Annual Conference

March 21, 2026

UTAH STATE UNIVERSITY

UTAH ACADEMY OF SCIENCES, ARTS, & LETTERS

Annual Conference - Saturday, March 21, 2026

Utah State University

Jon M. Huntsman Hall

8:30 a.m.- 9:30 a.m.

Check-in and Registration – Jon M. Huntsman Hall
2nd floor Entrance

Continental Breakfast

PLENARY SESSION

Eccles Business Building (EBB 215)

9:30 a.m. - 9:35 a.m. – Keith Lawrence, President

Welcome to Utah State University

9:35 a.m. - 10:00 a.m. – Jim Godfrey, President-Elect

James H. Wolfe Award
Shauna Mendini

John and Olga Gardner Prize
Prateek Sharma

10:00 a.m. - 10:30 a.m. – Keith Lawrence, President

Distinguished Service Award
Dianne McAdams-Jones

O.C. Tanner Lecture: Shauna Mendini

10:30 a.m. – 10:45 a.m.

Excursion announcement
CoCo James
Concluding remarks
Keith Lawrence

CONFERENCE PHOTO

10:45-11:00 a.m.

Location TBA

POSTER SESSION

11:00 a.m. -12:00 p.m.

1st and 2nd Hallways

LUNCH
12:00 p.m. – 1:00 p.m.
2nd floor Entrance - Catered lunch boxes

PAPER SESSION A
1:00 p.m. – 2:30 p.m.
Room assignments listed below

REFRESHMENT BREAK
2:30 p.m. – 2:50 p.m.
2nd *floor Lounge - Snacks and bottled water*

PAPER SESSION B
3:00 p.m. – 4:30 p.m.
Room assignments listed below

PAPER SESSION ROOM ASSIGNMENTS:

ARTS:
Session A/B: Room: *HH 160*

BIOLOGICAL:
Session A/B: Room: *HH 270*

BUSINESS:
Session A/B: Room: *HH 280*

EDUCATION:
Session A/B: Room: *HH 260*

ENGINEERING:
Session A/B: Room: *HH 170*

HUMANITIES/PHILOSOPHY/FOREIGN LANGUAGE:
Session A/B: Room: *HH 226*

KINESIOLOGY & HEALTH SCIENCES:
Session A/B: Room: *HH 130*

ENGLISH LANGUAGE AND LITERATURE:
Session A/B: Room: *HH 132*

PHYSICAL SCIENCES:
Session A/B: Room: *HH 222*

SOCIAL SCIENCES:

Session A/B: Room: *HH 220*

UASAL Board Meeting
4:45 p.m. – 6:00 p.m.
Room *HH 260*

The UASAL spring conference is able to provide the following technical access:

Every classroom has a projector with HDMI access. All rooms should have an HDMI cord. Presenters should bring any adaptors they need to connect their laptop/iPad to the projector through the HDMI. It is advised that presenters have a backup presentation (e.g., both flash drive and laptop).
Log In Information: Eduroam

Journal of the Utah Academy Publication Policy
The Journal of the Utah Academy of Sciences, Arts, and Letters publishes works in all of the fields of study encompassed in the Academy's mission. Papers published in The Journal of the Utah Academy of Sciences, Arts, and Letters are drawn from papers presented by members in good standing at the annual conference of the Utah Academy. The Journal of the Utah Academy is a refereed journal. To qualify for publication, the papers must be recommended through a refereeing system.
Presenters are encouraged to publish their paper in The Journal of the Utah Academy. The Journal's criteria are that a submission is (1) fresh, meaningful scholarly insight on its subject; (2) readable and well written; and (3) of general interest for an academic readership beyond the author's field.
If you wish your paper to be considered for publication in The Journal, please submit a Microsoft Word document to the chair of the appropriate division by June 1st 2022. Contact information for division chairs is available on the Utah Academy's website (www.utahacademy.org).
Editorial responses will be forthcoming after the resumption of school the following fall when referees have returned their comments to the division chairs.
Papers should be between ten and twenty double-spaced pages. Detailed instructions to authors are available at http://www.utahacademy.org/.

Excursion
This years Spring Excursion will be in Helper, Utah with a guided tour and lunch in Nine Mile Canyon, a couple of history museums, a walking mural tour.

James H. Wolfe Award and O.C. Tanner Lecture
Shauna Mendini, Interim Provost, Southern Utah University

Shauna Mendini is in her second year as the Interim Provost and Vice President of Academic Affairs at Southern Utah University with plans to retire in June 2026, completing 32 years of service to the institution. Mendini previously served as the Dean of the College of Performing and Visual Arts (CPVA) for over 14 years. Under her leadership, CPVA doubled in the number of majors and added 13 new programs, including three master's degrees. She was integral in the

expansion of several building projects for the arts including the Southern Utah Museum of Art, studios, equipment, and labs for the Filmmaking, Art, and Design Department, and SUU's latest project, The George S. and Dolores Doré Eccles Music Center. For Mendini, having the opportunity to be an administrator and creating resources for students, faculty, and the arts to grow and thrive has been a privilege. She is also a dancer, choreographer, and educator whose experience in the arts was highlighted with performances at the White Nights Festival, St. Petersburg, Russia, and co-directing and choreographing a collaborative production in Wuhan, China. Mendini is a recipient of SUU's Distinguished Educator Award, Creative Publication Award, Achievement in Experiential Learning Award, and the Board of Trustees Award of Excellence, the Bridging Award presented by Snow Studies Center Northwest University, Xi'an, China, and the Utah Dance Education Organization Lifetime Achievement Award. She is married to Ricky Mendini, an SUU Athletic Hall of Fame inductee.

John and Olga Gardner Prize
Prateek Sharma, Associate Professor, Food Science, Utah State University

Dr. Prateek Sharma is an Associate Professor of Dairy Technology and Director of the Western Dairy Center in the Department of Nutrition, Dietetics and Food Science at Utah State University (USU). Prateek earned his Ph.D. degree in Food Technology from Riddet Institute, Massey University, New Zealand and a Master's from Technical University Dublin, Ireland. Dr. Sharma is an experienced dairy foods Scientist with more than 17 years of research experience in commercial and institutional R&D environment. In the last six years, Dr. Sharma attracted more than $3 million research funding from diverse funding sources including federal (USDA, NSF, USDoE), regional and industry. Under his guidance, USU product development teams have won first place in the Idaho Milk Processors Association product development competition for last three years, consequently. His research portfolio at Utah State University is diverse with a focus upon understanding structure-function relationships in cheese and dairy powders, upcycling of by product streams, wear behavior, and use of advanced rheological techniques in dairy foods. Dr. Sharma is recipient of prestigious awards including 2025 IFT Outstanding Young Scientist Award in honor of Samuel Cate Prescott, 2023 CAAS Early Career Researcher Award, 2022 William C. Winder and Rebecca Steward Winder Professorship Award, 2021 ADSA Foundation Scholar Award, 2018 Marie-Curie Career-FIT post-doctoral fellowship and 2006 Erasmus Mundus scholarship from European Commission. Dr. Sharma is currently serving on several scientific committees in IFT, and ADSA.

Distinguished Service Award
Dianne McAdams-Jones, Professor, Nursing, Utah Valley University

Dianne was born in South Carolina, a sharecropper's daughter with 6 siblings, and a first-generation Baccalaureate in Nursing Science from Tuskegee University, 1973, Tuskegee, Alabama. After completing a graduate program in Education Management, Tuskegee University, she served in the US Army Nurse Corps for 8 years entering as a Captain and exiting as a Major, United States Army Nurse Corps. There was a 7 year child bearing hiatus and as the fifth child

entered school, she reentered the work force and completed a graduate degree in Nursing Science with a Nurse Educator Certificate, a doctorate in Health Professions, 2010, College of Saint Mary, Omaha, Nebraska and followed with completion of a Nursing Education Post Doctorate from Teachers College, Columbia University, 2018. She is credentialed by the Society of Simulation in Healthcare (SSH) as a Certified Healthcare Simulation Educator (CHSE), by the Harvard Center for Medical Simulation as a Simulation Course Instructor, by the Higher Education Academy as a Senior Fellow and by the National League for Nursing as a Fellow in the Academy of Nurse Educators.

Poster Presentations
1st and 2nd Floor Hallways
Session Chair: Jacque Westover
Utah Valley University

Arts

Title: Inclusive Tailoring for a World Premiere: Practice Based Costume Research in Gingerbread at Utah Tech University
Presenter: Abdiel Portalatín Pérez
Author: Abdiel Portalatín Pérez
Affiliation: Utah Tech University
Abstract: This practice-based inquiry investigates the integrated processes of costume design, tailoring, and pedagogical engagement undertaken for Gingerbread: A Musical Drama (Utah Tech University, 2025), a world premiere production for which I served as costume designer, lead tailor, and costume shop director. Central to this research was the construction of garments for a size diverse and gender expansive ensemble, whose varied proportions and embodied needs required expanded pattern systems and adaptive construction methodologies rooted in comfort, mobility, and identity affirming practice. The first area of inquiry conceptualizes tailoring beyond binary fit systems through the creation of full canvas tailored coats and structured outerwear engineered to respond to a broad spectrum of chest shapes, shoulder widths, and height variations. These garments incorporated canvas from shoulder to hem, shoulder pads, sleeve headers, stabilized facings, functional side seam pockets, and a custom clerical collar structure, and were further enriched through collaboration with a jewelry designer who fabricated original insignia that integrated world building into the garment architecture. The second domain examines the dual role of designer and tailor as pedagogical praxis, allowing students to observe a transparent design to construction workflow and engage in scaffolded mentorship that included size expansive drafting, textile evaluation, collaborative shop communication, and iterative fittings aligned with contemporary professional standards. The third domain considers the costume shop as a site of community and care, where students practiced intentionality, respect, and accountability while designing for a diverse ensemble. The research argues that inclusive tailoring protocols and transparent construction processes cultivate cultures of belonging, technical rigor, and professional readiness within higher education costume programs and proposes Gingerbread as a replicable model for practice-based research in costume design.

Title: Connecting to the Rhythm: Dance and Autism in Adulthood
Presenter: Bella Trionfo
Author: Bella Trionfo
Affiliation: Utah Valley University
Abstract: This poster presents preliminary research on dance and autism in adulthood. The common struggles that adults and children with autism can face include difficulty with social interactions, self-expression, managing emotions, and difficulties with voluntary motor activity (Bailey, 2025). Although some research exists, research for adults with autism is scarce. From 2017 to 2019, 32.59% of autism research funds were used for biological research (cures and causes), while only 5.02% of autism research funds were used to study services (Harris, et al., 2021). Unfortunately, the services that do exist often aren't consistent. During K-12 school, many children with autism are consistently supported and directed, but after high school, there is a sudden drop in resources and their accessibility ("Why More Resources, 2025"). The literature presented shows evidence of dance being beneficial to children with autism in regards to these

struggles. According to “The Effectiveness of Mirroring- and Rhythm-Based Interventions for Children with Autism Spectrum Disorder: a Systematic Review,” “social attention and social-emotional behaviors increased in children with ASD during and/or after the mirroring phase of their procedure” (Morris et al., 2021). The question then presents itself: if these struggles are carried into adulthood, can dance also help adults with autism regarding these struggles? Building off the positive effects the research on dance for children with autism has shown, in conjunction with the idea that common struggles exist with both children and adults with autism, this poster aims to spark ideas of multimedia learning with dance as a form of support for adults with autism.

Title: Touchstone
Presenter: Kellie Bornhoft
Authors: Kellie Bornhoft, Janika Linville and Xanthe Harris
Affiliation: Weber State University
Abstract: “Touchstone” is a new body of artwork created for Professor Bornhoft’s solo show at the Utah Museum of Contemporary Art, running September 26, 2025 to January 3, 2026. The exhibition features three large-scale sculptures and four video projections in the 350-square-foot Artist-in-Residence gallery. The work shown in the exhibition culminates the research and art-making that took place during the year-long residency at the museum, which focuses on the shared materialities of the geological and the human body. Our human bodies are mainly composed of sixteen earthly minerals. For example, according to the National Institute of Health (NIH), the average human body contains 1.3 kilograms of calcium, 25 grams of magnesium, 4 grams of iron, around 700 grams of phosphorus, etc. Two student researchers, Xanthe Harris and Janika Linville worked with Professor Bornhoft to research, design, fabricate and install the work. We built ten 5-foot by 5-foot sculptures that weigh varied amounts between 50 and 200 pounds to reflect different weight classes in an American population. According to the NIH’s data, the sheets of cast resin are embedded with the accurate amounts of minerals the average human body contains. Our research employs innovative approaches to increasing the impact of scientific knowledge through visual art. In addition to the work in the exhibition, the students created an interactive website that shares further information about the 16 minerals in the human body. In the age of the Anthropocene, we must understand how our human impact on the Earth is damaging its ecosystems at unsustainable rates. We must comprehend the Earth as a moving, shaking, malleable body. More than reading data, this knowledge must saturate our experience to evoke change. Art does that; it helps us conceptualize the unfathomable predictions that scientific research has made evident.

Biological Sciences

Title: An anatomical comparison of the human and chimpanzee cartilaginous eustachian tube
Presenter: Izabella Villanos
Authors: Izabella Villanos and Dr. Arianna Harrington
Affiliation: Southern Utah University
Abstract: In mammals, the eustachian tube passes through the temporal bone and connects the middle ear cavity to the throat. This tube allows for the drainage of fluids and equalization of pressure in the middle ear cavity, but may also provide a pathway for bacteria in the throat to spread to the ear and cause otitis media (OM), or middle ear infection. Frequency of infection is thought to be greater in human children because their cartilaginous eustachian tubes (CETs) are shorter and more horizontally oriented than those of adults. Over time, humans evolved shorter snouts and bipedalism, while their close relatives, the chimpanzees, retained protruded snouts

and quadrupedalism. Shortening of the snout is hypothesized to have changed the shape and orientation of the tube, diminishing its function in humans relative to other primates. This study aims to answer the question: Does the difference in cranium shape of humans and chimpanzees make humans more prone to middle ear infections? Computed tomography images of 20 human and 20 chimpanzee skulls were analyzed using the open-source imaging platform, 3D Slicer. Three-dimensional geometric morphometrics were used to qualitatively analyze shape differences, and univariate measurements were taken between bony landmarks to estimate dimensions of the CET. Generally, chimpanzees were found to have relatively short, horizontally oriented CETs relative to humans. This suggests that chimpanzees may be as susceptible to OM as humans, or other factors, in addition to the more horizontal angle and shorter length of the CET, may explain human children's susceptibility to OM. Combining these anatomical findings with clinical and veterinary data on OM prevalence may help doctors understand why some people are more susceptible to middle ear infections than others. Understanding fundamental differences between human and chimpanzee cranial structures provides insights into the evolutionary history of humans.

Title: Antibiotic bacteria: resistant destruction of the hospital acquired infection, *Acinetobacter baumannii*

Presenter: TBA

Authors: Elizabeth Bouwhuis, Kinsey Blatter, Carmen Housley, Remi Minor, Abby Grundy, Daniel N. Clark

Affiliation: Weber State University

Abstract: *Acinetobacter baumannii* are dangerous hospital-associated bacteria. *Acinetobacter* exhibits a remarkable resistance to antibiotics, making it a significant concern internationally. It particularly targets patients who are extremely ill, with open wounds, or with breathing problems, causing hospital-acquired pneumonia. It can also infect the central nervous system, soft tissue, and bone.

Bacteria such as *Acinetobacter* tend to form biofilms, which are composed of bacteria and their sticky secreted substances. In clinical settings, biofilms commonly form on the surfaces of medical equipment, such as catheters and IV lines. Biofilms act as a protective layer, preventing attacks from the immune system, environmental damage, and antibiotics. New treatments that can penetrate biofilms are essential in the age of antibiotic-resistant bacteria.

Bacteriophage (phage) are viruses that infect specific species of bacteria. Some phage are effective at penetrating layers of biofilm and can be used to treat infections with antibiotic-resistant bacteria. It is expected that phage therapy combined with effective antibiotics will help combat the growing problem of antibiotic resistance.

To test this hypothesis, we obtained fourteen strains of *Acinetobacter* from the Utah Public Health Laboratory, and selected one strain that was highly susceptible to a phage we isolated in our lab. We then grew the *Acinetobacter* using a bioreactor to form biofilms on surfaces for testing. These biofilms were treated with antibiotics and phage. To determine how much phage and antibiotics (Fosfomycin and Meropenem) to use for treatment, we added high-to-low concentrations of each and measured bacterial growth over time using a microplate reader. Phage killing and antibiotic growth inhibition were then measured and found to interact to kill this emerging pathogenic bacteria.

Title: Bioremediation of atrazine and PCB's through genetic engineering of *Chlamydomonas reinhardtii*

Presenter: Jonathan Kinross

Authors: Jonathan Kinross, Jessica Richards, Jake Hafen, Blake Bullock, Noah Peterson, Dr. Eric Domyan PhD.

Affiliation: Utah Valley University
Abstract: Atrazine and polychlorinated biphenyls (PCBs) are environmental contaminants found in various parts of the US. They have been shown to be harmful to certain plants, animals, and potentially even humans. Despite concerns, around 30,000 tons of atrazine are still used in the US annually. The use of PCBs was banned in the 1970s due to increasing evidence of toxicity, however PCBs are still found in harmful levels throughout the US today. The harmful effects of atrazine and PCBs are largely due to the chlorinated structures of both. Chlorinated species are frequently toxic to the environment and generally have longer half-lives due to environmental inability to dechlorinate them. The increasing evidence linking both atrazine and PCBs to environmental and human toxicity leads to a large interest in bioremediation of these chemicals. One strategy to accomplish this has been to identify microbes capable of degrading these compounds, then identifying the enzymes involved in the degradation process. From this approach, the enzymes atzA (from Pseudomonas sp. strain ADP) and TrzN (from Arthobacter aurescens, strain TC1) have been found to dechlorinate atrazine into the less harmful compound hydroxyatrazine (Mili et al. 2023). TrzN has also been found to dechlorinate a variety of compounds, leading us to hypothesize it could dechlorinate PCBs as well.

There is growing research surrounding the idea of using bioengineered microalgae for bioremediation purposes. Microalgae can relatively easily be engineered to express a variety of enzymes, including those capable of degrading environmental contaminants. An algae engineered to degrade a contaminant could be used in wastewater treatment plants to degrade that contaminant into a less toxic compound. This study aims to test if the enzymes atzA and TrzN can be expressed in the algae Chlamydomonas reinhardtii, which can then remove these harmful chemicals from the environment.

Title: Consistency of Parasitism in Free-roaming Horses Over Time
Presenter: Ella Moeller
Authors: Ella Moeller, Alex Jones, Graham Goodman, Sara Weinstein
Affiliation: Utah State University
Abstract: The health of wild horses is of great importance to many stakeholders, including land managers, veterinarians, wildlife biologists, and domestic horse owners. Wild horse health may be affected by the intensity and diversity of gastrointestinal nematode infections. It is vital to monitor nematode populations, not only to document parasites present in Utah, but also to understand the health consequences for horses and potential for spillover to other species. Little is known about parasites in free-roaming horses in Utah, and prior to implementing large scale monitoring programs, it is critical to determine whether sampling at a single time point captures a herd's infection profile. To determine whether herds exhibit consistent patterns of parasite diversity, we conducted monthly sampling on the Bonanza wild herd near Vernal, Utah between May 2024 and October 2025. On each sampling trip, we collected fecal samples from 6 to 12 individuals. To identify parasites, we coprocultured each sample, isolated third stage larval nematodes and then extracted their DNA. Samples were sequenced using next generation sequencing, to produce species-level profiles of the nematode community in each horse. Ultimately, our data address questions regarding the consistency of parasitism over time within a herd. These data will determine whether wild horses exhibit predictable seasonal parasite patterns and whether species' prevalence fluctuates over time.

Title: Effects of light exposure on *Latrodectus hesperus* in laboratory conditions
Presenter: Evie Adams
Authors: Holly Crowther, Feleti Liti, Evie Adams
Affiliation: Utah Tech University
Abstract: *Latrodectus hesperus* widows are widely abundant and easily identifiable in urban and

rural areas throughout Southwestern North America. Widows in urban areas face environmental stressors that can negatively impact their physiological state and webbing behavior. We hypothesize that a disruption in natural light cycles will result in a reduced overall web mass production due to increased environmental stress. In an effort to provide more data on how light pollution may impact *Latrodectus hesperus* webbing behavior, 60 widows were split into control and treatment groups. Web strands and the overall produced web were then collected from each group and analyzed for a possible relationship between light exposure and webbing behavior. Research regarding light pollution and artificial light is limited and does not isolate the factor of light exposure impacting webbing behavior. We aim to provide more data on how light pollution in laboratory conditions may contribute to the decline in health observed in urban widow populations.

Title: High Resolution Analysis of Status Epilepticus Propagation and Anti Epileptic Medication Treatments
Presenter: Emma Mainord
Author: Emma Mainord
Affiliation: Brigham Young University
Abstract: Epilepsy is a neurological disorder that causes recurrent seizures. The most severe seizure status is classified as status epilepticus (SE), which is a seizure with persistent ictal activity that lasts over 5 minutes. SE is often pharmacoresistant, meaning that typical frontline antiepileptic drugs (AEDs) are not effective in stopping SE. SE is classified as a medical emergency that can cause brain damage. SE has been widely studied, however with limited spatial and temporal resolution to describe the progression of SE. To fully understand how SE progresses, we have utilized a high-resolution micro-electrode array (MEA) recording system to interpret the spatial and temporal details of SE development in ex vivo rodent brain slices. Through analyzing the progression that the MEA records, we have discovered several features of SE activity that may explain its pharmacosensitivity. SE recruits tissues in a modular pattern, meaning that regions of the neocortex can be in SE while different parts of tissues are simultaneously experiencing self-limiting seizures. This also means that the newly recruited regions become ictogenises, where epileptiform discharges consistently propagate from. As SE spreads throughout different tissues, the number of ictogenic drivers increases, while the early cores remain stable within recordings. We aim to understand the properties that underlie progressive SE and explore novel ways to treat it, such as through a ketogenic diet and anti-epileptic medication. Our preliminary data analysis suggests that exogenous ketone bodies can significantly reduce the ex vivo seizure-like activity. This indicates that it could be a powerful therapy option for pharmacoresistant seizures, or SE. In addition, we are exploring how anti-epileptic medications impact the progression of SE. Together, these findings will advance our understanding of SE pathophysiology and may assist the development of more targeted and effective therapeutic interventions for this life-threatening condition.

