ANOKA-RAMSEY COMMUNITY COLLEGE

A member of Minnesota State

3rd Annual Student OSCARS

Outstanding **S**cholarship, **C**reative **A**ctivities and **R**esearch **S**ymposium

Wednesday, April 25, 2018

Project Descriptions and Abstracts

Project Categories:
[1] Creative Performance/Presentation
[2]Humanities/Social Sciences
[3]STEM/Health Sciences

Oral Presentations/Performances

1. Daniel Harms: Rondo in F# Minor[1]
MUSC 2226, Faculty Mentor: Jason Vanselow
This is a piano piece that I wrote for my Advanced Music Theory II mid-term. The conditions were that it needed to be in 3-part Rondo form with formal elements based specifically on a classical Rondo piece of my own choosing. A 3-part Rondo follows the structure of an A section leading to a B section and then returning back to the A section. I based this piece's form off of Beethoven's Sonata Op. 13 III from the Classical Era. One significant artistic choice was to modulate the starting key up a minor 3rd for the B section in a similar manner that Beethoven's sonata did. In addition, I used 4-bar phrasing that was accentuated with 5-bar phrases that reflects the original piece. My retransition from the B section back to the A section also imitates the way that Beethoven used parts of his A section in his own retransition to the original key. This is where most of the similarities end though. The chordal structure and tonality of the piece heavily reflects ideas from the Romantic Era of music. This piece makes heavy use of chromaticism and dissonant intervals. Chromaticism is the idea of letting stepwise motion in melodies and bass lines be the basis for chord progressions rather than conventional harmony. Overall, this is a somber piece that combines both the formal structure of the Classical Era with the chordal structure of the Romantic Era.

2. James Belden, Caitlin Sparks, Matt Worthington: Much Ado About Nothing[1]
THTR 2230, Faculty Mentor: Blayn Lemke
William Shakespeare's texts have remained relevant over hundreds of years due to their ability to connect to the human condition and offer an unvarnished view of fundamental human interaction. In Much Ado About Nothing, it is clear that gossip and rumors are a relevant topic across boundaries of time and location, as these themes are represented in a manner which is still chilling today. One of Shakespeare's most acclaimed comedies, Much Ado has several important instances of gossip. First, Don Pedro (the prince) and his soon-to-be-wed friends Hero and Claudio scheme to trick two rivals, Benedick and Beatrice, into falling in love. Meanwhile, the prince's bastard brother, Don John, schemes to ruin Hero and Claudio's wedding by convincing the world that Hero cheated on Claudio. To truly understand the significance of these events, we investigated how deeply gossip is embedded in human interaction. In this essay, we discuss where gossip originated, its history throughout civilization, and the meaning of the word gossip, all through the lens of Communication Theory and Psychology. We then examine the Prosocial Perspective and the hypotheses within this theory: the frustration hypothesis, the deterrence hypothesis, and the prosocial hypothesis. Then, the anatomy of a rumor and the miscommunications or misinterpretations of a rumor itself are explored, leading into the psychological theory of communication filters. Concluding this survey of Much Ado About Nothing, wel provide an analysis of the characters' intentions and the outcomes of the different forms of gossip used to influence the action of the play.

3. Axel Kylander: Around a Judgment Day[1]
ENGL 1161, Faculty Mentor: Getchen Marquette
In April of 2017, my mother was diagnosed with a rare, inoperable, and aggressive form of brain cancer. Her diagnosis was a judgment day, ending the old world and ushering in an era of uncertainty. This situation has dominated my thoughts for the last year, and, in essays and poetry, has been my main line of "research" over the course of this semester. If every day is a battle, here I provide only an overview of the war, through memories and vignettes. In this brief collection of thoughts, I reflect on life before and after the judgment day, what has changed and what has been lost, and, stranger still, what remains the same.

4. Wyatt Kerkes: Missing the Process of Mastery[2]
SOC/PSYCH 2260, Faculty Mentor: Karl Wielgus
The process of mastery is a missing puzzle piece in our collective consciousness. Fundamentally it is something quite often overlooked when trying to achieve unique individual human potential. I hope to shed light on the subject matter and give you the viewer a great sense of curious inspiration to strive for the daydream of your life. Using examples from my life research will give you an in depth look at how this process can be utilized for the future of our educational system and individual life potential.

5. Sam Mayes: Wildlife Use of Restored Peatland Habitats in East Central Minnesota[3]
BIOL 2230, Faculty Mentor: Kristen Genet
Wetlands are integral components of ecosystems. Recent studies show that nearly half of global wetlands have been lost; less than 9% of earth's land area remains as wetland. One of the resulting issues is a reduction in wildlife abundance and diversity. This is due to a decrease in native plant diversity that supports many terrestrial species. The overall objective of this study was to determine wildlife use in a partially restored and protected wetland in Blaine, MN. The hypothesis was that restoration of wetlands would increase the diversity of animal species present by providing more suitable habitat conditions. We used camera traps to capture animals in the restored and unrestored areas of the Blaine Wetland Sanctuary. The numbers of species at each location were recorded, and statistical analyses determined if there was a significant difference between the restored and unrestored areas. Although this is just the first phase of a long-term study, preliminary analyses suggest that there are no significant differences between species diversity in restored compared to unrestored wetlands, but does suggest that camera placement is very important in documenting species presence. Of the animals captured, only three species were found in both the restored and unrestored areas whereas several species were found in only one area and not the other. Although there was no difference in the number of species captured, more individuals were captured in the restored wetlands. These results will contribute to a larger database of wildlife use on a broader geographic scale to identify patterns of species diversity and habitat use in remnant and protected habitats of east central Minnesota.

