20th Annual
UW-System Symposium for Undergraduate Research, Scholarly & Creative Activity
University of Wisconsin-Whitewater

April 22, 2022
How to Connect to the University of Wisconsin-Whitewater Guest Wi-Fi Network

1. Locate the device “Settings” menu and select “Wi-Fi”.

2. Make sure your “Wi-Fi” is turned on and select “UWWGuest” under the available networks.

3. Open a web browser and navigate to a “Non-UWW” webpage in order to launch the “Wi-Fi registration” page. Select “Log In With Facebook” to login with your Facebook credentials or select “Don’t have an account?” to create a guest account.

4. If creating a guest account, fill out the registration form to create a temporary user name and password. Then select “Register”. “Read and accept” the license terms and conditions then change your temporary password when prompted.

5. You should now be connected to the “UWWGuest” wireless network.

Questions? Contact the Help Desk: helpdesk@uw.edu, (262) 472-4357
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Welcome Remarks from:

Welcome to the 20th annual UW System Symposium for Undergraduate Research, Scholarly and Creative Activity.

Undergraduate research has been a hallmark of UW-Whitewater for decades and today’s showcase of exhibits, posters and presentations represents the progress to date of much hard work performed by our students; some of it completed, and more in need of further exploration.

Research, scholarly and creative activities are examples of the inquisitive mind, problem solving, and learning by doing. Engaging in undergraduate research was my introduction into the love of inquiry, exploration, and discovery. It led me to pursue a career as a scientist and a university professor.

Kudos to the students and to the mentor faculty. You are all fortunate to be students at a university with a strong tradition and diversity in undergraduate research, fueled by a supportive and enthusiastic faculty to guide you in the process. Much of the research, scholarly and creative activities exhibited today may be both local and global, social and scientific, inter and multidisciplinary, and they are surely examples of students’ commitment to develop and add to new knowledge.

My warmest congratulations to all of the students and the supportive faculty who make this Undergraduate Research Day a distinctive and distinguishing trait of being a Warhawk!

Best regards,

Anny Morrobel-Sosa, Ph.D.
Welcome to all the participants and visitors to the 20th annual UW System Symposium for Undergraduate Research, Scholarly and Creative Activity.

This annual gathering of students, mentors, and visitors from across the state showcases the incredible talent among undergraduates doing research, producing scholarship, or engaging in creative activities, the great work done by faculty mentoring those individuals, and the ways in which that collaboration benefits us all. We are pleased to host this event this year, and look forward to the great presentations, exchanges of ideas, and broad learning that always takes place when this gathering is held.

UW-Whitewater prides itself on the engagement of our undergraduates in research, scholarship, and creative activity as do the other universities in the UW System. The innovation that takes place at the undergraduate level is often underestimated, and we believe that it plays an integral role in the best of undergraduate learning. Our faculty take great pride in the mentoring they do in supporting student work, and our students eagerly engage in that challenging process of producing new knowledge or creative works. We look forward to sharing the outcomes of the collaborations of our faculty and students during this Symposium.

This is an exciting time for research, scholarship, and creative activities, and we hope that you will all be active participants in this great event. Thanks for joining us at UW-Whitewater for this UW System Symposium.

Regards,

Jim Henderson, Ph.D.
Welcome Remarks from:

Welcome to UW-Whitewater for the UW-System Symposium for Undergraduate Research, Scholarly & Creative Activity!

Undergraduate research is a high impact practice that stimulates critical thinking, helps to improve communication skills and advances both individual and collective knowledge. These types of symposiums allow us to share that knowledge more broadly and celebrate the accomplishments of our students across the system. The work carried out by the students presenting at the symposium along with the supportive efforts of faculty and staff mentors is well worth sharing and celebrating. A hallmark of our university system is our ability to engage undergraduate students in the type of collaborative and creative activities that often are reserved only for graduate students.

Congratulations to all of our participants!

John Chenoweth, Ed.D.
Interim Chancellor
From my lens as the Senior Diversity Officer for the University, I'm constantly advocating for representation. Representation matters.

Representation in research is paramount to various communities to gain a fuller and more comprehensive array of information. Who better to study marginalized populations, tackle a grave medical problem or understand trends in society than a variety of diverse researchers? Our uniqueness allows us to view complex issues from a variety of different lenses and this spark of curiosity to encourage research is absolutely essential during the undergraduate experience. What a wonderful opportunity to engage students, specifically diverse students, to understand that they have a place in research, and research through their lived experience matters! By capitalizing on the lived experience of diverse people, the ability to conduct research in the spirit of representation allows all to benefit from shared knowledge.

Kenny E. Yarbrough, Th.D.
Welcome Remarks from:

It is my pleasure to welcome you to the University of Wisconsin System’s 20th annual research symposium here at the University of Wisconsin-Whitewater.

This event provides a conduit for undergraduate students from across the UW-System and state to express their research passions and show off their creative, scholarly ability. Undergraduate research is not only important to our individual campuses but to our state, nation, and society. It allows students to be mentored by outstanding faculty while investigating topics related to the sciences, humanities, business, the arts, etc. There are important questions that need answers, and these answers may have profound impacts on research for years to come. I congratulate all the research participants displaying their work, thank mentors for their guidance and patience, and again welcome everyone to the UW-System research symposium 2022.

Ozalle Toms, Ph.D.
Assistant Vice Chancellor for Student Diversity, Engagement & Success
Dear Symposium Attendees,

Welcome to the 20th Annual UW System Symposium for Undergraduate Research and Creative Activity.

The first of the System-wide symposia was hosted by the University of Wisconsin-LaCrosse in 1999. Over the years, the event has been hosted by UW- Eau Claire, Oshkosh, Stout, River Falls, Parkside, Milwaukee, Stevens Point, and Green Bay. This event was scheduled to be hosted in-person by UW-Whitewater in 2020 but had to be canceled due to COVID. While last year the UW System Symposium was hosted virtually by UW-Whitewater, we are happy to be back in-person with all of you to celebrate undergraduate researchers from Wisconsin. We are pleased to welcome students, faculty, staff, and parents from across Wisconsin to UW-Whitewater for this year’s event.

Following a long tradition of commitment to undergraduate research, we are thrilled to announce that over 500 attendees and close to 300 students from across the UW System are gathering here today to share their research and creative efforts from the past year. Despite the many uncertainties caused by COVID, the strong showing is a testament to the robust tradition of undergraduate research initiatives at all the UW System campuses. In today’s rapidly changing and complex environment, the pursuit of truth and knowledge has never been more relevant. Events like this UW-System Symposium are made possible only through the committed efforts of many dedicated people and organizations. We encourage all attendees to take this opportunity to learn about the extraordinary undergraduate research and creative initiatives taking place across all our campuses. On behalf of the UWW Office of Undergraduate Research, I would like to congratulate all students and their mentors for their hard work and for truly embodying the Wisconsin Idea.

Best Regards,

Ana Caballero Mengibar
**Information**

**Registration- Hyland Hall Atrium**
Registration will be open from 7:45 am to 4:00 pm. All attendees can pick up Symposium information, name tag, and swag at registration.

**Certificate of Participation- Hyland Hall Atrium**
Please pick up your UW-System Symposium Certificate at the time of registration. It will be open from 7:45 am to 4:00 pm.

**Coat Check- James R. Connor University Center (UC), 264**
For your convenience, complimentary coat racks will be available in James R. Connor University Center (UC), Hamilton Room 264. Bags and posters may also be checked (no valuable items, please). It will be available from 7:45 am to 4:00 pm.

**Symposium Schedule Information**
Please note that the print version of the program lists the schedule of oral presentations by the first author registered. All authors, co-authors, and mentors are listed at the end of the program with their corresponding abstract.

**Graduate School & Employer Networking Fair**
University Center (UC), Room 259
Be sure to stop by the Graduate School & Employer Networking tables in the University Center (UC), Room 259 from 9:30 am to 2:45 pm to learn about graduate programs available from a wide range of institutions in Wisconsin and to network with potential employers.

**Lunch Information** (Taking place in two different locations)
Hyland Atrium and University Center (UC) outside of Hamilton Room, 164
To enhance your lunch experience, all attendees have been preassigned a location for you to pick up your lunch. Please check the back of your nametag to find your pre-assigned location. Thank you for your cooperation!

All box lunches will be clearly labeled including gluten-free options. However, if you have one of the following dietary restrictions, including vegetarian, vegan, shellfish free, seafood free, dairy free, and soy free, please choose the “vegan” lunch option.

Nut free: Please be aware that the facility is not nut free and that cross contamination may be present.

**Wisconsin Council on Undergraduate Research (WisCUR) University Center (UC) Room 268**
Please attend by invite only and if a member of WisCUR.

**UWW Student Undergraduate Research Organization (SURO) meeting, Hyland Hall Room 2306**
UW-Whitewater students, please be sure to stop by the SURO meeting to connect and socialize with other undergraduate researchers.
Symposium Schedule - Friday, April 22, 2022

7:45 am - 8:45 am
- Registration, Hyland Hall Atrium
- Visual Arts Set-Up, Hyland Hall
- Performing Arts Presentations Set-Up, Dance Studio, Young Auditorium 114
- Oral Presentations Session 1 Set-Up, Hyland Hall
- Poster Session 1 Set-Up, University Center (UC), Hamilton Room 164 & Old Main Ballroom Room 275
- Breakfast, Hyland Hall Atrium

8:45 am - 9:00 am
- Opening Remarks, Hyland Timmerman Auditorium, Assistant Vice Chancellor for SDES Ozalle Toms

9:00 am - 9:30 am
- Keynote Speaker, Hyland Timmerman Auditorium, Jo Ann Oravec

9:30 am - 2:45 pm
- Graduate School & Employer Networking Fair, University Center (UC), Room 259

9:30 am - 10:30 am
- Oral Presentations Session 1, Hyland Hall
- Visual Arts, Hyland Hall
- Performing Arts Presentations, Dance Studio, Young Auditorium 114

10:30 am - 12:00 pm
- Poster Session 1, University Center (UC), Hamilton Room 164 & Old Main Ballroom Room 275

12:00 pm - 1:00 pm
- Lunch, University Center (UC), Outside of Hamilton Room 164 & Hyland Atrium. Please check the back of your nametag to find your pre-assigned lunch location.
- WisCUR meeting, University Center (UC) Room 268
- (UW-W) Students Undergraduate Research Organization (SURO) meeting, Hyland Hall Room 2306
- Poster Visual Arts Set-Up, Hyland Hall
- Performing Arts Presentations Set-Up, Dance Studio, Young Auditorium, 114
- Oral Presentations Session 2 Set-Up, Hyland Hall
- Poster Session 2 Set-Up, University Center (UC), Hamilton Room 164 & Old Main Ballroom Room 275

1:15 pm - 2:45 pm
- Poster Session 2, University Center (UC), Hamilton Room 164 & Old Main Ballroom Room 275

2:45 pm - 3:45 pm
- Oral Presentations Session 2, Hyland Hall
- Performing Arts Presentations, Dance Studio, Young Auditorium 114
- Visual Arts, Hyland Hall
- Refreshments available in Hyland Hall Atrium

3:45 pm - 4:00 pm
- Closing Remarks, Hyland Timmerman Auditorium, Interim Chancellor John Chenoweth

- Refreshments available in Hyland Hall Atrium
Jo Ann Oravec is a full professor in the College of Business and Economics at the University of Wisconsin at Whitewater.

She received her MBA, MS, MA, and PhD at UW-Madison. She also taught at Baruch College of the City University of New York as well as UW-Madison and Ball State University. She chaired the Privacy Council of the State of Wisconsin, the nation’s first state-level council dealing with information technology and privacy. She has written books including “Virtual Individuals, Virtual Groups” (Cambridge University Press) and “Good Robot, Bad Robot” (Palgrave Macmillan), and has several thousand citations of her academic journal articles. She held visiting fellow positions at Cambridge and Oxford.

Jo Ann Oravec, PhD,
Winner of the UW-Whitewater’s Faculty Research Award
## Schedule of Visual Arts Presentations by Time and Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Time</th>
<th>First Author Registered</th>
<th>Institution</th>
<th>Area of Research</th>
<th>Title of Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH 1300</td>
<td>9:30 am</td>
<td>Cordelia Regenold</td>
<td>UW-Whitewater</td>
<td>Art Education</td>
<td>Game Play in the Classroom</td>
</tr>
<tr>
<td>HH 1305</td>
<td>9:30 am</td>
<td>Ty Weiss</td>
<td>UW-Stout</td>
<td>2D Art &amp; Animation</td>
<td>Brought To Life</td>
</tr>
<tr>
<td>HH 1305</td>
<td>2:45 pm</td>
<td>Logan Mueller</td>
<td>UW-Whitewater</td>
<td>IT</td>
<td>Multi-User NFT's</td>
</tr>
<tr>
<td>Time</td>
<td>Location</td>
<td>First Author Registered</td>
<td>Institution</td>
<td>Area of Research</td>
<td>Title of Presentation</td>
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<tr>
<td>9:30 - 10:30 AM</td>
<td>Dance Studio: YA 114</td>
<td>Teresa Krogmann</td>
<td>UW-Whitewater</td>
<td>Dance: Live Performance</td>
<td>Sculpted stops sz sss</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Bri Allehoff</td>
<td>Dance: Live Performance</td>
<td>Radical Wave of Dependent Stillness 2022</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bekah Gruener</td>
<td>Dance: Live Performance</td>
<td>There Arose Such A Clatter: Purple Ladder</td>
</tr>
<tr>
<td>2:45 - 3:45 PM</td>
<td>Dance Studio: YA 114</td>
<td>Teresa Krogmann</td>
<td>UW-Whitewater</td>
<td>Dance: Live Performance</td>
<td>Sculpted stops sz sss</td>
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<td></td>
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<td>Bri Allehoff</td>
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<td>Bekah Gruener</td>
<td>Dance: Live Performance</td>
<td>There Arose Such A Clatter: Purple Ladder</td>
</tr>
<tr>
<td>Location: Hylan Hall Room #</td>
<td>Time</td>
<td>First Author Registered</td>
<td>Institution</td>
<td>Area of Research</td>
<td>Title</td>
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<tr>
<td>HH1301</td>
<td>9:30</td>
<td>Ara Smith</td>
<td>UW-River Falls</td>
<td>Horticultural Science</td>
<td>Cluster Thinning in ‘Great White’ and ‘Green Giant’ Heirloom Tomatoes</td>
</tr>
<tr>
<td>HH1312</td>
<td>9:30</td>
<td>Sanya Kathuria</td>
<td>UW-Milwaukee</td>
<td>Biomedical Sciences</td>
<td>The Effect of Mindfulness Practice on Salivary Cortisol Levels in A Patient Population Undergoing Rotator Cuff Repair</td>
</tr>
<tr>
<td>HH1302</td>
<td>9:30</td>
<td>Tristan Christensen</td>
<td>UW-Whitewater</td>
<td>Chemistry</td>
<td>Synthesis of Small Molecule Amines as Promising Covid-19 Antivirals in Drug Discovery</td>
</tr>
<tr>
<td>HH1310</td>
<td>9:50</td>
<td>Abigail Cullen</td>
<td>UW-Stout</td>
<td>Biology</td>
<td>Genomic Analysis of Acrididae Gut Microbiome</td>
</tr>
<tr>
<td>HH1309</td>
<td>9:50</td>
<td>Ariel Liu</td>
<td>UW-Eau Claire</td>
<td>Mathematics</td>
<td>Spear and Shield: Coding to Thwart Adversarial Aggression</td>
</tr>
<tr>
<td>HH1302</td>
<td>9:50</td>
<td>Ashley Afah</td>
<td>UW-Whitewater</td>
<td>Chemistry</td>
<td>A Study on Safety and Effectiveness of Covid-19 Vaccines Among Children Aged Groups 5-11</td>
</tr>
<tr>
<td>HH1301</td>
<td>9:50</td>
<td>Ashley Tuszka</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>Changes in Hair Coat Length and Diameter Over Time in Blanketed and Non-blanketed Adult Horses</td>
</tr>
<tr>
<td>HH1306</td>
<td>9:50</td>
<td>Emily Reimche</td>
<td>Concordia University Wisconsin</td>
<td>Biology, Chemistry</td>
<td>Selective Anti-Cancer Effects of Piper methysticum (Kava) on H232A, MCF-7, and HeLa Cancer Cell Lines</td>
</tr>
<tr>
<td>HH1312</td>
<td>9:50</td>
<td>Jalyssa Beaudry</td>
<td>UW-River Falls</td>
<td>Agricultural Economics and Dairy Science</td>
<td>Dynamics of Investment in Robotic Milking: Evidence from a Swackewong survey of Wisconsin Dairy Farmers</td>
</tr>
<tr>
<td>HH1308</td>
<td>9:50</td>
<td>Kylie Haarman</td>
<td>Concordia University Wisconsin</td>
<td>Biology</td>
<td>Cohesin mutations confer increased sensitivity to DNA damaging agents in AML cells</td>
</tr>
<tr>
<td>HH1311</td>
<td>9:50</td>
<td>Miles Wackett</td>
<td>UW-Eau Claire</td>
<td>Chemistry/Biochemistry</td>
<td>Application of Spectroscopic Techniques to Study Molecular Crowding Effects on the Structure and Functions of Escherichia coli Prolyl-tRNA Synthetase</td>
</tr>
<tr>
<td>Session</td>
<td>Time</td>
<td>Author</td>
<td>Institution</td>
<td>Department</td>
<td>Title</td>
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<tr>
<td>HH1303</td>
<td>9:50</td>
<td>Tien Wong</td>
<td>UW-Milwaukee</td>
<td>Materials Science &amp; Engineering</td>
<td>Analysis of the friction and wear of graphene reinforced aluminum metal matrix composites using machine learning models</td>
</tr>
<tr>
<td>HH1309</td>
<td>10:10</td>
<td>Alexandra Pierson</td>
<td>UW-River Falls</td>
<td>Agricultural Engineering</td>
<td>Retrofitting a Small-Scale Grain Harvester</td>
</tr>
<tr>
<td>HH1308</td>
<td>10:10</td>
<td>Aylah Hanson</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>Depletion of Vitamin E and Beta-Carotene in Teff and Alfalfa Hay During Storage</td>
</tr>
<tr>
<td>HH1306</td>
<td>10:10</td>
<td>Emma Dimick</td>
<td>UW-Eau Claire</td>
<td>Environmental Studies, Communication Studies</td>
<td>What do You do to Reduce the Effects of Climate Change? A Qualitative Investigation of Individual and Societal Actions</td>
</tr>
<tr>
<td>HH1310</td>
<td>10:10</td>
<td>Jordan Cioni</td>
<td>UW-Green Bay</td>
<td>Mechanical Engineering</td>
<td>Numerical Investigation of Gyroid Composite for Shock Mitigation</td>
</tr>
<tr>
<td>HH1303</td>
<td>10:10</td>
<td>Richard Perschon</td>
<td>UW-Green Bay</td>
<td>Environmental Science</td>
<td>Biosolids Land Application and The Occurrence, Fate, and Mitigation of Per-And Polyfluoroalkyl Substances and Nitrate</td>
</tr>
<tr>
<td>HH1311</td>
<td>10:10</td>
<td>Thomas Stirrat</td>
<td>UW-Parkside</td>
<td>Biology</td>
<td>Effects of Bmal1 deficiency and high-fat feeding on gut microbes, obesity, and host circadian clock function</td>
</tr>
</tbody>
</table>
## Schedule of Oral Presentation Session #2 by First Author Registered

### 2:45pm – 3:45pm

<table>
<thead>
<tr>
<th>Location: Hylan Hall Room #</th>
<th>Time</th>
<th>First Author Registered</th>
<th>Institution</th>
<th>Area of Research</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH1312</td>
<td>2:45</td>
<td>Hannah Keziah Agustin</td>
<td>UW-Whitewater</td>
<td>Creative Writing</td>
<td>Homeland Exiles: Notes on Gentrification</td>
</tr>
<tr>
<td>HH1302</td>
<td>2:45</td>
<td>Kamarie Seebecker</td>
<td>UW-Whitewater</td>
<td>Psychology</td>
<td>An Experiential Review Behind the Learning Processes of FluentPet</td>
</tr>
<tr>
<td>HH1319</td>
<td>2:45</td>
<td>Mikaela Robarge</td>
<td>UW-La Crosse</td>
<td>World Languages</td>
<td>Zooming in to World Languages: Students’ Perceptions of Effective Teaching Practices during COVID-19</td>
</tr>
<tr>
<td>HH1301</td>
<td>2:45</td>
<td>Spencer Carey</td>
<td>UW-Whitewater</td>
<td>Entertainment</td>
<td>One’s Own Justice Audio Drama</td>
</tr>
<tr>
<td>HH1311</td>
<td>3:05</td>
<td>Abby Daniels</td>
<td>UW-Whitewater</td>
<td>Economics</td>
<td>Oregon Soccer Club Economic Impact Study</td>
</tr>
<tr>
<td>HH1309</td>
<td>3:05</td>
<td>Jacob Rohan</td>
<td>UW-Milwaukee</td>
<td>Architecture</td>
<td>Another Day, Another Dollar General: The Architectural, Environmental, and Economic Impacts of Dollar Stores</td>
</tr>
<tr>
<td>HH1303</td>
<td>3:05</td>
<td>Jaidan Scheuneman</td>
<td>UW-River Falls</td>
<td>Occupational Therapy</td>
<td>The Evolution of Occupational Therapy</td>
</tr>
<tr>
<td>HH1317</td>
<td>3:05</td>
<td>Jesse Castellanos</td>
<td>UW-Eau Claire</td>
<td>Economics, Environmental Studies, Communication</td>
<td>Examining Chinese and American Climate Change Views Using 2015, 2017 and 2020 Survey Data - Part I</td>
</tr>
<tr>
<td>HH1302</td>
<td>3:05</td>
<td>Kelly McElvain</td>
<td>UW-Milwaukee</td>
<td>Biomedical Engineering</td>
<td>Impact of Wound Dressing on Mechanotransduction Within Tissues of Chronic Wounds</td>
</tr>
<tr>
<td>HH1306</td>
<td>3:05</td>
<td>Nue Thao</td>
<td>UW-Stout</td>
<td>Autonomous Drones</td>
<td>Design of Autonomous UAV</td>
</tr>
<tr>
<td>Schedule of Oral Presentation Session #2 by First Author Registered</td>
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<td>2:45pm – 3:45pm</td>
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<th>Room</th>
<th>Time</th>
<th>Name</th>
<th>Institution</th>
<th>Department</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH1301</td>
<td>3:05</td>
<td>Ren Murphy-Kehoe</td>
<td>UW-Parkside</td>
<td>Education</td>
<td>Neurodiversity and Gender-Diversity: Through the Lens of Education</td>
</tr>
<tr>
<td>HH1308</td>
<td>3:05</td>
<td>Samantha Reynoso</td>
<td>UW-Parkside</td>
<td>Sociology</td>
<td>Mothers’ Resilience and Self-Empowerment through a Global Pandemic: Coping Strategies and Cultivating Support Systems</td>
</tr>
<tr>
<td>HH1312</td>
<td>3:05</td>
<td>Savannah Hernandez</td>
<td>UW-Whitewater</td>
<td>Economics/Housing</td>
<td>Walworth County Housing Study</td>
</tr>
<tr>
<td>HH1306</td>
<td>3:25</td>
<td>Alexander Brost</td>
<td>UW-Stout</td>
<td>Educational Problems, ESL Education</td>
<td>ESL Education: A Case Study at UW-Stout</td>
</tr>
<tr>
<td>HH1309</td>
<td>3:25</td>
<td>Elizabeth Balsiger</td>
<td>Concordia University Wisconsin</td>
<td>Speech-Language Pathology</td>
<td>Ethical Concerns in Service Delivery to Adults with Neurodevelopmental Disabilities Diagnosed with Dysphagia: A Comprehensive Literature Review</td>
</tr>
<tr>
<td>HH1317</td>
<td>3:25</td>
<td>Erica Kladar</td>
<td>UW-Eau Claire</td>
<td>Economics, Environmental Studies, Communication</td>
<td>Examining Chinese and American Climate Change Views Using 2015, 2017 and 2020 Survey Data - Part II</td>
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<tr>
<td>HH1308</td>
<td>3:25</td>
<td>James Groehler</td>
<td>UW-Whitewater</td>
<td>Occupational Safety and Health</td>
<td>Heart Rate and Presence of Musculoskeletal Disorders</td>
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<td>HH1303</td>
<td>3:25</td>
<td>Mia Ciancio</td>
<td>UW-Whitewater</td>
<td>Healthcare Systems/Services, Communication Sciences &amp; Disorders</td>
<td>Barriers to Cleft Lip/Palate Services: A regional and Global Examination of Accessibility and Advocacy</td>
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<td>HH1311</td>
<td>3:25</td>
<td>Tyler John</td>
<td>UW-Milwaukee</td>
<td>Documentary</td>
<td>Turning the Page</td>
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<td>31</td>
<td>Alexandra Davis</td>
<td>UW-Green Bay</td>
<td>Biology</td>
<td>Assessing Phenological Shifts in Great Lake Plant Species using Machine Learning</td>
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<tr>
<td>47</td>
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<td>UW-Milwaukee</td>
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<td>Analysis of Nutritional Content Recycled Through Composting in Green Mountain Technology’s Earth Cube</td>
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<td>39</td>
<td>Alyssa Gernenz</td>
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<td>Biofeedback Using Endoscopic, Glottographic, and Aerodynamic Signature of Glottal Adduction in Voice, Swallow, and Airway Protection</td>
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<td>15</td>
<td>Angelique Compton</td>
<td>UW-Whitewater</td>
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<td>xPeriod1 Knockout Affects Heart Rate in Xenopus laevis during Embryonic Development</td>
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<tr>
<td>54</td>
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<td>12</td>
<td>Bashkim Veliu</td>
<td>UW-Whitewater</td>
<td>Biology</td>
<td>xPeriod1 knockout in Animal Caps Affects Basal Metabolism and Decreases the Response of xNocturnin in Mesoderm Induction in Xenopus laevis</td>
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<td>38</td>
<td>Brandon Wilson</td>
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<td>Assessing the Fluvial Habitat Preferences of Clubtail Dragonflies (Odonata, Gomphidae) in the Huron Mountains (Michigan, USA)</td>
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<td>19</td>
<td>Brianna Gesiorski</td>
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<td>Nucleoside Transport and Metabolism Contribute to the Recovery from Glucose-phosphate Stress in Escherichia coli</td>
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<th>#</th>
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<tr>
<td>51</td>
<td>Charity Hribar</td>
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<td>Discovering Novel Antimicrobials in Endophyte Producing Streptomyces Misionesis against Opportunistic Pathogens</td>
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<td>DaKota White</td>
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<td>Localizing Functional Amyloids in Cryopreserved Bovine Spermatozoa by Fluorescence Microscopy</td>
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<td>3</td>
<td>Damon Trump</td>
<td>UW-La Crosse</td>
<td>Biochemistry</td>
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<td>An Information-theoretic Model of Allosteric Macromolecules Based On Spatial Graphs</td>
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<td>Edyta Biever</td>
<td>Concordia University Wisconsin</td>
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<td>The quest for new antibiotics from an uncultured endophyte Rhodococcus sp. (STRP-A-15-3)</td>
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<td>49</td>
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<td>Eric Hoffstatter</td>
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<td>Effects of Extract from Bottle Gourd on Lung Cancer</td>
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<td>13</td>
<td>Evalyn Beall</td>
<td>UW-River Falls</td>
<td>Biology</td>
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**10:30 am - 12:00 pm**

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<td>52</td>
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<td>Concordia University Wisconsin</td>
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<td>1</td>
<td>Giannina Castillo Pacheco</td>
<td>Concordia University Wisconsin</td>
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<td>Computer-aided Drug Discovery of Selective HDAC3 Inhibitors as HIV Latency-Reversing Agents</td>
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<td>Hanna Skubal</td>
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<td>Expression and Purification of Recombination pCas9 from an E. coli Expression System</td>
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<td>Jacob Plumley</td>
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<td>Jenna Kerkvliet</td>
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<td>CRISPR knockout of xPeriod1 Effects xNocturnin Expression and Somite Development in Xenopus laevis</td>
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<td>John Binns</td>
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<td>UW-Green Bay</td>
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<td>16</td>
<td>Kaylie Branstrom</td>
<td>UW-Whitewater</td>
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<td>Antibiotic Production Based on Pseudomonas Chlororaphis Growth on Sugars</td>
<td>Kira Staehler</td>
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<td>The effects of Temperature on Soft coral Physiology</td>
<td>Kirsten Schwenk</td>
<td>UW-Whitewater Biology</td>
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<td>37</td>
<td>Reconstructing Ecological Communities over Time in an Ancient Wetland</td>
<td>Laura Phillips</td>
<td>UW-Whitewater Biology, Geology</td>
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<td>6</td>
<td>Isolation of Jumbo Phages</td>
<td>Lilianna Rolands</td>
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<td>Analysis of Metabolic Cell Structures in Fruit Fly Models of Spinal Muscular Atrophy</td>
<td>Lydia Zentzis</td>
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<td>Alcohol and Exercise and Their Impact on Aging Mice</td>
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<td>Ethanol extract Effects of Echinacea Purpurea on Superoxide Anion Production by HL-60 Cells</td>
<td>Mai Xiong</td>
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<td>Ultra High-Throughput Platform for the Directed Evolution of PET Degrading Enzymes</td>
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<td>The Effect of SK0408 and Sk0459 on Human Melanoma</td>
<td>Michael Laib</td>
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<td>30</td>
<td>Characterization of the insulin signaling pathway in the parasitic nematode Brugia malayi</td>
<td>Miles Hagen</td>
<td>UW-Whitewater Biology</td>
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<td>5</td>
<td>Novel Insights on the Genetic Identification of Giant knotweed Species in Wisconsin (genus Reynoutria, Polygonaceae)</td>
<td>Morgan Sabol</td>
<td>UW-Whitewater Biology</td>
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<td>Voice-Related Cortical Responses to Phonatory Onset and Rapid Laryngeal Somatosensory Perturbation</td>
<td>Morgan Smarzinski</td>
<td>UW-Whitewater Neuroscience, Biology, Medicine, Biomedical Engineering</td>
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<td>Myriah Earll</td>
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<td>22</td>
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<td>Analysis of Lysogeny and Immunity Genes in Arthrobacter Phages</td>
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<td>Stefanie Pettersen</td>
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**10:30 am - 12:00 pm**  
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<td>UW-River Falls</td>
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10:30 am - 12:00 pm  
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<td>Addressing the Social and Technology Needs of Regional Older Adults: Establishing an Intergenerational Technology Center</td>
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<td>Sasha Bellot</td>
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<td>UW-Eau Claire</td>
<td>Accounting</td>
<td>Budget/Cost Statistical Analysis and Modeling of City Greenhouse Gas Emission of Student from Minnesota</td>
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<td>Poster #</td>
<td>First Author Registered</td>
<td>Institution</td>
<td>Area of Research</td>
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<td>120</td>
<td>Abbie Bruederle</td>
<td>UW-Whitewater</td>
<td>Paleontology</td>
<td>Taphonomy of the Echinoids of the Cretaceous Walnut Formation, Central Texas</td>
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<tr>
<td>121</td>
<td>Aiden Scherff</td>
<td>UW-Whitewater</td>
<td>Paleontology</td>
<td>Multispecies Paleontology of the Late Ordovician Platteville Formation, Mifflin Member, of Southeastern Wisconsin.</td>
</tr>
<tr>
<td>132</td>
<td>Alex Abplanalp</td>
<td>UW-Whitewater</td>
<td>Research Compliance</td>
<td>Export Compliance Awareness and Engagement</td>
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<tr>
<td>98</td>
<td>Alex Nelson</td>
<td>UW-Milwaukee</td>
<td>Clinical Psychology, Nursing, Public Health</td>
<td>Effects of Mobile-Based Attentional Bias Modification Training for Young Adult E-Cigarette Users: A Randomized Controlled Trial</td>
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<tr>
<td>114</td>
<td>Alexis Peterson</td>
<td>UW-Green Bay</td>
<td>Inclusivity</td>
<td>Your academic success is our collective responsibility: Listening to our students to help them attain higher academic success</td>
</tr>
<tr>
<td>125</td>
<td>Ali Cunningham</td>
<td>UW-Whitewater</td>
<td>Psychology</td>
<td>The psychophysics of affordance perception and memory: The Power Law scaling of perceived maximum forward reach-ability with an object</td>
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<tr>
<td>95</td>
<td>Ali Thome-Hough</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>The Impact of Pulsed Electromagnetic Fields Therapy on the Stress Response in Horses</td>
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<tr>
<td>93</td>
<td>Alison Smelter</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>The effect of stocking density and a calving blind on assisted calvings in Holstein dairy cows</td>
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<td>103</td>
<td>Annemarie Mularski</td>
<td>UW-Whitewater</td>
<td>Geology</td>
<td>Multispecies Paleoecology of the Oxygen-Challenged Fauna from the Late Carboniferous Foraker Formation, Southeastern Nebraska..</td>
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<tr>
<td>91</td>
<td>Ashley Tuszka</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>Seasonal Changes in Plasma Vitamin E Concentrations in a Mature Horse Herd</td>
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<tr>
<td>101</td>
<td>Autumn Saunders</td>
<td>UW-Milwaukee</td>
<td>Freshwater Science</td>
<td>Determining the correlation between siderophore-encoding genes in E.coli strains and their survivability in a freshwater sand environment</td>
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## Schedule of Poster Session #2 by First Author Registered

1:15 pm – 2:45 pm  
Location: James R. Connor University Center (UC), Hamilton Room 164

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Author(s)</th>
<th>Institution</th>
<th>Department/Program</th>
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<tbody>
<tr>
<td>127</td>
<td>Cannabis Use, Aerobic Exercise, and Internalizing Symptoms Amongst Adolescents</td>
<td>Bo Malames</td>
<td>UW-Milwaukee</td>
<td>Psychology</td>
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<tr>
<td>99</td>
<td>The Joy of Cooking</td>
<td>Brenden Malmgren</td>
<td>UW-Stout</td>
<td>Cooking</td>
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<td>107</td>
<td>Developing a Multimodal Device to monitor Slope Stability</td>
<td>Brett Steck</td>
<td>UW-Whitewater</td>
<td>Geology, Physics, &amp; Computer Science</td>
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<tr>
<td>105</td>
<td>Macro-Borings in a Ceratostreon texana Oyster Mass Occurrence (OMO) in the Early Cretaceous Walnut Formation, Central Texas</td>
<td>Cali Lensmire</td>
<td>UW-Whitewater</td>
<td>Geology</td>
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<tr>
<td>113</td>
<td>Macro-Borings in a Ceratostreon texana Oyster Mass Occurrence (OMO) in the Early Cretaceous Walnut Formation, Central Texas</td>
<td>Cameron Mueller</td>
<td>UW-Green Bay</td>
<td>Hydrology/Environmental Science</td>
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<tr>
<td>122</td>
<td>A Social Gambling Task and Its Relation to Physiological Responses in Children and Adults</td>
<td>Carter Crowley</td>
<td>UW-Green Bay</td>
<td>Psychology</td>
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<tr>
<td>118</td>
<td>A Method of Properly Fitting a Chinrest for Upper String Students and Performers</td>
<td>Caryana Dominguez</td>
<td>UW-Whitewater</td>
<td>Music</td>
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<tr>
<td>106</td>
<td>Jurassic Morrison Formation Stratigraphy and Paleoenvironments at the Warm Springs Ranch, Foot Site Dinosaur Quarry, Thermopolis, Wyoming</td>
<td>Dylan Brandt</td>
<td>UW-Whitewater</td>
<td>Geology/Paleontology</td>
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<tr>
<td>89</td>
<td>To Eat or Not to Eat? An Analysis of Meat Consumption Behaviors</td>
<td>Emily Macpherson</td>
<td>UW-River Falls</td>
<td>Agriculture Economics</td>
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<tr>
<td>137</td>
<td>Changing Perceptions of Inclusion: The Role of a Universal Design for Learning Framework in Pre-Service Teacher Preparation</td>
<td>Emily Nickolai</td>
<td>UW-Eau Claire</td>
<td>Teacher Preparation</td>
</tr>
<tr>
<td>86</td>
<td>Are all Animals Equal?</td>
<td>Emma Jorgensen</td>
<td>UW-River Falls</td>
<td>Ag Economics</td>
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<tr>
<td>102</td>
<td>Using Visual Graphics of Mass Wasting for Community Outreach</td>
<td>Esther Jeninga</td>
<td>UW-Whitewater</td>
<td>Geology</td>
</tr>
<tr>
<td>94</td>
<td>Gabrielle Rice</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
<td>The effects of a novel FSH + hyaluronan superovulation protocol on the onset, duration, and number of ovulations in ewes</td>
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<td>119</td>
<td>Grace Johnson</td>
<td>UW-River Falls</td>
<td>Oral History Interview of a Non-native English Speaker</td>
<td>Who are Language Learners in the Midwest? An Oral History Interview</td>
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<tr>
<td>133</td>
<td>Hannah Driessen</td>
<td>UW-Oshkosh</td>
<td>Science</td>
<td>My Actions Have Reactions</td>
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<td>88</td>
<td>Hannah Lemke</td>
<td>UW-Platteville</td>
<td>Agriculture</td>
<td>An Evaluation of Corn and Soybean Hedging In Wisconsin Regional Markets</td>
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<tr>
<td>100</td>
<td>Helena Bloohm</td>
<td>UW-River Falls</td>
<td>Equine Science</td>
<td>Evaluating the Efficacy of Pyrantel Pamoate Dewormer Administered to Juvenile Horses</td>
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<tr>
<td>135</td>
<td>Kathleen Rocco</td>
<td>UW-Whitewater</td>
<td>Social Work and Computer Science</td>
<td>Older Wisconsinites' Use of Smart Medical Devices: Privacy and Security</td>
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<td>128</td>
<td>Kayla Deckert</td>
<td>UW-River Falls</td>
<td>Psychology</td>
<td>The Big Five and Relationship Satisfaction</td>
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<td>109</td>
<td>Kennedy Cox</td>
<td>UW-Whitewater</td>
<td>History</td>
<td>The Hand of God: Finding the Origins to the Hamsa and its impact on Abrahamic Religious Communities</td>
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<td>87</td>
<td>Kimberly Van Donsel</td>
<td>UW-Platteville</td>
<td>Agriculture</td>
<td>EPD Effects on Bull Value</td>
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<td>90</td>
<td>Kole Sommerfeld</td>
<td>UW-River Falls</td>
<td>Agronomy</td>
<td>Yield and Quality of Sorghum Sudan and Pearl Millet Under Drought in NW Wisconsin</td>
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<td>110</td>
<td>Kollin Bolchen</td>
<td>UW-Whitewater</td>
<td>History</td>
<td>A Common And Public Nuisance</td>
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<tr>
<td>129</td>
<td>Madeline Born</td>
<td>UW-Whitewater</td>
<td>Psychology</td>
<td>College Students' Close Relationships and Associations with Prosocial Orientation</td>
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<td>Department</td>
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<tr>
<td>131</td>
<td>Spectral Characterization and Classification of Urban Tree Species in Southern Wisconsin</td>
<td>Madelyn Seuser</td>
<td>UW-Whitewater</td>
<td>Remote Sensing</td>
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<tr>
<td>134</td>
<td>Re-Recruitment as Second Chances for Students and University Enrollment Efforts</td>
<td>Maggie Singer</td>
<td>UW-Whitewater</td>
<td>Social Work</td>
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<td>115</td>
<td>Comparison of Wearable Camera Image Physical Activity Behavior Estimates to Direct Observation</td>
<td>Michael Kneiert</td>
<td>UW-Milwaukee</td>
<td>Kinesiology</td>
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<tr>
<td>112</td>
<td>Car Vac</td>
<td>Michael Wolff</td>
<td>UW-Stout</td>
<td>Houseware</td>
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<td>116</td>
<td>LGBTQ PhotoVoice for Social Justice</td>
<td>Miles Duckert</td>
<td>UW-Whitewater</td>
<td>LGBTQ+ Studies</td>
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<td>108</td>
<td>A Calcite Investigation on the Great Bank of Guizhou in the Nanpanjiang Basin, South China</td>
<td>Neda Mobasher</td>
<td>UW-Green Bay</td>
<td>Geoscience</td>
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<td>92</td>
<td>The Impact of Hay Nets on Horse Hay Usage</td>
<td>Olivia Schueller</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
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<td>136</td>
<td>Foods of the Incas, Mayans, and Aztecs</td>
<td>Peyton Kowalski</td>
<td>UW-River Falls</td>
<td>Spanish</td>
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<td>104</td>
<td>Laboratory Experimentation on What Causes Slope Failure</td>
<td>Peyton Sanders</td>
<td>UW-Whitewater</td>
<td>Geology</td>
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<td>130</td>
<td>Risk factors associated with the national race/ethnicity disparity in Neonatal Abstinence Syndrome</td>
<td>Phoebe Troeller</td>
<td>UW-Milwaukee</td>
<td>Public Health-Epidemiology</td>
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<tr>
<td>138</td>
<td>Who are Language Learners in the Midwest? An Oral History Interview</td>
<td>Rachel Anderson</td>
<td>UW-River Falls</td>
<td>TESOL</td>
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<td>111</td>
<td>From Bolsheviks to Barberry: Wartime Propaganda Tactics in Domestic Agriculture</td>
<td>Riley Barlow</td>
<td>UW-Whitewater</td>
<td>History</td>
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<td>126</td>
<td>Odorant Chemical Structure Can Predict Changes in Olfactory Perception Ratings</td>
<td>Sana Shakir</td>
<td>UW-Milwaukee</td>
<td>Psychology</td>
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<td>96</td>
<td>Using conditioned place preference to assess dairy cow response to udder singeing</td>
<td>Shawna Sigl</td>
<td>UW-River Falls</td>
<td>Animal Science</td>
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Schedule of Poster Session #2 by First Author Registered  
1:15 pm – 2:45 pm  
Location: James R. Connor University Center (UC), Hamilton Room 164

