

8th ANNUAL

MONTANA STATE UNIVERSITY BILLINGS

**RESEARCH, CREATIVITY, AND
COMMUNITY INVOLVEMENT CELEBRATION**

SPRING 2021



montana state university
BILLINGS

2021 SYMPOSIUM

Due to COVID-19 restrictions, Montana State University Billings will hold its eighth annual Research and Creativity Symposium (RCS) in an online format. Sponsored by the Office of Grants and Sponsored Programs, the University Honors Program, and Montana IDeA Networks of Biomedical Research (INBRE), the symposium provides a great opportunity for undergraduate and graduate students of all majors to present their research and creative scholarship in a public forum.

The calendar below lists names and times for the live WebEx presentations. As some students are not participating live, links to all presentations can be found on our website: msubillings.edu/research

APRIL 16							
12:15	Keynote Speaker Rosalyn LaPier Introduced by Interim Provost Susan Balter-Reitz Symposium Welcome from Chancellor Stefani Hicswa						
1:00	Session 1 - Moderator Dr. Matt Queen						
	<table> <tr> <td>Hayley Blevins: <i>Supported Education in Higher Education</i></td><td>Eriska Fajriyati & Virginia Montague: <i>Characterization of Titin</i></td></tr> <tr> <td>Karrah Peterson: <i>Rate of Plasmid Loss in Recombinant Yeast</i></td><td>April Zimmerman: <i>Survival and Rescue of Apoptotic Induced Cells</i></td></tr> <tr> <td colspan="2">James Unzaga: <i>Investigation of Ligand Lability Using P K-Edge X-Ray Absorption Spectroscopy and Chemical Kinetics</i></td></tr> </table>	Hayley Blevins: <i>Supported Education in Higher Education</i>	Eriska Fajriyati & Virginia Montague: <i>Characterization of Titin</i>	Karrah Peterson: <i>Rate of Plasmid Loss in Recombinant Yeast</i>	April Zimmerman: <i>Survival and Rescue of Apoptotic Induced Cells</i>	James Unzaga: <i>Investigation of Ligand Lability Using P K-Edge X-Ray Absorption Spectroscopy and Chemical Kinetics</i>	
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1:00	Session 2 - Moderator Dean Tami Haaland						
	Daniel Lurie, Chase Johnson, Morgan Syring, Charles Martin, Sullivan Huebner, Jason Calvin, Brie Barron, Megan Westlake, Haleigh Rawden, and Cole Stewart <i>A Stranger Place: A Series of Readings</i>						
1:00	Session 3 - Moderator Dr. Jana Marcette						
	<table> <tr> <td>Minnie Bell: <i>A Musical Analysis of Heart and The Judds</i></td><td>Shaylyn Dilley: <i>Sustainability Perspectives among Montana State University Billings Students</i></td></tr> <tr> <td>Lauryn Tecca: <i>A Crisis Like Never Before: The Economic and Ideological Divide of the Colonists and Britain, 1763-1769</i></td><td>Jessica Tiry: <i>"Idiots and Distracted Persons:" Shifting Views on Mental Health in Eighteenth Century Colonial America</i></td></tr> </table>	Minnie Bell: <i>A Musical Analysis of Heart and The Judds</i>	Shaylyn Dilley: <i>Sustainability Perspectives among Montana State University Billings Students</i>	Lauryn Tecca: <i>A Crisis Like Never Before: The Economic and Ideological Divide of the Colonists and Britain, 1763-1769</i>	Jessica Tiry: <i>"Idiots and Distracted Persons:" Shifting Views on Mental Health in Eighteenth Century Colonial America</i>		
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3:00	Awards and Closing Remarks by Dean Kurt Toenjes						

KEYNOTE SPEAKER

Dr. Rosalyn LaPier

Ethnobotanist

Dr. Rosalyn LaPier is a traditionally trained ethnobotanist who works within Indigenous communities to revitalize Indigenous & traditional ecological knowledge (TEK), to address environmental justice and the climate crisis, and to strengthen public policy for Indigenous languages. She has written two award-winning books, two Blackfeet language lexicons, and dozens of articles and commentaries. Her writing has appeared in *The Conversation*, *High Country News*, *The Montana Naturalist*, *Washington Post*, among others. Dr. LaPier is currently an Associate Professor of Environmental Studies at the University of Montana and a Research Associate at the National Museum of Natural History, Smithsonian Institution.

Keynote Address: Why Write?

Indigenous people often emphasize that we come from oral traditions and ways of knowing. We argue that Indigenous peoples developed complex oral traditions to transmit history, science, religion, and environmental knowledge. And that writing in English is a colonial imposition. However, I believe that writing can be “reinventing the enemy’s language” and breathing new life into and perpetuating long told, yet unwritten stories. In this presentation I plan to discuss why sharing and writing our stories is necessary.

THANK YOU

TO ALL FACULTY WITH STUDENT PARTICIPANTS

Dr. Emily Arendt
Dr. Tien Chih
Dr. Corinne Day
Dr. Lynn George
Dr. Susan Gilbertz
Dean Tami Haaland
Dr. Ambrin Masood

Dr. Matt McMullen
Vanessa McNeill
Dr. Paul Nash
Dr. Mara Pierce
Dr. Matt Queen
Dr. Bernard Quetchenbach
Dr. Alex Shafer
Christine Whitlatch

Research Abstracts

Cost of Not Going to College

Student Researcher: Calliana Bagnell

Faculty Mentor: Dr. Matthew McMullen

Degree: B.S. Psychology

How much does having a college education affect your life? In a growing world the cost of living is increasing, making it more difficult for someone to support themselves or a family. In order to be able to live happily you must have a job that can support your kind of lifestyle. This is why the costs of not going to college are rising. The benefits of receiving an education outweigh the financial burden some may be placed under in order to receive this degree. This study includes millennials ages 25-32, and their education level, whether that is a college graduate, those with a high school diploma, or a less formal form of schooling. The researcher will report on the unemployment rates, annual earnings, share of those living in poverty, and job satisfaction in comparison to the participants' education levels. The researcher hypothesizes that job satisfaction, and annual earnings will be lower but unemployment rates and poverty will be higher if they have not received some type of college degree. The higher their degree is the more stable the participants will appear. These assessments will be found using the Pew Research Center Survey that was previously completed by 2,002 adults.

Generations and Sustainability

Student Researcher: Claire Bagnell

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.A. English

Sustainability no longer remains just a hot topic of discussion, but instead an issue for upcoming generations to solve. Sustainability can be broken down into three smaller categories: economic, environmental, and social. All three pillars of sustainability need to be laced together in a manner understandable and implementable for the public in order to activate a desire for change. Investigating knowledge, beliefs, and actions of the public is a crucial step in understanding why and how sustainability issues can move to center stage as a time crucial obstacle. A key generation to first investigate are college students, who will soon have the power in their hands to implement change to restore a healthy environment. Critical relationships analyzed in the study conducted are between political affiliation and concern about climate, knowledge of sustainability and the environment in relation to efficacy, and a belief in God's plan versus concern of environmental issues. Due to the small nature of the sample, no clear conclusions can be made in favor of the hypotheses in debate. Although our survey results were inconclusive, larger surveys of this type are need in order to produce results.

Communities Big and Small

Student Researcher: Madison Batey

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.A. History Teaching Option

Sustainability of the Yellowstone River is a topic not many individuals know about. Understanding what sustainability is and how a community or an individual can promote sustainability is crucial to the state of well-being of the world. As the years go on, the Yellowstone River gets less sustainable. Not only is the river in deteriorating health, the valley itself is also being affected. Farms and ranches that lie along parts of the river are unable to utilize parts of the river due to oil spills and other disasters. As the results will show, the size of a community that the participant is from does not influence the knowledge of sustainability. While researching the topic of staff and student initiatives, there is evidence that workers and students are not being taught about sustainability and its effect on Earth and on our future population.

