Journal of Scholarly Endeavor

2026
Symposium for Student Research, Scholarship, and Creative Achievement

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MESSAGE FROM THE PROVOST AND VICE PRESIDENT FOR ACADEMIC AFFAIRS

The **2026 SRU Symposium for Student Research, Scholarship, and Creative Achievement** celebrates the exceptional scholarly and creative work taking place across our campus. It reflects the strength of Slippery Rock University's intellectual community and the outstanding mentorship provided by our faculty. The symposium also highlights our institutional commitment to interdisciplinary inquiry and collaborative learning, encouraging students to examine complex questions through multiple perspectives.

At a public comprehensive university, the work of research, scholarship, and creative achievement often takes place within a context of competing demands and finite resources. That reality makes this celebration all the more meaningful. The projects featured in this symposium demonstrate not only talent and dedication but also the ingenuity, adaptability, and perseverance of our students and faculty mentors. They represent the best of what higher education can do: create opportunities for discovery, deepen understanding, and contribute to the life of the university and the broader community through thoughtful and disciplined inquiry.

One of the defining characteristics of higher education is its dual mission of creating and disseminating knowledge. Faculty are not only educators, but also scholars and practitioners whose work continues to evolve through research, creative activity, and professional engagement. At SRU, students are invited into that process of discovery. Through research, scholarship, and creative work, they learn by asking important questions, exploring evidence, testing ideas, solving problems, and sharing what they have learned with others.

The Symposium serves not only as recognition of these accomplishments, but also as an important developmental milestone for our students. Their work did not end when the data were collected, the analysis completed, or the artwork finished. The next step, synthesizing, refining, and presenting their work, is where deeper learning often occurs. As presenters, students step into the role of teachers, sharing insights with their peers, faculty, and the broader SRU community. Whether through poster presentations, oral sessions, performances, exhibits, or publication in the *Journal of Scholarly Endeavor*, they embody the spirit of intellectual curiosity, creativity, and academic courage.

I extend my sincere appreciation to the faculty mentors whose guidance, expertise, and encouragement made these projects possible. Your mentorship is central to this work. I also offer heartfelt thanks to the Office of Grants, Research, and Sponsored Programs, especially **Casey Hyatt and Rachel Seminatore**, for their dedicated coordination and support of student success. And finally, to our student presenters: thank you for going beyond what was required, for embracing the challenge of original inquiry, and for demonstrating the enduring value of learning through discovery.

Dr. Michael Zieg
Provost and Vice President for Academic Affairs

Art

FLOATING ART EXHIBITION

Riley Lennon, Megan Evans, Mackenzie Kratsas, Camille Bupp, Alexis Ward, Converse Kennedy, Veronica Yeschke, Emma Barrell, Nathaniel Gabriel, Nina Kahle, Alex Zieg, Joshua Vasquez, and Jake Lewin

Faculty Sponsors: Ms. Heather Hertel, Dr. Louis Christensen, Dr. Franklyn Charles, Dr. Jack Livingston, and Dr. Judith Silva

Off-Campus Collaborators: Dr. Sharon Dale, Penn State University and Mr. Beau Seibel, American Custom Sails

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Oral, Poster, and Exhibit

ABSTRACT:

Through the SRU Faculty Student Research Grant (FSRG) and SRU Faculty Professional Development Council Grant (FPDC), Slippery Rock University staff and students collaborated to create nine large-scale paintings on recycled J22 sails. Our team consisted of 13 students serving as painters, photographers, and videographers within the project. Through preliminary sketch ideas, to conductive research on hydrodynamics and naval architecture, this team examined the relationship between moving vessels and abstracted paintings to create an unprecedented Floating Art Exhibition.

Working with Professor of Art, Heather Hertel, our team experimented with painting on sailcloth. Combatting the learning curve of this new material, we learned how to transfer and create designs on non-flat surfaces that were dual sided, with a combined sail area of roughly 256 square feet on each side. Individually, our student team members each submitted sketches for the sail's iconography. As a group, we then collaborated, planned and revised these sketches to curate a collection of paintings that reflected our desired artistic choices.

Our team learned the mechanics of sailing along with sail assembly. The sails, consisting of a mainsail and a jib, were hoisted upon the J22 to showcase our painted compositions averaging 26 feet tall. Eight J22 sailboats then cruised as a Floating Art Exhibition on Presque Isle Bay, Erie, Pa hosted by the Erie Yacht Club. The sailboats were sailed by Women on the Water (WOW) sailing program along with each student painter. During the exhibition, photo and video documentation captured our artistic visions afloat. This exhibition was open to the public offering connection and empowering community building through the visual arts.

INTERWOVEN: EXPLORATIONS IN METAL

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Exhibit

ABSTRACT:

My research for this project involved attending the 2026 Material Topics Symposium at Eastern Carolina University. At this annual metal art conference, I met professionals in the field and participated in workshops taught by artists sharing their processes and experiences. I attended a lecture by Grant Turner on laser engraving methods for enamel. Enameling is an ancient form of art that fuses powdered glass to metal at a high heat, allowing for bright colors and illustrative designs. I have been inspired to create artworks with enamel to further explore the possibilities of the medium, and the intersection of traditional metalsmithing techniques with digital art methods.

In my process, copper sheets are formed with a hydraulic press to give a slight curvature to prevent warpage. The pieces are sawed and filed into shape. Powdered glass enamel is then sifted onto the pieces and fired briefly in a hot kiln. I created digital illustrations and converted them into files readable by a laser machine. The designs are laser engraved onto the enameled copper. This creates bold black linework that contrasts with the colorful coating. I tested a variety of hues to see which were best suited for this purpose. The final result of this project will be a wearable piece of jewelry.

Biology

CYTOTOXIC EFFECTS OF NICOTINE-FREE CINNAMON-FLAVORED, MENTHOL-FLAVORED, AND UNFLAVORED E-CIGARETTE VAPOR CONDENSATE ON HUMAN CELL LINES

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Poster

ABSTRACT:

This study was conducted to determine whether nicotine-free electronic cigarette vapor condensate, specifically cinnamon-flavored, menthol-flavored, and unflavored variants, affected the viability of cultured human cell lines. To test this, vapor condensate was collected from a SMOK V2 Vape device and applied to human cell cultures at varying concentrations to observe dose-dependent effects. Following exposure, an MTS assay was performed to assess metabolic activity as an indicator of cell viability. Untreated media served as the negative control, while cyclohexamide was used as the positive control to confirm the assay's ability to detect cell death. A one-way analysis of variance (ANOVA) was conducted to evaluate statistical significance in viability across all treatment groups. It was hypothesized that cell viability would decrease with increasing concentrations of e-cigarette vapor condensate and that the flavored condensate variants would produce greater cytotoxic effects compared to the unflavored variant.

UTILIZING RNA-SEQ TO UNDERSTAND THE MOLECULAR EFFECTS OF SUBLETHAL CONCENTRATIONS OF IMIDACLOPRID IN THE HUMAN CELL LINES SH-SY5Y AND MCF7

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Poster

ABSTRACT:

Imidacloprid (1-(6-chloro-3-pyridylmethyl)-N-nitroimidazolidin-2-ylideneamine) is one of the most widely used insecticides worldwide. It acts by binding with high affinity to nicotinic acetylcholine receptors (nAChRs) in the insect nervous system, causing sustained muscle contraction, paralysis, and death. As a systemic pesticide, imidacloprid is absorbed by plants and transported into growing tissues. It is commonly applied through seed coating, soil drenching, and foliar spraying, creating multiple potential routes of environmental exposure. Residues have been detected globally in produce, water, soil, and sediments. Although imidacloprid is considered more selective for insect nAChRs than mammalian receptors due to structural differences, growing evidence suggests off-target effects in vertebrates. Sublethal effects reported in human cells include aneuploidy, DNA damage, lipid accumulation, and hormone dysregulation. Notably, some affected cell lines do not express nAChRs, supporting the possibility of receptor-independent mechanisms. However, the molecular basis of these effects remains poorly understood. To address this gap, we initiated an RNA-sequencing (RNA-seq) study examining genome-wide transcriptional responses to four sublethal doses of imidacloprid (0.1, 1, 10, and 100 μM) in SH-SY5Y neuroblastoma cells, which express nAChRs, and MCF7 breast cancer cells, which do not. For SH-SY5Y cells, we generated three biological replicates for untreated controls (± DMSO) and each treatment condition following 24-hour exposure.

Preliminary bioinformatic analysis identified numerous differentially expressed transcripts in imidacloprid-treated samples compared to vehicle controls. In this poster, we present these findings, discuss their potential health implications, and describe ongoing validation efforts, including quantitative PCR (qPCR) analysis.

ESSENTIAL OILS AND ANTIBIOTIC PROPERTIES

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Poster

ABSTRACT:

This research is to study the antibiotic properties of essential oil and collect qualitative data to see if they have weak or strong antibiotics properties. The reason for this research is to collect a background on the 18 essential oils and their properties against 13 different strains of bacteria while also testing 11 different antibiotics for further experiments. To do this, the diameter of the zone of inhibition was measured and recorded, and any anomalies like colonies that have formed resistance, evidence of probable synergy, or different phenotypic properties were taken note of. After testing *Staphylococcus aureus* against the essential oil cumin and it had a large zone of inhibition, mutants popped up, three mutants were collected and grown to be later tested to see if the bacteria developed resistance against the antibiotics and essential oils. Later DNA of the *Staphylococcus aureus* will be sent off for sequencing to later find where the mutation happened.