Title: Identification of overwintering sites of beet leafhopper and leafhopper and *Curtoviruses* weed hosts
Presenter: Paige Bowler
Author: Paige Bowler
Affiliation: Utah State University
Abstract: Curly top viruses are single-stranded DNA viruses that infect a number of agriculturally significant plants, including beets and tomatoes, and are transmitted exclusively by beet leafhoppers (*Neoaliturus tenellus*). Though the effects of *curtoviruses* can be devastating for farmers, beet leafhopper overwintering sites and virus reservoirs in Utah remain unknown. In this study, leafhoppers and plant samples were collected from May-November 2025. Samples

were DNA extracted and leafhoppers were identified by amplifying the CO1 gene via PCR, and sequencing the product. Any beet leafhoppers identified, as well as all plant samples collected, were tested for curly top virus using PCR. This year, curly top virus was not as prevalent as in previous years (in 2024 some growers lost 100% of their tomatoes to the disease), and consequently, few plant samples were found to test positive. Additionally, very few beet leafhoppers were found- mostly in Logandale, NV- though sequencing is still ongoing. This research project will continue for at least three more years. This year's results, combined with data collected in future years, will help to improve *curtovirus* mitigation in Utah.

Title: Investigating How Odor-Guided Behavior Shapes Ecological Interactions in *Drosophila melanogaster*
Presenter: Jessica Venegas
Authors: Jessica Venegas, Paulina Koury, Sophie Caron
Affiliation: University of Utah
Abstract: Drosophila melanogaster, the common fruit fly, is a widely used model organism in neuroscience and genetics due to its well-mapped neural circuits and powerful genetic tools. Despite its small size, the fly brain shares key features with vertebrate systems, making it an ideal model for studying how sensory information drives behavior. This research project examines behavioral responses to 2-phenylethanol (2PE), a yeast byproduct commonly found in wine and floral scents. While some flies are highly attracted to this odor, others avoid it, suggesting that natural genetic variation influences olfactory-driven behavior. To investigate this, we use the Drosophila Genetic Reference Panel (DGRP), a collection of over 200 inbred fly lines that capture the genetic diversity of wild populations. By exposing both female and male flies from different DGRP lines to 2PE and quantifying their behavioral preferences, we aim to identify patterns of attraction, aversion, or indifference across genetically distinct individuals. Olfactory responses to 2PE are mediated by a well-defined neural circuit that links odor detection to innate behavior. The fly antenna houses olfactory sensory neurons that express odorant receptors, including OR67b neurons that detect 2PE and relay signals to the VA3 glomerulus in the antennal lobe. Projection neurons then transmit this information to the lateral horn, a brain region that processes innate behaviors. This circuit provides a framework for exploring how genetic differences may influence neural processing of odor cues. Our goal is to connect genotype, neural circuitry, and behavior to better understand how inherited variation shapes sensory decision-making. By establishing the behavioral foundation for future analyses of genetic and neuronal mechanisms, this work contributes to a broader understanding of how genes and brain wiring interact to drive innate behavior.

Title: Investigating Weed-Vine Water Dynamics in a Semi-Arid Vineyard System
Presenter: Micah Barnett
Authors: Micah Barnett and Erin O'Brien
Affiliation: Utah Tech University
Abstract: Efficient water management is crucial for viticulture, especially in regions facing limited water supplies. Weeds are often assumed to compete with grapevines for soil moisture and potentially reduce vine water availability. Although weed competition is well documented in newly established vineyards, there is limited evidence that mature vines experience the same degree of water competition. To determine if weeds negatively affect vines in an established vineyard, we removed weeds around mature grapevines in a southern Utah vineyard. Vine water stress was determined by comparing midday xylem pressure potential in paired vines across weeded and non-weeded conditions. Measurements were taken at solar noon in the summer, when vines typically experience their highest levels of water stress. Results showed no significant differences in midday stem water potential between weeded and control vines ($p >$

0.05). This suggests that, under the conditions of this study, weed presence did not measurably influence grapevine water availability. The absence of a significant treatment effect suggests that, under these conditions, mature vines were sufficiently buffered against potential competition from surface weeds. This may reflect a combination of deep rooting depth, adequate soil moisture during the measurement period, or limited water demand by the weed community. While not definitive, these results point to a limited role of weed presence in influencing vine water status in well-established systems. These results underscore the importance of site-specific factors in weed-vine interactions and point to the need for further research incorporating soil moisture profiling and weed community characterization to better understand the conditions under which competition may occur.

Title: Ketone bodies mitigate metabolic dysfunction triggered by spreading depolarization
Presenter: T. Luke Shafer
Authors: T. Luke Shafer, Dallin S. Nevers, Clayton Dunford, Rachel Ricks, Tyler Poulos, Isaac Stubbs, Coulson Cheney, Benjamin T. Bikman, R. Ryley Parrish
Affiliation: Brigham Young University
Abstract: Waves of neuronal and glial depolarization, termed spreading depolarizations (SDs), commonly propagate through the cortical tissue of patients experiencing traumatic brain injury, ischemic stroke, seizure, or migraine with aura. SD is initiated by a variety of neural stressors and results in cell swelling, and electrical silencing of neuronal activity. Recovery of ionic homeostasis following SD is metabolically taxing; the resulting energy shortage can lead to mitochondrial impairment and cell death.
To characterize the impact of SD on cortical metabolism, we measured acute mitochondrial fitness in rodent brain slices following SD. Because ketone bodies have demonstrated therapeutic potential in SD-associated neurological disorders, we further assessed whether elevating ketone bodies may mitigate SD-induced neuronal damage.
Previous studies suggest that SD disrupts acute oxidative-phosphorylation (OXPHOS) within the mitochondria, thus curtailing ATP production; however, this relationship has not been directly characterized. To fill this gap, we induced SD in neocortical rodent slices from healthy adult mice, recording the associated shift in local field potential. Concurrently, we observed the accompanying wave of cell swelling propagating through the tissue. High-resolution respirometry analysis of post-SD slices was then performed, revealing a significant reduction in complex I- and complex II-linked OXPHOS, indicating impaired overall mitochondrial capacity. Given this deficit, we next hypothesized that elevating ketone bodies would protect mitochondrial fitness following SD. To test this, we incubated neocortical slices in a ketone-enriched aCSF prior to SD induction. These slices showed no significant reduction in OXPHOS capacity post-SD, suggesting that ketone body incubation mitigates the adverse effects of SD on the mitochondria. These ketone-incubated slices also exhibited significantly smaller SD amplitudes, suggesting a reduction in SD severity.
Together, these findings suggest that ketone bodies may protect against SD-induced metabolic damage, supporting the therapeutic potential of ketogenic interventions in SD-associated neurological disorders.

Title: Neuroimaging Research Evolution in Understanding Long-Term Cognitive Effects of Traumatic Brain Injury (TBI)
Presenter: Ashton McEwan
Authors: M. Taillouli[1], A. McEwan[2], J. Vu[3], K. Crain[4], E. Godoy[5], H. Nur[6], A. Nyarko[7], M. Gorantla[8], L. Sun[9]
Affiliation: [1]Hunter College, [2]Brigham Young University, [3]Southwestern College, [4]Missouri Southern University, [5]Pierce College, [6]Istanbul Rumeli University, [7]Edison High School, [8]South

Forsyth High School, [9]Brookfield East High School
Abstract: The objectives of this study are to trace how neuroimaging research has evolved in addressing the question, "How has neuroimaging research evolved in understanding the long-term cognitive effects of traumatic brain injury (TBI)?" Specifically, we aim to (1) identify key technological advances and methodological shifts in neuroimaging used to study TBI over time, (2) examine how these imaging approaches have been applied to characterize long-term cognitive outcomes and brain changes, and (3) highlight influential studies, authors, and journals that have shaped current understanding of TBI-related cognitive sequelae. By mapping these developments, we seek to clarify how the field has moved from basic structural assessment toward more sophisticated network-level and biomarker-based perspectives on TBI. Traumatic brain injury is a major public health concern, with growing evidence that its cognitive and functional consequences can persist for years after the initial insult. As clinical awareness of these long-term outcomes has increased, neuroimaging has become a central tool for detecting and characterizing subtle brain changes that underlie chronic cognitive deficits This study utilized systematic bibliometric analysis to map the evolution of research concerning neuroimaging, traumatic brain injury (TBI), and long-term cognitive outcomes. The methodology was designed to identify the most influential literature in the field and to analyze trends in publication, authorship, and journal distribution. Neuroimaging research has evolved from basic structural assessments to sophisticated network-level and biomarker-based approaches, allowing a deeper understanding of how traumatic brain injury produces long-term cognitive effects. Highly cited studies in the field reveal that TBI leads to persistent alterations in white-matter connectivity, chronic neuroinflammation, and, in some cases, progressive neurodegenerative changes such as chronic traumatic encephalopathy. Continued integration of advanced imaging, biomarkers, and longitudinal designs is needed to fully understand recovery trajectories and guide targeted interventions.

Title: Optimizing PETase Stability for Enhanced Plastic Degradation Using an Integrated Physics-Machine Learning Pipeline

Presenter: Kiara Rojas Videa
Authors: Kiara Rojas Videa and Yuanfei Sun
Affiliation: Utah Tech University
Abstract: Plastic pollution is a critical global issue because synthetic polymers such as polyethylene terephthalate (PET) are highly resistant to microbial degradation, allowing them to persist in the environment for centuries. The discovery of PETase, an enzyme capable of hydrolyzing PET into its monomeric components, provides a promising biocatalytic route for sustainable plastic recycling. However, the wild-type PETase exhibits limited thermostability, restricting its application under industrial processing conditions. Enhancing the enzyme's thermal stability without impairing catalytic activity remains a central challenge in bioengineering. This project aims to develop an integrated computational framework that combines data-driven machine learning with physics-based energy modeling to identify mutations that improve PETase thermostability. We will first curate a comprehensive dataset of stability measurements for PETase-related enzymes from public resources such as ProThermDB and ThermoMutDB. Physics-based models (FoldX and Rosetta) will be used to evaluate residue energetics and identify active and structurally sensitive positions most likely to influence thermostability of PETase. A geometric deep learning model (GeoStab), pre-trained on large-scale protein stability datasets, will then predict changes in folding free energy and melting temperature upon mutations at these selected positions. The model will be fine-tuned on PETase-specific data to capture enzyme-specific nuances. Finally, molecular dynamics simulations and enhanced sampling will be applied to validate top-ranked variants and assess potential backbone effects. We anticipate that this hierarchically integrated pipeline, combining physics-based and machine learning approaches, will yield a prioritized set of thermostabilizing mutations with improved predictive accuracy over standalone methods. We will further evaluate the effectiveness of the proposed framework in advancing the rational engineering of PETase for industrial-scale biodegradation by submitting the top-ranked computational designs to 2025 PETase Engineering

Tournament organized by Align Foundation for experimental validation and benchmarking.

Title: Projection-Specific Plasticity of VTA GABA Neurons: Early Evidence From NAc and LHb Pathways

Presenter: Matt Reall
Authors: Matt Reall, Porter Lorange, Luke Hayes
Affiliation: Brigham Young University

Abstract: The ventral tegmental area (VTA) is a central regulator of reward learning, where inhibitory GABA neurons modulate dopaminergic output to limbic and cortical targets. Our project aims to map output-specific plasticity across VTA GABA neurons projecting to five addiction-relevant regions: the Nucleus Accumbens (NAc), Lateral Habenula (LHb), Central Amygdala (CeA), Pedunculopontine Tegmentum (PPT), and Ventral Pallidum (VP). As an initial step, we used GAD67-GFP mice combined with RetroBead tracing to identify projection-defined VTA GABA neurons and performed whole-cell electrophysiology to quantify inhibitory plasticity. Both NAc-projecting ($n = 8$) and LHb-projecting ($n = 10$) neurons exhibited robust long-term potentiation of inhibitory postsynaptic currents following 5 Hz stimulation (ANOVA $p < 0.05$), demonstrating that multiple output pathways express iLTP. These findings provide the first evidence supporting our larger hypothesis that VTA GABA neurons are functionally heterogeneous and governed by projection-dependent plasticity rules. Ongoing work is extending this analysis to CeA-, VP-, and PPT-projecting neurons to generate a comprehensive map of inhibitory plasticity that will serve as a baseline for evaluating how drugs of abuse alter VTA circuit function.

Title: Southern Utah Native Flora in Horticulture: The Viability of Native Flora in the Cut Flower Industry

Presenter: Amberlynn Anderson and Mya Taylor
Authors: Amberlynn Anderson, Mya Taylor, and Angela Patino-Acevedo
Affiliation: Southern Utah University

Abstract: The cut-flower industry throughout the country, and especially the Intermountain West, relies heavily on non-native ornamentals imported from South America, Europe, and African countries, despite the region's rich diversity of native flora. Despite this, according to recent data, the number of flower farms in Utah is increasing rapidly, from about 20 farms in 2018 to around 199 farms by 2023. However, these farms are still growing annual flowers, most of them non-natives that need an excess of water and fertilizer. Because of this, there is a shortage in the representation of native flora in the cut flower industry. Incorporating native species into floral markets could reduce water use, support pollinator-friendly landscapes, and promote local biodiversity. This study evaluated the potential of Southern Utah native plants for use in the regional cut-flower industry. We selected 32 native flowers from the SOUTHERN UTAH UNIVERSITY's pollinator garden and evaluated their flowers between May and October of 2025, measuring traits relevant to commercial floral quality, like bloom time, bloom duration in water after cutting, number of inflorescences per branch, flower diameter, and scent. Across species, we found substantial variation in vase life and aesthetic traits, with several species like *Chamaebatiaria millefolium* (fern bush), *Balleya multiradiata* (desert marigold), *Berlandiera lyrata* (chocolate flower), *Ratibida columnaris* (Mexican hat), *Gaillardia aristata* (blanket flower), *Helianthus maximiliani* (Maximilian sunflower), and several *Penstemon* species exhibiting bloom longevity comparable to or exceeding common commercial cut flowers. Our results identified promising native species that combine long vase life with strong visual appeal, demonstrating their potential to diversify the regional cut-flower market while promoting sustainable, local floriculture.

Title: Temperature-dependent Efficacy of *Toxorhynchites* as a Predator-based Biocontrol Agent for West Nile Virus Instead of Pesticides
Presenter: Austyn Gerritsen and Yadira Muro
Authors: Austyn Gerritsen, Yadira Muro, Dr. Vinodh K. Chellamuthu
Affiliation: Utah Tech University
Abstract: We develop and analyze a mathematical model to study the spread of West Nile Virus (WNV) within a closed environment consisting of mosquitoes, crows, and humans. WNV, a vector-borne pathogen, can lead to febrile illness and severe neurological conditions such as meningitis and encephalitis. Using a temperature-dependent system of first-order differential equations, we investigate the effectiveness of different control strategies. While traditional approaches focus on reducing adult mosquito populations with adulticides, larval control methods represent an alternative. In particular, we examine the novel introduction of Toxorhynchites mosquitoes as a biological control mechanism within an SEIR framework, comparing its performance with that of chemical adulticides. Our results show that although adulticides yield rapid short-term reductions in mosquito populations, the long-term persistence of control is more effectively achieved through Toxorhynchites. These findings highlight the potential of biocontrol-based strategies to complement or replace chemical interventions and provide a baseline for future mathematical modeling of WNV control.

Title: The reuse of Dairy Permeate as a biofertilizer
Presenter: Elli Mellor
Authors: Elli Mellor and, Namhyeon Park
Affiliation: Utah State University
Abstract: In the dairy industry, large amounts of dairy permeate are produced as a byproduct of cheese production. Research into the use of this byproduct is crucial to reducing the growing environmental impact, including polluted ground and water supplies. The production of IAA, a plant growth hormone, is carried out by fermenting Enterobacter cloacae in a permeate-soymeal solution. Growth optimization was performed with Enterobacter cloacae, followed by a 5-day fermentation trial assessed by a Salkowski assay to determine relative IAA levels. The Kentucky Wonder Bush Bean was then used to evaluate the potential of the fermented solution.
The growth of *Enterobacter cloacae* was assessed by fermenting 20 µL of stock with an absorbance of 0.10 at 600nm in 5mL of media. Twenty-four hours later, the growth was measured. The optimal growth temperature, permeate dilutions, and soymeal percentage were assessed. The highest absorbance was used to determine the highest growth. The 5-day fermentation was conducted using the optimized results. Each day was assessed using the Salkowski assay by using a 1:2 ratio of the fermented solution to 10 mmol/L $FeCl_3$ in 35% (v/v) sulfuric acid. Premeasured IAA concentrations of 2.5, 5, 10, 15, 20, and 25 µg/mL were also run through the assay for comparison. After 30 minutes, the absorbance of each sample was measured at 530nm. The plant trials are currently being performed with the beans planted 1/2 inch deep and irrigated with 125 mL of biofertilizer every Monday and Thursday. The optimization trials yielded 30 °C, a 1:1 permeate dilution, and a 2.5% soybean concentration with the highest absorbance at 600nm. During the 5-day trial, the IAA concentration was highest on day 5, at ~20 µg/mL. The plant trials are currently in progress and will conclude in the next few weeks.

Title: The Role of Focal Adhesion Kinase (FAK) In Melanoma Cell Migration and Invasion
Presenter: Landen Barnett
Authors: Landen Barnett, Camden VanTassell, Madison Hawkins, Joshua Knight, Karly Stanley, Savannah Pettey, Sheri Holmen, Gennie Parkman
Affiliation: Weber State University

Abstract: Brain metastases are a major complication of metastatic melanoma, contributing to nearly half of melanoma-related deaths. The presence of brain metastasis worsens prognosis, with median survival under 2 years. Therefore, understanding the mechanisms driving melanoma brain metastasis is critical. One such mechanism is the activation of the AKT signaling pathway, which promotes disease progression. Previous research in the Holmen lab has shown that AKT activates focal adhesion kinase (FAK) and inhibiting either AKT or FAK reduces tumor cell invasion. FAK is a critical regulator of cell adhesion, migration, and invasion, processes essential for cancer metastasis. In this study, we tested the functional impact of various activating and inactivating mutations of FAK in melanoma cell lines to assess their roles in tumor progression and metastasis. We introduced two activating mutations, Y397E (mimicking phosphorylation) and ΔN-FAK (a truncated form retaining kinase activity), and one inactivating mutation, K454R (a kinase-dead mutation), into melanoma cell lines and are testing them for the ability to influence the migration and invasion of these cell lines in vitro. In addition, these cell lines are being tested in vivo for their roles in promoting tumor growth and metastasis. Collectively, these findings will provide a greater understanding of the role of FAK activity in melanoma metastasis.

Title: Where Horses Roam and Parasites Thrive: How Environmental Conditions Affect the Parasite Loads of Utah's Wild Horses
Presenter: Jackson Smith
Authors: Jackson Smith, Clark Lawrence, Braxton Stevenson, Savanna Rasmussen, Jessica Hazelton, Adilyn Schwartz, Graham Goodman
Affiliation: Utah State University Eastern
Abstract: Parasites can affect the health and well-being of their hosts. Environmental conditions strongly affect the abundance and intensity of parasites in host populations. Fecal egg counts across many host-parasite systems have been shown to be affected by both temperature and precipitation. There are a number of mechanisms that may lead to these patterns. For example, the free-living larval stages of many parasites are vulnerable to desiccation and heat stress. One understudied environmental factor that may also affect parasite loads is the amount of vegetation in an area. By altering the microhabitats, vegetation can affect the ability of the free-living stages of parasites to survive. Finally, herbivores that feed on vegetation may be better able to defend themselves from parasites through strengthened immune responses. We collected fecal samples from six wild horse populations with varied environmental conditions and used remote sensing data to quantify temperature, precipitation, and plant biomass. We then quantified parasite loads using fecal egg counts. Our preliminary results suggest that both temperature and precipitation affect parasite loads, though analysis is still ongoing. These results have important implications for the health of both wild and domestic horses and will help create more effective management and treatment strategies for these horses in the future.

Education

Title: Exploring the Catawba Indian Nation's Resiliency Experience: A Qualitative Single Case Study
Presenter: David Reynders
Authors: David Renders and Shelby Vaughn
Affiliation: Baylor University
Abstract: The Catawba Indian Nation (CIN) has endured a long history of adversity, including forced relocation, cultural suppression, and systemic inequality. These challenges have contributed to intergenerational trauma, affecting the community's social, economic, and cultural well-being. Despite these hardships, the CIN has shown remarkable resilience, drawing on

cultural strengths and community bonds to navigate and overcome adversity.

This qualitative single case study explored the resilience strategies employed by CIN members. Using Lopez and Magaña's Family Resilience Model (FRM) as a theoretical framework, the study focused on three key components of family resilience: communication, belief systems, and organizational patterns. Data collection included qualitative surveys, semi-structured interviews, and follow-up surveys, emphasizing depth over breadth. Descriptive and pattern coding were used to identify broad themes, which were refined through thematic analysis aligned with FRM concepts.

Findings revealed that effective communication—such as open dialogue and family counseling—was central to resilience. Participants highlighted the importance of transparent, meaningful conversations in processing trauma and strengthening family ties. Belief systems that emphasized service, cultural identity, and finding meaning in adversity also played a vital role, offering purpose and continuity. Additionally, strong organizational patterns, including robust support systems and reliance on family and community networks, enhanced collective resilience.

These insights underscore the importance of culturally sensitive policies and initiatives that support communication, cultural preservation, and community cohesion. Such efforts are essential for fostering resilience and healing in Native American communities.

Title: Medical Terminology Podcasting as an Engaged Critical Thinking Learning Modality

Presenter: Maddison Johnston
Authors: Maddison Johnston and Justin Burr
Affiliation: Weber State University

Abstract: Each generation consumes information in different ways. Students have transitioned from reading papers to commonly consuming and gathering information through podcasts. According to the Pew Research Center, 67% of people 18-29 have listened to a podcast in the last year. College-aged students have the highest rate of podcast usage compared to all other age groups.

The Health Sciences Department at Weber State University offers an undergraduate course in Medical Terminology. One of the common challenges is helping students engage with the course material, view it through a lens of critical thinking, and interact with the content. Disengagement with course material has historically been evident through poor attendance, a low number of course logins, insufficient study time, failure to seek assistance from the professor(s), and subpar academic performance.2 The course has learning activities, formative assessments, and summative assessments. Despite revisions and innovations, the course is still lacking in some areas. Every semester, students reported, via course evaluations, a desire for improved engagement with the material. One student wrote, "I think it might help to provide more background material to help learn the words better." (WSU, 2024). To that end, three Health Sciences faculty members sought answers for how to provide more depth, critical thinking, and background information for the terms in the course.

