ROCKY MOUNTAIN COLLEGE

Rocky Mountain College presents

THE STUDENT SYMPOSIUM

FEATURING SCHOLARLY WORKS FROM STUDENTS ACROSS CAMPUS, SHOWCASING THEIR WORK AS SHORT LECTURES, POSTERS, DEMONSTRATIONS, EXHIBITS, PERFORMANCES, AND READINGS

APRIL 11, 2024

POSTER
Session 1: 9:00 am to 10:15 am
Session 2: 10:15 am to 11:30 am
Fraley Lounge

ORAL
11:30 am to 4:00 pm
Losekamp Hall

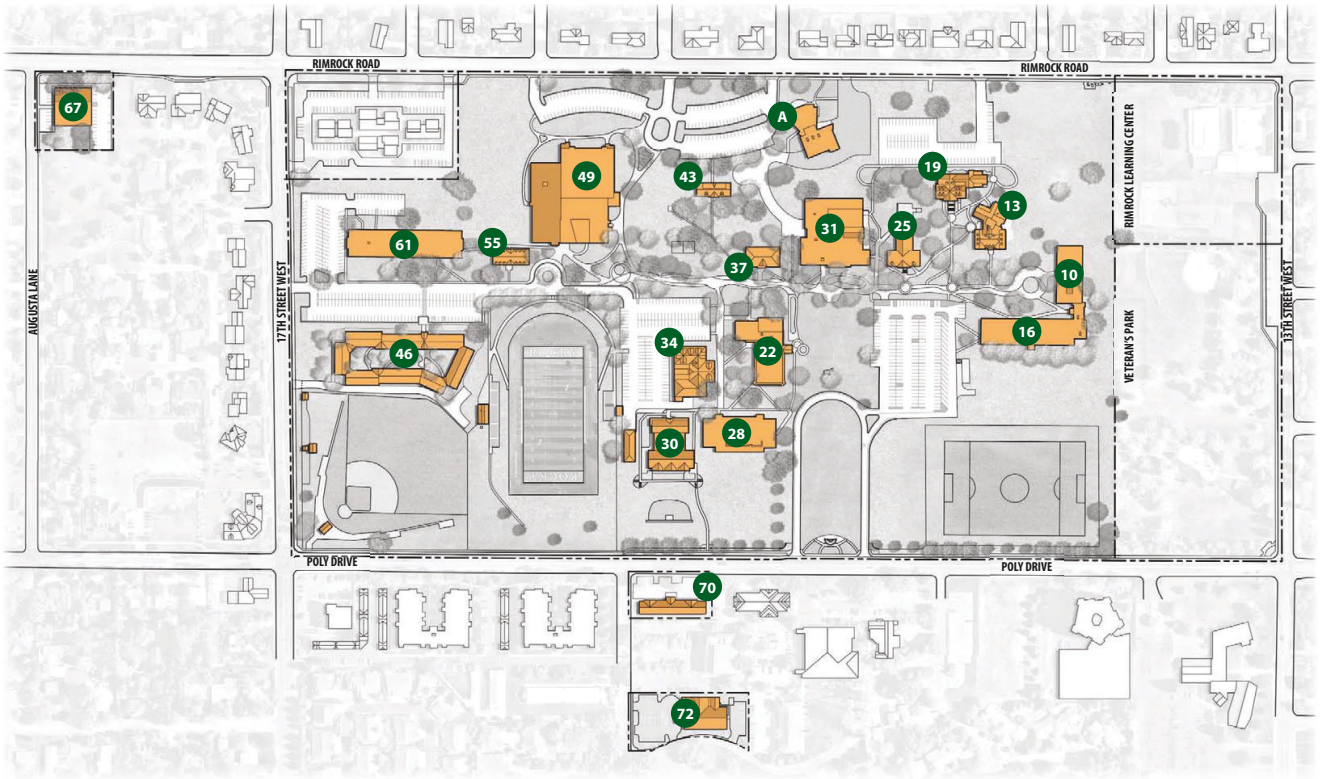
RYNIKER-MORRISON GALLERY
9am-7pm
Tech Hall

PROGRAM

Poster Presentations:
Session 1: 9:00 am to 10:15 am
Session 2: 10:15 am to 11:30 am
Fraley Lounge

Oral Presentations:
11:30 am to 4:00 pm
Losekamp Hall

Ryniker-Morrison Gallery:
9am-7pm
Tech Hall



BUILDING		USE
55	Alden Hall	Offices
10	Anderson Hall	Residence Hall
67	Aviation Hall	Aviation program
31	Bair Family Student Center Dining, Student Lounges	Administration, Bookstore,
28	Bair Science Center	Classrooms & Laboratory Space
A	Billings Studio Theater	Community Theater
30	Charles Morledge Science Laboratory	Laboratory, OTD Classrooms & Administrative Offices
72	Connor Hall, 2411 Village Lane	Physician Assistant Program
37	Eaton Hall	Administration
49	Fortin Education Center	Classrooms, Two Gymnasiums, Service for Academic Success, Athletic Administration
61	Jorgenson Hall	48-Unit Apartment Building
25	Losekamp Hall	Classrooms, Auditorium
	Educational Resource Center	Library LEAP
13	Morledge-Kimball Hall	Faculty Offices and Classrooms
19	Prescott Hall	President, Great Room, Admissions, Student Records, and Financial Aid
46	Rimview Hall	Residence Hall
34	Technology Hall	Classrooms, Facilities Department
43	Tyler Hall	Faculty Offices and Classrooms
16	Widenhouse Hall	Residence Hall

OFF-CAMPUS PROPERTIES

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70	1610 Poly Drive	
74	RMC Hangar, 1801 Aviation Pl Billings Logan International Airport	RMC Flight Operations
	White Aspen Ranch, 481 56th Street W.	Equestrian Facility

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POSTER PRESENTATIONS

The Creation and Potential Demise of Earthquake Lake

PRESENTER(S): Robyn Horgdal

MENTOR: Derek Sjostrom

DEPARTMENT: Geology

DESCRIPTION: On August 17, 1959 at 11:37pm, the largest earthquake to occur in the Intermountain West was recorded. With a magnitude of 7.3 it is still the largest earthquake in the region. This large geological event reshaped the Madison River Valley just west of Yellowstone National Park. A large dolomite cliff face broke loose and buried the valley 6 miles below the Hebgen Lake Dam. Today, a large lake, Earthquake Lake, remains behind the earthen dam created by the landslide. This project will look at the history of the dam, how it was constructed after the earthquake, and what it is constructed from. This will lead to the stability of the dam and the possible erosion rate of the dam and how it will affect the lake and the watershed below. Lastly, how Earthquake lake has changed over the past 64 years, what it looked like in 1959 vs. today.

