

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

### Group 1 Room 490

#### ***Man or Markets? How Assessments Turn into Tax Values for Homes Across Differing Values -*** (Political Science)

By: Lexi Kurszewski and Charlie Simpson

Faculty Mentor: Brad Mapes-Martins

Moderator: David Barry

This project examines the factors that contribute to the real market value of a home for tax assessment purposes. We examine objective factors such as year, square footage, and acreage in addition to subjective factors like the assessor's home ratings. The aims of this analysis are to determine whether home ratings are fair and equitable, what variables have the greatest influence on determining real market value for the home, and whether home assessment values vary across homes of differing values. Motivation for this research comes from efforts to provide transparency in the calculation of home assessment values and their variation across homes of differing values. This research hopes to promote housing and assessment equality, with research done by Strong Towns being greatly influential for this project.

#### ***Self-Love and Sport: More Than Just a Game -*** (Philosophy)

By: James Sivley

Faculty Mentor: Jason Zinser

Moderator: David Barry

Sports have played an important role in society throughout history and up to today. This paper will focus on what a healthy relationship between sport and the athlete should be. To address this question, I will be giving a view of what the self is, what love is, and argue how and why sport can cultivate self-love. Additionally, I will discuss when pursuing a sport can become unhealthy for an athlete. The findings here are important, because they will help athletes have a healthier, happier, more meaningful relationship with their sport and understand the benefit of developing self-love via sport.

#### ***Comparative Research on American and South Korean Feminist Movements -*** (Sociology and Social Work)

By: Isabella Cronce

Faculty Mentor: David Barry

Moderator: David Barry

As the use of technology changes how we interact with social movements, the 4B Movement of South Korea has spread widely through digital spaces. This recent radical women's movement utilizes four key tenets to push for women's rights and bring fundamental change to Korean society. Despite its digital presence in Korea and China, it's often overlooked in American academic and non-academic spaces as it's a developing movement. This study examines college students' attitudes, beliefs, and reception to the 4B movement and their views on American feminism in comparison. A survey (N = 686) was carried out to capture the views of American college students on the major 4B

tenets, which provide critical looks into how Americans perceive the 4B movement and the potential for similar women's movements to grow here. This research into a newly developing women's movement that is slowly being introduced to Americans through the digital sphere advocates for more attention to be brought to women's movements abroad in order to assess their potential influences on American feminism in the future.

**Group 2  
Room 101**

***Phytoremediation using Cannabis sativa L. - A comparative analysis of the effects of lead and arsenic on the fitness of six lineages of hemp*** - (Biology)

By: Elizabeth VanDomelen (research support of Mary Joy Relagio, Benjamin Loosen, Tyler Jolin, Grace Geils, Alaina Hart, Benjamin Opaneye, Addison Pfeil)

Faculty Mentor(s): Brian Barringer, Ann Impullitti, Shannon Riha      Moderator: Brian Barringer

A large portion of the world's soil is polluted to some capacity by heavy metals. This is especially true for soils used in agriculture. Growing crops in contaminated soil can reduce overall yield as well as pose risks to consumers. One possible solution to remove heavy metals from soil is phytoremediation, the use of plants to remove and sequester toxins. Hemp (*Cannabis sativa*) has been shown to be a successful phytoremediator in multiple studies. In this study, we examined differences among six lineages of industrial hemp, including three modern day lineages and three older lineages growing feral in Wisconsin. Plants were grown from seeds in soil that was either uncontaminated, contaminated with lead, or contaminated with arsenic (lead and arsenic are common soil contaminants). We collected data on height, vegetative and floral biomass, and cannabinoid and terpene concentrations. We also collected data on the concentrations of heavy metals in both vegetative and flower tissues. Our work provides valuable insights into the phytoremediation properties of hemp, which could be applied to develop lineages of hemp that are both efficient in their phytoremediation properties and able to produce a profitable yield for farmers.

***Effects of Environmental Noise and Pair Bond Disruption on Stress Levels and Immune Function in Zebra Finches*** - (Biology)

By: Mariano Yee Wiedman

Faculty Mentor: Sarah Jane Alger

Moderator: Brian Barringer

It is important to know how external and social stressors can affect our immune system. Noise pollution and the disruption of social bonds such as pair bonds in socially monogamous birds can cause high levels of stress. Stress levels can be measured in birds by heterophil to lymphocyte (H:L) ratios. I believe that environmental sound and separation of pair bonded animals effects stress in zebra finches and stress will affect their immune system. Pairs of zebra finches were exposed to white noise or silence once a week for four months. They were then moved into a separate room from their partner in the dark and exposed for 30 minutes to one of three types of calls: their current partner, previous partner, or a stranger's call. After 45 more minutes, we took blood samples. Blood samples were stained to count H:L ratios under a microscope. There was no correlation between white noise and H:L ratios while finches who had a higher affiliation with their partners had a higher H:L ratios compared to those who had low affiliation for their partners. With this data we can determine the stress caused by environmental factors as well as separating pair bonded zebra finches.

**Group 3**  
**Room 165**

***Electrochemical Synthesis using the Shono Oxidation Reaction*** - (Chemistry)

By: Prem Janssen

Faculty Mentor: Robin Tanke

Moderator: Andy Felt

Electrochemical synthesis has been well studied in the fields of inorganic and analytical chemistry but is less well developed in organic chemistry. Electrochemical synthesis is a method that uses electricity as the driving force for an otherwise unfavorable chemical reaction. A standard electrochemical cell was used for the synthesis containing a graphite rod working electrode, one platinum counter electrode and one silver reference electrode. Tetraethylammonium p-toluene sulfonate (0.1 M in methanol) was used as the electrolyte. N-Boc-pyrrolidine was added to the solution and constant current electrolysis was performed. The reaction occurs by the carbamate losing 1 electron then a second electron is lost simultaneously with a proton. The resultant iminium cation reacts with methoxide ion to produce an alpha-substituted carbamate. One of the challenges of electrochemical synthesis is removal of the electrolyte. Therefore, several methods for electrolyte removal were tested. C13 and H1 nuclear NMR data was used to monitor electrolyte removal and  $\alpha$ -methoxy carbamate purification.

***Using integer programming to solve the US National Parks traveling salesperson problem*** - (Mathematics)

By: Lily Laszewski

Faculty Mentor: Andy Felt

Moderator: Andy Felt

We report the results of a computational experiment, in which the goal was to find the shortest path that links all 63 National Parks, beginning and ending at the same park, a so-called Traveling Salesperson Problem. The experiment began with smaller problems, with four to nine parks, and increased the size of the problem, in order to develop a correlation between problem size and solution time. Overall, this TSP experiment was built from our curiosities of tackling large problems, and accomplished with our interests of integer linear programming being solved through Gurobi/AMPL.

***Collegiate Stigmas: Attitudes, Beliefs, and Opinions on Mental Illness*** - (Sociology and Social Work)

By: Nicole Pingel

Faculty Mentor: David Barry

Moderator: Andy Felt

Historically, individuals diagnosed with a mental illness were often met with disgust and judgement, resulting in institutionalization with potentially atrocious conditions and outcomes. Today, mental healthcare has improved significantly. Still, discrimination toward individuals with mental illness persists. This study examines college students' attitudes, beliefs, and opinions toward mental illness. Using a mixed methods approach (survey N = 882; focus group N = 9), this study offers a broad, well-versed perspective on these ideas. The survey focused on gathering overall attitudes and beliefs on mental illness using six mental illnesses; whereas the focus groups conversed about three common stigmas within mental illness. This study offers an important perspective that has not received the attention needed to understand where the next generation is heading in terms of destigmatizing mental illness.

**Group 4  
Room 161**

***“A Perfect Hostess”: Performing Ideal Femininity in Howard’s End and Mrs. Dalloway*** - (English)

By: Zoie Dinehart

Faculty Mentor: Dejan Kuzmanovic

Moderator: Dejan Kuzmanovic

This project delves into the complications of femininity in the early twentieth century, when women often had to choose to behave in a particular way or suffer social repercussions, even if behaving in the socially “standard” way went against their personal values or beliefs. In the case of the characters of Clarissa from Virginia Woolf’s *Mrs. Dalloway* and Margaret of E.M. Forster’s *Howard’s End*, social pressures mold them into performing the part of “the perfect hostess” while clever writing, narration, and character interactions show that both women object to being placed into these constraints, despite their benefits. Still, both choose to perform femininity situationally, as society deems acceptable, but at other times drop the farce and let their true beliefs be known. This analysis expands upon several studies that look at these novels through a gender critical lens, such as Ashton Redell’s “Howard’s End: Margaret, Henry, and the Situational Performance of Gender” and “A Study of Gender in Virginia Woolf’s *Mrs. Dalloway*” by Mahboubeh Moslehi and Niazi Nozar.

***Unconventionality and the English Character in E.M. Forster’s A Room with a View*** (English)

By: Samuel Zajkowski

Faculty Mentor: Dejan Kuzmanovic

Moderator: Dejan Kuzmanovic

This paper analyzes the representations of Forster’s beliefs on unconventionality and the English character in the early twentieth century. His 1908 novel *A Room with a View* puts them in the context of marriage and relationships, with Cecil representing conventionality and George unconventionality; the novel’s heroine Lucy, in choosing one suitor over another, embraces unconventionality. The paper builds on Forster’s own essays on the topic and the scholarship of Tony Brown to explore how these themes permeate this early novel in Forster’s career.

***“Childish Things” – Narnia, Susan Pevensie, and the Nature of Adulthood*** - (English)

By: Taylor Schmidt

Faculty Mentor: Mary Bowman

Moderator: Dejan Kuzmanovic

Many have spoken about the “Problem of Susan”—arguments spanning the full range of reactions to her permanent ejection from Narnia, from frustration with C.S. Lewis’s cruelty to certainty that Susan must have deserved her exile. Through careful analysis of *The Chronicles of Narnia*, as well as Lewis’s other writings, this research argues that Susan was not cast aside for her love of clothes, makeup, and parties. Instead, Lewis’s handling of the Pevensie children implies that, in order to be a morally sound adult, one must preserve a belief in creativity. Susan Pevensie was always an adult drawn in the shape of a child—forced to grow up too quickly by the war and her parents’ absence—and, as she runs toward adulthood because of those pressures, she loses both her family and her own identity. Susan’s story, combined with the public’s reaction to it, clarifies that children’s stories are an essential part of the process of growing up, and that our commentary on their existence is itself part of the coming-of-age they describe.

**Group 5  
Room 131**

***A Discovery of Witches: Sorcery, Heresy, and the Divine in the Middle Ages*** - (English)

By: Taylor Schmidt

Faculty Mentor: Mary Bowman

Moderator: Mary Bowman

The modern recounting of witch trials tend to focus on the implausibility of the supernatural. This disdain for witchcraft as a concept has seeped through the documentation of its history. Whether through the soaring heights of courtly love or the crashing lows of demonic pacts, women were substituted for the divine often within the ambient magical worldview of the Middle Ages. The revilement of witches was not primarily due to their employment of magic, but for the transgressive sexuality which treatises associated with their practice and the innately harmful nature of maleficium. Through historiographical documentation of the study of witchcraft and its stages, combined with analysis of the ambient magical worldview of the middle ages, this research highlights the ways in which religious fervor and the exoticism of mystic traditions has impacted our knowledge of witchcraft on every level and argues for the place of the witch in serious studies of Medieval and Renaissance history.

***How Culture Impacts Domestic Violence*** - (Sociology and Social Work)

By: Destiney Beauchamp-Lindholm, Keyona Hill

Faculty Mentor: Maggie Bohm-Jordan

Moderator:

This preliminary study examines the social and cultural factors that contribute to domestic violence against women, such as gender roles, power dynamics, and interpersonal interactions and the effect they have on global health. The study emphasizes the importance of recognizing how cultures perceive power relations, traditional gender roles, and stereotypes. Also, determine what role cultural relativism has in domestic violence. In conjunction, the study will examine the effect of attachment theory and family systems theory on cultural differentiation. This research will contribute to the development of culturally sensitive treatments and support systems that are tailored to the requirements of varying communities by clarifying the cultural factors that influence domestic violence. Future implication focuses on the influence in attempts to effectively prevent and respond to domestic violence and abuse.

***Violence Against Women*** - (Sociology and Social Work)

By: Madeline Wisniewski

Faculty Mentor: Maggie Bohm-Jordan

Moderator:

This preliminary study examines why women are more often to be victims of domestic violence; higher rates than men and the systemic measures that have been put into place to protect men from receiving prosecution. Estimated with 85% of total domestic violence cases, women are not always safe in their own homes. For centuries, women have fallen victim to their male partners, yet first to be victimized. The core issue that has prevailed for years is why women are the main target of interpersonal violence. To explain the severity of this, one in four women will experience a type of dating violence. Demographics (both victims and perpetrators) and other factors (i.e., rapes, assaults, and death) are discussed and addressing the need for better prevention and policies. Without acknowledging the systemic implications that make women and certain women more vulnerable to violence, we will never protect groups of women that need it.

***Social Connections to Fight Elder Abuse*** - (Sociology and Social Work)

By: Jayda Harris

Faculty Mentor: Maggie Bohm-Jordan

Moderator:

Elders, or individuals aged 65 years or older, that have contributed their whole lives to society are at high risk for elder abuse but increasing social connections for them may be the key to prevent elder abuse. This preliminary research examines how the level of social support impact elder abuse. Whether elders with three or more social connections have a decreased likelihood of experiencing any type of elder abuse. Social connections can be interpersonal relationships with another person that is frequently expressed upon, at least once a week, and examples can be visiting with a friend or peer, having a caregiver, or talking on the phone with family. Previous literature had limited information on the positive correlation between number of social connections and elder abuse. A proposed questionnaire among elders in the United States with levels of independency, types of social support, and experiencing types of abuse. Results from this research can be implemented in future programs and policies to prevent elder abuse.

**Group 6  
Room 261**

***Understanding the Role of Alcohol and Substance Abuse in Interpersonal Violence*** - (Sociology and Social Work)

By: Hazel Radtke

Faculty Mentor: Maggie Bohm-Jordan

Moderator: Maggie Bohm-Jordan

This research proposal aims to investigate the intricate relationship between alcohol and substance abuse and interpersonal violence. Interpersonal violence remains a significant public health concern, with far-reaching consequences for individuals and society. This study seeks to address this gap by employing a mixed-methods approach, combining quantitative surveys and qualitative interviews. Through a comprehensive review of existing literature and data analysis, the research aims to identify patterns and correlations between alcohol and substance abuse and different forms of interpersonal violence, including intimate partner violence, physical assault, and verbal aggression. The anticipated outcomes of this research include a deeper understanding of the complex interplay between alcohol/substance abuse and interpersonal violence, as well as implications for prevention and intervention strategies. By shedding light on these dynamics, this study strives to contribute to the development of more effective public health initiatives aimed at reducing interpersonal violence and its associated harms.