Title: Professional's Views on an After-School Robotics Makerspace

Presenter: Anna Oborn
Authors: Anna Oborn and Lu Lawrence
Affiliation: Utah State University

Abstract: Makerspaces have emerged as environments that promote hands-on learning, creativity, and problem-solving by allowing learners to engage in open-ended exploration (Halverson & Sheridan, 2014). In makerspaces, robotics activities are quite common and can support students' understanding of programming and systems thinking (Sullivan & Bers, 2018). Artificial intelligence (AI) has been integrated less, but research emphasizes the need for

appropriate, hands-on experiences that make AI visible and understandable (Touretzky et al., 2019). The purpose of this study is to understand the different expectations of the professionals concerning the design of the program and space, and how to provide opportunities for elementary students to learn about and use AI and robotics. We conducted semi-structured interviews with two teachers, a librarian, an administrator, and two researchers. We asked questions about their past experiences with makerspaces, ideas for the design, how to integrate AI and robotics, goals for students and the space, and perceived challenges in the process. We collected video recordings and observation notes, and used thematic analysis to explore their design recommendations. Our findings revealed four themes: goals and outcomes for the students, vision and materials for the space, expectations for the structure of the program, and perceived challenges. We found that professionals wanted the students to be creative leaders in the space, and learn about how AI can be integrated into their making. They shared that the makerspace should be bright and fun, but also be a space for students to think critically about AI and robotics. They also described the program as having a structured format with time for open ended exploration. This was also identified as a challenge, along with concerns about the limited space and managing behaviors across grade levels. These findings contribute to literature on designing makerspaces, offering insight into desired outcomes, challenges, and incorporation of emerging-technology.

Title: Virtual Reality in teaching Functional Analysis in Preservice Clinicians
Presenter: Casey Clay
Author: Casey Clay
Affiliation: Utah State University
Abstract: The purpose of this study is to add to existing literature regarding the use of virtual reality (VR) medium to teach Functional Analysis (FA) skills to preservice clinicians. Also, it is to determine if the acquisition of skills related to conducting a FA is dependent on the amount of time that is spent learning the individual skills. There are two problems that are addressed by this study. The first problem is that an in-vivo training opportunity with an actual client brings with it certain risks to both the clinician and patient. This study will demonstrate if the VR medium can bring upon competency in training individuals on how to conduct a Functional Analysis. This study will also compare acquisition of these skills within participants at two different session lengths. We asked two questions: In training pre-service clinicians and college students on how to conduct an FA using a VR medium, would competency be feasible with this VR medium? Also, would 2-minute training sessions, during some FA conditions, work as well as 5-minute training sessions, during other FA conditions, for pre-service adults to achieve competency? We used a multiple-baseline design to answer our research questions. We found the training in the VR medium was effective for all participants. Further we found that participants could reach mastery in the 2-minute sessions for some of the FA conditions. This indicates a potential time savings in training efficacy. Future researchers should explore using VR to train clinical human service procedures in efficient ways across other skills.

Engineering

Title: Design, Fabrication, and Flight Validation of 3D-Printed FAA Class 1 Rockets with Variable Fin Geometries
Presenter: Mackenzie Breiter
Authors: Mackenzie Breiter, Kyle Anderson, Ryan Parkinson, and Ignacio Paz Biolley
Affiliation: Southern Utah University
Abstract: This study presents an integrated methodology for designing, fabricating, and flight-testing 3D-printed FAA Class 1 rockets with controlled geometric variations to enable systematic

aerodynamic analysis. Three candidate materials—PLA, PETG, and ABS—underwent tensile testing following ISO 527 standards. ABS was selected for its optimal strength-to-weight ratio of 183.23 and heat deflection temperature of 87°C at 0.45 MPa. Airframe designs with fin spans of 1.0, 1.5, and 2.0 inches incorporated forward-mounted instrumentation to achieve calibers of stability between 1 and 2 without requiring ballast. Wind tunnel testing yielded drag coefficients of 0.38, 0.54, and 0.65 for the three configurations. Each airframe required 3 hours of print time at $2.50 per unit. Fifteen successful launches instrumented with commercial sensors sampling at 50 Hz collected altitude, velocity, and acceleration data. The baseline 1.5-inch configuration achieved 4,404 ft average apogee with 4.19% coefficient of variation. The 1-inch configuration reached 807 ft higher than baseline, while the 2-inch configuration performed 118 ft below baseline. Theoretical predictions using Euler's method showed strong agreement with experimental data. Static testing of three Aerotech G80 motors revealed higher initial thrust than published values. Computational fluid dynamics analysis identified an altitude measurement anomaly caused by localized low-pressure regions near the barometric sensor vent port, with pressure coefficients ranging from -0.054 to -0.262 corresponding to altitude errors of 67 to 3,095 ft. Strong correlation ($R^2 > 0.95$) between CFD predictions and flight-derived corrections validated this hypothesis. The project achieved 88% data acquisition success and 100% vehicle recovery, demonstrating cost-effective methodologies for instrumented Class 1 rocket development and testing within educational budget constraints.

Title: Physics-Informed Neural Networks for Telemetry Reconstruction in Small-Scale Rocket Flights with Limited Training Data

Presenter: Mackenzie Breiter
Authors: Mackenzie Breiter, Kyle Anderson, Ryan Parkinson, and Ignacio Paz Biolley
Affiliation: Southern Utah University

Abstract: Telemetry data loss during rocket flights compromises trajectory analysis and design validation; yet, traditional interpolation methods fail to capture the complex, nonlinear physics governing rocket trajectories. This study developed a Physics-Informed Neural Network capable of reconstructing missing telemetry segments from small-scale rocket flights using only 15 complete training datasets. Four architectures were initially evaluated: Gated Recurrent Units, Temporal Convolutional Networks, Autoencoders, and a Kalman Filter with a Neural Network. Testing on synthetic data showed the Kalman Filter approach dramatically outperformed alternatives with $R^2 = 0.951$ compared to negative values for purely data-driven models. Validation on experimental flight data confirmed superior performance ($R^2 = 0.980$), demonstrating that physics-based state propagation provides essential structure. The final PINN architecture employed a feedforward network with three 64-neuron hidden layers, ReLU activation, and 10% dropout, trained on 5,306 synthetic gap samples ranging from 0.5 to 4.0 seconds across ascent, coast, and descent flight phases. The physics-informed loss function combined mean squared error with penalties for non-smooth velocity and acceleration changes, enforcing physically plausible trajectories. Two reconstruction strategies were compared: point-by-point prediction achieved 37.7% accuracy, while trendline reconstruction using second-order polynomial fitting through predicted midpoints achieved 83.7% accuracy. The trendline approach placed 83.7% of reconstructed points within ±15% of true values, substantially exceeding the 60-70% target. This hybrid physics-ML approach demonstrates that telemetry reconstruction can extend the utility of partially corrupted recordings while respecting fundamental rocket dynamics, particularly valuable for resource-constrained systems with limited training data availability.

Title: Instrumentation and Analysis of 3D-Printed Class 1 Rockets: An Integrated Approach to Data Collection and Machine Learning Reconstruction

Presenter: Mackenzie Breiter
Authors: Mackenzie Breiter, Kyle Anderson, Ryan Parkinson, and Ignacio Paz Biolley
Affiliation: Southern Utah University
Abstract: Small-scale FAA Class 1 amateur rockets (≤1,500 g total mass, ≤125 g propellant) provide accessible platforms for engineering education but remain underrepresented in published literature. This study demonstrates an integrated framework for designing, fabricating, instrumenting, and analyzing 3D-printed rockets while addressing data loss through machine learning reconstruction. Using computer-aided design and additive manufacturing, multiple airframes with fin spans of 1.0, 1.5, and 2.0 inches were fabricated from ABS material, selected for its optimal strength-to-weight ratio of 183.23 and heat deflection temperature of 87°C. Each configuration was instrumented with commercial off-the-shelf sensors sampling at 50 Hz to record altitude, velocity, and acceleration throughout flight. The project achieved an 88% telemetry acquisition rate and 100% vehicle recovery rate, exceeding the 85% targets. A Physics-Informed Neural Network with trendline reconstruction was developed to recover missing telemetry segments, achieving 83.7% accuracy with reconstructed points falling within ±15% of true values. This substantially exceeded the 60-70% objective and enabled trajectory analysis of flights with partial sensor dropout. Experimental results showed the 1-inch fin configuration reached 807 ft higher apogee than baseline, while theoretical predictions using Euler's method matched experimental data closely. Computational fluid dynamics analysis identified and quantified a barometric altitude measurement anomaly caused by localized low-pressure regions near the sensor vent port during high-velocity flight. All objectives were completed within a $500 budget, establishing a validated, cost-effective framework for data-driven analysis in amateur and educational rocketry that extends research capabilities through AI-based telemetry reconstruction.

Title: A Wearable Platform for Real-Time Respiratory and Metabolic Monitoring in Athletes
Presenter: Gisela Benavides
Authors: Gisela Benavides, Malainy Lambert, Averie Perriton, Bing Jiang, Milan Pantovic
Affiliation: Utah Tech University
Abstract: Advances in wearable sensing now make it possible to monitor respiratory and physiological status continuously in both athletic and clinical environments. This project integrates three complementary systems—a mobile coaching app, a portable metabolic mask (SmartFlow), and a CPAP-compatible sensing chamber—into a unified platform for real-time cardiorespiratory assessment. The mobile application processes motion and respiration signals over Bluetooth Low Energy (BLE) and provides adaptive feedback using rule-based analytics. It visualizes key metrics such as respiration rate, heart-rate variability, and metabolic state through intuitive effort-zone displays. SmartFlow expands this capability by estimating oxygen consumption (VO_2), carbon-dioxide production (VCO_2), and Respiratory Exchange Ratio (RER) using onboard airflow, O_2, and CO_2 sensors embedded in an ESP32-powered mask. Embedded algorithms derive tidal volume, ventilation, breath rhythm, and peak flow values, enabling portable VO_2-related monitoring during exercise. For sleep-health applications, a 3D-printed CPAP-compatible chamber integrates low-pressure MEMS sensors to capture inhalation-exhalation waveforms without disturbing therapy, providing enhanced respiration-rate and amplitude monitoring for OSA assessment. Preliminary tests confirm that the integrated sensors accurately capture respiration waveforms and that the mobile app reliably receives and displays real-time data. Further validation will proceed in three stages: (1) bench testing of airflow, pressure, and gas sensors using controlled flow rates and calibration gases; (2) human performance trials comparing SmartFlow and app-derived metrics (RR, VT, VE, RER, VO_2-related features) with laboratory metabolic cart measurements to assess accuracy,

responsiveness, and signal quality; and (3) CPAP simulation testing followed by pilot overnight studies to evaluate waveform fidelity, comfort, and integration with commercial CPAP systems. These evaluations will determine overall accuracy, reliability, and readiness for broader deployment.

Title: Behavioral Cues for Trust in AI-Driven Virtual Agents
Presenter: Garrett Woodhouse
Authors: Garrett Woodhouse, Isaac Cho, Dongyun Han, Donghoon Kim, Taehyun Kim, and Junyoung Kyum
Affiliation: Utah State University
Abstract: Artificial Intelligence (AI) is increasingly integrated into immersive environments, accelerating the use of virtual agents in settings such as Virtual Reality (VR). Yet it remains unclear which interaction characteristics shape users' perceptions of an AI-driven agent's trustworthiness. We conducted a controlled user study with 36 participants to evaluate how different animations and response-time delays influence perceived trust in virtual agents in a VR environment. Our results show that both animation and response-time delay significantly affect participants' trust in AI-driven agents, with attentive animation increasing trust and delayed responses reducing it. These findings provide actionable guidance for designing more trustworthy AI-powered virtual agents for immersive applications and contribute to a deeper understanding of social perception, timing, and interaction design for human–AI interaction in immersive environments. These results are directly applicable to AI companies as they will help them have a more successful product in the future.

Title: A Compact, Wideband, Single-Layered Rectangular Filtenna
Presenter: Sai Radavaram
Author: Sai Radavaram
Affiliation: Utah Tech University
Abstract: A compact, wideband, single-layered rectangular microstrip patch antenna with built-in filtering capability at both the lower and upper bands has been investigated in this project. The design employs a slot-loaded radiator to reshape and excite multiple resonant modes. In particular, the slots enable coupling between the fundamental TM01 mode and a modified TM21 mode, generating additional resonances that broaden the impedance bandwidth. The slot arrangement also produces radiation nulls at both band edges through the excitation of higher order TM20 and TM21 modes. Additionally, the coplanar L-probe feed introduces an extra radiation null in the upper stopband while improving impedance matching at higher frequencies. The Filtenna achieves a realized 10-dB impedance bandwidth of 27%, spanning 4.4 to 5.8 GHz, providing broad operational coverage with strong out-of-band suppression. It's single-layered, low-profile structure, and straightforward fabrication makes it well suited for compact wireless communication systems requiring integrated filtering to reduce front-end complexity and insertion loss. Full-wave numerical simulations performed using ANSYS HFSS confirm stable broadside radiation patterns across the entire operating frequency range, with cross polarization levels well below -20 dB and -15 dB along the E- and H-planes, respectively. The Filtenna also exhibits pronounced attenuation outside the operating band, demonstrating an effective balance among bandwidth, selectivity, and compactness for modern wireless applications.

Title: Pause, Reflect, Proceed: Ethics Checkpoints in the AI Development Lifecycle
Presenter: Tanya Yu
Authors: Tanya Yu, Catherine Bao, Vivek Srikumar
Affiliation: University of Utah
Abstract: As artificial intelligence (AI) systems are increasingly deployed in high-stakes domains

such as healthcare, justice, and education, the lack of structured ethical oversight risks amplifying existing inequities. Although regulatory and corporate frameworks highlight principles like transparency, fairness, and accountability, they often do not translate these principles into concrete practices aligned with real development workflows. This work introduces a publicly accessible, stage-specific checklist framework designed to support ethical reflection across the AI life cycle: design, development, testing, deployment, and post-deployment. The checklist provides closed-ended but adaptable questions that act as actionable prompts to guide reflection and team dialogue. By consolidating principles from existing responsible AI frameworks and aligning them with development milestones, the checklist helps surface risks and governance gaps earlier in the process when used alongside other mechanisms rather than as a stand-alone safeguard. We demonstrate its value through retrospective applications to real-world cases, showing how such tools can complement emerging regulatory and industry efforts toward more transparent and accountable AI development. This work represents an initial step toward shared, community-driven standards. It is intended as both a practical resource and a foundation for future validation in real deployment contexts.

Title: A Deep Learning Approach to Vehicle-to-Vehicle Communication for Enhanced Road Safety Using Graph based algorithms
Presenter: Karson Blomquist
Author: Karson Blomquist
Affiliation: Southern Utah University
Abstract: Vehicle to vehicle (V2V) communication has become an important component of modern technology in transportation. V2V allows vehicles to share information about hazards, traffic conditions, and roadway events. My prior research has demonstrated that machine learning models, particularly Graph neural networks (GNNs), can prioritize messages to support safe driving. I plan on building on this foundation by using an enhanced V2V framework that integrates this priority scheduling with a real time 3D visual of what is going on. Along with this 3D visual there will be a GNN visualizer as well. Together these will create an interactive environment for evaluating how machine learning models help influence communication with vehicles. The Priority scheduling layer expands the original architecture by bringing in contextual features that affect message urgency and behavior. These features include message type (like hazards, emergency alerts, or traffic updates). What type of vehicle it is (normal car, ambulance, bus), estimated load on the network, and the distance between the vehicles. With these factors combined, the system generates a score that will guide these messages differently when there is heavy network traffic. critical information such as anything coming from ambulances, police cars, or road closures, will receive higher priority and bandwidth allocation. By combining the 3D simulation, the GNN tools, this project will offer a comprehensive and highly important extension of my prior V2V communication research. This platform will provide improved decision quality and reasoning of machine learning communication systems. This is going to be valuable information for future V2V studies, and real-world transportation applications.

Kinesiology and Health Sciences

Title: Virtual Reality Walking Increases Visual Scanning and Reduces Free Memory Recall
Presenter: Elena Moreno
Authors: Elena Morena, Jeffrey Cowley, Danilo Dullas, Jeff Guzman, Clifford Sanders, Alana Molin Tucker, Amelia Cathrine Wolfe, Nathaniel Bodell, James Navalta, Lijie Zhou
Affiliation: Southern Utah University

Abstract: Modern virtual reality (VR) systems can simulate natural motor experiences, but little is known about how cognitive and visual processes differ compared to real-world experiences. PURPOSE: The purpose of this study was to compare object memory recall and eye movement behavior between OW and VRW conditions. METHODS: Twenty participants (9 female; 26.8 Â± 9.3 years) wore eye tracking devices while walking at a self-selected pace on a ~1â„2 mile outdoor route (OW) and on a passive, omnidirectional treadmill while wearing a headset displaying a 3D video (~10.5 min) of the outdoor route (VRW) in pseudorandom order. After the first walk, participants completed an object recall quiz identifying five objects seen along the path amidst similar objects not on the path. The recall score (correct - incorrect recalled objects) was compared between groups (OW: 5 female; 25 Â± 10.3 years; VRW: 4 female; 28.1 Â± 7.9 years) with a two-sample t-test. Eye movement metrics (# saccades and average peak saccadic velocity) were compared between conditions using paired samples t-tests. RESULTS: Participants had better recall scores after OW compared to VRW (3.1 vs. 1.5; p = 0.026). Participants made fewer saccades in OW compared to VR (460 vs. 911; p = 0.001) and had a lower average peak saccadic velocity (110Â°/s vs. 137Â°/s; p = 0.02). CONCLUSION: Participants demonstrated stronger memory recall when walking outdoors, while VR walking showed increased visual scanning activity. The changes in memory performance and eye movement activity in VR may relate to the novelty of the experience, limitations in video quality, or the physical adaptation required to walk on a treadmill while immersed in a virtual environment. These factors may increase visual scanning demands and cognitive effort, potentially interfering with memory encoding. With greater familiarity and improved VR immersion, these differences may diminish.

Title: Factors Affecting Renal Health in Collegiate Athletes
Presenter: Paul Pillitteri
Authors: Paul Pillitteri, Mary Jo Tufte, Alexa Lord, Dillon Petty, Jack Stevenson, Colton Koch
Affiliation: Southern Utah University
Abstract: Collegiate athletes put a great deal of physical stress on their bodies, through both physical exertion as well as their lifestyle habits that aid in performance. However, limited research has examined the impact of daily these stressors on renal function. This study surveyed collegiate athletes across various sports and competitive seasons to assess training, lifestyle habits, and subjective indicators of renal dysfunction. Survey results were compared with urine albumin-creatinine ratio (uACR) values obtained through standard urinalysis. Of the 163 athletes tested, 35.6% had abnormal uACR values. Pearson’s correlation analysis revealed a strong positive association between uACR and the time elapsed between exercise and urine collection, suggesting that some factor associated with the workout may be transiently affecting kidney function. These findings highlight the need for further investigation into the long-term effects of athletic training on renal health and recovery in this population.

Title: Exploring the Role of Thyroid Hormones and Zinc in Reducing ACL Injury Risk in Menstruating Females
Presenter: Kasidee Carter
Authors: Kasidee Carter, guided by Tyler Smith
Affiliation: Independent
Abstract: The increased risk of ACL tears in females, particularly during menstruation, is an issue for female athletes across the world of sports. A connection between ACL laxity and elevated levels of estrogen and relaxin has been observed due to an upregulation of matrix metalloproteinases (MMPs), which degrade the extracellular matrix (ECM) and weaken connective tissues such as collagen. The most current way medicine has tried to intervene with this matter is through the use of hormonal contraceptives. The contraceptives are used as an

effort to stabilize estrogen levels along with relaxin levels. As more information emerges with hormonal contraceptives, these treatments may not be as suitable for all individuals. The research takes on an alternative approach with an emphasis on the role of thyroid hormones (T3 and T4) and zinc in the way they interact with MMP-13 activity to allow for tissue strength and resilience. Zinc has the ability to express more production of T3 and T4 allowing for more GH factor to be released in order for muscle and tendon strengthening to take place. If T3 and T4 levels could be manipulated to reduce the risk of ACL tears for menstruating females, then understanding the effect of MMP-13 activity with Zinc on managing hormonal fluctuations throughout menstruation could prove valuable in reducing ACL injury risk. This alternative approach could lead to a new path of maintaining/improving joint stability and reducing ACL sports-related injuries among females through a non-contraceptive method.

Humanities Philosophy and Foreign Language

Title: Teaching Writing in the Age of AI Requires both Intellectual and Emotional Labor, Work that Teachers are often Left to Navigate Alone

Presenter: Ariela Sanchez
Authors: Ariela Sanchez and Xiao Tan
Affiliation: Utah State University

Abstract: College students' use of generative AI (GenAI) is growing, particularly in assisting writing. Responding to this unauthorized use of GenAI in writing is an emotionally demanding task for college writing teachers, who are often left alone to sort out such emotional processes (Micciche). While in personal blogs and newsletter, writing teachers and scholars have expressed their intense feelings, from frustration and distress to desperation and even disgust (Lieberman; McMurtrie), little research has systematically analyzed the complex emotions that writing teachers experience as a result of GenAI development. This study, funded by the Conference on College Composition and Communication Emergent Scholar award and the Utah Academy of Sciences, Arts, and Letters RA stipend, seeks to investigate how college writing teachers respond to the growing use of GenAI by students, and what emotional labor they face. Through the theoretical lens of emotional labor (Hochschild), our goals are to figure out what triggers strong emotions for writing teachers and what factors play into positive and negative experiences. Nine college writing instructors with diverse teaching experiences, academic ranks, and institutional positions were recruited as participants for Fall 2025. Each participant kept a monthly narrative journal on their emotional experiences in teaching and took a monthly semi-structured interview throughout the semester. Interview transcripts and narratives were coded inductively to understand participants' emotions in dealing with AI-related challenges. Analysis shows three major patterns in terms of emotions. The types of emotions that were most distinct in our study were 1) doubt and anxiety, 2) frustration and anger, and 3) empowerment and motivation. Many of the emotions felt by participants were related to teacher-student relationships, their ability to meet pedagogical goals, and their personal opinions on GenAI. The study also shows that participants often feel emotionally isolated and pressured to obscure their true feelings to align with the mainstream discourses of GenAI. For example, participants who embrace the power of GenAI in writing pedagogy feel pressured to remain silent amid the field's cautious sentiment, whereas those who are wary of its ramifications are pushed to adopt it under university- or state-level initiatives. Our study brings forward the hidden labor of being a writing teacher in the age of GenAI, which will be a valuable addition to recent studies on GenAI's impact on higher education.

