Wireless Access for UWSP Guests

Visitors may connect to the guest wireless network or the eduroam wireless network.

The **guest wireless network** is available in all academic and administrative buildings. This is an open unsecure network that provides limited access to UWSP resources. UWSP services such as email.uwsp.edu, myPoint.uwsp.edu, and myfiles.uwsp.edu are not available on this network.

To access the guest wireless network, connect your device to the wireless network connection identified as "UWSP_Unsecure_Guest." Next, open your web browser and register by entering a valid email address.

The **ederoom wireless network** is available in all academic and administrative buildings. This is a secure network and allows visitors from other colleges and universities to connect to it with the credentials of their home institution, provided that their institution also participates in eduroam. This wireless network is labeled as "ederoom." For additional information on the eduroom federation visit eduroam.org.

*Logo design for the 15th Annual UW System Symposium for Undergraduate Research and Creative Activity by Professor Christos Theo of UW - Eau Claire*
Contents

General Information................................................................. 2
Symposium Schedule............................................................... 3
Keynote Speaker: Dôna Warren.................................................... 5
Presentation Schedules............................................................. 7
Abstracts.................................................................................. 27
Dreyfus University Center Maps.................................................. 100
General Information

Registration – Outside of the Laird Room, Dreyfus University Center 230
Registration is open from 7:30 a.m. to 3:45 p.m.

Coat Check – Encore Room, Dreyfus University Center, First Floor
A complimentary coat check is located inside the Encore Room. Please be advised that the Encore Room is also the Performing Arts Venue for the Symposium. You may need to wait up to 20 minutes for access between 9:00 a.m. and 10:00 a.m. (we will not interrupt performers).

Faculty/Staff/Administrator Lounge – Dreyfus University Center 236
DUC 236 is available with seating, coffee and refreshments.

Student Lounge – Encore Room, Dreyfus University Center, First Floor
Tables and chairs, complimentary coffee, and charging stations are available. Please be advised that access will be limited between 9:00 a.m. and 10:00 a.m. for Performing Arts Presentations. You may need to wait up to 20 minutes for access (we will not interrupt performers).
Symposium Schedule - Friday, April 22, 2016

7:45 a.m. Registration Opens (available all day)
Continental Breakfast Available

8:30 a.m. Opening Remarks

9:00 a.m. Oral Presentations #1
Performing Arts Session #1

10:30 a.m. Poster Session #1

11:15 a.m. Research and URSCA Administrators Meeting,
DUC 235

11:45 a.m. Lunch and Keynote Speaker

1:00 p.m. Oral Presentation #2

2:30 p.m. Poster Session #2
Visual Arts Session #1

3:45 p.m. Closing
"What the 'Wiseman Knowes'"

Dôna Warren received her Bachelor's Degree in Mathematics from Minnesota State University Moorhead and her Ph.D. in Philosophy from the University of Minnesota. She is currently Professor of Philosophy and Assistant Dean for Curriculum and Student Affairs of the College of Letters and Science at the University of Wisconsin – Stevens Point, where she's won the Excellence in Teaching Award twice and the Regents' Teaching Excellence Award once. She genuinely loves her job, at least in part because it allows her to talk about interesting things with fascinating people.
### Morning Performing Arts Presentations - Encore

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<th>First Name</th>
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<th>Presentation Title</th>
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<td>Multimedia Performance and Recording</td>
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<td>The Biggest Thing I Am Having A Little Trouble With</td>
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## Morning Poster Presentations by Location

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<th>First Name</th>
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<td>Danielle</td>
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<td>UW - Milwaukee</td>
<td>Health Promotion and Chronic Disease Prevention: Personal and Professional Care</td>
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<td>Structural Health Monitoring Systems with Integrated Sensors and Actuators to Detect and Locate Structural Flaws</td>
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<td>Moving and Mothering Russia: The Soft Power of Embodied Actions in Russia</td>
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<td>The Fight for Egyptian Artifacts and Heritage: Historical and Cultural Conflicts of Globalization</td>
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<td>Puppet Diplomacy: Analyzing Sesame Street in Palestine, Israel, and Pakistan</td>
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<td>Baking Bread, Making Bombs: Ideology and Roles of Women in Nazi Era Germany</td>
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<td>Identity &amp; Feminism: The Usage of Psychoanalysis and Feminism to Explore Identity Alice in Wonderland</td>
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<td>The Cruel, the Carnal, and the Corrupt: Why Men and Women Sought Divorce in Scotland, 1750-1800</td>
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<td>Amanda</td>
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<td>Organic-Inorganic Nanoscale Composites: Optical Properties as a Function of Anisotropic Orientation</td>
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<td>Mercury Concentrations in Larval Dragonflies from Streams Draining Different Land Cover Conditions in the Black River Watershed, WI.</td>
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<td>The Effect of Web Interface Design on the Parallel and Distributed Computing Concepts Learning Process</td>
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<td>Annotation of olfactory genes from the genome of the emerald ash borer, Agrilus planipennis (Coleoptera: Buprestidae)</td>
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## Morning Poster Presentations by Location, cont.

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<td>Eastern Gray Squirrel Population Demographics in Different Aged Timber Stands</td>
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<td>Influence of Supplementary Walleye Stocking on Year-Class Strength in Six Minnesota Lakes</td>
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<td>Seasonal variance in river otter (Lontra canadensis) diet in Sandhill Wildlife Area of central Wisconsin</td>
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### Morning Poster Presentations by Location, cont.

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<td>In Vitro Metabolism of the Piperazine Nootropics Sunifiram and Unifiram Using High Performance Liquid Chromatography and Liver Microsome Fractions</td>
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### Morning Poster Presentations by Location, cont.

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<td>93, 94</td>
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## Afternoon Oral Presentations by Room

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<td>Emile de Antonio</td>
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<td>Dylan</td>
<td>Juza</td>
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<td>Peter</td>
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<td>Coins, Corpses/Corollas, and Churches: How Social Relationships Can Be Seen in Post-Medieval Transylvanian Funerary Excavations</td>
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<td>[art]fact: where history meets art</td>
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<td>Modelling Body Mass Index Distribution Using Flexible Skewed Density Functions: An Application to UWEC Health Data</td>
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<td>Sarina</td>
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<td>Using distribution and stable isotopic composition of filter-feeding aquatic insect larvae to distinguish sources of organic matter in small cold water streams.</td>
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<td>Jonathan</td>
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<td>Induction of intestinal dysbiosis through broad-spectrum antibiotic gavage, high-fat feeding impairs microbiota-gut-brain axis and sleep behavior in mice</td>
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<td>John</td>
<td>Lynch</td>
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<td>De Novo Synthesis of All Stereoisomers of 2,3,6-Trideoxyhexopyranosides and Their Oligomers</td>
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<td>Drug Transport and Absorption on a Capillary Network</td>
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<td>Cyber Professionalism: When Students and Social Media Collide</td>
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<td>Johnny</td>
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<td>&quot;Y Era Torta Encima&quot;: The role of sexism in the construction of gay male identity in Argentina</td>
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<td>Adolph Germer and His Role in the History of the American Left</td>
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<td>Bonds of Blood: Violent Creation and Relationship-Building in Bioware's Dragon Age II</td>
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<td>Linda</td>
<td>Hartman</td>
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<td>T.S. Eliot’s The Waste Land as a Modern Retelling Inferno</td>
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<td>Elizabeth</td>
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<td>Escape Behavior of Side-Blotched Lizards Differs in Response to Predatory Lizards or Snakes</td>
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<td>When, Why, and with Whom?: Understanding U.S. Adults’ Reports of Romantic Kissing</td>
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<td>Habitat use of adult female porcupines (Erithizon dorsatum) in Sandhill Wildlife Area</td>
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### Afternoon Visual Arts Presentations - Alumni Room

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## Afternoon Poster Presentations by Location

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<td>Bushweiler</td>
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<td>Effect of Heel Lifts on Achilles Tendon Stress During Running</td>
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<td>Jamie</td>
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<td>How Sport Specialization Affects Lower Extremity Biomechanics and Injury Risk</td>
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<td>BMI, Educational Status, and Access to Healthcare and Health Services</td>
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<td>The Effect of Sprint and Endurance Genes in Division III College Swimmers</td>
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<td>Ryan</td>
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<td>What You Don’t Know About Poland- Conrad’s “Prince Roman”: An Annotated Text</td>
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<td>The Culture of Machismo: Gender Stereotypes in the Dominican Republic and Cuba</td>
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<td>Portraying the Challengers: A study of the relationship between film and activism</td>
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<td>Terphenyl Lactone Switches: Planar Conjugated Compounds Capable of Dual-Input Geometry Switching</td>
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<td>Cleaning station size and its effect on prevalence of Black Ich (Turbellarian flatworm) in Acanthurus sp. on two reef ecosystems at South Water Caye, Belize.</td>
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<td>Empowerment of Latin Women Through Breast Cancer Awareness, Understanding, Screening, and Survivor Support</td>
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<td>Characterization of the GABAA Receptor Subunits in a Murine Model of Asthma</td>
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<td>Characterizing Protein Isoforms Involved in Manganese Homeostasis in E. coli</td>
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<td>A Survey of Parasites in Greater Prairie Chickens in Central Wisconsin</td>
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<td>1) Atomic Layer Deposition of Manganese Sulfide Thin Films for Applications in Energy Conversion and Storage</td>
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<td>Do pair bond and nesting behaviors indicate reproductive success in a captive zebra finch colony?</td>
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<td>Utilizing Fire and Hydrology to Control Invasive Wetland Flora: Phase 1 – Establishing Pre-Control Conditions</td>
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<td>Reproductive Histology of Mice Transgenic for Chemokine Ligand 2 (CCL2)</td>
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<td>Population demographics of white-tailed deer in Schmeeckle Reserve: Overabundance and potential impacts on native plant communities</td>
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<td>Vigilance of wildlife at anthropogenic compost sites</td>
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<td>Blood-lactate level response to potentially stressful activities due to physical exertion in three endemic South African small-bodied Shysharks (Scyliorhinidae: Actinopterygii)</td>
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<td>Thin Films Deposition: To Investigate the Relationship between Roughness and Film Conductivity</td>
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<td>Teaching the Water Cycle: Kinesthetic vs. Traditional Textbook Lessons in an Elementary Classroom</td>
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<td>UW - Whitewater</td>
<td>Preferential Growth Habitats for Morel Mushrooms</td>
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<td>Exploring consumer’s reaction in the bad gift situation across cultures</td>
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<td>Zolkowski</td>
<td>UW - Fox Valley</td>
<td>Learning Outcomes of Hands-On Activities in a Community College General Chemistry Classroom</td>
</tr>
<tr>
<td>49</td>
<td>Jeshanah</td>
<td>Zolkowski</td>
<td>UW - Fox Valley</td>
<td>The Role of Research in Undergraduate Education: An Analysis of Benefits and Drawbacks</td>
</tr>
<tr>
<td>50</td>
<td>Gina</td>
<td>Vlach</td>
<td>UW - Green Bay</td>
<td>Mapping Trees in UW-Green Bay’s Residence Life</td>
</tr>
<tr>
<td>51</td>
<td>Cody</td>
<td>Becker</td>
<td>UW - Green Bay</td>
<td>Aerial Surveying and Vegetation Mapping Using Drone Technology at the Point au Sable Nature Reserve</td>
</tr>
<tr>
<td>52</td>
<td>Brennen</td>
<td>Frisque</td>
<td>UW - Green Bay</td>
<td>Developing the GAHPFinder Tool: Software to Address Conceptual Gaps</td>
</tr>
<tr>
<td>54</td>
<td>Jacob</td>
<td>Poppe</td>
<td>UW - La Crosse</td>
<td>That’s So Trashy: Studying Refuse Pits at the Tremaine Site (47/LC95)</td>
</tr>
<tr>
<td>55</td>
<td>Jennifer</td>
<td>Keute</td>
<td>UW - La Crosse</td>
<td>Chemical Analysis of Fatty Acid Residues on Archaeological Pottery of Pastoralist Communities in Northern Tanzania</td>
</tr>
<tr>
<td>56</td>
<td>Sophia</td>
<td>Nelson</td>
<td>UW - La Crosse</td>
<td>The Missing Link Between Sustainable Awareness and Sustainable Practices</td>
</tr>
<tr>
<td>57</td>
<td>Ka’ Shena</td>
<td>Harris</td>
<td>UW - Milwaukee</td>
<td>Black Males and Educational Attainment</td>
</tr>
<tr>
<td>58</td>
<td>Lauren</td>
<td>Jares</td>
<td>UW - Oshkosh</td>
<td>Reading and Students Learning English as a Second Language</td>
</tr>
<tr>
<td>59</td>
<td>Tabitha</td>
<td>Dorhorst</td>
<td>UW - Oshkosh</td>
<td>Dietary Reconstruction of the Winnebago Phase Oneota: A Study of Dental Caries</td>
</tr>
<tr>
<td>60</td>
<td>Rachel</td>
<td>Lutz</td>
<td>UW - Oshkosh</td>
<td>Mathematical Abilities in Elementary Aged Children</td>
</tr>
<tr>
<td>61</td>
<td>Danny</td>
<td>Wilson</td>
<td>UW - Parkside</td>
<td>Conservation values within southeastern Wisconsin secondary forests: a preliminary assessment of plant species richness loss and decreased floristic qualities</td>
</tr>
<tr>
<td>62</td>
<td>Haley</td>
<td>Roenneburg</td>
<td>UW - Stevens Point</td>
<td>Repeat After Me: The effects of imitating on perception of infant vocalizations</td>
</tr>
<tr>
<td>Location</td>
<td>First Name</td>
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<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>63</td>
<td>Brienne</td>
<td>Grosskopf</td>
<td>UW - Stevens Point</td>
<td>Students Perceptions of Local Food Sourcing Compared to Actual University Efforts</td>
</tr>
<tr>
<td>64</td>
<td>Lauren</td>
<td>Sommer</td>
<td>UW - Stevens Point</td>
<td>The Unequal Advantage that Health Plays in American Lives</td>
</tr>
<tr>
<td>65</td>
<td>Aryn</td>
<td>DeGrave</td>
<td>UW - Superior</td>
<td>The Effects of Social Perspective-Taking and Self-Focus on Stress Perception</td>
</tr>
<tr>
<td>66</td>
<td>Jacob</td>
<td>Chmela</td>
<td>UW - Whitewater</td>
<td>Young Children’s Perspectives on Older Adults Based on Their Participation in an Intergenerational Reading/Storytelling Program</td>
</tr>
<tr>
<td>67</td>
<td>Jennifer</td>
<td>Rathsack</td>
<td>UW - Whitewater</td>
<td>Belongingness on the UWV Campus: The Relationships between Introversion-Extraversion and the Types of Faculty Mentorships Students Seek</td>
</tr>
<tr>
<td>68</td>
<td>Laila</td>
<td>Briedis</td>
<td>UW - Whitewater</td>
<td>Transformative Strategies in the Community Organization</td>
</tr>
<tr>
<td>69</td>
<td>Laila</td>
<td>Saxon</td>
<td>UW - Whitewater</td>
<td>Self-Awareness in BSW Students</td>
</tr>
<tr>
<td>70</td>
<td>Rachael</td>
<td>Cross</td>
<td>UW - Whitewater</td>
<td>Occupy Madison Build: Community Solidarity in the Context of Neoliberalism</td>
</tr>
<tr>
<td>71</td>
<td>Joe</td>
<td>Hunt</td>
<td>UW - Eau Claire</td>
<td>Does Access, Repeated Exposure, Encouragement and Praise Increase Children’s Consumption of Vegetables for School Snack?</td>
</tr>
<tr>
<td>72</td>
<td>Anna</td>
<td>Hamer</td>
<td>UW - Eau Claire</td>
<td>Tracking the Use of Free Fruit and Vegetable Coupons Given to Families and Assessing the Impact on Children’s Consumption</td>
</tr>
<tr>
<td>73</td>
<td>Kirstin</td>
<td>Martell</td>
<td>UW - Eau Claire</td>
<td>A Continuing Analysis of Chinese and American Public Support for an International Climate Change Mitigation Treaty</td>
</tr>
<tr>
<td>74</td>
<td>Matthew</td>
<td>Pergolski</td>
<td>UW - Eau Claire</td>
<td>A Continuing Analysis of Chinese and American Public Willingness to Pay for Climate Change Mitigation Policy Action</td>
</tr>
<tr>
<td>76</td>
<td>Hunter</td>
<td>Bodnar</td>
<td>UW - Eau Claire</td>
<td>The relationships between parental involvement, music aptitude and achievements of preschool children</td>
</tr>
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</tbody>
</table>
### Afternoon Poster Presentations by Location, cont.

<table>
<thead>
<tr>
<th>Location</th>
<th>First Name</th>
<th>Last Name</th>
<th>Institution</th>
<th>Presentation Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>Colton</td>
<td>Branville</td>
<td>UW - Stevens Point</td>
<td>Exploring aquaponics: comparing walleye (Sander vitreus) and tilapia (Oreochromis</td>
</tr>
<tr>
<td>78</td>
<td>Kayla</td>
<td>Fuller</td>
<td></td>
<td>niloticus) production to plant growth and nutrient removal</td>
</tr>
<tr>
<td>79</td>
<td>Jessica</td>
<td>Kraase</td>
<td>UW - Stout</td>
<td>Cadmium Detected in Legumes and Other Food Samples</td>
</tr>
<tr>
<td>79</td>
<td>Jonathan</td>
<td>Dahlen</td>
<td></td>
<td>Assembly of a Gold Nanoparticle Monolayer and its Applications</td>
</tr>
<tr>
<td>79</td>
<td>Grace</td>
<td>Forrest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>Alexander</td>
<td>Olson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Nicole</td>
<td>Moehring</td>
<td>UW - Stout</td>
<td>Environmental Monitoring Server</td>
</tr>
<tr>
<td>81</td>
<td>Michael</td>
<td>Jenssen</td>
<td>UW - Superior</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>Josh</td>
<td>Letter</td>
<td>UW - Superior</td>
<td>Making a Pedometer</td>
</tr>
<tr>
<td>83</td>
<td>Craig</td>
<td>Cross</td>
<td>UW - Whitewater</td>
<td>Analysis of Volatile Organics within Dog Urine</td>
</tr>
<tr>
<td>84</td>
<td>Christopher</td>
<td>Marshall</td>
<td>UW - Whitewater</td>
<td>3D Printing of Physics Tactile Objects for Science Accessibility</td>
</tr>
<tr>
<td>85</td>
<td>Joseph</td>
<td>Mozuch</td>
<td>UW - Whitewater</td>
<td>Localization and Effects of Titanium Dioxide (TiO2) Nanoparticles on Bovine</td>
</tr>
<tr>
<td>86</td>
<td>Sarah</td>
<td>Benson</td>
<td>UW - Whitewater</td>
<td>Spermatozoa</td>
</tr>
<tr>
<td>86</td>
<td></td>
<td></td>
<td></td>
<td>Effects of sodium chlorides on the freshwater crustacean, Gammarus</td>
</tr>
<tr>
<td>86</td>
<td></td>
<td></td>
<td></td>
<td>pseudolimnaeus</td>
</tr>
<tr>
<td>87</td>
<td>Beau</td>
<td>Schommer</td>
<td>UW - Whitewater</td>
<td>Trophic Position of Green Hydra, Hydra viridissima, Across Varying Environmental</td>
</tr>
<tr>
<td>88</td>
<td>Jacob</td>
<td>Bogenschuetz</td>
<td>UW - Whitewater</td>
<td>Remote Neural Robotics</td>
</tr>
<tr>
<td>89</td>
<td>Amanda</td>
<td>Danno</td>
<td>UW - Whitewater</td>
<td>Mutation of Predicted Phosphorylation Sites in Brugia Malayi DAF-16</td>
</tr>
<tr>
<td>90</td>
<td>Wytney</td>
<td>Schilt</td>
<td>UW - Whitewater</td>
<td>The Challenge Effect in Betta Splendens</td>
</tr>
<tr>
<td>91</td>
<td>Andrew</td>
<td>Ibach</td>
<td>UW - Whitewater</td>
<td>Use of Museum Specimens to Investigate Morphological Changes in Wisconsin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reptiles and Amphibians Over Time</td>
</tr>
</tbody>
</table>
15th Annual
UW System Symposium
for Undergraduate Research
and Creative Activity
University of Wisconsin-Stevens Point

Presentation Abstracts
Mujjada Ahmad (UW - Whitewater)
Belongingness on the UWW Campus: The Relationships between Introversion-Extraversion and the Types of Faculty Mentorships Students Seek
Mentor: Carolyn Morganc@uww.edu

There have been studies showing connection between student mental health and academic performance. Race, class, and personality traits are also factors affecting how students may feel about school as a whole. These factors can also be the reason why students may or may not feel connected with the school and reach out by establishing a mentoring relationship with a faculty member. Past research has found the importance of having such a mentoring relationship in college, but most students do not seek them out. This disconnect could occur because their connection to the campus is not in place. Both Introverted and Extroverted students have to be studied in order to measure what may cause some students to not feel it necessary to reach out establish these relationships, based upon what each personality trait needs in order to be successful. Having mentoring relationships could make introvert and extroverted students feel connected to the school in different ways.

Hannah Andersen (UW - Stout)
Portraying the Challengers: A study of the relationship between film and activism
Mentor: Tina Lee Co-author: Mariah Pellowski

This research investigates how film can be used as a tool for activism, through analyzing the content of videos posted online, film style, the number of media posts, the use of social platforms, as well as conducting interviews with filmmakers and activists about their personal and professional use of film for advocacy. This is also an investigation into how film can be used to advocate for a social movement and how to gauge what factors lead to a successful film narrative for a movement.

Bailey Anderson (UW - Oshkosh)
Influence of high pH conditions on early vertebrate diagenesis and decomposition: a preliminary qualitative assessment
Mentor: Joseph Peterson

Geochemical data from the Late Jurassic Morrison Formation of North America suggest alkaline paleoenvironmental conditions. However, the role of such conditions on early-stage vertebrate fossilization have not been fully explored. Presented here are preliminary results of an experiment in which extant theropod remains were placed in a high pH setting to assess early diagenetic alteration. Bones of modern chickens (Gallus gallus domesticus) were placed in the William W. Powers State Recreation Area in Calumet County, IL (pH of ~12), providing a potential model for the chemical conditions in the Late Jurassic. Samples included fleshy and de-fleshed bones as the two primary variables, and whole, crushed, and articulated bones as secondary variables. Although results are preliminary and qualitative, cartilage was observed to remain attached in samples where soft-tissues were removed before decomposition, and separated in samples that remained encased in flesh. This observation has implications on remains from Late Jurassic deposits. Calcium carbonate concretions found in Morrison Formation bonebeds have been interpreted as altered cartilage under alkaline conditions. Experimental results suggest that concretions on Morrison vertebrate remains are the result of partial skeletonization prior to deposition. Further investigation for this study includes SEM and EDS analyses to characterize mineral precipitation.

Amanda Anderson (UW - Whitewater)
Teaching the Water Cycle: Kinesthetic vs. Traditional Textbook Lessons in an Elementary Classroom
Mentor: Juk Bhattacharyya Co-author: Alexis Seitz

Schools have been pushing for more hands-on learning in science education, and many are reforming their curriculum to provide project-based learning. To examine the benefits of kinesthetic learning in science-based subjects, our study involved measuring the comprehension of fourth grade students on a lesson given kinesthetically as compared to a textbook lesson. This study explored
the possible benefits of kinesthetic learning in an elementary science class using 3D models of the water cycle. Students created their own water cycles as well as learned about water transportation. Furthermore, this study compared how much information students retain from either the kinesthetic or textbook lesson over a two-week period. We hypothesized that the kinesthetic group would have a higher comprehension and recall score on the quizzes given after the lesson provided than the textbook group would.

Sara Arafeh (UW - Oshkosh)  
*Involvement of RNA in Mitotic Chromosome Condensation*  
*Mentor: James Paulson*

As human cells grow and divide, they go through a repeating set of changes called the cell cycle, which is composed of two main periods: interphase and mitosis. In interphase, the cell makes more protein, organelles, and DNA. During mitosis, the chromosomes condense into highly-compacted structures of DNA and protein. This is very important for the process of cell division. A condensed mitotic chromosome consists of two identical "chromatids", each of which contains a copy of the chromosomal DNA. Eventually, these condensed chromatids will separate and be pulled to opposite ends of the cell so that when the cell divides, each daughter cell will get a copy of the genetic material.

The process of chromosome condensation is not yet fully understood. Scientists still do not know all the molecules and chemicals that are responsible for this mechanism. One possibility is that non-coding RNA (RNA that is not translated into proteins) is involved in chromosome condensation. This idea is promising because there are clues that non-coding RNA has a structural role in chromosomes and cell nuclei. In this project, we inhibit RNA synthesis and then induce premature chromosome condensation (PCC) by treating the cells with calcycin A. The results will show whether or not the inhibition of RNA synthesis makes a difference in either the extent of condensation of the chromosomes or their stability.

Paige Arneson (UW - Superior)  
*Use of Super Resolution Microscopy to Characterize the Two Component Measles Virus Fusion Complex*  
*Mentor: Edward Burkett*

Measles virus and its mode of infection are currently under investigation for use in a type of cancer therapy called oncolytics. Interestingly, measles spreads through host tissues by fusing cells together. The virus is able to complete fusion by forcing its host cell to synthesize two proteins (H and F). My project was based off of H and F proteins that had been previously altered to possess a fluorescent property, allowing them to be visualized with a super resolution microscope. My main objective was to use these fluorescent proteins as a model for wild type (naturally occurring) proteins, which do not fluoresce. This model would then be used to gain knowledge on the location and organization of H and F on an infected cell’s membrane. From the experiments I conducted this summer I am able to conclude that our altered proteins are a sufficient model for further study of H and F proteins. Additionally, I was able to perform some preliminary microscopy and could see that H and F do group together on cell membranes. Overall, this will provide the science community with a better understanding of how measles virus infects and spreads through tissue, which can be applied oncolytics.

Ryan Baker (UW - River Falls)  
*The Philosophy of the Leap: The Role of Egoism in Conrad’s Lord Jim*  
*Mentor: Lissa Schneider-Rebozo*

The works of Joseph Conrad are best known for their complexity and many layers of meaning. Of particular interest to this project is the trend of analyzing works in the modernist canon—such as Conrad’s—through the lens of the philosophies that influenced their writing. The work of philosophers such as Friedrich Nietzsche has proved to be useful in better understanding the literature of this era, and specifically works by Conrad (Touchon, 14). It is my belief that further meaningful contributions can be made in this sub-field. The goal of this project is to establish and explore the connection between Joseph Conrad’s Lord Jim (1900) and the largely ignored work The Ego and Its Own (1845) by
German philosopher Max Stirner. Stirner’s book outlines his philosophy of Egoism which—while largely unknown today—had a significant impact on the philosophers and authors of its day. Its influence can be traced through time to later writers such as George Meredith, whose Victorian novel the The Egoist (1879) focuses on the potential negatives of Stirner’s philosophy, characterizing it as brutish (Hudson, 168). A connection then seems probable between this philosophy and Conrad’s novel in which the main character Jim is said to come to his doom because of his “Exalted Egoism” (Conrad, 303). To prove this connection I explore historical contexts to find evidence that Conrad had knowledge of Stirner’s work, and incorporated its ideas into his own writing.

Ryan Baker (UW - River Falls)
What You Don’t Know About Poland—Conrad’s "Prince Roman": An Annotated Text
Mentor: Lissa Schneider-Rebozo
Co-author: Samantha Hiller

Joseph Conrad’s short story “Prince Roman” presents numerous challenges to modern readers. Chief among these is its use of many Polish historical references which now fall well outside the realm of common knowledge. To address this problem we have isolated and researched the most significant historical moments of the text and compiled annotations to aid readers in the understanding of the text. In conjunction with these annotations we have also provided illustrations to further illuminate this story. We have then organized these annotation and images alongside the text in the form of a poster.

Haley Baltes (UW - Whitewater)
Using Kurzweil 3000 and Rewordify to Support International Students in an Academic ESL Writing Class
Mentor: Susan Huss-Lederman

How does using text-to-speech software, such as Kurzweil 3000, and text modification programs, such as Rewordify, affect students’ abilities to read academically challenging material, when they speak English as a second language (ESL)? For this project, I examined how Kurzweil 3000 and Rewordify could assist ESL students in a university setting to better understand the process of academic reading and to enhance their academic writing.

Subjects were 18 students enrolled in a college-level ESL writing course. Students completed a pre- and post-semester survey about educational technology. In addition, some students were interviewed. Throughout the semester, students were encouraged to use both Kurzweil 3000 and Rewordify to read academic texts, which served as sources for a final research paper. Of the 15 students who took the post-survey, 14 students responded that they used both programs throughout the course. Although all students indicated that both programs were useful, there was a preference for Rewordify. Study results indicate that support software, such as Kurzweil 3000 and Rewordify, may be helpful tools in mastering collegiate English.

Alex Baran (UW - Parkside)
An evaluation of the co-occurrence of ectoparasites and endoparasites in Common Starlings (Sturnus vulgaris)
Mentor: Jessica Orlofske

Parasites may be useful bioindicators since their presence in or on a host could be used to infer ecological diversity, food web connectivity, and overall ecological conditions. My research provides baseline data on the diversity, prevalence, and intensity of ectoparasites and endoparasites in a common, globally distributed bird species: the Common Starling (Sturnus vulgaris). Specifically, I investigate a potential negative correlation between ectoparasite and endoparasite diversity and intensity. Deceased birds were salvaged for my study. I performed complete necropsies of juvenile starlings. Parasites encountered during these necropsies include three phyla of endoparasites: flatworms (Platyhelminthes), roundworms (Nematoda), and thorny-headed worms (Acanthocephala). Tapeworms (Cestoidea) and thorny-headed worms were the most common endoparasites in the specimens. The majority of the ectoparasites collected were lice (Insecta: Phthiraptera), but mites and ticks (Arachnida: Acari) were also encountered. The most common parasites detected have contrasting modes of transmission: tapeworms and thorny-headed worms are transmitted trophically while lice; mites and ticks are transmitted through intraspecific contact between birds. Therefore,
examining the parasites of these birds provides a unique perspective on the ecology of the urban landscapes where these birds were collected.

**Brielle Bartes (UW - Waukesha)**

*The S.M.A.R.T. Start: Stroke Management and Readiness Template*

**Mentor:** Lori Brock

**Co-authors:** Xiongmee Yang, Jacob Skylaski, Sireen Jaber

For the 2015 WI AHEC Inter-Professional Healthcare Case Competition, our team researched the interdisciplinary healthcare delivery system with an emphasis placed upon stroke patients. Our research efforts utilized a triple aim focus with a goal to improve health care protocols, population health, and to reduce health care costs per capita. Solutions established to meet our goal include improvements in communication, care coordination, technology, preventative medicine, and enhanced access to care for stroke victims.

**Cody Becker (UW - Green Bay)**

*Aerial Surveying and Vegetation Mapping Using Drone Technology at the Point au Sable Nature Reserve*

**Mentor:** Robert Howe

Managing natural areas, especially dynamic sites along coastal areas, need detailed and up-to-date knowledge about vegetation patterns, hydrology, and other natural features. Satellite and low altitude airplane imagery have been used successfully as resources for informed management. Recently, the availability of inexpensive remotely operated aerial drones enables researchers to obtain more detailed, higher resolution information about these sites. In this study we illustrate the use of the Iris+ quadcopter for acquiring information from the Point au Sable Nature Reserve, a 180 acre natural area owned and managed by the University of Wisconsin-Green Bay. Results have proven valuable for invasive species management, habitat mapping, and identification of potential sites for ecological restoration. As drone technology continues to improve, this approach presents many new opportunities for adaptive management of natural areas such as Point au Sable, where short term changes in environmental conditions are ongoing challenges.

**Sarah Benson (UW - Whitewater)**

*Effects of sodium chlorides on the freshwater crustacean, Gammarus pseudolimnaeus*

**Mentor:** Elisabeth Harrah

Sodium chloride is the active ingredient in many road salts used to treat ice and snow – covered roads, and it frequently ends up in nearby streams and lakes, especially during spring. It is important that chronic toxicity tests be conducted to determine what concentrations of sodium chloride may adversely affect survival and growth of aquatic organisms since it is so widely used and since aquatic organisms may be exposed for long periods of time. Three chronic toxicity tests were conducted with Gammarus pseudolimnaeus, a common amphipod species found in local waters. Amphipods were exposed, for 14 days, to six different concentrations of sodium chloride, ranging from 0 to 1200 mg/L (first test) or 0 to 2400 mg/L (second and third tests). Survival was recorded and solutions changed each day. Surviving amphipods were stored in ethanol. They will be measured for growth (length) using a dissecting microscope, camera, and Image J software. Survival ranged from 30% (2400 mg/L) to 95% (control). Survival varied somewhat among the three tests, but was generally high up to concentrations of about 500 mg/L. Measurements of growth will allow us to assess sublethal effects. Effects may result in decreased reproduction and population size in this species.

