preliminary research indicates that one of the innovative parts of the Bridgetown Initiative is a new mechanism for paying for climate change that benefits those countries currently suffering its worst effects.

forms of evidence. My sources focus on the dynamic differences between both sides of Bloody Sunday, as this separation becomes a political and religious issue that made peace seem to be an impossible feat. More specifically, I argue that the preservation of collective memory about Bloody Sunday in Northern Ireland has helped lead to a sense of remembrance and honor for the people killed as well as a way to commemorate the historical and cultural significance of their protests for civil rights.

***Clandestine Commemoration: The Ulterior Motives of Memorializing the Cambodian Genocide (1975-Present)*** - (History and International Studies)

By: Sydney Lee  
Faculty Mentor: Dr. Valerie Barske

I examine the competing motivations behind commemorating the Cambodian Genocide, which led to the death of approximately 1.7 million Cambodians. Generally, commemorations are considered noble undertakings that provide closure to survivors, accountability for the guilty, and education to avoid repeating tragic events. Yet, the various commemorations of the Cambodian Genocide remain replete with ulterior motives. Following the collapse of Pol Pot's Khmer Rouge in 1979, opponents began to develop commemorative tourist destinations to bring attention to the "killing fields." I explore the following surreptitious strategies first used by the conquering Vietnamese government through The People's Republic of Kampuchea to the current government of the People's Party of Cambodia. These strategies include the vilification of political enemies, the distancing of guilty parties and power from their earlier acts of atrocity, and the continuing goal of celebrating those in power as the protectors from a reoccurrence of the horrors of the earlier genocide. It is important to recognize that acts of commemoration can serve both noble and nefarious purposes. It is incumbent upon historians, researchers, and the general public to recognize the motivations behind such memorials.

***Collective Memory and Algerian Culture Post Civil War (2002-2023)*** - (History and International Studies)

By: Michael Anderson  
Faculty Mentor: Dr. Valerie Barske

In this research project, I examine the ways in which the Algerian Civil War (1991-2002) continues to shape collective memory. In 1991, the first multi-party elections in Algerian history were held. As the ruling National Liberation Front (FLN) government was defeated swiftly by the new Islamic Salvation Front (FIS), a military coup prevented any newly elected officials from assuming power. Soon after, groups militarized, resulting in the deaths of around 100,000 Algerians. Throughout the eleven official years of the war, many people were assassinated and "disappeared" in military custody especially women. Feminist activist and former Minister of Culture, Khalida Messaoudi (b. 1958) protested the FLN's family codes for a decade by the start of the war. As war ensued, she was also condemned to death by the FIS for confronting a high-ranking member. Messaoudi's efforts, like many, were commemorated in literature. Political and cultural activism from this time was remembered through policy, art, music, and film. As Messaoudi faces a new prison sentence in 2022 for supporting feminist events, a cultural war rages on in Algeria to commemorate the many stories that have been suppressed for over 20 years.



## School of Humanities and Global Studies

### ***Afro-Puerto Rican Commemorative Practices: Cultural Expression through the Ethnic Dance of Bomba (2020-2023)*** - (History and International Studies)

By: Genesis Santos

Faculty Mentor: Valerie Barske

In this research, I examine how Puerto Rico's Afro-Puerto Rican communities commemorate their African roots by the ethnic dance of bomba. Due to colonization (1508-1898), Puerto Rico suffered from a "western" construction of race, which featured a degradation of the island's connection with its blackness. This colonial social construct hindered the embracing of identities such as Afro-Puerto Rican. The town most actively involved with maintaining African legacies has been the northeastern town of Loíza. Historically, Loíza features one of the highest African descent populations on the island. In 2020, Mayor Julia M. Nazario incorporated commemorative ceremonies such as the dance of bomba in local celebrations, which allowed the town to maintain its relationship with practices left by enslaved peoples in this coastal town. This practice of cultural expression continues as the most untouched and timeless example of how African practices have been present in the island since the beginning of colonization. Only recently, this practice has been acknowledged as a vital fragment of our connections with blackness. In my research, I examine how African legacies and identities have been kept alive through the ethnic dance of bomba.

### ***Animal Property Rights: The Middle Ground*** - (Philosophy and Religious Studies)

By: Austin Kubisiak

Faculty Mentor: Dr. Chris Diehm

Animal Property Rights theory is a philosophical and legal framework that works to establish animals as beings capable of having property rights within our legal system. Primarily, this is based on an animal rights theory rather than an animal welfare theory. Animal rights activists, such as Tom Regan, argue that individual animals have inherent and intrinsic value and therefore deserve rights. On the other side, animal welfarists, such as Peter Singer, argue that animals should be treated with respect to their quality of life, and that we should minimize animals' suffering and maximize their quality of life. Animal property rights theory has attracted significant attention in recent years. This paper explores the concept of animal property rights and examines the arguments for and against granting animals legal rights as property owners. It argues that animal property rights is the best option to protect individual animals, species, and biodiversity because it avoids potential philosophical problems with both welfare and rights views, while still giving ethical status to animals.