Sex-Specific Differences on VO2peak Estimation

PRESENTER(S): Meagan Baham, Syd Von Bergen, Lauryn Frideres

MENTOR: Christopher Irvine

DEPARTMENT: Health and Human Performance

DESCRIPTION: Introduction: There are a wide variety of commercially available pieces of fitness equipment on the market today. Most pieces of equipment show the user various exercise-related variables, such as calories burned or aerobic fitness levels. The metric of interest in this study is aerobic fitness levels. This study aimed to examine the validity of the aerobic fitness estimate from a commercially available cycle ergometer when compared to a lab based measurement (gold standard). The secondary aim of this study is to examine if there are any sex-specific differences in aerobic fitness estimations. Methods: Individuals were to perform a 3-minute aerobic test on a Wattbike. The Wattbike provided an estimate of the participant's maximal oxygen consumption (a marker of aerobic fitness). The value provided by the Wattbike was compared to the gold standard measurement for oxygen uptake, an indirect calorimetry.

ABSTRACTS

POSTER PRESENTATIONS

The Use of Digital Assistive Technology in Addressing Sleep Problems Among Older Adults in Yellowstone Countye

PRESENTER(S): Mikayla Myers, Austin Zacher, Yve Clarence Bitoy, Carson Deyo

MENTOR: Philip Nordeck

DEPARTMENT: Occupational Therapy Program

DESCRIPTION: Currently there are over 40,000 adults over the age of 60 in Yellowstone County. Among this population of older adults, about 36 million falls are reported each year. This project looks to address that problem by collaboratively designing and implementing an occupational therapy intervention for older adults in Yellowstone County that addresses fall risk and sleep using digital assistive technology. A mixed-methods approach will be utilized over the course of 8 weeks, by conducting assessments and interviews as well as implementing the digital assistive technology. Descriptive and analytic statistics will be used to analyze the date and results will be disseminated to participants from HighGate Senior Living and Adult Resource Alliance.

Viral Protein Hijacking of Lung Carcinoma Cells

PRESENTER(S): Tristan Hanson, Tanner Hilliard, Kyndra Long, Adelle Meissner, Jillian O'Brien

MENTOR: Holly Basta

DEPARTMENT: Biology

DESCRIPTION: Viruses are obligate intracellular parasites that interact with their host cells in diverse and complex ways. In the biology capstone course BIO454 Virology, students complete independent research projects on a virus of their choice, including clinically relevant human viruses (HIV and EBV) and important animal model viruses (EMCV, VSV, and ZFERV). In these novel studies, a protein from each virus is introduced into lung carcinoma cells via transfection and the effects are observed using fluorescence microscopy. Our hypotheses predict effects of viral proteins on cells, specifically their ability to cause cytotoxicity, inhibit the immune response, exit the plasma membrane, and induce cell proliferation. Students design independent research projects while learning transferable research techniques, experimental design, and troubleshooting with the potential to discover novel effects of their viral proteins.

ABSTRACTS

POSTER PRESENTATIONS

Fish Composition on Recently Restored Side Channels of the Bighorn River: A Pilot Study

PRESENTER(S): Josephine Eccher

MENTOR: Kayhan Ostovar

DEPARTMENT: Environmental Science

DESCRIPTION: Anthropogenic changes, notably the construction of dams, have significantly altered river hydroperiods, crucial for maintaining river ecosystems. In regions like the mountain west, spring snowmelt generates vital peak flows that sustain side channels, essential for diverse habitats and species. However, dams disrupt these flows, reducing lateral connectivity and harming biodiversity, including fish, amphibians, turtles, and birds. The Yellowtail Dam completed in 1967 on the Bighorn River exemplifies this impact, diminishing peak flows and causing sediment accumulation, resulting in the loss of side channel habitats. This study aims to assess fish recolonization in recently reconnected side channels, analyzing their seasonal utilization. By understanding fish behavior in response to channel restoration, we can better manage and conserve river ecosystems amid anthropogenic pressures.

Effects of External Verbal Encouragement and Cheering on Aerobic Performance

PRESENTER(S): Mason Browning

MENTOR: Chris Irvine

DEPARTMENT: Health and Human Performance

DESCRIPTION: Introduction: Cheering and external verbal encouragement are found in all types of activities, especially athletic sports, and is used as a way to motivate or improve the overall performance of the individual and the action they are performing. This study observed whether the application of cheering and external verbal encouragement will increase the performance of an individual during peak aerobic performance. Methods: Eighteen participants performed two VO2 peak tests, one with the presence of external verbal encouragement and the other without.

Results:It was found that the presence of external verbal encouragement during peak aerobic performance does not significantly improve aerobic endurance and performance. Conclusion: The presence of external verbal encouragement during peak aerobic performance did not significantly improve the aerobic performance of the participants. Based on the data it can be assumed that external verbal encouragement is not necessary during aerobic performance.

ABSTRACTS

POSTER PRESENTATIONS

The Great Migration and the Fight for Civil Rights: The Impact of the Chicago Defender from 1905-1946p

PRESENTER(S): Morgan Baird

MENTOR: Tim Lehman, Jenifer Parks

DEPARTMENT: Department of Political Science, Department of History

DESCRIPTION: African American newspapers became prevalent and popular in the North and South during the early-to-mid twentieth century. In Chicago, Robert S. Abbott began publication of the Chicago Defender in 1905. Abbot's newspaper became the most influential and popular African American owned and operated newspaper as it was considered the voice of the African American community. The newspaper was one of the biggest drivers of the Great Migration (1910-1970), which was considered one of the largest movements of people in United States history. The guiding principles behind the Defender were the obliteration of American racial prejudice, and a call for federal intervention to protect liberties when civil rights compliance broke down at the state level. Abbott's ultimate goal, however, was the total integration of people in the United States. Hence the newspaper also pioneered the early Civil Rights Movement by lobbying against segregation and for equality within its pages.