**Grant Blashka (UW - Whitewater)**

*Multimedia Performance and Recording*

**Mentor:** Jeff Herriott

In the past two years I have completed two research grants here in Whitewater, the first titled “Exploration of Electroacoustic Music through Composition and Improvisation” and the second, “Curating and Performing in a Contemporary Music Recital”. Through these grants I developed skills in programing and performing electroacoustic music and planning and curating a recital. For this grant I have utilized these skills to create several audiovisual performance environments. The final performance for the grant will take place on March 18th.

For the past three years I have studied programming in Max MSP with Dr. Jeff Herriott. During the fall semester (2015) I began working with prof. Bill
Miller as well. Max MSP is a tactile, object based programming environment commonly used in music and art. My work is focused on exploring the connection between sound and visuals in an attempt to create a symbiotic relationship between the two. To this end I’ve created projects in which video is controlled or influenced by different aspects of sound. For example, in one project low frequencies stretch and slow the video, while higher frequencies affect the brightness and saturation of the video. The research lead to the discovery of perceptual similarities between different audio and visual effects, and has served to expand my outlook on music and art as a whole.

Jacob Bogenschuetz (UW - Whitewater)  
Remote Neural Robotics  
Mentor: Ozgur Yavuzcetin

Machines controlled remotely by one’s nervous system, or even brain waves, hold incredible potential especially for prosthetics and mobility. With a growing demand for an individual to be able to quickly interact and interface with technology, this area of technology, Brain-Machine Interface (BMI), is of growing interest.

This project is investigating a cost effective means to do just that. With versatile and low cost processing units, like Arduino and 3-D printer technology, a unique, affordable, neurologically and remote controlled prosthetic arm is being constructed. This project will have wide ranging uses - for those in need of prosthetic assistance, industrial use, and even aiding in the handling of hazardous or emergency situations.

Kelsie Bolstad (UW - La Crosse)  
La Crosse Juvenile Justice Arrest and Disproportionate Minority Contact Inter-Agency (JJADMC) Task Force: A Case Study  
Mentor: Lisa Kruse

In 2008, the Carey Group released a report indicating that La Crosse County had a juvenile arrest rate higher than not only the Wisconsin juvenile arrest rate, but also three like sized counties (Kruse and Foegen 2014). In hopes to change the statistics, the Juvenile Justice Arrest and Disproportionate Minority Contact Inter-Agency (JJADMC) Task Force has collaborated to discuss different methods to help the at-risk youth in the city of La Crosse avoid contact with the juvenile system. This task force is a collaboration of key stakeholders including the Juvenile Justice Supervisor, the Health and Human Services Supervisor, school administrators, school resource officers, and youth program implementers. In this mixed methods case study, qualitative methods will be used to assess the effectiveness of the JJADMC Task Force as it redefines arrest for the city of La Crosse, and implements new diversionary programs. Interviews with the La Crosse School District School Resource Officers (SROS), the Sergeant who oversees their work, and the key stakeholders of the task force will help to gain an understanding of specific stakeholders’ views of the process and buy-in to changes. Further, observational meetings will help to evaluate the progress of the task force. Quantitative methods will be used to assess arrest and suspension data for La Crosse. This research will be beneficial for the community of La Crosse and others in understanding the most effective ways to address juvenile delinquency and disproportionate minority contact.

Joshua Borst Bergfeldt (UW - Eau Claire)  
Mediated Public Diplomacy: How News Agencies Cover Global Climate Change  
Mentor: Won Yong Jang

Climate change is no longer grounds for scientific contradiction and as such is a major policy issue both at the national and international level. The United States and China are of specific interest, due to their large size, heavy reliance on fossil fuels, and general influence internationally. They are to some degree setting the benchmark that other countries are expected to achieve, therefore no impactful global policy can be enacted without the heavy involvement of both the U.S. and China. We present an empirical comparative content analysis focusing on the unique framing of climate talk related information with regards to respective news agencies for the years 2013, 2014, and 2015. We focus on comparing the varying content involved in climate change related news coverage, taking into consideration the implications of differing governmental systems, and differing perspectives within different media system models. The findings of this study demonstrate the possibility for a comparative analysis of news coverage at
international scale, and identifying the relationship between national interests and the framing of news coverage.

Ava Boswell (UW - Stevens Point)
A Comparison of Temporal and Spatial Mammal Community Stability in Schmeckle Reserve, Stevens Point, WI
Mentor: Chris Yahake
Co-authors: Tara Buehler, Sarah Rothe

Since 2011, the Small Mammal Project as a part of The Wildlife Society has been monitoring small mammal populations between two areas in Schmeckle: the eastern edge of Lake Joanes and the Chilla Woodlot. Monitoring small mammal populations in an area is important because changes in population sizes could indicate or correlate with many factors such as amount of ground cover, food availability, predator presence, and wildlife diseases. A grid composed of an average of twenty traps was set on each site. Small mammals were marked and recaptured at each location over a four-week period each fall of the study. Morisita's Index of Dispersion was used between each site and between years for each site to measure dispersion of individuals within the two communities. We expected to find both habitats to be temporally and spatially stable. Schmeckle Reserve is a heavily used area by University of Wisconsin - Stevens Point students for research as well as by the general public. This information could be used as a comparison tool for future studies in Schmeckle Reserve, as well as to monitor habitat and wildlife health within the reserve.

Colton Branville (UW - Stevens Point)
Exploring aquaponics: comparing walleye (Sander vitreus) and tilapia (Oreochromis niloticus) production to plant growth and nutrient removal
Mentor: Chris Hartleb
Co-authors: Kayla Fuller, Taylor Remington

Aquaponic systems are recycled aquaculture systems consisting of hydroponic plants utilizing fish waste. In aquaponics water circulates from plant tanks to the fish tanks with the plants acting as a natural filter. Aquaponics doesn't require soil for plants to grow creating an agricultural situation where you produce two products with a fraction of the land needed to produce the food. Plants require many micro- and macro-nutrients, which are supplied from fish waste. Currently tilapia (Oreochromis niloticus) has been the only fish studied in aquaponic systems, so this project is examining walleye (Sander vitreus) growth with tilapia as base for comparison. We studied three replicate walleye and tilapia systems to compare water chemistry along with plant and fish growth. The water chemistry parameters measured were ammonia-N, nitrate-N, nitrite-N, orthophosphate, sulfate, iron, copper, nickel, potassium, molybdenum, alkalinity, hardness, and pH. Both repeated measures and two-factor tests were used to compare plant and fish growth differences, respectively. A walleye's diet differs from a tilapia's diet. We anticipate this will affect the plant growth as well as the water chemistry. Since modern aquaponics is a fairly new field of agricultural technology, there is much to learn on how to maximize production and efficiency.

Christa Brehm (UW - La Crosse)
The Effect of Web Interface Design on the Parallel and Distributed Computing Concepts Learning Process
Mentor: Samantha Foley

As parallel machines become increasingly common in our daily lives, it is critical for computer science students to understand how to leverage the multitude of multiprocessing machines around them. Students encounter a barrier to entry for learning how to become productive in most parallel computing environments, as the systems are often unfamiliar and complex. The OnRamp project provides an interactive web portal that allows students to launch parallel applications and explore parallel and distributed computing (PDC) concepts. In this Human Computer Interaction study, we created two alternative user interfaces for OnRamp to determine which interface is more user friendly, yet maintains educational efficacy. The first is a "quiet" design where the student chooses what information to display, and the second a "busy" design which floods the user with information. Each student will be given a pre-test and post-test consisting of the same PDC questions to compare knowledge gained before and after using OnRamp. Using SPSS, an Independent t-Test will be run to compare the means of the two groups in order to determine if there was a significant difference.
between scores. System usability will be measured using the System Usability Scale, which consists of a ten item questionnaire with five response options ranging from strongly agree to strongly disagree. SPSS will be used to determine if a correlation exists between usability and the PDC learning process.

Emma Brukner (UW - Stevens Point)
**Bacterial Influence in Producing Aphthous Ulcer (Canker Sores)**
**Mentor:** Aaron Davis
**Co-author:** Emma Ray

Canker sores are painful ulcers that frequently occur on the cheek and gums of the mouth. These mouth ulcers typically heal within two weeks of occurring, and can be triggered by multiple factors. We surveyed students at the University of Wisconsin-Stevens Point in order to determine the frequency of students who suffer from canker sores, as well as the conditions that contribute to triggering them. We found that 40% of students get canker sores on a regular basis, and that most students cannot identify a specific trigger for the occurrence of canker sores. We also determined what types of bacteria are present in the mouth of an individual with a canker sore by metagenomic sequencing, a technique that can distinguish and quantify the amount of DNA from individual species of bacteria. Saliva samples taken from controls, an individual during a canker sore, and an individual post-canker-sore were sequenced and compared to look for differences between amounts of bacteria. If a common trigger of cankers exists and can be related to the overgrowth of a bacterial species, we expect to find these answers in our survey and metagenomic data. As understanding what can trigger or confound canker sores is important in controlling the onset of mouth ulcers, our research can lead to interventions that allow for the treatment and management of the onset of cankers.

Tara Buehler (UW - Stevens Point)
**Habitat use of adult female porcupines (Erethizon dorsatum) in Sandhill Wildlife Area**
**Mentor:** Cady Sartini
**Co-authors:** Sam Lau, Anna Schneider

Porcupines (Erethizon dorsatum) rest during the day and forage at night. During the winter they can be found feeding on the cambium of trees and conifer needles. They prefer to feed on the herbaceous material of aspen trees when it becomes available in the spring. We propose that porcupines in Sandhill Wildlife Area will be found in early-successional habitat more at night than the daytime during the transitional period from winter to spring. Thirteen adult female porcupines were radio-collared in Sandhill Wildlife Area as part of a doctorate research program out of UW-Madison. They were tracked and located multiple times from March through April to compare the frequency of their locations during both day and night time periods. This information could give us more of an understanding of what habitat porcupines use as food becomes more available in the spring during and after the snow melt.

Kayla Bushweiler (UW - La Crosse)
**Effect of Heel Lifts on Achilles Tendon Stress During Running**
**Mentor:** Robert Ragan

Orthotic heel lifts, used for Achilles tendon (AT) pain, injury, etc., are thought to lower tension in the Achilles (calcaneal) tendon, though some studies show an increase. To further explore this relationship, 7 subjects participated in running at medium speed with and without 10 mm in-shoe heel lifts. Reflective markers were adhered to their bodies and 180 Hz motion capture tracked the subjects as they ran across 2 force plates. The effect of AT stress was determined using inverse dynamics and HBM static muscle force optimization. The AT moment arm was determined from published cadaver data and the AT cross-sectional area was obtained via ultrasound. A paired t-test of peak stress found the peak AT stress to be 37-52 mPa with a test statistic of p=0.014. The peak AT stress was higher (~40%) with heel lift which is in concurrence with a similar study which estimated AT force from ankle moments.

Allison Byrd (UW - Platteville)
**Metal Organic Frameworks for Selective Gas Separation Applications**
**Mentor:** Mohammad Rabbani
**Co-authors:** Jacob Taylor, Katherine VonArx, Nicholas Loes

We aimed to synthesize porous materials which are promising in separation of gas molecules based on
the preferential adsorption and the passing of gas molecules through the controlled pores of the porous architecture. Metal-Organic-Frameworks (MOFs), a new class of inorganic-organic hybrid porous materials, have been synthesized successfully using a simple and easy synthetic route. The material is thermally stable, has moderate surface areas around 1000 m²g⁻¹ and a pore size distribution around 28Å which makes this material promising in gas separation, particularly in separation of CO₂ from landfill gas. The detailed synthesis and gas uptake properties for CO₂ and CH₄ will be presented in the poster.

Richard John Caldwell (UW - Parkside)
Investigation of the effects of fiber supplementing high fat diets on the development of obesity and early signs of diabetes in mice
Mentor: Fabian Preuss
Co-authors: Lucas David Samuel, George Phillip Vanags, Ashwanth Lalithaa Padmanabhan

Most laboratory inbred strains have a highly functional food homeostat. This allows feeding the animals ad libitum, without the animals becoming overweight or developing metabolic problems. However, this ability is highly dependent on the feed composition. If the fat content in the diet is increased to 45% total energy from fat or even 60% total energy from fat, the animals will fail to self-regulate, gain weight and eventually become obese and finally develop signs of diabetes. Here we describe the progression the pathophysiology induced by the change in dietary composition, as well as the effects of an applied countermeasure – the addition of a dietary fiber to the diet, which has been suggested to act protective against the dietary induced obesity and onset diabetes.

Yo-Fan Callewaert (UW - Parkside)
Men’s Behavior towards Women as a Function of Women’s Costume Attire (Cosplay): An Experimental Investigation of Speed Dating at a Popular Culture Convention
Mentor: Sylvia Beyer
Co-authors: Rachel Boraca, Sarah Nygren, Amanda Greidanus, Alexa Laird, Kacy O’Haver

With the surge of consumer interest in popular culture media, it is surprising that little research has been conducted into the conventions that celebrate these themes. Speed dating is a staple of these conventions. Attendees are encouraged to dress up or “cosplay” as their favorite characters from movies, television, or comic books. Will a woman generate more interest from men while in costume, and if so, does the type of costume matter? We hypothesized that men are more attracted to women dressed in seductive rather than demure cosplay or in street clothes. However, it is unlikely that women’s attire is the sole determinant of men’s interest in women. In all likelihood, other factors such as women’s physical attractiveness and personality also affect men’s interest. Our study included three female confederates that differed in body type and personality. We examined whether women’s attire affects men’s interest in them at a real-world cosplay speed dating event with 54 single men participating. Men were more attracted to a female conferee when she wore a seductive rather than demure costume or street clothes, but only if she was not very engaging. Engaging confederates were popular regardless of their attire.

Eric Canania (UW - Stevens Point)
Population demographics of white-tailed deer in Schmeeckle Reserve: Overabundance and potential impacts on native plant communities
Mentor: Scott Hygstrom
Co-authors: Dana Jarosinski, Anne Vierling, Garrett Downing, Dylan Wenker

The population of white-tailed deer (Odocoileus virginianus) in North America is on the rise, with over 30 million individuals currently inhabiting the landscape. This increase in population is causing major economic and environmental problems, especially in urban nature preserves where application of management techniques is limited. Overpopulation of white-tailed deer can profoundly alter native plant and animal communities through the effects of over-browsing. Our objective was to estimate population demographics of white-tailed deer in the 103.6 ha Schmeeckle Reserve located in Stevens Point, Wisconsin. To obtain these demographics, we conducted a trail camera survey for 3, 14-day periods in late summer and fall of 2015 and winter of 2016. We established a grid of 6 trail cameras with a density of 1 camera/17.3 ha. All three surveys combined produced 7,950 pictures of
white-tailed deer. The summerA, fallB, and winterC
surveys resulted in a population estimate of 65A,
198B, and 59C individuals, respectively. We
calculated a population density estimate of 63A,
192B, and 57C deer/km². According to the
Wisconsin Department of Natural Resources, as of
2010, the population density goal for Central
Wisconsin was 10-12 deer/km². Our data suggests
that the estimated deer density in Schneekloch
Reserve is up to 17 times greater than the state's
goal. To prevent long-term damage of hardwood
regeneration and negative impacts on native plant
communities, management of white-tailed deer
should be considered.

Elise Celarier (UW - Stevens Point)
Integer Linear Programming Model for
Scheduling Corporate Training
Mentor: Andy Felt
Co-author: Robert Goszkowicz

We will present results from an independent study
in the Department of Mathematical Sciences, in
which we used integer linear programming methods
and computer resources to create training schedules
for a major corporation. We will display a
mathematical model we created which assigns a
teacher to a class and location each week, while
taking into consideration their credentials, travel
restrictions, how often a class must be taught, and
other pertinent information. We will illustrate ways
of making the model more efficient in dealing with
large amounts of data and complex requirements.
We will then compare our model's usefulness and
efficiency compared to old scheduling techniques.

Zachary Christensen (UW - Stevens Point)
Map based cloning of two male-sterility genes
in soybean
Mentor: Terese Barta
Co-author: Wyatt Beyers

Sterility refers to spores and gametes that are
abnormal or absent, or individuals that fail to
produce functional gametes to produce offspring.
Since manual cross-pollination to produce large
quantities of hybrid soybean seed is difficult and time
consuming, identifying a stable male-sterile system
would create a breakthrough in hybrid seed
production. Two male-sterile soybean mutants (ms1
and ms3) have been identified and mapped.

Objectives of this investigation were to fine map and
close these two genes controlling male fertility in
soybean. Genetic linkage mapping was used to locate
ms1 and ms3 genes to chromosomes 13 and 2
respectively. The comparisons of the genetic linkage
maps with the sequence based physical maps helped
in localizing ms1 and ms3 to 76 and 3717 Kb regions,
respectively. Predicted genes in the corresponding
regions were studied for the predicted functions and
candidate genes were identified for each of the male-
sterility genes. We are currently sequencing wild
type and mutant alleles to identify causes of mutants.
Characterization of the genes involved in male
fertility may play a critical role in development of
economically feasible soybean hybrids.

Bonnie Chan (UW - Whitewater)
A comparative analysis of the phylo-proteomic
and phylo-geographic context of the
evolutionary histories of Zika
Mentor: Robert Kuzoff

Over the past two decades Zika, a mosquito borne
Flavivirus related to the Dengue and West Nile, has
expanded around the world at an alarming rate.
Once restricted to a narrow latitudinal band in
Africa and Southeast Asia, in recent years the
number of infected individuals, worldwide, has
exploded to an estimated three to four million,
spreading to diverse Pacific islands, South and
Central America, and twelve US states. Previously,
Zika had received limited attention compared to its
deadlier relatives. However, potential severe effects
of Zika on the unborn, especially in the form of
microcephaly (reduced head and brain size) has
concerned the CDC, WHO, and numerous
governments. My research explores variation in the
Zika genome and proteome that may be associated
with its recent, rapid expansion. To explore the
phylo-geographic context of the Zika pandemic, I am
reconstructing a comprehensive phylogeny for the
flavivirus genus with dense sampling of Zika, using
MEGA, and estimating divergence times of
constituent clades, using BEAST. Additionally, I am
exploring correlations between genomic
polymorphisms and diverse characteristics, including
temporal and geographic distributions, insect
vectors, and patient symptoms, using original Python
and R programs. This study has the potential to
identify molecular determinants that impact Zika's
explosive expansion and emerging virulence properties.

Amelia Cisewski (UW - Stevens Point)
Association Between Student Awareness of Dining and Summer Conferences Local Food Sourcing Initiatives and Their Attitudes Toward Sustainability
Mentor: Jasie Steinhmetz
Co-authors: Tianna Hamm, Deanna Nelson, Anna Kašíer, Tyler Roberts

Research was conducted at a small town, Midwestern university that has been a leader in sustainability on college campuses. However, services such as local food sourcing are underused and lack student support. The purpose of this study is to determine if student awareness of local food sourcing at the university affects their concern towards sustainability. Data was collected from students in three courses that were selected based on student enrollment number and class standing. On arrival to class, students were handed a 35-question survey and given approximately ten minutes to complete it. Survey results suggest a relationship between student awareness and student attitudes towards sustainability. Therefore, strategies to increase student knowledge of sustainability in regards to food sourcing could increase student participation and support for university initiatives.

Gracia Clark (UW - Eau Claire)
Exploring consumer’s reaction in the bad gift situation across cultures
Mentor: Sydney Chinchanchokchai
Co-author: Yook Jo

Gift exchange promotes consumptions of products. It grows into huge part of profit businesses. The current study looks at the impacts of bad gift giving across cultures, especially how Western (American) vs Eastern (Asian) consumers react when they receive bad gifts and how it would affect their relationship with the giver. It extends the understandings of gift exchange in different cultures, which international businesses can use to sell gifts in different settings that have different cultural backgrounds. Moreover, it helps to design the marketing plan and can help to promote businesses to be more precise to the needs of the customer. Students (N = 257) from a university in Thailand (Eastern culture) and a university in the US (Western culture) participated in the online study in exchange for extra credit. The results show the culture differences in gift giving behavior between collectivist and individualistic cultures, especially when they receive undesirable gifts. Although individualist culture felt that the gift was more appropriate, they seemed to put an emphasis on reciprocating the bad gift. On the other hand, collectivist culture still wanted to give something good to the giver even though they did not like what they received from them.

Justin G. Coats (UW - Parkside)
Using Morphometrics to Assign Isolated Fossil Gar Scales to Specific Body Regions
Mentor: Christopher Noto

Isolated freshwater gar scales are commonly found in fossil deposits around the world. While some scales can be visually identified as mid-line or lateral line in the field, morphometrics may be used to assign many to specific body regions. 152 lateral scales representing head, trunk and tail regions were removed from a preserved modern specimen. 22 fossil lateral scales of distinct body region morphologies were collected from the Carthage Institute of Paleontology (Kenosha, WI). An outline of 75 semi-landmarks were placed on photographs of each scale using TPSdig and analyzed with MorphoJ. A Principal Component Analysis (PCA) showed that scale body depth and shape and anterior root explain most variation in morphology. A Canonical Variate Analysis (CVA) indicates significant differences between head, trunk and tail regions. Scales dorsal and ventral to the lateral midline differ significantly, but not among caudal scales. PCA shows that most fossil scales correspond to one of the body regions in modern gar, enabling specific assignment of isolated gar scales. These results show that morphometrics enables separation of isolated scales of different body regions, useful in paleobiological studies, and may be extended to identifying damaged scales or separating scales that belong to different taxa.
Antoinette Conway (Other)
Terror on Twitter: How the Islamic State of Iraq and Syria (ISIS) Exploit Social Media
Mentor: Renee Gralewicz

Governments around the world have been struck by how the Islamic State of Iraq and Syria (ISIS) exploits social media to further its extremist agenda. ISIS is unique among terrorist and religious extremist organizations throughout history in how it uses social media as a way of perpetuating an environment of fear and recruiting new members and support. ISIS’s approach has been successful because it exploits a unique aspect of modern religious extremism. Whereas religious extremist groups have often been conservative and reactionary, much of ISIS’s support has derived from well-educated, Westernized youth. For this reason, traditional media is less effective in recruiting support. Instead, more modern forms of communication and social media are better equipped to reach a young, Westernized, and technologically savvy demographic. ISIS has targeted this demographic through the use of a polished public relations department, twitter accounts, and well-produced media.

In this poster, I present research reviewing ISIS’s use of social media in the context of historical religious extremism. I review the secondary literature on religious extremism and the approaches that extremist groups have historically taken to obtain support. I then review primary sources, including twitter posts by ISIS accounts and ISIS propaganda videos. In doing so, I argue that these primary sources demonstrate that ISIS has successfully targeted a uniquely modern and youthful demographic, and therefore significantly diverged from prior approaches taken by religious extremist groups.

Paul Cooper (UW - Eau Claire)
Mentor: Eric Jamelske
Co-authors: David Hahn, Tung Nguyen

The importance of global climate change in society cannot be overstated. Specifically, China and the United States share prominent roles in the development of international climate change mitigation strategies.

Citizen opinions are crucial for policy action to mitigate climate change to occur. However, due to the complexity of the issue, public views are diverse and can be uninformed or misinformed. There is evidence that American opinions on climate change are influenced by sources advocating denial/skepticism. To better understand public views on climate change, we analyze responses to the open survey question “What comes to mind when you hear the words ‘climate change?’”

Surveys were conducted of Chinese and American citizens from May – October 2015 (N=7,556). We investigate the frequency that words/topics associated with climate change denial and/or skepticism appear in American and Chinese responses respectively. We also examine what respondents’ views, beliefs, and characteristics other than nationality are related to comments associated with denial/skepticism and analyze common themes found in these comments.

Preliminary results indicate a greater frequency of statements indicating denial/skepticism from American respondents which is consistent with their significantly lower acceptance of climate science in other survey results compared to Chinese respondents. These results also both correlate with American respondents’ political affiliation.

Our work addresses an important issue with meaningful public policy implications and thus should be of broad interest.

Adry Cota (UW - River Falls)
Detroit Alive
Mentor: Brett Kallusky

Exploring Detroit Michigan is not on the majority of students or adults lists of places to research, or explore. The city of Detroit has the power to grab people by the throat. Popular media pushes people to avoid Detroit like its a death sentence. The exploration of Detroit became extremely engaging to me. The real Detroit needed to be shown. The community within the city limits is extremely cordial. I never felt any more unsafe in Detroit then I would
have in St. Paul for instance. Detroit is more afraid of you, then you are of it.

Antonio Covelli (UW - Parkside)
Isolation and Fractionation of Humic Substances from UW-Parkside Soil
Mentor: Jason Kowalski
Co-author: Matthew Horne

Fulvic and humic acids are the organic matter components of soil. They have been characterized based on functional groups, but contain a large percent of carbohydrates mixed with smaller molecules. Fulvic acid fractions are water soluble due to a higher percentage of polar functional groups and a molecular weight range of 1000 to 10000 Da. A large body of work exists that describes the environmental origins of humic substances and their effects upon the environment. Some work has also shown that some humic substances have antimicrobial properties. A recent study has shown that soil bacteria are a potential source of bioactive compounds that have generated a new class of antibiotic drugs. This project aims to isolate fractions of humic substances that have bioactive properties. The work demonstrated here are the initial steps in producing fulvic and humic acid fractions from local soil to use for minimum inhibitory concentration assays against bacteria.

Craig Cross (UW - Whitewater)
Analysis of Volatile Organics within Dog Urine
Mentor: Paul House

This research is attempting to identify volatile organic compounds within dog urine samples which might explain behavioral reactions seen when other dogs are exposed to these same samples. Not much published research has been conducted on this topic, so the determination of these compounds would be helpful in furthering the understanding of how olfactory communication is utilized within domestic dogs. In order to determine these volatile organic compounds, the urine samples collected were analyzed using head space solid-phase micro extraction (HS-SPME) and gas chromatography and mass spectrometry (GC-MS). HS-SPME is a technique used where a coated fiber is suspended above the liquid urine. As the volatile compounds evaporate off of the liquid, they attach to the coated fiber and are then analyzed using GC-MS to
determine the presence and abundance of individual compounds collected on the fiber. Initial findings of the research have been mixed and no significant results have been discovered. Compounds present and the amounts they are present in have varied too greatly between samples to determine any form of correlation. Continuing work is being conducted to better the experimental methods by altering the temperature and time during SPME exposure to maximize reproducibility.

Rachael Cross (UW - Whitewater)
Occupied Madison Build: Community Solidarity in the Context of Neoliberalism
Mentor: Kristen Lavelle

The rising popularity of neoliberal policies and their effects are important to consider for the health of our democracy. According to Ayers and Saad-Filho (2015), neoliberalism encompasses market-oriented political tendencies and “illiberal policies towards personal and civil liberties.” The grassroots organization, Occupy Madison (OM), does not employ a representative democracy in which participants give away some autonomy, but rather a deliberative democracy, in which all participants discuss matters preceding an all-inclusive vote. This paper examines the role of participatory democracy within the context of OM Build, an organization constructing a tiny home village for the homeless, with whom I conducted an ethnography in the summer of 2015. I observed purposeful commitment to a common cause between people of radically different socioeconomic backgrounds and bonds that were reinforced daily through shared goals. Flexibility in group structure, the lack of any apparent hierarchy, and regular interactions in meetings where deliberative democracy was practiced contributed to the success of the group’s continued solidarity. I argue that, in the case of OM Build, deliberative democracy can foster solidarity between people of radically different backgrounds, encourage participation and political inclusion while reducing alienation, and be a model for combating the rise of neoliberal policies.
Jessica Curry (UW - Whitewater)
Self-Awareness in BSW Students
Mentor: Kristi Law

In this study, a sample size of 24 Bachelor of Social work students were given specific tasks to complete, these tasks being a required assignment for the BSW students. We are trying to find how the process of self-awareness works in BSW students. With informed consent and IRB approval, students completed role-play as student social workers and student clients, while other students in the classroom setting assessed and judged their peer social worker, using this information as peer feedback. Students rotated the roles and assessed one another. The goal of this study is figure out if student social workers assisting their student client would benefit from the role-play as well as from peer feedback so that it could possibly help them as a potential social worker. Given that this study is exploratory, we found limited works of literature that we found helpful to understand the process in depth. We found that a thematic analysis was necessary in analyzing out data.

Jameson Dabeck (UW - Whitewater)
Profits in the Airline Industry
Mentor: David Welsch

The airline industry is a multi-billion dollar industry that affects both tourism and commerce. Despite this, relatively little is known about this industry relative to other large industries because it is constantly changing with new technology and advancements. Each airline spends a millions of dollars on various aspects of their business to try to achieve a higher profit margin through higher productivity. This paper is looking to determine which aspect of business is most important to focus on and/or spend money on to obtain a competitive edge in an already competitive market. If an airline can centralize its focus towards one aspect, then they can get better in that one aspect and their productivity will go up in that area, thus giving them a higher profit margin. The main aspects analyzed by this paper are labor spending, plane size, airline size, various revenue and expenditure types and plane efficiency. This is a highly regulated industry in the United States, so my result could possibly have an effect on what areas get regulated and where they may be able to ease up on regulation so that the industry can thrive. Results include a positive relationship between profits and passengers, seat miles offered and miscellaneous revenues. On the flip side, there is a negative relationship between profits and labor spending.

Jesse Dahir-Kanehl (UW - La Crosse)
User Interaction with Custom Volunteer Management Website
Mentor: Kenny Hunt

The Habitat for Humanity (HFH) of La Crosse currently manages volunteers using a mixture of pen and paper, excel spreadsheets, and donor software, Donor Perfect. This way of recording events, group, and volunteer information can make it difficult and slow to retrieve and manipulate data. HFH would like a better system for volunteer management. While there are many pre-built software solutions like Volunteer Impact and Volgistics, these solutions are expensive and can be difficult to customize. Instead of building the volunteer management site from scratch it was decided to use a preexisting framework. CiviCRM is open source web software built to help non-profits organize their staff and members. CiviCRM provides functionality to create and manage groups, events, activities, relationships between contacts, and reports to summarize statistics on previously mentioned entities. This software could be used for other nonprofit groups, evaluated with more user studies, and developed into a software solution for a broader use case. Small informal user studies will be conducted frequently to gather observations on the user interface and effectiveness of the website with volunteer coordinators and volunteers.

Connor Dahlin (UW - Stout)
Contemporizing Poetry: A Study of Form and Digital Modernity
Mentor: Mitch Ogden

This project began with a creative chapbook that experimented with subject matter in poetry. I wished to infused existential themes into a medium where it wasn't typically seen. This expanded into a two year long investigation of modern poetics and what forms they take in the contemporary society.

Poetry's long history has seen itself reinvented many times over. While this has typically manifested in
changes of meter, or subject matter, we now are on the preface of a more complicated transition. Poetry's rigid; purely textual form no longer fully captures the interest of the general public. With the advent of computerized mediums, we can now start to experiment with how to further poetic expression with use of typography, various typefaces, and the digital medium as a whole. With this we can begin to ask, what will poetry in the future look like?

To embody this pursuit and research, I've assembled my own experimental collection of poems, in hopes of melding traditional and radical forms in a way that fairly complements both. With this, I've utilized my research and creative ability creating an intentionally unique collection of poems.

Amanda Danno (UW - Whitewater)  
**Mutation of Predicted Phosphorylation Sites in Brugia Malayi DAF-16**  
**Mentor:** Kirsten Crossgrove

Brugia malayi is a parasitic roundworm that causes lymphatic filariasis in humans. Lymphatic filariasis in humans can cause swelling of the lymph nodes, and leads to overall dysfunction of the lymph system. B. malayi infective stage larvae (IL3) are transmitted by mosquito to a human host, which triggers development to the L4 life stage. This transition may be regulated by the DAF-16 Forkhead Box O (FOXO) transcription factor, a protein that binds to DNA and turns on other genes. Research in other organisms has shown that phosphorylation regulates DAF-16. Phosphorylation is the addition of a phosphate group to a protein or organic molecule. It can serve as an "on, off" switch for protein function. When it is phosphorylated, DAF-16 moves to the cytoplasm; otherwise it stays in the nucleus. We hypothesize that B. malayi DAF-16 is similarly regulated by phosphorylation. We mutated three conserved phosphorylation sites to see the effect on Bm-DAF-16 placement in cell culture cells. We predict that the mutation of the phosphorylation sites will cause Bm-DAF-16 to be localized in the nucleus, because phosphorylation will not take place. This research is significant because it helps us understand parasite development and may lead to treatments or prevention of parasite infection.

