Spring URSCA Day
May 4, 2016
Riverview Ballroom, University Center
12-2 p.m.

Spring URSCA Day is an annual showcase event to celebrate the research, scholarly and creative activities of University of Wisconsin-River Falls undergraduates. Campus URSCA from all areas of study is represented through research posters, short films, art exhibits, PowerPoints, and interactive displays. We hope you enjoy this opportunity to learn more about the hands-on research activities that are taking place every day on our campus. Spring URSCA Day is organized and sponsored by the Office of Undergraduate Research, Scholarly and Creative Activity and the Society for Undergraduate Research, Scholarly and Creative Activity (SURSCA). We gratefully acknowledge the support of Kathy DeLonias and the DeLonais Foundation, the UWRF Foundation, the UWRF Office of Alumni Relations, and the UWRF Falcon Promise for additional support in making this event possible.

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College of Agriculture, Food and Environmental Sciences

Adkins, Shannon

*The effects of lavender oil on stalled horses subjected to a stressor*  
(Poster)

Research Collaborator(s): Anneliese Apel  
Faculty Mentor(s): Dr. Danielle Smarsh, Animal and Food Science

The use of alternative medicine, such as aromatherapy, has increased in recent years within the equine industry. Lavender oil is commonly thought to have a calming effect, however, there is limited data in horses to confirm these claims. In addition, there are questions regarding the efficacy of such products. Therefore, the two objectives of this research were to conduct a basic chemical analysis of lavender essential oil products, and to assess the potential anti-anxiety effects of lavender essential oil on stalled horses subjected to a stressor.

In the first part of this study, gas chromatography analysis was performed on lavender oil products from two companies looking at linalool concentrations. Both oils were of the Lavendula augustifolia species, and results were then compared to standards set by the International Standards Organization and published third party tests. In the second part of this study, two groups of horses were studied: 6 two-year old Quarter Horse colts, and 18 horses (12 Quarter Horse geldings and 6 Thoroughbred geldings, aged 10±5 years) were organized into a Latin Square design with each horse acting as its own control. The treatment group was administered lavender oil by aromatic application for 15 minutes at 40 minutes and 95 minutes. For the colts, behavioral data was collected via video camera, while for the mature horses, video data was collected, as well as heart rate and salivary cortisol. The control group did not have an application of lavender oil. The stressor used was a sound recording of sirens played for 10 minutes. Salivary cortisol and HRs were later analyzed. Gas chromatography results confirmed that both lavender oil products tested did contain linalool. For the colts, effects were seen on standing, pawing, backing, and scratching (p<0.05). For the mature horses, there was an overall effect of time (p<0.0001) on HR, with HR lower at 10, 30, and 50 minutes as compared to 60 minutes (p<0.0001), and higher at 80, 90, 100, and 110 minutes as compared to 60 minutes (p<0.0017). There was an overall effect of treatment on salivary cortisol (p=0.04), and a trend for an overall effect of treatment on HR (p=0.0518). While the stressor did increase HR, the application of lavender oil did not have a direct effect on HR or cortisol at any specific time point. Further
research is needed to identify an effective dose of lavender oil via aromatic application as a means of reducing stress in horses.

Apel, Anneliese

The effects of lavender oil on stalled horses subjected to a stressor
(Poster)
Research Collaborator(s): Shannon Adkins
Faculty Mentor(s): Dr. Danielle Smarsh, Animal and Food Science

The use of alternative medicine, such as aromatherapy, has increased in recent years within the equine industry. Lavender oil is commonly thought to have a calming effect, however, there is limited data in horses to confirm these claims. In addition, there are questions regarding the efficacy of such products. Therefore, the two objectives of this research were to conduct a basic chemical analysis of lavender essential oil products, and to assess the potential anti-anxiety effects of lavender essential oil on stalled horses subjected to a stressor.

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Arnoldussen, Brent

*Genetic fingerprinting of advanced UWRF strawberry selections (Fragaria x ananassa) with ISSR and RAPD markers* (Poster)

Faculty Mentor(s): Dr. David Zlesak, Plant and Earth Science; Dr. Brian Smith, Plant and Earth Science

The UWRF Fruit Research Program, under the direction of Dr. Brian Smith, has been breeding strawberries for over 25 years for climatic adaptation, yield, and fruit quality. Five promising selections have been identified with superior winter hardiness, disease tolerance/resistance, yield, and vigor and fruit quality. These selections may be released as cultivars to growers and, if so, will be protected with a US Plant Patents. The goal of this research was to identify unique genetic fingerprints to accompany the patent applications. Polymerase chain reaction-based molecular genetic markers (Inter simple sequence repeats, ISSRs; Random Amplified Polymorphic DNA, RAPDs) were used. Primers amplify unique DNA sequences in the genome to create fragments of different lengths that can be run on agarose gels. We used 33 ISSR and 13 RAPD primers individually and in selected combinations on the five UWRF strawberry selections and three industry standard cultivars, Cavendish, Annapolis, and Valley Sunset. Primers either did not amplify any fragments or fragments were uniform across all genotypes. Lack of polymorphisms are likely due to the highly inbred nature of commercial strawberry (F. x ananassa), which is a cross of a limited parental pool of two wild species made centuries ago (F. chiloensis and F. virginiana). More ISSR and RAPD primers or more advanced techniques will need to be used to identify enough polymorphisms in these closely related genotypes to distinguish them from each other.

Beisner, Megan

*Greenhouse Rain Garden* (Poster)

Research Collaborator(s): Jenna Schauer, Alexus Heldt

Faculty Mentor(s): Dr. Joel Peterson, Agricultural Engineering Technology

The Greenhouse Rain Garden Project is focused on creating a rain garden that will be located to the south of the campus greenhouse. The main issue with the area behind the greenhouse is that the soil is eroding from the immense amount of water coming from the pipes off of the greenhouse. Our task is to design and implement a rain garden where a rock bed currently resides. The construction of a rain garden will prevent further erosion and also beautify the campus. By building a rain garden we will be fixing the current erosion problem for that area. Right now, the rock pile located at the end of the pipes only slows down the water flow. A rain garden in that location would allow the water to infiltrate the soil so that the water will not flow down the hill and continue to erode away
the hill. The rain garden will also control the warm water runoff into the nearby Kinnickinnic River, which is a Class I trout stream, meaning the water needs to be cooler when entering the river. A benefit of having a rain garden is that it will help to enhance the appearance of the area. The rain garden will include many colorful plants that will attract birds, butterflies, and other pollinators. Our research will be focused on determining if the rain garden was successful in reducing erosion, increasing soil infiltration, and lowering the water temperature. In order to complete our project we will use mathematics and engineering practices to calculate the volume and size of the rain garden.

**Bemis, Spencer**  
*The Effects Different Natural Sweeteners have on Sensory and Palatability of Yogurt* (Poster and display)  
Research Collaborator(s): Emily Lehmann  
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The goal of this project is to make a healthy, “all natural” yogurt, by replacing sugar with a natural alternative. Starting with a base yogurt flavor and modifying the sugar ingredient, the objective is to maintain or improve sensory attributes, palatability and consumer acceptability.

**Bystedt, Erik**  
*Lake George Groundwater and Surface Water Interaction* (Poster)  
Research Collaborator(s): Ryan Hei, Rebecca Lambert, Jacob Tormoen  
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

A study of the groundwater and surface water interaction upstream, at the lake, and downstream of Lake George in River Falls.

**Currier, Danielle**  
*INSIDE THE JORDAN SANDSTONE; CONTINUOUS EXPOSURE OF SEDIMENTARY STRUCTURES IN AN UNDERGROUND MINE NEAR BAY CITY, WISCONSIN* (Poster)  
Research Collaborator(s): Samuel Kirmis, Gary Strohbeen  
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

In 2015-2016 Fairmount Santrol provided access to their underground mine located near Bay City, Wisconsin. The purpose of this project is to study the excellent exposures of the mine “ribs” (walls); to reveal the three-dimensional geometry, cross-bedding orientation patterns, and sedimentary features within the upper Jordan Sandstone. Compared with surface exposures, the subsurface exposures in the mine are much more extensive and nearly continuous. In addition, the spatial layout of the mine allows three-dimensional description of this unit.
This mine uses room and pillar construction, but with narrow elongate rooms (drifts) and larger square- or rectangular-shaped pillars. Intersections make “T’ s” and form an alternating left-right pattern along primaries throughout the mine. Typical lengths of ribs (wall surfaces) are 20 to 25 m, the height of the “back” (roof) is generally 6.5 to 8.0 m, and the drifts (i.e., the ‘streets’) are roughly 6 to 7 m wide. Three-way intersections increase the stability of the mine.

We chose to focus on an area of roughly 150 by 400 meters in the eastern part of the mine. The typical stratigraphy consists of a lower unit of medium- to thickly-bedded, medium-coarse quartzose sandstone with variable cross-bed orientations; a middle unit of alternating clay and medium-coarse quartzose sandstone layers; and an upper unit composed of medium-coarse, cross-bedded quartzose sandstone that dips generally northeastward, with maximum dips of 20 to 25°. This sand wave thickens eastward to 4 m.

Large soft-sediment deformation features in the mixed clay-sand unit occur where the overlying sand wave thickness increases. Other sedimentary features include abundant intraclasts, burrows and bioturbation structures, load casts and flame structures, and several small-scale faults. Liesengangen banding is common. The cross bedded sands display strong diagenetic iron-oxide coatings. Laminae from the thicker clay bed (beneath the sand wave), spaced at fairly regular intervals, extend southwestward partway up onto cross-bed foresets. This implies that the clay bed is contemporaneous with the sand wave and is present in slightly deeper water northeast of the sand wave. The repetitive spacing of the laminae are consistent with tidal processes.

Destiche, Lauren

The reduction of canine translocation stress through single instrument music. (Poster)
Research Collaborator(s): Bailey Post, Mikayla Dolan, Morgan Kelley
Faculty Mentor(s): Dr. Beth Rausch, Animal and Food Science

Companion animal translocation, specifically canine translocation, is a recent phenomenon in the evolution of modern animal shelters/rescues. Translocation is an important component when addressing the issue of overpopulation of animal shelters struggling with high euthanasia rates. While the ultimate intent of transport is worthy, the process itself is stressful for the dogs, especially those travelling long distances from high-stress living environments in over-crowded shelters. Service dog groups have noted long delays from the time of arrival to the time of training in dogs that have undergone translocation. During this acclimation phase, dogs are unable to train. This prolonged acclimation period costs the non-profit time and money, and delays placement into homes. Literature has noted that classical music has caused shelter dogs to bark less and sleep more which are both indicators of relaxation. This project aimed to
discover whether or not classical piano music has an effect on stress indicators and behavioral assessments. Our team of college students travel by rental SUV for a total of 48 hours with a medium-large breed shelter dog from Madison, Virginia to Minneapolis, Minnesota. The control group (C) will travel with one dog while no music is played. The treatment group (T) will travel with another dog while classical piano music is played during the entire translocation. A behavioral test is to be conducted prior and post translocation by students. Collection of data will be done by the passenger (every 15 minutes) and a GoPro camera for later assessment and cross referencing. Scan sampling of the video collected will be conducted to quantify the behavior of the dog at five minute intervals. Qualitative measurements assess the behavior during translocation and include vocalization, pacing, panting, stress displacement, stereotypies, and laying. Quantitative measurements are assessed every four hours while in transport, which include body temperature, pulse, respiration, and cortisol levels every 12 hours. Time-to-train evaluations will be performed post-trial.

D'Huyvetter, Nickolas

*Effects of cheese varieties on a cheese sauce's consistency and texture*  
(Poster and display)  
Research Collaborator(s): Lizzy Pruss  
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The goal of the project is to develop a cheese sauce that has differing varieties of cheeses. The resulting cheese sauce will be tested with sensory evaluation. The results will be compared against the consistency and texture of a sauce with all one variety of cheese.

Dolan, Mikayla

*The reduction of canine translocation stress through single instrument music.*  
(Poster)  
Research Collaborator(s): Bailey Post, Morgan Kelley, Lauren Destiche  
Faculty Mentor(s): Dr. Beth Rausch, Animal and Food Science

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**Emmerich, Chris**

*Engineering a Small Scale Hops Thresher* (Poster)
Research Collaborator(s): Paul Reberg, Andrew McLean
Faculty Mentor(s): Dr. Joseph Shakal, Agricultural Engineering Technology

The Hops Thresher project is a student designed and fabricated implement that removes hops cones from the bine in order to be used for brewing. This machine is made for small hops farmers and local brewers 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. Over the past year, Christopher, Andrew, and Paul have designed and fabricated the cleaning basket that separates the hops cones from the leaves and other unwanted materials. Upon completing fabrication of the basket, we ran multiple tests using freshly threshed hops. These tests allowed us to determine the most efficient mesh size and basket speed to be used on the cleaner. By using the engineering design process, and CAD stress tests, we were able to determine the proper materials needed for each part. These decisions were made based off of strength, weight, and ease of cleaning, being our machine is used in the food industry. As the project nears completion, the next step will be to turn it over to the marketing department, and a manufacturing plan will be created to efficiently and profitably manufacture the machine for market.

**Farnell, Shane**

*Ground Water and Surface Water Interaction on the South Fork Tributary.* (Poster)
Research Collaborator(s): Ryan Pero
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

Surface water and ground water share a unique relationship. Based on the hydraulic head of a system, surface streams may either be fed by groundwater or feed the groundwater themselves. The South Fork Tributary of the Kinnikinnick River has a range of changing head values that can be used to categorize this streams’ interactions with groundwater. Using temperature, topography, and potentiometric data we have gained a better understanding of the role that ground water plays in the flow of the South Fork.

Graven, Kaitlynn

Testing of Target Antibiotics Against Classified Endophytic Contamination in Main Culture Lines in the Plant Tissue Growth Room at UW-River Falls (Poster)
Research Collaborator(s): Rebekah Hite
Faculty Mentor(s): Dr. David Zlesak, Plant and Earth Science

Symbiotic interactions permeate our daily lives, and are even a part of who we are as healthy humans. Just like we benefit from the endophytes in our gut, plants have a plethora of bacterial and fungal interactions that are mutually beneficial. Endophytes can promote plant growth, the uptake of metabolites for the plant, or even help in plant defense against intruding and harmful bacteria. These interactions have the potential to be utilized in the agricultural production of crops to naturally boost quality and quantity. However, this relationship, developed in nature, can lead to problems in the deviant environment of Plant Tissue Culture (PTC), where nutrient resources are readily available. This can lead to the endophyte overwhelming the plant and leech out onto the media, causing a decline in the plants’ health in culture. Five of the primary-culture plant lines were identified to have such a problem in the PTC lab at University of Wisconsin-River Falls: Ageratum #34, Ageratum ‘John Eustice’, Magnolia RISL #, Little Blue Stem Grass ‘Blue Heaven’ and Heliopsis VRPB. Plants were sub-cultured and bacteriostatic reagents were added to the media for multiple generations to remove the chance of contamination through other means. Plants were then further surfaced sterilized before harvesting six individual novel bacteria for characterization and antibiotic sensitivity profiling. Antibiotic profiling was analyzed to develop methods for establishment of a bacteria free culture to continue plant phenotypic studies into the benefits of the bacteria to the plant. Microbiological metabolic and bacterial phenotypic test were performed to establish characterization of the bacteria. Our research provides a basis to further characterize endophytic bacteria for potential industrial use of entophytic bacteria as agricultural additives to soil to benefit crop output in addition to or as a replacement for current chemicals additives.
Groover, Isabella

*Intercollegiate Horse Show Association Semi Final Championships*

(PowerPoint presentation)
Research Collaborator(s): Alyssa Tomei, Morgan Pliszka, Emily Lehmann, Melissa Warme, Alexandra Taylor
Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science

Five UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.

Hafstad, Logan

*Monitoring and Operational Improvements to the UWRF On-Campus Groundwater Observation Well Network - Spring 2018* (Poster)
Research Collaborator(s): Patricia Muchowski, Nate Overby, Donald Pierquet-Flores
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

An initial installation of groundwater observation wells were installed around the South Fork of the Kinnickinnic River on the University of Wisconsin-River Falls campus to assess the suitability of the floodplain for stormwater treatment wetlands. A network of approximately one dozen temporary observation wells were installed in 2001. Over the subsequent decade, additional wells have been added to the research network bringing the total to twenty-three. Since the installation of the temporary observation wells, the wetlands have not been built, and the existing wells have been repurposed as an ongoing field research laboratory for the Hydrogeology course at the University of Wisconsin-River Falls. Several wells have been vandalized since the installations, and another was eroded at a meander in the river channel. Detailed surveys of the well elevations have been performed twice since the initial installation, but due to freeze/thaw cycles, and other possible ground movements, a re-survey of well elevations is required. Four staff gauges are also located along the river channel. Due to changes in the river channel, Staff Gauge 3 (SG-3) is now inoperable due to sediment accumulation and must be relocated.

Hei, Ryan

*Lake George Groundwater and Surface Water Interaction* (Poster)
Research Collaborator(s): Erik Bystedt, Rebecca Lambert, Jacob Tormoen
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

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Heldt, Alexus

**Greenhouse Rain Garden** (Poster)

Research Collaborator(s): Jenna Schauer, Megan Beisner  
Faculty Mentor(s): Dr. Joel Peterson, Agricultural Engineering Technology

The Greenhouse Rain Garden Project is focused on creating a rain garden that will be located to the south of the campus greenhouse. The main issue with the area behind the greenhouse is that the soil is eroding from the immense amount of water coming from the pipes off of the greenhouse. Our task is to design and implement a rain garden where a rock bed currently resides. The construction of a rain garden will prevent further erosion and also beautify the campus. By building a rain garden we will be fixing the current erosion problem for that area. Right now, the rock pile located at the end of the pipes only slows down the water flow. A rain garden in that location would allow the water to infiltrate the soil so that the water will not flow down the hill and continue to erode away the hill. The rain garden will also control the warm water runoff into the nearby Kinnickinnic River, which is a Class I trout stream, meaning the water needs to be cooler when entering the river. A benefit of having a rain garden is that it will help to enhance the appearance of the area. The rain garden will include many colorful plants that will attract birds, butterflies, and other pollinators. Our research will be focused on determining if the rain garden was successful in reducing erosion, increasing soil infiltration, and lowering the water temperature. In order to complete our project we will use mathematics and engineering practices to calculate the volume and size of the rain garden.

Hite, Rebbekah

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Huberty, Thomas

*Change in Water Storage for Dunn and Chippewa Counties.* (Poster)
Research Collaborator(s): Jusin Walde, Danielle Towner, Brett LaCoy
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

We have monitored water inflow into these counties via wells operated by the DNR, and have also measured the drainage of these counties. Using these numbers we can accurately describe the change in water storage for these counties over the past few years.

Karlen, Kyle

*Analysis of ocular and horn bud thermography, pressure algometry, and rate of gain in response to caustic paste disbudding with the use of oral meloxicam* (Poster)
Faculty Mentor(s): Dr. Kurt Vogel, Animal and Food Science

Dehorning has been a widespread practice for much of the commercial cattle industry. It is still practiced today to ensure the safety of the animals and people, to increase carcass quality by eliminating bruising that occurs when horned animals are present, to conserve space, and to increase revenue because horned feeder cattle are purchased at a discounted rate. One of the most common painful procedures involving cattle is disbudding/dehorning, and from an animal welfare standpoint, it is one of the most serious. Disbudding earlier in life has proven to be much less stressful than dehorning, because it destroys the horn bud tissue before it has the chance to fully attach. Caustic paste disbudding does not have the acute pain response associated with other forms of dehorning/disbudding, and the procedure itself has a quite innocuous and simple appearance. The pain of disbudding is likely similar to that of an acid
burn, which has a slow onset, meaning that oral meloxicam given at the proper time prior to the application of paste would likely reduce the pain response by slowly increasing the concentration of meloxicam in the blood, while the pain caused by the caustic paste slowly increases. This project focused on the long term pain response of caustic paste disbudding and the effects of orally administered meloxicam on the pain response. This was ascertained through the use of ocular and horn bud thermography, pressure algometry, and average daily gain using specialized equipment.

Kelley, Morgan

The reduction of canine translocation stress through single instrument music. (Poster)

Research Collaborator(s): Bailey Post, Mikayla Dolan, Lauren Destiche
Faculty Mentor(s): Dr. Beth Rausch, Animal and Food Science

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Kirmis, Samuel

**INSIDE THE JORDAN SANDSTONE; CONTINUOUS EXPOSURE OF SEDIMENTARY STRUCTURES IN AN UNDERGROUND MINE NEAR BAY CITY, WISCONSIN** (Poster)

Research Collaborator(s): Gary Strohbeen, Danielle Currier  
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

In 2015-2016 Fairmount Santrol provided access to their underground mine located near Bay City, Wisconsin. The purpose of this project is to study the excellent exposures of the mine “ribs” (walls); to reveal the three-dimensional geometry, cross-bedding orientation patterns, and sedimentary features within the upper Jordan Sandstone. Compared with surface exposures, the subsurface exposures in the mine are much more extensive and nearly continuous. In addition, the spatial layout of the mine allows three-dimensional description of this unit.

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We chose to focus on an area of roughly 150 by 400 meters in the eastern part of the mine. The typical stratigraphy consists of a lower unit of medium- to thickly-bedded, medium-coarse quartzose sandstone with variable cross-bed orientations; a middle unit of alternating clay and medium-coarse quartzose sandstone layers; and an upper unit composed of medium-coarse, cross-bedded quartzose sandstone that dips generally northeastward, with maximum dips of 20 to 25°. This sand wave thickens eastward to 4 m.

Large soft-sediment deformation features in the mixed clay-sand unit occur where the overlying sand wave thickness increases. Other sedimentary features include abundant intraclasts, burrows and bioturbation structures, load casts and flame structures, and several small-scale faults. Liesengangen banding is common. The cross bedded sands display strong diageneric iron-oxide coatings.