6. Christopher Sherve: Investigating Serum levels in Wild versus Captive Great Plains Grey Wolves from Northern Minnesota [3]
BIOL 2299, Faculty Mentor: Paula Croonquist
Immunoglobulin E (IgE) is critical not only in providing immune protection against parasites but also mediating type I hypersensitivity that results in allergic reactions, asthma and atopic dermatitis. No much is known about IgE serum levels in wolves. One study concluded that Scandinavian wolves have higher levels of IgE than humans and mice presumably due to antigen exposure in the wild. However, Scandinavian wolves have been shown to have very low levels of IgA as opposed to Canadian wolves presumably due to inbreeding due to geographical confinement. In addition, although some non-colonized dogs have significant high levels of IgE, some colonized breeds did also in a report that concluded genetics and not environment is important for IgE production. . We hypothesized that wild Great Plain Gray wolves may produce higher levels of IgE in serum when compared to captive Great Plain Gray wolves presumably due to higher exposure and antigenic challenge. We analyzed serum samples that were collected the United States Geological Survey in collaboration with Dr. Mech and Dr. Barber-Meyer from wild animals in Ely, MN area. We also utilized captive wolf serum samples collected by Field Biology students at the Wildlife Science Center in Wyoming, MN our partnering institution, during their wolf handling experience. We performed enzyme-linked immunosorbent assays (ELISA) to detect IgE levels in three captive and 12 wild wolves. Our data indicates that IgE levels are

significantly higher in wild wolves versus captive wolves. We are particularly interested in this data as previous results indicate that captive wolves with eosinophilic dermatitis (presumably due to Sarcoptes scabiei causing Mange) may have significantly higher levels of IgE when compared to healthy captive animals. We propose to expand this study to a larger sample size and investigate mechanistically this increase in IgE in wild and sick animals as it may provide an early diagnostic tool to prevent full blown parasitic skin infestations in captive wolves.

7. Jordan Hartmark, Emma Luckhardt, Eliana Portlance, David Letellier, Ruta Patel, Nick Ridley, Elijah Muhammad, Richard Ondigi, Anthony Brown: Lynx v. Timberwolves - A coding project of the Star Tribune Sports Section[2]
   MCOM/CMST 1100, Faculty Mentor: Melody Hoffmann
   In this project, three sections of Intro to Mass Comm coded newspaper stories during the Lynx and TImberwolves seasons (July 2017-Feb. 2018). The goal of the research was to find out if the arguments made by Coach Reeve (Lynx) about the Lynx team's inequitable amount of news coverage were supported by data. Students also tracked off-season game coverage, style of photographs, sources used in stories, and the gender of the reporter.

8. Erica Dorough: Food Origins[2]
   POLS 1141, Faculty Mentor: Matt Schuster
   This was a very interesting/eye-opening project for me to find out exactly where the food I consume is coming from. I will definitely be looking at my product packaging a lot closer than I used to and I have made a conscious effort to think about where I am going to purchase my fruits and vegetables, such as visiting my local town farmers market more during the seasonal availability of course and even a local butcher shop as opposed to the local big box warehouse.

Art Exhibitions/Poster Presentations

9. Ruth Baccam: Dramaturgy - Visual Conversations[1]
   ART 2200, Faculty Mentor: Mark Lambert
   Since a young age, I have found myself in between states of vulnerability, restlessness, healing and a spectrum in between them all. They sometimes clash with each other and I am always trying to find an equilibrium for them. With this combination growing up I was tentative to certain details but had a tendency to disassociate with anything else. My attention to detail and personal growth is integrated into how I approach my art. I also use symbolism with the human figure to show emotions that may cross with vulnerability, restlessness, and healing. Other ideas in my personal artwork that I explore revolve around identity, countering society ideology, and diversity. For human figures, I usually choose women. The reason for this is because it is a privilege to represent women in the world and visual art where representation of women has been historically facilitated through men. Along with this privilege as a women I also display women of colour often as a piece of me identifies with. This in hand counters the saturation of bias beauty in the media and a visual conversation of identity and what it includes. These ideas and my approach to detail make my artwork a visual expression of my personal nature.

10. Nikki Remington: My Place, 2018[1]
    ART 2200, Faculty Mentors: Mark Lambert and Rachel Breen
    My artwork conveys my internal struggles and illustrates injustice faced by people throughout society. It is deeply satisfying when people react not only positively to my art but also with empathy, and can relate to the messages presented. Seeing my work resonate with people lets me know I'm not alone in my battles, and that keeps me inspired to continue. I work primarily with paint and mixed drawing media. I'm also an apprentice tattoo artist. I enjoy that through my tattoos my art becomes a physical part of someone else. A bond is created between myself as an artist and the client whose skin becomes permanently embedded with my art. My work revolves around exploring my own sense of identity, the human body, and our connection to the natural world around us. I enjoy manipulating the human figure, combining it with elegant floral imagery, and experimenting with landscape elements. I seek to create a narrative between ourselves and the environment in which we live.

11. Alison Stege: Blown Glass.[1]
ART 2132, Faculty Mentor: Rick Schneider
Many forms of glass are in the display case, fused glass, blown glass and sculpture. I also have an oil painting and a large charcoal drawing located in the art department. (Artist statement)
Growing up I have always loved to be creative. In fifth grade I stumbled upon a video on YouTube of a man blowing glass, instantly I was in love . As time continued I spent most of my free time watching videos online and talking about how all I want to do is learn how to blow glass. It was my 16th birthday and my parents surprised me with a crash course at Foci for the weekend. After the weekend was done I knew that glass blowing is where I belong. I started my freshman year of college in fall of 2016 at Anoka Ramsey in Coon Rapids (Minnesota) where my passion continues to grow. The feeling of happiness I receive when I am creating my work is indescribable. I hope to spread my happiness with the world around me !