***The Impacts of Parental Substance Abuse on Children*** - (Sociology and Social Work)

By: Cesar Rios

Faculty Mentor: Maggie Bohm-Jordan

Moderator: Maggie Bohm-Jordan

This preliminary study explores the intense impacts of parental substance abuse on children, focusing on various aspects such as physical and psychological effects, educational attainment, decision making, and criminal acts. Utilizing the social learning theory and family system theory as the frameworks for this study, the research aims to understand how children are affected by their parent's substance abuse. Future implications of the study include the development of programs in areas around Stevens Point and Appleton, WI, aimed to provide support and treatment to families and children affected by substance abuse. These programs would focus on education and coping strategies to prevent substance abuse and provide affordable, and accessible care. The goal is to

shed light on the often-overlooked impact of parental substance abuse on children and to provide support and resources to those in need.

***Childhood Trauma Prevention Program in Wisconsin*** - (Sociology and Social Work)

By: Jenna Worzella, Callie Zastrow

Faculty Mentor: Maggie Bohm-Jordan

Moderator: Maggie Bohm-Jordan

This program proposal will focus on interpersonal violence prevention for youth in the community setting. The goal of this program is to be a club (i.e. Boys and Girls Club) where it is more welcoming and less stigmatized. Children who have witnessed or experienced abuse between family members are more likely to repeat the abuse pattern in their relationships as adults. The program can help children/youth join a club or find support and/or shelter that will help them escape interpersonal violence at home. It will allow children/youth to talk about their feelings and create a positive perception on relationships. Wisconsin is one of the few states with domestic violence programs in the U.S. Implementing more community clubs that is geared toward children who witness domestic violence at home may decrease the cycle of violence.

**Group 7  
Room 265**

***Prevalence of Interpersonal Violence Across Generations*** - (Sociology and Social Work)

By: Marc Geronimo

Faculty Mentor: Maggie Bohm-Jordan

Moderator: David Chunyu

This preliminary research discusses and analyzes contemporary research on intimate partner violence (IPV) in relation to the status of being a 1st generation or subsequent generation of immigrant. Although immigrants do not represent most of the United States' population, it is important to discuss and examine the nature of IPV because of the significant part of the nation's culture. Immigrants also have unique and distinct cultures. Cultural assimilation theory is used to explain how assimilation influences the prevalence of IPV. The aim is to analyze whether there are differences in perpetration and victimization of IPV 1st generation and US native-born; and risk factors of IPV prevalence. Analyzing how IPV manifests in the immigrant community can be beneficial because it can expand our understanding of its nature in different and distinct segments of the country.

***How Race is Developed Socially: Through the Lenses of Modes of Incorporation*** - (Sociology and Social Work)

By: Mai Yer Lee

Faculty Mentor: David Chunyu

Moderator: David Chunyu

The origin of racism is a contentious topic. Using the modes of incorporation theory to look at the development of race and ethnicity and how evolving ideas affect attitudes towards immigration, this study seeks to explain the result of change within various racial and ethnic groups. The goal of this study is to explain how racism may have developed, the reasons why, and how it forced these groups to change, or continue to resist. This is a qualitative study based on historical literature that showcases the change in attitudes towards race and using sociological studies of immigration. The authors and researchers have uncovered works that help explain how these processes are historical continuities rather than new phenomena. The research analyzes the development of race and immigration and reveals how those attitudes towards immigrants and certain racial/ethnic groups

were developed from society's needs and trending ideas. The findings indicate that the discriminatory narratives for minority groups were constructed by the dominant group due to economic or social reasons. These insights allow a new perspective on societal dynamics.

***Politics, Immigrants, and Cognitive Dissonance: Public Opinion on Illegal Immigrants Across the Last Four Presidencies*** - (Sociology and Social Work)

By: Kendall Anderson

Faculty Mentor: David Chunyu      Moderator: David Chunyu

Sociologists recognize that America has been founded on the idea of immigration. Most Americans realize this too. While many Americans favor legal immigration, there is a large ideological split between those who approve and those who disprove. Upon finding this, and with knowledge over the current and historic immigration trends, I sought to look at two major sources of public opinion: the media and our government. The last four presidencies have been vastly different regarding personalities, attitudes, objectives, public perception, and policies. This research examines the trend in public perception over immigration over the last four presidencies, and compares it to public perception of the Presidents, both of which are then compared to the reality of the illegal immigration issue. The greatest finding in this research is that public opinion on illegal immigrants is not based in truth. It is heavily subject to media bias. Any drastic changes in public opinion are seldom due to a drastic change in the illegal immigrant stock, rather, it points to a shift in the political landscape in which illegal immigrants are either a scapegoat, or not at the forefront of political agendas.

**Group 8  
Room 105**

***Enhancing Interpersonal Violence Policies and Programs: A Comprehensive Approach in Wisconsin Law Enforcement*** - (Sociology and Social Work)

By: Mikayla Nocchi, Lucas Stokes, Shane Simon

Faculty Mentor: Maggie Bohm-Jordan

Our program project dives into the examination of current police training and support programs for domestic violence. We focus on programs in Portage County Wisconsin, to improve strategies to help stop domestic violence. We expose the good and the bad of numerous organizations such as Victim/witness program, Avail Inc, and CAP services. Recognizing the advantages disadvantages in supporting survivors and provide better programs in the future to prevent domestic violence. The program will provide law enforcements the training to recognize and proper protocol to handle domestic violence cases. It will also focus on teaching children/youth at an early age that violence is unacceptable. The anticipated future implications are to reduce domestic violence rates, increase survival outcomes and overall community awareness of domestic violence. Overall, the program aims to strive to prevent, avoid, and help domestic violence from happening in Portage County, Wisconsin.

***Policy and Prevention: Child Neglect and Abuse During Pregnancy*** - (Sociology and Social Work)

By: Maya Wallace-McKittrick

Faculty Mentor: Maggie Bohm-Jordan

Child abuse and neglect remain pervasive issues affecting the lives of thousands of children worldwide. Despite efforts to address these concerns, the alarming statistics persist, underscoring the urgency for proactive interventions. This policy proposal outlines a comprehensive framework for preventing child abuse and neglect during pregnancy, targeting individuals aspiring to start a family,



expectant families, and those already caring for children. Drawing on existing programs and research, the policy advocates for a multifaceted approach encompassing in-home visitations, resource provision, support systems, education, screening protocols, and community engagement. By addressing risk factors associated with abusive and neglectful parenting and fostering a culture of prevention, the policy aims to interrupt the cycle of childhood maltreatment and safeguard the well-being of children and families. Evaluation mechanisms are proposed to assess the program's effectiveness, with future implications emphasizing reduced incidence of child abuse, improved maternal and child health outcomes, enhanced parenting skills, prevention of intergenerational abuse cycles, cost savings, community empowerment, and continued program development. This policy underscores the collective responsibility to protect children and create a future where every child can thrive in a safe and nurturing environment.

***Outcomes of Childhood Neglect and Abuse in Adults*** - (Sociology and Social Work)

By: Holly Welsh

Faculty Mentor: Maggie Bohm-Jordan                      Moderator:

Adults who have endured neglect or abuse within their childhood often exhibit a higher potential for perpetrating abuse themselves later in life. This preliminary study examines the complex overlap of early life maltreatment and the outcome of abusive behaviors in adulthood. Previous research suggested that individuals who experienced neglect or abuse during early years are at an increased risk of developing unstable coping strategies and impaired socioemotional functioning. These individuals may also struggle with regulating their emotions, forming healthy relationships, and effectively managing stress, causing them to engage in abusive behaviors. Overall, exposure to violence and dysfunction in childhood can shape harmful beliefs and attitudes regarding interpersonal relationships, which reinforces cycles of abuse from generation to generation. Understanding these patterns is crucial for interventions aimed at breaking the cycle of abuse and promoting healthy alternatives for those individuals with a history of childhood neglect or abuse.

***UWSP Transfer Student Study on Social Integration, Satisfaction, Adjustment, Engagement, and Academic Success*** - (Psychology)

By: Sophie Christenson

Faculty Mentor(s): Justin Rueb, Andrew Cinoman, Trish Lamers

The University of Wisconsin-Stevens Point (UWSP) Transfer Student questionnaire on Social Integration, Satisfaction, Adjustment, Engagement, and Academic Success attempts to better understand the transfer student experience at UWSP. In addition, the survey aims to identify factors that support or impede transfer student success. Furthermore, this study investigates whether there is a significant impact of the Join the Pack Transfer (JTP) Student Summer Bridge Program and Student Transition, Advising, and Registration (STAR) on transfer students from the fall cohort of 2022. A Qualtrics survey collected data from students who participated in the above-stated program(s) and students who did not attend. The questionnaire included 39 questions focusing on transfer expectations, experiences before and after the first day of class, and open-ended responses to provide insight for improvement. Questions also covered qualitative and quantitative topics such as demographics, living situations, and credit load to eliminate confounding variables. Accordingly, students in the transfer orientation programs will rate higher in one of the categories (social integration, satisfaction, adjustment, engagement, and academic success) than students who did not participate.

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

CBB Atrium and 1st- 2nd Floors

### **School of Behavioral and Social Sciences**

#### ***A Cross-National Study of Gun Control Legislation*** - (Political Science)

By: Matthew Barton

Faculty Mentor: Jennifer Collins

Gun control laws in the United States are widely recognized as lax, which has been linked to the high rate of mass shootings. Many people cite the National Rifle Association (NRA) as being a major player in blocking gun control legislation. To demonstrate the need for gun control reform and how to get there, this study examines these policies in four developed countries – Canada, Australia, New Zealand, and Switzerland. The paper finds strong evidence that countries can successfully reduce mass shootings and rampant gun violence by implementing reasonable gun control policies. Furthermore, the United States should enact more stringent gun ownership laws, and to do so, politicians and the public must react much more quickly and decisively in the wake of mass casualty events to push through this needed legislation. While the gun lobby in the United States is politically powerful, the experience of other comparable countries demonstrates that it is possible to reduce gun violence when there is the political will to do so; these cases offer insight about how to achieve the political conditions that will make this possible.

#### ***Are There Downsides to Thinking About Ourselves as Individuals?*** - (Psychology)

By: Amy McGuire, Quinlyn Mack

Faculty Mentor: Mark Ferguson

Are there downsides to thinking about ourselves as individuals (as separate and distinct from others) rather than as social group members? Previous research has shown that thinking about ourselves as group members has positive effects on our health and wellness (Steffens et al., 2021). However, little research has examined how thinking about ourselves as individuals affects our health and wellness. More specifically, it remains unclear whether thinking about ourselves as individuals could lead to greater individualism, neoliberalism, or entitlement than those who think about themselves as group members. To address this question, 90 participants were asked to list either their three most important differences from others (personal identity), similarities to others (group identity), or they did not complete a listing task (control condition). Participants then completed measures of individualism, neoliberalism, and entitlement. We predicted that participants who listed their differences will report greater individualism, neoliberalism, and entitlement than those who list their similarities. If so, this would suggest that thinking about oneself as an individual could have potential downsides.

#### ***Breaking the Silence: Youth Empowerment Program*** - (Sociology and Social Work)

By: Jean Xiong

Faculty Mentor: Maggie Bohm-Jordan

This program proposal addresses the issue of sexual assault among adolescents, focusing on its significant impact on survivors' mental health. It stresses the importance of supporting survivors' mental health post-assault to prevent long-term harm. Statistical data highlights the prevalence of child sexual abuse and the challenges survivors face in finding help. Existing organizations such as RAINN, Darkness to Light, and Awareness to Action have their limitations. This proposed program aims to empower survivors and enhance prevention efforts, especially within schools. The program plans to create safe environments, raise awareness, build support systems nationwide, implement strategies, and policy enforcement to address survivors' immediate concern and promote long-term healing. Ongoing evaluation will ensure effectiveness with future expansion, collaboration, advocacy,

and research to increase support services and address community needs. The goal for this program is to continue to provide support for survivors and advocate for systemic changes to combat sexual violence effectively.

***Do Age Comparisons Affect Personality?*** - (Psychology)

By: Natalee Sundby, Eliotte Heinz

Faculty Mentor: Mark Ferguson

How flexible are our personalities? Prior research on the trait approach (see John & Robins, 2022 for a review) suggests that people's age groups are related to their personalities, beliefs, and values. However, other research (Reynolds et al., 2010) suggests that self-categorization and dynamic interactions contribute to understanding the relationship between the self, identity, and personality. This research examines how age comparisons shape personality trait ratings. To test this idea, we had 60 college participants list their three most important similarities to young children, elderly people, or did not complete a list task. They then completed measures of personality traits, life satisfaction, and attachment styles. We predicted that age group comparisons influence people's personalities, well-being, and attachments. Such results would suggest that personality is more flexible than personality researchers previously thought.

***Education and Awareness of Interpersonal Violence in LGBTQ+ Youth*** - (Sociology and Social Work)

By: Bennett Atlee, Dayna Brey, Harmony Houpt

Faculty Mentor: Maggie Bohm-Jordan

This proposed program aims to educate youth on signs of toxic and/or abusive relationships. Central Wisconsin School District (CWSD) lack interpersonal violence programs that protects and supports LGBTQ+ population. The goal for implementing this program is to allow students to have a safe outlet (physical and psychological) when they feel ready to discuss potential issues on violence/abuse, and trauma. The program will be equipped with trained staff and professionals along with online resources for those who may not be ready or unable to come forth.

***Effects of Bisphenol-S on Reproductive Behavior in Female Rats*** - (Psychology)

By: Carmen Morgan, Matthew Kopplin, Jessica Davis, Kyla Potter, Neo Johnson, Natalie Knollenberg, Riley Westover, Chloe Brown, Ka Blia Thao

Faculty Mentor: 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. To control for circulating estradiol levels, females were ovariectomized, and two weeks later, were primed with estrogen and progesterone to induce sexual receptivity. We then video recorded females' reproductive behavior to assess lordosis posture frequency and intensity, frequency of solicitation behaviors, such as hopping darting and ear wiggling, and frequency of rejection behaviors. We did not observe any differences in any of our measured behaviors, indicating that exposure to BPS may not negatively impact reproduction in female rats. We are currently investigating whether there are effects on male sexual behaviors, as it is possible that detrimental effects of BPS are sex-specific.

***Gender Differences in Parents' Invisible Labor and Mental Load*** - (Psychology)

By: Lauren Welander, Jessica Davis, Jackie Winemiller

Faculty Mentor: Erica Weisgram

The mental load of motherhood has been discussed in the popular press in a variety of different ways. However, relatively little psychological research has been devoted to its study. The present study will examine gender differences in parents' participation in mental load activities as reflected on by undergraduate students. Participants include 40 undergraduate students who reside in two-parent families. Results will be discussed.

***Gender Identity Moderates the Effect of Demographic Change on Identity-Strengthening Behavior*** - (Psychology)

By: Olivia Voge, Sarah Budde

Faculty Mentor: Mark Ferguson

Many studies (e.g., Outten and Schmitt, 2018) show that demographic declines in one's ingroup lead to identity-strengthening behavior. To test this idea, 326 participants (187 females and 139 males) were randomly-assigned to one of four conditions. We examined whether this was true for Wisconsin deer hunters. In a 2 (past numbers of hunters: low, high) x 2 (present numbers of hunters: low, high) between-subjects experimental design, participants were presented with a graph showing the number of hunters in the past and the number in the present. For instance, participants in the past-high, and present-low condition viewed a graph showing that the number of hunters in Wisconsin has increased over the past 40 years. Participants then completed a measure of their willingness to perform hunting-related behaviors (e.g., purchasing hunting gear). Based on our previous work, we expected that male hunters in the high past-low present condition would report greater willingness to engage in hunting-related behaviors than those in the other conditions. However, we did not expect the same results for women.