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Kuehnl, Jordan

*The Effects of Sodium Butyrate and Herbal Supplementation on the Health and Growth of Neonate Dairy Calves* (Poster)
Research Collaborator(s): Elizabeth Schumacher
Faculty Mentor(s): Dr. Sylvia Kehoe, Animal and Food Science

This study examined the effects of three dietary treatments on Holstein bull calves over a four week period. Calves arrived at between two and four days of age and were kept on trial for four weeks. There were two repetitions of eighteen calves randomly sorted into three treatment groups. Treatment A was a control, treatment B was sodium butyrate supplementation, and treatment C was supplementation with sodium butyrate, an herbal supplement called Apex. An unmedicated milk replacer was mixed to 12.5% DM and fed at a rate of six quarts per head per day throughout the duration of the study and a textured calf starter grain was offered free choice. Refusals of milk replacer and grain were measured and recorded. Growth characteristics of hip height, heart girth circumference, and body weight were measured weekly. Blood was drawn weekly, and hematocrit and total serum protein levels were recorded. The second repetition experienced an outbreak of Salmonella type D, which resulted in high morbidity and mortality rates during and after the treatment period. This inhibited our ability to perform a third repetition as initially planned; instead, the decision was made to retain the second repetition of calves for an additional two weeks to monitor their health and treat sick animals. The calves left once they were weaned and in stable condition at just over six weeks of age. Every effort was given to support calf health and prevent the spread of the disease to other parts of the farm. We are still in the process of data entry and analysis.

LaCoy, Brett

*Change in Water Storage for Dunn and Chippewa Counties.* (Poster)
Research Collaborator(s): Jusin Walde, Thomas Huberty, Danielle Towner
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

We have monitored water inflow into these counties via wells operated by the DNR, and have also measured the drainage of these counties. Using these numbers we can accurately describe the change in water storage for these counties over the past few years.

Lambert, Rebecca

*A Study of Plagioclase-bearing Pyroxenites from the Ultraslow-spreading Gakkel Ridge, Arctic Ocean* (Poster)
Faculty Mentor(s): Dr. Allison Gale, Plant and Earth Science
Mantle pyroxenites play an important role in models on melt petrogenesis at mid-ocean ridges and ocean islands. Thus, their study can give extremely valuable insights on mantle heterogeneity and deep melting and melt transport processes but only a limited number of studies exist. A recent study on pyroxenites sampled at the Lena Trough showed that measuring the elemental composition of minerals within pyroxenites can give important information on their formation processes and associated pressures and temperatures.

Here we build on this recent study by working on fresh plagioclase-bearing pyroxenites from the nearby Gakkel Ridge, Arctic Ocean. Very little has been published on abyssal pyroxenites and plagioclase-bearing pyroxenites in particular, and the ability to contrast our results – including estimates of formation pressures and temperatures – with pyroxenites from a nearby ridge is particularly useful. In this study we determined the chemical and modal composition of three samples of plagioclase-bearing pyroxenites dredged within the Sparsely Magmatic Zone.

These samples are particularly fresh, allowing a detailed study of mineral compositional variation and their textural context. Different generations of pyroxene can be identified and plagioclase occurs as rims around spinel, pl-opx symplectites and lamellae in and around clinopyroxene and crosscutting olivines.

Mineral compositions are variable within a given thin section and distinctly different to pyroxenites from Lena Trough. We established temperature and pressure conditions under which the samples likely formed using mineral equilibria and single mineral thermometers; we then compared and contrasted the studied samples with published data from other plagioclase pyroxenites and peridotites. Pressure estimates show that plagioclase formation occurred shallower relative to Lena Trough but comparable to pyroxenites from the Southwest Indian Ridge.

**Lambert, Rebecca**

*Lake George Groundwater and Surface Water Interaction* (Poster)
Research Collaborator(s): Erik Bystedt, Ryan Hei, Jacob Tormoen
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

A study of the groundwater and surface water interaction upstream, at the lake, and downstream of Lake George in River Falls.

**Lehmann, Emily**

*Intercollegiate Horse Show Association Semi Final Championships* (PowerPoint presentation)
Research Collaborator(s): Alyssa Tomei, Isabella Groover, Morgan Pliszka, Melissa Warme, Alexandra Taylor
Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science

Five UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.

**Lehmann, Emily**

*The Effects Different Natural Sweeteners have on Sensory and Palatability of Yogurt* (Poster and display)

Research Collaborator(s): Spencer Bemis
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The goal of this project is to make a healthy, “all natural” yogurt, by replacing sugar with a natural alternative. Starting with a base yogurt flavor and modifying the sugar ingredient, the objective is to maintain or improve sensory attributes, palatability and consumer acceptability.

**McLean, Andrew**

*Engineering a Small Scale Hops Thresher* (Poster)

Research Collaborator(s): Paul Reberg, Chris Emmerich
Faculty Mentor(s): Dr. Joseph Shakal, Agricultural Engineering Technology

The Hops Thresher project is a student designed and fabricated implement that removes hops cones from the bine in order to be used for brewing. This machine is made for small hops farmers and local brewers 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. Over the past year, Christopher, Andrew, and Paul have designed and fabricated the cleaning basket that separates the hops cones from the leaves and other unwanted materials. Upon completing fabrication of the basket, we ran multiple tests using freshly threshed hops. These tests allowed us to determine the most efficient mesh size and basket speed to be used on the cleaner. By using the engineering design process, and CAD stress tests, we were able to determine the proper materials needed for each part. These decisions were made based off of strength, weight, and ease of cleaning, being our machine is used in the food industry. As the project nears completion, the next step will be to turn it over to the marketing department, and a manufacturing plan will be created to efficiently and profitably manufacture the machine for market.

**Milkent, Nicole**

*The Effects of Additional Whey Protein on Yogurt Palatability* (Poster and display)
Research Collaborator(s): Michaela Schrimpf
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The purpose of this research is to determine the effects additional whey protein has on texture, sweetness, aroma, and flavor of a yogurt product. Using three varying levels of added whey protein, palatability and sensory attributed will be examined using hedonic testing methods.

Muchowski, Patricia

*Melt Mixing in a Mid-Ocean Ridge Environment: Are Mineral Compositions in MORB in Equilibrium with the Surrounding Melt?* (Poster)
Faculty Mentor(s): Dr. Allison Gale, Plant and Earth Science

Research conducted as a part of Semester Abroad-Europe. Analysis was conducted at the Laboratoire Magmas et Volcans in Clermont-Ferrand, France with the help of Dr. Muriel Laubier. Research involved chemical analysis on Olivine, Clinopyroxene and Plagioclase from the Mid-Atlantic Ridge FAMOUS segment.

Muchowski, Patricia

*Monitoring and Operational Improvements to the UWRF On-Campus Groundwater Observation Well Network - Spring 2016* (Poster)
Research Collaborator(s): Nate Overby, Logan Hafstad, Donald Pierquet-Flores
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

An initial installation of groundwater observation wells were installed around the South Fork of the Kinnickinnic River on the University of Wisconsin-River Falls campus to assess the suitability of the floodplain for stormwater treatment wetlands. A network of approximately one dozen temporary observation wells were installed in 2001. Over the subsequent decade, additional wells have been added to the research network bringing the total to twenty-three. Since the installation of the temporary observation wells, the wetlands have not been built, and the existing wells have been repurposed as an ongoing field research laboratory for the Hydrogeology course at the University of Wisconsin-River Falls. Several wells have been vandalized since the installations, and another was eroded at a meander in the river channel. Detailed surveys of the well elevations have been performed twice since the initial installation, but due to freeze/thaw cycles, and other possible ground movements, a re-survey of well elevations is required. Four staff gauges are also located along the river channel. Due to changes in the river channel, Staff Gauge 3 (SG-3) is now inoperable due to sediment accumulation and must be relocated.
Overby, Nate

Monitoring and Operational Improvements to the UWRF On-Campus Groundwater Observation Well Network - Spring 2017 (Poster)
Research Collaborator(s): Patricia Muchowski, Logan Hafstad, Donald Pierquet-Flores
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

An initial installation of groundwater observation wells were installed around the South Fork of the Kinnickinnic River on the University of Wisconsin-River Falls campus to assess the suitability of the floodplain for stormwater treatment wetlands. A network of approximately one dozen temporary observation wells were installed in 2001. Over the subsequent decade, additional wells have been added to the research network bringing the total to twenty-three. Since the installation of the temporary observation wells, the wetlands have not been built, and the existing wells have been repurposed as an ongoing field research laboratory for the Hydrogeology course at the University of Wisconsin-River Falls. Several wells have been vandalized since the installations, and another was eroded at a meander in the river channel. Detailed surveys of the well elevations have been performed twice since the initial installation, but due to freeze/thaw cycles, and other possible ground movements, a re-survey of well elevations is required. Four staff gauges are also located along the river channel. Due to changes in the river channel, Staff Gauge 3 (SG-3) is now inoperable due to sediment accumulation and must be relocated.

Paim, Marina

Determine the Effects of Emulsifying Salts and Various Cheeses in Alfredo Sauces (Poster and display)
Research Collaborator(s): Hailey Zettler
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The experiment involves changing the ingredients in two Alfredo Sauce recipes by using varying emulsifying salts and cheeses. The purpose of this study is to determine whether a healthier Alfredo Sauce can be created that is consistent with many traditional flavors while minimizing calories and sodium.

Pero, Ryan

Ground Water and Surface Water Interaction on the South Fork Tributary. (Poster)
Research Collaborator(s): Shane Farnell
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

Surface water and ground water share a unique relationship. Based on the hydraulic head of a system, surface streams may either be fed by groundwater
or feed the groundwater themselves. The South Fork Tributary of the Kinnikinnick River has a range of changing head values that can be used to categorize this streams' interactions with groundwater. Using temperature, topography, and potentiometric data we have gained a better understanding of the role that groundwater plays in the flow of the South Fork.

**Pierquet-Flores, Donald**

*Monitoring and Operational Improvements to the UWRF On-Campus Groundwater Observation Well Network - Spring 2019* (Poster)

Research Collaborator(s): Patricia Muchowski, Nate Overby, Logan Hafstad

Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

An initial installation of groundwater observation wells were installed around the South Fork of the Kinnickinnic River on the University of Wisconsin-River Falls campus to assess the suitability of the floodplain for stormwater treatment wetlands. A network of approximately one dozen temporary observation wells were installed in 2001. Over the subsequent decade, additional wells have been added to the research network bringing the total to twenty-three. Since the installation of the temporary observation wells, the wetlands have not been built, and the existing wells have been repurposed as an ongoing field research laboratory for the Hydrogeology course at the University of Wisconsin-River Falls. Several wells have been vandalized since the installations, and another was eroded at a meander in the river channel. Detailed surveys of the well elevations have been performed twice since the initial installation, but due to freeze/thaw cycles, and other possible ground movements, a re-survey of well elevations is required. Four staff gauges are also located along the river channel. Due to changes in the river channel, Staff Gauge 3 (SG-3) is now inoperable due to sediment accumulation and must be relocated.

**Pliszka, Morgan**

*Intercollegiate Horse Show Association Semi Final Championships* (PowerPoint presentation)

Research Collaborator(s): Alyssa Tomei, Isabella Groover, Emily Lehmann, Melissa Warme, Alexandra Taylor

Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science

Five UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.
Podgorak, Chloe

*Palatability and Sensory Differences Found in a Coconut Based Frozen Dessert with Various Stabilizers.* (Poster and display)

Research Collaborator(s): Holly Voigts
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The purpose of this research is to evaluate the differences in palatability and sensory characteristics of various stabilizers in a coconut based frozen dessert. The intent is to develop a product that has increased health benefits and favorable consistency and flavor.

Post, Bailey

*The reduction of canine translocation stress through single instrument music.* (Poster)

Research Collaborator(s): Mikayla Dolan, Morgan Kelley, Lauren Destiche
Faculty Mentor(s): Dr. Beth Rausch, Animal and Food Science

Companion animal translocation, specifically canine translocation, is a recent phenomenon in the evolution of modern animal shelters/rescues. Translocation is an important component when addressing the issue of overpopulation of animal shelters struggling with high euthanasia rates. While the ultimate intent of transport is worthy, the process itself is stressful for the dogs, especially those travelling long distances from high-stress living environments in over-crowded shelters. Service dog groups have noted long delays from the time of arrival to the time of training in dogs that have undergone translocation. During this acclimation phase, dogs are unable to train. This prolonged acclimation period costs the non-profit time and money, and delays placement into homes. Literature has noted that classical music has caused shelter dogs to bark less and sleep more which are both indicators of relaxation. This project aimed to discover whether or not classical piano music has an effect on stress indicators and behavioral assessments. Our team of college students travel by rental SUV for a total of 48 hours with a medium-large breed shelter dog from Madison, Virginia to Minneapolis, Minnesota. The control group (C) will travel with one dog while no music is played. The treatment group (T) will travel with another dog while classical piano music is played during the entire translocation. A behavioral test is to be conducted prior and post translocation by students. Collection of data will be done by the passenger (every 15 minutes) and a GoPro camera for later assessment and cross referencing. Scan sampling of the video collected will be conducted to quantify the behavior of the dog at five minute intervals. Qualitative measurements assess the behavior during translocation and include vocalization, pacing, panting, stress displacement, stereotypies, and laying. Quantitative measurements are assessed every four hours while in
transport, which include body temperature, pulse, respiration, and cortisol levels every 12 hours. Time-to-train evaluations will be performed post-trial.

**Pruss, Lizzy**

*Effects of cheese varieties on a cheese sauce's consistency and texture* (Poster and display)
Research Collaborator(s): Nickolas D'Huyvetter
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The goal of the project is to develop a cheese sauce that has differing varieties of cheeses. The resulting cheese sauce will be tested with sensory evaluation. The results will be compared against the consistency and texture of a sauce with all one variety of cheese.

**Reberg, Paul**

*Engineering a Small Scale Hops Thresher* (Poster)
Research Collaborator(s): Chris Emmerich, Andrew McLean
Faculty Mentor(s): Dr. Joseph Shakal, Agricultural Engineering Technology

The Hops Thresher project is a student designed and fabricated implement that removes hops cones from the bine in order to be used for brewing. This machine is made for small hops farmers and local brewers 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. Over the past year, Christopher, Andrew, and Paul have designed and fabricated the cleaning basket that separates the hops cones from the leaves and other unwanted materials. Upon completing fabrication of the basket, we ran multiple tests using freshly threshed hops. These tests allowed us to determine the most efficient mesh size and basket speed to be used on the cleaner. By using the engineering design process, and CAD stress tests, we were able to determine the proper materials needed for each part. These decisions were made based off of strength, weight, and ease of cleaning, being our machine is used in the food industry. As the project nears completion, the next step will be to turn it over to the marketing department, and a manufacturing plan will be created to efficiently and profitably manufacture the machine for market.

**Schalla, Emily**

*The Effects of Honey on the Sensory Qualities of Baked Custard* (Poster and display)
Research Collaborator(s): Kalyn Suhorepetz
Faculty Mentor(s): Michelle Farner, Animal and Food Science
The goal of this research is to determine whether altering the sugar component in baked custard will have an effect on various sensory qualities. Using various levels of sweetener substitutions, the similarities and differences in its sensory qualities such as appearance, taste, texture, and consistency will be evaluated.

**Schauer, Jenna**

*Greenhouse Rain Garden* (Poster)
Research Collaborator(s): Megan Beisner, Alexus Heldt
Faculty Mentor(s): Dr. Joel Peterson, Agricultural Engineering Technology

The Greenhouse Rain Garden Project is focused on creating a rain garden that will be located to the south of the campus greenhouse. The main issue with the area behind the greenhouse is that the soil is eroding from the immense amount of water coming from the pipes off of the greenhouse. Our task is to design and implement a rain garden where a rock bed currently resides. The construction of a rain garden will prevent further erosion and also beautify the campus. By building a rain garden we will be fixing the current erosion problem for that area. Right now, the rock pile located at the end of the pipes only slows down the water flow. A rain garden in that location would allow the water to infiltrate the soil so that the water will not flow down the hill and continue to erode away the hill. The rain garden will also control the warm water runoff into the nearby Kinnickinnic River, which is a Class I trout stream, meaning the water needs to be cooler when entering the river. A benefit of having a rain garden is that it will help to enhance the appearance of the area. The rain garden will include many colorful plants that will attract birds, butterflies, and other pollinators. Our research will be focused on determining if the rain garden was successful in reducing erosion, increasing soil infiltration, and lowering the water temperature. In order to complete our project we will use mathematics and engineering practices to calculate the volume and size of the rain garden.

**Schrimpf, Michaela**

*The Effects of Additional Whey Protein on Yogurt Palatability* (Poster and display)
Research Collaborator(s): Nicole Milkent
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The purpose of this research is to determine the effects additional whey protein has on texture, sweetness, aroma, and flavor of a yogurt product. Using three varying levels of added whey protein, palatability and sensory attributed will be examined using hedonic testing methods.
Schumacher, Elizabeth

The Effects of Sodium Butyrate and Herbal Supplementation on the Health and Growth of Neonate Dairy Calves (Poster)
Research Collaborator(s): Jordan Kuehnl
Faculty Mentor(s): Dr. Sylvia Kehoe, Animal and Food Science

This study examined the effects of three dietary treatments on Holstein bull calves over a four week period. Calves arrived at between two and four days of age and were kept on trial for four weeks. There were two repetitions of eighteen calves randomly sorted into three treatment groups. Treatment A was a control, treatment B was sodium butyrate supplementation, and treatment C was supplementation with sodium butyrate, an herbal supplement called Apex. An unmedicated milk replacer was mixed to 12.5% DM and fed at a rate of six quarts per head per day throughout the duration of the study and a textured calf starter grain was offered free choice. Refusals of milk replacer and grain were measured and recorded. Growth characteristics of hip height, heart girth circumference, and body weight were measured weekly. Blood was drawn weekly, and hematocrit and total serum protein levels were recorded. The second repetition experienced an outbreak of Salmonella type D, which resulted in high morbidity and mortality rates during and after the treatment period. This inhibited our ability to perform a third repetition as initially planned; instead, the decision was made to retain the second repetition of calves for an additional two weeks to monitor their health and treat sick animals. The calves left once they were weaned and in stable condition at just over six weeks of age. Every effort was given to support calf health and prevent the spread of the disease to other parts of the farm. We are still in the process of data entry and analysis.

Stephenson, Emma

Effect of low fat or high fat dry distiller’s grains supplementation on forage intake and digestibility in beef heifers (Poster)
Faculty Mentor(s): Dr. Amy Radunz, Animal and Food Science

The objective of this study was to evaluate low-medium quality forage intake and total tract digestibility of high verses low-fat Dried Distiller’s Grain with Solubles (DG) supplementation fed to yearling beef heifers. Thirty Angus, Hereford, and Angus cross yearling beef heifers (399 ± 16 kg) were stratified by BW and breed and then assigned to 1 of 3 supplementation treatments; 1) no supplementation (CON); 2) supplementation of low-fat DG (LDG); 3) supplementation of high-fat DG (HDG) and were provided ad libitum intake of low-quality hay (7.82% CP, 1.14 Mcal NEm/kg). Both LDG and HDG were supplemented at 0.8% body weight (BW) to provide a similar CP intake of 0.224%. Hay was fed twice a d at 800 and 1600 and supplement was fed once a d at 700 prior to hay feeding. Individual feed intake was recorded for 37 d. Two-day BWs were collected at the beginning and end of the trial. To determine
apparent total tract digestibility feed, ORTS, and fecal samples were collected on d 27 from a subset of 5 heifers per treatment. Nutrient analysis was performed on each sample (DM, OM, CP, ADF, NDF, EE) and ADIN was used as an indigestible marker for digestibility calculations. Heifers supplemented (LDG or HDG) had greater BW gain and reduced hay DMI (as %BW) by 9.8% compared to CON (P < 0.0001), but no difference in BW gain (P = 0.55) or hay DMI (P = 0.14) between HDG and LDG was observed. Apparent digestibility of DM, CP, EE, and OM were not different (P > 0.05) between HDG and LDG, but heifers supplemented DG had greater DM, CP, EE, and OM apparent digestibility than CON (P < 0.03). Apparent digestibility of NDF and ADF was not different (P = ??) between CON and LDG, however HDG had greater NDF and ADF apparent digestibility (P < 0.03). Supplementation of DG regardless of fat content improved DM and OM digestibility, reduced hay intake, and improved average daily gain for yearling beef heifers.

Strohbeen, Gary

INSIDE THE JORDAN SANDSTONE; CONTINUOUS EXPOSURE OF SEDIMENTARY STRUCTURES IN AN UNDERGROUND MINE NEAR BAY CITY, WISCONSIN (Poster)

Research Collaborator(s): Samuel Kirmis, Danielle Currier
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

In 2015-2016 Fairmount Santrol provided access to their underground mine located near Bay City, Wisconsin. The purpose of this project is to study the excellent exposures of the mine “ribs” (walls); to reveal the three-dimensional geometry, cross-bedding orientation patterns, and sedimentary features within the upper Jordan Sandstone. Compared with surface exposures, the subsurface exposures in the mine are much more extensive and nearly continuous. In addition, the spatial layout of the mine allows three-dimensional description of this unit.

This mine uses room and pillar construction, but with narrow elongate rooms (drifts) and larger square- or rectangular-shaped pillars. Intersections make “T’s” and form an alternating left-right pattern along primaries throughout the mine. Typical lengths of ribs (wall surfaces) are 20 to 25 m, the height of the “back” (roof) is generally 6.5 to 8.0 m, and the drifts (i.e., the ‘streets’) are roughly 6 to 7 m wide. Three-way intersections increase the stability of the mine.

We chose to focus on an area of roughly 150 by 400 meters in the eastern part of the mine. The typical stratigraphy consists of a lower unit of medium- to thickly-bedded, medium-coarse quartzose sandstone with variable cross-bed orientations; a middle unit of alternating clay and medium-coarse quartzose sandstone layers; and an upper unit composed of medium-coarse, cross-bedded quartzose sandstone that dips generally northeastward, with maximum dips of 20 to 25°. This sand wave thickens eastward to 4 m.
Large soft-sediment deformation features in the mixed clay-sand unit occur where the overlying sand wave thickness increases. Other sedimentary features include abundant intraclasts, burrows and bioturbation structures, load casts and flame structures, and several small-scale faults. Liesengangen banding is common. The cross bedded sands display strong diagenetic iron-oxide coatings.

Laminae from the thicker clay bed (beneath the sand wave), spaced at fairly regular intervals, extend southwestward partway up onto cross-bed foresets. This implies that the clay bed is contemporaneous with the sand wave and is present in slightly deeper water northeast of the sand wave. The repetitive spacing of the laminae are consistent with tidal processes.

**Suhorepetz, Kalyn**

*The Effects of Honey on the Sensory Qualities of Baked Custard* (Poster and display)

Research Collaborator(s): Emily Schalla  
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The goal of this research is to determine whether altering the sugar component in baked custard will have an effect on various sensory qualities. Using various levels of sweetener substitutions, the similarities and differences in its sensory qualities such as appearance, taste, texture, and consistency will be evaluated.