12. Ian Davis: Rhyme Scheme - Earl Sweatshirt[1]
MUSC 2202, Faculty Mentor: Melissa Bergstrom
This presentation will cover the strong word play and rhyme scheme of Earl Sweatshirt. His word choices rhyme in such a unique way. He uses each part of the word beginning, middle, and end to make his rhyme work. For example his lines
"Call him bloated 'til he show 'em that the flow deluxe
Off the wall loafers, Four Loko and a cobra clutch
Vocals bold and rough, evoke a ho to pose as drum
And let me hit and beat it with a stick until the hole is numb
The culprit of the potent punch" his main rhyming sound is the "o", which is found in BLOated, fLOW, CObra, VOcals, etc. While his secondary rhyming sound is "i" found in his words: hIt, stIck, untIl, etc. He bounces back an forth between these two rhyming sounds until three fourths of the way through his verse then he reintroduces his rhyming sounds that he used in the beginning of his verse.

13. Alex Guimont: The Plight of the Basses[1]
MUSC 2202, Faculty Mentor: Melissa Bergstrom
I am a Bassist. Being a Bassist today brings along with it certain stigmas and assumptions. Such as that you are playing an easy instrument, a unimportant instrument or even just that you aren't a good musician. Composers and listeners throughout history have believed that low end frequency instruments shouldn't play the melody. They shouldn't be in the forefront. They should be there to support and to fill the gaps while the guitar, violin, or vocalist steals the show. Because of this fewer virtuosic bassist have risen to fame than other musicians. I am researching the virtuosic bass instrument players throughout time and how they have shaped how composers write and how audiences listen to music today.

14. Adam Johnson: Emotionally Charged Sound Through Unconventional Means[1]
MUSC 2202, Faculty Mentor: Melissa Bergstrom
Through the use of modern music software we are able to synthesize sounds that many years ago, seemed unimaginable. The use of sound design to create other worldly sounds, when used correctly, can paint a song with more detailed and vivid colors.
We take a look at a song called Presudeos by Alon Mor, which uses modern production techniques combined with classical scoring to tell a story of a relationship in turmoil. I dive into what gives this piece its character, as well as what modern production techniques give the song deeper emotional content.

15. Maggie Sorenson: Beethoven's Rebellion[1]
MUSC 2202, Faculty Mentor: Melissa Bergstrom
I am going to be showing Beethoven's genius ways of composing and how he was the bridge from 18th-century classicism to 19th-century romanticism. The dawn of a new century was very fitting for this composer and his originality. His cleverness astonished many with his first symphony: breaking all tonality rules, abnormal rhythms and shocking melody lines. It appeared to start in the wrong key, so people thought. But was it? This is the first of Beethoven's many broken rules planted in his 1st Symphony and blossomed in his mature 9th Symphony. In both pieces, uncertain tonality, melody and rhythm play a crucial role in defining Beethoven's rebellious compositional spirit.

16. Emily Starr: It Is Well, Over a Hundred Years [1]
MUSC 2202, Faculty Mentor: Melissa Bergstrom
In our day and age it is rare that anything, whether books, music, or paintings, remain relevant when they are from over 100 years ago. Only do the truly exceptional and beautiful things survive. An example of this started out as a poem written by Horatio Stafford in 1873. This piece of poetry was written after Stafford suffered a great tragedy when he sent his wife and daughters on a trip by ship to England from America after being devastated by the great Chicago fire. The ship that his family was on collided with another vessel and sunk. Soon after he received a telegram from his wife that read, "Saved alone." On his journey to reunite with his wife in England, he passed over the spot where the ship went down and he lost his daughters and he then penned the poem, It Is Well With My Soul. This heartfelt poem was first set to music in 1876 by Philip Bliss as part of a collection of hymns. Out of the book, this particular hymn became very popular and Philip Bliss himself performed it across the United States. More recently however, Matt Redmond, who is a contemporary Christian artist released a song based off of the poem as well. Redmond decided to update the language of the verses so that it could resonate with the younger generation, but he kept the refrain exactly the same as Philip Bliss's hymn. There are many other examples as well but, it is pretty evident that It Is Well With My Soul still has an effect on music today.

17. Elise Williams: What Message Does Modern Day Music Send to Women? [2]
SOC/WOST 1145, Faculty Mentor: Kirsten Olsen
The messages that society sends to women in the media is something that has a large impact on the way women grow up and learn to view themselves. I wanted to analyze whether or not men and women were sending positive or negative messages to their listeners and if themes were more prevalent in female versus male artists. In this research, I am attempting to showcase the amount of subtleties in the media that send small messages to women and impact the way others feel they can treat women, whether the listeners are male or female. I selected the top ten Billboard songs for first week in March, 2018 so I could get an accurate idea of the more recent musical messages. I am hoping to find that we will see more positive than negative messages in modern day popular music. When society begins to realize how many of these themes exist in the media we can work towards respecting our women and girls.

18. Bailey Ellefson: The Effect of State Contraception Policies on Teenage Pregnancy [2]
SOC 1102, Faculty Mentor: Stacey Brumbaugh-Johnson
States vary in their policies and practices pertaining to birth control education and access. Sex education and birth control access for teenagers is highly controversial. Rates of teenage pregnancy vary greatly by state. This study examines teen-parent birth rates and role of state policies and practices pertaining to contraception education and access. Using data from the Census Bureau and state-level websites, I analyze the relationship between state policies and teen birth rates. I hypothesize that greater restrictions on teenage access to birth control results in higher rates of teenage birth.

19. Natalie Juell: Music Messages For LGBTQ+[2]
WOST 1145, Faculty Mentor: Kirsten Olsen
I conducted a small-scale content analysis of music lyrics and its message to the LGBTQ+ community members. I am very passionate of Women and Gender Rights, and I was very compelled to study the messages embedded within the music we listen to everyday. For my methodology I selected ten songs from Billboard's all time Gay Anthems. The years ranged from 2007 to 2017. I was looking for the following themes: Hatred against, Being/Loving Yourself, and Bullying/Derogatory Terms. I found that many artists in my sample would allude to the fact of their support for the LGBTQ+ community members and the countering of bullies through equal hurtful terms. I found that the music industry produces music that they believe will sell. Even though the times call for gender expression and empowerment, we are continuing to hear hurtful ideas and words.