Effects of Resistance Training the Tibialis Anterior on Single Leg Running Approach Vertical Jump Height in Men's Collegiate Basketball Players

PRESENTER(S): Mick O'Connor

MENTOR: Chris Irvine, Patrick Hughes

DEPARTMENT: Health and Human Performance

DESCRIPTION: Introduction; Vertical jump is a key aspect in sport performance. In basketball, vertical jump can be improved through resistance training. No previous research has looked into resistance training for the tibialis anterior and its effects on vertical jump height. Methods; Participants tested their pre-test vertical jump, then were assigned into either the control group or treatment group that performed the tibialis resistance training. After 6 weeks, all participants retested vertical jump. Results; There was no significant difference in vertical jump height for the treatment group (p=0.666). Conclusion; The results of this study suggest that resistance training the tibialis does not lead to any significant improvements in vertical jump height.

ABSTRACTS

POSTER PRESENTATIONS

Nature as Teacher: A Comparative Analysis of Henry David Thoreau's Walden and Robin Wall Kimmerer's Braiding Sweetgrass

PRESENTER(S): Alex Mattie

MENTOR: Henrietta Goodman, David Strong

DEPARTMENT: Honors Program, English Department

DESCRIPTION: Ecocriticism is a field in which examining solutions to problems of climate change is central, and often ecocritical scholars examine the works of nature writers to explore what these works teach people about solving ecosystemic and environmental issues. Henry David Thoreau's Walden has been an influential environmental text since the mid-1800s, but his individualistic approach is embedded in American culture and is counterproductive to attempts to address climate crises. Thus this analysis compares Walden to Robin Wall Kimmerer's collection of linked essays Braiding Sweetgrass. Kimmerer is a contemporary author who centers collective perspectives through an approach grounded in Indigenous knowledge, and her focus on collective action provides a structure for changing cultural attitudes toward nature. Through storytelling, Kimmerer demonstrates how an individualistic approach like Thoreau's is detrimental to addressing widespread climate crises, highlighting the necessity for collective cultural action for the environment.

Aquatic Therapy for Individuals with Autism Spectrum Disorder

PRESENTER(S): Hannah Hunt-Larson, Kaylee Sandall, Noah Howey, Ashley Arbuckle

MENTOR: Danyela Farrar, Amanda Carroll

DEPARTMENT: Occupational Therapy Department

DESCRIPTION: With the increased identification and early diagnosis of children with Autism Spectrum Disorder in recent years, researchers have identified a need to determine and disseminate effective ways of addressing challenges these individuals may face. Aquatic therapy is one approach that has proven benefits for this population. For this project, we will be conducting a series of semi-structured group interviews with individuals who have a diagnosis of autism and recent experience in the water. From their responses, we will be able to identify important themes that will guide how aquatic therapy can best be utilized to support individuals with autism.

ABSTRACTS

POSTER PRESENTATIONS

Examining the Experiences of Older Adults Aging in Place in a Rural State

PRESENTER(S): Erin Kelly, Kenadee Jenkins, Danielle Menter

MENTOR: Kalyn Briggs, Twylla Kirchen

DEPARTMENT: Occupational Therapy Doctorate Program

DESCRIPTION: The purpose of this study is to gain insights about the lived experiences of older adults in frontier counties to support sustainable aging in place. Research will explore the current barriers to healthcare access, understand the needs and desires of the population, determine environmental factors, and gain an awareness of current strategies that support healthy aging. The data collected will provide insights into how to best support aging in place for older adults living in Montana's frontier communities. The research will educate current and future healthcare providers on how to support this population and improve their overall quality of life.

Geological Investigation of the Kootenai and Morrison Formations in the Big Horn Basin

PRESENTER(S): Andrew Slaughter

MENTOR: Derek Sjostrom

DEPARTMENT: Geology

DESCRIPTION: To better understand the geologic history of the Bighorn Basin in Montana, field studies have been conducted in the Jurassic Morrison and Cretaceous Kootenai Formations in South-Eastern Pryor Mountains. These formations consist of sandstones and mudstones that suggest meandering and or braided streams. The Morrison Formation is green colored shales and finer grained sandstone. The Kootenai does have layers of sandstone, but they are much thicker bedding. The Kootenai has course-grained conglomerates with layers of chert, and the shales tend to be reddish. It is assumed that these deposits formed in foreland basins during the development of the Rockies to the west. Data suggests that the Kootenai was part of a larger stream system in a drier climate in comparison to Morrison. We propose more documentation in the field, which will include paleocurrent and provenance analysis to document our interpretations of the depositional environment more fully.

ABSTRACTS

POSTER PRESENTATIONS

The Effects of Isometric Grip Training in Collegiate Football Athletes

PRESENTER(S): Isaiah Sanchez

MENTOR: Chris Irvine

DEPARTMENT: Health and Human Performance

DESCRIPTION: Handgrip strength is important for athletic performance.This study aims to examine if additional grip training augments overall handgrip strength. 12 participants aged 18-24 who were currently college football players participating in an off-season resistance training program participated in this study. The participants were asked to perform a hand grip dynamometer pre-test to determine maximum grip strength. The control group was asked to continue their regular weightlifting routine. The experimental group was asked to perform isometric grip exercises at the end of their resistance training session. After a period of four weeks, a post-test was taken using the hand grip dynamometer to examine if the isometric grip training at the end of a resistance training session improves grip strength. The results showed that handgrip strength can significantly improve by performing isometric dumbbell holds.

Insemination and Penetration: Creating a Bisexual Count Dracula

PRESENTER(S): Stephanie Howard

MENTOR: Henrietta Goodman

DEPARTMENT: English

DESCRIPTION: Bram Stoker's Dracula is no stranger to dissections of the novel's portrayals of gender and sexuality, and yet, despite the overwhelming presence of blurred dichotomies in the text, few scholars have applied a bisexual reading to the novel or its characters. By considering previous works of queer scholarship on Dracula, I draw on ideas from Judith Butler and Christopher Craft to reexamine the sexuality of the novel to create an undeniably bisexual Count Dracula. Using the two potential ways to visibly perform bisexuality as proposed by April Callis (2009), I investigate the gender performance and sexual behaviors of the Count in order to establish a bisexual lens through which to examine the novel, a lens that not only reinvigorates a century-old text, but one that introduces bisexuality as a plausible addition to the tools of queer theory.