A Musical Analysis of Heart and The Judds

Student Researcher: Minnie Bell

Faculty Mentor: Dr. Matthew McMullen

Degree: M.S. Psychology

Background: The broad vocal ranges of Ann Wilson of Heart and Wynonna Judd led me to want to pursue a life on stage, leading a country or a rock-n-roll band. Aim: To determine what about these two musical styles affected my musical style. Approach: By researching the vocal and musical styles of these two performing artists, I will determine which one has had the most influence on me personally. Results: The results of this study are still being conducted but will show a comparison between Ann Wilson and Wynonna Judd including what keys they prefer to sing in, how many octaves they can sing, the tempo of songs, the danceability of songs, the liveness of songs, and the valence of songs. Conclusion: The conclusion of this analysis should help me to determine which artist had the most influence over my musical style.

Comparing Internet Searches for “Election Fraud” During Election Years

Student Researcher: Nicole Bernard

Faculty Mentor: Dr. Matthew McMullen

Degree: B.S. Psychology

Election fraud became a popular topic surrounding the 2020 Presidential Election. The purpose of this project is to compare Google searches in the U.S. for “election fraud” during the past four election years and the years surrounding them. Also, which states Googled “election fraud” the most will be analyzed. Results were found using RStudio and the package “trendy” and were displayed using graphs. The results show that searches for “election fraud” peaked late in election years and increased over time. Not surprisingly, 2020 yielded the most searches for “election fraud.”

Supported Education in Higher Education

Student Researcher: Hayley Blevins

Faculty Mentor: Dr. Ambrin Masood

Degree: M.S. Rehabilitation and Mental Health Counseling

Supported Education is a method utilized to assist individuals living with a mental illness become successful in obtaining educational goals. This method is commonly associated with the process of psychiatric rehabilitation, which is used by a wide variety of clients to complete a range of goals, whereas supported education has a narrower set of clients, specifically those who have higher education goals. These programs are typically located on college campuses due to most psychiatric disabilities appearing in late adolescence or early adulthood, which disrupts their education. This paper will focus on what supported education is, the benefits and disadvantages of this method, current research and findings related to this method, and how these programs can be successful in the future. The goal is to determine if supported education is needed on college campuses, and if it is helpful for students who struggle with a diagnosed mental illness.

Dating Satisfaction Relation to Online Dating Platforms

Student Researcher: Alexandra Bloyder

Faculty Mentor: Dr. Matthew McMullen

Degree: B.A. Communication, B.A. Media Studies

This research project addresses the following question: Have online dating platforms impacted the dissatisfaction of dating in the past decade? This project will compare and contrast the findings of two Pew Research projects conducted in the past year to determine the correlation of online dating and overall relational satisfaction. The first article, written by Anna Brown, examines the satisfaction of American adult relationships and factors that influence satisfaction. The second article, by Monica Anderson, Emily A. Vogels and Erica Turner, identifies the demographics of American adult online dating use and the experiences of users. Following the individual analysis of each article, a comparison and contrast will be done to identify the correlation between online dating and overall satisfaction of American adult relationships. The hypothesis of this project infers that use of online dating platforms does not directly correlate to dating dissatisfaction.

The Impact of the Covid-19 Pandemic on Mental Health

Student Researcher: Rylee Clark

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

The Covid-19 pandemic has affected many people's mental health and has created new obstacles for people who were previously dealing with mental health issues. In fact, the Kaiser Family Foundation (KFF) conducted a study in spring 2020 which showed 45% of adults in the United States have been negatively impacted due to anxiety and stress during the pandemic. In addition, recent studies regarding the impact of the pandemic on mental health show high rates of anxiety (6.33% to 50.9%) and depression (14.6% to 48.3%). The purpose of this study is to determine what factors related to mental health during

the Covid-19 pandemic, specifically on people's anxiety and depression. To conduct this study, I will ask participants to fill out an anxiety and depression scale. In addition, I will ask questions related to factors that were associated with heightened anxiety and depression during the past year, such as issues with money, family, school, work, etc. After I gather the data, I will use RStudio to analyze the data and present the results by using the appropriate statistics and graphs to show the relationship between mental health and the Covid-19 pandemic.

Sustainability in Higher Education

Student Researcher: Madison Coffey

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S. Healthcare Administration

This project investigates the idea of sustainability and how much students in higher education know and practice the basics of sustainability. Sustainable business strategy is the integration of economic, environmental, and social aims into a firm's goals, activities, and planning, with the aim of creating long-term value for the firm, its stakeholders, and the wider society. This means that strategy is formulated and executed so that the needs of the firm and its stakeholders are met today, while protecting, sustaining, and enhancing the natural and resources that will be needed in the future.

Sustainability Perspectives Among Montana State University Billings Students

Student Researcher: Shaylyn Dilley

Faculty Mentor: Dr. Susan Gilbertz

Degree Program: B.S. Health and Human Performance

The Honors Inquiry and Research class at Montana State University Billings set out to conduct a survey about sustainability amongst their fellow peers. The goal of this survey was to determine the knowledge and efficacy of students and to see if there were any trends or developments. Some of the trends examined were between political parties, knowledge and efficacy relationship, and gender. It was determined that Democrats were significantly more worried about climate change than Republicans and as an overall group they cared and knew more about sustainability. The hypothesis that higher knowledge means a higher efficacy was also proven correct. On average if respondents knew more about sustainability they also cared more. The next major category was gender trends between males and females. It was shown that not one gender knew more about sustainability. The gender-based knowledge data came out relatively evenly making it difficult to decipher if one gender was more knowledgeable. However, when it came to caring about sustainability there was a significant difference. Women cared much more about sustainability and sustainability issues than men. These trends provide a perspective about what the next generation feels about sustainability.

Characterization of Titin

Student Researcher: Eriska Fajriyati

Faculty Mentor: Dr. Lynn George

Degree Program: B.S. Biology

Amyotrophic lateral sclerosis (ALS) is a devastating neurodegenerative disease that kills motor neurons in the cortex, brainstem, and spinal cord, leading to nervous system shutdown and muscle atrophy in patients. There are currently no effective therapeutics for treating the disease and patients typically die within three years of diagnosis. Studies have shown that ALS progression correlates with diminishing levels of a giant protein called titin. A function for titin (TTN), the largest protein in the human proteome, has been well characterized in muscle cells. Similar to a spring, TTN provides elasticity to muscle tissue. Since ALS is actually a disease of neurons, with its effects on muscle occurring as a secondary effect of motor neuron loss, we wondered whether TTN might actually be expressed in the neuron itself, as well as within the muscle sarcomere. This could potentially better explain the connection between disease severity and low levels of TTN. To pursue this question, we used a procedure called immunohistochemistry that uses conjugated fluorescent antibodies to specifically label proteins of interest within tissue. Using this technique, we observed robust expression of titin within the nucleolus of motor neurons and other neuronal subtypes. The nucleolus is a membraneless compartment within the cell nucleus that functions in ribosome biogenesis. Since RNA is a primary structural component of the ribosome, we next analyzed TTN's structural motifs and discovered that it houses hundreds of RNA binding domains. Based on these findings we hypothesize that titin functions in neuron ribosome biogenesis. As one of the largest and most dynamic cell types in the human body, neurons are particularly dependent on ribosomes and efficient protein synthesis. Our lab's work is the first to document the expression of titin in the mammalian nucleolus. Given the important connection between TTN protein levels and ALS progression, our findings may help to better understand the molecular mechanisms that go awry to precipitate this fatal disease and open new avenues for drug discovery.