20. Elier Meraz Barrera: Research/ Content Analysis in Lyrics [2]
SOC/WOST 1145, Faculty Mentor: Kirsten Olsen
One topic that is not very common in sociology is the research of misogyny and masculinity problems, along with women's empowerment. For my research i will be comparing and contrasting popular music genres, pop

and trap rap. My central question will be asking which of the two shows signs of misogyny and masculinity problems, and which of the two genres has more redeeming factors with empowerment of women. I will analyze the top 5 songs on both of these genres. Breaking down the lyrics of all ten and making notes and analyzing the significance of the lyrics. I will compare my results, and with my finding I will be able to determine which of the music genres has more misogyny man male centered bias.

21. Samantha Robinson: Song Lyrics Content Analysis Research Project[2]
SOC/WOST 1145, Faculty Mentor: Kirsten Olsen
For my content analysis research project, I took a deeper look into a variety of song lyrics of rock n' roll hits from 1987 to present day. I wanted to see how the portrayals of women have changed since 30 years ago in rock music. I believe the portrayals of women since the late 80's have promoted more positive messages towards women. For my study, I conducted a random sample. I choose 3 songs from each era (1987, 1997, 2007, & 2017). Then I'm going to be analyzing song lyrics to find themes of misogyny, women being sexualized, women being submissive and promiscuous, content about love, and positive messages about women.
I expect to find more positive changes in the content of the songs in my sample.

22. Amanda Baird, Hannah Willi, Ogoma Nwachukwu: Experiments in Ethics - Organize an Activity[2]
PHIL 1110, Faculty Mentor: Monica Janzen
For our Organize an Activity assignment in our Philosophy class, we ended up choosing to help with the remodeling of the cottages at the Anoka State Hospital into a homeless shelter for veterans. After an exchange of emails with the senator in charge of the project, Jim Abeler, we found ourselves there, cleaning, scraping, and painting. We spent about 5 ½ hours helping on a Saturday afternoon and when we left that night, we felt like we really did something that would make a huge difference in someone's life. When talking to the senator earlier in the day, we learned that the veterans take their own lives every day and that providing a home for them quickly was literally saving their lives. While we only came one day, we put all of our effort into working the hours that we were there, making sure that our small part could still make an impact on the lives of the veterans that will be living in that shelter. We were a part of 345 volunteers who spent a total of 56 days preparing this shelter. All those volunteers' work (including ours) added up to an achievable result in the end and the shelter was able to open the first of the cottages on schedule on Friday, December 1st, 2017.

23. Jitendra Balraj: Organize an Activity[2]
PHIL 1110, Faculty Mentor: Monica Janzen
I will be presenting a project my partners and I took part in for into to ethics. The purpose of this project was to organize an activity outside of class, an activity meant to make an impact in the world. My group and I decided to host a volley ball tournament at Anoka Ramsey for a charity of our choosing. The process of setting up a big event with a lot of risks was not easy. But we did successfully host the event and with the money earned (almost 400$) we donated to Leadmn.org an organization that is known for giving out scholarships to students. We decided on that organization because we're also college students and helping other fellow students trying to get an education like us is a worthy cause.

24. Eric Hiel: Extreme Ethics in Action[1]
PHIL 1110, Faculty Mentor: Monica Janzen
I have always had a passion to change the image skateboarders portray through the community. It's important to remember what Gandhi said when it comes to making a difference. "You must be the change you wish to see in the world"-Gandhi. I specifically chose this project because I wanted to help make a difference in the skateboarder image. I started out by creating a group chat on Facebook with 3 friends who also are concerned on this topic. We then figured out a date which worked for all of us. My boss at Dairy Queen was in on this as well. She donated a few trash bags to our activity. I noticed that it takes multiple people to make a difference in some particular cases. This is perfectly fine because more people can reach out to kids that way. What I wanted to do was try to portray the greater good and spread the word to others. There is now a larger group hosted my 3rd lair action sports facility called BOSS squad. (Being Of Service Skaters) Follow them on Instagram to see more. BOSS squad Is a group of skaters who go out to communities and clean parks as well as spread the word to locals all around the cities. This activity exercises many virtuous skills. These skills include

self-discipline, awareness, helpfulness, and much more! I suggest you relate this to your own personal life. Seeing a common problem and acting on it will change the community. This also builds character and virtue and helps accomplish the greater good. Even something as little and spending 5 minutes picking up trash at the park will make a big difference in the long run.

25. Jalwa Khan: Organize an Activity[2]
PHIL 1110, Faculty Mentor: Monica Janzen
For my Organize an Activity, I organized the 1st Annual Masjid Beautification Day in collaboration Mosque's Women Board which included Lubna, Imaan, Jamilah, Flories and Marwa. The purpose of this project was to clean up the MAS Blaine Community Center. The community center had not been cleaned, on a large scale, since its purchase, which was in 2012, and junk items were lying around. The center is a place of worship and as a religious community, it is an important part of the lives of Muslims who live in Blaine. By organizing this project, we hoped to involve the community and instill a sense of responsibility so they would continue to take care of the Masjid. I knew that cleaning the Masjid would showcase our care and the community should be built on care for each other and demonstrating that care. On November 19, 2017, the activity took place from 9:30 to 2:30 which was divided into two shifts. We had about twenty six volunteers show up to help us clean. Originally, we had been planning on cleaning the ground and first floor of the center but it was more than a day's work so we only cleaned the first floor. Everyone was exceptionally happy to have had the opportunity to clean the center and offer a clean space for worshipper and the kids who attended Saturday and Sunday school.