Jamie Destache (UW - Stevens Point)  
**How Sport Specialization Affects Lower Extremity Biomechanics and Injury Risk**  
**Mentor:** Beth Kinslow  
**Co-authors:** Madalyn Sawdey, Chelsie Harrison, Sarah Vitale, Valerie Mielke

Currently in the media, orthopedic surgeons are advocating to de-emphasize the trend of specialization in sport to decrease risk factors related to injury. Our proposed research is to discover how sport participation, both past and current, affects lower extremity biomechanics in athletes using the Landing Error Scoring System (LESS). Specifically, the focus will be to compare the results of the LESS scores between multi-sport athletes (playing more than one sport for 5+ consecutive seasons) versus single-sport athletes. Participants will be current members of the University of Wisconsin-Stevens Point (UWSP) men’s and women’s intercollegiate basketball teams and members of the UWSP men’s and women’s intramural basketball program. Participants will complete an intake questionnaire to determine sport participation and training methods from 6th grade to the present. Each participant will be videotaped completing a jumping protocol which will then be evaluated based on the 17 pre-determined criteria of the LESS. The results of the LESS score determined if the participant had high-risk movement patterns that may pre-dispose them to injury. Due to our limited power; there is no statistically significant data found in relation to the variables tested. However, there was a difference between mean LESS scores and sport participation, mean LESS scores and gender, and mean LESS scores and level of participation. This information could prove helpful to increasing awareness of the effects of sport specialization and the potential effects on injury risk.

Amanda Dick (UW - Whitewater)  
**The Cruel, the Carnal, and the Corrupt: Why Men and Women Sought Divorce in Scotland, 1750-1800**  
**Mentor:** Jennifer Thibodeaux

In the late eighteenth century, divorce rates in Scotland took a sharp rise, with both women and men able to obtain divorce on equal terms. In order to successfully obtain divorce, a large amount of evidence had to be compiled for the prosecution and
defense, providing a wealth of documents to study. Many scholars have studied divorce in various countries and time periods, but only a few have studied it in Scotland during the eighteenth century. Using twenty-three divorce cases and both court and private documents related to the Mary Eleanor Bowes case, my study answers the question of what factors did men and women claim led to their desire to file for divorce. Three main themes arise. First, men and women filed for divorce based upon the other not fulfilling the societal and patriarchal expectations for husbands and wives during the time period. Second, religious beliefs influenced their decisions. Lastly, men and women filed for divorce due to “cruel” actions, such as physical and verbal abuse. This study gives insight on the complex relationships between married couples in a unique system that has so far been largely ignored by other scholars. This insight allows for a better understanding of relationships and marriage as a whole in the Early Modern Period, the time of the Enlightenment that preceded the Industrial Revolution.

Kyle Dobson (UW - Oshkosh)
In Vitro Metabolism of the Piperazine Nootropics Sunifiram and Unifiram Using High Performance Liquid Chromatography and Liver Microsome Fractions
Mentor: Kevin Crawford
Co-author: Kevin Crawford

Nootropics, also known as “smart drugs” have become widely available in online markets, and many of these drugs have no toxicological data to prove their safety. Examples of piperazine “smart drugs” include Sunifiram (DM-235) and Unifiram (DM-232). The metabolism of Sunifiram and Unifiram was evaluated in vitro using human liver microsomes and rat liver S9 fraction. Metabolites were identified using Reversed-Phase High Performance Liquid Chromatography (HPLC)/ Mass Spectrometry. The likely Phase I & II metabolites were specifically targeted for identification. These results will help serve as a preliminary evaluation of toxicity, although further studies are necessary to determine a full safety profile.

Shane Donohue (UW - Stevens Point)
The Biggest Thing I Am Having A Little Trouble With
Mentor: Joan Karlen

"The Biggest Thing I Am Having A Little Trouble With" is both a dance for the screen and an installation work that investigates how the medium of camera can make abstract art more accessible. This dance work has been enhanced in order to appeal to audiences that might not be familiar with the form. This exploration is made possible by experimenting with different methods in recording and editing the footage taken during the process.

Wilson Dorsey (UW - Whitewater)
Transformative Strategies in the Community Organization
Mentor: Mark McPhail

While social problems are ubiquitous, the context in which they reside often varies significantly. Transformative strategies are those which attempt to alleviate the effects of social problems. The purpose of this study is to examine the context of transformative strategies which merge the role of community and individual. To address this purpose, I question how community organizations in Milwaukee, WI, affect transformative change. Community Advocates and Urban Underground, Inc. are two organizations in Milwaukee with approaches rooted in communal – individual strategies. Quantitative data from both organizations indicates positive developments including high graduation rates of participants (Urban Underground, Inc.) and large numbers of individuals provided with health and financial support (Community Advocates). To understand the extent to which their approaches may be superimposed, however, a holistic assessment of their approaches is necessary. I analyzed the approaches of both organizations in two steps. First, I engaged in ethnographic field study, attending several of Urban Underground's youth campaigns and observing meetings between participants and volunteers within Community Advocates. Second, in-depth interviews were conducted with leaders and participants, yielding a better understanding of these organizations' effectiveness and the context of their strategies. The study concludes with a discussion of the knowledge added to our understanding of transformative strategies.
strategies by the approaches of Community Advocates and Urban Underground, Inc.

Tabitha Dorhorst (UW - Oshkosh)  
**Dietary Reconstruction of the Winnebago Phase Oneota: A Study of Dental Caries**  
*Mentor: Jordan Karsten  
*Co-author: Jordan Karsten

Archaeological studies of the late prehistoric Oneota of Wisconsin have demonstrated that this group relied on maize agricultural for at least part of their subsistence. However, the relative importance of maize is unknown. Previous stable carbon isotopic analyses have suggested that maize was of lower importance than to comparable groups in the Midwest, but to date, no study has examined Oneota dental caries rates from a regional perspective. In this study we examine 979 teeth from a minimum of 179 individuals from eight Winnebago Phase Oneota sites in Central Wisconsin. We found 8.07% of observed teeth to have at least one carious lesion. This rate of dental caries is comparable to other regional agricultural populations, suggesting that maize may have been more important than previously believed.

Zachary Dunton (UW - Oshkosh)  
**Structural and Functional Analysis of the Cold-Shock Protein RBM3**  
*Mentor: Bianchetti Christopher

Cold-shock proteins are hypothesized to allow cells to survive in cold stress conditions (~32°C). We shall be researching the cold-shock protein RNA-binding motif-3 (RBM3), which is expressed in mammals. When experiencing cold stress RBM3 expression is unregulated in many tissue types. When expressed, apoptosis is attenuated, and the decrease of synapses observed upon induction to cold stress is reversed. RBM3 is proposed to be an RNA-binding protein due to its similarity to other RNA binding proteins, but its mechanism of action is not yet clear. To date, there are two proposed mechanisms of action for RBM3: binding to pre-miRNA to facilitate RNA interference, or binding to the 60S ribosomal subunit to facilitate translation. In this project, we aim to analyze the three-dimensional structure and test its binding affinity in accordance with its structure. First, we shall transform the human and mouse variant RBM3 gene into *Escherichia coli* and force expression of the gene. Then, we will collect and purify RBM3 from the *E. coli* and use X-ray crystallography to obtain a three-dimensional model of RBM3. Finally, through a variety of binding assays, we will test RBM3's ability to bind to pre-miRNA, the 60S ribosomal subunit, and other potential targets the structure may reveal.

Allison Earl (UW - Stevens Point)  
**Evaluation of the Moses Creek Restoration**  
*Mentor: James Cook  
*Co-authors: Solimar Garcia, Isaiah Stone

Moses Creek was restored in 2010/11 with the goal of a diverse wet meadow. Progress is measured in part by the floristic quality index (FQI), which compares plant communities using conservation values. Our objective was to determine if the status of Moses Creek has improved since 2011. We recorded percent cover by species within forty-three 1 x 0.5 meter plots systematically arranged in the wet meadow during September and October 2015. These plots were established in fall 2011, and reassessed in 2012 and 2014. We analyzed our data to determine FQI, total vascular plant richness, percent of native species, percent of wetland species, and total cover. We compared data to previous inventories to determine the community's progression since 2011. FQI was calculated at 21.1 in 2015, compared to 16.6 and 20.1 in 2011 and 2014. Richness decreased from 49 species in 2014 to 32 in 2015. Native species and obligate wetland species made up 94% and 96% of the community in 2015 and 95% and 36% in 2011. Average total cover was 55% in 2015 and 37% in 2011. The dominance of woolgrass (*Scirpus cyperinus*) and common rush (*Juncus effusus*) in 2015 may explain differences in richness and wetland cover.

Kyle Ebelt (UW - Stevens Point)  
"Action or Inaction": Wisconsin State University and the Fair Housing Crisis of 1967  
*Mentor: Lee Willis  
*Co-authors: Ryan Bottomley, Jordan Straight, Kendall Talvaksoki

Our research investigates the history of housing discrimination in Portage County, specifically using Wisconsin State University history professor Jimmie Franklin as a lens through which we analyze the macro-problem that existed both locally and
throughout the United States. Dr. Franklin was hired by the university in 1966. Seeking a larger residence for his family the following year, Franklin encountered racially restrictive covenants that prevented African American renters. Although he faced many complications, Dr. Franklin and his colleagues in the College of Letters and Science challenged university administration to take a stand against restrictive covenants and to pressure the Stevens Point Common Council to pass a fair housing ordinance in the fall of 1967. We use interviews with Dr. Franklin and other faculty members who worked during Franklin's time, as well as archival and county records to demonstrate how one professor changed a community.

Paige Ehrecke (UW - Platteville)
Can a Giant Pacific Octopus Learn to Associate Color to Food?
Mentor: Rebecca Doyle-Morin

The Giant Pacific Octopus (GPO) is a well-known invertebrate found in the Pacific Ocean. There are scores of studies on similar species, however not much is known about the GPO or its visual capabilities—specifically its ability to see color. There are conflicting findings in the literature about this, with no real consensus thus far. I am working in conjunction with the National Mississippi River Museum and Aquarium in Dubuque, Iowa, to test the abilities of their GPO in an attempt to contribute to this research. The octopus is simultaneously presented with two identical jars with one yellow lid and one red lid. The red-lidded jar always contains food while the yellow-lidded jar never does. If the octopus is able to learn to open the red-lidded jar over the yellow one in each trial, it will support the hypothesis that she is able to see color—the question then becomes how she sees it. In addition to testing color vision, this research project should help us gain a better understanding of this species so that they can be better conserved. Understanding their eyes could also lead to a deeper understanding of their camouflage system, which could contribute to human technologies.

Christian Eiler (UW - Whitewater)
Efficiency of Ex Ante Flood Mitigation Spending
Mentor: Matthew Winden

A simplified permanent income hypothesis model can show that there is an economic cost to floods before they are realized. This creates an incentive to mitigate the dangers of floods, however defense spending can be costly, and thus the efficiency of such spending must be determined. This study addresses the efficiency of flood mitigation spending in Wisconsin from 1990 to 2010, asking the primary question of whether current spending on flood mitigation leads to a decrease in future defense spending. The study evaluates this by developing an ordinary least squares (OLS) model that uses lagged FEMA spending in Wisconsin as the reactive variable and current FEMA spending in Wisconsin as the independent variable, while controlling for regional specific data. The OLS estimates that for every dollar spent in the present, a decrease of eleven dollars can be seen in future spending, ceteris paribus. The result suggests that Wisconsin is mitigating the dangers of floods both effectively and efficiently. However, the result is statistically insignificant leaving a high possibility of a type I error. Further research should be done to control for intertemporal weather patterns as well as income data that is not included in the current model.

Ashley Erb (UW - Parkside)
Creating MET31-MET32 promoter swap strains to determine if the cellular roles of Met31 and Met32 are dictated by their promoters
Mentor: Traci Lee

Gene expression determines cell identity. Therefore, it is important to understand how genes get expressed. We study a very simple system in yeast to understand how sulfur metabolism genes are expressed. Met31 and Met32 are similar DNA-binding proteins that allow sulfur metabolism genes to be expressed by recruiting the expression machinery to a region just in front of the gene called a promoter. Although these two DNA-binding proteins are very similar, they play slightly different roles in regulating the expression of sulfur metabolism genes. The different roles by Met31 and Met32 may be due to how they are expressed, as
Met31 and Met32 are present at different times and at different levels in the cell. Therefore, we altered the yeast genome to replace the MET31 promoter with the MET32 promoter and vice versa to analyze how these promoter replacements will affect the ability of the Met31 and Met32 to regulate sulfur metabolism. We currently have the individual promoter replacement strains and are working on creating the promoter swap strain (that has both promoter replacements). When the promoter regions are swapped, the MET32 promoter will control Met31 expression and the MET31 promoter will control Met32 expression.

Bradley Erdman (UW - Stevens Point)
Analysis of Potential Brood Sources for Wisconsin Brook Trout Propagation
Mentor: Keith Turnquist
Co-authors: Keith Turnquist, Brian Sloss

The Wisconsin Department of Natural Resources' (WDNR) Brook Trout propagation program seeks to increase Brook Trout abundance by means of stocking for both remediation and recreational purposes. Brook Trout propagation in Wisconsin has historically relied upon numerous sources and genetic strains; recently, Ash Creek has served as the primary brood source for statewide propagation needs. A decline in Brook Trout abundance in Ash Creek has prompted the WDNR to examine other potential brood sources consistent with stock-based management. From a genetic conservation perspective, two criteria are important to consider when exploring potential brood sources: 1) they should display levels of genetic diversity consistent with naturally-recruiting Brook Trout populations in the region/state, and 2) when genetic structure is detectable, the alternative source should be genetically consistent with Brook Trout populations in the management unit targeted for propagation. Our objectives were to develop a set of easily quantified and measurable genetic diversity metrics potential brood sources must meet to comply with stock-based management, and determine if WDNR identified potential brood sources were consistent with these criteria. By comparing the genetic diversity of the five potential brood sources to these metrics and observed patterns of genetic structure throughout the state, we were able to determine if the potential brood sources, from a conservation genetics perspective, would be suitable candidates for the WDNR's Brook Trout propagation needs.

Dustan Erickson (UW - Stevens Point)
The Rise of Korean Cool: Transformation of South Korea through Neoliberalism
Mentor: Valerie Barske

In this research project, I evaluate how South Korea employs "soft power" through the marketing of popular culture to enhance international relations. Following colonial and military occupations by both Japan and the U.S., the contemporary Korean economy now competes with leaders in world economies. The economic foundation has allowed Korea's pop culture to flourish on a global scale. Since 1994, South Korea has employed the increase in popularity of Korean pop culture, known as the "Korean Wave" (Hallyu), packaged to surrounding countries such as Taiwan, Vietnam, and Philippines. Emerging as a major exporter of popular culture intersects with other ideas and policies tied to globalizing trends of neoliberalism. Through the theoretical frameworks of neoliberalism and soft power, I analyze how popular stars such as CL (Lee Chae-rin) and Psy link Korean culture with the global community. This development of a Korean Wave shows us the force of globalization and how it affects a given nation and national culture.

Victoria Ferstein (UW - Parkside)
An Implicit Test of False Memory
Mentor: Melissa Gregg
Co-author: Melissa Gregg

A substantial body of research has established that memory for an event can be modified, or in some cases falsely created, by subtle, simple suggestion. Currently there is no physiological measure that distinguishes between false memories and memories of real events. In this project, we determined whether false memories can be implicitly detected by the galvanic skin response (GSR). Participants watched a video of a crime, followed by presentation of misleading post-event information (MPI group) or accurate information (control group). We tested the GSR at 2 phases: as the memory was initially in the process of consolidation and two days later after the memory had been consolidated into long-term memory. Our hypothesis was that false memories could be distinguished from real memories by the
The results indicated a higher false memory rate in the MPI group, as well as differences in GSR between the MPI and the control groups. The results of this study have the potential to inform the issue of how to avoid false memories and how to distinguish between false memories and memories of actual events.

Elliot Franczek (UW - Stevens Point)
Characterization of Athletic Genes in Division III College Track Athletes
Mentor: Aaron Davis
Co-author: Andrea Ball

The genes ACE and ACTN3 have been associated with elite athletic performance. Angiotensin I Converting Enzyme (ACE) impacts an athlete's physical performance with respect to endurance based on the I/D polymorphism. The ACE I allele confers an advantage in elite endurance athletes. The gene α-actinin-3 (ACTN3) is has been strongly associated with sprint/power performance. The ACTN3 R allele is associated with enhanced power and sprint performance, while the ACTN3 X allele leads to reduced performance in sprint and power events. Although the association of both genes in elite runners is well established, it is not known if either gene is strongly associated with runners at the Division III college level. In order to determine if ACE and ACTN3 are associated with runners in Division III athletes, we characterized the genotypes of members of the track team at the University of Wisconsin – Stevens Point (UWSP). Sixty members of the UWSP track team were genotyped for both the ACE and ACTN3 genes. We examined if performance among distance runners was stratified based on the ACE gene (I allele outperforming the D allele), and if performance among sprinters was stratified based on the ACTN3 gene (R allele outperforming the X allele). Additionally we examine if individual improvements in personal record times are associated with an individual’s ACE or ACTN3 genotype.

Brennen Frisque (UW - Green Bay)
Developing the GAHPFinder Tool: Software to Address Conceptual Gaps
Mentor: Ankur Chattopadhyay

The undergraduate attrition rate in the CS discipline has become a nationwide issue that poses a challenge of student retention for CS educators. This challenge is linked to the improvement of knowledge retention and subject mastery of students. This poster proposes the GAHPFinder Tool to enhance undergraduate CS education through innovative strategies for addressing student conceptual gaps as well as enabling consolidation of concepts and motivating student creativity. GAHP represents a unique motivational basis for reinforced learning that enhances teaching by having students identify their own conceptual gaps (GAHPs) through self-reflections. Its novelty lies in the creation of a new experimental GAHPFinder tool, which has been designed and developed to help students discover their CS programming GAHPs via software based self-inquiry. As a research experiment, GAHP has been currently implemented in two programming classes at the CS1 and CS2 levels. These ongoing teaching experiments will analyze the initial performance of the GAHPFinder tool through survey data obtained by participating students. This poster presents the data collected as initial results from the CS teaching experiments that have used the GAHPFinder tool as well as an overview of the GAHPFinder Tool itself.

Michael Fuerte (UW - La Crosse)
Building a Simulated Multi-Context Dataset to Test for Differential Methylation in Plants
Mentor: Douglas Baumann

Methylation of DNA is a well understood epigenetic mechanism that influences gene expression and can trigger specific gene silencing in polyploid eukaryotes. Recent next-generation sequencing (NGS) techniques have allowed researchers to examine methylation rates across whole genomes and test for differential methylation across different biological conditions using newly developed analytical methods. Animals in general show methylation at cytosines preceding a guanine on the sugar phosphate backbone of DNA (CpG); however plant species are known to demonstrate methylation at context sites where a cytosine is neighbored by a
nucleotide other than guanine. Biological variables in these cytosine contexts, such as uneven spacing between CpX dinucleotide sites (X = any nucleotide not cytosine) and correlation of methyl values for similar subsequently occurring dinucleotide and trinucleotide cytosine contexts, influence the rate of methylation at the individual cytosine level. In addition, standard methods of whole-genome sequencing are costly and produce a limited amount of working data sets per treatment condition, thus any interplay between biological factors and methylation rates may not be fully observed in the data. To better understand the interaction of cytosine contexts and respective methylation rates, an algorithm in R (statistics coding software) will be used to develop simulated, but experimentally realistic, methylation data focused on plant species while incorporating a correlation factor of similarly occurring cytosine contexts.

Lorena Garceau (UW - Eau Claire)
Tracking the Use of Free Fruit and Vegetable Coupons Given to Families and Assessing the Impact on Children's Consumption
Mentor: Eric Jamelske
Co-authors: Josh Bodnar, Ryan Mikula, Levi Soborowicz

Fruit and vegetable consumption has been shown to improve health and reduce the risk of a variety of costly chronic diseases. However, poor nutrition among children, including low fruit and vegetable intake have contributed to rising rates of obesity among U.S. children which have been shown to persist into adulthood.

As a result, increasing children’s fruit and vegetable consumption has become an important focus among practitioners, policymakers and researchers. There is a variety of evidence from research showing that school-based interventions can increase children’s fruit and vegetable consumption. However, most studies reveal only modest gains in the short term.

This project was designed to influence children to eat more fruits and vegetables at home by providing free fruit and vegetable coupons to parents. We examine the coupon redemption rate and whether students whose families redeemed the coupons showed an increase in fruit and vegetable intake. Participants in this study included 121 students in fourth grade classrooms in two Western Wisconsin elementary schools.

Out of more than 7,000 $1 coupons, less than 2,000 (27.1%) were redeemed by families. Using self-report surveys timed to match coupon availability we find only modest increases in fruit and vegetable intake for children whose families redeemed the coupons. We also explore reasons and implications for these results. Our research may also have policy implications for the Supplemental Nutrition Assistance Program and the Women, Infants and Children Program.

Erin Geddes (UW - Platteville)
Effect of Pathway-Interconnectors in SEB-Induced Apoptosis Related Events in Human PBMCs
Mentor: Chanaka Mendis
Co-authors: Michelle Hendricks, Dylan Borgos, Connor Doyle, DanielleBurton

Staphylococcus enterotoxin B (SEB) is produced by the bacterium Staphylococcus aureus. SEB is a common cause of apoptosis within human peripheral blood mononuclear cells (PBMCs). The purpose of this study is to further investigate human PBMCs in order to better understand the apoptosis related events induced by SEB. C-Jun N-Terminal Kinase (JNK) has been previously identified to be induced by SEB, and has demonstrated that it inter-connects multiple signaling cascades. As a crucial pathway inter-connector in SEB-induced human PBMCs, we believe that inhibiting JNK may possess inhibitory effects on SEB-induced apoptosis. In this study, JNK specific inhibitor (SP600125) was used to specifically inhibit JNK. We will further evaluate the gene expression profile using RT and PCR. Protein expression patterns of some genes will be examined through the use of enzyme-linked immunosorbent assays (ELISAs). We believe that our work will allow us to better understand the complex interactions of multiple signal transduction pathways induced by SEB.
Johnny Glaunert (UW - La Crosse)
"Y Era Tonta Encima": The role of sexism in the construction of gay male identity in Argentina
Mentor: Stephen Mann

Recent gay rights victories such as marriage equality in the US and Argentina have prompted activists and scholars alike to revisit issues of gender-based exclusion within gay male spaces. In this oral presentation, I will examine data gathered from 47 language attitudes surveys and interviews with gay men in Buenos Aires as part of a grant-funded undergraduate research project conducted in the spring of 2015. Utilizing a modified matched-guise technique, I created Reader and Listener Attitudes surveys specifically designed to examine sexist language attitudes among straight and gay men in Argentina. My findings revealed a higher degree of sexist attitudes among straight men, who consistently rated assertive female authors as more nosy, aggressive, and vulgar than identical male authors. These findings conform with my prediction that, due to prior contemplation of gender norms, gay men would express fewer normative language attitudes than their straight counterparts. Gay participants did, however, articulate similar attitudes during the oral interviews conducted post-survey. Several gay men expressed a particular disdain for women in positions of power, describing female employers as more bossy, demanding, and unpredictable than male employers. These data support recent findings on the effects of gender bias upon formal evaluations of female authority figures while providing new insight into the role that sexual orientation plays in the construction of gendered evaluations.

Liv Griplko (UW - Parkside)
Ecological restoration progression of a coastal wetland ecosystem (Samuel Myers Park, Racine, WI, USA) based on aquatic invertebrate biodiversity
Mentor: Jessica Orlofske

I am evaluating the ecosystem health of restored wetlands at Samuel Myers Park (Racine, Wisconsin) by analyzing aquatic invertebrate biodiversity. I collected samples from the park's three wetlands in September and November 2015. Invertebrates will be identified to the lowest taxonomic level.

Throughout the restoration, I expect to find an increase in the diversity and abundance of sensitive invertebrates that would indicate a return to a natural, healthy ecosystem. Coinciding with my surveys, I collected live snails to investigate the prevalence of parasites, and whether they affect snail behavior. Snails are an intermediate host for Trematode parasites. Previous studies suggest that some of these parasites manipulate snails to move closer to shore making them more vulnerable to predation by avian definitive hosts. Based on my field observations, I expect the most mobile snails to be more visible to predators - a manipulation by the parasite to enhance transmission. To test this, I have digitally recorded snail activity to analyze their movements. Following the activity trials, I dissected each snail to census the parasites. I expect that the most active snails will have a higher parasite burden. This comprehensive evaluation of invertebrate biodiversity, including parasites, may inform further restoration of this unique, urban, coastal wetland.

Brianne Grosskopf (UW - Stevens Point)
Students Perceptions of Local Food Sourcing Compared to Actual University Efforts
Mentor: Jasia Steinmetz
Co-authors: Lauren Sommer, Aryn DeGrave, Kelly Chmela, Jacob Richmond

Many universities have acknowledged their duty to invest in and adopt sustainable commitments. The extent to which these pledges impact students may depend on students' perception and awareness of the specific practices on its campus. The purpose of this study was to assess student perceptions of local food sourcing on a Wisconsin university campus by their university's dining services (UDS), and compare these perceptions to actual practices utilized by UDS. Surveys were distributed to three different courses which were chosen to ensure a representative sample of upperclassmen and underclassmen. Of the 1,058 students enrolled in these courses, 696 participants responded. The collected data was analyzed and compared to records found in the UDS website and UDS 2014-2015 Annual Report. Results from the survey confirmed that 77% of students were not aware of UDS sustainable practices. A significant difference was found between academic standing and awareness of sustainable practices that UDS uses ($p = 0.038$). The majority of responses (54.7%), indicated
that students believe their campus offers local food, however, a large percentage (43.4%) were unsure about local food sourcing on campus. When students were asked to define “local food”, the top four most frequent definitions of local food matched the UDS definition. Results conclude that students are not entirely aware of UDS sustainable practices, including sourcing food locally. More research is needed in order to lead to results that could drive better communication of sustainable food sourcing efforts to the student body.

Joseph Grosskopf (UW - Stevens Point)
Early events of vascular occlusion development in grapevines
Mentor: Sun Qiang
Co-authors: Jonathan Sommerfild, Kai Chang

Grapevine Pierce's disease (PD) caused by the bacterium Xylella fastidiosa is a devastating vascular disease threatening the wine industries in the United States due to the PD susceptibility of most of the important commercial grape varieties. Some previous work in our lab has revealed that occlusions in the water-conduits of host grapevines are related to the vines' PD susceptibility and also strongly suggested that understanding of the vascular occlusion formation should be a key to clarify a host vine's PD susceptibility mechanism. The current study deals with the early formation process of vascular occlusion by using our pruning-induced vascular occlusion system and electron microscopy. Our results have indicated that some living cells adjacent to water-conduits modified their contact cell walls with the conduits by removing wall materials and secreting in diverse manners, resulting in a loss of structural integrity of the contact walls. The living cells then bulged toward the conduit lumen to eventually occlude the lumen. The detailed structural and morphological changes in the early formation process of vascular occlusion are fully described in this report. This information is essential for understanding of the unknown early events of vascular occlusion as well as the PD susceptibility mechanism of grapevines.

Tom Gugel (UW - Eau Claire)
Mindfulness-Based Anxiety Reduction Program: Design and Preliminary Findings
Mentors: Mickey Crothers, Ann E. Brand
Co-authors: Sarah T. Loew, Stephanie A. Beck, Zachary Donovan, Carlee Schneider

Mindfulness can be defined as a state of active attention to the present moment, in which thoughts, feelings, and physical sensations are observed from a stance of psychological neutrality. Building upon previous research, the authors developed a brief anxiety reduction intervention combining both mindfulness-based and psychoeducational elements. The participants were 11 college students who indicated at initial screening that anxiety impaired their functioning and/or quality of life, and who were not concurrently receiving any other form of psychosocial treatment to address their anxiety. The treatment consisted of six, 90-minute sessions at weekly intervals. The purpose of this pilot study was to determine whether meaningful improvement could be achieved with a very brief intervention of only six sessions. Participants' levels of anxiety, distress tolerance, emotion regulation, and mindfulness were measured at pre-test and posttest using the Beck Anxiety Inventory, the Distress Tolerance Scale, the Emotion Regulation Questionnaire, and the Toronto Mindfulness Scale, respectively. The goals of this intervention were to increase mindfulness, thereby increasing participants' emotion regulation skills and tolerance for psychological distress, and reducing their anxiety. Change scores will be used to evaluate program efficacy. Results are pending as data collection remains in progress at the time of abstract submission.

Brian Hall (UW - Stevens Point)
How Users Adapt to Slow Computer Systems
Mentor: Tim Krause

When users have a job to do and cannot just walk off because a computer is slow, how will this delay affect their work? Will tasks take longer, and if so, will they only be slowed as much as they are directly delayed by the system? If system delay causes user error, what kind of errors will users make? Are there trade-offs between system speed and user accuracy? The presentation will report the findings of a double-blind, controlled, counter-balanced experiment of 61 human participants which
examined the effects of system delay in a human-computer interface on user experience. The paper about this experiment was accepted into the Microsoft ACM Student Research Competition at the CHI 2016 conference, and will be presented there in May. This talk is a chance to learn about this project and experimental results before they are published in the ACM Digital Library. The project was a multi-disciplinary effort between the Computer Information Systems and Psychology departments, conducted over a 1-year period.

Erik Halverson (UW - Stevens Point)
Examining total nitrogen and phosphorus levels found in Yellow Perch (Perca flavescens) waste water and comparing the effects of tomato seedling growth under fish waste/commercial fertilizer treatments
Mentor: Dr. Rob Michitsch
Co-author: Richard Mahoney

Due to nutrient levels in fish waste water such as nitrogen and phosphorus, it can be used as a potential soil amendment to fertilize plants. The effects of fish waste water on tomato (Solanum lycopersicum) growth was examined in a eight week experiment at the University of Wisconsin – Stevens Point. Yellow Perch (Perca flavescens) fish waste was siphoned from acetylene tanks in the UW-Stevens Point aquaculture lab and stored in a cool environment prior to the start of the experiment. Tomatoes were planted in pots and grouped into five different treatments with five pots per treatment: Group 1 (tap water), (group 2 fish waste water), and group 3 (20-20-20 NPK commercial fertilizer balanced for nitrogen), group 4 (20-20-20 NPK commercial fertilizer balanced for phosphorus), group 5 (20-20-20 NPK commercial fertilizer balanced for nitrogen and phosphorus). Upon harvesting the tomato plants, physical measurements (eg height, dry weight, yield, etc.) of each plant were conducted and were analyzed for N, P, and K contents for the dried tomato plant tissues as well as soil samples from each pot.

Ka' Shena Harris (UW - Milwaukee)
Black Males and Educational Attainment
Mentor: Ermite Saint-Jacques

This study aims to explore the factors which may contribute to the educational attainment of second-generation Nigerian immigrants and native-born black adolescents. In terms of educational attainment, this study will examine high school completion amongst members of both groups, and the possible contributing factors. What is to be examined is whether institutional and individual factors are more pertinent to high school completion rates than socioeconomic and cultural factors which are also instrumental to students' academic success. Although an extensive review of relevant literature will be used to assist in the exploration of the possible factors, interviews will be conducted to test whether or not the factors that influence high school completion are induced by cultural, socioeconomic, institutional, and/or individual factors.

Linda Hartman (UW - Whitewater)
T.S. Eliot's The Waste Land as a Modern Retelling of the Inferno
Mentor: Elena Levy-Navarro

My paper will draw on research-primary and secondary-in order to explore the complex relationship between Dante's Inferno and T. S. Eliot's modern masterpiece, The Waste Land. An examination of Eliot's own writing—his essays, personal correspondence, and extensive notes—suggest a profound connection between the two. The paper will argue that the allusions to the Inferno are used to suggest a spiritual journey toward enlightenment, one that must, ultimately, remain unfulfilled in the modern landscape of the postwar London.

Ben Hartzler (UW - Milwaukee)
Characterization of the GABAA Receptor Subunits in a Murine Model of Asthma
Mentor: Alexander (Leggy) Arnold

The GABA<sub>A</sub> receptor is a heteropentameric ligand-gated ion channel consisting of combinations of 19 different subunits (α1–6, β1–3, γ1–3, δ, ε, π, θ, ρ). γ-aminobutyric acid (GABA) is the ligand that binds to the GABA<sub>A</sub> receptor and causes an inhibitory effect on the signal transduction cascade. Although predominantly located in the brain, recent studies have identified the receptor in immune cells, the epithelium and airway smooth muscles. Activated GABA<sub>A</sub> receptor present in the airway causes muscle relaxation and anti-inflammatory effects,
hence can be a useful target for the management of asthma. Novel subtype selective GABAA receptor positive allosteric modulators with the potential to reduce inflammation and relax constricted airway smooth muscles in-vitro have been identified. To ascertain if the ovalbumin sensitized and challenged murine model of asthma is ideal for in-vivo testing of these compounds, we have characterized the expression of the different GABAA receptor subunits in asthmatic and non-asthmatic mice. We found expression in the smooth muscles, epithelium, and chondrocytes of the α4, α5, and β3 subunits. Expression for the α1 subunit was only expressed in the chondrocytes and the γ2 subunit showed no expression in the lungs.