<table>
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<th>No.</th>
<th>Author</th>
<th>Institution</th>
<th>Field</th>
<th>Title</th>
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<tr>
<td>139</td>
<td>Shelley Feil</td>
<td>UW-Milwaukee</td>
<td>User Experience</td>
<td>Gamification and Storytelling Principles for Mental Health Support</td>
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<td>117</td>
<td>Tessa Culleton</td>
<td>UW-Milwaukee</td>
<td>Linguistics</td>
<td>Low density and clear speech make spoken words more memorable</td>
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<tr>
<td>123</td>
<td>Thomas Stirrat</td>
<td>UW-Parkside</td>
<td>Psychology</td>
<td>The Effect of Alpha and Beta Binaural Beats on Insight and Analytic Problem Solving</td>
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<tr>
<td>97</td>
<td>Valerie Rakoczy</td>
<td>UW-River Falls</td>
<td>Animal Welfare</td>
<td>Evaluation of Local Anesthetic Placement in Dairy Calves During the Disbudding Process</td>
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<tr>
<td>124</td>
<td>Yincheng Jin</td>
<td>UW-Parkside</td>
<td>Psychology</td>
<td>College Students’ Conspiracy Beliefs, Their Political Attitudes, and Attitudes to the Insurrection at the US Capitol, COVID-19, and Black Lives Matters</td>
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<td>Poster #</td>
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<td>Institution</td>
<td>Area of Research</td>
<td>Title of Presentation</td>
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<td>152</td>
<td>Alex Narkiewicz-Jodko</td>
<td>UW-Eau Claire</td>
<td>Chemistry (Biochemistry)</td>
<td>A Combined Experimental-Computational Investigation of the Impact of Macromolecular Crowding on Proteins’ Structure and Dynamics.</td>
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<td>149</td>
<td>Alex Pavelic</td>
<td>UW-Madison</td>
<td>Chemistry</td>
<td>Diruthenium Paddlewheel Electrocatalysts: A Simple Solution to Efficient Ammonia Oxidation</td>
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<td>157</td>
<td>Benjamin Patterson</td>
<td>UW-River Falls</td>
<td>Mathematics</td>
<td>Solution to Square Game on Small Grids</td>
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<td>158</td>
<td>Bryan Boettcher</td>
<td>UW-Platteville</td>
<td>Mechanical Engineering</td>
<td>Analytical study of a piezoelectric energy harvester under both steady flow and harmonic excitation</td>
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<td>155</td>
<td>Dakota Vaughn</td>
<td>UW-Whitewater</td>
<td>Computer Science</td>
<td>Implementation Review of a Multimodal Landslide Detection Device</td>
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<td>146</td>
<td>Dhivyashree Senthil Murugan</td>
<td>UW-Milwaukee</td>
<td>Chemistry</td>
<td>Biological Investigation of Phenylboronic Acid Nitrogen Mustards induced apoptosis in Triple Negative Breast Cancer</td>
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<td>153</td>
<td>Forest Winklepleck</td>
<td>UW-Whitewater</td>
<td>Chemistry, Biology</td>
<td>Initial Analysis of Volatile Organic Compounds in Domestic Dog Urine</td>
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<td>160</td>
<td>Ian Carter</td>
<td>UW-River Falls</td>
<td>Physics</td>
<td>Developing a Method For Constructing a MOSFET Transistor</td>
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<td>151</td>
<td>Jacob L. Gasner</td>
<td>UW-Stout</td>
<td>Chemistry</td>
<td>Synthesis of Chemical Probes for Detection of Amino Acid Citrulline Using Ester/Nitrile Condensation</td>
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<tr>
<td>144</td>
<td>James Anderson</td>
<td>UW-Whitewater</td>
<td>Chemistry</td>
<td>Developing a Method to Detect Volatiles in Dog Urine</td>
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<tr>
<td>156</td>
<td>Jeryn Daggs</td>
<td>UW-Green Bay</td>
<td>Materials Science</td>
<td>Structural and electronic properties of AgZnF3 Perovskite</td>
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### Schedule of Poster Session #2 by First Author Registered

**1:15 pm – 2:45 pm**  
**Location: James R. Connor University Center (UC), Old Main Ballroom 275**

<table>
<thead>
<tr>
<th>#</th>
<th>First Author</th>
<th>Institution</th>
<th>Major</th>
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<tr>
<td>154</td>
<td>John Schnor</td>
<td>UW-Whitewater</td>
<td>Computer Science</td>
<td>HawkRover Autonomous Driving Platform with 5G Variable Beamforming</td>
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<tr>
<td>161</td>
<td>Julia Jones</td>
<td>UW-Parkside</td>
<td>Physics</td>
<td>Growth and optimization of structural properties of (110)- oriented YBa2Cu3O7 (YBCO) / PrBa2(Cu0.8Ga0.2 )3O7 (PBCGO) heterostructure</td>
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<tr>
<td>145</td>
<td>Justice Merrifield</td>
<td>UW-Madison</td>
<td>Chemistry</td>
<td>Progress towards a high-throughput catalyst discovery platform using DNA nanostructures.</td>
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<tr>
<td>143</td>
<td>Marina Slawinski</td>
<td>UW-Milwaukee</td>
<td>Biophysics</td>
<td>Generating Pores within Protein-Based Biomaterials without Compromising Their Structural Integrity</td>
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<tr>
<td>142</td>
<td>Naomi Raicu</td>
<td>UW-Milwaukee</td>
<td>Biophysics</td>
<td>Study of fluorescent environment-sensitive dyes for protein mechanical unfolding detection</td>
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<tr>
<td>150</td>
<td>Peyton Kowalski</td>
<td>UW-River Falls</td>
<td>Chemistry</td>
<td>Over-the-Counter Melatonin, Are You Getting What You Are Expecting?</td>
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<td>148</td>
<td>Rylee Newell</td>
<td>UW-Whitewater</td>
<td>Chemistry</td>
<td>Development of an internal standard for normalizing palmitoylomic data</td>
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<tr>
<td>147</td>
<td>Sarah Maloney</td>
<td>UW-Whitewater</td>
<td>Chemistry</td>
<td>Synthesis and Utilization of New Sulfonium Salt Photoinitiators</td>
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<tr>
<td>140</td>
<td>Sparrow Roch</td>
<td>UW-Milwaukee</td>
<td>Astronomy</td>
<td>Observatory Position Error as a Source of Noise in Pulsar Timing Data: Effect on Gravitational Wave Analyses</td>
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<td>141</td>
<td>Sparrow Roch</td>
<td>UW-Milwaukee</td>
<td>Astronomy</td>
<td>STARS@UWM: The Search for Pulsars</td>
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<tr>
<td>159</td>
<td>Thomas Stirrat</td>
<td>UW-Parkside</td>
<td>Organic Chemistry</td>
<td>Syntheses and evaluation of UV filters derived from polyphenolic hydroxycinnamic acids.</td>
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</tbody>
</table>
20th Annual

**UW-System Symposium** for Undergraduate Research, Scholarly & Creative Activity
University of Wisconsin-Whitewater

**Presentation Abstracts**
Abstracts of Visual Arts Presentations

Game Play in the Classroom (UW-Whitewater)
Time: 9:30 Location: HH 1300
Author(s): Cordelia Regenold
Mentor(s): Teresa Faris
Visual Art: Art Education

My original research was meant to connect escapism, nostalgia, and comfort in adults based on their childhood experiences and senses. I then wanted to consider whether or not fidget toys were at all able to be connected with all of these seemingly differing ideas. After I started doing research I started to come across a couple of really interesting ideas that made me want to change my research. I found information on transitional objects, social-emotional learning, and gamification. Although again, all of these ideas differ and may not connect, I did find some connections with them in research in regards to the current education system and especially during the current pandemic related to COVID-19.

Multi-User NFT’s (UW-Whitewater)
Time: 2:45 Location: HH 1305
Author(s): Logan Mueller
Mentor(s): Nick Hwang
Visual Art: IT

Generative Art and NFTs emerged through blockchain technology and were made popular through Cryptocurrencies. While many NFTs are visual and interactive, few are interactive for multiple users, nor are they interactable separate from the NFT itself. Our research attempts to combine existing NFT platforms with our multi-user communication platform (Collab-Hub) to create generative multi-user NFTs that are also interactive separate from the NFT. Our process involved surveying NFT platforms, adapting our broad network multi-user communication platform, and utilizing a popular creative-coding environment P5.js. We used Collab-Hub to interconnect the users' actions while editing the same file. We used P5.js to create the file that the user input would modify, and the website 'fxhash.xyz' was used to publish the file as a licensed NFT. The file used various procedural and user-based generation methods to create unique and interesting pieces of art that were equally different based on the user's input on the external website. While many procedurally generated NFTs exist, few are interactable in real-time by any number of users from an external website. Our method allows for endless possibilities and creative opportunities to interact with the same file to make something unique and new.

Brought To Life (UW-Stout)
Time: 9:30 Location: HH 1305
Author(s): Ty Weiss
Mentor(s): Xanthi G
Visual Art: 2D Art & Animation

Creation of a 2D animated avatar from scratch. In order to accomplish this, the student had to draw a character model, slice, and then rig it in another program in order to animate. The software used was Gimp (free photoshop) to draw it & live2D to animate it. Each step from reference picture to final "living" product is detailed. Many challenges were combated from drawing, anatomy, shading, color, perspective, slicing, deformers, parameters, physics, & exporting/importing. The final product is an avatar brought to life through imagination and work of the student.
Abstracts of Performing Arts Presentations

There Arose Such A Clatter: Purple Ladder
(UW-Whitewater)
*Time:* 9:30 & 2:45
*Location:* Dance Studio: YA 114
*Author(s):* Bekah Gruener, Kelli Polnow, CJ Kaegi, Dalon Williams and Nicole Kuhnz
*Mentor(s):* "Piper" Morgan Hayes
*Performance Art*
*Dance: Live Performance*

Auditions for Piper Morgan Hayes’ choreographic work “There Arose Such A Clatter: Purple Ladder” occurred early in the Fall 2021 semester. Dancers were selected to investigate movement via choreography taught by Hayes as well as improvisation by the dancers. This piece is a collaborative work between Hayes and her dancers. Dancers are pushed to thoroughly investigate roles of gender within the work and find ways to break down stereotypes to push the norm and break expectations of the viewer. The movement within the piece is always changing in an effort to create a choreographic work that pushes boundaries within both the dancers and the audience. The dancers have learned to let the message of the piece flow through their bodies as they perform the work. Finally, after two semesters of rehearsing, “There Arose Such A Clatter: Purple Ladder” was performed at UWW’s annual dance show Dancescapes'22 as well as at the American College Dance Association in March 2022.

Radical Wave of Dependent Stillness 2022
(UW-Whitewater)
*Time:* 9:30 & 2:45
*Location:* Dance Studio: YA 114
*Author(s):* Bri Allehoff, Stephanie Krug and Emma Hendricks
*Mentor(s):* Barbara Grubel
*Performance Art*
*Dance: Live Performance*

Auditions for mentor Barbara Grubel’s work, Radical Wave of Dependent Stillness, were held in September 2021. Three dancers were chosen for this specific work that would be a collaboration of movement development between choreographer and the dancers. Dancers were given specific dual movement words to create movement material that ultimately would represent motifs within the work. The words were derivative of an email sent to the choreographer by the music composer UWW Professor Christian Ellenwood stating his inspiration to create the work from a poem by Lola Ridge, A Torch Blown Along the Wind. Throughout the fall and spring semester, development and editing of movement material and choreography occurred separate from deliberate relationship to the musical score. Radical Wave of Dependent Stillness continued development in the Spring 2022 semester and premiered in March at DanceScapes 22 and performed at the American College Dance Association Regional Conference at UW-Milwaukee. The music, A Torch Blown Along the Wind, is performed by the UWW Chamber Singers under the direction of Robert Gehrenbeck.

Sculpted stops sz sss
(UW-Whitewater)
*Time:* 9:30 & 2:45
*Location:* Dance Studio: YA 114
*Author(s):* Teresa Krogmann and Kayley Stoner
*Mentor(s):* Barbara Grubel
*Performance Art*
*Dance: Live Performance*

Sculpted stops sz sss began as a simple idea of statues, sculptures, and photos taken from around the world including the Freedom Sculpture, Terra Cotta Soldiers, and Raising the Flag on Iwo Jima. The images were blended with various movements, ideas, and music to create an ever-changing and complex picture of these historical images. The movement to portray these images are represented in a futuristic, cold, and mechanical way. Different ideas explored through the piece were movements of ebb and flow, the feeling of being part of a bigger machine, the feeling of spiraling in and out, and exploring space, time, and dynamics.
Abstracts of Performing Arts Presentations

Movements were created by focusing on these images and sculptures using techniques learned in solo and group composition at UW-Whitewater along with previous choreographic experiences.

The five dancers in the cast were selected based on auditions held in September of 2021. For the auditions, dancers were given different shapes and ideas to improvise from. Rehearsals began mid-September with at least 3 hours per week and continued until the beginning of December. From September to March, mentor and Artistic Director, Professor Barbara Grubel would visit rehearsals to give in-depth feedback to the choreographers and dancers. After the adjudication in early December, Sculpted stop sz sss was chosen to be performed in DanceScapes 2022 and represent the University of Wisconsin -Whitewater at the American College Dance Association Regional Conference at the University of Wisconsin – Milwaukee on March 22.
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Genomic Analysis of Acrididae Gut Microbiome
(UW-Stout)
Time: 9:50   Location: HH1310
Author(s): Abigail Cullen
Mentor(s): Arthur Kneeland
Biology

Grasshoppers (Acrididae) play a major role in ecosystem services, biodiversity, and as agricultural pests. Understanding their overall biology is critical for proper management. This includes the insects gut microbiome. Many insect gut microbiomes have been explored, and are well understood, although this mostly applies to economically important species. Acrididae, microbiome is poorly understood, even though they often act as seasonal agricultural pests. In this study, we performed a genomic survey of bacterial species using the Oxford Nanopore MinION. As well as cell cultivation to determine dominance and functions of bacterial lineages found in Melanoplus species native to Western Wisconsin. A whole genome analysis of gut contents revealed 100-150 species of bacteria per sample. The oxford nanopore instrument allows for an entire genomic analysis, at roughly $100-$150 per gut sample. There were between five and ten thousand base pairs read in each sample, thousands of which belonged to bacterial lineages. Across all Acridid samples, Enterobacteriaceae, Moraxellaceae, and Pseudomonadaceae were the most abundant bacterial families. Escherichia coli was the most dominant species, followed by Acinetobacter guilluae and Pseudomonas spp. Enterobacteriaceae and E. coli dominance indicate there is a major role played in digestion, upgrading the nutrient poor diet of Melanoplus spp. Moraxellaceae and Pseudomonadaceae species are likely opportunistic colonizers due to their association with soil and water. The technology used in this study allowed us to yield large quantities of data at a relatively low cost, and this data gave us insight to Acrididae biology and ecology in Western Wisconsin.

Retrofitting a Small-Scale Grain Harvester
(UW-River Falls)
Time: 10:10   Location: HH1309
Author(s): Alexandra Pierson, Kyle Leis and Rames Frisch
Mentor(s): Bob Zhiwei Zeng
Agricultural Engineering

People all around the world have different perspectives about farming from backyard gardens providing sustainable and self-sufficient produce to industrial size equipment. However, the industrial size equipment is cost prohibitive to small scale farmers around the world. The objective of this project is to retrofit an old combine harvester to improve the productivity, efficiency, profitability, and sustainability of the machine for small-scale grain farmers. An Oliver 18 combine harvester was chosen because the simplicity of the original machine design facilitates multiple redesign concepts and modifications including replacing the cutter bar and reel with a stripper head to increase the capacity of the combine. Redesign concepts in this project include additional bristle brush sections added to the head auger and a precisely fitted plastic shim inserted under the head auger. The original head auger configuration was included in the test as the control group. Three different material mass flow rates were used to represent different field travel speeds (i.e., 2 mph, 3 mph, and 4 mph). Three design configurations combined with three speeds, replicated at 3 times, yielding a total of 27 lab tests. Material handling efficiency of the wheat-straw mixture was measured, and overall cost, weight, durability, and longevity were analyzed in assessing design concepts at different working conditions. The results showed that the plastic shim design concept had the highest efficiency and a reasonable overall installation/material cost to small-scale farmers. Data analysis is in progress and will be presented in the Symposium.
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Using Survey Data From 2021 to Explore Barriers Limiting Usage of the Supplemental Nutrition Assistance Program-Market Match Incentive Program at the Eau Claire Farmers’ Market (UW-Eau Claire)
Time: 10:10 Location: HH1317
Author(s): Annabelle Howat, Katie Klingbeil, Andrew Lindaas and Madelyn Zenner
Mentor(s): Eric Jamelske Economics: Health & Nutrition

Food insecurity is a significant issue facing many American households. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers’ markets (FM) offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at FM. The Eau Claire Farmers’ Market (ECFM) offers a Market Match Program (MMP) to incentivize Supplemental Nutrition Assistance Program (SNAP) participants to shop at the market. Administrative data show that approximately 90% of eligible SNAP households never use the ECFM-MMP, while approximately 50% of SNAP households using the ECFM-MMP only shopped at the ECFM one time per season. In 2021, we conducted surveys of SNAP shoppers at the ECFM (N=149) as well as EC County SNAP households that did not shop at the ECFM through a mailer sent to people’s homes (N=240). Our primary goal was to identify barriers that limited/prevented people from using the ECFM-MMP as well as what factors might increase their ability to shop at the ECFM using their SNAP benefits. The top barriers to using the ECFM-MMP were similar for both groups and included limited FM hours/locations, difficulty getting to/from FM, did not remember and can’t get all food needed at FM. The factors that would increase usage of the ECFM-MMP were also similar for both groups and included a larger match amount, expanded FM

Cluster Thinning in ‘Great White’ and ‘Green Giant’ Heirloom Tomatoes (UW-River Falls)
Time: 9:30 Location: HH1301
Author(s): Ara Smith
Mentor(s): Dr. Sonja Maki Horticultural Science

High tunnel production is used to provide optimum growing conditions for heirloom tomatoes. Cluster thinning has been used to improve uniformity of fruits. In this study, the effect of cluster thinning was studied using two cultivars of heirloom white tomatoes for possible use in the juice industry. ‘Great White’ and ‘Green Giant’ tomatoes were started in a greenhouse of the University of Wisconsin-River Falls in April of 2021 and planted into a high tunnel in June of 2021. This was done in a completely randomized block. Tomato plants were irrigated with drip tape and fertilized throughout the season. Treatments included a non-thinned control and a 3-fruit per cluster thinning treatment. Two harvest dates were conducted. Fruit weight and fruit circumference were measured. Samples for determining sugar content through a BRIX meter were also taken.

Spear and Shield: Coding to Thwart Adversarial Aggression (UW-Eau Claire)
Time: 9:50 Location: HH1309
Author(s): Ariel Liu
Mentor(s): Allison Beemer, Carolyn Otto Mathematics

In coding theory, we study methods to send information more effectively, for example, in telecommunications. Authentication is important when sending information to detect any potential interference. Our research is built on recent results on authentication with multiple users. We discuss some limitations for constructing good codebooks with certain achievable rates for partial correction in a
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two-user multiple access channel with or without adversary participation. We also explore other directions in this channel to satisfy our interests.

A Study on Safety and Effectiveness of Covid-19 Vaccines Among Children Aged Groups 5-11 (UW-Whitewater)

Time: 9:50 Location: HH1302
Author(s): Ashley Afaah
Mentor(s): Hephzibah Kumpaty
Chemistry

Since the outbreak of Covid-19, the pandemic has caused morbidity and mortality around the globe, with new variants rapidly spreading, causing health, economic and severe disruption to daily routines. Vaccines to prevent Covid-19 have been developed with unprecedented speed and proven effective in ending the pandemic and returning to normalcy. The study aims to evaluate the efficacy and safety of the Covid-19 vaccines among children aged 5-11 and provide a perspective on evidence-based vaccine advocacy. This research reviews statistical information about the effects, reactions, and benefits of vaccination. Moreover, it seeks to address whether Covid vaccines may be worth injecting into kids in our efforts to prevent the disease. In our ongoing research, we are evaluating data for efficacy for partial and complete vaccination and in subgroups defined according to demographics, age, race, ethnic group, and presence of underlying conditions. The data utilized in this study is based on public sources, including surveys, published articles, and credible websites such as the Center for Disease Control and Prevention (CDC), Johns Hopkins University, and World Health Organization (WHO) and our own research through survey data collected locally. To date, the Pfizer-BioNTech vaccine is the only vaccine approved for kids aged 5-11, Hence, the information in these findings pertains to this vaccine.

Changes in Hair Coat Length and Diameter Over Time in Blanketed and Non-blanketed Adult Horses (UW-River Falls)

Time: 9:50 Location: HH1301
Author(s): Ashley Tuska, Alexandra Konop and Bailey Fisher
Mentor(s): Dr. Michelle DeBoer
Animal Science

Horses are often blanketed during cold weather for reasons including assisting thermoregulation, hair coat cleanliness, and anecdotally decreased hair coat length. The objective of this study was to evaluate changes in the hair coat length and diameter in blanketed and non-blanketed horses during winter in River Falls, WI. In October 2019, an initial body weight (BW) and body condition score (BCS) were taken on sixteen mature horses. The horses were blocked by BCS and breed and randomly assigned to blanketed (n=8) or control (n=8) treatments. Research occurred from October 2019 until March 2020 where the horses were housed outdoors with access to shelter, ad libitum water, and free-choice hay. Monthly, BW and BCS were recorded, and twenty hair coat samples from each horse were taken on the non-mane side of the neck and the flank area using tweezers and analyzed using a digital micrometer for diameter and digital caliper for length. While the average BW and BCS did not differ across treatment groups, the average flank and neck hair length/diameter did vary. The longest length and greatest diameter were observed in January and February, and the shortest length and smallest diameter were observed in October and March (P ≤ 0.05). However, blanketed horses had shorter neck hair than non-blanketed horses in January at 46 and 59 mm, respectively (P ≤ 0.05). These results suggest blanketing leads to changes in hair coat.
Depletion of Vitamin E and Beta-Carotene in Teff and Alfalfa Hay During Storage (UW-River Falls)

**Time:** 10:10  **Location:** HH1308  
**Author(s):** Aylah Hanson, Ashley Tuszka, Krishona Martinson and Michelle DeBoer  
**Mentor(s):** Michelle DeBoer  
**Animal science**

Beta-carotene and vitamin E are essential nutrients for livestock but can become depleted when fresh forage is dried for hay. The objective of the study was to evaluate vitamin E and beta-carotene concentrations in alfalfa and teff hay from baling through 180 days of storage to determine the extent of depletion and how rapidly it occurs. To monitor this, 12 bales of alfalfa and teff hay were harvested in Otsego, MN and were randomly divided into 3 replicates and stored in a barn and covered with a tarp. Six hay cores were taken from each of the replicates on days 0 (baled), 15, 30, 60, 90, and 180 and sent for analysis of forage nutritive values, beta-carotene, and vitamin E concentrations. All data were analyzed as a randomized complete block repeated measures study using statistical significance of $P \leq 0.05$. Upon analysis, a difference was noted in both beta-carotene and vitamin E concentrations between baling and all other collection periods. When comparing the initial depletion between baling and 15 days of storage, beta-carotene showed a 58% depletion from 6.6 to 2.8 IU/kg and vitamin E showed a 48% depletion from 48.0 to 24.9 IU/kg. Between days 15 and 60, no statistical difference was noted in the concentrations of the nutrients. We are waiting on the results from the analyses but alfalfa and teff hay will continue to be sampled and analyzed for 360 days of storage.

Selective Anti-Cancer Effects of Piper methysticum (Kava) on H232A, MCF-7, and HeLa Cancer Cell Lines  
(Concordia University Wisconsin)

**Time:** 9:50  **Location:** HH1306  
**Author(s):** Emily Reimche, Hannah Arvis and Rochelle VanHart  
**Mentor(s):** Jessica Loppno and Uvidelio Castillo  
**Biology, Chemistry**

Kava is a common beverage in the South Pacific derived from the roots of the plant Piper methysticum. It has a long tradition in the South Pacific islands as a popular sedative drink. The South Pacific islands are characterized by lower lung cancer rates, despite high tobacco use, and previous research suggests that Kava consumption may play a role in preventing certain types of cancer in these populations. While some studies have identified several anti-cancer constituents of Kava, there are many additional components that may have similar and robust anti-cancer properties. Using a hexane extraction followed by flash chromatography of crude Kava root powder, we isolated various unknown fractions of Kava and tested them on a human non-cancer and several human cancer cell lines. Viability, cytotoxicity, and proliferation of cultured cell lines such as human lung cancer cells (H232A), breast cancer cells (MCF-7), cervical cancer cells (HeLa), and human primary non-cancer fibroblast cells (NHDF) were determined using an MTT colorimetric assay. Treatment with specific Kava isolates exhibited a significant reduction in cell proliferation on H232A, MCF-7, and HeLa lines, while also having limited anti-proliferative effects on NHDF cells. This study demonstrated that there are still many components in the Kava extracts that may have promising chemotherapeutic effects against different human cancer cells.
What do You do to Reduce the Effects of Climate Change? A Qualitative Investigation of Individual and Societal Actions (UW-Eau Claire)

Time: 10:10  Location: HH1306
Author(s): Emma Dimick, Ben Worner, David Xing Yi Lee and Phoenix Leary
Mentor(s): Dr. James Boulter, Dr. Kristine Knutson, Dr. Eric Jamelske and Dr. Won Jang

Environmental Studies, Communication Studies

Climate change is one of the most pressing existential threats facing our world. A plethora of research exists that demonstrates that climate change is real and that it is human caused. To this growing body of literature, this study contributes knowledge about the actions that individuals in the United States take to combat climate change, as well as their expectations for how society ought to address climate change. Using thematic analysis techniques (Norwell, Norris, White & Moules, 2017), participant responses to two open ended questions were analyzed (i.e., What actions have you or your family taken to reduce your personal contribution to climate change/global warming? and What societal changes do you think are most important to significantly reduce the effects of climate change/global warming?). Findings indicate that participants act and believe society ought to act in ways that coincide with cultural narratives for combating climate change (e.g., recycling, green purchasing, reducing consumption, and making transportation changes). The efficacy of these actions is discussed and suggestions for improving climate communication are offered.

Dynamics of Investment in Robotic Milking: Evidence from a Survey of Wisconsin Dairy Farmers (UW-River Falls)

Time: 9:50  Location: HH1312
Author(s): Jalyssa Beaudry
Mentor(s): Shaheer Burney and Luis Pena-Levano

Agricultural Economics and Dairy Science

Over the past decade, dairy farmers have faced substantial market volatility, leading to widespread uncertainty about the future of the industry. This has been further exacerbated by the COVID-19 pandemic, which led to labor shortages and rising labor costs. To cope with these changes, some dairy farmers have started to adopt robotic milking as a strategy to decrease labor dependence. However, robotic milking requires a significant up-front investment, and benefits vary by size of the enterprise and the infrastructure needed to accommodate a milking robot in the dairy barn. On the upside, the investment may still be profitable since it leads to greater operating efficiency, higher productivity, improved animal health and welfare, and consequently, long-term cost savings.

To understand the factors that determine the adoption of robotic milking and its implications for farm profitability, we conducted a survey of Wisconsin dairy farmers in February 2022. A 6-page paper survey was distributed to 500 dairy farmers in Wisconsin and while the survey is currently underway, we have already received 128 completed surveys to date (a 25.6% response rate). During the presentation, we will present a full set of results of the survey.

Farmer responses to the survey will determine whether adoption of mechanization is financially feasible for dairy farms, the cost of input substitution (labor versus capital), challenges in implementing a robotic milking system, and farmer perceptions of macroeconomic changes facing the Wisconsin dairy industry.
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Numerical Investigation of Gyroid Composite for Shock Mitigation (UW-Green Bay)
Time: 10:10 Location: HH1310
Author(s): Jordan Cioni
Mentor(s): Jagadeep Thota
Mechanical Engineering

The dynamic energy absorption characteristics of metal matrix gyroid reinforced with polyurethane composite is investigated through finite element computational study and lab-scale experimental tests. Dynamic loading simulations are performed while varying the double gyroid isovalue and the reinforcement material mechanical properties. Damping coefficients of the gyroid composite material are predicted by conducting Fourier analysis of the simulated results. To validate the predicted computational results, low velocity impact experiments using a force hammer are conducted on the gyroid composite material.

Cohesin mutations confer increased sensitivity to DNA damaging agents in AML cells (Concordia University Wisconsin)
Time: 9:50 Location: HH1308
Author(s): Kylie Haarman
Mentor(s): Joseph B. Fisher
Biology

Acute myeloid leukemia (AML) is a myeloid malignancy that progresses quickly and carries with it a poor prognosis. With the cost of NextGen sequencing rapidly declining, sequencing patient’s AML cells has become a reality allowing for the development of personalized therapeutic approaches. Recently, mutations in the cohesin complex have been identified in a subset of AML patients. Although emerging research suggests that cohesin contributes to AML by altering expression of myeloid stem cell genes, cohesin is also known to play a role in DNA double stranded break repair, a function that presents a feasible therapeutic approach to treating AML patients harboring cohesin mutations. This study investigates how cohesin-mutant leukemia cells respond to Doxorubicin treatment in comparison to cohesin wild-type cells. Using a combination of flow cytometry and western blotting, our data show that cohesin-mutant leukemia cells are more sensitive to DNA damaging agents suggesting that AML patients harboring cohesin mutations should respond more favorably to DNA damaging therapeutics than cohesin-wildtype AML patients. This work contributes feasibility to a personalized medicine approach to treating cohesin-mutant AML patients.

Application of Spectroscopic Techniques to Study Molecular Crowding Effects on the Structure and Functions of Escherichia coli Prolyl-tRNA Synthetase (UW-Eau Claire)
Time: 9:50 Location: HH1311
Author(s): Miles Wackett, Christine Le and Bethany Laatsch
Mentor(s): Sanchita Hati and Sudeep Bhattachayya
Chemistry/Biochemistry

Many in vitro experiments with enzymes are performed in dilute conditions that do not resemble the cellular environment, which is crowded with biomolecules. Crowding could impact an enzyme's structure, intrinsic dynamics, and function. To account for the crowding effect, synthetic polymers are often used for simulating the intracellular environment. Previous kinetic studies demonstrated these crowders impact substrate binding and catalytic efficiency of E. coli prolyl-tRNA synthetase (Ec ProRS). However, the molecular mechanism of the crowding effect is not fully understood. Therefore, intrinsic tryptophan (Trp) fluorescence spectroscopy is employed to probe conformational changes of Ec ProRS in the presence of crowders. Three
variants of Ec ProRS, each containing TRP in only one of the three domains, are purified and used to probe the conformational change of individual domains under crowding conditions. Thermal denaturation experiments were performed in the presence of monomeric and polymeric crowders to explore the impact of crowding on protein stability. Fluorescence resonance energy transfer is used to examine the changes in the domain dynamics under crowded conditions. Lastly, saturation transfer differential (STD) NMR is used to observe the change in ligand binding by calculating the dissociation constant of Ec ProRS in the presence of crowders. Results of these experiments are expected to shed light on the molecular mechanism of crowing and aid in structure-based drugs design. Preliminary results of the study will be presented.

**Biosolids Land Application and The Occurrence, Fate, and Mitigation of Per- And Polyfluoroalkyl Substances and Nitrate**

(UW-Green Bay)  
*Time: 10:10*  
*Location: HH1303*  
*Author(s): Richard Perschon, Emma Loucks and Mackenzie Klein*  
*Mentor(s): Michael Holly*  
*Environmental Science*

Land application is a beneficial use of biosolids, the semi-solid residual of wastewater treatment. In Wisconsin, land application is typically the most cost effective and common practice for handling sludge in the state; however, groundwater contamination is a potential risk of application. Per- and polyfluoroalkyl substances (PFAS), a hazardous chemical present in numerous household products and used in manufacturing, will adsorb to sludge at a wastewater treatment facility. PFAS is currently not included in biosolids land application regulations and is capable of leaching through the soil profile potentially contaminating water resources. Risk assessment for future guidance requires data collection on the occurrence of PFAS in sludge and soil leaching potential. Nitrate (NO3), the product of biogeochemical transformation of nitrogen in sludge, is a known human health environmental contaminant that is currently regulated. However, even with current regulations NO3 leaching is possible outside of the growing season, requiring additional mitigation. Biochar produced from agricultural waste has the potential to sequester PFAS and NO3 from sludge and could be a low-cost amendment to protect groundwater. This research is looking at the leaching from real soil samples from across the state and the potential of biochar to reduce those pollutants from leaching. Results will help predict future PFAS groundwater contamination by contaminated soil, generate future guidelines to protect groundwater wells from PFAS, identify Wisconsin groundwater sources at risk, and evaluate a low-cost treatment to further minimize PFAS and NO3 leaching.

**The Effect of Mindfulness Practice on Salivary Cortisol Levels in A Patient Population Undergoing Rotator Cuff Repair**

(UW-Milwaukee)  
*Time: 9:30 Location: HH1312*  
*Author(s): Sanya Kathuria*  
*Mentor(s): Dr. Elizabeth Liedhegner*  
*Biomedical Sciences*

Shoulder pain is a prevalent problem amongst adults and is manifested by injuries to the tendons. Despite physical therapy and other non-invasive interventions, 20% of those afflicted with rotator cuff complaints will require surgical repair to restore functionality and reduce pain. Unfortunately, only slight improvement 1 year post surgery has been reported in patients who suffer through psychological distress and pain. Physiologically, stress is regulated by the
hypothalamic-pituitary-adrenal (HPA) axis via production of cortisol. Since stress is negatively correlated with rotator cuff disorder outcomes, methods to reduce patient stress could improve shoulder surgery recovery. One such method is mindfulness practice where a person uses meditation techniques to attune one’s focus to the present moment. Meta-analysis of mindfulness-based stress reduction (MBSR) studies showed a small, positive effect on patients experiencing depression, anxiety, and psychological distress. Thus, our central hypothesis is that mindfulness-based interventions will help reduce overall stress and improve surgical outcomes in patients undergoing rotator cuff surgery. We plan to test this hypothesis by prescribing mindfulness through the app, Headspace to half of our patient population chosen at a random basis. We will assess surgical outcomes via pain analysis and stress levels via self-report and salivary cortisol analysis at 4 time points throughout the surgical intervention and recovery. We predict that mindfulness will decrease overall stress leading to a reduction in cortisol levels which can be correlated with reduction in self-reported stress. We predict reduction in overall stress will improve patient-reported pain and ultimately be positively correlated with surgical outcomes.

Effects of Bmal1 deficiency and high-fat feeding on gut microbes, obesity, and host circadian clock function (UW-Parkside)

**Time:** 10:10  **Location:** HH1311

**Author(s):** Thomas Stirrat, Nadine Dziekanski and Lamija Coric

**Mentor(s):** Dr. Fabian Preuss

**Biology**

Each human carries about 10-100 trillion symbiotic microbial cells around, which are primarily composed of bacteria harbored in the gut. Over the recent years, the importance of these organisms has been more and more elucidated with the discovery of the gut-brain axis, involved in homeostatic regulation and controlling the body’s immune system. In 2015 Leone et al. showed in mice that the aberrant microbial signals were required for mice to develop obesity when fed a high-fat diet. While laboratory mice can self-regulate their food intake and do not gain weight when fed ad libitum (as desired), this homeostatic control is lost when the mice receive 40% or more calories from fat. However, as shown by Leone, only when the microbiota population changes for the worse does this occur. Intriguingly, last year, Yu et al. (2021) showed that the lack of the circadian gene Bmal1 could prevent obesity as well, linking the biological clock into the process. Here we show the impact of limiting the lack of the Bmal1 gene to the colon and challenging the animals with circadian misalignment by providing high-fat food only during the day or during the night on their food intake, body weight, and glucose tolerance. Male and female C57/BL6 mice carrying a colon-specific Bmal1 mutation were fed a high-fat diet (60% calories from fat) for 10 weeks during either their regular feeding time (night) or at the wrong feeding time (day) while being offered regular chow for the remaining day.

Analysis of the friction and wear of graphene reinforced aluminum metal matrix composites using machine learning models (UW-Milwaukee)

**Time:** 9:50

**Location:** HH1303

**Author(s):** Tien Wong, Michael Nosonovsky

**Mentor(s):** Pradeep Rohatgi and Md Syam Hasan

**Materials Science & Engineering**

The effect of graphene on the material properties, friction, and wear of self-lubricating aluminum-based metal matrix composites
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(MMC) was compared with the effect of graphite as the reinforcement. Notable enhancement of mechanical properties and friction and wear performance was observed with graphene addition. Statistical analysis suggested that a much lesser amount of graphene reinforcement can produce a friction and wear performance similar to that of aluminum MMCs with a higher amount of graphite. Five machine learning (ML) regression models were developed to predict the wear rate and coefficient of friction (COF) of aluminum-graphene MMCs. ML study suggested that the weight percent of graphene, loading condition, and hardness had the largest influence on the wear and friction of aluminum-graphene composites.