26. Natalie Juell: Alexandra House: Outreach of Love[2]
PHIL 1110, Faculty Mentor: Monica Janzen
For my project, I collected donations for the Alexandra House in Blaine, Minnesota. I am extremely passionate about Women's Rights. I believe we all need to help each other out, no matter in what capacity. I reached out through social media platforms, email, and flyers to get the word out that I was collecting donations. In a span of a month and a half, I collected over 550 items in total. I collected everything from hygiene products to breast milk storage bags to a lion king kids toy set. I am very humbled by the donations made to my project by my peers.

27. Brittanie Fort, McKenna Janudry, Misael Sente-Diaz: Abnormal Exposure to Reactive Oxygen Species Due to a Leaky Gut And Exacerbated by Meis1 Disregulation May Lead to HLHS[3]
BIOL 2299, Faculty Mentor: Paula Croonquist
Hypoplastic left heart syndrome (HLHS) is a complex Congenital Heart Disorder (CHD) that is defined by hypoplasia of the ascending aorta and left ventricle as well as aortic valve defects. A role for Reactive Oxygen Species (ROS) in gastrointestinal-related abnormalities has been established demonstrating that oxidative stress can damage the intestinal barrier, alter its functions and increase intestinal permeability. In large quantities ROS have been linked to damage of oocytes. MEIS1 has been shown to protect hematopoietic stem cells from ROS accumulation as Meis1 conditional knock out mice display significantly higher ROS levels. In addition, a recent study provided evidence for a bigenic cause of HLHS identifying Sap130 and Pcdha9 as required for normal left ventricle and aortic valve formation. Interestingly, ChIP-seq data identified Meis1 as a potential target of Sap130. We propose that exogenous, due to increased intestinal barrier permeability, and endogenous, via Meis1 dysregulation, ROS accumulation directly causes genetic lesions in Sap130 and Pcdha9 respectively. A recently reported Sap130m/m and Pcdha9m/m double mutant mouse model could be crossed to the Meis1-/- knock out mouse and ROS levels measured in single, double and triple mutant embryos. Furthermore, a rescue experiment could involve crossing Sap130, Pcdha9 double mutants with a knock-in Meis1 transgenic mouse to investigate if endogenous ROS levels decrease in the triple mutants. The findings may be significant to potentially treat expecting mothers with antioxidants and similar inhibitors that prevent ROS accumulation and/or counteract its damaging effects.

28. Brandon Beaulieu, Payton Wright: Seasonal Abundance of Bushpigs in Gorongosa National Park[3]
BIOL 1103, Faculty Mentor: Kristen Genet
We will be discussing if bushpigs are found more during the wet season than in dry. We found that they were actually found to be more abundant during the dry season, which came as a surprise to us. We looked deeper

and found out that it was because of their type of diet and the main foods that they eat are found in dry areas. Overall, we thought we would answer a question that posed relevant and useful to those studying in Gorongosa.

29. Hanna Dockter, Donald Maroschek, Lindsay Finnerty, Mathew Johnson: Lion Activity Affected By Seasons in Gorongosa National Park[3]
BIOL 1103, Faculty Mentor: Kristen Genet
In this project we carefully analyzed the trends in Lion activity in accordance to the seasons in Gorongosa National Park, located in Mozambique Africa. Lions are a Keystone Species, meaning that their activity largely impacts other animals throughout the park. When there are large numbers of lions, their prey populations will dramatically decrease, which ultimately decreases the lions population due to their dependent relationship. Our group was drawn to find out what causes lions daily activity because of their significant role in their environment. Our mission was to determine what seasons we should expect to see a large amount of lions, in order to predict the activity of several other species and their behavior. We found that seasons effect lion activity but we also determined that there are several other variables that influence their activity as well.

30. Elijah Muhammad: Bird Abundance in Gorongosa National Park[3]
BIOL 1103, Faculty Mentor: Kristen Genet
My examination and information were particularly focused to answer the inquiry, does the environmental change in particular areas of Gorongosa National Park modify the natural surroundings choices of specific birds, raptors, and ground hornbills? Or do they stay in a specific zone adjusting to the "Dry ,Dry-Wet, Wet and Wet-Dry" seasons? The wonderful winged animals do in fact chose to adjust, picking recognition over relocation modifying their conduct changing nourishment inclinations, shedding and so on which helps them in adjusting to the new condition. Abstaining from relocating the raptors and other birds escape potential fatigue, starvation and additional negative impacts.

31. Elijah Muhammad: Industrial Waste and how it's poisoning the world[3]
BIOL 1103, Faculty Mentor: Kristen Genet
The video will be revolved around describing an approach that would enable the arrangement of a sensible, socially fit, and naturally stable intend to diminish and eliminate "Industrial Waste" in MN. While identifying specific toxic substances and how they are ruinous to the earth and individuals. Included in this short film will be illustrations of non-point source pollutions current policies that are in place and how some companies “skirt” them in order to retain capital at the expense of life itself while focusing on both the issue and potential arrangements that can be enacted to halt the further destruction of all living things.

32. Geraldine Sagbo, Katarina Kraljic, Derrick Knotz: Hippopotamus Habitat Preference in Gorongosa National Park[3]
BIOL 1103, Faculty Mentor: Kristen Genet
Gorongosa National Park is located in South Eastern Africa in the country of Mozambique. Gorongosa was first established as a hunting ground in 1920. Our focal species is the Hippopotamus and the most important aspect for their survival. Trail cameras were used to take snapshots of animals that walk by a motion-detector. The cameras allow researchers and scientists to observe and understand the everyday lives of Gorongosa inhabitants. We will check to see how many each year had been spotted in the areas. Our thesis was supported with this evidence because of the number of hippos seen in this area.