**Symbal, Hannah**

*Assessment of Behavior Sampling Techniques for Nursery Pigs* (Poster)  
Research Collaborator(s): Dana Wagner  
Faculty Mentor(s): Dr. Kurt Vogel, Animal and Food Science

Observation and collection of behavior data are important parts of understanding the affective states of animals. Behavior sampling is used to quantify animal behavior when it is not practical to observe every animal in question for a continuous amount of time. There are two methods of behavior sampling used in this study: focal, and scan. In focal sampling, all behaviors for one animal are recorded for a continuous amount of time. In scan sampling, the number of animals displaying certain behaviors are counted at set intervals. Currently, there is no guidance for the amount of behavior sampling data needed for nursery pigs, but there is guidance for other species such as feedlot cattle and primates. The objective of this research was to set standards for data collection for other projects involving the behavior of nursery pigs by determining the maximum time interval for scan sampling and determining the minimum number of pigs per pen required for focal sampling. Focal sample data and 1-minute scan interval data were collected for 4 pens which housed 9,8,6, and 3 pigs per pen. DATA/FINAL POINTS/ETC. Compared focal and scan.
Taylor, Alexandra  
*Intercollegiate Horse Show Association Semi Final Championships*  
(PowerPoint presentation)  
Research Collaborator(s): Alyssa Tomei, Isabella Groover, Morgan Pliszka, Emily Lehmann, Melissa Warme  
Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science

Five UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.

Taylor, Alexandra  
*The Effects of Skin Fold Testing Post-Dehorning on PHA-P Injected Locations in Pre-Weaned Dairy Calves* (Poster)  
Faculty Mentor(s): Dr. Sylvia Kehoe, Animal and Food Science

PHA-P was used to measure the response of the body to electric dehorning. PHA-P is a red kidney bean based lectin substance called phytohemagglutinin. PHA-P inspires a cell mediated response by the body in order to break down and eliminate it. The degree of swelling and amount of time required to break down PHA-P was measured through skin fold testing in pre-weaned dairy calves post-dehorning. PHA-P was injected in the skin layer of the ear and posterior to the scapula in the calf thirty minutes after being dehorned and measured using digital calipers at 30 minutes, 6, 12, and 24 hours post-dehorning. The objective of this study was to determine how the rate of degradation of the chemical PHA-P differs after dehorning.

Tomei, Alyssa  
*Intercollegiate Horse Show Association Semi Final Championships*  
(PowerPoint presentation)  
Research Collaborator(s): Isabella Groover, Morgan Pliszka, Emily Lehmann, Melissa Warme, Alexandra Taylor  
Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science

Five UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.

Tormoen, Jacob  
*Lake George Groundwater and Surface Water Interaction* (Poster)  
Research Collaborator(s): Erik Bystedt, Ryan Hei, Rebecca Lambert  
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science
A study of the groundwater and surface water interaction upstream, at the lake, and downstream of Lake George in River Falls.

**Towner, Danielle**

*Change in Water Storage for Dunn and Chippewa Counties.* (Poster)
Research Collaborator(s): Jusin Walde, Thomas Huberty, Brett LaCoy
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

We have monitored water inflow into these counties via wells operated by the DNR, and have also measured the drainage of these counties. Using these numbers we can accurately describe the change in water storage for these counties over the past few years.

**Voigts, Holly**

*Palatability and Sensory Differences Found in a Coconut Based Frozen Dessert with Various Stabilizers.* (Poster and display)
Research Collaborator(s): Chloe Podgorak
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The purpose of this research is to evaluate the differences in palatability and sensory characteristics of various stabilizers in a coconut based frozen dessert. The intent is to develop a product that has increased health benefits and favorable consistency and flavor.

**Walde, Jusin**

*Change in Water Storage for Dunn and Chippewa Counties.* (Poster)
Research Collaborator(s): Thomas Huberty, Danielle Towner, Brett LaCoy
Faculty Mentor(s): Dr. Kerry Keen, Plant and Earth Science

We have monitored water inflow into these counties via wells operated by the DNR, and have also measured the drainage of these counties. Using these numbers we can accurately describe the change in water storage for these counties over the past few years.

**Warme, Melissa**

*Intercollegiate Horse Show Association Semi Final Championships*
(PowerPoint presentation)
Research Collaborator(s): Alyssa Tomei, Isabella Groover, Morgan Pliszka, Emily Lehmann, Alexandra Taylor
Faculty Mentor(s): Dr. Peter Rayne, Animal and Food Science
9 UWRF students qualified to compete at Semi Finals after successfully competing at Regional Championships. Demonstrating extreme composure and grace under pressure.

**Zettler, Hailey**

*Determine the Effects of Emulsifying Salts and Various Cheeses in Alfredo Sauces* (Poster and display)

Research Collaborator(s): Marina Batista Paim
Faculty Mentor(s): Michelle Farner, Animal and Food Science

The experiment involves changing the ingredients in two Alfredo Sauce recipes by using varying emulsifying salts and cheeses. The purpose of this study is to determine whether a healthier Alfredo Sauce can be created that is consistent with many traditional flavors while minimizing calories and sodium.
Ahlfs, Matthew

*The Effects of Employment, Stress, and Being a Full-Time Student at a Medium Size Midwestern Four Year University* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study focuses on the relationship between the number of hours a student works per week, stress levels and GPA (academic success). And if work hours and stress plays a role on the students ability to succeed in academics. The goal of the research is to place focus on if employment can hinder or benefit the student’s capability to perform effectively and to their desire.

Anderson, Emily

*The Effects of Inhibition of the Medial Prefrontal Cortex on Symptoms of Depression in an Animal Model* (Poster)
Research Collaborator(s): Anna Miller
Faculty Mentor(s): Dr. James Cortright, Psychology

Depression is the most widespread disability on Earth affecting more than 350 million people of all ages across the globe (World Health Organization, 2015). Depression mostly affects women and can lead to self-injury, substance abuse, and even suicide (World Health Organization, 2015). The gravity of these consequences indicates that depression is a mental illness which can alter an individual’s self-esteem or self-focus. Self-focus (i.e. the process by which one engages oneself in self-referential processing) is a core issue in the psychopathology of major depression (Lemogne, Delaveau, Freton, Guionnet, & Fossati, 2012). Previous studies have used functional neuroimaging to identify that the cortical midline structures, including the medial prefrontal cortex (mPFC), play a key role in self-referential processing in depressed subjects (Elliott, & Dolan, 2003; Lemongne et al., 2012). This research holds significance in that it builds on previous findings that have aimed to link specific patterns of activity to specific areas of the prefrontal cortex as mediating symptoms of depression with conflicting results. Further examination of the mPFC is warranted not only as a possible precursor to the implication of its involvement in mediating depression, but also in order to provide support for a dominant pattern of brain activity (inhibition) which interacts with symptoms of depression. This study aims to look at drug-induced mPFC inhibition in animal models of depression. These experiments use an animal model of learned helplessness, lethargy, and anhedonia as a measure of self-referential
processing in depression. In order to maintain high external validity the study utilizes female Long Evans rats in order to more accurately generalize findings to the population of women which make up the majority of depressed individuals in humans. Subjects are tested for latency in regards to learned helplessness, for lethargy in a radial arm maze and open field test, and for anhedonia using sugar pellets. As data collection is underway, it is hypothesized that a decrease in learned helplessness, lethargy, and anhedonia will be seen in animals which exhibit depressive symptoms that have undergone inhibition of the mPFC (having also had their self-referential processes inhibited) compared to animals which display symptoms of depression but do not receive this treatment. The results of these experiments have important implications regarding the neurobiology of depression, specifically the role of the mPFC in symptoms of depression.

**Anderson, Carter**

*Tobacco: An Assessment of Use, Health, Perceptions, Knowledge, and Influences* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be researching tobacco with an emphasis on the use, health, perceptions, knowledge, and influences. Even though rates are still high, tobacco use has recently been declining. In response, tobacco companies have retreated to advertising their products to younger generations by producing sweet flavors and changing their packaging to attract favorable attention. Additionally, new age tobacco products are hitting the shelves marketed as healthier options, with a lack of proper knowledge as to the same harmful effects well known by traditional tobacco. What presence does tobacco have in our society today and what influences do our family, friends, and the media play in our perceptions?

**Angell, Jenn**

*Investigating Surface* (Artwork)

Faculty Mentor(s): Randy Johnston, Art

This is a presentation of a series of investigations and experiments with different kinds of glazes and surface treatments for sculptural ceramic forms. A ceramic glaze is made up of different materials, minerals, chemicals, and oxides. These raw materials are mixed together in certain ratios, depending on the desired effect, and then fired in a kiln to temperatures up to 2400 degrees Fahrenheit. It is then that the glaze takes on the glassy characteristics that people are generally familiar with. I have recently been developing a body of sculptural work that is influenced by scientific specimens, human anatomy, and ideas of psychological functioning, and was struggling with finding a surface that felt appropriate to the forms. By conducting a wide variety of tests using different
ceramic glaze materials and exploring color and texture, I've come closer to developing a surface that is my own and will give my sculptures the life that they desire.

**Arnoldussen, Brent**

**CRISPR: Not if, but how will it impact your life?** (Poster)
Research Collaborator(s): Nicole Stiff, Kara Mallizzio, Louis Musser, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology

CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy. CRISPR stands for Clustered regularly-interspaced short palindromic repeats. Cas9 is the predominantly utilized enzyme that’s associated with CRISPR. Discovered in the late 1980s, this gene-editing system brings with it near-endless possibilities in terms of its applications. It shows promise across many fields and disciplines, including biomedicine and agriculture.

**Arnoldussen, Brent**

**Monsanto’s glyphosate is now the most heavily pesticide in history and Component of the Roundup ready 2 gene** (Poster)
Research Collaborator(s): Nicole Stiff, Kara Mallizzio, Louis Musser, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology

Monsanto is a multinational agricultural biotechnology corporation based in the United States. They are the world’s leading producer of Roundup, a herbicide containing the active ingredient glyphosate.

Monsanto is also the largest producer of genetically engineered (GE) seeds on the planet, accounting for over 90% of the GE seeds planted globally in 2003. Monsanto introduced genetically modified soybeans in 1996 that were resistant to glyphosate. The addition of other crops, such as corn in 1998, soon followed. “Roundup Ready” crops greatly improved a farmer’s ability to control weeds since glyphosate could be sprayed in the fields without harming their crops. Monsanto has modified the Roundup Ready 2 gene and engineered it into their crops so that the plants will remain unaffected in the presence of Monsanto’s herbicide and increase overall crop yield.

**Azasu, Samuel**

**Smart Addict (Nomophobia)** (Short Film)
Faculty Mentor(s): Erik Johnson, Stage and Screen Arts
A documentary about a test on the addiction of a cell phone/smart device usage.

**Baker, Ryan**

*What Don't know About 19th Century Poland- Joseph Conrad's "Prince Roman": An Annotated Text* (Poster)

Research Collaborator(s): Samantha Hiller  
Faculty Mentor(s): Dr. Lissa Schneider-Rebozo, English/URSCA

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.

**Bakuto, Jalane**

*The Relationship Between One’s Racial Background and Their Preference of Therapist* (Poster)  
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study examined an individuals’ perceptions and personal experiences with Mental Health Services based on their racial and ethnic background. 12 students of three different racial backgrounds: Caucasian, Asian and African Americans at a small liberal arts university were interviewed about their preference regarding their comfort level with therapists of different backgrounds in terms of race and culture. Asian and African Americans indicated they were less likely to seek out and utilize therapy due to their economic conditions and lack of racially diverse mental health counselors in the field. White respondents expressed higher comfort levels and more economically stable when accessing mental health services. Racial minorities would be more likely to reach out to receive therapy benefits if the practitioner shared the same racial or cultural background.

**Barbian, Tyler**

*Shake-A-Day* (Poster)  
Faculty Mentor(s): Dr. Keith Chavey, Mathematics

I am presenting the results of an investigation into the odds of Shake-A-Day. Shake-A-Day is presented in many bars as a game of chance with a tiered prize structure. The basic game involves 5 dice, with three chances to roll a winning dice combination. No saving of dice rolls are allowed. Only winning dice rolls
have a pay out, of which there are three variants: full house, four of a kind, and five of a kind. Comparing the different ways to roll these variants to the total combination of dice rolls allows the likelihood of each winning roll to be calculated. After these calculations, the price to play and the pay out are considered to determine an expected value, which essentially predicts whether it is a financially sound decision to play. Many variants exist, so for my research I will investigate different taverns to find as many house rules as possible. After compiling a comprehensive list, I would calculate all possible outcomes to compute the various probabilities of a winning roll, and the expected value of the various games. This knowledge would allow players to predict whether a game is favorable or not to play. I expect to find that the expected value of the generic Shake-A-Day is favorable towards the players, while the variants favor the pot or house.

**Bares, Zach**

*Patriotism In a Time of Distress:*

*RFSTC and Student Voice Reaction to WWII* (Poster)

Faculty Mentor(s): Andris Straumanis, Communication and Media Studies

How the Student Voice and the campus of River Falls reacted to Pearl Harbor and the beginning of WWII. Looking at the period of December, 1941 through May of 1942. Poster will feature clippings of the school newspaper from that time period and how the newspaper was constructed.

**Beasley, Megan**

*Para Las medias rojas: Reality of the trial of Feminism* (Poster)

Research Collaborator(s): Kalyn Suhorepetz, Brittany Berg, Zoë Wischer

Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

Throughout the late nineteenth century, Spain was under a great reform and revolution. Women were still being oppressed, but were finally taking a stand. The roles of women were being redefined and their relationships with men were under negotiation. There were many women who stood up for their gender in order to better the future, and although they made a grave difference, many of them also suffered along the way. The basis of our analysis of feminism/protofeminism in late nineteenth century Spanish literature is the short story “Las Medias Rojas” by Emilia Pardo Bazán. Our study of this story focuses on the oppression of women through domestic abuse and gender roles as well as Bazán’s use of realism and naturalism to convey feminist ideals.

Realidad de la judicio de feminismo:

Por todo el final del siglo XIX, España estaba bajo gran reforma y revolución. Las mujeres todavía estaban oprimidos, pero finalmente estaban tomar una
postura. Los papeles de las mujeres estaban siendo redefinido y sus relaciones con los hombres estaban bajo negociación. Estaban muchas mujeres que tomaban una postura para su género y para mejorar la futura. Aunque hacían una diferencia grande, muchas de ellas sufrían en el proceso. La base de nuestro análisis del protofeminismo en el literatura española del siglo XIX es el cuento corto “Las Medias Rojas” por Emilia Pardo Bazán. Nuestro estudio de este cuento está enfocada en el oprimido de las mujeres por el abuso doméstico y los papeles de género. También enfocamos en como Bazán usa el realismo y el naturalismo para comunicar ideales feministas.

**Beck, Casey**

*Squared wheel thrown forms* (Artwork)
Faculty Mentor(s): Rhonda Willers, Art

When you think of a wheel thrown form you think of something round; a circle. I have been exploring the possibilities of this circle and how far you can push it, or pull it into other shapes. Paddling, and pulling techniques are used to get the general shape of a square, then the forms are trimmed with a surform tool to define the edges and create the sides. Each bottle, cup, mug, yunomi, and bowl are trimmed either by spinning them on the wheel or by hand.

**Berg, Brittany**

*Para Las medias rojas: Reality of the trial of Feminism* (Poster)
Research Collaborator(s): Kalyn Suhorepetz, Megan Beasley, Zoë Wischer
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

Throughout the late nineteenth century, Spain was under a great reform and revolution. Women were still being oppressed, but were finally taking a stand. The roles of women were being redefined and their relationships with men were under negotiation. There were many women who stood up for their gender in order to better the future, and although they made a grave difference, many of them also suffered along the way. The basis of our analysis of feminism/protofeminism in late nineteenth century Spanish literature is the short story “Las Medias Rojas” by Emilia Pardo Bazán. Our study of this story focuses on the oppression of women through domestic abuse and gender roles as well as Bazán’s use of realism and naturalism to convey feminist ideals.

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Bergs, David

Gōsutotaun: Abandoned and Derelict Landscapes in Japan (Poster)
Faculty Mentor(s): Dr. Charles Rader, Geography and Geographic Information Science

Ghost towns and abandoned locations are found throughout the world; even densely populated Japan is no exception. The country has a number of structures and locales distributed throughout the islands that were abandoned for various historical reasons, including the recent evacuation of neighborhoods following the Fukushima nuclear disaster in 2011. In this project, major abandoned areas in the past century are identified, classified, and analyzed in the context of population shifts throughout Japan.

Bierbaum, Lynnette

SPE National Photography Conference (Poster)
Research Collaborator(s): Samantha Kern, Lauren Olson, Alysha Knandel, Anthony Czech, Christian Seiler, Rachel Urban, Adry Cota
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club’s trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

Bram, Alanna

Antonín Dvořák, the influence of his environment and experiences on his compositions (Poster)
Faculty Mentor(s): Dr. Kristin Tjornehoj, Music

Antonín Dvořák was born in Nelahozeves, Bohemia (currently the Czech Republic). He was the director of the National Conservatory of Music in New York from 1892-1895, but also spent time in the Midwest. I decided to research the influence of his environment and experiences on his compositions because of a planned band trip with the UWRF Symphony band to his homeland in June. I was also interested in studying Dvořák because of his close ties to the Midwest during his time in the United States. It is clear that his music was profoundly impacted by his environment. Early compositions reflect the influence of his family and exposure to the folk music of his native Bohemia. Later, family tragedy in his homeland changed the style of his compositions. There is no
question that Dvořák influenced American music and musicians, but the American culture and environment also significantly impacted Dvorak’s works.

**Britts, Kyia**

*Sustainable Lighting in Theatre* (Poster)
Faculty Mentor(s): Robin Murray, Stage and Screen Arts

In theatre, there are many ways we try to be sustainable, but there is more we can do. One day I hope to be a lighting designer. The types of lights we use here at the University of Wisconsin-River Falls worry me though. My hypothesis is that if I can eliminate dust and build up on the lighting instruments we use as well as the dust and build up on the lamps in the instruments, the instruments would last longer. I propose to collect data on lighting instrument performance from three different shows to test my hypothesis.

**Byrnes, Taylor**

*Determination of Fatty Acid Profiles in Pennycress* (Poster)
Faculty Mentor(s): Dr. Ross Jilk, Chemistry and Biotechnology

Current research is investigating the possibility of domesticating Thlapsi arvens (pennycress) as a cash crop. It is known that pennycress seeds have a high triglyceride content indicating that they may be a good feedstock for the production of biofuels. Domestication efforts to improve the fatty acid profile of the pennycress oil are presently underway. This research aims to generate a method that could be used in a teaching laboratory that will allow the determination of the fatty acid profiles of new strains of pennycress. Our method includes toasting and cracking the seeds prior to Soxhlet extraction in order to isolate the oils, followed by methoxide ethanol transesterification to generate the fatty acid methyl esters (FAMES), and the use of gas chromatography to separate and quantify the isolated FAMES. We have used this method to determine that native pennycress seeds contain high amounts of 11-eicosenoic acid and 13-docosenoic acid.

**Carufel, Donald**

*giveBIG St. Croix Valley Promotional Videos* (Short Film)
Faculty Mentor(s): Erik Johnson, Stage and Screen Arts

I created videos to promote an online fundraiser called giveBIG St. Croix Valley. During this event, 50 non-profits within the Osceola, Amery, and St. Croix Falls area can receive donations from anyone within the community. I was asked to collaborate and make a promotional video and Thank You video with the Osceola Medical Center to hype up the event. The videos went on social media pages, as well the giveBIG donation page.
Ceithamer, Jay

*Public Opinion of Criminal Justice* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

Looking into the rehabilitation aspect of the United States Criminal Justice system

Chieves, Dillon

*AN INVESTIGATION OF THE PERCEIVED IMPORTANCE AND INCLUSION OF MUSIC STANDARDS WITHIN MINNESOTA AND WISCONSIN CLASSROOMS* (Poster)

Research Collaborator(s): Rebecca Huth, Ryan Nattrass, Richard Thomas

Faculty Mentor(s): Dr. Paul Budde, Music

The purpose of this study is to gather information from current music educators in Minnesota and Wisconsin regarding their attitudes about and implementation of state and national music standards within their classrooms. Our research will be conducted via an online survey sent to approximately 5500 music educators in Wisconsin and Minnesota (per the estimates given by the Minnesota Music Educators Association and Wisconsin Music Educators Association). The survey will be distributed this school year, with a target of mid-January 2016. With the information gathered from the research survey, we hope to determine whether there is a correlation between a music educator’s gender, age, school setting (rural-urban-suburban), classes taught (band-choir-orchestra-classroom music-other), grade level taught (K-12), teaching experience (years), or highest degree earned regarding (a) the value that s/he associates with the inclusion of specific music standards when constructing daily lesson plans, (b) his/her knowledge about State (Minnesota and Wisconsin) and National (1994 and 2014) music standards, and (c) his/her inclusion of specific music standards within daily lesson plans.

Clark, Cory

*Juvenile Delinquency and Deterrence* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study touches on the subject of juvenile delinquency and deterrence. In this study, questions were asked of the participants in the study in the form of a survey and then again in an interview in order to find out the relationship of delinquent acts and deterrent measure which may need to be taken in order to help curve delinquent acts. The findings indicate that although some of the participants were fully active in some form of extracurricular activity, delinquent acts were still committed by some participants.
Cota, Adry

*SPE National Photography Conference* (Poster)
Research Collaborator(s): Christian Seiler, Rachel Urban, Lynnette Bierbaum, Samantha Kern, Lauren Olson, Alysha Knandel, Anthony Czech
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club's trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

Czech, Anthony

*Power's Source* (Artwork)
Faculty Mentor(s): Brett Kallusky, Art

Images of the Allen S. King Generating Station in Oak Park Heights, Minnesota.

Czech, Anthony

*SPE National Photography Conference* (Poster)
Research Collaborator(s): Adry Cota, Christian Seiler, Rachel Urban, Lynnette Bierbaum, Samantha Kern, Lauren Olson, Alysha Knandel
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club's trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

Davis, Sarah

*Ace of Hearts self portrait* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

A half-Dragon portrait of me as the ace of hearts card.