ABSTRACTS

POSTER PRESENTATIONS

The Effect of Aspect on Alpine Plant Phenology on the Beartooth Plateau, WY

PRESENTER(S): Emma Hardy

MENTOR: Megan Poulette

DEPARTMENT: Environmental Science

DESCRIPTION: In many plant populations, flowering has advanced earlier in response to climate change induced warmer temperatures. This could have potential effects on the reproductive success (and consequently the persistence) of the critical alpine indicator species Silene acaulis, Geum rossii, Bupleurum americanum, Mertensia alpina, Artemisia scopulorum, Erigeron grandiflorus and Pedicularis oederi. Therefore, this study examines the effects of early warming by slope aspect on phenology, with a specific focus on the sex ratio of the common gynodioecious boreal-alpine plant moss campion (Silene acaulis) at GLORIA sites. Analysis revealed a significant negative correlation between the east aspect and the number of days after snowmelt until the dominant phenophase was open flower for all species. Similarly, moss campion was rarely found on east aspects and did not produce any female flowers there. Overall, the sex ratio of moss campion was not significantly different with approximately 50% female and 50% hermaphrodite across aspects.

Effect of Cognitive and Physical Multitasking on Static Balance

PRESENTER(S): Sofia Brustia

MENTOR: Patrick Hughes

DEPARTMENT: Health and Human Performance

DESCRIPTION: This study aimed to see the effects of cognitive and physical multitasking on balance in young adults. Participants were required to participate in three sessions, where they played a battery of Wii games once with no multitasking, once with cognitive multitasking, and once with physical multitasking. A MANOVA was used to determine whether the results were significant, no significance was found between Ski Slalom and Tightrope Walking, but demonstrated statistical significance when Table Tilt was performed with physical multitasking, indicating that a more complicated primary task with a physical secondary task does have a negative effect on static balance.

ABSTRACTS

POSTER PRESENTATIONS

Exploring the Impact of Culturally Relevant, Occupation-Based Treatment Approaches to Promote Well-Being of Native American Youth and Families

PRESENTER(S): Jonny Handel, Kristin Mayer, Katie Brandt

MENTOR: Twylla Kirchen

DEPARTMENT: Occupational Therapy

DESCRIPTION: The purpose of this research study is to provide high-risk Native Americans with the opportunity to participate in interventions that are engaging, identify barriers to participation, and reflect desired client goals at the following sites: Tumbleweed, YWCA-Billings, and the Community Crisis Center. We plan to analyze our participants occupational engagement through the choice of an activity provided by researchers. We will be using an Ecological Momentary Assessment software to capture "real time" participation from our participants and collect our data under supervision of our research advisor, Twylla Kirchen.

Hydrogen Gas Production in E. coli

PRESENTER(S): Isabella Sloan, Tanner Hanson, Tristan Hanson, Mya Minkoff, Riley Farnsworth

MENTOR: Mark Osterlund

DEPARTMENT: Biology

DESCRIPTION: Hydrogen gas (H2) is a renewable clean energy source that emits pure water when consumed. The majority of hydrogen gas is currently being generated through the burning of fossil fuels. However, many biological organisms also have the ability to naturally produce H2. Escherichia coli (E. coli) is a bacterium that naturally produces hydrogen gas using a series of linked genes known as the Hya operon. Those genes are regulated by environmental conditions, limiting the efficiency of H2 production. Our goal is to isolate and clone the Hya operon from E. coli in order to manipulate expression.

ABSTRACTS

POSTER PRESENTATIONS

Position Specific Fatigue in Collegiate Volleyball Athletes Following Match Simulated Play

PRESENTER(S): Hayley Bretz

MENTOR: Christopher Irvine, Patrick Hughes

DEPARTMENT: Health and Human Performance

DESCRIPTION: Introduction: Collegiate volleyball players experience varying degrees of fatigue within a match. Fatigue may be position-specific and therefore, influence training parameters. Methods: This study was conducted to find if there were differences in fatigue within the front-row and back-row positions' after a three-set scrimmage. Fatigue was measured by assessing a vertical jump. Vertical jump was measured using a Just Jump Mat and was measured before and after the scrimmage. Results: There was no significant difference between the front row's vertical jumps after the scrimmage ($p=0.096$). The back row also saw no significance in vertical jump after the scrimmage ($p=0.226$). Conclusion: This study showed there was no significance in fatigue based on position. However, this information may be beneficial for strength and conditioning coaches when developing training programs for volleyball athletes.

Exploring the Impact of an Occupational Therapy Sleep Intervention to Improve the Mental Health of Montana Veterans

PRESENTER(S): Kendra Weir, Emily Naughton, Sarah Warren, Tiana Benham

MENTOR: Amanda Carroll, Molly Wollner

DEPARTMENT: Occupational Therapy Doctorate Program

DESCRIPTION: This research project aims to develop and deliver an occupational therapist-delivered sleep intervention program to promote veterans' mental health within Yellowstone County, Montana. As one in ten Montana residents identify as veterans, it is important to address their unique health needs. Veterans report poor sleep at double the rate of their civilian counterparts. Poor sleep has been shown to have a large impact on veterans' mental health and suicide risk. A holistic approach will be taken to address this need and ensure client-centeredness. Sessions will include empowering and educating veterans to implement modifications to their individual sleep habits & routines, while simultaneously using cognitive behavioral principles to address mental health concerns. This will be conducted over the course of 5 weeks.

ABSTRACTS

POSTER PRESENTATIONS

Transfection of Zebrafish Endogenous Retrovirus (ZFERV) and Implications for Cell Viability

PRESENTER(S): Kenidee Wolery, Cassidy Litten

MENTOR: Holly Basta

DEPARTMENT: Biology

DESCRIPTION: Endogenous retroviruses (ERVs) are ancestral viruses that have integrated into host DNA and are inherited following the Mendelian inheritance pattern. Zebrafish endogenous retrovirus (ZFERV) is selectively expressed in the thymus and random insertions of ZFERV have been tied to T cell leukemia in zebrafish. The full extent of this retrovirus's genome and potential protein products remains to be fully characterized. ZFERV contains a gene that shows commonalities with viral phosphodiesterases (PDE) that inactivate a branch of the innate immune system. We propose characterization of the ZFERV predicted PDE. We hypothesize that the expression of ZFERV potential PDE may disrupt critical cellular processes and potentially trigger apoptotic pathways based on observations from previous transfections. We plan to characterize ZFERV predicted PDE's potential cytotoxic effects using a transfection time course and fluorescence microscopy.