EFFECTS OF A COMMON PHARMACEUTICAL CONTAMINANT OF THE AQUATIC ENVIRONMENT ON THE STRESS RESPONSE IN CRAYFISH

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Oral

ABSTRACT:

Animals must regulate physiological responses to maintain homeostasis when challenged by environmental stressors. Increased plasma glucose concentration in body fluids (hyperglycemia) is a well-established measurement of the metabolic stress response. In crustaceans, the neurotransmitter serotonin activates a conserved neuroendocrine stress pathway that induces hyperglycemia by stimulating the release of crustacean hyperglycemic hormone (CHH). Pharmaceutical contamination is frequently detected in surface waters. One such contaminant is fluoxetine (the active ingredient of Prozac), one of the most widely prescribed antidepressants worldwide, used by millions of patients annually. As a selective serotonin reuptake inhibitor (SSRI), fluoxetine disrupts normal serotonin-mediated signaling pathways. Fluoxetine enters aquatic environments primarily through human excretion and incomplete removal during wastewater treatment and has been detected at low but biologically relevant concentrations. In this ongoing study, Virile crayfish (*Faxonius virilis*) were exposed via immersion to environmentally relevant, sublethal concentrations of fluoxetine (0.5 and 5 μg/L) for 14 days. We will report on ongoing analysis of plasma glucose concentrations as well as measures of serotonin-regulated behaviors following fluoxetine exposure. This study aims to advance understanding of neuroendocrine stress regulation and evaluate the potential for SSRIs to disrupt metabolic processes in aquatic invertebrates.

DNA PURIFICATION AND SEQUENCING OF WOLF CREEK SOIL ACROSS FIVE WEEKS

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Poster

ABSTRACT:

We conducted a pilot study to compare the microbiome in deep and surface river sediment layers. We constructed large, laboratory mesocosms, and used them to evaluate project feasibility, DNA sampling methods, and our data analysis pipeline.

Mesocosms (18”x12”x36”) were constructed from plexiglass and wood frames, filled with soil and water collected from Wolfe Creek, with pumps for continual water flow. Sediment samples were collected weekly, and DNA was extracted using a simple and cost-effective isopropanol-based method across all weeks. In week five, an additional extraction method (using expensive PowerSoil kits) was included. The pilot study ended early at week five when several of our mesocosms began to catastrophically leak, preventing us from collecting more timepoints.

After DNA extraction, our analysis pipeline used next gen sequencing by SeqCoast, and data processing using Kaiju via the KBase server cluster. Microbial diversity and community composition were analyzed on species and order level using Shannon diversity, gamma diversity, and Bray–Curtis dissimilarity.

This analysis revealed no difference between surface (oxygen rich) and subsurface (oxygen poor) layers, nor any differences over the five-week sampling period. We did find substantial differences (Bray-Curtis dissimilarity score) in the species recovered by the isopropanol and PowerSoil methods, with PowerSoil recovering a modestly higher total number of species (73 vs. 66) and more unique species (28 vs. 21), although both methods detected distinct portions of the community, with only 45 species shared between them.

EXPLORING *APIS MELLIFERA* HINDGUT MICROBIAL GROWTH

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Poster

ABSTRACT:

The hindgut microbiome of honey bees (*Apis mellifera)* remains understudied despite its critical role in digestion, immunity, and overall colony health. The present study focuses on characterizing the hindgut microbiome of honey bees in Western Pennsylvania using a combination of molecular and culture-based techniques. Specifically, the hindgut microbiome of nurse honey bees collected from the Rock Apiary at Slippery Rock University during the summer and late fall months was evaluated using 16S rRNA sequencing to determine full community structure. Additionally, hindgut samples were homogenized, serially diluted, spread plated onto tryptic soy agar (TSA) and incubated under aerobic, anerobic, and CO_2 conditions. While limited growth occurred under each condition using the TSA media, visible colonies were selected and streak plated to obtain pure isolates that could be submitted for 16S rRNA gene and whole genome sequencing.

These results provided information on the microbial community structure, allowing for comparison of the communities at different times of the year and more specific selection of conditions for culturing potential new species. Sequencing of isolates that were obtained allowed for determination of known vs unknown bacterial species. Overall, the findings of this study not only allow for the identification of microbes in the honey bee hindgut, but also assist in guiding future work aimed at optimizing culture conditions for growth of additional bacterial isolates and further examining differences in hindgut microbial composition across seasonal nurse bee populations.

INVESTIGATION OF METAL RESISTANT BACTERIA FROM ACID MINE DRAINAGE ENVIRONMENTS AND THE GENETIC ELEMENTS RESPONSIBLE

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Poster

ABSTRACT:

Microbe-metal interactions are an area of great interest in microbiology. Bacteria which possess a high-level of resistance to various toxic metals have the potential to provide us with mechanisms of remediating metal contaminated locations in an ecologically friendly way. That being said, in order to achieve this, one needs to have a better understanding of the genetic elements which provide this resistance, and we need to properly classify bacteria with these abilities. To this end, we investigated the genomes of 59 bacteria with a high-level resistance to various toxic metals isolated from environments impacted by acid mine drainage. Specifically, screening for known metal tolerance, or resistance, genes was done by searching the annotated genomes. Initial investigation has indicated these bacterial isolates do appear to contain several various metal resistance genes and/or resistance mechanisms. Also, methods of resistance appear to be similar across different species, suggesting a potential common evolution of these genes among distant bacterial lineages. The findings of this study are a significant advancement in the field of microbe-metal interactions and help further our understanding of the genetic elements involved in allowing bacteria to tolerate high levels of toxic metals.

TREE SURVEYING THE SRU MILLER TRACT: ANALYSIS OF COMPOSITION AND GROWTH OF SLIPPERY ROCK UNIVERSITY'S MILLER TRACT

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Poster

ABSTRACT:

Plant community assemblages are driven by stochastic and deterministic factors across space and time, which result in a wide variety of potential communities. By better understanding how communities assemble, scientists, managers, and stakeholders can better engineer forest communities to desired states. This goal is especially attractive in western Pennsylvania, a largely forested region with an extensive history of logging. This study examines forest composition on the Miller Tract, a ~16 ha plot of bottomland hardwood forest owned by Slippery Rock University in Butler Co, PA. The goal of the present study is to better understand community assembly in bottomland hardwood forests through close observation of the extant forest community. To accomplish this, 12 50 m^2 plots were randomly placed across the property. Within each plot, every tree (diameter at breast-height (DBH) > 3 cm) was geotagged, identified to species, and measured for DBH. Results from the two completed plots encompassed 237 trees, a majority of which were *Acer saccharum* (sugar maple) and *Prunus serotina* (black cherry) at 74.7% and 16.5% of the sample, respectively. Overall, we observed 10 species of trees, with an average density of 948 trees ha^{-1}. Additionally, the shape of DBH distributions of these two species suggests a narrow colonization period in the distant past, potentially reflecting the history of logging and rapid recolonization by easily dispersed shade-intolerant species. Future work will assess the remaining 10 plots, determine spatial relatedness and patterns within and between species, and further investigate biotic and abiotic factors driving tree community assembly in bottomland hardwood forests.

CHARACTERIZING MICROBIAL COMMUNITIES ASSOCIATED WITH NON-NATIVE EARTHWORM DECOMPOSITION OF NATIVE AND INVASIVE PLANT LITTER

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Poster

ABSTRACT:

Earthworms play critical roles in ecosystems through their influence on soil composition, nutrient availability, and interactions with soil microorganisms to break down organic matter. After the last glacial period, earthworms native to large parts of Eastern North America were extirpated, leaving forests to develop in their absence for the last 20,000 or more years. In recent centuries, non-native earthworms from Asia and Europe have been introduced to these forests by humans. Differences in earthworm lifestyles, such as foraging interactions with soil microbial communities, can have consequences on ecosystem structure and function. For example, epigeic earthworms like non-native *Eisenia fetida* (red wriggler) have been demonstrated to enhance bacterial and fungal biomass through various mechanisms. The goal of this study was to evaluate differences in microbial communities in (1) the presence of non-native earthworms *E. fetida* and *Lumbricus terrestris* (common nightcrawler); and (2) across different leaf litters, including native *Impatiens capensis* (jewelweed, n=1), invasive *Alliaria petiolata* (garlic mustard, n=1), and native control *Quercus* sp. (oak, n=1). 1g of leaf litter was added to mesocosms containing either *E. fetida* individuals (n=10) or *L. terrestris* (n=1), reflecting earthworm densities found in nature. Worm foraging of litter material was quantified at the end of 4 weeks by removing, drying, and weighing the litter. Bacterial 16S rRNA gene sequencing was used to evaluate the soil microbial community at t=0 in the absence of earthworms and litter (starting bacterial community structure), and after 4 weeks, for any differences across worm species and litter type. These results are expected to delineate how non-native earthworms impact soil microbial communities through their foraging habits.

FORAGING PREFERENCES OF THE NON-NATIVE EARTHWORM *EISENIA FETIDA* AMONG NATIVE AND INVASIVE PLANT SPECIES

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Oral

ABSTRACT:

Earthworms play critical roles in ecosystems through their influence on soil composition, nutrient availability, and mechanisms of litter decomposition. After the last glacial period, earthworms native to large parts of Eastern North America were extirpated, leaving forests to develop in their absence for the last 20,000 or more years. In recent centuries, non-native earthworms from Asia and Europe have been introduced to these forests by humans. Differences in the foraging habits of these non-native earthworms can have consequences on ecosystem structure and function, including changes in soil chemistry, carbon: nitrogen ratios, and phosphorus abundance. The goal of this study was to determine the impact of a non-native earthworm, *Eisenia fetida* (red wriggler), on soil litter dynamics. Leaf litter from native *Impatiens capensis* (jewelweed), invasive *Reynoutria japonica* (Japanese knotweed), invasive *Alliaria petiolata* (garlic mustard), and native control *Quercus* sp. (oak) was added to mesocosms containing *E. fetida* individuals (n=10). Worm foraging of litter material was assessed at the end of 1 (n=3), 2 (n=3), and 4 (n=3) weeks by removing, drying, and weighing the litter. Initial results suggest a trend towards greater consumption of native *I. capensis* when provided with only one litter type (1g) per mesocosm. Trials consisting of two litter types (0.5g each) per mesocosm indicate a significant preference in consumption of *I. capensis* compared to *R. japonica* (df=1, F=10.604, p=0.007), while preference between *I. capensis* and *A. petiolata* is still being analyzed. Additionally, the microbial community was evaluated via 16S rRNA sequencing for differences across litter type and worm species, comparing *E. fetida* to another non-native earthworm, *Lumbricus terrestris* (common nightcrawler). These results are expected to delineate how non-native earthworms impact forest communities through their foraging habits.