Synthesis of Small Molecule Amines as Promising Covid-19 Antivirals in Drug Discovery (UW-Whitewater)

**Time:** 9:30  **Location:** HH1302

**Author(s):** Tristan Christensen and Julien Trujillo

**Mentor(s):** Helizibah Kumpaty

Chemistry

The continuing and rapid spread of Covid-19 around the globe seeks strategic approaches to develop medicines to combat the viruses and to address public health needs. With the exception of Remdesivir, and the recently developed two successful COVID-19 oral treatments, molnupiravir and nirmatrelvir by Pfizer, progress in the development of anti-viral drugs is still in the making. Antivirals of interest include chemical entities which include small organic molecules or biotherapeutics (nucleotide and nucleoside analogues) that directly block viral targets. A recent review article from the literature reports several promising anti-viral drugs containing molecules with a Carbon-Nitrogen bond in its structure. Therefore, in our study, we specifically aim towards efficient development of structurally diverse functionalized amines using established protocols from the work on reductive amination reactions to construct a C-N bond. The reaction sequence proceeds through the formation of an imine or iminium intermediate upon reaction of a carbonyl compound with primary amine or secondary amine followed by in situ reduction to yield an amine of higher order. The scope and limitations of the reactions are being assessed using a structurally diverse set of amines with carbonyl compounds. Special focus was placed on greener synthesis strategies to make the process greener, thus developing an enhanced protocol for economical and environmentally friendly reactions. Preliminary data on successful synthesis of these molecules and the proposed structure-activity studies will be presented.
Oregon Soccer Club Economic Impact Study
(UW-Whitewater)
Time: 3:05 Location: HH1311
Author(s): Abby Daniels, Grayden Gruchow and Johnny Pulley
Mentor(s): Matthew Winden
Economics

The Fiscal and Economic Research Center (FERC) aimed to study the economic impact that the Oregon Soccer Club (OSC) annual soccer tournament brings to the Oregon, WI community, as well the annual impact the club has on the community as a whole. This impact was measured by a survey that asked respondents to measure their spending during the tournament. We surveyed attendees for a total of 4 days during the Fall Fury tournament weekend and a normal soccer weekend. After collecting data, we found the impact of our sample size and extrapolated the data to the whole population that participated each weekend.

Our major findings include that over the course of a tournament weekend, the OSC brings well over $270,000 to the community through hotels, gas, food, entertainment, and tournament vendors. Significantly more money was spent at gas stations and food than had been initially anticipated. Upon analysis, away-fans that bought gas and food in Oregon were significant contributors to these factors. Over the course of the fall and spring seasons, OSC generates just shy of $1,000,000 directly to the community.

The significance of these findings is positive for both the OSC and the economy of Oregon, WI. Events and tournaments such as those held by the OSC bring a positive economic impact to Oregon and allow for the OSC to promote the club even more. These findings indicate that other sport clubs or organizations may host events that would positively impact their local economy and community.

ESL Education: A Case Study at UW-Stout
(UW-Stout)
Time: 3:25 Location: HH1306
Author(s): Alexander Brost
Mentor(s): Tina Lee
Educational Problems, ESL Education

This project examines the English as a Second Language (ESL) program at the University of Wisconsin – Stout and compares the pedagogical methodology to different parts of Second Language Acquisition (SLA) theory as per Noam Chomsky and later, Stephen Krashen. The purpose of this research is to examine whether there is a gap between theory and practice in ESL education. To measure this, I conducted interviews with two ESL professors of about one hour each and observed those professors teaching in typical classroom situations. Observations were especially important given that how teaching is performed gives information about the underlying methodology. I found that both teachers were quite knowledgeable SLA theory and used aspects of it in the classroom. Thus, the gap between theory and practice was minimal and any gap that was there could likely be explained by the structure of the classroom environment and the university itself. This case study demonstrates that UW-Stout ESL educators are already providing a reliable, and theory backed education to students. Their methods might be a model for others in the field.
Ethical Concerns in Service Delivery to Adults with Neurodevelopmental Disabilities Diagnosed with Dysphagia: A Comprehensive Literature Review (Concordia University Wisconsin)

Time: 3:25 Location: HH1309
Author(s): Elizabeth Balsiger
Mentor(s): Cindy Lund
Speech-Language Pathology

Adults with neurodevelopmental disabilities (ND) may have anatomical, sensory and/or neuromotor impairments, thus causing swallowing difficulties. Dysphagia prevalence in this population remains inconsistent across texts (8% to 50%). A consistent measure would be necessary to establish to further promote research and support intervention strategies. The purpose of this presentation is to identify the challenges and ethical considerations in serving adults with neurodevelopmental disabilities diagnosed with dysphagia. A comprehensive review of the literature was facilitated in Fall 2021 to gain a foundational understanding on the available assessment and treatment opportunities for adults with ND diagnosed with dysphagia as well as training opportunities for SLPs. The review was conducted by searching for peer-reviewed articles concerning the target population, thus yielding ten articles. The comprehensive literature review revealed pertinent themes across texts including: A lack of quality, quantity, and clinical applicability in literature relating to assessment and treatment options for adults with ND and dysphagia. A paucity of training opportunities for SLPs, negative societal perceptions of the target population, and the impact of dysphagia on patients and caregivers were discussed across texts. Inadequacies relating to available EBP and SLP training as well as negative societal perceptions greatly limit the ability for adults with ND to receive ethical dysphagia treatment. Future directions in this area include: establishing a reliable “prevalence” measure, conducting research on education, training, and exposure to this population, clinically applicable assessment and intervention strategies for these individuals, and advocating for patient rights.

Examining Chinese and American Climate Change Views Using 2015, 2017 and 2020 Survey Data - Part II (UW-Eau Claire)

Time: 3:25 Location: HH1317
Author(s): Erica Kladar, Emily Krahn, Micah Link, and Hannah Raddenbach
Mentor(s): Eric Jamelske
Economics, Environmental Studies, Communication

China (CH) and the United States (US) are key players in international climate change (CC) negotiations, and thus we conducted surveys in 2015 (N=7,556), 2017 (N=7,415) and 2020 (N=2,600) to better understand what Chinese and American citizens think about this very important issue. Selected survey questions were used to calculate a CC index (CCI) with higher values indicating more alignment with the scientific realities of CC. After comparing the CCI across CH and the US, we use it as an explanatory variable to investigate correlations between CC views and other outcome variables of interest continuing to provide comparisons between countries. We are looking for new stories to tell from these data, and thus have not finalized exactly what we will be presenting. Possible topics include support for the Paris Agreement, willingness-to-pay for CC policy action and exploring themes from responses and comments from open-ended survey questions. Throughout both presentations, attention will be given to the degree of variation in CC views in each country as well as the existence of a partisan political divide regarding CC among Americans. Our preliminary findings suggest that Chinese citizens show more support for their country fulfilling its commitment to the Paris Agreement and are
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also willing to pay more to support CC policy action compared to Americans. Additionally, open-ended survey responses reveal significant anger and denial regarding CC among American citizens, while these feelings are almost non-existent in the Chinese responses/comments.

The Supplemental Nutrition Assistance Program-Market Match Incentive Program at the Eau Claire Farmers’ Market: Comparing Utilization Before and During the COVID Pandemic Using Data From 2018-2021 (UW-Eau Claire)

Time: 9:50 Location: HH1317
Author(s): Ethan Blaney, Kayla Irlbeck, Zach Ledwith and Tristan Shuttleworth
Mentor(s): Eric Jamelske
Economics, Health & Nutrition

Food insecurity is a significant issue facing many American households. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers’ markets (FM) offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at FM. The Eau Claire Farmers’ Market (ECFM) offers a Market Match Program (MMP) to incentivize Supplemental Nutrition Assistance Program (SNAP) participants to shop at the market. In 2020 and 2021, COVID-19 increased the number of families facing food insecurity. The ECFM also faced many challenges regarding how to operate safely and households faced decisions about where/when to shop for food during the ongoing pandemic. This study employs administrative data to compare SNAP households’ usage of the ECFM-MMP before and during the pandemic. We find that more SNAP households used the ECFM-MMP in 2020 compared to the pre-pandemic years of 2018 and 2019 with an additional increase in utilization in 2021. The percent of eligible SNAP households that used the ECFM-MMP at least one time in a season remained relatively constant at about 9% in 2018, 2019 and 2020, and increased to just over 11% in 2021. Our data also reveal that approximately 50% of SNAP households using the ECFM-MMP only shopped at the ECFM one time per season in each of the four years between 2018-2021. This study transitions into a second presentation analyzing survey data to learn more about people’s experiences using the ECFM-MMP.

Homeland Exiles: Notes on Gentrification
(UW-Whitewater)

Time: 2:45 Location: HH1312
Author(s): Hannah Keziah Agustin
Mentor(s): Barrett Swanson
Creative Writing

I created a long-form journalistic essay titled “Homeland Exiles” about my family house’s demolition in Manila as a result of urban gentrification. Before immigrating to America, my family lived in a working-class neighborhood next to an abandoned sugar factory near the nation’s largest financial district. In 2015, the government sold our land to a private multimillion-dollar corporation that builds residential buildings for the middle and upper class. Our house was demolished in January 2021 to make way for one of the elite condominiums.

In the name of “progress”, slum settlements are being demolished and burned down to make way for infrastructures, shopping malls, and high-class condominiums. At the cost of this, however, low-income families are being exiled from the city, which prioritizes people who can pay enough money to stay. This displacement happens systematically across the metropolis, the exclusionary nature of the city pushing out the economically disadvantaged. Even in their own land, they are exiled. This is why I find it
necessary to write about and raise awareness for the plight of folks in the urban space.

I will be using Edward Said’s Reflections on Exile in shaping my experiences. The essay contains both an intellectual arc and a personal arc. The intellectual arc will touch on the history of our neighborhood, the history of the rich side of the city, the history of how the government has violently handled pushback against urban resettlement. The personal arc will touch on the stories of the people in our neighborhood and the place’s dynamism, the stories of how we moved to our house after having lived in a single bedroom in my grandparents' house for the first decade of my life, and the stories of our family house and the histories contained inside of it as the site of my grandmother’s death and a Bible study. I will also be touching on my immigration story and how moving to America was the pinnacle of my exile.

Having lost my house in the middle of the pandemic while I was halfway around the world, in a country that does not welcome the bodies of women of color, except when it is used for sex and labor, reminded me of the sobering truth that the money-hungry capitalistic system we live in does not have mercy on the people inside of it. I want my essay to offer a sliver of that mercy through the act of humanizing the people whose stories were erased in the process of renewing neighborhoods.

**Another Day, Another Dollar General: The Architectural, Environmental, and Economic Impacts of Dollar Stores** (UW-Milwaukee)

*Time:* 3:05  *Location:* HH1309  
*Author(s):* Jacob Rohan, Franziska Burkard and Natalie Kuehl  
*Mentor(s):* Lindsey Krug  
*Architecture*

In 2021, one in three new retail openings in America is a dollar store. Dollar General Corporation, the country’s largest “small-box” retailer, owns and operates most of these stores, with 18,000 locations nationwide. By strategically expanding into sites where Walmart and other “big-box” grocers won’t, Dollar General justifies their aggressive expansion pattern as providing at least one food retail option in areas considered to be food deserts. This significant retail shift is an outcome of — and in turn, a cause of - the well-told story of American food culture where at least 70% of food Americans eat is substantially processed and manufactured, rather than consumed fresh. Dollar General’s impact on the American landscape and culture is profound and growing exponentially into issues of land use, food culture, economic health, and supply infrastructures, as well as exacerbating divides among Americans along lines of race, class, politics, and geography. As the dollar-store empire expands further into rural and urban communities, “small-box” stores are becoming increasingly critical to Americans’ daily lives. Nevertheless, this “small box” store typology is under-explored in architectural discourse. The research seeks to uncover covert and overt relationships between Dollar General and the communities it serves both locally and globally, looking at production processes, marketing strategies, and fresh food distribution. Through surveying, model making, and diagramming Dollar General’s impact and consequences, the research has discovered obstacles in food traceability and workplace transparency within the dollar store industry that reflects larger socioeconomic and environmental conditions in America as a whole.
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The Evolution of Occupational Therapy
(UW-River Falls)
Time: 3:05 Location: HH1303
Author(s): Jaidan Scheunemann
Mentor(s): Dr. Timothy Lyden
Occupational Therapy

My research focused on creating a survey that serves the purpose of collecting data from occupational therapists in active clinical practice. This survey used a snowball sampling technique and was distributed to occupational therapists active in the Wisconsin Occupational Therapy Association. The survey asked about the populations served and about certain treatment plans in different situations (where a patient would be referred to an occupational therapist). I also asked if occupational therapists have had success with more modern therapies that aren’t as documented since the beginning of occupational therapy. I have compared collected responses with what is the most widely taught, and accepted treatments. Contrary to what had been hypothesized, my data shows that occupational therapists are still relying mainly on canonical treatment plans. The findings indicate that occupational therapy programs at universities are closely regulated and that occupational therapists are attempting to implement more modern therapy practices in their work.

Heart Rate and Presence of Musculoskeletal Disorders (UW-Whitewater)
Time: 3:25 Location: HH1308
Author(s): James Groehler and Gabriel Koenig
Mentor(s): Oscar Ernesto Arias-Fernandez
Occupational Safety and Health

This study aims to measure physical demands at work and outside of work among construction workers and their correlation with musculoskeletal symptoms. For this purpose, we will collect heart rate data during seven consecutive days to estimate the physical demands at work and outside of work. Heart rate has been considered a valid proxy for physical demands, given the direct association between heart rate and physical activity levels. Musculoskeletal symptoms arise from over-exertion and diminish the quality of life for millions of employees each year. We will administer a survey to assess musculoskeletal symptoms in both the last seven days and 12 months. The results of this study will provide valuable information that will help design interventions to reduce the negative impact of the physical demand at work on workers' health and the prevalence of musculoskeletal disorders.

Examining Chinese and American Climate Change Views Using 2015, 2017 and 2020 Survey Data - Part I (UW-Eau Claire)
Time: 3:05 Location: HH1317
Author(s): Jesse Castellanos, Philip Long, Lillian Roubinek and Megan Schiller
Mentor(s): Eric Jamelske
Economics, Environmental Studies, Communication

China (CH) and the United States (US) are key players in international climate change (CC) negotiations, and thus we conducted surveys in 2015 (N=7,556), 2017 (N=7,415) and 2020 (N=2,600) to better understand what Chinese and American citizens think about this very important issue. Selected survey questions were used to calculate a CC index (CCI) with higher values indicating more alignment with the scientific realities of CC. Comparisons are presented across countries using aggregate data for three years. We also report on responses to the individual survey questions that are incorporated into the CCI calculation. American views on CC are also compared across political affiliations. Chinese CCI values were higher on average than for Americans, while there was more variation in American CCI values. Two
Factors driving this result are that Chinese respondents were more likely to see climate change as primarily caused by human actions and they were also more likely to see an obligation to act to prevent climate change compared to Americans. Additionally, there was a significant partisan political division among Americans with liberals having the highest CCI index values followed by moderates and then conservatives. Lastly, liberals and conservatives show the least and most variation in CC views respectively. This study transitions into a second presentation using the CCI as an explanatory variable to investigate correlations between CC views and other outcome variables of interest continuing to provide comparisons between countries and reporting on the existence of a partisan political divide among Americans in these analyses.

An Experiential Review Behind the Learning Processes of FluentPet (UW-Whitewater)

Time: 2:45 Location: HH1302
Author(s): Kamarie Seebecker
Mentor(s): Matthew Andrzejewski
Psychology

A new front in animal communication has emerged over the past few years, and it has taken pet owners by storm. Created by the company FluentPet, pet owners can purchase buttons which record sound and use them to communicate with their pet, or “learner.” FluentPet claims that their products combine concepts of speech language pathology and cognitive science in order to help learners communicate and remember word locations. In this study, I recorded my own learner’s progress over the course of several months. I analyzed her ability to comprehend the effect of a new button and discuss the cognitive processes behind her learning. Though there is still a lack of research on the effectiveness of FluentPet buttons, she appears to be capable of understanding abstract concepts such as time and emotions.

Impact of Wound Dressing on Mechanotransduction Within Tissues of Chronic Wounds (UW-Milwaukee)

Time: 3:05 Location: HH1302
Author(s): Kelly McElvain, Joshua Klister, Alessandra Ebben and Sandeep Gopalakrishnan
Mentor(s): Mahsa Dabagh
Biomedical Engineering

Acute and chronic wounds are significant public health problems, impacting the health-related quality of individuals’ lives. Acute wounds result in more than 17 million hospital visits each year in the US. Treatment of these and chronic wounds creates an immense economic burden to healthcare systems around the world. Commercially available wound dressings are extensively used as a part of standard of care. There remains a lack of knowledge regarding the role of dressing characteristics and properties on wound healing process. On the other hand, the role of mechanical forces on wound healing has recently gained significant clinical attention where the application of mechanical forces is expected to influence the physiology and structure of the tissue surrounding a wound. The objective is to investigate whether the force transmission within wound tissues is impacted by the dressing characteristics and whether this impact may differ with wound tissue’s properties. Three-dimensional wound tissue and dressing models were developed and simulated to study the impact of various properties on the transmission of force through tissues of chronic wounds. Our results demonstrate that the stiffness of dressing and tissue are both playing a key role in force transmission within wound; when the stiffness of tissue and dressing are relatively close, the tissue experiences lower stresses. This study’s findings on role of both dressing and tissue characteristics demonstrates
that precision dressings are required and investigation on the role of mechanotransduction in wound healing will help in designing novel, efficient dressings that can accelerate healing in chronic wounds.

**Barriers to Cleft Lip/Palate Services: A regional and global examination of accessibility and advocacy (UW-Whitewater)**

**Time:** 3:25  **Location:** HH1303  
**Author(s):** Mia Ciancio  
**Mentor(s):** Dr. Lynn Gilbertson  
**Healthcare Systems/Services, Communication Sciences & Disorders**

There are documented differences and disparities in access to healthcare, especially among minority or marginalized populations. One method to make progress towards access is to understand the unique barriers that exist to different types of health services. Through a review of the literature, the current project aimed to summarize the barriers to cleft/lip and palate (CLP) services regionally and globally. Cultural disparities, early intervention services, and geographic accessibility were found to be critical factors inhibiting post-op compliance in the region. Global barriers to long term care included post-op follow-ups, organization of short-term reconstructive missions, and economic stability. Additionally, the COVID-19 pandemic may have accelerated areas of concern. By examining these barriers through a psychosocial and socioeconomic lens, we can begin to recognize the critical need for access to CLP services and post-op compliance. Suggestions for culturally and socially sensitive practice will be discussed.

**Zooming in to World Languages: Students’ Perceptions of Effective Teaching Practices during COVID-19 (UW-La Crosse)**

**Time:** 2:45  **Location:** HH1319  
**Author(s):** Mikaela Robarge  
**Mentor(s):** Kimberly Morris  
**World Languages**

The COVID-19 pandemic has drastically impacted second language (L2) classrooms due to the absence of face-to-face (F2F) target language use and interaction, essential facets of second language acquisition (Long, 1996). With the abrupt shift to online instruction, new technologies became essential to language teachers and students, oftentimes with little training (Morris, 2021).

Because students’ perceptions and attitudes of teaching practices can impact L2 development and success (Kern, 1995), it is crucial to examine their experiences during this unprecedented time. Thus, this study explores how students believe L2 teaching and learning has been impacted due to remote instruction during COVID-19. A survey was distributed among 120 undergraduate students enrolled in L2 classes at UWL during the spring of 2021. Questions inquired about the effectiveness of different modalities and teaching strategies along with student engagement, participation, and workload. Results confirmed the effectiveness of online synchronous instruction and group interactions to foster active engagement among students, yet found breakout rooms less effective for L2 interactions. Perceptions regarding workload, effort, and participation were similar to F2F classes, altogether illustrating the perceived value of computer-assisted language learning and its implications in future program design.
Design of Autonomous UAV (UW-Stout)

Time: 3:05 Location: HH1306
Author(s): Nue Thao, Wesley Larrabee and Cole Glassing
Mentor(s): Abhishek Verma
Ahmet Turkmen
Autonomous Drones

The objectives of this project are to build an unmanned aerial vehicle (UAV) which can take off, land, perform simple flight maneuvers, detect obstacles, and log its flight data offline autonomously. The objectives will be accomplished by improving upon a Lynxmotion HQuad500 drone kit with Quadrino Nano flight controller. Along with the built-in gyroscope, accelerometer, magnetometer, barometer, and GPS on the flight controller, the drone will also have ultrasonic sensors mounted on its sides to detect and avoid obstacles while in flight. The ultrasonic sensors will be controlled by an Arduino Nano IoT 33 microcontroller which will also be connected to the flight controller. The UAV will be programmed to take off, hover, and fly in patterns autonomously by simulating a radio transmitter which sends instructions to the drone. Data such as the roll, pitch, and yaw movements of the drone will be logged on Google sheets for viewing in real time as well as data analysis later via a webserver hosted on the Arduino Nano.

Neurodiversity and Gender-Diversity: Through the Lens of Education (UW-Parkside)

Time: 3:05 Location: HH1301
Author(s): Ren Murphy-Kehoe
Mentor(s): Sarah Wilkinson
Education

Neurodiversity is a strengths-based belief that there are a variety of ways to think, learn, and behave (Baumer & Frueh, 2021). Neurodiverse people may have a variety of diagnoses, such as autism spectrum disorder, attention deficit hyperactivity disorder, and learning disabilities. Though they face a number of challenges, neurodiverse individuals can make positive contributions to society, equivalent to those made by neurotypical individuals. Many neurodiverse students are eligible for special education, the foundation of which is to facilitate academic success while taking into account the unique needs of individual students. Student needs are carefully observed, discussed, and supported with evidence-based strategies. Though educators are typically well-equipped to provide academic support for their neurodiverse students, there is another common need in this population that is not being met in the education system. Both research and records of lived experiences identify intersectionality between gender and neurodiversity as a common experience. For example, evidence suggests that people with autism spectrum disorder are more likely to be gender diverse than their neurotypical peers (George & Stokes, 2018; Glidden et al., 2016). These students may identify as transgender, non-binary, gender nonconforming, or other diversities. Teacher education programs and in-service professional development opportunities rarely discuss this topic, leaving teachers underprepared to effectively work with students who are both neurodiverse and gender diverse. This research project explores the connections between neurodivergence and gender diversity, the laws and standards for gender diverse students, and resources for educators.

Mothers’ Resilience and Self-Empowerment through a Global Pandemic: Coping Strategies and Cultivating Support Systems (UW-Parkside)

Time: 3:05 Location: HH1308
Author(s): Samantha Reynoso
Mentor(s): Madhumita Banerjee
Sociology

COVID-19 has highlighted challenges for mothers as they balance work and parenting responsibilities during unprecedented times.
While these issues are hardly unfamiliar, the pandemic has exacerbated their impact. New and emerging research related to the pandemic indicates that the work-family balance has become increasingly difficult for working mothers. At the same time, more than half of mothers in the United States have reported negative impacts to their mental health related to the coronavirus pandemic. This research aims to undertake an in-depth exploration of the experience of working mothers, including their resilience and their creation and development of support groups that have helped fortify themselves and their communities through the pandemic. Convenience and snowball sampling were used to conduct semi-structured in-depth interviews of 10 participants who are working mothers of elementary-age children in Milwaukee, Wisconsin. While evidence on the negative impacts of the pandemic on mothers’ work-family balance and well-being emerges, it is critical to examine coping mechanisms that were revealed to be important for the mental health and well-being of working mothers. This qualitative study examines mothers’ experiences and is expected to help shed light on existing societal gender inequities that have been worsened by the pandemic, as well as the subjects’ responses to the pandemic. Furthermore, the coping strategies discussed could benefit others, including those who have not yet been able to find support.

**Walworth County Housing Study**  
(UW-Whitewater)  
*Time:* 3:05  
*Location:* HH1312  
*Author(s):* Savannah Hernandez and Clayton Gallmann  
*Mentor(s):* Russell Kashian  
*Economics/Housing*

Housing price inflation, housing growth, and housing affordability for the working class have been existing topics of discussion, especially with the COVID-19 pandemic. Other studies, including other reports by the Fiscal and Economic Research Center, have found that housing construction is not keeping up pace with household growth, and this shortage is even more pronounced when looking at affordable housing and rent inflation.

The Fiscal and Economic Research Center has reviewed data from the DOA, ALICE, DOR, and the ACS to analyze Walworth County single-family housing supply, cost-efficiency, and demand, as well as renter-occupied housing and housing analyses for the thirteen municipalities in Walworth County.

Our major findings include that Walworth County has low rates of housing construction that do not keep up with household growth, with a shortage that will significantly compound by 2030. Walworth County has quickly increasing home prices and a diminishing months’ supply of housing, which has negative implications for workforce and ALICE (Asset Limited, Income Constrained, Employed) households. After reviewing ALICE data, we found that there is a low and diminishing supply of housing for households spending 30% or more of their income on housing costs.

The significance of these findings is that this issue is not constrained to Walworth County, but there is evidence that this problem is occurring across many Wisconsin counties and even across the nation. Studies such as this one give the counties the opportunity to increase housing construction and consider housing prices and affordability for workforce housing.
One’s Own Justice is an audio drama produced as an independent study. The story is a tale of a family drama in a fictional old-western desert. Specifically, the story is about a cashier who sets off to save his hometown from an impending attack. He finds some assistance from a local legend. Though it seemed like a good idea to have him as a guide to get more help, he soon finds himself tied up in the family drama that leaves his life constantly threatened over the period of four days. Though he must now fight unfamiliar battles without any experience, he is determined to save himself and his home at all costs. One’s Own Justice is a mix of old west aesthetic and fantasy elements blended and is a natural mix for the story. In terms of production, I have a cast of six people to play the characters. There are ten episodes altogether; all are carefully edited with original music composed for the project. The project will first be aired on 91.7 the Edge WSUW. Later, I will be posting it to personal web pages such as YouTube and podcast platforms along with my portfolio.

Turning the Page (UW-Milwaukee)

How does a person transform themselves to benefit their community after overcoming years of violence, childhood trauma, drug addiction and white supremacist affiliation? Shawn Page found purpose in the aftermath of the George Floyd murder and attempting to get clean from heroin. He fashioned himself as an advocate for systemic change and white ally for Milwaukee’s
Assessing Phenological Shifts in Great Lake Plant Species using Machine Learning (UW-Green Bay)

Time: 10:30 Location: UC Hamilton
Author(s): Alexandra Davis and Mel Daugherty
Mentor(s): Keir Wefferling and Iftekhar Anam
Poster Presentation 31 Biology

Studies have shown that abiotic variables such as temperature, soil moisture, and sunlight have an effect on plant phenology (cyclic, seasonal events, such as flowering time or fruit maturation). Here we will be assessing phenological shifts in several flowering plants, including Rubus species (blackberry and raspberry) and Vaccinium macrocarpon (cranberry) through the use of a combination of digitized plant collections from the Gary A. Fewless Herbarium (UWGB) and existing images from other regional herbaria. Manual image annotations and artificial intelligence (AI) will be used to collect phenological data from hundreds to thousands of digitized herbarium collection images. Incorporating data from museum collections collected across the Great Lakes region allows for phenological data to be gathered from different states and be observed over decades. The results will address spatial and temporal shifts in the seasonal, cyclic responses of vegetation to changing trends in bioclimatic variables. Further, we can address whether species at the southern edge of their range have responded differently to increased average spring temperatures than species at the northern edge of their range.

Analysis of Nutritional Content Recycled Through Composting in Green Mountain Technology’s Earth Cube (UW-Milwaukee)

Time: 10:30 Location: UC Hamilton
Author(s): Allyn Lottouzee
Mentor(s): Dr. Neal O’Reilly
Poster Presentation 47 Environmental Studies

The NRDC estimates that 40% of food is wasted in America due to increased urbanization and industrialization. Food banks claim food as lost if it is sent to the landfill, yet can avoid this by recycling these products into compost. Research was conducted over different composting methods, including the windrow system, piles, varied levels of turning, and using a Walipini (an underground greenhouse) to amass the composting materials. The Earth Cube, designed by Green Mountain Technologies, will be physically built and outdoor research will be conducted on nutrient levels of ingredients prior to being included and after being composted. Temperature, moisture/humidity, pathogen levels, and lumens (on the surface of the Earth Cube) will be documented. Turning will be conducted daily, and water added when necessary. It is anticipated that nutrient retention levels will remain above 20%, a temperature of 65˚ C for will be achieved and maintained for 72 hours, and the thermodynamic process will be completed in one month. This will justify the in-vessel title given to the Earth Cube, further advocating for its distribution to communities everywhere. With nutrient retention quantified, food banks can specify an amount on their diverted waste.
Biofeedback Using Endoscopic, Glottographic, and Aerodynamic Signature of Glottal Adduction in Voice, Swallow, and Airway Protection

(UW-Whitewater)
Time: 10:30 Location: UC Hamilton
Author(s): Alyssa Gernenz, Morgan Smarzinski and Alexandra Kestol
Mentor(s): Michael Hammer
Poster Presentation 39 Biology, Medicine, Biomedical Engineering, Healthcare

Glottal adduction is an important action to observe in a variety of speech and non-speech studies, including those that focus on airway protection, deglutition, and phonation. Laryngeal endoscopy is a reasonable choice to directly observe laryngeal movements. However, laryngeal endoscopy may be incompatible or unavailable for use with other measurements or research goals. Therefore, it is important to identify and validate a non-invasive approach to observing glottal adduction. Electroglottography is traditionally used to record glottal oscillation during sustained phonation. We have noted a repeatable, discrete increase in voltage in the electroglottographic signal corresponding to the onset of glottal adduction in a variety of tasks. We attempted to validate the use of electroglottography as an index of glottal adduction - such as when the vocal folds adduct before the onset of vocalization, or when the vocal folds adduct during the onset of glottal closure prior to a cough, during a swallow, during reflexive glottal closure, or when an individual closes the glottis to hold their breath. We simultaneously recorded electroglottography, air flow, microphone, and endoscopic video of the larynx in a variety of speech and non-speech tasks. Our findings confirmed each of our hypotheses. Electroglottography provides a unique signature that may serve as a useful indicator of glottal adduction. We believe that the judicious use of electroglottography can be useful for biofeedback when it may be desirable to indirectly observe glottal adduction.

xPeriod1 knockout affects heart rate in Xenopus laevis during embryonic development
(UW-Whitewater)
Time: 10:30 Location: UC Hamilton
Author(s): Angelique Compton and Sama Louise-Emma Ngwi
Mentor(s): Dr. Kris Curran
Poster Presentation 15 Biology

The circadian rhythm, also known as the body's clock, is a natural cycle of physical, mental, and behavior changes that the body goes through in a 24-hour cycle. In the developing heart, the central oscillator genes xPeriod 1 and xRev-erba, display a statistically significant 24-hour rhythm after 5.5 days of development. PERIOD1 protein is a transcriptional repressor which aids in rhythm generation and impacts components of the circadian rhythm such as metabolism, locomotion and behavior. The purpose of this study was to determine how circadian genes affect heart physiology during embryonic development. Knockout of xBmal1 in Xenopus laevis embryos can increase heart rate compared to un-injected controls. xPeriod1 in knockout was observed for similar effects. The xPeriod1 guide RNA targeted exon 8 of the gene which encodes the PAS domain of the protein. PAS domains are important for protein-protein interactions and allow PERIOD1 to inhibit BMAL1/CLOCK transcription of Period1 gene (negative feedback). The embryos were injected at the one cell stage with xPeriod1 8-3 guide RNA and CAS9 protein and cultured the
embryos to various stages of heart development. Heart rate is first detected at stages 33 (44 hours post fertilization). We determined heart rate in xPeriod1 Knockout and un-injected embryos by counting the number of heartbeats in 15 second intervals twice for each embryo. Beats per minute was then calculated by multiplying by four. Next, the average beats per minute for each stage of development was assessed. Concluding, circadian genes have an impact on heart physiology during embryonic development.

Analysis of Antibiotic Properties from Streptomyces sp. KB40 Endophyte STRP-110 (Concordia University Wisconsin)
Time: 10:30 Location: UC Hamilton
Author(s): April Xiong and Hanna Jang
Mentor(s): Uvidelio Castillo Tzvia Springer
Poster Presentation 54
Microbiology Research

Antibiotic resistance is a growing concern and to combat this issue, the search for new antimicrobials is constantly expanding. In this study, a specific endophyte was the selected organism to further study its antimicrobial properties. Endophytes are a type of microorganism that can be found living in plant tissues in a symbiotic relationship with the hosts without causing any harm. The studies of this project centered on isolating novel antimicrobial compounds from Streptomyces sp. KB40 (STRP-110). STRP-110 was first fermented in three different medias, Nutrient broth (NB), Lysogeny broth (LB) and Potato Dextrose broth (PDB) to find which broth nutrient would enhance the organism to produce more antibiotic compounds against four human pathogenic organisms, Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus. After its fermentation period, a chemical extraction was performed using ethyl acetate. Following the chemical extraction, a 24-hour bioassay was conducted on the organic extract of STRP-110 to observe the growth inhibition on the four pathogenic bacteria cultures. This bioassay was conducted using UV spectrophotometry at the wavelengths of 600 nm. The assay showed that STRP-110 grown in NB broth had the greatest inhibition against Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus. Based on this assay, further research is needed to understand STRP-110, this includes but is not limited to identifying and studying the isolated individual compounds from STRP-110 against known pathogens that were used in this study.

xPeriod1 knockout in animal caps affects basal metabolism and decreases the response of xNocturnin in mesoderm induction in Xenopus laevis (UW-Whitewater)
Time: 10:30 Location: UC Hamilton
Author(s): Bashkim Veliu and Andrea Schwartz
Mentor(s): Kristen Curran
Poster Presentation 12
Biology

The purpose of this experiment was to determine whether xPeriod1 influences changes in gene expression and metabolism that occur during mesoderm induction in Xenopus laevis. PERIOD1 is a component of the central oscillator of the circadian clock. xPeriod is transcribed by BMAL1/CLOCK heterodimer and PERIOD1 inhibits its own transcription by inhibiting BMAL1/CLOCK. This negative feedback loop is part of the molecular timing of 24 hours in almost every cell in adults. One output of the circadian clock is the NADP+ phosphatase, Nocturnin. We isolated animal cap ectoderm from blastula stage embryos. The animal cap (AC) can be induced to form mesoderm using activin (10ng/ml) in vitro. Previous work from...
our lab shows that xBmal1 knockout in animal caps affects basal metabolism and decreases the response of xNocturnin to mesoderm induction. We tested whether xPeriod1 knockout would have similar effects. We injected xPeriod1 guide RNA and CAS9 protein into 1-cell embryos, grew them to blastula stage, and removed the ACs. We compared the response to activin induction in xPeriod1KO and un-injected ACs. Basal metabolism and xNocturnin expression were monitored using luciferase-based assay systems. These experiments are ongoing, but we hypothesize that circadian genes like xBmal1 and xPeriod1 coordinate the response of embryonic cells to mesoderm induction.

Assessing the fluvial habitat preferences of Clubtail Dragonflies (Odonata, Gomphidae) in the Huron Mountains (Michigan, USA) (UW-Parkside)

Time: 10:30 Location: UC Hamilton

Author(s): Brandon Wilson, Amy Johnston, Samantha Fiedler, Christopher Tyrrell and Rachel Headley

Mentor(s): Jessica Orlofske

Poster Presentation 38 Biology, Aquatic Ecology

The presence of riverine odonates may be directly related to characteristics of fluvial habitat, particularly for sediment burrowing clubtail dragonflies (Gomphidae). The variation in fluvial properties throughout the Huron Mountain region (Upper Peninsula, Michigan, USA) provides the ideal conditions for examining the relationship between larval odonate density, adult odonate emergence, and hydrologic and geologic characteristics. Nine sites in two watersheds were surveyed during three periods (Aug. 2020, May/June 2021, and Aug. 2021). During each survey a multi-parameter YSI probe and OTT Hydromet MF PRO flow meter were used to measure temperature, pH, dissolved oxygen, conductivity, discharge, and flow velocity respectively. To quantify emergence, odonate exuviae were collected along a 30m stretch of riparian habitat at all sampling sites in June 2021. In August 2021, benthic larvae were collected using a Surber sampler placed at five points along a transect across the channel perpendicular to flow. Wolman pebble counts were conducted in August throughout the same area where odonate larvae and exuviae had been sampled. Based on pebble counts, six sites contained higher frequencies of coarse gravel and coarse sand, and five contained cobble. Spring discharge ranged from 0.046 m3/s – 1.041 m3/s while August discharge measurements were much lower (0.032 m3/s – 0.879 m3/s). A total of 324 exuviae were collected among the sites in June 2021, 156 were identified as the target family, Gomphidae. Larval counts in August 2021 totaled 44 larvae, 22 of these were Gompshids. Although sites with higher larval density differed from sites with greater emergence, generally more odonates were observed at sites with moderate flow and mixed substrate containing cobble, coarse sand, and coarse gravel. Understanding the preferences of odonates throughout their development can support habitat management and conservation efforts.
Nucleoside transport and metabolism contribute to the recovery from glucose-phosphate stress in Escherichia coli (UW-Parkside)

*Time:* 10:30  *Location:* UC Hamilton

*Author(s):* Brianna Gesiorski, Miranda Marks and Elaine Dandan

*Mentor(s):* Gregory Richards

*Poster Presentation 19 Biology*

Organisms must often generate coordinated responses to overcome stresses in their environment. Enteric bacteria like Escherichia coli experience glucose-phosphate stress, a nutrient-related growth inhibition that occurs when cells accumulate sugar-phosphates due to a block in glycolysis. E. coli responds to this stress through a regulatory mechanism involving the transcription factor SgrR and the small RNA SgrS, which acts in part by stopping uptake of stressor sugar-phosphates. While this regulation is well understood, less is known about metabolic pathways that help circumvent the block in glycolysis. Previous research has shown that nucleoside transport and metabolism likely provide alternative carbon sources that aid the recovery from glucose-phosphate stress. The current study aims to characterize the roles of additional nucleoside transporters and nucleoside phosphorylases (which cleave the sugar from nucleosides for use as a carbon source) during stress. To do so, we constructed mutations in E. coli genes encoding transporters and phosphorylases and examined the mutants for changes in growth during glucose-phosphate stress. Of the genes examined, deleting the transporter gene nupC worsens growth during stress, consistent with a role of nucleoside transport in helping cells recover from stress. In contrast, deleting the nucleoside phosphorylase gene xapA appears to slightly improve growth, suggesting its expression during stress might be deleterious. Current research is focused on characterizing the contribution of additional nucleoside metabolism genes to recovery from glucose-phosphate stress.