Psychology Program Internships

PRESENTER(S): Sana Bath, Rhiannon Nez Varnrobinson, Eryn Ducote, Aleah Goeke, Kacy Horton

MENTOR: Barbara Vail

DEPARTMENT: Psychology Program

DESCRIPTION: The Rocky Mountain College psychology internship program serves as one of two capstone options for seniors in the psychology program. Placements for this program currently include The Montana Tribal Council, The RMC Chaplain's Office, Passages Women Center, Tamarack Family Services in Coeur d'Alene, Idaho, and Montana Peak Performance. Students are given the opportunity to apply psychological principles to problems ranging from opioid addiction and adjustment after release from prison to performance in competitive and team sports. Opportunities for students to intern with various organizations highlight the many possible careers available in psychology. Internship experiences also allow students to relate the needs of the community to their own future educational and employment pursuits. Psychologically oriented internships compel students approaching graduation to make the leap from learning in the classroom to practical applications.

ABSTRACTS

POSTER PRESENTATIONS

Project-Based Learning in the History Classroom: Splendor and Terror in Renaissance Europe

PRESENTER(S): Cade Lambert, Timothy Tanzosh, John Patterson, Chloe Headswift, Tanner Lemm

MENTOR: Jenifer Parks

DEPARTMENT: History

DESCRIPTION: Project-Based Learning has become a popular high-impact practice in higher education, so I've incorporated short projects into my HST303: Reformation, Absolutism, and Enlightenment Europe course. In one project, students were asked to identify an example of Renaissance art, research its provenance, meaning, and symbolism, and create a digital story map of the piece, using the KnightlabJS Story Map tool to explore the artwork, highlighting key "moments" in the piece that speak to the social, cultural, political, and economic concerns of the period as well as the priorities of the artist and their patron. In another project, students worked in teams to construct their own hypothetical witch trial scenario and primary source, based on research and analysis of primary and scholarly sources from the 15th-17th century European Witch Hunts. Creating a website to showcase the projects allows visitors to explore the story maps and sources and immerse themselves in Renaissance Europe.

Mental Activation and Advancement of Recovery

PRESENTER(S): Elizabeth Rohwer

MENTOR: Mindie Clark, Patrick Hughes

DEPARTMENT: Health and Human Performance

DESCRIPTION: Patients in extended-duration postoperative settings show losses of physical function, muscle mass, and cognitive function. Reduced mobility and cerebral dysfunction have detrimental implications to daily life and mental wellbeing, particularly in more vulnerable populations, like older adults. However, effective rehabilitation can be achieved through regular stimulation of a patient's cerebral cortex, into a "state of general wakefulness, or attention"(S. Lehrl, et al. 2012). As a result, adopting strategies of daily mental activation have shown increases in patient information processing capacities and rates (S. Lehrl, et al. 2012).

The efficacy of mental activation during recovery is still widely unknown and warrants further evaluation before drawing conclusions and making confident recommendations for the enhancement of rehabilitation protocols . This project is a synthesis of studies regarding brain training/ mental activation using video games (VG) and their respective transfer effects on cognition and physical abilities of patients in a postoperative rehabilitation setting.

ABSTRACTS

ORAL PRESENTATIONS

Exploring the Interconnected Rhythms: Investigation the Potential Influence of Horse Hearts on Human Hearts

PRESENTER(S): Sara Kelly-Cannon

MENTOR: Amy Neuman

DEPARTMENT: Equine Sciences

DESCRIPTION: Literature supporting animal use in therapy documents benefits for human/animal interventions in both mental health and physical therapeutic applications. Studies have demonstrated the therapeutic effects of animal-assisted interventions on physiological health. However, there are multitudes of wider theories which are largely unsubstantiated by research regarding the physiological changes resulting from human/animal interactions outside of significantly controlled therapeutic circumstances. This literature review is within the framework of both Western and traditional Chinese medicine that analyzes the concept of Qi (the energy that is emanated and absorbed by mammals including humans) as underpinning the therapeutic potential of horses. Using horses and students in the Rocky Mountain College equestrian program, this project investigates the claim of the horse's influence on the cardiovascular system of human handlers in everyday interactions, to address the theoretical movement believing the outside of the horse is good for the inside of mankind.

Socks vs No Socks

PRESENTER(S): Isabella Bryan

MENTOR: Jenny Reichert

DEPARTMENT: Psychology

DESCRIPTION: Many college students struggle to get the recommended amount of sleep each night due to various factors such as academic stress or irregular schedules. Finding ways to optimize sleep quality is important for overall well-being and physical performance. Wearing socks to bed can improve sleep by facilitating the body's natural temperature, which is important for falling asleep and staying asleep. Additionally, feeling warm and cozy can promote relaxation, which may contribute to better sleep. In this study, student athletes were randomly assigned to sleep in socks or not, for one week. They were asked to run a 10-yard dash at the beginning and end of the week, and to complete a sleep log documenting sleep length, sleep quality, and level of tiredness throughout the day. It is expected that longer sleep length and higher quality sleep will mediate the relationship between sock-wearing and athletic performance. Data analysis ongoing.

ABSTRACTS

ORAL PRESENTATIONS

Remote Sensing and the Past, Present, and Future of Dover Park

PRESENTER(S): Claire Blomquist, Ella Fox, Catalina Muchnick, Aaron Stottmann, Donald Swanson, Madison Zabrocki

MENTOR: Luke Ward

DEPARTMENT: Geography

DESCRIPTION: The northern section of John H Dover Memorial Park, located just downstream of Billings, MT, is the site of a collaborative restoration project between Knife River, a construction materials and contracting company, and the Yellowstone River Parks Association, YRPA, which owns/manages Dover Park. In support of those efforts and a future long-term monitoring project, this presentation reports the results of a project undertaken by GPY 322 - Remote Sensing students. The project goals were to: (1) use supervised classification workflows and relatively-high-resolution aerial imagery (1-meter pixels) to quantify how the landscape currently being restored has changed between 2005 and 2021 and; (2) use recent (2023) high-resolution imagery (5-inch pixels) and Dover Park restoration plans to explore what restoration work still needs to be completed.

The Bias of Human Taste

PRESENTER(S): Sven Navas Jr., Mila Allison

MENTOR: Jenny Reichert

DEPARTMENT: Psychology

DESCRIPTION: Human taste is subjective and affected by many factors including smell, expectations, and even visual images (Swasty & Muhizam, 2023). The current study was designed to test whether the packaging of coffee grounds would influence perceived taste and quality of coffee. In this study, participants were asked their opinion on the taste and quality of three different coffees; however, they were actually tasting the same coffee three times and were presented with three different types of packaging of coffee grounds to manipulate perceived quality. Data collection and analysis is ongoing.