Dwight-Anthony Hayes (UW - Stevens Point)
The Fight for Egyptian Artifacts and Heritage: Historical and Cultural Conflicts of Globalization
Mentor: Valerie Barske

This research project evaluates historical and cultural debates surrounding the repatriating of ancient Egyptian artifacts. For example, the Rosetta Stone found in 1779 by the French and captured by the English holds ancient texts important to world heritage and literature. Another example surrounds the controversy over raiding King Tutankhamun’s tomb in 1922 by Howard Carter (1874-1939) and George Herbert (1866-1923), including the removal of important artifacts such as the king’s throne and mummified body. I examine original sources in newspapers, journals of archeologists, and archival correspondence. These works discuss Egypt’s attempts to repatriate artifacts, political tensions and cultural clashes between the United Kingdom, France, and Egypt, and the issue of tomb raiding ignited by British “recovery” actions. My research analyzes issues of race and nation as central to examining trans-national conflict resolution. In conclusion, this research seeks to promote greater cultural and historical understanding by exploring how treatments of the past remain central to contemporary global citizenship.

Erica Hegi (UW - Whitewater)
The relationships between parental involvement, music aptitude and achievements of preschool children
Mentor: Alena Holmes

Early childhood is considered a critical time period for musical development. The researcher became trained in Music Rhapsody early childhood music curriculum and taught music lessons at daycare for 12 weeks. The following research questions guided the study: (1) What are the most effective elements of Music Rhapsody curriculum with pre-school children? (2) Is there a relationship between the home musical environments, parental involvement and musical potential in young children? A total of 30 children age three to five-years-old and their parents were participating in the study. The parents completed a survey - “Parents’ Use of Music with children” (Wills, 2011). The survey elicited the following information: demographics, the nature of the home musical environments, parental musical background and their attitudes about music. Music potential has been assessed using: (1) Audite Test (Gordon, 1989) and T- EAA test (Runfola, 2015). The quantitative analyses of results indicate a positive relationship between the home musical environment variables and the music aptitude scores. The results indicate that home musical environment is predictive of developmental music aptitude and high scores on audition achievement. The qualitative data indicates that pitch matching, playing instruments and solo singing are the most effective components of Music Rhapsody curriculum.

Amber Heil (UW - Stevens Point)
Racial Disparity in America
Mentor: David Chunyu

The purpose of this research is to illustrate the reality of the racial barrier that still exists in America today. The method used to analyze the data is a multivariate analysis using cross tabulation with variables and data from the General Social Survey of 2010 and 2014. The populations of concern are the respondents identifying as “white” and the respondents identifying as “black.” The variable “degree” is used as a control variable to test each of the hypotheses. This variable is narrowed down into those respondents with a high school degree, bachelor’s degree, and graduate degree. This study
compares objective findings from the survey such as respondent’s work status and income. It also compares subjective variables such as the respondent’s opinion of government spending to improve the conditions of Blacks (2010 dataset) and the respondent’s opinion when it comes to improving their standard of living. The data strongly suggests racial disparity exists in America today. Blacks have higher unemployment and lower income than their white counterparts. In comparison, whites tended to think too much government money was being spent to improve the condition of Blacks. These results suggest that racism today takes a different form than in years past. The institutional racism that is embedded into society takes a more covert form and makes everything seem fair on the outside. By reading the facts that blacks do have higher unemployment and do make less than their equal white counterparts, a person can see the gap in America is real. In spite of this, Black respondents tended to be more optimistic when it comes to improving their standard of living than white respondents. Regardless of the opinion of some, Black lives do matter.

Connor Heinlein (UW - Whitewater)
Diurnal changes in water quality in the Whitewater Creek Watershed
Mentor: Dale Splinter

Since 2007 water quality metrics (dissolved oxygen, clarity, conductivity, nitrates, phosphates, temperature, and pH) have been sampled in the Whitewater Creek watershed. In order to further develop an understanding and comprehension of water quality and how weather, agricultural practices, and ecosystem processes affect water quality a more time intensive diurnal sampling design was created. The newly designed method shows how dependent variables (rainfall, temperature, photosynthesis) could be used to better understand how and why water quality metrics changed over a short period of time. In this study water quality sampling is performed on a diurnal basis instead of once a month. With an improved sample design it shows trends seen throughout the day to better understand the water quality instead of using just baseline data. Going further, the purpose of this study is to investigate why changes occur in water quality over 24 hours, and to compare baseline data to a more time intensive data to see if it captures an accurate snapshot of monthly conditions.

Hailey Henck (UW - Parkside)
Climbing Sucks: Do Fin Rays Help?
Mentor: Natalia Taft

There is variation among species of Hawaiian goby fishes in their ability to climb waterfalls using specialized mouth and pelvic fin suckers. We hypothesize that there are fine anatomical details of the fin rays that can explain some of this variation in climbing performance. We predict that these morphological differences are more pronounced in pelvic fins, which are used for climbing, versus pectoral fins, which are not used for climbing. We compare two species, one high performance climber and one low performance climber. We predict that high performance climbers will have wider fin rays and shorter and more numerous segments within each fin ray. We also predict that the pelvic fin rays will be stiffer than the pectoral fin rays in both species because of the modifications required for suction in the pelvic fin rays. We use classical clearing and staining techniques to observe the segmentation and branching patterns within the fin rays from two climbing species, as well as a non-climbing predator of these species. We will then perform materials testing on the remaining specimens to assess the stiffness of the fin rays of the pelvic and pectoral fins of each species.

Megan Hess (UW - La Crosse)
Mercury Concentrations in Larval Dragonflies from Streams Draining Different Land Cover Conditions in the Black River Watershed, WI
Mentor: Roger Haro

Larval dragonflies are increasingly being used to monitor concentrations of mercury (Hg) that has been deposited in aquatic systems from atmospheric coal burning fumes. Although coal burning industries alone can introduce Hg into wetlands, other anthropogenic activities, such as agricultural, can further exacerbate the methylation process. I examined streams in the Black River Watershed of west-central Wisconsin to evaluate the relationship between upstream land cover and total mercury (THg) concentration in larval dragonflies. Results demonstrate a clear gradient in dragonfly Hg levels with higher concentrations in the northern peat-
lands to lower concentrations in the southeastern trout streams, which are dominated by agricultural land covers. For the Green-striped darter species of dragonfly, Aeshna verticalis, the average concentration of total mercury in the north was 276 ng/g dry weight. Dragonflies containing these levels of THg in lakes correspond with predatory fish containing Hg concentrations that exceed EPA consumption limits. The dominance of peatland in the northern region of the Black River Watershed may explain why the larval dragonflies have higher THg concentrations than those found in the southern agricultural streams of the watershed. These peatlands tributaries drain into the Black River and may transport Hg into the Mississippi River.

Logan Hess (UW - Stevens Point)
Bulge-Disk-Bar Interplay as a Function of the Environment in Early-Type Spiral Galaxies
Mentor: Adriana Durbala

We employ a Fortran code called BUDDA (BULge/Disk Decomposition Analysis) to perform a detailed photometric analysis of early-type spiral galaxies found in different environments: isolated versus loose groups. We use green (g) and red (r) filter images from SDSS (Sloan Digital Sky Survey). The main components of a spiral galaxy (bulge, disk, bar) are modelled with appropriate mathematical functions. We present the scaling relations between parameters that describe each component of the galaxy. We explore the relative role of “nature versus nurture” (intrinsically versus environmentally driven influences) in shaping the morphology and evolution of galaxies by comparing the properties of galaxies in the two samples (isolated versus loose groups).

Liam Hicks (UW - Stevens Point)
KIAA0319 Gene Association with Dyslexia
Mentor: Diane Caporale
Co-author: Samantha Wilson

Dyslexia is a genetic disease where an individual has difficulties decoding texts. Today dyslexia is referred to as a learning disability with no cure and very limited knowledge of the underlying genetics of the disease. Dyslexia is a complex genetic disorder involving multiple genes. However, the KIAA00319 gene seems to be the most associated with the disease, since it codes for a protein responsible for the migration of neurons to the reading center of the brain during development. It has been found that there is a GT repeat within the 5’ untranslated region before the coding portion of the gene that may play a role in gene regulation. It is hypothesized that the length of GT repeat may hinder transcription of the KIAA0319 gene leading to dyslexia. To test this hypothesis, DNA was isolated from the saliva of 80 volunteers with and without dyslexia. The section of the KIAA0319 gene containing the GT repeat was amplified using PCR (polymerase chain reaction). PCR products were run on a gel for conformation, and sequenced using a fluorescently-tagged Sanger method and capillary sequencer. The length of the GT repeat was recorded and compared statistically between the control and dyslexic populations. We will present the significance of our findings at the UW-System Symposium.

Samantha Hiller (UW - River Falls)
Russian Anarchism in Joseph Conrad’s The Secret Agent
Mentor: Elizabeth Schneider-Rebozo

Joseph Conrad constantly centered his short stories and novels around real events that happened throughout his life time. Vox Populi is a magazine created to further understand Russian anarchism during the 1800s and how it pertains to Conrad’s The Secret Agent: A Simple Tale. The articles that make up the magazine focus on: what anarchy is, the difference between communism and other forms of government power, how Tsar Alexander II contributed to the establishment of Russian anarchism, and the literary effect of using historical figures as a base for his fictional characters.

Heather Hintz (UW - Eau Claire)
Pi-Expanded Coumarins with Switchable Propeller Geometries
Mentor: Bart Dahl

Planar conjugated compounds are becoming a popular topic of research because of their possible application as chemical dyes and possible role in molecular electronics as well as their interesting spectroscopic properties. The focus of this project is on analyzing planar conjugated compounds as molecular switches. Specifically, analyzing the architectures of propeller shaped molecules as pH-
driven molecular geometry switches. Previously studied crankshaft shaped compounds are pi-expanded oligocoumarin terphenyl systems with two lactone bridges. Propellers are pi-expanded oligocoumarin systems with biphenyls and terphenyls arranged in a linear fashion with three lactone bridges. The lactone bridges are used to force rigidity in the system and this orientation has demonstrated a strong absorption and emission of UV-light. This property allows us to identify if the molecule has switched to an open conformation after the proper change in pH. With these architectures the rigidity of the ary1 system could be reversibly altered by cleavage and re-formation of the lactone bridging of the arenes. Propellers have the potential to be switched from a non-planar conformation with treatment of a base, and switched back to a planar conformation with treatment with an acid. Herein, we report the synthesis and study of several propeller pi-expanded oligocoumarin systems.

Kayla Hodorff (UW - Green Bay)
Moral Beliefs and Organizational Information Security Policy Compliance: The Role of Gender
Mentor: Gaurav Bansal
Co-author: Kyle Marshall

Data breaches are a continuing problem for managers in the digital age. Currently, there is very little guidance available to companies and managers in particular on how to mitigate data breach risks arising due to malicious or negligent insiders. This study examines the factors impacting employees’ intention to violate an organization’s security policies – using hypothetical scenarios. Specifically, the research attempts at understanding the role of gender on the relationship between moral beliefs, understandability of the security policy, underlying moral issue (necessity vs. metaphor of the ledger), and intention to violate the security policy. Our results suggest that moral beliefs and understandability of the security policy lower intention to violate the policy, and do so differently depending upon one’s gender and the underlying moral issue. Data was gathered from 173 students using Qualtrics, and analyzed using SPSS. We used multiple regression to conduct the analysis. We examined regression assumptions and found no major issues. The study has several practical and theoretical implications. Theoretically - the findings suggest that it is helpful to examine the security compliance using ethical and gender perspective. The findings could help IS security managers frame security policies and devise training programs more effectively.

Bryan Hoff (UW - Stevens Point)
Past Environments of the Dinosaur-Bearing Fort Crittenden Formation in Southeast Arizona
Mentor: Samantha Kaplan

In the spring of 2014, researchers affiliated with the Arizona Museum of Natural History (AZMNH) collected eleven late Cretaceous sedimentary rock samples from the Fort Crittenden Formation in southeastern Arizona. The samples are from layers that contain dinosaur and other vertebrate remains. The University of Wisconsin-Stevens Point was asked by the AZMNH to analyze the samples for fossil pollen and other microfossils to interpret past environments. The Fort Crittenden rock members are comprised of conglomerates, shales and sandstones that are interpreted to be freshwater river and lake deposits as well as and subaerially-derived valley materials. Despite ample fossil faunal material and fossilized wood, little is known of the flora or the micropaleontology. To better understand the environments in which these dinosaur remains accumulated, we are using physical and chemical maceration techniques to disaggregate the rock and isolate pollen and other microfossils. Light and scanning electron microscopy are being used for pollen identification. An energy dispersive X-ray spectrometer, which can be used to detect cellulose presence, is being tested for pollen recognition. Preliminary results show a high degree of sediment oxidation with several possible pollen and non-pollen microfossils that may be useful as paleoenvironmental indicators.

Hillary Hoffman (UW - Stout)
Politics and College Students: How Social Hierarchy and Individual Background Affect Political Behavior and Leadership Trends
Mentor: Tina Lee

Today’s college students are our future social actors and potential political leaders. This research aims to identify voting, political participation, and leadership
trends among college students. With this information, we can attempt to identify characteristics of future leaders, discover the political traits that this generation finds desirable in a political leader, and conceptualize what our future society may look like based on the social and political issues that this generation feels most passionate about. After extensive literature review on political participation and leadership traits, an emailed survey was sent out to 2,000 randomly selected University of Wisconsin-Stout students. The multiple-choice and write-in questions were used to gather the political opinions and participation behaviors of the respondents. The responses were coded and analyzed. Through the analysis it was found that specific demographic characteristics are often related to a set of political ideas and opinions. Where one is placed within the social hierarchy has an effect on opinions of ideal political leaders, level of political participation, and perception of potential future leadership roles. Through this research, we can discover the needed enhancements of leadership and civic society in an effort to improve our future government and society as a whole.

Consumption of these five items is recorded by teachers/parent volunteers across six servings over several months for each child. This presentation compares consumption in classrooms using different delivery snack delivery methods. Specifically, intake in classrooms where the vegetable snacks were simply made accessible in repeated servings are compared to intake in classrooms where the vegetable snacks were made accessible in repeated servings and snack time was also part of an intentional experience/intervention including encouragement/praise from the teacher.

Our work addresses an important issue with meaningful public health and public policy implications and thus should be of broad interest.

Andrew Ibach (UW - Whitewater)
Use of Museum Specimens to Investigate Morphological Changes in Wisconsin Reptiles and Amphibians Over Time
Mentor: Joshua Kapfer

It is often reported that body size, of many organisms, varies across time; however, this trend is relatively unexplored in amphibians and reptiles. The purpose of this study is to investigate whether certain morphological features of reptiles and amphibians do in fact vary over time within Wisconsin. We hypothesized that there would be a decrease in body size over time, possibly due to anthropogenic effects such as temperature changes brought about by climate change, and the persecution of larger individuals due to their more obvious presence and lessened ability to conceal themselves. We collected morphological data from the UW Zoological Museum (UW–Madison) and the Milwaukee Public Museum specimen collections, processing over 6,000 specimens from Wisconsin, in order to compare measurements by the year each specimen was collected. Morphological characters measured were snout–to–vent length (amphibians and squamates), tail length (caudatans, squamates), and carapace length (turtles; to nearest 0.1 cm). Statistical comparisons were conducted on those species with the largest sample sizes. For each species, we compared sizes of individuals collected pre–1950 to sizes post–1950 via t–tests to create sample sizes as close to equal as possible in each category. Currently, no significant difference in morphological change over time has been found for

Joe Hunt (UW - Eau Claire)
Does Access, Repeated Exposure, Encouragement and Praise Increase Children’s Consumption of Vegetables for School Snack?
Mentor: Eric Janelski
Co-authors: Anna Hamer, Kjirstin Martell, Matthew Pergolski

Fruit and vegetable consumption has been shown to improve health and reduce the risk of a variety of costly chronic diseases. However, poor nutrition among children, including low fruit and especially low vegetable intake persist. As a result, increasing children’s fruit and vegetable consumption has become an important focus among practitioners, policymakers and researchers.

This research uses data from students in twelve classrooms in two Seattle, WA elementary schools (N=300) from their implementation of the USDA Fruit and Vegetable Program. We measure consumption of five vegetables: cucumber slices, celery sticks, pepper slices, salad greens and assorted roasted vegetables for school snack.
Common Gartersnakes (Thamnophis sirtalis; p=0.59473, t=1.972204, n=216), Green Frogs (Lithobates clamitans; p=0.985918, t=1.964929, n=770), or Painted Turtles (Chrysemys picta; p=0.15552, t=1.021075, n=172).

Shayla Jackson (UW - Milwaukee)
A Charter Middle School for African American and Latino Males
Mentor: Gary Williams

According to Schott Foundation of Public Education, in 2011-2012, 43 percent of Black males graduated from high school in Milwaukee. For the state of Wisconsin (2011-2012), the graduation rate for Latino males was 73 percent compared to White males' graduation rate of 93.6 percent. The purpose of this research is to examine the importance of a charter middle school to address the educational needs of African American and Latinos males in Milwaukee. This proposal will examine four significant questions. Why middle schools? Why charter schools? Why black and brown boys? Why Milwaukee? The theoretical framework is based on Urie Bronfenbrenner's Social Ecological Model (1979) and Rumberger's (1998) theory. Secondary data was gathered from: Wisconsin Department of Public Instruction, Schott's Foundation of Education, National Assessment of Educational Progress, and Milwaukee Public Schools Office of Accountability and Efficacy. The measures for this study were high school completion (graduation rates) and academic achievement on standardized tests (WSAS, ACT). Data demonstrated a need for a charter middle school that addresses the educational needs of African American and Latino males. Data also shows the city of Milwaukee's education system is in need of much improvement.

Lauren Jares (UW - Oshkosh)
Reading and Students Learning English as a Second Language
Mentor: Marguerite Penick-Parks

To conduct my research, I visited Ripon Middle School and assessed the books provided for English as a second language, or ESL, students in their specific classroom. I observed the classroom and the relationship between the students and the ESL teacher, Mrs. Robin Vaughan. I looked through all books provided in the room and took note on each of them. In addition to this, I visited the 7th grade English classroom at Perry Tipler Middle School. I was able to compare the books provided for students in the ESL classroom, and in the traditional English classroom. I noticed some overlap, and was able to recommend certain books that were in the traditional classroom that could be provided in the ESL classroom. In my findings, I was able to understand the books that ESL students are drawn to. Graphic novels are a first choice for ESL readers, and educators must understand the positive support they provide for these readers. In the classroom I visited, the books provided were not simple, but some were bilingual, specifically Spanish and English. Graphic novels may assist these students in their independence and strength in reading because they are supported by the illustrations, text bubbles, and clear character emotions included. It is important to seriously consider what books should be included in an ESL library, because this may determine the student's motivation to read, and time spent independently reading. I created a poster and presented to my class, and my instructor would like me to further my presentation.

Michael Jenssen (UW - Superior)
Environmental Monitoring Server
Mentor: Sergei Bezroukov

This project makes use of a microcontroller and an Ethernet module to compose a hardware web-server. The server will be responsible for generating a website containing information on the fly per user request. Information for the website can be polled from a temperature and other sensors connected to the server hardware. Also, the web-server can remotely accept user command to control external devices that are attached to it, for example turning on/off a heater or air conditioner. The web-server can be used to remotely monitor rooms or buildings that contain wired internet access from any other Internet enabled device using a web browser on a client computer or portable device.
Colton Johnson (UW - Marshfield/Wood County)
*Effects of Buckthorn Removal On Forest Characteristics*
Mentor: Laura Lee

Rhamnus, commonly known as Buckthorn was originally introduced as an ornamental shrub is now an invasive plant species in many of Wisconsin's forest. As buckthorn begins to take over it also begins to play an important role in our forested ecosystems.

The focal point of this project was to study the effects of the removal of buckthorn from a temperate deciduous forest ecosystem. In the year 2013 an acre plot had been cleared of buckthorn. We compared several characteristics of this plot with an adjacent plot that had not yet been cleared. In the summer of 2015 we randomly placed 12 1m² quadrats in .5 acre cleared plot and another 12 in .5 acre un-cleared plot. I sampled the following dependent variables from each of the plots: number of native tree seedlings, number of buckthorn seedlings, species richness, and measurements of soil nutrients such as nitrogen and phosphorus. Minor differences between groups in soil nitrogen levels and number of buckthorn seedlings suggests that buckthorn removal can affect ecosystem characteristics in a fairly short period of time.

Kalra Kamke (UW - Stevens Point)
*Characterization of macroinvertebrate assemblages in restored and natural wetlands in Central Wisconsin*
Mentor: Bill Fisher

Macroinvertebrates are widely accepted as quality indicators of aquatic environments and are utilized in many studies to evaluate effects on ecosystem health. While they have been used as indicators in stream riffle habitats, no macroinvertebrate metric has been established for use as an indicator across all wetland types. A study was conducted on four different wetlands around the Stevens Point community in Central Wisconsin to compare environmental quality to sampled invertebrate species. Two sites consisted of recently restored depressional wetlands, one site was a natural unrestored depressional wetland, and one site was a natural floodplain wetland of the Wisconsin River.

Samples were taken at each site by sweeping a box net through shallow vegetated locations. The specimens were field picked and then identified taxonomically to the lowest possible level. The sites for each sampling effort were assessed for quality using the wetland habitat rating established by the Wisconsin Department of Natural Resources in their development of biological index and classification of wetlands. A variety of comparative metrics were used to assess and compare each wetland site. These findings, in combination with other preliminary research, can begin to establish an overall index to be used on multiple wetland types.

Denise Kannegiesser (UW - Eau Claire)
*Impacts of On-Campus or Off-Campus Employment on UWEC Students’ Experiences*
Mentor: Holly Hassemer
Co-authors: Hanna Catron, Shannon Amberson, Loralei Zimbauer

The purpose of this project is to explore the impacts that working on-campus or off-campus has on the experiences of University of Wisconsin-Eau Claire students. Through researching this connection, we hope to show both the advantages and the disadvantages of working while in college. Although, there are national studies like this, ours is unique in that it is focused strictly on University of Wisconsin-Eau Claire students. As students ourselves, we know it can be difficult to decide whether or not it is a good idea to work while being a full time student. The findings of this study may help students make that decision. We will be gathering both qualitative and quantitative data through surveys from a random and confidential cross-section of UW-Eau Claire students. A thematic analysis of the data will illuminate trends and commonalities of employed student. We expect the results gathered here in Eau Claire to be very similar to those found in national studies on the impacts of employment and student experiences.

Jennifer Keute (UW - La Crosse)
*Chemical Analysis of Fatty Acid Residues on Archaeological Pottery of Pastoralist Communities in Northern Tanzania*
Mentor: Katherine Grillo

In the semi-arid climate of eastern Africa, mobile cattle pastoralism has been an essential way of life
for at least the past 5000 years (Prendergast et al. 2013). On the Mbulu Plateau of northern Tanzania, Research on the Archaeology of Pastoralism in Tanzania (RAPT) has discovered the largest "Pastoral Neolithic" site in the country, which dates to about 3000 years ago. Archaeologists have interpreted animal bones and ceramics found at the site as evidence of an occupation by groups of mobile people who herded cows, goats and sheep. My project focuses on carefully selecting pottery samples to be tested for fatty acid residues left through the storing or cooking of materials. With the assistance of a Gas Chromatograph/Mass Spectrometer (GC-MS), it has been determined the majority of the pottery was used for storing dairy products or cooking meat. This research will aid in understanding prehistoric modes of pastoral subsistence, cooking practices, and the importance of pottery to mobile herding populations.

Molly Kiefer (UW - Milwaukee)

17β-Estradiol activates the Wnt/β-catenin pathway in the dorsal hippocampus of ovariectomized female mice

Mentor: Karyn Frick
Co-author: Lisa Taxier

Females are more susceptible to age-related cognitive decline than males due to the loss of circulating estrogens after menopause. Understanding how estrogens regulate memory could provide beneficial information towards creating new treatments for memory disorders. Within the hippocampus, a brain region implicated in episodic and spatial memory, estrogen mediates a number of molecular pathways and has been shown through a variety of behavioral tasks to enhance memory in rodents. However, the molecular mechanisms by which estrogen mediates memory are not well understood. The Wnt/β-catenin pathway is one possible molecular mechanism mediated by estrogen. This pathway is known to regulate development and synaptic plasticity in the hippocampus. To study whether estrogen activates Wnt/β-catenin signaling, we ovariectomized female mice and infused either vehicle or 17β-Estradiol (E2) directly into the dorsal hippocampus. The animals were then sacrificed and the dorsal hippocampus was dissected either 5 minutes or 4 hours post-infusion. The biochemical technique of western blotting allowed us to quantify changes in target proteins of the Wnt/β-catenin pathway. E2 increased Wnt-related proteins, suggesting a role for estrogens in modulating the Wnt/β-catenin pathway. Future studies will characterize the necessity of Wnt/β-catenin signaling for E2-induced memory enhancement.

Erica Kleist (UW - Stevens Point)

Reproductive Histology of Mice Transgenic for Chemokine Ligand 2 (CCL2)

Mentor: Karin Bodensteiner
Co-authors: Cali Hagen, Amara Zehms

The chemokine ligand 2 (CCL2; also referred to MCP-1) is a small protein which mediates inflammatory processes and may act as a neuroendocrine modulator. Mice transgenic for CCL2 under the control of the human glial fibrillary acidic protein (GFAP) promoter overexpress CCL2 in astrocytes and develop encephalopathy with impaired blood brain barrier function. GFAP is also expressed in hypothalamic cells, suggesting a possible influence of this transgene on reproductive function. During isolation of ovarian follicles for use in in vitro culture, we noted inconsistencies in numbers of follicles obtained from putative transgenic mice. Thus, to begin to examine reproductive parameters in female mice transgenic for CCL2, experimenters blind to genotype examined ovarian histology, follicular populations, and uterine histology in transgenic (n = 5) and wild type mice (n = 3). Tissue fixed in 10% neutral buffered formalin (SARL Scientific, Kalamazoo, MI) was embedded in paraffin, serially sectioned at 5-8 μm, and stained with Hematoxylin and Eosin. Examination of ovarian tissue allowed identification of transgenic and nontransgenic individuals, but uterine histology and follicular populations did not differ. Given the small number of animals in this preliminary study, further analyses are needed, and evaluation of tissues from additional animals is ongoing.
Nathan Klopmeier (UW - Stevens Point)
Eastern Gray Squirrel Population
Demographics in Different Aged Timber Stands
Mentor: Shelli Dubay
Co-authors: Shylee Church, Nathaniel Yost, Addison Swenson

The eastern gray squirrel (Sciurus carolinensis) is an important game species in many states. In Wisconsin, the hunting season for eastern gray squirrels is open between mid-September and late January. Since 2012, long term research in Sandhill Wildlife Area, Babcock, Wisconsin, has been focused on collecting data pertaining to forest growth and the live capture of eastern gray squirrels. Three separate trapping grids were placed in timber stands harvested in different years: Mature (1932), Intermediate (1996), and Young (2011). Data have included individual squirrel information such as sex, age, weight, trap number, and trapping instance such as open bait absent, tripped bait present, tripped bait absent, and captures of non-target species. We live trap squirrels during the winter months from late January through March, until the snow melts. We will determine the population demographics, the proportion of juveniles to adults and males to females, in each timber stand. A Chi-Square test for heterogeneity will be used to determine differences between years. Analysis is ongoing.

Alexandra Koegel (UW - Stevens Point)
Atomic Layer Deposition of Manganese Sulfide Thin Films for Applications in Energy Conversion and Storage
Mentor: Shannon Riha
Co-author: Shannon Riha

As our current sources of energy continue to cripple the environment, perhaps beyond repair, an answer for clean, sustainable, and affordable energy becomes more pertinent to society’s well being. With applications in solar energy conversion and energy storage, manganese sulfide (MnS) is a potentially useful material for addressing the energy challenge. MnS has three principle phases: a high-temperature stable alpha phase and two low-temperature metastable phases, beta and gamma. Here we demonstrate the phase-controlled deposition of MnS thin films using a novel deposition technique called Atomic Layer Deposition (ALD), which is based on sequential and self-limiting surface chemical reactions. Gaseous phase hydrogen sulfide and manganese (II) bis(ethylicyclopentadienyl) were deposited via ALD to yield pure γ-phase MnS thin films at deposition temperatures ≤150°C and a mixture of the γ- and α-phase MnS at temperature between 150-225°C. Thin films were characterized using in situ and ex situ techniques including quadrupole mass spectrometry (QMS), quartz crystal microbalance (QCM), scanning electron microscopy (SEM), and x-ray diffraction (XRD). Finally, to demonstrate its potential in energy storage applications, both α- and γ-phase MnS thin films were deposited on copper foil and tested as the anode for a Li-ion battery. Excellent battery cycling stability and near-theoretical capacity make MnS a possible replacement to the traditional graphite anode in a Li-ion battery.

Emily Koehn (UW - Eau Claire)
A Continuing Analysis of Chinese and American Public Support for an International Climate Change Mitigation Treaty
Mentor: Eric Jämäskék
Co-authors: Ryan Hammer, Hunter Hermes

Climate change could be the single most important issue our society has ever faced. Additionally, China and the U.S. share the highest importance related to potential climate change mitigation policies. Thus, a better understanding of public views on climate change in these two countries is of great interest.

Surveys were conducted of Chinese and American citizens from May – October 2015 (N=7,556). We investigate support for signing an international climate treaty and what factors influence support for a treaty in each country. We use two questions randomized across respondents specifically referring to the 2015 United Nations Framework Convention on Climate Change meeting in Paris, France. One question is unconditional with no mention of the other country, while the other is conditional on knowing the other country will not sign the treaty.

Our results show greater support for an international climate treaty among Chinese respondents. Support diminishes in both countries when it is known the other country will not participate. Almost two-thirds of Americans support
signing a climate treaty with no mention of China, while just over 50% support a treaty without China’s participation.

Additionally, a variety of variables reflecting climate change perceptions are positively correlated with support for a climate treaty in both countries, while political affiliation influences support among Americans.

Our work addresses a timely and important issue with meaningful public policy implications and thus should be of broad interest.

Adam Kositzke (UW - Oshkosh)
**Biochemical Characterization of Highly Expressed Biomass-degrading enzymes from the Cellulolytic Streptomyces sp. SirexAA-E**
Mentor: Christopher Blanchetti

Streptomyces sp. SirexAA-E (ActE) is part of a complex microbial community deposited into pine trees by the invasive wood wasp Sirex noctilio. ActE secretes numerous glycoside hydrolases (GHs) that are capable of degrading cellulose and hemicellulose into oligosaccharides. While many GH families have been characterized, ActE contains several GH enzymes that belong to poorly understood GH families. SACTE_0562, SACTE_5592, SACTE_0528, SACTE_0364, SACTE_5810, SACTE_0076, SACTE_1602, SACTE_5647, and SACTE_0604 have yet to be analyzed and their role in the cellulolytic activity of SACTE remains unclear. Biochemical and structural analysis of these enzymes will elucidate their role in biomass degradation. Understanding the role of these enzymes in biomass degradation could help in the production of biofuel from biomass.

Jessica Kraase (UW - Stout)
**Cadmium Detected in Legumes and Other Food Samples**
Mentor: Ana M.Q. Vande Linde
Co-authors: Jonathan Dahlen, Grace Forrest, Alexander Olson

The uptake and accumulation of cadmium in the food chain is a public health concern. Reports from the U.S. Department of Health and the European Commission’s Institute of Health and Consumer protections indicate that the main toxic effect of cadmium is to the kidney. Cadmium is also a human carcinogen and its adverse health effects to the pulmonary, cardiovascular and muscular systems have also been reported. In this study, food samples were analyzed for their cadmium content using Atomic Absorption Spectroscopy. Cadmium was detected in all the legume samples that were analyzed, the concentrations range from $63.4 \pm 1.4 \, \text{mg} \text{ cadmium per serving in black eyed peas to } 130 \pm 5 \, \text{mg} \text{ cadmium per serving in soy beans. Cadmium was also detected in carrots, celery, peppers and spinach.}

Aaron Krebsbach (UW - Oshkosh)
**Emile de Antonio in the eyes of the FBI: Filmmaker, radical leftist, subversive**
Mentor: Stephen Kercher
Co-author: Dylan Juza

As students in a Fall 2015 “History of the American Left” course, we were assigned the task of pursuing an archival research project. For this project, we studied the types of raw materials of history—in this case, archival papers from the Wisconsin Historical Society Archives in Madison—that historians use in order to piece together the mosaic of the past. We are proposing to deliver an oral presentation—accompanied by a multimedia PowerPoint—on the subject of our research, Emile de Antonio, a left-wing documentarian and filmmaker who lived from 1919 to 1989. Specifically, our paper focuses on the uphill struggle de Antonio waged in order to produce The Weather Underground, a documentary that featured interviews with left-wing Weather Underground radicals who were fugitives from the law. When de Antonio produced this documentary he was forced to tangle with the Federal Bureau of Investigation and defend his rights as a documentary filmmaker.