Complete Genome Sequence of a New Genus of β-Proteobacteria Isolated from Solanum tuberosum Baby Potatoes (Concordia University Wisconsin)

*Time:* 10:30  *Location:* UC Hamilton

*Author(s):* Caleb Wardenburg and Olivia Olson Hartwig

*Mentor(s):* Dr. Justin Speck

*Poster Presentation 50 Microbiology*

Here we report the complete genome sequence of a novel phytopathogen isolated from Yukon Gold baby potatoes. 16s analysis of this organism found the closest identity to be 93.2% indicating a unique genus of bacteria. Whole genomic sequencing was conducted on the 3.5Mb genome and analyzed via PROKKA. This organism was found to contain 67 tRNAs, 1 CRISPr, 3183 CDSs, and 1536 unique gene codes. Taking into account the low identity scores via 16s alignment and low identities across several housekeeping genes, we propose a new genus be introduced for this organism. This project discusses these molecular findings and explores the metabolic characteristics of this newly discovered potato phytopathogen.
Discovering novel antimicrobials in endophyte producing Streptomyces misionesis against opportunistic pathogens (Concordia University Wisconsin)

**Time:** 10:30  **Location:** UC Hamilton

**Author(s):** Charity Hribar and Myriah Earl

**Mentor(s):** Uvidelio Castillo and Tzvia Springer

**Poster Presentation** 51  
**Microbiology**

Antibiotic resistance is on the rise and searching for novel antimicrobials is a field of medicine that continues to evolve. An endophyte is an organism, such as a bacterium or fungus that lives between plant cells while maintaining a symbiotic relationship with the plant without causing disease. Endophytes are known to produce natural antimicrobial compounds for their survival in the environment. This project focuses on discovering novel antimicrobial compounds isolated from Streptomyces misionesis (STRP 126-1). Following fermentation of STRP 126-1, a series of solvent extractions using ethyl acetate was performed. Bacterial growth inhibition was assayed at OD600 for STRP 126-1 antimicrobial activity against known pathogens (Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, and Salmonella enterica). The data showed that STRP 126-1 was effective in inhibiting 100% of S.aureus, P. aeruginosa, E. coli and S. enterica in a 24-hour growth period. In conclusion, STRP 126-1 is an effective antibiotic-producing endophyte and future work will include identifying and characterizing the isolated compounds against the known pathogens listed in this study.

Effect of extreme diets on fruit flies with SMA (UW-River Falls)

**Time:** 10:30  **Location:** UC Hamilton

**Author(s):** Christian Chrisler and Evalyn Beall

**Mentor(s):** Ashlyn Spring

**Poster Presentation** 35  
**Biology**

Spinal muscular atrophy (SMA) is a fatal genetic disorder that causes the degeneration of motor neurons that control muscles in babies and young children. In addition to impacting neurons, a growing body of evidence suggest that SMA also reduces the body’s ability to metabolize fat and cause fatty liver to develop. The mechanisms driving this metabolic dysfunction are not well understood. To investigate this, we examined fruit flies’ models of SMA raised on fly food with varying amounts of added saturated fat. Using these flies, we first assessed viability across developmental phases of the fruit fly life cycle by measuring survival of larva to the pupal and adult stages. We also used lipidomics and metabolomics to assess the chemical composition of the adipose tissue in the fruit fly larvae. These forms of testing use mass spectroscopy and liquid chromatography to determine chemical make-up of the adipose tissue and percentage breakdowns. These experiments are ongoing at the time of abstract submission. Our expected results are that the flies fed high fat diets will have a reduced viability due to a change in the composition of the adipose tissue. The use of lipidomic and metabolomic testing will help quantify the effects of a high fat diet and how the percent make-up of the adipose tissue has changed. These data will provide a deeper understanding to how SMA affects fat metabolism in the fly and will help to shed light on clinical
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Observations of metabolic complications in SMA patients.

**Effects of hydrologic alteration on invasive Reed Canary Grass (Phalaris arundinacea L.) in a restored wetland (UW-Stout)**

*Time:* 10:30 *Location:* UC Hamilton  
*Author(s):* Christopher Jones and Kyle Baemmert  
*Mentor(s):* Keith Gilland and Mandy Little  
*Poster Presentation* 21 *Biology*

This study explores the effect of altering a wetland’s hydroperiod on the population of invasive Reed Canary Grass (Phalaris arundinacea L.). The study site is a restored tamarack bog enrolled in the USDA NRCS Wetland Reserve Program. Hydrology was restored at the site in 2018 by installing a water impoundment structure to reverse previous wetland drainage efforts. Data was collected from 36, 1m2 plots located in five transects across the site in Spring-Fall 2021. From these plots, the plant species present were identified, and percent cover was estimated for each species present. Species richness (S) diversity, Shannon diversity (H'), and species evenness (J) were calculated for each plot. Correlation analyses were used to compare the relationships between environmental conditions and diversity measures. There was a significant negative relationship found between water depth and Phalaris arundinacea L. cover and there was also significant positive relationship between the water depth and species evenness (J). This study suggests that flooding may be effective to control Phalaris arundinacea L., and that Phalaris arundinacea L. negatively impacts species richness. Although increasing water depth seems to control Phalaris arundinacea L., it also results in a community with lower species richness. The long-term impact of altered hydrology on the Phalaris arundinacea L. and the overall community make-up will need to be further monitored to fully assess the efficacy of this method of restoration.

**Analysis of the insulin/IGF-1 signaling pathway gene, Bma-daf-2, in the parasitic nematode Brugia malayi (UW-Whitewater)**

*Time:* 10:30 *Location:* UC Hamilton  
*Author(s):* Cole Lindwall  
*Mentor(s):* Kirsten Crossgrove  
*Poster Presentation* 11 *Biology*

Brugia malayi is a parasitic nematode that causes lymphatic filariasis in humans. As a part of its life cycle, B. malayi receives environmental cues to enter a transitional arrest stage known as the infective (IL3) stage before the parasite is transferred between a mosquito vector and mammalian host. We are using a free-living nematode, Caenorhabditis elegans, as a model to study B. malayi development. As a part of its life cycle, C. elegans goes into a dormant state called dauer during periods of unfavorable conditions until it receives a signal that conditions have improved. The insulin/IGF-1 signaling pathway (IIS) regulates dauer formation and recovery in C. elegans, and we hypothesize that the same pathway works similarly to regulate IL3 in B. malayi. We used bioinformatic tools to identify and predict the gene structure of the B. malayi IIS pathway gene Bma-daf-2, which is predicted to encode the insulin receptor. We then used the polymerase chain reaction (PCR) to amplify portions of the gene from cDNA. We sequenced the PCR products and compared them to the predicted B. malayi mRNA sequences and compared the similarity between the B. malayi and C. elegans genes. In the future, we plan to use the B. malayi genes in transgenic experiments in C. elegans. Since the genes in
the IIS pathway are highly conserved, we hypothesize that the B. malayi orthologs will be able to rescue function in C. elegans mutants, which may then provide a system to further study the B. malayi protein function.

**Localizing functional amyloids in cryopreserved bovine spermatozoa by fluorescence microscopy** (UW-Whitewater)

*Time:* 10:30  
*Location:* UC Hamilton  
*Author(s):* DaKota White  
*Mentor(s):* Dr. Nathaly Cormier  
*Poster Presentation*  

**Biology**

Amyloids, or self-aggregated proteins, were once thought to only be associated with neurodegenerative diseases such as Alzheimer’s and Parkinson’s, though recent studies have shown that amyloids may serve a biological function in reproduction. In mouse sperm, a study demonstrated that amyloid proteins were not only present but served in forming a formic-acid and SDS resistant acrosomal matrix core. Recent studies also found amyloid structures in the acrosome of fresh, ejaculated Rhesus monkey and bovine spermatozoa. In the dairy industry, artificial insemination with cryopreserved semen is a common practice, though cryopreservation procedures have been shown to affect the sperm membrane and physiology. Further examination of amyloid localization in cryopreserved bovine spermatozoa may help to elucidate the difference in fertility of cryopreserved spermatozoa as compared to the fresh ones. We hypothesized that amyloids localize in the acrosome of frozen-thawed bovine ejaculates, and that following the acrosomal reaction of frozen-thawed spermatozoa, amyloids will re-localize to the equatorial segment of the sperm head. To detect and localize amyloids, indirect immunofluorescence assays were performed using conformation-dependent amyloid antibodies and dyes that bind specifically to amyloid structures in frozen-thawed spermatozoa before and after physiological induction of the acrosome reaction. Preliminary immunolocalization results indicated that amyloids localize in the acrosome of bovine spermatozoa that were frozen-thawed as observed in freshly ejaculated ones, but further analysis using different bulls is required to confirm their similar location. This study could serve as potential framework for future studies in the functional role of amyloids in reproduction.

**A Search for the Structural Identity of a gammaherpes virus tegument protein of unknown function: Advancements Towards the Understanding of Epstein Barr Virus (EBV)**  
(UW-La Crosse)  

*Time:* 10:30  
*Location:* UC Hamilton  
*Author(s):* Damon Trump  
*Mentor(s):* Dr. Kelly Gorres  
*Poster Presentation*  

**Biochemistry**

Epstein Barr Virus (EBV) and Kaposi sarcoma-associated herpes virus (KSHV) are members of the gammaherpes virus family. These viruses have been directly associated with multiple types of cancers in humans, particularly in Burkitt lymphoma, lung, and gastric cancers for EBV and a variety of immune cell cancers for KSHV. Herpes virions contain a tegument layer with protein functionalities and structures that are relatively unknown. We are particularly interested in a tegument protein of unknown function which has been linked to the lytic cycle in virus progression. This open reading frame is highly conserved among gammaherpesviruses, including the related virus, murine gammaherpesvirus 68 (MHV68). We have produced and purified the MHV68
target protein from E. coli. Disulfide bond and oxidation-reduction characteristics were observed in gel mobility shifts. Structural determination will allow us to advance our knowledge in the functionalities of this protein through structural relationships. This advancement will ultimately further our understanding of EBV and its role in human cancers and infections.

An Information-theoretic Model of Allosteric Macromolecules Based On Spatial Graphs (UW-Oshkosh)

Time: 10:30 Location: UC Hamilton
Author(s): Drosianos Louvaris
Mentor(s): Ahmed Nasif
Poster Presentation 40
Biology, Nanotechnology, Information Theory

Allostery is a fundamental mechanism by which many biological conformational processes are controlled, such as protein folding. Information theory is the science of modeling random events and processes using statistical measures, such as entropy and mutual information. In this poster, a review of allostery is conducted in the light of information theory. The potential of information-theoretic models to help answer many of the standing questions in allostery is investigated. Such models empowered by machine learning tools may be used to study complex biological processes and develop new therapeutics.

The quest for new antibiotics from an uncultured endophyte Rhodococcus sp. (STRP-A-15-3) (Concordia University Wisconsin)

Time: 10:30 Location: UC Hamilton
Author(s): Edyta Biever and Genevieve Pittman
Mentor(s): Uvidelio Castillo Tzvia Springer
Poster Presentation 53
Microbiology Research

Antibiotic resistant pathogenic bacteria continue to negatively impact society worldwide. This issue has caused scientists to pursue research in discovering new antibiotics from natural entities. Endophytes are bacteria and fungi microorganisms that live symbiotically in plant cells. The hope is to find new microorganisms that could potentially produce novel antimicrobial compounds. The goal of this project is to discover antimicrobial compounds from an uncultured Rhodococcus sp. (STRP-A-15-3). STRP-A-15-3 was fermented in Lysogeny brother (LB), Potato Dextrose Broth (PDB), and Nutrient Broth (NB). It was found to thrive and harness better antibiotic activity when grown in PDB. The fermented STRP-A-15-3 PDB broth was extracted with ethyl acetate. The chemical extract showed inhibition via spectrophotometry at OD600 over a 24-hour period after testing against the following pathogenic bacteria: Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus. The Bioassay and HPLC results revealed bacterial inhibition against all four pathogens. The results from this study show that this extract has the potential to serve as an effective potential source of novel alternative to synthetic antibiotics.

Searching for Antibiotic Compounds from Bacillus strain STRP-49-1 (Concordia University Wisconsin)

Time: 10:30 Location: UC Hamilton
Author(s): Elizabeth Van Rossum
Mentor(s): Uvidelio Castillo
Poster Presentation 49
Microbiology

Antibiotic resistance is a problem that is going to continue to grow in hospitals and the health care system. In recent years, research has slowly shifted focusing on finding new areas in which
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antimicrobial drugs properties can be found. Endophytes are a new area of research. Endophytes are bacteria or fungi that can be found living in plants tissue in a symbiotic relationship. They are believed to produce antimicrobial compounds that may help the host plant survive in the environment. This project focused on the antimicrobial properties produced by Bacillus (STRP-49-1). STRP 49-1 was fermented in Nutrient Broth (NB), Potato Dextrose Broth (PDB), and Lysogeny Broth (LB) to determine which one of them helped the culture produce more antimicrobial compounds. After the fermentation of STRP-49-1, a solvent extraction was performed using ethyl acetate. To determine if STRP-49-1 produced antimicrobial properties a growth inhibition via spectrophotometry was assayed at OD600. The chemical extract showed inhibition via spectrophotometry over a 24-hour period after testing against the following pathogenic bacteria: Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus. The data that was collected from the assay showed that STRP-49-1 fermented in PDB inhibited the growth of all four bacterial pathogens in a 24-hour period better than the other two medias. Bioassay guided fractionation using high-performance liquid chromatography has helped narrow the active fractions. Purification of the active metabolites are currently underway.

Effects of Extract from Bottle Gourd on Lung Cancer (UW-River Falls)
Time: 10:30 Location: UC Hamilton
Author(s): Evalyn Beall
Mentor(s): Dr. Ashlyn Spring
Poster Presentation 13 Biology

Lung Cancer is the leading cause of cancer related death for both men and women, accounting for roughly 25% of cancer deaths. Although many drugs are available to treat lung cancer, many of them are toxic to normal cells and cause severe side effects. In addition to the inconvenience of life altering side effects, many patients also risk developing drug resistance. It is thus essential to find more therapeutic options for lung cancer patients. In this project, I tested extracts and purified compounds obtained from bottle gourd on cultured lung cancer cells. Using the standard MTT cell proliferation assay, the partially purified extract named AK 10 was found to have qualities that can slow the growth of lung cancer cells. The AK-10 extract was further separated using MPLC and HPLC to generate F1-9 fractions. Interestingly and surprisingly, all the F1-9 fractions showed proliferation inhibition of lung cancer cells. Cytological studies showed that the actin cytoskeletal system totally collapsed in the AK-10 treated cells. Western blotting analyses showed that AK-10 compounds caused significant decrease of actin protein and the Akt cell proliferation pathway activity. These results revealed the unique molecular mechanisms of AK-10 in inhibiting cancer cell growth.

Impacts of Spinal Muscular Atrophy on Immune Function (UW-River Falls)
Time: 10:30 Location: UC Hamilton
Author(s): Evalyn Beall
Mentor(s): Dr. Ashlyn Spring
Poster Presentation 13 Biology

Spinal Muscular Atrophy (SMA) is a genetic disease that primarily impacts babies and young children. Symptoms of SMA include progressive muscle weakness, paralysis, and if left untreated, possible death. This project seeks to test whether SMA affects the immune system in conjunction with its known effects on the nervous and muscular system. Previous
periments in mice have shown immune effects to be present, and in fruit flies the expression of melanotic masses indicates a possible immune system effect. Fruit flies make a good model organism for this experiment because they have similar SMN proteins to humans. Reducing SMN levels in these flies leads to similar SMA phenotypes that we see expressed in human patients, namely locomotion defects, decreased viability, and shorter lifespan. In addition to flies, we have also developed human bronchial epithelial cell lines with reduced SMN levels and subjected them to infection. Pseudomonas entomophila, a known fly pathogen related to bacteria that infect humans, was used in our fly infection assays. Two human pathogens, Pseudomonas aeruginosa and Staphylococcus aureus, were used for cell infection experiments. Our results indicate a possible detrimental effect on the function of the immune system in Spinal Muscular Atrophy and will be important to consider in the context of animal models and human patients in the future.

**Acute and Chronic Toxicity of a Mixture of Two Neonicotinoid Insecticides on Ceriodaphnia dubia and Gammarus pseudolimnaeus**

(UW-Whitewater)

**Time:** 10:30  **Location:** UC Hamilton

**Author(s):** Faune Fisher  
**Mentor(s):** Elisabeth Harrahy

**Poster Presentation 26 Biology**

Neonicotinoid insecticides have been detected in streams, and aquatic invertebrates may be at risk from exposure. While studies have been conducted to examine the impacts of individual neonicotinoid insecticides on aquatic invertebrates, very little research has been conducted on the impacts of exposure to a mixture of neonicotinoids, which is more realistic. The goal of this project is to determine the acute and chronic toxicity of a mixture of two neonicotinoids, thiamethoxam and imidacloprid, to select aquatic invertebrates. In separate acute and chronic toxicity tests, water fleas (Ceriodaphnia dubia) and amphipods (Gammarus pseudolimnaeus) were exposed to a mixture of the two insecticides in different proportions using a toxic unit approach based on data collected in single insecticide toxicity tests. Acute tests ran for 48 hours (water fleas) or 96 hours (amphipods) and chronic tests ran for seven days (water fleas) or 10 days (amphipods). We observed no significant impacts of a mixture of imidacloprid and thiamethoxam on survival or reproduction in the water fleas. There was a significant decrease in survival of amphipods exposed to the mixture, with imidacloprid accounting for more of the observed toxicity than thiamethoxam. However, there was a lag in effects on survival and most amphipods died after the standard four-day exposure/observation period. There was no significant impact on growth (as length) of the amphipods. We recommend acute toxicity tests be run for a longer duration to allow delayed effects to be observed. We also recommend that toxicity tests include environmentally realistic concentrations. Impacts on survival of these species could have cascading effects on the structure and function of aquatic ecosystems.
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Search of Antimicrobial Compounds from Streptomyces sp. Ag109_G2-1 (Concordia University Wisconsin)
Time: 10:30 Location: UC Hamilton
Author(s): Genevieve Pittman and Brandon Xiong
Mentor(s): Uvidelio Castillo and Tzvia Springer
Poster Presentation 52
Microbiology Research

The discovery of Streptothricin from Streptomyces lavendulae as an antibiotic in 1942 transformed the treatment of bacterial infections. Antibiotics are bioactive secondary metabolites (BSM) that are complex stereoisomers which require isolation to be an effective microbial inhibitor. Synthetic chemists have struggled to create pure stereoisomers; however, Streptomyces spp., a genus of Gram-positive bacteria, have the ability to produce BSM and have evolved to produce stereospecific molecules effective in the treatment of bacterial, fungal, and viral infections. Following fermentation of Streptomyces sp. Ag109_G2-1 (STRP-45) in Potato Dextrose Broth (PDB), Nutrient Broth (NB) and Lysogeny Broth (LB), PDB fermentation showed more antibiotic activity than NB and LB. The PDB ethyl acetate chemical extraction crude sample showed inhibition via a 600 nm spectrophotometer over a 24-hour period after testing against the following pathogenic bacteria: Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus. Bioassay guided HPLC results revealed bacterial inhibition against all four pathogens by exhibiting no bacterial growth in all experimental wells. Results from this study show that STRP-45 extract has the capability to serve as a potential source of novel antibiotics. Further research is required to isolate and characterize the biologically active component of STRP-45.

Computer-aided drug discovery of selective HDAC3 Inhibitors as HIV Latency-Reversing Agents (Concordia University Wisconsin)
Time: 10:30 Location: UC Hamilton
Author(s): Giannina Castillo Pacheco
Mentor(s): Terry-Elinor Reid
Poster Presentation 1
Biochemistry

The eradication of HIV/AIDS remains a scientific challenge. This is due to the genetic diversity of the virus constantly mutating and evading the activity of anti-retroviral (ARV) drugs and the presence of long-lasting latently infected CD4+ T-cells that harbor integrated HIV-1 DNA in its genome. One approach for eliminating HIV latent reservoirs is the “shock and kill” method by latency-reversing agents (LRAs) like Histone deacetylase (HDAC) inhibitors. HIV latency is maintained through the synergistic mechanism of class I HDAC isoforms 1, 2, 3, and 8. However, HDAC3 activity is essential for restricting the HIV-latent integrated provirus. Although there are class I HDAC inhibitors currently on the market, most are not isoform-selective resulting in cardiotoxicity concerns and reduced potency as LRAs. Hence, not only is there an unmet need for HIV cure, but there is also a need to identify isoform-selective Class I HDAC inhibitors that can be included in a combinatorial therapeutic latency eradication strategy.

To achieve our goal of discovering isoform-selective HDAC3 negative allosteric modulators (NAMs) we have identified an allosteric co-repressor binding site of HDAC3 that is less conserved thus can be exploited computationally. We conducted virtual screening (VS) of Concordia University Wisconsin School of Pharmacy (CUWSOP)
in-house chemical library of over 10,000 molecules. Our preliminary results yielded a promising HDAC3 inhibitor exhibiting 5.12μM activity. This project is unique in that our group does not seek to discover new therapies to manage the disease, but to cure the disease which would transform the landscape of current HIV treatment."

### Expression and Purification of Recombination pCas9 from an E. coli Expression System
(UW-Platteville)

**Time:** 10:30  **Location:** UC Hamilton  
**Author(s):** Hanna Skubal  
**Mentor(s):** Mark Levenstein  
**Poster Presentation** 8  
**Biology**

By first preparing the DNA containing the Cas9 gene, we were able to transform the plasmid by positioning the plasmid into bacteria and allowing it to grow in liquid culture. After growth the bacteria was opened and the purified Cas9 was the result. The DNA was transformed again into another strain of bacteria which allowed for protein expression. To separate the Cas9 protein from the other proteins we then used column chromatography to use the tags of the Cas9 to prohibit that protein from flowing through the rest of the column with the other proteins. Then we used a buffer to release the Cas9 proteins. Finally, we were able to use probes to guide the Cas9 enzyme to the DNA sequence that was to be cleaved. Once that was complete, we then ran a gel electrophoresis to evaluate the assay.

CRISPR/Cas9 gene editing provides researchers with the ability to target virtually any location in a genome for disruption. Since its description in 2012, the system has been modified by labs around the world to carry out functions as diverse as gene insertion and COVID-19 testing.

This project’s goal is to clone, express, and purify Cas9, the restriction endonuclease enzyme component of the CRISPR/Cas9 system, with a bacterial expression vector. The Cas9 gene will be tagged with a 6-histidine sequence to streamline purification. Using IPTG induction with an inducible lac promoter and a pET expression vector, expression levels can be visualized on an SDS-PAGE gel. Cas9 protein is then purified from cell lysates using a nickel resin. After designing guide RNAs, the enzyme will be tested for activity and accuracy to cleave DNA.

### Potential New Chemotherapeutic Drugs from Bottle Gourd (UW-River Falls)

**Time:** 10:30  **Location:** UC Hamilton  
**Author(s):** Jacob Arnt  
**Mentor(s):** Cheng-Chen Huang  
**Poster Presentation** 41  
**Cancer biology**

Cancer is among the leading causes of death worldwide. According to the World Health Organization, in 2018, there were 17 million new cases and 9.6 million cancer-related deaths worldwide, about 1 in 6 deaths are due to cancer. Dr. Huang has discovered that several partially purified herbal fractions from bottle gourd can significantly inhibit the proliferation of melanoma and breast cancer cells. This family of compounds are called the AK compounds and they have been shown to strongly inhibit the proliferation of B16F10 melanoma and MCF7 ER+ breast cancer cells. For my research project I used B16F10 mouse melanoma and MCF7 ER+ human breast cancer cell lines to analyze the chemotherapeutic effects that the AK10 compound had on those cells. The main objectives of my research project were to examine the cytoskeletal and cell adhesion structures in AK-treated cells, to test if the cell aggregation caused by AK
compounds is transient and reversible, and to study the molecular mechanism of AK compounds. The two questions that I wanted to answer from doing my research project were first, how does the AK10 compound inhibit breast cancer and melanoma growth and second, what is its similarity to other chemotherapeutic drugs. When it comes to medical application, it is important to understand that as new chemotherapeutic drugs are tested and prescribed, new drug resistances form as well. That is why it is important to continue to try to find new compounds that can serve as chemotherapy, as well as preventative therapy for patients. Even though further research is required, this project yielded promising results that indicate that the AK10 compound could serve as a potential chemotherapeutic agent in the future.

**Effects of Various Climate Factors on Acer saccharum (Sugar Maple) in Northern Wisconsin**

**Wisconsin** (UW-Whitewater)

**Time:** 10:30  **Location:** UC Hamilton  
**Author(s):** Jacob Hafner  
**Mentor(s):** Dr. John D. Frye  
**Poster Presentation 46**  
**Environmental Science**

Acer saccharum (Sugar Maple) is a key tree species in northern Wisconsin. It is abundant in the state’s iconic northwoods and has been the official state tree since 1893. However, Acer saccharum is vulnerable to the effects of climate change. The purpose of this study is to determine the extent of the risk that climate change poses for Acer saccharum in the northern portion of Wisconsin. The study area covers climate divisions 1, 2, and 3 which span the northern third of the state and was chosen because 81% of the state’s Acer saccharum population is found there. Annual maple syrup production data was collected and used as an indicator for the population health of Acer saccharum. The syrup production data was compared with data of various climate factors that influence the health of the tree population. Analysis shows that climate variables such as growing season temperature and precipitation as well as drought conditions throughout the year have an influence on maple syrup production from Acer saccharum and thus can also indicate the health of the tree population in the state of Wisconsin.

**Shape-based Separation of Mastitis Pathogens Using Nanosculpted Membranes**

(UW-Platteville )  
**Time:** 10:30  **Location:** UC Hamilton  
**Author(s):** Jacob Plumley  
**Mentor(s):** Mark Levenstein  
**Poster Presentation 14**  
**Biology**

A 2019 report from UW-Madison shows that the Wisconsin dairy industry accounts for over half of the total annual revenue from Wisconsin agriculture. Diseases in dairy cattle threaten profit and production with mastitis alone causing an estimated annual loss of $1B nationally and $140M locally. Broad-spectrum antibiotics, the current regimen for mastitis has the potential to generate antibiotic-resistant pathogens. The ability to isolate the cause of individual mastitis cases will lead to tailored treatment plans resulting in lower costs, shorter lost production windows, and a lower risk of future pathologic issues. This project seeks to exploit the distinct aspect ratios found among different pathogens by fabricating customized nanosculpted membranes. The current stage of this experiment is the formation of a library of antibiotic-resistant bacteria needed to test the efficacy of the customized nanosculpted membranes. In the future, dairy farms can use...
an onsite testing device to identify the source of infection and implement a treatment plan.

**CRISPR knockout of xPeriod1 effects**  
**xNocturnin expression and somite development in Xenopus laevis**  
(UW-Whitewater)  
*Time*: 10:30  
*Location*: UC Hamilton  
*Author(s)*: Jenna Kerkvliet  
*Mentor(s)*: Kris Curran  
*Poster Presentation*: 23  
*Biology*

xPeriod 1 is a central oscillator gene that encodes a transcriptional repressor in the circadian clock. Circadian rhythm controls time of day dependent changes in gene expression, metabolism, and behavior. xPeriod 1 is transcribed by BMAL1/CLOCK, binding to E-box consensus sequences in the promoter of the xPeriod 1 gene. PERIOD1 protein inhibits BMAL1/CLOCK (negative feedback). During Xenopus development, xPeriod 1 is present in the developing central nervous system and sensorial placodes, as well as the heart and somites. Knockout of xBmal1 causes fewer somites to form and suppression of xNocturnin expression. xNocturnin transcription is controlled by the circadian clock. To test the importance of xPeriod 1 in Xenopus laevis development we designed three different guide RNAs to combine with CAS9 protein to mutate specific regions of the xPeriod1 gene. We specifically targeted positions on exon 3 and exon 8 of the xPeriod 1 gene. Exon 8 encodes the PAS domain of PERIOD1 which is required for protein-protein interactions. We injected Period1 gRNA and CAS9 into one cell embryos that were transgenic for xNocturnin::LUC2. Light production correlates with xNocturnin transcription. We also injected one cell of embryos that were at 2-cell stage of development, so that xPeriod1 was only knocked out on the right or left side of the embryo. These embryos were transgenic for a Cardiac actin::GFP reporter which allowed us to monitor effects of xPeriod1 knockout on somite number using Florescence microscopy. Knockout of circadian genes affected somite number and xNocturnin expression suggesting that xBmal1 and xPeriod1 play roles during organ differentiation before acting to time 24 hours.

**Designing molecular methods to identify genotypes for human genes that influence eye and skin color pigmentation** (UW-Whitewater)  
*Time*: 10:30  
*Location*: UC Hamilton  
*Author(s)*: John Binns and Noah Barkes  
*Mentor(s)*: Nicholas Tippery  
*Poster Presentation*: 10  
*Biology*

As we come to understand more about the human body and genome, we find that many important genetic features are not easily determined by simple laboratory tests. In this experiment we aim to make it easier to identify genotypes for the OCA2 gene, which helps to determine a person’s eye color. This gene mainly determines where someone's eyes fall on a blue to brown gradient. When trying to predict eye color there are multiple SNPs (single nucleotide polymorphisms) that can be chosen from, but as it has been found in other experiments the OCA2 gene can account for up to 74% of eye color variation. This larger representation is why we decided to design our experiment around creating a discriminant primer pair to isolate the OCA2 eye gene in a PCR (polymerase chain reaction) which would then be used to determine a person's genotype. Anonymized DNA samples and images of the participants' irises will be put into a data bank. The photos will be compared against the DNA evidence that
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determines whether individuals are heterozygous or homozygous for the OCA2 gene. Then the results will be sequenced and compared to the iris images in order to confirm the effectiveness of the PCR technique.

Testing Humidity Levels Required for Styrofoam-reared Mealworms (UW-Platteville)
Time: 10:30  Location: UC Hamilton
Author(s): Katelyn Barsema and Mackenzie Murphy
Mentor(s): Rebecca Doyle-Morin
Presentation 25  Biology

Styrofoam takes multiple lifetimes to decompose. If our goal is to become a more sustainable planet, we need to find ways to combat this long-lasting pollution. One approach we have been taking has been studying how to farm Styrofoam-reared mealworms on a small scale to see if a mass production is possible. Our main focus has been determining how to help our mealworms access the water they need to survive. We have looked at both Styrofoam-only habitats, where we varied the humidity in their environments (their only source of water intake for the mealworms in that environment). We have also studied supplementing with moisture-rich organic waste like potato and banana peels. Our ultimate goal is to determine a sustainable and efficient way to rear these organisms, which can represent an important source of protein for livestock and humans alike, on our waste.

Ovarian Cancer Cell Line-Specific Responses to Dietary Molecules Vitamin D and ω-3 Fatty Acids (UW-Green Bay)
Time: 10:30  Location: UC Hamilton
Author(s): Katharina Keller, Kylie Gierach, Rebecca Radtke and Brooke Breitrick

Mentor(s): Georgette Heyrman, Deb Pearson and Paul Mueller
Poster Presentation 42  Cancer Biology

Ovarian cancer affects many women across the world, yet treatment options are limited due to frequent late diagnosis and the presence of aggressive tumors. Diet can influence an individual's risk of developing ovarian cancer; in this study the effects of the nutrients, vitamin D (Calcitriol) and omega-3 fatty acid (docosahexaenoic acid [DHA]) were investigated. Evidence in breast cancer cell lines suggests that these nutrients act synergistically to inhibit cell growth, but their effect on ovarian cancer is unknown. To elucidate the individual and combined effects of these nutrients in ovarian cancer, the ovarian cancer cell lines, OVCAR3 and OVCAR4, were treated with varying amounts of the nutrients, alone and in combination, for 72 hours. After treatments, cell growth assays were conducted to determine the effects at various treatment conditions. Western blotting was utilized to monitor changes in protein expression of markers of cell cycle arrest and/or apoptosis. Calcitriol and DHA individually inhibit OVCAR3 and OVCAR4 cell growth. Furthermore, our data suggest that inhibition of cell growth is not due to induction of apoptosis. Short-term (72 hour) co-incubation of the nutrients did not demonstrate additional synergistic cell growth inhibition compared to the individual treatments. Physiologically, nutrient interactions may influence cancer cell growth over the long term that may not be apparent through short incubations. Therefore, studies are ongoing to evaluate the potential long-term effects of these nutrients and explore additional mechanisms of action for the observed inhibition of cell growth.
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Examining the presence of the protein glycogen synthase kinase-3 (GSK-3) in cryopreserved spermatozoa from bulls of low and high fertility. (UW-Whitewater)

Time: 10:30 Location: UC Hamilton
Author(s): Kaylie Branstrom
Mentor(s): Nathaly Cormier
Poster Presentation 16
Biology

In order to become fertile, mammalian spermatozoa must mature in the epididymis to develop motility and undergo capacitation in the female genital tract. Phosphorylation of sperm proteins, including kinases such as Glycogen-synthase kinase-3 (GSK-3), is essential to both processes. GSK-3 has been localized in sperm cells by fluorescence immunocytochemistry, and inactivation of the GSK-3α isoform gene in knockout mice reduced motility and males are infertile. Other studies with human spermatozoa of low motility and fertility revealed that GSK-3α is less abundant and if present is not phosphorylated, which strongly suggests an important role for GSK-3 in sperm motility and fertility. Since cryopreserved bull semen is commonly used for artificial insemination in the cattle industry, and the fertility status of the bulls is known, we will test the hypothesis that cryopreserved spermatozoa from bull of low fertility will have less GSK-3 and will not be phosphorylated. Proteins isolated from frozen-thawed spermatozoa of bulls with low or high fertility will be examined by Western blot analysis. So far, we successfully optimized the conditions to separate the proteins by SDS-PAGE electrophoresis and transferred them onto PVDF membrane. The next step will be to blot the membranes with GSK-3α antibodies that recognize the non- and phosphorylated forms of GSK-3 protein. Results from this study could eventually lead to the development of a fertility marker for both animals and humans.

Antibiotic production based on Pseudomonas chlororaphis growth on sugars
(UW-Whitewater)

Time: 10:30 Location: UC Hamilton
Author(s): Kira Staehler
Mentor(s): Dan Zamzow
Poster Presentation 34
Biology

This research is being done to try and find new antibiotics. With the antibiotic crisis booming, more infections are becoming untreatable, leaving a common infection potentially deadly to healthy individuals. There is now a need for new antibiotics more than ever. Soil bacteria were tested because soil is rich in antibiotic activity. A bacteria isolated from soil in southern Wisconsin, Pseudomonas chlororaphis, was tested for antibiotic production. It was found that when there is antibiotic activity an orange color is produced by the Pseudomonas chlororaphis. It produces antibiotics that are active against Staphylococcus and Acinetobacter species. In order to understand how the antibiotic is produced, Pseudomonas chlororaphis was grown on media supplemented with nine different sugars. Growth on three of the nine sugars resulted in antibiotic activity against Acinetobacter. While growth on all nine showed at least some antibiotic activity against Staphylococcus. It was found that growth on xylose resulted in better antibiotic activity than both dextrose and arabinose when put on a plate with Acinetobacter and Staphylococcus species. It was also found that the orange color may not be related to antibiotic activity after all. This suggests that the production of antibiotics is
controlled by access to certain carbon sources of Pseudomonas chlororaphis.

**The effects of temperature on soft coral physiology** (UW-Whitewater)

*Time:* 10:30  *Location:* UC Hamilton  
*Author(s):* Kirsten Schwenk, Jay Taylor, Celeste Taylor and Melissa Ozburn  
*Mentor(s):* Stephen Levas  
*Poster Presentation*  28  
*Biology*

The ocean’s coral reefs are threatened globally due to a combination of direct and indirect anthropogenic activity. Of significant concern are rising global temperatures. Increases in summer mean maximum temperatures increase the risk of coral bleaching, a phenomenon whereby the coral animal expels its photosynthesizing algae endosymbiont. Coral bleaching can lead to death if the coral is not able to recover or if the temperature stress is prolonged. Mass bleaching events have increased in severity and intensity over the past decade. While there have been studies that have assessed the impact of temperature on hard corals, there is a lack of studies that have assessed the impacts of temperature on soft corals. This is despite the importance that soft corals play in coral reef ecosystems. Here, we will experimentally bleach two species of Indo-Pacific soft corals by mimicking a short-term natural bleaching event and then subsequently track the corals recovery over six months. Respiration, photosynthesis, biomass, and energy reserve measurements will provide insight as to how soft corals respond to coral bleaching events and their likelihood of persistence in the coming decades.

**Reconstructing ecological communities over time in an ancient wetland** (UW-Whitewater)

*Time:* 10:30  *Location:* UC Hamilton  
*Author(s):* Laura Phillips and Thomas Rodeen  
*Mentor(s):* Nicholas Tippery and Peter Jacobs  
*Poster Presentation*  37  
*Biology, Geology*

The earth has undergone many ecological changes over time, and the most recent ice ages were some of the more recent and severe events to impact the upper midwest. I investigated material taken from soil cores from an ancient wetland in central Indiana to identify the species present and their relative abundances over time. Samples of soil at 1 cm thickness were investigated over a range of depths representing the age range of approximately 30,000–15,000 years ago. I recovered six different species of aquatic plants and macroalgae. Zygotes of charophyte algae were found at all depths older than 17,000 years ago and were the most consistently recovered type of particle. Water lilies (genus Nymphaea) were found in layers older than 23,000 years ago, whereas a species of pondweed identified as Potamogeton spirillus was found only in the most recent layers (younger than 17,000 years ago). Other pondweed species and water nymph plants (genus Najas) were found in other layers. The prevalence of water lilies in older layers may indicate a pond or lake with little water movement and mucky substrate. Changes in species abundance over time could be attributed to changes in water nutrients, acidity, or other factors.
Isolation of Jumbo Phages (UW-River Falls)
*Time: 10:30  Location: UC Hamilton*

*Author(s):* Lilianna Rolands and Makayla Mobek

*Mentor(s):* Karen Klyczek

*Poster Presentation  6  Biology*

Our team worked to isolate a jumbo bacteriophage from soil samples. Bacteriophages, also known as phages, are viruses that infect bacteria. Jumbo phages are bacteriophages with genomes 200 kbp or greater. They can be difficult to isolate using traditional methods given their large size, so our team tried several different methods to bypass the barriers preventing isolation. We used low concentration top agar during isolation and purification. We also experimented with using large filters or chloroform to remove bacteria from our samples without removing large phages. Phages were identified as plaques in the bacterial lawn. Promising plaques were picked and expanded to generate phage lysate. Phage DNA was isolated and analyzed by agarose gel electrophoresis to estimate genome size.

Analysis of Metabolic Cell Structures in Fruit Fly Models of Spinal Muscular Atrophy (UW-River Falls)
*Time: 10:30  Location: UC Hamilton*

*Author(s):* Lydia Zentzis

*Mentor(s):* Ashlyn Spring

*Poster Presentation  17  Biology*

Spinal muscular atrophy is a neuromuscular disorder that negatively impacts the health, function, and survival of motor neurons, ultimately causing atrophy of the patient’s musculature and death if untreated. Currently available therapies for this disorder effectively correct the neuromuscular symptoms of the disease but leave non-neuromuscular body systems untreated. With patients living longer lives and with less overwhelming muscular degeneration, physicians are still seeing these patients in their offices with conditions affecting their metabolic, skeletal, and cardiovascular systems. Current research denotes that SMA patients struggle with effectively metabolizing fatty acids. However, research has not yet determined which specific metabolic processes are hindered in this disease, and researchers believe that the metabolic issues related to SMA are potentially more significant than originally thought. This research project aimed to assess health and function of metabolic tissue using fruit fly models of Spinal Muscular Atrophy by using fluorescence microscopy to measure fat body cell size and determine the quality and quantity of mitochondria within these cells. Our results shed light on the cellular mechanisms that may be driving metabolic dysfunction in SMA patients.