DIVERGENCE IN INSECT POPULATION DIVERSITY AND ABUNDANCE ACROSS CONTRASTING HABITAT TYPES IN SLIPPERY ROCK, PENNSYLVANIA

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Poster

ABSTRACT:

Insect populations are declining globally due to increasing anthropogenic pressures, making localized monitoring essential for understanding community structure and informing conservation and management strategies. Insects underpin terrestrial food webs, provide economically critical pollination services worth billions of dollars, and are fundamental to ecosystem function and human prosperity. We examined insect diversity and abundance across four habitat types—developed, wetland, forested, and grassland environments—in and around Slippery Rock, Pennsylvania. Malaise traps, pitfall traps (arranged within a 5 m radius of each Malaise trap), and Berlese funnel samples were deployed for 72-hours across two sampling periods (mid-summer and early fall 2025) to assess seasonal and habitat-driven variation in insect communities. Vegetation structure and environmental parameters within 10 m of each malaise trap were also quantified. Preliminary qualitative patterns indicate developed sites exhibit the highest malaise-trap abundance and biomass of insects, dominated primarily by Diptera (Flies). In contrast, a qualitative comparison between representative samples from a developed site and a grassland site revealed the grassland supported a broader diversity of insect families and a higher overall abundance, despite having perceptibly lower biomass. We hypothesize that reduced vegetation complexity and increased open flight corridors in developed areas facilitate higher aerial insect capture rates, while lower predator abundance may further contribute to elevated flying-insect activity. Conversely, pitfall traps in naturalized habitats (wetlands and forested sites) captured greater numbers of ground-dwelling invertebrates—including Opiliones (Harvestmen), Coleoptera (Beetles), Arachnida, and Mollusca—likely reflecting increased habitat heterogeneity, moisture availability, and greater habitat availability. Across both sampling periods, total invertebrate abundance declined from summer to early fall, consistent with seasonal life-history transitions in many taxa, particularly those with adult flying stages. Our findings highlight strong habitat-specific differences in insect community composition and underscore the importance of repeated, multi-method sampling for monitoring local insect biodiversity in human-impacted landscapes.

SELECTIVE FEEDING BY *LUMBRICUS TERRESTRIS*: IMPLICATIONS FOR NATIVE AND INVASIVE PLANT LITTER DECOMPOSITION

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Poster

ABSTRACT:

Earthworms directly alter key aspects of soil composition and litter dynamics in systems where they are present as a result of foraging and movement through the soil column. In areas devoid of native earthworms, such as much of glaciated eastern North America, the introduction of non-native earthworms is hypothesized to have profound impacts on ecosystem processes and plant community development. In eastern deciduous forests, these non-native earthworms increase soil aeration, impact nutrient ratios, and process through litter detritus, all of which may alter ecosystem characteristics as these forests have developed without earthworms for at least the last 10,000 years. One common species introduced to these forests is *Lumbricus terrestris,* also known as the common nightcrawler. Nightcrawlers favor detritus high in nitrogen and calcium, but their feeding preferences between native and nonnative plants remain unclear. This study seeks to investigate the feeding preferences of *Lumbricus terrestris* regarding native plants vs nonnative plant litter. We hypothesize that the nightcrawlers will preferably feed on the native plants over the nonnative plants. The experiment follows a set of trials over the span of four weeks, measuring the consumption of 1 g increments of the invasive perennial *Reynoutria japonica (*Japanese Knotweed*)* and native plant *Thelypteris palustris* (Marsh Fern). A second set of trials compared the consumption of the native annual *Impatiens capensis* (Spotted Jewelweed) against the invasive biannual *Alliaria petiolate* (Garlic Mustard) 100 worms were propagated prior to the start of trials. 27 mesocosms, lined with cardboard and containing a soil layer with one worm per tank, were constructed. Biomass consumption was measured at 1, 2, and 4 weeks. By directly enumerating feeding preferences of *L. terrestris*, we hope to better understand the effects of these worms on forest dynamics.

INVESTIGATING THE MECHANISMS OF RESVERATROL-INDUCED HEAT STRESS RESISTANCE IN DROSOPHILA: THE ROLE OF HEAT SHOCK RESPONSE AND UNFOLDED PROTEIN RESPONSE

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Oral

ABSTRACT:

The heat shock response (HSR) and unfolded protein response (UPR) are essential cellular mechanisms that help counteract protein misfolding and maintain homeostasis. These pathways are activated by stressors that lead to protein misfolding in the cytoplasm and endoplasmic reticulum (ER), respectively. The HSR is primarily regulated by heat shock factor 1 (HSF1), while the UPR is activated by X-box binding protein 1 (XBP1). When misfolded proteins accumulate in the cytoplasm, HSF1 induces the expression of heat shock proteins (HSPs), such as Hsp70, to assist in protein refolding. Conversely, the UPR responds to misfolded proteins in the ER by activating XBP1, which enhances the expression of chaperones to alleviate ER stress. Both responses can elevate reactive oxygen species (ROS), leading to cellular damage. Cells counteract ROS through endogenous antioxidants and exogenous sources like resveratrol, a plant-derived polyphenol. The effects of resveratrol on stress resistance have shown mixed results. In our study, we investigated whether dietary resveratrol enhances heat stress tolerance in *Drosophila*. Flies treated with 100 µM and 400 µM resveratrol exhibited significantly improved resistance to heat stress-induced paralysis. We hypothesize that resveratrol enhances stress tolerance by modulating HSF1 and/or XBP1 activity. To test HSR involvement, we used confocal microscopy to examine GFP-tagged HSF localization at hsp70 loci and quantified Hsp70 protein levels via western blotting. Our results showed that resveratrol treatment did not promote HSF1 recruitment to hsp70 loci or increase Hsp70 expression, suggesting its protective effects are independent of HSR activation. Ongoing experiments aim to determine whether XBP1 activity is enhanced by resveratrol, providing insight into its role in stress resistance.

Career and Academic Progress

FROM ASSESSMENT TO IMPACT: HOW LASSI AND SUCCESS COACHING SUPPORT FIRST-YEAR STUDENT SUCCESS

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Poster

ABSTRACT:

The transition from high school and college is often riddled with challenges related to embracing independence, establishing academic agency, and learning how to learn. To help address these challenges, universities have created first-year transition courses. At SRU, the FYRST seminar course seeks to help students become acclimated to campus and college life. During the fall 2025 term, 80% of FYRST seminars partnered with Success Coaching to scaffold academic transition support for their students. Success Coaching empowers students to discover, reflect, and grow as they become courageous, lifelong learners. Grounded in Hope Theory, the Success Coaching office helps students explore goals and define what success means to them. The Success Coaching partnership with FYRST seminar included a classroom presentation from the Success Coaching staff on first-year academic success, followed by a two-part assignment. First, students took the Learning and Study Strategies Inventory (LASSI). The 64-item LASSI used Likert-scale responses across ten constructs to measure self-regulated learning. Next, students completed a 30-minute one-on-one coaching debrief appointment with a Peer Academic Coach or Academic Life Coach, where they reflected on their results and strategies for academic success. During fall 2025, more than 500 students completed a LASSI debrief appointment. This assessment project examines the impact of integrating the LASSI and coaching into the FYRST Seminar. Assessment analyses explored academic outcomes of students who participated in the LASSI assignment, as well as differences in LASSI patterns and coaching experiences across majors and disciplines. Findings demonstrated that students who completed the LASSI assignment earned higher fall GPAs and persisted to spring semester at higher rates than those who did not. This project highlights the importance of reflective practice, self-regulated learning skills, and the role of Hope Theory in promoting first-year student success.

Chemistry and Environmental Geosciences

KINETIC CHARACTERIZATION OF DIHYDROFOLATE REDUCTASE UNDER VARYING PH AND THERMAL CONDITIONS

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Poster

ABSTRACT:

Dihydrofolate reductase, DHFR, is an enzyme that converts dihydrofolate (DHF), a folic acid derivative, into tetrahydrofolate (THF) by adding a hydride from NADPH. THF is a methyl group shuttle required for the synthesis of the purines, thymidylic acid, and amino acids. This makes DHFR essential for DNA replication and cell proliferation and, hence, makes it a viable target for pharmacological agents.

In this study, we expressed recombinant DHFR from *Eschericihia coli* using an inducible plasmid system and purified it using metal affinity and size exclusion chromatography to obtain a soluble and active enzyme. Protein expression was quantified at 280nm absorbance and verified by SDS-PAGE.

To investigate environmental influences on enzyme function, we examined the effects of pH and temperature on DHFR catalytic activity. Enzyme kinetics were monitored spectrophotometrically by measuring the decrease in NADPH absorbance at 340 nm during conversion of DHF to THF. Initial reaction velocities were determined under saturating substrate conditions across a pH range of 2.0 to 11.0 and temperatures from 0°C to 40°C.

We hypothesized that DHFR activity would display a bell-shaped dependence on pH due to ionization requirements of active site residues and would increase with temperature up to an optimal point before declining due to denaturation.