De Moulin, Zachary

*The Effects of Propolis on the Viral Levels of Honey Bees* (Poster)
Faculty Mentor(s): Dr. Kim Mogen, Biology

Apis mellifera, the European honey bee, plays a very important role in today’s society. Today, honey bees are the top pollinators of American crops, and play a major role in the pollination of products ranging from almonds, to apples and melons, and even alfalfa [1]. However, as the need for honey bees increases, the number of bees available is decreasing. This decline is believed to be a result of several different bee health issues, including viruses. In collaboration with Renata Borba at the University of Minnesota – St. Paul, the amount of virus present in individual bees was tested to see if the concentration of virus had any correlation with the amount of propolis that was present in the hive over a one
year period beginning in May 2013. Bees came from hives containing a propolis trap, a propolis envelope, or control hives containing neither. The results of this experiment indicate that the amount of propolis present in a hive does not affect the virus levels.

Diaz, Maritza

*Symbolism through Color and Imagery in Emilia Pardo Bazán’s "Las medias rojas"*/Simbolismo a través del color y las imágenes en "Las medias rojas" de Emilia Pardo Bazán (Poster)
Research Collaborator(s): Alexandra Murdock, Andrea Olson, Emma Meyer
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In "Las medias rojas" (The Red Stockings), Bazán’s use of naturalism truly captures the brutality being faced by women at the end of the 19th century. Being one of the only female writers with known prestige of her time, and she did not hesitate to bring light to the social conflicts and injustice that had been taking place globally through her use of color and imagery in her works. In the short story, the young Ildara challenges the old ideals and lifestyle of traditional Spain. Ildara is left at the mercy of her father, Clodio, and the violent conclusion is all due to her symbolic red stockings.

En “Las medias rojas” el uso del naturalismo de Bazán verdaderamente captura la brutalidad al que las mujeres se enfrentaron a fines del siglo XIX. Emilia Bazán era una de las escritoras más prestigiosas de su tiempo. Ella no dudó en aportar luz sobre los conflictos sociales y la injusticia que había tenido lugar a nivel mundial con su uso del simbolismo del color y las imágenes en sus obras. En el cuento, la joven Ildara desafía los ideales antiguos y el estilo de vida de la España tradicional. Ildara está a la merced de su padre, Clodio, y la conclusión violenta se debe al simbolismo de sus medias rojas.

Doerr, Kimberly

*An IceCube Detector Model for Education and Outreach* (Poster)
Research Collaborator(s): Nicholas Jensen, Laura Moon
Faculty Mentor(s): Dr. James Madsen, Physics; Dr. Surujhdeo Seunarine, Physics; Dr. Mark-David Hosale, Physics

We will present an 8ft x 8ft x 8ft LED Model of the IceCube Detector. The model consists of 5160 LEDs arranged on 86 cables with 60 lights each, with 4 speakers playing a sonification of the data. Construction was completed last year, and we have since been upgrading software to support sound and the ability to control the model in real time. This allows users to interact with the model through use of a tablet or computer.
Erickson, Lisa

*JFK in River Falls: Local Media Coverage of a Candidate and President, 1959-1963* (Poster)

Faculty Mentor(s): Andris Straumanis, Communication and Media Studies

The way the small town of River Falls, Wisconsin, media sources covered John F. Kennedy’s visits reveal different observations from large media sources of the same time. From the time of JFK’s first visit in November of 1959, to his assassination in 1963, there are articles written by students from the River Falls State College (University of Wisconsin-River Falls) student newspaper, the Student Voice. In the River Falls Journal, there are multiple articles, pictures, editorials, and opinion pieces written about JFK. This study examines the way small college town media covered JFK’s visits to his death.

In the initial research of JFK and his campaign trail, specifically information from the John F. Kennedy Presidential Library and Museum revealed little about his visits to River Falls. Furthermore, little information was found as to why JFK spent a lot of time campaigning in Wisconsin. The Wisconsin Historical Society has a small collection of photos of JFK from his visits to Madison and other areas, but none from the River Falls.

By analyzing articles, photos, and other documents from River Falls, journalists reveal details of JFK’s intent, his past experience prior to becoming president, and the effects his assassination had on the residents of River Falls. From the initial focus of JFK’s feats in winning the election, these articles show the writers were genuinely interested in his prior success at the onset of his campaign and again when he was assassinated. Coverage of JFK in the Student Voice revealed that a majority of college students did not support him and in a mock election students favored Nixon even though national media coverage showed him in the lead. The River Falls Journal reported about JFK with curiosity throughout his candidacy, with neutral articles and favorable editorials. After his assassination the coverage was very thorough and reflected a community that felt they personally knew the president because of his prior visits.

Erickson, Kyle

*Memory* (Artwork)

Faculty Mentor(s): Bernice Ficek-Swenson, Art

This is my first copperplate relief-project in printmaking. My early edition is currently on exhibit in the Wyman Gallery. I am more excited to show my final edition, which exhibits more refinement and depth than the celebrated original.
Eskro, Maria

*The Sky is Falling: A Study of Space Debris* (Poster)

Research Collaborator(s): Dagan Hathaway, Austin Wilcox  
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

The purpose of the project was to quantitatively and qualitatively assess the properties of several different approaches as they address the problem of space debris in the Lower Earth Orbit. Space debris, like global warming, has been a growing concern over the years. Large contributions to the space debris problem include, a Chinese anti-satellite weapons test in 2007, and a collision between two satellites Iridium-33 and Kosmos-2251 in 2009. The mass amount of debris in the Lower Earth Orbit it have caused several problems, which include a rise of radon levels, debris reentry into Earth’s atmosphere, a high risk of injury for astronauts working on satellite repair in the Lower Earth Orbit, and a rise in air pollution. Particularly, in the case of astronauts, this has become exceedingly dangerous. It was estimated that in May of 2009, when conducting repair on the Hubble Space Telescope, the astronauts working outside of the shuttle had a 1 in 89 chance of being fatally hit by a piece of debris. This project is concerned specifically with two possible types of remediation which are currently being built and tested: An ablative laser which moves large debris lower into the Earth’s atmosphere to significantly shorten its lifespan, and a robotic satellite which uses the debris and its own momentum to catch and release debris down into the Earth’s atmosphere in such a way that they are destroyed before they can reach the ground. This paper discusses the usefulness and practicality of these two methods based on their cost, environmental impact, and their overall effectiveness at removing the debris.

Fleck, Luke

*Lecture hall versus active learning classroom: is student learning effected by the room design?* (Poster)  
Faculty Mentor(s): Dr. Jamie Schneider, Chemistry and Biotechnology

Chemistry utilizes symbolic, macroscopic, and particulate level representations. Research has shown that students grasp the concepts of the symbolic level and macroscopic level far greater than the particulate level. Our study compares the change in how accurately students portray ionic and covalent molecules over the course of the semester to compare the classroom environment effects on students’ understanding of the particulate nature of matter. During General Chemistry I, students in both an active learning center environment and a lecture environment were instructed using the same student-centered pedagogical practices regarding the particulate nature of mater. Coding Schemes were used to document the errors made in the representations. Error
codes were analyzed for change over time on a per student basis as well as an entire class. Data was compared to see if either setting produced greater growth in students' comprehension of the particulate nature of matter. Trends in both environments show that students significantly understand that covalent compounds do not have charges and share electrons. Trends also show that students understand that ions in an aqueous state dissociate and that polyatomic ions remain a single unit. Both populations showed improvement, but neither improved greater over the other.

**Frank, Daniel**

*Working Towards Single Bubble Sonoluminescence* (Poster)
Research Collaborator(s): Jesse Newell
Faculty Mentor(s): Dr. Lowell McCann, Physics

In this experiment we attempted to induce sonoluminescence in water. We attempted to find the resonant frequency of the system that is optimal for trapping a single bubble. At the resonant frequency a single bubble can be trapped in the antinode of an acoustic pressure wave. There it will pulsate with very high regularity.

**Frikken, Grace**

*Untitled* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Split complimentary colors

Acrylic on wood

**Gelhar, Devon**

*Explorations in Earthenware* (Artwork)
Faculty Mentor(s): Randy Johnston, Art

Using earthenware clay as my medium, I have been involved in an investigation into the possibilities as well as limits of using a particular earthenware clay body for my functional ceramic work. During my investigation I have also explored the use of Terra Sigillata, as well as various colored slips in order to achieve the results and aesthetic I desired in my work I initiated this investigation and research firstly in order to prepare a cohesive body of work to apply to graduate schools with and secondly to explore my options for making ceramics in my own studio after my graduation from UWRF.

**Germain, Dante**

*Color Works* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art
Acrylic on wood using only complimentary colors

Germain, Dante

*Rats* (Artwork)
Research Collaborator(s): Emily Pelton, Tyler Pelton, Franco Schildknecht
Faculty Mentor(s): Jeannine Kitzhaber, Art

This project is group installation that will be sent up on the basement level of the library. This installation will explore the relationships of color with in a space. The installation will be presented at URSCA with photos of the installation.

Gerstenzang, Drew

*A Study of the Local Wisconsin Newspaper’s Reaction to the Joe Must Go Movement* (Poster)
Faculty Mentor(s): Andris Straumanis, Communication and Media Studies

Between the years 1954 and 1956, Senator Joseph McCarthy proclaimed to the United States that communists had infiltrated American society during the Korean War. A subcommittee was established to investigate, interrogate and weed out the suspected communists. My research project looks specifically between the months of March and April of 1954 when an anti-McCarthy Wisconsin movement called “Joe Must Go“ was organized in Sauk County and how the local newspapers responded to it.

Gerstenzang, Drew

*The Roof Rider* (Short Film)
Faculty Mentor(s): Erik Johnson, Stage and Screen Arts

A documentary about how Steven Johnson, local roof worker, fell from a rooftop and suffered severe injuries. This documentary details and takes interviews from both Steven and his employer. It documents the moments leading up to his injury, the painful transition, and the lessons learned afterward.

Glowa, Kyle

*Phantom Islands: A Sea of Mysteries* (Poster)
Faculty Mentor(s): Dr. Charles Rader, Geography and Geographic Information Science

This project focuses on the global distribution of the centuries old phenomenon of illusory islands. The goal of the project was to produce a map of the
numerous non-existent islands found on sea charts and world maps. The location and recorded data available for each island allows for an analysis of spatial patterns and a classification of persistence, number of sightings, and factors which lead to the belief in an island's existence.

**Gundrum, Trent**

*Geography of NFL Rivalries* (Poster)
Faculty Mentor(s): Dr. Charles Rader, Geography and Geographic Information Science

My project investigates the geography of NFL rivalries. Attendance and stadium capacity data were used to calculate a weighted average for attendance ratio for each team and rival. The ratios were then compared by distance and region to determine if teams within close proximity exhibit more intense rivalries as measured by higher attendance ratios. In addition, long distance intense rivalries were also examined to determine if historical factors, such as team relocations, played a role.

**Haninger, Megan**

*Social Media and Grades* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be researching social media usage and how this usage impacts students overall grades and GPA. I will be analyzing study habits of students of UWRF and I will also study their social media habits. The social media I am interested in is Facebook, Twitter, Instagram, Snapchat, and Tinder.

**Hastings, Nicole**

*Monsanto's GMO Analysis* (Poster)
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems and Dr. Brad Mogen, Biology

I will be talking about the roundup ready gene and its plasmid components

**Hathaway, Dagan**

*The Sky is Falling: A Study of Space Debris* (Poster)
Research Collaborator(s): Maria Eskro, Austin Wilcox
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

The purpose of the project was to quantitatively and qualitatively assess the properties of several different approaches as they address the problem of space debris in the Lower Earth Orbit. Space debris, like global warming, has been a growing concern over the years. Large contributions to the space debris
problem include, a Chinese anti-satellite weapons test in 2007, and a collision between two satellites Iridium-33 and Kosmos-2251 in 2009. The mass amount of debris in the Lower Earth Orbit it have caused several problems, which include a rise of radon levels, debris reentry into Earth’s atmosphere, a high risk of injury for astronauts working on satellite repair in the Lower Earth Orbit, and a rise in air pollution. Particularly, in the case of astronauts, this has become exceedingly dangerous. It was estimated that in May of 2009, when conducting repair on the Hubble Space Telescope, the astronauts working outside of the shuttle had a 1 in 89 chance of being fatally hit by a piece of debris. This project is concerned specifically with two possible types of remediation which are currently being built and tested: An ablative laser which moves large debris lower into the Earth’s atmosphere to significantly shorten its lifespan, and a robotic satellite which uses the debris and its own momentum to catch and release debris down into the Earth’s atmosphere in such a way that they are destroyed before they can reach the ground. This paper discusses the usefulness and practicality of these two methods based on their cost, environmental impact, and their overall effectiveness at removing the debris.

**Hayes, Josie**

*UWRF Sustainability Scavenger Hunt* (Short Film)

Research Collaborator(s): Kelsey Tyznik
Faculty Mentor(s): Erik Johnson, Stage and Screen Arts

Over the years, UWRF has worked very hard to become a more sustainable campus. We have created a scavenger hunt helping to promote UWRF campus’s sustainability efforts in a fun an engaging manner. We challenge students and their friends to discover the places where our campus is sustainable. A number of clues are released on a specific day in order for students to find those preselected locations. We ask the student(s) to take a short video or selfie at each of the sustainable locations, upload them, and tag the UWRF Sustainability Scavenger Hunt page! Top participators receive prizes!

**Hennig, Sarah**

*Gender Roles and Relationships Compared at a Generational Level* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study is meant to compare generations' views of what gender roles mean within their own relationships or marriages. Primarily, it is designed to focus on what type of up-bringing the individuals had growing up (concerning household work), what gender role ideas they internalized, and how that influences their current relationship or marriage.
Hiller, Samantha

*What Don’t know About 19th Century Poland- Joseph Conrad’s "Prince Roman": An Annotated Text* (Poster)
Research Collaborator(s): Ryan Baker
Faculty Mentor(s): Dr. Lissa Schneider-Rebozo, English/URSCA

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.

Hite, Rebekkah

*INVESTIGATION OF PHOSPHOINOSITIDE LIPID KINASES (PIKS) AS A DRUG TARGET USING NVP-BEZ235, PI-103 AND PIK-90 FOR TREATMENT OF PLASMODIUM FALCIPARUM* (Poster)
Research Collaborator(s): Noah Stueven, Ryan Kuehn, Jacqueline Van Schaick
Faculty Mentor(s): Dr. Fred Bonilla, Biology

The parasite Plasmodium falciparum is responsible for the most severe forms of human malaria. The phosphatidylinositol-3-kinase (PfPI3K) pathway has been previously shown to be involved in hemoglobin transport and digestion in the parasite, and to be exported to the host erythrocyte. Phosatidylinositols (PtdIns) are the specific produced phosphorylated variants of phosphoinositide lipid kinases (PIKs) and are effective second messengers in both cellular membrane remodeling and signaling. As PIKs are an important, emerging class of drug targets for many therapeutic areas including cancer, inflammatory and metabolic diseases, we investigated the antimalarial potential of targeting PfPI3K in P. falciparum using inhibitors. We successfully demonstrated the inhibition for a new strain of the parasite growth by targeting the pathway in nM concentrations for three PI3K inhibitors and utilizing a novel flow cytometry method for our lab. We evaluated dual PI3K/mammalian Target of Rapamycin (mTOR) inhibitor NVP-BEZ235 and PI-103 as well as PI3K/Akt (Protein Kinase B) inhibitor PIK-90. Specificity of the effects to the different stages in the parasite’s asexual life cycle (ring, trophozoite, and schizont) were explored through using synchronous cultures developed through magnetic separation techniques. With the ongoing issue of human malaria, there is an urgent need to develop new antimalarial chemotherapies. PfPI3K is a viable, potential drug target for further investigation as well as the PI3K/mTOR/Akt inhibitors studied.
Hoglund, Trevor

**Calculating Heat Efficiency on Campus Using Infrared Imaging** (Poster)
Research Collaborator(s): Benjamin Michaud
Faculty Mentor(s): Dr. Glenn Spiczak, Physics

Using data collected with an infrared camera, a mean external temperature for any given building can be found and subsequently compared to that of other buildings or the building’s own internal temperature. This data gives a statistical basis for determining the heat efficiency of a building.

Holub, Matthew

**The Contemporary Amish and Mennonite Migration, 1970-present** (Poster)
Faculty Mentor(s): Dr. Charles Rader, Geography and Geographic Information Science

My project examines contemporary migration of the Amish and Mennonite populations in the United States from 1970-present. I investigated the reasons behind the migration and the impact it has had on their culture. I expected that population growth was the main reason behind migration decisions and that they have become less isolated than generations past.

Horton, Sadie

**The Impact of Watching Crime Dramas and Your Fear of Crime** (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

There have been multiple studies and peer review articles written looking at the effect that the news media has on a person's fear and perception of crime. However, there are not many studies or articles looking at the impact that crime dramas play on a person's fear of crime. Between CBS, NBC, FOX and ABC, which are the four major networks, together produce 36 crime dramas out of 113 shows they have on primetime. (CBS 2015; ABC 2015; NBC 2015; ABC 2015).

With crime dramas taking over television this is something that should be looked at. That is why my research question is how does watching crime dramas impact a person's fear of crime. Specifically one in which the victim knows the offender versus a stranger crimes.

Howell, Sydney

**Better Bites** (Short Film)
Research Collaborator(s): Dan Mariette
Faculty Mentor(s): Joe Blum, Stage and Screen Arts
The local nonprofit, St. Croix Valley Better Bites. Works to supply families and individuals with lower incomes with fresh produce enriched meals. They do this through premade meals that are either frozen or crockpot ready, or simply a grocery bag with cooking instructions. They do this to help instruct the families in proper meal preparation in varying degrees of skill. Our research project was to create 6-8 cooking demo videos to supplement this meal preparation for the families apart of Better Bites.

Huth, Rebecca

**AN INVESTIGATION OF THE PERCEIVED IMPORTANCE AND INCLUSION OF MUSIC STANDARDS WITHIN MINNESOTA AND WISCONSIN CLASSROOMS** (Poster)

Research Collaborator(s): Dillon Chieves, Ryan Nattrass, Richard Thomas

Faculty Mentor(s): Dr. Paul Budde, Music

The purpose of this study is to gather information from current music educators in Minnesota and Wisconsin regarding their attitudes about and implementation of state and national music standards within their classrooms. Our research will be conducted via an online survey sent to approximately 5500 music educators in Wisconsin and Minnesota (per the estimates given by the Minnesota Music Educators Association and Wisconsin Music Educators Association). The survey will be distributed this school year, with a target of mid-January 2016. With the information gathered from the research survey, we hope to determine whether there is a correlation between a music educator’s gender, age, school setting (rural-urban-suburban), classes taught (band-choir-orchestra-classroom music-other), grade level taught (K-12), teaching experience (years), or highest degree earned regarding (a) the value that s/he associates with the inclusion of specific music standards when constructing daily lesson plans, (b) his/her knowledge about State (Minnesota and Wisconsin) and National (1994 and 2014) music standards, and (c) his/her inclusion of specific music standards within daily lesson plans.

Huther, Eliza

**Household Cleaner Color Reverse** (Artwork)

Faculty Mentor(s): Jeannine Kitzhaber, Art

A painting that is done in reverse colors of a household cleaning project.

Jardine, Dylan

**Supertrooper** (Poster)

Faculty Mentor(s): Jeannine Kitzhaber, Art

First off, this project was done as part of an assignment in my Design class. We have been working more with Photoshop lately and have created various types
of projects. In my Supertrooper project, we were to paint or edit pictures of ourselves and create some sort of theme to go along with it as well. So what better theme than Supertrooper’s?

**Jensen, Nicholas**

*An IceCube Detector Model for Education and Outreach* (Poster)
Research Collaborator(s): Kimberly Doerr, Laura Moon
Faculty Mentor(s): Dr. James Madsen, Physics; Dr. Surujhdeo Seunarine, Physics; Dr. Mark-David Hosale, Physics

We will present an 8ft x 8ft x 8ft LED Model of the IceCube Detector. The model consists of 5160 LEDs arranged on 86 cables with 60 lights each, with 4 speakers playing a sonification of the data. Construction was completed last year, and we have since been upgrading software to support sound and the ability to control the model in real time. This allows users to interact with the model through use of a tablet or computer.

**Kallsen, Hannah**

*Complimentary Color Figures* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Complimentary Color Figure Painting done with Acrylic on Wood

**Kern, Samantha**

*SPE National Photography Conference* (Poster)
Research Collaborator(s): Lauren Olson, Alysha Knandel, Anthony Czech, Adry Cota, Christian Seiler, Rachel Urban, Lynnette Bierbaum,
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club’s trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

**Kile, Mitchell**

*Disharmonious color scheme* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

In our 2D design foundation class we took regular pictures and changed the color schemes of the image. We use a stylized technique to apply the color which created a unique image.

**Knandel, Alysha**

*SPE National Photography Conference* (Poster)
Research Collaborator(s): Anthony Czech, Adry Cota, Christian Seiler, Rachel Urban, Lynnette Bierbaum, Samantha Kern, Lauren Olson
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club's trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

**Knapp, Jessica**

*Self Portrait: Playing Card*

*Digital Painting* (Artwork)

Faculty Mentor(s): Jeannine Kitzhaber, Art

Digital Painting completed entirely in Photoshop.

**Kolell, Kelsey**

*Simulating Atmospheric Profile and Particle Interactions at the University of Wisconsin-River Falls* (Poster)

Research Collaborator(s): Laura Moon

Faculty Mentor(s): Dr. Lowell McCann, Physics

We created an atmosphere of different layers (called an atmospheric profile) at the University of Wisconsin-River Falls. To do this we collected data from GDAS which is a data base full of weather information. We used data for the first two weeks in July. From there we started to simulate particle interactions. We put the atmospheric profile into FLUKA, a program that will simulate these interactions. FLUKA created a beam of particles and projected them at a location we desired. This gave us an output file with information about how many particles interacted through this specific atmosphere.

**Kponou, Marie-Morella**

*Relation Between Diet/Lifestyle Choices and Choice of Healthcare Practices* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This research is about finding whether or not there is a link between people's diet or lifestyle choices (vegetarian, vegan, etc) and the types of healthcare practices that they prefer/choose to use (Acupuncture and Chiropractic for example). It will also examine whether or not these choices influence their practice of Yoga and/or Meditation.