33. Elier Meraz Barrera, Jeff Panora: Seasonal Buffalo Populations in Gorongosa National Park[3]
BIOL 1103, Faculty Mentor: Kristen Genet
Gorongosa National park is located in Mozambique, Africa in the southern end of the East African Rift Valley. The park is home to many animals such as buffalos, lions, elephants, and many other species. The park has also experienced two decades of civil war that ended in 1992, and this war had caused many animal populations to decrease. However, due to large scale conservation efforts the animals population are starting to increase again. The scientists of the Gorongosa National park are tracking the growth of the animals. Now the specific species that we are looking at is the buffalo, which is Africa’s only wild cattle species and is one of

the "Big Five" mammals. The buffalo are dark gray or black to reddish brown, and can be found in the African savannah or tropical forests, and its predators are humans and lion.

34. Sarah Durkot, Abdishakur Farah, Joseph Williams: Analysis of Sexual Dimorphism of Plastron Patterning and Length Along Femoral and Pectoral Sutures of Adult *Chrysemys picta bellii*[3]
BIOL 1107, Faculty Mentor: Kristen Genet
Chrysemys picta bellii, the western painted turtle, is one of four subspecies of painted turtle. Painted turtles are among the most common turtle species in North America with a range extending from southern Canada to northern Mexico. Currently, there has been little empirical research concerning differences between plastron pattern and length in adult male and female painted turtles. This study analyzed the ratio of pectoral-femoral suture width and suture pattern widths to determine whether the differences between sexes are significant. Photographs of turtles from Sunfish Lake and Lochness Lake from 2016 and 2017 were analyzed with image analysis software to measure the pattern and suture lengths on each turtle's plastron. Preliminary data suggests that there is no significant difference in either pectoral-femoral suture width ratio or patterns between males and females of *C.p. bellii*. Further data analysis of a larger and more geographically diverse sample may provide greater insights into the relationship between the sex and suture width of male and female western painted turtle.

35. Emily Hanson, Marina Richter, Katie Gilmer: The Effect of Age on Pattern Distribution and Coloration of the Plastron of *Chrysemys picta bellii*[3]
BIOL 1107, Faculty Mentor: Kristen Genet
Chrysemys picta bellii, the Western Painted Turtle, is one of four subspecies of painted turtles and can be found throughout the Midwest. Members of this subspecies are recognizable by their colorful patterned plastron. Little empirical research has been conducted on the patterns on the plastrons of Western Painted Turtles, and this study has added information to a pioneering area of research. Our study looked at the difference between adult and juvenile turtles concerning pattern area, perimeter to area ratio, and coloration. We measured the plastron and pattern of turtles from two locations, Sunfish Lake and Lochness Lake in Minnesota, using photographs and the image analysis software ImageJ. Data analyses show no significant differences between juveniles and adults in terms of pattern area and red coloration, but does show a significant difference for the pattern perimeter to area ratio. This shows a possible relationship between the development of the turtles and the extent of the patterns.

36. Hope Gapen, Esther Aspling, Differences in Plastron Pattern Areas and Coloration Between Sexes in Adult Western Painted Turtles[3]
BIOL 1107, Faculty Mentor: Kristen Genet
Western Painted Turtles (*Chrysemys picta bellii*) have distinct coloring on their plastron that exhibits a colorful pattern that is unique to each turtle. No current empirical relationships to distinguish sex or age class using pattern or coloration exists. The goal of this study was to identify whether a difference in pattern area or coloration exists between male and female adult turtles. Turtles from Sunfish Lake and Lochness Lake (Anoka County, MN) were captured and photographed between 2016 and 2017. Using imaging analysis software, the plastrons pattern and coloration were measured and analyzed. The results were statistically compared using two sample t-test between the males and females to determine if any significant differences existed between them. Based on similar comparisons in other turtle species a confirmation of the hypothesis was expected. Discovering a difference in pattern area or coloration could possibly lead to the development of a system to determine the sex of juvenile turtles. Such a system would lead to more accurate population studies and management of the species.

37. Vladislav Gladis, Eduard Parrington, Andrew Bluth, Kalid Abdalla: Comparison of Plastron Pattering in *Chrysemys picta bellii* from two Lakes in Anoka County, MN.[3]
BIOL 1107, Faculty Mentor: Kristen Genet
Chrysemys picta bellii, one of four subspecies of the painted turtles, is a very common turtle in the Midwest, and evaluating differences between these turtles' plastrons throughout different locations is important for determining the effect of the environment on physiology. Does the plastron area and perimeter to area ratio differ between Sunfish Lake and Lochness Lake in Anoka County, MN? Turtles were captured, marked, and

photographed from these locations in 2016-2017 and Image J software was used for image analysis of plastron photos. The differences in the pattern area and perimeter to area ratio of the turtles within Sunfish Lake in 2016 was not significant, but may be different compared to Lochness Lake, due to varying environmental factors. This study implies that exposure to different habitat conditions and water chemistry may influence development of pattering and coloration in plastrons of turtles from different sites.

38. Mary Yocum, Diana Abebe, Alina Brooke: The extent of plastron patterning area and length, with relation to overall plastron size between male and female Western Painted Turtles (*Chrysemys picta bellii*)[3] BIOL 1107, Faculty Mentor: Kristen Genet
The Western Painted Turtle, *Chrysemys picta bellii*, has a large area of the plastron covered by patterning, misaligned scutes and lighter colored margins. Sex determination is not possible for painted turtles until they reach sexual maturity, as characteristics used to tell sexes apart are not fully developed. Absolute growth rate differs between males and females of the Western Painted Turtle and shell shape, color patterns, and claw size may be used to determine the sex of a turtle. However, these characteristics can give inconclusive results as variations due to environment can exist. This project will determine whether there is a significant difference in the extent of plastron pattern area and length between adult male and female western painted turtles, and if this difference is significant enough to be used to differentiate sexes. The hypothesis is that there is a difference between sexes of *Chrysemys picta bellii,* due to differing growth rates and sexual characteristics. Image analysis software was used to measure the sizes of the turtles taken from Sunfish and Lochness Lake, including a comparison of plastron and pattern area, and a comparison between the plastron width between set scute pairs and length versus the pattern. Measuring was done on photographs taken in a standard manner in 2016 and 2017. These measurements were compared between male and female adult turtles and significance was determined using a t-test. This is an ongoing study with the results expected to show that the difference in plastron pattern area and width in relation to the plastron can be used to distinguish between sexes.