PURIFICATION OF ALPHA-SYNUCLEIN AND THE SUBSEQUENT ELECTRON SPIN RESONANCE SPECTROSCOPY OF THE PROTEIN UPON INTERACTION WITH CURVED MEMBRANES

Cooper Alleman

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Poster

ABSTRACT:

Alpha-synuclein (aSyn) is a membrane-binding protein, consisting of 140 amino acids, which helps to control vesicles that travel between neurons in the brain. Its ability to control these vesicles is partially due to its intrinsic disorder, which allows it to bind to the various curved membranes in neurons, as well as its ability to snap into shape once it binds to said membranes. Our research focuses on the expression, purification, and labeling of this protein and the subsequent analysis of how it interacts with various curved membranes. To accomplish this, we transformed mutated plasmid into competent E. coli cells and then extracted and purified the mutated protein via rudimentary cell lysis, and nickel column chromatography. We exploited the mutated nature of our protein to label it so that Electron Spin Resonance Spectroscopy (ESR) could be implored to study how this protein interacts with the curved membranes in neurons at the amino acid level.

To conduct ESR experiments, we need high concentrations of pure protein, as well as complete spin labeling for significant detection (which is done via mutation), and my role in our research is to ensure this. We performed the protein expression, purification, and labeling at SRU, and our ESR experiments will be performed at the University of Pittsburgh in the Saxena lab. Through this research, a deeper understanding of how the amino acids in aSyn interact with the membrane could be discerned.

HPLC ANALYSIS OF VITAMIN C STABILITY UNDER DIFFERENT STORAGE CONDITIONS

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Poster

ABSTRACT:

Ascorbic acid (vitamin C) is widely incorporated into topical serum formulations for its antioxidant activity and role in collagen synthesis; however, it is highly susceptible to degradation by heat, light, oxygen, and pH changes. Accurate quantification in complex matrices therefore requires selective, stability-indicating analytical methods. High-performance liquid chromatography with ultraviolet detection (HPLC–UV) has been extensively applied for vitamin C determination in food and biological matrices and offers improved specificity compared to traditional dye-titration and fluorometric assays. Official methods further establish HPLC–UV, coupled with acidic extraction and stabilization using tris(2-carboxyethyl)phosphine (TCEP), as a validated approach for vitamin C analysis. Additional HPLC–UV procedures have demonstrated reliable separation and quantification of ascorbic acid and its oxidized form in biological systems.

The objective of this undergraduate research project is to develop and apply an HPLC–UV method for the quantitative determination of vitamin C in commercial cosmetic serums and to evaluate its stability under controlled stress conditions. Sample preparation procedures are adapted from established acidic extraction protocols designed to minimize oxidative degradation during handling. Separation will be performed on a reversed-phase C18 column with UV detection near 254–265 nm, consistent with reported HPLC methods. Calibration curves will be constructed using external ascorbic acid standards to evaluate linearity and working range. Serum samples will be subjected to stress (photolytic and oxidative) to simulate real-world storage conditions. Periodic analysis will enable monitoring of ascorbic acid depletion and potential formation of degradation products.

GIS TRACKING OF TORNADO ALLEY'S SHIFT

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Oral

ABSTRACT

Tornado Alley is a region in the Great Plains of the United States, spanning from the Texas Panhandle to lower central North Dakota. Approximately one in four U.S. tornadoes occur within this area, making it one of the most active tornado regions in the world. Recent Geographic Information System (GIS) studies use weather radar data to analyze tornado frequency and locations over 40-year periods. These studies indicate that Tornado Alley has shifted and continues to shift eastward, a trend widely associated with climate change.

This project measures that eastward shift by analyzing GIS datasets from multiple regions to visualize changes in tornado activity across the United States. The project compiles data from the National Oceanic and Atmospheric Administration (NOAA) to develop GIS-based mapping zones that illustrate this movement. Examining these datasets improves understanding of evolving weather patterns, particularly in eastern states such as Alabama and Tennessee, where tornado frequency and risk have increased in recent years.

QUANTIFICATION OF DHFR THROUGH PROTEIN ASSAYS

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Poster

ABSTRACT:

Dihydrofolate reductase (DHFR) is a key enzyme present in organisms that catalyze the NADPH-dependent reduction of dihydrofolate (DHF) to tetrahydrofolate (THF). DHFR is crucial to DNA synthesis, amino acid metabolism, and cell proliferation. The inhibition of this enzyme leads to the disruption of DNA synthesis, making it a central target for cancer and bacterial treatments. In this experiment, we quantified the concentration of the DHFR protein to assess expression levels. By using protein assays, we were able to indirectly determine DHFR abundance. A strain of *E.coli* was used to purify functional DHFR, we first performed a cell culture and induction of the bacteria. We separated the soluble and insoluble components via centrifugation. We then purified with affinity chromatography and size exclusion chromatography. SDS-PAGE Electrophoresis was conducted to check protein expression and purity. We compared the concentration between Bradford and Lowry assays as well as absorbances at 280 nm. SDS-PAGE analysis confirmed protein purity with a prominent band at the expected molecular weight (~37 kDa). Finally, the enzymatic activity of dihydrofolate reductase was analyzed with the use of enzyme kinetics to quantify the rate of NADPH oxidation to $NADP^+$ along with the conversion of DHF to THF. Overall, it was concluded that there were quantifiable protein concentrations of DHFR in both assays.

MOUNTAIN PALEOECOLOGY: EXPEDITION PLANNING TO INVESTIGATE MIOCENE FOSSIL LOCALITIES IN COLORADO, U.S.A.

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Poster

ABSTRACT:

Fossil preservation in montane environments is uncommon due to high erosion rates that reshape or destroy topography. As a result, the fossil record of montane ecosystems is less well understood than assemblages formed in basins or lowlands. Colorado has an abundance of montane basins in its outcrops, making it an ideal location to obtain data and expand our knowledge of these unique paleo-ecosystems. We are targeting the Pawnee Buttes, Martin Canyon, Pawnee Creek, and Troublesome formations deposited during the early-mid Miocene (23.4-11.0 Ma) to refine the biostratigraphic record. These formations share similar lithology: primarily comprised of sandstone and gravel, with intermittent ash layers, and conglomerates. The numerous ash layers provide radiometric age control for the local sediments.

The Miocene is recognized as a period of rapid mammalian evolution and development, and many of the fossil assemblages found in these Northern Colorado formations coincide with that age. Based on our research, the localities include abundant species of Rodentia, Artiodactyla (Even-toed hoofed mammal), and Perissodactyla (Odd-toed hoofed mammal), with modern analogues of these orders including squirrels, pronghorns, camels, and horses. A more precise understanding of how montane paleoecology affects these species would help to articulate the physiological and biological development of ancient montane species for future study.

We have compiled existing research on the study areas and formations, while synthesizing geologic maps using ArcGIS and USGS explorer. Using our information, we are identifying geologic outcrops from which to collect precise stratigraphic data, access routes to arrive at our specified locations, as well as topographic and geologic maps to plan our future expedition.

INVESTIGATING HARLANSBURG CAVE

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Poster

ABSTRACT:

The Harlansburg Cave is located in western Pennsylvania and is incised into the Vanport Limestone below the Kittanning Sandstone that are a part of the Allegheny Group from the middle Pennsylvanian period (~314 – 306Ma). The cave was discovered during a road cutting project in 1950 for PA Route 108 and is a maze cave containing numerous closed loops of interconnected passages. The cave is currently being mapped by the Pennsylvania Geological Survey. Folded sedimentary rocks throughout the broader. We are conducting a lithofacies analysis of the cave's rocks to determine their depositional environments. Hand samples will be collected from along the roadcut outcrop leading to the cave, then prepared into thin sections for petrographic analysis. We have also begun to describe the fossil assemblage of the cave, which represents a shallow marine environment, based on the presence of crinoids present in the Vanport Limestone and a fluvial and deltaic system of the Kittanning Sandstone based on the presence of Lycopod and Lepidodendron fossils. We are measuring exposed fossils in situ using calipers and a tape measure to provide information on the size distribution of the invertebrate community. Finally, we are generating a 3D model of a portion of the cave using a handheld LiDAR device. This method records point cloud data that will be processed to create a model that will provide valuable information on the geometry of the cave system. The 3D model will allow us to examine the cave's geometry so that we can determine dissolution rate and begin to investigate how the cave formed. This project will allow us to better understand where other unknown cave systems exist as well as build upon the knowledge of cave formation geometry and the processes that create these different structures.

ENZYME KINETICS AND COMPETITIVE INHIBITION OF HUMAN DIHYDROFOLATE REDUCTASE

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Poster

ABSTRACT:

The human dihydrofolate reductase gene was expressed to produce dihydrofolate reductase (DHFR) using *Escherichia coli* (*E. coli*). DHFR is an enzyme that catalyzes dihydrofolate (DHF) to tetrahydrofolate (THF) that requires the presence of the cofactor NADPH. THF plays a critical role in nucleotide biosynthesis and DNA replication. Following protein expression and purification, sodium dodecyl sulfate – polyacrylamide gel electrophoresis (SDS-PAGE) was used to determine adequate protein purity. To characterize enzyme function, varying concentrations of DHF will be used to determine the kinetic parameters of Michaelis-Menten modeling. Reaction rates will be measured by a microplate reader monitoring the decrease in absorbance at 340 nm, which corresponds to the oxidation of NADPH to $NADP^+$. From this data, the Km (Michaelis constant) and Vmax (maximum reaction velocity) of DHFR will be calculated. The Km will provide the insights of enzyme affinity of DHF, while Vmax will indicate the maximum catalytic efficiency under substrate saturation. To further investigate enzyme regulation, the competitive inhibitor methotrexate (MTX) will be tested at varying concentrations. Competitive inhibition provides clearer insight into the enzymes efficiency at a fixed substrate concentration. Understanding DHFR kinetics and inhibition is clinically significant, as methotrexate is widely used in chemotherapy and autoimmune disease treatment due to its ability to disrupt nucleotide synthesis in rapidly dividing cells.