***Genetic influence on cognitive and locomotor behavior during adolescence – a strain comparison between C57BL/6J and DBA/2J*** - (Psychology)

By: Anna Barker, Grant Atwood, Joy Vandenberg, Miranda Gust, Lindsay Nielsen

Faculty Mentor: Sean Mooney-Leber

Behavioral development is a defining factor during the adolescent period. Nevertheless, the role certain factors, such as genetics, play in behavioral development during adolescence is largely understudied. We utilized two commonly used inbred mouse strains (C57BL/6J and DBA/2J; PND 35 +/- 3) to further understand the role genetics may play in learning capability and locomotor behavior differences during the adolescent period. The following behavioral tests were used to analyze cognitive development: novel object location and Y-maze. For locomotor behaviors, we conducted the open field test. We observed a significant difference in the open field test with the DBA2J strain expressing increased locomotor behavior and reduced time in the center during the open field test, when compared to C57. No strain differences were found in the y-maze or novel object location. Based on these results, the DBA2J strain expressed higher levels of anxiety-like behavior and reduced levels of locomotor behavior. The lack of strain differences in the cognitive assessments suggests that genetic differences between these two strains do not influence working or spatial working memory. Continued exploration of more strains and different forms of memory would further establish the role genetics play in adolescent behaviors.

***Holding Up Half of the Sky: Feminism and the Chinese Communist Revolution*** - (Political Science)

By: Oscar Wyss

Faculty Mentor: Jennifer Collins

This paper seeks to understand why, despite a strong rhetorical commitment to gender equality on the part of many male and female leaders and cadre, the Chinese Communist Revolution ultimately failed to fully emancipate women. Using scholarly sources on Chinese feminism and feminist

movements, this paper analyzes the evolution of these movements in the twentieth century focusing especially on interactions with the state and party after the 1949 Revolution. Within the Chinese Communist Party, feminism was often viewed as secondary and bourgeois. While Chinese Communists undertook numerous reforms aimed at emancipating women, in every case they pulled back in the face of societal resistance. This paper analyzes several of these failed initiatives and finds that the persistence of gender inequality after the revolution was not reflective of communist ideology but resulted from the difficulty of challenging entrenched cultural norms that pre-dated the Revolution. Furthermore, the feminist movement in China failed in its quest for gender equity due to men's shortsightedness with regards to the importance of women's liberation, which resulted in the relegation of this issue to a secondary position within the revolutionary struggle.

***How Long Will This Take? Finding the Length of Treatment of Mental Health Diagnoses in Adolescents and Teens*** - (Sociology and Social Work)

By: Micah Kurtzman

Faculty Mentor: Jess Bowers

The purpose of this research is to identify the correlation between specific mental health diagnoses (Attention-Deficit/Hyperactivity Disorder, Disruptive Mood Dysregulation Disorder, and Generalized Anxiety Disorder) and length of treatment in youths and teenagers. There is a gap in knowledge when it comes to finding an average length of treatment for mental health disorders which this research strives to fill. Using a longitudinal-cohort approach, this data analyzed the number of days that a child received mental health treatment and reasons for discharge from mental health treatment programs as related to specific mental health diagnoses. While the research concludes that there is a significant difference in length of treatment for differing mental health diagnoses, it also needs to be stressed that many other factors can and do play a significant role in mental health treatment. This study helps to fill gaps in knowledge by finding an average length of treatment for varying mental health diagnoses, as well as calculating the impact of other factors (success rates by diagnosis and sex). Further research should be conducted to analyze other treatment methods.

***Impact of acute restraint stress on anxiety-and depressive-like behaviors: a preliminary meta-analysis*** - (Psychology)

By: Miranda Gust, Grant Atwood, Lindsay Nielsen, Anna Barker, Joseph Walstrom, Emily Nielsen, Joy Vandenberg, Sophia Ellis, Max Seppelt

Faculty Mentor: Sean Mooney-Leber

The link between stress exposure and the emergence of psychiatric disorders is well-documented, yet the impact of acute stress on anxiety- and depressive-like behaviors lacks a comprehensive quantitative analysis. This preliminary meta-analysis aims to bridge this gap by systematically reviewing studies that compare animals exposed to acute stress against non-stressed controls regarding anxiety and depressive-like behaviors. Utilizing search terms "acute restraint stress forced swim," and "acute restraint stress elevated plus maze," we compiled data from tables and graphs that compared these behaviors. From the analysis, we expect that acute restraint stress, when compared to appropriate non-stressed controls, will result in a significant increase in depressive-like behavior in the forced swim and anxiety-like behavior in the elevated plus maze. Moreover, when available we plan on examining potential mediating factors such as species, sex, duration of stress, and age of stress exposure to see if certain populations more susceptible to stress exposure. This comprehensive quantitative analysis lays the groundwork for further research into the neurobiological mechanisms underlying stress-induced changes in behavior, with implications for understanding stress-related psychiatric conditions.

***Impact of acute restraint stress on depressive behaviors in forced swim test in adult inbred mice – C57BL/6J and DBA/2J comparison*** - (Psychology)

By: Grant Atwood, Anna Barker, Joseph Walstrom, Miranda Gust

Faculty Mentor: Sean Mooney-Leber

Previous studies have shown that stress enhances depressive behaviors in mice. However, few models have looked at the role genetics plays in the development of depressive behaviors following stress. Here we aim to examine the impact of stress on depressive-like behaviors using two inbred mouse strains, C57BL/6J and DBA/2J. Our preliminary results failed to see a difference between acute restraint stress (1hr) and increased depressive behaviors (immobility) in forced swim in either inbred strain. Conversely, we found a clear strain difference between C57BL/6J and DBA/2J inbred strains in their baseline depressive-like behaviors. Specifically, C57BL/6J spend significantly more time immobile compared to DBA/2J, indicating C57BL/6J have a sensitive genome to stress that results in a higher quantity of depressive-like behaviors. Interestingly a similar behavioral outcome was observed 1-week post stress exposure, suggesting a stable behavioral phenotype. When examining gene candidates in publicly available datasets, we found substantial genetic variation between the two inbred strains in genes associated with depressive-like behaviors in rodents and depression in humans. Further investigation into these targets and the role they may play in our observed strain difference is warranted.

***The influence of genetic backgrounds on affective behavioral expression during adolescence – a C57BL/6J and DBA/2J comparison*** - (Psychology)

By: Emily Nielsen, Joseph Walstrom, Max Seppelt, Sophia Ellis

Faculty Mentor: Sean Mooney-Leber

This study aims to understand adolescent manifestation of anxiety- and depressive-like outcomes, while considering genetic background and sex as potential influencers. Anxiety-and depressive-like behaviors were tested using adolescent inbred mouse strains, C57BL/6J and DBA/2J. Mice were exposed to light-dark box and forced swim behavioral tests. Single nucleotide polymorphism (SNP) analyses were run to determine possible candidate genes for behavior differences between strains. Adolescent C57BL/6J mice spent significantly more time in light area and had significantly more transitions between the light to dark compartments when compared to DBA/2J mice, indicating that DBA/2J mice show higher levels of anxiety-like behavior during adolescence. Forced swim results showed that C57BL/6J spent significantly more time immobile compared to DBA/2J mice, indicating that C57BL/6J mice show more depressive-like behaviors during adolescence. Research on candidate genes shows differences that could influence behavioral outcomes during adolescence. SNP analysis on top candidate genes for anxiety includes the *Drd2* gene coding for the dopamine D2 receptor. Others include GABA receptors *Gabra1* and *Gabbr1* and *Nr3c1* coding for the glucocorticoid receptor. Although not definitive, SNPs within these genes between strains could help explain the observed behavioral differences within this study. Continued genetic analysis will determine the polygenic influence on adolescent behaviors.

***Mum! Dad! Bingo! Gender Roles in Bluey!*** - (Psychology)

By: Jessica Davis, Lauren Welander, Jackie Winemiller

Faculty Mentor: Erica Weisgram, Heather Molenda-Figueira

In this study, we examined masculine and feminine gender roles in the children's program, Bluey!. The results indicate that for each of the characters, there was not a significant difference in the number of masculine and feminine characteristics exhibited indicating that the show depicts an egalitarian approach to family dynamics.

***Perception on Publicized Sexual Assault Cases Among Celebrities*** - (Sociology and Social Work)

By: Quinlyn Mack

Faculty Mentor: Maggie Bohm-Jordan

This preliminary study examines how the public perceives sexual assault cases committed by celebrities. There is limited research on celebrities' public perception before and after cases of interpersonal violence. However, with celebrity athletes, the response is to focus on sports and not outside circumstances. Also, male celebrities appeared more likely to commit sexual harassment or sexual assault (as a combined measure) than the average American man (Lankford, et al, 2023). The study uses power theory to examine relations and dominance. A questionnaire will be used to analyze public opinions on celebrities and their committed cases on IPV. In addition, demographic information will be collected to compare thoughts and perceptions of interpersonal violence across gender, race, and economic status. With the high prominent celebrities in our culture, it is important for celebrities to be positive role models and understand the career consequence of interpersonal violence.

***Perceptions of Power: How Superhero and Villain Identities Shape Psychological Outcomes*** -

(Psychology)

By: Jasmine Hemmer, Rachael Bouwer, Carmen Morgan, Isabelle Schmitt, Kimmy Lecheler, Leo Smith

Faculty Mentor: Mark Ferguson

Many comic book superheroes emerged during the Great Depression—a time in which people were content to mentally escape the tough conditions in American society (Robb, 2014). But what if superheroes offer us more than an escape? For instance, maybe they also help us to feel more powerful than we would otherwise. Keltner et al. (2003) shows how feeling powerful influences our thoughts, feelings, and behavior. The question is whether thinking about oneself as a superhero does the same. More specifically, our research examines whether thinking about oneself as a superhero or villain affects whether people feel powerful, empathetic, or motivated to challenge injustice. Two-hundred and ninety-three UWSP students were randomly-assigned to write a story about a day in their life as if they were a superhero, supervillain, or as themselves (a control condition). Participants then completed questions about their feelings of power (efficacy and optimism), empathy, and prosocial behavior. We hypothesized that participants in the hero and villain conditions will report stronger feelings of efficacy and optimism than in the control condition. We also predicted that participants in the hero condition will report greater empathy and prosocial behavior than in the villain or control conditions.

***Political Ideology: How Utopian and Dystopian Literature Help Envision a New World*** - (Political Science)

By: Morigan McCoy

Faculty Mentor: Jennifer Collins

This research project explores several diverse radical political ideologies through an analysis of relevant utopian and dystopian literature. Radical ideologies entail a vision of a new world and literature has often been a venue through which utopian and dystopian projects are imagined and visualized. The core of the project entailed reading four novels, each representing a highly divergent political vision, and analyzing the political ideology and its related vision as manifested in the respective novel. I use additional sources on the relevant political ideologies to identify the ideological manifestations of belief in each novel and secondary literature on the novels themselves to better understand their impact on the real-world political ideological vision. The novels span four distinct ideologies: Racial (White Supremacy), Ecological (Eco socialist & Ecofeminist), Technological (Accelerationism), and Gender (Radical Feminism). My analysis illuminates salient features of these

radical political ideologies and their visions for society through an analysis of these novels, thus demonstrating the role literature can play in political imagination.

***Sexual Assault Reporting on Survivors' Mental Health*** - (Sociology and Social Work)

By: Jessica Davis, Lauren Welander

Faculty Mentor: Maggie Bohm-Jordan

This preliminary research examines why survivors have difficulty reporting and the kind of mental implications reporting can pose. There is often a stigma attached to reporting sexual assault, and that can affect the survivor's mental health as well as their decision to report. Understanding how resources can change the way survivors report cases and different types of support may increase reporting rate. The study addresses two research questions on sexual assault reporting and survivors' mental health; 1) Do mental health outcomes vary based on the form of reporting (campus resource, nurse, police, etc.) and 2) whether their mental health outcomes are better for survivors who reported their assault. Cultural assimilation theory and gender power theory are utilized to explain how/why survivors can be affected by reporting. Future research will address the intersectional approach by understanding other demographic factors that could affect survivors' comfortability with reporting.

***Strain differences between C57BL/6J and DBA/2J mice in offspring production and parental care*** - (Psychology)

By: Lindsay Nielsen, Emily Nielsen

Faculty Mentor: Sean Mooney-Leber

This study aims to examine the differences in offspring production and parental care between C57BL/6J and DBA/2J strains. Maintaining a continuous production of offspring is critical for the species' survival. Further, previous studies have suggested that parental care differences during the neonatal period can influence the success of offspring by promoting healthy behavioral development. In this study, a pair of (male and female) mice were housed together for the entirety of the breeding, birthing, and neonatal period. Strain differences were evaluated over a three-birth span. For each birth, data on the average number of offspring per birth, average number of days between births, and success/failure to wean ratio was collected. For successful first-time births, C57BL/6J pairings had a significantly higher amount of successfully weaned litters when compared to DBA/2J mice. Significant differences were also observed in the time between litters, with the C57BL/6J mice giving birth to a faster first litter but a slower second litter. Lastly, no differences in litter sizes were observed, when controlling for failed litter. These results demonstrate that genetic differences among C57BL/6J and DBA/2J influence offspring prosperity.

***UWSP Transfer Student Study on Social Integration, Satisfaction, Adjustment, Engagement, and Academic Success*** - (Psychology)

By: Sophie Christenson

Faculty Mentor(s): Justin Rueb, Andrew Cinoman, Trish Lamers

The University of Wisconsin-Stevens Point (UWSP) Transfer Student questionnaire on Social Integration, Satisfaction, Adjustment, Engagement, and Academic Success attempts to better understand the transfer student experience at UWSP. In addition, the survey aims to identify factors that support or impede transfer student success. Furthermore, this study investigates whether there is a significant impact of the Join the Pack Transfer (JTP) Student Summer Bridge Program and Student Transition, Advising, and Registration (STAR) on transfer students from the fall cohort of 2022. A Qualtrics survey collected data from students who participated in the above-stated



program(s) and students who did not attend. The questionnaire included 39 questions focusing on transfer expectations, experiences before and after the first day of class, and open-ended responses to provide insight for improvement. Questions also covered qualitative and quantitative topics such as demographics, living situations, and credit load to eliminate confounding variables. Accordingly, students in the transfer orientation programs will rate higher in one of the categories (social integration, satisfaction, adjustment, engagement, and academic success) than students who did not participate.

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

### **School of Biology, Chemistry, and Biochemistry**

#### ***Absence of Phenotypic Changes in the Common Redpoll (*Acanthis flammea*) in Central Wisconsin - (Biology)***

By: Josiah Gritter, Sophie Hauser, Dana Lotz, Rylie Ullrich

Faculty Mentor: Robert Jadin

Common Redpolls (*Acanthis flammea*) are migratory finches, spending the winter in Wisconsin, and can be found at bird feeders or perching in trees and shrubs. These birds' diet consists of small seeds, other plant material, and arthropods. In North America, their wintering distribution overlaps with human occupancy, likely increasing their presence at bird feeders, where their preferred food items are abundant. Many wonder what effects urbanization and climate change have on birds over time. Due to urbanization over the past 100 years in Portage County, WI, we studied the potential resulting change of morphology in Common Redpolls. Utilizing the specimens in the Vincent A. Heig Ornithology Collection from UWSP, we investigated the differences in body condition and body size over time, and the effects of body condition on body size in central Wisconsin. By using a standard linear regression, we found no significant changes in either metric over time and there was no strong correlation between these two factors.