2020 College Assistant Football Coach Salary Reduction due to Coronavirus Pandemic

Student Researcher: Ally Findlay

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

The Coronavirus pandemic has affected all levels of sports. The purpose of this analysis was to uncover how the coronavirus pandemic affected NCAA college football assistant coaches' salaries in 2020. The data used in this analysis was acquired from the *USTODAYSports* annual survey of FBS assistant coaches' pay. This analysis examines and compares what schools, conferences, and coaches took the greatest pay reduction as a result of the pandemic. This analysis also evaluated which assistant coaches made the most money and what conference they were from. This data was then later used to determine which conference pays their assistant coaches the most on average.

Mathematics for Social Justice

Student Researcher: Elizabeth Fisher

Faculty Mentor: Dr. Corinne Day

Degree Program: B.S.E.D. Elementary Education

This research project shares findings from my study of Social Justice Mathematics (SJM), which is mathematics that focuses on promoting equity within the mathematics classroom, but also on empowering students to understand and confront inequities outside the classroom. As part of my project, I created my own SJM lesson featuring Indian Education for All. In this lesson, students will learn through math that there is something happening on the reservations that is causing them to have higher rates of COVID cases and subsequently more deaths. In this lesson, students will calculate the percentages of current COVID cases for each demographic population in Montana and analyze data and identify discrepancies in COVID rates among ethnic groups. This lesson helps students start conversations about why this is occurring, how federal policy affects life on American Indian Reservations, and discuss what they can do to try to help change this.

Exploring Sustainability & Efficacy

Student Researcher: Brie Frazier

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S. Health and Human Performance

The research includes data about sustainability as it relates to future generations. Sustainability can be separated into three main categories, or “pillars”, including environmental, economic, and social factors. The issue of sustainability has been a main topic of study in recent years, and the burden has been placed on current generations to find a solution, especially regarding environmental aspects of sustainability. With this in mind, data from a survey administered to Montana State University Billings students of higher education exploring efficacy, general knowledge of sustainability, and personal demographics are also presented within the article, as subjects are part of the generation tasked with facing the issue of sustainability head on. Conclusions and comparisons such as the relationship between political/religious affiliations and efficacy and knowledge of sustainability are formulated based on research results.

Americans' Views on Helicopter Parenting

Student Researcher: Emily Gaines

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

The findings of this research project will address the follow questions: How does helicopter parenting affect young adults? What are Americans' views on helicopter parenting? A Pew Research team collected data from a variety of young adults aged 18 to 29 to understand reasons for financial dependence or general dependence on parents as well as opinions on the topic. An online survey of 9,834 adults and a telephone survey of 1,1015 adults were conducted in 2019 to gather a multitude of answers on helicopter parenting. According to the Pew Research Center study 64% of Americans think young adults should be financially independent by the time they reach 22 years old. An analysis of census bureau data from 2018 found that 24% of young adults were financially independent by age 22 or younger. This is compared with 32% of young adults being financially independent at 22 or younger in 1980. According to Pew

Research Center's surveys, 45% of adults ages 18 to 29 say that they have received a lot or some financial help from their parents. However, 59% of the parents of these young adults say that they have given their kids a lot or at least some financial help. The majority of Americans say that parents in general do too much for their young adult children. This generally refers to financial help, solving problems for their children, and letting them live with them.

Relationship between Language Patterns and Antisocial Personality Disorder

Student Researcher: Kiah Goettlich

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

Background: Presently the diagnosis of personality disorders, particularly those that are concerned with manipulative traits such as those associated with Antisocial Personality Disorder, are extremely time consuming and variable from clinician to clinician. With the rise of social media platforms personal writings over time have become more widely available. If a new system of analysis were to be utilized as a way to help clinical assessments it could significantly reduce the time invested as well as the reliability of the data. **Aim:** This study was meant to investigate whether there are quantitative differences in language patterns of those identified with a personality disorder (through the use of the MCMI-III) and those without. **Approach:** Deidentified transcripts of the Adult Attachment Interview were formatted so that text-analysis could be run using the R-studio (Version 1.4.1103) software. The transcripts that were identified as persons with the disorder were randomly paired with those that were identified as not having the disorder. The content analysis included the complexity of the text through the use of each group's lexical diversity, lexical density, and word count. Sentiment analysis was run which assessed not only the number of positive words versus negative but also the most common words under each of those sentiments. Similarly, overarching themes can be seen when the most frequently used words of each condition are compared by themselves and then in pairs (using the bigrams data frame). **Results:** Based on previous research in this area, it was expected that those with the personality disorder would show themes that are more negative in nature (e.g., aggression, fear, etc.). When the sentiment analysis was run there were differences in common words based on sentiment. However, there were not significant differences when the analyses for the texts complexity were compared.

Sustainability Knowledge Based on College Class Rank

Student Researcher: Jordyn Haemmerle

Faculty Mentor: Dr. Susan Gilbertz

Degree: A.A./A.S. Pre-Nursing

This research discusses the central question of sustainability, which is: can we meet our current needs without compromising the ability of future generations to meet their needs? A phone survey about sustainability was conducted. The findings in this paper will show results based on college class rank, grouped into non-students, freshman, sophomore, and junior, senior, graduate student. As well as the participants thoughts on how to live a life that will benefit future generations. The findings of this research will exhibit the ways that current generations practice sustainability, and their knowledge on the topic. The research also compares political affiliation and worry over climate change, as well as greater critical sustainability knowledge correlate with greater personal efficacy of the participants.

Measurement of Bilateral Transfer in a Lab Setting to Predict Success in a Sport Setting

Student Researcher: Jordan Holm

Faculty Mentor: Dr. Alex Shafer

Degree Program: B.S. Health and Human Performance

Introduction: Bilateral transfer has been proven to improve or help develop motor skills during numerous fine motor tasks. Bilateral transfer is effective in teaching fine motor control in young individuals and in rehabilitation settings. Current research has not examined the correlation of bilateral transfer between these controlled settings and a sport training setting. **Purpose:** The Purpose of the present study is to determine if a significantly positive correlation exists between bilateral transfer observed in a laboratory setting and a sport-specific setting. **Methods:** A total of 13 participants between the ages of 18-55 were chosen for this study. Each participant completed Laboratory and sport task with both their preferred and non-preferred hand. Mirror tracing was chosen to represent the lab task and serving table tennis balls represented the sport task. Pre and post tests were completed along with 5 practice trials in between the two test trials. Scores were calculated for each trial for each task and percent improvement was calculated using the following equation $(\text{posttest score} - \text{pretest score}) / \text{posttest score}$. A Pearson r was used to calculate the correlation of transfer between the two tasks. **Results:** No significant correlation existed between the two tasks ($r = .25$, $p = .062$). However, transfer did occur during both tasks, although the table tennis task showed mixed results on the level of transfer that occurred for each participant. **Conclusion:** Laboratory and sport settings that use bilateral transfer as a training strategy are not significantly correlated. Future research should be done to further explore any potential correlation that exists between sport and laboratory settings that examine similar skills. Future research should also address sports and activities that involve more gross motor movement control.