ANALYSIS OF PROTEIN EXPRESSION AND QUANTIFICATION IN *ESCHERICHIA COLI* USING SDS-PAGE AND COMPARATIVE PROTEIN ASSAYS

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Poster

ABSTRACT:

This study aims to analyze protein expression and quantify protein concentration of a purified fusion protein expressed in *Escherichia coli*. The protein of interest, dihydrofolate reductase (DHFR), is expressed as a fusion construct with GST and a histidine tag (GST-DHFR-His). The GST tag enhances protein solubility, while the histidine tag facilitates purification using immobilized metal affinity chromatography (IMAC) with nickel-charged resin. Cell growth, induction, lysis, and purification of *E. coli* are used to express the GST-DHFR-His. Quantitative determination of protein concentration is performed using three separate methods: standard absorbance at 280 nm, the Bradford protein assay, and the Lowry protein assay. The 280 nm absorbance serves as a reference standard, while the Bradford and Lowry assays are colorimetric tests used to obtain comparative concentration values for the protein GST-DHFR-His that is purified from *E. coli*. SDS-PAGE analysis is used to evaluate protein size and purity. By analyzing and comparing the results from each technique, the accuracy, reliability, and suitability of each method for protein quantification of the GST-DHFR-His can be assessed. Additionally, the enzymatic activity of DHFR is analyzed to confirm that the purified GST-DHFR-His protein is not only present but functional. SDS-PAGE is used to confirm the successful expression and purification of the GST-DHFR-His-tagged protein by showing a band at the expected molecular weight. Overall, this study provides insight into recombinant protein expression, purification strategies, and quantitative protein assay techniques. The DHFR protein is important for research, gene manipulation, and medical treatment for diseases such as cancer and Malaria.

EXPRESSION, PURIFICATION, AND IMMUNODETECTION OF GST-DHFR-HIS

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Poster

ABSTRACT:

Dihydrofolate reductase (DHFR) is an essential protein used in the conversion of dihydrofolate (DHF) into tetrahydrofolate (THF) by the addition of a hydride from NADPH. DHFR is vital to DNA synthesis and purine/thymidylate production, and deficiencies in DHFR have been shown to have unfavorable outcomes such as megaloblastic anemia and cerebral folate metabolism disorders.

For this experiment, cell cultures of *Escherichia coli* that contained pDHFR were grown and subsequently induced via IPTG. *E. coli* cells were then lysed after induction to be used for purification of GST-DHFR-His. The lysis is then separated into soluble and insoluble components via centrifugation. Purification of GST-DHFR-His includes affinity chromatography, size exclusion chromatography, and desalting of imidazole from GST-DHFR-His. SDS-PAGE is used with fractions from each portion of the expression and purification process to check levels of expression and purification. Enzymatic activity will then be recorded from the desalted GST-DHFR-His sample via spectrophotometry and addition of NADPH and DHF. A direct ELISA will then be conducted using a mouse anti-His tag monoclonal antibody and fractions from each step of the expression and purification process.

We expect to have a relatively pure sample of GST-DHFR-His, showing a strong single band on the SDS-PAGE. Enzymatic activity, when recorded by a spectrophotometer, should decrease over time, given that GST-DHFR-His is converting DHF and NADPH to THF and NADP+. We would also expect to see a gradient of colors with the direct ELISA, with the uninduced fraction of GST-DHFR-His not showing any results, and the purer samples expressing a darker color, indicating the presence of the histidine tag.

DIFFERENT TYPES OF CANNABINOIDS IN RELATION TO ALZHEIMER'S DISEASE

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Poster

ABSTRACT:

Alzheimer's disease AD is a neurodegenerative disease that is present in areas regarding memory and behavior. AD is characterized by two main protein aggregates, Amyloid-β (Aβ) plaques and intracellular neurofibrillary tangles. While there is currently no cure, treatment consists of modifying acetylcholine (ACh) signaling, which works by increasing quality of life but does nothing to slow the progression of the disease. Recent studies show that cannabinoid (CB) receptors share signaling pathways with the ACh receptors. This means that hypothetically CB receptors could crosstalk or signal to each other and potentially be used in treatment of AD. In fact, CB receptor activation has recently been linked to decreased cognitive loss in AD mouse models containing toxic Aβ plaques. We plan to further investigate the effects of cannabinoids on cell viability and effects on CB and ACh receptors. We plan to test synthetic cannabinoids such as WIN 55, 212-2(WIN) or Cannabinol (CBN). Comparing different forms and versions of cannabinoids could potentially show differences in expression of receptors and lead to new supporting evidence of crosstalk and the strength of that cross talk in regardless to treating AD.

TARGETING CANNABINOID RECEPTORS IN ALZHEIMER'S DISEASE

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Poster

ABSTRACT:

Alzheimer's Disease (AD) is a progressive neurodegenerative disease with no definitive cause or cure. Evidence suggests this disorder is characterized by two main protein aggregates, Amyloid-β (Aβ) plaques and intracellular neurofibrillary tangles. These plaques and tangles are mainly present in brain regions involved in learning, memory, and behavior. Current treatments primarily focus on modulating acetylcholine (ACh) signaling. These mediate AD symptoms to increase the quality of life for AD patients, but fail to halt the disease progression, thus underscoring a critical need for new therapeutic targets. Recent evidence suggests that cannabinoid (CB) receptors share signaling pathway components with ACh receptors, known as receptor crosstalk. This implies that CB receptors could be a novel therapeutic target in the treatment of AD. In fact, CB receptor activation has recently been linked to decreased cognitive loss in AD mouse models containing toxic Aβ plaques. Our research aims to determine the effect of synthetic cannabinoids, such as WIN 55,212-2 (WIN), on cell viability and expression of CB and ACh receptors in an AD model. We will perform an MTS assay to evaluate differences in cell viability by measuring absorbance of an MTS reagent at 490 nm using spectroscopy. We will quantify changes in expression of CB and ACh receptors using fluorescence microscopy. We have genetically modified plasmids for various subtypes of CB and ACh receptors linked to a green fluorescent protein (GFP). CB-GFP and ACh-GFP receptors will be expressed in HEK293T cells and exposed to WIN and/or Aβ. Differences in fluorescence intensity at 488 nm correspond to changes in receptor expression. We aim to determine if WIN alters cell viability or expression of GFP-tagged CB and ACh receptors in cells exposed to Aβ. Effects of WIN on these systems provide evidence of receptor crosstalk.

DEVELOPING ACYLHYDRAZONES DERIVATIVES AS A NOVEL GROUP OF BIOACTIVE AGENTS

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Poster

ABSTRACT:

The search for new therapeutic compounds has not ceased with the emergence of drug-resistant viral strains such as Influenza virus, Respiratory Syncytial Virus (RSV), SARS-CoV-2 (the causative agent of COVID-19), and Adenovirus. Purine and acylhydrazone frameworks have historically contributed to a broad chemical space of antiviral and antimicrobial interventions; however, many purine-based analogues exhibit extremes in polarity that can limit membrane permeability, complicate drug delivery, and reduce patient uptake. Hydrazone functionalities, being amphipathic in nature, provide an opportunity to introduce tunable physicochemical characteristics to the purine scaffold without compromising its biochemical relevance. Hydrazone and acylhydrazone functionalities were incorporated into both purine-based and non-purine-based scaffolds to create a focused library of compounds. Six hydrazone derivatives were synthesized by combining 6-hydrazinopurine and 3-amino-2-oxazolidinone with a phenyl aldehyde. The synthesis and purification conditions were optimized to enable controlled functionalization of the purine core and to improve product isolation. Cellular toxicity/activity data have been collected, and studies on antimicrobial activity are currently underway. This framework provides a modular platform for investigating the physicochemical properties and structure-activity relationships (SAR) of purine-centered hydrazones and supports the further exploration of bioactive nucleobased acylhydrazone analogues.

COMPUTATIONAL ANALYSIS OF MUP1/ART1 PROTEIN INTERACTIONS

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Oral

ABSTRACT:

Our project focuses on using modelling tools, Visual Molecular Dynamics (VMD) and Nanoscale Molecular Dynamics (NAMD) to model a protein system in yeast. Molecular dynamics is a powerful tool that is able to precisely predict the behavior and movement of proteins and other large molecules in a system. The target for analysis is the interaction between two proteins: MUP1, a methionine pump, and ART1, an adaptor protein used in the process of ubiquitination and endocytosis of MUP1. Previous studies done by Dr. Guiney in the Biology department suggest that a basic groove on ART1 is recruited and binds to an acidic patch on the N-terminal cytosolic tail of MUP1. Our simulations will focus on that region and the corresponding binding sequence on ART1. This presentation details the protein modeling process and analyzes the resulting simulation data, featuring structural visualizations and videos of the protein-protein interactions.

KINETIC CHARACTERIZATION AND INHIBITOR PROFILING OF RECOMBINANT DIHYDROFOLATE REDUCTASE (DHFR)

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Poster

ABSTRACT:

Folate metabolism is essential for cellular growth and division because it supplies one-carbon units required for nucleotide biosynthesis. Rapidly proliferating cells, including cancer cells and many pathogens, depend heavily on folate-dependent enzymes to sustain DNA replication. Dihydrofolate reductase (DHFR) catalyzes the NADPH-dependent reduction of dihydrofolate (DHF) to tetrahydrofolate (THF), a critical cofactor in thymidylate and purine synthesis. Inhibition of DHFR disrupts folate cycling and represents a well-established therapeutic strategy in the treatment of cancer, bacterial infections, malaria, and other proliferative diseases.