### ***Bloody Sunday Commemorative Portraits in Derry Ireland (1972-2023)*** - (History and International Studies)

By: Bailey Johnson

Faculty Mentor: Dr. Valerie Barske

In this research paper, I evaluate how the mural portraits created to remember the Bloody Sunday tragedy in Derry Ireland serve as a crucial form of commemorative practice. On January 30, 1972, an estimated 15,000 people gathered in Derry to participate in a civil rights march. Members of the British Army's Parachute Regiment opened fire on the demonstrators in the Bogside, a predominantly Catholic area, killing thirteen civilians and injuring at least fifteen others. In particular, I examine primary sources from the event in 1972, secondary sources on commemorative practices and failed acts of remembrance, and finally the commemorative portraits themselves as central

### ***Impact of ACEs on Children's Behavioral Mental Health*** - (Sociology and Social Work)

By: Madeline Van De Hey

Faculty Mentor: Dr. David Chunyu

The purpose of this research is to prove the causal relationship between having four or more adverse childhood experiences (ACEs) and developing an externalizing mental health condition in later childhood to early adolescence. This connection has been hinted at before by other studies and professionals, but no official conclusion has ever been reached. In order to determine the existence of this relationship, I will take two cohorts of children, which will be separated based on scores from previously completed ACEs screenings, and compare their mental health statuses over the course of ten years. One cohort will consist of participants with less than four total ACEs, the other with four or more. Their mental statuses and diagnostic information will be assessed based on a series of three self-reporting surveys that will be mailed out every two years as the cohorts age. All participants will be randomly selected from various accredited children's hospitals, as most medical facilities offer ACEs screeners. Should my hypothesis prove to be accurate, those children with a score of four or more will develop an increase in behavioral mental health challenges by the end of ten years than those with less than four.

### ***Impact of genetic differences on fear conditioning, forced swim test, and elevated plus maze: A preliminary meta-analysis between C57BL/6J and DBA/2J inbred mouse strains*** - (Psychology)

By: Joy Vandenberg, Grant Atwood, Zach Mikkelson

Faculty Mentor: Dr. Sean Mooney-Leber

Inbred mouse strains are commonly used in research experiments to examine how genetics impact certain behaviors. The DBA/2J (DBA) and C57BL/6J (C57) strains are among the most popular inbred strains used. Previous findings have suggested phenotypic differences between these two strains, however, a broader analysis of publicly available data on these differences has yet to be conducted. This meta-analysis sought to compare phenotypic tendencies between DBA and C57 strains in behavioral tasks commonly employed as animal models of human psychological symptomology including the Forced Swim Test (FST; depression), Elevated Plus Maze (EPM; anxiety), and Contextual Fear Conditioning (CFC; learning). An initial search of the literature procured eight (FST), fourteen (EPM), and thirty-six (CFC) articles for each behavioral task that met our search criteria, of which six, seven, and sixteen, respectively, were used in analysis. Analysis of collected FST data found that C57 mice spent significantly more time immobile than DBA mice ( $p=0.006$ , Hedges'  $g$  value= 1.53). Results of CFC analysis found that C57 animals elicited significantly more freezing behavior than DBA animals ( $p= 0.001$ , Hedges'  $g$  value= 1.51). No differences between strains were found for time spent in the open arm during the EPM ( $p=0.11$ , Hedges'  $g = 0.51$ ). These results confirmed suspected strain differences, suggesting a genetic basis for behavioral traits observed between DBA and C57 mice strains. Such confirmed differences may pave the way for future animal model research examining genetic vulnerability to certain psychopathology such as depression.

***Influence of Housing, Athletics, and Student Organizations on Students' University Perceptions*** - (Psychology)

By: Stephanie Hermann, Elijah Wibben

Faculty Mentor: Dr. Erica Weisgram

Our study explores whether student involvement, participation in athletics, housing status, and/or demographic factors predict UWSP students' sense of campus community and personal perceptions of UWSP. Based on existing research, we predict student involvement, participation in athletics, and housing status will all influence students' sense of community and positive perceptions of UWSP. We also expect individual demographic characteristics will influence students' sense of community and perceptions of UWSP. Participants included UWSP students between the ages of 18 and 30 who were recruited via the PSY 110 participant pool and through social media and on-campus recruitment. Participants completed a short self-report survey via Qualtrics. Regression analyses will be performed to identify which variables best predict the sense of campus community and personal perceptions of UWSP. Results of statistical analyses will be presented.

***Nature as Sacred: An exploratory study on nature, religion, and spirituality*** - (Sociology and Social Work)

By: Clarissa Helms

Faculty Mentor: Dr. David Barry

This research project is starting to scratch at the surface of the question: Is nature a sacred space? Through conducting a school wide online survey (N=1309) given to students at a medium-sized midwestern university, a series of questions about nature, religion, and spirituality are examined. Analysis of this data resulted in significant findings that are discussed.

***Realism's Influence on Cultural Venues in Final Fantasy XIV*** - (Sociology and Social Work)

By: Zoe Butzow

Faculty Mentor: Dr. David Barry

This research is on realism's influence on aquariums and museums in the video game Final Fantasy XIV. It aims to examine how a virtual recreation of aquariums and museums is influenced by the physical equivalent in a virtual world community and why these cultural venues are being built. Additionally, how the limitations and physics of the virtual setting are handled or used in the cultural venues is explored. Social dynamics and rules exist within these virtual settings both from society and the virtual community. While sociology has done a healthy study of offline structures and behaviors it has done little in regard to virtual worlds. Particularly, these virtual worlds are becoming more popular and an avenue for socializing or to partake in things one may do in offline settings. Data collection is done via survey and observation of staff and visitors of cultural venues in Final Fantasy XIV.

6 locations, three in large hydrologically stable wetlands that served as reference sites. Our three treatment locations included a recently created depressional wetland, one wetland in full drawdown, and one in partial drawdown. Up to fifty snails were collected at each site and screened for parasites which were identified based on morphology. An average of over five parasite taxa were present in the reference wetlands. The newly created wetland had one taxa, and the two wetlands with water management applied had three taxa present. The wetland in partial drawdown had two species of snails present. If we included the second species of snail found only at that site, we increased our total to six parasite taxa. Our results suggest that wetland management can alter parasite communities by changing snail host presence. Parasite diversity could potentially be used to assess how drawdowns affect biodiversity and feeding interactions.