**Krantz, Connor**

*Colors of Florida* (Poster)

Faculty Mentor(s): Jeannine Kitzhaber, Art

photo shop edited photo of color change to give effect to depth.
Krueger, Anna

The Symbolic Power of Clothing in "La flor de la playa"/El poder simbólico de la ropa en "La flor de la playa" (Poster)

Research Collaborator(s): MaryAnn McCusker, Chloe Paavola
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In La flor de la playa, a short story by Spanish author Carmen de Burgos, the topic of what it means to be a woman in 19th century Spain is explored. Burgos utilizes the symbolic power of clothing to demonstrate the search for identity in a romantic relationship and the problems raised when one attempts to base their identity around another person. Through the lens of a modern woman in a traditional Spanish world, Burgos discovers that even those seeking independence can fall into a trap of the ever popular role of an “ángel del hogar” that was promoted during Francisco Franco’s dictatorship in Spain. This analysis will be presented to the public via a Trifold poster board and oral presentation, demonstrating the group members’ knowledge of the subject.

Kuehn, Ryan

INVESTIGATION OF PHOSPHOINOSITIDE LIPID KINASES (PIKS) AS A DRUG TARGET USING NVP-BEZ235, PI-103 AND PIK-90 FOR TREATMENT OF PLASMODIUM FALCIPARUM (Poster)

Research Collaborator(s): Noah Stueven, Rebekah Hite, Jacqueline Van Schaick
Faculty Mentor(s): Dr. Fred Bonilla, Biology

The parasite Plasmodium falciparum is responsible for the most severe forms of human malaria. The phosphatidylinositol-3-kinase (PfPI3K) pathway has been previously shown to be involved in hemoglobin transport and digestion in the parasite, and to be exported to the host erythrocyte. Phosatidylinositols (PtdIns) are the specific produced phosphorylated variants of phosphoinositide lipid kinases (PIKs) and are effective second messengers in both cellular membrane remodeling and signaling. As PIKs are an important, emerging class of drug
targets for many therapeutic areas including cancer, inflammatory and metabolic diseases, we investigated the antimalarial potential of targeting PfPI3K in P. falciparum using inhibitors. We successfully demonstrated the inhibition for a new strain of the parasite growth by targeting the pathway in nM concentrations for three PI3K inhibitors and utilizing a novel flow cytometry method for our lab. We evaluated dual PI3K/mammalian Target of Rapamycin (mTOR) inhibitor NVP-BEZ235 and PI-103 as well as PI3K/Akt (Protein Kinase B) inhibitor PIK-90. Specificity of the effects to the different stages in the parasite’s asexual life cycle (ring, trophozoite, and schizont) were explored through using synchronous cultures developed through magnetic separation techniques. With the ongoing issue of human malaria, there is an urgent need to develop new antimalarial chemotherapies. PfPI3K is a viable, potential drug target for further investigation as well as the PI3K/mTOR/Akt inhibitors studied.

Lecander, Paul

HPLC Evaluation of Xylenol Orange as Related to the FOX Assay
(Poster)
Faculty Mentor(s): Dr. Dan Marchand, Chemistry and Biotechnology

The ferrous-oxidized xylenol orange (FOX) method is designed to test for hydroperoxides in an assay. Normally, the peroxide test using the FOX method is straightforward; however, a dilemma has surfaced with some batches of xylenol orange (XO). Literature citations suggest that XO is a fairly impure compound. It is possible that these impurities may be interfering with the FOX method assay readings. I am interested in determining whether the impurities in XO can be associated with faulty reading using the FOX method. Separation of XO by HPLC is being examined as method for assessing XO purity. Once the HPLC method is developed, XO can be purified from an HPLC column and tested against ‘impure’ XO in a FOX assay.

Lee, Sanghee

Clearing Orbital Debris (Poster)
Research Collaborator(s): Joseph Opseth, Kyle Swanson
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

There is a growing amount of debris orbiting the Earth, including stages that fall off during a rocket launch and pieces of defunct satellites. This debris presents a hazard to spacecraft such as operational satellites and the International Space Station. We examined proposed methods for clearing this debris to determine if it would be feasible for a private company to invest in a project to remove it.

Loureiro, Ronaldo

Application of Cell-MateTM 3D matrix in modeling artificial breast ductal cancer as well as control “normal” tissues. (Poster)
Research Collaborator(s): Hanna Thueson, Bruna Stilpeh-Justen
Faculty Mentor(s): Dr. Timothy Lyden, Biology

In collaboration with BRTI Lifesciences, LLC., the UWRF TCIC has been engaged in testing and evaluating a new synthetic 3D tissue engineering matrix material called “Cell-MateTM”. This new material is based on a combination of hyaluronic acid and chitosan which yields a final matrix gel that enmeshes cells at high densities to generate artificial tissue (AT) constructs. In this series of studies, breast ductal adenocarcinoma cells (MCF-7) and “normal” breast ductal cells (MCF10A) were employed to generate significant artificial tissues based on the application of Cell-MateTM matrix materials. MCF-7 ATs were generated from 40, 20 and 10 million cells respectively and MCF10A ATs were generated from 20 and 10 million cells. In all cases, successful ATs resulted with significant areas of tissue or tumor-like architecture and distinct evidence of cellular differentiation as well as tumor development. MCF-7 ATs generated evidence of tumor progression and eventual metastasis-related spheroid, cluster and single cell release after 1-3 weeks of culture. In the case of 40 million cell seeding loads, spheroid production occurred within the first week of culture while at 20 and 10 million cell loads, the timing of spheroid generation/release was significantly longer at 2-3 weeks. However, within the first week, 20 million and 10 million cell loads did show definitive rounded features on the surfaces of the developing ATs. In the case of MCF10A, shed cells forming monolayers in the bottom of culture wells displayed differentiation-associated cells and colonies after 2-3 weeks of ATs development. These cells contrasted distinctly from those seen in the original culture monolayers. Continuing studies are evaluating the morphology and marker expression profiles of tissues within the generated ATs as well as examining and comparing Cell-MateTM generated MCF-7 spheroids in contrast to mammosphere media induced or hanging drop culture generated spheroids. Based on studies to date, we propose the application of Cell-MateTM as an effective approach to modeling breast cancer in-vitro.

Ludvigsen, Angela

*Whispering Gallery Modes Used to Determine the Changing Size of Levitated Aerosol Droplets in a Fluctuating Optical Trap* (Poster)
Faculty Mentor(s): Dr. Lowell McCann, Physics

A laser can be used as an optical trap to catch and hold small, transparent objects. Observations of optically trapped aqueous aerosol droplets have demonstrated that the droplet moves between two or more stable positions dependent upon the power of the trapping laser. It is hypothesized that this movement coincides with a resonance between the trapping light and the droplet’s surface, called a Whispering Gallery Mode. When this resonance occurs, forces acting on the droplet cause it to move. To investigate this...
behavior, Raman scattered light from the droplet as well as the droplet’s position are measured. The Raman spectrum exhibits a series of peaks resulting from the droplet’s spherical shape, referred to as Cavity Enhanced Raman Spectroscopy. The location and spacing of these peaks are known to be related to the diameter and the optical properties of the droplet. From this spectrum, the magnitude of the electric and magnetic fields of the scattered light are calculated. This allows for a precise measurement of the droplet’s radius at the moment that the droplet moves between stable positions. After determining the droplet’s radius from the spectrum, the effect of varying the intensity of the trapping laser beam on the droplet radius can be investigated.

**Lynum, Mariah**

*Chronic Stress Enhances Nicotine-Seeking Behavior in an Animal Model of Addiction* (Poster)

Research Collaborator(s): Amanda Janke

Faculty Mentor(s): Dr. James Cortright, Psychology

Drug addiction is a major public health and serious economic concern in the United States costing taxpayers billions of dollars annually. Experimental evidence shows that exposure to stress is not only a factor in the development of addiction; but also a trigger for drug relapse, or reinstatement. As tobacco use has been linked to a number of cancers and represents the leading cause of preventable death in the United States, elucidation of the effects of stress on nicotine-seeking behavior and relapse is critical. A critical role of chronic stress in the compulsion to seek tobacco and other nicotine delivering products has long been suspected. Although many studies have provided compelling evidence for a role of chronic stress in the enhanced sensitivity to cocaine-seeking behavior and relapse, few have assessed the contribution of chronic stress on nicotine-seeking behavior. In fact, stress induced cross-sensitization to nicotine remains controversial. Additionally, there have been no studies investigating the effects of chronic stress on nicotine-seeking relapse, or reinstatement. Thus, these experiments assess the ability of repeated exposure to variable stress to augment nicotine-seeking behavior and relapse in an animal model of drug addiction. Male Long-Evans rats were exposed to variable stress that consisted of the exposure to different stressors once a day in random order for 20 days. During this period the control group was left undisturbed except for cage cleaning. Rats were allowed to self-administer nicotine (0.03 mg/kg/infusion) under fixed ratio schedules of reinforcement across 15 consecutive daily sessions. Responding under a progressive ratio schedule of reinforcement was assessed over the following six daily sessions. This schedule allows for break points to be analyzed, a measure that reflects the motivation to self-administer nicotine. Following up to 20 days of extinction training, rats were tested for nicotine-seeking behavior reinstatement by a non-contingent injection of nicotine (0.4 mg/kg, IP). Rats exposed to chronic stress acquired nicotine self-
administration at a faster rate relative to controls, exhibited enhanced motivation to obtain the drug, and were more resistant to nicotine extinction. Further, we hypothesize that exposure to chronic variable stress will lead to enhancements in nicotine-primed reinstatement, or relapse. Collectively, these findings indicate that chronic stress can enhance the motivational effects of nicotine.

Mallizzio, Kara

**CRISPR: Not if, but how will it impact your life?** (Poster)
Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Louis Musser, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology

CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy. CRISPR stands for Clustered regularly-interspaced short palindromic repeats. Cas9 is the predominantly utilized enzyme that’s associated with CRISPR. Discovered in the late 1980s, this gene-editing system brings with it near-endless possibilities in terms of its applications. It shows promise across many fields and disciplines, including biomedicine and agriculture.

Mallizzio, Kara

**Monsanto’s glyphosate is now the most heavily pesticide in history and Component of the Roundup ready 2 gene** (Poster)
Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Louis Musser, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology

Monsanto is a multinational agricultural biotechnology corporation based in the United States. They are the world’s leading producer of Roundup, a herbicide containing the active ingredient glyphosate. Monsanto is also the largest producer of genetically engineered (GE) seeds on the planet, accounting for over 90% of the GE seeds planted globally in 2003. Monsanto introduced genetically modified soybeans in 1996 that were resistant to glyphosate. The addition of other crops, such as corn in 1998, soon followed. “Roundup Ready” crops greatly improved a farmer’s ability to control weeds since glyphosate could be sprayed in the fields without harming their crops. Monsanto has modified the Roundup Ready 2 gene and engineered it into their crops so that the plants will remain unaffected in the presence of Monsanto’s herbicide and increase overall crop yield.
Mandich, Mariah

*Societal view of single-parent family homes versus traditional family homes.* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

For my research I am interested in societal views regarding single-parent family homes. Prior research conducted concludes that single-parent family homes carry a negative stigma. I wanted to challenge this assumption and conduct my own research to determine if societal views regarding the non-traditional family home have become more accepted in today’s society. I have conducted both qualitative and quantitative research to obtain my data.

Marier, Jenna

*Academic Success: Gender Differences in Division III Student Athlete Experiences* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

Title IX was heralded as a groundbreaking piece of legislation that would dramatically alter the experiences of men and women college athletes. 40 years later, the amendment has many demonstrated successes. Hundreds of thousands of women have flooded the athletic world. However, questions remain as to the impact of women's athletic participation and other outcomes such as academic success. This study explores the question of whether or not there are gender differences in academic performance for student athletes in a Division III university. While both men and women spend large chunks of their time split between academic and athletic responsibilities, we also know that factors beyond time constraints might lead to divergent outcomes. For instance, nationally women appear to be outperforming men academically, but do these gender differences hold for this unique sample of young men and women? My research explores this issue and provides preliminary answers.

Mariette, Dan

*Better Bites* (Short Film)
Research Collaborator(s): Sydney Howell
Faculty Mentor(s): Joe Blum, Stage and Screen Arts

The local nonprofit, St. Croix Valley Better Bites. Works to supply families and individuals with lower incomes with fresh produce enriched meals. They do this through premade meals that are either frozen or crockpot ready, or simply a grocery bag with cooking instructions. They do this to help instruct the families in proper meal preparation in varying degrees of skill. Our research project was
to create 6-8 cooking demo videos to supplement this meal preparation for the families apart of Better Bites.

**Martinez, Mark**

**The Chromatographic Separation of a 7000 Base Pair Fragment from Small DNA Fragments** (Poster)

Research Collaborator(s): Emily Nolting, Rachel McNeill

Faculty Mentor(s): Dr. Lisa Kroutil, Chemistry and Biotechnology

The purification of individual DNA fragments without the introduction of mutagens can be a challenge. The interest of this project is the separation of the 7kb fragment from a 500 bp fragment. The separation of the two fragments is an important step towards the preparation of a gapped DNA substrate for use in mutation assays to study diseases.1 Gapped substrate was previously prepared through the use of polyethylene glycol precipitation.2 This technique is difficult for undergraduates to use and failed to produce efficient separation of the fragments. The use of a size exclusion column to separate different length DNA fragments has been explored as a means of performing this task. Hind III and PvuII restriction enzymes were used to digest lambda DNA producing a variety of fragment lengths. The sample was subjected to a Sepharose CL-2B column. The contents of the samples were analyzed using gel electrophoresis. The results of the size exclusion column appear successful in the separation of the large and small DNA fragments. High performance liquid chromatography was also explored as a technique to separate the fragments by size using a strong anion-exchange column and a salt gradient mobile phase will be used to elute the fragments from the column. The anion exchange column showed poor separation of the large and small fragments. A third method of separation purifies DNA fragments from an agarose gel. This technique fully separated the fragments, but needs to be refined to improve yield.


**McCusker, MaryAnn**

**The Symbolic Power of Clothing in "La flor de la playa"/El poder simbólico de la ropa en "La flor de la playa"** (Poster)

Research Collaborator(s): Anna Krueger, Chloe Paavola

Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In La flor de la playa, a short story by Spanish author Carmen de Burgos, the topic of what it means to be a woman in 19th century Spain is explored. Burgos utilizes the symbolic power of clothing to demonstrate the search for identity in a romantic relationship and the problems raised when one attempts to base their identity around another person. Through the lens of a modern woman in a
traditional Spanish world, Burgos discovers that even those seeking independence can fall into a trap of the ever popular role of an “ángel del hogar” that was promoted during Francisco Franco’s dictatorship in Spain. This analysis will be presented to the public via a Trifold poster board and oral presentation, demonstrating the group members’ knowledge of the subject.

En La flor de la playa, un cuento de la autora española que se llama Carmen de Burgos, investiga lo que significa ser una mujer en el siglo XIV en España. Burgos utiliza el poder simbólico de la ropa para demostrar la búsqueda por identidad en una relación romántica y los problemas que surgen cuando una persona intenta basarse su identidad alrededor otro persona. Mirado a través de la lente de una modista en un mundo tradicional española, Burgos descubre que hasta las que buscan la independencia pueden caer a la trampa popular del papel de una “ángel del hogar” que fue promovida durante la dictadura Franco en España. Este análisis se presentará al público a través de un cartel y presentación oral, demostrando el conocimiento de los miembros del grupo sobre la tema.

McNeill, Rachel

The Chromatographic Separation of a 7000 Base Pair Fragment from Small DNA Fragments (Poster)

Research Collaborator(s): Emily Nolting, Mark Martinez
Faculty Mentor(s): Dr. Lisa Kroutil, Chemistry and Biotechnology

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Meyer, Emma

**Symbolism through Color and Imagery in Emilia Pardo Bazán’s "Las medias rojas"/Simbolismo a través del color y las imágenes en "Las medias rojas" de Emilia Pardo Bazán** (Poster)

Research Collaborator(s): Maritza Diaz, Andrea Olson, Alexandra Murdock

Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In "Las medias rojas" (The Red Stockings), Bazán’s use of naturalism truly captures the brutality being faced by women at the end of the 19th century. Being one of the only female writers with known prestige of her time, and she did not hesitate to bring light to the social conflicts and injustice that had been taking place globally through her use of color and imagery in her works. In the short story, the young Ildara challenges the old ideals and lifestyle of traditional Spain. Ildara is left at the mercy of her father, Clodio, and the violent conclusion is all due to her symbolic red stockings.

Michaud, Benjamin

**Calculating Heat Efficiency on Campus Using Infrared Imaging** (Poster)

Research Collaborator(s): Trevor Hoglund

Faculty Mentor(s): Dr. Glenn Spiczak, Physics

Using data collected with an infrared camera, a mean external temperature for any given building can be found and subsequently compared to that of other buildings or the building’s own internal temperature. This data gives a statistical basis for determining the heat efficiency of a building.

Miller, Dylan

**Building a Transistor: N Channel MOSFET Fabrication using Maskless Photolithography** (Poster)

Faculty Mentor(s): Dr. Lowell McCann, Physics
The MOSFET fabrication process was explored using a Digital Mirror Device (DMD) to pattern light in the lithography steps. Photoresist was successfully patterned using a development grade DMD with a standard blue Light Emitting Diode (LED) to cure the resist. The work done to set up the maskless lithography process will help future students create their own microelectronic structures.

**Miller, Dylan**

*Engineering and Programming a Drone* (Poster)
Research Collaborator(s): Elliot Pachniak  
Faculty Mentor(s): Dr. Lowell McCann, Physics

The goal of this project was to lay the ground work for a drone that would be capable of carrying and delivery small packages. We designed and assembled the drone as well as began work on a flight control system. While we were able to achieve stability with our flight control system, our drone is not ready for flight at this time.

**Miller, Anna**

*THE EFFECTS OF INHIBITION OF THE MEDIAL PREFRONTAL CORTEX ON SYMPTOMS OF DEPRESSION IN AN ANIMAL MODEL* (Poster)  
Faculty Mentor(s): Dr. James Cortright, Psychology

Depression is the most widespread disability on Earth affecting more than 350 million people of all ages across the globe (World Health Organization, 2015). Self-focus (i.e. the process by which one engages oneself in self-referential processing) is a core issue in the psychopathology of major depression (Lemogne, Delaveau, Freton, Guionnet, & Fossati, 2012). Previous studies have used functional neuroimaging to identify that the cortical midline structures, including the medial prefrontal cortex (MPFC), play a key role in self-referential processing in depressed subjects (Elliott, & Dolan, 2003; Lemongne et al., 2012). This research holds significance in that it builds on previous findings that have aimed to link specific patterns of activity to specific areas of the prefrontal cortex as mediating symptoms of depression with conflicting results. Further examination of the medial prefrontal cortex is warranted not only as a possible precursor to the implication of its involvement in mediating depression but also in order to provide support for a dominant pattern of brain activity (inhibition) which interacts with symptoms of depression. This study aims to look at drug-induced medial prefrontal cortex inhibition in animal models of depression. This study will utilize female Long Evans rats in order to more accurately generalize findings to the population of women which make up the majority of depressed individuals in humans. Subjects will be tested for latency in regards to learned helplessness, for lethargy in a radial arm maze and open field test, and for anhedonia using sugar pellets. It is hypothesized that a decrease in learned helplessness, lethargy, and anhedonia will be seen in animals which exhibit
depressive symptoms that have undergone inhibition of the medial prefrontal cortex compared to animals which display symptoms of depression but do not receive this treatment.

**Moes, Robin**

*Individuals Attitudes toward Feminism Depending on Their Political Affiliation* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

The study explored individual’s feminist attitudes in relation to their political stance. The importance of this study is to identify if there is a political affiliation that impacts individual’s feminist attitudes. There were 2,538 individuals who responded to the General Social Survey of 2014. The study examined the correlation between sociological demographics, their attitudes toward feminism and their political affiliation. The results found that individuals who had positive attitudes toward feminism were more likely to identify as being liberal than being conservative. From this study, it can be concluded that political affiliation does impact individual’s attitudes toward feminism. The more liberal an individual is, the more likely that they will have positive attitudes toward feminist ideas.

**Moon, Laura**

*An IceCube Detector Model for Education and Outreach* (Poster)

Research Collaborator(s): Nicholas Jensen, Kimberly Doerr

Faculty Mentor(s): Dr. James Madsen, Physics; Dr. Surujhdeo Seunarine, Physics; Dr. Mark-David Hosale, Physics

We will present an 8ft x 8ft x 8ft LED Model of the IceCube Detector. The model consists of 5160 LEDs arranged on 86 cables with 60 lights each, with 4 speakers playing a sonification of the data. Construction was completed last year, and we have since been upgrading software to support sound and the ability to control the model in real time. This allows users to interact with the model through use of a tablet or computer.

**Moon, Laura**

*Simulating Atmospheric Profile and Particle Interactions at the University of Wisconsin-River Falls* (Poster)

Research Collaborator(s): Kelsey Kolell

Faculty Mentor(s): Dr. Lowell McCann, Physics

We created an atmosphere of different layers (called an atmospheric profile) at the University of Wisconsin-River Falls. To do this we collected data from GDAS which is a data base full of weather information. We used data for the first two
weeks in July. From there we started to simulate particle interactions. We put the atmospheric profile into FLUKA, a program that will simulate these interactions. FLUKA created a beam of particles and projected them at a location we desired. This gave us an output file with information about how many particles interacted through this specific atmosphere.

Moses, Max

Religious Trends Among College Age Students (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

Students will be asked various questions regarding their religious preferences. The answers will be analyzed for trends among students.

Murdock, Alexandra

Symbolism through Color and Imagery in Emilia Pardo Bazán’s “Las medias rojas”/Simbolismo a través del color y las imágenes en “Las medias rojas” de Emilia Pardo Bazán (Poster)
Research Collaborator(s): Maritza Diaz, Andrea Olson, Emma Meyer
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In "Las medias rojas" (The Red Stockings), Bazán’s use of naturalism truly captures the brutality being faced by women at the end of the 19th century. Being one of the only female writers with known prestige of her time, and she did not hesitate to bring light to the social conflicts and injustice that had been taking place globally through her use of color and imagery in her works. In the short story, the young Ildara challenges the old ideals and lifestyle of traditional Spain. Ildara is left at the mercy of her father, Clodio, and the violent conclusion is all due to her symbolic red stockings.

En “Las medias rojas” el uso del naturalismo de Bazán verdaderamente captura la brutalidad al que las mujeres se enfrentaron a fines del siglo XIX. Emilia Bazán era una de las escritoras más prestigiosas de su tiempo. Ella no dudó en aportar luz sobre los conflictos sociales y la injusticia que había tenido lugar a nivel mundial con su uso del simbolismo del color y las imágenes en sus obras. En el cuento, la joven Ildara desafía los ideales antiguos y el estilo de vida de la España tradicional. Ildara está a la merced de su padre, Clodio, y la conclusión violenta se debe al simbolismo de sus medias rojas.