In this study, recombinant DHFR expressed as a GST-DHFR-His fusion protein was purified and functionally characterized. Affinity chromatography followed by size-exclusion chromatography was used to isolate the recombinant enzyme, and purity was confirmed by SDS-PAGE analysis. Enzyme activity was evaluated spectrophotometrically by monitoring the decrease in absorbance at 340 nm corresponding to NADPH oxidation. Reaction rates were measured under constant DHF concentrations to assess catalytic activity in the presence and absence of inhibitors. A water control was included to account for non-enzymatic NADPH degradation, while methotrexate and pyrimethamine were used to validate assay performance. Additional compounds, including trimethoprim, sanguinarine, and nolatrexed, were evaluated for their effects on reaction velocity.

Comparative analysis of initial reaction rates enabled assessment of inhibitor potency based on changes in NADPH oxidation rates. This study confirms the functional activity of recombinant DHFR and demonstrates measurable inhibition by antifolate compounds, supporting its relevance as a pharmacological target.

INVESTIGATION OF SUPERFUND SITES IN PROXIMITY TO MINORITY COMMUNITIES IN PENNSYLVANIA

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Poster

ABSTRACT:

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund sites identify the nation's most severely contaminated lands resulting from hazardous waste. However, the designation and remediation of these sites often reflect systemic inequalities. This research is a mixed-methods spatial and historical analysis of environmental injustice. It first utilizes a case-study methodology focusing on two designated Environmental Justice (EJ) areas in Pennsylvania, Chester and Farrell, to illustrate the systemic nature and geographic depth of toxic exposure. This project will utilize ArcGIS Pro for data analysis, sourcing data from the PennEnviroScreen, the Environmental Protection Agency, and the U.S. Census. It will examine Pollution Burden Score Percentiles and pollution emissions compared with demographic qualities to determine if a disproportionate impact is present. A statewide buffer analysis will be conducted to quantify the proximity of minority populations to Superfund sites, testing the hypothesis that race is the most influential predictor of toxic exposure. It will be followed by a comprehensive literature review examining the studied concentration of Superfund sites in vulnerable areas. Historic policies, such as zoning, land-use, and housing, will be investigated to explain the possible existence of this phenomenon.

ECOMETRIC INVESTIGATION OF ARTIODACTYL LOCOMOTION IN MIOCENE ASSEMBLAGES FROM THE GREAT PLAINS

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Poster

ABSTRACT:

The Miocene (~20-5 Ma) was a period of change for North American environments. Interconnected forests were replaced by patchy landscapes of woodlands and grasslands, which contributed to the diversification of animals adapted to open-canopy habitats, such as many artiodactyls (even-toed, hoofed mammals). Many groups developed cursorial morphology that allowed efficient movement over long distances. A positive relationship between habitat openness and cursoriality has been documented in modern taxa within the astragalus, or ankle bone. This load-bearing bone element scales with body mass and exhibits a functional ratio that correlates with habitat. Communities with low ratios are associated with greater cursoriality in open-canopy habitats while high ratios are exhibited by communities from closed-canopy habitats. Results from Miocene communities in the topographically complex Mojave Region suggest that a phylogenetic overprint may complicate interpretation, so we collected data from the more topographically uniform Great Plains to evaluate the strength of this relationship. We measured 145 astragali from Montana and Nebraska in the vertebrate collections of the Carnegie Museum of Natural History. This study investigates four families: Antilocapridae, Camelidae, Entelodontidae, and Merycoidodontidae. By analyzing the locomotor morphology of artiodactyls from the Miocene Great Plains, we gain a better understanding of environmental conditions and their effect on mammalian evolution. Our dataset allows us to test three hypotheses: 1) Do artiodactyls in the Great Plains exhibit lower functional ratios than those in the Mojave? 2) What is the distribution of body mass among the sampled localities? 3) Do phylogenetic signals suggest that lineage plays a stronger role than environment in the evolution of cursorial morphology? We will also evaluate the relationship between body size, lineage, and functional ratio to determine which variables exert the strongest influence on the evolution of locomotion in artiodactyls.

Communication, Media, and Sports Management

AN ANALYSIS OF THE ASTRONOMER COLDPLAY KISS CAM SCANDAL RELATIVE TO PUBLIC RELATIONS AND MODERN-DAY INTERNET BEHAVIOR

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Poster

ABSTRACT:

This project examines the Astronomer Coldplay kiss cam scandal from the perspectives of the company Astronomer and the internet. This analysis employs public relations methods in crisis communication to analyze the steps taken by Astronomer and the recommendations given. Recommendations for ethical internet behavior are also given.

A subjective approach was taken to this analysis, along with theories of basic human nature and psychology. Various website publications, AI-generated statements, social media activity, Astronomer's YouTube video, and press releases were studied in the process of this research.

The ethics of Astronomer were examined based on the Public Relations Society of America Code of Ethics. Specifically in areas of Honesty and Fairness.

This research shows the importance of understanding the climate of a company's crisis, along with the most effective methods to avoid further damage. Methods include responding within 24 hours of the crisis and having all parties facing an image crisis release statements. Also shown in this research is the effect that one's actions on the internet have on others. It is questioned whether people are responsible for inspiring others' internet behavior, intentional or not. Also questioned is how ethical modern-day internet behavior is.

CRISIS COMMUNICATION WITHIN THE ADIDAS YEEZY PARTNERSHIP

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Oral

ABSTRACT:

This case study investigates the rise and fall of the Adidas-Yeezy partnership and how Adidas' communication strategy affected the course of the crisis after Kanye West's controversial actions and antisemitic comments in 2022. The subject is important as it shows how large companies deal with celebrities who become risks while still making money, keeping its reputation and meeting the needs of all its stakeholders. The study is helpful for scholars, professionals and students who want to expand their knowledge on crisis communication, public relations ethics, celebrity partnerships and corporate decision making.

This case explores the following questions: (1) How did Adidas' internal and external communication practices contribute to the worsening of the Yeezy crisis? (2) How does this case compare to Nike's response to the Kyrie Irving crisis? (3) How did Adidas' response align with the Public Relation Society of America's code of ethics? The study uses a variety of sources to back up its claims. News coverage, press releases, exposés and other media relations were used to gather information on the crisis.

The results show that Adidas' slow response and mixed messages made the crisis worse, which led to extensive backlash from the public. Adidas made the right move by ending the partnership, but its earlier unwillingness to clearly address the issues and red flags damaged its relationship with its stakeholders. Nike's response to Kyrie Irving proved that a quick, value-driven approach of action can stop a crisis from growing. This concludes by providing suggestions for better communication, ethical improvements and a more proactive crisis management process for celebrity partnerships.

PUBLIC RELATIONS CASE STUDY: CRISIS COMMUNICATION EVALUATION OF CHIPOTLE'S E. COLI CRISIS

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Poster

ABSTRACT:

This project examines the crisis communication response of the 2015 Chipotle E. coli outbreak in the United States. This paper utilizes communication theory, models of public relations, and ethics to evaluate the effectiveness of Chipotle's crisis communication response. A comparative analysis will be conducted between Chipotle's case and McDonald's in a similar health crisis. After evaluating Chipotle's response, suggested improvements will be recommended for future crises.

This project explores crisis communication and public relations principles in six sections. The first chapter includes an overview of Chipotle as a corporation and of its crisis communication case. Following the overview of Chipotle's crisis case, the second includes an overview of McDonald's E. coli outbreak crisis. The third section will include an analysis of each company's' crisis response strategies. After comparative analysis, the fourth section provides an assessment of Chipotle's response to the health crisis. The fifth section includes suggested improvements for Chipotle's crisis response. The final section will include an evaluation of Chipotle's case by the PRSA code of ethics.

Communication professionals may use this project as a reference for analysis of similar case studies. The purpose of this paper is for individuals to gain a stronger understanding of crisis communication practices and responses. Scholars may use this paper for research related to similar crisis communication cases. Professors may lean on this paper as a reference for lectures or to guide students' research. This paper is dedicated to scholars, professors, and professionals in the field of strategic communication and media.

ARTIFICIAL INTELLIGENCE: THE CODE THAT THINKS

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Exhibit

ABSTRACT:

The project we are presenting in the symposium is a research documentary we completed in Dr. Charles' Field Video Production class in the Spring of 2025. This was a group project completed by Katie Catrain, Max Graziani, and Trevor Mann. This documentary focused on Artificial intelligence and both the positive and negative influences it has on the world around us.

Once we had the focus of our documentary decided, we began writing the script outline with each member choosing a topic to highlight. Trevor focused on AI's effect on education, Max focused on AI's effect on the work force, and Katie focused on AI's effect on everyday life. Each group member having his or her own focus allowed each member to thoroughly research that topic and gather as much useful data as they could. After each member completed their research and wrote their portions of the script, the three sections were brought together and polished into one complete script treatment.

Once we had the script where we liked it, we began filming. We conducted several interviews with SRU professors and students, as well as a graphic designer to get their perspectives on AI. During the interviews, Katie was in charge of the audio, Max was in charge of the cameras, and Trevor was in charge of lighting, as well as asking the interviewees the questions. Once we gathered the interview footage, we gathered B-Roll and put it all together. Each member edited a designated section of the documentary, with Max conducting the final edit and providing the narration as well. The result was a documentary that was completed through solid group collaboration that professionally highlighted the relevant and interesting topic that is Artificial Intelligence.

DOES POWER FOUR COLLEGE ATHLETICS UTILIZE TIK TOK?