Introduction to Intersex and Intersexuality

Student Researcher: Seth Richard Hostman

Faculty Mentor: Vanessa McNeill

Degree Program: B.S. Psychology

There is an extraordinarily special moment in life for many couples--the magical day when they welcome a newborn child into the world. Everyone is excited for the pink or blue, male or female baby that is being brought into this world. Naturally, people try to prepare for these moments. They set up a nursery, stockpile diapers, and begin to buy clothes and other items so they can be ready for the child about to be. While this would ideally be straightforward thinking and acting for new parents it is not always this simple. Picture the parents prepared and anxious for the news--they are having a boy, or they are having a girl. However, no one can truly prepare themselves for the news that their child is neither male nor female, but that the newborn infant is intersexed. Another term used today to understand the complexity of this situation is to describe this as someone born with ambiguous genitalia. However, this term still does not fully explain the infrequent situation where this occurs. There are several components that must first be examined in order to understand the terms intersex and intersexuality.

Superior Sustainability in Higher Education

Student Researcher: Morgan Hubbard

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.A. Organizational Communication

This paper investigates areas of sustainability in Montana's university students. Background knowledge in sustainability to rural Montana areas is presented. A survey instrument was used to gain insight into the behaviors, knowledge, and personal philosophies about sustainability in college students. Regarding political affiliation, no major party stood as an outlier in sustainability behaviors. Those who classify as "other" were the most concerned with sustainability practices. In concern of knowledge about sustainability, participants averaged a low score that correlated mainly with low efficacy. Males and females had been predicted to have very different views on sustainability practices. Findings in the participant group found no significant difference between the two sexes. Philosophies of sustainability presented a great contrast. Two participants in the survey had very unexpected results. Many participants are hopeful and willing to leave behind a world of opportunity for future generations. Our findings support many personas who are undereducated about sustainability, have low sustainable efficacy (behaviors), and have varying personal philosophies about sustainability. Political affiliation and gender have been found to have predicted impacts on the findings of our research.

Homelessness in America

Student Researcher: Kinsey Irvin

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

Homelessness is an area of concern all over the world. The United States of America is ranked number ten on the chart of countries with the highest homeless population. The purpose of this project is to extend the viewer's knowledge on the topic of homelessness, specifically in America. It is reported that there has been a significant decrease in the homeless population in America from 2007 to 2015. It would be expected in further research that those numbers will continue to decrease until present day as well as decrease in the future years. This is predicted to be true because there is a significant amount of evidence and research done on the homeless population as to why the numbers are decreasing. This research can be found on numerous sites. The context of the research that will be done on this project extends from the number of homeless individuals by State, to the characteristics and demographics of homeless people, to the number of homeless families with children and the unaccompanied homeless youth. The research is illustrated by statistics, graphs and maps. The average homeless family household group is three. It is predicted that there are more families that are not accompanied by children than there are with. That being said, it is predicted that those families with children are more likely to seek shelter than those without. The results of this research will be presented in the final poster.

Sustainability and Climate Change Knowledge

Student Researcher: Justine Jenkins

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.A. Art

The article focuses on the evaluation of current students at MSUB who were surveyed on their knowledge of sustainability and climate change. The surveyors also observed how the current students answered a philosophical question about describing their part in contributing sustainability to future generations. The sustainability can be achieved environmentally, socially, or economically. The MSUB students are an excellent resource to get a glimpse into the society to see how the newer generations of adults are thinking about the future of sustainability.

Changes in Grip Strength Following Carpal Tunnel Release Surgery

Student Researcher: Jordan Keller

Faculty Mentor: Dr. Alex Shafer

Degree Program: B.S. Health and Human Performance

It is currently estimated that there are more than eight million people affected by carpal tunnel syndrome every year. A surgical procedure that is done for carpal tunnel syndrome is currently the second most common type of musculoskeletal surgery in the United States with more than two-hundred and thirty cases procedures performed every year (Carpal-Tunnel.net, 2018). The purpose of these surgeries is to stop the progression of paresthesia to the hand and upper extremity. Carpal tunnel surgery is not a cure-all, but it can provide a better quality of life for the patient. Risks and side effects of this common surgery are limited, but permanent change can take place due to the physiological change of the wrist. When the transverse carpal ligament is transected on during surgery in order to relieve pressure off of the median nerve, it has been theorized that up to 20% in grip strength is lost due to the loss of mechanical advantage. The transverse carpal ligament acts as a pulley in the wrist to then apply a greater force when a grip is applied. Purpose: The purpose of the study is to determine how much grip strength is lost on patients that underwent a carpal tunnel surgery after an eight-week period. Methods: Participants in the study will be the selected voluntarily having already completed a carpal tunnel release surgery. Patients will have to be prior than eight weeks post-op so that proper scheduling and data collection can take place. Patients before surgery will have already completed a grip, pinch, and sensory test by the occupational therapist in the clinic. This is a standard protocol before carpal tunnel surgeries are prescribed to the patients. After the grip strength is collected at the patients' eight-week post-op appointment, the grip strength will be recorded compared to the pre-op grip strength data.

Sustainability in the Yellowstone River Valley

Student Researcher: Amanda King

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S. Psychology

The Yellowstone River Valley is a part of our home. However, we have not been treating it as such. Sustainability should be a more discussed topic here because it is something we as MSUB students and

Montanans impact. It is crucial we act now on the issues at hand because most of the damages done will be irreversible. This project outlines what we have done and what is still unfinished business. Taking the initiative to make a change is essential to our well-being moving forward.

Relationship between Mental and Physical Health

Student Researcher: Alicia Miller

Faculty Mentor: Dr. Matt McMullen

Degree Program: B.S. Psychology

This study evaluates the relationship between depression and exercise and the relationship between depression and nutrition. The question that is to be answered is whether exercise and poor nutrition contribute to the severity of depression, possibly resulting in identifying them as effective treatments. A meta-analysis published in 2017 evaluated 997 participants that used exercise as a treatment for depression and showed positive results. The researchers also saw positive results when combining medication with psychological interventions. Another study that focused on the role nutrition has on depression showed that certain components in food, such as low folate and B12 levels, have been associated with depression. The motives for this study stem from the curiosity of whether there are holistic approaches, including exercise and proper nutrition, that may decrease the negative symptoms of depression. To gather data for the study, a survey using Beck's Depression Test and a modified version of the Oregon State University Nutrition and Health Information Questionnaire was administered to fifty-seven participants. From the survey data, days active, the number of times per week participants at fast food, and participants' body satisfaction were compared to levels of depression. Body satisfaction was also compared with how many times per week the participants were active. It was hypothesized that individuals who exercise consistently would have lower depression scores than those who do not and that the more participants eat fast food the higher their depression scores would be. It was also hypothesized that individuals who have low body satisfaction will have higher depression scores and individuals with low body satisfaction will spend more days active than those who have high body satisfaction. The results supported the following hypothesis: individuals who exercise consistently had lower depression scores ($p < .05$), participants who eat less fast food have a lower depression score ($p = .05$), and participants with low body satisfaction had higher depression scores ($p < .05$). The hypothesis that stated participants with low body satisfaction would have more days active than those with high body satisfaction was rejected, and the opposite was shown. Individuals with high body satisfaction had more days active.