- a02379429@usu.edu - Ariela Sanchez; Xiao Tan – Utah State University

Title: Sappho on Tour: Mapping Lesvos; Poetic Heritage

Presenter: Dhanai Anthimidou-Friel
Authors: C.R. Grimmer and Dhanai Anthimidou-Friel
Affiliation: Utah State University C.R. Grimmer, Ph.D., assistant professor; and Dhanai Anthimidou-Friel, undergraduate student
Abstract: This poster presents the research process, methodology, and early development of the international public humanities project Sappho on Tour. The project investigates the history, poetry, and cultural afterlives of the ancient Greek poet Sappho by connecting her work to contemporary landmarks, artistic interpretations, and global scholarly debates. Long before modern associations reshaped her legacy, Sappho was recognized in antiquity for her groundbreaking lyric voice; Plato famously referred to her as the "tenth muse." As the most extensively preserved woman poet from archaic Greece, her writing marks a turning point in Western literary history, representing some of the earliest explorations of personal emotion, desire, and individual experience rather than mythic or civic narratives.
Through a UASAL Undergraduate Research Fellowship, student researcher Dhanai Anthimidou-Friel collaborated with Assistant Professor C. R. Grimmer to build a foundational research infrastructure for the project's next stages. Utilizing cultural and linguistic expertise from a native Greek, Anthimidou-Friel created a comprehensive international database of scholars, artists, museums, archives, and cultural organizations whose work engages with Sappho or her reception. This database informs the design of an interactive digital map intended for public audiences, educators, and researchers. It also consolidates over a century of Sappho scholarship, making the larger project eligible for complex arts and humanities grants that require evidence-based planning, interdisciplinary partnerships, and long-term feasibility.
The poster highlights the skills and processes involved in developing this scholarly foundation, including archival research, metadata organization, digital mapping preparation, and evaluation of sources. By emphasizing the labor behind research scaffolding—work that is often invisible in final digital products or grant narratives—this presentation demonstrates how undergraduate researchers contribute meaningfully to large-scale public scholarship. Ultimately, this project shows how humanities research can connect ancient literature to contemporary global communities while providing emerging scholars with training in academic and public-facing research practices.

Physical Sciences

Title: Synthesis and Characterization of Novel Xanthylium Fluophores
Presenter: Jackson Olsen
Authors: Jackson Olsen, Jacob Moody, Brecken Shakespeare, Jessica Munro, Betsy Hansen, Zane Towers, Michael Horton, Adam Jones, Mackay B. Steffensen
Affiliation: Southern Utah University
Abstract: Xanthylium-based fluorophores, comprising a central cationic xanthene framework, are useful as molecular probes and for cellular imaging. Benzo[5,6]naphthaceno[1,12,11,10-jklmna]xanthylium (BNAX) represents a highly conjugated member of this family, displaying strong orange fluorescence under UV irradiation. This project focuses on expanding the structural diversity of BNAX derivatives to investigate how substituent and conjugation changes may influence optical behavior. BNAX and its analogs were synthesized through a three-step sequence involving a multicomponent cyclization, bromine oxidation, and photocyclization at 400 nm. Derivatives were prepared by varying the aldehyde or naphthol precursors. Derivatives include utilizing 4-tert-butylbenzaldehyde, 3,5-ditert-butyl-4-hydroxybenzaldehyde, and 2-naphthaldehyde. This latter naphthaldehyde derivative exhibited a red-shifted absorption consistent with an increase in conjugation across the entire molecule. Products were purified and characterized using 1H NMR spectroscopy and fluorescence spectroscopy. These results

demonstrate that structural modifications may predictably tune the photophysical properties of BNAX-based dyes, providing insight into structure-property relationships relevant to future design of functional light-harvesting and imaging molecules.

Title: A Pilot Study Investigating Virtual Reality for Chemical Education
Presenter: Kaden Jensen
Authors: Kaden Jensen and Matthew Prater
Affiliation: Southern Utah University
Abstract: Connecting 2D molecular structures to their 3D counterparts can be exceptionally challenging for students studying chemistry, especially in the context of stereochemistry and symmetry. Many students struggle with visualizing the spatial arrangement of atoms, which is crucial for predicting molecular properties. Virtual reality (VR) can be useful to bridge this gap of understanding by allowing students an immersive experience to interact with the 3D structures next to their 2D drawings. As no user-friendly application existed, we built a new VR program to help students internalize this important relationship. Our application was specifically designed to simplify difficult spatial reasoning by allowing them to rotate the 3D models. We used student survey data to examine student perceptions of the utility of this learning modality.

Title: Oxidation of Indoline with Ruthenium (III) Chloride
Presenter: Holden Petty
Authors: Matthew Prater Ph.D., Holden Petty, Wyatt Evans
Affiliation: Southern Utah University
Abstract: Indole is an important compound found in the amino acid tryptophan and indole alkaloids. It is usually made using a process called the Fischer indole synthesis. Indoline, a version of indole with two extra hydrogen atoms, can be made through various methods, such as metal catalysts, organic catalysts, or radical reactions. We initially proposed a reaction between indoline and Ru(III) to generate indole by removing hydrogens from indoline through an oxidative process. In our first experiments, we noticed a shiny metal forming, which showed that a reaction was occurring. We then isolated indole from the reaction mixture to confirm it was being produced via a stoichiometric process. Present work is engaged in converting to a catalytic process. Indole is a biologically relevant compound used to form the amino acid tryptophan and indole alkaloids. Traditionally, indole is prepared via the Fisher indole synthesis. Indoline, the di-hydrogenated derivative of indole, is often made through a variety of methods, including transition metal catalysis, organocatalysis, and radical cyclization. We hypothesized that Ru(III) could oxidize indoline to indole and be reduced in the process. Our earliest reactions had a lustrous metal precipitate, indicating that reduction had taken place. Indole was then isolated to confirm its production. Current work is focused on developing a catalytic cycle by using a secondary oxidant and implementing other indoline derivatives.

Title: Bear With Me: Carbon Cycling in the Bear River
Presenter: Ash Rogers
Author: Ash Rogers
Affiliation: University of Utah
Abstract: Rivers play a significant role in the global carbon cycle, acting as both burial sites for carbon and sources of atmospheric CO_2. Western U.S. river systems remain understudied despite their importance in agricultural water use and regional carbon transport. The largest tributary of the Great Salt Lake, the Bear River, is extensively diverted for irrigation within Idaho and Utah and is especially critical for migratory birds. This project aims to quantify spatial and seasonal variability in carbon flux along the Bear River to establish baseline data for understanding how water management and environmental conditions influence carbon cycling. During Summer

2025, six sampling sites corresponding with existing USGS monitoring locations were selected from near the river's headwaters in the Uinta Mountains to its end at the Great Salt Lake. Field measurements included temperature, conductivity, dissolved oxygen, and pH, and bottled samples were collected for lab analysis of dissolved inorganic carbon (DIC) and dissolved organic carbon (DOC). Initial observations show measurable differences in carbon concentrations between upstream and downstream sites, suggesting influences from agricultural usage and in-stream biological processes. Continued seasonal sampling will give insight into the impact river discharge and temperature have on carbon concentrations. These findings will ultimately contribute to improved understanding of carbon movement within Western U.S. river systems.

Title: Modeling the Effects of Temperature on Wolbachia Release Strategies and Dengue Serotype Dynamics
Presenter: Fischer Davis
Authors: Fischer Davis, Brayson Williamson, Vinodh Chellamuthu
Affiliation: Utah Tech University
Abstract: Dengue is a vector borne illness that circulates among Aedes mosquitoes and humans. There are four serotypes of dengue that have been known to co-circulate. Several strategies have been utilized to break the cycle of dengue transmission such as Wolbachia, adulticides, and vaccines. Use of the bacterium Wolbachia can mitigate dengue transmission by reducing the level of dengue virus in the mosquito and/or shortening the mosquitoes lifespan. Since Wolbachia is not naturally occurring in Aedes mosquitoes, it must be introduced. Temperature is a critical determinant of mosquito behavior and life cycle dynamics. This study focuses on the development of a mathematical model to quantify the effect of temperature on dengue transmission. The model is a compartment-based system consisting of first-order differential equations; temperature-based variability is introduced into several of the parameters. The analysis focuses on an outbreak of two, co-circulating, dengue serotypes typical of a tropical monsoon climate. Temperature data and mosquito parameters are based on Chiang Mai, Thailand. We found that a significant reduction in human dengue cases can be achieved when Wolbachia carrying mosquitoes persist in the population. Once introduced to the population, Wolbachia can persist for many years. When compared to other strategies for dengue mitigation, such as adulticides and Dengvaxia vaccines, Wolbachia has a great long term impact. Temperature also influences the optimal timing of Wolbachia mosquito releases for effective dengue mitigation. Leveraging the temperature-dependent mosquito dynamics provided by the model, we can identify optimal Wolbachia release strategies to mitigate dengue transmission.

Title: Study of Ferroelectric-to-Antiferroelectric Phase Transitions in LiTaO3 Under Electric Boundary Conditions
Presenter: Eva Greene
Authors: Eva Greene and Shao Qiu
Affiliation: Utah Tech University
Abstract: Ferroelectric (FE) materials exhibit spontaneous and switchable polarization below the Curie temperature, arising from symmetry-breaking ionic displacements. Antiferroelectric (AFE) materials, by contrast, display antiparallel dipole arrangements that yield zero net polarization and characteristic double hysteresis loops, making them attractive for high-energy-density capacitors. This computational study explores the electric-boundary-condition-induced ferroelectric-to-antiferroelectric phase transition in LiTaO3 using density functional theory (DFT). Under short-circuit boundary conditions (SCBC), perfect screening of surface charges eliminates the depolarization field, stabilizing the out-of-plane ferroelectric phase. Under open-

circuit boundary conditions (OCBC, zero net charge on electrodes → ⟨D⟩ = 0), the unscreened depolarization field destabilizes the FE phase and drives a transition to a previously unreported non-centrosymmetric antiferroelectric ground state characterized by alternating dipole patterns. Phonon calculations on the high-symmetry R3c reference structure reveal two unstable modes: a polar A2u mode (ω ≈ 181i cm-1) that condenses to the monodomain FE phase, and an antipolar A2g mode (ω ≈ 103i cm-1) that condenses to the AFE phase. Energetic analysis shows the FE phase is lowest in energy under SCBC, whereas the AFE phase becomes the global minimum under OCBC. The critical depolarization field required to trigger the FE → AFE transition is quantified, and the evolution of the energy landscape with finite electric displacement D is mapped. These results demonstrate that LiTaO3 can be reversibly switched between ferroelectric and antiferroelectric states solely by electrical boundary conditions or applied D-field, offering a new route for electrically tunable dielectrics, non-volatile memory, and high-performance energy-storage devices.

Title: What can magnetic biomarkers tell us about the Eocene-Oligocene Transition in the North Atlantic?
Presenter: Margaret Call
Authors: Margaret Call and Peter C. Lippert
Affiliation: University of Utah
Abstract: One of most significant episodes of climatic change in the past 66 million years was the Eocene-Oligocene Transition (EOT), a global cooling that began approximately 33.3 million years ago. While the climate records and proxies for EOT have been investigated in detail in the Southern and Pacific oceans and the impacts on marine ecosystems there are better understood, there remain major geographic and ecological areas of impact that lack information. My project aims to improve this knowledge gap by measuring high-resolution records of environmental change across the EOT by studying fossil remains of magnetotactic bacteria (MTB). MTB are a rich archive of environmental change because they are sensitive to oxygen and nutrients, which allows us to use their fossil record as a pathway to understand the impact of global cooling on deep sea communities. By using core samples retrieved from offshore of Newfoundland during International Ocean Discovery Program (IODP) Expedition 342, we will document the concentration and preservation quality of these fossils across the Eocene-Oligocene Boundary in high resolution. We will perform two types of measurements on these sediment samples: First Order Reversal Curves (FORCs) and analytical electron microscopy. FORCs and their corresponding FORC diagrams to isolate the signal from the magnetofossils efficiently from other magnetic material to the bulk sample. We use these data to select a few samples of interest to prepare examine magnetic extracts using a Scanning Transmission Electron Microscope. These observations will provide physical images and chemical composition (via electron diffraction and energy dispersive X-ray spectroscopy) of the fossils and allow us to understand their level of preservation over the EOT and confirm our previous findings, and allowing us to learn more about the deep-sea oxygen, nutrient availability, and redox conditions on the sea floor during the transition from a greenhouse to icehouse

Title: Frost Formation and Isoperimetric Tiling
Presenter: Clara Varela
Authors: Clara Varela and Maria J Rodriguez
Affiliation: TECS and Utah State University
Abstract: Frost accumulation on pavements and playgrounds can be unsafe, and cause serious injuries. But could the surface itself help prevent it? This project investigates whether surface texturing can reduce frost formation and which geometrical imprints would be most effective in

lessening frost coverage. Guided by principles such as the Isoperimetric Inequality and the Regular Polygon Tiling Theorem—which show that minimizing perimeter relative to area reduces frost formation—geometric tiling patterns were selected for testing. To perform this experiment, various concrete slabs were cast, and textured using 3D printed circular, square and hexagonal patterns. In each design, the tiled pattern created raised perimeters, while the interior of each shape was inset 3mm into the concrete. The necessary environmental conditions to allow frost to form (below 2°C and Relative Humidity above 80%) were recreated in a freezer and slabs were monitored for three hours while measuring frost coverage, relative humidity and temperature. Our findings indicate that textured surfaces significantly reduced frost accumulation compared to a flat control slab, which had 100% frost coverage, with the hexagonal tiling being the most effective at 52%.

Social Sciences

Title: Visitor Reactions at a Museum Exhibit: Emotions to Climate Change Vary by Climate Engagement

Presenter: Ginger Blodgett
Authors: Ginger Blodgett, Alec Roberts, Lynne Zummo, Monika Lohani
Affiliation: University of Utah

Abstract: As climate change continues to threaten both natural systems and human society, understanding what distinguishes individuals who are highly engaged in climate action from those who are not is essential for broadening mitigation efforts. Initial research has linked negative climate-related emotions to increased willingness to take climate action, indicating that negative emotions may be an important motivator for engaged individuals. However, when negative emotions become too intense or persistent, they can undermine wellbeing, making the capacity to emotionally recover from negative climate-related emotions essential. The current study aimed to better understand the emotional experiences of individuals viewing climate change stimuli in a naturalistic environment. More specifically, we explored how trait-level climate engagement was linked to experiences of negative and positive emotion as participants explored a museum exhibit on climate change. Participants viewed a negative section of the exhibit, followed by positive and neutral sections, pausing between each to complete surveys assessing their emotions. There was an interaction between climate engagement and exhibit section. Individuals with higher climate engagement reported experiencing more negative emotion than those with lower engagement in the negative section, but comparable levels of negative emotion in both the positive and neutral sections. Although positive emotion differed across exhibit sections, there was no significant effect of climate engagement on positive emotion. The surge of negative emotion among engaged individuals when viewing the negative exhibit section aligns with prior work showing that, in the context of climate change, negative emotion may be a necessary element of genuine concern and action. However, our findings also suggest that engaged individuals can recover from their negative emotions, and experience similar amounts of positive emotion as their disengaged peers. This highlights a potential pathway for balancing engagement with wellbeing; allowing negative emotions to arise when appropriate while also supporting a return to baseline.

Title: The Role of Affect in Perceptions of Personal Urgency in the Context of Climate Change

Presenter: Alexa Almond
Authors: Alexa Almond, Ginger Blodgett, and Monika Lohani
Affiliation: University of Utah

Abstract: Although climate change is recognized as a global and pressing issue, people vary

widely in their perceived urgency and the effort needed to engage with this crisis. Affective responses to climate change may play a central role in perceiving the urgency of climate change; however, limited research has tested this relationship. To address this knowledge gap, the current study examined whether the experience of negative and positive affect was associated with the perceived urgency of adverse climate change effects on one's personal life. 510 participants reported their affective responses to the realities of climate change. Personal urgency specific to climate change was measured by asking participants to estimate the number of years until they expect adverse climate change events to personally affect them, ranging from 0 (urgent) to 500 years from now (not urgent). In line with predictions, participants' affect significantly predicted their perceptions of climate urgency. A higher negative affect, as well as positive affect, predicted greater personal climate urgency. These findings indicate that stronger affective responses specific to the climate crisis are related to perceptions of more urgent personal impact. Additionally, negative affect explained significantly more variance than positive affect, suggesting its greater role in perception of personal threat and climate change urgency. These findings highlight the role that affect can play in effective scientific communication of the climate crisis and in motivating individual engagement in climate mitigation efforts. Future work is also needed to understand how affect, and its regulation in the context of climate change, can be tailored to improve both personal and collective climate engagement and action.

Title: Two therapies utilizing bilateral stimulation for PTSD: EMDR and ART
Presenter: Kerry Kennedy, PhD
Authors: Kerry Kennedy, PhD, D. Loftus, Teresa Salias, LCSW
Affiliation: Weber State University
Abstract: The field of Social Work has seen the development of specific interventions to address Post-Traumatic Stress Disorder (PTSD) using bilateral stimulation. Bilateral stimulation bridges both sides of the brain to access the midbrain, helps people stay in the present moment, and assists with processing negative physical and emotional responses due to a traumatic event. Bilateral stimulation can be achieved through the use of eye movements by having a client move their eyes from back and forth, left to right, following your hand, by utilizing a light bar, or by utilizing tappers that vibrate bilaterally. Two interventions utilizing bilateral stimulation, EMDR (Eye Movement Desensitization and Reprocessing) and ART (Accelerated Resolution Therapy), have become increasingly popular and effective in processing trauma. This presentation will explore and explain bilateral stimulation, provide a review of the literature surrounding both EMDR and ART, focusing on the use of each with PTSD (Post-Traumatic Stress Disorder). A case study utilizing ART and a case study utilizing EMDR will be presented. Strengths and limitations of each modality will be explored.

Title: The Paradox of Efficiency: A Mixed-Methods Study on Human-AI Co-Creation in Video Production
Presenter: Jiachun Hong
Author: Jiachun Hong
Affiliation: Utah Tech University
Abstract: The rapid advancement of artificial intelligence (AI) is ushering in a transformative era for video production, enhancing efficiency, creativity, and lowering technical barriers for content creation. This mixed-methods pilot study investigates the attitudes, acceptance factors, and the human-AI co-creation experience of university students enrolled in an AI media production class. It considers AI video production as a human-AI collaborative model and explores the role of AI as a "creative accelerator" and "thought partner" rather than a replacement for human ingenuity. Using an extended Technology Acceptance Model (TAM) and the #ppAI6 Model of Creative Engagement (Six Levels of AI-Enhanced Creative Engagement) as the framework, the

research collects data through a survey (measuring perceived usefulness, AI self-efficacy, and ethical concerns), structured class observation (quantifying time spent on prompting versus critical remediation), and artifact analysis (assessing video creativity using fluency, flexibility, originality, and objective quality metrics). The research expects to find that perceived usefulness strongly predicts adoption, reflecting students' prioritization of time-saving benefits. It also anticipates that high adoption may correlate with lower visual originality in artifacts, suggesting a potential creative deficit linked to AI reliance. Additionally, the study addresses "Supervision Laziness," predicting that students who report high confidence in AI oversight (self-efficacy) will nonetheless be observed engaging in low rates of critical analysis and remediation. These results will inform pedagogical strategies for moving students beyond passive AI consumption toward transformative, participatory co-creation (Level 6), ensuring balanced skill development and proactive ethical awareness.

Title: Deseret Divided: Regional Identity and Religious Stereotypes in Utah
Presenter: Ryan T. Cragun, Bethany Gull, Michael Nielsen, Rick Phillips, Jesse Smith
Authors: Ryan T. Cragun, Bethany Gull, Michael Nielsen, Rick Phillips, Jesse Smith
Affiliation: Ryan T. Cragun (University of Tampa), Bethany Gull (Utah Tech University), Michael Nielsen (Georgia Southern University), Rick Phillips (University of North Florida), Jesse Smith (Western Michigan University)
Abstract: Utah's distinctive subculture emerges from the consolidation of church, community, and kinship ties. This leads to stereotypes about members of The Church of Jesus Christ of Latter-day Saints in Utah, including that they (a) are heavily involved in multilevel marketing ventures (b) believe in the therapeutic efficacy of essential oils, (c) undergo cosmetic surgeries at high rates, and (d) are frequently prescribed antidepressants. This paper uses a stratified sample of Utah residents and a quota sample of U.S. residents in other states to assess the veracity of these stereotypes. We find that current members of The Church of Jesus Christ of Latter-day Saints behave similarly to Utahns who have never been members of this church, casting doubt on the religious character of these stereotypes. However, former members of the church—a burgeoning demographic—exhibit distinctive behaviors.

Title: Does Health Expenditure Build Trust? Evidence from OECD Countries, 2010–2022
Presenter: Shatarupa Dey
Authors: Shatarupa Dey and Dr. Phillip M. Singer
Affiliation: University of Utah
Abstract: This study focuses on analyzing the relationship between national health expenditure and public trust in government, utilizing cross-country panel data that leverages OECD healthcare expenditure data, along with a comprehensive, longitudinal dataset of 37 countries from 2010 to 2022. Costa Rica was excluded from the analysis due to its recent addition to the OECD in 2021, which resulted in a lack of data for the years preceding it. The initial analysis (based on the pooled OLS model) revealed that people in richer, high-spending countries generally exhibit higher levels of political trust—aligning with theories that revolve around state capacity and welfarism leading to increased legitimacy vis-à-vis increased confidence (Kumlin et al., 2025). However, the US is a notable outlier in this regard, demonstrating high spending but only a moderate level of trust. In this case, factors such as party polarization, institutional performance, and historical contexts may determine and shape citizens' confidence (Hetherington & Rudolph, 2015). Our subsequent analysis relied on fixed effects models, and we found that a within-country increase in spending does not invariably lead to an increase in trust. This underscores the leading theory on counter-cyclical investments, suggesting reactive/short-term spending alone may not lead to augmented/increased political trust (Camarena, 2019). Additionally, although public trust increased in 2020, this may have been due to a "rally-around-

the-flag" effect (Baekgaard et al., 2020). For the years 2021 and 2022, the model showed a negative association between health expenditure and trust, which increased significantly in 2022. The policy implications of this study are that high resource allocation and spending alone may not be sufficient to build trust; consistent and effective performance of the government over time (that may primarily align with broader performance theory) results in increased trust (James, 2019).

Title: Isolation and Identification: A Qualitive Analysis of Interviews with Incels
Presenter: Ryan Felderman
Author: Ryan Felderman
Affiliation: University of Utah
Abstract: This project seeks to investigate how individuals come to identify with the "incel" (involuntary celibate) community, focusing specifically on the pathways by which people become affiliated with this online subculture. While the phenomenon of inceldom has generated substantial media attention and growing academic interest, most existing research focuses on ideological content, behavioral risks, or psychological profiles of incel participants. There remains a critical gap in understanding how individuals find and integrate into the incel community, and what leads them to that point. Through semi-structured interviews with self-identifying incels, this qualitative study aims to center participants' own narratives, through which we may examine the social, emotional, and contextual factors, such as experiences of loneliness, marginalization, or rejection, by which an individual comes to associate themselves with the incel movement. By examining the processes of self-identification with and entry into the incel subculture online, this study contributes to existing research and provides insight for future scholars, educators, and researchers concerned with online extremism, young men's mental health, and cultural dynamics shaping modern masculinity.