Musser, Louis

CRISPR: Not if, but how will it impact your life? (Poster)
Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Kara Mallizzio, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology
CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy. CRISPR stands for Clustered regularly-interspaced short palindromic repeats. Cas9 is the predominantly utilized enzyme that’s associated with CRISPR. Discovered in the late 1980s, this gene-editing system brings with it near-endless possibilities in terms of its applications. It shows promise across many fields and disciplines, including biomedicine and agriculture.

**Musser, Louis**

*Monsanto’s glyphosate is now the most heavily pesticide in history and Component of the Roundup ready 2 gene* (Poster)

Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Kara Mallizzio, Nancy Rohret

Faculty Mentor(s): Dr. Brad Mogen, Biology

Monsanto is a multinational agricultural biotechnology corporation based in the United States. They are the world’s leading producer of Roundup, a herbicide containing the active ingredient glyphosate.

Monsanto is also the largest producer of genetically engineered (GE) seeds on the planet, accounting for over 90% of the GE seeds planted globally in 2003. Monsanto introduced genetically modified soybeans in 1996 that were resistant to glyphosate. The addition of other crops, such as corn in 1998, soon followed. “Roundup Ready” crops greatly improved a farmer’s ability to control weeds since glyphosate could be sprayed in the fields without harming their crops. Monsanto has modified the Roundup Ready 2 gene and engineered it into their crops so that the plants will remain unaffected in the presence of Monsanto’s herbicide and increase overall crop yield.

**Nattrass, Ryan**

*AN INVESTIGATION OF THE PERCEIVED IMPORTANCE AND INCLUSION OF MUSIC STANDARDS WITHIN MINNESOTA AND WISCONSIN CLASSROOMS* (Poster)

Research Collaborator(s): Dillon Chieves, Rebecca Huth, Richard Thomas

Faculty Mentor(s): Dr. Paul Budde, Music

The purpose of this study is to gather information from current music educators in Minnesota and Wisconsin regarding their attitudes about and implementation of state and national music standards within their classrooms. Our research will be conducted via an online survey sent to approximately 5500 music educators in Wisconsin and Minnesota (per the estimates given by the Minnesota Music Educators Association and Wisconsin Music Educators Association). The survey will be distributed this school year, with a target of mid-January 2016. With the information gathered from the research survey, we hope to determine whether
there is a correlation between a music educator’s gender, age, school setting (rural-urban-suburban), classes taught (band-choir-orchestra-classroom music-other), grade level taught (K-12), teaching experience (years), or highest degree earned regarding (a) the value that s/he associates with the inclusion of specific music standards when constructing daily lesson plans, (b) his/her knowledge about State (Minnesota and Wisconsin) and National (1994 and 2014) music standards, and (c) his/her inclusion of specific music standards within daily lesson plans.

**Newell, Jesse**

*Working Towards Single Bubble Sonoluminescence* (Poster)
Research Collaborator(s): Daniel Frank
Faculty Mentor(s): Dr. Lowell McCann, Physics

In this experiment we attempted to induce sonoluminescence in water. We attempted to find the resonant frequency of the system that is optimal for trapping a single bubble. At the resonant frequency a single bubble can be trapped in the antinode of an acoustic pressure wave. There it will pulsate with very high regularity.

**Nolting, Emily**

*The Chromatographic Separation of a 7000 Base Pair Fragment from Small DNA Fragments* (Poster)
Research Collaborator(s): Rachel McNeill, Mark Martinez
Faculty Mentor(s): Dr. Lisa Kroutil, Chemistry and Biotechnology

The purification of individual DNA fragments without the introduction of mutagens can be a challenge. The interest of this project is the separation of the 7kb fragment from a 500 bp fragment. The separation of the two fragments is an important step towards the preparation of a gapped DNA substrate for use in mutation assays to study diseases.1 Gapped substrate was previously prepared through the use of polyethylene glycol precipitation.2 This technique is difficult for undergraduates to use and failed to produce efficient separation of the fragments. The use of a size exclusion column to separate different length DNA fragments has been explored as a means of performing this task. Hind III and Pvull restriction enzymes were used to digest lambda DNA producing a variety of fragment lengths. The sample was subjected to a Sepharose CL-2B column. The contents of the samples were analyzed using gel electrophoresis. The results of the size exclusion column appear successful in the separation of the large and small DNA fragments. High performance liquid chromatography was also explored as a technique to separate the fragments by size using a strong anion-exchange column and a salt gradient mobile phase will be used to elute the fragments from the column. The anion exchange column showed poor separation of the large and small fragments. A third method of separation
purifies DNA fragments from an agarose gel. This technique fully separated the fragments, but needs to be refined to improve yield.


Olson, Lauren

**SPE National Photography Conference** (Poster)
Research Collaborator(s): Alysha Knandel, Anthony Czech, Adry Cota, Christian Seiler, Rachel Urban, Lynnette Bierbaum, Samantha Kern
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club’s trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

Olson, Andrea

**Symbolism through Color and Imagery in Emilia Pardo Bazán’s “Las medias rojas”/Simbolismo a través del color y las imágenes en "Las medias rojas" de Emilia Pardo Bazán** (Poster)
Research Collaborator(s): Maritza Diaz, Alexandra Murdock, Emma Meyer
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

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Opseth, Joseph

**Clearing Orbital Debris** (Poster)
Research Collaborator(s): Sanghee Lee, Kyle Swanson
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

There is a growing amount of debris orbiting the Earth, including stages that fall off during a rocket launch and pieces of defunct satellites. This debris presents a hazard to spacecraft such as operational satellites and the International Space Station. We examined proposed methods for clearing this debris to determine if it would be feasible for a private company to invest in a project to remove it.

Overland, Thomas

Dire Consequences of the Legal Drinking Age (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study compares the correlation between mandatory legal drinking ages and alcohol-related dire consequences. The research question is: Does a country's mandatory legal drinking age have any effect on the amount or rate of dire consequences? This study is important, as approximately 88,000 people die from alcohol-related causes annually, which makes it the third leading preventable cause of death in the United States. The point of this study is to establish which legal drinking age could prevent further alcohol-related deaths and injuries. To gather the information used in this study, I conducted a secondary data analysis using preexisting public information accessible through the World Health Organization's (WHO) data repository, specifically data from the substance abuse and mental health section, and compared it with legal drinking ages around the world. What this study found was that the most common mandatory legal drinking age, 18, had the highest rate of dire consequences in three out of the four tested categories. This study also found that in three of the four tested categories that countries with a mandatory legal drinking age greater than 18 had the lowest rates of dire consequences. This study concluded that having a mandatory legal drinking age higher than 18 could prevent several dire consequences. These results support the already existing mandatory legal drinking age of 21 in the United States.

Paavola, Chloe

The Symbolic Power of Clothing in "La flor de la playa"/El poder simbólico de la ropa en "La flor de la playa" (Poster)
Research Collaborator(s): MaryAnn McCusker, Anna Krueger
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

In La flor de la playa, a short story by Spanish author Carmen de Burgos, the topic of what it means to be a woman in 19th century Spain is explored. Burgos utilizes the symbolic power of clothing to demonstrate the search for identity in a romantic relationship and the problems raised when one attempts to base their identity around another person. Through the lens of a modern woman in a
traditional Spanish world, Burgos discovers that even those seeking independence can fall into a trap of the ever popular role of an “ángel del hogar” that was promoted during Francisco Franco’s dictatorship in Spain. This analysis will be presented to the public via a Trifold poster board and oral presentation, demonstrating the group members’ knowledge of the subject.

En La flor de la playa, un cuento de la autora española que se llama Carmen de Burgos, investiga lo que significa ser una mujer en el siglo XIV en España. Burgos utiliza el poder simbólico de la ropa para demostrar la búsqueda por identidad en una relación romántica y los problemas que surgen cuando una persona intenta basarse su identidad alrededor otro persona. Mirado a través de la lente de una modista en un mundo tradicional española, Burgos descubre que hasta las que buscan la independencia pueden caer a la trampa popular del papel de una “ángel del hogar” que fue promovida durante la dictadura Franco en España. Este análisis se presentará al público a través de un cartel y presentación oral, demostrando el conocimiento de los miembros del grupo sobre la tema.

Pachniak, Elliot

*Designing and Programming with LEGO MINDSTORM Robotics* (Interactive Display)
Faculty Mentor(s): Dr. Earl Blodgett, Physics

This project explored engineering and programming with the LEGO MINDSTORM EV3 Robotics kit. A robot was designed that was capable of movement and able to grip and lift small objects. It was programmed to navigate obstacles, avoid ledges, and be operable via remote control.

Pachniak, Elliot

*Engineering and Programming a Drone* (Interactive Display)
Research Collaborator(s): Dylan Miller
Faculty Mentor(s): Dr. Lowell McCann, Physics

The goal of this project was to lay the ground work for a drone that would be capable of carrying and delivery small packages. We designed and assembled the drone as well as began work on a flight control system. While we were able to achieve stability with our flight control system, our drone is not ready for flight at this time.

Palmer, Kaitlyn

*Night Out on Earth* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Acrylic on Masonite
Pashina, Alex

*Untitled* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Tertiary colors

Acrylic on board

Peake, John

*college student's perception of police* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be presenting information obtained from interviews from college students about their perception of the police and why it is that way.

Pelton, Emily

*Rats* (Artwork)
Research Collaborator(s): Tyler Pelton, Franco Schildknecht, Dante Germain
Faculty Mentor(s): Jeannine Kitzhaber, Art

This project is group installation that will be sent up on the basement level of the library. This Installation will explore the relationships of color with in a space. The installation will be presented at URSCA with photos of the installation.

Pelton, Tyler

*Self portrait playing card* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Showing aspects of my personality through the use of color, form, and pattern

Pelton, Tyler

*Rats* (Artwork)
Research Collaborator(s): Emily Pelton, Franco Schildknecht, Dante Germain
Faculty Mentor(s): Jeannine Kitzhaber, Art

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Perreault, Ryan  

*Electrophilic Chlorination of m-Xylene: Development of an Organic Chemistry Lab Experiment* (Poster)  
Research Collaborator(s): Troy Riccardi  
Faculty Mentor(s): Dr. Stacey Stoffregen, Chemistry and Biotechnology

Chlorinating m-xylene can be achieved in a number of ways, for instance using Cl₂ and FeCl₃. However the use of NaOCl (bleach) and acetic acid provided an easier and less expensive reaction to be used by students. The reaction was carried out at 0°C in the presence of acetone and then extracted and distilled to yield a clean product. The product mixture was then analyzed using IR, 1H NMR and 13C NMR finding that the products followed inductive effects to place the chlorine in the ortho/para positions. Computational modeling of intermediate and product structures was used to support the observed product distribution of the reaction.

Peterson, Kodi  

*Characterization of Actinobacteriophages from Soil Samples* (Poster)  
Faculty Mentor(s): Dr. Karen Klyczek, Biology

Presently, little is known about the phages that infect the members of the Actinobacteria family other than Mycobacterium. The objective of the proposed research is to learn more about the diversity of these phages by building on the work of previous students. The Freshman Phage course offered at the University of Wisconsin - River Falls has isolated many unknown bacteriophages from soil samples. The aim of the research is to extend the analysis of several of these phages for the purpose of exploring the diversity and evolutionary relationships of these viruses, as well as their potential in therapeutic medicine for bacterial infections.

Pratumwon, Tynan  

*Photoshop color painting* (Artwork)  
Faculty Mentor(s): Jeannine Kitzhaber, Art

Painting of an image manipulated in Photoshop

Pretasky, Robert  

*Effects of Working Out: Exercisers vs Non-Exercisers* (Poster)  
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be studying the effects of working out on the individual's self-esteem. This study will also differentiate between, gender, age, and other variables.
Radke, Luke

**Public Perceptions of the River Falls Police Department** (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be looking at the public perception of the River Falls Police Department held by adults ages 18-23 (college students). Also I will be looking at factors that go into the formation of these perceptions like sex, race/ethnicity, etc.

Ramsden, Nicholas

**Mass Media's Influence Over the Formation of Opinions or Views** (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

Looking at mass media's influence over people's opinions/views on controversial topics due to the sometimes misleading or not fully developed stories due to adequate info from sources.

Rapoport, Holly

**Untitled** (Artwork)
Faculty Mentor(s): Bernice Ficek-Swenson, Art

An exploration of self portraiture, geometry, and chemistry. Each hand is accompanied by geometric imagery inspired by the 12 of the most common elements found in the human body.

H C Na
N P Mg
O S K
Cl Fe Ca

Riccardi, Troy

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yield a clean product. The product mixture was then analyzed using IR, 1H NMR and 13C NMR finding that the products followed inductive effects to place the chlorine in the ortho/para positions. Computational modeling of intermediate and product structures was used to support the observed product distribution of the reaction.

Rice, Abigail

*Split Complementary* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Acrylic painting on Masonite

Rohret, Nancy

*CRISPR: Not if, but how will it impact your life?* (Poster)
Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Kara Mallizzio, Louis Musser
Faculty Mentor(s): Dr. Brad Mogen, Biology

CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy. CRISPR stands for Clustered regularly-interspaced short palindromic repeats. Cas9 is the predominantly utilized enzyme that’s associated with CRISPR. Discovered in the late 1980s, this gene-editing system brings with it near-endless possibilities in terms of its applications. It shows promise across many fields and disciplines, including biomedicine and agriculture.

Rohret, Nancy

*Monsanto’s glyphosate is now the most heavily pesticide in history and Component of the Roundup ready 2 gene* (Poster)
Research Collaborator(s): Brent Arnoldussen, Nicole Stiff, Kara Mallizzio, Louis Musser
Faculty Mentor(s): Dr. Brad Mogen, Biology

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Monsanto is also the largest producer of genetically engineered (GE) seeds on the planet, accounting for over 90% of the GE seeds planted globally in 2003. Monsanto introduced genetically modified soybeans in 1996 that were resistant to glyphosate. The addition of other crops, such as corn in 1998, soon followed. “Roundup Ready” crops greatly improved a farmer’s ability to control weeds since glyphosate could be sprayed in the fields without harming their crops. Monsanto has modified the Roundup Ready 2 gene and engineered it into their
crops so that the plants will remain unaffected in the presence of Monsanto’s herbicide and increase overall crop yield.

**Sawdy, Michael**

*The Effects of Embedded Versus Peripheral Corporate Social Responsibility on Organizational Attraction* (Poster)

Research Collaborator(s): Yeng Som  
Faculty Mentor(s): Dr. Travis Tubre, Psychology

Previous research has identified corporate social responsibility (CSR) as a predictor of organizational attraction (Greening, & Turban, 1997). However, the mechanisms that explain this relationship are not as well understood. Different conceptualizations of CSR used throughout research have led to confusing, sometimes contradictory, results (Aguinis & Glavas, 2013). Aguinis and Glavas (2013) described embedded CSR as CSR practices that are directly tied to an organization’s mission and underlie every aspect of the organization. In contrast, peripheral CSR describes CSR initiatives that are secondary to the main goal of profit and are delegated to small areas within the organization. We hypothesize that potential job seekers will indicate higher levels of attraction to organizations displaying embedded, rather than peripheral, CSR practices. Based on previous research (Hirsh & Dolderman, 2007) examining relationships between environmentalism and the Five-Factor Model constructs of agreeableness and openness to experience, we also expect these personality traits to relate to organizational attraction to companies displaying embedded versus peripheral CSR practices. Approximately 100 undergraduate students will be randomly assigned to review recruiting materials from a fictional corporation emphasizing either embedded or peripheral CSR practices. In both conditions, participants will provide demographic data, complete the International Personality Item Pool items pertaining to agreeableness and openness to experience (IPIP; Goldberg, 1992), and complete the 15-item Organizational Attraction Scale (OA; Highhouse, Lievens, & Sinar, 2003). We will use regression analysis to investigate the extent to which the CSR practice and the personality variables predict participants’ attraction to the fictional company.

We believe that our results will indicate that companies whose CSR practices are seen as more embedded will be more attractive to job seekers. Our research will also add to understanding in the field of how applicant personality interact with corporate practices to predict attraction to work environments.

**Scheid, Racheal**

*Public Perceptions of Law Enforcement vs. Law Enforcement Perceptions of Public* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology
This research aims to highlight two issues: first, public perceptions of law enforcement in their communities and second, law enforcement perceptions of the public. Now more than ever, establishing a better relationship between law enforcement and the public’s they serve is critically important. However, the bulk of the research that is available focuses on one group at the exclusion of the other. This research is important in that it highlights the perspectives of both groups in order to better understand the factors that might exacerbate and/or mitigate negative interactions between law enforcement and the community. By using qualitative interviews with 10 people, I am able to more fully understand what is happening.

**Schilsknecht, Franco**

*Picnic* (Artwork)
Faculty Mentor(s): Jeannine Kitzhaber, Art

Acrylic paint on wood

**Schilsknecht, Franco**

*Rats* (Artwork)
Research Collaborator(s): Emily Pelton, Tyler Pelton, Dante Germain
Faculty Mentor(s): Jeannine Kitzhaber, Art

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**Schmidt, Brooke**

*Behaviors Affected By Binge Drinking* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

My research examines gender differences in binge drinking behaviors and other outcomes. While traditionally, women have been less likely to engage in deviant behaviors such as binge drinking, other studies indicate that women are increasingly engaging in behaviors we might identify as deviant. Using a sample of Facebook respondents, I found that generally speaking the gender differences are small with very few statistically significant patterns emerging between drinking alcohol and engaging in other negative behaviors. However, on the few variables in which gender differences did emerge, it appears that the old pattern of men engaging in more deviant acts while drinking remains true.

**Sedani, Erik**

*Effectiveness of Restorative Justice* (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

How well restorative justice works with repeating offenders.

**Seiler, Christian**

*SPE National Photography Conference* (Poster)

Research Collaborator(s): Rachel Urban, Lynnette Bierbaum, Samantha Kern, Lauren Olson, Alysha Knandel, Anthony Czech, Adry Cota

Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club’s trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.

**Sinnwell, Jacob**

*Domestic Violence in the National Football League* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This research was conducted to analyze the concepts of masculinity, violence and enforcement and how each concept plays into domestic violence in the NFL. This research is aimed at finding which of the three main themes has the most influential impact of domestic violence and its prevalence in the NFL. The research will be done using a content analysis analyzing 75 newspaper articles that discuss the themes or violence, masculinity and enforcement. It was found that lack of enforcement in the leading reason for domestic violence being prevalent in the NFL. The NFL has made changes to their policies to make it more difficult for a player to get away with domestic violence.

**Som, Yeng**

*The Effects of Embedded Versus Peripheral Corporate Social Responsibility on Organizational Attraction* (Poster)

Research Collaborator(s): Michael Sawdy

Faculty Mentor(s): Dr. Travis Tubre, Psychology

Previous research has identified corporate social responsibility (CSR) as a predictor of organizational attraction (Greening, & Turban, 1997). However, the mechanisms that explain this relationship are not as well understood. Different conceptualizations of CSR used throughout research have led to confusing, sometimes contradictory, results (Aguinis & Glavas, 2013). Aguinis and Glavas (2013) described embedded CSR as CSR practices that are directly tied to an organization’s mission and underlie every aspect of the organization. In contrast, peripheral CSR describes CSR initiatives that are secondary to the main goal of profit and are delegated to small areas within the organization. We hypothesize
that potential job seekers will indicate higher levels of attraction to organizations displaying embedded, rather than peripheral, CSR practices. Based on previous research (Hirsh & Dolderman, 2007) examining relationships between environmentalism and the Five-Factor Model constructs of agreeableness and openness to experience, we also expect these personality traits to relate to organizational attraction to companies displaying embedded versus peripheral CSR practices. Approximately 100 undergraduate students will be randomly assigned to review recruiting materials from a fictional corporation emphasizing either embedded or peripheral CSR practices. In both conditions, participants will provide demographic data, complete the International Personality Item Pool items pertaining to agreeableness and openness to experience (IPIP; Goldberg, 1992), and complete the 15-item Organizational Attraction Scale (OA; Highhouse, Lievens, & Sinar, 2003). We will use regression analysis to investigate the extent to which the CSR practice and the personality variables predict participants’ attraction to the fictional company.

We believe that our results will indicate that companies whose CSR practices are seen as more embedded will be more attractive to job seekers. Our research will also add to understanding in the field of how applicant personality interact with corporate practices to predict attraction to work environments.

Stencil, Cody

*How the North American Fur Trade Affected Territorial Expansion and Culture* (Poster)
Faculty Mentor(s): Dr. Charles Rader, Geography and Geographic Information Science

My research investigates the geography of the North American Fur Trade and its role for territorial expansion and the development of colonial social-economic cultures. This project summarizes the basis of the fur trade, where it occurred within the North American continent and why it was crucial in a historical geographic context. Emphasis will be on spatial dimensions of the trade.

Stiff, Nicole

*CRISPR: Not if, but how will it impact your life?* (Poster)
Research Collaborator(s): Brent Arnoldussen, Kara Mallizzio, Louis Musser, Nancy Rohret
Faculty Mentor(s): Dr. Brad Mogen, Biology

CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy. CRISPR stands for Clustered regularly-interspaced short palindromic repeats. Cas9 is the predominantly utilized enzyme that’s associated with CRISPR. Discovered in the late 1980s, this gene-editing system brings with it near-endless possibilities in terms of its applications. It shows
promise across many fields and disciplines, including biomedicine and agriculture.

**Stiff, Nicole**

*Monsanto’s glyphosate is now the most heavily pesticide in history and Component of the Roundup ready 2 gene* (Poster)

Research Collaborator(s): Brent Arnoldussen, Kara Mallizzio, Louis Musser, Nancy Rohret  
Faculty Mentor(s): Dr. Brad Mogen, Biology

Monsanto is a multinational agricultural biotechnology corporation based in the United States. They are the world’s leading producer of Roundup, a herbicide containing the active ingredient glyphosate.

Monsanto is also the largest producer of genetically engineered (GE) seeds on the planet, accounting for over 90% of the GE seeds planted globally in 2003. Monsanto introduced genetically modified soybeans in 1996 that were resistant to glyphosate. The addition of other crops, such as corn in 1998, soon followed. “Roundup Ready” crops greatly improved a farmer’s ability to control weeds since glyphosate could be sprayed in the fields without harming their crops. Monsanto has modified the Roundup Ready 2 gene and engineered it into their crops so that the plants will remain unaffected in the presence of Monsanto’s herbicide and increase overall crop yield.