***Zebra Finch White Blood Cell Count and Stress*** - (Biology)

By: Mariano Yee Wiedman

Faculty Mentor: Dr. Sarah Jane Alger

The way stress can alter and affect our immune system is a subject that is highly beneficial to study. Immunologists have extensively studied the immunological function of each WBC; with this information we can determine what WBC will be present in an immune response. It is also important to know what external stressors can affect our immune system, and how removing pair bonds can alter our immune system. I believe that environmental sound effects stress in zebra finches and stress will affect their immune system. There is not a lot of knowledge known about how the removal of pair bonded animals can affect their immune system via stress. We exposed zebra finches (a monogamous songbird species) to three different types of calls, their current partner, previous partner, and a stranger's call. We then took blood samples and heterophils to lymphocytes (H: L) ratios are recorded using an Olympus brand BX40 Microsoft. With this data we can determine the stress caused by Environmental factors. This can show us two things, that a new pair bond causes stress in zebra finches and that stress can affect the immune system drastically.

relationship between caller and receiver. Birds were played distance calls of an opposite-sex individual that was either a pair bonded ex-partner, pair bonded current partner, or stranger. After the stimulus was presented, birds were sacrificed, and their brains were fixed. The brains were sectioned coronally, and three serial sections were made. Immunohistochemistry (IHC) was used to stain for proteins produced by immediate early genes *zenk* and *cfos*. Brain sections were then mounted on slides for relevant regions to be analyzed through bright-field microscopy. Using NIS-Elements, we plan to threshold and quantify the number of labeled cells in different regions of the brain. We believe that there will be distinct differences in *zenk* and *cfos* activation within regions mentioned above, between the three experimental groups.

#### ***Timing of Puberty in Mice Transgenic for CCL2*** - (Biology)

By: Elliott Becker

Faculty Mentor: Dr. Karin Bodensteiner

Chemokines are small proteins involved in cell signaling. CCL2 is an inflammatory chemokine involved in immune response. Mice transgenic for CCL2 under regulation of the human glial fibrillary protein (GFAP) promoter overexpress CCL2 in glial cells of the brain. These glial cells can affect the hypothalamus, which moderates hormone secretion in puberty. GFAP expression in the hypothalamus has also been shown to be dependent on estrus cycle stage. Thus, mice transgenic for overexpression of CCL2 can serve as a model for investigating roles of CCL2 in reproductive processes. Previous research in our laboratory found pups born to females transgenic for overexpression of CCL2 weighed more than pups born to wild-type females on 8 out of 12 post-natal days, and female pups born to transgenic dams went through puberty later than those born to wild-type dams. In the present study, we examined timing to puberty in male and female littermates to further examine the influence of CCL2 overexpression on reproduction. Following weaning, we measured time to puberty by checking for vaginal opening in females and preputial separation in males. Timing of puberty in males did not differ ( $p=0.11$ ), but transgenic females went through puberty later than wild type females ( $p=0.02$ ).

#### ***Transition Metal Induced Charge Transfer*** - (Chemistry)

By: Noah Grinde

Faculty Mentor: Dr. Nate Bowling

The synthesis and characterization of a new bipyridyl ligand is reported. Upon the introduction of a guest transition metal, the pyridine moieties force the aromatic end groups together. Aromatic rings in close proximity are known to interact in a phenomenon called  $\pi$ - $\pi$  stacking. This has been previously studied in a similar system. By introducing dinitro and aniline end groups, intramolecular charge transfer (CT) has been successfully induced. CT has applications in catalysis, materials development, molecular recognition, and supramolecular chemistry. As such, the nature of CT interactions has also been extensively studied. This work instead explores how CT can be utilized in molecular recognition. The bipyridyl ligand allows CT to be "turned on" via clamping to a guest transition metal. UV-Vis studies were conducted to examine the electronic properties of the ligand. CT absorption bands were observed as the ligand was titrated with Ag cations.

#### ***Wetland Management Practices Associated with Parasite Diversity*** - (Biology)

By: Roxanne Gasperetti, Sydney Paoli, Shayla Wagner

Faculty Mentor: Dr. Sarah Orlofske

Wetlands support high biodiversity including flatworm parasites that rely on multiple hosts and feeding interactions in their life cycles. Wetland management could influence both host and parasite diversity. Our research objective is to investigate how flatworm diversity responds to wetland drawdowns. Our study site, Mead Wildlife Area, is managed by manipulating hydrology. We sampled

#### ***Self-Conscious Emotions in the Workplace*** - (Psychology)

By: Olivia Baumgartner, Jasmine Hemmer, Amy McGuire, Savannah Mujkanovic, Jordan Schrom

Faculty Mentor: Dr. Mark Ferguson

Self-conscious emotions refer to emotions that we experience when we become aware of ourselves in social settings. Such settings are characterized by the power that we have in our relationships with others, as well as the legitimacy of those relationships. This study examines whether variations in power and legitimacy influence self-conscious emotions in the context of workplace relationships. Two-hundred and ninety-four participants were randomly assigned to read one-of-four scenarios that varied by power (employer or employee) and legitimacy (did or did not deserve treatment). They then completed measures of four self-conscious emotions: pride, guilt, shame, and resentment. We predicted that our different scenarios would predict differences in these emotions.

#### ***Social Identity Salience Affects Environmental Motivations*** - (Psychology)

By: Zach Mikkelson, Allie Waite, Gladys Lara, Olivia Voge

Faculty Mentor: Dr. Mark Ferguson

Social identity refers to that part of our self-concept based on social group memberships. The importance of social identity has become increasingly clear to environmental psychologists. In this study, we examine whether salient social identities affect environmental motivations (such as attitudes and values), as well as willingness to perform sustainable behavior. One-hundred and ninety-seven participants were randomly assigned to one of four social identity salience conditions (artistic, athletic, rebellious, university) or a control condition. They then completed several measures of environmental motivation and willingness to perform sustainable behavior. We predicted that participants across the conditions would report different levels of motivation and willingness to perform behavior.