Title: Hidden Heroes of West Farms: A Bronx Neighborhood's WWII Legacy
Presenter: Vanessa Garcia
Author: Vanessa Garcia
Affiliation: Utah Tech University
Abstract: WWII (1939–1945) was a global conflict that involved more than 30 countries. It began with Germany's invasion of Poland. The United States eventually joined the battle after the 1941 attack on Pearl Harbor. Using archival records, census data, and newspaper reports, this research explores enlistment and military service among West Farms residents, employment, shifts in housing, and the neighborhood's civic participation during WWII. Findings reveal that West Farms played a far more active role in World War II than its public image suggests. This work challenges the perspective people have of New York and reveals wartime sacrifices and stories that deserve recognition. In doing so, it invites people, regardless of where they are based, to approach every new location they visit with historical curiosity, seeing not just a location but the lives and stories behind it. Although this research focuses on West Farms in the Bronx, its meaning reaches far beyond New York. The experiences of West Farms' residents during WWII mirror the sacrifices and civic participation found in communities across the United States, including places like Utah. By studying one neighborhood in depth, we gain insight into national patterns of service and social change that shaped the entire country. By examining local history, we connect past and present, preserve memory, learn from prior experiences, enrich our understanding of society, and inspire civic engagement, while also building a more inclusive narrative for future generations. We honor the veterans of West Farms, who celebrate the spirit of ordinary Americans everywhere, and whose contributions have often been overlooked.

Title: Satisfaction at the Extremes? Government Evaluations and Ideology

Presenter: Vidya Despain
Authors: Vidya Despain and Harley Roe
Affiliation: Southern Utah University
Abstract: Parties in opposition tend to be less satisfied with government than parties serving as a member of an executive coalition. This project explores heterogeneity within party families and finds that parties at the extremes of the political spectrum tend to be the parties least satisfied with government while they remain in opposition. Meanwhile, when these parties join coalition governments their supporters not only experience the greatest boost in satisfaction, but also become the groups most satisfied with the functioning of government. We examine this phenomenon using 11 available waves of the European Social Survey.

Title: Social Belonging in Utah
Presenters: Lillian Allred, Becca Hine, Madison Kuchinski, Addie Mumford, and Lily Turner
Authors: Lillian Allred, Kiana Hansen, Calleigh Herbert, Becca Hine, Addie Mumford, Madison Kuchinski, Lily Turner
Affiliation: Snow College
Abstract: Compared to other states, Utah is one of the most religiously distinct in the US. The majority of the population does not only identify as Christian, but belongs to a specific denomination: The Church of Jesus Christ of Latter-day Saints. This is an extremely rare occurrence, which makes Utah an ideal setting to study how religion affects social belonging and isolation. Our research will look at a broad range of questions, including whether LDS or non-LDS respondents interact with more people outside of their religious beliefs, and whether recent converts of a religion feel that they belong more or less than those who have been members since birth. Other research, such as a study done by Emily A. Greenfield and Nadine F. Marks, has shown that social belonging is a strong indicator of both mental and physical well-being, and that those who have a stronger sense of belonging in their community generally lead healthier, happier lives. If we can identify factors that influence social belonging in Utah, we can use that knowledge to create environments, such as college campuses, that foster belonging and community cohesion for people of all backgrounds. Furthermore, our research fills a gap that other studies have not. Although the relationship between religion and belonging has been studied before, there have been very few studies that focus specifically on Utah and its unique religious makeup. Although data collection is currently ongoing, initial results suggest that LDS respondents are reporting the highest levels of belonging, while non-LDS respondents are reporting the lowest levels of belonging. Among LDS participants, those who attend religious services weekly report higher levels of belonging than those who attend religious services less frequently.

Title: Applied Behavior Analysis for Individuals with Autism Spectrum Disorder: The Benefits and Drawbacks
Presenter: Carmyn Hardisty
Author: Carmyn Hardisty
Affiliation: Utah Tech University
Abstract: Autism Spectrum Disorder (ASD) is a common diagnosis found in our population today. Applied Behavior Analysis (ABA) is one of the most common therapeutic resources to assist individuals with ASD in skill building and development. However, ABA has a controversial history and this has created push back on the use of this therapy. Given its complex history, what are the benefits and drawbacks of ABA therapy? This thematic literature review dives into the historical, social, and psychological research into ABA treatment and evaluates common themes in the scholarly literature, touching on ABA's history, therapeutic strategies over time, therapeutic benefits, and therapeutic downfalls. This project examines the foundation

of ABA and how it has evolved and explains the use and extinction of previous cognitive aversives. Various research studies have been found to support the improvement of cognitive ability and interpersonal skills in ABA clients. The significance that self-injurious behavior has on this population and ABA's focus on safety for clients has been recognized as a key component. ABA's use of intense treatment while developing individualized behavior support plans has become a primary focus. Through evaluating the negative impacts of masking on individuals with ASD, studies have shown that ABA has evolved to be patient centered and embrace diversity. The Autism Rights Movement and activists express concern for the lack of representation of autistic voices in ABA development. ABA is progressing in the direction of prompting autonomy and choice to the clients they work with. Gaps in the literature that are most prevalent encourage future research to explore educational and infield training for behavior analysis practitioners, evaluate complex situations where consequences of choice can cause conflict, use sample sizes that reflect a wider age range and more diverse populations over longer durations, and dive into the social effects of misinformation.

Title: Is Corn Ethanol Production Greenwashing? A Critical Analysis of Biofuel Production in the USA under the Renewable Fuel Standard.

Presenter: Maya Gomez-Coultas
Author: Maya Gomez-Coultas
Affiliation: University of Utah

Abstract: The literature of corn ethanol presents conflicting claims on its environmental impacts. The fuel, implicated in ecosystems of the soil and water in addition to the food system (and costs), is inextricably linked to not only greenhouse gasses, but other resources. Often cited to reduce greenhouse gasses in the transportation sector, while other evidence confirms corn ethanol's increase, rather, in greenhouse gas emissions. This paper will address the Renewable Fuels Standard as a policy of greenwashing, that preserves neoliberal capitalist policy and perpetuates modes of extraction degrading ecosystems irreversibly. Drawing on a historical analysis, this paper will also address the polices of subsides that have allowed the over accumulation of corn in the USA, necessitating a reabsorption into commodity circuits. I argue corn ethanol production not only rose out of the organizing principles of capitalism but perpetuate structures that allow for the continuation of the pollution of environments and the further release of greenhouse gasses.

Title: Does music preference impact the stress response and the accuracy in an arithmetic task?

Presenter: Kaitlyn Jensen
Authors: Kaitlyn Jensen, Niobe Friedrich, Jaxon Lombardi, & Claudia Jorgensen
Affiliation: Utah Valley University

Abstract: When individuals are exposed to stress, the sympathetic nervous system activates the stress response, leading to increased respiration and heart rate, fluctuating body temperature, and sweating. Stress is associated with poor health outcomes and mental illness. College students face many potential sources of stress, including financial, social, and academic pressures. Music interventions have been shown to mitigate the stress response and improve mental well-being, but research on the influence of specific music qualities is sparse. We performed a between-subject repeated measures experiment in which heart rate, electrodermal skin response, and body temperature were recorded while undergraduates performed a potentially stressful calculation task. The participants completed the task first without music and then two additional times with music, either with two fast-paced or two slow-paced music segments. The researchers also recorded the number of calculation errors during the three task segments. Following the completion of the calculation task segments, participants were asked to complete a brief survey

on their music preferences. The survey asked them to rate the music they encountered, their listening habits when completing homework, and their music preference. Based on previously collected data from our lab, we predict that the math-induced stress response gets smaller with practice. We further predict that this reduction in the stress response is more pronounced when the music preference matches the background music, while we predict that this reduction in the stress response will be smaller when the music preference does not match the background music. We further predict that the error rate will be smaller when the music preference is a match, and larger when it is a mismatch.

Title: Understanding the Predictive Nature of Adverse Childhood Experiences and Attachment Quality for Adult Mental Health Outcomes: A Systematic Review
Presenter: Ashley Carras
Author: Ashley Carras
Affiliation: University of Utah
Abstract: Background: Adverse childhood experiences (ACEs) are traumatic events that a child experiences from birth to 17 years old, such as neglect, child maltreatment, incarcerated parent, and violence in the home. Previous research shows a high number of ACEs is associated with detrimental health conditions, insecure attachment, and poor mental health outcomes. The first hypothesis is that a higher number of ACEs is associated with greater likelihood of for poor mental health outcomes (specifically, depression, anxiety, and PTSD) and an insecure attachment style in adulthood. The second hypothesis is that those who have experienced neglect specifically in childhood have an increased risk of developing a depressive disorder and an anxious attachment style in adulthood. Aim: This systematic review aims to better understand the predictive nature that exists between the relationship of ACEs and attachment in adult mental health outcomes. Methods: A search strategy was created to identify studies that examined ACEs, mental health outcomes, and attachment quality. The following databases were searched using keyword-based strategies: Academic Search Ultimate, APA PsychInfo, ProQuest Central, PubMed, and Web of Science. This study is based on an existing data set, the data set included 637 studied that were screened for title and abstract, 95 studies that were screened for full-text, and the data that was extracted from 55 studies which met the inclusion criteria. The current study will be a more in-depth examination on ACEs and will extract more detailed information pertaining to ACEs and establishing inter-rater reliability on both of this. Future steps include extracting additional data, such as specific traumatic events, and certain attachment styles, to be analyzed quantitatively. Preliminary Results: Preliminary results indicate there is a strong association between ACE exposure with insecure adult attachment and depression and PTSD.

Title: Social Cohesion Among Communities Experiencing Homelessness
Presenter: Shay Butcher
Authors: Shay Butcher, Cambria Jones, Alexandria Olson, Dan Poole
Affiliation: Salt Lake Community College
Abstract: Understanding Us is a non-profit in Salt Lake City, Utah. They run a Street Tai Chi program for people experiencing homelessness. Students and researchers from Salt Lake Community College have partnered with the organization to collect data on the efficacy of the program and the experience of participants. We have collected an updated sample of demographic survey data to better understand who engages with the program. This paper presents the updated data and describes the next phases of research. These include a focus on mental wellbeing and prior contact with system interventions such as drug treatment, homelessness prevention, mental health care, and interaction with the criminal justice system.

Title: A Song of Mistrust: The Role of Music Tonality in Interpersonal Trust

Presenter: Cameron Jewkes, Bella Smith, Lilliauna Burgi
Authors: Eliza Hess, Cameron Jewkes, Bella Smith, Lilliauna Burgi, Samantha Schaugaard
Affiliation: Snow College
Abstract: Our project explores the potential effects atonal music has on trust in an interpersonal relationship with strangers. Some musical notes when played together sound pleasant to the ear, and others have a clashing, uncomfortable sound. These combined notes that create that "uncomfortable feeling" are called atonal chords. Extensive research has been done on the effects of different music on thoughts and feelings, but very little research has been done on the specific effects on trust in interpersonal cooperation. In political, professional, and social environments, trust is an important variable. The use of music can potentially aid in these trust-dependent environments. Our project has examined college level students and placed them in a situation where they must depend on a stranger to reach a goal. The variable that changed was either a generic, atonal, instrumental song playing in the background or a generic, instrumental song without atonal chords. There was also a control group performing the task without any music playing. The effect on trust has been self-measured by a survey taken before the experiment rating if they are a naturally trusting person. They submitted a second form after the experiment asking a question gaging their trust in the stranger they depended on. In the post survey, we used a Likert scale of 1–10-star ratings in our surveys to analyze and gather results. Our results depicted, on average, less anxiousness and more trust and connection to one's guide overall in the tonal group compared to the other two groups. However, the tonal group scored the lowest regarding the questions of attaining the raffle tickets and being led the right way. One research limitation could be that our sample size was small as there was limited time. Another factor of limitations is that most of the subjects were people that we already

Title: Persuability Based on Traits, Looks, and Religion
Presenter: Danica Diaz, Carlee Adams, Miriam Thomas, Naomi Thomas
Authors: Danica Diaz, Carlee Adams, Miriam Thomas, Naomi Thomas
Affiliation: Snow College
Abstract: This research project investigates how physical characteristics, personality traits, and religiosity influence perceptions of attractiveness and persuability in potential romantic relationships. This study seeks to understand how moral and spiritual alignment, first impressions, and personal bias shape dating preferences and perceived compatibility. In the anonymous online survey college aged participants will answer demographic questions, self-assessments, and evaluate AI- generated character profiles. Each profile will vary in physical appearance, personality traits (based on the Big Five model), and religious background. Participants will be asked to rate the attractiveness of the character and then have a follow up question on how long they think a relationship with said character would last if they hypothetically were to have a romantic relationship. By comparing these responses, the study aims to measure how each factor affects attraction and persuability. We mainly want to focus our findings on if religion is as big of a contributing factor to who you find attractive as people assume it is. In addition, we aim to explore whether participants' self-identified personality types and personal levels of religiosity influence their ratings. The results may also highlight some external factors that come into play such as cultural norms, social expectations, and generational attitudes towards dating and how individuals perceive as "ideal" or "compatible." Furthermore, we aim to compare gender-based differences in persuability, noting whether men and women weight appearance, personality, ore religion more heavily when forming judgments or compatibility particularly among college students. Ultimately, this research contributes to the border understanding of modern relationship dynamics, offering insight into how people make dating decisions in an increasingly diverse, value-driven society. Findings will help clarify whether persuability and attraction are primarily driven by physical appearance, shared belief

systems, or personality congruence, deepening our understanding of human social and romantic behavior in the contemporary world.

Title: Multi-Level Credit Claiming
Presenter: Waylon Robinson*
Authors: Doug Murdoch, Grant Anderson*, Liza Berrett*, Ines Boumahdi*, Trinity Bryant*, Christianna Carpio Pancorvo*, Judas Johnson*, Enock Moke*, Gracey Lambertsen*, Defi Lodi*, Jack Madsen*, Valeria Matos Tarazona*, Joys Mbata*, Tristyn Montgomery*, Anis Nafir*, Joel Perez*, Ayla Raguskus*, Waylon Robinson* and Antonia Wirth*
*indicates undergraduate student
Affiliation: Southern Utah University
Abstract: Federal grants to state and local governments have increased dramatically over recent years. This forces coordination across multiple levels of government. Oftentimes, leaving the line of credit towards a specific project murky. This paper asks: how do voters respond to these complex intergovernmental relationships? I argue that voters reward their in-partisans for providing goods, but that political knowledge moderates this relationship. Nevertheless, officials at multiple levels of government are able to "credit claim" for the same program. I then use an original survey experiment to provide evidence for my theory.
Second, we are able to test whether political ignorance biases public opinion on criminal justice policy.

Title: The Capacity of Individuals to Recognize Healthy and Unhealthy Traits in Romantic Relationships
Presenters: Bryn Anderso, Adrien Hurst, Steven McIlrath, and Summer Welchmann
Authors: Bryn Anderson, Trinity Citte, Adrien Hurst, Summer Welchman, Dakota Lundgreen, Steven McIlrath
Affiliation: Snow College
Abstract: Over generations, the average age at which Americans marry has begun to rise. Differencing opinions on relationship traits may be due to social media, technology, and generational differences. The purpose of this study is to show how different factors affect an individual's ability to recognize healthy and unhealthy relationship traits. For the methods, an anonymous survey was sent out using Survey Monkey Software. We compared responses across generations, genders, and relationship statuses to identify how these factors shape dating culture. Although few responses have come in at this time, the initial data suggests that individuals ages 18-26 are extremely well at recognizing healthy and unhealthy traits in relationships. Our data also suggests that most respondents associate conflict as being an unhealthy relationship trait. This is contrary to the Gottman Method that perceives conflict as being really healthy for relationships, and that it can be healthy for couples to fight, if it is not too extreme (Busby, 2009). Respondents showed consistency in scenarios that involved more extreme unhealthy behaviors. The results of our survey show that the incorrect classifications from our respondents can serve as a vital learning opportunity. Relationship education can even further strengthen our respondents current knowledge on what is healthy and what is unhealthy in a relationship, and to help their potential future relationships to have a greater chance of success.

Title: The use of RealCare/electronic babies in public education Sex Education/Health courses may provide a more comprehensive teaching framework for holistic sex-ed outcomes.
Presenters Poster 1: Alissa Shuetz and Jody Forbush
Presenters Poster 2: Sadie Read, Mallory Trythall, Jessica Saunders, Felicity Magelby, Linsey

Utley
Authors: Alissa Shuetz, Jody Forbush, Sadie Read, Mallory Trythall, Jessica Saunders, Felicity Magelby, Linsey Utley
Affiliation: Snow College
Abstract for Parts I and II:
In this two-part study, surveyed young adults, reported that while they received formal sexual education, it was often narrow in focus and incomplete in scope. High confidence in abstinence instruction contrasts sharply with lower understanding of real-world sexual health and relationship dynamics. The findings advocate for a shift from abstinence-dominant frameworks to comprehensive, inclusive curricula that address physical, emotional, long-term, and ethical dimensions of sexuality. Part two of the study focused on an informed intervention of sending RealCare (electronic simulator) babies home with male, undergraduate college students for approximately 24-30 hours. The purpose of the intervention was to increase stress among young adult males in correlation with simulated childcare. At the simulation's end, participants completed a follow-up survey. Survey results showed participants agree or strongly agree that after caring for the infant simulator, they better understand how unexpected parenthood could disrupt educational goals and, they are more likely to consider a partner's reproductive health/consequences when making sexual decisions. Participants strongly agreed that the infant simulator experience reinforced the importance of shared responsibility and communication in preventing pregnancy. Both steps in this study emphasize prioritization of holistic sexual education which includes understanding consent, active communication, and a mutual respect for both parties' potential risks. Alongside biological education, schools can cultivate better-informed, more confident, and emotionally healthy individuals when all aspects of sexual health and outcomes are addressed.

Oral Presentations

Arts

Division Chair: Jim Godfrey
Utah Valley University

SESSION A: (1:00 – 2:30 p.m.) *HH 160*
Session Leader: Jim Godfrey

Title: Liminality and the Carnivalesque in the Dream(e)scapes of Leonora Carrington
Presenter: David A. Hatch
Author: David A. Hatch
Affiliation: Southern Utah University
Abstract: The Surrealist movement in pre-World War II France was attractive to many artists because of the movement's aesthetic of free expression and unfettered artistic exploration. One such artist, Leonora Carrington, fled a prosperous and prominent family in England to join these artists and to incorporate this aesthetic into her own writing and painting. This paper will argue that she was drawn to Surrealism largely due to this promise of artistic and personal freedom, and that her art reflects her concern with independence and other feminist issues. To accomplish this purpose, this paper will first examine how Carrington's writings interact with the theoretical position of women within the Surrealist movement, specifically the concept of the femme-enfant, the function of madness for the artist, and the connection of woman to nature. Next, it will explore Carrington's actual position within the movement, taking into account how both her persona and her art were viewed by critics and fellow artists alike. Finally, and most significantly, the paper will examine images of women, nature, madness and escape in

Carrington's writing (and corresponding images in her visual art) to illustrate her use of the Surrealist aesthetic to engage issues of freedom and femininity.

Title: The Shattered Mirrors of Mexican Surrealism: Fragmentation of Identity in the Self-Portraiture of Frida Kahlo and Maria Izquierdo
Presenter: Aubrey Gallafent
Author: Aubrey Gallafent
Affiliation: Utah Valley University
Abstract: The internal world of artists came to be revealed through the movement of Surrealism, especially in the work of Mexican Surrealists, such as Frida Kahlo and Maria Izquierdo. Through multi-self-portraiture, these two artists depict fragmented identities caused by childhood sexual trauma that disrupted self-image and understanding. This is visible in Frida Kahlo's What the Water Gave Me, painted in 1938, and Maria Izquierdo's Sueno y Presentimiento of 1947. These works hide heavy symbolism and psychological meanings within repeated images of self. Underlying themes and meaning are illuminated through an examination of their childhood environment and a discussion of Lacan's mirror theories. Kahlo's suspected childhood sexual abuse and Izquierdo's experience as a child bride and mother align with current research on the psychological effects of childhood sexual trauma. To understand the taboo subject matter of these works, it is necessary to acknowledge the collective experience and trauma of their group identities as women in Surrealism. It is impossible to talk about autobiographical work and individualism without acknowledging the nuances of systematic oppression and abuse. Dissecting the strategy of multi-self-portraiture for expression, explores the overlapping experiences of female artists in Mexico and the trauma created by powerful men within the artists' young lives. This paper establishes a pattern in the iconography and psychoanalytic applications of the taboo subjects in these two artworks.

Title: The Didactic Role of Theatricality in Bernini's Fountain of the Four Rivers
Presenter: Charlotte Poulton
Author: Charlotte Poulton
Affiliation: Utah Valley University
Abstract: This paper examines Gian Lorenzo Bernini's Fountain of the Four Rivers (1651) as a work of theater rather than simply a sculptural monument. The fountain stands in front of the Palazzo Pamphilj in the Piazza Navona, a space that had served as an important site for spectacles such as Carnival rituals, feast day celebrations, processions, and triumphal entries. Upon the accession of Pope Innocent X to the papacy in 1644, the piazza became the forecourt to the magnificent familial drama of the Pamphilj family. If Rome embodied the idea of theatrum mundi, then Bernini's fountain functioned as a permanent stage set within the piazza. Jesuit theater in Rome was a powerful tool of the Counter-Reformation because the religious dramas both delighted audiences and instructed them through persuasive staging techniques. As an amateur playwright, Bernini wrote, designed, and produced plays such as *Inundation of the Tiber* (1638) and *The Impresario* (1637) that commented on art and theater and incorporated startling illusionistic stage designs in doing so. Bernini employed similar theatrical elements in his fountain to first stir the viewer's passions and then act as a didactic strategy to reveal the symbolic implications of the structure in relation to Counter-Reformation ambitions. This paper examines the illusionistic structure, elements of visual and aural wonder, expressive figural gestures, and carefully choreographed viewpoints of the fountain in light of conventions of contemporary theater staging and performance. It argues that the theatricality of Bernini's fountain was not merely stylistic but an essential pedagogical tool for educating audiences and shaping public opinion about Pope Innocent X and his contributions to the triumphs of the post-Tridentine Church.