Alcohol and Exercise and their impact on aging mice (UW-Parkside)
*Time: 10:30  Location: UC Hamilton*

*Author(s):* Mahdi Museitef, Mohammad Raza, Jonathan Ochoa and Nicholas Bilicki

*Mentor(s):* Fabian Preuss

*Poster Presentation  27  Biology*

As humans are achieving higher and higher age, the study of aging, gerontology, has grown in importance. However, human aging studies encounter two characteristic problems: studies using cross-sectional methods, which are comparing various age groups and inferring the observed differences resulted from the passage of time, ignore the birth-cohort effect, which results from that fact that having grown up in the 60s may not have been the same as having
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grown up in 2000s. Alternatively, the Longitudinal Method can be used – following the same individuals over time, however, these studies typically take years or decades to complete, as humans age rather slowly. A possible solution is presented by the utilization of (more rapidly) animal models. While still time-consuming, a mouse reaches middle age within a year and approaches average life expectancy past two years. Here we report the results of modeling human aging in C57BL/6J male mice, which have been exposed to physical exercise (providing them with a running wheel, which they utilize voluntarily) as well as with alcohol (15% EtOH added to their drinking water), or both, throughout their lifetime. At this time the impact of exercise and alcohol on the animals’ locomotor behavior over time, the age-influenced decrease in glucose tolerance, changes in body weight and increases in intestinal damage have been analyzed following a 12-months exposure to either exercise, alcohol, both or neither, allowing us to evaluate the impact and potential interactions on the aging animals.

Ethanol extract effects of Echinacea purpurea on superoxide anion production by HL-60 cells
(UW-Green Bay)

Time: 10:30 Location: UC Hamilton

Author(s): Mai Xiong, Aaron Ferkovich, Hannah King, Katrina Mittelstadt, Abby Miller and Sami Struzynski

Mentor(s): Brian Merkel and Julie Wondergem

Poster Presentation 33 Biology

Echinacea is a commercially available herbal supplement studied to have health benefits and improve upper respiratory tract diseases, such as the common cold and influenza. Echinacea activity on superoxide anion production by the promyelocytic cell line, HL-60, was evaluated by culturing the cells with different ethanol extract percentages of Echinacea purpurea (E. purpurea). HL-60 cells cultured with 55% ethanol extract of E. purpurea produced significant levels of superoxide anion compared to other ethanol extract percentages: 35%, 45%, and 65%. The superoxide anion response elucidated by 55% ethanol extract of E. purpurea was comparable to superoxide anion levels produced by HL-60 cells treated with the positive control, phorbol 12-myristate 13-acetate (PMA). These data suggest that 55% ethanol extracts of Echinacea contain immunomodulatory compounds capable of activating HL-60 cells to produce superoxide anion.

Ultra High-Throughput Platform for the Directed Evolution of PET Degrading Enzymes
(UW-Madison)

Time: 10:30 Location: UC Hamilton

Author(s): Maxwell Unger

Mentor(s): Mario Cribari and Jeffrey Martell

Poster Presentation 43 Chemical Biology

We are developing an ultra high-throughput platform to enable directed evolution of plastic degrading enzymes. In the last two decades, enzymes have been investigated as environmentally sustainable catalysts for the breakdown of common commercial plastic polyethylene terephthalate (PET). However, existing PET-degrading enzymes have numerous limitations, such as low tolerance to acidic conditions formed in situ during degradation. Laboratory evolution has been explored previously, but efforts have been restricted to low-throughput screening—limiting exploration of the mutational landscape. Our platform will enable the analysis of ~10^8 individual enzyme
mutants in a single day, surpassing traditional enzyme evolution methods. Biocatalysis is a promising method for environmentally friendly plastic depolymerization and recycling, and as such this work aids in eliminating the need for incineration or disposal of plastics into the environment.

The Effect of SK0408 and Sk0459 on Human Melanoma (UW-River Falls)
Time: 10:30 Location: UC Hamilton
Author(s): Michael Laib
Mentor(s): Dr. Cheng-Chen Huang
Poster Presentation 7 Biology

There currently exists over 100 different kinds of chemotherapy drugs for treating cancers, each with unique traits and purposes (University of Iowa Health Care). Previously, two compounds, SK0408 and SK0459, were shown to reduce the cancer stem cell population and invasiveness in mouse melanoma cells (Schlaeger et al., 2000). The following research project was developed to test the effectiveness of these two compounds on cancerous human melanoma cells. In our research we used a highly metastatic human melanoma cell line called Colo829 from the American Type Culture Collection. These compounds were used in well-tested proliferation protocols which allows us to better understand the compounds and their effects on the cancer cells. The first experiment tested cell viability and proliferation using the MTT assay. The results of the MTT assay suggested that SK0408 and SK0459 did not reduce proliferation or viability based on mitochondrial activity. We then performed a cell invasion assay to determine the effect of the SK compounds on cell invasiveness. The results of this experiment showed that our test compounds did reduce invasiveness. Our final experiment utilized the western blot method to detect essential signaling pathways via proteins in cells treated with the SK compounds. Our results showed that the SK compounds had little effect on reducing the activity of several essential pathways. Our research showed that SK0408 reduces melanoma cell invasiveness, however, in future experiments it would be necessary to repeat the western blot experiment and study other signaling pathways. It will be interesting to further understand the differences between the mouse and human melanoma cells that underlie the different drug responses.

Characterization of the insulin signaling pathway in the parasitic nematode Brugia malayi (UW-Whitewater)
Time: 10:30 Location: UC Hamilton
Author(s): Miles Hagen, Alexandra Kestol, Morgan Sabol and Jake Minx
Mentor(s): Kirsten Crossgrove
Poster Presentation 30 Biology

Lymphatic filariasis is a human disease that causes swelling and enlarging of specific body parts due to blockage of the lymphatic system. It is caused by the parasitic nematode Brugia malayi, and related parasites. We are using the non-parasitic nematode Caenorhabditis elegans as a model organism to study genes in the insulin/IGF-1 signaling (IIS) pathway. The IIS pathway regulates the dauer (L3) stage in C. elegans. The dauer stage allows C. elegans to withstand suboptimal environmental conditions. This L3 stage parallels the infective (IL3) stage in Brugia malayi, allowing it to survive within the mosquito vector until infection. Understanding the IIS pathway allows us to understand more about the infective stage of B. malayi. We are specifically studying the ilps genes. The ilps genes encode insulin-like ligands that bind to the
insulin receptor and activate the IIS pathway. The pdk-1 gene encodes a kinase that sends the insulin signal further into the cell, eventually resulting in activation of the AKT-1 protein. The pptr-1 gene encodes an inhibitor of the insulin/IGF pathway that antagonizes the AKT-1 protein. The ftt-2 gene product regulates the cellular location of the DAF-16 protein, a target of AKT-1. These genes are being examined using bioinformatic analysis, polymerase chain reaction (PCR) and gene sequencing to compare the amplified gene sequences in B. malayi to bioinformatic predictions based on C. elegans sequences. Understanding insulin signaling during the iL3 stage may contribute to future research that could manage lymphatic filariasis.

**Novel insights on the genetic identification of giant knotweed species in Wisconsin (genus Reynoutria, Polygonaceae)**

(UW-Whitewater)  
**Time:** 10:30  
**Location:** UC Hamilton  
**Author(s):** Morgan Sabol, Jenna Boeck and Colin Topol  
**Mentor(s):** Nicholas Tippery  
**Poster Presentation**  
**Biology**

Giant knotweed plants in the genus Reynoutria are native to eastern Asia, but they have become troublesome invasive weeds in other parts of the world. Two species grow in North America: the Japanese Knotweed (R. japonica) and Giant Knotweed (R. sachalinensis), as well as a hybrid known as Bohemian Knotweed (R. × bohemica). The separate species may have different ecological tolerances, competitive strengths, or susceptibilities to herbicides or biocrital agents, and therefore it is important to identify them correctly. Because of the close relationships among invasive knotweeds and their propensity to hybridize, identification using molecular methods is particularly useful. We investigated the DNA sequence diversity of Reynoutria plants in Wisconsin using the nuclear LEAFY gene. We have learned from previous research that the nuclear LEAFY gene is effective at identifying the species and multiple kinds of hybrids. There are at least two different intron sequences that correspond to the R. japonica parent and four for R. sachalinensis. More recently, we have sequenced most of the LEAFY intron 2 and discovered new sequences from exon 1 and 2, as well as intron 1. We are looking to obtain sequences for additional plants by designing new primers for PCR and sequencing. Furthering our research and identifying the rest of the sequences will offer us more knowledge and possibly more tools for identifying hybrids more easily.

**Voice-Related Cortical Responses to Phonatory Onset and Rapid Laryngeal Somatosensory Perturbation (UW-Whitewater)**

**Time:** 10:30  
**Location:** UC Hamilton  
**Author(s):** Morgan Smarzinski, Alyssa Gernenz and Alexandra Kestol  
**Mentor(s):** Oleg Korzyukov and Michael Hammer  
**Poster Presentation**  
**Neuroscience, Biology, Medicine, Biomedical Engineering**

Vocalization is a complex sensorimotor task involving precisely coordinated movements of respiratory, laryngeal, and supralaryngeal structures. From birth and into adulthood, the development, refinement, and guidance of mammalian vocalization would benefit from afferent input from each of these structures. This is especially true for the larynx, the sound source for vocalization, as it is hidden from view within the neck. It would be an advantage to
provide the nervous system with the wealth of available movement detail related to vocalization including movement and position of the vocal folds and other laryngeal structures, movement of air flow through the larynx, and any unexpected somatosensory perturbations that may occur during vocalization. Although previous studies suggest that laryngeal afferent mechanisms are important for voice production and voice disorders, no previous studies known to these authors have directly examined cortical responses to phonatory onset or to a rapid somatosensory perturbation during vocalization.

Therefore, our two-fold goal was (a) to determine the cortical responses related to the onset of phonation, timed precisely to the time of vocal fold closure and (b) to provide a somatosensory perturbation during ongoing vocalization that would yield a reliable robust cortical response to determine the cortical processing of laryngeal sensory input. Consistent with our hypotheses, we found an orderly pattern of afferent transmission in the sensorimotor cortices, consistent with cortical control of vocalization and processing of voice-related somatosensory input.

**Identifying antimicrobial molecules from Streptomyces spp. against antibiotic resistant human pathogens** (Concordia University Wisconsin)  
*Time: 10:30 Location: UC Hamilton*  
*Author(s): Myriah Earll and Charity Hribar*  
*Mentor(s): Tzvia Springer and Uvidelio Castillo*  
*Poster Presentation 48 Microbiology*

Opportunistic pathogenic bacteria including Pseudomonas aeruginosa, Escherichia coli, Salmonella, and Staphylococcus aureus, continue to be a burden on the general population worldwide. The antibiotic era halted when resistance mechanisms in these organisms were discovered. However, the rise in new antibiotic discovery from natural organisms has begun again. This study focuses on identifying antimicrobial compounds from endophyte producing bacterium NLAE-zl-H396 (STRP-48T). The purpose of this study is to test the level of inhibition that varying concentrations of extract has on the growth of each bacterium. The data showed that STRP-48T endophyte extract had intermediate inhibition on all strains of bacteria grown in potato dextrose broth, and bactericidal effects when grown in nutrient broth. The results of this experimentation shows that 48T endophyte extractions inhibited the growth of select bacteria under certain nutrient rich conditions. Future work will include separation by high pressure liquid chromatography and structure characterization by mass spectrometry of these novel antimicrobial molecules.

**Structural Insights into Molecular Recognition by Human Chemokine CCL19** (UW-Whitewater)  
*Time: 10:30 Location: UC Hamilton*  
*Author(s): Robin Witt and Alyssa Hintz*  
*Mentor(s): Christopher Veldkamp*  
*Poster Presentation 2 Biochemistry*

The human chemokines CCL19 and CCL21 through activation of the G-protein coupled receptor CCR7 play roles in the trafficking of immune cells and even recruiting metastatic cancer cells to the lymph nodes. Hence, CCL19, CCL21, and CCR7 are drug targets. Chemokines are proposed to activate their receptors through a two-site, two-step mechanism where the receptor’s extracellular N-terminus binds to the chemokine first followed by the chemokine’s N-terminus binding the core of the receptor
leading to activation. Computational analysis of CCL19’s structure using the program FTMap indicates potential hot spots for binding of small molecule ligands. Hot spots found near the C-terminal alpha helix and the 40’s loop that contained both positive and hydrophobic residues suggest CCL19 may be druggable. Peptides consisting of sequences from the extracellular N-terminus of CCR7 have been proposed as starting points for inhibitor design that might target these hot spots. Here NMR titrations of CCL19 with two CCR7 derived peptides consisting of residues 4-9 and 5-11 are analyzed. Only the CCR7 peptide comprised of residues 5-11 demonstrated measurable, albeit weak binding. The CCR7 5-11 peptide bound to CCL19 near the C-terminal alpha-helix, however, it also appeared to interact with other CCL19 residues potentially due to non-specific electrostatic interactions. While these CCR7 4-9 and 5-11 peptides do not appear to be good starting points for inhibitor design, future work using peptides of different sequences will continue to test the hypothesis that N-terminal chemokine receptor peptides could serve as starting points for inhibitor design.

Evaluating Conditions for Locating Urban Ecology Centers in New Communities
(UW-Milwaukee)
*Time:* 10:30  *Location:* UC Hamilton
*Author(s):* Sadee Kidd
*Mentor(s):* Chris Young
*Poster Presentation 45*
*ENV Science, Geography, ENV Education*

Milwaukee’s Urban Ecology Center (UEC) is a non-profit organization that is founded on urban environmental education, community engagement, neighborhood renewal, and land restoration. Every year tens of thousands of visitors come to the UEC and adjacent green spaces to connect with nature. Milwaukee’s ability to cultivate such an immersive experience has caught the attention of cities across the country. The UEC has responded to inquiries from passionate people in communities who have seen the urban ecology model in action. To better understand the potential for the success of the model in other cities, this research focuses on identifying demographic commonalities that may foster programming through the development of Urban Ecology Centers. The goal is to create a communal environment that is available to the greatest population of people, which can be achieved by pinpointing a best-fit location. Through the consideration of varying conditions including, city population, school density, and key geographic features, determining what conditions offer a best-fit location will be formulated. It is also important to note similar environmental organizations to be considered as potential partners. Data is gathered through publicly available records and organized into a database allowing for comparative analysis to define and recognize trends in cities. The ultimate hope of the research is to establish a guide to creating deeper relationships for initiating urban ecology programming in any city.

Analysis of Lysogeny and Immunity Genes in Arthrobacter Phages (UW-River Falls)
*Time:* 10:30  *Location:* UC Hamilton
*Author(s):* Scott Christensen and Vincent Kromrey
*Mentor(s):* Karen Klyczek
*Poster Presentation 22*
*Biology*

The current goal of this research is to investigate genes controlling the lysogeny areas of two phages that infect the bacteria Arthrobacter globiformis. The two phages infecting Arthrobacter globiformis are AY cluster phages
Ettarad and Gorpy. The sequencing we performed revealed that each sample of the respective phages contained a mixture of two phages; genetically identical apart from the section in the center of the genome where the immunity genes are located. The methods used to separate these phages starts with a serial dilution of each respective phage. The most isolated plaques are then picked, and we run PCR on these picked plaques, using primers designed to match the sequences that differ between the phages. We then run gel electrophoresis to see which plaques react with each primer set. We have successfully separated the two phages in the Gorpy mix. The second phage’s name is Sakai. Ettarad has been more difficult to isolate, so we are designing new primers to target the unique regions of the phages. We are currently annotating Gorpy and Sakai’s genes to find the predicted functions of these genes. Future experiments will include isolating stable lysogens and performing immunity testing to identify the immune functions of the phages.

**p21 Inhibition Improves Bone Regeneration**  
(UW-Milwaukee)  
**Time:** 10:30  
**Location:** UC Hamilton  
**Author(s):** Seth Krebs  
**Mentor(s):** Priyatha Premnath  
**Poster Presentation** 9  
**Biology**

A common gene found in both humans and mice is p21, a cell cycle regulator. Previous studies have demonstrated a role for p21 in limb regeneration in mice. Similarly, our lab has shown that loss of p21 can increase bone formation after an injury in mice. Mesenchymal stem cells (MSCs) were found to be one of the reasons for improved bone properties. The experimental drug UC2288 is a known p21 inhibitor. Commonly used in anti-cancer therapies, it can be used to specifically target MSCs and inhibit p21. MSCs are multipotent, meaning they turn into several different cell types such as bone, cartilage, fat, and muscle. We are testing the efficacy of UC2288 in improving osteogenic capacity, i.e., the capacity of MSCs to turn into osteoblasts rather than cartilage or fat cells. By increasing the bone forming capacity of MSCs, we will be able to increase bone formation. These results will help us create translational therapies in bone healing and regeneration, especially for pathologies like osteoporosis or fractures that occur in aged patients where bone healing pathways are compromised.

**Differentiating Disaccharides of Same Mass by Mass Spectrometry**  
(Marian University)  
**Time:** 10:30  
**Location:** UC Hamilton  
**Author(s):** Stefanie Pettersen  
**Mentor(s):** Jason M Kowalski and Anna M Benko  
**Poster Presentation** 4  
**Biochemistry**

Metabolite analysis by mass spectroscopy of dragonflies and damselflies may be useful for efficient biomonitoring of steam, river, and lake health. This process requires the identification and quantification of specific fragments of small metabolites. Trehalose has been identified as a potentially important metabolite to understanding thermal stress as it is the dominant blood sugar disaccharide in insects, though their diet may expose them to large intakes of other disaccharides. Disaccharide sugar molecules pose a challenge to identify by mass spectroscopy because the mass of many dietary disaccharides is the same and cannot be differentiated without fragmentation. Sucrose, maltose, and trehalose are all possible disaccharide metabolites with a mass of 342.3 g/mol. Standard solutions of these sugars were
made using analytical methods and tested in a triple-quad mass spectrometer. The mass spectrometer was able to differentiate between the different disaccharides once fragmented, but with some overlap of trehalose with maltose among fragments. The mixed disaccharides can be differentiated with a combined approach of instrumentation and experimental design.

A Behavioral and EEG Investigation of the Differences in Auditory and Visual Memory (UW-Parkside)

Time: 10:30 Location: UC Hamilton
Author(s): Thomas Stirrat
Mentor(s): Dr. Melissa Gregg
Poster Presentation 44
Cognitive Neuroscience

Previous research has demonstrated a consistent discrepancy between our memory for visual and auditory events. Visual recognition memory has a greater capacity than auditory memory, whereas auditory memory has a longer duration. There are differences in the resolution of the two memory systems as well: visual representations are initially rich in detail but become coarse over time, whereas auditory representations are coarse shortly after encoding and remain so over time. The nexus between these two memory systems is of particular interest as it may offer insight into the evolutionary divergence and organization of neural information. The goal of this study was to examine the neural mechanisms that account for the differences in capacity, duration, and fidelity between the two memory systems using electroencephalography. Participants first completed a study phase, which consisted of either a series of pictures or sounds. The study phase was followed by an immediate memory test wherein the participant was instructed to recall whether a set of pictures or sounds was presented during the study phase by responding “old” or “new.” The ERP results revealed significant differences between visual and auditory recognition memory: there was an enhanced negative component on correct visual recognition memory trials. There was also an enhanced late positive component on incorrect visual trials, compared to incorrect auditory trials. These results indicate that the auditory memory may be coded with less neural precision, which affords lower resolution but more enduring memory representations.

Fine-scale environmental changes on bird declines in the Great Lakes Region (UW-Parkside)

Time: 10:30 Location: UC Hamilton
Author(s): Thomas Stirrat and Kaitlyn Andresen
Mentor(s): Dr. David Rogers
Poster Presentation 18
Biology

The North American Breeding Bird Survey (BBS) is an annual roadside count-based survey that is a vital source of information for tracking bird population trends over time and for identifying species that need conservation action. Recent studies examining the BBS database have elucidated striking patterns of decline across most North American habitat groups, including grassland, forest, arid, and generalist species over the last fifty years. The precipitous declines in North American bird populations over the last 50 years are startling, deeply troubling, and will have strong implications for ecosystem and human welfare. In addition to their intrinsic value, birds are valuable for seed dispersal, ecosystem monitoring, pest control, and myriad other ecosystem services. Although the trend in bird decline is well described at the continental scale, the nature of how spatial and temporal patterns of bird populations have changed over
time remains unresolved at more local landscape scales, particularly as it relates to urbanization and light pollution. Here we use a Geographic Information System (GIS) to quantify the land use in the landscape surrounding the survey route to ask whether survey routes in more urbanized landscapes lost birds at a faster rate than average and whether species or guilds are more sensitive to these landscapes features.

**Exploring the role of alternative carbon source metabolism in the recovery of Escherichia coli from glucose-phosphate stress** (UW-Parkside)

*Time:* 10:30  *Location:* UC Hamilton

*Author(s):* Thomas Stirrat  
*Mentor(s):* Dr. Gregory Richards

Poster Presentation  20  
Biology

All organisms have evolved the ability to sense and respond to environmental changes. For example, bacteria such as Escherichia coli must deal with changes in nutrient availability including glucose-phosphate stress, a form of growth inhibition caused by blocks in glycolysis, and a resulting inability to metabolize sugars. E. coli can overcome this stress in part through the actions of the small RNA SgrS, which halts the accumulation of sugar-phosphates that contribute to stress. The role of SgrS in stopping stressor uptake has been extensively characterized, but metabolism of alternative carbon sources that might rescue the glycolytic block is poorly understood. Here, we evaluate the effects of various alternative carbon source pathways on the recovery from glucose-phosphate stress. To do so, we constructed insertion-deletion mutations in genes involved in stress responses, central carbon metabolism, amino acid metabolism, and nucleoside metabolism, and tested the mutants for growth changes during stress. Deleting cdd (encoding an enzyme involved in ribonucleoside degradation) appears to slightly worsen growth during stress, which is consistent with a previously characterized role of nucleoside metabolism in rescuing cells from stress. Similarly, deleting aceF results in a stress-specific growth defect. aceF encodes part of the pyruvate dehydrogenase complex, an important intermediary between glycolysis and the citric acid cycle that converts pyruvate to acetyl-CoA. Taken together, these results suggest that both nucleoside and central carbon metabolism pathways provide alternative carbon sources that help bypass the stress-inducing glycolytic block. Future directions include assessing the effects genes have in related pathways on glucose-phosphate stress.

**Comparison of Polyploid Plant and Animal Lineages and their Relative Frequency**  
(UW-Green Bay)

*Time:* 10:30  *Location:* UC Hamilton

*Author(s):* Tiffany Paalman  
*Mentor(s):* Keir Wefferling

Poster Presentation  32  
Biology

My literature review explores the evolution, causes, and examples of polyploidy (i.e., whole genome duplication) in several species to discuss possible explanations for the discrepancy between frequencies of polyploid plants and animals. Polyploidy’s genetic importance is proven within its ability to produce well-adapted yet diverse genotypes in both plants and animals, but the relative frequencies across different genera are difficult to explain. I evaluated the causes of polyploid events to search for plausible trends or tendencies in the relative success of polyploid lineages. Additionally, I referred to the history of major whole genome duplication events and their impacts on the polyploid species we see
today. The examination of two angiosperm polyploid lineages, Ranunculus kuepferi and Opuntia, and two animal polyploid lineages, Hyla versicolor and Ambystoma, provides current examples of polyploid success that gives insight to what strategies account for a higher ratio of surviving angiosperms versus animals. Methods of sex determination, physiological characteristics, mechanisms, and the necessity of filling an ecological niche in polyploid lineages contribute to the success of both angiosperms and animals. These findings determined that a full comparison in frequencies between all polyploid angiosperms and animals is very complex and cannot be fully explained by a single mechanism. However, further research questions can be more appropriately framed towards why the success of some lineages is more common than others and what those groups share with other polyploid angiosperms or animals.

Characterization of the Bma-age-1 gene in the parasitic nematode Brugia malayi
(UW-Whitewater)
Time: 10:30  Location: UC Hamilton
Author(s): William Morgan
Mentor(s): Kirsten Crossgrove
Poster Presentation 36
Biology/Genetics

Brugia malayi is a parasitic nematode that causes lymphatic filariasis in humans. We are using Caenorhabditis elegans as our model organism to study parasite development. During their lifespan, B. malayi and C. elegans undergo a series of molts. When environmental conditions are harsh, C. elegans undergoes dauer arrest following the second molt. This is a similar state to the B. malayi infective (iL3) stage, when the nematode enters a transitional arrest period between a mosquito vector and a mammalian host. Specifically, I am studying the gene, Bma-age-1, and the effect that it has on the insulin/IGF-1 signaling pathway (IIS) in these nematodes. The AGE-1 protein in C. elegans acts as a phosphatidylinositol-3-OH kinase (PI(3)K) to add phosphate groups to lipids in response to insulin signaling. We hypothesize that Bma-AGE-1 works similarly in B. malayi during the (iL3) stage. We are using bioinformatics tools and lab experiments to confirm the identity and gene structure of Bma-age-1. We designed primers that were used to amplify sections of the Bma-age-1 gene using Polymerase Chain Reactions (PCR) with cDNA (DNA version of the messenger RNA that codes for protein) as the template. We are sequencing the PCR products and comparing them to the predicted sequence of Bma-age-1 and Ce-age-1. The future goal of the project is to create transgenic worms for rescue experiments in which we will see if the parasite AGE-1 can rescue normal function in a C. elegans age-1 mutant.
Abstracts of Poster Session #1
James R. Connor University Center (UC), Old Main Ballroom 275

Comparison of Three Types of Historical Nonprofits (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Anna Kuhtz
Mentor(s): Ruth Hansen
Poster Presentation 80
Non-profit

For my presentation, I am doing a comparative study of three nonprofit history organizations in Southeastern Wisconsin. One organization is the nonprofit branch of a state historical site, one is an independent nonprofit, and the other is a county historical society. Comparisons will be made of where the organizations receive their funding, focusing on if it comes from grants, donations, and admissions. I am interested in looking at the division of budgets among special projects, maintenance, and general running of the museum. The other part of the comparison is looking at the daily running of the organizations and how their staffing works if they rely on volunteers, seasonal staff, or full-time, year-round staff. The last thing I will look at is the different career and educational paths of employees within the organizations; as I plan to pursue a career with a nonprofit history organization and am curious about the different ways to end up working at one. To conduct the research, I will interview an employee or volunteer from each organization along with examining their annual reports. I will present the information through an academic poster.

Satisfaction and Transference of Family-Centered AAC Camp Activities (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom

Author(s): Ashley Munoz
Mentor(s): Dr. Lynn Gilbertson
Poster Presentation 62
Communication Sciences & Disorders

Previous research suggests that successful augmentative and alternative communication (AAC) intervention outcomes are linked to family support. A four-day overnight camp, for children (ages 5-15) who use AAC and their immediate family members, was designed to support family bonding, communication, and networking. AAC users, caregivers, and siblings engage in activities and educational sessions. Fifteen families attended camp. Fourteen families completed a fourteen-question exit survey immediately after camp. Eight families completed a seven-question follow-up survey 1-2 months after camp. Caregiver AAC training satisfaction remained high on the initial and follow-up surveys and is comparable to previous family-centered intervention. For the participants that completed both the initial and follow-up survey bowling, cooking, programming, and AAC supports were the activities and education sessions most reported to result in AAC use at home. The multi-family AAC camp model appears to support high levels of satisfaction and transference to the home environment.

Language Differences in a Child with Autism and a Typically Developing Child (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Ashley Peterson and Aarika Kuhl
Mentor(s): Lourdes Nieto-Martinez
Poster Presentation 65
Communication Sciences and Disorders
When looking at language differences in children with autism, most information and research focuses on the differences we see within their pragmatic language development. The goal of this project was to evaluate a child with autism’s language within all aspects of language and then compare those results to those of typically developing children to show that children with autism spectrum disorder may have difficulties in different language aspects not only in pragmatics. To do this we evaluated two children in fourth grade, one with typically developing language and one with autism. With both children we worked through the same cloze tests and had them tell us a narrative. We then took the results from these activities and compared both children to each other. We found differences in development in most aspects of language. These results show that professionals should consider and evaluate all language aspects including tests and narratives. Individuals with Autism spectrum disorder may be receiving intervention for pragmatics but may not be meeting milestones in other language aspects which may affect their academics. With these being two individual cases and the variation within autism spectrum disorder these results may vary from other individuals with autism.

Who can access the metros of the world and how do they do it? (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Austin Oaks
Mentor(s): Jonathan Burkham
Poster Presentation 77
International Studies

This poster looks at the different ways people utilize transit systems around the world. The poster looks at the different ways planners and politicians decide on what transit to put where and who to serve it with. Then it looks at some of the challenges there are in North America and compares them to transit systems in Europe and the former Soviet Union. Finally, it looks at different ways people with mobility challenges access transit. This will be done by looking at blogs, transit websites and academic articles.

A Look into Bullying and Cyberbullying (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Brad Proell
Mentor(s): Peter Killoran
Poster Presentation 58
Anthropology, Psychology, Sociology

The research presented for this project is a result of looking at a social issue like bullying through different lenses of social sciences including psychology, anthropology, sociology, and women & gender studies. Presented on the poster is some information on bullying, including some of the signs / indicators as well as some potential solutions or tips for people to deal with bullying. This project was inspired by work completed during an Individual and Society course taken with Professor Pete Killoran.

The Effects of Covid-19 on College Students Post Vaccination (UW-Green Bay)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Brinley Kowalkowski, Paul Mues, Simran Challana and Emily Brosig
Mentor(s): Dianne Murphy
Poster Presentation 81
Pandemic Effect on Students in a Business School

The COVID-19 pandemic presents significant challenges to college students, which is still prominent in 2022. The main cause of this stress...
may originate from students experiencing a loss of resources (Hobfoll, 1989). Resources defined by Hobfoll (1989) include “objects, personal characteristics, conditions, or energies” that individual's value by themselves or as a means to retain or gain additional resources (p. 516). These ideas were formulated through Hobfoll's (1989) Conservation of Resource Theory, which explains resource threat and conservation related to stress. If a student experiences high amounts of stress, it may negatively affect their physical health, psychological health, well-being, and performance.

The purpose of the survey-research is to formally measure the impact the COVID-19 pandemic has on students by measuring if and how their loss or gain of resources is related to their stress levels during the academic 2021-2022 school year, after the introduction of the vaccine. In addition, the study will measure if these stressors are related to physical and psychological health, and performance. By studying students, we will have a better understanding of how Covid-19 has impacted student resource loss and gain during the post vaccine time of the pandemic, which may help universities to better serve their students. The study is a continuation of the survey research performed last year for “The Effects of Covid-19 on College Students.

Our data collection should conclude on April 29th; therefore, our group will present preliminary results.

Avoiding sour grapes and bitter hops: How Wisconsin laws can nurture the local wineries and breweries that drive regional economies
(UW-Stevens Point)
Time: 10:30  Location:  UC Old Main Ballroom
Author(s):  Callie Wulk
Mentor(s):  Nikolaus Butz

Poster Presentation  60
Business

The purpose of this study is to explore how Wisconsin laws and regulations affect local wineries and breweries. In particular, this research examines how these laws impact local economies via the multiplier effect, a phenomenon in which money spent by local patrons and tourists creates jobs and drives consumption. This research also explores how these local businesses navigate the laws that govern them. Since a lot of the laws affecting these businesses were originally created following prohibition in 1933—when alcohol production was virtually synonymous with large-volume breweries—the operation of small local breweries and wineries often do not fit well within the historic context of existing legislation. The methodology used to conduct this study was one-on-one interviews with local winery and brewery owners in Central Wisconsin. To this end, we collected first-hand perspectives on what it is like operating a small business under these laws and how they are affected both positively and negatively. Overall, Wisconsin laws could do more to drive local economics in the beer and wine sector, thereby contributing to the economic success of local communities.

In pursuit of firmness of character: How grit shapes the academic achievement of university students in the COVID-19 era (UW-Stevens Point) Time: 10:30  Location:  UC Old Main Ballroom
Author(s):  Emma Fisher
Mentor(s):  Nikolaus Butz
Poster Presentation  61
Business

The purpose of this study is to explore the relationship between grit and how it shapes the
academic achievement of students during the COVID-19 era. Early studies have shown that the pandemic has negatively affected student academic performance and success. Furthermore, factors such as transitioning to online classes have also been determined as a factor affecting student success. Measuring the combination of passion and perseverance, the grit scale can be used to help predict not only attributes of employee success, but also student success. Participants were 500 undergraduate students from a mid-sized, Midwestern 4-year public university. The results indicated students’ grit had a positive effect on their academic success. The findings were evaluated in terms of collecting strategy recommendations to help instructors improve student grit.

**Amazon Prime Student: My Life. My Prime.** (UW-Whitewater)

_Time: 10:30  Location:  UC Old Main Ballroom_

**Author(s):** Emma Passig Avery Maney, Ashley Hoffman and Abby Daniels

**Mentor(s):** Pavan Chennamaneni

**Poster Presentation 78  Marketing**

Historically, Amazon.com, one of the first e-commerce sites, started as an online bookstore and innovated over the years to dominate the 760 billion dollar e-commerce industry. The success of Amazon.com and advancements in technology have spurred the online sale of almost all types of goods. As the industry matured, information seeking has become more social and interactive, forcing manufacturers and retailers to adapt to the rapidly evolving consumer decision-making process. More recently, digital channels have become prevalent, making it difficult to manage information flows that allow consumers to discern fact from fiction. These trends, along with an increasingly challenging competitive landscape, are placing intense pressure on retailers in their pursuit of market share.

**Student Perception of Auto Generated Real-Time Captions for In-Person Instruction with Mandatory Face Coverings** (UW-Whitewater)

_Time: 10:30  Location:  UC Old Main Ballroom_

**Author(s):** Erin Matheny, Abby Ross and Kylie Lara

**Mentor(s):** Lynn Gilbertson

**Poster Presentation 66  Communication Sciences and Disorders**

In no other time in history have students and instructors had the challenge of engaging in face to face classes with mandatory face coverings while at the same time having free access to auto-generated captioning technology. Previous data suggests that the majority of university students see captions as moderately to extremely helpful when used with recorded instructional material. The goal of the current study was to compare student perceptions of captioned video content with auto-generated real time captions during in person instruction where a face covering was required. Data was collected from an in person anatomy and physiology course during fall 2021. The instructor utilized google slide’s caption feature during all lectures. At the end of the semester, 19 out of 31 students completed a survey with questions (selected from published surveys) evaluating student perceptions of captions. Data suggests that captions support universal design regardless of format of course delivery (video or in person) and there appear to be more benefits than drawbacks to utilizing live captions in a variety of instructional settings.
Abstracts of Poster Session #1
James R. Connor University Center (UC), Old Main Ballroom 275

Tools for Success in the Foster Care System: A Qualitative Study (UW-Whitewater)
Time: 10:30  Location: UC Old Main Ballroom
Author(s):  Evan Donini
Mentor(s):  Loren Wilbers
Poster Presentation 83
Sociology

A majority of foster youth are met with adverse situations that can hinder their ability to achieve stability and success in their lives after aging out of the foster care system. Much of the pre-existing literature on foster care focuses on unfavorable outcomes among foster youth related to mental health and substance abuse, educational achievement, and criminal justice system involvement. However, the existing literature does not provide sufficient instruction for mitigating the effects of adverse situations or aiding foster youth in achieving favorable outcomes in adulthood. The current study draws on qualitative interviews (N=7) with six case workers involved with foster care and one ex-foster youth. The central question guiding this research was, what tools or strategies are helpful in aiding foster youths’ success after aging out of the foster care system? The analysis revealed four essential factors that are conducive to the success of foster youth. These include: stability of placement, freedom within the home, kinship placement, and case worker involvement. The results of this study provide insight into ways in which the foster care system can better promote favorable outcomes among youth after leaving foster care.

The Experiences BIPOC Who Use AAC: Pilot Data (UW-Milwaukee)
Time: 10:30  Location: UC Old Main Ballroom
Author(s):  Gracie Williams Adriana Castillo
Mentor(s):  Shelley Lund

Poster Presentation 68
Communication Sciences and Disorders

Three million people in North America have complex communication disorders that severely limit their speaking ability. These individuals often utilize Augmentative and Alternative Communication (AAC) devices. AAC devices can be as simple as a board of pictures or as complex as a computer with a speech synthesizer. The United States Society of Augmentative and Alternative Communication (USSAAC) is an organization that supports and advocates for individuals who use AAC. This study aims to describe the experiences of Black, Indigenous, and People of Color (BIPOC) who use AAC. Our goal is to identify ways that the AAC field can better support this demographic. We will use the data collected from this study to examine how USSAAC, professionals, and AAC industries are representing and/or underrepresenting BIPOC AAC users.

We recruited two individuals who self-identify as BIPOC and used AAC to participate in this phase of the study. Each participant was interviewed individually via Zoom by two research team members who use AAC. During these interviews, they were asked questions about their experiences as a BIPOC AAC user. The interviews were transcribed, including timestamps, method of communication, and message communicated. These transcripts will be analyzed qualitatively to determine themes in the participants’ responses.

We will use the results of this study to gain insight into how the field of AAC can better represent BIPOC who use AAC. By doing this, organizations, industries, USSAAC, and professionals can take steps to become better allies for this community.
Abstracts of Poster Session #1
James R. Connor University Center (UC), Old Main Ballroom 275

DogBox (UW-Stout)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Jack Stubb
Mentor(s): Jennifer Astwood
Poster Presentation 74
Dog Product Design

The opportunity this project presents is using research and relevant design strategies to create an effective design solution with an effective aesthetic that makes the process of training and owning a dog go more smoothly.

Using Community Based Art in the College Classroom to Help Students Cope with COVID Stressors (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Lauren Dufek
Mentor(s): Susan Wildermuth
Poster Presentation 70
Communications

The COVID-19 pandemic has been devastating for students worldwide. Pandemic induced stressors have led to increased stress, anxiety and depression among students. These factors have resulted in negative outcomes including sleeplessness, decreased academic performance, self-harm (Son, Hegde, Smith, Wang, and Sasangohar, 2020). Throughout the pandemic, staff at institutions of higher education have used a variety of strategies to support students’ physical and mental health. The current study examines one instructor’s community art project as a means of helping students cope through artistic self-expression and community building. There is evidence that art-based interventions are effective in reducing the adverse effects of stress (Stuckey & Nobel, 2010). However, due to the unique stress from the pandemic, it was difficult to predict if such an intervention would have any impactful effect on student health. Results demonstrated that even small art-based interventions can have a positive impact on coping. A thematic analysis of the acts of expression created by students as well as a content analysis of their reactions to the project overall found that students benefited from 1. having an outlet for expressions of negative emotions, 2. experiencing a sense of community through the creation of community art, and 3. sharing words and images of optimism and support in their art, thus gaining a feeling that they were helping others. From this, we can learn to value the use of community art and expand it to all classrooms as a way of helping students cope in a variety of situations.

Camping Waste Elimination (UW-Stout)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Lauren Jaunich
Mentor(s): Jennifer Astwood
Poster Presentation 72
Design (Camping)

Whether it’s pitching a tent or parking your RV after a long trip, camping is an immersive experience. It was first seen as a way of recreation and escape, the most popular reason why it has become so widespread today. Total profit of this 6.5 billion dollar industry has been declining about 2.6%. Now, with modern technology rapidly growing, it has become harder to detach from the pressure of everyday life. That is a reason camping is needed more than ever. However, certain camping routines can get complicated, making adjusting to the outdoors a struggle! Unexpected weather, running out of water, and trying to stay clean can ruin one of the most affordable vacations. To explore and design for outdoor camping problems including cleaning, comfort, and
safety. Consider sustainability aspects including, human and animal welfare. To be able to aid in the hygiene/safety of campers while still fulfilling the enjoyment of the outdoors. Address the environmental impacts of camping. Minimize the effect of harmful pollutants while camping. Accommodate the lifestyles of campers. Encourage the importance of camping along with its market. Continue to provide an inclusive experience without incorporating too much technology.