**Stilpeh-Justen, Bruna**

*Application of Cell-MateTM 3D matrix in modeling artificial breast ductal cancer as well as control “normal” tissues.* (Poster)

Research Collaborator(s): Hanna Thueson, Ronaldo Loureiro  
Faculty Mentor(s): Dr. Timothy Lyden, Biology

In collaboration with BRTI Lifesciences, LLC., the UWRF TCIC has been engaged in testing and evaluating a new synthetic 3D tissue engineering matrix material called “Cell-MateTM”. This new material is based on a combination of hyaluronic acid and chitosan which yields a final matrix gel that enmeshes cells at high densities to generate artificial tissue (AT) constructs. In this series of studies, breast ductal adenocarcinoma cells (MCF-7) and “normal” breast ductal cells (MCF10A) were employed to generate significant artificial tissues based on the application of Cell-MateTM matrix materials. MCF-7 ATs were generated from 40, 20 and 10 million cells respectively and MCF10A ATs were generated from 20 and 10 million cells. In all cases, successful ATs resulted with significant areas of tissue or tumor-like architecture and distinct evidence of cellular differentiation as well as tumor development. MCF-7 ATs generated evidence of tumor progression and eventual metastasis-related spheroid, cluster and single cell release after 1-3 weeks of culture. In the case of 40 million cell seeding
loads, spheroid production occurred within the first week of culture while at 20 and 10 million cell loads, the timing of spheroid generation/release was significantly longer at 2-3 weeks. However, within

the first week, 20 million and 10 million cell loads did show definitive rounded features on the surfaces of the developing ATs. In the case of MCF10A, shed cells forming monolayers in the bottom of culture wells displayed differentiation-associated cells and colonies after 2-3 weeks of ATs development. These cells contrasted distinctly from those seen in the original culture monolayers. Continuing studies are evaluating the morphology and marker expression profiles of tissues within the generated ATs as well as examining and comparing Cell-MateTM generated MCF-7 spheroids in contrast to mammosphere media induced or hanging drop culture generated spheroids. Based on studies to date, we propose the application of Cell-MateTM as an effective approach to modeling breast cancer in-vitro.

**Stokke, Emily**

*Analysis of Immunoglobulin Genes in Swine* (Poster)
Faculty Mentor(s): Dr. Karen Klyczek, Biology

In 2009, swine flu became a pandemic. Although this is the most well known virus that has been harbored in swine, these animals can transmit several viruses to humans. Through our research analyzing the immunoglobulin genes in swine, we will better understand the immune system of swine and their immune responses to viruses such as influenza, as well as how these compare to the human immune system. Our initial focus is examining the extent of Immunoglobulin G (IgG) subclass gene polymorphism and splice site variation. We have isolated RNA and DNA from the white blood cells of pigs at the University of Wisconsin-River Falls lab farm, and copied the RNA into cDNA. PCR has been used to amplify the various constant region domains as well as the V-D-J splicing regions. The PCR products have been cloned and sequencing data results are being examined. By comparing the rearranged cDNA to germline DNA, we will be able to identify splicing patterns. Genomic DNA sequences will be compared to determine allotypic differences among these animals as well as with previously studied swine.

**Stueven, Noah**

*INVESTIGATION OF PHOSPHOINOSITIDE LIPID KINASES (PIKS) AS A DRUG TARGET USING NVP-BEZ235, PI-103 AND PIK-90 FOR TREATMENT OF PLASMODIUM FALCIPARUM* (Poster)
Research Collaborator(s): Ryan Kuehn, Jacqueline Van Schaick, Rebekah Hite
Faculty Mentor(s): Dr. Fred Bonilla, Biology
The parasite Plasmodium falciparum is responsible for the most severe forms of human malaria. The phosphatidylinositol-3-kinase (PfPI3K) pathway has been previously shown to be involved in hemoglobin transport and digestion in the parasite, and to be exported to the host erythrocyte. Phosphatidylinositols (PtdIns) are the specific produced phosphorylated variants of phosphoinositide lipid kinases (PIKs) and are effective second messengers in both cellular membrane remodeling and signaling. As PIKs are an important, emerging class of drug targets for many therapeutic areas including cancer, inflammatory and metabolic diseases, we investigated the antimalarial potential of targeting PfPI3K in P. falciparum using inhibitors. We successfully demonstrated the inhibition for a new strain of the parasite growth by targeting the pathway in nM concentrations for three PI3K inhibitors and utilizing a novel flow cytometry method for our lab. We evaluated dual PI3K/mammalian Target of Rapamycin (mTOR) inhibitor NVP-BEZ235 and PI-103 as well as PI3K/Akt (Protein Kinase B) inhibitor PIK-90. Specificity of the effects to the different stages in the parasite’s asexual life cycle (ring, trophozoite, and schizont) were explored through using synchronous cultures developed through magnetic separation techniques. With the ongoing issue of human malaria, there is an urgent need to develop new antimalarial chemotherapies. PfPI3K is a viable, potential drug target for further investigation as well as the PI3K/mTOR/Akt inhibitors studied.

Suhorepetz, Kalyn

*Para Las medias rojas: Reality of the trial of Feminism* (Poster)
Research Collaborator(s): Megan Beasley, Brittany Berg, Zoë Wischer
Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

Throughout the late nineteenth century, Spain was under a great reform and revolution. Women were still being oppressed, but were finally taking a stand. The roles of women were being redefined and their relationships with men were under negotiation. There were many women who stood up for their gender in order to better the future, and although they made a grave difference, many of them also suffered along the way. The basis of our analysis of feminism/protofeminism in late nineteenth century Spanish literature is the short story “Las Medias Rojas” by Emilia Pardo Bazán. Our study of this story focuses on the oppression of women through domestic abuse and gender roles as well as Bazán’s use of realism and naturalism to convey feminist ideals.

Realidad de la judicio de feminismo:

Por todo el final del siglo XIX, España estaba bajo gran reforma y revolución. Las mujeres todavía estaban oprimidos, pero finalmente estaban tomando una postura. Los papeles de las mujeres estaban siendo redefinido y sus relaciones con los hombres estaban bajo negociación. Estaban muchas mujeres que tomaban una postura para su género y para mejorar la futura. Aunque hacían una diferencia grande, muchas de ellas sufrían en el proceso. La base de nuestro
análisis del protofeminismo en la literatura española del siglo XIX es el cuento corto “Las Medias Rojas” por Emilia Pardo Bazán. Nuestro estudio de este cuento está enfocado en el oprimido de las mujeres por el abuso doméstico y los papeles de género. También enfocamos en cómo Bazán usa el realismo y el naturalismo para comunicar ideales feministas.

Swanson, Kyle

**Clearing Orbital Debris** (Poster)
Research Collaborator(s): Sanghee Lee, Joseph Opseth
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

There is a growing amount of debris orbiting the Earth, including stages that fall off during a rocket launch and pieces of defunct satellites. This debris presents a hazard to spacecraft such as operational satellites and the International Space Station. We examined proposed methods for clearing this debris to determine if it would be feasible for a private company to invest in a project to remove it.

Tessmer, Ryan

**Creation of attitudes toward deviant & risky behaviors: Importance of Family Characteristics and Sibling Influences** (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be using family characteristics like level of parents education, parenting techniques, number of siblings, strength of interfamily bonds, and other characteristics to determine how personal definitions of deviance & risky behaviors are created and either reinforced or rejected creating these negative or positive behaviors.

Thao, Naly

“**What Does It Mean to be a First-Generation College Student?**” (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study was designed to determine who is considered a FGCS, how many students there are in this group, what sort of obstacles they face going in to and attending college compared to their college counterparts. Other aspects of this project will look into what types of programs are out there and what percentage actually stay and graduate from college.

Thiry, Katelyn

**Perceptions of Correctional Facility Staff Upon Their Inmates** (Poster)
Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology
The purpose of this study is to examine the perceptions of prison guards of the inmates they are overseeing. I will look at their perceptions of the inmates due to their behavior while incarcerated. These could potentially affect how the guards treat the inmates, and vis versa.

**Thomas, Richard**

**AN INVESTIGATION OF THE PERCEIVED IMPORTANCE AND INCLUSION OF MUSIC STANDARDS WITHIN MINNESOTA AND WISCONSIN CLASSROOMS** (Poster)

Research Collaborator(s): Dillon Chieves, Rebecca Huth, Ryan Nattrass

Faculty Mentor(s): Dr. Paul Budde, Music

The purpose of this study is to gather information from current music educators in Minnesota and Wisconsin regarding their attitudes about and implementation of state and national music standards within their classrooms. Our research will be conducted via an online survey sent to approximately 5500 music educators in Wisconsin and Minnesota (per the estimates given by the Minnesota Music Educators Association and Wisconsin Music Educators Association). The survey will be distributed this school year, with a target of mid-January 2016. With the information gathered from the research survey, we hope to determine whether there is a correlation between a music educator’s gender, age, school setting (rural-urban-suburban), classes taught (band-choir-orchestra-classroom-music-other), grade level taught (K-12), teaching experience (years), or highest degree earned regarding (a) the value that s/he associates with the inclusion of specific music standards when constructing daily lesson plans, (b) his/her knowledge about State (Minnesota and Wisconsin) and National (1994 and 2014) music standards, and (c) his/her inclusion of specific music standards within daily lesson plans.

**Thueson, Hanna**

**Application of Cell-MateTM 3D matrix in modeling artificial breast ductal cancer as well as control “normal” tissues.** (Poster)

Research Collaborator(s): Bruna Stilpeh-Justen, Ronaldo Loureiro

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from 20 and 10 million cells. In all cases, successful ATs resulted with significant areas of tissue or tumor-like architecture and distinct evidence of cellular differentiation as well as tumor development. MCF-7 ATs generated evidence of tumor progression and eventual metastasis-related spheroid, cluster and single cell release after 1-3 weeks of culture. In the case of 40 million cell seeding loads, spheroid production occurred within the first week of culture while at 20 and 10 million cell loads, the timing of spheroid generation/release was significantly longer at 2-3 weeks. However, within the first week, 20 million and 10 million cell loads did show definitive rounded features on the surfaces of the developing ATs. In the case of MCF10A, shed cells forming monolayers in the bottom of culture wells displayed differentiation-associated cells and colonies after 2-3 weeks of ATs development. These cells contrasted distinctly from those seen in the original culture monolayers. Continuing studies are evaluating the morphology and marker expression profiles of tissues within the generated ATs as well as examining and comparing Cell-MateTM generated MCF-7 spheroids in contrast to mammosphere media induced or hanging drop culture generated spheroids. Based on studies to date, we propose the application of Cell-MateTM as an effective approach to modeling breast cancer in-vitro.

Tyznik, Kelsey

**UWRF Sustainability Scavenger Hunt** (Short Film)
Research Collaborator(s): Josie Hayes
Faculty Mentor(s): Erik Johnson, Stage and Screen Arts

Over the years, UWRF has worked very hard to become a more sustainable campus. We have created a scavenger hunt helping to promote UWRF campus's sustainability efforts in a fun and engaging manner. We challenge students and their friends to discover the places where our campus is sustainable. A number of clues are released on a specific day in order for students to find those preselected locations. We ask the student(s) to take a short video or selfie at each of the sustainable locations, upload them, and tag the UWRF Sustainability Scavenger Hunt page! Top participators receive prizes!

Urban, Rachel

**SPE National Photography Conference** (Poster)
Research Collaborator(s): Lynnette Bierbaum, Samantha Kern, Lauren Olson, Alysha Knandel, Anthony Czech, Adry Cota, Christian Seiler
Faculty Mentor(s): Brett Kallusky, Art

A display about the UWRF Photography Club’s trip to Las Vegas for the 2016 Society for Photographic Education National Photography Conference.
Van Schaick, Jacqueline

**INVESTIGATION OF PHOSPHOINOSITIDE LIPID KINASES (PIKS) AS A DRUG TARGET USING NVP-BEZ235, PI-103 AND PIK-90 FOR TREATMENT OF PLASMODIUM FALCIPARUM** (Poster)

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The parasite Plasmodium falciparum is responsible for the most severe forms of human malaria. The phosphatidylinositol-3-kinase (PfPI3K) pathway has been previously shown to be involved in hemoglobin transport and digestion in the parasite, and to be exported to the host erythrocyte. Phosatidylinositols (PtdIns) are the specific produced phosphorylated variants of phosphoinositide lipid kinases (PIKs) and are effective second messengers in both cellular membrane remodeling and signaling. As PIKs are an important, emerging class of drug targets for many therapeutic areas including cancer, inflammatory and metabolic diseases, we investigated the antimalarial potential of targeting PfPI3K in *P. falciparum* using inhibitors. We successfully demonstrated the inhibition for a new strain of the parasite growth by targeting the pathway in nM concentrations for three PI3K inhibitors and utilizing a novel flow cytometry method for our lab. We evaluated dual PI3K/mammalian Target of Rapamycin (mTOR) inhibitor NVP-BEZ235 and PI-103 as well as PI3K/Akt (Protein Kinase B) inhibitor PIK-90. Specificity of the effects to the different stages in the parasite’s asexual life cycle (ring, trophozoite, and schizont) were explored through using synchronous cultures developed through magnetic separation techniques. With the ongoing issue of human malaria, there is an urgent need to develop new antimalarial chemotherapies. PfPI3K is a viable, potential drug target for further investigation as well as the PI3K/mTOR/Akt inhibitors studied.

Vaught, Hannah

**The Surprising Cardiac Toxicity of Arbutin, a Common Skin Lightening Chemical** (Poster)

Faculty Mentor(s): Dr. Cheng-Chen Huang, Biology

Arbutin is a natural and popular skin-lightening agent found within many cosmetic products designed to lighten and even skin tone. However, the toxicity of arbutin has not been closely studied. Earlier research done by our lab has shown unusual cardiac toxicity of arbutin in developing zebrafish embryos. My project was designed to better understand the arbutin toxicity. We first found that arbutin consistently caused specific cardiac defects in a dosage dependent manner. In the next experiment, young zebrafish embryos were treated with arbutin before cardiac development occurred in order to identify the effects of arbutin on the developing heart. Older embryos were also treated with arbutin to study the impact of arbutin on the developed heart. The results showed that
while arbutin was toxic to all the embryos tested, the older embryos with already developed cardiac tissues exhibited poor circulation, reduced heart size, and death earlier than younger embryos. Paraffin-sectioning of the hearts showed that arbutin treated embryos displayed collapsed cardiac chambers, and no lumen was visible within the two chambers. Furthermore, labeling and analysis of cell death within arbutin treated embryos revealed an overall increase of apoptosis in cardiac tissue. Throughout this project, arbutin has displayed unreported cardiac toxicity, showing a need for alternate skin lightening compounds.

**Vissers, James**

*The Internal Traveling Classroom* (Poster)
Faculty Mentor(s): Dr. Jennifer Brantley, English

Studying abroad through UWRF allowed for the interaction with 24 pretty amazing individuals during a three month stint throughout Europe. Two years after the trip, what lingers is an indescribable feeling I attempt to analyze and turn into words, specifically a piece of nonfiction in hopes of capturing a glimpse of symbiosis. Primarily humanity of STEM. This is a story of an egg hatching into an adventure, and somewhere along the way, science and technology are highlighted. Included in the story are four individuals, their fields of study, and how the adventure changed their lives.

**Wahlquist, Victoria**

*Analysis of a Figure Skating Back Scratch Spin* (Poster)
Faculty Mentor(s): Dr. Lowell McCann, Physics

A figure skating back scratch spin was analyzed using a gyroscope to measure the angular velocity throughout the spin. A cylinder model of the skater was made for both the initial and final positions of the back scratch spin. The moment of inertia approximated for the initial and final positions of the back scratch spin were found to be 8.364 +/- 0.042 kgm^2 and 1.156 +/- 0.015 kgm^2 respectively. The moment of inertia was also calculated with the skater on a rotating platform while measuring the applied force and resulting angular velocity. The moment of inertia for the final position was calculated to be 1.06 +/- 0.11 kgm^2. This value was compared to the cylinder value and they were one sigma apart and had a 9.06% difference. The two values were in agreement. The frictional torque during the final of the spin was modeled as being constant was found to be -2.33 +/- 0.14 Nm.

**Welshons, Griffin**

*Reincarnation* (PowerPoint presentation)
Faculty Mentor(s): Dr. Joseph Rein, English
Throughout our lives we strive to establish a home for ourselves. This collection of poetry examines my struggle to find a community of people with a similar mindset that are also in a place of intrigue. It contrasts the year I lived in Seoul, South Korea to my suburban hometown of Hastings, Minnesota. For the first twenty years of my life I lived in Hastings, a town that hasn’t changed greatly since my father’s birth. Most of the people who live there were born there. My family keeps hold of this tradition, pressuring me to do the same. Every day in Seoul, new districts are being built with modern technology. Nature is still prevalent from the surrounding mountains and numerous forest trails, and its past thrives through their palaces, Buddhist temples, museums, and markets of traditional wear and items. These poems are heavily influenced by Buddhism. It employs the Buddhist belief of reincarnation to show the personal changes within someone when transitioning from one place to another rather than in terms of being reborn after death. It also addresses the upheaval of being taken from a place of belonging. Where someone is left to choose a life to return to that place in the future or grow into something else from their experience.

This is being presented through poetry, read in second person, to have the listeners be put into the same location as the narrator. To allow the listeners to feel the soothing embrace of home, for these poems South Korea, then endure displacement once being pulled back into American life. Listening to poetry forces the listeners to have to create the images themselves and feel the emotion with their own minds, making the poems simultaneously universal yet extremely personal much like having a home within a community.

**Whitmore, Hayley**

*The Affects of Online Bullying* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

I will be looking at how online bullying affects people through a survey I will be administering and will be presenting it here.

**Wichser, Zoë**

*Las Medias Rojas* (Poster)

Research Collaborator(s): Kaylin Suhorepetz, Brittany Berg, Megan Beasley

Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

Para Las medias rojas: Reality of the trial of Feminism

Throughout the late nineteenth century, Spain was under a great reform and revolution. Women were still being oppressed, but were finally taking a stand. The roles of women were being redefined and their relationships with men were under negotiation. There were many women who stood up for their gender in
order to better the future, and although they made a grave difference, many of
them also suffered along the way. The basis of our analysis of
feminism/protofeminism in late nineteenth century Spanish literature is the
short story “Las Medias Rojas” by Emilia Pardo Bazán. Our study of this story
focuses on the oppression of women through domestic abuse and gender roles
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cuento está enfocada en el oprimido de las mujeres por el abuso doméstico y los
papeles de género. También enfocamos en como Bazán usa el realismo y el
naturalismo para comunicar ideales feministas.

Wilcox, Austin

The Sky is Falling: A Study of Space Debris (Poster)
Research Collaborator(s): Maria Eskro, Dagan Hathaway
Faculty Mentor(s): Dr. Kathy Tomlinson, Mathematics

The purpose of the project was to quantitatively and qualitatively assess the
properties of several different approaches as they address the problem of space
debris in the Lower Earth Orbit. Space debris, like global warming, has been a
growing concern over the years. Large contributions to the space debris
problem include, a Chinese anti-satellite weapons test in 2007, and a collision
between two satellites Iridium-33 and Kosmos-2251 in 2009. The mass amount
of debris in the Lower Earth Orbit it have caused several problems, which
include a rise of radon levels, debris reentry into Earth’s atmosphere, a high risk
of injury for astronauts working on satellite repair in the Lower Earth Orbit, and
a rise in air pollution. Particularly, in the case of astronauts, this has become
exceedingly dangerous. It was estimated that in May of 2009, when conducting
repair on the Hubble Space Telescope, the astronauts working outside of the
shuttle had a 1 in 89 chance of being fatally hit by a piece of debris. This project
is concerned specifically with two possible types of remediation which are
currently being built and tested: An ablative laser which moves large debris
lower into the Earth’s atmosphere to significantly shorten its lifespan, and a
robotic satellite which uses the debris and its own
momentum to catch and release debris down into the Earth’s atmosphere in such a way that they are destroyed before they can reach the ground. This paper discusses the usefulness and practicality of these two methods based on their cost, environmental impact, and their overall effectiveness at removing the debris.

**Williams, Tye**

*Radio Frequency Identification (Poster)*

Faculty Mentor(s): Dr. James Madsen, Physics

Radio Frequency Identification tags are quickly becoming the future in many settings now. They are being used in marathon races to track contestants, determine the work patterns of bumblebees and may soon relieve us of bar codes on the products that we buy.

I would like to research the different uses of RFID tags so that I would be able to use them in other more in depth projects. An example would be to attach a tag to a Queen Bee in her hive, allowing researchers to determine her location at any time.

**Wischer, Zoë**

*Para Las medias rojas: Reality of the trial of Feminism (Poster)*

Research Collaborator(s): Kalyn Suhorepetz, Megan Beasley, Brittany Berg

Faculty Mentor(s): Dr. Daniela Goldfine, Modern Language

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**Witthoft, Meghann**

*Complementary Colors, Complementary Personalities* (Artwork)

Faculty Mentor(s): Jeannine Kitzhaber, Art

Travel photo of three friends revamped.

**Xiong, Gao Ee**

*Are Middle Born Children More Deviant Than Their Other Siblings?* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

The purpose of this study is to examine the impact of birth order on a variety of adult outcomes including: deviant behavior and social attitudes. There have been various theories from social scientists explaining the different behaviors and personalities of each birth order. There are basic ideas about how children who are the only child act and the personality traits that explains why certain individuals act the way they do based on their place in their birth order and their family. Others, however, have critiqued the idea that birth order is important. I would like to explore this debate using qualitative interviews.

**Zeuli, Alexandra**

*Title IX: The Achievement of Substantial Proportionality within the Thirteen University of Wisconsin’s Collegiate Athletic Programs* (Poster)

Faculty Mentor(s): Dr. Paige Miller, Sociology, Criminology and Anthropology

This study begins with a brief history of women’s involvement in collegiate sports. Followed by an explanation of Title IX, the creation of the proportionality prong, and the improvements made in women’s collegiate sport. This study follows with an examination of existing data to establish the level of substantial proportionality of the 13 sport programs in the University of Wisconsin system. By studying the data of these 13 athletic programs, this study identified programs lacking or meeting the expectation of proportionality. The results found a substantial number of universities in the UW system did not meet the proportionality requirement. Finally, a section including suggestions for universities to improve their substantial proportionality and meet Title IX’s requirement.
College of Business and Economics

Abraham, Jared

*Ion Channel Motifs* (PowerPoint presentation)
Research Collaborator(s): Miranda Mellen, Rita Woldemichel, Rachel Hedin
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Under supervision of Dr. Varghese, we have been looking at protein sequences and trying to find motifs between different groups. This project focuses on identifying previously discovered motifs, as well as identifying new motifs, within a dataset of Kv1 (voltage-gated potassium channels) sequences provided to us. We have been doing this through the use of online sources, as well as through multiple sequence alignment steps.