Characterization of Titin

Student Researcher: Virginia Montague

Faculty Mentor: Dr. Lynn George

Degree Program: General Studies

Amyotrophic lateral sclerosis (ALS) is a devastating neurodegenerative disease that kills motor neurons in the cortex, brainstem, and spinal cord, leading to nervous system shutdown and muscle atrophy in patients. There are currently no effective therapeutics for treating the disease and patients typically die within three years of diagnosis. Studies have shown that ALS progression correlates with diminishing levels of a giant protein called titin. A function for titin (TTN), the largest protein in the human proteome, has been well characterized in muscle cells. Similar to a spring, TTN provides elasticity to muscle tissue. Since ALS is actually a disease of neurons, with its effects on muscle occurring as a secondary effect of

motor neuron loss, we wondered whether TTN might actually be expressed in the neuron itself, as well as within the muscle sarcomere. This could potentially better explain the connection between disease severity and low levels of TTN. To pursue this question, we used a procedure called immunohistochemistry that uses conjugated fluorescent antibodies to specifically label proteins of interest within tissue. Using this technique, we observed robust expression of titin within the nucleolus of motor neurons and other neuronal subtypes. The nucleolus is a membraneless compartment within the cell nucleus that functions in ribosome biogenesis. Since RNA is a primary structural component of the ribosome, we next analyzed TTN's structural motifs and discovered that it houses hundreds of RNA binding domains. Based on these findings we hypothesize that titin functions in neuron ribosome biogenesis. As one of the largest and most dynamic cell types in the human body, neurons are particularly dependent on ribosomes and efficient protein synthesis. Our lab's work is the first to document the expression of titin in the mammalian nucleolus. Given the important connection between TTN protein levels and ALS progression, our findings may help to better understand the molecular mechanisms that go awry to precipitate this fatal disease and open new avenues for drug discovery.

College Sports Financing

Student Researcher: Skylar Patton

Faculty Mentor: Dr. Matthew McMullen

Degree Program: B.S. Psychology

College sports get their money from various sources such as ticket sales, fundraising, endorsements, and many more. The NCAA releases expenditures and revenue for each sport to be analyzed. I hypothesize that men's football makes the most money and spends the most on their department and players. Since football requires many more players than other sports, they probably spend the most on scholarships compared to other sports. I also expect that men's sports will receive more money than women's sports considering the increase in views among men's sports compared to women's. The findings of this data will be analyzed and displayed on a poster that clearly shows the results.

Effects of a Six-Week Combination Resistance Training Program in High School Athletes

Student Researcher: Bryce Peterson

Faculty Mentor: Dr. Alex Shafer

Degree Program: B.S. Health and Human Performance

INTRODUCTION: Weight training in adolescents has become significantly more accepted than it previously has been. While it is deemed safe and often encouraged, the most efficient strength training method for the use of high school athletes is still relatively unproven. Whether it is lack of knowledge or evidence, high school strength coaches often implement inefficient methods of strength training that have poor carry over to athletic performance. **PURPOSE:** To determine whether traditional single-joint strength training (TRT) or Olympic training proves to be more effective when used in combination with a powerlifting program. It is hypothesized that the combination of Olympic and powerlifting will result in the greatest amount of improvement in the athletic parameters measured. **METHODS:** Twenty high school athletes enrolled in a Strength and Conditioning class at Huntley Project High School will be recruited to participate in this study. Potential participants will be screened for inclusion/exclusion criteria prior to participation. There will be two groups in this study. Half will be randomly assigned to a

Traditional resistance training group (TRT), and the other half will be assigned to the Olympic lifting group (OL). Students enrolled in a Strength and Conditioning class will already be familiar with all lifts that will be asked of them, and they both will be receiving the same base powerlifting (PL) workouts that the additional training (TRT vs OL) will complement. The supplemental TRT or OL workouts will be completed twice a week, depending on the assigned group. Each student will be tested for athleticism and strength by completing tests in 1-RM back squat, 40-yard dash, vertical jump height, and broad jump distance at the beginning and end of the six-week training program. **EXPECTED RESULTS:** Participants characteristics of age and sex will be reported. Strength and athleticism scores will be compared between participants of the two groups to determine gains in these areas due to training style using independent t-tests. The results that stem from this research can help increase the efficiency at which high school students train in the pursuit of becoming better athletes. Because of time restrictions, competition demands, and possible collegiate athletic opportunities, finding the right strength training program has many positive benefits for athletes and their coaches.

Rate of Plasmid Loss in Recombinant Yeast

Student Researcher: Karrah Peterson

Faculty Mentor: Dr. Paul Nash

Degree Program: B.S. Biology

Recombinant vaccines can be made in yeast and an understanding of plasmid retention in yeast in non-selective media can be a cost-effective way to manufacture these vaccines, especially in developing countries. What is the rate of plasmid loss in recombinant yeast under various conditions? Finding the rate of loss of a plasmid will be done by experimenting with yeast containing a plasmid with one of the genes for tryptophan production. Yeast with the plasmid will be able to make tryptophan and grow in media that does not contain tryptophan. Yeast with the plasmid will be tested in media with tryptophan (non-selective) and media without (selective). Yeast with the inserted plasmid will eventually lose the plasmid and without selection, the number of yeasts without plasmid will continue to increase. The rate of loss may be altered by factors such as protein production, incubation conditions as well as media formulations. Rate of loss can be calculated by monitoring the population over time and comparing the numbers of colonies of yeast with the plasmid that grow on selective media to the number of colonies of yeast with and without plasmid growing on the tryptophan media. Success will be the collection of repeatable data on loss rates.

Sustainability in the Yellowstone River Valley

Student Researcher: Trinitee Powell

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S.B.A. Business Administration: Management

Sustainability knowledge and practices in the Yellowstone River Valley, specifically in relation to college students, are assessed via survey. The influence of political affiliation, the level of knowledge, and the amount and focus of collegiate schooling are discussed in regard to knowledge and efficacy. This is significant because while many researchers look at how knowledge and efficacy relate, few take into consideration that the field of study or general livelihood of people influence knowledge and efficacy as well.

The VertiMax Platform and Its Optimization of Post Activation Potentiation in Female Collegiate Athletes

Student Researcher: Shannon Reny

Faculty Mentor: Dr. Alex Shafer

Degree Program: B.S. Health and Human Performance

Post Activation Potentiation (PAP) is characterized as an acute increase in neuromuscular performance following a series of isometric contraction exercises. This emerging field of research has primarily been conducted in male populations and used the back-squat as the mechanism for promoting the PAP. In this study, the effectiveness of the VertiMax platform to elicit PAP will be assessed in twenty female collegiate athletes recruited from the MSUB women's basketball and volleyball teams. The participant will perform a baseline vertical jump test where height of jump and peak power will be recorded. A TENDO Sport FitroDyne will be used to measure muscle power output during the jump test. Following the baseline measure, participants will perform a jump exercise protocol on the VertiMax resistance platform and then perform a post-intervention vertical jump in the same manner as the baseline. There will be an eight-minute rest period between the VertiMax exercises and the postintervention vertical jump test to maximize PAP effects. To determine precise protocols (e.g. number of jumps on platform, time waited for post-intervention jump, number of trials, statistical analysis tools, etc.), further reading of related HHP literature will be done. The findings of this study could be used to improve the performance of athletes who compete with quick, short-term, explosive movements (e.g. track and field athletes). The research with female athletes will add a new population to the existing literature.

Exploration of Spiderwebs of Graphs

Student Researchers: Alexis Stahl and Ralph Studer

Faculty Mentor: Dr. Tien Chih

Degree Program: B.S. Mathematics

We explore the notion of homotopy in graphs. The work of Chih-Scully shows that any homotopy between finite graphs can be decomposed using spider moves. We explore using this concept on the automorphisms of a graph and the automorphisms of a pleat of a graph, including writing SAGE code to illustrate these ideas. We also explore a group homomorphism that takes $Automorphism(G) \rightarrow Pleat(Automorphism(G))$. This is work done by undergraduate students participating in a CURM funded research project supervised by Chih and Scull.