#### ***Support for Reparations: The Role of Public Park Use and Other Nature Activities*** - (Sociology and Social Work)

By: Olivia Voge

Faculty Mentor: Dr. David Barry

Movements promoting reparations - or attempts to remedy historic trauma inflicted on a group, such as institutionalized slavery - are gaining increasing attention. The number of Americans supporting such compensations has drastically increased in recent years. While there is much discussion, there is little social science research around reparations, especially for Indigenous groups in the US. Some proposed reparations include returning government property, such as public parks, to tribal ownership. This study seeks to gain awareness of attitudes toward these reparations and toward the environment. Participants completed an online survey, which included questions to assess social demographics, activities in nature, and attitudes about environmental issues. We aim to answer: What are significant characteristics for individuals that support these reparations? How does exposure to public parks relate to these attitudes?

***The Effects of a Female Rapper's Sexualized Lyrics on Ambivalent Sexism*** - (Psychology)

By: Savannah Mujkanovic

Faculty Mentor: Dr. Mark Ferguson

Rapper Cardi B's song, WAP, flirted with controversy as it reached the top of Billboard charts. Some view it as an anthem for advancing women's sexual norms, which critics sharply rebuff by declaring it filthy, vulgar, and overly sexualizing. WAP's lyrics center around the physical aspects of women's sexual arousal and explicit acts geared toward women's enjoyment. Historically, male rappers have included explicit sexual material with less controversy while leaving out their sexual partner's perspective. Ambivalent sexism, which includes hostile sexism (HS) and benevolent sexism (BS), explains how emotional responses impact sexist attitudes. HS is based on negative and harmful views that help maintain men's dominance over women. In contrast, BS includes prosocial and intimacy-seeking behaviors, which result in women being kept in stereotypical roles. This study examines the effects of disclosing female sexual experiences in rap music on the affective responses of audiences, and whether these responses influence ambivalent sexism. It also examines gender differences in responses and sexism. We expected that listening to explicit sexual disclosures of women in music will increase emotional responses and ambivalent sexism. We also expected that women in the sexual lyrics condition will report greater happiness, whereas men will report greater guilt.

***The Impact of College Housing on Roommate Conflict and Students' Stress Levels*** - (Psychology)

By: Gladys Lara, Olivia Baumgartner

Faculty Mentor: Dr. Erica Weisgram

This study examined the effect that an individual's college housing status has on perceived levels of conflict and stress. College students make up a large portion of the population that have a roommate. Examining the effects that roommates have on perceived levels of conflict and academic success is important when trying to find ways to make college life more comfortable and easily adaptable. The study was presented to students via the PSYC 110 participant pool and through social media. Students who were a part of the Psych 110 participant pool were rewarded with 0.5 credits after completion of this study. Participants answered a set of questions that measured roommate conflict, stress levels, and academic success. Participants were asked in the survey if they live with roommates in a dorm or a campus suite, at home with their parents, or in an apartment that is leased by them. Data for this survey has not yet been analyzed but a regression will be done in SPSS. We predict that individuals with higher perceived levels of roommate conflict will have lower levels of academic success. We also predict that individuals with higher perceived levels of roommate conflict will have higher levels of stress.

***Sea Urchin Communities and Water Chemistry of Tidepools on the Windward and Leeward Sides of Hawai'i*** - (Biology)

By: Genna Bouzek

The marine intertidal zone is subject to extreme environmental fluctuations on a daily basis. Tide pool communities are shaped by a number of factors including how connected they are to the subtidal zone, the degree and duration of daily water chemistry changes, and a number of other physical factors. In this study we sought to identify environmental variables impacting diversity and abundance of sea urchins, a prominent group of herbivores in the intertidal. Eight tide pools were sampled at each of two sites on the island of Hawai'i, one on the windward side and one on the leeward side. For each pool, we recorded size, temperature, pH, dissolved oxygen, and salinity, along with abundance of each urchin species. As expected, larger tide pools contained more urchins. We detected no relationship between water chemistry and urchin communities *within* sites. However, urchin abundance—especially of that of the dominant species *Echinometra mathaei* ('ina, rock borer urchin)—differed *between* sites: significantly higher on the leeward locality, even when pool size was accounted for. Leeward tide pools also had significantly lower pH, higher salinity, and lower dissolved oxygen than windward side pools. Since these conditions are expected to be detrimental rather than favorable to sea urchins, this suggests that other environmental factors such as wave activity may have a larger influence on sea urchin distributions.

***SEEE CBB SHAReD: Student Enrichment, Engagement, and Equity in Chemistry, Biology, and Biochemistry through Science History And Research Displays*** - (Biology)

By: Quinn Goetsch, Sharayah Lazaroff, Alexa Thomson, Katie Duffy

Faculty Mentor(s): Dr. Lindsay Dresang, Dr. Krista Slemmons

Retention in science, technology, engineering and math (STEM) fields for underrepresented groups is on the decline across the globe, with women and minorities employed in less than 25% of STEM occupations (Noonan, 2017; Ong et al. 2018). However, certain best practices have shown to be effective at improving retention rates for students of all backgrounds. These practices include: creating a welcoming and supportive learning environment, bringing real-world relevance into the classroom, and highlighting careers in STEM. An example of newly employed engagement activities applied elsewhere include setting up QR-codes at STEM career displays with participants using smart devices for STEM-career bingo (Blanchard et al., 2017). We hope to provide similar activities, from competitive scavenger-hunt-style games (and other platforms) to engage K-12 visitors, general members of the public, and our students. These activities are geared around scientific discovery and exploration, accompanied by biographies of people in STEM of many diverse backgrounds. Here we present the current progress of this project, areas which are still in development, and preliminary data from a trial activity pitched as "research game night." These initial results provide useful information on what needs to be adjusted as we continue to build upon these displays, bios, and activities.