College Esport Athletes and Hearing Health
(UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Lea Mueller, Amaya Massey and Annika Gill
Mentor(s): Lynn Gilbertson
Poster Presentation 67
Communication Sciences and Disorders

The world of collegiate esports is rapidly growing with over 1,350 universities and 40,000 athletes interested in collegiate esports tournaments since 2013 (Murray, 2021). In the world of competitive gaming, many of the esports games involve audio communication or interaction with sound in order to gain an advantage on the opponent. Previous data indicates that noise exposure from video games can reach the lower exposure limit of 80 dBA over only a four hour period (Iannace, 2019). However, limited data is available to evaluate the hearing health practices of collegiate sport athletes. The current project aimed to answer two questions: 1) Do collegiate sport athletes differ in their hearing health habits and attitudes compared to the general collegiate student? 2) Do collegiate sport athletes have awareness of and/or use sound accessibility features on sport games? A 15 question survey regarding hearing health attitudes, practices, and accessibility features was distributed to collegiate sport athletes across the United States. Preliminary data indicates some similarities and some differences between collegiate sport athletes and their non-sport peers. Results of this project have potential to inform best practices for long term hearing health among collegiate sport athletes. The project may also highlight opportunities for access and inclusion for sport athletes with hearing challenges.

The Effects of Title 3 Funding On Senior Students’ College Attainment (UW-Stout)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Logan Willits
Mentor(s): Zach Raff and Tina Lee
Poster Presentation 75
Economics

Dual-language programs, programs that teach in more than one language, have been gaining more traction in the United States. With the United States becoming more diverse, dual-language schooling in K-12 education has been a necessity to immigrant families. Given the disparities that minority students have in receiving an education compared to the white majority, this research looks at the extent of the outcome gap. As well as that, this research analyzes the extent of the effect of taxpayers’ money towards educational attainment in Wisconsin. Specifically, Title 3 funding allocations are looked at as that is the funds allocated towards education for English Language Learner (ELL) students. The research looks at the impacts of Title 3 funding on education in Wisconsin. Amounts of funding will differ throughout Wisconsin depending on the acquired number of ELL students. A regression analysis is also utilized. Title 3 funding amounts is the independent variable whereas
postsecondary attainment rates is the dependent variable. Other factors such as median income level, unemployment rate, population density, political makeup, and ELL student concentrations are used as controls. The second component of this research locates areas with a high probability of current or needed bilingual programs. This is done through analyzing the distribution of Title 3 funding and concentration of English Language Learner (ELL) students. Then, the research locates school districts that are not receiving the proper amount of Title 3 funding for their ELL students’ needs. This research utilizes graphical, hot spot, and statistical analysis with Esri’s GIS technology.

The effects of multilingual instruction on educator confidence (UW-Whitewater)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Maggie Tienor
Mentor(s): Lourdes Martinez Nieto
Poster Presentation 63
Communication Sciences and Disorders

The passing of the Bilingual Education Act in 1968, followed closely by the landmark Lau vs. Nichols case of 1974 required federally funded schools to offer English language instruction to students who did not natively speak it. This notably paved the way for equal opportunity education in the United States, although there is still room for improvement. As of the 2017-2018 school year, over 5 million English learners were enrolled in K-12 schools throughout the United States (NCELA, 2018). As the country becomes more diversified, it is expected that this group will continue to grow, and in turn, more multilingual educators and specialists will be needed to aid in the teaching of English, as well as maintenance of native languages. As it currently stands, many states face deficits in the number of professionals available to facilitate bilingual education correctly and confidently to students speaking more than one language. States like Texas, for instance, are already seeing an extreme need for sufficient help with the registered number of speech language pathologists equating to 1 bilingual service provider per 11,000 bilingual individuals (Aguilar et al., 2013). The work presented here aims to identify the shortcomings in the United States educational system relating to bilingual education and its benefactors. The results of this project have potential implications to provide efficient strategies to use while teaching English to nonnative students, while also maintaining their respective native languages. The results also highlight teaching methods and ideologies to avoid when preparing students to be successful multilinguals.

Canine Care (UW-Stout)
Time: 10:30 Location: UC Old Main Ballroom
Author(s): Margaret Dechant
Mentor(s): Jennifer Astwood
Poster Presentation 73
Design (Dog Products)

With the Covid-19 Pandemic dog ownership was at an all time high due to isolation in quarantine. The animal shelter adoption rate jumped up by 11% in 2020 and people had more time to spend with their furry family members. This accompanied a time when people wanted to be more active and get out of their houses in a safe way. Outdoor activity with a dog can promote both physical and mental health in a time when everyone needs a little support. This provides a great opportunity to design a dog product that promotes the health benefits of outdoor activity between owner and dog and keeps both safe while keeping in mind...
the dangers and challenges that come with multiple climates and environments.

**Identification of COMDIS ePortfolio artifacts selected to represent learning outcomes and professional standards** (UW-Whitewater)

*Time: 10:30  Location: UC Old Main Ballroom*

*Author(s): MaryAnn Stangl and Sam Schultz*

*Mentor(s): Lynn Gilbertson and Cody Busch*

*Poster Presentation 69  Communication Sciences and Disorders*

An ePortfolio is a digitized collection of artifacts that represent an individual’s experiences and learning over time. The current assessment project aimed to identify the artifacts graduate students in the communication sciences and disorders (COMDIS) program selected for their ePortfolios as exemplars of the professional standards. Summary statistics were compiled to determine the most commonly used artifacts as well as the most commonly cited professional standards. Qualitative thematic analysis was completed using inductive coding to identify themes from student responses to the following two questions 1) Why the artifact demonstrates that the student met the professional standard and 2) How the artifact influenced their approach to clinical practice. By analyzing graduate student ePortfolio data from two recent cohorts, the COMDIS department will learn more about the assignments and experiences in the program from the perspective of the students. The artifact selection may highlight the impactful or valued experiences in the curriculum and inform future practices for program improvement. This project will also benefit the teaching and learning community by providing data to support practices in ePortfolio implementation and assessment.

**Raising Awareness of Food Insecurity Resources at the University of Wisconsin-River Falls through Marketing Communications** (UW-River Falls) *Time: 10:30  Location: UC Old Main Ballroom*

*Author(s): Meghan Jirik and Elise Johnson*

*Mentor(s): Melissa Schnettler*

*Poster Presentation 79  Marketing Communications*

Our project is an extension of the project that we conducted in Spring of 2021 for Dr. Melissa Schnettler's Small Group Communication class. In this class, along with fellow Small Group Communication group members Angelique Tretsven and Emily Kupka, we chose a problem on campus to hypothetically solve. The problem that we chose was food insecurity on campus. Throughout the project we conducted research on the small food shelf that we have here on campus, resources in the community, as well as surveying small sample sets of the campus population about their knowledge of these resources. A theme that we found is that many students did not know about the resources available to them. Students cannot use resources they do not know exist. This finding led to our continuation of the project with our independent study. The goal of this independent study was to create a marketing material and plan that helps students learn about the campus food shelf as well as the additional food insecurity resources available to students in the surrounding community. We created these materials through additional research that built onto the research we did during the original class, as well as conducted six interviews with campus staff and local community members. With the help of our research, a larger food pantry named “Freddy’s Pantry” was opened January 10 of this year with efforts by Dr. Kathleen Hunzer with the Honors...
Abstracts of Poster Session #1
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Program and Ian Stroud from the Student Success Center.

The Pandemics Effect on Speech and Language Development (UW-Whitewater)
*Time: 10:30  Location: UC Old Main Ballroom*
*Author(s): Molly Miller  Mentor(s): Lourdes Martinez-Nieto*

Poster Presentation  64
*Communication Sciences and Disorders*

The lockdowns, isolation, online learning, and masks all have had an effect on children's development. Mirror neurons are designed to help children learn speech and language by helping them to imitate the things that they see. With masks, children are unable to see the mouth movements of the people who are speaking to them. This makes it much more difficult to develop speech and language skills.

The pandemic has also brought isolation and feelings of anxiety for people and children of all ages. This, along with online learning, has had a major impact on children's social development. With the lack of social interaction some children are facing, there is heightened social anxiety, inappropriate social behavior, and less learning opportunities. In this study I researched the ways in which all of these factors have played a role in the possible delayed speech and language development in children as well as solutions for caregivers to help the child.

Comparative Analysis of American and Chinese Media Coverage of Climate Change Issues Over the Period of 2021 (UW-Eau Claire)
*Time: 10:30  Location: UC Old Main Ballroom*
*Author(s): Natalie Girard  Mentor(s): Wong Yong Jang*

Poster Presentation  71
*Communications*

This research offers an empirical analysis comparing Chinese and U.S. news agencies coverage of Climate Change in 2021. As Climate Change negotiations become more of a consistent and pressing issue, it is important for us to study the world's top two greenhouse gas emitters, China and the U.S., and the roles they play in global negotiations. With international news agencies holding a strong influence on the global community's perspectives and resolution of general knowledge, we examined the presentation of news agencies between the two countries and whether the depositions of the topic were similar. Comparatively, we argued that if not similar, the conflicting views would result in differences between presiding principles and the dominant interests of each individual news agency's home nation. Our research showed that both agencies published varying amounts of news coverage that stemmed from multiple sources. It was also noted that there were differences between Chinese framing of climate change and the U.S. framing. We can contribute these differences to the influence of the differing government's propaganda reports on this topic in each country.

Modular storage for an evolving home market (UW-Stout)
*Time: 10:30  Location: UC Old Main Ballroom*
*Author(s): Noah Carson  Mentor(s): Jennifer Astwood*

Poster Presentation  76
*Industrial Design*

With an increase of people renting homes there has been a decrease in physical personal ownership. There is an opportunity to design and develop storage that is affordable,
sustainable and is able to fit within a wide array of environments.

Y'all Know About This?...Do I?: Student Perceptions of Self and Friends' Sexual Knowledge (UW-River Falls)

**Time:** 10:30  **Location:** UC Old Main Ballroom

**Author(s):** Payton Zacharias  
**Mentor(s):** Dr. Paige Miller

**Poster Presentation** 82  
**Sociology**

How knowledgeable do college students believe they are about sex? How knowledgeable do they think their friends are? This research aims to investigate student perceptions of their own and their friends’ sexual understanding and the factors that may influence these opinions. Assessment of knowledge was conducted through a survey sent to 1,000 random student emails at a small university just outside of a large metropolitan area in the fall of 2021. Investigation suggests those who have right-leaning political identities, have long-term relationship experience, frequently discuss sexual information with peers, believe themselves to have more sexual encounters than their friends, and consume pornography are more likely to perceive themselves and their peers as more knowledgeable about sex-based topics. These results imply many factors can influence college students’ perceptions of knowledge and have a complex relationship with sexual understanding which should be further studied.

**Addressing the Social and Technology Needs of Regional Older Adults: Establishing an Intergenerational Technology Center (UW-Whitewater)**

**Time:** 10:30  **Location:** UC Old Main Ballroom

**Author(s):** Sadie Schwefel  
**Mentor(s):** Jeannine Rowe

**Poster Presentation** 84  
**Sociology and Gerontology**

The detrimental effects of social isolation have been long documented, however, society has overlooked the communities suffering most - older adults residing in rural communities. Technology is a well-established antidote, but in addition to standard barriers older adults face to technology, such as a general lack of confidence, understanding, and familiarity with technology, rural communities also face low rates of internet access.

Seeing the potential for the rurally-located University of Wisconsin-Whitewater to play a role in a solution, a needs assessment on older adults in the regional community was conducted. Findings point to a need for a community space in which older adults could interact with others, access the internet, receive technology training, and obtain one-on-one technology support from younger persons. Thus was born the concept of an Intergenerational Technology Center (ITC) to be housed on-campus in the William’s Center.

Researchers have garnered support from regional partners and developed a plan for establishing the center. Currently, they are seeking additional community support and identifying funders to support costs needed to establish the center. Soon the researchers will renovate the William’s Center space for improved accessibility. Next the researchers will undertake tasks to market and promote the ITC, and engage in activities to open and begin offering services through the ITC. The ITC will serve as a valuable community resource wherein younger and older generations can engage and learn from one another. It will also reduce the potential for social isolation and
support the technology needs of older adults in our community.

**Inside Out: Effects of COVID-19 on views of "Going out" (UW-Stout)**

*Time: 10:30  Location: UC Old Main Ballroom*

*Author(s): Sasha Bellot  Mentor(s): Tina Lee  Poster Presentation  57 Anthropology*

Last year, during the initial stages of the COVID-19 pandemic, a common safety measure suggested by the CDC was the practice of self-lockdown, or staying in one’s home to minimize possible contact with other people. Some research has been done on the experiences of lockdown and other aspects of living during the pandemic, often looking at mental health impacts. To date, there is a definite gap in this research concerning the felt effects of living in this way and how it has influenced behaviors. This project seeks to fill this gap. I used a Qualtrics online survey to gather broad information about people’s habits of leaving the home during the initial lockdown and currently. Additionally, the survey was used to recruit interviewees, who I then interviewed virtually over Microsoft Teams to gather more complete information about their experiences of living through lockdown. In this paper, I show that for those who lived in this lockdown, a sense of unease formed which respondents dealt with in different ways. Most described a need to “escape” from their home lives by leaving their residence. This process of “going out” proved important to respondents, whether formalized in the framework of going to work or more loosely defined, such as with hikes and small errands. Understanding this concept and why people do this can prove important, giving us potential solutions and ways to keep people comfortable in their homes for future situations where a lockdown could be necessary.

**The psychology of successful leaders: Unlocking leadership potential through growth mindset and systems thinking (UW-Stevens Point)**

*Time: 10:30  Location: UC Old Main Ballroom*

*Author(s): Serena Vincent  Mentor(s): Nikolaus Butz  Poster Presentation  59 Business*

The purpose of this study was to examine the psychology of leadership by exploring how successful leaders use growth mindset and systems thinking. First, in terms of growth mindset, successful leaders tend to internalize the belief that their most basic abilities can be developed through hard work and dedication. Second, in terms of systems thinking, a successful leader will seek to understand the nature of why situations are the way they are, including how thoughtful changes may improve results. The importance of growth mindset and systems thinking becomes even more pronounced when leaders face seemingly insurmountable obstacles. To this end, the present study analyzed the behaviors of historical leaders Roald Amundsen and Robert Falcon Scott, the first explorers to reach the South Pole, and identified how their disparate approaches influenced the effectiveness of their leadership styles. While we no longer live in the Age of Polar Exploration, growth mindset and systems thinking are still key tools for developing resilience—a highly-sought after trait among today’s leaders. Recommendations are provided for developing these skills and for leading in the face of adversity.
Harassment and Discrimination: The unseen crisis behind public safety professions
(UW-Whitewater)

Time: 10:30  Location: UC Old Main Ballroom
Author(s): Shelby Perket
Mentor(s): Krista McQueeney
Poster Presentation  85
Sociology/Business

Public safety professionals play a vital role in keeping the community safe. Yet, within fire stations, harassment and discrimination is commonplace. Probationary periods may include hazing rituals that test the mental toughness of new members. Studies indicate that this hazing behavior often continues in the form of harassment and discrimination. This disproportionately targets women and limits women’s careers. Using a survey method, this study assesses the prevalence of harassment and discrimination across public safety sectors and identifies the factors that contribute to these behaviors. The implications of these findings for equity and accountability within public safety professions are discussed.

Budget/Cost Statistical Analysis and Modeling of City Greenhouse Gas Emission of Student from Minnesota (UW-Eau Claire)

Time: 10:30  Location: UC Old Main Ballroom
Author(s): Xiaoxue Liu
Mentor(s): Jidong Zhang
Poster Presentation  56
Accounting

The research project starts from an accounting and data analysis perspective to estimate the amount of greenhouse gas emissions in the future 5 years in Minneapolis based on the past 10 years’ data and provides a model for the government to estimate the budget for reducing greenhouse gas emission. Related research on this field is relatively blank so far, and the government’s needs for a budget in the environment field are desperate. Our project focuses on providing a model for the government to facilitate them making a budget on controlling greenhouse gas emission. The project has practical implications to the government and non-profit organizations, and also contributes to academic research.

Our research classifies the emission of greenhouse gas by their sources: 1) Building energy 2) Vehicle travel 3) Management of municipal solid waste. Our project firstly estimates the amount of greenhouse emission by different sources. Secondly, we analyze the most effective ways to reduce the total emission. Thirdly, identify the marginal cost in reducing the emission. Finally, provide a model for government and non-profit organizations to make their budgets and for auditors to make a proper assumption and form professional skepticism.

This is a significant study because it is an interdisciplinary study across accounting, environment protection, and auditing. Secondly, this research provides a reliable basis for the government and non-profit organizations to make their budgets in lowering the greenhouse gas emission. Thirdly, auditors are provided with a reliable basis to audit the government’s expenses and make sure the taxpayers’ money is used properly. In addition, our research contributes to filling in the blanks in this field. Finally, this research is an excellent opportunity to apply my knowledge to resolve practical business questions and I expect to learn econometrics, statistical modeling, and estimation with data.
Abstracts of Poster Session #2
James R. Connor University Center (UC), Hamilton Room 164

**Taphonomy of the Echinoids of the Cretaceous Walnut Formation, Central Texas**
(UW-Whitewater)
*Time: 1:15  Location: UC Hamilton*
*Author(s): Abbie Bruderle*
*Mentor(s): Rex Hanger*
*Poster Presentation  120*
*Paleontology*

The Walnut Formation from the Albian Stage (113-100 million years ago) within the Cretaceous Period outcrops extensively throughout Central Texas. The Echinoderm portion of these paleocommunities is dominated by irregular, echinoids of the order Spatangoida, specifically Heteraster texanum. As a dominant taxon, the taphonomic characteristics of H. texanum can be used as a proxy for overall preservation state of the collections. Preliminary analysis of the H. texanum populations indicates the following: 1) mostly complete tests, with all spines removed; 2) complete absence of epibiont coverage indicating no exhumation after death; and 3) a small percentage of specimens with dorsal to ventral crushing indicating sediment overload of already-buried, partially empty skeletons. Modern Echinoids have been shown to decay and become buried in sediment in a regular progression for shallow subtidal environments. The taphonomic state of H. texanum from the Walnut Formation confirms early position on the decay progression.

**Multispecies Paleontology of the Late Ordovician Platteville Formation, Mifflin Member, of Southeastern Wisconsin**
(UW-Whitewater)  *Time: 1:15*
*Location: UC Hamilton*
*Author(s): Aiden Scherff*
*Mentor(s): Dr. Rex Hanger*
*Poster Presentation  121*
*Paleontology*

The Platteville Formation is a Late Ordovician (Sandbian ~ 453-458 million years old) unit exposed throughout the Upper Midwest. Within the formation, The Mifflin Member is recognized as the most fossiliferous of the formation, but because of regional dolomitization, fossil preservation is poor in southeastern Wisconsin. Since 2018, the Hausz Brothers Quarry just a few miles from the UW-Whitewater campus has been working down into the Mifflin, exposing strata that exhibit much better preservation than elsewhere in the region. As with most research of Mifflin fauna, study requires collection of large slabs and counting of taxa on their surfaces. Preliminary results from multiple line counts include: 1) a diverse fauna indicative of shallow marine conditions, including dominant trilobites, crinoids, gastropods and brachiopods, 2) Exceptional preservation of the brachiopod genus Rhynchotrema and the gastropod genus Trochonema in contrast to the disarticulated and fragmented trilobites and 3) occurrence of rare Climacograptus? graptolites. Continued preparation and slab surveys will refine taxonomic identification of taxa present.

**Export Compliance Awareness and Engagement**
(UW-Whitewater)
*Time: 1:15  Location: UC Hamilton*
*Author(s): Alex Abplanalp*
*Mentor(s): Dr. Donna Kempf and Dr. Elizabeth Olson*
*Poster Presentation  132*
*Research Compliance*

As the world is becoming increasingly dependent on international interaction, research investigators are obligated to become conscious of export control regulations. Noncompliance can result in severe penalties, which may include significant fines and/or imprisonment. Under the supervision of Dr.
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Donna Kempf and Dr. Elizabeth Olson, I had conducted primary research by interviewing with export control specialists from other institutions. After the interviews were completed, a qualitative analysis was written to articulate our findings. The analysis captures what we have learned from the regulations and best practices of other institutions, as well as new approaches to export compliance. This independent study has guided the Office of Research and Sponsored Programs in improving our own export control program here at UW-Whitewater. Those who are looking to improve export compliance within their institution may gain valuable insights from this independent study.

Effects of Mobile-Based Attentional Bias Modification Training for Young Adult E-Cigarette Users: A Randomized Controlled Trial  
(UW-Milwaukee)  
Time: 1:15  
Location: UC Hamilton  
Author(s): Alex Nelson  
Mentor(s): Seok Hyun (Joshua) Gwon and Hanjoo Lee  
Poster Presentation  98  
Clinical Psychology, Nursing, Public Health

Use of electronic nicotine delivery systems (ENDS, also known as e-cigarettes) has been an increasingly pervasive public health concern particularly among young adults (18-24 years) in the nation. One factor contributing to the initiation and maintenance of this health-risk behavior is attentional bias (AB). AB is the tendency to preferentially focus on substance-related cues over other types of cues. Our preliminary studies demonstrated that young adult ENDS users had higher AB levels in comparison to non-users. Based on this, we developed an innovative mobile-based AB modification training program (mABM) for ENDS users who want to reduce or quit usage. It is an online, mobile-based training program consisting of eight training sessions over 4 weeks and three online assessments (pre-training, post-training, and 1-month follow-up). Since June 2021, we recruited 16 ENDS users with a moderate level of nicotine dependence (≥ 9 on the Penn State Electronic Cigarette Dependence Index) and randomly assigned them to mABM or placebo training control (PLT) groups. Notably, the mABM group showed a 31% reduction at post-training (N=7) and 47% reduction at 1-month follow-up (N=5) in nicotine dependence levels, whereas the PLT group (N=9) had negligible levels of change. Participants reported high acceptability of the training program (> 70 points out of 100 on the Treatment Acceptance Questionnaire adapted from Hunsley, 1992). These results indicate the potential clinical utility of mABM as a sustainable intervention for ENDS users to diminish their dependence on nicotine.

Your academic success is our collective responsibility: Listening to our students to help them attain higher academic success  
(UW-Green Bay)  
Time: 1:15  
Location: UC Hamilton  
Author(s): Alexis Peterson  
Mentor(s): Dr. Guarav Bansal and Dr. Stacie Christian  
Poster Presentation  114  
Inclusivity

This presentation is part of a broader study designed to investigate the challenges faced by minority students (particularly – disability, LGBTQ, and students of color) to create a more inclusive environment at the University of Wisconsin – Green Bay. Research suggests that students from these groups often perceive the campus climate as less inclusive than others. In this presentation, we will share our research design, including research questions, salient findings from the literature review, our plan to recruit students along with the research
methodology. Our study will have multi-dimensional implications supporting inclusivity and learning from multiple perspectives - students, faculty/staff, and the University as a whole. Our study will help students by providing them a forum to voice their concerns and suggestions on how our campus can be more inclusive for them and many others like them. Similarly, our findings will help our faculty/staff by enhancing their understanding of these students' struggles. Research has suggested that faculty and staff perceptions about the needs and requirements of students from minority groups are not completely aligned with the actual needs of these students. Our study could also help sensitize faculty and staff towards the challenges and problems such students face. Such understanding could lead to better intervention strategies for our faculty/staff to help these students in a more timely and appropriate manner. Finally, our study has implications for the entire University. The findings can help create a better learning and more responsive environment and help the University become attractive to all students.

The psychophysics of affordance perception and memory: The Power Law scaling of perceived maximum forward reach-ability with an object (UW-Whitewater)

Time: 1:15  Location: UC Hamilton
Author(s): Ali Cunningham, Jenica Giese, Lauren Miller, Reanne Dwyer, Kristii Massman, and Tara Petrozelli
Mentor(s): Brandon Thomas
Poster Presentation 125
Psychology

Affordances are opportunities for actions that depend on the action capabilities and morphology of organisms and the physics of the environment. For instance, a chair affords sitting for a person but not an elephant. A large body of past research suggests that affordance perception and memory are scaled to actual abilities. We sought to further probe the scaling of affordance perception and memory by using Steven’s (1955, 1957) Power Law model. Participants were asked to report the perceived and/or remembered affordance of standing or seated maximum reach-with-ability of a series of objects for themselves or another person. Participants also reported the perceived and remembered length of the rods. We found that regardless of whether participants perceived or remembered, seated or standing reaching ability with an object, affordance reports were significantly more under accelerated functions of stick length than actual stick length. We discuss the implications of our findings.

The Impact of Pulsed Electromagnetic Fields Therapy on the Stress Response in Horses (UW-River Falls)

Time: 1:15  Location: UC Hamilton
Author(s): Ali Thome-Hough, Riley Walske and Elizabeth Erb
Mentor(s): Dr. Michelle DeBoer
Poster Presentation 95
Animal Science

Pulsed electromagnetic fields (PEMF) therapy is becoming a popular therapeutic technique used to speed up recovery and manage inflammation or soreness in patients. However, little research has evaluated the effects of this therapy on horses. The objective of this study was to evaluate PEMF therapy on the physiological and behavioral response in the horse. Six mature horses were used in a double-blind cross-over design. Horses were randomly assigned to a treatment order, including a PEMF treatment or placebo. Prior to the onset of data collection, horses were acclimated to the treatment conditions for two weeks followed by three weeks of the assigned treatment. For these sessions, horses were brought into a heated
barn once a week. Horses had PEMF loops placed on their back for 30 minutes with PEMF treatment horses receiving frequencies at intensities specific to their needs while the placebo group had PEMF loops placed on their back with no frequency emitted. The treatment was divided into three 10-minute periods in which the loops were placed on the shoulder, back, and hindquarters equally. Thermography pictures were taken before and after treatment and analyzed using Digatherm software. Prior to treatment and every 5 minutes during treatment, heart rate and respiratory rate were taken by blinded researchers and behaviors were recorded for the duration of the session. Results will follow. The effect of stocking density and a calving blind on assisted calvings in Holstein dairy cows (UW-River Falls)  
*Time: 1:15  Location: UC Hamilton*  
*Author(s): Alison Smelter*  
*Mentor(s): Kate Creutzinger*  
*Poster Presentation 93  
Animal Science*

In the dairy industry, many cows have difficult births (i.e., dystocia) which are painful and can trigger disease after calving. The calving environment is important to the normal progression of labor and can influence labor length. The objective of this project was to determine the effect of stocking density (pen space per cow) and a calving blind on the rate of dystocia. Holstein dairy cows (n = 374) were included in a 2 × 2 factorial arrangement of treatments including 1) high vs. low stocking density (100 ft² vs. 200 ft² per cow) and 2) provision of a calving blind vs. barren pen. The calving blind (12 ft long × 2 ft wide × 5 ft tall) was centered in calving pens for cows to seek seclusion while giving birth. Calving behavior was assessed using continuous observation from previously recorded video. Measurements included time of calving or calving assistance for each cow and the length of stage II labor (time from the first abdominal contraction to calf delivery). Dystocia will be defined as cows in stage II labor >70 minutes. A total of 50 cows with assisted calving’s will be observed. Data collection is currently in progress (n = 30/50 cows complete). We expect there will be a greater rate of dystocia in high stocking density pens and pens without a blind. 

**Multispecies Paleoecology of the Oxygen-Challenged Fauna from the Late Carboniferous Foraker Formation, Southeastern Nebraska.**  
(UW-Whitewater)  
*Time: 1:15  Location: UC Hamilton*  
*Author(s): Annemarie Mularski*  
*Mentor(s): Dr. Rex Hanger*  
*Poster Presentation 103  
Geology*

The Late Carboniferous (Gzhelian ~ 304-299 million years old) Foraker Formation of the USA Midcontinent preserves a diverse fauna of marine organisms as sea levels rose and fell repeatedly over the region due to glaciation in the southern hemisphere. Coincident with sea level changes are changes in rock lithology reflecting primarily oxygen levels in the water. The Hughes Creek Shale (HCS) Member of the Foraker Formation is classified as a gray, “core” shale, deposited in an environment of less than normal oxygenation. Fossils within the HCS can then form an ancient example of how faunas react to depletion of oxygen in the oceans as predicted for our future world of global warming. A small roadcut in Richardson County, Nebraska was sampled to document the paleoecological relationships. Bulk samples soaked in Stoddard Solvent and sieved were supplemented with surface-picked specimens to build the collection. Rarefaction curves indicate
that sampling was relatively “complete”. Preliminary results include: 1) a diverse fauna consisting of at least 5 phyla, dominated by brachiopods, bryozoans and fusulinid foraminifera, 2) numerical dominance of the brachiopod Neochonetes granulifer; 3) size relations consistent with other HCS fauna of Nebraska and 4) U/Th ratios derived from Gamma Ray Spectroscopy that confirm the oxygen-challenged classification.

Seasonal Changes in Plasma Vitamin E Concentrations in a Mature Horse Herd (UW-River Falls)
Time: 1:15 Location: UC Hamilton
Author(s): Ashley Tuszka and Olivia Schueller
Mentor(s): Dr. Michelle DeBoer
Poster Presentation 91 Animal Science

Vitamin E is an essential nutrient for horses that is primarily available in fresh forage. However, vitamin E becomes depleted when fresh forage is cut and dried for hay, a common feedstuff provided to horses without pasture access. The objective of this study was to evaluate plasma vitamin E concentrations over one year in a mature horse herd to determine the impact of diet and management practices on the prevalence of vitamin E deficiency. Jugular venous blood samples were taken from 26 mature horses housed at the University of Wisconsin-River Falls in February 2022 with future samples anticipated in May, August, and November 2022. Horses were selected from different management practices including 1) dry lot horses only consuming hay (n=13) and 2) horses with pasture access in the summer (n=13). Horse weight, body condition score, housing conditions, and current diet were recorded at each time point. The blood samples were centrifuged at 1500 x g for 10 minutes, and the samples were sent into Michigan State Veterinary Diagnostic Laboratory for analysis of vitamin E concentration. Horses with a plasma vitamin E concentration less than 2 µg/mL were considered deficient while values between 2 and 4 µg/mL were considered adequate. All data was analyzed as a repeated measures study with Proc Mixed of SAS with statistical significance set at P ≤ 0.05.

Determining the correlation between siderophore-encoding genes in E.coli strains and their survivability in a freshwater sand environment (UW-Milwaukee)
Time: 1:15 Location: UC Hamilton
Author(s): Autumn Saunders and Brigid Meyers
Mentor(s): Sandra McLellan
Poster Presentation 101 Freshwater Science

Escherichia coli is a bacterium that can live in varying environments using adaption mechanisms to scavenge for limited nutrients and compete with neighboring lifeforms. One such mechanism of adaption is the production of siderophores. Siderophores are molecules secreted when bacteria are under iron-limiting conditions: their structure has a high affinity to bind ferric iron. E. coli, used as a fecal indicator bacterium in water quality assessment, has been shown to survive within beach sand over a long period of time. The objective of this research is to learn more about the distribution of siderophore-encoding genes between different strains of E. coli and identify correlations between the siderophore production and survival of those strains. Genomic screening for siderophore genes will be performed on isolates demonstrating long-term survival from past microcosm experiments. This information will then be compared to the genetic profiles of the isolates initially inoculated into the microcosm. We will
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also test strains for the qualitative presence of siderophores using chrome azurol sulphonate (CAS) agar plates. It is expected that there will be more siderophore production and genetic prevalence of siderophore-encoding genes in the genomic profiles of output microcosm E. coli strains than that of the input isolates overall, due to selection of these strains as survivors in the microcosm experiments. This research will allow for more accurate beach safety readings and water quality assessments by providing a better understanding of how E. coli survives in beach sands.

**Cannabis Use, Aerobic Exercise, and Internalizing Symptoms Amongst Adolescents**  
(UW-Milwaukee)  
**Time:** 1:15  
**Location:** UC Hamilton  
**Author(s):** Bo Malames and Julia Harris  
**Mentor(s):** Krista Lisdahl  
**Poster Presentation** 127  
**Psychology**

Cannabis is a widely used drug in the United States by youth and is associated with increased levels of internalizing symptoms, including depressive and anxiety symptoms. Research has shown that cannabis use and aerobic fitness (AF) predicts better performance on neurocognitive tasks, thus, AF may be helpful for young cannabis users in improving psychological and cognitive functioning. Few studies have examined the relationship between AF and internalizing symptoms among young cannabis users. This study investigated differences in AF level and internalizing symptoms among cannabis users and controls. It was hypothesized that cannabis users with increased AF would report lower internalizing symptoms.

75 participants, (25 cannabis users (1x weekly in the past year); 67.57% Caucasian; 52.7% male) were recruited from the community to complete three weeks of monitored abstinence from drugs and alcohol. Across five sessions, participants completed questionnaires assessing internalizing symptoms, AF, and past-year substance use patterns. A one-way ANOVA examined differences of AF and internalizing symptoms among young cannabis users.

There were no statistically significant relationships between cannabis use, AF and internalizing symptoms in this sample.

AF levels and internalizing symptoms did not differ among young cannabis users compared to controls. This sample had low variability in internalizing symptoms likely due to the exclusion of major mood and anxiety disorders. Future research should investigate the effects of cannabis use, AF, and more severe levels of internalizing symptoms. Additionally, future research is needed to understand potential mechanisms of AF reducing neurocognitive impacts of cannabis use during adolescence.

**The Joy of Cooking** (UW-Stout)  
**Time:** 1:15  
**Location:** UC Hamilton  
**Author(s):** Brenden Malmgren  
**Mentor(s):** Jennifer Astwood  
**Poster Presentation** 99  
**Cooking**

Cooking is one of human history’s favorite pastimes. Throughout time, there have been incredible breakthroughs in evolution in the way we prepare food, the types of meals, the way we share them, what we use to cook, and how our food is presented. The world of food has led to some of humankind’s most iconic and everlasting designs that we have used for a few thousand years without any change. In the past few years, there is a low amount of people who admit to actually having a passion for cooking. Many struggle with lack of motivation, time, money, and confidence. This presents an opportunity to bring the joy back into cooking.
Many current appliances are very industrial looking and may be intimidating to the inexperienced. But with an appealing new aesthetic and easy functionality, more users could be brought into the fun and experimental world of food preparation.

**Developing a Multimodal Device to monitor Slope Stability (UW-Whitewater)**

*Time: 1:15  Location: UC Hamilton*

*Author(s): Brett Steck, Gabe Lewis, Peyton Sanders, Esther Jeninga, Dean Wink, Corban Larson, Nick Huffman and Ethan Hensel*

*Mentor(s): Ozgur Yavuczetin, Juk Bhattacharyya and Haijian Sun*

*Poster Presentation  107  Geology, Physics, & Computer Science*

Water moving from a saturated to unsaturated zone can make slopes unstable and lead to slope failure in regions where the freeze-thaw cycle is common. This process is abundant in the midwest, specifically along the shoreline of Lake Michigan. We know that water, specifically groundwater, moves to colder regions within the subsurface during the freeze-thaw cycle. However, we don’t know the rate of such water movement under different conditions, such as a temperature gradient, the rate of cooling or thawing, and initial moisture content. It is critical to understand the effects these variables have on slope stability to mitigate further failure.

We have designed a multimodal device with temperature and moisture sensors using the raspberry pi platform to monitor contributing factors of landslides. Currently, the device is tested under laboratory conditions, where it records water movement in sand and unconsolidated materials in response to temperature. We aim to synchronize a series of Raspberry Pis with different sensors to communicate between one another. In this poster we will describe our equipment (types of sensors, Raspberry Pi, computer codes), research design, experimental setup, and future directions of this project.

**Macro-Borings in a Ceratostreon texana Oyster Mass Occurrence (OMO) in the Early Cretaceous Walnut Formation, Central Texas (UW-Whitewater)**

*Time: 1:15  Location: UC Hamilton*

*Author(s): Cali Lensmire*

*Mentor(s): Rex Hanger*

*Poster Presentation  105  Geology*

The Early Cretaceous (Albian ~ 113-110 million years old) Walnut Formation of Central Texas preserves multiple instances of Oyster Mass Occurrences (OMO’s) in which one or more species of oyster, bivalved Mollusc forms the dominant taxon in an ancient paleocommunity. A key question for all OMO’s is whether it is formed by the original, gregarious build-up of the oysters (= Autobiostrome), or by sedimentologic buildup of oysters that did not necessarily all live together (= Allobiostrome).

To test the two possibilities, over 540 individual shells of Ceratostreon texana from the Keys Valley Marl Member of the Walnut were examined for fractures of the shell and the prevalence of bio-erosion as macro-borings into the shells by other organisms. Both of these taphonomic characters in abundance would indicate buildup as a sedimentologic allobiostrome. Preliminary results include: 1) over 60% of all individual shells are fractured; 2) over 90% of all fractures are in the outer margin of the shells, typical of breakage due to movement as a sedimentary particle; 3) over 40% of all individual shells contain some evidence of macro-borings and 4) identified macro-boring ichnogenera (in order of abundance) Entobia (by sponges), Maeandropolydora (by worms) and...
Gastrochaenolites (by bivalves). Collectively, these data support extended residence time for dead shells at the sediment-water interface and so an allobiostrome classification for this OMO.

Assessment of Phosphorus Impairment of Lake Michigan Tributaries in Manitowoc County, WI (UW-Green Bay)

Time: 1:15  Location: UC Hamilton
Author(s): Cameron Mueller, Tanner Nate, Alexandra Davis, Sarah Burmesch, Jessi Braun and Brooke Schuler
Mentor(s): Rebecca Alber and Dr. Richard Hein
Poster Presentation  113
Hydrology/Environmental Science

Analyzing the water quality in a variety of creeks found in Manitowoc County, WI, is of interest to the mitigation and prevention of environmental pollutant effects in our community. Phosphorus levels in this area have consistently exceeded DNR standards. Potential sources of pollutants include sewage, agriculture, and anthropogenic sources. The restoration of Centerville Creek and Little Manitowoc River were designed to slow down stream flow and prevent the distribution of phosphorus into Lake Michigan. Restoration was implemented in these areas due to high concentrations of phosphorus that result in eutrophication which causes Cladophora. Cladophora blooms impact communities along Lake Michigan both environmentally and economically. The blooms caused by eutrophication result in decreased concentrations of dissolved oxygen, E. coli outbreaks, aquatic death, beach closures, decreased property values, and tourism. Identifying phosphorus trends within these systems is critical in determining how effectively restoration limits the input of phosphorus into Lake Michigan. Water samples were collected from twenty-three locations among six streams within the Little Manitowoc River and Sevenmile-Silver Creek watersheds. Testing variables included dissolved oxygen, E. coli, ammonia, pH, total phosphorus, and total dissolved phosphorus. Our research found that phosphorus levels spiked proceeding precipitation events greater than 0.5 inches. This data can effectively be used by government agencies in the calculation and implementation of Total Maximum Daily Load allowances, in addition to educating individuals surrounding a 9 key element plan; a set of steps that can be used by any property owner to locate potential pollutants of phosphorus.

A Social Gambling Task and Its Relation to Physiological Responses in Children and Adults (UW-Green Bay)

Time: 1:15  Location: UC Hamilton
Author(s): Carter Crowley and Taylor Kegen
Mentor(s): Sawa Senzaki
Poster Presentation  122
Psychology

The primary purpose of this study is to examine cognitive and social development by measuring psychophysiological responses in children and adults. Self-regulation skills are mental processes that enable us to plan, focus attention, and remember instructions. These skills develop from childhood and adulthood (Crone & van der Molen, 2007), and there are physiological markers of self-regulation, such as skin conductance response and heart rate (Fukui et al., 2004; Juzdani et al., 2020). Our hypothesis is that there will be significant comparative differences between child and adult physiological responses. We also hypothesize that there will be significant differences in the responses between children and adults when comparing their responses when doing the Hungry Donkey task for
themselves, versus when they play for another person (their child/parent).