A Crisis Like Never Before: The Economic and Ideological Divide of the Colonists and Britain, 1763-1769

Student Researcher: Lauryn Tecca

Faculty Mentor: Dr. Emily Arendt

Degree Program: B.A. History

This research seeks to prove that the debt crisis in Britain following the Seven Years' War manifested itself as an economic and ideological crisis for colonial America. It seeks to examine the shockwaves that follow the first Acts passed by Britain in regards to taxation that left colonists angry and obstinate. It explores the idea of the Seven Years' War as an economic anomaly for Britain and the colonists alike. Major themes include the impact of the economy on ideals, the nature of the economic issues following

the Seven Years' War, and rifts between colonists and Britain as a result of the Stamp Act of 1765. It will rely on primary sources, specifically newspapers and journals. Based on this primary evidence, it will seek to prove that the economic consequences of the Seven Years' War became much more ideological in nature, forcing Britain to relinquish its hold on America.

Will Belief in God and a Sustainable World Ever Coexist?

Student Researcher: Jessica Tiry

Faculty Mentor: Dr. Susan Gilbertz

Degree Program: B.S. Human Services

Research in sustainability is no new ground for exploration; however, this research strays away from science and puts focus on the effects personal belief in God has on one's knowledge of sustainability. This project takes each participant's response to if they believe in God and compares this response to the score the participant receives on the knowledge component of the survey. The question which drives this research asks whether those who believe in God's plan will score higher or lower on the knowledge component of the survey than someone who disagrees or remains neutral to the idea of God's plan. After the surveys were conducted and placed into a data table, the data appeared to support the hypothesis—those who agree everything that happens is part of God's plan will score lower than someone who disagrees or remains neutral to believing in God's plan on the knowledge component of the survey. However, there was not enough data collected to definitively prove the hypothesis.

“Idiots and Distracted Persons:” Shifting Views on Mental Health in Eighteenth Century Colonial America

Student Researcher: Jessica Tiry

Faculty Mentor: Dr. Emily Arendt

Degree Program: B.S. Human Services

With research deriving from many historians, and the help of Dr. Arendt, this project explores the eighteenth-century colonial period's shifting views of mental health. These views during this time period were not solely based on religious standpoints, but medical aspects as well, as there was a new growth of knowledge into the strange minds of human beings. This would eventually lead Americans to view mental illness as a result of actions made by the individual. There were several influences which led to the shifting views on mental health, and each influence was connected and opened the path for another influence. These major shifts encompass changes from religious, political, and medical influences which tracked along one another in the eighteenth century. A major influence on shifting perceptions of mental illness was Native American traditions and beliefs, and minor influences that contributed to major intellectual shifts on mental illness include Cotton Mather, the father to modern medicine Benjamin Rush, and the role of natural law in American Colonies. Although medical explanations and treatments have drastically changed over three centuries, stigma towards those affected by mental illness has not changed since the eighteenth century. Colonial America opened the gates for medicine to be an answer to problems with the human mind, but stigma and treatment of these people were never changed—maybe these people will always be viewed as “idiots and distracted persons.”

Economic Sustainable Development

Student Researcher: Carson Ullmer

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S.B.A. Business Administration: Accounting

In this project, Montana State University of Billings college students or college alumni participants were surveyed to assess their knowledge and assessment of the three pillars of sustainability—economic, environmental, and societal. The specific research questions we asked were centered around the survey participants political affiliation, efficacy in relation to sustainability, and knowledge of knowingly acting economically sustainable. The survey results will allow us to understand more about how sustainably students are acting as well as how much they would like to learn more about the subject. By creating a larger base of students of whom understand sustainability, we can work together to create a better future for our world.

Investigation of Ligand Liability Using P K-Edge X-Ray Absorption Spectroscopy and Chemical Kinetics

Student Researcher: James Unzaga

Faculty Mentor: Dr. Matt Queen

Degree Program: B.S. Chemistry

Carbon Tetrachloride (CT) is a carcinogenic industrial solvent. Environmentally CT dechlorinates in a stepwise manner forming lesser chlorinated intermediates. [Cu(PDTC)L] is a small coordination compound capable of dechlorinating CT into less harmless decomposition products: CO₂ and Cl⁻. In this study we draw a correlation between the dechlorination kinetics of CT of [Cu(PDTC)L] and the ligand liability of the L ligand using P K-edge X-Ray Absorption Spectroscopy.

International Sustainability Trends in Higher Education

Student Researcher: Sydney Wate

Faculty Mentor: Dr. Susan Gilbertz

Degree: B.S. Health and Human Performance

Climate change and sustainability are increasingly hot topics in education for young adults. This makes it important for this group to have the proper knowledge and feelings of accountability towards climate change. The area of interest for this project is staff and student initiatives where we will assess the willingness of students to take action on these matters to counteract misinformation and disbelief and, hopefully, work towards global awareness and an improved quality of life for future generations.

Survival and Rescue of Apoptotic Induced Cells

Student Researcher: April Zimmerman

Faculty Mentor: Dr. Paul Nash

Degree Program: B.S. Biology: Medical Lab Sciences

The parasite called *Toxoplasma gondii* will be under study because cells infected with the toxoplasma are resistant to apoptotic behaviors. *Toxoplasma gondii* can be found throughout the world but it is only harmful to those who are immunocompromised or pregnant. It can be transferred via ingestion, mother-to-child or from contact with cat feces. Those who are infected with *Toxoplasma gondii* may not experience signs or symptoms, but those who are immunocompromised may experience severe toxoplasmosis which can damage vital organs such as the brain and eyes. If a healthy person who is not pregnant does get infected with toxoplasma and they do experience symptoms they usually go away on their own without medication. If a person who is immunocompromised or pregnant gets infected with toxoplasma, then medication is needed to get rid of the toxoplasma because they cannot fight off the parasite. For this experiment we will be exploring different methods of rescuing the cells from both beauvericin and the toxoplasma through different methods such as washing, antibiotics, and aging apoptosis inducers. We will be using various antibiotic drugs such as Ciprofloxacin, a DNA replication inhibitor, Pyrimethamine, a folic acid inhibitor and Artemisinin, a protease inhibitor. With so many options, there has to be one that works the best. We will be determining this based on whether the antibody kills the toxoplasma, how it affects the cells, and lastly how many doses are needed for complete depletion of toxoplasma. In addition, we want to see if only one drug will have the best results or if they work best in combination with each other. Beauvericin, a mycotoxin, will be used in experiments to see if the toxin can be washed out of the cell before apoptosis can be induced. The toxin causes the cell to undergo oxidative stress to the point of which the cell then begins apoptosis. For this experiment cells will be exposed to beauvericin for certain amounts of time, washed and then placed in new media to watch for cell growth. We will additionally explore whether or not beauvericin loses its toxicity over time. This will be done by allowing the beauvericin infused media to sit out for various amounts of time before adding any cells. Whether or not cell growth occurs will determine if beauvericin toxicity wears off over time.

Creative Projects

Teach me who you are

Student: Eva Boone

Faculty Mentor: Christine Whitlatch

Degree: Non-Degree (University Connections)

Description: A personal essay about the rituals, relationships, restrictions, and past connections that can shape the understanding of oneself.

Photography

Student: Tiffani Luckett

Faculty Mentor: Dr. Mara Pierce

Degree Program: B.S. Biology: Medical Laboratory Sciences

Description: Pet pictures captured in and around the Bridger Mountains.