***The Effect of Opposite Sex Conspecific Distance Calls on Neuronal Regions Related to Emotional and Social Responses in Zebra Finches*** - (Biology)

By: Carter Thomas, Madeline O'Hara

Faculty Mentor: Dr. Sarah Jane Alger

Zebra finches live in large social groups and rely heavily on distance calls to effectively recognize others, especially their pair-bonded partner. The ability to recognize and appropriately respond to distance calls with respect to their relationship to the caller is extremely important in zebra finches. We would like to explore how different brain regions involved in memory, social behavior, and motivation work in tandem to respond to distance calls differently depending on the social

areas, which significantly increase their adsorptive capacity. Here we investigate how PFAS of varied chain lengths and headgroups adsorb within a MOF and how these results change under equilibrium versus non-equilibrium conditions.

***Phytoremediation with Cannabis Sativa: A Comparative Analysis of Heavy Metal, Soil Type, and Fertilizer Treatments on Plant Fitness*** - (Biology)

By: Nicholas Albers, Mike Mensah-Ayensu, Tyler Jolin, Aster Kabat, Max Kindschuh, Jacob Ollarzabal, Mary Joy Relagio, Zach Tower

Faculty Mentor(s): Dr. Brian Barringer, Dr. Shannon Riha, Dr. Laura Cole, Dr. Ann Impullitti, Dr. Bryant Scharenbroch

Heavy metal contamination negatively impacts a third of arable soils. Soils polluted with heavy metals can reduce agricultural productivity and pose an indirect risk to consumers because crops can take up and sequester dangerous levels of these contaminants. At the same time, phytoremediation, the sequestration of toxins in plant biomass, has the potential to be an economically viable and environmentally friendly method for decontaminating soil. Hemp (*Cannabis sativa*) has been shown to function as an effective phytoremediator, and studies suggest that hemp might retain the potential for industrial use after sequestering soil contaminants. To the extent this is true, hemp farmers would be able to generate a profit while cleaning up the environment at the same time. However, the extent to which hemp can tolerate heavy-metal exposure is not well understood.

In the Fall of 2022, plants from the industrial hemp cultivator Colorado Cherry Wine were grown in the University of Wisconsin Stevens Point greenhouse. We explored questions related to the effects of various soil treatments (soil type and heavy metal and fertilizer concentrations) on the phenological, physiological, and morphological features of the plants. Prior to harvesting, plant height, internode length, chlorophyll production, and photosynthetic rates were measured and recorded. After harvesting, the concentrations of heavy metals in the roots and soil were assessed, as were both vegetative and floral biomass.

Our results offer insight into the use of hemp as both a phytoremediator and a cash crop. Increasing our understanding of the soil conditions that hemp can tolerate will further our capacity to clean up the environment while maintaining economic viability for Wisconsin hemp farmers.

***Understanding Factors Influencing Alcohol and Substance Abuse Stigma*** - (Psychology)

By: Ellie Lovelace

Faculty Mentor: Dr. Erica Weisgram

This research investigates the impact that labels and gender have on substance abuse stigma. In a survey via Qualtrics, participants were asked to read one of twelve different vignettes describing a fictional person that varied the drug type, language, and gender. The study used a 2 Drug type (Alcohol/Drug) \* 2 Wording (Alcoholic, Alcohol use Disorder, Drug addict, Substance Use Disorder) \* 3 Gender (Male, Female, Gender Neutral) ANOVA. Participants then evaluated the fictional person on six different traits and behaviors. The participants rated the statements on a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree, statements were related to social perception. The purpose of this study is to add to the knowledge of stigma associated with addiction disorders. This is important because as individuals work towards being sober need a solid social foundation to integrate to make change. By understanding how gender and language impacts other peoples' perceptions individuals, and providers will be able to better navigate clients' journey to sobriety. Results will be discussed at the symposium.



## School of Biology, Chemistry, and Biochemistry

### ***Analysis of Volatile Esters in Beer by Gas Chromatography-Mass Spectrometry*** - (Chemistry)

By: Nathan te Pas, Cody Korth

Faculty Mentor(s): Dr. Shannon Riha, Dr. Terese Barta

Esters are a class of organic compounds that are actively synthesized by yeast during the beer fermentation process and contribute to a beer's sweet, fruity, or floral aroma and flavor. However, esters are known to be volatile compounds and can degrade with time. This research aims to study the correlation between fermentation temperatures, ester production, and ester volatility. Here, we targeted common esters found in beer: isoamyl acetate (banana flavor), ethyl hexanoate (apple flavor), ethyl octanoate (apricot flavor, fruity and floral aroma), and phenylethyl acetate (fruit and honey aroma). Understanding these relationships can help brew masters, cicerones, and large scale beer companies alike create innovative flavor profiles while contributing to the determination of shelf life.

### ***Anesthesia Response in Handled vs. Non-Handled Surgery Rats*** - (Biology)

By: Katie Lynch, Lauren Meunier

Faculty Mentor(s): Dr. Sarah Jane Alger and Sandie LaVake

The goal for these species is to reduce the stress the rats may be exposed to in order to obtain improved physiologic results prior to and during sedation. Assessing anesthesia risks and identifying potential problems is important for potential complications or contraindications to a procedure. In previous years, during ovariectomy procedures on rats, the rats would not readily take to sedation. This could result in redosing the animal which increases the risk of complications or removing the animal from the project altogether. Our theory is that a highly anxious and stressed rat will be less vulnerable to the effect of KXA used as a sedative. Our project documents and tests this theory of anxiety and anesthetic induction failure to ensure future success prior to and during anesthetic induction. Our work desensitizes eight treatment rats by handling prior to testing by petting, holding, and talking to them. We then test anxiety levels using the elevated plus maze which tests rat anxiety. Introducing more than the typical momentary touch suggests that rat handling plays a role in the reduction of stress prior to undergoing and while under anesthesia.