Watch Your Step

PRESENTER(S): Stephanie Howard

MENTOR: Ashley Kunsa

DEPARTMENT: English (Creative Writing)

DESCRIPTION: Fiction Reading: An unusual passenger draws unwitting attention to himself and his mysterious luggage in this piece of flash fiction set on a moving train and narrated in third-person omniscient point of view. Suspense builds as questions arise about the passenger and what he's carrying until, finally, the train car hostess learns the unfortunate answers.

ABSTRACTS

ORAL PRESENTATIONS

Liszt Consolations V

PRESENTER(S): Madison Lambert

MENTOR: Cara Schreffler

DEPARTMENT: Music Department

DESCRIPTION: The Hungarian composer and piano virtuoso Franz Liszt (1811 - 1886) wrote the Consolations, S. 172, between 1849 and 1850. The Consolations are a set of short character pieces: solo piano pieces intended to suggest a mood or capture the essence of a scene. Liszt wrote the Consolations in the form of nocturnes, a specific genre of character pieces that are intended to evoke nighttime. In doing so, he paid homage to Frederyk Chopin, who had died in 1849 and is famous for his nocturnes. A Romantic era composer, Liszt prioritized emotional expression in his works and is known for fiery, dramatic, and technically difficult pieces. In the Consolations, however, he departs from his usual style and writes a piece of touching tenderness and gentle empathy. Madison Lambert, a freshman piano performance major, will be performing the fifth movement.

Consolations, S. 172	Franz Liszt
V. Andantino	(1811 - 1886)

Gum's Influence on Memory

PRESENTER(S): Daron Lasher

MENTOR: Jenny Reichert

DEPARTMENT: Psychology

DESCRIPTION: Past research shows that chewing gum improves memory recollection capabilities (Johnson and Miles, 2008), however there is no research on whether the effect is stronger for mint-flavored or fruit-flavored gum. This study was designed to test whether there is a relationship between the flavor of chewing gum while studying and ability to retain information. Participants were given either no gum, fruit-flavored gum, or mint-flavored gum to study the placement of 8 pairs of playing cards in a memory task and then tested on the memory task. Data analysis is ongoing. Keywords: memory; studying; chewing; flavorless; mint

Dirty Dishes

PRESENTER(S): Bethany O'Tremba

MENTOR: Ashley Kunsa

DEPARTMENT: English (Creative Writing)

DESCRIPTION: Creative Non-Fiction Reading: This memoir describes the narrator's relationship with her best friend and the challenges that emerge when the best friend becomes engaged to her now-husband. The narrator mourns their changing dynamic during the development of the best friend's romantic relationship; however, through the metaphor of washing dishes, the narrator comes to terms with this shift in their friendship.

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ORAL PRESENTATIONS

Meditation on Water

PRESENTER(S): Teagan Oliva

MENTOR: Ashley Kunsa

DEPARTMENT: English (Creative Writing)

DESCRIPTION: This lyric essay features a braided style of writing to explore the narrator's harrowing experience of learning how to swim. Weaving together three distinct strands – a personal story from the narrator's point of view as a child, questions and facts about water, and real-life accounts of people drowning – the essay shifts between and meditates on the variously tranquil and fear-inducing nature of water.

Comparative Analysis of the Impact Of Direct and Leverage Style Bits for Optimal Control

PRESENTER(S): Julia Hanson

MENTOR: Amy Neuman

DEPARTMENT: Equine Science

DESCRIPTION: Modern bits are typically metal tools placed in a horse's mouth to aid in control of the animal. Bits have been standard equipment for horse control for over 5,000 years. This project evaluates the way bit design affects horse performance using four horses and six different bit types to investigate response times and rein tension dynamics for riding horses. The evaluation of the influence of bit design and fit on horse performance highlights the significance of equipment selection in optimizing communication and achieving improved performance outcomes in horse riding.

The Sexualized Violence Against Women in the Slasher Film Genre

PRESENTER(S): Bay Sandefur

MENTOR: Gayle Fallon

DEPARTMENT: Literary Studies

DESCRIPTION: The subject of my project for the Student Symposium is the gender differences with sex and violence in the slasher film genre. My thesis states that the sexualized violence female characters face in slasher films could contribute to the way that society views this same violence enacted on women in our day to day lives–contributing to the normalization of punishing women for performing socially perceived sexual promiscuity. My intended audience are those interested in true crime and other horror-related media, and I believe the best method to use in order to cater to this audience is through creating a podcast. To be able to best present my project at the student symposium, I will be giving an oral presentation by reading the script I have written for the podcast. Due to the graphic nature of my subject matter, I will not be using images during my presentation.

ABSTRACTS

ORAL PRESENTATIONS

Relating Productivity Through Puzzle Completion While Listening to Background Music

PRESENTER(S): Emily Craft, Emily Cole

MENTOR: Jenny Reichert

DEPARTMENT: Psychology

DESCRIPTION: It can be difficult for full-time college students to balance work, academics, social endeavors, and extracurriculars while maintaining productivity. It is imperative to find ways to maximize productivity when completing day-to-day activities. Listening to music or background noise while completing daily tasks such as homework or chores can improve rates of task completion (Yongsong, Et Al. 2020), however, little research focuses on the relationship between the speed or type of music and productivity. This study was designed to test whether students completed a jigsaw puzzle faster when listening to faster versus slower tempo music and when the music contained lyrics or no lyrics. Data collection is ongoing.

Association Between DRD4 Gene Polymorphism and the Ability of Horses to Adapt to Living in Box Stalls

PRESENTER(S): Janet Florey

MENTOR: Amy Neuman

DEPARTMENT: Equestrian Studies

DESCRIPTION: Abstract: As open land and turnout space becomes more limited, more horses live in a box stall environment with limited daily choices. While some horses thrive in a stalled environment, other horses exhibit emotional and mental stress. This study is investigating whether or not DRD4 gene polymorphism can be used as a predictor to determine which horses are more adaptable to living in box stalls. The DRD4 gene polymorphism has been provided to have a correlation with two equine temperament traits, curiosity and vigilance. 10 horses were genotyped for DRD4 curiosity and vigilance gene and compared to results of observed behavioral traits questionnaire and a novelty item reaction test. All horses in the study are kept under the same stable management method. The results of this study will indicate whether DRD4 polymorphism is an indicator of adaptability of stable horsekeeping methods.