William Langhoff (UW - Milwaukee)
**Drug Transport and Absorption on a Capillary Network**
Mentor: Peter Hinow
Co-authors: Peter Hinow, Ani Radunskaya

Drug delivery to the brain is more difficult than other organs due to the presence of the blood-brain-barrier. One potential method to mitigate this difficulty is to load drug molecules into artificial carriers called liposomes, and apply focused ultrasound to the target area. The ultrasound waves
cause the liposomes to release their contents, and may also increase permeability of the blood-brain-barrier. We present a compartmental model of capillary networks using a system of ordinary differential equations. Applying this model to the delivery of L-dopa (used to treat Parkinson’s disease) and Doxorubicin (used in cancer chemotherapy), we search for an ultrasound schedule which optimally delivers medicine to a specific target area while minimizing potential side-effects. By delivering medication to only where it is needed, overall health can be significantly improved. Additionally, this type of model could be adapted to individual patients’ unique anatomies, further improving quality of care.

Klaire Laux (UW - Oshkosh)
*Deinococcus aquaticus: Life or Death in a Biofilm Driven by Desiccation Tolerance*
*Mentor: Sabrina Mueller-Spitz*

*D. aquaticus* are common members of shallow freshwater biofilms where they are often exposed to drying (desiccation) and rehydration events. Desiccation tolerance is assumed to be a common trait for deinococci; however, whether this trait provides an ecological advantage for deinococci inhabiting biofilm environments that are prone to extreme variations in water availability is a question of interest.

To address this question, the survival and morphological changes of four *D. aquaticus* strains following desiccation and rehydration over six weeks was explored. Regardless of biofilm habitat, the four isolates survived desiccation; however, each strain showed different patterns of regrowth. Strain P17 doubled cell counts after weeks one and two thus demonstrating the potential for reductive division. On the other hand, the remaining strains (P43, P34, and P71) began dying after one week of desiccation. High-scale magnification of the desiccated cells revealed P17 and P34 heavily encased in a protective matrix not present in P71 or P43. Variations in long-term desiccation tolerance were attributed to extracellular material secreted. We predict that desiccation resistance in *D. aquaticus* relates to strain viability in expression and secretion of extracellular material. Additionally, the biofilm environment may provide desiccation protection to other ecotypes in a mixed community.

Amanda Leichtfuss (UW - Oshkosh)
*Halogenation of Natural Gas Components Under Mild Conditions*
*Mentor: Jennifer Schuttefield-Christus*

Hydrocarbon fuels are the major source of energy on the market today. Now that abundant quantities of shale gas have been found in many places, the focus has shifted to natural gas. Natural gas is projected to be the major hydrocarbon source of the future. Transportation of natural gas is expensive especially in the remote places where natural gas is produced. One way to lower transportation cost is to convert natural gas from the gaseous state it is extracted in to a liquid state directly at the remote sites. Traditional liquefaction processes use extreme conditions, such as high temperature and pressure, which are cost intensive. A potential solution for this technique is to utilize solar energy and a solid metal halide as a photocatalyst. Gas Chromatography-Mass Spectrometry (GC-MS) experiments were performed on "dirty" natural gas, irradiated for 3 hours under broadband light above a metal halogen salt solution in a sealed chamber and a bias of 1.5 V was applied. Interestingly, Infrared Spectroscopy (IR) experiments with no applied bias showed no halogenation. These experiments showed that halogenation of various natural gas components can be accomplished under photoelectrical conditions and is a critical first step in determining the mechanisms involved.

Erika LeMay (UW - Superior)
*The Effects of Social Perspective-Taking and Self-Focus on Stress Perception*
*Mentor: Eleni Pinnow*

Negative health impacts from stress have led to attempts to decrease stress perception. This research investigated the effect that self-focus and social perspective-taking have on the intensity that people perceive everyday stressors. Participants were assigned to either self-focus or social perspective-taking conditions, with each completing a relevant questionnaire and then all participants responding to a measurement of perceived stress. It was hypothesized that the self-focus group would score higher than the social perspective-taking group in stress perception. However, nonsignificant results imply that altering stress perception may require a less nuanced approach to manipulation for the
conditions. Further research could show that shifting focus from one's self to one's external environment may reduce stress perception.

Jonathan Lendrum (UW - La Crosse)

*Induction of intestinal dysbiosis through broad-spectrum antibiotic gavage, high-fat feeding impairs microbiota-gut-brain axis and sleep behavior in mice*

Mentor: Bradley Seebach
Co-author: Sunzel Liu

The lymphatic system, a perivascular circulatory system active during sleep phases and the recently uncovered meningeal lymphatic vasculature have brought into question the long-standing notion of immune privilege of the central nervous system. The aim of our study was to investigate relationships between altered compositions of intestinal microbiota and sleep behavior in mice. To do so, we individually housed three groups of five C57BL/6 mice in cages fit with an infrared security camera system used to record sleep behavior. Five of the mice were gavaged with a broad-spectrum antibiotic cocktail consisting of ampicillin, neomycin, metronidazole, and vancomycin in order to perturb intestinal microbiota and induce dysbiosis. To a second group of mice we used high fat (60% kcal) feeding to alter the gut-microbiome. Using chamber techniques were used to assess mucosal barrier function and whole blood parameters were measured with a HemaVet Analyzer. We found that antibiotics and high fat diet-induced dysbiosis caused a dramatic increase in intestinal permeability, indicating mucosal barrier impairment. Additionally, energy harvest capacity, spleen size and total white blood cell count was significantly reduced in antibiotic treated mice. The results of this study suggest that different states of dysbiotic damage mucosal barrier similarly, but the consequence of which leads to microbial-specific compromises in immune cell homeostasis, glympathic dysfunction and subsequent disruption in sleep-wake behavior.

Acknowledgement: NIH R15 DK097460-01A1 and UWRC grant.

Josh Letter (UW - Superior)

*Making a Pedometer*

Mentor: Sergei Bezrukov

A pedometer is a device used to calculate the steps that a person takes. The fundamental components to building one are a microcontroller (to retain data and draw conclusions from it) and an accelerometer (the measurement device, employed to gather data points). For our purposes we also installed a screen, so a user could view the number of steps they had taken at the push of a button.

Microcontroller programming is typically done in assembly or C languages. The benefit of these is that they are very light on resources and offer the programmer full control over every aspect of memory and processes run by the microcontroller. One hardship encountered in these lower level languages is that they are very cryptic and require substantial study to understand which action each line of code performs.

There is one algorithm that is quintessential to the operation of the pedometer. It involves measuring the forces acting upon the X, Y, and Z axes of the accelerometer and making a Force Vector from those readings (essentially Pythagorean theorem, but in three dimensions). Our pedometer algorithm compares this new found vector against others to dictate what represents a step and what forces are worth ignoring.

Laura Ley (UW - Eau Claire)

*Investigation of student attitudes and understanding in inorganic chemistry*

Mentor: Roslyn Theisen
Co-author: Roslyn Theisen

Strengthening instruction in STEM fields can benefit student learning as well as foster positive attitudes towards the sciences. This project tries to answer the question whether there is a measurable difference in understanding of and attitudes towards chemistry of two groups: students who complete an online or a face-to-face inorganic chemistry course. Participants will have completed a 200-level, lecture-only inorganic chemistry course at University of Wisconsin-Eau Claire, a large, Midwestern, public, undergraduate-only institution. The goal of this study is two-fold: to gather information about the impact
of online or face-to-face teaching modes on student understanding of and attitudes towards the subject of chemistry. In this study, online and face-to-face student attitudes and understanding will be assessed by several quantitative measures. Before the start of the course (pre-) and after the course has been completed (post-), a published, validated and reliable attitude survey on the subject of chemistry will be given to student participants. To quantitatively assess student understanding of inorganic chemistry of all groups, several measures will be examined and statistically analyzed, such as exam and quiz questions. Our hypothesis is that students who are enrolled in an online or a traditional face-to-face course will have the same measurable outcomes in their understanding of and attitudes towards chemistry.

Cassandra Limberg (UW - Oshkosh)
Cyber Professionalism: When Students and Social Media Collide
Mentor: Suzanne Marnocha
Co-author: Jacqueline Wnuk

This article addresses nursing students at a midwestern university and their understanding of online professionalism. Social media has contributed to confusion regarding professional identity and actions. Many nursing students lack knowledge on what is and is not professional conduct online. There is a dearth of research literature on the effects of social media on nursing students' professional identity. Despite an extensive review of the literature through Cinalhl and Medline, only fifteen articles related to research and policy were found to support the importance of online etiquette in nursing. The current study was a quasi experimental pilot study and consisted of a pre-test questionnaire administered to participants, who were recently admitted undergraduate nursing students, an in-person presentation followed by a post test. Results concluded that the students were unclear of the College of Nursing's standards and a vast majority had done something they regretted on a social media website.

Rachel Lintereur (UW - Stevens Point)
Baking Bread, Making Bombs: Ideology and Roles of Women in Nazi Era Germany
Mentor: Valerie Barske

In this research, I evaluate the dichotomy between the Nazi ideology of the "ideal" woman, including the idea of the "neue frau" or "new woman" and roles that women negotiated as part of the Nazi Party from 1933-1945. My research will examine social, cultural, historical, and political influences on women via the Nazi regime, from primarily a German perspective, while examining interpretations from other countries, including both primary and secondary sources. Specifically, I demonstrate that the roles of German women including as secretaries and nurses directly conflicted with the official ideology the Nazi regime of "Kinder, Küche, Kirche" (children, kitchen, church,) portrayed through propaganda, regulations, and government programs including marriage loans and the Winter Relief Program. As World War II began, many countries, including Germany, sought victory through pulling everyone, including women, into the war effort. Through this research, I articulate that feminine roles portrayed in Nazi era Germany stood in stark contrast to the reality of women in the World War II era, and the Nazi's defense of contradictions evident between ideal and reality.

Rachel Lutz (UW - Oshkosh)
Mathematical Abilities in Elementary Aged Children
Mentor: Lori Kroeger

Research indicates that "between 5% and 10% of children will be diagnosed with some form of learning disability in mathematics (MLD) by the time they complete high school" (Geary, Bailey, & Hoard, 2009, p. 265). This study examines domain-general and domain-specific cognitive abilities in children through measures of working memory, cognitive processing and mathematics skills and will aid in identifying children struggling to learn early mathematical concepts.
John Lynch (UW - Madison)
*De Novo Synthesis of All Stereoisomers of 2,3,6- Trideoxyhexopyranosides and Their Oligomers*
Mentor: Weiping Tang
Co-authors: Wangze Song, Jean Kim, Yu Zhao

All possible stereoisomers of 2,3,6-trideoxyhexopyranosides are prepared from readily available furan derivatives. This approach gives quick access to over 4000 possible stereoisomers of four unit pyranosides in 11 steps and nARBOSone B derivatives in 7 steps.

Katherine Macco-Webster (UW - Platteville)
*Using Microscopic Plankton Population Dynamics to Determine Nuisance Algae Treatment*
Mentor: Rebecca Doyle-Morin

Like many nutrient-rich bodies of water, Lake Joy in Belmont, WI, is plagued annually with cyanobacteria (nuisance algae) blooms. These blooms are unappealing and unsafe for organisms within and around the water. Hydrogen peroxide has shown promise in past experiments to treat such blooms without damaging beneficial plankton. However, when cyanobacteria are not present, beneficial plankton (microscopic plants and animals) will be impacted. In order to treat such blooms safely, plankton population dynamics must be fully understood during critical seasonal events such as fall turnover. Fall turnover occurs as the once warm surface water cools, sinking to the bottom and mixing the lake. Cyanobacteria populations typically decrease at this time, but some populations of plankton may become seasonally successful. If this is true, fall turnover would be an ideal time to end treatment.

Johann Mack (UW - Milwaukee)
*Empowerment of Latin Women Through Breast Cancer Awareness, Understanding, Screening, and Survivor Support*
Mentor: Sandra Underwood
Co-authors: Jessy Aguilera, Mayra Escoto

While much progress has been made in the control of breast cancer, Latina women in the United States have not equally benefited from these successes. Breast awareness and early detection are essential to reducing breast cancer mortality. Many initiatives for Latina women have been proposed to promote breast awareness and breast care, however, data suggest that Latina women across the state are not being adequately reached. Identifying women in need of breast care have been identified as a statewide imperative. Yet few report efforts have been undertaken to delimit the characteristics of Latina women in need. A cross-sectional study of the breast care needs of Latina women in SE Wisconsin was therefore undertaken. The study aimed to explore the breast awareness and breast cancer screening practices of Latina women, and the impact of sociocultural factors on breast awareness and breast cancer screening. Data were collected from 1073 women engaged in social service programs within SE Wisconsin using a investigator designed survey. The survey measures were based on the guidelines endorsed by the Komen Foundation. Data analysis revealed variations and deficits in breast awareness and screening by age, family history and health insurance status among the women in this targeted community.

Aaron Maldonado (UW - Parkside)
*Analysis of Alternatively Spliced CrXrn1-GFP Reporter mRNAs in the Green Alga Chlamydomonas reinhardtii*
Mentor: David Higgs
Co-author: Valerie Riehl

Living organisms have the ability to regulate gene expression can control development and environmental responses. In the case of plants and algae, there are nucleus-encoded proteins that aid in the regulation of photosynthesis in chloroplasts. The single-celled alga Chlamydomonas reinhardtii contains an Xrn endonuclease (5'-3') gene that is hypothesized to control the regulated degradation of chloroplast mRNAs and in turn regulate photosynthesis. Sequence analysis identified three genes in the nuclear genome of C. reinhardtii, and of these CrXrn1 is the focus of this work. We have used RT-PCR and sequencing to confirm the expression of CrXrn1 and identified mRNA splice variants, CrXrn1a and CrXrn1b. We hypothesize that the CrXrn1b mRNA encodes a protein (CrXrn1b) that is targeted to the chloroplast. Transgenic C. reinhardtii strains with different CrXrn1-GFP (green fluorescence protein) reporter genes were developed and analyzed by confocal...
microscopy to test chloroplast localization. These data suggest the CrXrn1b protein is targeted to chloroplasts. In this study, we continue to analyze CrXrn1-GFP reporter genes and the resulting mRNAs. Through the use of RT-PCR and sequence analysis, we are testing the CrXrn1-GFP mRNAs to assess expression levels and if the proposed alternative mRNA splicing occurs for these reporter mRNAs.

Alexander Markiewicz (UW - Parkside)
Invasive Decoration
Mentor: Kristin Bartel
Co-author: Laura Hauter

Decorating our interior environments is not anything new. Since the invention of the printing press, humans have been utilizing this tool as a means of making our living arrangements more visually aesthetic, personal, and unique. Often overlooked, wallpaper has been an influential tool for incorporating the exterior beauty of nature into our interior lives. Our wallpaper design adheres to this tradition by the utilization of motifs created with images of the natural vegetative species of Kenosha County. In contrast to this, we decided to play around with the dualistic nature of life by incorporating plant species that either invade or hinder the existence our town’s public land and parks.

Ramona Marquardt (UW - Stevens Point)
Do you need more than water during your workout? An examination of intra-workout carbohydrate consumption and exercise performance
Mentor: Beth Kinslow
Co-authors: Samuel Joswiak, Nicholas Lemke, Sarah Pettit

Many professionals within the fitness industry promote intra-workout nutrition to enhance performance despite a lack of support through research. The purpose of this study was to determine if carbohydrate consumption during exercise would influence endurance performance. Physically trained participants underwent a 30-minute workout while consuming one of three beverages: Gatorade, GU Hydration Drink, and non-caloric flavored water. The water was flavored with a non-caloric additive which served as a placebo for the carbohydrate drinks. At the end of the workout session, the participants performed the PACER test, a standardized test commonly used to evaluate endurance and fitness. Each participant completed three different sessions followed by a PACER test to allow for the consumption of each of the beverages. Upon completion of all testing sessions, results of the PACER tests were compared to determine if there was a benefit from intra-workout carbohydrate consumption. The results of the study showed that there was no significant benefit to consuming a carbohydrate beverage during activity that lasts less than 60 minutes compared to a non-caloric flavored water.

Christopher Marshall (UW - Whitewater)
3D Printing of Physics Tactile Objects for Science Accessibility
Mentor: Steven Sahyun

Last year, Dr. Steven Sahyun started a project to try to make science easier for visually-impaired students. Research students were brought onto the project to design (using the engineering program AutoCAD) and 3D print physics-based teaching objects.

Several objects were created, including but not limited to: a pulley system, a braille slate that uses the Gardner-Salinas braille system, a lever system, and several 3D representations of mathematical functions (created with the help of the MATLAB program. Also, a University of Wisconsin-Whitewater (UWW) 3D Campus Map (made in coordination with the UWW Center for Students with Disabilities and the UWW Geography and Geology Department) was made. There are several more objects currently being designed and perfected.

The overall goal of this project is to make physics more accessible to everyone, so in order to make this happen, the designs were put up online on Dr. Steven Sahyun’s website (http://sahyun.net/3Dphys.php) under a Creative Commons license so anyone who wants to, can just go online and download the files to print off their own objects.
Marco Mascitti (UW - Stevens Point)
Vigilance of wildlife at anthropogenic compost sites
Mentor: Cady Sartini
Co-author: Nathaniel Rice

The group size effect suggests that individual animals are less vigilant as group size increases. However, in some instances group size has been positively correlated with vigilance suggesting that vigilance varies with species composition and group size. Vigilance behavior in animals can be affected by a variety of additional factors such as quantity and quality of forage, proximity to disturbance, and kleptoparasitism. Although the extent to which species share this behavior is largely unstudied, individual species could benefit from the vigilance of other species present. We used camera traps to collect images of wildlife foraging at two anthropogenic compost sites. We defined vigilant individuals by their head position; if the animal’s head was up it was scored as vigilant, if the head was down it was scored non-vigilant. We expect to see a decrease in vigilance as conspecific group size increases. We also expect to find a decrease in vigilance as interspecies group size increases. This information is pertinent because of a lack of consensus in the existing research regarding group size and vigilance. Additionally, as urban interfaces expand information regarding wildlife behavior in human-altered habitat is increasingly necessary.

Andrew Melborg (UW - Platteville)
Influence of survey methods, distance, and weather on detection of state-endangered frogs
Mentor: John Peterson
Co-authors: Megan Hart, Amanda Carpenter

The Blanchard’s cricket frog is Wisconsin’s only endangered amphibian. The Blanchard’s cricket frog requires riverbanks with cracks and crevices in which to overwinter because they are not freeze tolerant. Riverbank development in Wisconsin has the potential to damage important habitat for this species. The Wisconsin DNR has put guidelines into place that minimize such practices in areas where cricket frogs are present. In order to determine cricket frog presence, surveys must be conducted by an individual approved by the Endangered Resources Review Program. Bringing an approved individual on site to conduct a cricket frog survey is expensive and paid for by the landowner. An option for reducing these costs is the use of recording devices in place of a human surveyor. In order to see if this is a viable option we compared recording devices to human surveyors and determined their ability to discern calls from various distances. Recorded cricket frog calls were broadcasted at a wetland and surveys were conducted at various distances and during variable whether conditions.

Martha Meyer (UW - Stout)
Self-Identity
Mentor: Tina Lee

This research will explore the complex relationships people have with their own identities. Using Qualtrics to survey Adults (18+), participants will rank their identities according to which they feel represent them the most. I will also conduct interviews with participants who have taken the survey to get more in-depth answers. The purpose of this research is to find if certain identities are more likely to be ranked higher than others and if that ranking is due to a particular experience or reason. Since I am surveying a wide range of participants and self-identity can be a complex process, this data will explore a variety of scenarios. This research will also promote self-reflexivity which could lead to a better understanding of participants own identity. By understanding their own identities, participants can better relate to others and clearly articulate their wants and needs in many situations. Some of these situations include but are not limited to, government programs, personal affairs, school environments, etc. Analysis of the data collected will help society gain an insight to why people identify themselves the way they do and how they relate to themselves and others because of it.

Liz Mielke (UW - Whitewater)
VO2 Max Changes across the Winter Months of Wisconsin
Mentor: Dr. Andrea Ednie

The snowy, cold winter months of Wisconsin differ greatly from the beautiful, sunny days of summer. Granted, it is not known if there are corresponding fitness changes in runners. This study focused on the changes in VO2 Max from late November until late March in participants of the September Discover
Whitewater Half Marathon or 5k subject volunteers. There has been research on physical activity patterns throughout winter seasons. In both northern climates and within Europe, physical activity has declined throughout the winter months (Shephard & Aoyagi, 2009; Griffiths & Dezateux, 2012; Graciamaco et al. 2013). Granted, the research done in these studies is not specific to change in fitness. The population studied is very specific and cannot be extrapolated. Therefore, to perform this study, each subject performed a pre and post VO2 Max test, also testing lactate threshold. Between tests, each filled out monthly progress reports, noting changes in fitness patterns. We expect an overall decrease in fitness. Few participants may have an increase it VO2 Max as they transition into other activities, such as cross-country skiing. Not all participants are primary runners, and, consequently, the overall variation in fitness changes is expected to vary slightly across the subjects.

Sarah Miller (UW - Eau Claire)
Terphenyl Lactone Switches: Planar Conjugated Compounds Capable of Dual-Input Geometry Switching
Mentor: Bart Dahl

Large planar conjugated systems exhibit extraordinary capacity for conductivity, fluorescence, and absorption of UV and visible light. Our previous work has proved terphenyl lactone systems are capable of electronic character augmentation by breaking lactone tethers to afford nonplanar structures, thus disrupting conjugation. Molecular switches are essential to emerging studies of drug delivery and molecular electronics and have recent applications in polymer adhesive chemistry. Terphenyl lactones remain uncharted in the literature with our group’s preliminary study being one of only a few examples. There is a distinct opportunity to hone in on structural conditions that optimize useful properties of compounds containing the terphenyl lactone subunit. The goals of this research are to (1) synthesize new moieties marked by improved solubility in organic solvent (2) confirm stoichiometric conditions for reversible switching between open and closed states with pH and redox as the stimuli (3) characterize the unique UV-Vis or fluorescence signals associated with each state, and determine number of effective switching cycles the molecules can tolerate.

Kelsey Miller (UW - La Crosse)
Effects of Triclosan on Zebrafish Cardiac Development and Function
Mentor: Tisha King-Heiden
Co-authors: Alisha Saley, Megan Hess, David Howard, Tisha King-Heiden

When using household personal care products, most of us adopt an “out of sight, out of mind” manner of thought without considering which types of contaminants are being washed down the drain and into aquatic ecosystems. One such contaminant, triclosan (TCS), is found in hand sanitizers, cosmetics, toothpaste, kitchenware, and even products such as odor fighting socks. Recent work has landed TCS in elevated scrutiny as a developmental toxicant. The extent of TCS impacts on wild fish populations remains unknown, so members of our team set out to determine its effects on zebrafish heart development and function. It was hypothesized that embryonic exposure to TCS would reduce and/or impair heart function. There was increased pericardial edema and altered heart structure upon exposure to ≥ 40 μg TCS/L, but cardiac output was only reduced following exposure to 400 μg TCS/L. A small yet significant amount of embryos showed increased incidence of regurgitation following exposure to ≥ 0.4 μg TCS/L. Our findings suggest that acute TCS exposure has the potential to cause subtle cardiac toxicity in developing fish, and further evaluation of the risks TCS poses to wild fish as well as human health is needed.

Nicole Moehring (UW - Stout)
Assembly of a Gold Nanoparticle Monolayer and its Applications
Mentor: John Kirk

Self-assembled monolayers (SAMs) are assembled using molecules that can be bound onto a surface in an organized manner typically with very simple procedures. Due to the variety of SAMs possible, there are a wide range of applications for these materials. The goal of this research is to build a SAM that will be used to capture and detect DNA in the environment. We constructed a SAM of a sulfur-terminated molecule on the surface of a glass microscope slide. Separately, gold nanoparticles were synthesized using a common, low temperature method and then assembled on the surface by
binding specifically to the sulfur portion of the SAM. The resulting gold nanoparticle-decorated surface was characterized using atomic force microscopy (AFM) to visualize areas of nicely aligned gold nanoparticles as well as areas of randomly dispersed particles. Surface-enhanced Raman spectroscopy was used to detect the capture of model organic compounds onto the gold nanoparticles, similar to the capture and detection scheme for future environmental DNA studies.

**Kevin Mohawk (UW - Stevens Point)**
**Connections on Campus: Links with Functioning**
**Mentor:** Debbie Palmer

We examined how much support in handling emotional and academic problems Introduction to Psychology students at UWSP perceived they had from others on campus. We explored whether greater perceived support from campus members was linked to stronger personal identification with UWSP and higher academic self-efficacy and motivation. We also examined connections with gender, ethnicity, racial identity and GPA at two points in the semester. Prior research studies indicated connections amongst these variables (Bandura, 2006; Honora, 2015; Matthews, Banerjee & Lauermann, 2015; Pintrich, Smith, Garcia, McKeachie, 1991; Voelkl, 1996); however, this research included only high school students (Nasir, Jones, & McLaughlin, 2011). We predicted that traditionally underrepresented students, such as minority group members, would feel less personally connected with the UWSP campus in general, and with faculty and staff and classmates in particular compared to student members of the majority group. We also expected to see older students reporting greater levels of connection with campus in general and faculty and staff and classmates in particular in comparison with younger students. It was expected that younger female students would have lower levels of academic self-efficacy and motivation in comparison to their male classmates and with older female students.

Rebekah Mokry (UW - Parkside)
**Assessing Met31 and Met32 Protein Levels upon Sulfur Limitation in MET31 and MET32 Promoter Replacement Strains**
**Mentor:** Traci Lee

Transcription (the first step in gene expression) is regulated by proteins called transcription factors (TF) that either recruit or prevent the transcription machinery from binding to the promoter of the gene. In humans, gene expression is regulated by large families of similar TFs. Members of these TF families bind the same promoter, but play different roles in controlling how the gene is expressed. We study a two-member yeast TF family of Met31 and Met32, which allows transcription of sulfur metabolism genes. Although these TFs are very similar, they regulate sulfur metabolism genes in different ways. These differences may be due to differing levels and timing of MET31 and MET32 expression. Under conditions that activate sulfur metabolism genes, such as sulfur limitation, Met32 levels rapidly increase, while Met31 levels stay relatively constant. To determine if these differences are due to MET31 and MET32 promoter differences, we altered the genome of yeast strains to exchange their promoters and examine if this promoter replacement would alter the timing and levels of Met31 and Met32 proteins. We compared protein levels of Met31 and Met32 in wildtype cells and in our promoter replacement strains upon sulfur limitation using Western analysis. Preliminary results of the promoter replacement show that when MET31 is driven by the MET32 promoter, Met31 levels rapidly increase, similar to the regular expression of Met32; however, when MET32 is driven by the MET31 promoter, Met32 levels rapidly increase, retaining its former expression pattern.

Katrina Monson (UW - Whitewater)
**Partial Cloning of the Bovine Zonadhesin Gene for the Development of Molecular Sperm Capacitation Tests**
**Mentor:** Nathaly Cormier

Zonadhesin (zan) is an acrosomal protein involved in species-specificity during gamete interaction in early events of mammalian fertilization. This protein only becomes visible on the sperm surface after capacitation, and for that reason it is a potential molecular marker to assess the fertility status of
sperm cells. Sequencing of the Zonadhesin gene (Zan) has been successful in many species including humans, pigs, and mice, but not in bulls (Bos taurus). The main objective of my project is to partially—due to its large size—clone bovine Zan. Total RNAs from bovine testis have been isolated, and the first strand cDNA synthesized. After optimization of the PCR conditions, specific primers to the 5' region of the predicted Zan sequence of B. taurus and Bison bison amplified a DNA fragment of about 1.2 kb. This PCR product is currently being cloned using the pGEM-T easy vector system I, and will then be sequenced. With this newly sequenced portion of zan, the dairy industry could benefit by having a biomarker for the fertility competency of cryopreserved sperm.

Joseph Mozuch (UW - Whitewater)
Localization and Effects of Titanium Dioxide (TiO2) Nanoparticles on Bovine Spermatozoa
Mentor: Nathaly Cormier

Sperm-mediated gene transfer (SMGT) is used to create transgenic animals by combining desired genes with semen samples and performing assisted fertilization. While this is effective in smaller mammals, it is notably less effective in larger mammals. Previous studies have shown that oxide nanoparticles (NPs) have been effective in transporting genetic material into somatic cells, though the effects on germ cells have not been extensively studied. Thus, SMGT may have a higher success rate in the presence of NPs. To that end, we looked at the effects of titanium dioxide (TiO2) NPs on bovine spermatozoa to assess viability and acrosome integrity. The purpose of this is to determine baselines for future experiments to see if TiO2 would be an effective nanoparticle for use in future experiments. The acrosome integrity and viability were monitored at 30 minute intervals for 1.5 hours. Viability was assessed by eosi-n nigrosin dye staining and acrosome integrity was assessed with PNA staining and fluorescent microscopy. The preliminary data showed no negative effect on either the sperm viability or the acrosomal integrity. The next step is to determine the localization of the TiO2 NPs within the sperm, which will be accomplished with alizarin red dye staining and confocal microscopy.

Daniel Mueller (UW - Parkside)
Alteration of the intrinsic circadian oscillators investigated during various light conditions by adding fiber to the animal’s diet
Mentor: Fabian Preuss
Co-authors: Glennisha Johnson, David Dummer, Nathan Schneiderman, Phil Berce

Locomotor behavior in mammals is derived by the combined signaling of various intrinsic oscillators which determine the behavioral patterns throughout the day. The oscillators can be reset or altered due to outer inputs, such as exposure to bright light. In mice, nocturnal animals, locomotion is predominantly occurring during the night period, yet due sample the outside light conditions throughout the day. Housing the animals under constant lighting conditions can reveal the dominant action of this particular oscillator. In constant darkness, the light entrainable oscillator continues to track time, but slowly drifts out of phase, in mice leading to locomotion periods typically shorter than 24h. Under constant light conditions, this oscillator is continuously suppressed, which exposes the period of the remaining circadian system, in mice typically running above 24h. Here we report that the systems accuracy in period length is depending on many other factors – such as the dietary composition, as addition of fiber to the drinking water supply, leads to significant changes in both the observed constant darkness and constant light free running periods.

Rusty Mundorf (UW - Milwaukee)
The spiral growth of few layer transition metal dichalogenides
Mentor: Lian Li

A new class of materials called transition metal dichalogenides have made waves in study of semiconductors in the recent years because of their enhanced optical and electronic properties in a two dimensional limit. These materials are composed of a transition metal (e.g. tungsten, molybdenum) and a chalogen (e.g. sulfur, selenium, tellurium), which can form a single atomic layer when grown properly on a substrate. The purpose of this study is to optimize the growth of transition metal dichalogenides onto a silicon dioxide substrate using chemical vapor deposition. In this method, the precursor materials (sulfur, metal oxide) and substrate are heated in a quartz tube furnace at a
pressure of 5 torr under flux of hydrogen and argon gas. The chalogen evaporates and reduces the metal oxide and ideally deposits a single atomic layer or few layer transition metal dichalcogenide onto the SiO2 substrate. The film is characterized using optical and atomic force microscopy, and Raman spectroscopy. Atomic layer MoS2 islands are found to be triangularly shaped with sizes ranging from tens to hundreds of micrometers, which also exhibits the characteristic Raman bands at 403.36 and 385.05 cm⁻¹ corresponding to the A1g and E2g modes, respectively. Atomic force microscopy imaging further confirms the single atomic layer thickness to be 0.8 nm. For few layer MoS2 films, triangular spirals are observed with both left and right handed chirality. Raman spectra show interesting features of these growth spirals, the details of which will be presented at the conference.

Victoria Nellessen (UW - Stevens Point)
Do pair bond and nesting behaviors indicate reproductive success in a captive zebra finch colony?
Mentor: Sarah-Jane Alger

The zebra finch (Taeniopygia guttata) is a well examined monogamous biparental bird. It is a species that has been shown to remain loyal as long as the mate is audible (Silcox & Evans, 1982). This loyalty can be observed through certain pair bonding behaviors. It is a sound assumption that the monogamous mating system must have a reproductive advantage in the species. The purpose of this study is to examine the effects of pair bonding and nesting behaviors on reproductive success. I analyzed data collected during the first two breeding attempts of eleven pairs of birds. Reproductive success, nesting behaviors and behaviors associated with pair bonding were compared with one another through Pearson correlation matrices and linear regression models. While some correlations were noted as significant by the Pearson matrix, linear models showed no strong relationship. The strongest trend in the data was between clumping and gathering nest material. Due to data collection methods, and analysis constraints, only trends were noted as to avoid a type I error. Further analysis is needed to examine evolutionary benefits in T. guttata loyalty strategies.

Rebecca Nelson (UW - Eau Claire)
The Effects of Different Tasks in Multitasking on Idea Generation
Mentor: Sydney Chinchanchokchial
Co-author: Sarah O’Driscoll

With the availability of mobile devices, consumers have a tendency to perform more than one task at a time. The purpose of this study is to examine how the structured vs unstructured tasks in multitasking affects consumer’s ability to generate ideas.