Our study involves college students from the University of Wisconsin-Green Bay, and child participants ages 6-9 years old, as well as one of their parents. We anticipate a diverse group of participants in race/ethnicity and sex/gender. We will examine the relation between physiological responses to socio-cognitive decision-making tasks and individual differences in the levels of anxiety, as recent studies suggest such a relation in adults (Miu et al., 2006). However, the relationship in children is still largely unknown. The physiological responses that we are looking for are electrocardiogram (ECG) and electrodermal activity (EDA) measurements. We will be using the Hungry Donkey task to compare child and adult ECG and EDA responses. The Hungry Donkey Task has been used to measure the physiological responses of children in previous studies (Crone & van der Molen, 2007). We will also examine child-parent relationships and the role of psychophysiological synchrony in the development of self-regulation skills.

A Method of Properly Fitting a Chinrest for Upper String Students and Performers
(UW-Whitewater)

Time: 1:15 Location: UC Hamilton
Author(s): Caryana Dominguez and Noah Schaffrick
Mentor(s): Leanne League
Poster Presentation 118
Music

The goal of this project is to create a method to properly fit chinrests to upper string musicians (violin and viola players). Oftentimes, upper-string players will invest in multiple styles of shoulder rests to alleviate pain or discomfort. Though adjusting the shoulder rest may help the musician, the problem typically initiates from an improperly fitted chinrest. The misconception is that a proper set-up comes from elevating the distance between the instrument and shoulder. However, a proper set-up comes from the instrument's contact point between the collarbone and the jaw. Using the Frisch and Denig Violin and Viola Chinrest Fitting Systems, players can measure their collarbone to the jaw, as well as try different chinrest sizes, and different chinrest shapes. In this study, students would be measured and fitted to a recommended chinrest. The measurements of all participants will be placed into a spreadsheet that contains student neck sizes, instrument and chinrest size, and chinrest shape. Students’ self-reported levels of tension and discomfort will be recorded, before and after the fitting, using a survey.

Jurassic Morrison Formation Stratigraphy and Paleoenvironments at the Warm Springs Ranch, Foot Site Dinosaur Quarry, Thermopolis, Wyoming (UW-Whitewater)
Time: 1:15 Location: UC Hamilton
Author(s): Dylan Brandt
Mentor(s): Dr. Rex Hanger
Poster Presentation 106
Geology/Paleontology

The Morrison Formation is one of the most extensive and well-known dinosaurs bearing rock units in the entire world. It preserves the richest assemblages of dinosaur species from the Jurassic period and covers over 600,000 square miles of the western United States. Distinct stratigraphic members have been identified based on rich data gathered from its southern reaches across Colorado, New Mexico, and Utah. However, the stratigraphy of the formation becomes progressively less well understood in the north-central basins of Wyoming and Montana. During the summer of 2021, 124 rock samples were collected from a
stratigraphic section at the Foot Site (FS) Quarry near Thermopolis, Wyoming with the purpose of filling in parts of this “knowledge gap”. The samples were run through a suite of tests including X-Ray diffraction (XR) and Gamma Ray Spectrometry (GRS) and Magnetic Susceptibility (MS). Preliminary results indicate: 1) consistent gray-green siltstone lithologies throughout the section, with potential(?) volcanic ash layers; 2) predominance of vermiculite-illite mixed layer clay mineralogy throughout the section; 3) moderate variation of U/Th values, ranging from 0 ppm to 3.6 ppm, and MS variation from -0.0186 to 0.341. Future work will incorporate other geochemical methods and biostratigraphy to further characterize the paleoenvironmental conditions at the quarry to advance the description of these poorly understood, dinosaur-bearing Morrison strata.

To Eat or Not to Eat? An Analysis of Meat Consumption Behaviors (UW-River Falls)

Time: 1:15  Location: UC Hamilton

Author(s): Emily Macpherson

Mentor(s): Dr. Albert Boaitey

Poster Presentation 89

Agriculture Economics

The decision of whether or not to consume meat and how much meat to consume is a complex one with many important implications. Current trends indicate consumers are increasingly conscious about health, social and ethical dimensions of food, including meat. Given that consumers drive demand, their perceptions and choices directly affect the livestock industry and the wellbeing of the communities that depend on livestock production. The aim of this study is to examine the factors that influence meat consumption for three meat consumer categories- omnivore, flexitarian, and vegetarian diets. The shared characteristics and demographics of each diet were examined to understand who is consuming each diet; followed by the analysis of the motivations and morals behind each individuals’ choice in diet. We generate insights that allow us to better understand consumer meat choice and its implications for the livestock industry.

Changing Perceptions of Inclusion: The Role of a Universal Design for Learning Framework in Pre-Service Teacher Preparation

(UW-Eau Claire) Time: 1:15  Location: UC Hamilton

Author(s): Emily Nickolai and Maura Laesser

Mentor(s): Dr. Karsten Powell

Poster Presentation 137

Teacher Preparation

This study focuses on how instruction utilizing a Universal Design for Learning (UDL) framework influences secondary pre-service educators’ knowledge and perceptions of inclusion in educating students with disabilities. Achieving greater acceptance of students with disabilities in general education classrooms requires pre-service general educators to complete additional preparation emphasizing inclusive knowledge and skills. For this study, pre-service general educators completed pre- and post-course surveys which focused on students’ perceptions of and preparation for inclusive education through examining six constructs. A 30-question survey was completed before and after a pre-service inclusive methods course. Additionally, participants (n=53) developed inclusive lesson plans implementing UDL principles. Researchers found significant change from time one to time two: (a) participants’ efficacy for including students with disabilities in their classrooms and (b) their knowledge and skills associated with UDL. Data collection continues this fall, with 36 additional participants’ data being collected and examined using the same methods as the previous year of the study. Findings of this study indicate that
pre-service general educators may require more than one inclusive methods course to develop their inclusion-related skills. Additional recommendations include providing pre-service teachers with a placement that involves inclusion with students with disabilities and a collaboration course between pre-service special educators. Through the continuation of this study, additional data collected from pre-service general educators will look to provide more reliability and further perceptions on collaboration and inclusive practices within pre-service preparation.

**Are all Animals Equal?** (UW-River Falls)

**Time:** 1:15  **Location:** UC Hamilton  
**Author(s):** Emma Jorgensen  
**Mentor(s):** Albert Boaitey  
**Poster Presentation** 86  
**Ag Economics**

The creation of farm animal welfare (FAW) standards that meet public expectations is a pertinent issue in livestock production. For most consumers, food is no longer just calories but a bundle of many important attributes including ethical production practices (Schulz & Tonsor 2015; Norwood & Lusk 2009). Many conventional production methods (e.g. confinement types, routine mutilations and transport) are being questioned. Rising public concern can lead to anti-consumption behavior. Also, the public can vote in referendums to impose restrictions on production practices that can have far-reaching consequences for many livestock industries and the welfare of farmers and rural communities that depend on livestock production.

In response to these concerns and to maintain the industry’s social license to operate, supply-side stakeholders have come up with a number of measures. Livestock supply chains consist of primary processors, wholesalers, food and non-food retailers as well as third party verification organizations. Each of the agents may have an interest in developing FAW standards. Given the integrated nature of livestock supply chains, standards set further down the supply chain can have effects further up the chain. Indeed, producer-led FAW initiatives are becoming increasingly popular in many countries but the extent to which they compare with other retailer-led initiatives have not been previously addressed. For example, the dairy farmers in the US have launched the FARM initiative that seeks to promote, amongst others, higher FAW standards. Major food retailers have their own initiative and standards. Further, the differences in farmer-led initiatives across different livestock species (hogs, beef cattle, dairy cattle, poultry) have not been addressed. Furthermore, the level of public confidence in producer-led versus industry versus third party verifiers have not been addressed. Understanding these issues can be important in the development of FAW standards that are consistent with public expectations.

The objectives of this study are: to assess the FAW welfare standards of the livestock producer groups in the US; Compare these standards with those of major food and non-food retailers, processors and third-party organizations; and, evaluate public confidence in the FAW standards of the different stakeholders identified. Insights generated from this study can be useful in shaping ongoing efforts aimed at creating FAW labeling schemes for various livestock industries and meeting public expectations.
Using Visual Graphics of Mass Wasting for Community Outreach (UW-Whitewater)

**Time:** 1:15  **Location:** UC Hamilton

**Author(s):** Esther Jeninga, Brett Steck, Peyton Sanders, Dean Wink, Gabriel Lews and Corban Larson

**Mentor(s):** Juk Bhattacharyya

**Poster Presentation 102 Geology**

Port Washington, Wisconsin, is a community along the shore of Lake Michigan. Their scenic view makes it a popular destination for tourists. Their shoreline is subject to lake erosion, and increased rainfall leads to landslides within the city. However, the general public seems mostly unaware of the various factors that can cause slope failure events in their own communities. Unless bridged, this knowledge gap can lead to potential death and property damage as people may fail to take appropriate and timely slope stabilization measures to protect their communities. To address this issue, we have designed a simple visual graphic of different types of slope failures, with explanations of causes, effects, and general descriptions of each.

Community outreach is important when talking about landslides because people need to be prepared so they can be proactive in protecting their own property and the community's economy. The United States Geological Survey has released a Landslide Handbook, however, the terminology used throughout is difficult to understand without expert commentary. Simply finding the information you are looking for becomes a game a “Where’s Waldo”. The glossary of landslide terms is found on page sixty of the handbook rather than at the beginning or the end. This makes the first fifty-nine pages incomprehensible to a general reader. The purpose of creating this poster for the Port Washington community is to bridge the gap between specialists and the general public.

The effects of a novel FSH + hyaluronan superovulation protocol on the onset, duration, and number of ovulations in ewes (UW-River Falls)

**Time:** 1:15  **Location:** UC Hamilton

**Author(s):** Gabrielle Rice and Desiree Buchholz

**Mentor(s):** Justin Luther

**Poster Presentation 94 Animal Science**

In sheep, the total amount of follicle stimulating hormone (FSH) required for superovulation combined with hyaluronan (HA) and then limited to two doses, yields similar results for the number of ovulations and embryos produced when compared to traditional superovulation protocols (Panyaboribian et al, 2018). Unfortunately, no studies known report the onset or duration of the ovulation response in FSH-HA treated ewes, which is necessary for determining the most optimal time for artificial insemination and maximizing embryo production. By comparing the time of ovulation of the two protocols, we can add new information concerning the most appropriate time to artificially inseminate superovulated ewes.

The objectives of this project are to determine ovarian responses following two superovulation protocols in ewes, and compare the onset and duration of ovulation resulting from each protocol. A traditional superovulation protocol involving 8 separate doses of FSH over four days (FSH-CON, n = 6 ewes) will be compared to a novel superovulation protocol involving FSH diluted with hyaluronan and administered in two separate doses (FSH-HA, n = 6 ewes). Upon completion of the superovulation protocols, each ewe will undergo transrectal
ultrasonography to determine the onset and duration of the superovulatory response to each protocol. The addition of HA has been shown to slow FSH release into the vascular system thereby extending the ovarian response following a single dose. The data collected from this study will be used to determine the most optimal time for AI following superovulation with FSH-HA when compared to a more labor intensive traditional FSH protocol.

Who are Language Learners in the Midwest?
An Oral History Interview (UW-River Falls)
Time: 1:15  Location:  UC Hamilton
Author(s):  Grace Johnson
Mentor(s):  Rhonda Petree
Poster Presentation  119
Oral History Interview of a Non-native English Speaker

This poster presentation shares the results of an oral history interview of a non-native English speaker originally from Ukraine. The interviewee settled in the Midwest region and gained English language skills through schooling and interacting within the community.

The purpose of this project was to gain insight into the interviewees' experiences learning English and adjusting to the midwestern culture. The interview questions focused on language, culture, personal history, and school experiences. The interview was conducted using an oral interview protocol and was completed virtually.

This project provided insight into the lives of immigrants who acquired English language skills and allowed the interviewer to recognize and understand how different circumstances shaped the experiences of immigrants living in the Midwest.

My Actions Have Reactions (UW-Oshkosh)
Time: 1:15  Location:  UC Hamilton
Author(s):  Hannah Driessen
Mentor(s):  Yoko Mogi-Hein
Poster Presentation  133

Science My 5-day STEAM lesson plan, created for First through Third grade, will focus on the laws of motion & learning about Newton Third Law. Students will make their way through a 5 day lesson focused on Science, Technology, Engineering, and Art, with Newton Third Law being the center focus of each day. Students will learn the song "Newton's Third Law" from day one and work with different materials to learn about the third law. Students will also create a bumper guard and color it which will be the main activity for the Art and Engineering-focused days. For science and math students will bounce different types of balls to see how high they can go as well as finding the height difference by subtracting the starting and ending points. Students will then go on to play with Newton’s cradle simulator to allow them to see what happens with each action they make during the Technology-focused day. At the end of the 5-day lesson, students should be able to accurately know what Newton’s third law is and where they see it being used in their day to day lives.

An Evaluation of Corn and Soybean Hedging In Wisconsin Regional Markets (UW-Platteville)
Time: 1:15  Location:  UC Hamilton
Author(s):  Hannah Lemke
Mentor(s):  Dr. Kishore Joseph
Poster Presentation  88
Agriculture

We examine the hedging effectiveness for CBOT corn and soybeans storage and operational hedges at non-delivery points during periods of higher basis volatility. Corn and soybean data from 2015 – 2021, from select regions of
Fecal egg counts (FECs) can be performed to monitor parasitic resistance in response to the administration of dewormer, but they are not performed regularly, which may result in improper dewormer use. This study aims to evaluate the efficacy of pyrantel pamoate dewormer to reduce parasite populations in juvenile horses in River Falls, Wisconsin. To evaluate the dewormer, an initial FEC was taken using the McMaster’s Method and horses with ≥ 25 eggs per gram (EPG) were used (n=40). Two-weeks post-treatment, another FEC was taken, and a fecal egg count reduction (FECR) was calculated. The FECR percentages were analyzed using the MIXED procedure of SAS and a paired T-test was used to analyze EPG reductions. Results from this study indicated pyrantel pamoate was effective at reducing the FEC by 98 EPG (P≤0.05). However, the average FECR was 75%, which indicates that parasitic resistance to this anthelmintic is observed. These results demonstrate that alternative anthelmintics and parasite management tactics are critical to helping horse herds combat parasites, as traditional dewormers have reduced efficacy.

Older Wisconsinites’ Use of Smart Medical Devices: Privacy and Security (UW-Whitewater)
Time: 1:15  Location: UC Hamilton
Author(s): Kathleen Rocco and Malayna Oswald
Mentor(s): Jeannine Rowe  Dr. Jiazhen Zhou
Poster Presentation  135
Social Work and Computer Science

Older Wisconsinites are growing users of smart medical devices (SMDs), which are types of “internet of things,” (IOT) that collect personal health information and connect wirelessly to the internet. While SMDs are valuable health devices, they are often adopted with little knowledge or understanding about how they...
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work. This limited knowledge and reality that older adults are greater targets for IOT hacks poses risks. To better understand the potential risks, an exploratory study is being conducted. The study involves interviewing older Wisconsinites who use one or more SMD and conducting laboratory tests in which the security of the devices is assessed. To date, we have interviewed 42 older Wisconsinites who use one or more SMDs and asked how the device is used, understanding of how information is being collected, stored, and used, and their perception of device security. Preliminary interview findings suggest that the devices are used to manage or prevent chronic health conditions. The findings further reveal use of devices for convenience, as well as lack of understanding how information is collected, stored, and by whom it is accessed. Laboratory tests are currently underway. Preliminary findings reveal significant internet traffic is generated while using the SMDs. This traffic can be intercepted by foreign online entities. These laboratory tests with the interview findings offer some support for the privacy and security risks involved with SMDs. The findings will be used to inform SMD developers and Wisconsin legislators to advocate for improved privacy and security practices and stronger IOT legislation.

The Big Five and Relationship Satisfaction
(UW-River Falls)

**Time:** 1:15  **Location:** UC Hamilton  
**Author(s):** Kayla Deckert and Giselle Nunez  
**Mentor(s):** Melanie Ayres  
**Poster Presentation 128 Psychology**

Personality has become a topic of interest for many researchers over the past few decades, and several researchers have become interested in how personality is paired with relationships. The Big Five personality traits show that traits like high agreeableness and extraversion are correlated to higher levels of satisfaction. (White et al., 2004; Wilson et al., 2015). It is important to study romantic relationships and friendships as they are a central aspect of most people's lives.

Approximately 200 undergraduate students participated in an online survey that measured personality traits and relationship satisfaction. Participants took the TIPI Gosling Personality Scale (TIPI; Gosling, 2003) to measure Big Five traits. Further, we assessed relationship satisfaction of their romantic partner and close friend using the Couples’ Satisfaction Index (Funk & Rogge, 2007).

The IRB has received and accepted our study. We used correlation and regression tests to examine how participants’ personality is related to the personality of their romantic partners and friends.

We expect couples with similar personality traits to be more satisfied in their relationship (Shiota & Levenson, 2007). In addition, we hypothesize that friendship satisfaction will be higher overall and that it will follow the same format where extraversion agreeableness will be higher while neuroticism will be low for individuals who report higher satisfaction.

The findings of this research will be important to therapists or other professionals who work with couples and individuals who may be struggling in various relationships to help delve into why relationships may be unsatisfactory.
The Hand of God: Finding the Origins to the Hamsa and its impact on Abrahamic Religious Communities (UW-Whitewater)

**Time:** 1:15  **Location:** UC Hamilton

**Author(s):** Kennedy Cox

**Mentor(s):** Dr. Molly Patterson

**Poster Presentation** 109

**History**

The purpose of my research is to solve two questions. Where did the Hamsa symbol come from and what does it mean to the religious and non-religious communities of today? The first question will be about the origins of the symbol and how it is connected to the past. The second question will be solved through interviews with those in the Islamic, Judaic, and Christian communities as well as a few members with no religious affiliations that use the symbol as well. Including, a survey will be sent to a wide range of people to comprehend the general knowledge of the symbol regardless of religion. This survey will contribute to how the Hamsa is or is not being culturally appropriated. In so, I will look at how the symbol compares and contrasts to the different communities and how it has been culturally appropriated in today’s society.

**EPD Effects on Bull Value (UW-Platteville)**

**Time:** 1:15  **Location:** UC Hamilton

**Author(s):** Kimberly Van Donsel, Dr. Kishore and Ms Alicia Prill-Adams

**Mentor(s):** Dr. Kishore Joseph and Ms Alicia Prill-Adams

**Poster Presentation** 87

**Agriculture**

Sire selection based on desirable traits is a critical step in raising and maintaining a productive beef herd. The Wisconsin Beef Improvement Association (WBIA) bull testing and auction sale program has strived to understand the type of bulls that are in demand to meet the buyer’s management objectives profitably. In this regard, we analyze the historic WBIA bull test and auction sale dataset for different breeds to empirically estimate the discounts and premiums associated with various bull traits. We compile data from bull tests and annual performance sales at UW Platteville during 2012-2020. The data contains detailed records of simple performance measures (SPMs) including birth date, birth weight, color, frame, delivery weight, dam’s age, on-test weight, weight per day of age, average daily gain, ultrasound data including back fat, rib eye area, marbling percentage, and detailed EPD profile. We adopt the hedonic regression framework with the bull sale price adjusted for inflation as the dependent variable and genetic indicators, phenotypic indicators, and EPDs as independent variables. The analysis is performed for individual breeds in the data set and for all breeds combined after adjusting EPDs using Across Breed EPD factors. The analysis is performed for individual years, by splitting data into 4 and 5-year periods, and over the pooled data. After dropping correlated variables, ordinary least squares regression is used to estimate the marginal valuation of bull traits, allowing producers to predict prices for their bulls.

Yield and Quality of Sorghum Sudan and Pearl Millet Under Drought in NW Wisconsin (UW-River Falls)

**Time:** 1:15  **Location:** UC Hamilton

**Author(s):** Kole Sommerfeld

**Mentor(s):** Yoana Newman

**Poster Presentation** 90

**Agronomy**

Summer annuals like sudangrass and pearl millet are important in agriculture because of the drought resistance capabilities they have, and the anticipated warming predicted of the earth. In the last 3 years, NW Wisconsin
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weather has been in moderate to severe drought, therefore these summer annuals like sorghums and pearl millet have become more relevant for growers. The objective of this study was to do a preliminary evaluation of yield and quality of these grasses in the area. The materials and method in this study included planting strips of different species [sorghumxSudangrass (SS) variety Evergrow, SS variety Dryland, sudangrass, and pearl millet], and evaluating yield and nutritive value samples using near infrared spectroscopy (NIR). The average results show that SS yields in the last two years were consistent (1.93 tons/acre), sudangrass (1.8 tons/acre), and pearl millet (2.5 tons/acre). Crude protein average for the summer annuals were moderately high, SS Evergrow (10.9%CP), SS Dry (13.5 %CP), sudangrass (13.9 %CP), and pearl millet (14.5% CP). The conclusion of this experiment indicates that under the conditions evaluated with unfertile sandy soils and moderate drought (10 inches below average) the summer annuals like SS, sudangrass, and pearl millet are a good alternative to fill the summer slump experienced by the cool-season forages. More research should be done with these species because of the potential benefits in terms of yield and nutritive value, especially protein.

A Common And Public Nuisance
(UW-Whitewater)
Time: 1:15 Location: UC Hamilton
Author(s): Kollin Bolchen
Mentor(s): Dr. Karl Brown
Poster Presentation 110

History

Prohibition did not happen overnight. A case study of Wisconsin in the period 1918-1922 reveals that many Wisconsin breweries, like Walter Rahr Brewing in Menasha or the Fred Rahr Brewery in Green Bay, continued operations for years after the passage of the Volstead Act. This was facilitated by illicit support by law enforcement and local elites (the Elks Lodge bought beer from Rahr until that brewery was busted in 1922), as well as resistance to Prohibition by local communities. Rather than focusing on bootlegging, the rise of organized crime, or other new forms of lawbreaking, I focus on the persistence of existing economic, social, and cultural practices after they were criminalized.

College Students’ Close Relationships and Associations with Prosocial Orientation
(UW-Whitewater)
Time: 1:15 Location: UC Hamilton
Author(s): Madeline Born
Mentor(s): Dr. Anna Lindell
Poster Presentation 129
Psychology

Prosocial orientation reflects an individual’s tendency to pursue outcomes for self and others, along with the tendency to value equality in outcomes, and is thought to become more stable in emerging adulthood (ages 18-25). Prosocial orientation can be influenced in multiple ways as an individual develops into emerging adulthood. Previous research has shown that parents may influence the development of prosocial behaviors, but less is known about the influence of peers and romantic partners. We therefore examined if emerging adults’ relationship quality with their parents, best friend, and romantic partner had an association with their prosocial orientation. We also examined if there were any gender differences in these associations. First-year college students completed online questionnaires during the 2012-2013 academic year regarding their relationship quality with their parents, best friend, and romantic partner for class credit. Three years later the same participants were asked to fill out the same
questionnaire again for a chance to win a gift card. Overall, we found that relationships with parents were especially strongly associated with prosocial orientation for girls, and romantic relationships were more heavily related to prosocial orientation than both relationships with parents and friends. These findings suggest that while high-quality parent relationships do appear to be beneficial for the development of prosocial orientation, romantic partners may become even more influential during emerging adulthood.

### Spectral Characterization and Classification of Urban Tree Species in Southern Wisconsin (UW-Whitewater)

**Time:** 1:15  **Location:** UC Hamilton  
**Author(s):** Madelyn Seuser and Alex Krebs  
**Mentor(s):** Dr. Rocio Duchesne  
**Poster Presentation** 131  
**Remote Sensing**

Trees in urban environments have an important role in maintaining a stable ecosystem as well as aiding the social, economic, and health aspects of society. The potential of using hyperspectral remote sensing to map tree species in an urban area can give city planners up-to-date information to help manage urban trees. Our goal was to collect the spectral information of 14 of the most common tree species in Southern Wisconsin and to use the Random Forest (RF) model to classify them at the leaf level.

The species were abstracted using data from the Wisconsin DNR. A total of 1,006 individual trees were sampled using the HR 1024 spectroradiometer, a state-of-the-art instrument that measures spectral reflectance between 350 nm and 2,500 nm. A large number of features were extracted from the hyperspectral data. Besides the reflectance values, there were vegetation indices, First Derivatives (FD) of the reflectance values, statistics of the FD (mean, standard deviation, maximum, and minimum), and principal components. Multiple RF models were produced to find the optimum feature combination.

Our results show that the five most important variables for classifying tree species were FD 653, FD 654, FD 655, FD 677, and the Red Edge Vegetation Stress Index (RVSI), all within the red and near-infrared region. Having all features in the model rendered a predictive performance of 0.71. When only using the FD features, the performance dropped to 0.68. While with the spectral indices only, the overall accuracy further fell to 0.62.

### Re-Recruitment as Second Chances for Students and University Enrollment Efforts (UW-Whitewater)

**Time:** 1:15  **Location:** UC Hamilton  
**Author(s):** Maggie Singer and Jessica Huber  
**Mentor(s):** Dr. Jennifer Anderson  
**Poster Presentation** 134  
**Social Work**

The Covid-19 Pandemic has had a multi-faceted effect on institutions of higher education. Yet with all of the changes exacerbated by the pandemic, often rapid and reactive, there have been genuine and deliberate advances in service projects led by faculty. These service projects align with strategic enrollment efforts and foster a greater opportunity for an engaged academic community. The Second Chances Initiative is a faculty-led initiative, facilitated by four individuals that prioritized outreach to undergraduate students (N=786) who discontinued and/or were academically dismissed during a 5-year period (2016-2021). A great deal of the lessons learned through the involvement in this re-recruitment effort center on the unintended consequences of academic...
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forgiveness protocols, long-term barriers towards degree completion based on short-term management of debt, over-reliance on programmatic academic advising versus developmental academic advising, and the need for faculty to engage in strategic enrollment management efforts as a critical aspect of their professional development. Ultimately, the most significant findings from this re-recruitment effort were repeatedly voiced by returning students as “I can’t believe Dr. XXX remembers me” and a sense of appreciation that the university was willing to support and simplify the re-entry process.

COMPARISON OF WEARABLE CAMERA IMAGE PHYSICAL ACTIVITY BEHAVIOR ESTIMATES TO DIRECT OBSERVATION (UW-Milwaukee)
Time: 1:15 Location: UC Hamilton
Author(s): Michael Kneiert, Julian Martinez, Garrett Steinbrink and Scott Strath
Mentor(s): Scott Strath
Poster Presentation 115
Kinesiology

To assess the accuracy and precision of physical activity (PA) behavior estimates from wearable camera (WC) still-images (IMGs) to video-recorded direct observation (DO). METHODS: Participants (n=19) wore a WC above the xiphoid process while simultaneously being video recorded by researchers, during 3 visits. WC was set to the highest capture rate. A PA behavior annotation protocol was developed from the Compendium of Physical Activities. For analysis, PA behavior annotations were collapsed into 8 domains. A linear mixed effects model was used to calculate statistical bias and 95% CIs of IMGs to DO behavior times to determine accuracy and precision. Confusion matrices were computed to determine trends in behavior misclassification by IMGs against DO. One-way random effects intraclass correlation coefficient (ICC) was calculated between domains to assess reliability. RESULTS: 53 visits were analyzed, total time of 4381.3 min (mean 82.7 ± 19.2 min). Discrepancies of PA behavior min estimation by IMGs against DO annotations were statistically insignificant at p > 0.05. Households had the smallest bias (0.09 ± 6.2 min) whereas sport & exercise had the largest (1.61 ± 9.32 min). Confusion matrices determined IMG annotation scored “other” as “household” 26.3% of the time. ICC between IMGs and DO was excellent (ICC = 0.8945 [0.8938, 0.8953]). CONCLUSION: WC IMG annotation is accurate and precise when estimating PA behavior compared to annotated, DO videos. Future work examining WC use in more heterogeneous populations and over longer periods of time would further advance the application of this technology in measurement research.

Car Vac (UW-Stout)
Time: 1:15 Location: UC Hamilton
Author(s): Michael Wolff
Mentor(s): Jen Astwood
Poster Presentation 112
Houseware

With the recent pandemic on the decline, we have seen a greater need in cleanliness. This attention opens the door for the need of a smaller niche of product. With personal hygiene in mind, we can start looking at places in which people can keep their everyday surroundings healthier.

A small portion of our day revolves around transportation. Whether it is driving back and forth to work or public transportation, dropping the kids off at school or sporting events; we find ourselves spending quite a bit of time in our vehicles. This may feel like our second home in a way. With this in mind, we can see that there is a need for interior upkeep to not only prevent
distractions in our cars but also practice good hygiene.

To find a way to normalize and simplify the process of upkeep and cleaning the inside of our personal vehicles. This should be a relatively easy way to maintain the inside of our daily commuters. The product must also give the consumer a satisfying experience during and after the use of the product.

Users should span from all vehicle owners, but it will be important to find a smaller target user. Many people own vehicles but there may be a small number that are interested in personally maintaining their vehicle. Younger owners may not be as interested in upkeep, and wealthier owners may be paying for the service through a third-party. Environment may vary wildly because the interior of vehicles, very biased on consumers day to day life. Some may eat in their car on the way to work and others may be using their vehicles for work. This will become important in the research portion to find what users require regular vehicle interior upkeep.

The goal of this product is to produce an effective way of maintaining upkeep on the interior of your personal vehicle. The product should be easy to maneuver and user friendly. Portability and ergonomics must be kept in mind as well. The design must reflect the target user if possible but maintain an appeal to a vast audience. Storage must also be kept in mind where it can be easily placed in a garage or within the vehicle itself.

LGBTQ PhotoVoice for Social Justice
(UW-Whitewater)
Time: 1:15  Location:  UC Hamilton
Author(s):  Miles Duckert, Mia Artman, Jessica Boegel, Lyric Trempe, Tara Petrozelli, Phoenix Grassler, Kat Hunt, Esther Jeninga, Kelsey Pacetti, Sawyer Reid, Jay Van Zandt and Dalon William

Mentor(s):  Kristen Prock, Stephanie Selvick, Megan Kaiser and Ashley Barnes-Gilbert
Poster Presentation 116
LGBTQ+ Studies

In spring 2022, twelve undergraduate students participated as co-researchers on an LGBTQ+ PhotoVoice project. “PhotoVoice” is a social justice methodology that helps to visibilize experiences that are often underrepresented or misrepresented in order to advocate for positive social change. Across two months, students took photographs of their lives on our rural Wisconsin campus in response to themes that emerged in discussion, such as: the need for safety, the importance of community, and the desire to be truly seen. Ultimately, the project will demonstrate the full scope of LGBTQ+ lives in rural communities and create space for student-led advocacy.

A Calcite Investigation on the Great Bank of Guizhou in the Nanpanjiang Basin, South China (UW-Green Bay)
Time: 1:15  Location:  UC Hamilton
Author(s):  Neda Mobasher, Nathaniel Ledbetter Ferrill, Xiaowei Li, Daniel Lehrman and John Luczaj
Mentor(s):  John A. Luczaj
Poster Presentation 108
Geoscience

The Great Bank of Guizhou (GBG), in the Nanpanjiang Basin of south China, is a 2.5 km thick isolated platform of Triassic carbonate. Diagenetic features of samples in the GBG were investigated to interpret geologic history of dolomitized rocks and their relationship with calcite. Through multiple sections and in all carbonate depositional facies, calcite is nearly ubiquitous, represented as various sizes and crystal habits. Methods of investigation included petrographic analysis to construct a paragenetic sequence, fluid-inclusion microthermometry of
calcites, and stable isotope analysis of calcite and dolomite.

The host rocks have multiple generations of dolomite with varying textures. Dolomite was followed by fracturing, minor pyrite and other minerals, calcite cementation, and stylolitization. Multiple generations of calcite occur as isopachous calcite marine cements, two generations of pore-filling cement, and fracture filling cement. Fracture and pore-filling calcite crystals range from a few microns to over a centimeter wide and are mostly anhedral. Fracture and pore-filling calcite occur as either heavily twinned or untwinned/lightly twinned crystals, which represent various degrees of deformation. Previous fluid inclusion data for the host dolomites show entrapment of a brine between 110°C and 180°C with salinities up to 16 wt.%.

The observed fluid-inclusion assemblages (FIAs) included both primary and secondary aqueous assemblages. Primary FIAs in calcite were rare but occur as three-dimensional arrays of all-liquid inclusions, indicating that at least some later calcite formed ≤50°C. Abundant secondary FIAs indicate that entrapment of a low salinity water occurred over a large range of temperatures between about 50°C and 121°C.

**The Impact of Hay Nets on Horse Hay Usage**
(UW-River Falls)

*Time:* 1:15  
*Location:* UC Hamilton  
*Author(s):* Olivia Schueller, Krishona Martinson and Ali Mickelson  
*Mentor(s):* Dr. Michelle DeBoer  
*Poster Presentation* 92  
*Animal Science*

Hay nets can be a beneficial management practice for horse farms to lower hay wastage and ultimately provide cost-savings to horse owners. The objective of this study was to evaluate hay usage, body weight (BW), and body condition scores (BCS) for horses fed with or without hay nets. In September 2021, 13 mature adult horses were blocked by weight and randomly assigned to a hay net or no hay net treatment. Horses were housed in adjacent dry lots with shelter, ad libitum water, and free choice access to grass round bales. Bales were weighed prior to being placed in the dry lot and the date fed was recorded to calculate hay usage. Horse BW and BCS were recorded monthly. Horses without a hay net had higher hay usage at 3.4% BW while horses with hay nets averaged 2.6% BW hay usage (P<0.01). However, the use of a hay net did not result in changes in horse BW or BCS (P>0.05). These results indicate that the use of hay nets can decrease hay wastage by an average of 0.8% BW of the horse herd but it will not lead to weight loss.

**Foods of the Incans, Mayans, and Aztecs**
(UW-River Falls)

*Time:* 1:15  
*Location:* UC Hamilton  
*Author(s):* Peyton Kowalski, Tyler Sampson, Micah Walt and Jaqueline Morales  
*Mentor(s):* Daniela Goldfine  
*Poster Presentation* 136  
Spanish

Prior to the arrival of Christopher Columbus, Latin America was occupied by three great civilizations: The Mayans, Incas, and Aztecs. Agriculture was the foundation upon which these ancient civilizations built their empires. Despite being separated by thousands of miles and had geographical differences, the three civilizations shared some similarities in food. In our research, we explored the differences and similarities that exist between the three civilizations. Additionally, we investigated the ties that exist between ancient these Mesoamerican civilizations' foods and foods that are eaten today. Specifically, we found that in each civilization diets consisted of mostly
Laboratory Experimentation on What Causes Slope Failure (UW-Whitewater)

Time: 1:15  Location: UC Hamilton

Author(s): Peyton Sanders, Brett Steck, Esther Jeninga, Gabriel Lewis, Dean Wink, Corban Larson and Ethan Hensel

Mentor(s): Juk Bhattacharyya, Ozgur Yavuzcetin and Haijian Sun

Poster Presentation  104  Geology

Every year, landslides cause billions of dollars in damage and lead to losses of human life on a global scale, with an estimated 32,322 fatalities occurring from 2004 to 2010. Areas with heavy rainfall increase pressure on slopes, leading to more chances of slope failure. Climate change can intensify precipitation. As a result, weakened slopes pose a threat to infrastructure and tourist driven locations along shorelines. For our project, we focused on Port Washington’s (WI) shoreline on Lake Michigan, looking at the factors leading to bluff erosion. Also, we’re working to inform the public about the danger of bluff erosion so they can help themselves.

Many variables are considered when testing landslides in a laboratory setting. Currently, we are experimenting with a sandbox that includes a scaled down version of sand bluffs where we simulate erosional processes. These processes include: wave action, precipitation, grain sizes, slope angle, and freeze thaw cycle. We simulate wave action by introducing a fan to the makeshift lake, causing undercutting. The second variable we tested was precipitation where we modeled rainfall, thus adding to runoff creating rills. Thirdly, we classified sand by its grain size to achieve different till mixtures, as all soils aren’t the same throughout the soil profile. Finally, we explored the freeze thaw cycle through uses of liquid nitrogen on and within the slope. We are anticipating to see what actions or events cause slope failure. This could potentially help us to warn the community if we know certain events are going to happen.

Risk factors associated with the national race/ethnicity disparity in Neonatal Abstinence Syndrome (UW-Milwaukee)

Time: 1:15  Location: UC Hamilton

Author(s): Phoebe Troeller, Marina Feffer and Kyla Quigley

Mentor(s): Keith Dookeran

Poster Presentation  130  Public Health- Epidemiology

A wealth of data indicates that the national rate of Neonatal Abstinence Syndrome (NAS) has rapidly increased throughout the United States over the past two decades. The national burden of NAS is highest among non-Hispanic White newborns, though few studies have examined factors that may explain the higher rates of NAS observed among White newborns compared to other racial and ethnic groups. Additionally, NAS has been found to be more prevalent in rural settings and among those enrolled in public insurance plans (Medicare and Medicaid). Regional variation and hospital bed size have also been reported as influential factors in NAS diagnoses. Our research project aims to investigate how factors associated with NAS vary across different racial and ethnic groups.

We first conducted a systematic literature review using PRISMA guidelines and PubMed and Web of Science databases to analyze existing studies and identify related gaps in knowledge. Studies that discuss the occurrence of NAS due to opioid use in addition to...
analyzing data by race and ethnicity were included, while studies which discuss NAS due to iatrogenic causes, alcohol, cocaine, meth, or other harmful exposures were excluded. Results of the systematic literature review are pending and will be presented at the University of Wisconsin System Symposium for Undergraduate Research. Further development of our project will include examination of risk factors predictive of NAS among White, Black, and Hispanic newborns in the Kids’ Inpatient Database (KIDs) from the Healthcare Cost and Utilization Project (HCUP) for 2016 and 2019 cycle years.

Who are Language Learners in the Midwest?
An Oral History Interview (UW-River Falls)
Time: 1:15 Location: UC Hamilton
Author(s): Rachel Anderson
Mentor(s): Rhonda Petree
Poster Presentation 138
TESOL

This poster presentation shares the results of an oral-history interview of a non-native English speaker originally from Ukraine. The interviewee settled in the Midwest region and gained English language skills through interacting within the community. The purpose of this project was to gain insight into the interviewees’ experiences learning English and adjusting to the midwestern culture. The interview questions focused on language, culture, personal history, and experiences. The interview was conducted using an oral interview protocol and was completed virtually. This project provided insight into the lives of immigrants who acquired English language skills and allowed the interviewer to recognize and understand how different circumstances shaped the experiences of immigrants living in the Midwest.