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Poster

ABSTRACT:

This study looks at how Power Four college athletics programs use TikTok as a digital marketing tool to promote their teams, athletes, and organizations. Since its development during the COVID-19 pandemic, TikTok has become one of the fastest-growing social media platforms. As a result, it has grown more important for engaging younger audiences, especially Generation Z, who make up an important part of college athletics. The most well-known college football programs are found in the Power Four conferences, the Atlantic Coast Conference (ACC), Big Ten, Big 12, and Southeastern Conference (SEC), making them perfect candidates for examining TikTok usage and efficacy in collegiate sports marketing.

The study uses a mixed-methods approach, including qualitative data of creative strategies and branding approaches with quantitative content analysis of followers and engagement rates. Data was collected from all Power Four schools to determine which universities maintain official athletics TikTok accounts, whether these accounts are linked to their official athletics websites, and how effectively they engage their target audiences. Findings reveal significant variation in TikTok adoption and utilization across Power Four programs. The study also found significant gaps in TikTok usage. Many schools that do have an account on TikTok fail to link these accounts to their official athletic websites, which restricts discoverability and raises concerns about the institution's dedication to the platform. This difference suggests that while some universities acknowledge the significance of TikTok, others have not yet completely embraced its potential for fan interaction and brand growth. The rapid change of social media trends, the absence of peer-reviewed research on TikTok in collegiate athletics, and the platform's relatively recent rise as a professional marketing tool are among the limitations acknowledged by the study. Despite these limitations, the results offer practical advice for universities looking to improve their online visibility and fan interaction.

TRAVEL AND TOURISM FOLLOWING THE COVID-19 PANDEMIC

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Poster

ABSTRACT:

This project explores the tourism trends following the 2020 global pandemic. Travel and tourism rely on in person activities, so when lockdowns were created, the industry took a significant hit. The goal of this paper was to see how cities were able to bring tourists back and refill that empty space.

This paper was designed to look at travel and tourism on a national level, and then localize it to Mercer County, showing that the issue affected people no matter the size of the city. I looked at the strategies New York City used to bring tourists back following the lockdowns and their effectiveness. I then used this knowledge to look at Mercer County and see the strategies that were used there.

Throughout writing this paper, I was able to do online research, statistical analysis, and interviews. Using these three types of sources, online, statistical, and human, allowed me to greater understand the topic and form a deeper analysis.

While doing this research I was able to learn about the new markets Mercer County utilized to increase tourism. The outdoor markets, such as kayaking, fishing and hiking, became very popular following the lockdown and have stayed popular to this day.

Key themes of this paper include post-pandemic travel and the formation of new markets, and how those markets affect a community. This paper helped show the impact an unexpected event can have and how markets can rebuild following it.

ADVANCED MEDIA WRITING AND REPORTING:

THE POWER OF REPORTING COMMUNITY NEWS

Josie Hart

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Poster

ABSTRACT:

The Power of Reporting Community News is a compilation of media writing and reporting that highlights the importance of local journalism in traditional media. This project includes five original news articles focused on the Greenville and Slippery Rock area.

The work produced for this project stemmed from early, detailed planning of interviews, intensive background research, fact-checking, and correctly conveying the story in a visually pleasing way. The stories covered a range of community topics, including local paranormal history and current issues affecting schools and families. The reporting process emphasized ethical storytelling and the responsibility writers have when representing real people.

Two stories from the project were published in Greenville's newspaper, *The Record Argus.* The historical feature, *Not Afraid of History,* was published on the front page on Halloween day. The story explored Greenville's haunted folklore and the way locals continue to keep the town's past alive. Reporting for this story included visiting the Greenville Manor, a historic site known for its paranormal reputation, and an interview with filmmaker Tony Reames. The second published story, *Greenville Junior/Senior High School Enforces New Electronic Device Policy,* reported on a new cell phone ban affecting students and staff. This story emphasized the role of local journalism in covering timely community change.

This semester-long compilation of storytelling demonstrates the power of community reporting to connect residents, preserve history, and provide meaningful coverage beyond major headlines.

SLIPPERY ROCK COMMUNITY LIBRARY

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Exhibit

ABSTRACT:

This commercial video editing project was completed in Spring 2026 for Editing for Video (COMM 350), an upper-division course in the Department of Communication, Media and Sport Management. The video demonstrates the editor's ability to script, record stable footage, perform voiceover work, and align audio with a central theme. Using Adobe Premiere Pro, the editor crafted a cohesive digital story that reflects his creative work outside his major and highlights digital storytelling as its own art form, one where any story can become powerful when told with intention.

The commercial focuses on a vital part of the Slippery Rock community: the Slippery Rock Community Library. This evolving space empowers people to thrive and contribute to something larger than themselves. At its core, the library ensures that knowledge, creativity, and support remain accessible to everyone, regardless of background.

Through thoughtfully designed programs, toddlers build early literacy skills during story time, teens engage in their creativity and critical thinking in a safe environment, and older adults stay active through fiber arts and Geri-fit classes. Staff and volunteers make these opportunities possible, but the true strength of the library comes from community members who reinvest in the resources that support them.

Donors who believe in the power of shared access help sustain free programming, technology availability, and educational materials, even items like borrowable binoculars. This project aims to highlight the library's role as a foundation for lifelong learning and to inspire continued investment in its mission.

BLEED BLADES OF GLORY

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Exhibit

ABSTRACT:

The Music Video Editing Project was an assignment completed during the Spring 2026 semester for Editing for Video (COMM 350), an upper-division Communication course in media production. In the video, the editor demonstrates his ability to manipulate video and sound with video editing software while artfully matching those visuals with a corresponding soundtrack. The editor hoped to showcase that digital storytelling is an art form of its own and similar to how real stories are told because digital stories have the same individualism to the author or creator.

The song chosen for the music video is “Bleed” by Kid Laroi. The creator chose this song to connect with the audience. The song is a story; told about growing relationships that sometimes end prematurely. The imagery in the video begins by showing relationships that are healthy and budding. They are “honeymoon-ish” and kind of fairytale. Then like all relationships, the consistency feels repetitive. The wonder that was so wonderful becomes familiar, the point where love and care become a conscious decision.

This story can be told in many ways and from countless perspectives. As depicted, there are old and young, gay and straight, father and daughter, and full family relationships that have different meaning and significance. To reinforce the message that we all experience these feelings; like the world is moving faster than you can think, like the memories you want to hold on to are being buried by new ones. The creator made this video to be a lesson to connect with more people, talk to a peer you sit next to, or form a bond that can’t be forgotten like yesterday.

Oh, and there is also a funny reminder in the video to still have a little fun when it comes to class projects.

ARE STUDENT ATHLETES SUPPORTED? THE MENTAL HEALTH LANDSCAPE OF POWER FOUR INSTITUTIONS

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Poster

ABSTRACT:

Mental health has become a major concern in college sports, especially at the Power Four level, where student athletes deal with high levels of stress, pressure and public attention. Although NCAA policies encourage schools to provide mental health support, the accessibility, visibility and consistency of those said resources vary widely depending on the school. The purpose of this study was to examine how Power Four schools in the Big Ten, Big 12, ACC, and SEC, and with the addition of independent Notre Dame, communicate and present mental health resources to their student athletes through official university and athletic department websites. Our research focused on three questions, the first being, what mental health resources are available to student athletes? Second, how easy are these resources to find online and finally, how consistent are these resources across different conferences?

To answer these questions, we reviewed a variety of Power Four schools' university websites, its athletic department website, and the conference website. Each researcher followed the same steps to search for mental health resources, wellness programs, sport psychology services, and any pages that were made for student-athlete support. Websites were the resources we looked at because that should be most accessible to student-athletes.

This research is valuable to the sport industry because it highlights how colleges can improve the way they share mental health information with athletes, as well as how they can further support them. Understanding how resources are presented online can help athletic departments, conferences, and administrators create better communication strategies and make mental health support much easier for student athletes to access. This can create better awareness, stronger well-being for student athletes, and help improve support systems for student athletes at all levels.

APPLYING THE RELATIONAL INVESTMENT MODEL TO COLLEGIATE ATHLETES' DECISION TO TRANSFER INSTITUTIONS

Quinn Parson

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Poster

ABSTRACT:

The NCAA Transfer Portal provides student athletes (SAs) with a risky yet potentially fruitful avenue to transfer academic institutions. It becomes important, then, to understand the factors that lead players to transfer institutions. This study examines the factors the influence SAs' decisions to enter the portal. We draw from the relational investment model (RIM), which arises from the interpersonal communication literature, and looks at three factors that predict relational commitment: investment, satisfaction, and comparison of alternatives (Rusbult et al., 2001).

A sample of 110 Division I collegiate athletes participated in a survey in which we assessed their intentions to inter the NCAA transfer portal, along with the RIM variables, including perceptions of alternatives, satisfaction, investment, and commitment. Results of a regression analysis demonstrated that SAs felt committed to their athletic program when they felt satisfied, saw fewer appealing alternatives, and were invested in their athletic program. Together these factors that explained over 70% commitment to an athletic program. This commitment was a strong predictor of transfer portal intention. Results are discussed in light of their implications for the RIM, as well as the cognitive and affective mechanisms explaining SAs' intentions to transfer academic institutions.

CLASSROOM TO NEWSROOM: JOURNALISM IN ACTION

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Oral

ABSTRACT:

This project examines the importance of journalism and the role it plays in ethically and objectively informing the public of both local and national events. My work in the Advanced Media Writing course reflects professional journalism skills that I will translate to my future career. In this class, I created five news-ready articles that include both feature and hard news stories. Each article required a considerable amount of secondary and primary research, as I conducted at least three interviews per story.

This course took me beyond the typical boundaries of the classroom, giving me the opportunity to interact with state representatives, community members, school board directors and historians. It allowed me to contribute to broader societal issues and public discourse. One of my stories was published in the Somerset Daily American, demonstrating the "real-world" importance of my work.