A Stranger Place: A Series of Readings

Students: Daniel Lurie, Chase Johnson, Morgan Syring, Charles Martin, Sullivan Huebner, Jason Calvin, Brie Barron, Megan Westlake, Haleigh Rawden and Cole Stewart

Faculty Mentors: Tami Haaland & Dr. Bernard Quetchenbach

Description: With special emphasis on poetry and spoken-word pieces, this session features some of the best creative writing from *The Rook*, the Sigma Tau Delta Poetry contest, and creative writing classes. Brie Barron will read her poems "My Prayers are Not My Own" and "Water to Werewolves, Haleigh Rawden "Sharp Mattresses" and "Red Wings," Chase Johnson "July," and Cole Stewart "Singularity." Daniel Lurie will present his spoken-word piece "Object Permanence." Jason Calvin, Charles Martin, Sullivan Huebner, and Morgan Syring will also read their work.

Photography

Student: Randilynn Short

Faculty Mentor: Dr. Mara Pierce

Degree Program: B.S.B.A. Accounting

Description: Nutrition-themed photography presented from the Exploring Digital Photography course. Pictures taken using the Canon Rebel T2i EOS 550D.

MSU BILLINGS DEPT OF MUSIC

The Department of Music welcomes you to the 2021 Jazz Ensemble Concert and to the Eighth Annual Research Creativity and Community Involvement Celebration!

As a department, we are delighted to share the creativity and musicianship of our students and anticipate that their performances will make for a festive and spirit-raising spring evening. Featuring styles from swing to funk, the concert will highlight two ensembles: the MSU Billings Big Band and the Honors Jazz Combo.

On behalf of the MSUB Music Faculty
Scott Jeppesen, Doug Nagel, and John Roberts

Welcome to this evening of jazz!

Jazz Concert

Friday, April 16, 5:30 PM

~~Lawn between Cisel and Rimrock Halls~~

Due to weather, the concert will be moved inside and presented virtually. Video links to follow.

MSUB Big Band

John Roberts, Director

Saxophone

Konnor Stiles - Tenor
Sam Woodis - Alto
Mady Johnson - Tenor
Katelyn Schneider - Bari
Rylee Johnson - Alto

Trumpet

Tyler Honcoop
Monica Moss
Parker Sappington
Shay Robertus

Trombone

Chris Fite
Collin Sitton
Hazel Bullis
Ben Stevens

Rhythm

Alexander Bush - Bass
Jacob Decker - Drums
Raphael Lopez - Guitar
Jayden Ostler - Piano

Honors Jazz Combo

Scott Jeppesen, Director

Saxophone

Konnor Stiles - Alto
Sam Woodis - Tenor

Trumpet

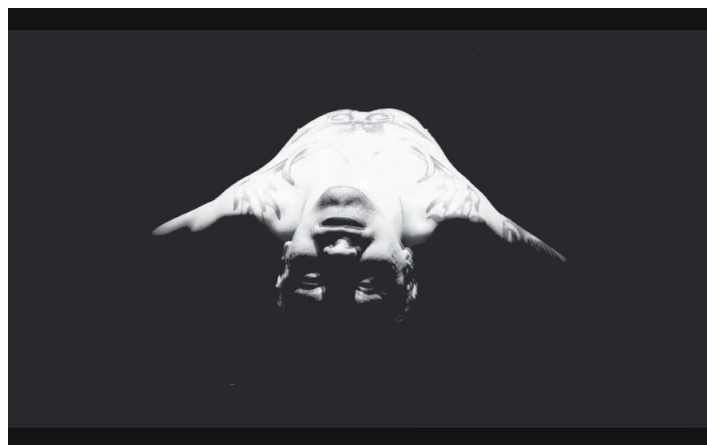
Tyler Honcoop

Trombone

Chris Fite

Rhythm

Jacob Decker - Drums
Alexander Bush - Bass
Jayden Ostler - Piano
Raphael Lopez - Guitar



Terrin Bisel

Feelings

Black and White Photo. 13" x 11"

Terrin Bisel

Archfiend Deliverance

Video. 2:30



Isabelle Carroll

Isolation in the Information Age

Oil Painting. 22.3125" x 14.5"

Isabelle Carroll

The Dollhouse

Digital Photography. 51.93" x 27.97"



Isabelle Carroll
Proving Identity

Digital painting. 20.96" x 23.91"



Shannon Davids
No More

Oil Paint. 24" x 36"



Courtney Dickerson
H2-Oh-Absurd

Metal and acrylic plastic. 41" x 22" x 19"



Chloe Fields
Jacqueline, Claudia, Thelma and Elizabeth

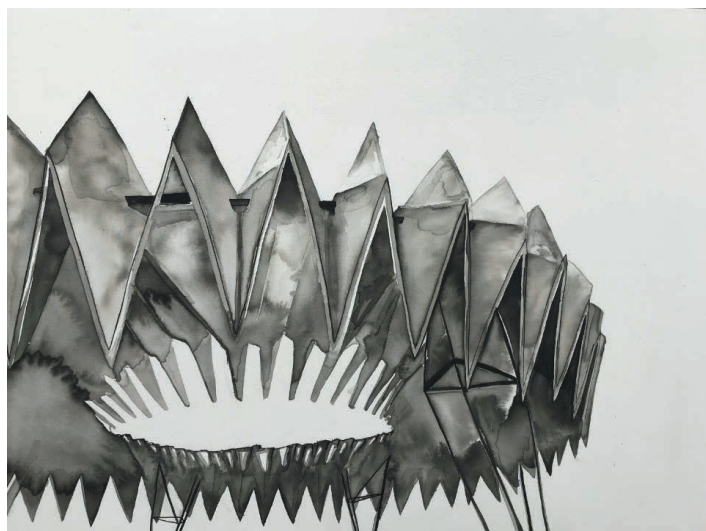
Watercolor, pen and ink on Yupo Paper. 30" x 15"



Elizabeth Fisher

Flowers

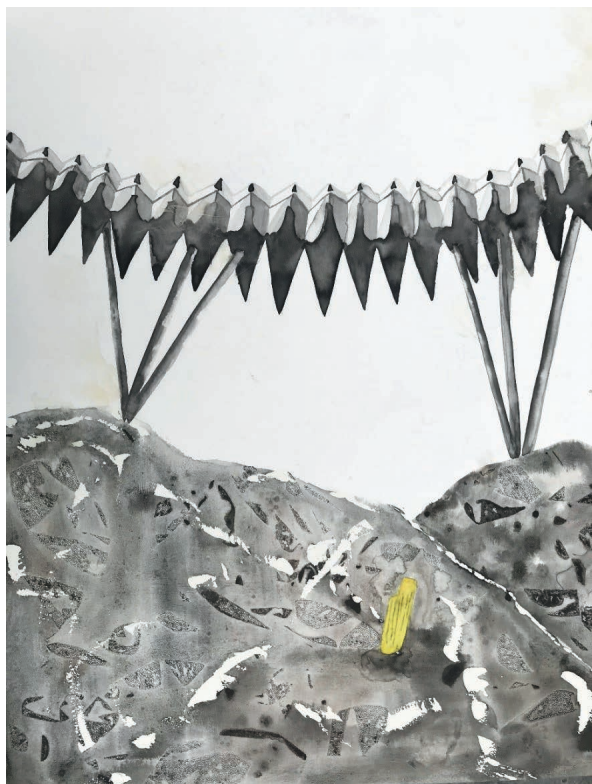
Ceramics. 10.5" x 6.5" x 6.5"



Hannah Harsha

Dominant Network

ink on panel. 18" x 24"