ABSTRACTS

ORAL PRESENTATIONS

GPS Accuracy and Related Pipeline GIS Workflows

PRESENTER(S): Calen Renner

MENTOR: Lucas Ward

DEPARTMENT: Geography

DESCRIPTION: This presentation focuses on the results of a research project and related GIS work that were completed as part of an internship with CHS Inc., based in Laurel, MT. CHS needed high accuracy (sub-meter) data on the location of subterranean pipeline welds to support safe maintenance and management of its pipeline network. The presentation presents an overview of four sets of workflows and related results that were tested as possible strategies for generating these high accuracy points. The presentation concludes with a discussion of how project findings were built into CHS's standard operating procedures as well as related GIS work performed during the internship.

The Struggle

PRESENTER(S): Jacob Johnson

MENTOR: Ashley Kunsa

DEPARTMENT: English (Creative Writing)

DESCRIPTION: Creative Non-Fiction Reading: This flash essay details the narrator's journey through college golf. Golfing with new teammates and coaches leads to a variety of unknowns, and the narrator experiences many mental and physical struggles while trying to stay motivated to play in college and beyond. In order to fulfill the expectations he has for himself, he must push himself out of his comfort zone. Ultimately, by surrounding himself with the right people, the narrator learns to acknowledge ongoing struggle and continues to move forward.

Marital Satisfaction in Families Raising Children with Autism Spectrum Disorder

PRESENTER(S): Jordyn Fields

MENTOR: Julie Beicken

DEPARTMENT: Sociology

DESCRIPTION: The purpose of this project is to consider the impact raising children with an autism diagnosis has on marital satisfaction. Marriages are profoundly affected by the different demands and stressors of raising children, especially with one who has ASD. Divorce rates remain high due to factors such as low social kinships, religion, the stress of raising children, and financial hardships. Research has shown that a lack of services provided for families raising a child with ASD can directly impact marriage, from financial strains, outside support, resources, and socioeconomic status. Stress within the marriage can directly affect the child's development, putting them at risk for further developmental delays. This project also considers differences in marital satisfaction between families raising children with ASD and with those raising neurotypical children.

ABSTRACTS

ORAL PRESENTATIONS

The Effectiveness of Bisphosphonates as a Treatment for Horses

PRESENTER(S): Allie Bonebright

MENTOR: Amy Neuman

DEPARTMENT: Equestrian

DESCRIPTION: Bisphosphonates are a group of drugs that are commonly used in human healthcare to prevent bone loss, however, they are becoming prevalent in equine veterinary medicine to treat and manage pain in horses with navicular syndrome. Despite FDA approval in 2014, a lack of substantial clinical data following the use of these drugs persists. I surveyed clinical veterinarians in Montana to uncover challenges regarding the usage, prevalence, and possible barriers to research for bisphosphonates in veterinary medicine. Due to their successful treatment for bone diseases in various species, these drugs have the potential to lead to an optimistic future for equine veterinary medicine.

Our Experience as Interns at Beacon Air Group

PRESENTER(S): Catalina Muchnick, Camden Roe

MENTOR: Matt Prinkki, Dan Hargrove

DEPARTMENT: Aviation

DESCRIPTION: Beacon Air Group was one of 3 FBOs (Fixed Base Operator, or Aviation service station) to open in the last year across the country. Camden and Catalina's internship experience was unique as they were part of the first batch of hires, assisting in the final stages of construction and primary opening stages. As both Aeronautical Science and Aviation Management majors (respectively), Camden and Catalina were able to utilize their knowledge acquired through their coursework. Camden's role includes fueling, building maintenance, maintaining records, quality control, and servicing aircraft. Catalina's role includes billing, charter brokerage, managing flight reservations. She has also extended her task list to include social media and marketing interests.

Factors Contributing to The Endangerment of The Crow Language 1980 to Now

PRESENTER(S): Jacob Brien

MENTOR: Julie Beicken

DEPARTMENT: Sociology

DESCRIPTION: Many consider the Crow language to be endangered, meaning that children are no longer learning the language. This is a recent development on the reservation. Recent estimates suggest that the total number of Crow speakers is only 20% of the total Crow population. However, this was not always the case. In the 1970s various studies concluded that the majority of Crow people spoke the Crow language and that children were learning it. However, the rise of English media, the Crow Bilingual program, the completion of the I-90 interstate, the Crow's economic dependence on border towns, and replacement of Crow culture have contributed to the endangerment of the language. In this study I hope to show that various structural factors on the Crow reservation have led to the decline and endangerment of the language and how the narrative of "these kids just don't wanna speak Crow" is not the whole truth.

ABSTRACTS

ORAL PRESENTATIONS

Room 313

PRESENTER(S): Shane O'Callaghan

MENTOR: Ashley Kunsa

DEPARTMENT: English (Creative Writing)

DESCRIPTION: Creative Non-Fiction Reading: This flash memoir recounts the narrator's first and only time meeting his uncle who was suffering from Alzheimer's disease. At eight years old, Shane could not understand his uncle's diminished state and struggled to accommodate the elder man's delusions. As an adult, however, the narrator reflects on the significance of his younger self's ability to offer solace during his uncle's storm.

The Perception of Stress in conjunction with Nature and Exercise

PRESENTER(S): Sharon Nye

MENTOR: Jenny Reichert

DEPARTMENT: Psychology

DESCRIPTION: Past research indicates that perceptions of stress are impacted by many factors, including time spent outdoors and exercise (Aisha, 2020; McCue & Sachs, 1991). Current research indicates that those who are connected to nature have better emotional regulation strategies, and those who exercise have lower levels of stress (Gu, Zheng, & Tse, 2023; Martin-Rodriguez et al., 2024). In the current study, participants are assigned to one of four groups, in which they were asked to complete a number of stress perception scales while inside or outside and while walking or sitting. It is expected that participants in the walking outside group with higher connectedness to nature will have the lowest levels of stress perception, though research is ongoing.