39. Matthew Ebeling: Wetlands in Your Neighborhood Interpretive Sign[3]
BIOL 1107, Faculty Mentor: Kristen Genet
During the 2017 fall semester, the class of BIOL 1107-01 designed interpretive signs for a Blaine wetland restoration project under the supervision of Dr. Genet. Weekly revisions from peers and Blaine board members served to focus the design and purpose of each sign. The goal of the signs is to educate the public about the Blaine wetland sanctuary and the benefits it provides.

40. Amara Isom Karypis and Rachel Geurts: Upland & Mesic Forest Interpretive Sign for Blaine Wetland Sanctuary[3]
BIOL 1107, Faculty Mentor: Kristen Genet
This Upland and Mesic Forest interpretive trail sign for the Blaine Wetland Sanctuary, is one in a series of signs that will be posted along the trail of the sanctuary. Embedded within the sanctuary's mesic forest, this sign is an essential visual and educational tool. It informs readers about what makes that region of the sanctuary different from the rest and the environmental services it provides. Illustrations point out and magnify the plants, animals and different parts of the forest. Interactive activities encourage visitors to look around and experience the sanctuary. The sign also educates visitors about common misconceptions about the forest, including its fallen and essential logs and fungi. Quick response QR codes are placed within the sign to give visitors additional online information about varying parts of the forest, allowing easy and simply access through your smartphone. Links to sound bites of animals and interesting articles about plant life will be easily visible to those interested in furthering their knowledge. With the support of Blaine, ARCC, the Blaine Wetland Sanctuary and additional partners, a wide range of viewers, from differing ages and backgrounds, have evaluated this and others signs, all with positive responses. This sign and others will connect the citizens of Blaine to their local wetland in a unique and entertaining way.

41. Leah Nelson, Samantha Jamagin: Incubation Periods of Different Breeds of Chickens[3]
BIOL 2206, Faculty Mentor: Joan McKearnan
In our experiment we gathered 16 eggs, four off which were pure bred, and the rest were crossbred. We started the incubator on Friday with the eggs and it is set to automatic rotation at around 100°C. The eggs

should take around twenty-one days to hatch, putting the hatching date around April 20. We will me measure which breeds have the greatest viability and the length of the incubation. Do different breeds of chickens have different hatching rates and incubation periods? Our hypothesis is that the pure breeds will have the greatest viability and shortest incubation period. It helps to know what breeds of chickens have the greatest viability for mass production.

42. Elliott Johnson, Dalton Degler: The Effect of Insect Repellant on Decomposers.[3]
BIOL 2206, Faculty Mentor: Joan McKearnan
A least 2 carcasses are to be placed for decomposition. One will be sprayed with DEET insect repellant and the other untreated. Both carcasses will be observed over multiple days to record the decomposers, if any, that visit each carcass.

43. Brittany Wells, Rachel Geurts: Freshwater Sponge Gemmules[3]
BIOL 2206, Faculty Mentor: Joan McKearnan

44. Eduard Parrington, Matt Ebeling, Soren Flaten: The Effect of Environmental Temperature on Cricket Food Consumption[3]
BIOL 2206, Faculty Mentor: Joan McKearnan
The purpose of this experiment was to determine the effect of environmental temperatures on the amount of food consumed by crickets. By monitoring both temperature and food mass within each test group, the recorded data will be able to determine if temperature impacts food consumption.The hypothesis for this experiment is that warmer temperatures will cause a higher rate of food consumption.

45. Andrew Steward, Taylor Borgman: Testing for Antibiotic Resistant Bacteria in Wolf Fecal Samples[3]
BIOL 2230, Faculty Mentor: Scott Danneman
Wolf packs traveling beyond their primary ranges have required extensive ecological research to conserve their populations, but little research has been conducted on the antibiotic resistant (AR) bacteria they may carry that could cause clinical challenges for these wolves. It was hypothesized that potential contact with humans will influence the amount of AR in wolves. Wolves with little human contact and wild human-associated wolves were predicted to contain minimal AR compared to captive wolves. In this study, fecal samples were collected from wild wolves far from humans and wild wolves closer to humans, and compared to prior analyses of captive wolves. Species will be identified utilizing PCR and morphological tests; samples will be tested for AR using the Kirby-Bauer method.

46. Jacob Soucy, Andrew Hoium, Brittanie Fort, Leah Nelson, Soren Flaten, Austin Rosene: Functional Characterization of CRISPR/Cas9 Treated Human Colon Carcinoma Cells Targeting the CFTR Locus[3]
BIOL 2208, Faculty Mentor: Paula Croonquist
The Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) gene encodes for chloride channel critical for chloride and bicarbonate secretion and fluid balance. Loss of function recessive mutations in this gene are responsible for Cystic Fibrosis, a fatal disease. In addition, low CFTR expression characterizes several types of cancer, in particular nasopharyngeal and intestinal carcinomas. Recently, CFTR has been shown to be a tumor suppressor for intestinal cancer and a prognostic factor for outcome. The aim of this study is to functionally characterize 7 clones derived from the T-84 human colon carcinoma parental cell line, genetically modified utilizing the CRISPR/cas9 system to target the CFTR locus. We hypothesize that loss of function of CFTR promotes highly aggressive phenotypes, increasing cell proliferation, migration and invasion. Upon successful culturing, expanding and maintaining the parental and CRIPR/cas9 treated cell lines, we are in the process of conducting cell viability assays to measure cell proliferation. We predict that CFTR loss is required for increased mitotic rate. Our future studies include transwell migration and scratch assays to measure the migratory and invasive potential respectively of the mutant clones, in addition to RT-PCR and immunofluorescence to validate loss of CFTR transcript and protein expression upon guided RNA targeting via CRISP/cas9 locus targeting. This study may provide insight on the mechanism by which CFTR loss contributes to high metastatic cancer and provide opportunities for treatment of this devastating tumor.