Participants (N = 164) were assigned to one of four conditions (Control, Stress Ball, Doodling, Coloring). In the control condition, participants completed an idea generation task in which they listed as many creative ideas as possible for the use of a newspaper. In the Stress Ball condition, participants completed the same task while squeezing a stress ball. In the Doodling condition, participants completed the task and were also given a blank piece of paper on which they could draw freely. In the Coloring condition, participants completed the idea generation task while coloring two provided images with crayons. In the two-task conditions, they had ten minutes to complete both tasks simultaneously. The results showed that participants who squeezed a stress ball while trying to generate ideas for uses of a newspaper had the greatest number of ideas generated. While the participants in the coloring condition reported they enjoyed the tasks the most, they had the lowest number of ideas generated.

Sophia Nelson (UW - La Crosse)
The Missing Link Between Sustainable Awareness and Sustainable Practices
Mentor: Henry Petersen

The purpose of this research investigation is to evaluate the differences in the desire to behave sustainably, and the actions that consumers choose to make. The research evaluates past observations of desires for sustainability, including recent growth in the subject in both popularity and availability. The research then looks at identified barriers to making sustainable purchasing decisions. A survey regarding consumer’s awareness of sustainability and sustainable options, mainly in the grocery category, as well as their sustainable purchasing behavior and perceived barriers to acting more sustainably will help to evaluate these factors. This survey will
categorize consumer based on demographic traits as well as their perceived dedication to sustainable purchasing in their daily lives. The barriers and sustainable ideals will help to better understand why consumers choose to advocate sustainability more than they tend to make purchasing decisions that align with these statements. The barriers and dedication to sustainability can be analyzed for use in sustainable marketing to realign or define the sustainability market and products.

Jesse Nitzke (UW - Parkside)
Artificial Intelligence & Personal Identity
Mentor: Jennifer Keefe

Artificial Intelligence (AI) is the topic of many science fiction stories, but that fiction is quickly becoming a reality. With technology rapidly expanding, one might start to question the role AI has with humanity. In other terms, should we consider AI just a great as, or superior to, human intelligence? The question of whether or not machines with AI could be considered human also arises, along with other questions of personal identity regarding machines. People like John Searle and Alan Turing discuss AI and if machines can “think”, while others like Derek Parfit, John Locke, and Eric T. Olson discuss matters of personal identity and what it takes to be a human. By examining both of these fields of philosophy, I hope to create a theory in which AI is a sufficient condition for being a human. However, the conditions to achieve personhood might prove to be too great for machines to accomplish.

Kelsey Noce (UW - Stevens Point)
Indigenous Intercultural Bilingual Education in Latin America
Mentor: Valerie Barske
Co-author: Cassandra May

In this research project, we examine how the Indigenous Intercultural Bilingual Education (IBIE) model (1994), has increased literacy among indigenous peoples in Latin America, but has also caused a need for indigenous peoples to negotiate their own cultural identities. Initially, this program was established to homogenize indigenous cultures with European Spanish culture and government. The bilingual education of these cultures forced a suppression of Indigenous languages, hindering academic success. By looking at primary source charts that analyze effectiveness with the evolution of IBIE as well as secondary scholarly journals, we study the impact of this model on indigenous peoples from through 2015. In addition we explore how indigenous peoples challenged the IBIE to focus more on local goals. By considering the evolution of the IBIE, we seek to recognize the move from homogeny toward acknowledgment of indigenous aspirations and needs. In the end, our research seeks to contribute to broader theoretical and on the ground conversations about the realities of globalization and global citizenship.

Samantha Noll (UW - Parkside)
The Effects of Chronic Headphone Use on Perceptual Organization Ability, Peripheral Vision, and Auditory Memory
Mentor: Melissa Gregg

Previous research has demonstrated that the overuse of headphones can lead to hearing loss, but the effect of headphone use on perceptual abilities important to navigating in naturalistic environments is not known. In the present study, we investigated the relationship between headphone use and three different measures: auditory perceptual organization ability, peripheral vision tracking, and auditory memory. Auditory perceptual organization skills were measured with a same/different judgment on two consecutive, naturalistic auditory scenes that had the same sounds or one differing sound. Peripheral vision tracking was measured with a peripheral motion task in which participants had to determine whether two patterns of motion presented in the periphery were the same or different. And, auditory memory ability was measured by presenting participants with a study phase of 64 environmental sounds, followed by a recognition memory test for those sounds. The results indicated that extensive headphone use is related to decreased performance on perceptual tasks but improved auditory memory performance. Thus, although headphone use does cause deficits in some areas of perceptual processing, headphone use may be advantageous to improving auditory memory capacity.
Danielle Olsen (UW - Milwaukee)
**Health Promotion and Chronic Disease Prevention: Personal and Professional Care**
**Mentor:** Sandra Millon Underwood  
**Co-author:** Erin Green

Chronic diseases are among the most common causes of disability and death in the United States. The feet have been described as the “mirror” of a person’s general health given that signs and symptoms of chronic disease are often reflected in the feet. Why then, are the feet often ignored, overlooked, neglected and taken for granted? A cross-sectional exploratory study was undertaken to explore perceptions of the importance of foot health and to identify needs relative to foot health and foot care. Data was collected from 1617 men and women engaged in social service and community empowerment programs within S.E. Wisconsin using an investigator designed survey. The survey measures were based on the principles of foot care endorsed by the American Medical Association. Data collected were reviewed, tabulated, scanned and entered into a computerized database, then analyzed using descriptive and inferential statistics. Data revealed that the majority of participants felt that foot care was important to their overall health, but significant variations were noted relative to the participant’s age, race, education, and health history and foot care. This presentation will provide an overview of study findings and efforts undertaken to address the health promotion and care needs of the community.

Jacob Olufs (UW - Stevens Point)
**Transient Thermal Imaging of Quantum Cascade Lasers (QCLs) by Thermoreflectance Microscopy**
**Mentor:** Maryam Farzanah  
**Co-authors:** Don Lindberg, Tom Earls, Luke Mawst

Quantum Cascade Lasers (QCLs) are high power, mid-infrared semiconductor laser diodes with a broad range of applications in remote sensing, fiber optic communications and broadband spectroscopic analysis. It is known that excess heat affects the performance of a QCL, and its efficient operation and high output power depend strongly on improved thermal management and heat dissipation. Therefore, it is important to understand the temperature distribution and heat flow in QCLs in order to improve their design with regard to thermal management. In this presentation we discuss the time-dependent thermal response of a QCL to a heating pulse, and explore the dependence of this transient response to different pulse widths and amplitudes. In order to determine variations in temperature, we study thermal images obtained by thermoreflectance microscopy. This technique is based on measuring the relative changes in the reflectivity of the surface of QCL, which are directly proportional to changes in surface temperature. These thermal maps yield valuable information about the spatial distribution of temperature over the laser facet and will be used to determine thermo-physical parameters of the laser structure. This work will be extended in future to include the study of thermal properties of monolithically integrated arrays of QCLs.

Chyenne Osgood (UW - Milwaukee)
**How Broadband Speech Maintains Intelligibility at High Intensities**
**Mentor:** Peter Lenz

The research piloted in Dr. Warren’s Perception Lab is conducting experiments to improve certain types of hearing loss for hearing aids. The goal is to develop a new method designing hearing aids for people where the current hearing technology is ineffective. The experiment uses an age range of 18-36 year olds within UWM. To create a foundation for the experiments, the lab tested average hearing levels of students. After their level of their hearing is documented, the participants are moved to another soundproof booth to conduct the experiments. Depending on the experiment, there are three, the subjects are tested on different decibels levels. A decibel (dB) is a unit used to measure the intensity of sound. The higher the decibel the louder the sound. The subjects are given 10 sets of 12 generic sentences. They go through the sentences at different pitches and levels of intelligibility. The experiment includes white noise, which contains, all the frequencies within the range of human hearing, producing it all at equal amounts. At first it was at a low decibel level, 30 decibels below the sentence’s decibel. Then the white noise increased and successively the intelligibility of the sentences also increased. Most subjects experience what is called the Rollover Effect.
Joshua Panter (UW - Stevens Point)
*Puppet Diplomacy: Analyzing Sesame Street in Palestine, Israel, and Pakistan*
**Mentor:** Valerie Barske

In 1966, Joan Ganz Cooney had a vision of a televised pre-school educational program to "master the addictive qualities of television and do something good with them." Cooney's vision has since been realized through Sesame Street Workshop in over 140 countries with countless children across the entire globe. Over 20 Sesame programs are currently individually crafted and created for the specific cultural identities of their targeted audiences. So is Sesame Street's promotion of cultural understanding and literacy an attempt to globalize shared values or is the programming another product of "Western" cultural imperialism? This research examines the motivations guiding Sesame Street's international programming, specifically comparing programs in Israel, Palestine, and Pakistan. After briefly discussing the definition of cultural imperialism and then the political and social history of these three countries (1980s-Present), this project compares Sesame Street's programming in each country. My research considers original primary sources and secondary scholarly journal articles to focus on the funding of the programs from specific governments and NGOs, as well as the social or political challenges the programs encountered. I focus on how the targeting of children through media intersects with processes of globalization that present both opportunities and challenges for local populations.

Matthew Phillips (UW - Stevens Point)
*Non-Celiac Gluten Sensitivity*
**Mentor:** Diane Caporale

Non-Celiac Gluten Sensitivity (NCGS) is a gastrointestinal disease occurring in 3-6% of the population, while celiac disease (CD) and wheat allergy (WA) are only found in 2-4%. This indicates that 17 million Americans may have NCGS. Only by eliminating a diagnosis of CD and WA through medical testing and the elimination of foods from their diet can a patient be diagnosed with NCGS. Some reports have shown that proteins embedded in the membranes of leukocytes known as human leukocyte antigens (HLAs) are linked to comparable gastric diseases like CD and WA. It is possible that certain HLA genotypes may also be associated with NCGS. To test this hypothesis, we screened a cohort of 50 NCGS and 50 non-NCGS participants for their HLA beta genotypes, using AllSet+ Gold DQ beta 1 high resolution allele-specific PCR kits. DNA fingerprints were generated by electrophoresing the PCR products on large agarose gels and photodocumented for interpretation. Unimatch Plus SSP was performed to determine the p value or significance of whether certain HLA DQ genotypes are associated with NCGS. If a genotype correlates with NCGS, then this could be used as a more efficient diagnosis tool.

Sean Piette (UW - Stevens Point)
*Defining Priority Conservation Targets Using Land Cover Metrics*
**Mentor:** Aaron Thompson

The Plover River Watershed project is for the preservation and protection of water quality in the Plover River Watershed. The main goal of this research is to identify the prime location for protecting land that will have the greatest impact on water quality for the river. The protection of land is a newer concept in the Natural Resources field that looks to preserve the land from development before the problems of water quality occur.

Ally Plecki (UW - Whitewater)
*Preferential Growth Habitats for Morel Mushrooms*
**Mentor:** Peter Jacobs

Morel (Morchella sp.) mushrooms are a highly sought after species of wild mushroom. They are used in a diverse array of cooking and represent a significant sector in the gourmet foods industry. Many mushrooms used in these applications are cultivated and mass-produced to meet demand. However, morels cannot be cultivated and therefore yearly supply is dependent on wild yields, which can be unpredictable and unpredictable. There is much debate surrounding the best growing conditions and habitats for morels. This investigation looks at habitat characteristics from three sites such as soil temperature, soil moisture, soil composition, terrain and slope, and surrounding vegetation. These habitat markers were used to find any commonalities that would indicate habitat characteristics that are supportive of morel proliferation. Analysis of the soil
characteristics did not reveal any significant correlations between the variables measured and morel growth. However, sites that had garlic mustard (Alliaria petiolata) present showed a significant decrease in or complete elimination of morel yields. Garlic mustard is known to exert antifungal properties in soil environments. Field observations in this study support the theory that garlic mustard infestation is degrading or eliminating morel habitat in southern Wisconsin.

Jacob Poppe (UW - La Crosse)
That’s So Trashy: Studying Refuse Pits at the Tremaine Site (47LC95)
Mentor: Constance Arzigian

Humans are repetitive beings. These repetitive behaviors affect the space and cultural material of the people you utilize them. This repetition of behaviors forms into larger patterns which can be seen culturally, and archaeologically. Archaeology uses cultural material and remains of these patterns to better understand the people and culture they came from. For my research, I am studying refuse pits at the Tremaine Site (47LC95). The Tremaine Site was largely occupied by the Oneota, a cultural complex that existed in the La Crosse area from around A.D. 900 to A.D. 1600. I will use the combined analysis of ceramics, lithics, floral, and faunal data to further our understanding how three refuse pit’s locations and formations represent the past activities of the Oneota. My data so far suggests that there are differences among the features, illuminating possible cultural activities.

Lindsey Price (UW - Stevens Point)
The Effect of Sprint and Endurance Genes in Division III College Swimmers
Mentor: Aaron Davis

Are the fastest swimmers the product of environment (training and nutrition) or do they carry favorable genes that give them a competitive advantage? In recent years the field of performance genetics has identified several genes that contribute to enhanced athletic performance at elite levels of competition, however it is unknown if any of these genes favor athletic performance at lower levels of competition. In order to determine the contribution of genes to athletic performance we characterized several genes in Division III College swimmers. We focused on genes related to sprint performance (ACTN3, BMP2, ACVR1B, PPAR) or endurance performance (ACE, ACSL1, GABPB1, NOS3). We compared these genes with the performance of specific events swam and the time of rest needed for optimal performance, specifically for each swimmer. We also analyzed the effect that favorable alleles might play in a swimmer’s ability to improve performance over their college career.

Jennifer Rathsack (UW - Whitewater)
Young Children’s Perspectives on Older Adults Based on Their Participation in an Intergenerational Reading/Storytelling Program
Mentor: Simone & Giuliana DeVore & Miolo
Co-authors: Laila Briedis, Lauren Saxon

Our research team implemented reading activities and studied the perspectives young children have affiliated with older adults. The reading activities are part of an intergenerational program on our campus called Bridging the InterGenerational Gap (Project BIGG). Older adults from a nearby senior community regularly spend time reading books and engaging in conversation with the preschool age children. To study children’s perspectives, we are interviewing 12 children whose families have given consent by asking them standardized questions, such as “What do you think this man/woman will do today?” while showing pictures of older adults. Based on transcriptions of the recorded interviews, we will identify themes that emerge from children’s comments about older adults. Common themes will be identified based on how children describe and characterize older adults. We anticipate that there will be specific differences in the way children think about older adults depending on the pictures children see and the experiences they share with older adult readers. We are particularly interested in learning whether children reflect on relationships they have formed with older adults.

Paul Reberg (UW - River Falls)
Engineering a Small Scale Hops Threshing Program
Mentor: Joseph Shakal
Co-authors: Christopher Emmerich, Andrew McLean

In the fall of 2012, a project to engineer and fabricate a small scale hops threshing was started. This
machine is made for small hops farmers and local brewer who only have a couple of acres of crop and cannot economically afford to buy a large hops combine. The project consists of two main parts, the thresher, and the cleaning basket. Teams have followed the engineering design process in order to achieve success throughout the multiple phases of the project and to meet the goals and deadlines set at the beginning of the term. Teams have also held design review meetings with professors to review CAD drawings and prototype components before fabrication of the actual component. The engineering process used throughout the project simulates the steps and processes used in industry, and is a great way to expose students to what is to come after graduation. The project is nearing the end of fabrication now as the thresher is completed, and the basket is nearing completion. After the cleaning basket is finished the project will be turned over to the marketing department, and a manufacturing plan will be made to successfully and cost efficiently produce and market the machine.

Allison Reed (UW - Stevens Point)
The Culture of Machismo: Gender Stereotypes in the Dominican Republic and Cuba
Mentor: Valerie Barske

In this research project, I assess the impacts of a machista culture in the Caribbean from a socio-cultural standpoint. The cultural perception of machismo in most of the Caribbean is a concept that dictates the performance of gendered roles for men and women in society, stereotypically depicting the woman as subordinate to the man in all aspects of life including social, economic, and political spheres. Specifically, I analyze how machista attitudes in the Dominican Republic and Cuba have influenced gender attitudes and gender roles. In my analysis, I consider the time period between 1975 and 2015. I examine peer-reviewed journal articles, news articles, and books ranging from research done by Antonia Ramírez looking at the Dominican Republic and the Federation of Cuba Women in the 1970s through today with authors including Donette A. Francis and female Cuban rap groups such as Krudas Cubensi. I hypothesize that tensions between feminist movements and machismo stereotypes continue to intersect in the formation of attitudes towards gender roles in Cuba and the Dominican Republic. Overall, my research will show that machismo and feminism are not mutually exclusive influences, rather they connect in complicated ways.

Rachel Reichert (UW - Superior)
A Deeper Shade of Blue
Mentor: Joel Sipress

For this project I created a collection of oral histories of bluegrass recording artists, documenting the folklore surrounding the music. The collection is accessible as both transcriptions and recordings through the UW Superior Library’s Special Collections Department and through a publicly accessible website. I focused on two main groups of bluegrass recording artists, those who were played in the groups influential in creating the style of bluegrass, and the modern day groups trying to preserve the old ways of playing. To collect these recordings I traveled around the country interviewing musicians of all ages and from all over to get a sample of professional bluegrass musicians from all walks of life. I will present this project by playing samples of the interviews along with samples of the music of the interviewees, and elaborate on each example.

Nicholas Reitano (UW - Eau Claire)
Organic-Inorganic Nanoscale Composites: Optical Properties as a Function of Anisotropic Orientation
Mentor: Dr. Jennifer Dahl
Co-authors: Connor J. Richards, Eric J. Miller

Previous studies in our lab demonstrated the fabrication of covalently cross-linked soft networks of hydrophobic gold nanoparticles with the aid of a Langmuir trough. These composite materials exhibited greater mechanical integrity than comparable non-cross-linked networks, and these films can be cast upon planar or textured substrates with no disruption of the array. This methodology can be extended to arrays of anisotropic nanomaterials such as nanorods, whose optical properties are expected to be dependent upon final orientation (either side-by-side or end-to-end) of the finished cross-linked composition. Here, hydrophobic gold nanorods were synthesized and cast upon an air-water interface within a Langmuir trough. When this film is isometrically compressed to low surface pressures (~2 mN/m), end-to-end configurations of the film are favored, while side-by-
side configurations, where the longitudinal axes of
the nanorods are aligned with the surface normal of
the air-water interface, are favored at higher surface
pressures (> 10 mN/m). Once the desired nanorod
orientation is achieved through surface compression,
the nanorods can be covalently cross-linked and
transferred to a solid substrate for characterization
of structure and optical properties. Likely
applications of these materials include components
of photovoltaic devices, optoelectronic circuits, and
chemical-sensing membranes.

Ariel Reker (UW - La Crosse)

**Coins, Corpses/Corollas, and Churches: How Social Relationship Can Be Seen in Post-Medieval Transylvanian Funerary Excavations**

**Mentor:** Timothy McAndrews

This presentation is an examination of two funerary
sites in Transylvania, Romania. Telekfalva is a 17th
century church with an unexpectedly high
percentage of subadult burials within it. To explain
this, a material culture analysis, cross-discipline
contextual research, and comparison to Telekfalva's
sister church, Patakelva, was completed. The
material culture proved to be evidence of religious
changes from Transylvania's Roman past and
Reformed Christian present. This revealed the
uniquely high value placed on subadults at Telekfalva;
which in and of itself exposes the social relationships
between the buried and those who buried them.

Ariel Reker (UW - La Crosse)

**[art]fact: where history meets art**

**Mentor:** Ariel Beaulot
**Co-authors:** James North, Sam Reinders, Megan Kautz, Mercedes Fowler

"[art]fact: where history meets art" is an exhibit at
the Pump House Regional Arts Center that
showcases local historical objects that were made in
La Crosse from the La Crosse County Historical
Society's collection alongside new original artwork
inspired by these objects and their stories. The
purpose of this exhibit was to help visitors
understand material culture and why humans need
things. Students in the class responsible for
mounting [art]fact chose objects from the La Crosse
County Historical Society and researched their
histories and stories to help artists create a new
interpretation of the objects. The students were also
split into four groups that had their own set of
responsibilities: Public and Artist Relations,
Curatorial, Education Coordination, and
Interactive/Assessment. There will be presentations
about each group and their duties. With the
collaboration of these groups not only was an exhibit
created, but programming and interactive activities
were also created to go along with the exhibit to
involve the La Crosse community in their local
history and art.

Genevieve Richard (UW - Stevens Point)

**Nature and Culture Education Center**

**Mentor:** Nisha Fernando
**Co-author:** Esteban Lomeli

This poster will present a senior-level interior design
project on a Nature and Culture Education Center is
Tucson, Arizona. The building is a two-story multi-
used facility that will provide an educational center
dedicated to both the surrounding natural
environment and the local Native American culture.
Many different activities and events on the wildlife,
ecological conservation, environmental awareness,
and the history and traditions of the local Native
American culture will take place here. Within the
building are several different types of spaces such as
exhibit spaces, a lobby, restaurant, café, gift shop,
classrooms, and private offices. The project was
completed in three phases. In the first phase, we
researched the traditional cultural motives such as
the sun cycle and the cardinal directions of the local
Native American tribes including the Navajo Tribe
and the Hopi Tribe to connect the visitors to the
simple reflections of the natural surroundings in the
area. Our research also included sustainability and
universal design that both became large factors
within our design. The main design concept was
based on these factors and influenced the way we
designed the entire facility. Several commercial fire
egress codes also played a central part of the final
design.
Austin Riedl (UW - Eau Claire)
The moduli space of $\mathbb{Z}$ dimensional complex associative algebras
Mentor: Michael Penkava
Co-authors: Dylan Magnani, Chris Magyar, Lucas Buchanan

We study all associative algebra structures on a $\mathbb{Z}$-dimensional complex vector space, which is a $\mathbb{Z}/2\mathbb{Z}$-graded vector space with 1 even and 3 odd dimensions. Such spaces arise both in mathematics and physics. To construct this space, we need to know all $\mathbb{Z}/2\mathbb{Z}$-graded simple algebras of lower dimension and all nilpotent algebras of dimension $1[2, 0][3] and 0[2]$, which have been previously determined. Next, we have to understand how these algebras deform, which means that we change the rules of multiplication slightly and see what new algebra arises. We used software we designed for the Maple computer algebra system as our primary tool for the calculations, which are quite complicated to perform. The deformations determine how the space is glued together.

Austin Riedl (UW - Eau Claire)
Algebras Associated with the Hasse Graphs of Polytopes
Mentor: Colleen Duffy
Co-authors: Mitchell Lemons, Austin Holmes

The primary goal of our project is to determine the structures of the graded algebras that are associated to the Hasse graphs of polytopes. In particular, we are studying the n-dimensional semi-hypercube and the icosahedron, whose symmetry groups are finite Coxeter groups. Our current investigation serves as a natural extension of work done previously on the n-hypercube and n-simplex. For each symmetry of a polytope, we consider the Hasse subgraph consisting of fixed k-faces of the polytope under the action of the symmetry. From each Hasse subgraph we determine the graded dimension of the subalgebra by counting the directed paths between each pair of levels in the graph. For both the n-semi-hypercube and icosahedron we have determined the generating functions which give us the graded dimensions of the subalgebras, which in turn allow us to describe the algebras.

Ethan Robers (UW - Stevens Point)
Effects of Prescribed Fire on Habitat Restoration for the Federally Endangered Karner Blue Butterfly
Mentor: Mike Demchik
Co-authors: Jacob Livingston, Paul Priestley, Jordan Winkenbach, Alissa Johnson

Our objective is to explore the effects of different restoration techniques, particularly different prescribed fire regimes to maintain suitable pine barren habitat for the federally endangered Karner Blue Butterfly (KBB) (Lycaenidae melissa). The KBB has a unique relationship with wild lupine as it is the sole food source for the larval stage. Fire suppression and development have led to the decline of this habitat type within the Great Lakes region. The Society of Ecological Restoration student chapter and UWSP Fire Crew have teamed up to perform restoration on a site managed by the Wisconsin DNR. The restoration involved mechanically thinning a stand of jack pine followed by seeding a mixture of wild lupine and native forbs. The study area is composed of five equal size plots that will receive different prescribed fire treatments including: a control, an annual spring burn, a two-year rotation late summer burn, a two-year rotation spring burn, and a three-year rotation spring burn. Pre and post vegetation sampling will be conducted to monitor the abundance of desired plant species in each plot. The butterfly population will and be completed during the two flights of its life cycle using transects.

Ethan Robers (UW - Stevens Point)
Utilizing Fire and Hydrology to Control Invasive Wetland Flora: Phase 1 – Establishing Pre-Control Conditions
Mentor: Kyle Herrman
Co-author: Kaira Kamke

Wisconsin has lost nearly half of its original wetland environments, primarily for development and agriculture. This has led to a revival in recent years to mitigate and restore wetlands to their pristine state. A wetland located west of Stevens Point, Wisconsin, was converted to an agriculture field nearly a century ago and has recently been restored to a wetland environment. The Students for Wetland Awareness, Management and Protection (SWAMP) organization from UW – Stevens Point
conducted a baseline assessment to evaluate the quality of the site and provide recommended actions that could improve the area. Parameters included a soil survey, hydrologic analysis, vegetation assessment, macroinvertebrate collection, and water chemistry analysis. Due to a high percentage of invasive wetland plants, the group determined that the best option of control is to implement a fire regime, which is anticipated to begin in spring of 2016.

**Haley Roenneburg (UW - Stevens Point)**
**Repeat After Me: The effects of imitating on perception of infant vocalizations**
**Mentor:** Rachel Albert  
**Co-authors:** Lillian Molik, Emily Breyer, Emily Lindberg, SerenaHoldosh

Vocal imitations account for 20 percent of mothers’ responses to their infants’ vocalizations. In comparison, when non-mothers respond to infants they rarely imitate. Mothers also perceive infant vocalizations as more advanced than non-mothers. We hypothesize that imitating infants shapes mothers’ perceptions of infant vocalizations into distinct categories and may explain why mothers perceive infant vocalizations differently than non-mothers. In the current study, we aimed to increase non-mother’s experience with imitating infant sounds to see if the act of imitating would shift their perceptions. Mothers and non-mothers rated a set of infant vocalizations twice. In between the rating phases, participants imitated each vocalization. Results from both rating phases of infant vocalizations were compared. We expected that the acoustic feedback from imitating would provide non-mothers with additional practice differentiating the vocalizations into categories. Therefore, non-mothers should shift their ratings of the infant sounds to more closely resemble the ratings of mothers. Mothers, having already had plenty of practice imitating infant sounds, should be less influenced by the extra imitations. Preliminary results suggest that imitating sounds causes non-mothers to shift their ratings of infant vocalizations. If these trends continue, our results will provide a function of imitation for reorganizing perceptions of infant vocalizations.

**Joseph Rouse (UW - Parkside)**  
**Characterizing Novel Connections of Sugar Metabolism to the Escherichia coli Glucose-Phosphate Stress Response**  
**Mentor:** Greg Richards  
**Co-author:** Kelsey Helm

Glucose-phosphate stress occurs when sugar-phosphates accumulate in bacterial cells and inhibit growth. Bacteria like Escherichia coli respond to this stress by preventing sugar uptake through the action of the transcription factor SgrR and its small RNA counterpart SgrS. While regulation by SgrS is well understood, less is known about regulatory effects of SgrR. Our goal is to characterize the role of novel SgrR-regulated genes in glucose-phosphate stress. We have identified putative SgrR-regulated targets, including mglB (encodes a galactose transporter subunit), treR (encodes a repressor of trehalose metabolism) and fruK (encodes an enzyme that synthesizes fructose-1,6-bisphosphate (FBP)). Here, we show that deleting either mglB or treR results in improved growth of an sgrS mutant during stress on solid but not liquid media. We previously showed that deleting fruK worsens sgrS mutant growth during stress. Because depleting glycolytic intermediates like FBP is known to contribute to glucose-phosphate stress, we hypothesized that mutating fruK increases stress by blocking an FBP-generating pathway. To examine this notion, we deleted pfkA, which encodes an alternate FBP-producing enzyme. As expected, mutating pfkA likewise worsened the stress growth defect of an sgrS mutant. Future directions include confirming the effects of SgrR on expression of these potential targets.

**Richard Rudolf (UW - Stevens Point)**  
**Relating Forest Professionals’ Perceptions of Landscape-Scale Hardwood Log Grade Patterns to Underlying Geology: A Geospatial Analysis**  
**Mentor:** Michael Demchik  
**Co-author:** Brady Backes

The goal of this study is relate forest professionals' perceptions of landscape-scale hardwood log grade patterns to underlying geology. We plan to survey foresters, loggers, and other knowledgeable timber professionals to determine where they find the best log quality within their buying areas. This data will
be compiled using ArcMap and areas will be ranked based the combined perception of all timber professionals surveyed. Existing Pleistocene geology layers and soil layers for each county will be compared to areas of perceived high timber quality. We will attempt to generate a basic conceptual model (or possibly a predictive model) to predict overall log quality for geological features or soils. To our knowledge there has never been research like this done in Wisconsin. This project is the initial exploratory stage of a larger project, which will relate field collect log grade data to geology and soils. Understanding of the general soil and geological factors that impact log quality will be of benefit to forest professionals as well as landowners.

Sarina Rutter (UW - La Crosse)
*Using distribution and stable isotopic composition of filter-feeding aquatic insect larvae to distinguish sources of organic matter in small cold water streams.*
Mentor: Roger Haro

This presentation focuses on my graduate Master’s thesis that I hope to have completed by June, 2016, and will give information from the relevant literature and on study design and methods. Fine particulate organic matter (FPOM) is an important part of freshwater stream ecosystems, and serves as food for a variety of aquatic macroinvertebrates. The composition of FPOM can vary depending on its source, which can be either allochthonous (coming from terrestrial areas or upstream tributaries) or autochthonous (produced within a stream itself from macrophytes or algae) in origin. Sources of this organic matter differ in terms of their isotopic signatures of carbon and nitrogen, or δ13C and δ15N values, respectively, and these differences may be reflected in the bodily isotopic signatures of various aquatic filter-feeding insect larvae, who rely on this organic matter for sustenance. An analysis of these bodily isotopic signatures may therefore help to distinguish the sources (allochthonous vs. autochthonous) of the organic matter that is consumed by these larvae. Current velocity is an abiotic factor that affects the habitat stability of filter-feeding aquatic insect larvae and the distribution of allochthonous and autochthonous FPOM within a stream. The combination of these effects on both FPOM availability and larval habitat may have an effect on the spatial distributions of filter-feeding aquatic insect larvae, and an analysis of these community distributions may provide insight as to what sources of FPOM are directly available to certain filter-feeding larval taxa.

Alisha Saley (UW - La Crosse)
*Cleaning station size and its effect on prevalence of Black ich (Turbellarian flatworm) in Acanthurus sp. on two reef ecosystems at South Water Caye, Belize.*
Mentor: Greg Sandland
Co-authors: Megan Hess, Phoenix Rogers

Marine reef ecosystems are incredibly diverse environments containing numerous symbiotic interactions. Cleaning station mutualisms, involving cleaner fish and their clients, are crucial for maintaining healthy fish communities within these ecosystems, as cleaners can remove harmful ectoparasites from the external surfaces of their clients. Turbellarian flatworms are relatively common ectoparasites of tropical fish communities (such as Acanthurus sp.). Establishment of these worms in the epidermis of their hosts can result in localized immunological reactions, necrosis and secondary infections. The degree to which cleaning stations influence the occurrence of turbellarian infections within reef habitats of Belize is not well-understood. To address this shortcoming, we developed a study examining the relationship between cleaning station size and the prevalence of parasitic turbellarian infections across on two patch reefs off the coast of South Water Caye, Belize.

Using 30-m transects, we assessed the prevalence of turbellarian infections in reef fish (Acanthurus sp.) along with the number of cleaner fish per cleaning station. Results revealed a negative association between proportion of turbellarian-infected fish and the size of cleaning stations (= #fish/station). Our results suggest that cleaning-station size can influence ectoparasitic infection levels in tropical regions. The implications of this for fish communities and overall ecosystem health will be discussed.
Michael Salm (UW - Whitewater)
Developing and Evaluating a Holistic Student-Athlete Leadership Development Program: Promoting Mental Health, Academic Engagement, and Personal Development
Mentor: Kristina Navarro
Co-author: Michelle Sauers, Madison Hodge

As the needs of contemporary National Collegiate Athletic Association [NCAA] student-athletes change, so must the programming being offered to them at the campus level. Student-athletes experience college in a unique and demanding way, intricately balancing academics and athletics. Accordingly, it is of keen interest to intercollegiate practitioners how to best serve this subset of the student body in ways that promote excellence during the collegiate years as well as in their life after athletics. True to the mission of the NCAA, a major intent of campus based programming today seeks to develop student-athletes academically, support them mentally, assist and retain underrepresented minorities, engage them civically, and provide opportunities for professional development. In turn, this comprehensive study of an NCAA Division III Leadership Academy will serve as a starting point to re-envision how campuses may approach holistic student-athlete development within the NCAA’s largest division: NCAA Division III.