Hannah Harsha

From Pitsunda to the Dirt Pile in Your Backyard

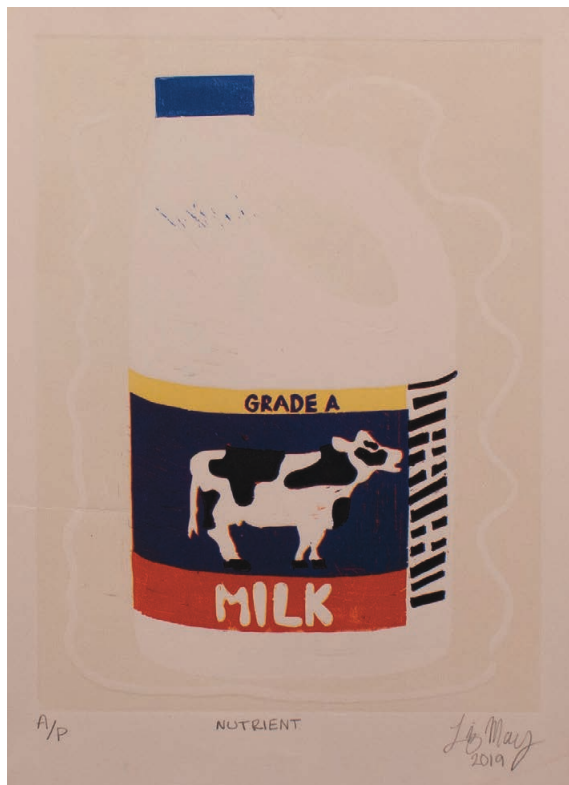
ink and watercolor on panel. 18" x 24"



Vince Long

Charm 1

pastel and graphite on paper. 22" x 30"



Elizabeth May
Nutrient
 Reduction print. 10" x 14"



Elizabeth May
Artfacts
 Video (color, sound). Dimensions variable



Heather Oltrogge
Yellowstone Contained
 Resin and Polymer Clay. 3" x 3" x 3" each



Daphne Picard
Playful
 Ceramic and Flocking, dimensions variable, 3" ea.



Terri Porta
Consumerism
 Ceramics. 16" x 12" x 8"



Olivia Ruesch
Oh, I can fit there
 Digital Photo Print Series of 6. 24" x 48" each



Olivia Ruesch
Daydream
 Video. 6:36



Angel Shandy
Where's My Raptor (pages 3 and 4)
 Watercolor and ink on paper. 11" x 14"

2021 MSU BILLINGS STUDENT JURIED EXHIBITION



Angel Shandy

The Dragon's Demise

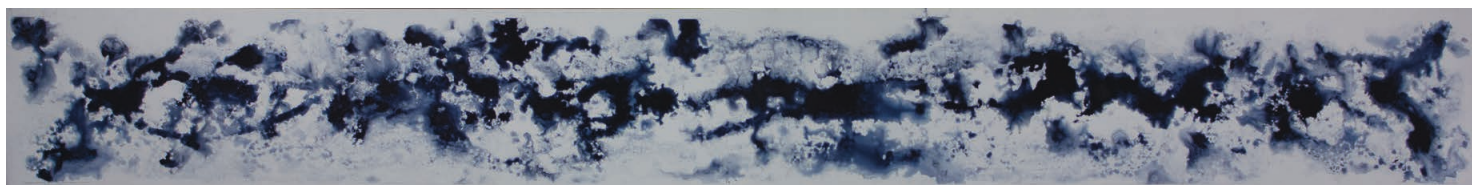
steel, paper, india ink, acrylic ink. 50" x 26" x 36"



Morgan Syring

to breathe, to live, to give life

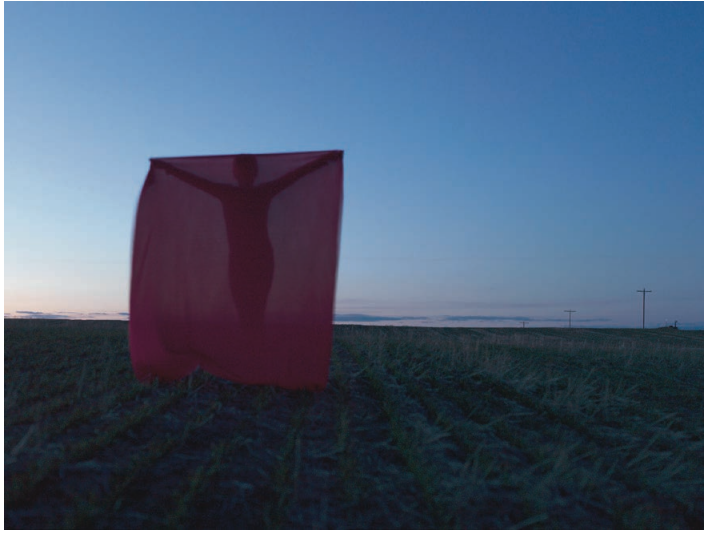
video. 10:02



Morgan Syring

interstice 1

handmade indigo ink on yupo. 10" x 80"



Morgan Syring
screaming singing sighing

installation (photographic print, audio) 30"x40";
sound 1:14.



Julia Torna
Jurgis Rudkus

Marker, pen, graphite, and watercolor on paper.
14" x 14"

Welcome!

Dear Friends of the Northcutt Steele Gallery
and MSUB Department of Art,

As we near the end of spring semester 2021, I am delighted to celebrate the artistic accomplishments of the students of MSUB. The works selected by our juror for inclusion in this year's exhibition testify to the resilience, perseverance, and commitment of our students. Gathered together these diverse works across a range of media affirm the power of art to heal, mend, prompt, seek, question, and transform in these challenging times.

I offer special thanks to Student Gallery Director, Morgan Syring, gallery intern Heather Oltrogge, Administrative Associate Shelly Ovalle, and students in Gallery Professional Practices class for your time and efforts. I am grateful to Jenay Cross and Dr. David Craig for assistance with our website design and for coordination with the Research, Creativity, and Community Involvement Symposium. I also give my sincere thanks to the entire Department faculty for sharing your passion for learning and creating, which sustains, challenges, and inspires our students.

I also especially thank this year's juror, Billings-based artist, gallery owner, musician, curator, and cultural impresario Shane de Leon. De Leon's efforts to draw attention to the imagination, connections, and energies that shape our city and connect our world, heartens and inspires me. It has been a pleasure to work with him and I appreciate the characteristically generous, thoughtful insight he brought to this year's jurying process.

Lastly, I congratulate all artists selected for inclusion in the exhibition. Please keep taking risks and creating in whatever form, medium, discipline or avenue that takes. Our department, our campus, and our community are immeasurably enriched by your creative energy and efforts.

Sincerely,
Leanne Gilbertson, Ph.D.
Director, Northcutt Steele Gallery



Read Shane De Leon's juror statement at
<http://www.msubitllings.edu/gallery/exhibit/2021/2021jurorstatement.htm>

Research, Creativity and Community Involvement Conference Committee

Cindy Bell

David Craig

Jenay Cross

Nick Drzycimski

Danielle Loomer

Jana Marcette

Matt Queen

Sheryl Shockley

Kurt Toenjes

The committee wishes to thank and acknowledge Jenay Cross, who served as its Conference Coordinator for this year's virtual Celebration.

Special Thanks & Appreciation

Chancellor Dr. Stefani Hicswa
Interim Provost Dr. Susan Balter-Reitz
Dean Dr. Kurt Toenjes
Patrick Williams – Multimedia Designer
Dr. Leanne Gilbertson – Art Gallery Director
John Roberts – Jazz Band Director
Dr. Rachel Schaffer – Session Moderator
Dr. Matt Queen – Session Moderator
Dr. Jana Marcette – Session Moderator
Dr. Tien Chih – WebEx Cohost
Dr. Paula McMahon – WebEx Cohost
Kathleen Thatcher – WebEx Cohost

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