#### ***Adsorption of PFAS in Nanoporous Solids - (Chemistry)***

By: Brody Berens, Jamie Conner, Jackson Mikel, Sierra Omernik

Faculty Mentor(s): Joe Mondloch

Per- and polyfluoroalkyl species (aka forever chemicals) contain at least one fully fluorinated carbon atom. They are broadly used in society because of their desirable properties such as their high chemical and thermal stability and ability to repel water, oil, and grease. These same properties ensure that PFAS persist in the environment as well as in animals and humans. Unfortunately, PFAS have been shown to have negative health impacts including increased cholesterol, lower antibody response to vaccines, low birth weights, and cancer. Here we evaluate the ability of nanoporous solids termed MOF-808-FA and MOF-808-TFA to remove PFAS from water and investigate how they bind to the MOF.

#### ***Characterization of Hemp Pathogens in Central Wisconsin - (Biology)***

By: Mackaelyn Wagoner, Liberty Klug

Faculty Mentor(s): Ann Impullitti, Brian Barringer, Bryant Scharenbroch

During the 1940's, hemp plants (*Cannabis sativa*) were widely grown in Wisconsin for production of ropes for WWII. The mass growing of these plants led to many feral populations existing throughout the state decades later. In 2022, feral hemp seeds were sown in a greenhouse and transplanted along with a compost application to a field in Central Wisconsin. In July, it was observed that plants exhibited stunting, root rot, stem cankers, foliar chlorosis, and reduced surface area of leaves.

Cankers were 1 to 4 cm in length and the incidence of diseased plants in the field was 55%. Oomycetes were cultured from diseased plants, DNA was amplified and sequenced, and *Pythium torulosum* and *Pythium irregulare* were identified as the likely casual agents of disease symptoms. Root samples from all field samples were collected to further characterize *Cannabis* pathogens present in Wisconsin soils. We evaluated Soil DNA extraction kits to determine quality and quantity of DNA from *Cannabis* roots. Samples were then amplified using oomycete specific primers to determine incidence of oomycete in samples. Select samples will be further characterized by DNA sequencing. Results from this study will help to expand our knowledge of hemp pathogens in Wisconsin.

***Comparison of Ectoparasite Communities in Great Horned Owls and Barred Owls*** - (Biology)

By: Sam Coleman, Ethan Davis, Morgan Smits

Faculty Mentor: Sarah Orlofske

Great horned owls (*Bubo virginianus*) and barred owls (*Strix varia*) are both geographically widespread, with ranges that overlap primarily in the Eastern United States. Great horned owls often prey upon the smaller barred owls. Ectoparasites such as chewing lice (Phthiraptera), feather mites (Acari), and tick flies (Hippoboscidae) can cause sub-lethal damage to the host's feathers. Using digitized museum records from the Stephen J. Taft Animal Parasitology Collection and new owl specimens collected from road mortality and rehabilitation centers, we addressed two research objectives. First, we examined ectoparasite communities of each species temporally using historical and current ectoparasite species richness. Second, compared the ectoparasite communities between the owl species. Our museum records included 12 great horned owl specimens representing 4 ectoparasite species and 6 barred owl specimens representing 1 ectoparasite species. Our preliminary examination of 2 owls collected in 2022-2023 revealed 3 specimens in the family Menoponidae and 11 specimens in the family Philopteridae for great horned owls. One barred owl examined for ectoparasites was uninfected. Our results suggest that great horned owls have a more diverse ectoparasite community, but further data collection is needed to distinguish patterns. Our research highlights how museum collections can be used to address ecological questions.

***Copper-Catalyzed Synthesis of Nitrogen Heterocycles*** - (Chemistry)

By: America Arts, Sebastain Sczygelski

Faculty Mentor: Katie McGarry

Pyrrolidine, especially its derivatives, are used extensively in the pharmaceutical industry for antibacterials, antifungals, antivirals, antimalarials, anticonvulsants, and more. The goal of our project is the creation of an improved copper-catalyzed synthesis method of creating pyrrolidines, using a more desirable amine-protecting group; protecting groups are structures that attach to certain areas of a molecule to control its reactivity. Copper-catalyzed synthesis of pyrrolidine structures has been successfully achieved using sulfonyl amine-protecting groups; however, the conditions for removal of this protecting group are harsh and shown to be inefficient. We're looking for a protecting group that leads to a method of synthesis that is more economical, with a more efficient and favorable process. During the desired copper-catalyzed reaction, the pyrrolidine ring structure forms along with a new bond external to the ring that attaches a coupling partner. Protecting groups tested this year have included the benzyl group and BOC group (tert-butylloxycarbonyl) and coupling partners have included vinegar, glacial acetic acid, and 2-propanol. Selective ring formation has not yet been observed under the tested conditions. Further directions will explore different reaction conditions using the BOC substrate, and other protecting groups.

***Correlating Age, Sex and Body Condition Factors of the Logperch (*Percina caprodes*) with Blackspot (*Neascus, Digenea*) Parasitism Rates in Wisconsin Waters*** - (Biology)

By: Collin Styers, Jennifer Kahn

Faculty Mentor: Justin Sipiorski

Logperch (*Percina caprodes*) have been collected from Wisconsin waters for over 100 years. Many of these specimens are housed in the Becker Memorial Ichthyological Collection (BMIC) in the COLS Olson Museum of Natural History. Recently we have been gathering data from the several thousand Logperch specimens in the BMIC. We collected length and weight for use in length-weight regression analyses. We collected scale samples for use in age estimation for a length-at-age analysis. These data are also being used to determine whether there is a correlation between body condition and black-spot parasite (fluke) infestation rates. We plan to look for correlations among black spot infestations, length, weight, and sex over space and time. Very little research of this sort has been conducted on the Logperch in Wisconsin. This research seeks to determine factors that increase parasite rates and could be used to determine how the blackspot parasite functions at the ecosystem level in Wisconsin waterways.

***Development of an Alternative Method for Analyzing Nitrogen in Agricultural Runoff*** - (Chemistry)

By: Dylan Francis, Madison Culli

Faculty Mentor(s): Dave Snyder

In the absence of industrial point sources, agricultural runoff is the primary source of nutrient input to surface waters. Runoff containing nitrogen and phosphorus can lead to harmful algal and bacterial blooms and hypoxia, a process known as eutrophication. Accurate measurement of nutrients in agricultural runoff is critical in preventing eutrophication and helping farmers to develop efficient and environmentally sound fertilization practices. The standard method of measuring nitrogen in runoff, known as Total Kjeldahl Nitrogen (TKN), requires complicated and time-consuming sample preparation and the use of toxic reagents, including mercury. Total Nitrogen (TN) analysis offers an alternative that requires little or no sample preparation and does not require the use of hazardous substances. For this project, samples acquired from the US Geological Survey's Edge-of-Field Monitoring Project were analyzed for nitrogen content using both the TKN and TN methods. Preliminary results indicate that the TN method compares favorably with TKN for samples containing less than 40% of N as organic nitrogen and low levels of suspended particles (slope = 1.01,  $r^2 = 0.97$ ); however, TN and TKN deviate significantly when samples contain higher amount of organic nitrogen and/or high amounts of suspended particles (slope = 0.63,  $r^2 = 0.93$ ).

***The Effect of Population Density on Growth of Juvenile Domestic *Helisoma* sp. Snails*** - (Biology)

By: Maverick Vang, Alexander Nelson, Hunter Servais, Kali Stanislawski

Faculty Mentor: Sarah Orlofske

Freshwater snails are subjected to many environmental conditions that contribute to their overall development. For our research we looked at how population density factors into growth of *Helisoma* snails. *Helisoma*, our taxon of focus, are common in Wisconsin wetlands and are a key nutritional resource for predators and hosts of diverse parasites. Using a controlled laboratory experiment, we measured the overall growth of 4 distinct population densities (20, 40, 60, 80 snails/liter respectively) of snails over 6 weeks. Change in growth across the treatment groups was relatively equal and was therefore not statistically significant. However, we made observations that represent opportunities for further research on *Helisoma* development. We noticed intraspecific interactions among snail populations such as resource capacity and timing of egg production. Our research provides a baseline for understanding snail development and exploring additional factors snails experience in their natural environment.

***The effects of pH on growth of Helisoma snails*** - (Biology)

By: Alaina Hart, Brenna Bogaczyk, Eric East, Hannah Panitzke, Maren Herndon

Faculty Mentor: Sarah Orlofske

George W. Mead State Wildlife Area supports a large population of aquatic snails (*Helisoma* sp.). Snails are an important contributor to the decomposition functions of the boreal-stream ecosystem. Wetlands at Mead average around pH of ~6.5 based on field measurements. There are fluctuations in the pH of Mead aquatic habitats and changes in water conditions from runoff exposure and temperature. The question we are addressing is how does pH impact snail growth? Our hypothesis is that water pH impacts snail metabolism and energy for maintaining homeostasis. We conducted a laboratory experiment representing three different pH environments for the snails (Control-6.5, Neutral 7.33, & Basic 8.26) with three replications of three individuals for each. We measured snail mass, length, width, and height once a week to monitor their growth changes. The preliminary trends from our data suggest the snails' growth rate is optimal in the control conditions (pH 6.5). This translates into important parameter indicators when it comes to the natural snail environment. By understanding the optimal conditions for snail growth and size, we could better understand decomposition processes in freshwater wetlands.

***Effects of Topping on the Growth and Development of Cannabis sativa*** - (Chemistry)

By: Danielle Singkofer, Addison Pfeil, Mike Ayensu-Mensah, Benjamin Loosen, Ben Jore, Ava Meinert, Olivia Schwarz, Grace Geils

Faculty Mentor(s): Shannon Riha, Brian Barringer, Laura Cole

*Cannabis sativa* is a short-rotation crop used in the production of medicinal compounds, rope, textiles, bioplastics, and many other important materials. One technique growers often use to make a plant more productive is topping, when the apical meristem is removed to stop the plant from growing upward through its main shoot. Topping forces the plant to invest more energy in lateral growth which, in theory, leads to increased biomass, including flower material, and increased production of phytochemicals such as cannabinoids and terpenes. In this project, plants of the Colorado Cherry Wine strain of *Cannabis sativa* were grown in the UW-Stevens Point greenhouse and topped at various stages in their development. After about four months, the plants were harvested, separated by tissue type (roots, stems and leaves, and flowers), dried, weighed, and stored at  $-80^{\circ}\text{C}$  to prepare for chemical analysis. Analysis of cannabinoid concentrations was conducted using high-performance liquid chromatography (HPLC), and analysis of terpenes was conducted using gas chromatography (GC). Future research using larger sample sizes and longer growth periods could help find further insights into the benefits of topping for hemp production.

***Electron Rich/Poor Conjugated Molecules Facilitate Charge Transfer*** - (Chemistry)

By: Josh Kolodziej

Faculty Mentor: Nate Bowling

Synthesis of conjugated molecules through Sonogashira coupling yields two identical halves of a molecule that can interact through space to elicit charge transfer behavior. The final products in these syntheses have two pairs of adjacent branches supporting an arene group, each with an electron withdrawing or electron donating group.  $\pi$ - $\pi$  stacking results from the proximity of these groups and enables the movement of electrons between these rings. The  $\pi$ - $\pi$  stacking in the final product is induced by covalently binding both halves by Sonogashira coupling. Current and future research aims to use other methods, such as halogen bonding, to bring these groups into proximity. Charge transfer due to intramolecular  $\pi$ - $\pi$  stacking in conjugated molecules remains largely unstudied. Implications of molecules with these unique electronic properties could be limitless.

***Extraction and Antimicrobial Testing of Shiitake Mushroom Powder*** - (Chemistry, Biology)

By: Maggie Amundson, Elliona Staves

Faculty Mentor: Katie McGarry, Matt Rogge

Previous research has shown that a variety of mushrooms, including shiitake mushrooms (*Lentinula edodes*), contain substances with medicinal properties, such as antimicrobial properties. With the emerging crisis of antibiotic resistant bacteria, we aim to develop protocols for isolating and identifying the compounds within shiitake mushrooms (*Lentinula edodes*) that have these antimicrobial properties. This project has employed food grade mushroom powder to create an extract which was then used in bacterial testing to determine if it had any antimicrobial properties. The methods used to obtain these extracts were sonification and maceration in ethanol and deionized water. The bacterial testing proceeded using disc diffusion of the extracts on agar plates inoculated with four different bacterial species, two gram positive species (*Bacillus megaterium* & *Staphylococcus epidermidis*) and two gram negative species (*Escherichia coli* & *Pseudomonas fluorescens*). Inhibition results and future direction will be presented.

***A Fluorescence Quenching Study of Bovine Serum Albumin-Vitamin B6 Interactions*** - (Chemistry)

By: Kaylee Wilker, Monica Apsey, Wyatt Lind, Patrick Mileski

Faculty Mentor: Amanda Jonsson

Serum albumins are the major soluble protein in the bloodstream and have many functions, including binding to a wide variety of small molecules, including many drugs. Understanding how compounds interact with serum albumin proteins can help us understand how drugs and other small compounds behave in the body. We are using bovine serum albumin (BSA) as our model protein and want to explore how different small molecules bind to the protein and whether ligand binding impacts the stability of the albumin protein. Currently, our work involves pyridoxine, (vitamin B6), which is important for brain function and metabolic processes. We titrate mixtures of BSA in buffer with vitamin B6 and use fluorescence spectroscopy and Stern-Volmer plots to evaluate the characteristics of the quenching and therefore possible binding modes of the ligand. So far, we have had mixed results for our quenching experiments for both fluorescence intensity and calculated Stern-Volmer constants. This indicates that there is future work to be done with the project to resolve these problems and obtain more consistent data.

***A Greener Method of Isolating Eugenol*** - (Chemistry)

By: Ethan Theoharopoulos

Faculty Mentor: Robin Tanke

4-Allyl-2-methoxyphenol better known as eugenol, has uses and applications such as flavoring, dental treatment, breast cancer treatment, and gastrointestinal and respiratory pain relief. Eugenol comes from cloves which are aromatic flower buds of a tree in the family Myrtaceae *Syzygium aromaticum* and is native to the Maluku Islands in Indonesia. The most common forms of isolating and extracting eugenol are vacuum filtration (which is energy intensive) and column chromatography (which is solvent intensive). However, acid-base extraction is not solvent intensive nor is it energy intensive. Eugenol has a highly acidic proton present in its phenol group and isolation and characterization of eugenol using acid-base extraction is reported. Cloves were ground to form a dense powder and then steam distilled to produce a clove oil water mixture. The mixture was extracted with diethyl ether and clove oil isolated. Eugenol was extracted from clove oil with NaOH (10%). Thin Layer Chromatography was used to determine if eugenol was completely separated from clove oil. IR Spectroscopy, <sup>13</sup>C and <sup>1</sup>H NMR Spectroscopy and Gas Chromatography were all used to characterize the eugenol isolated.