From Bolsheviks to Barberry: Wartime Propaganda Tactics in Domestic Agriculture (UW-Whitewater)
Time: 1:15 Location: UC Hamilton
Author(s): Riley Barlow
Mentor(s): Dr. Karl Brown
Poster Presentation 111
History

In the late 19th and early 20th centuries, stem rust (Puccina graminis) ravaged grain crops in the Midwestern United States. Although scientists had discovered the link between stem rust and the fungus’s secondary host the barberry bush in the 1890s, it was not until 1918 that the Department of Agriculture joined forces with state governments to form the Barberry Eradication Program. The BEP’s war against crop disease was waged with propaganda techniques borrowed from the Committee on Public Information’s practices during World War I (up to and including demonizing stem rust as a German, and later anarchist threat), and it was carried out on the ground by local organizations and public institutions ranging from the 4H to Boy Scouts to the creation of “Rust Buster” clubs in public schools. By the time the program was phased out in the late 1970s, over 500 million barberry bushes were uprooted and destroyed. The BEP stands out as a unique episode in American propaganda, fusing a wartime mentality with civilian mobilization to face a domestic foe.
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James R. Connor University Center (UC), Hamilton Room 164

Odorant Chemical Structure Can Predict Changes in Olfactory Perception Ratings (UW-Milwaukee)
*Time*: 1:15  *Location*: UC Hamilton
*Author(s)*: Sana Shakir
*Mentor(s)*: Adam Greenberg
*Poster Presentation* 126  *Psychology*

The human olfactory system uses chemosensation whereby chemical odorants bind to G-protein coupled receptors on odor receptor neurons (ORNs). Individual odor percepts are represented by the pattern of activity across the population of ORNs. Thus, many models of olfaction link the chemical structure of odorants with olfactory perception. Despite this link, direct evidence for a causal role of odorant chemical structure leading to perceptual changes has not yet been established. One problem in the extant literature is a somewhat oversimplification of the physicochemical-perceptual relationship. This study aims to explore more complex and accurate linkages between odor perception and chemical structure using exploratory computational methods. An extensive list of commonly used odors was compiled and 14 chemical features were identified for each odor. These data were then analyzed using principal component analysis (PCA) to identify latent variables that may better explain the relationship between chemical structure and olfactory perception. Using two large bodies (N1 = 180, N2 = 100) of behavioral olfactory perception data, ratings of odorants were compared to PCA output. Results showed that the first principal component was strongly related to molecular size and weight (r = 0.91), while the second component was related to ring structure (r = 0.87; i.e. molecular complexity). Analysis of Euclidean distances between pairs of odors in the multidimensional principal component space also revealed significant positive correlations with pleasantness and intensity ratings. This analysis provides a basis upon which further predictions can be made regarding how olfactory perception is related to odorant chemical structure.

Using conditioned place preference to assess dairy cow response to udder singeing (UW-River Falls)
*Time*: 1:15  *Location*: UC Hamilton
*Author(s)*: Shawna Sigl
*Mentor(s)*: Kate Creutzinger
*Poster Presentation* 96  *Animal Science*

Many dairy farms around the world remove udder hair to prevent increased bacteria counts in milk and mastitis in dairy cows. A commonly used method of hair removal is udder singeing, which removes hair from the udder with a low flame. The aim of the study was to determine if dairy cows are averse to udder hair removal by singeing using condition place preference testing. Thirty lactating Holstein dairy cows will be randomly assigned to 1 of 3 treatments 1) udder singeing, 2) udder clipping, and 3) udder handling. Days 1 and 2, cows will be conditioned to the testing apparatus one at a time for 5 min. The test apparatus will be created using gates (10 ft wide × 12 ft long × 6 ft). Half of the test apparatus will be covered in white cloth and the other half will be covered in black and white horizontal stripe cloth. Days 3 and 4, cows will be exposed to their assigned treatment while locked in headlocks. During treatment exposure, a 3-sided shield (3 ft wide × 3 ft long × 5 ft high) will be placed around the cow’s head. The shields will be white or black and white horizontal striped so that cows form an association with the treatment. Day 5, each cow will be placed in the test apparatus for 5 min. Video recording will be used to assess how much time cows spend on either side of the test.
apparatus associated with their udder removal treatment.

**Gamification and Storytelling Principles for Mental Health Support** (UW-Milwaukee)

- **Time:** 1:15  
- **Location:** UC Hamilton  
- **Author(s):** Shelley Feil  
- **Mentor(s):** Emily M. Berens

**Poster Presentation 139**

Recent research has shown that mental health applications geared at providing treatment options for conditions such as depression and anxiety utilize extrinsic motivators like digital rewards to support users. This approach is not effective in the long term because these methods only temporarily gratify and motivate the user to continue the application. This research investigates better mental health support methods through the targeting of intrinsic motivators instead, and in the process creating a prototype from the accumulated information. In this meta-synthesis study, literature was compiled and analyzed about gamification principles, motivation, behavior intervention, and storytelling. Using the results from this research, a digital “Choose Your Own Adventure Story” was decided on and developed informing people of different mental health interventions, but not substituting as medical advice. Originally, the point of the research was to create a mobile app for mental health support, however, findings have shown that current methods are not as effective for sustained engagement, so a less common yet potentially effective alternative method of support was explored: storytelling. The “Outcome Stories” within the narrative immersion model are proven to better persuade people when making decisions for their well-being, while conveying an experience of desirable behaviors. In conclusion, this research not only advances current knowledge about the impact of storytelling in mental health applications, but the prototype developed creates a meaningful experience for the user to educate themselves with.

**Low density and clear speech make spoken words more memorable** (UW-Milwaukee)

- **Time:** 1:15  
- **Location:** UC Hamilton  
- **Author(s):** Tessa Culleton  
- **Mentor(s):** Jae Yung Song and Anne Pycha

**Poster Presentation 117**

Linguistics

This research addresses the effect of word characteristics on memory. Previous research has shown that word frequency, phonological neighborhood density (number of similar-sounding words), and acoustic-phonetic features affect word recognition tasks. However, less is known about their effects on memory. For example, higher frequency and lower neighborhood density make words easier to recognize1, as does clear speech2. In two experiments, we examine whether neighborhood density and speech style (clear/casual) also make words easier to remember. Participants (n = 48: Exp 1, n = 66: Exp 2) completed an old/new memory task. Stimuli were CVC English words (e.g. hot, path…), 48 high-density, 48 low-density. In Exp 1, target words were recorded in isolation; to emphasize speech style differences, in Exp 2, the same target words were recorded within a sentence context then excised. During the study phase, the participants listened to one of two study lists balanced across speech style. For the test phase, participants heard 96 words (half heard during the study phase, half new) and were asked whether each word was in their study list. We examined percent-correct word recall responses. Results indicate an effect of density (Exp 1, Exp 2), suggesting that people are more likely to remember low-density words. With sufficient difference between styles (Exp
2), they are also more likely to remember clear words. These results support a distinctiveness framework wherein distinct features like unusualness (low-density) and clear speech style enhance listener memory. This research may inform how clear speech can aid memory in cognitive-impaired populations.

The Effect of Alpha and Beta Binaural Beats on Insight and Analytic Problem Solving
(UW-Parkside)
Time: 1:15  Location: UC Hamilton
Author(s): Thomas Stirrat, Alex Lovely and Trever Schneider
Mentor(s): Dr. Edward Bowden
Poster Presentation 123  Psychology

We examined the use of binaural beats to influence problem-solving approaches. It has been suggested that Alpha beats (8-12 Hz) enhance intuition and creativity whereas Beta beats (13-31 Hz) increase concentration and focused attention. In Experiment 1 we used Compound Remote Associate (CRA) problems to look at whether Alpha beats lead to more insight solutions while Beta beats lead to more analytic solutions. The Beta beats significantly increased solutions by analysis over both the Alpha beats and Control condition (Ocean Rain sound), whereas the Alpha beat increased solutions by insight over the Beta beats but not over the Control condition. This suggests that binaural beats can influence the way a person solves a problem. Experiment 2 again used CRA problems but replaced the Ocean Rain sound with silence while Experiment 3 replaced the Ocean Rain sound with silence and used anagrams instead of CRA problems.

Evaluation of Local Anesthetic Placement in Dairy Calves During the Disbudding Process
(UW-River Falls)
Time: 1:15  Location: UC Hamilton
Author(s): Valerie Rakoczy, Olyvia Horsman and Johanna Haines
Mentor(s): Dr. Sylvia Kehoe
Poster Presentation 97  Animal Welfare

The proper placement for maximum pain reduction during disbudding in dairy calves is not fully understood. Pain management, in the farm setting, is becoming an increased practice throughout the industry as a whole. As farmers, specifically dairy farmers, are being put in the spotlight more and more, their desire to house comfortable critters is also on the rise. This is why local anesthetic-based disbudding is expanding rapidly. However, there is little research regarding proper placement of said local anesthetic to achieve maximum pain reduction.

College Students’ Conspiracy Beliefs, Their Political Attitudes, and Attitudes to the Insurrection at the US Capitol, COVID-19, and Black Lives Matters  (UW-Parkside)
Time: 1:15  Location: UC Hamilton
Author(s): Yincheng Jin
Mentor(s): Sylvia Beyer
Poster Presentation 124  Psychology

This study examined the interrelations among conspiracy theories, political attitudes, the insurrection at the US Capitol, and attitudes towards COVID-19 and Black Lives Matter (BLM) in undergraduates. We found that individuals who are high in conspiracy beliefs have more lax attitudes towards COVID-19, which translates into lower vaccination rates. They trust the government, news media, and especially politicians less. Evidence for a connection
between conspiracy theories and political conservatism was mixed. Although those high compared to low in conspiracy beliefs held more favorable views of QAnon, anti-vaxxers, members of the NRA, and the alt-right, they were no more likely to have voted for Trump. Interestingly, they also rated themselves as having more negative traits than students lower in conspiracy beliefs.
A Combined Experimental-Computational Investigation of the Impact of Macromolecular Crowding on Proteins’ Structure and Dynamics. (UW-Eau Claire)

**Time:** 1:15  **Location:** UC Old Main Ballroom

**Author(s):** Alex Narkiewicz-Jodko and Harrison Lowater

**Mentor(s):** Dr. Sanchita Hati and Dr. Sudeep Bhattacharyya

**Poster Presentation 152**

**Chemistry (Biochemistry)**

Structure-based drug design is an important tool, and many pharmaceuticals are designed to target specific proteins in the body. However, most protein studies (in vitro) are conducted in dilute conditions (salt-buffer solutions), which poorly mimic the environment that proteins normally operate in, living cells. The inside of a cell is crowded, packed with biomolecules of various shapes and sizes which could confine and change the structure and dynamics of proteins. However, the precise mechanism by which the crowding and confinement impacts a protein’s structure and function differ with the macromolecular crowders present in the system. One of the methods to study these effects is to employ synthetic and protein-based crowders to see how they impact a protein’s structure, shape, and function. In the present study, a fusion of experimental and computational methods, namely, Atomic Force Microscopy (AFM) and Molecular Dynamics (MD) simulations, have been used to explore the impacts of molecular crowding. The presentation will showcase some of the preliminary results of this study. By analyzing the results from these experimental and computational systems, we hope to be able to gain valuable insight into how proteins operate in their natural environments and apply these data to improve protein-based drug design and distribution.

**Diruthenium Paddlewheel Electrocatalysts: A Simple Solution to Efficient Ammonia Oxidation** (UW-Madison)

**Time:** 1:15  **Location:** UC Old Main Ballroom

**Author(s):** Alex Pavelic

**Mentor(s):** Prof. John Berry

**Poster Presentation 149**

**Chemistry**

The development of alternatives to carbon-based fuels is of paramount importance to society. This work capitalizes on a recent discovery that compounds containing the metal ruthenium can catalyze the electrochemical oxidation of ammonia to nitrogen, an exciting reaction that paves the way for the development of new zero-carbon fuel cells that utilize ammonia to produce electricity. Current work seeks to understand how the unusual bimetallic core and ligands found in the catalyst impact electrocatalytic efficiency. Computational and synthetic study led to the discovery that new diruthenium tetrabenzoate and tetraacetate complexes display spontaneous and electrocatalytic ammonia oxidation without the need of an applied potential, and at increased rates of reaction as compared to the first-generation catalysts.

**Solution to Square Game on Small Grids** (UW-River Falls)

**Time:** 1:15  **Location:** UC Old Main Ballroom

**Author(s):** Benjamin Patterson

**Mentor(s):** Michael Loper

**Poster Presentation 157**

**Mathematics**

The development of alternatives to carbon-based fuels is of paramount importance to society. This work capitalizes on a recent discovery that compounds containing the metal ruthenium can catalyze the electrochemical oxidation of ammonia to nitrogen, an exciting reaction that paves the way for the development of new zero-carbon fuel cells that utilize ammonia to produce electricity. Current work seeks to understand how the unusual bimetallic core and ligands found in the catalyst impact electrocatalytic efficiency. Computational and synthetic study led to the discovery that new diruthenium tetrabenzoate and tetraacetate complexes display spontaneous and electrocatalytic ammonia oxidation without the need of an applied potential, and at increased rates of reaction as compared to the first-generation catalysts.
Square Game is a pencil and paper game in which two players take turns putting their marks in cells of a grid, much like tic-tac-toe. A player wins if they mark all four corners that bound a square of any size within the grid. The outcome of a game played optimally by both players on an n x n grid is a problem posed by Martin Erickson, and the results of this project are progress towards the general solution. For the 3x3 and 4x4 cases, the second player can always force a draw regardless of the first player’s moves. This result can be shown by listing possible counterplay and how the second player should respond. We are currently working on showing that the first player can always win on the 5x5, and we hope to find a solution that can be generalized to larger grids. Come and challenge the author to a match of Square Game!

Analytical study of a piezoelectric energy harvester under both steady flow and harmonic excitation (UW-Platteville)

*Time: 1:15  Location: UC Old Main Ballroom*

*Author(s): Bryan Boettcher*

*Mentor(s): Dr. Bo Yu*

*Poster Presentation 158  Mechanical Engineering*

This work investigates a harmonic excited piezoelectric energy harvester under a steady flow. First, a lumped parametric model incorporating the fluid-structure interaction is developed to understand the effects of steady flow and harmonic excitation on the proposed energy harvester. Stable and unstable periodic oscillations are analytically obtained and investigated using the implicit maps method. The stabilities and bifurcations of the periodic responses are analyzed via the eigenvalue analysis. The performance of the proposed energy harvester varying with excitation amplitude and frequency is investigated. Finally, the numerical simulations are compared with the results of the implicit maps. The theoretical analysis can be used for the design and optimization of the proposed energy harvester.

Implementation Review of a Multimodal Landslide Detection Device (UW-Whitewater)

*Time: 1:15  Location: UC Old Main Ballroom*

*Author(s): Dakota Vaughn and Christian Ayon Garcia*

*Mentor(s): Juk Bhattacharyya and Haijian Sun*

*Poster Presentation 155  Computer Science*

To provide a reliable means of detecting slope failure, this research seeks to apply a multimodal approach that integrates input from stress, temperature, and moisture data. Said multimodal devices include two Raspberry Pis outfitted with several sensors. One Raspberry Pi houses a strain gauge and the other a temperature sensor. Both of these Raspberry Pis need to communicate with each other in order to provide comprehensive and reliable transmission of data both inside and outside of the network. In addition, the Raspberry Pis should be able to continue data collection for as long as necessary in the event of a connection failure. To do so we have sought to implement a remedial client-server architecture between the two Raspberry Pis. Thus, the stress data from the strain gauge and temperature data are treated as client data and collected from both Raspberry Pis and aggregated together onto a single CSV file on the server temperature sensor. We chose to use a plaintext CSV file format due to ease of parsing and storing data.

As of right now both sensors can collect and store data independently, as well as communicate with each other. Future works include implementing the ability to aggregate stress and temperature data onto the
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Temperature sensor. To make the system more resilient to downtime we’re also seeking to implement persistent data collection without transmission in the event of a connection failure. We anticipate that this research will increase security by strengthening disaster reporting with regards to landslides and slope failure.

**Biological Investigation of Phenylboronic Acid Nitrogen Mustards induced apoptosis in Triple Negative Breast Cancer (UW-Milwaukee)**
*Time: 1:15 Location: UC Old Main Ballroom*
*Author(s): Dhivyashree Senthil Murugan, Taufeeque Ali and Xiaohua Peng*
*Poster Presentation 146 Chemistry*

Triple Negative Breast Cancer (TNBC) tests negative for the presence of hormonal receptors such as progesterone and estrogen receptors and excess human epidermal growth factor (HER2 protein). TNBC is unaffected by hormonal treatments that target these three growth factors. After diagnosis, there is less time than other cancers to treat TNBC. These characteristics of TNBC results in having poorer prognosis among all types of breast cancer. Therefore, there is dire need for a better understanding of cancer and of potential drugs. Based on previous research, we have concluded that two Phenylboronic acid nitrogen mustard prodrugs, namely, CWB-20I45 and FAN-NM-CH3 are effective in reducing tumor sizes due to prodrugs’ enhanced activity in the presence of hydrogen peroxide (H2O2). Prodrugs are initially inactive that are then turned into an active compound upon metabolism. Inside cells, these prodrugs cause DNA cross-linking that ceases DNA replication and leads to apoptosis, making them superior to common chemotherapy drugs, i.e., chlorambucil and melphalan. Cancer cells have higher levels of reactive oxygen species (ROS) such as H2O2. The prodrugs are thus more selective to cancer cells and less toxic to normal cells. A series of in-vivo experiments determined that the prodrugs are safer in mice. To understand the drug’s mechanism inside cells, we investigated biological pathways by looking at protein expression levels, which vary in drug-treated cells. These proteins include tumor suppressor p53. This was done using RT-qPCR technique to amplify RNA upon extracting mRNA between cancerous cells that are untreated versus drug-treated.

**Initial Analysis of Volatile Organic Compounds in Domestic Dog Urine** (UW-Whitewater)
*Time: 1:15 Location: UC Old Main Ballroom*
*Author(s): Forest Winklepleck, Tom Rodeen and Skyler Wilson*
*Poster Presentation 153 Chemistry, Biology*

Research has shown that the behavior of dogs is affected differently by smelling the urine of dogs of different social status. The most likely explanation is that volatile compounds present in the urine communicate information about a dog’s social status. This work is an attempt to identify the compound potentially important in this form of communication. The analysis consists of heating a sample of the urine, which vaporizes the organic compounds in the sample. A solid phase microextraction (SPME) fiber was used to extract these compounds. The fiber was placed in the headspace of the heated sample, and gas phase organic compounds adsorb to the fiber. The fiber was degassed in a gas chromatograph-mass spectrometer (GC-MS), which separated and analyzed the organic compounds. Urine samples from three dogs were run with each showing approximately 20 major peaks. The mass spectra were compared to mass spectra library to identify the volatile
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compounds. Unfortunately, only 2 or 3 compounds in each sample were matched with confidence of at least 80% based on the search algorithm. A number of the other peaks are matched to silicon-containing compounds, which are not expected in the urine, or very large organic compounds unlike the compounds identified in the urine of other animals. Next steps involve investigating potential laboratory sources of contamination and how to maximize extraction of the volatile compounds.

Developing a Method For Constructing a MOSFET Transistor (UW-River Falls)  
**Time:** 1:15  **Location:** UC Old Main Ballroom  
**Author(s):** Ian Carter  
**Mentor(s):** Dr. Lowell McCann  
**Poster Presentation** 160  
**Physics**

In this project, I am creating a silicon metal-oxide-semiconductor field-effect transistor (MOSFET). The MOSFET will be constructed on P-Doped Silicon wafers using projection lithography and thermal oxidation growth. I will develop an appropriate method for constructing a MOSFET and enable this process of creating a transistor to be added to the curriculum of an upper-level physics class. After finishing the construction and optimizing the equipment needed to perform the lab, the MOSFET is to be examined using an atomic force microscope and a multimeter to characterize the properties of the transistor that is produced. The final procedure will allow future students to complete the steps of making their own MOSFET using lithography, thin film deposition or thermal oxidation, patterning, etching, doping, and characterization of their transistor.

Synthesis of Chemical Probes for Detection of Amino Acid Citrulline Using Ester/Nitrile Condensation (UW-Stout)  
**Time:** 1:15  **Location:** UC Old Main Ballroom  
**Author(s):** Jacob L. Gasner  
**Mentor(s):** Dr. Dmitry V. Kadnikov  
**Poster Presentation** 151  
**Chemistry**

Citrulline is an amino acid generated via a post-transcriptional modification of a protein within cells undergoing programmed cell death. Citrullinated proteins spill into the surrounding tissues, activating an autoimmune response in which the immune system attacks one’s own tissues, causing painful inflammation. Therefore, some autoimmune diseases, such as rheumatoid arthritis, have been linked to citrullination in proteins. The early detection of citrullinated proteins could allow for early intervention within the cases of budding autoimmune diseases, possibly preventing the onset altogether. Overall goal of the research project is development of novel small molecule chemical probes for detection of amino acid citrulline, particularly the probes incorporating -ketoaldehyde structure. My research focuses on development of an efficient synthesis of such molecules using ester/nitrile condensation. To this end, I first explored reaction conditions for the condensation using model compounds. The direct condensation involving an aromatic nitrile and alkyl ester was more favorable than condensation with an aromatic ester. Then, I have investigated the feasibility of two specific pathways for the synthesis of the starting nitrile for this condensation, which is not commercially available, one involving a substitution reaction with sodium cyanide, and the other a palladium-catalyzed route, known as the Heck reaction. The Heck reaction turned out to be a more efficient pathway, and it has been used to
generate gram quantities of the desired nitrile. Finally, to complete the synthesis I investigated reduction of a nitrile to the desired aldehyde. A complete synthesis of the desired probe will be presented.

**Developing a Method to Detect Volatiles in Dog Urine**  
(UW-Whitewater)  
*Time: 1:15  Location: UC Old Main Ballroom*  
*Author(s): James Anderson  
Mentor(s): Dr. Paul House*  
*Poster Presentation 144 Chemistry*

It is commonly known that dogs communicate with each other through urine, but very little is known about the compounds actually in play. My project is looking into developing a method for detecting and quantifying the volatile compounds in dog urine. The method that we choose to pursue is Solid Phase Micro Extraction (SPME) due to its emergence as a cost effective, accurate, solventless method. We expect to be able to determine the compounds and concentrations of volatiles present in dog urine. The information that is collected using the method I developed will be able to be utilized to determine which volatile compounds are in dog urine and could potentially be used for communication.

**Structural and electronic properties of AgZnF3 Perovskite**  
(UW-Green Bay)  
*Time: 1:15  Location: UC Old Main Ballroom*  
*Author(s): Jeryn Daggs  
Mentor(s): Mahmoud Hammouri*  
*Poster Presentation 156 Materials science*

Using first-principle DFT calculations, we investigated the electronic properties of a fluoride-based perovskite under the influence of a uniaxial strain. AgZnF3 is a cubic structure with the space group of Pm-3m. The primitive cell includes five atoms of Ag (0,0,0), Zn (0.5,0.5,0.5), and F1 (0.5,0.5,0), F2 (0.5,0.5,0.5), and F3 (0.5,0.5). The lattice parameter of AgZnF3 is 3.97 Å.

The calculations are carried out using the Quantum ESPRESSO electronic structure code combined with Vanderbilt ultrasoft pseudopotentials. We simulated different values of uniaxial strains (tensile and compressive) by compressing and relaxing AgZnF3 along [001]. Our results show that the electronic properties are influenced by the application of an external strain which in turn changes its thermoelectric properties.

**HawkRover Autonomous Driving Platform with 5G Variable Beamforming**  
(UW-Whitewater)  
*Time: 1:15  Location: UC Old Main Ballroom*  
*Author(s): John Schnor and Christian Ayon Garcia  
Mentor(s): Haijian Sun*  
*Poster Presentation 154 Computer Science*

The growing popularity of smart vehicles coupled with their decreasing cost should result in a rapid increase in their numbers on roadways in the near future. This presents a new opportunity to wirelessly connect vehicles in a way that is seamless, efficient, and reliable, and that provides general information concerning traffic patterns and other aspects of their environment. With this new level of connectivity, we believe that the total number of fatalities on the road can be reduced on a broad scale. However, due to the high speeds at which vehicles travel, wireless signals can easily become distorted. The capability of these vehicles to remain connected in a reliable manner is lagging behind the rest of current
smart vehicle technology. As of now, the approach to establishing connection requires that a signal be sent in all directions to decipher which trajectory ensures the strongest signal strength. We are taking a different approach, one that integrates cameras and LiDAR sensors already built into the smart vehicle to guide signal transmission. The sensors provide a map of the autonomous driving vehicle’s surrounding environment that will be input to a neural network. This neural network will then output the optimal beamforming direction of a wireless signal thus establishing a connection. Using this method the beamforming direction can be updated by the neural network while the vehicle is in motion and the initial direction becomes outdated.

**Growth and optimization of structural properties of (110)-oriented YBa2Cu3O7 (YBCO) / PrBa2(Cu0.8Ga0.2)3O7 (PBCGO) heterostructure** (UW-Parkside)

*Time: 1:15  Location: UC Old Main Ballroom*

*Author(s): Julia Jones, Nathan Arndt, Jungwoo Lee, Yuchuan Yao, Chang Beom Eom and Zhongrui Li*

*Mentor(s): Hom Kandel*

*Poster Presentation 161  Physics*

Epitaxial growth and characterization of heterostructures made of high-temperature superconductor YBa2Cu3O7-x (YBCO) and cuprate insulator PrBa2(Cu0.8Ga0.2)3O7 (PBCGO) are of utmost importance for developing many superconductors electronic devices including Josephson junctions, three-terminal devices, and circuit applications such as interconnects, ground planes, and multichip modules. Of particular interest is the Josephson junction device for many applications, ranging from biomagnetometer sensors, quantum computing, geophysical measurements, radio telescopes, and defense applications. These heterostructures also have applications in fundamental science research, such as studies of mechanisms for high-Tc superconductivity, 2D superconductivity, and measurement of correlation energy.

Using the pulsed laser-based thin film deposition technique, we fabricated (110)-oriented YBCO / PBCGO bi-layer heterostructure and performed x-ray diffraction (XRD), atomic force microscopy (AFM), and Auger electron spectroscopy measurements to optimize its structural properties for the nanofabrication of Josephson junctions and other superconducting electronic devices. Here, we present our experimental results of AFM and various x-ray measurements including theta-2 theta XRD patterns, rocking curve, x-ray reflectivity, pole figures, and reciprocal space mapping measurements. We also present our theoretical studies on the electronic structure of the heterostructure, such as the YBCO and PBCGO cell structures and density of state calculations.

**Progress towards a high-throughput catalyst discovery platform using DNA nanostructures.** (UW-Madison)

*Time: 1:15  Location: UC Old Main Ballroom*

*Author(s): Justice Merrifield*

*Mentor(s): Edward Pimentel and Jeffrey Martell*

*Poster Presentation 145  Chemistry*

Current approaches to catalyst discovery are low-throughput: screening catalysts sequentially or in parallel becomes cost-prohibitive as the number of catalysts screened increases. We envision the development of a high-throughput catalyst discovery platform taking advantage of DNA barcoding and combinatorial assembly that
would enable the simultaneous creation and screening of a million-member catalyst library in a single test tube. We report here progress towards the creation of combinatorial catalyst libraries using DNA nanostructures and activity-based screening using techniques from molecular biology.

Generating Pores within Protein-Based Biomaterials without Compromising Their Structural Integrity (UW-Milwaukee)

Time: 1:15 Location: UC Old Main Ballroom
Author(s): Marina Slawinski, Luai R. Khoury, Sabita Sharma, Joel Nowitzke and Jennifer H. Gutzman
Mentor(s): Ionel Popa
Poster Presentation 143 Biophysics

Increasing the porosity of biomaterials is desirable for designing 3-D cell culture scaffolds with physical and mechanical properties similar to the native extracellular matrix (ECM) and creating permeable biomaterials capable of transferring large molecules. However, producing a highly porous substrate without compromising its mechanical properties has posed challenges, as formation of pores typically comes at the expense of the primary network. Here, we synthesize dual-network protein-polysaccharide hydrogels with increased permeability without diminishing the material’s mechanical stability. A photoactivated reaction is used to covalently cross-link bovine serum albumin (BSA) protein molecules, while the inclusion of a polysaccharide – alginate – during synthesis allows for the formation of a secondary network obtained through its ionic interaction with calcium cations. Alginate chains associate with calcium cations to form an insoluble gel during the growth of the covalent protein network, reshaping its backbone structure. When subsequently exposed to a solution lacking calcium, the alginate chains revert to their water-soluble form, leaving vacancies in the protein network. SEM and confocal laser scanning microscopy images revealed an increase in porosity compared to pure-protein BSA hydrogels. Characterization of mechanical response through force-clamp rheometry demonstrated that the Young’s Modulus of the porous-BSA hydrogels is comparable to that of pure-BSA hydrogels, while filtration experiments confirmed that the increased porosity allows for better percolation of various solutes. The methods used here allow for the synthesis of highly porous hydrogels without sacrificing the mechanical properties compared to nonporous counterparts. The increased permeability offers new possibilities in the design of biomaterial cell scaffolds and filters.

Study of fluorescent environment-sensitive dyes for protein mechanical unfolding detection (UW-Milwaukee)

Time: 1:15 Location: UC Old Main Ballroom
Author(s): Naomi Raicu and Joel Nowitzke
Mentor(s): Dr. Ionel Popa
Poster Presentation 142 Biophysics

Protein hydrogels are elastic materials composed of folded domains that serve as useful experimental models for tissues and constitute a promising method to study mechanical unfolding of proteins in bulk. Our lab has developed a Force Clamp (FC) hydrogel rheometry approach to apply a controlled force to protein hydrogels, simultaneously unfolding and extending protein domains. Due to the random cross-linking geometry of domains inside hydrogels, which affects protein mechanical stability, a fluorescence-based method is highly desirable as a method of decoupling mechanical unfolding from the
intrinsic elasticity of the network. Here we explore fluorescent environment-sensitive dyes, such as SYPRO Orange and 1-anilinonaphthalene-8-sulfonate (ANS), as useful indicators of a protein’s folded state inside protein hydrogels. When hydrogels are exposed to stress in the presence of either dye, dye molecules bind to the hydrophobic regions of proteins inside the hydrogel, exhibiting an overall decrease in fluorescence intensity as proteins unfold. Our goal in this study is to determine, using the protein Bovine Serum Albumin (BSA), which dye is a better indicator of folded and unfolded states. More specifically, the dye that exhibits the greatest change in fluorescence when bound to BSA will be used in future experiments characterizing the unfolding mechanism and mechanical stability of BSA. Having a clear indicator of a change in a protein’s folded state will allow us to establish a framework for discovery of mechano-active drugs that target protein misfolding, allowing us to make strides in the fight against protein misfolding diseases such as Alzheimer’s Disease.

Over-the-Counter Melatonin, Are You Getting What You Are Expecting? (UW-River Falls)
Time: 1:15 Location: UC Old Main Ballroom
Author(s): Peyton Kowalski and Sierra Kolodjski
Mentor(s): Daniel Marchand
Poster Presentation 150 Chemistry

This research project explored the quality of different over-the-counter (OTC) melatonin supplements. Prior research shows that melatonin tablets differ in quality and consistency. Supplements are not regulated by the Food and Drug Administration, which may lead to the difference in quality. Due to prior research that showed inconsistency in OTC melatonin, it was hypothesized that different brands of melatonin would have variances in quality. A method was developed for measuring the concentration of melatonin in OTC tablets using High Performance Liquid Chromatography. Different brands were tested to determine if the stated concentration of melatonin is accurate.

Development of an internal standard for normalizing palmitoylomic data (UW-Whitewater)
Time: 1:15 Location: UC Old Main Ballroom
Author(s): Rylee Newell
Mentor(s): Dan Zamzow and Paul House
Poster Presentation 148 Chemistry

Protein palmitoylation is a 16-carbon posttranslational modification on proteins that directs otherwise soluble proteins to cell membranes. In recent years, several methods have been developed to isolate palmitoylated proteins from total cell lysates. One method, HPDP-Biotin, utilizes simple sulfhydryl chemistry to replace 16-carbon palmitates with biotin covalently-bound to a linker molecule. This essentially biotinylates palmitoylated proteins, allowing for easy precipitation with streptavidin beads. With this method hundreds of palmitoylated proteins can be precipitated from cells or tissues.

The problem is there is currently no internal standard that can follow the entire process from precipitation to mass spectrometry analysis. There is loss of protein with each step of the process, therefore an internal standard is essential for normalizing mass spectrometry data from different samples or treatment groups.

We chose a palmitoylated yeast protein, VAC8, that doesn’t appear to have an ortholog in
mammals as a candidate for an internal standard. We cloned a 6X His tag into the C-terminal sequence of VAC8 in the pRS405 VAC8-GFP plasmid. The plasmid was transformed into yeast, and the 6X His-VAC8 protein purified with Ni agarose then subjected to precipitation using the HPDP-Biotin method. We added different amounts of purified 6X His-VAC8 to 1 mg of protein from brain lysates of mice and precipitated the palmitoylated proteins using HPDP-Biotin. Protein samples were digested and spectra separated at the mass spectrometry facility on the UW-Madison campus.

We hope that this method can be used in semiquantitative experiments comparing large palmitoylation datasets created through mass spectrometry.

**Synthesis and Utilization of New Sulfonium Salt Photoinitiators** (UW-Whitewater)

*Time:* 1:15  
*Location:* UC Old Main Ballroom

*Author(s):* Sarah Maloney  
*Mentor(s):* Dr. Steven W. Anderson

**Poster Presentation** 147  
**Chemistry**

Photoinititators are compounds that readily absorb UV light and are converted into reactive intermediates like free radicals and acids. They are used to initiate polymerization reactions. Photoinitiators find many applications such as coatings, adhesives, dental resins, gel nail polish, and inks. Our first goal has been the synthesis of (S)-2-bromo-2-phenylindane-1,3-dione dibenzoziophenium triflate. The synthesis was unsuccessful in refluxing solvent at a lower temperature (acetone; bp 56°C) due to an unfavorable equilibrium. The reaction mixture stayed a canary yellow color from start to finish. At a significantly higher temperature (3-hexanone; bp 123°C) the equilibrium shifted yet was followed by rapid decomposition yielding a root beer colored product. A compromise was achieved by employing 3-pentanone (bp 102°) which yielded an orange-colored product. The reaction time is critical. Product is formed within 30 minutes. Longer reflux time leads to decomposition products. In sum, the bromination of 2-phenylindane-1,3-dione led to the derivative, 2-bromo-2-phenylindane-1,3-dione. A metathesis reaction was performed with 2-bromo-2-phenylindane-1,3-dione, dibenzoziophene, sodium trifluoromethane sulfonate (triflate) and 3-pentanone. Water and ethyl ether were added after reflux, the product was separated by extraction and dried with MgSO₄. Solvent was removed (rotovapor) to leave the sulfonium salt. The product was purified by wet-column chromatography (silica gel/petroleum ether-ethyl acetate). The purified product has a melting point (142-149°C), IR, and 1H-NMR spectra consistent with the expected structure. Next steps include kinetic studies by 1H-NMR for rates of photodecomposition and polymerization with acrylamide. We also plan to synthesize the corresponding tetrphenylboron salt to examine the effect of the counterion.

**Observatory Position Error as a Source of Noise in Pulsar Timing Data: Effect on Gravitational Wave Analyses** (UW-Milwaukee)

*Time:* 1:15  
*Location:* UC Old Main Ballroom

*Author(s):* Sparrow Roch and Alexandra Higley  
*Mentor(s):* Sarah Vigeland, Maura McLaughlin, and Manjari Bagchi

**Poster Presentation** 140  
**Astronomy**
Pulsars are extremely dense, highly magnetized neutron stars that rapidly rotate with a fast, reliable period, producing an intense radiation beam emitted from the star’s magnetic poles. When observed, these periodic signals are comparable to a pulse. Millisecond pulsars (MSPs) have rotational periods of around 10 milliseconds or less and their pulse signals are known to have extremely consistent times of arrival when observed from Earth. Timing the unique pulses from MSPs at different locations in the galaxy allows for novel ways to study the universe, including the potential to detect gravitational waves at much lower frequencies than those previously detected. The North American Nanohertz Observatory for Gravitational Waves (NANOGrav) is a collaboration that aims to detect gravitational waves by timing MSPs. Many factors contribute to accurate pulsar timing; here, the focus is observatory positions, which are assumed to be well-defined. However, incorrect position coordinates could potentially skew or otherwise manipulate the interpulsar correlations in timing residuals. This project reevaluates NANOGrav pulsar data with intentionally imposed positional offsets to assess whether incorrect observatory coordinates could result in a spatially correlated quadrupolar signature as expected from gravitational waves. A new gravitational wave analysis will be done to determine whether or not these positional errors could falsely provoke results that mimic gravitational wave signals.

STARS@UWM: The Search for Pulsars
(UW-Milwaukee)
Time: 1:15 Location: UC Old Main Ballroom
Author(s): Sparrow Roch, Claire Bolda, Herbert De Leon, Telemachos Agoudemos, Ben Lorenz, Nick Gilhaus, Nate Valentine, Sky Majerus, Melissa Gleiter and Lucas Patron
Mentor(s): David Kaplan, Sarah Vigeland, and Alex McEwen
Poster Presentation 141
Astronomy

Pulsars are a type of star that are incredibly dense and small. As pulsars rotate they release beams of radiation that can be detected from Earth as pulses, similar to the workings of a lighthouse. This unique pulse of radiation allows for novel ways to study the universe, the most exciting being the potential to detect previously undiscoverable gravitational waves. On the Student Team of Astrophysics Researchers (STARS), undergraduate students join the search for new pulsars and contribute towards the goals of the North American Nanohertz Observatory for Gravitational Waves (NANOGrav). Students remotely observe from UWM using the Green Bank Telescope in West Virginia. Previously, the Arecibo Telescope in Puerto Rico was also used. Students analyze the resulting data from both telescopes to discover and study these neutron stars. Students at UWM also collaborate with other institutions around the country, including Franklin & Marshall College, University of Washington – Bothell, Kenyon College, Hillsdale College, West Virginia University, and more. Students from UWM have also participated in astronomy-related projects internationally in places such as China, Italy, India, South Africa, and Australia.
Abstracts of Poster Session #2
James R. Connor University Center (UC), Old Main Ballroom 275

Syntheses and evaluation of UV filters derived from polyphenolic hydroxycinnamic acids. (UW-Parkside)

**Time:** 1:15  **Location:** UC Old Main Ballroom

**Author(s):** Thomas Stirrat and Hunter Cheney

**Mentor(s):** Dr. Ilirian Dhimitruka

**Poster Presentation 159**

**Organic Chemistry**

There is a pressing need to replace commercial UV filters with environmentally friendly alternatives. Naturally occurring hydroxycinnamic acid (HCA) antioxidants, such as Ferulic acid, Caffeic Acid, and Sinapic acid are being investigated due to their UV spectra overlapping with the 290 nm-400nm range of solar radiation. Few literature reports, among others one published by our group, concluded that HCAs if properly modified to ensure emulsification, can serve as green alternatives to multiple commercial UV filters used in sunscreens. Multifunctionality of proposed UV filters combined with the exclusive use of naturally derived products would result in negligible environmental and health toxicity.

A comparative analysis to determine structural features that lead to optimal UV screening properties is being performed. A library of esters of Ferulic, Caffeic, and Sinapic acids with metabolic alcohols was synthesized using two methods, microwave Fisher Esterification, or Steglich Esterification. Green chemistry principles were applied to the synthetic process resulting in minimal use of toxic chemicals. Upon syntheses, parameters that define sun screening properties such as photostability, sun protection factor (SPF), UVA/UVB ratio of UV absorption intensity, and critical are measured via UV spectroscopy in solution, and via UV transmission spectroscopy in thin films.

Antioxidative capacities are measured via the DPPH assay.

Proposed UV filters are projected to be biodegradable in vivo, nontoxic, and could potentially serve multiple roles, as broadband UVB/UVA filters, antioxidants, and emollients. This study provides evidence towards the design of green sunscreen products.
THANK YOU AND ACKNOWLEDGEMENTS

*UW-Whitewater's Undergraduate Research Program would like to extend sincere appreciation to all those who made this day possible.*

*University of Wisconsin System*
*UW-Whitewater Chancellor's Office*
*The Division of Equity, Diversity, Inclusion and Support Programs*
*Office of Student Diversity, Engagement and Success*
*Career Services*
*Continuing Education*
*All student researchers and presenters*
*All faculty research mentors*

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