### ***Comparing Reproductive Traits and Viscin Thread Production in Selfing and Outcrossing Species of Clarkia*** - (Biology)

By: Meghan Schimka, Morgan Gibbs, Frankie Will, and Morgan Jansen

Faculty Mentor(s): Dr. Brian Barringer and Dr. Qiang Sun

In this study, we compared three outcrossing and three selfing species of *Clarkia* to determine to what extent they differ in a number of traits related to plant mating systems. Traits studied included herkogamy, protandry, corolla size, pollen-ovule ratios, and viscin thread production. For each species we quantified herkogamy by measuring the average distance between the anthers and stigma within flowers, protandry by recording the average amount of time between anther/pollen maturation and stigma maturation, and corolla size by measuring the diameter of flowers at their widest point. To estimate pollen-ovule ratios and viscin thread production, flowers from each species were harvested and preserved in a solution of FAA (formalin, acetic acid, and ethanol). Light

could prove useful to hemp breeders and WI hemp farmers in terms of helping them produce a high-value crop that can tolerate the harsh WI climate.

### ***Nitrogen Manipulation of Algal Composition in Bromeliad Phytotelmata*** - (Biology)

By: Lillian Johnson

Faculty Mentor: Dr. Stephanie Lyon

Bromeliads have naturally occurring pools of water held in their upper leaf axles called phytotelmata that are important freshwater ecosystems in terrestrial or aerial systems especially for invertebrates and algae. Algal community composition in tank bromeliad species is typically studied in the natural environment with little to no manipulation of samples. Two individual plants of the genus *Neoregelia* grown in a greenhouse were sampled for an initial community survey. Initial findings showed high abundance of the nitrogen-fixing cyanobacteria species *Gloeotricha* and the green algae genera *Ankistrodesmus* and *Chlorella*. 30 pellets of 3:1:2 ratio fertilizer were added to one of the sample plants to increase the nitrogen present in the system and to see if the abundance of heterocysts (nitrogen-fixing cells) declined in *Gloeotricha*. Phytotelmata algal communities were repeatedly sampled over the course of one year. We observed major seasonal fluctuations in abundance but no effect of nitrogen treatment on algal community composition. We also found no significant effect of nitrogen treatment on heterocyst abundance in *Gloeotricha*.

### ***Perfusion-Fixation Protocol for TEM Imaging of Brain Tissue in Mice*** - (Biology)

By: Jacqueline Korb

Faculty Mentor(s): Dr. Jennifer Bray and Dr. Sol Seppenwol

Proper fixation is critical in transmission electron microscope (TEM) studies because of the artifacts created in poorly fixed (i.e., dying) tissues. This is especially true with brain tissue, due to the fatty myelin of the brain. To prevent tissue breakdown from lack of oxygen and nutrients, perfusion fixation must be used to rapidly and completely fix the tissues for high-resolution TEM images. Briefly, perfusion fixation is a method of circulating fixative via the circulatory system. It consists of replacing the blood of a deeply-anesthetized animal with physiological saline via the heart, then replacing the saline with fixative. These trials have been conducted to refine the mouse perfusion fixation technique in brain tissue. Using the optimized perfusion-fixation protocol, we obtained high-resolution TEM images of the cerebellum from mouse brain. Future studies will use this technique to determine the effects of acute colitis on the ultrastructure of the mouse brain. Previous studies of acute colitis in mice demonstrated that biochemical compounds from the inflamed intestinal tract induce important pathophysiological changes in the brain, most notably, the brain vasculature. This protocol will serve as a method to visualize and characterize the vascular, neuronal, and glial cell changes within the brain of animals with induced colitis.

### ***PFAS Dependent Adsorption within a Metal-Organic Framework*** - (Chemistry)

By: Kiley Wadzinski, Melissa Siewert

Faculty Mentor: Dr. Joe Mondloch

Per- and polyfluoroalkyl substances (PFAS) are a class of man-made chemicals containing at least one -CF<sub>3</sub> moiety. Thousands of unique PFAS have been manufactured because they exhibit properties (including non-stick behavior as well as heat-, stain-, and water-resistance) that are desirable for a wide variety of practical applications. Unfortunately, these properties make PFAS extremely stable and persistent in the environment, and, as such, PFAS have been linked to adverse human health effects. Strategies are therefore needed to remove these compounds from point sources and the environment. One promising strategy is called adsorption—a phenomenon that relies on a pollutant (e.g., PFAS) sticking to the surface of a solid. Metal-Organic Frameworks (MOFs) are particularly attractive for adsorption because they contain void spaces, and therefore large internal surface

***Least Darter (Etheostoma microperca) Population Viability in the Central Sands Ecoregion of Wisconsin*** - (Biology)

By: Cole Weede

Faculty Mentor: Dr. Justin Sipiorski

The Least Darter (*Etheostoma microperca*) is a fish that inhabits lakes and streams throughout the Midwest. In the “Central Sands” of Wisconsin, Least Darters reside in clear cool waters with moderate flow and vegetated shorelines. They occupy similar habitats in small, glacial lakes. We have begun a study to delineate 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/marl substrates. It appears that the water chemistry of these habitats is higher in pH (~8.0), hardness (~250 ppm) and alkalinity (~240 ppm). 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. Perhaps these groundwater issues will affect Least Darter population levels. We plan to conduct detailed studies on aquatic invertebrates, water chemistry, physical habitats, and plant communities to identify critical habitat components for Least Darter survival. This knowledge may guide us to find other Least Darter habitats and populations.