Title: Bright Without and Bitter Within: Rethinking Self-Portraiture in Pieter Claesz's Lemon Still Lifes
Presenter: Savannah Allen
Author: Savannah Allen
Affiliation: Utah Valley University
Abstract: Still life painting is often described as the least personal of art genres, favoring various collections of objects over that of biographical detail. However, many still lifes offer a hidden sense of activity, whether that be through half-eaten food, a table in disarray, or a glass that is half full. Yet it is the collection of these objects and the deliberate choice by the artist of what to include where the true meaning derives, wherein each choice can reflect the artist's own personal introspection. One such artist is Pieter Claesz, an artist well-known for his prominent still lifes during the Dutch Golden Age. "By re-examining Claesz's works through the lens of modern psychoanalysis, this paper explores how his repetitive use of an otherwise ordinary object—a peeled lemon—turns it into a subtle yet powerful mode of self-expression." Through examining the formal variations of Claesz's lemon peels throughout his works, ranging from theatrical curls to fragmented pieces, the motif acts as both a display of technical skill as well as a vehicle for personal introspection. Combining Jacques Lacan's theories of semiotics with the peeled lemon's inherent visual and symbolic duality within seventeenth-century Dutch still lifes discloses what the lemon could perhaps then reveal about Claesz's own concerns within society about appearance versus reality, artistic façade versus inner truth, and worldly abundance versus mortality. Through comparisons to vanitas symbols, seventeenth-century still life practices, and moments of overt self-representation within his oeuvre, this paper reveals how Claesz embeds his presence within his compositions in a genre that usually obscures it. His repeated act of peeling became an act of revealing, exposing the labor behind the illusion and the artist behind the genre.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 160*

Title: The Art of the Dominican Guitar: From Its Bolero Trio Roots to the Birth of Bachata and Bacharengue
Presenter: Emmanuel Roque Deschamps
Author: Emmanuel Roque Deschamps
Affiliation: Utah State University
Abstract: This submission presents my yet to be published book The Art of the Dominican Guitar: From Its Bolero Trio Roots to the Birth of Bachata and Bacharengue. This will be the first comprehensive instructional and historical method dedicated to Dominican guitar styles. While genres such as bachata, merengue, and bolero-trio music have achieved global visibility, their guitar techniques have remained largely undocumented, transmitted almost exclusively through oral tradition. This book addresses that gap by transforming an inherited musical language into a structured, accessible pedagogical resource for guitarists around the world. Drawing from musical transcriptions, interviews, and performance-based study, the manuscript documents the rhythmic, harmonic, and melodic foundations of Dominican guitar playing. It traces the evolution of these techniques from mid-20th-century bolero trios to the contemporary sounds of bachata and bacharengue. The primary contribution of this book lies in preserving, organizing, and contextualizing knowledge that has never been formally codified. By compiling this repertoire and its techniques for the first time in written form, the book expands access to Dominican musical heritage, supports cultural preservation, and offers performers, educators,

and scholars a reliable foundation for future research, performance, and pedagogy. Ultimately, this unpublished manuscript represents a milestone for guitar studies, ethnomusicology, and Latin American music scholarship, opening new horizons for musicians seeking to engage with one of the Caribbean's most influential musical traditions.

Title: The Computer as Creator: How Does Technology Redefine Musical Composition, Improvisation, and Production in the Digital Age?
Presenter: Josiah Boornazian
Author: Josiah Boornazian
Affiliation: University of Utah
Abstract: Throughout music history, musicians have continually embraced new technologies to expand their creative processes, from innovations in instrument manufacturing and music publishing to audio recording. Today, digital audio workstations (DAWs) and artificial intelligence (AI) tools present unprecedented opportunities to transform how musicians conceptualize, practice, teach, and perform. This raises pressing questions about the relationship between musicians and technology: Does AI enhance or limit creativity in composition? Will digital tools diminish the need for foundational skills such as music theory or mixing techniques in the pursuit of "authentic" music? Could there be a backlash against AI, sparking renewed interest in purely acoustic forms? And might AI tools reduce job opportunities for working musicians? This presentation argues for a hybrid theory of musical creation that embraces both traditional training and new technological innovations. A wholesale rejection of AI risks missed opportunities for artistic growth and competitive disadvantage, while complete dependence on AI could strip music of its distinctly human qualities—insight, intuition, and cultural continuity—that sustain its vitality.

Title: Head-motif imitation in Bach's Well-Tempered Clavier
Presenter: Kristin Whipple
Author: Kristin Whipple
Affiliation: Utah Valley University
Abstract: Bach took an encyclopedic approach to the Well-Tempered Clavier, using all of the styles of his time and from the past. The old style that has been most deeply explored is stile antico, especially in relation to Fux's Gradus ad Parnassum. This paper deals with a related archaic style: the 16th-century Prima prattica featuring head-motif imitation. There are several examples of this in the Well-Tempered Clavier, two of which I will discuss here. The first example is the G Minor fugue in Book One, which we can see as an early essay on the techniques of head-motif imitation. The second is the D Major fugue from Book Two, which serves as an apotheosis of this technique. These examples show extensive use of the tail of the subject as both countersubject, and episodic material. Another technique used in these two examples is stretto. It is written in the G Minor fugue in several places, and then in the D Major fugue throughout the piece, more than in any other fugue. This study will deal with the head-motif imitation and the use of stretto as examples of the archaic 16th century style Prima prattica in Bach's fugues.

Biological Sciences

Division Chair: Daniel Clark
Weber State University

SESSION A: (1:00 – 2:30 p.m.) *HH 270*
Session Leader: Daniel Clark

Title: Effect of Freeze - Thaw Cycling on Protein Concentration in Extracellular Vesicles
Presenter: Caleb Weaver
Author: Caleb Weaver
Affiliation: Southern Utah University
Abstract: Extracellular vesicles (EVs) are lipid-based nanoparticles released by all cell types and are increasingly explored as natural delivery vehicles for therapeutic cargo. Their ability to carry drugs, proteins, and nucleic acids to specific tissues makes them a promising platform for future treatments. As their function and safety depend heavily on maintaining structural and biochemical integrity, evaluating EV stability is essential before these applications can be realized. EV isolation is time-intensive and yields small aliquot batches making proper sample storage essential. Isolated samples must be stored at low temperatures to prevent the degradation of natural proteins and other biomolecules, however, repeated freeze-thaw cycles risk damage to vesicle structure and function. This study measured the effects of repeated freeze-thaw cycles on protein concentration as a means to estimate sample degradation. EVs were isolated from local raw bovine milk using a modified aqueous-two phase separation protocol with polyethylene glycol (PEG) and dextran-based isolation. Seven samples, each from a different isolation, were placed in a freezer at -80°C and thawed to room temperature. Protein content was quantified using a Rose Bengal protein assay. No significant decrease in protein concentration was observed, indicating that freeze-thaw cycling had little effect on EV protein concentration. These findings support the viability of multiple freeze-thaw cycles in EV research.

Title: Revealing Hidden Flora: *Senecio flaccidus*
Presenter: Skylee Haramoto
Author: Skylee Haramoto
Affiliation: Southern Utah University
Abstract: This oral presentation includes my work done on composing a comprehensive taxonomic summary and identification key for the *Senecio* species (Groundsels and Ragworts) based on A Utah Flora by Stanley Welsh. This summary is focused on the occurrences found close to and in Iron County, Utah. The *Senecio* species represent an ecological importance as well as a chemically diverse group within the Asteraceae family. However, the regional distribution and distinguishing compounds have remained extremely under-researched. To address this gap in knowledge my work has complied verified species records, and summarized distribution to provide an accessible dichotomous key to aid students, botanists, farmers, community members, and all people in accurately identifying this species.
In addition to the taxonomic key, this study has integrated a niche model component to help visualize the environmental space and area in which the species has previously been collected or identified. The model contains many ecological components such as elevation, climate and habitat associations to help us visualize potential areas of growth. Creating this model not only identifies the growth possible but it highlights previously made collections and/or identification regarding GBIF data. This model will also help in offering insight into future field studies.
Lastly, concluding the presentation will be a discussion on the chemical composition and potential medicinal values the species might have. These compounds will mostly be pyrrolizidine alkaloids. Because of their toxicity the use of them in any therapeutics processes is rendered.
By using an intense interdisciplinary approach from taxonomy, ecology, chemistry, biology, and tribal studies this project fuses all areas together. My work will continue to expand and change as I discover new research and will hopefully help any peers wanting to know or study as well.

Title: Feeding activity of the brain-eating amoeba: blocking *Naegleria fowleri* with treatment drugs
Presenter: Anya Midavaine, Ian Ford, Khoi Dinh

Authors: Anya Midavaine, Ian Ford, B. Kooper Clawson, Khoi Dinh, Nicholas Murray, Daniel N. Clark
Affiliation: Weber State University
Abstract: What drugs will kill the brain-eating amoeba? Only four survivors out of 154 cases of *Naegleria fowleri* have occurred in the US, and those that survive are likely to suffer from minor brain damage, immune reactions, or adverse side effects from the drug treatment. Each survivor was treated with amphotericin B, but many fatal cases also attempted this drug.
Infections are rare, but what makes *N. fowleri* dangerous is its speed (time to death is around four days post-exposure) and thus how difficult it is to diagnose and treat. We have some basic information about potential drugs: The Centers for Disease Control (CDC) list amphotericin B, fluconazole, rifampin, azithromycin, nitroxoline, and miltefosine. We investigated the effectiveness of combinations of these drugs on cultured human cells infected with *N. fowleri*. We hypothesized that each of the selected drugs would have varying levels of effectiveness at reducing the amoeba's feeding levels. The investigational drugs were tested by first measuring toxicity on the amoeba to establish the appropriate dose of each drug. We then set up cultures of amoeba in 24-well plates and presented them with fluorescent plastic beads to eat, and treated them with the appropriate dose of each drug for 24-48 hours. Amoeba killed due to drug inhibition were unable to eat beads and remained negative for fluorescence when measured with a flow cytometer.
We found that amphotericin B and azithromycin reduced the brain-eating amoeba's ability to feed by 40%, while the other four drugs were ineffective or caused only a modest reduction in amoeba activity. We will next investigate combinations of drugs and run variations of our infection model. These findings will inform clinical practice as physicians attempt to save the lives of those infected with this killer parasite.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 270*

Title: Understanding the Limited Biomass and Biodiversity in the Coal Creek Drainage Basin.
Presenter: Constantine Zanieski
Authors: Constantine Zanieski, Sarah Slikkerveer, Cauy Williams
Affiliation: Southern Utah University
Abstract: Chemical and Microbiological Characterization of the Coal Creek Drainage Basin
Coal Creek, the main surface water source that flows into the Cedar City valley is very limited in terms of both biomass and biodiversity despite minimal anthropogenic influences. Most of the water comes from Ashdown Creek which fed from multiple tributaries which drain the pristine Ashdown Gorge Wilderness Area and Cedar Breaks. No fish are found, and invertebrate concentrations are minimal. Only the Arch Creek, and Crow Creek tributaries routinely have algae formation on the rocks within the stream beds. Stream flow conditions not only vary dramatically during the year but also significantly vary from year to year. Stream flow affects physical, chemical, and microbial conditions of Coal Creek. In fact, the large amount of sediment found in Coal Creek during flood events has been hypothesized as an explanation of the limited biodiversity in the Creek. Coal Creek's microbiological communities and their ecological functions are not well understood and the difference biomass of the tributaries between the different tributaries cannot be explained either. Understanding the microbiome of Coal Creek is essential towards understanding the Coal Creek ecosystem and its limited biodiversity. We have collected biofilm samples on microscope slides in different locations of the drainage basin during different seasons. These samples have been analyzed using 16 S rRNA sequencing. These

sequencing results will be presented in conjunction with major ions and trace metal concentrations determined in each tributary of the basin to address the limited biodiversity in Coal Creek. The stream flow and weather conditions corresponding to these samples and historical conditions will also be discussed.

Title: Surveying Phototaxis Response at Varying Elevations
Presenter: Sarah Slikkerveer
Authors: Sarah Slikkerveer and Dr. Gina Profetto
Affiliation: Southern Utah University
Abstract: Many insects display positive phototaxis, where an organism moves towards the direction of a light source. However, phototaxis varies among species of insects, and factors such as the light's wavelength affect how strongly an insect will react. Many studies have explored how different insect species respond to wavelengths of light across the color spectrum, but the influence of elevation and differences in light exposure on phototaxis response remains less understood. We compared two sites with similar vegetation in low and high elevation locations within Iron County, Utah. Light traps of varying wavelengths were set up for 24-hour periods at both locations. Species richness was measured for each wavelength. While species richness did not vary in different elevations, the light traps within the ultraviolet spectrum attracted more species than traps within the visible light spectrum. Our study shows insect behavior remains consistent at varying elevations regarding phototaxis response.

Business

Division Chair: Jim Brau
Brigham Young University

SESSION A: (1:00 – 2:30 p.m.) *HH 280*
Session Leader: Jameson Brau

Title: Navigating Digital Business Crises: Testing the BEACON Model for Algorithm-Aware Corporate Social Media Communication and Consumer Trust
Presenters: Aggrey Otieno and Ruth Otieno
Authors: Aggrey Otieno and Ruth Otieno
Affiliation: Utah State University
Abstract: The pace and design of the modern digital landscape have transformed how business crises occur, shifting them from traditional news cycles to social media feeds shaped by algorithms that amplify reputational risks and attract more public attention. This study improves the BEACON model, a framework that explains how corporate message strategies, platform-driven visibility, and online network structures influence perceptions of transparency, clarity in sensemaking, and consumer trust during business digital crises. The model treats crisis communication as a vital business function that affects short-term actions and long-term brand value. Although frameworks like Situational Crisis Communication Theory and Signaling Theory have long guided crisis responses, they give limited attention to the influence of platform algorithms, which determine which messages gain prominence, which lose traction, and how user interaction reshapes the narrative. Drawing on research in algorithmic governance and stakeholder psychology, the BEACON model links message design to measurable business outcomes such as rebuilding trust, advocacy, and repurchase intent. The research uses a sample of 1,561 social media users who have experienced real corporate crises. Through structural equation modeling, the study compares how individuals judge transparency, interpret events, and trust across victim, accidental, and preventable crisis categories. It also examines how algorithmic visibility and network homophily function both as internal pathways and contextual

forces shaping individuals' behavioral intentions. The results highlight the importance of communication strategies that best maintain trust and reduce reputational harm in environments where algorithmic delivery guides public attention. As crisis communication theory evolves to account for platform-controlled information dynamics, this study provides business leaders and communication practitioners with a practical framework for navigating digital crises. It also improves the credibility and effectiveness of crisis responses while helping organizations shape their strategies according to the limitations and expectations set by platform governance.

Education

Division Chair Doug Stump
Southern Utah University

SESSION A: (1:00 – 2:30 p.m.) *HH 260*
Session Leader: Doug Stump

Title: Answering Changing Behavior and It's Impact on Performance in E-Proctored Anatomy and Physiology Exams
Presenter: Justin Burr
Author: Justin Burr
Affiliation: Weber State University
Abstract: Students are often cautioned against changing their answers on multiple-choice exams, despite evidence suggesting that revising initial responses can improve performance. However, little is known about whether this pattern his consistent for electronically proctored online testing environments. This study examined the frequency and outcomes of answer-changing behavior in e-proctored anatomy and physiology exams to determine whether revisions were generally beneficial or detrimental to student performance. Using data automatically tracked by the learning management system, responses were analyzed for all instances of answer changes, categorizing them as beneficial (wrong-to-right), detrimental (right-to-wrong), or neutral (right-to-right or wrong-to-wrong). Results showed that 50.35% of changes were beneficial, 14.18% were neutral right-to-right revisions, and 25.53% were neutral wrong-to-wrong changes. Only 9.93% of changes negatively affected scores by changing correct answers to incorrect ones. Overall, more than 64% of answer changes had a positive or neutral impact on performance. Higher-performing students tended to change fewer answers but demonstrated a higher ratio of beneficial changes. Overall, students showed a 3.35:1 ratio of settling on the correct answer versus the incorrect one. These findings align with prior research in traditional settings, suggesting that thoughtful answer revision continues to support performance even within e-proctored environments. Instructors may consider encouraging students to review and revise their responses as appropriate when using online proctoring.

Title: VIDS: Using Strategy Instruction to Improve Math Outcomes
Presenter: Keeli Shakespear
Authors: Keeli Shakespear and Kaitlin Bundock
Affiliation: Utah State University
Abstract: Linear equation problems are found across several mathematics domains and require integrating multiple challenging skills; these problems are often a barrier for students' success in algebra and higher-level mathematics, especially for students with mathematics learning disabilities (Hattikudor et al., 2012; Teuscher & Reys, 2012). The purpose of this study is to examine the effects of a strategy intervention on students' representation of linear equations. The research question for this multiple probe across participants design study was: Is there a functional relation between a strategy intervention and students' proficiency in representing

linear equation problems that involve translating between graphs, tables, and equations? This study included four middle- school aged participants with or at-risk for learning disabilities. An interventionist met one-on-one with the students virtually to provide instruction three times per week. Participants completed researcher-created mathematics assessments three times per week. The intervention consisted of explicit instruction using a strategy, VIDS. The VIDS strategy (Variables, Intercepts, Direction, and Slope) was used in every lesson to help students attend to and develop understanding of important features of linear equations. The intervention focused on four objectives: writing an equation from a graphed line, graphing a line when given an equation, making a table from an equation, and writing an equation when given 2 points on a line. The intervention included lessons focusing on each of these learning targets, one lesson addressing pre-requisite skills (e.g., graphing basics such as coordinates and axes) and cumulative practice lessons. Each intervention session began with a warm-up review problem, followed by interactive modeling of new material, guided practice with feedback, and an independent practice exit slip. This study is currently in progress, so results are not yet available. This presentation will highlight practical instructional implications based on the results.

Title: Integrating Research, Design Thinking and Entrepreneurship in STEM Education
Presenter: Vinodh Chellamuthu
Authors: Wendy Schatzberg, Samuel Tobler, Aaron Davis, Rachel Ramsay
Affiliation: Utah Tech University
Abstract: The NSF-funded INSPIRE program at Utah Tech University strengthens STEM education by immersing interdisciplinary student teams in real-world research, design, and problem-solving experiences. Through a three-semester sequence, students collaborate on applied and entrepreneurial projects that address authentic community, industry, and societal challenges. The program's structure promotes deep learning through problem-based inquiry, cross-disciplinary communication, and iterative development, enabling students to build both technical and professional competencies. In addition to enhancing student engagement and career readiness, INSPIRE provides a sustainable framework that supports faculty workload and fosters faculty-student collaboration across departments. This presentation highlights the program's model, implementation, and outcomes, illustrating how INSPIRE prepares students to contribute meaningfully to today's rapidly evolving, innovation-driven workforce.

Title: A Study of Organizational Strategy at Mid-Sized Universities
Presenter: Jake Johnson
Authors: Jake Johnson, Jon Anderson, Mary Pearson, Jared Tippets
Affiliation: Southern Utah University
Abstract: Higher education in the United States is in the early stages of an era of intensifying competition for enrollments and resources. Projected enrollment declines are the product of fewer college-aged domestic students (demographic), federal immigration policies that discourage international students (political), and increasing skepticism about the value proposition of higher education (cultural). The strain on university budgets isn't isolated to fewer tuition dollars when enrollment declines. Disinvestment by state legislatures and federal austerity measures impacting research funding are also contributing to growing financial pressure. With fewer resources accessible, colleges and universities must compete with one another for those that are available.

Mid-sized institutions, those that have medium enrollments (~ 4,000 and 20,000), offer bachelor's and master's degrees, and maintain a general focus, are expected to face greater risks and vulnerability in a competitive environment. Strategy takes on an exceedingly important role under such conditions. The researchers posit that strategy formulation can be operationally understood as what institutions choose to prioritize and which of their resources, if any, can be

uniquely leveraged for competitive advantage. This session will present the results of a short survey of leaders at mid-sized institutions. It will describe how leaders assess the current environment, characterize their institutional priorities, and account for unique institutional resources they believe may enable them to succeed.

This presentation represents the first phase of this research project. In a subsequent phase, the survey responses will be correlated with historical enrollment data from NCES to see how effective the responding institutions have been in their selection of priorities and use of resources. We welcome attendees that are interested in learning about our initial results and where we envision this research will take our understanding of organizational strategy.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 260*

Title: Empowering Young Writers: Teaching Sentence Writing to Students with Intellectual and Developmental Disabilities

Presenter: Thai Ray Williams
Author: Thai Ray Williams
Affiliation: Utah State University

Abstract: Presenters will present the results of three research studies that examined the effectiveness of a writing intervention package designed to improve sentence construction for students with intellectual and developmental disabilities (IDD), including those with autism, across diverse ages and settings. The intervention combined evidence-based strategies: response prompting, sentence frames, and technology-assisted instruction (TAI). Three single-case experimental design iterations evaluated student outcomes across literacy lessons, small group settings, and typical classroom instruction.

Results indicated substantial gains in sentence writing for participants, who initially demonstrated minimal baseline performance. Improvements were observed within 3–12 sessions, with students generalizing skills to new materials, instructors, and contexts. Maintenance probes conducted up to 5.5 weeks post-intervention showed sustained skill acquisition. Social validity measures revealed high levels of satisfaction among teachers, parents, and students, who valued the intervention's relevance, feasibility, and impact on students' independence and communication.

These findings support the use of systematic, research-based writing instruction for students with IDD, demonstrating that even students with extensive support needs can acquire, maintain, and generalize sentence construction skills. The intervention offers practical strategies for educators, including the integration of UDL principles and technology to promote active engagement, motivation, and access to written expression. This research underscores the importance of providing high-quality, evidence-based writing instruction to students with IDD to enhance literacy outcomes, self-expression, academic participation, and post-secondary outcomes.

Title: Aphantasia Impact on Literacy Activities for Young Students

Presenter: Marilyn Taft
Authors: Marilyn Taft, Penee Stewart
Affiliation: Weber State University

Abstract: Instructional materials in many content disciplines assume students are able to use mental imagery to understand and process required content. Mental imagery is a form of visualization in which a person perceives an object or scene when the actual object or scene is not present. In sports, coaches ask players to picture themselves scoring a goal or passing the

ball. Dynamic mental imagery, sometimes referred to as mental models, is used in science to ask students to visualize planets revolving around the sun at different speeds, and in literacy to help them picture events in a story. Literacy teachers assume that creating mental images facilitates students; understanding of a story and aids in other literacy skills. Creating mental images is frequently used as a comprehension strategy during explicit reading instruction. Most people, including educators, who are able to create mental images believe their lived experiences with a functioning mind's eye are commonly shared.

In 2003, the first academic paper describing the inability to create mental images, now known as aphantasia, was published. In 2015, the term "aphantasia" was coined to refer to the absence of mental imagery. Since 2015, more than 50 published papers have explored what it is like for adults to be unable to create visual images. Very limited research has been done with young children.

Our study examines the prevalence of aphantasia among 4th graders in a Utah elementary school and reviews their grade-level curriculum to determine how often students are encouraged to use mental imagery during literacy instruction. We discuss ways in which teachers can differentiate assignments and activities to best meet the needs of young students with aphantasia.

Title: Professional Ethics and Pre-Service Music Teachers: A Practitioner Research Study
Presenter: Eric Pearson and Jonathan Dillon
Authors: Eric Pearson and Jonathan Dillon
Affiliation: University of Utah
Abstract: Educators have professional and ethical obligations to the students entrusted to their care. In Utah, these obligations are formalized in R277-217, an administrative rule stipulating the sorts of conduct that educators are required to or prohibited from engaging in (Utah State Board of Education, 2025). While many researchers have argued that pre-service teacher education ought to include direct instruction in professional ethics (see Maxwell & Schwimmer, 2016)—a concern shared by many pre-service teachers themselves (Boon, 2011)—relatively few teacher education programs include dedicated coursework on professional ethics (Glanzer & Ream, 2007). This issue may be further compounded in music education, wherein some of the problematic aspects implicated in competitive talent education are more likely to be normalized (see Ramstedt, 2023). In this presentation, we share a practitioner research study (McKenney & Reeves, 2018; Somekh, 2008) in which we collaborated on the creation and implementation of a professional ethics unit for pre-service music teachers. Against the backdrop of Utah's changing policy landscape (Tanner, 2025), we sought to empower the pre-service teachers participating in this study to engage in ethical decision-making connected to the real-world practice of music education.