***Harnessing Molecular Approaches to Survey Trematode Parasites in Wisconsin's Wetland Habitats - (Biology)***

By: Ava Meinert, Renee Mcsherry

Faculty Mentor: Robert Jadin, Sarah Orlofske

While challenging to assess, ecosystem health is widely acknowledged as a crucial metric in today's era of biodiversity transformation. One measure beginning to be implemented is utilizing parasitic diversity of an ecosystem to serve as an indicator of a healthy wetland ecosystem. Their multi-host life cycle requires a specific diversity of taxa present for the parasites to exist. By studying the parasitic diversity in Wisconsin wetlands, a better understanding of wetland management can be developed. However, distinguishing between parasitic species is challenging due to the presence of morphologically indistinguishable species and therefore often necessitates the utilization of molecular data. For this study, we constructed phylogenies generated from DNA sequences of parasites to assess species diversity and compared it to our morphological identifications. We found that understanding the health of Wisconsin's wetland ecosystems is enhanced by identifying parasite diversity through the use of molecular data and bioinformatic tools.

***Helisoma sp. Snail Reproduction in Relation to Environmental Variables - (Biology)***

By: Maverick Vang, Hannah Kvasnica

Faculty Mentor: Sarah Orlofske

Freshwater snails play a key role in parasite ecology as the required primary hosts of parasitic flatworms (Platyhelminthes: Trematoda). Freshwater snails are also critical as many life stages of parasites develop inside snails as second intermediate hosts. *Helisoma* spp., or ramshorn snails are a common freshwater gastropod that resides in Wisconsin wetlands serving as a resource for many taxa including fish, reptiles and birds which become infected with parasites by eating the infected snails. Our research focuses on the captive reproduction and development of *Helisoma* sp. snails with respect to different environmental variables. Over the span of a month we examined captive wild *Helisoma* populations in order to assess possible factors that lead to reproductive success. Our observations suggest that specific types of algae work as a possible stimulating force in snail reproduction. While snail reproduction is increasing we still face many difficulties with juvenile snail development. Successful captive reproduction of wild *Helisoma* would give critical insight into necessary environmental conditions for wild populations in addition to being a fundamental baseline for further parasite-host research in the laboratory.

***Historical patterning of age, growth, body condition and ectoparasite loads in Wisconsin populations of the Bluntnose Minnow (*Pimephales notatus*) - (Biology)***

By: Eric East

Faculty Mentor: Justin Sipiorski

We are gathering life history information for Wisconsin populations of the Bluntnose Minnow (*Pimephales notatus*) from all holdings in the Becker Memorial Ichthyological Collection (BMIC) of the UWSP Olson Museum of Natural History. This work is currently in progress but will eventually encompass the collection of data from thousands of individuals collected from throughout the State over the past century. The Bluntnose Minnow is one of the most ubiquitous fish species in Wisconsin. We are measuring total length (mm), body weight (g) and gonad weight (g) from all BMIC holdings. We are estimating the age of individuals by counting scale annuli and we are quantifying infestations of the "Blackspot" fluke, an ectoparasite. We will conduct length weight regressions and length-at-age analyses for historical Wisconsin populations. We hope to compare these past life history parameter values to those of present-day populations. We also hope to compare past and present life history data with statewide land use patterns, pollution patterns, climatological information and other socioeconomic pattern.

***Impact of a Warm-Water Tributary on Intolerant Fish Species Distribution in a Northern Wisconsin Cold-Water Stream*** - (Biology)

By: Brandon Frank, Zephyr Lopez

Faculty Mentor: Justin Sipiorski

Riverine tributaries and confluences are recognized as important locations within lotic systems. The primary effect of confluences on the mainstem may be changes in water volume, water chemistry, nutrient load, sediment types, and other abiotic factors downstream. We investigated the distribution of intolerant species in a Northern Wisconsin Class I trout stream (Big Pine Creek) before and after a confluence with a Cool (Warm-Transition) stream (Pickerel Creek). Intolerant fish species are tied to cool and cold-water habitats with high dissolved oxygen levels and harder substrates like gravel and cobble. We found that the fish community in Big Pine Creek upstream of its confluence with Pickerel Creek was dominated by the intolerant species, Brook Trout while the section downstream was dominated by the tolerant species White Sucker. Our data suggest that this difference in fish species assemblages is largely due to differences in substrate type and land cover in Big Pine Creek upstream and downstream of its confluence with Pickerel Creek.

***The Impacts of Competition and Fertilizer on the Growth of Cannabis sativa L.*** - (Biology)

By: Elizabeth VanDomelen, Ben Jore, Sharayah Lazaroff, Ava Meinert, Addison Pfeil, Danielle Singkofer, Olivia Schwarz

Faculty Mentor(s): Brian Barringer, Ann Impullitti, Shannon Riha

Cannabis cultivation is one of the most rapidly growing industries in the world. While the profits from cultivation can be generous, there are only a few opportunities per year for harvest in a single growing season. This leaves growers with the dilemma of how to get the highest quantity and quality yield while also utilizing growing space effectively. Some studies have been conducted on the effects of fertilizer on cannabis growth, but this is not a well examined topic. This topic has not been explored especially in regard to plants experiencing the stress of competition. Our methods explored whether and to what extent soil amendments (a typical NPK ratio of 10:10:10) as well as con-specific competition interact to influence plant fitness and levels of phytochemicals using the industrial hemp cultivar Colorado Cherry Wine (*Cannabis sativa*). Throughout the trial process, we exposed plants to different levels of competition and fertilizer and collected data on plant height and biomass as well as cannabinoid and terpene production. Our work provides valuable insights into the effects of competition and fertilizer on the fitness of *Cannabis sativa*. Our data could be useful for growers trying to maximize their yields at a minimal cost to them as well as providing insights of optimal growth conditions for a desired yield.

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

By: Josey Wolf, Maryah Cook, Billy Peterson, Justin Konopacki

Faculty Mentor: Sarah Orlofske

The Ring-necked Duck, *Aythya collaris*, is a species of diving duck native to North America. These ducks typically feed on aquatic vegetation and invertebrates. Ring-necked ducks, along with other species of ducks, are at risk of parasitic infections due to their dietary habits, as snails are common intermediate hosts to parasites. For this research, hunter donated ducks were collected from Mead Wildlife Area (Central WI) and were used to compare the parasite burden and diversity between dabbling and diving duck species. The dabblers include Wood ducks, Blue-winged Teal, and Green-winged Teal, and divers include Lesser Scaup and Ring-necked Ducks. Data for both dabblers and divers were taken from past records at the University of Wisconsin-Stevens Point (UWSP) and compared to novel data collected from Ring-necked Ducks. All ducks were dissected, and all organs,

body, and gut washes were examined under dissecting microscopes. Parasites were quantified and preserved for further identification. Across Ring-necked ducks 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.

***Intramolecular Charge Transfer Using Functionalized Pyridines*** - (Chemistry)

By: Mya Beyerl

Faculty Mentor: Nate Bowling

Charge transfer is a phenomenon that is useful in catalysis, materials development, and molecular recognition. The interactions responsible for charge transfer, however, only occur for a finite time. In our research, a multi-step synthesis is performed to create a  $\pi$  system that encourages charge transfer. The template generated in our synthesis brings electron-rich aromatic rings into the proximity of pyridine units. Pyridine units themselves are not expected to display charge transfer behavior, but functionalization of the nitrogen atom with alkoxy groups should provide an avenue to desirable, charge transfer behavior. This charge transfer will be observed in UV-Vis studies that examine the electronic properties of the molecule.

***Isolation Stress Influences White Blood Cells in Zebra Finches*** - (Biology)

By: Mariano Yee Wiedman, Kali Stanislawski, Vic Nelson

Faculty Mentor: Sarah Jane Alger

The stress of pair bonded animals can be impacted when they are removed from their partners. Stress can greatly influence animals and show up as an increased white blood cell ratio of heterophils to lymphocytes in songbirds. There is a lack of knowledge about how separating highly pair bonded animals will affect their levels of stress. Zebra finches, a monogamous passerine species, were measured for their affiliation with their partner, and then were isolated and exposed to song either from their current partner, ex-partner, or a stranger for 30 minutes. We then let the birds sit for another 45 minutes in the dark before culling and collecting samples of their blood. The blood was stained and examined, counting white blood cell ratio of heterophils to lymphocytes. The zebra finches which had a higher level of affiliation with their partners produced higher H:L ratios compared to the zebra finches that had lower affiliation with their partners. This suggests that stress increases when removing and isolating pair bonded birds. Through this we can learn to reduce stress levels of other pair bonding bird species by keeping the partner in sight through stressful situations.

***Least Darter (*Etheostoma microperca*) Population Delineation and Status in the Central Sands Region of Wisconsin*** - (Biology)

By: Sydney Steffens, Gethin Wallace, Nina Pallo

Faculty Mentor: Justin Sipiorski

The Least Darter (*Etheostoma microperca*) inhabits lakes and streams throughout the Midwest. In the "Central Sands" of Wisconsin, this species resides in clear cool waters with moderate flow and vegetated shorelines. They occupy similar habitats in small, glacial lakes. We are delineating current populations throughout the Wisconsin Central Sands Ecoregion. Initial analyses indicate that Least Darters prefer to reside near springs mixing with surface water in areas dominated by sand, silt, muck, and marl substrates—higher in pH, hardness, and alkalinity. Least Darters also appear to congregate in areas with flooded vegetation, particularly areas with Swamp Loosestrife (*Decodon verticillatus*). The Wisconsin DNR lists Least Darters as "Special Concern." Recent studies have shown a significant impact on Central Wisconsin groundwater quality due to increasing numbers of



high-capacity wells as well as agricultural runoff. We measure total length and body weight from all holdings of the Becker Memorial Ichthyological Collection of the COLS Olson Museum of Natural History. We are estimating age of individuals, and we are quantifying infestations of the “Blackspot” fluke, an ectoparasite. We will conduct length-weight regressions and length-at-age analyses for historical Wisconsin populations. We will compare these past life history parameter values to those of present-day populations.

***Parasites of the American Woodcock from Wisconsin, USA*** - (Biology)

By: Roxanne Gasperetti, Rianna Taylor

Faculty Mentor: Sarah Orlofske

The American Woodcock (*Scolopax minor*) is a migratory shorebird with a unique ecological niche. In contrast to typical shorebirds, it inhabits forests and fields in eastern North America rather than shoreline habitats. Their diet, mainly earthworms and other invertebrates, fosters interactions between parasites and woodcock. We studied hunter-donated woodcock specimens from Wisconsin to document parasites. Feathers and internal organs were examined for parasites, identified using morphology, and preserved in 80% ethanol. Liver samples were analyzed using molecular techniques to identify haemosporidian infections. Museum specimens from the UWSP Parasitological Collection provided a historical baseline and comparisons for parasite identification. Based on 137 museum specimens, 57% were *Tetrameres* spp., 15% other nematode species, 10% digenean species, and 18% phthirapteran species. Among 26 necropsied woodcock specimens, 14 (53%) had nematode infections, 20 (76%) had cestode infections, 15 (57%) had digenean infections, with 1 (3%) each for mites and lice. *Syngamus trachea* was found in one specimen; these nematodes could pose harm to woodcocks. *Tetrameres* were present in 5 woodcocks. We tested 18 liver samples for haemosporidian parasites; none were detected. Studying these parasites enhances our understanding of host-parasite dynamics in American Woodcock, while also advancing knowledge of the bird's life history and ecology.

***PFAS Adsorption Utilizing Metal-Organic Frameworks (MOFs)*** - (Chemistry)

By: Ashley Authement, Anna Hahn, Grace Versnik

Faculty Mentor(s): Joe Mondloch

Per- and polyfluoroalkyl species (aka forever chemicals) contain at least one fully fluorinated carbon atom. They are broadly used in society because of their desirable properties such as their high chemical and thermal stability and ability to repel water, oil, and grease. These same properties ensure that PFAS persist in the environment as well as in animals and humans. Unfortunately, PFAS have been shown to have some negative health impacts including increased cholesterol, lower antibody response to vaccines, low birth weights, and cancer. Here we evaluate the ability of a porous materials termed MOF-808-AA to remove PFAS from water.

***Phytoremediation using Cannabis sativa L. - A comparative analysis of the effects of lead and arsenic on the fitness of six lineages of hemp*** - (Biology)

By: Elizabeth VanDomelen (research support of Mary Joy Relagio, Benjamin Loosen, Tyler Jolin, Grace Geils, Alaina Hart, Benjamin Opaneye, Addison Pfeil

Faculty Mentor(s): Brian Barringer, Ann Impullitti, Shannon Riha

A large portion of the world's soil is polluted to some capacity by heavy metals. This is especially true for soils used in agriculture. Growing crops in contaminated soil can reduce overall yield as well as pose risks to consumers. One possible solution to remove heavy metals from soil is phytoremediation, the use of plants to remove and sequester toxins. Hemp (*Cannabis sativa*) has been shown to be a successful phytoremediator in multiple studies. In this study, we examined differences among six lineages of industrial hemp, including three modern day lineages and three older lineages growing feral in Wisconsin. Plants were grown from seeds in soil that was either uncontaminated, contaminated with lead, or contaminated with arsenic (lead and arsenic are common soil contaminants). We collected data on height, vegetative and floral biomass, and

cannabinoid and terpene concentrations. We also collected data on the concentrations of heavy metals in both vegetative and flower tissues. Our work provides valuable insights into the phytoremediation properties of hemp, which could be applied to develop lineages of hemp that are both efficient in their phytoremediation properties and able to produce a profitable yield for farmers.

***Rapid, Low-Temperature Synthesis of Chalcogenide Perovskites from Molecular Precursors*** - (Chemistry)

By: Meghan Taylor, Andrew Thompson, Connor Jeske

Faculty Mentor: Shannon Riha

Chalcogenide perovskites are materials with the chemical formula,  $ABX_3$ , where elements A and B are cations with a +2 or +4 charge, respectively, and element X represents S, Se, or Te. Theoretical studies suggest that chalcogenide perovskites are ideal thin film solar cells absorber materials, offering low toxicity, earth abundant elements, and high thermal and moisture stability. Current synthesis methods for chalcogenide perovskites often come with a high energy penalty (e.g., high temperatures, lengthy reactions, etc.) or are not easily scalable, which are not ideal for developing the next generation of thin film solar cells. Here we present the first steps to a scalable synthesis approach that utilizes molecular precursors and rapid, low-temperature thermal processing to fabricate chalcogenide perovskite thin films.

***So many cercariae: are estimate counting methods even viable?*** - (Biology)

By: Ethan Barber

Faculty Mentor: Sarah Orlofske

Larval Flatworm (Platyhelminthes: Trematoda) parasites, called cercariae, emerging from snail infections are responsible for transmission to human and wildlife hosts, potentially causing disease. These stages also serve as a substantial food source in aquatic food webs. Quantifying the number of trematodes shed by snails can give us important information on disease transmission and aquatic ecosystems. However, previous attempts at doing so have been made with extremely variable methods and unknown accuracy. I attempt to resolve this problem by introducing a standardized method for quantifying these trematodes, using controlled samples and statistical methods to verify its reliability. Using these methods and building upon these findings, researchers will be able to answer questions about trematode-snail systems with increased confidence and support.