***Modulator Dependent PFAS Adsorption within a Porous Solid*** - (Chemistry)

By: Jackson Mikel, Olivia Stellpflug

Faculty Mentor: Dr. Joe Mondloch

Per- and poly-fluoroalkyl substances (PFAS) are a class of man-made chemicals containing at least one -CF<sub>3</sub> moiety. Thousands of unique PFAS have been manufactured because they exhibit properties (including non-stick behavior as well as heat-, stain-, and water-resistance) that are desirable for a wide variety of practical applications. Unfortunately, these properties make PFAS extremely stable and persistent in the environment, and, as such, PFAS have been linked to adverse human health effects. Strategies are therefore needed to remove these compounds from point sources and the environment. One promising strategy is called adsorption—a phenomenon that relies on a pollutant (e.g., PFAS) sticking to the surface of a solid. Porous solids are particularly attractive for adsorption because they contain void spaces, and therefore large internal surface areas, which significantly increases their adsorptive capacity. Here we describe how the porous solid MOF-808 containing trifluoroacetic acid (TFA) compares to other solids with anionic modulators in affecting the adsorption of PFAS.

***Morphology and Phytochemistry of Wisconsin Feral Hemp Populations*** - (Chemistry)

By: Ashley Prebeg, Aaron Springman, Addison Pfeil, Zach Tower, Danielle Singkofer, Mary Joy Relagio  
Faculty Mentor(s): Dr. Shannon Riha, Dr. Brian Barringer, Dr. Laura Cole, Dr. Ann Impullitti, Dr. Bryant Scharenbroch

Wisconsin was once one of the nation’s top producers of hemp (*Cannabis sativa*) fibers; however, the Controlled Substances Act of 1970 halted production of this high-value crop. While commercial production of hemp ceased, feral populations of *Cannabis sativa* remained present throughout Wisconsin. With the recent passing of the Hemp Farming Act in 2018, these feral populations could be key to the success of Wisconsin’s modern-day hemp industry. Twenty-three different feral hemp populations were grown and harvested in the University of Wisconsin Stevens Point greenhouse to explore whether phenotypical differences influence the morphology and phytochemistry. These data

microscopy was used to estimate pollen ovule ratios and scanning electron microscopy was used to quantify viscin thread production. Our data contribute to a more general understanding of how floral characteristics vary in relation to plant mating systems and shed light on the important roles that viscin threads might play in pollen transfer.

***Dynamic Starch Metabolism in Xylem Tissue of Grapevine Stems*** - (Biology)

By: Kade Fink, Maddalena Martello

Faculty Mentor: Dr. Qiang Sun

Starch is one major type of storage molecule in plants and occurs as granules in plant cells. Plants may convert extra sugars made by photosynthesis into starch molecules for storage and decompose the starch molecules for needs in plant growth and development. Therefore, the appearance, disappearance and reappearance of starch granules in plant cells reflect different physiological statuses of a plant. In this study, we use grapevine vine as a model plant and scanning electron microscopy to investigate the dynamics of starch metabolism in xylem tissues of grapevine stems. Our results have indicated that axial parenchyma cells, ray parenchyma cells and xylem fibers are the locations of starch storage in secondary xylem. Abundance, size and shape of starch granules differed among these cell types and also varied in each cell type in different seasons. Significantly reduced starch granule abundance occurred in xylem fibers in summer, while both types of parenchyma cells contained starch granules throughout year despite some differences in the morphology of starch granules. Detailed quantitative analysis on seasonal differences of some features of starch granules was also performed. The information gained from this study is essential to understanding the starch metabolism in xylem and should also be helpful to improve some viticultural practices for producing grape berries of better quality and/or higher yield.

***Estimating the Intake and Digestibility of Forage Consumed by Dairy Cattle using External Markers*** - (Chemistry)

By: Julia Hickey, Dylan Francis

Faculty Mentor: Dr. Dave Snyder

Extracts of plants and feces were analyzed by gas chromatography – mass spectrometry (GC-MS) for plant wax markers to estimate the intake and digestibility of forage consumed by dairy cattle. External markers consisting of odd-chained alkanes (C<sub>25</sub>-C<sub>35</sub>) derived from plant waxes and a synthetic alkane (C<sub>32</sub>) fed to cattle were quantified in sample extracts using a gas chromatograph equipped with an electron-impact quadrupole mass spectrometer. The use of an accelerated solvent extraction (ASE) system to extract samples more efficiently was also investigated. This work was conducted as a part of an ongoing environmentally integrated dairy management research project being conducted by the USDA’s U.S. Dairy Forage Research Center located in Marshfield, WI.

***Geographic and Temporal Dimensions of Cattail (Typha) Hybridization in Wisconsin Based on Microsatellite Genotyping of Herbarium Specimens*** - (Biology)

By: Amelila Phommady

Faculty Mentor: Dr. Stephanie Lyon

The cattail genus *Typha* is widely distributed across North America, where its presence and local abundance are known to have significant impacts on wetland ecosystems. Of particular concern is formation of the hybrid *T. x glauca* from crosses between the native *T. latifolia* and the now widespread Eurasian species *T. angustifolia* and subsequent gene introgression in populations of the native species, thought to be a major driver of increased invasiveness of cattails over the past several decades. Detailed studies of reproductive morphology in Wisconsin herbarium specimens suggested higher rates of hybridization than indicated by field identifications, but also suggested that

hybridization was concentrated in particular geographic regions and time periods. To further investigate the nature of these putative hybrids, we extracted DNA from 96 herbarium specimens collected over the past five decades and throughout the state of Wisconsin. We amplified four microsatellite markers commonly used to distinguish *T. latifolia*, *T. angustifolia*, *T. x glauca*, and backcrosses with parental species. We report on the relationship between observed phenotypes and genotypes in these specimens, the reliability of selected morphological traits for identifying hybrids and backcrosses, and implications for the temporal and geographical dimensions of hybridization in the state of Wisconsin, including possible environmental correlates of hybrid formation.