Engineering

Division Chair: Ali Siahpush
Southern Utah University

SESSION A: (1:00 – 2:30 p.m.) *HH 170*
Session Leader: Ali S. Siahpush

Title: Conduction Heat Transfer Through UHMW Polyethylene Short Cylinder
Presenter: Dilynn Engbarth
Authors: Dilynn Engbarth and Ali Syyed Siahpush
Affiliation: Southern Utah University
Abstract: The transient temperature solutions, both graphical and analytical, for one-dimensional (1D) conduction in plane walls and long cylinders can be extended to predict temperature

distributions in two-dimensional (2D) heat-conduction systems. Using the method of superposition (also known as the product solution), the 1D solutions can be combined to obtain the transient temperature distribution for a short cylinder. This research expands on a previous project conducted at Southern Utah University by Hofeling et al. Their work focused on a short cylinder made of 1018 steel. Because steel has a high thermal conductivity, their results closely matched predictions from the lumped-capacitance method. In the present study, a UHMW polyethylene cylinder is used instead. The analytical solution is considered valid when all surfaces of the cylinder experience convection heat transfer with the same heat transfer coefficient. The cylinder was cooled and heated to –12.1°C and 55.7°C, respectively. Thermocouples were placed at both ends, at the mid-height outer surface, and at the geometric center of the cylinder. The cylinder was suspended horizontally while it returned to ambient temperature, and temperature data were recorded over time. After the experimental data were collected, the heat transfer coefficient was estimated so that both analytical and graphical transient solutions could be generated. Both sets of solutions exhibited exponential decay behavior during heating and cooling, and followed the experimental results. Also, an error analysis was performed to investigate potential causes for the divergence between the analytical, graphical, and experimental results.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 170*

Humanities, Philosophy, & Foreign Language

Division Chair: Thomas Terry
Utah State University

SESSION A: (1:00 – 2:30 p.m.) *HH 226*
Session Leader: Thomas Terry

Title: Care and Contractarianism
Presenter: Heather Hoyt
Author: Heather Hoyt
Affiliation: U of U Ph.D. student
Abstract: Recently, Salt Lake County proposed cutting four childcare centers, and people had a lot to say about it. There were two themes in the comment sections: some didn't want their taxes used for something that didn't benefit them. But others said that programs such as childcare were exactly where they wanted their taxes to go. The first group focused on their own benefit; the second preferred that others benefited. I will explore that second type of preference and show how society needs more than self-interest.
Traditional contractarianism is based on mutual benefit: people enter a contract because it makes them better off. These contracts require parity, so that the advantages of both parties have similar weight. This parity is often impossible because of real-world inequalities, such as gender, race, and socioeconomic status. Even in an ideal world, children, the elderly, and people of varying abilities are unequal parties. They need care instead.
Some feminist scholars say that we should get rid of the contractarian framework. But instead of abandoning it, I will argue that we can modify it to incorporate altruistic and caring preferences. Altruism and care can be thought of contractually. They establish agreement, expectations, and obligations between parties. These contracts are motivated by altruistic preferences, where people want to give their own resources to benefit others. These interactions resemble contracts of mutual benefit, as they form markets and explain and justify institutions. Contracts of care

may be found in family responsibilities, education, nonprofit work, philanthropy, and government welfare programs.
Because there are many who cannot enter contracts of mutual benefit, even in an ideal world, traditional contractarianism is insufficient. But we can alter the framework to account for altruistic preferences so that we can take care of those who need it.

Title: The Privatization of Black History
Presenter: Yasamin Osqueezadeh
Author: Yasamin Osqueezadeh
Affiliation: Utah State University student
Abstract: My project rhetorically analyzes the presentation of African American history in two slave plantations in South Carolina: McLeod and Boone Hall. Researchers have written about the presentation of African American history in public and private plantations, evaluating their sensitivity, correctness, and effectiveness. Most concluded that both public and private plantations have a long way to go, citing the language and speeches of the administrations. However, there is little focus on plantations in South Carolina, which was the port of entry for the transatlantic slave trade, and few dissect the rhetoric of the plaques used across the plantations. Additionally, due to the new governmental efforts to defund public parks and censor American history, there have been few academic articles written about the effects of such regulations.
My presentation focuses on the representations of African American enslaved history in plantations, comparing the information presented in Boone Hall, a private plantation, and McLeod, a county-owned park. During my time at these plantations, I found that both plantations censor their language to cater to a white-majority audience. This could especially be seen at Boone Hall, where the history was inaccurate, incomplete, and often romanticized the lives of planters and their relationships with the enslaved. In contrast, McLeod's presentation of slave history was more accurate and revolved around the experience of enslaved African Americans. Based on these findings, I argue that public parks have made an overall more concerted effort to properly represent and preserve the history of African Americans, but the current government administration's regulations will further censor the presentations of such history. I argue so by analyzing the rhetoric of the plaques presented at various public and private plantations, their websites, and event advertisements, tying those rhetorical analyses to governmental funding cuts, content reviews, and regulations.

Title: Marketized Trust: A Genealogy of the Trust Badge (1906–2025)
Presenter: Erin Ortiz
Author: Erin Ortiz
Affiliation: Utah Tech University professor
Abstract: This paper traces a genealogy of the "trust badge" from early 20th-century assurance regimes to today's fee-based platform verification, arguing that what public relations often describes as "trust-building" is, in practice, a form of market design. Beginning with quasi-public testing and warranty programs such as Underwriters Laboratories, the Good Housekeeping Seal, and USDA Organic, and moving through Michelin stars, Fairtrade certification, Apple's "privacy nutrition labels," and paid blue checks, the paper examines how credibility has been progressively marketized: turned into a priced access right enacted through badges, fees, and interface rules. Using political economy, paratext analysis, and an intersectional lens, I theorize "marketized trust" as an infrastructural practice that allocates visibility, protection, and redress unevenly across organizations and publics. Rather than treating trust as the outcome of persuasive discourse, this paper foregrounds the standards, testing protocols, pricing tiers, and UI affordances that decide in advance who is trusted, seen, and shielded from harm. The analysis

repositions trust from an unqualified good to a contested resource embedded in infrastructures that both enable and constrain democratic accountability. I conclude by outlining a future research agenda on comparative "badge ecologies," design-justice principles for equitable verification, and policy pathways that reclaim assurance as a public-interest function rather than a paywalled privilege.

Title: Towards a Community-Informed Design of Pedagogical Materials for Interpreting Courses: Analyzing the Needs of Spanish, Portuguese, Russian, and Navajo LEP-Speakers in Utah
Presenter: Marcela Lemons, Elsa Pérez,, Karli Poulter, Sydney Barney
Authors: Marcela Lemos, Ph.D., assistant professor (PI); Ekaterina Arshavskaya, Ph.D., professor; Sofía Monzón Rodríguez, Ph.D., assistant professor; Elsa Pérez, Ph.D., assistant professor; Sydney Barney, undergraduate research assistant; and Karli Poulter, undergraduate research assistant
Affiliation: Utah State University students
Abstract: This presentation reports on the research component of the course and curriculum design project "Bridging Language Education and Career Opportunities in Utah: Consolidating the Translation and Interpretation Program through Multilingual Course Development," funded by the Pathways Step Grant (Modern Language Association, Mellon Foundation). We propose a systematic analysis of the main medical needs of the limited-English-proficiency (LEP) Spanish, Portuguese, Russian, and Navajo speakers in the state of Utah. Data is collected through a mixed-methods questionnaire, a social listening protocol, and focus groups. The analysis of this data will inform the adaptation of pedagogical materials in Spanish, Portuguese, Russian, and Navajo medical interpreting courses to adequately prepare future interpreters for the communicative situations they are likely to encounter at work. Presently, these courses' pedagogical materials, for example, video and oral practical activities, offer the same content in the different languages. We want to localize these materials to better reflect the actual needs of the populations and healthcare professionals our students are trained to serve. Moreover, as our curriculum and material design project is also intended to inform courses in Spanish legal and business interpreting, we assess LEP Spanish speakers' needs in these areas as well. In the presentation, we will report on the results and draw implications for course material adaptation. Our community-informed course and material design project contributes to preparing trainees more adequately for the tasks they will perform as professionals, therefore enhancing the quality of language services provided to LEP populations in the state of Utah as required by federal law. Finally, the project also inserts USU in contemporary debates on interpreter and language training within the fields of additional language pedagogies and translation and interpretation studies.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 226*

Title: Where's Claudia? An Analysis of Deictic Pronouns in the *Pro Caeli*
Presenter: Jevan Winn
Author: Jevan Winn
Affiliation: University of Utah
Abstract: Ancient historians such as Alexander (2003) and Skinner (2011) often assume that Clodia Metelli was present in the audience during Cicero's *Pro Caelio,* his defense of Marcus Caelius Rufus in which he repeatedly attacks Clodia's character. Her presence is assumed partly due to circumstantial evidence within Cicero's speech, such as his extensive attention to

undermining her role in the prosecution. Yet, given the scarcity of evidence for aristocratic women's direct participation in Roman political life, her attendance cannot be assumed without further proof.
This paper argues that Cicero's use of demonstrative pronouns and deictic expressions in his *Pro Caelio* oration, when compared with other legal speeches, provides strong evidence that Clodia was in the audience to hear his attacks firsthand. This finding reshapes our understanding of criminal trials in the late Republic, women's participation in political life, and the ways linguistic analysis can illuminate the lives of figures such as Clodia. I will show how this additional evidence adds to our understanding of the functioning of criminal trials in ancient Rome, how women interacted with trials and politics during the late republic, and how linguistic evidence can help us piece together rate clues into the life of one of the Roman Republic's most interesting women.

Title: Engagement Architectures of Faith: Social Media Engagement, Religious Micro-Influencers, and Political Participation in Digital Faith Communities
Presenter: Aggrey Otieno, Ph.D
Author: Aggrey Otieno, Ph.D.
Affiliation: Utah State University assistant professor
Abstract: Social media engagement has become the new currency in the algorithmic marketplace of belief and belonging. This study examines how social media affordances, religious micro-influencers, and digital faith communities influence political participation and public discourse in Utah, USA. Using survey data (N = 1,730), we incorporate perspectives from media studies, political communication, and the sociology of religion to model the pathways through which interactive platform features and perceived influencer authenticity predict political participation, attitude changes, and susceptibility to disinformation. The study finds that live streams, Q&A sessions, and private group sharing foster stronger parasocial bonds and stronger intentions to engage in political action than passive consumption. Micro-influencers, who command modest but highly engaged followings, have become key intermediaries of civic mobilization, especially when seen as credible and morally consistent. Participation in online faith communities increases emotional connection and group solidarity, creating what we call affective publics of conviction. However, these same dynamics can amplify susceptibility to religiously framed misinformation when media literacy skills are weak. The findings show the double-edged potential of engagement structures: they can promote participatory democracy or increase ideological polarization. This study also advances the ENGAGE Model, an interdisciplinary framework for analyzing online engagement techniques and community features that influence moral and political perceptions in networked societies. The ENGAGE (Engagement, Networked Groups, Affect, Guidance, and Ethics) Model explains how digital engagement architectures, driven by social media features, micro-influencers, and faith-based communities, shape moral reasoning, emotional bonds, and political participation. It presents engagement as both a mechanism for empowerment and a risk for polarization.

Title: "Myths or Facts? Uncovering Influencers and Framing of Unidentified Anomalous Phenomena (UAP) Conversations Among Social Media Users in the U.S."
Presenter: Brian Kirk
Authors: Brian Davis Kirk, Aggrey Willis Otieno, Ph.D., Ruth Shikuku Otieno
Affiliation: Utah State University, Logan; Brian Davis Kirk, undergraduate student; and Aggrey Willis Otieno, Ph.D., assistant professor.
Abstract: This study examines how Unidentified Anomalous Phenomena (UAP) circulate, acquire meaning, and generate engagement on X, now a central arena for real-time speculation, evidentiary dispute, and political commentary about anomalous events. Using a mixed-methods

approach, the study analyzes 378 publicly accessible posts to address three objectives: identifying the most influential actors shaping UAP visibility; determining the dominant interpretive frames associated with UAP narratives; and assessing which frames and formats generate the highest engagement. Network analysis shows that influence is distributed across disclosure advocates, viral entertainment hubs, skeptical interpreters, and science-linked commentators, each anchoring distinct discursive communities. Thematic analysis reveals five primary frames, with Political Oversight and Whistleblower narratives producing the strongest 2026TentativePapersPresentationsTimes (3) engagement (22,650 likes, 6,040 reposts, and 4,530 replies). Conspiracy-oriented and catastrophic frames also perform strongly, generating 7,480 likes and 1,904 reposts. Experiential and mythic narratives sustain symbolic and affective dimensions of UAP discourse, while credibility and evidence-contestation frames attract dense argumentative exchanges. Content-format analysis demonstrates that visual media significantly outperform text-only posts: videos generate 7,500 likes and 2,050 reposts, whereas images attract 5,900 likes and 1,450 reposts. These patterns show that UAP communication is shaped less by the empirical status of anomalous events than by platform affordances, identity work, and broader currents of political distrust and epistemic uncertainty. The findings expand framing theory into a domain where scientific ambiguity, cultural mythology, and conspiratorial reasoning intersect, and they underscore the challenges of science communication within environments that reward spectacle and ambiguity. By mapping the ecological dynamics of UAP discourse, the study clarifies how digitally networked publics engage with emerging scientific and national security questions in a hybrid communicative environment defined by visual immediacy, institutional suspicion, and algorithmic amplification.

Kinesiology and Health Sciences

Division Chair: Tracy Fawns
Utah Tech University

SESSION A: (1:00 – 2:30 p.m.) *HH 130*
Session Leader: Tracy Fawns

Title: Creative Fortitude: Evaluating the Role of Artistic Workshops in Enhancing Healthcare Staff Resilience
Presenter: Jamie Covington
Author: Jamie Covington
Affiliation: Southern Utah University
Abstract: Healthcare professionals face unprecedented levels of stress, burnout, and emotional fatigue, conditions exacerbated by staffing shortages and ongoing systemic pressures. This research and study investigate the potential of artistic workshops as an intervention to support staff well-being and resilience within healthcare systems.

Title: Effect of Carbohydrate Quality on Markers of Oxidative Stress: A Systematic Review and Meta-Analysis of Human Intervention Studies
Presenter: Tyler Carley
Authors: Tyler Bosner, Tyler Carley, Karen Della Corte, Dennis Della Corte
Affiliation: Brigham Young University
Abstract: Whole grains have potential benefits on overall health including on the prevention of diabetes and cardiovascular disease. The refinement process removes the bran and germ layers that contain fiber, antioxidants, and phytochemicals, reducing their nutritional value and potentially increasing the body's oxidative stress response. Refined grains can cause rapid fluctuations in blood glucose levels leading to increased oxidative stress. But this has not been

summarized quantitatively across studies. Results from randomized control trials on oxidative stress are varied and inconsistent. We have conducted a systematic review and meta-analysis to clarify the effect of carbohydrate quality on oxidative stress in the body (i.e. whole grain vs refined grain, high vs low GI, and high vs low fiber). A systematic search was conducted by using the online databases of PubMed, Embase, Cochrane, Web of Science and CINAHL for relevant studies up to May 2025. Eligible studies included randomized control trials with healthy, overweight, or obese participants with or without any diagnosis of type II diabetes. Two reviewers independently screened studies and extracted data. From 15,124 studies, 32 studies met inclusion criteria and were systematically reviewed. Data analysis and conclusion of results is ongoing and will be completed by February 2026.

English Language and Literatures

Division Chair: Melanie Jenkins
Snow College

SESSION A: (1:00 – 2:30 p.m.) *HH 132*
Session Leader: Melanie Jenkins

Title: A Revenant Of Congaree: Old Growth Haunting To Stand For Future History
Presenter: Dillan Bryan
Author: Dillan Bryan
Affiliation: Southern Utah University
Abstract: In the current moment, the modern world is seeing the after effects of past environmental injustices that have left many landscapes hungry for their previous intactness. Some spaces benefit from the perseverance of ecologic ghosts that now haunt the environment they once inhabited through absence and now through resurrected presence. The parking lot of Congaree National Park displays an old growth bald cypress tree stump that bears many stories including the devastation the bottomlands environment was subjected to at the hands of an early 20th century logging company. My analysis proposes the material body of this tree stump is a vehicle for greater ecologic communication through its ability to haunt spaces of absence. Observing this figure of space with the lens of hauntology suggests that the old tree stump contains multitudes and exists as an ecologic ghost haunting the present from the past, while simultaneously speaking to the future. Ecologic hauntings, such as this bald cypress tree stump, provoke preservation through story telling of past environmental injustices, new materialist eco-rhetoric, and obfuscations of human exceptionalism. My analysis challenges one to look at how the present was shaped by the past, and now how the present will shape the future. Understanding this allows one to reject the idea that ghosts, especially ecologic ones, are to be exorcized by view of the Western gothic tradition, and instead turn to indigenous views that look at ecologic ghosts as land-bound spirits to coexist with. The preservation and coexistence with nature and other-than-human beings is dependent on human's abilities to recognize the past these ghosts speak of, learn from their haunting, and ensure those learnings do not become future hauntings themselves.

Title: Decolonizing the American West: The Role of Indigenous Americans within the Western Narrative
Presenter: Yasamin Osqueezadeh
Author: Yasamin Osqueezadeh
Affiliation: Utah State University
Abstract: Through Spanish colonialism, Indigenous Americans were introduced to horses and cattle ranching. Colonialism, and thus the introduction of ranching, is inherently connected to

racist stereotypes that guide narratives of various cultures, tribes, and historical events and relations. Such racialization led to representations of the savage, noble, and uneducated Indian—all of which fuel the idea that Indigenous Americans are "relics of the past. Scholars have researched the media narratives of "Indians versus cowboys," but I bring about a new perspective through my research of Indigenous American representations at the National Cowboy Poetry Gathering, annual events held by the Western Folklife Center in Elko, Nevada, that aim to further ranching knowledge and community. While there have been efforts to include ethnically diverse perspectives, most archival materials continue to push racist narratives, highlighting the white-majority academics and ranchers in administrative roles--an extension of the racialized Indigenous stories and histories. This project focuses on the history of Indigenous Americans within American West narratives and how they are represented through poetry, using archival material from the Western Folklife Center. Specifically, I look at two poems, one by a white author and one by an Indigenous author: "The Coming Change" and "A Message to Our Chiefs." I analyze these poems through the lens of dominant cowboy tropes, such as settler innocence, white saviorism, manifest destiny, and the vanishing race. Using this material, I argue that while the recent inclusion of Native archival materials has opened space for Indigenous voices, enduring histories of disenfranchisement, racial violence, and stereotypical representation continue to marginalize and villainize Indigenous Americans. The inclusion of Indigenous narratives act as reparation, but white-led administrations that work within anti-Indigenous.

Physical Sciences

Division Chair: Maria Rodriguez
Utah State University

SESSION A: (1:00 – 2:30 p.m.) *HH 222*
Session Leader: Maria Rodriguez

Title: Spatial Characterization of EM Mode Structures in a Helicon Antenna
Presenter: Tessa Miller
Authors: Tessa Miller, Conner Stong, Hyrum Barlow, Dan James, Phil Matheson
Affiliation: Utah Valley University
Abstract: Helicon antennas are designed to confine RF power to small volumes as opposed to broadcasting that power. They are commonly used in particle accelerators to initiate plasma discharges and they are also being developed for the production of low thrust magnetoplasma rockets such as the Variable Specific Impulse Magnetoplasma Rocket (VASIMR). Our plasma group uses elements of a VASIMR to study various aspects of plasma physics appropriate for an undergraduate laboratory. Our current plasma device uses a magnetron to initiate plasma discharges in argon, and we are working on constructing and deploying a helicon antenna to further heat and direct the plasma in those discharges. As a preliminary study in the physics of RF antennas we have measured the spatial structure of the electric and magnetic fields in a "gear up" helicon antenna and in a Nagoya type III antenna. The measurements are done with a low power RF amplifier over a range of 5 to 10 MHz. The measurements are done in air, and not coupled to a plasma. High power plasma coupling is pending with the acquisition of a larger RF power source. Impedance characteristics of the antennas are estimated. Results are compared to analyses of Light and Chen (Phys. Plasmas, Vol. 2, No. 4, 1084-1093, April 1995).
2025-11-30 15:44:31

Title: Perceptions On VR Use: Developing Foundational Skills in Organic Chemistry
Presenter: Isabelle Smith
Authors: Isabelle Smith, Lacey Vaile-Larson, Kaden Jensen, Matthew B Prater

Affiliation: Southern Utah University
Abstract: Spatial visualization is an important skill in STEM fields such as anatomy, physics, chemistry, and engineering, yet many students struggle to mentally manipulate 3D structures. This is especially the case in Organic Chemistry courses. Virtual reality (VR) offers a promising way to address this challenge by providing immersive, hands-on interaction with 3D models. A VR application was developed to help students better visualize and understand molecular geometry, stereochemistry and chirality in organic chemistry. To evaluate its impact, students enrolled in these courses were introduced to the application and then interviewed about their experiences using the VR to determine how it influenced their spatial reasoning skills. Students reported that being able to manipulate molecules in a 3D environment enhanced their engagement and comprehension of complex topics. Many described the VR experience as more interactive and enjoyable than traditional learning methods and noted a clearer understanding of stereochemical concepts. Overall highlighting the potential of VR technology to strengthen spatial visualization abilities and deepen conceptual understanding in STEM education.

Title: Utilizing the ACS Study Guide throughout CHEM 1210
Presenter: Claire Neuberger
Author: Clair Neuberger
Affiliation: Southern Utah University
Abstract: Many college students struggle with chemistry, particularly when they lack a strong grasp of core concepts. At Southern Utah University (SUU), general chemistry courses use the American Chemical Society (ACS) standardized exams as final assessments. This study investigates whether sustained use of the ACS Study Guide (ACSSG) throughout General Chemistry I improves student performance and confidence on the course midterms and the ACS final exam, compared to using it only during the final two weeks of the semester, which is the typical practice. The ACSSG provides practice questions and concise explanations of key general chemistry topics. Because it is authored independently of the course textbook, its content was aligned with the textbook. Students were required to complete ACSSG problems as part of their preparation for each of the five midterm exams. After each midterm, anonymous surveys were administered to evaluate students' perceptions of how the ACSSG contributed to their understanding, compared to other course resources such as textbook homework and Mastery Quizzes, another existing exam-preparation tool. Survey data indicate that students recognized the benefits of using the ACSSG as the semester progressed. This trend suggests that sustained engagement with the ACSSG may enhance both midterm and final exam performance. Furthermore, comparisons of midterm and ACS final exam scores show consistent improvement relative to the previous semester where the ACSSG was an optional resource. This study confirms that consistent use of the ACSSG strengthens students' foundational understanding and retention of General Chemistry I concepts, supporting its potential to improve long-term performance in STEM coursework. This study will continue in General Chemistry I and expand to General Chemistry II next semester. Data collection will continue in order to see whether these positive results persist over time.