***Student Enrichment Engagement and Equity (SEEE)*** - (Biology)

By: Sharayah Lazaroff

Faculty Mentor: Lindsay Dresang, Krista Slemmons

The Student Enrichment, Engagement, and Equity (SEEE) project in the Chemistry and Biology Building (CBB) encompasses both education in Science, Technology, Engineering, & Mathematics (STEM) history and representation. Specifically, you can learn about many individuals who overcame adversity, challenges, or personal struggles to make important contributions to our scientific knowledge and awareness. The individuals highlighted are intended to reach a wide audience and share relatable stories regardless of their sex, religion, race, abilities, socio-economic status, or other struggles. Here we report a progress update on these displays along with information on what the next steps will be in highlighting STEM history and representation of STEM scientists of many different backgrounds. We also compare different tactics developed in engaging diverse age groups in passive and active events. Feedback obtained regarding a sense of education and belongingness were obtained and are presented along with assessment of these results.

***Studying Charge Transfer of Aromatic Rings Brought Together via Transition Metal Complexation -***  
(Chemistry)

By: JT Sjoquist

Faculty Mentor: Nate Bowling

Aromatic rings can have certain groups added onto them to make the rings either more electron rich or more electron poor. These aromatic rings can interact in a phenomenon called  $\pi$ - $\pi$  stacking. Often,  $\pi$ - $\pi$  stacking involves simple electrostatic (positive to negative) attraction between electron poor and electron rich rings. Under some circumstances, an electron can briefly be transferred from the electron rich ring to the electron poor ring. This electron transfer (which can cause a color change in the visible light spectra) is called charge transfer. Because intermolecular  $\pi$ - $\pi$  stacking and charge transfer are very brief interactions, we are interested in developing intramolecular mechanisms for holding these aromatic rings in close proximity. In this study, we use transition metal coordination of winged pyridine ligands, with electron rich and electron poor rings, to force the aromatic rings together in space and study charge transfer between those electron rich and electron poor rings. The synthesis of these ligands is through the use of Sonogashira couplings, deprotections, and transition metal complexations.

***Ultrastructure of Brain Vasculature in a DSS-Induced Colitis Mouse Model -*** (Biology)

By: Julia Hickey

Faculty Mentor: Jennifer Bray, Michael Steury, Sol Sepsenwol

Previous studies in the laboratory using mice with ulcerative colitis (UC) induced by dextran sulfate sodium (DSS) demonstrated that biochemical compounds from the inflamed intestinal tract (cytokines) induce pathophysiological changes on the brain. Most notably, they induce changes in brain vasculature, which are crucial to maintaining the blood-brain barrier. This study concentrated on the vascular, notably capillary, changes in the brains of mice with DSS-induced colitis.

Transmission electron microscopy (TEM) was used to determine the effects of DSS-UC on the ultrastructure of brain vasculature. To circumvent the problems of brain fixation – cellular changes with hypoxia and slow penetration of fixatives into the fatty, myelin-rich brain tissues – we used perfusion fixation (PF) through the heart. In PF, the fixative is carried by the circulation to within microns of the tissues it perfuses, resulting in excellent fixation. DSS-UC mouse brain, intestine and other tissues were fixed, embedded in plastic, and sectioned for TEM imaging. A comparison of TEM images of the capillaries of control and DSS-induced colitis mouse tissues will look for unique changes associated with the experimental colitis. The information from this work may contribute to effective therapies for colitis-related diseases.

***Verification of the Timing of a 20th Century Introduction of the Eastern Banded Killifish (*Fundulus diaphanus diaphanus*) to Lake Michigan Using Museum Specimens -*** (Biology)

By: Nolan Schmelder

Faculty Mentor: Justin Sipiorski

We completed this work to determine how long the Eastern subspecies of the Banded Killifish (*Fundulus diaphanus diaphanus*) has been present in the waters of Wisconsin. It has been shown recently that the Eastern Banded Killifish was introduced into Lake Michigan and its tributaries likely in the mid to late 20th Century. This introduction was likely from individual fish contained in ballast water taken on by Great Lakes vessels as they made their way from Atlantic seaports to Western Great Lakes ports. Dozens of Banded Killifish specimens currently in the Becker Memorial Ichthyological Collection (COLS Olson Museum of Natural History) were examined and the sub-species status was determined by counting lateral line scales. Our holdings (mainly collected in the 1960s through the 1990s) do not contain any specimens of the Eastern sub-species. Our specimens support the notion that the Eastern subspecies was likely not present in Wisconsin waters mid-century, suggesting that the presence of eastern subspecies is more recent—likely occurring in the 1990s or later.

**Poster Presentations 2:30 - 4:00 p.m.** 3<sup>rd</sup>- 4th Floors

**School of Humanities and Global Studies**

***The Bogside Massacre: Analysis of Murals in Irish Commemoration (1972-2022)*** - (History and International Studies)

By: Will Wallerius

Faculty Mentor: Valerie Barske

In this research project, I analyze the use of murals in Northern Ireland (1972-2022) by artists to express complex feelings of nationalism. The Bogside Massacre was a peaceful civil rights protest that gathered 15,000 protesters in Derry, Northern Ireland, a part of mainland Ireland still under British rule to this day. The Northern Ireland Civil Rights Activists were protesting in Derry on January 30, 1972, for their independence from Britain when British soldiers shot 26 unarmed citizens. As a result, 14 citizens perished. I examine The Museum of Free Derry and interviews collected from survivors on a website entitled "Free Derry Lives" dedicated to recording video interviews of survivors. The Bogside Murals were made by local artists brothers William and Tom Kelly and Kevin Hasson. When analyzing the 50th anniversary of the Bogside Massacre, the murals spearheaded the conversation for civil rights for people of Northern Ireland. By studying these murals, we may understand how victims of the Bogside Massacre became a symbol of Irish culture and resistance in protests for independence from British rule.

***The Celebration of Independence in South Sudan: How the World's "Newest Nation" Commemorates their Independence in the 21st Century (1955-2024)*** - (History and International Studies)

By: Nathan Hoks

Faculty Mentor: Valerie Barske

In this research project, I analyze how the world's "newest nation," South Sudan, commemorates and celebrates its Independence Day. South Sudan formally became an independent nation on July 9, 2011, after 50 years of fighting for independence from their northern Arab and Muslim counterpart Sudan. Since achieving independence in 2011, the people of South Sudan have endured a 7-year civil war and continue to experience turbulence in their lives with ongoing economic and political unrest. In my research, I explore what makes the South Sudanese's Independence Day celebration unique and how these commemorative practices compare to other nations. I examine contemporary primary sources shared on social media platforms to gain an understanding of how independence and its commemoration can be acknowledged in the digital age. For example, the South Sudanese Government's Twitter page depicts how the government wants July 9 to be seen and celebrated. I use the original videos published on YouTube as a platform for assessing how NGO's and others on the world stage acknowledge key moments in South Sudan's history, especially the tenth anniversary. This project analyzes how "digital memorialization" represents an increasingly meaningful way to forge, foster, and remember/forgetting specific notions of national identity.

***Centennial Anniversaries and Commemoration of WWI in Great Britain (2014-2018)*** - (History and International Studies)

By: Jack Krause

Faculty Mentor: Valerie Barske

In this research project, I examine how the First World War (July 28, 1914-November 11, 1918) was commemorated during centennial anniversaries recognized in the United Kingdom. Although a truly global war, WWI featured conflicts between the Central Powers of Germany, the Ottoman Empire, and Austria-Hungary versus the Allied Powers of Russia, Britain, France, Italy, and the United States. In addition to these key players, multiple other nations participated. Beginning in 2014 with the centennial that marked the start of the war, new commemorative spaces and reflections built on previous remembrance practices appeared. In this research project, I first examine and establish how WWI has been commemorated within the United Kingdom. Next, I compare the U.K. to commemorative practices that occurred elsewhere throughout the 21st Century. Additionally, I examine the role of the centennial anniversaries (2014-2018) in shaping the remembering of WWI by maintaining previous memorials while also creating new commemorative projects. For example, new commemorative projects and increased funding emerged during the centennial period to address specific intersectional identities, such as the role of Muslim soldiers in Britain. These changes indicate the significance of centennial anniversaries on commemorative practices.

***Commemorating Anti-War Artwork: Guernica and Peace Education Museums (1937-2024)*** - (History and International Studies)

By: Halle Reeder

Faculty Mentor: Valerie Barske

In this research project, I examine artwork as an important factor in anti-war commemoration in contemporary Spain by analyzing Guernica (1937) by Pablo Picasso. The town of Gernika, located in Northern Spain, suffered an airstrike requested by Spanish Nationalists. On April 26, 1937, Francisco Franco commanded German and Italian forces to attack, deliberately targeting civilians. By examining a variety of primary and secondary sources, I contend that this painting serves as a representation of what occurred in Gernika, a political statement against armed conflict, and a personal anti-war statement from the artist. To understand anti-war commemorative practices and grapple with the concept of peace today, the Gernika Peace Museum contains a documentation center that collects archival material about the bombing. In addition, the Gernika Research Center focuses on educational content of Gernika's history and the representation of peace. Both sites serve as places of historical remembrance and educational value that hold great significance, especially in light of civilian work to transform Gernika into a harmoniously peaceful space. Addressing this history is crucial to the world as there are continual attacks on civilians today. Understanding ideas of peace and analyzing Picasso's artwork may help humanity grapple with these ongoing issues.

***Commemorating in the Midst of Corruption: Remembrance of the 2013 Ghouta Syria Gas Attacks (2013-2023)*** - (History and International Studies)

By: Gavin Dinges

Faculty Mentor: Valerie Barske

In this research project, I explore the challenges facing Syrian people in commemorating and memorializing chemical attacks perpetrated by their own government. Two years into a devastating

conflict between the government and its citizens, Sarin gas missiles struck the Ghouta District of Damascus, claiming the lives of 1400 civilians. I analyze the responses of the UN, Syrian activists, and the Assad Regime, spanning from the immediate aftermath of the attacks to the 10-year anniversary parade in 2023. More specifically, I examine primary sources including accounts from hospital workers, survivors, and imagery from the attacks and parade, alongside secondary sources such as academic journals and news articles. Given ongoing efforts by the Assad Regime to conceal the realities of the massacre, additional primary sources remain limited. Furthermore, parades and protests during the 10th anniversary of the attacks occur with caution. In 2023, the parades and murals protesting the government serve as a testament to the resilience of an oppressed people's ongoing fight for their freedoms. The culmination of my research lies in an examination of coping mechanisms and commemorative strategies adopted by individuals living under a corrupt regime that actively suppresses such endeavors.

***Commemorating the Centennial of the Russian Revolution through Visual Culture (1917-2017)*** - (History and International Studies)

By: Nolan Lamers

Faculty Mentor: Valerie Barske

This research project assesses commemorative practices related to the Russian Revolution in the Soviet Union by analyzing various forms of visual culture, including films and statues, and conducting a comparative analysis. The films and statues depicting the Russian Revolution serve as a visual representation of the contemporary sentiments held by the inhabitants of the Soviet Union towards this historical event. The collective memory is shaped throughout time and changes with new ideas, films, and statues. In Russia, this period represents a challenging time because of the oppressive government actions and famines, which explains why commemorative practices remain complex and complicated. By considering specific expressions in visual culture, my research begins to unpack socio-political and economic ideologies that shaped the past. In addition, this project relates to current struggles for grappling with the realities of violence in contemporary Eastern Europe.

***Comparative Commemorations: The 1916 Easter Rising in Ireland 50 and 100 Years Later*** - (History and International Studies)

By: Kenna Levanetz

Faculty Mentor: Valerie Barske

In this research project, I examine the role and significance of commemorating the Easter Rising, which began on Easter Monday April 24, 1916. Members of the Irish Citizen Army, Irish Volunteer, and members of the Cumann na mBan rose up in Dublin to fight against the British. The conflict resulted in hundreds of deaths, mostly civilians. This event served as a catalyst for an independence movement in 1922. My research analyzes the political and social context of collective memory within Ireland and specific commemorative practices in 1966 and 2016. Commemorations included monuments such as the Glasnevin memorial wall, parades, the General Post Office (GPO) Museum, and written stories from surviving families. I also examine the forms of nationalism in the Northern Ireland communities and the way in which women have been represented over the years. This research sheds light on the complex interaction between memory, nationalism, gender, and political tensions in Irish society. Although these commemorative events continue to develop over time, tensions remain through the present that darken new efforts for remembrance.

***Contrasting Memories: Examining Commemorative Practices and Diverse Memories of the Bosnian Genocide (1992-2024)*** - (History and International Studies)

By: Noah Kilgas

Faculty Mentor: Valerie Barske

In this research project, I examine commemorative practices and contrasting memories of the Bosnian Genocide, a tragedy marked by mass killings, sexual assault, and ethnic cleansing against the Bosnyak (Bosnian Muslim) population by Bosnian Serb aggressors during the 1992-1995 Bosnian War. I analyze diverse remembrances of this tragic period by examining contemporary podcasts such as Untold Killing (2020-2022), firsthand accounts of Bosnyak survivors, commemorative anniversaries and ceremonies, and personal interviews with a Bosnian citizen who fled from Bosnia. These narratives highlight the diverse perspectives of Bosnyak men and women, both residing in Bosnia and as refugees, but also provide insight into the viewpoints of Bosnian Serbs. From these multiple perspectives, I analyze their differences and potential evolution over time. Understanding the diverse interpretations of historical events like the Bosnian Genocide is crucial for working through ongoing conflicts. Drastic differences in perspectives and collective memories often fuel animosity and eventually violence, as we see in the Russia-Ukraine War today. By understanding how different groups remember and interpret events, we can better promote peace within Eastern Europe.

***Culture as an Invention: An Analysis of Bunka no Hi (Culture Day) as a Changing Commemorative Practice in Japan (1948-2023)*** - (History and International Studies)

By: Jeremy Ryan

Faculty Mentor: Valerie Barske

In this research, I examine the role of Bunka no Hi (Culture Day) in Japan as a holiday constructed to move Japanese culture and national identity away from a complex imperial past. To commemorate the new Japanese Constitution ratified in 1947, the holiday was invented during the U.S. occupation of Japan in 1948. I draw from the scholarly works of Tai (2003) and Morris-Suzuki (1995) to contextualize and explain Bunka no Hi (Culture Day) as an “invented” cultural tradition. I also consult the work of Enemoto (2016) and Watson (2010) to analyze indigenous identities including Ainu and native groups in Tsushima and their representation in Japanese culture. These works are used to analyze images of celebrations for the holiday such as the Daimyo Gyoretsu, a recreation of a feudal lord’s procession from their territory to the capital, which occurs in Yumoto Japan sponsored by the local tourism association. I argue that images of these celebrations are used to promote Japanese culture, but distance the country’s culture and identity from its imperial past and portray the country with a single culture based on tradition.