The National Collegiate Athletic Association [NCAA] forwards a mantra that "there are over 400,000 student-athletes and most of them are going pro in something other than sports." In turn, this research project explores how a NCAA Division III campus seeks to reframe holistic development programming via an intentional leadership development program.

Kourtney Sande (UW - Superior)
Identity & Feminism: The Usage of Psychoanalysis and Feminism to Explore Identity Alice in Wonderland
Mentor: Hilary Fezzey

The topic I have chosen to explore is Lewis Carroll’s representation of identity within his famous children’s book, Alice in Wonderland. I analyze this text from a feminist perspective to unveil the main protagonist’s repressed sexual identity. During my research, I examined how the author of the book is defying norms of Victorian society by writing a children’s book from a female character’s perspective. When it comes to analyzing the psychological elements of the book, I found that the main character defies gender norms by always questioning herself and her surroundings. The main character’s journey through the fictional world of Wonderland symbolizes the journey that she has to make through reality herself, but, reality according to the main character, is not what she thinks is normal. Reality, in contrast to Wonderland, has the appearance of what most of society sees as normal, but Alice sees the world’s imperfections and therefore questions them. Alice’s main problem with her identity is that she questions her role as a young girl growing up in Victorian England. Alice’s consistent questioning and daydreaming lead her out of reality into a personified world of inanimate objects and animals being able to communicate verbally with her.

My research shows that despite being a children’s book, this story has important social implications in the Victorian period and today, as it is about a girl who begins to question the world around her and starts to develop an identity as she is coming of age.

Trishika Santebennur (UW - Milwaukee)
Structural Health Monitoring Systems with Integrated Sensors and Actuators to Detect and Locate Structural Flaws
Mentor: Nathan Salowitz
Co-author: Ross Schloegel

Acoustic ultrasonic structural health monitoring (SHM) systems use piezoelectric transducers to generate and detect waves that are propagated through structures to detect damage flaws. Application could vastly improve the safety and performance of engineered systems including bridges and spacecraft. Locating damage is critical to this capability and prohibitively challenging with other forms of SHM, but direct path mapping of ultrasonic signals is a promising method for damage location. The test sample used in this experiment consists of five piezoelectric transducers adhered to an aluminum sheet. A waveform generator and amplifier actuate a desired waveform from one of the piezoelectrics allowing the others to act as sensors. Results are taken from a pristine sample (no damage), giving baseline data. This baseline data can
be compared to data collected later in either pristine or damaged states using Matlab. The complexity of the signals propagated makes analysis challenging due to the presence of multiple wave modes and reflections; however, calculating the difference in scatter energy, which differs between the damaged and pristine data, over multiple paths, and windowing the signals, allows comparisons between the scatter energies of differing paths to be made, and a location to be determined.

**Sam Schaick (UW - Stevens Point)**

*Influence of Supplementary Walleye Stocking on Year-Class Strength in Six Minnesota Lakes*  
*Mentor: Joshua Raabe*

Walleye Sander vitreus are a highly targeted species in the Midwestern United States and Canada. To satisfy angler demand, stocking is a common management practice to create and maintain fisheries, or to supplement natural reproduction. Previous evaluations of Walleye supplementary stocking have produced variable results. My objective was to determine if supplemental stocking influences Walleye year-class strength in six Minnesota lakes. Walleye were sampled using gillnets and stocking records were obtained from the Minnesota Department of Natural Resources database. Ages were estimated from a combination of scales and otoliths and year-classes were determined by subtracting age from capture year. Year-class strength was determined using residuals by subtracting the expected catch proportion of a year-class from the observed catch proportion of that year-class across all surveys for the corresponding lake. Expected catch proportions were determined by the age of the year-class at the time of survey. T-tests indicated that no significant (p-value > 0.05) differences occurred when year-class strength was pooled across lakes or when lakes were individually analyzed. In general, I recommend less frequent Walleye stocking for the lakes in this study.

**Janel Scharhag (UW - Stevens Point)**

*Black Bear Home Range Response to Dog Training in Northern Wisconsin*  
*Mentor: Tim Ginnett*

Hunting of the American Black Bear (Ursus americanus) with the use of dogs is a popular sport in the northern third of Wisconsin. Hunters have a period during which they are allowed to train their dogs on public land by chasing live bears. This type of dog training is viewed as a low level, human predation disturbance on black bear (Stiffried et al. 2015). I hypothesized dog training would result in larger home ranges and shift the home range centroid of black bear. The black bears in this study (n=7) were radio collared female bears in the Chequamegon-Nicolet National Forest near Clam Lake, WI. This area receives high dog use during training season. During the summer of 2015 bear locations were obtained by radio telemetry prior to and during the dog training season. Home ranges for each of these periods were estimated using the Minimum Convex Polygon method and tested as a paired sample. The results showed that the areas of the home ranges were significantly larger, by 4,163 acers (p= 0.026), during the dog training season. On average the home range centroid shifted 2 kilometers between the pre-training season and the training season but we cannot conclude that this was the result of dog training because other environmental factors such as resource availability could have covaried during this period.

**Wyntey Schilt (UW - Whitewater)**

*The Challenge Effect in Betta Splendens*  
*Mentor: Ellen Davis*

The Siamese fighting fish, Betta splendens, has long been studied for its aggressive behavior. Surprisingly, one aspect of aggressive behavior seen in many species, the Challenge Effect, has not yet been clearly demonstrated in Bettas. According to the Challenge Hypothesis, aggressive encounters with a conspecific (i.e., same species) male will trigger the temporary increase of androgens within these males. The purpose of this study was to: (1) explore whether there is a Challenge Effect in Betta; and (2) examine the consistency of the Challenge Effect when alternate stimuli were used. Sixteen focal males underwent three aggression 20-minute trials in random order, during which their behavior was recorded. Males were exposed to either 1) a live conspecific male, 2) the focal male’s own reflection in a mirror or 3) video playback of a conspecific male. Non-invasive, baseline hormone samples were collected from each focal fish, and then again after each of the three encounters. Samples were analyzed for 11-ketotestosterone (the major androgen in fish)
using an enzyme immunoassay kit. The results, both behaviorally and hormonally, are still being analyzed. The anticipated results could have significant implications for future research on aggression. If use of video works just as effectively both hormonally and behaviorally as when a live conspecific male is present, then well-controlled video stimuli could be used to manipulate different behaviors in Betta, and fewer animals would be required to conduct experiments.

Jennifer Schimanski (UW - Stevens Point)
Quantifying ecological change in diatom diversity from paleo-limnological records in Swedish Lakes
Mentor: Krista Slemmons
Co-author: Daniel Soderlund

Global concentrations of atmospheric nitrogen have increased dramatically over the last 150 years. While the effects of nutrients, particularly phosphorus, on aquatic systems are well known, the ecological influence of elevated atmospheric nitrogen to lakes over long temporal scales remains unclear. Elevated nitrogen has been attributed to rapid shifts in primary producers, across the globe, particularly in high latitude regions. Given the sensitivity of diatoms to environmental change, examination of lake sediments can provide clues as to the conditions of the lake during nutrient concentrations, temperature, pH, lake turbulence and ultraviolet light at a certain period of time. These paleoanalyses allow for comparisons to present conditions and offer predictions of lake conditions under future nutrient scenarios. We observed fossil diatoms from Swedish lakes with varying atmospheric nitrogen deposition to determine the effect of augmented nitrogen on lakes. We quantified species diversity and community turnover from four Swedish lakes. Preliminary results indicate major shifts in diatom community structure over time and declines in diatom species richness over the last 150 years. These results may provide insight into the trajectory in which lake communities may proceed under novel environmental conditions and may be applicable to other freshwater ecosystems experiencing nutrient shifts.

Jennifer Schmitz (UW - Oshkosh)
Investigating Potential Novel Manganese Exporters Controlled by Riboswitch Mechanisms in an Array of Bacterial Species
Mentor: Lauren Waters

Investigating novel manganese exporters controlled by riboswitch mechanisms in an array of bacterial species. Preliminary data has shown that some members of the UPF0016 family are capable of rescuing cells through moderate amounts of manganese stress. Further work on P-type ATPases and Ter is ongoing. These results could shed light on previously unknown exporters and riboswitches in bacteria, ultimately helping scientists modulate bacterial growth.

Beau Schommer (UW - Whitewater)
Trophic Position of Green Hydra, Hydra viridissima, Across Varying Environmental Gradients
Mentor: Brian O’Neill

Green hydra, Hydra viridissima, is in the phylum ctenophora, just like jellyfish and corals. This one in particular houses a mutualistic endosymbiotic photosynthetic bacterial organism that can make this hydra act as either a producer or a consumer. Trophic levels tell where an organism fits within the food web such as: producer, primary consumer, secondary consumer, etc. Trophic position of organisms can be measured by using compound specific stable isotope analysis of an entire organism to know if there is a change in quantities of the specific isotope from the calculated baseline. In our study we will expose the Hydra to two varying light conditions, one which will provide better conditions for photosynthesis to occur and the other where consuming an organism would be the possible preferred option for the Hydra over photosynthesis. If the Hydra behaves as a consumer we would see higher \(^{15}N\) levels in our samples than if the Hydra in the experiment were behaving more as a producer. This type of study we are undergoing is important in helping scientists better understand how organisms can fit in the food web and how organisms in the food web can change based off of varying environmental gradients.
Adam Schwartz (UW - Oshkosh)
Annotation of olfactory genes from the genome of the emerald ash borer, Agrilus planipennis (Coleoptera: Buprestidae)
Mentor: Robert Mitchell
Co-author: Robert Mitchell

The emerald ash borer (EAB) is an invasive species introduced to North America from Asia in wooden packing materials. The larvae feed within ash trees, damaging the phloem to devastating results. The current infestation has killed hundreds of millions of trees in the Midwestern US and could potentially extirpate ash from North America. Efforts to regulate EAB are hampered by an inability to detect early infestations as well as unintentional transport over long distance in firewood. Current artificial traps use attractive odors to lure insects, and while functional, a powerful long distance attractant remains elusive. Here, we present a genome-wide analysis of the major EAB olfactory genes, a key step in understanding the olfactory capabilities of this insect and potentially developing new attractants. To date, our annotation has yielded 11 odorant binding proteins (OBPs) and approximately 40 odorant receptors (ORs), which respectively manage transport and recognition of odors in the insect antenna. The relative scarcity of olfactory genes suggests that olfaction in EAB could be considerably reduced compared to other insect groups. Nevertheless, future functional analysis of these genes may reveal new odors and attractants that will improve trap efficiency and help curb the spread of EAB in North America.

Caitlin Shaw (UW - Stevens Point)
Identifying spatial and temporal patterns of anthropogenic nitrogen deposition and the influence on aquatic community change in Wisconsin Lakes
Mentor: Krista Siemens
Co-authors: Natalie Lirette, Markie Rodgers

The health of aquatic primary producers, on which all species depend, is vital to the function and services provided by freshwater. Over time, increased nutrients elicit stark changes in primary producers, particularly diatom communities, and can indicate that these aquatic systems have researched an ecological threshold. This is apparent in regions where elevated levels of nitrogen are associated with ecological shifts. We examined sediment cores from Wisconsin Lakes along a nitrogen gradient to identify temporal shifts in diatom communities. We conducted nitrogen isotopic analysis to determine if δ15N signatures were correlated with diatom community change. We present our preliminary findings from Crampton and Pike Lakes. These results have direct implications to the wise management of the water resources on which we depend and can lend suggestions to the establishment of critical nitrogen thresholds to diminish ecological change as a result of pollutants.

Katherine Senn (UW - Oshkosh)
Characterizing Protein Isoforms Involved in Manganese Homeostasis in E. coli
Mentor: Lauren Waters

In bacteria, manganese is an enzyme cofactor and protects against oxidative stress but is toxic in excess. MntS, an Escherichia coli protein, is involved in manganese homeostasis, potentially as a manganese chaperone. It is predicted to be 42 amino acids long, but when the protein is separated using gel electrophoresis and detected by Western blot, there are two bands, indicating two isoforms that differ in molecular weight. We hypothesize that translation can begin in two places. Potential start codons were mutated, and the mutant genes were expressed in vivo or using an in vitro transcription/translation system. The same two bands were produced both in vitro and in vivo, suggesting that the protein isoforms are not due to processing. Interestingly, mutations to the predicted start codon did not reduce MntS expression, but mutations to Val10, especially when combined with other mutations, did have an effect. Taken together, our data suggest that Val10 serves as the primary translation initiation site, but that surrounding sequences influence its use. This investigation of the origin of the isoforms will aid the exploration of the function of MntS as well as add to our knowledge about the ability to initiate translation from multiple start sites.
Yuqi She (UW - Oshkosh)
Neutral Electrolyte Experiment in Metal Oxide Water Splitting
Mentor: Jennifer Schuttlefield-Christus

Neutral electrolyte solutions were investigated as potential media for water splitting via mixed metal oxide combinations. Specifically, several known efficient metal oxide combinations were employed to examine their oxygen evolution catalytic reaction in salt solutions such as NaNO3, Na2SO4, NH4NO3, and (NH4)2SO4. Traditionally, basic electrolyte such as NaOH is used though a neutral to more acidic electrolyte will be needed for the oxygen evolving reaction due to the creation of hydrogen ions in the oxidation process. To detect the oxygen evolution of the various combinations, the Heterogeneous Anodes Rapidly Perused for Oxygen (O2) Overpotential Neutralization (HARPOON) kit was used. The HARPOON kit uses a stainless steel mesh coated with paint that contains two fluorophores, one of which is sensitive to O2 and the other insensitive to O2. The ratio of response to the two fluorophores is plotted on a false color map, where the brightest spots correspond to the high concentration of oxygen evolved. Neutral electrolytes and metal oxide combinations that demonstrated oxygen evolution are of interest. To date, NaNO3 with several aluminum, nickel, iron oxide combinations and Na2SO4 with several nickel, iron, magnesium, manganese oxide combinations have exhibited oxygen evolution. Further tests are underway to explore more electrolyte-metal oxide combinations as well as determine the long term response of the materials to simulated solar irradiation.

Adam Shelvik (UW - Oshkosh)
RR Lyrae Stars in the Globular Cluster NGC 1261
Mentor: Barton Pritzl

We have searched the poorly-studied globular cluster NGC 1261 for pulsating variable stars called RR Lyrae stars. By examining the properties of these variable stars, we can determine such things as the distance and chemical content of the cluster. Several RR Lyrae stars were detected within the cluster. We present the results of this survey and what they reveal about the cluster NGC 1261. The overall goal of this research is to increase our knowledge and understanding of the Milky Way globular clusters to better understand the formation of the Milky Way Galaxy. The properties of NGC 1261 are compared to other Galactic globular clusters to see if it has any unique features.

Jacob Shurba (UW - Stevens Point)
A Survey of Parasites in Greater Prairie Chickens in Central Wisconsin
Mentor: Shelli Dubay
Co-authors: Anna Schneider, Shanell Budleski, Emily Weiler

The Greater Prairie Chicken (Tympanuchus cupido) is a state threatened species. Overharvest from hunting and poaching caused significant declines in prairie chicken populations in Wisconsin. In 2013, a graduate project was initiated to identify nest and brood survival rates for prairie chickens in central Wisconsin. Female chickens were radio-marked and chicken carcasses were collected after death. Prairie chickens can be affected by gapeworm (Syngamus traches), a gastrointestinal parasite, but how parasites affect prairie chickens in central Wisconsin is unknown. We aimed to identify ectoparasites and endoparasites of greater prairie chickens to identify any management concerns for the species in Wisconsin. We hypothesized that parasites would be common in prairie chickens. We necropsied 13 prairie chickens and parasites or fly larvae were identified in 7 (54%) of the birds. Gapeworm was present in 3 (23%), gizzard worms of unknown species were found in 2 chickens (15%). Two chickens (15%) had larvae of a Dipteran species of fly inside the GI tract, and a single chicken had a chewing louse located in the lung (8%). Gapeworm infection may affect survival of individual prairie chickens, but additional research is needed to determine if these parasites affect chicken populations.

Dana Sickinger (UW - Fox Valley)
Understanding and Serving ELL (English Language Learner) Writers
Mentor: Christina Marty
Co-authors: Katie Ziemer, Caleb Jablonicky, Blake Miller, Anthony Heuber

The purpose of the Writing Pad’s research is to better understand the ELL (English Language Learner) writers’ approach to the writing process.
With this understanding, we will be able to better serve them not only in the Writing Pad, but all over campus. Surveys will be distributed to all ELL writers and an equal sample to native English speakers. The results will show the patterns of ELL writers in their writing process and will be compared to the native English speakers. These results will also be compared to scholarly readings.

**Gregory Sikowski (UW - Eau Claire)**

**A Continuing Analysis of Chinese and American Public Willingness to Pay for Climate Change Mitigation Policy Action**

**Mentor:** Eric Jamelske

**Co-author:** Helue Vazquez Valverde

Climate change could be the single most important issue our society has ever faced. Additionally, China and the U.S. share the highest importance related to potential climate change mitigation policies. Thus, a better understanding of public views on climate change in these two countries is of great interest. Surveys were conducted of Chinese and American citizens from May – October 2015 (N=7,556). We investigate willingness to pay for an increased cost of living arising from policies putting a price on greenhouse gas emissions to mitigate climate change. We also examine what factors influence willingness to pay in each country.

We employ a double-bounded dichotomous choice contingent valuation framework with five randomized initial bid values, followed up by specific second bid values based on the initial bid value response. All monetary values are considered in both home country currencies and international dollars converted using purchasing power parity.

Our results show a higher willingness to pay for climate change mitigation policy action among Americans compared to the Chinese. However, adjusting for purchasing power parity reveals a significantly higher willingness to pay among the Chinese.

Additionally, a variety of variables reflecting climate change perceptions are positively correlated with willingness to pay for climate change mitigation in both countries, while political affiliation influences willingness to pay among Americans.

Our work addresses a relevant issue with meaningful public policy implications and thus should be of broad interest.

**Sam Simmons (UW - Platteville)**

**Effects of Hydrogen Peroxide on Elodea and Freshwater Fish**

**Mentor:** Rebecca Doyle-Morin

Cyanobacteria is present in many freshwater systems throughout Wisconsin. This algae can cause serious problems because of their inedibility, high abundance, and toxicity. We have been studying ways to naturally control nuisance algae, like using hydrogen peroxide. Hydrogen peroxide decomposes into water and oxygen, is a natural by-product that is given off by plants via cellular processes, and is inexpensive to purchase. Before implementing a hydrogen peroxide treatment into a freshwater ecosystem, we wanted to see how other beneficial organisms in the ecosystem will be affected. Our study looked at elodea, a freshwater plant, and fish. Elodea are representative of the many macrophytes often present in waterbodies, playing an important role as a natural filter. Preliminary results suggest no deleterious effects on either organism. Hydrogen peroxide is a natural control that inhibits reproduction of cyanobacteria. The need for nuisance algae control is important, particularly in Wisconsin, where many of our lakes are used for recreation and agricultural purposes.

**Rohini Singh (UW - Stout)**

**Identity of Second Generation American Sikhs in Minnesota**

**Mentor:** Thomas Pearson

The purpose of this research is to bring attention to the experience of second generation American Sikhs in American society through the frame of multiple themes. The essay features brief historical context on the origin of Sikhism as well as the history of Sikh immigrants in the United States. It then proceeds to discuss various theories that perhaps contribute to the perceived identity of Sikhs in the United States from the cultural lens of both Sikhs themselves and non-Sikh Americans. Through this research, we have discovered that second generation Sikhs have internalized the dualism of American culture and Sikh culture within all aspects of their lives.
Kayla Skalets (UW - Stevens Point)
The Unequal Advantage that Health Plays in American Lives
Mentor: David Chunyu

The research explores health status and its relationship to income, employment, and opinions on government services through the use of the 2014 General Social Survey (GSS) conducted in the United States. The literature review explains the positive relationship between income and health internationally. The review also gives light to how poor health can severely impact an individual's productive capabilities in school and the workplace, which often leads to lower employment rates, earlier retirement, and an increased societal impact. Self-rated health status is used to develop the three hypotheses that follow. Individuals with lower socioeconomic statuses have poorer health than individuals with higher socioeconomic statuses. Individuals with poor health are more likely to be unemployed than individuals with better health. Individuals with better health are less likely to value the need for government healthcare assistance than individuals with poor health. To better assess the relationships established in the hypotheses, control variables are used including age, political views, and sex. Overall, the research concludes that individuals with poor health are more likely to be unemployed, have a low socioeconomic status, and be in support of government healthcare assistance services than individuals with good or excellent health.

Josh Skattum (UW - Stevens Point)
Assessing methods for public involvement in identifying bat calls
Mentor: Christopher Yahnow
Co-author: Peter Rebolzo

Citizen scientists are volunteers who collect and process data as part of a scientific inquiry. Citizen science research initiatives face problems from a lack of standardized protocols when interpreting scientific information. The goal of this project is to determine the level of training and best crowdsourcing model to most accurately describe bat communities. We wanted to know if the consensus of five students working independently performed as well as a single expert. Fifteen teams of 5 students each were divided into three treatments (5 teams in each treatment). All students received the same level of training. In treatment 1, each of the 5 students worked independently on the same acoustic data set. In treatment 2, all 5 students worked together on the same acoustic data set. In treatment 3, all 5 students worked independently on different acoustic data sets. We compared student data to expert and Kaleidoscope Pro Auto ID software by calculating Percent Similarity and Morisita's Community Similarity Index. There was no difference between students working independently and students working together on the same data set. However, the consensus of 5 students working independently performed better than the same number of students working together on the same data. The best crowdsourcing model would involve multiple users engaging the same data file at least 5 times.

Aimee Smolens (UW - Stevens Point)
BMI, Educational Status, and Access to Healthcare and Health Services
Mentor: David Chunyu

This study uses a very recent community survey dataset to study the health status of Portage county residents and its association with socioeconomic status and access to health care services. It is known that a relationship exists between education and health. Lesser known, are the mechanisms by which individuals fail to obtain access to healthcare. This study seeks to identify the relationship that exists between specific social and environmental attributes and individual access to healthcare and health services. This study uses data from the Portage County Local Indicators for Excellence (LIFE) Survey of 2012 and 2015 and seek to determine if a correlation exists between specific variables: BMI, educational attainment, and relative location (zip code) and access to healthcare and health services in Portage county Wisconsin. Health services include: prescriber services, prescription drug services, dental services, and mental health services. The preliminary findings indicate obesity (BMI over 30.0) as an indicator of failure to access health care outlets in all areas excluding mental health services. These results suggest that social forces such as stigma associated obesity may be preventing individuals from accessing health care.
from seeking required medical services. Further findings suggest a similar correlation between lower educational attainment and health care access. While education may influence the amount of knowledge an individual has about health services, other underlying socioeconomic forces associated increased education, like level of income, may be a contributing factor.

Melanie Snyder (UW - Stevens Point)
Bonds of Blood: Violent Creation and Relationship-Building in Bioware’s Dragon Age II
Mentor: Chris Williams

In Virtuous Violence: Hurting and Killing to Create, Sustain, End, and Honor Social Relationships, Alan Page Fiske and Tago Sachi Shin present their virtuous violence theory, which states that "the perpetrator intends to harm or kill in order to constitute a social relationship to make it correspond with a prescriptive model of what the relationship ought to be—what it must be made to be" (17). Fiske and Shin go on to say that "in these culturally informed relationships, by killing and being killed, as well as by being liable to be killed or obligated to kill, participants constitute and vividly display their social relationships" (34).

Dragon Age II is the second game in Bioware’s Dragon Age franchise, released in 2011, which explores this idea of violence as a means of building and maintaining individual identities and social dynamics. It is a role-playing, action game in which the player takes on the identity of Hawke, a human whose home is destroyed as a blight of darkspawn rages the land. She enters the city of Kirkwall as a refugee. Throughout the game, Hawke builds up reputation and wealth to become the city’s legendary champion, leading its citizens through a time of political and social disruption, making friends and choosing allies along the way. Throughout this story, violence functions as a form of character creation, shaping the Self behind the player character Hawke, as well as functioning as the main instrument in her creative investment in the world through the formation of social relationships with her companions in order to write a meaningful story.

Harley Soerfass (UW - La Crosse)
Life on the Shoulders of the Earth: Archiac Hunter-Gatherer Settlement Patterns in the Driftless Area of Southwestern Wisconsin
Mentor: Heather Waider

From approximately 6000 to 3500 years ago hunter-gatherers from the middle-to-late Archaic Tradition occupied the diverse landscape of the Driftless Area in southwest Wisconsin (Pleger and Stoltman 2009). The Maple Ridge archaeological site (47sk509) is one such occupation. Through an analysis of the Maple Ridge lithic assemblage, I define the site occupation period, establish the purpose of the occupation, and compare Maple Ridge to other Archaic sites. I use these data to propose a middle-to-late Archaic Tradition settlement model of the Driftless Area in southwest Wisconsin. Factors of analysis and observation include topography, hydrology, soil, and occupation. Through this research, I have identified patterns in how middle-to-late Archaic peoples utilized the landscape in the Wisconsin Driftless region. This model may be used to help define human behaviors at existing sites found in the Driftless Area such as rockshelters, open air sites, procurement areas, quarry sites, and rock art sites, and in the future to find new Archaic Tradition sites in southwest Wisconsin.

Venton Speidel (UW - Green Bay)
Mentor: Ankur Chattopadhyay

This research project is intended towards developing the WebDAS workshop, which is designed as a hands on learning cum outreach module for enhancing general education and awareness of data analytics plus security in the web. The workshop teaches participants how to use data analytics and web security scanners for making better use of the web. The proposed lab exercises on data analytics help learners to understand and appreciate data analytics. These exercises use practical tools of data analytics to show the participants how web users use their websites. This learning process assists participants in making their websites better and getting the most out of the web space. Additionally, the proposed workshop demonstrates the practical
use of web scanners in identifying potential vulnerabilities in a website. The proposed web scanning based lab modules, which illustrate web security, help the participants in identifying the holes and weaknesses in their website implementations. This learning experience helps create the awareness for web security risks and molds a better security mindset amongst the general audience. Given that the above topics plus tools for education and outreach are not something that the average person with a website is familiar with, this workshop is instrumental in educating people and creating awareness in the public space. In order to assess the overall utility and effectiveness of the proposed workshop, the designed hands on lab modules are tried out on several users, who are surveyed for feedback cum inputs after undergoing the hands on exercises. The data gathered from the conducted surveys serve towards the initial evaluation of the workshop’s performance and indicate the prospects of the proposed workshop.

**Renee Spiewak (UW - Milwaukee)**
**ARCC@UWM: Searching and Solving Pulsar Puzzles**
**Mentor:** Xavier Siemens
**Co-authors:** William Fiore, Eric Edwards

Pulsars are a type of evolved star that are extremely dense and rotate with an extremely reliable period producing an intense beam of radiation, similar to a lighthouse pulse. This unique pulse allows for novel ways to study the universe, the most exciting of which is the potential to detect low frequency gravitational waves. The Arecibo Remote Command Center (ARCC) was formed as a way for undergraduate students to be involved in the search for new pulsars. Students remotely observe from UWM with two of the world’s largest radio telescopes, the Arecibo Observatory in Puerto Rico, and the Green Bank Telescope in West Virginia, and analyze the resulting data to discover and study these incredible neutron stars. Once a pulsar is discovered, it must be timed regularly in order to determine various parameters describing the system with astounding precision. These timing proposals can require ~1000 hours per year of observing, which undergraduates can easily do in the place of faculty and senior researchers. Students are also learning to “solve” pulsars themselves, an effort which will likely lead to authorship on a refereed journal paper. UWM students collaborate with students at a number of other US institutions, including the University of Texas - Rio Grande Valley, and Franklin & Marshall College, and with researchers across the globe.

**Michael Sportiello (UW - Milwaukee)**
**Synthesis of Fluorescent Quinolones as Inhibitors for the β-Barrel Assembly Machine**
**Mentor:** Alan Schwabacher

Much of antibiotic resistance results from membrane proteins that, through the process of active transport, remove antibiotics from within the membrane to outside the membrane, rendering said antibiotics useless. Many membrane proteins called efflux protein complexes responsible for this are, in part, folded by a different protein-complex called the β-barrel assembly machine (BAM). The secondary structure of proteins folded by this machine is of the form of a β-barrel, composed of β-pleated sheets. Currently, a rigid aminoquinolone structure with strategic hydrogen-bonding sites is being pursued as a molecular template that will hydrogen-bond small peptides by mimicking the interactions in a β-sheet. These templates will be used to study intramolecular forces in β-sheets and β-barrels. Inhibition of the β-barrel assembly machine, killing gram-negative bacteria with high efficacy, has been shown with particular short peptides. However, these peptides make poor drug possibilities due to the inherently poor quality of being metabolized by the patient to which these drugs may be given, as they would be digested like other proteins. Therefore, we propose possible inhibition of the β-barrel assembly machine via our synthetic molecule mimicking the interactions of that peptide which has been shown to kill gram-negative bacteria in proper dosages.

**Ashley Steadman (UW - Stevens Point)**
**White Noise Disturbance and Pair Bond Strength in Zebra Finches (Taeniopygia guttata)**
**Mentor:** Sarah Alger

Environmental white noise affects songbird populations because it has the ability to mask any vocalization that may signal location, attract mates, and defend territories. For the zebra finch, vocal communication plays a vital role in mate attraction, but less is known about the role of vocal signals in pair bond maintenance. If vocalizations play an
important role in pair bond maintenance, then environmental white noise exposure may degrade established pair bonds. A repeated white noise disturbance treatment was applied on five established zebra finch pairs and a no noise treatment was applied on five other established zebra finch pairs at the University of Wisconsin-Stevens Point. We then measured pair bond behaviors with the partner and with a novel opposite-sex individual. Mann Whitney U tests were used to determine if there are any significant differences in specific pair bond behaviors with and without white noise exposure. My results did not show significance in pair bond degradation from white noise exposure. However, there is a trend with males exposed to white noise increasing the duration of clumping with their new partners. This experiment will ultimately give us a new perspective on how white noise can affect songbird populations.

Jordan Steppe (UW - Parkside)
Revitalization of urban streams: A biological and hydrological analysis of the Oak Creek watershed in southeastern Wisconsin, USA
Mentor: Jessica Orlofske

Storm-water retention structures influence hydrologic patterns, and the highest concentrations of retention structures occur in urban and suburban areas. The Oak Creek watershed covers ca. 70.5 km² of Milwaukee County, Wisconsin, which includes the highest concentration of urbanization statewide. Here, we use a comprehensive watershed study to identify stream reaches subject to hydrologic alteration based on benthic macroinvertebrate (BMI) assemblages. We examine the efficacy of BMI assemblage metrics to indicate water quality when influenced by storm-water retention structures and in-channel modifications by characterizing the number, size, and location of natural wetlands and anthropogenic storm-water retention structures in upstream subcatchments and riparian zones. A 3-mL kick net procedure was used to sample BMIs at 12 sites in October 2015. Samples were processed according to state guidelines. Preliminary results indicate slight to severe impairment throughout the watershed. Further analysis will determine whether increased storm-water retention structure development in the watershed is associated with impairment. This research is essential to prioritize restoration and maintain aquatic habitats and water quality in Oak Creek.

Simon Stevensold (UW - Stevens Point)
The Use of Biochar and Biosolids as Soil Amendments in a Greenroof System
Mentor: Bryant Scharenbroch

Greenroofs are gardens on top of structures that help to improve energy use efficiency and provide additional space for ecosystems in urban areas. Natural soils are too heavy for greenroofs so lightweight aggregates are used; however, these aggregates have a limited ability to retain water and nutrients. This inability could be amended with additions like biochar. Some studies have found biochar to improve nutrient and water retention, but none have examined biochar in a greenroof system. Waste biosolids from wastewater treatment were the chosen organic material to be converted to biochar. This helps divert them from landfills while potentially improving greenroof conditions.

For this experiment six greenroof mesocosms were constructed and each fitted with a greenroof drainage system. Each mesocosm contains clean greenroof substrate (control) and three amendments, biosolids at 5%, biochar at 5% and biochar at 20% by volume. Each of the 24 units has its own collection system to collect leachates that percolate through the media, which are analyzed for nutrient levels and other characteristics. Sunflowers (Helianthus annuus) were chosen as the test plant due to their fast growth and potential to phytoremediate. Measurements of plant health and growth are monitored to determine the effect of each amendment.

Courtney Stewart (UW - Whitewater)
The Effect of Phonemic Awareness Training on a 4K Head Start Classroom
Mentor: Giuliana Miolo

Providing phonemic awareness (PA) training to children maximizes their chances for reading success in early school years. Children living in poverty are especially in need of phonemic awareness training because of the higher risk of difficulties with emergent literacy skills. This study focuses on the effect of PA training on the emergent literacy skills in preschool children attending a Head Start program.
Two 4K Head Start classrooms are included in this study. One classroom received the PA training daily in a large group setting. The classroom also received twice-weekly small group trainings over a 13-week period. The other classroom did not receive the training. Pre-intervention and post-intervention test scores will be compared to evaluate the effect of the training on the children’s emergent literacy skills. The growth in test scores points to the importance of PA training in the preschool years and could further influence the mandated use of PA training in schools.