Albright, Mason

*Genome Assembly and Analysis of Two Previously Isolated Bacteriophages* (Poster)
Research Collaborator(s): Jacqueline Van Schaick, McKenna Mattison
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Partnered with the University of Pittsburgh and the Howard Hughes Medical Institution, the University Of Wisconsin River Falls is working to discover new soil viruses every year. A class of biology students isolates bacteriophages, a type of virus that infects bacteria, and sends their genomes in for sequencing. Our project took two of the previously sequenced genomes and assembled them using a virtual machine. We then analyzed it to find the beginning and end of the genome, as well as determined the quality of the assembly, and finally compared the genome to other sequenced species to find similarities in the genome.

Bretoi, Travis

*Money Demand* (Poster)
Research Collaborator(s): Josiah Knowlen, Spencer Korum
Faculty Mentor(s): Dr. John Walker, Economics

The purpose of this research is to determine whether or not a stable relationship between money and economic activity exists. Using regression
analysis, we tested quarterly data over a 20 and 30 year time period (1977, 1987-2007), and our results suggest that there is a stable relationship between money and economic activity during the 30 year time period only.

DeRosier, Elizabeth

*Please don't touch me!* (Prezi presentation)
Faculty Mentor(s): Dr. Claire McCarty, Management and Marketing

Alicia and Sam worked for Midwest Products. More than once, Alicia experienced Sam putting his arm around her when talking to her. She felt uncomfortable and all she could think about was that arm. What was he saying? She stopped paying attention to their conversation. They weren’t close friends. He didn’t appear to be anything but friendly, but Alicia found it very intrusive.

Upon finding out that he did this to his secretary, Monica, Alicia realized he might be doing this to all women employees. She decided that she needed to do something about this. What should she do? Is this sexual harassment? Should she talk to Sam about his actions? How?

Hamus, Alex

*2D Java Platform Game* (PowerPoint presentation)
Research Collaborator(s): Alex Holmquist
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

This project explores the use of Libgdx and Tiled to create a 2-D Java platform game. The game puts the player through harsh environments that the player has to overcome to get passed the current stage they are playing on. The goal of the game is to collect as many collectibles as possible and advance to the end of the level without hitting an obstacle. The game is implemented in Java and uses Libgdx to handle the game physics and game environment. The game also features the use of software called Tiled which allows for control over designing maps.

Hastings, Nicole

*Monsanto’s GMO Analysis* (Poster)
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems and Dr. Brad Mogen, Biology

I will be talking about the roundup ready gene and its plasmid components

Hedin, Rachel

*Ion Channel Motifs* (PowerPoint presentation)
Research Collaborator(s): Jared Abraham, Miranda Mellen, Rita Woldemichel
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Under supervision of Dr. Varghese, we have been looking at protein sequences and trying to find motifs between different groups. This project focuses on identifying previously discovered motifs, as well as identifying new motifs, within a dataset of Kv1 (voltage-gated potassium channels) sequences provided to us. We have been doing this through the use of online sources, as well as through multiple sequence alignment steps.

Holmquist, Alex

2D Java Platform Game (PowerPoint presentation)
Research Collaborator(s): Alex Hamus
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

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Johnson, Caitlin

The Phillips Curve: Stable or Not? (Poster)
Research Collaborator(s): Lindsey Ogawa, Logan Massop, Brendan Sullivan
Faculty Mentor(s): Dr. John Walker, Economics

This research examines the link between inflation and unemployment, first surmised by Phillips in 1958.

Knowlen, Josiah

Money Demand (Poster)
Research Collaborator(s): Travis Bretoi, Spencer Korum
Faculty Mentor(s): Dr. John Walker, Economics

The purpose of this research is to determine whether or not a stable relationship between money and economic activity exists. Using regression analysis, we tested quarterly data over a 20 and 30 year time period (1977-1987-
2007), and our results suggest that there is a stable relationship between money and economic activity during the 30 year time period only.

Korum, Spencer

Money Demand (Poster)
Research Collaborator(s): Josiah Knowlen, Travis Bretoi
Faculty Mentor(s): Dr. John Walker, Economics

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Massop, Logan

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Research Collaborator(s): Lindsey Ogawa, Caitlin Johnson, Brendan Sullivan
Faculty Mentor(s): Dr. John Walker, Economics

This research examines the link between inflation and unemployment, first surmised by Phillips in 1958.

Mattison, McKenna

Genome Assembly and Analysis of Two Previously Isolated Bacteriophages (Poster)
Research Collaborator(s): Jacqueline Van Schaick, Mason Albright
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Partnered with the University of Pittsburgh and the Howard Hughes Medical Institution, the University Of Wisconsin River Falls is working to discover new soil viruses every year. A class of biology students isolates bacteriophages, a type of virus that infects bacteria, and sends their genomes in for sequencing. Our project took two of the previously sequenced genomes and assembled them using a virtual machine. We then analyzed it to find the beginning and end of the genome, as well as determined the quality of the assembly, and finally compared the genome to other sequenced species to find similarities in the genome.

Mellen, Miranda

Ion Channel Motifs (PowerPoint presentation)
Research Collaborator(s): Jared Abraham, Rita Woldemichel, Rachel Hedin
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Under supervision of Dr. Varghese, we have been looking at protein sequences and trying to find motifs between different groups. This project focuses on identifying previously discovered motifs, as well as identifying new motifs, within a dataset of Kv1 (voltage-gated potassium channels) sequences provided to us. We have been doing this through the use of online sources, as well as through multiple sequence alignment steps.

**Ogawa, Lindsey**

*The Phillips Curve: Stable or Not?* (Poster)

Research Collaborator(s): Caitlin Johnson, Logan Massop, Brendan Sullivan
Faculty Mentor(s): Dr. John Walker, Economics

This research examines the link between inflation and unemployment, first surmised by Phillips in 1958.

**Opseth, Joseph**

*Replication of Arbitrary Hole-free Shapes via Self-assembly with Signal-passing Tiles* (Poster)

Faculty Mentor(s): Dr. Jacob Hendricks, Computer Science and Information Systems

The Signal-passing Tile Assembly Model simulates self-assembling DNA strands by representing them as tiles that can pass signals. We demonstrate that it is possible to create a set of tiles that will replicate without bound arbitrary hole-free shapes.

**Sullivan, Brendan**

*The Phillips Curve: Stable or Not?* (Poster)

Research Collaborator(s): Lindsey Ogawa, Caitlin Johnson, Logan Massop
Faculty Mentor(s): Dr. John Walker, Economics

This research examines the link between inflation and unemployment, first surmised by Phillips in 1958.

**Van Schaick, Jacqueline**

*Genome Assembly and Analysis of Two Previously Isolated Bacteriophages* (Poster)

Research Collaborator(s): McKenna Mattison, Mason Albright
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Partnered with the University of Pittsburgh and the Howard Hughes Medical Institution, the University Of Wisconsin River Falls is working to discover new soil viruses every year. A class of biology students isolates bacteriophages, a type of virus that infects bacteria, and sends their genomes in for sequencing. Our project took two of the previously sequenced genomes and assembled them using a virtual machine. We then analyzed it to find the beginning and end of the genome, as well as determined the quality of the assembly, and finally compared the genome to other sequenced species to find similarities in the genome.

Woldemichel, Rita

*Ion Channel Motifs* (PowerPoint presentation)
Research Collaborator(s): Jared Abraham, Miranda Mellen, Rachel Hedin
Faculty Mentor(s): Dr. Tony Varghese, Computer Science and Information Systems

Under supervision of Dr. Varghese, we have been looking at protein sequences and trying to find motifs between different groups. This project focuses on identifying previously discovered motifs, as well as identifying new motifs, within a dataset of Kv1 (voltage-gated potassium channels) sequences provided to us. We have been doing this through the use of online sources, as well as through multiple sequence alignment steps.
Allen, Rachael

*Effects of student listening practice on identification of overall severity in dysphonia* (Poster)
Faculty Mentor(s): Dr. Sharyl Samargia, Communicative Sciences and Disorders

39 second year graduate students in the Department of Communicative Disorders at UWRF were recruited and randomly assigned to three groups. They rated the overall severity of dysphonic voices through the CAPE-V at baseline, 6 week probe, and 12 week probe. The data collected was organized and analyzed to help determine the amount of practice needed to improve graduate students' perceptual assessment skills of overall severity in patients with dysphonia.

Allen, Rachael

*Effects of student listening practice on identification of perceptual voice characteristics in dysphonic voices* (Poster)
Faculty Mentor(s): Dr. Sharyl Samargia, Communicative Sciences and Disorders

Perceptual analysis of voice is commonly used by speech-language pathologists for assessing voice disorders, therefore listening practice is a common tool used in training students in the field. However, there have been no direct investigations regarding the amount of practice needed for students to enter the profession and competently conduct perceptual assessments in patients with voice disorders. The purpose of this study was to determine the amount of practice needed to improve graduate students' perceptual assessment skills of breathiness, strain, roughness, and overall severity in patients with dysphonia.

Anderson, Lydia

*Phonological Vocabulary Learning in Older Adults: Do Phonological Short Term Memory Abilities Play a Role?* (Poster)
Research Collaborator(s): Hannah LaCasse
Faculty Mentor(s): Dr. Naomi Hashimoto, Communicative Sciences and Disorders

The first aim of our study was to examine the extent to which phonological cues will help with phonological word retrieval failures in older adults. The second
aim of the study was to examine the relationship between phonological short-term memory working memory abilities and phonological vocabulary learning in older adults. We examined (and are continuing to examine) this by facilitating vocabulary learning of non-words using phonological cues and testing for short term retention of the words learned.

**Anderson, Kimberly**

*Providing care to residents that encourages achieving and sustaining a sense of recovery at Emma Norton Residence.* (Poster)
Faculty Mentor(s): Dr. Tammy Kincaid, Social Work

The goal of this research study was to determine if the case management and services provided at Emma Norton Residence, were recovery oriented; meaning that the provided services encouraged residents in their journey of recovery. The survey asked 10 questions about how satisfied the residents were with the services they received at Emma Norton Residence. The questions were about the residence itself, and the staff they interacted with. The questions were based off of a 1-5 scale, with 5 meaning most satisfied. There was also a box under each question for residents to write optional comments if they chose to.

**Ebensperger, Anna**

*Patient Compliance in Dysphagia Management* (Poster)
Faculty Mentor(s): Dr. Sharyl Samargia, Communicative Sciences and Disorders

Dysphagia is a swallowing disorder that can affect the oral, pharyngeal, and/or esophageal phases of deglutition and lead to aspiration pneumonia, dehydration, malnutrition, overall weakness, and muscle atrophy. To minimize the risk of aspiration pneumonia and improve overall health, patients are often prescribed a modified diet including thickened liquids by a speech-language pathologist. Cornstarch-based and xanthan gum-based thickeners are available to manually thicken liquids however, they reportedly alter the taste of the liquid and the cornstarch thickeners increase in viscosity over time. More recently, pre-thickened liquids have been developed to improve convenience however; they are expensive and inaccessible to many patients. Noncompliance in following thickened liquid recommendations can lead to increased occurrence of aspiration pneumonia, hospitalizations and can even lead to death. In a preliminary study, 32 beverages found in the supermarket met the viscosity requirements for nectar-thick liquid based on the National Dysphagia Diet (NDD) standards. In a follow up study, these “naturally thick” liquids were found to be significantly more palatable than some beverages mixed with a powdered thickener, in healthy adults. However, individuals with dysphagia often have altered sensory systems and their palatability may be different from healthy adults. Aims: 1) Determine the most palatable method for thickening liquids for
patients with dysphagia to potentially improve compliance and reduce the medical complications associated with dysphagia, 2) determine if high palatability rankings correlate to higher potential compliance in patients with dysphagia and 3) determine if palatability and potential compliance ratings are different between healthy and patients with dysphagia. Design: Adults (ages 50-80 years) living in a residential facility(s) who have dysphagia and are currently or have prescribed a modified diet including nectar-thick liquids (by a speech-language pathologist) will be recruited. All subjects will be given twelve nectar-thick beverage samples, in random order, to taste and score on a palatability and potential compliance survey using a modified Likert Scale. The samples will consist of: naturally thick (3), pre-thickened (3) and liquids thickened with cornstarch thickener (3) and xanthan gum thickener (3). All samples will have been measured prior to the experiment to confirm the viscosity meets the NDD standards for nectar-like liquids. Impact: Identification of the most palatable method(s) for thickening beverages could potentially improve patient compliance and minimize health complications associated with dysphagia.

Foy, Madeline

Resiliency in Siblings of Children with Developmental Disabilities
(Poster)
Faculty Mentor(s): Dr. Sharyl Samargia, Communicative Sciences and Disorders

Past research has shown, parents of children with developmental disabilities are more resilient and exhibit greater patience, tolerance, and sensitivity compared to parents of typically developing children. Considering the evidence regarding parents, one could speculate siblings of children with developmental disabilities may also have greater resiliency. However, no known literature exists regarding the resiliency of siblings of children with developmental disabilities. Purpose: The purpose of this study was to compare the resiliency between siblings of children with developmental disabilities to siblings of typically developing children. Methods: Recruitment occurred through the Driven to Discover Research Program at the University of Minnesota. Individuals attending the MN State Fair were recruited and screened for eligibility. Data from pilot study was incorporated for overall analysis. 78 children, ages 9-17 (mean age =12 years 8 months) were placed into two groups 1) siblings of typically developing children (n=42, mean age = 12yrs 4moths) and 2) siblings of children with developmental disabilities (n=36, mean age = 13years 1 month). Each participant completed the Resiliency Scales for Children and Adolescents: A Profile of Personal Strengths. This measure has three subtests: sense of mastery, sense of relatedness and sense of emotional reactivity. Results: An analysis of variance indicated no significant differences between the groups across all subtests (p>0.05). Statistical significance was nearly found in the MAS subtest of trust; however, this finding did not correlate with disability type nor severity. This may have
been due to study limitations. Conclusion: This study provided valuable information to guide future research in understanding resiliency in siblings and will lay the foundation for future supportive programming.

Haehnel, Morgan

**Patient compliance in dysphagia management: what thickening method is most palatable?** (Poster)

Faculty Mentor(s): Dr. Sharyl Samargia, Communicative Sciences and Disorders

Dysphagia is a swallowing disorder that can affect the oral, pharyngeal, and/or esophageal phases of deglutition and lead to aspiration pneumonia, dehydration, malnutrition, overall weakness, and muscle atrophy. To minimize the risk of aspiration pneumonia and improve overall health, patients are often prescribed a modified diet including thickened liquids by a speech-language pathologist. Cornstarch-based and xanthan gum-based thickeners are available to manually thicken liquids however, they reportedly alter the taste of the liquid and the cornstarch thickeners increase in viscosity over time. More recently, pre-thickened liquids have been developed to improve convenience however; they are expensive and inaccessible to many patients. Noncompliance in following thickened liquid recommendations can lead to increased occurrence of aspiration pneumonia, hospitalizations and can even lead to death. In a preliminary study, 32 beverages found in the supermarket met the viscosity requirements for nectar-thick liquid based on the National Dysphagia Diet (NDD) standards. In a follow up study, these “naturally thick” liquids were found to be significantly more palatable than some beverages mixed with a powdered thickener, in healthy adults. However, individuals with dysphagia often have altered sensory systems and their palatability may be different from healthy adults. Aims: 1) Determine the most palatable method for thickening liquids for patients with dysphagia to potentially improve compliance and reduce the medical complications associated with dysphagia, 2) determine if high palatability rankings correlate to higher potential compliance in patients with dysphagia and 3) determine if palatability and potential compliance ratings are different between healthy and patients with dysphagia. Design: Adults (ages 50-80 years) living in a residential facility(s) who have dysphagia and are currently or have prescribed a modified diet including nectar-thick liquids (by a speech-language pathologist) will be recruited. All subjects will be given twelve nectar-thick beverage samples, in random order, to taste and score on a palatability and potential compliance survey using a modified Likert Scale. The samples will consist of: naturally thick (3), pre-thickened (3) and liquids thickened with cornstarch thickener (3) and xanthan gum thickener (3). All samples will have been measured prior to the experiment to confirm the viscosity meets the NDD standards for nectar like liquids. Impact: Identification of the most palatable
method(s) for thickening beverages could potentially improve patient compliance and minimize health complications associated with dysphagia.

Joswiak, Jenna

The Impact of the Family Resource Center Play and Learn Groups on Communication Patterns (Poster)
Research Collaborator(s): Natalie Storlie
Faculty Mentor(s): Dr. Molly Gerrish, Teacher Education

This research is focused on determining the impact of Family Resource Center Play and Learn groups on communication patterns. The purpose of the study is to evaluate the effectiveness of Play and Learn group activities to determine the level of impact the program has on communication patterns, including parent/child, parent/parent, and parent/teacher communication that occurs within the group. Areas identified for this study include: exploring current methods of communication being used in the Play and Learn groups as well as identifying other effective strategies that may enhance the existing program. A series of take-home activities will be implemented and parents/families will be able to reflect upon completion of the sessions. Data will be collected for analysis through observations of Play and Learn group sessions, as well as surveys to be completed by parents and teachers within the program. These will be analyzed for recurring themes. Triangulation will be provided by optional parent and family reflections after participating in the Play and Learn sessions. Evidence collected thus far, currently reflects higher directive communication during the parent and child interactions during the parent and teacher communication within the sessions. Additionally, the parent to parent communication seem to focus more on conversation. Upon final analysis of the data, it is predicted that the level of conversational communication increases within the Play and Learn sessions. Furthermore, upon completion of the analysis of the data, it is believed that the modifications and additional take-home activities will continue to support the effectiveness of the Play and Learn program and increase the positive communication that happens both within the group setting as well as have positive carry-over in the home setting.

LaCasse, Hannah

Phonological Vocabulary Learning in Older Adults: Do Phonological Short Term Memory Abilities Play a Role? (Poster)
Research Collaborator(s): Lydia Anderson
Faculty Mentor(s): Dr. Naomi Hashimoto, Communicative Sciences and Disorders

The first aim of our study was to examine the extent to which phonological cues will help with phonological word retrieval failures in older adults. The second aim of the study was to examine the relationship between phonological short-
term memory working memory abilities and phonological vocabulary learning in older adults. We examined (and are continuing to examine) this by facilitating vocabulary learning of non-words using phonological cues and testing for short term retention of the words learned.

Storlie, Natalie

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URSCA Mentors

We would like to acknowledge the efforts of Faculty and Staff Mentors, whose dedication allows our campus URSCA to thrive. We deeply appreciate their contributions in support of the university’s commitment to undergraduate research, scholarly and creative activity. Thank you!

Below is a comprehensive list, by college, of all of the URSCA Mentors who have students presenting projects at 2016 Spring URSCA Day.

College of Agriculture, Food and Environmental Sciences

Michelle Farner, Animal and Food Science
Dr. Allison Gale, Plant and Earth Science
Dr. Kerry Keen, Plant and Earth Science
Dr. Sylvia Kehoe, Animal and Food Science
Dr. Sonja Maki, Plant and Earth Science
Dr. Joel Peterson, Agricultural Engineering Technology
Dr. Amy Radunz, Animal and Food Science
Dr. Beth Rausch, Animal and Food Science
Dr. Peter Rayne, Animal and Food Science
Dr. Joseph Shakal, Agricultural Engineering Technology
Dr. Danielle Smarsh, Animal and Food Science
Dr. Brian Smith, Plant and Earth Science
Dr. Kurt Vogel, Animal and Food Science
Dr. David Zlesak, Plant and Earth Science

College of Arts and Sciences

Dr. Earl Blodgett, Physics
Joseph Blum, Stage and Screen Arts
Dr. Fred Bonilla, Biology
Dr. Jennifer Brantley, English
Dr. Paul Budde, Music
Dr. Keith Chavey, Mathematics
Dr. James Cortright, Psychology
Eoin Breadon, Art
Grace Coggio, Journalism
Dr. James Cortright, Psychology
Bernice Ficek-Swenson, Art
Dr. Mathew Dooley, Geography and Mapping Sciences
Bernice Ficek-Swenson, Art
Dr. Daniela Goldfine, Modern Language
Dr. Cheng-Chen Huang, Biology
Erik Johnson, Stage and Screen Arts
Randy Johnston, Art
Brett Kallusky, Art
Dr. Karen Klyczek, Biology
Jeannine Kitzhaber, Art
Dr. Lisa Kroutil, Chemistry and Biotechnology
Dr. Timothy Lyden, Biology
Dr. James Madsen, Physics
Dr. Dan Marchand, Chemistry and Biotechnology
Dr. Lowell McCann, Physics
Dr. Paige Miller, Sociology, Anthropology and Criminal Justice
Dr. Brad Mogen, Biology
Dr. Kim Mogen, Biology
Robin Murray, Stage and Screen Arts
Dr. Charles Rader, Geography and Mapping Sciences
Dr. Joseph Rein, English
Dr. Jamie Schneider, Chemistry and Biotechnology
Dr. Lissa Schneider-Rebozo, English/URSCA
Dr. Surujhdeo Seunarine, Physics
Dr. Glenn Spizak, Physics
Dr. Stacey Stoffregen, Chemistry and Biotechnology
Andris Straumanis, Communication and Media Studies
Dr. Kristin Tjornehoj, Music
Dr. Kathy Tomlinson, Mathematics
Dr. Travis Tubre, Psychology
Rhonda Willers, Art
College of Business and Economics
Dr. Jacob Hendricks, Computer Science and Information Systems
Dr. Claire McCarty, Management and Marketing
Dr. Tony Varghese, Computer Science and Information Systems
Dr. John Walker, Economics

College of Education and Professional Studies
Dr. Molly Gerrish, Teacher Education
Dr. Naomi Hashimoto, Communicative Sciences and Disorders
Dr. Tammy Kincaid, Social Work
Dr. Sharyl Samargia, Communication Sciences and Disorders

Off-Campus Mentors
Dr. Mark-David Hosale, Physics
Questions?

For additional information about upcoming events, grant funding, trainings, and presentation opportunities, visit the URSCA webpage at www.uwrf.edu/URSCA/ or contact the URSCA Office by phone at 715-425-3902 or email at ursca@uwrf.edu.

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