***The Effects of Fear: Club Disney and the Privatization of Recreation*** - (History and International Studies)

By: Joshua Antos

Faculty Mentor: Neil Prendergast

This research explores the history of how fear has shaped public and private recreational facilities and how Club Disney is a prime example of this fear in effect. The late 1800s and early 1900s saw a rise in public parks as they were offered up as solutions to societal ills like juvenile delinquency. In the mid-20th century, fear around desegregation prompted the rise of privately owned recreation facilities like swimming pools. In the late 20th century, juvenile delinquency, drugs, and kidnappings

prompted anxiety around public recreational facilities, prompting for an increase in private children's recreational facilities like Club Disney. Club Disney, even though being situated in affluent suburbs where this danger would be largely unfounded, capitalized on parents' anxiety. The centers emphasized the safety and the educational aspects of their facilities to keep parents at ease. Club Disney, even though it had a short life span of two years, is a prime example of how fear can cause a rise in private recreational facilities, particularly by internationally recognizable brands.

***The End of an Era: Remembering the Fall of the Berlin Wall (1989-2023)*** - (History and International Studies)

By: Brianna Garrett

Faculty Mentor: Valerie Barske

In this research project, I examine how the Berlin Wall has been commemorated in Germany since its collapse. After WWII ended in 1945, the Socialist Unity Party of Germany (SED), with the support of the Soviet Union, began to seal the borders before separating West Berlin and East Berlin in 1961. The wall was constructed to prevent travel between East and West Berlin. The wall symbolized the Cold War Era and the division of Germany, political ideologies, and families. Due to increasing protests against the wall and unstoppable migration westward, the SED was forced to lift travel bans. Large crowds rushed the wall following new travel legislation, leading to the wall's collapse in 1989. I build my research using frameworks from scholarship in the disciplines of history and political science. I examine how the collapse of the Berlin Wall is remembered in present-day Germany. Exhibits at German museums, commemorative events, and TripAdvisor reviews provide insight on how the Berlin Wall remains prominent within contemporary German collective memory.

***Exhuming the Past: Commemorating Collective Erasure and the Disintegration of Franco's National Image in Post-Francoist Spain (1975-2023)*** - (History and International Studies)

By: Rachel Kairys

Faculty Mentor: Valerie Barske

In this research project, I examine ways in which political leaders and cultural activists strive to erase the collective memory of Francisco Franco (1892-1975) and the process of transforming new identities in contemporary Spain. These practices include physical changes such as removing public statues and posters, changing street names, and exhuming his tomb in 2019 from the Valley of the Fallen Cemetery. Lawmakers instituted new policies such as the unwritten Pact of Forgetting, the 1977 Amnesty Law, the 2007 Historical Memory Law, and the 2022 Democratic Memory Law, which aim to disremember Franco and Spain's fascist past. Based on my study abroad experience in Valladolid, Spain, I witnessed how the country reacts to him and seeks to diminish his historical and cultural impact. My research evidence includes primary sources such as photos of iconographic removals and quotes from the Official Bulletin of the State along with peer-reviewed secondary articles. I demonstrate how the level of Francoist erasure has grown notably since his death and continues to transform the country to promote autonomous identity, democracy, and justice. I argue that collective erasure may be considered a critical aspect of commemorative practices by dismembering legacies to enable transformations and new identities.

***The First Woman Honored in Parliament Square: Commemorating the Centennial of the British "1918 Representation of the People Act" (1918-2018)*** - (History and International Studies)

By: Jasmine Schnelle



Faculty Mentor: Valerie Barske

In this research project, I evaluate how the Prime Minister of the United Kingdom Theresa May and the Mayor of London Sadiq Khan worked with artist Gillian Wearing to commemorate the Centennial of expanding the right to vote by passing the “1918 Representation of the People Act” in England. This act granted all men over 21 and all women over 30 the right to vote, which led to subsequent legislation that expanded the right to vote to any person over 18. I analyze archival materials, specifically government records in response to militant suffragist activities such as destruction of property, tax evasion, and census boycotts from the British National Archives. I employ peer-reviewed secondary articles that focus on commemoration and apply key concepts of collective memory and the politics of memory to address how women are perceived and remembered. In remembrance, Gillian Wearing (b. 1963) created a statue of Millicent Fawcett (1847-1929) who became the first woman honored by a statue in Parliament Square. I plan to show the positive impact of commemorative statues, not only to celebrate women of the past, but also to instill hope in the women of today.

***Gold Mountain in the Pinery: Chinese Americans in Rural Wisconsin, 1875-1940*** - (History and International Studies)

By: Jarita Bavidó

Faculty Mentor: Brett Barker

In the late 1800s, a steady stream of Chinese immigrants flowed into the rural cities of Wisconsin from the West Coast and beyond. This research considers the motivations for early Chinese American immigration to the Midwest. Then, using newspaper, census, and archival data, this research shows the economic presence of Chinese people in more than 55 counties in Wisconsin. When they first arrived, most began small laundries, but their entrepreneurial energy showed a greater reach. By 1900, their businesses also included import stores for Chinese and Japanese goods, and Chinese restaurants. The results of this historical research show both the presence and persistence of Chinese people in rural Wisconsin in an era when the immigration of Polish, German, and Scandinavian people has been more fully researched and is more well known. From an economic perspective, it is a reminder that then as now, immigrant populations play an integral role in the success and diversity of our state, regional, and national economy.

***In Defense of Clive: An Analysis of English Societal Pressures in E. M. Forster's Maurice*** - (English)

By: Eleanor Belcher

Faculty Mentor: Dejan Kuzmanovic

This poster presents research and analysis of the character Clive in E.M. Forster's novel *Maurice*. I argue that the circumstances and expectations of early 20th century English society, the Edwardian period, explain why Clive chooses to become “normal” and appear to society as a heterosexual man despite his homosexual affections. I begin by providing historical context of what it was like to live as a homosexual man in Edwardian England, building on the insights about English values that affect Clive's experience found in the work of Nishta Sharma, Anne Hartree, and Ma Ángeles Toda. These ideals can be seen in Clive's family and school life. Clive is raised in an upper-class family that expects him to marry a suitable woman, produce an heir, and have a successful political career. His schooling censures homosexual relations, and the society penalizes them with prison and social ruin. In the film version of the novel, a fellow schoolmate who is outed as gay is publicly ostracized for the rest of his life. These societal conditions lead Clive to follow a heteronormative lifestyle. Despite this,

the ending of the book and Clive's final interaction with Maurice show that he chooses a path of normalcy not because he became heterosexual but because of societal pressures.

***Level Up and Wise Up: The Evolution of Women and LGBTQIA+ Video Game Developers*** - (English)

By: Angel Bronk

Faculty Mentor: Lauren Gantz, Rebecca Stephens

Video gaming has long been believed to be a male-dominated field, with origins and creation by and for a masculine demographic. This misconception is untrue, as many women and LGBTQIA+ individuals have played key roles in the formation of this widely successful medium. The evolution of representation of women and LGBTQIA+ people has unfortunately lacked in recent decades, as the online space has shifted the ways these groups are treated in the industry for good and for ill. Infamous movements like GamerGate were only the precursor to the more insidious Activision Blizzard lawsuit, leaving modern gaming adrift as it seeks to reconcile its long-standing belief of male dominance with a future that wants to bring gaming back to its diverse roots.

***Living Legacy of Camp Pattison: Civilian Conservation Corps at Pattison State Park*** - (History and International Studies)

By: Ella Hunter

Faculty Mentor: Cory Haala

This research examines the history of the involvement of the Civilian Conservation Corps (CCC) at Pattison State Park. Often overlooked were the lives of the men in Company 3663 and how living and working at Camp Pattison changed their lives for the better and transformed public spaces still enjoyed by Wisconsinites today. In present commemoration of the CCC's work at Pattison, the lives of the men who built the park go unknown to visitors. By exploring how the CCC improved the site while also improving the lives of corpsmen, this project argues there is a greater need for acknowledgement related to working-class labor in Wisconsin's public parks. One prominent sign recognizes the work on the CCC-built shelter building, only saying that the men had chiseled rock to build the shelter; to the average visitor, this is the only time they engage with the history of the park or the men who built it. But, through new synthesis of primary and secondary source material, this project argues there is a need for wider-ranging acknowledgement of the lives and accomplishments of men at Camp Pattison and the state park.

***Modernizing Tradition: A Comparative Analysis of Diwali as Festivalization in New Zealand, Malaysia, and Guyana (1974-2024)*** - (History and International Studies)

By: Kyle Goneau

Faculty Mentor: Valerie Barske

In this research project, I analyze the festivalization of Diwali celebrations in New Zealand, Malaysia, and Guyana. Diwali, a five-day celebration full of music, dancing, and religious practices originates in India ca. 527 B.C.E. However, I explore specifically the contemporary celebration from 1974-2024. This project examines long-standing communities in countries that celebrate the "Festival of Lights" and how they seek to understand communal and individualized identities through place. Additionally, I consider the theme of festivalization, which refers to the politicization of big events, and more specifically, the economic and cultural consequences that follow (Booth 2015). In recent years, governments have provided significant funding for these cultural and religious events, which highlights new issues in terms of the impact of festivalization on Diwali commemorations. This analysis specifically answers questions on how contemporary practitioners view traditional and cultural celebrations, as well as how nations may foster such practices without relying too heavily on governmental aid. National and cultural identities around the globe cannot be formed with

governments pushing their colonial agendas on celebrations, and governments must separate themselves from traditional events to allow cultures to flourish.

***Painting through the Pain: The Commemorative Practices of Frida Kahlo and Her Impact on the Feminist and LGBTQ+ Movements in Mexico (1928-2023)*** - (History and International Studies)

By: Chloe Demarco

Faculty Mentor: Valerie Barske

In this research project, I examine Frida Kahlo, the renowned Mexican artist and how she used art as a commemorative practice to become a symbol of strength, self-expression, and defiance. I analyze Kahlo's art, activism, and life to help examine her impact on the feminist and LGBTQ+ movements in Mexico. Kahlo's art is representative of her personal struggles, including her experiences with disability, chronic pain, and "unconventional" relationships, which resonated deeply with marginalized communities, fostering a sense of solidarity and empowerment. Her self-portraits challenged the traditional ideas of femininity by focusing on her unique identity and blurring the lines between gender roles. Her legacy extends far beyond the canvas, inspiring generations of activists to advocate for gender equality and LGBTQ+ rights. Kahlo's art and life story, her unapologetic portrayal of female experiences, and her fluid approach to gender and sexuality are what makes her the icon she is within the feminist and LGBTQ+ communities of not only Mexico, but the entire world. Through a combination of archival research, art analysis, and analysis of secondary sources, I aim to highlight how Kahlo's impact, long after her death, continues to inspire feminist and LGBTQ+ activism in Mexico and beyond.

***Perpetuation of Heteronormativity in E.M. Forster's Maurice*** - (English)

By: Paige Biever

Faculty Mentor: Dejan Kuzmanovic

This project explores both the external and internal factors which contribute to the continuation of heteronormative standards within middle-upper class English society, as illustrated by the character of Clive Durham. E.M. Forster's *Maurice* explores how harmful beliefs and attitudes are constructed through socialization, as well as the impact of family and familial obligations. These familial obligations are only one of the factors which serve to reinforce heteronormative ideas within Clive, along with his public-school upbringing, significantly influenced by Plato's *Symposium*. These ideas are built on by scholars such as Anne Hartree and Scott R. Nelson, who discuss the homosexual relationship between Clive and Maurice. This project expounds further on these ideas and how the repression of homosexuality—or desires incompatible with heterosexuality—continues a cycle of discrimination and prejudice which in turn perpetuates heteronormativity.

***Reclaiming the White Crow: Commemorating the Life and Career of Rudolf Nureyev (1961-2024)*** - (History and International Studies)

By: Sophia Harvey

Faculty Mentor: Valerie Barske

In this research project, I examine the commemoration and legacy of Rudolf Nureyev (1938-1993), the Soviet ballet dancer, choreographer, and director at the Paris Opera from 1961 to 1989. Nureyev is internationally recognized for his skilled dancing and innovative choreography that emphasizes the male dancer. With his fame, Nureyev created The Ballet Promotion Foundation, which still exists today as The Rudolf Nureyev Foundation, to assist young dancers and to carry on his memory. My research considers how organizations such as the Paris Opera commemorate Nureyev through

performance and education. Today, his choreography is still performed while his body and skill are immortalized through image and video. Internationally, Nureyev's career and life continue to be referenced in modern art and cultural movements. The 2017 ballet *Nureyev* (Kirill Serebrennikov and Yuri Posokhov) and the 2018 movie *The White Crow* (Ralph Fiennes) are modern efforts to explore Nureyev's life and sexuality. His identity is a place of contention in his commemoration as the Russian government seeks to erase his queer sexuality. My research explores Rudolf Nureyev's life, art, and legacy in terms of what commemorative practices intentionally remember or selectively forget.

***Religious Re(memory) and the Road to LGBTQ+ Rights: A Case Study of Taiwan (2006-2023)*** -  
(History and International Studies)

By: Jarita Bavidó

Faculty Mentor: Valerie Barske

In this research project, I explore the intersection of religion, historical memory, and identity. As the movement for LGBTQ+ equality and rights gained momentum in Taiwan in the early 2000s, traditional Chinese religious practitioners negotiated queer spaces within their faiths in meaningful new ways. In 2006, the Wei-Ming Temple in Taipei opened. A tertiary deity honored there is the Rabbit God, Tu'er Shen. The shrine simultaneously reclaimed a derogatory slang term for gay men—rabbit—and reinterpreted the legend of Hu Tianbao, the man who became Tu'er Shen. Likewise, LGBTQ+ devotees of the folk goddess Matsu built a social media movement around the slogan, "Matsu's love sees no difference." Through increasing visibility in religious ritual spaces, on social media pages, and in pride parades, I argue that religious re(memory) helped define a narrative of LGBTQ+ existence, past and present, by queering Chinese legend and providing space for LGBTQ+ spirituality. When in 2019, Taiwan became the first government in East Asia to legalize gay marriage, it was fueled in part by strategic religious re(memory). Perhaps Taiwan's example can inspire LGBTQ+ movements in other countries to publicly re(member) their sacred stories.

***Secondhand Survivance: Reclaiming Kimono through Flea Markets, Fashion Shows, and Foreign Consumerism*** - (History and International Studies)

By: Sydney Phelps

Faculty Mentor: Valerie Barske

In this research project, I examine how traditional Japanese fashion and textiles underwent significant shifts in representation, economic stability, and international understanding. More specifically, I analyze the cultural complexities of owning secondhand objects in Japan that affected these changes. I utilize personal experience at flea markets in Japan, analysis of the secondhand objects I personally curated from Tokyo and Kyoto, and scholarly research on Japanese fashion spanning from the 17th century Edo period to contemporary times. Examinations of art pieces that contextualize the histories of secondhand culture and textiles play a key role in my background analysis. I feature examples from the archives of several museums including the Tokyo National Museum as well as the Victoria and Albert History Museum's 2020 Exhibition entitled *Kimono: Kyoto to Catwalk*. Through this intersectional discourse, I discuss the complex history of kimono and how the growing secondhand ownership culture - as well as international interest - works to keep the traditional textile industry alive despite taboos and spiritual complications. Issues of cultural appropriation, national identity, gendered practices, cultural survivance, fashion trends,

embodiment, and reclamation converge in the complex underpinnings of Japan's national dress: the kimono.