47. Tam P. Nguyen, Anh Huynh: Optimization of factors affecting the production of biodiesel[3]
CHEM 2062, Faculty Mentor: Andrew Aspaas
There are some factors that affect the yield of biodiesel. The purpose of this experiment was to find the factors that affect the archieved yield of biodiesel. The biodiesel was synthesized from camelina oil. The result of the experiment could prove that mass ratio of methanol to oil and reaction time play the most important role to archieve the yields of the biofuel.

48. Shihab Ahmed, Mohammad Younus: Biodiesel Synthesis[3]
CHEM 2062, Faculty Mentor: Andy Aspaas
Biodiesel as the name implies, refers to the long chained fatty acids. Biodiesel is commonly used to fuel diesel engines. These fuels can then be blended with petroleum oil for further usage in various other mechanical engines. Biodiesel serves as an alternative source of energy that is less toxic to the environment as compared to the fossil fuel alternatives. It is helpful in understanding the underlying chemical reactions that lead to the production of biodiesel so new alternative sources can be used. Thus to study the methods of creating biodiesel, a transesterification of camolina oil, corn oil, and waste oil was conducted.

49. Mary Yocum: Synthesis of Biodiesel Fuel from Waste Oil[3]
CHEM 2062, Faculty Mentor: Andrew Aspaas
Diesel is a petroleum-based fuel oil, that has a density of about 18% higher than unleaded gasoline. Diesel has a higher quantity of sulfur than gasoline, which can damage the environment. Lowering the sulfur reduces lubricity of the fuel, requiring added lubricants, such as biodiesel. Biodiesel is the fuel equivalent to diesel produced from chemically processes biological sources, such as vegetable oil, or waste vegetable oil. To produce biodiesel, oil is chemically converted with the use of an acid or base catalyst, and an alcohol. By-products of glycerol and soap are formed, which must be removed from the product before it can be used as fuel. To produce biodiesel in the most efficient way, first the best acid catalyst for the production must be found, the optimal reaction conditions and reactant amounts calculated, and the final product analyzed for purity. By repetition of the experiment, along with slight changes in conditions and NMR analysis, this project will discover an efficient formula for biodiesel synthesis, giving the highest percent conversion into pure product.

50. Jessica Thunder, Krista Olson, Jenna Schulte: Synthesis of Biodiesel[3]
CHEM 2062, Faculty Mentor: Andrew Aspaas & Patty Pieper
Biodiesel is produced by a process known as transesterification. This occurs when glycerin is removed from fatty acids. The products of transesterification are glycerin (soap) and methyl esters (biodiesel). Biodesel production is very important as a replacement energy in diesel engines. One main goal of this experiment was to identify the best conditions to reach optimal biodiesel production.

51. Jennifer McDilda: Base catalyzed biodiesel synthesis vs acid catalyzed reaction, Acid value titrations, and MALDI-MS for pennycress seeds
CHEM 2062, Faculty Mentor: Andrew Aspaas
Our project is based off a group of data that our Lab gathered to get the best %conversion of biodiesel from camelina oil.

52. Rachel Griffith, Ashely Mayer: The Effects of Caffeine on Heart Rate and Blood Pressure Before and After a Workout in Women Ages 20-30.[3]
EXSC 475, Capstone Research (SMSU), Faculty Mentor: Jill Gromberg
The purpose of this study is to determine how caffeine affects heart rate (HR) and blood pressure (BP) after performing a full body strength workout in women ages 20-30 years old. Eight female subjects stratified at low cardiovascular risk participated in three supervised exercise tests. Before each test, participants consumed a specific amount of caffeine; 1) 0 mg., 2) 100 mg., and 3) 200 mg. in a pill form at least 30 minutes before exercise. Prior to the workout, participants relaxed for 5 minutes. Before exercise, HR and BP were measured. Participants then began a 3-minute warm up on the rower. The strength-training program followed. The workout was 3 sets of 10 reps with a 30 second rest between each rep. The training program included four upper body lifts and four lower body lifts. Immediately following the last lift was a passive

(sitting) recovery phase. HR and BP were then assessed. A timer was set for 10 minutes in order to assess HR recovery, which was collected each minute for 10 minutes. Participants completed each test 1 week apart. Results are pending.

53. Amanda Proctor, Larry Robinson, Rumen Hulmequist: The Effect of Different Genres of Music on Heart Rate in Men Before, During and After a Workout[3]
EXSC 475, Capstone Research (SMSU), Faculty Mentor: Jill Gromberg
This study was designed to test how different genres of music effect the heart rates in men before during and after a workout. Our subjects were men between the ages of 18-35 who had a basic to intermediate level of experience with weight training. A 30 minute, prescribed workout was created and executed for four weeks. The workout consisted of a jog/run, bench press, squats, leg raises and finally an overhead shoulder press. Subjects' heart rates were taken five minutes into the jog/run; heart rates were then collected at the end of the weight training component of the workout. Once the workout was completed, heart rates were taken every minute for five minutes and at the ten minute mark. The results are still pending from this study.