Kitchen (Non)Confidential: The Effects of Media and Substance Use on Chefs

PRESENTER(S): Ireland Best

MENTOR: Julie Beicken

DEPARTMENT: Sociology

DESCRIPTION: This project aims to explore how media affects the perception of the chef and their celebrity status, the environment of the kitchen, along with factors that contribute to the high rates of substance use among kitchen staff. Once an occupation that was solely about preparing and serving food, the role of the chef has evolved into a profession where the chef has a cult following and presents themself in a notable manner. With the growth of media, the profession has become a spectacle to the point of romanticization of kitchen culture. The kitchen creates its own subculture that consists of stress, pressure, injuries, and various forms of aggression, which contributes to above average rates of substance use. In connection to the growth of media, the celebrity chef has become an admired phenomenon effectively changing how the industry is viewed.

ABSTRACTS

ORAL PRESENTATIONS

Birthdays are for Redefining

PRESENTER(S): Esabeau Harrington

MENTOR: Ashley Kunsa

DEPARTMENT: English

DESCRIPTION: Creative Non-Fiction Reading: In this personal essay, the twenty-one-year-old narrator hesitates over who she should invite to celebrate her birthday. While sorting through the names of the people closest to her, she finds herself stuck deciding whether her current friends should even be called “friends” and becomes frustrated over whether or not she has any real friends. She reflects on friendships past and ruminates on what it means to be a friend while deciding if, according to the definitions discussed, she has ever experienced true and honest friendship before. In this piece, the narrator and the audience are invited to meditate on the concept of a “friend,” what the idea means to different people, and how the narrator’s perception of that word has shifted over the years through personal drama, individual change, and the influence of social media.

Unveiling the Crisis of the Missing and Murdered Indigenous Women

PRESENTER(S): Isabella Bryan

MENTOR: Julie Beicken

DEPARTMENT: Sociology

DESCRIPTION: Amongst the ongoing crisis of Missing and Murdered Indigenous Women (MMIW), a striking pattern of violence, systemic injustice, and societal indifference has emerged. This project explores these tragic events, examining complex barriers to justice such as jurisdictional issues and providing proper training to law enforcement. Additionally, this project explores factors that contribute to the disappearance of these women. The project also engages with other ways of helping include spreading awareness about this topic and how these women are going unnoticed, as well as exploring community-driven approaches for change. By weaving together voices from Indigenous communities, statistical data, and policy analysis, this work sheds light on a path forward for healing and ownership. It also aims to let Indigenous women find their voice by telling their untold stories.

ABSTRACTS

SENIOR ART SHOW

The Gallery is open 9am-7pm and the artists will be available 12:00 - 1:00 pm and 5:00 - 7:00 pm.

Demonstration or Exhibit

PRESENTER(S): Lily Lieuallen

MENTOR: Todd Forsgren, Kelsey Bowen

DEPARTMENT: Art Department

ARTIST STATEMENT: Artist Statement: The urge to create has always been a part of my life. Evidence of this includes a silly story about the adventures of my pet fish or a picture of me "cooking" grass soup outside that predates my memories. I was always trying to make something of the world around me.

I need to make, and I still create with whatever I have on hand, and draw inspiration from the Lord and the world around me. Bibbles, my pet rabbit, has been a constant muse and delight (in the way of bunny kisses), letting me see the world in a playful way. Use of materials are still vital in my art, from discarded scraps, to clay, to precious metals and stones, or really any junk that I think is cool.

I enjoy the process of discovery and play that comes with using materials and looking at the world around me. Turning a lump of clay into a vessel, or incorporating a found object into art, is a marvelous experience. How can I transform what I see and the materials I find into something fun, new, different, and never before seen?

I want to surprise my viewer. By making physical my interior world, I hope that those who see the things that I create, make, and enjoy, will be inspired to do the same :)

ABSTRACTS

SENIOR ART SHOW

Demonstration or Exhibit

PRESENTER(S): Gabby Sermeno

MENTOR: Todd Forsgren

DEPARTMENT: Art Department

ARTIST STATEMENT: Artist Statement: Why do I make art?

I make art because it makes me happy. But it can go deeper than that... It gives me a way to entertain my mind and hands without having to think about anything else. It's a peaceful moment for me, or at least it should be.

Why do I make art?

It's a safe place for me to make mistakes and start over. It's a way for me to escape everything else and just be with my thoughts, my soul. Which in itself can be a scary place.

Why do I make art?

I make it for the people I love. I make it to make them happy. It's a way for me to show that I care about them. When I'm making something for someone that piece will embody what I know of them, favorite color, favorite things and I might even listen to music we listen to together to help me remember that person.

Why do I make art?

To make a stranger smile. I love seeing people smile, especially if I don't know them. Maybe I've made their day with something so simple as art.

Why do I make art?

For the connection I make with the art. My art becomes a part of me. A lot of the time, especially with my ceramic works I'll give the creatures I make a name. For example, my most current work is my octopus named Clyde. When I finish a piece it has a part of my soul with it. A living part of me that will be with it forever.

Why do I make art?

To play with colors. I love colors. Bright colors , pastel colors, all colors. They're something I've always been interested in. I love to explore colors with painting. See how I can mix them, how close I can come to matching a natural color, or to see how two colors can play off of each other. I like to see what I can do with them, how they affect one another, and how they can embody an emotion that I just can't explain.

So, why do I make art?

Why wouldn't I?

ABSTRACTS

SENIOR ART SHOW

Demonstration or Exhibit

PRESENTER(S): Kayley Peterson

MENTOR: Todd Forsgren

DEPARTMENT: Art Department

ARTIST STATEMENT: Artist Statement:There is an innate human urge to create. This pull has driven me to become an artist and connect with people through the universal language of art.

The tools I love are simple: graphite and paper. With this as my medium of choice, my drawings have explored so many forms, ideas, patterns, and textures. Despite the pull of different mediums, I always come back to the simplicity of graphite on paper. There is a feeling of accomplishment that I receive from creating artwork with something as humble as a pencil.

My inspiration comes from subjects that I find beautiful in order to instill a certain awe when being viewed. A technique I use often is to grid my paper so that I can ensure that I get precise proportions to accurately translate a subject into a drawing. This comes back to my goal to be as refined as possible, and the experience I strive to produce through my work is a sense of wonder through viewing a beautiful image.

All these subjects and mark making techniques are driven by the idea of photorealism. A photograph, as opposed to the human eye, is a true representation of a subject without the obscurities that may result from one's own subconscious. The viewer may be tricked however, into thinking they're looking at a photograph insead of graphite made by a human hand. This creates tension between man made and machine made... bringing an interesting idea to my mind. The photograph that serves as my reference image and the drawing that looks just like the photograph, is just one art or both?

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