***Sites of Trauma: Place, Collective Memory, and Commemorative Practices in Postwar Denmark (1945-2015)*** - (History and International Studies)

By: Olivia Burrows

Faculty Mentor: Valerie Barske

In this research project, I explore the dynamic relationship between place, collective memory, and commemorative practices in postwar Denmark (1945-2015), focusing on Ryvangen Memorial Park (Mindelunden). In 1943, after the takeover of the Danish government, Nazi soldiers secretly executed Danish Resistance Fighters at Mindelunden. Upon reclaiming the space in 1945, Danes discovered 202 graves at the site. The Danish people quickly addressed the trauma and 106 hearses arrived at Mindelunden for burial and cemetery inauguration; thus began to process of transforming the site into a Memorial Park. In 1946 a sculpture by Axel Poulsen (1887-1972) and a poem by martyr Kaj Munk (1898-1944) became central commemorations of the atrocities committed at Mindelunden. By May 5, 1950, Mindelunden was completed. Through the interdisciplinary lenses of history, sociology, and cultural studies, I examine how sites such as Mindelunden attain historical significance by embodying memories of occupation, resistance, and collaboration. Analyzing memorials, photographs, and public discourse, I reveal how Mindelunden has evolved, reflecting changing national narratives of identity, resistance, and reconciliation. I argue that the interplay of place and memory offers insights into how societies confront traumatic pasts, reconcile conflicting historical interpretations, and construct collective identities in the aftermath of war.

***Striking Life: Development and Representation of Identity, Embodiment, and Cultural Memory in Contemporary Noh-Inspired Art*** - (History and International Studies)

By: Sydney Phelps

Faculty Mentor: Valerie Barske

In this research project, I examine how contemporary artist Shuko Nakamura (b. 1988), and other female-identifying artists utilize both traditional and new methods of Noh mask carving to establish and challenge concepts of memory and identity. The art and methods of "striking" (referencing the first "strike" of a mallet to chisel, now used synonymously with Noh mask carving) were passed down through patrilineal lineages since 13th century Japan and remain largely unchanged. Female performers and artists challenge the culturally engendered barriers within the world of Noh theater since women were first allowed to participate after World War II. I utilize my personal experiences studying abroad in Japan and hands-on research in collaboration with leading Japan scholar Dr. Adam Zollinger who provided self-authored secondary sources including compendiums of mask types and identifying features. Through comparative analysis of scholarly writings on the impact of Noh and representations of gender identities in modern Japanese performing arts, I seek to identify and examine how Shuko Nakamura's recent work and 2023 exhibitions reflect the complex intersections between gender, spirituality, identity, and deeply rooted performative traditions through the eyes of Noh masks.

***Toussaint Louverture, Soup Joumou, Slave Trade, and Abolition: Collective Memory and Remembrance of the Haitian Revolution (1804-2024)*** - (History and International Studies)

By: Ryan Mullen

Faculty Mentor: Valerie Barske

The only successful African slave revolt in history occurred in Haiti from 1791 to 1804 resulting in the creation of the second independent nation in the Americas. Despite this monumental moment in history, Haiti is currently regarded as an impoverished and dangerous country, a view that overlooks a rich cultural history. In this research project, I examine the ways in which the Haitian Revolution continues to be commemorated, especially in relation to cultural practices related to identities of race and nation in contemporary Haiti. Specifically, I consider the remembrance of Toussaint Louverture (1743-1803), Soup Joumou, and finally the August 23rd holiday of remembrance. Toussaint led the Haitian revolution and often serves as the face of Haiti's independence and slavery remembrance. Soup Joumou is a dish forbidden for slaves but now consumed on January 1st every year to celebrate Haitian independence. August 23rd was chosen as International Slavery Remembrance Day to recognize the beginning of the Haitian Revolution in 1791. As we move forward and face the realities of slavery in world history, remembering the start of abolition and the ways it is commemorated, I aim to give a greater understanding of a nation with a past that is often underappreciated.

***The Voices of Hiroshima: Honoring the Past, Shaping the Future (1945-2024)*** - (History and International Studies)

By: Matthew Rogers

Faculty Mentor: Valerie Barske

In this research project, I examine post-WWII commemorative practices related to the bombing of Hiroshima, Japan. The bombing of Hiroshima on August 6, 1945, devastated the city and signaled the end of World War II. Using academic literature, I investigate how Japan processed the pain of these occurrences and created memorials. I contend that remembrance in postwar Japan functioned as hubs of communal memory, building resiliency due to unspeakable destruction. My research considers annual peace events and commemorations of the atomic bomb and how they shape public impressions of the city. Gender, class, and nation are examples of intersectional identities that interact with commemoration rituals to shape who is remembered and how. Applying intersectional analysis, I understand how these dynamics influenced commemorative initiatives and reveal larger social hierarchies. By shedding light on the long-lasting effects of the Hiroshima bombings on Japanese society, this research adds to current historical discussions. We may better appreciate the importance of recollection in forming communal identities and fostering peace if we have a greater knowledge of the intricacies surrounding commemorative rituals. This project may resonate with a variety of groups throughout the world, promoting reflection on the costs of conflict and the necessity of peacebuilding initiatives.

***Within These Walls: Restored Synagogues as Sites of Jewish Collective Memory (1960-2022)***-  
(History and International Studies)

By: Lila Banks

Faculty Mentor: Valerie Barske

In this research, I examine Ashkenazi Jewish practices of restoring historic synagogues in postwar Europe. These synagogues are the few that survived the antisemitic violence prevalent before and during the second world war. Jewish spaces such as synagogues were looted and torched by antisemitic mobs. With most of their Jewish population murdered, governments razed Jewish neighborhoods and synagogues while rebuilding. It was not until the early 1970s where movements to restore synagogues gained attention amongst Jewish people worldwide. These synagogues became “musealized” spaces, acting as reminders of the Jewish past and present (Ariese 2022, p. 241.) Using posts by Jewish organizations, museum reviews, blogs, and synagogue websites, this research employs museum and memory studies concepts including collective and cultural memory as well as sites of memory. This research aims to understand restored synagogues and their importance by using the frameworks established by scholars in memory studies and cultural studies. While these restored spaces seek to educate a broader non-Jewish public, synagogues act as sites of collective memory and possess cultural and spiritual importance to Jewish visitors. To the global Jewish community, these synagogues represent sites for telling stories of loss and survivance.

***Worshipping the Sun God: Celebrating Inti Raymi, an Incan Traditional Dance Celebration in Central America as Cultural and Economic Revitalization (2002-2024)***- (History and International Studies)

By: Morgan Hansen

Faculty Mentor: Valerie Barske

Annually around the southern-hemisphere winter solstice in Peru and Ecuador, indigenous Incan groups host an event for commemorating the sun god. This celebration of Inti Raymi dates to the 1200s and recognizes the Quechua name for the “sun god.” Due to the realities of colonization including mass-murder, illness, and war, the Incan population continues to decline in number. However, areas where the Tahuantinsuyo Empire (1438-1533) once reigned including Ecuador, Bolivia, Chile, Columbia, and especially Peru, desire to keep Incan cultural practices alive. This research project explores multifaceted sources about Inti Raymi in preserving Incan culture heritage, capitalizing on cultural celebrations as a source of income for indigenous people, and resisting cultural erasure within a post-colonial world. In my extensive secondary source research, scholars examine Inti Raymi through the lens of “idolatries” and “extirpation” to examine how these events serve as both resistance and reinforcement of identities. My qualitative evidence includes primary sources from social media platforms such as LIVE Peru, Visit Peru, exploorperu, Instituto Cultural Loja. These sites underscore the vital role of cultural traditions in sustaining communities and identities. Celebrations such as Inti Raymi help to ensure that Incan cultural heritage survives and thrives for future generations.

***Za Naszą I Waszą Wolność (For Our Freedom and Yours): Memory of the Warsaw Uprising and Modern Polish National Identity (1944-2024)***- (History and International Studies)

By: David Spayer

Faculty Mentor: Valerie Barske

In this research project, I analyze commemorative practices related to the 1944 Warsaw Uprising and the impact on Polish national identity, foreign relations, and culture. More specifically, I examine

how remembrance of the Warsaw Uprising is used to inspire nationalism, push political agendas, and create a national hero mythos. The Warsaw Uprising represents an attempt by the Polish Underground Army and civilian partisan forces to liberate the city of Warsaw from German occupation. The uprising was extremely bloody for both sides and lasted 63 days. This event has been commemorated by the Polish people for decades. The common themes in the public history and memory of the event are resistance, national unity, and strength of will. The Uprising serves as an icon of strength, militarism, and resistance in the modern Polish nation and state. I examine the commemoration of the Warsaw Uprising through analyzing archival primary sources, museum exhibits, modern memorial events, songs, films, and video games. This mixture of cultural influences informs how the Polish people approach modern situations, both from a governmental and individual level, especially on matters of national sovereignty and foreign relations, particularly with nations that were former enemies, such as Germany and Russia.

**Poster Presentations 2:30 - 4:00 p.m.** 2<sup>nd</sup>- 3<sup>rd</sup> Floors

**School of Mathematics, Computing,  
Physics and Astronomy**

***Echo ... Echo ...Echo: The Effects of Acoustic Impedance on the Sound in a Tube*** - (Physics and Astronomy)

By: Emma Deal

Faculty: Brad Hinaus

Sound waves are modeled in a cylindrical tube with a speaker at one end and a reflecting surface at the opposite end to determine different sound aspects of the cavity. The reflecting surface is given different values of acoustic impedance to affect the reflectivity of the waves and the resonant frequencies in the tube. The sound waves are modeled using the wave equation but written as two differential equations involving the pressure of the wave and the velocity of the wave medium. The coupled differential equations are solved using Euler's method while incorporating the acoustic impedance into the boundary conditions at the reflecting end of the tube. We will show how the acoustic impedance affects the amplitude of the sound at the resonant frequency and how it affects the damping of the sound after the speaker is turned off.

***The Effect of Initial Water Content on the Hydrophobicity of Soils*** - (Mathematical Sciences)

By: Stella McCarty, Lane Bowman

Faculty: Mick Veum, Jacob Prater

After an intense wildfire, it is known that soils may develop hydrophobicity, that is, a tendency to repel and not absorb water. This effect is not usually observed after prescribed fire. The phenomenon of hydrophobic soils after a forest fire presents a runoff and erosion problem that can substantially hinder the regeneration of a forest. The mechanism(s) responsible for this effect is not well documented. Certainly, fire intensity seems to play a role, and we hypothesize that the water content of the soil upon the condensation of volatile organics in smoke may be a significant mechanism for this effect. As a first step in better understanding the role of water content, we have investigated the influence of initial water content in four types of soil on the formation of a hydrophobic coating, simulating the volatile organics from smoke with a silicone-based, water-proofing spray. Preliminary results indicate that indeed the greater the water content at the time of treatment, the less hydrophobic the soil, as evidenced in measurements of soil wetting angle. Future



steps will be testing the same four soils that are treated instead with smoke generated from dry aspen chips.

***Exploring the Properties of Galaxies in Undergraduate ALFALFA Team Groups*** - (Physics and Astronomy)

By: Meghan Taylor

Faculty: Adriana Durbala

The Undergraduate ALFALFA Team (UAT) Groups project is a coordinated study of gas and star formation properties of galaxies in and around 66 nearby ( $z < 0.03$ ) groups and clusters of varied richness, morphological type mix, and X-ray luminosity. Here we use the Sloan Digital Sky Survey (SDSS) and the Arecibo Legacy Fast ALFA (Arecibo L-band Feed Array) Survey (ALFALFA) catalog to study the properties of galaxies in twelve groups. Our analysis includes stellar mass, HI mass, absolute magnitude, color index, and morphological type. We present a comparison of the properties of galaxies located within and outside 2 Mpc from the group center.

***Observation and Characterization of Exoplanets via Transit Method Using the UWSP 16-inch Meade Telescope in the Pejsa Observatory*** - (Physics and Astronomy)

By: Logan Hodorowski

Faculty: Sebastian Zamfir

We perform photometric observations of exoplanets transiting their parent stars using the Meade 16-inch telescope equipped with a 24 Megapixel camera. We test the capability of our observatory by targeting planets (mostly hot Jupiters) that produce a sizable dip in the light-curve of their stars over timescales of the order of a few hours. The data collected is analyzed with the Python-based Holomon Photometric Software (HOPS), which uses comparison stars to perform differential photometry on the target of interest. HOPS subsequently generates the best model of the light curve by fitting the most likely size of the transiting planet and its orbital period. It also calculates the best solution for the star size and its surface temperature. We present the equipment employed (hardware and software) along with an example of a measured transit.

***A Search for Suitable Water-Splitting Electrodes Using SEAL and HARPOON*** - (Physics and Astronomy)

By: Dustin Brodie

Faculty: Ken Menningen, Shannon Riha

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. Electrodes made of oxides of Fe, In, Ga, Ru, W, and Zn were produced in our laboratory and evaluated using the SEAL and HARPOON experiments. The relative performance of these oxides and their mixtures were evaluated.

***Statistical Analysis of Fluorescent Photons Emitted by Dye Molecules*** - (Physics and Astronomy)

By: Kaylee Wilker

Faculty: Palash Banerjee

Rhodamine 6G (R6G) is an organic dye that emits a burst of orange photons when illuminated by a green laser. Photons emitted from micro molar R6G solutions were measured using a single photon detector using a home-built setup that consists of several lenses, mirrors, apertures, and a 100x oil immersion objective. A beam pick-off was used to monitor and remove the laser fluctuations from the measured photon signals. The photon arrival times were used to compute a correlation function to measure the diffusion constant of the dye molecules. In addition, a photon counting histogram

was also calculated to measure the molecular brightness of the diffusing species. The use of both methods on the same photon stream allows access to more information than is typically obtained in such experiments.

***Thermal Imaging Study of NiCr Microheaters*** - (Physics and Astronomy)

By: Cameron Zins

Faculty: Maryam Farzaneh

In this presentation, we report on thermal imaging of micrometer-sized Nichrome (NiCr) heaters under controlled operating conditions using thermorefectance microscopy technique. Thermorefectance microscopy is based on measuring the relative change in the reflectivity of a device, which is directly proportional to the change in its surface temperature. Thermal images were used to analyze the temperature distribution of these heaters as a function of electrical power. Additionally, we studied the thermal transient behavior of the heaters and determined the time constant of the thermal response to a heating pulse. Eventually, these thermal studies will be used in improving the design of the microheaters and their thermal management.

***Trapping Micrometer-sized Silica Beads with Optical Tweezers*** - (Physics and Astronomy)

By: Kevin Peters

Faculty: Maryam Farzaneh

Optical tweezers are optical instruments that use a high power, highly focused laser beam to hold and move small particles. Optical tweezers have been used in a variety of different applications, in the fields of biology and biophysics. In certain cases they are used to grab and hold viruses, bacteria, or molecules including DNA. When the laser light passes through an object it refracts and transfers momentum to the object. A restoring force experienced by the object ensures the conservation of total momentum and causes the object to be pushed to the center of the focused laser beam and be trapped within the laser. We present the details of an optical tweezers set up that we designed and constructed in the lab. This set up was used for the study of the Brownian motion of micrometer-sized silica beads in a water medium. By tracking and recording the random motion of the beads within the medium we determined the viscosity and resistive force of the medium. Once a bead was successfully trapped, the strength of the trapping force of the optical tweezers was determined at different laser intensities.

## Campus Parking

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