#### **Haemosporidian Diversity of Waterfowl in Green Bay, WI - (Biology)**

By: Gina Magro

Faculty Mentor(s): Dr. Sarah Orlofske and Dr. Robert Jadin

As Greater (*Aythya marila*) and Lesser Scaup (*Aythya affinis*) populations have declined, research focused on trematode and cestode diversity, linking die-offs to non-native trematodes in the Mississippi flyway. Our objective is to survey haemosporidian prevalence and diversity in understudied diving ducks in Green Bay, WI. Samples included 67 Scaup and 15 other waterfowl representing seven species collected over the 2019-21 seasons. Birds were dissected, liver samples collected, preserved in 95% ethanol, and frozen. From livers we extracted DNA and amplified sequences using established protocols to detect and identify parasites to the genus level, including *Haemoproteus*, *Leucocytozoon*, *Parahaemoproteus*, and *Plasmodium*. Greater Scaup had lower overall prevalence (15.8%) than Lesser Scaup (27.6%). Scaup overall had 18 infections from 14 birds, the majority (61%) being *Leucocytozoon*. Four new lineages were discovered from two Scaup, Goldeneye, and Wood duck. To investigate diversity patterns and host-associations, we constructed a phylogenetic tree revealing a lack of host-specificity across species. A generalized linear model showed that our demographic factors (species, age, sex, or year of collection) were not statistically associated with parasite infection ( $p > 0.05$ ). Monitoring parasites is important for waterfowl management; our study may be representative of the larger Scaup population using the Mississippi flyway.

#### **Identifying Aquatic Community Resiliency Following Anthropogenic Acidification and Landscape Alterations of Little Rock Lake, in the National Ecological Observatory Network (NEON), Wisconsin, USA. - (Biology)**

By: Abby Jackson

Faculty Mentor: Dr. Krista Slemmons

Fresh water is a critical and endangered resource often susceptible to harmful chemical inputs resulting from anthropogenic activities (e.g., acid atmospheric inputs). In the 1970s, acid rain was a prevalent phenomenon in many regions of the United States. Legislation and more efficient mechanical machinery decreased sulfur dioxide emissions, and to some extent, nitrous oxide emissions, thereby lowering the frequency and severity of acid rain events. These recent reductions in sulfur emissions have lessened this problem facing many ecosystems across North America but a new question has emerged related to the resiliency of these once affected ecosystems. The object of this study is to evaluate the effect of increased acidity on aquatic environments, specifically in Little Rock Lake in northern WI. Beginning in 1985, Little Rock Lake was separated into two basins with a vinyl divider, and the north basin was artificially acidified with sulfuric acid. The untreated south basin was monitored as a control basin. Over the course of six years, the north basin of the lake was

gradually acidified until the overall pH dropped from 6.1 to 4.6. We extracted core samples of sediment from each basin and conducted various analyses to establish data comparisons. The main purpose of the project is to analyze the species composition and richness of diatoms present in the samples and compare those to pre- and post-acidification. Diatoms are sensitive indicators of environmental conditions; species present in sediments reflect historical environmental conditions. Preliminary findings indicate high concentrations of *Tabellaria* sp. and *Aulacoseira* sp. in the samples, both of which are ubiquitous in Wisconsin lakes.

#### **Intensity and Diversity of Parasites on Diving vs. Dabbling Duck Species - (Biology)**

By: Maryah Cook, Morgan Marty, Logan Maier, Josey Wolf, Samantha Wegger, Mick Krug

Faculty Mentor: Dr. Sarah Orlofske

*Aythya collaris*, the Ring-necked Duck, is a species of diving duck common to North America. These birds feed on aquatic vegetation and invertebrates including snails, which are a common intermediate host for many parasites. For this research, hunter-donated Ring-necked Ducks were collected from Mead Wildlife Area (Central WI) and used to compare the parasite burden and diversity to those of dabbling and diver species of ducks collected from the same area. The dabblers include Wood ducks, Blue-winged Teals, and Green-winged Teals, and the other diver Lesser Scaup. The data for dabblers and Lesser Scaup were taken from past records at the University of Wisconsin-Stevens Point (UWSP) and compared to novel data collected from Ring-necked Ducks. All Ring-necked Ducks were dissected, and all organs, body, and gut washes were examined under dissecting microscopes. Parasites found quantified and preserved for further identification. Across Ring-necked ducks that were dissected, a high diversity and abundance of parasites were recovered including ectoparasites such as lice and mites and endoparasites, specifically tapeworms and flatworms. This evidence suggests that diver ducks have a comparable or potentially higher parasite infection level than dabbling ducks in central Wisconsin.

#### ***Internal Parasites of the American Woodcock in the Upper Midwest* - (Biology)**

By: Sydney Paoli, Roxanne Gasperetti, Rianna Taylor

Faculty Mentor: Dr. Sarah Orlofske

The American Woodcock (*Scolopax minor*) is a beloved game bird. Our research objective is to examine parasite communities in American Woodcock collected in the Midwest using current literature, historical museum data, and dissections of host specimens. The woodcock specimens used in this study were hunter donated and harvested in the Central to Northern region of Wisconsin. Feathers were examined for ectoparasites, and the internal organs and tissues were separated and examined for endoparasites. Archived museum parasite slide specimens from the Stephen J. Taft Animal Parasitological Collection were used to provide a historical baseline and basis of comparisons of parasite identification. Our dissection data uncovered a wide diversity of parasite taxa including previously unreported taxa and potential pathogens. *Syngamus trachea* was found, and no current published research describes this species utilizing woodcock as a host. Flatworms in the family Strigeidae were also recovered from the woodcock. Future directions of our study include a broader assortment of samples from varying geographic areas. Our research has relevant implications for conservation biology, as well as parasite taxonomy.