Celia Sweet (UW - Stevens Point)
Moving and Mothering Russia: The Soft Power of Embodied Actions in Russia
Mentor: Valerie Barske

In this research project, I examine how embodied actions and performance as protest engage with issues of politics and gender in Russia. My research explains the roles and expectations of women during the Soviet Era in comparison with post-socialist Russia, showcasing continuity as well as change. To challenge gendered expectations in 2012, Pussy Riot, a punk-rock protest group, performed at the Russian Orthodox Church, enraging President Vladimir Putin’s administration and landing the three young female performers in jail. Analyzing books, articles, primary and secondary sources from scholars of gender studies, history, and anthropology, I identify how embodied actions signify specific meanings in terms of gender, religious beliefs, and post-socialist Russian cultural practices. My theoretical and methodological approach builds on the work of Drid Williams (1982), Brenda Farnell (2014), and other scholars working on “dynamic embodiment.” I seek to demonstrate why embodied actions are so powerful and why women using their bodies to oppose politicized gendered roles made their performance even more significant.

Hannah Symbal (UW - River Falls)
Assessment of behavior sampling techniques for nursery pigs
Mentor: Kurt Vogel

The purpose of this study is to set standards for consistent data collection for future research involving the behavior of nursery pigs. Behavior sampling is a common and important measure used to quantify animal behavior in research, and consistent data collection will lead to easier data interpretation for researchers, veterinarians, and others who access the literature. The first part of this study determines the maximum time interval for scan sampling, and the second part determines the minimum number of pigs per pen required for focal sampling. Similar assessments exist for other species, including feedlot cattle and primates.

Joseph Taylor (UW - Stevens Point)
Designing Beyond Visuals
Mentor: Nisha Fernando
Co-authors: Genevieve Richard, Taylor Kapalczynski

In the field of interior design, the attention to the spatial experiences of the visually impaired is significantly limited. This presentation includes an upper-level design project which attempted to narrow the gap within the design field. The primary goal of our research was to identify, evaluate, and create solutions for public spaces which lack accessibility to those who are visually impaired. Initially we researched visual impairments to gain knowledge and a stronger understanding of how each impairment is affected by design and how we can design better to cater to their needs. Next we focused on the areas within design that are not compatible; space planning, products, materials and building codes. The project involved creating new building codes which would complement a truly universal design. Lastly, we implemented the needed design changes within a public commercial building to demonstrate the outcome of designing for those who are visually impaired.

Paige Thompson (UW - Whitewater)
Trauma Informed Care in a Preschool Classroom
Mentor: Lucinda Heimer

Trauma-informed care is becoming a growing trend in today’s schools. Recently, it had been associated with counselling and psychology fields, but more research shows the positive effects and why it is needed in educational settings. Approximately 25 percent of children and adolescents experience at least one potentially traumatic event, increasing the risk of low academic performance, low school attendance, negative behaviors, engagement in high-
risk behaviors, health issues, and difficulties in peer and family relationships (Bornstein, 2013; Ko et al., 2008; Malkoetter, 2011). This research study used qualitative data in the form of observations and interviews to focus on one child's experiences in a preschool classroom and the teachers' understanding of how to support him with trauma informed care. Anticipated findings from research include more understanding of the complex lives of children, the limitations of looking only at "traumas" opposed to all experiences, and insight into how trauma informed care can improve pedagogy and child outcomes.

Ross Thorn (UW - Stevens Point)
Using an Augmented-Reality Sandbox to Aid in Contour Map Interpretation
Mentor: Keith Rice
Co-author: Stephen Schuessler

We propose the use of an augmented-reality sandbox (ARSB) to aid in the instruction of contour map interpretation. Interpreting physical relief contour maps is one of the most difficult concepts to master in the fields of geography and geology with regards to map-reading and visualization. It is also one of the most important concepts, as it is used by several agencies, both private and public, for multiple situations.

Through this project, we hope to gain insight on three-dimensional terrain modeling and whether or not the ARSB helps people to interpret flat contour maps more efficiently. If the sandbox is successful in helping subjects interpret these maps, then the implementation of ARSBs in classrooms would be a reasonable investment for geography/geology classrooms around the world.

Samantha Tomczewski (UW - Platteville)
Comparing survey techniques for monitoring Wisconsin's endangered cricket frog
Mentor: John Peterson

Manual calling surveys have historically been the method of choice for monitoring frog populations. During these surveys researchers travel to wetlands and listen for frog species following a standard protocol. These surveys can be time intensive and occur late into the evening. Additionally, incorrect detections, observer differences, logistics, and safety and environmental factors can constrain data collection in manual surveys. The development of automated recording systems and their accompanying software can offer a solution to some of the drawbacks of manual calling surveys. In our study we used a combination of manual calling surveys and automated recording systems to monitor three populations of state endangered Blanchard's cricket frogs (Acris blanchardii) at 3 sites in Grant County Wisconsin. Current DNR management guidelines for this species involve assessing populations via manual calling surveys. Our data suggest that automated recording systems have several advantages over manual calling surveys. Our results may lead to improved guidelines for monitoring this species, especially in regards to increasing sample sizes for statistical analysis, thereby improving the conservation of this imperiled species.

Thao Tran (UW - Eau Claire)
Modelling Body Mass Index Distribution Using Flexible Skewed Density Functions: An Application to UWEC Health Data
Mentor: Mohammad Aziz
Co-author: Cara Wiskow

The purpose of this project is to find distributions which best model body mass index (BMI) data. BMI has become a standard health indicator and numerous studies have been done to examine the distribution of BMI. Due to the skew and bimodal nature of BMI data, we focused on modeling with flexible skew distributions. We applied the models to UWEC BMI data and to empirical data as well. We used maximum likelihood estimation technique to obtain the models' parameters. Then we compared flexible models to more conventional distributions, such as skew-normal, and skew-t distributions using AIC and BIC. Our results indicate that the skew-t and alpha-skew Laplace distributions are able to describe unimodal BMI accurately. We believe the models discussed here will offer a framework for testing features such as – bimodality, asymmetry, and robustness – of the BMI data, thus providing a more detailed and accurate understanding of the distribution of BMI.
Natalie Trumm (UW - Stevens Point)
The Making of a Soprano
Mentor: Susan Bender

Studying the art of vocal performance has exceeded all expectations I had prior. This study demands not only physical discipline, but mental capacity, as well. Being a soprano, I had learned in order to be heard, you have to indulge in your work. I found a great deal of success while stumbling upon my comedic side of operetta (a lighter form of opera) while studying the piece Glitter and Be Gay by Leonard Bernstein. Allowing myself a safety net of comedy helped launch me off the deep end and into coloratura world this last fall. Coloratura is a certain kind of fach (voice type). For sopranos, there are lyric, coloratura and mezzo. Within those categories are light or dramatic, I classify myself as a light-lyric coloratura, but that doesn't mean you can't stretch out of the box. Coloratura singing demands an ability to move the voice and to have the ability of singing notes above high C. In order for me to be successful, I have to constantly let go of my inner insecurities and control my voice with my breath, allowing the melismatic phrases to dance off my tongue. Studying operetta opened so many doors and opportunities for me to discover my own voice. This spring, I am studying the role of Queen of the Night, who is the complete opposite of comedy. Now that I discovered my confidence in singing way above the staff, I can play with the vindictive attitude of the Queen and show off my vocal and acting capabilities.

Spencer Twining (UW - Whitewater)
Thin Films Deposition: To Investigate the Relationship between Roughness and Film Conductivity
Mentor: Ozgur Yavuzcetin

There are numerous and diverse applications for thin film coatings such as nanoelectromechanical systems and microelectronics in circuits, optical electronics to create mirror surfaces, and energy conservation strategies by way of corrosion sensors. Thin films are valuable because they play an important role in many of the modern scientific industries. The motivation of the research was to create a thin film deposition of multiple metal sources onto silicon wafers in order to investigate the physical properties, such as thickness, of films under 500 nm. When testing the thickness of thin films, a multitude of methods are available: QCM, AFM, profilometer, and electric resistance measurements can all be used to determine the thickness of a metallic film. To ensure an accurate measurement of thickness, all of these testing procedures were performed. Because these methods use different properties acquire measurements, however, the thicknesses of the metallic films varied, especially for the 4-Wire and 2-Wire electrical test methods. If this is the case, new resistivity constants must be considered and factored into calculation when using a 4-Wire or 2-Wire approach to measuring depositions of this scale.

Peter Twiss (UW - Oshkosh)
Leo Koch and Academic Freedom
Mentor: Stephen Kercher

This presentation will concern the professor Leo Koch who lost his job as a biology professor from the University of Illinois Champaign-Urbana in 1960 for advocating for safe and mindful sexual activity between the students of the college. The college had been seeing a rise in what, at the time, were called "heavy petting parties" and an article in the university's "Daily Illini" led to a discussion about the ramifications of these types of parties. Leo Koch wrote an editorial for the paper claiming that "with modern contraceptives and medical advice readily available...there is no valid reason why sexual intercourse should not be condoned among those sufficiently mature to engage in it." This led to Professor Koch's dismissal. This chapter in American history leads to an interesting discussion over the breadth and limit of academic freedom. This presentation will delve into this discussion using Leo Koch's story as a backdrop to this question with special attention to how academic freedom has changed over the years, as well as, how this story is evolving to this day.

Abigail Ulrich (UW - Stevens Point)
Associations between Choosing Academic Major and Your Genes
Mentor: Aaron Davis
Co-authors: Kelsey Blob, Kara Herr

The selection of an academic major is one of the most important decisions a student will make in terms of their college and professional careers, and many students change majors in pursuit of a field
that suits their interests and talents. There are many factors that contribute to the selection of an academic major, but one factor, largely ignored, are possible genetic contributions. Several genes are known to be associated with traits that may influence academic major/career selection such as prosocial behavior (DAT1, CD38, OXT, OXTR, 5HTT), working memory (BDNF, HTR2A, VWC1), and stress perception (COMT, DRD2). The aim of this research is determine if there is an association between an academic major and gene polymorphisms. To test this hypothesis we analyzed the genes of students at the University of Wisconsin-Stevens Point and looked for an association of genes within a given major. Our findings may help determine if genes play a role in major selection.

Adam Ulman (UW - Green Bay)
**Finding The Right Balance Between Privacy & Security In Video Surveillance**
**Mentor:** Ankur Chattopadhyay

In recent years, video surveillance has become a tool organizations increasingly rely upon to secure their premises. The ubiquity of video surveillance has created privacy concerns for individuals, many of whom are recorded multiple times per day, often without their knowledge. Our approach aims to balance both the need for surveillance as a security tool, while also protecting the privacy of individuals. To achieve this goal, we use a number of computer vision techniques to identify an individual person by their face or silhouette in both video and images. We then obscure, and encrypt, or “lock”, that individual’s identifying information. The personal information can later be decrypted, or unlocked, by an authorized party, should the need arise; thus maintaining the effectiveness of video surveillance while limiting the exposure of individuals. This novel use of encryption could be applied in any surveillance setting.

Aubri Urbanek (UW - Manitowoc)
**Impact of Rainfall and Snowmelt on Water Quality of the Tributary Creeks of Lake Michigan in Manitowoc, Wisconsin.**
**Mentor:** Rebecca; Richard Abler; Hein
**Co-authors:** Chelsey Coutermarch, Paige Arneson, Catherine Hinkle, GeorgiaPloedel

In the summer of 2015, water quality research was conducted in the local watersheds of Manitowoc County. These included Point, Pine, Calvin, and Fischer Creeks, as well as the Little Manitowoc River, all of which are tributaries of Lake Michigan. Weekly sampling was conducted to monitor biological, physical, and nutrient parameters, including stream velocity, total and dissolved phosphate, E.coli, turbidity, dissolved oxygen, and other important parameters. In addition, samples were taken 24 and 48 hours after rainfall. Data comparisons indicated similar trends at each creek which most strongly suggest a relationship between rainfall and increased nutrient and bacterial levels. In the spring of 2016 water samples were collected during snowmelt which is important in understanding the impact of runoff from land into the creeks during the initial melt. A subset of nine of the sampling locations was tested for temperature, total and dissolved phosphate, bacterial contamination, and stream velocity. Initial snowmelt results indicate that early snowmelt events are the driving contributor of spring runoff, while later samples indicate much lower contributions of nutrient and bacterial loads. Continued sampling of these creeks are vital in assessing the health of Lake Michigan and land and water management impacts.

Megan Verhagen (UW - Stout)
**Sexual Assault: Policy and Actors on College Campuses**
**Mentor:** Tina Lee

This research aims to investigate the dissemination of sexual assault policy on college campuses through the use of content analysis of the policy and information made accessible by universities to college students. Sexual assault is a very important societal issue to address. Due to the high prevalence of sexual assault on college campuses, legislatures have struggled to create and implement policies that best serve victims as they disclose and recover from their trauma. Additionally, interviews conducted
with various actors involved in implementing sexual assault policies on college campuses will investigate how authority figures interacting with victims and perceive policy effectiveness. Understanding how both victims and service providers use currently policy can aid researchers and legislators in creating a more effective policy addressing sexual assault, which would hopefully lead to a decrease in sexual violence and more functional recovery services for victims.

Gina Viach (UW - Green Bay)
**Mapping Trees in UW-Green Bay’s Residence Life**
**Mentor:** David Helpap

Built on an old farm field, the University of Wisconsin-Green Bay has had to plant the majority of the trees that are currently present on its campus. This is especially true for housing as there were hardly any trees present when the university began building its residential facilities. The purpose of this project was to identify the trees in housing and use this information to construct a map. The reason that this is especially important is that there was not any record of what had been planted in this area, which makes creating a future plan for plantings nearly impossible. Additionally, it is difficult to prepare for potential pests and diseases as there are not numbers on where vulnerable trees are located. Not knowing where trees exist or what species they are prevents facilities from properly preparing for threats and addressing them should the threat impact trees on campus. To remedy this, the project aimed at providing accurate information about the species, diameter, and location of all of the trees in housing at the University of Wisconsin-Green Bay.

Elizabeth Wagner (UW - Stevens Point)
**Escape Behavior of Side-Blotched Lizards Differs in Response to Predatory Lizards or Snakes**
**Mentor:** Peter Zani
**Co-author:** Peter Zani

Few field studies have examined responses of prey to multiple predators despite most prey occurring in multipredator environments. Therefore, we studied 10 populations of common side-blotched lizards in western North America that varied from co- occurring with both predatory lizards and snakes to only co-occurring with snakes. We quantified the escape behavior of side-blotched lizards when approached with one of two model predators: a lizard or a snake. We found no difference in flee initiation distance between the model lizard or snake. However, we did find differences between the predator types in terms of escape distance, flee direction, and refuge use. Approach by a predatory lizard resulted in side-blotched lizards tending to flee only short distances before seeking refuge, but running more directly toward that refuge when compared to an approaching snake. Thus, the escape responses of side-blotched lizards are tailored to the type of predator that is approaching even in the absence of that particular predator. These results suggest that side-blotched lizards across the geographic range of this species use a combination of escape responses that are both generalized to terrestrial predators as well as contextualized to counter the specific threats of certain predator types.

Ellie Wallace (UW - Stevens Point)
**Blood-lactate level response to potentially stressful activities due to physical exertion in three endemic South African small-bodied Shysharks (Scylorhinidae: Actinopterygii)**
**Mentor:** Sarah Jane Alger

Angling exposes sharks to physical exhaustion and various types of stress. One of the many shark groups angling has relatively unknown effects on are shysharks endemic to South Africa, including Puffadder Shysharks (Haploblepharus edwardsii), Dark Shysharks (H. pictus) and Leopard Catsharks (Poroderma pantherinum). Working with the RecFishSA program at the South African Shark Conservancy (SASC), I evaluated lactate levels in wild-caught shysharks experiencing voluntary stress like actively foraging, involuntary stress like chasing, and the effects of recovery periods. I defined and quantified several shark behaviors in the video footage while the sharks were subjected to chasing or foraging stimuli. I hypothesized that blood lactate levels correlate with evasive and stressful behaviors exhibited by the sharks under the two stimuli. There were no whole-blood lactate level differences among the species or between sexes. Whole-blood lactate levels were higher in sharks experiencing chasing stimuli compared to foraging stimuli ($p < 0.001$).
Two behaviors were found to have a significant positive correlation with blood lactate levels: number of line changes, and number of tail whips (p<0.001). These behaviors are activity intensity measures, suggesting that blood lactate is primarily influenced by increased anaerobic metabolism during periods of physical exertion rather than "psychological" stress.

**Cole Walli (UW - Stevens Point)**  
*Seasonal variance in river otter (Lontra canadensis) diet in Sandhill Wildlife Area of central Wisconsin*  
*Mentor: Justin Sipiorski*  
*Co-authors: Michelle Sauers, Madison Hodge*

River otters (Lontra canadensis) are a keystone predator in North American aquatic ecosystems, and understanding their diet is crucial to understanding their enormous, season-to-season impact in the surrounding community. River otter scat was collected approximately once per month in 2014 and 2015 from Sandhill Wildlife Area in southern Wood County of central Wisconsin. The scat was then processed and analyzed to determine seasonal variance in river otter fish consumption. We extracted fish cleithra (the major bone in the pectoral girdle of fish) from otter feces and used a recently published guide on fish cleithra published by the Michigan Department of Natural Resources to identify fish remains to species. Current data from 61 scat samples shows Salmo trutta composing the largest portion (38.94%) of river otter diet, while Umbra limi (30.65%) and Lepomis gibbosus (21.86%) contribute the second and third largest compositions. The substantial presence of Salmo trutta remains in the scat samples suggests either larger-than-anticipated river otter ranges or currently undocumented brown trout populations in closer proximity to Sandhill Wildlife Area than previously found. We are also curious about any potential seasonal shifts that the otters make from one taxonomic group of fish prey to another.

**Rosetta Washington, RN, ADN (UW - Milwaukee)**  
*Striving to Create Healthier Birth Outcomes through Innovative Partnerships and Sisterhood: Early Findings from the Birthing Project Milwaukee*  
*Mentor: Lucy Mkandawire-Valhmu, PhD, RN*  
*Co-authors: Lucy Mkandawire-Valhmu, PhD, RN, Mary Jo Baisch, PhD, RN, Victoria Scheer, BSN, RN, Oluwatoyin Oluokotun, BSN, RN*

Infant mortality is one of the most salient measures of disparities in determining the health and social wellness of a community. In the last two decades, the state of Wisconsin has seen little improvement in the rate of African American infant deaths. In 2010, 393 Wisconsin infants died during the first year of life. Of these 247 were Caucasian and 95 were African American. While African American infants comprise only 10% of all live births in Wisconsin, they account for 24% of all deaths in the state. The purpose of this birthing project, which is modeled after the Birthing Project USA, is to pilot a psychosocial intervention program tailored for low-income, expectant African American women living in Milwaukee, Wisconsin. The focus is to: Pair these women with African American women from the community to provide advocacy and mentorship; evaluate program's effectiveness, and maintain documentation for development of future interventions. While data collection is ongoing, it is imperative that we report on what we have learned thus far in efforts to contribute to the discourse on African American infant mortality. Ultimately, with the implementation of this intervention program, we expect to note an improvement in birth outcomes for this targeted population.

**William Wasielewski (UW - Oshkosh)**  
*Adolph Germer and His Role in the History of the American Left*  
*Mentor: Stephen Kercher*

During the Fall 2015 semester, I studied a manuscript collection from the Wisconsin Historical Society for an upper-level history course on the history of the American left. Through this archival research, I studied the career of Adolph Germer, a Socialist and union organizer during the first half of the twentieth century. I examined the archival collection in an attempt to gain a more thorough
understanding of what Germer was like, as well as what participation in the left was like. Through this research I gleaned information about Germer's youth as a miner which gave him a practical foundation for career in leftist politics over a span of more than 40 years. Through contacts with the most famous leftists of the day, it became clear that Adolph Germer was a valuable strategist and organizer for the left.

Jonathon Waterman (UW - Stevens Point)
**Paper Mill Sludge-Based Biorefinery**
**Mentor:** Malek Alkasrawi
**Co-author:** Justin Okruszynski

The purpose of this research is to optimize the conversion of Paper Mill Sludge, a byproduct of paper manufacturing, into more useful components. The aspects of this process that were explored include the removal of 'fillers' in paper-mill sludge such as calcium carbonate, the liberation of cellulose fibers from remaining sludge, and conversion of recycled fibers into simple sugars that can be used in fermentation procedures. Water effluent was evaluated at every step to maximize the amount of water that could be recycled throughout the system, and minimize the amount of wastewater produced. This research also helps achieve a better understanding of the economic practicality of this process on a much larger scale, giving insight on the contents of paper mill sludge and the potential to modify these contents into more valuable products.

Evan Weis (UW - La Crosse)
**Mapping Instances of Fatalities in the Himalaya Between 195-2006**
**Mentor:** Gargi Chaudhuri

The use of maps has long been a tool in the effective synthesis of information. Whether undertaking something as complicated as navigating the globe or tracking the progression of desertification, or something as simple as finding your way in an unfamiliar city, maps are paramount in the quick and succinct understanding and identification of unique information. Maps can help us find things when we are lost or, when applied, understand critical information that details large scale activities and provides accurate and timely information to help improve the safety and cost effectiveness of an operation. The function of my research in not only to educate others on mountaineering expeditions in the Himalaya, the aim of which is to assist in the improvement of existing mountaineering expeditions and to provide interested parties with valuable information. This will be achieved through the development of existing data into GIS Static and Interactive web maps which will, upon completion, be made publicly available for the benefit of all. The scope of the study includes all major mountaineering peaks in the Nepal Himalayan range. Through mapping the instances of fatalities we are not only able to determine the risk level associated with a particular mountaineering route but are similarly able to identify the underlying patterns within individual peaks, the greatest risk factor associate with fatal events and gain the ability to concisely track geospatial locations of mountaineering fatalities within the region.

Allison Wells (UW - Platteville)
**Calling Periods of Southwest Wisconsin's Endangered Cricket Frog**
**Mentor:** John Peterson

Blanchard's cricket frog (Acris blanchardi) is a species native to much of the United States. However, the cricket frog has been listed as endangered in the state of Wisconsin for several years. They are currently only known to be located in the southwest corner of the state. In order to monitor southwest Wisconsin's cricket frog populations, surveys are conducted during the species' breeding period in the months of May through August. Surveys are conducted by visiting various wetland sites to listen for and quantify the frogs' calls. A growing alternative to this survey method is the use of recording devices. These "frog loggers" are used to record frog calls at various sites rather than utilizing a human surveyor. In this study, frog loggers were utilized as well as human surveyors to obtain cricket frog call data. This study seeks to determine when cricket frogs call throughout the day and throughout the season and how cricket frog calling periods compare to the calling periods of other frog species.
Abigail Westendorf (UW - Whitewater)
Cyclamate Reaction during Simulated Wastewater Treatment
Mentor: Paul House

Sodium cyclamate (CYC) is an artificial sweetener with a sweetening intensity 30-50 times stronger than sugar. Studies suggest CYC is partially chemically modified during wastewater treatment. The purpose of this project is to further examine what reactions CYC undergoes during simulated chlorine gas disinfection. Solid phase extraction (SPE), high performance liquid chromatography with UV detection (HPLC-UV), and nuclear magnetic resonance (NMR) have been used to investigate this reaction. Samples of CYC reactions with hypochlorite are being separated by HPLC with a titania C18 column. The oxidation products due to CYC modification in wastewater treatment are not well studied. Not all CYC appears to be modified in wastewater treatment and Canadian researchers found concentrations of CYC at 0.88 µg/L. CYC affects aquatic life in a negative manner, harming the photosynthesis of plants and altering aquatic food sources. Identification of oxidation products is necessary to determine ecotoxicological effects. Data detecting CYC and separating mixtures containing CYC have been collected. Reaction mixtures simulating wastewater treatment are being separated and work on identifying oxidation products is progressing.

Danny Wilson (UW - Parkside)
Conservation values within southeastern Wisconsin secondary forests: a preliminary assessment of plant species richness loss and decreased floristic qualities
Mentor: David Rogers

Over the past 60 years, many agricultural fields throughout southeastern Wisconsin have been abandoned, allowing for secondary forest regeneration. Being of agricultural origin, these developing habitats were initially void of forest plant species and such stands should have a “colonization credit”, and be open to recruitment of forest species. Thus, all species present today at these sites represent a colonization event. When compared to old-growth remnants, documented patterns of recruitment into secondary forests could provide insight into the conservation value of these habitats as well as some insight into the environmental filters acting on community assembly.

We surveyed 7 secondary growth sites throughout southeastern Wisconsin, all of which were located adjacent to oak-hickory old growth forests. Within each site, we sampled plots for herb densities, tree and sapling densities, and estimated canopy cover and the distance to the nearby old-growth. With this data, we made comparisons of community diversity and composition to historic and contemporary data collected from similar oak-hickory old growth forests stands, using non-metric multi-dimensional scaling. We found that the species compositions within secondary sites significantly differed from those within the old-growth sites. In addition, with one notable exception, neither oak nor hickory showed much regeneration within these sites, and the understory was composed of lesser floristic quality species such as non-native invasives and weedy natives.

Zachary Witzel (UW - Stevens Point)
Relative Precision of Northern Pike Ages Estimated from Multiple Calcified Structures: Preliminary Results from an Ongoing Statewide Evaluation
Mentor: Dan Isermann

Ages of Northern Pike are estimated using a variety of calcified structures, including cleithra, scales, fin rays, and otoliths. Previous work has validated pike ages estimated from cleithra and suggested that differences in reader precision vary among structures. However, specific protocols for estimating the age of northern pike are lacking and most previous work including otoliths and fin rays has been conducted for fast-growing pike populations. We expect that reader precision will be lower for slower-growing (i.e., stunted) pike populations that are common in smaller inland lakes within the upper Midwest. Our objectives are to compare among-reader precision and northern pike age assignments among cleithra, scales, otoliths, and fin rays for pike populations located throughout the state. Wisconsin DNR personnel have collected more than 300 fish from 10 lakes throughout the state. We will report the preliminary results of this assessment which represents a collaborative effort between the Fisheries Analysis Center, the WDNR.
Fish Age Task Group, and the WDNR Northern Pike Team.

**Joy Wolf (UW - Parkside)**

*Soil analysis of an environmental education center for land use and restoration assessment*

*Mentor: Joy Wolf*

**Co-authors:** Alexis White, Benjamin Haas

Eco-Justice Center promotes green, sustainable living for educational purposes and to the community. The center promotes stewardship for learning about organic gardening, composting, beekeeping, non-carbon energy, heritage animals, and prairie restoration. The Center is designing an expansion which may shift land use. We completed a preliminary soil analysis to determine physical and chemical properties to assist the Board with future decisions. We tested soil samples at the end of the growing season from a hay field, garden, compost, a riparian area, and animal pens. Preliminary data show soil pH between 7 and 8, bulk density between 0.94 – 1.22 with a high clay content (up to 44%), and porosity from 54% to 65%. Garden soil contained the highest capillary water (23%) and the lowest gravitational water (11.9%). Animal pens had lower capillary water (10-16.5%) than gravitational water (10-19%). The hay field soil did not differ between gravitational and capillary moisture levels (13–17%). Water holding capacity (WHC) varied slightly between sites (hay field= 30.8%, pen = 32.87%, and garden =31.7%). Nitrogen was highest in the hay field (0.13 cmol/100kg soil) and lowest in the garden (0.09 cmol/100kg). Soil samples will be taken from protected land in Cliffside Park and Renak-Polak Woods to assess soils in stages of succession to support prairie restoration plans at Eco-Justice Center. This study strengthens collaborative and community-based learning, and helps students to better understand ecological applications of soils in areas of protection and restoration.

**Mary Workman (UW - Stevens Point)**

*Can a mutated breast cancer gene be associated with lung cancer?*

*Mentor:* Diane Caporale

**Co-author:** Chelsea Reterson

Mutations in the BRCA2 gene have been linked to increased risk of breast cancer in previous studies.

A patient with a previous Breast Cancer diagnosis and a confirmed BRCA2 mutation has recently been diagnosed with Small Cell Lung Cancer (SCLC). This study is examining a potential connection between a mutated BRCA2 gene and increased risk of SCLC. DNA was isolated from the biopsy of an SCLC tumor from this patient. The BRCA2 gene sequence was amplified through PCR using primers flanking the exons of the gene. The PCR products were then sequenced, the resulting sequence compared to the wild type BRCA2 sequence, and screened for mutations, keeping in mind the patient’s previous mutation. Results of this study indicate whether the BRCA2 gene shows an additional mutation that could contribute to SCLC. Discovery of a mutation in BRCA2 could be suggestive of a genetic predisposition for increased risk of SCLC. Further studies to verify and duplicate these results with a larger sample size of DNA from patients diagnosed with both Breast Cancer and SCLC could lead to early risk screening, diagnosis, and treatment for Small Cell Lung Cancer patients.

**Ta Xiong (UW - Stevens Point)**

*Hmong-American Literature: Discovering Identity Through Written Texts*

*Mentor:* Wade Mahon

The most recent census of 2010 reports over 260,000 Hmong individuals in the United States, yet there is a disproportionately small amount of literature written by or about Hmong people. The culture of the Hmong people is rapidly being lost as children assimilate into American culture, and this is partly due to its oral tradition. As a result of the trauma of escaping genocide, many Hmong elders are reluctant to share their experiences. Without the knowledge of their elders, Hmong youth struggle to understand the dual cultures they belong to as first-generation immigrants. This project aims to seek a connection between literature as a means of preserving culture, restoring pride, and validating cultural experiences. This oral presentation will explore books available by or about the Hmong and critique the challenges faced in accessing literary texts. It will recount the discoveries of students who have read Hmong books and project core elements these students desire to see in future literary representations of themselves and their culture.
Max Zamzow (UW - Stout)  
*Material Data Sheet of A "Green" Thermosetting Resin*  
**Mentor:** Wei Zheng  
**Co-authors:** John Droske, Wei Zheng, Zachary Hecht

Biodegradable polymers have received much attention in recent years due to their promising medical applications and use in sustainable technologies. In an effort to enhance the properties of such polymers, a "green" thermosetting resin, oligo(ethylene-2-mercaptosuccinate) has been synthesized and characterized. Particular emphasis of this work is to prepare material data sheets to promote its potential use in industry. Therefore, thermal and mechanical properties are measured using differential scanning calorimetry, rotational rheometry, and thermogravimetric analysis. Detailed results will be presented, along with discussion on the implications.

Jeshanah Zolkowski (UW - Fox Valley)  
*The Role of Research in Undergraduate Education: An Analysis of Benefits and Drawbacks*  
**Mentor:** Caroline Geary  
**Co-author:** Caroline Geary

With the birth of the LEAP (Liberal Education and America's Promise) program, more and more colleges have been providing multi-semester research opportunities in the undergraduate experience. Challenges and rewards accompany this research emphasis. Participants in a two-year research program funded by the Wisconsin Space Grant Consortium and located at the University of Wisconsin-Fox Valley were asked to consider benefits and drawbacks of long-term research for undergraduate students in a short survey. The listed advantages were increased communication and technical skills, while a disadvantage was decreased time for traditional coursework. If research was a mandatory substitute for a few traditional classes, this disadvantage would no longer apply.

Lisa Zoromski (UW - Stevens Point)  
*Parasite prevalence in the South Dakota Nature Conservancy free-roaming American Bison (Bison bison)*  
**Mentor:** Todd Huspeni

The Samuel H. Ordway Jr. Memorial Preserve owned by The Nature Conservancy in Leola, South Dakota, manages a herd of approximately 300 bison. The Ordway bison have free-range to 3,030 acres of Leola prairie in the prairie pot-hole region. Ordway prairie had never conducted a parasite examination of the bison herd before. For the past 10 years, researchers coordinated through the Gustavus Adolphus College in Minnesota perform summer bison behavioral studies. This research accustomed the bison to a truck and allowed the unique ability to obtain fresh fecal samples of bison with known age, sex, and identification. From August 10-20th, 2015, forty-nine fecal samples were collected (9 adult bulls, 19 cows, 14 yearlings to three year olds, and 7 calves). Fecal floatation tests were performed to identify prevalence of parasite species. Results from this study will provide future management implications for controlling parasitism in the herd, and comparisons of parasite prevalence over different bison age classes.
7:45 a.m. Registration Opens (available all day) Continental Breakfast Available
8:30 a.m. Opening Remarks
9:00 a.m. Oral Presentations #1 Performing Arts Session #1
10:30 a.m. Poster Session #1
11:45 a.m. Lunch and Keynote Speaker
1:00 p.m. Oral Presentation #2
2:30 p.m. Poster Session #2 Visual Arts Session #1
3:45 p.m. Closing