Title: First-Principles DFT Study of Ferroelectric-to-Antiferroelectric Phase Transitions in LiTaO3 Under Electric Boundary Conditions
Presenter: Eva Greene
Authors: Eva Greene and Shao Qiu
Affiliation: Southern Utah University
Abstract: Ferroelectric (FE) materials exhibit spontaneous and switchable polarization below the Curie temperature, arising from symmetry-breaking ionic displacements. Antiferroelectric (AFE) materials, by contrast, display antiparallel dipole arrangements that yield zero net polarization

and characteristic double hysteresis loops, making them attractive for high-energy-density capacitors. This computational study explores the electric-boundary-condition-induced ferroelectric-to-antiferroelectric phase transition in LiTaO3 using density functional theory (DFT). Under short-circuit boundary conditions (SCBC), perfect screening of surface charges eliminates the depolarization field, stabilizing the out-of-plane ferroelectric phase. Under open-circuit boundary conditions (OCBC, zero net charge on electrodes → ⟨D⟩ = 0), the unscreened depolarization field destabilizes the FE phase and drives a transition to a previously unreported non-centrosymmetric antiferroelectric ground state characterized by alternating dipole patterns. Phonon calculations on the high-symmetry R3c reference structure reveal two unstable modes: a polar A2u mode (ω ≈ 181i cm-1) that condenses to the monodomain FE phase, and an antipolar A2g mode (ω ≈ 103i cm-1) that condenses to the AFE phase. Energetic analysis shows the FE phase is lowest in energy under SCBC, whereas the AFE phase becomes the global minimum under OCBC. The critical depolarization field required to trigger the FE → AFE transition is quantified, and the evolution of the energy landscape with finite electric displacement D is mapped. These results demonstrate that LiTaO3 can be reversibly switched between ferroelectric and antiferroelectric states solely by electrical boundary conditions or applied D-field, offering a new route for electrically tunable dielectrics, non-volatile memory, and high-performance energy-storage devices.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 222*

Title: Design and Testing of Standalone Flpw Cytometry Device
Presenter: Bryce A Clawson
Author: Bryce A Clawson
Affiliation: Utah Valley University
Abstract: We present the design and integration of a custom flow cytometer for a benchtop imaging system, developed to accommodate the spatial constraints imposed by the system's optical objectives. The flow device is centered around the commercially available "Scifly" 0.25mm flow cell and was engineered to ensure precise particle alignment within the sheath flow for imaging. The model was first designed using Fusion 360, incorporating standard SPT fittings for ease of assembly and compatibility with existing components. Computational fluid dynamics (CFD) simulations were conducted using Fusion CFD to approximate flow stability. The final design was fabricated using resin 3D printing, ensuring a watertight structure suitable for flow. Performance was evaluated by introducing microparticles into the system and observing their trajectory through the imaging system. Results confirmed stable, centered particle flow, demonstrating the effectiveness of the sheath flow in maintaining alignment. This custom cytometer provides a cost-effective and modular solution for integrating flow-based imaging into compact benchtop research systems, offering flexibility for a broad range of applications in biomedical imaging. Future work includes optimizing flow for higher throughput and enhanced imaging. Initial imaging will utilize microbeads to ensure channel uniformity. Following these tests, we can move forward to imaging tissue samples.

Title: Silver nanoparticles in ceramic glazes
Presenter: Betsy Hansen
Authors: Betsy Hansen and Christopher F. Monson
Affiliation: Southern Utah University
Abstract: Metal nanoparticles are well known as potent coloring agents, with evidence of their

use going back to Roman times with the Lycurgus cup. More recently, nanoparticles have been investigated as catalysts, markers, and in medicine. We are investigating the use of metal nanoparticles-particularly silver nanoparticles-as colorants in ceramic glazes. Nanoparticles in ceramics have been investigated previously by other researchers, but these nanoparticles were fabricated during the firing process. Our methods differed by first synthesizing nanoparticles using a microfluidic device, then mixing the already fabricated nanoparticles with the glaze, followed by the standard firing process. Early results indicate that this causes nanoparticle aggregation, which severely reduces their effectiveness as coloring agents. We will report on the results of our research.

Title: Effects of Nanoparticle Formation on Provitamin D Photochemistry
Presenter: Emma Monson and Isabell Haslem
Authors: Emma Monson, Isabell Haslem, and Jacob C. Dean
Affiliation: Southern Utah University
Abstract: Vitamin D is a fat-soluble vitamin that is made by Provitamin D (ProD) when exposed to the sun. This exposure also creates unwanted byproducts, such as tachysterol. In this work, we aim to elucidate how photochemistry is affected when ProD nanoparticles are formed in an aqueous solution. Further, we explore ways to maximize its conversion into vitamin D even when illuminated with UV wavelengths that tend to concentrate tachysterol at the expense of vitamin D. We make ProD nanoparticles by creating a concentrated solution in a good solvent, like methanol, and then transferring a small amount to a significantly larger amount of a poor solvent. To analyze the nanoparticles, we exposed the solution to 294 or 258 nm light for set time periods, and measured the time-evolving concentrations using UV-visible absorption spectroscopy. We then compared this to the same photochemistry experiment with just the good solvent, i.e. freely suspended ProD in solution. The differences we see in the spectra allow us to determine that we do have nanoparticles, and the ProD photochemistry is strongly affected within the nanoparticle, particularly at otherwise parasitic wavelengths. Following acquisition of photochemical data, the kinetics of the reactions were determined by global kinetic analysis. Scanning Electron Microscopy was used to measure the nanoparticles and determine their size distribution.

Title: Electrochemical Quantification of Dissolved Oxygen in Anoxic Waters
Presenter: Gage DeLange and Thomas Mendoza
Authors: Gage DeLange, Corban Kerr, Thomas Mendoza, Christopher F. Monson
Affiliation: Southern Utah University
Abstract: Dissolved oxygen concentration in aqueous environments is relevant to biological and chemical processes. Variations in oxygen levels may critically change metabolic and other chemical pathways. We developed a microfluidic device inspired by the STOx electrode to measure dissolved oxygen. The STOx electrode is among the most sensitive electrochemical device currently available for the quantitation of dissolved oxygen. However, it is fragile and expensive, whereas our device is constructed from a 3D printed resin. Previous prototypes of our device employed microfluidics and up to 8 electrodes, while the current design of our device requires only three electrodes, resulting in a more efficient, durable, and cost-effective alternative

Social Sciences

Division Chair: Emily Putnam
Salt Lake Community College

SESSION A: (1:00 – 2:30 p.m.) *HH 220*

Session Leader: Emily Putnam

Title: Thirsty for Answers: Understanding Water Conservation Attitudes and Behaviors in Washington County, Utah
Presenter: Joshua Cafferty, Alexie Lundgreen, and Austin Badger
Authors: Joshua Cafferty, Alexie Lundgreen, and Austin Badger
Affiliation: Utah Tech University
Abstract: Washington County, Utah—one of the fastest-growing regions in the United States—faces mounting pressure on its limited and highly variable water resources. Although public agencies have implemented extensive conservation campaigns, little is known about how residents understand water scarcity, interpret conservation messaging, or integrate sustainable practices into everyday life. This project addresses that gap by examining the social and psychological dimensions of water conservation in a rapidly expanding, arid region marked by diverse cultural attitudes toward environmental regulation. This mixed-methods study uses a community-based survey of Washington County residents to investigate how demographic, behavioral, and personality factors shape conservation attitudes and behaviors. Drawing on the Big Five Personality framework and the Sustainability Consciousness Questionnaire, the project assesses how traits such as openness, conscientiousness, and agreeableness relate to environmental concern, perceived norms, and self-reported water-saving actions. Quantitative analysis of these measures is complemented by qualitative insights from open-ended responses, providing a nuanced understanding of motivations, barriers, and values surrounding water use. The study contributes to environmental sociology by integrating sociological and psychological perspectives to advance theories of sustainability behavior beyond traditional demographic explanations. In doing so, it highlights the role of personality and identity-based factors in shaping local responses to environmental stressors. Findings will offer practical value for regional policymakers, educators, and the Washington County Water Conservancy District by identifying the factors most strongly associated with conservation engagement and receptivity to messaging. By linking sociological analysis with locally grounded concerns, this project deepens understanding of water conservation in Washington County and proposes an approach that may inform sustainability initiatives in other arid, fast-growing communities across the American West.

Title: Land use amid environmental crisis: Planning for a metropolitan future on the shores of a changing Great Salt Lake
Presenter: Jeremy Bryson and Lucas Charlesworth
Authors: Jeremy Bryson and Lucas Charlesworth
Affiliation: Weber State University
Abstract: The Great Salt Lake is rapidly declining, driven by accelerating climate change and decades of unsustainable water management. Its retreat threatens the region with cascading risks: collapsing ecosystems as migratory bird habitats vanish; economic disruption as mineral extraction and the brine shrimp industry lose the water essential to their operations; and worsening public-health hazards as exposed lakebed releases toxic dust across Salt Lake City and the urbanizing Wasatch Front. This paper examines how state and local planning agencies are preparing urban and suburban land uses for this escalating crisis—one poised to reshape the region's environmental and social landscape. It advances a framework for analyzing the land use planning responses along the shores of a rapidly disappearing Great Salt Lake.

Title: Relationship between Organizational Factors and Eudemonic Well-being: A Moderated Mediation Model
Presenter: Aklima Sultana

Authors: Aklima Sultana and Nuria Tordera
Affiliation: PhD student, University of Utah/ Assistant Prof. of Psychology, University of Chittagong Bangladesh
Abstract: The significance of work in human life continues to motivate scholars and practitioners to examine the conditions that support employee well-being. Yet, the majority of workplace well-being research focuses on overall or hedonic indicators, leaving eudaimonic well-being (EWB)—a deeper sense of purpose, meaning, and personal growth—relatively understudied. Addressing this gap, the present study investigates how organizational factors influence employees' EWB. Prior research suggests that human resource (HR) practices and organizational justice (OJ) can shape well-being, but findings remain inconsistent, indicating that additional mechanisms may clarify these relationships. Drawing on person–environment fit perspectives, we consider the role of personal values, specifically individualism and collectivism, as potential moderators of the HR practices–EWB link. Using a two-wave longitudinal dataset from 653 employees across multiple organizations in Spain, we test a moderated mediation model with Hayes' PROCESS framework. We examine how two bundles of HR practices—performance enhancement practices and employee support practices—relate to EWB through perceptions of OJ, and whether these effects vary depending on employees' individualistic or collectivistic value orientations. The findings demonstrate that both HR practice bundles positively predict EWB. Furthermore, OJ fully mediates these relationships, indicating that HR practices promote EWB primarily by enhancing employees' perceptions of fairness and justice within the organization. However, individualism and collectivism do not moderate the direct or indirect effects, suggesting that the positive influence of HR practices on EWB is robust across employees with different value orientations. Overall, this study contributes to the growing literature on workplace eudaimonia by clarifying the mechanisms through which HR practices foster deeper forms of well-being. The results highlight the central role of organizational justice and offer practical implications for HR professionals and policymakers seeking to cultivate fair, supportive, and psychologically enriching work environments.

2:30 p.m. Break - 2nd *floor Lounge - Snacks and bottled water*

SESSION B: (3:00 – 4:30 p.m.) *HH 220*

Title: When They Flex Muscles: Military Parade, Public Opinion, and Falsification
Presenter: Jia Li
Author: Jia Li
Affiliation: Utah State University
Abstract: Military parades are a mixed strategy of soft and hard propaganda: leaders aim to inspire public support with a "rally-around-the-flag" effect as well as deter defiance by signaling regime strength. Do military parades work as a soft or hard propaganda strategy? To answer this question, one challenge is that an increase in genuine public support and people's preference falsification—evidence for effective soft and hard propaganda, respectively—can both manifest themselves in that people's opinions about the regime become more positive. This paper introduces new evidence based on people's responses on factual questions about their political identity. A quasi-experimental design using the 2015 Chinese General Social Survey shows that China's Victory Day Parade on September 3 does not effectively improve how people evaluate the regime, nor increase people's propensity to falsify their support for the regime. Instead, watching the parade makes people more honest about their political identity: interviewees after the parade are less likely to identify themselves as members of the Communist Party of China. These findings suggest that while military parades signal strength to domestic audience, their implications for the public expression go beyond the feigning of political loyalty. Rather, the

regime's show of force can increase people's perceived cost of falsifying their political identity, inducing more truthful responses.

Title: Scrolling the Perfect Body
Presenter: Aggrey Otieno
Author: Aggrey Otieno
Affiliation: Utah State University
Abstract: A growing body of social science research shows that platform-driven advertising environments are reshaping how individuals judge their bodies and regulate appearance in daily life. This study develops and evaluates REFLECT, a model that explains how targeted social media advertising influences appearance comparison and regulation among young adults in Utah. The study examines a sequence in which retargeted exposure, endorsement fit, figurative idealization, and lifestyle framing heighten comparison tendencies and widen the distance between the self as it is and the self as it is expected or desired to be. These expanding gaps contribute to greater body dissatisfaction and a range of regulatory behaviors, including dieting, appearance-motivated exercise, concealment, and various forms of avoidance. The study uses a longitudinal design with a stratified sample of Utah residents aged eighteen to thirty-five. Twelve hundred participants completed established measures of the REFLECT constructs and later reported changes in dissatisfaction and new appearance-regulation practices. Its inferential statistics include confirmatory factor models with invariance tests, structural equation models that trace mediational pathways from exposure through comparison and discrepancy to outcomes, moderation by media literacy, religiosity, and modesty norms, and multilevel models that incorporate county-level variation in perceived advertising intensity. Platform contrasts between short-form video and photo-dominant environments isolate ecological effects. The study offers a transferable framework that distinguishes advertising effects from those of organic content and identifies both cultural pressures and protective factors in faith-influenced settings. Findings will inform media-literacy programming, debates on advertising personalization, and context-sensitive approaches to health communication. Keywords: social comparison, self-discrepancy, targeted advertising, influencers, media literacy, Utah

Title: Framing Compromise: How Parties Can Sell Interparty Cooperation to Voters
Presenter: Harley Roe
Author: Harley Roe
Affiliation: Southern Utah University
Abstract: Is there a justification a politician can offer that would, in the eyes of the voter, keep their hands "clean" when engaging in political compromise? Voters respond favorably to the idea of political compromise — parties working across the aisle to enact suboptimal policy — but reject the incidence of compromise when it occurs. However, policymakers also recognize that in order to gain traction on important policy issues, there may be a need to negotiate with the opposition in order to ensure passage. The issue, then, for politicians who are incentivized to compromise from a policy angle is finding ways to sell this action to voters in order to avoid sanctioning in future elections. Relying on a survey experiment embedded on two waves of the Cooperative Election Study (CES) administered in the months preceding and following the 2024 general elections, I test if this negative perception about political compromise can be amended when voters are given a justification for the compromise. I find support for the claim that voters find the action of compromise more agreeable if they expect to receive policy concessions from their political opponents in the future. In other words, voters respond positively to reciprocity.

Title: "Is it the Space, or is it the People": Factors Affecting Understandings and Experiences of Belonging in Southern Utah

Presenter: Carmyn Hardisty
Authors: Carmyn Hardisty, Bethany Gull, Tyler Quincy, Abby Pond, and Marisela Quintanar
Affiliation: Utah Tech University
Abstract: St. George is one of the fastest-growing cities in the nation. This growth has caused points of conflict between long-time, mostly conservative residents and more recently arrived groups. LGBTQ visibility in the area has also increased. Concerns have arisen that affective polarization, or the perception that political rivals are not only different but moral enemies and threats to community stability, may cause barriers to building community ties between residents of different backgrounds. One result is that members of minority populations may find it hard to feel part of the larger community. This study analyzes the results of two focus groups to see how two groups with very different social locations define and experience community belonging in Southern Utah. One focus group included young Southern Utah lesbians; the other, St. George-area community leaders. Questions guiding group discussion included how community belonging is perceived by each group and compared the differences due to identification, social resources, representation, and beliefs. Each group has a different relationship to the community and the power differences are vast. The defining themes of community belonging amongst these groups differ on individual identity and connected community morals. By analyzing how different groups in Southern Utah view belonging, we can better compare their experiences and understand how these differences shape overall social cohesion. This study is important to future research as it allows us to focus on communities that are continuously and rapidly growing all over the country.

As an FYI: you can park free in any flat or ground-level parking lot. However, I'm not sure whether that applies to the University Inn lot, so I'd just avoid that. Unless you're at the University Inn, I like the lots that are at the bottom of the Visitor Map attached. Confusingly, they are called "Brown Lots," but aren't shown in brown on the map. You can see them connected by what looks like a street crossing: Actually, they are underground passages. However - the lots are kind of funky to get into from the road, especially the one on the bottom left. Do not approach them from right to left, where you have to cross traffic; instead come up Hwy. 89 (400 - heading to Bear Lake) from downtown in the vicinity of In N' Out. Why? Because they are very sharp turns into them, particularly the lower left one, unless you come up that way. The left one comes up really quickly as you come up the road and is not well sign-posted. They both overlook what we call "The Island," because campus is located on a bluff of sorts (if you've never been to USU).

The conference is being held in the Business/Huntsman bldg. on the map (everything connected), just to the left of the cross-hatched construction zone . . . which is no longer a construction zone, even more confusingly: Everything is built there, now. The most convenient entry to Huntsman is at the lower left corner of the Huntsman building, if you come up from those parking lots. Take half a flight up through the ground-level doors, and you'll be right near registration.

I'm going to put up signs on the doors directing folks to registration and the auditorium we'll be using.

Just some more confusion: If you come in from the north and from one of the main walkways of the campus (main library is near there), you'll seem like you're coming in at the first floor. Nope. The rooms are number 200+. To get to the 100-numbered rooms, you go down a flight. The entrance by the lots I just mentioned will be up half-a-flight to 200-rooms and down half-a-flight to 100-rooms. This is all because the Huntsman complex has had (at least) three major building projects. I find the progression of room numbers to be a bit illogically placed, but that's probably just me. The auditorium is just inside the north entrance from campus and to the left.

Oh, and for those of you interested, a new Starbucks has opened in the ground floor of the student union. It is listed as being open on Saturdays 9 a.m.-3 p.m., which is what a barista told me (confirmed online). The Taggart Student Union is about a 5-min. walk northwest from the Huntsman bldg. It's on the map just down and to the left of the twin parking lots in brown on the map. Don't go up any stairs no matter which way you enter (two main entrances on the southwest and southeast corners), because (and I did this last week!) you can't get down from the sort of second floor.

Jon M Huntsman Hall is wrapped North to West of the Eccles Business Building

Eccles Business Building (EBB)

Directions Copy Link

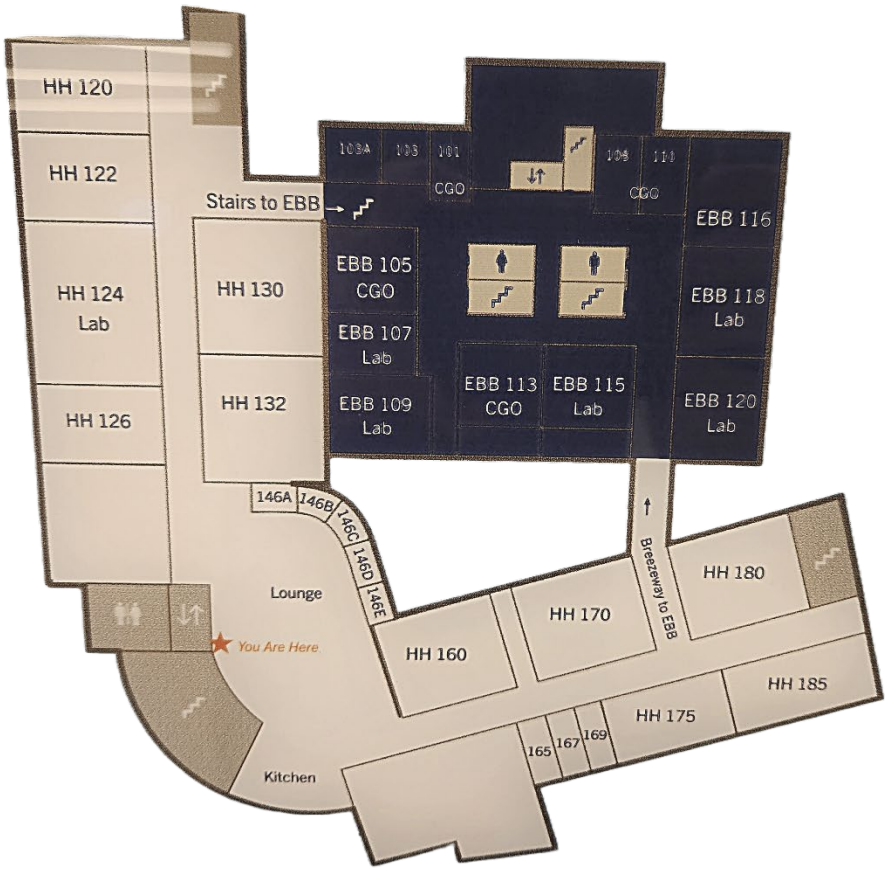
Huntsman Hall (HH)

Directions Copy Link

2nd Floor


Registration
Lounge
202A
HH 220
START
Breezeway to EBB
EBB 214
EBB 209
224
HH 222
EBB 216
EBB 211
EBB 215
Auditorium
EBB 218
228
HH 226
Courtyard
Breezeway to EBB
HH 280
You Are Here
SHAW'S
88
HH 260
HH 270
282
284
272
274
262
264
Café

1st Floor


HH 120
HH 122
HH 124
Lab
HH 126
HH 130
HH 132
Stairs to EBB
103A
103
101
CGO
105
111
CGO
EBB 116
EBB 105
CGO
EBB 107
Lab
EBB 109
Lab
EBB 113
CGO
EBB 115
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EBB 118
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EBB 120
Lab
146A
146B
146C
146D
146E
Lounge
You Are Here
Kitchen
HH 160
HH 170
Breezeway to EBB
HH 180
HH 185
HH 175
165
167
169

https://www.usu.edu/parking/files/parking-maps/all-campus.pdf. The Canyon View Terrace is a paid parking lot Huntsman Hall Free Parking any flat lot that is not a multi-story parking structure.