This presentation will showcase a historical feature about a small coal town during Prohibition, a court update about a man who committed crimes against Amish communities, an evaluation of Slippery Rock High School's cell phone policy, an examination of how AI data centers could impact Western Pennsylvania and an analysis of America's police staffing crisis.

Through this experience, I learned that journalism can preserve community memories and oral histories, ensuring these stories endure for generations to come. It teaches critical thinking by presenting factual information and multiple viewpoints, allowing readers to cultivate their own opinions. Journalists are responsible for providing the public with transparency, acting as a community watchdog to strengthen democracy and trust. Lastly, I learned that journalism is about reporting both national and local news, making small and large communities aware of current events and the potential effects.

BRIDGING THE NIL GAP: HOW POWER FOUR INSTITUTIONS SHAPE THE FUTURE FOR ALL SCHOOLS

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Poster

ABSTRACT:

The introduction of Name, Image, and Likeness (NIL) policies has rapidly transformed collegiate athletics, reshaping the responsibilities of athletic departments and the expectations of student athletes. The Power Four institutions, those in the ACC, Big Ten, Big 12, and SEC, possess both the largest budgets and most competitive athletic programs in the NCAA. This research examines Power Four conferences and how they have adapted to the ever-changing demands of NIL and also examines whether their approaches can serve as a model for smaller institutions.

This study focuses on two primary research questions: (1) What do NIL resources look like in Power Four conferences, specifically how do institutions provide accessible information such as regulations, FAQs, guidance, and marketplace links? (2) How can the strategies used by well-resourced institutions inform and develop scalable NIL frameworks for smaller schools lacking similar financial and administrative capacity?

The methodology centers on a systematic review of NIL resources found on the Power Four institutions' athletic websites. The sample includes over 65 universities representing different geographical regions, administrative structures, and competitive levels. The study assesses the clarity, depth, and accessibility of NIL materials provided on various athletics websites. The study identifies common trends and the approaches each athletic department is taking to educate their student athletes, providing an evidence-based understanding of how the highest-resourced programs have answered to the evolving NIL landscape.

Athletic directors, compliance officers, and other staff working directly with NIL face increasing pressure to support student athletes. Athletes' branding, financial literacy, and eligibility remain vital. As NIL continues to influence recruiting, retention, and competitive balance, identifying scalable models becomes essential. By outlining the structures and strategies used by leading institutions, this study invites stakeholders to explore how equitable NIL support systems can be implemented across all levels of collegiate athletics.

Computing and Security

IMPLEMENTATION AND EVALUATION OF AUTHENTICATION METHODS IN VIRTUAL REALITY

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Poster

ABSTRACT:

Virtual Reality (VR) and Augmented Reality (AR) are rapidly expanding fields within computer science, driven by continuous advances in hardware, software, and immersive user experiences. As technology evolves to support an expanding range of use cases, it increasingly enters domains that involve heightened sensitivity. Eventually, the applications of VR technology will begin to appear and become widespread in areas dealing with personal data, protected documents, or other confidential information.

A primary issue for authentication in VR environments is maintaining a balance between usability, security, and immersion. Users using VR in sensitive areas are vulnerable to identity theft and unauthorized access to shared spaces. An effective VR authentication method must prevent these vulnerabilities without compromising usability or immersion.

The goal of this research is to implement and evaluate an alternative authentication method for use within a VR environment. The VR authentication method enhances immersion by eliminating the need to remove the headset during the authentication process, ensures usability by implementing a recognizable and understandable method, and enhances security by utilizing gesture-based and knowledge-based authentication.

In this research, VR authentication methods are implemented in the Unity development platform. The system is designed for use with a Meta Quest 2 VR headset and controllers. The authentication methods are performed using a combination of controller hit point recognition with grabbing button and pressing functions. The particular implementations include a traditional number pad, a combination lock, and a rotary combination lock. Further, this system is designed to analyze usability tests for specific authentication attempt characteristics using different color mappings. By synthesizing these analyses, designers can better understand users' preferred authentication methods.

Curriculum, Instruction, and Educational Leadership

IT STARTS IN THE HOME: ADULT LITERACY IMPACTS ON STUDENT LEARNING

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Oral

ABSTRACT:

Literacy gains are hindered by barriers outside our students' control, with low literacy skills often passed from generation to generation, limiting student potential (Kugat 2004). Educators must be cognizant of the barriers children face outside the classroom. In this presentation, the presenter will provide an overview of a parental literacy research project for the Keystone State Literacy Association. The researcher will provide data on adult literacy rates and their correlation with socioeconomic status and children's literacy proficiency, providing the audience with insight into an ongoing statewide issue (Krenzke et al., 2020).

Next, participants will receive a list of research-based instructional strategies that are beneficial in and outside the classroom in informational pamphlets for teachers of early learners to utilize within their communities. These research-based strategies will be split into three domains: classroom, district-wide, and community (Kruidenier, 2002; Smith and Elish-Piper, 2002). The presenter will describe direct instructional strategies, activities, and projects to implement into the classroom to promote inclusive literacy for parents of children ages kindergarten to grade four. District-wide strategies will be activities, events, and programs that can be implemented on a school-wide basis. Community strategies will explain programs, resources, and support within the local community.

PRESERVING DOMINICA'S INDIGENOUS KALINAGO HERITAGE THROUGH THE DEVELOPMENT OF CULTURALLY RELEVANT CURRICULUM RESOURCES

Autumn Crawford and Maria Spedaliere

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Poster

ABSTRACT:

The purpose of our research project is to highlight the Kalinago tribe's heritage through the curation of multiple lesson plans and a website. The Kalinago are an Indigenous tribe that resides on an island in the Caribbean called Dominica. Over this past summer, we had the privilege of travelling to this island with Dr. Enoh Nkana, two of her colleagues, and three other students. While we were there, we conducted scholarly research and interviews with members of the tribe, and other professionals about the long and rich history of the Kalinago. The reason our research is prevalent is due to colonization, natural disasters, and Western influence, the community has started to watch their culture disappear. Additionally, they traditionally learn about their heritage orally from centenarians or elders. Due to this, we recognized that the children in the elementary schools on the territory are not receiving the full scope of their identity. Our solution to this is to create culturally responsive materials that are centered around the Kalinago way of life, and most importantly, their history. To execute this, our team is working with the recorded interviews we took on the island, as well as external research to create a series of lesson plans that can be uploaded to a website that is easily accessible for the educators in the elementary schools on the territory. Our goal through these resources is to support the preservation of their rich cultural and historical heritage as well as to bring awareness to marginalized communities.

STRATEGIES FOR ELL TEACHERS

Samantha Guyer and Takashi Mukai

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Poster

ABSTRACT:

This research focuses on English education across two cultures: students learning English as a second language in the United States of America from an Elementary education perspective, and students learning English as a second language in Japan from a Secondary Education perspective. We will combine our research and prior knowledge to guide teachers toward the best path to higher English proficiency.

In Japan, all students study English until high school, focusing on acquiring reading, listening, and writing fluency for their university entrance exams. On the contrary, in American schools, at least 10.6% of students enrolled identified as "ELL" as of Fall 2021 (National Center for Education Statistics), and it continues to grow as more students move to the USA without knowing much English. Therefore, teachers across the world need to be better prepared to address acquisition challenges in their classrooms when teaching L2 language learners.

This presentation will provide guidance on how the following strategies can help ELL students become confident in their new language and thrive in the classroom. One of the most common issues is that many English learners may become frustrated when speaking English effectively, as it does not come until stage 4 of acquisition (Pearson). Therefore, our presentation will explain how using visuals can help aid in vocabulary retention (Fleenor 2019), allow for translation time when asking questions (Rowe, 1972), provide group-work time "for ELLs to practice their language skills with peers in a less formal, lower-risk setting" and how students can use AI for translations"...to make input in the other language comprehensible" (Cummings, 2000). Attendees will leave this session understanding the strategies that educators can choose from to guide their lessons toward better English development for L2 learners, ultimately learning how to combine the above strategies to help their students most effectively.

SOCIAL EMOTIONAL LEARNING IN LITERACY

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Poster

ABSTRACT:

Social emotional learning (SEL) is used to teach students ways to regulate emotions, as well as understand emotions they are feeling. Everyone in some way will deal with SEL whether they are doing it on their own or at school. Mental health issues are beginning to affect more elementary school students every year. The issue, however, is these young children do not know the skills needed to manage their emotions. It is usually not taught to them in their regular education classes. But this skill is desperately needed for them to be able to flourish in the academic journey they are on. According to Sandell (2020), "Evidence suggests SEL is crucial for excelling in school and in life, as well as increasing success in academic learning." (para. 3).

At this point you may be asking, "Well, if this is the case, what can we do?" Educators are constantly required to follow the learning standards set by the state. This is helpful for consistency, but why can we not add to this? When combining SEL with literacy instruction in the regular classroom, teachers can address the standards while supporting students SEL needs. This presentation will review the result of a year-long project in which the researcher examined SEL in the context of literacy instruction in elementary classrooms. Through coursework exploration, research on the literature on the topic, and fieldwork in k-6 classrooms with practicing educators, the presenter created an SEL Literacy Toolkit to help educators efficiently and effectively use literacy to teach important SEL skills that are crucial for our students to be able to succeed.

BUILDING STRONG FOUNDATIONS: ENGAGING FAMILIES IN THE 5 EARLY LITERACY SKILLS ESSENTIAL FOR KINDERGARTEN SUCCESS

Ave Pushchak

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Oral

ABSTRACT:

This presentation examines the five foundational early literacy skills that prepare children for success in kindergarten. These skills include phonological and phonemic awareness, phonics and decoding, fluency, vocabulary, and comprehension. This presentation highlights resources and methods that families can use to improve their child's literacy skills. Research has been completed that analyzes the impact of screentime on the brains of young children, with a focus on productive screentime. High-quality technological content can enhance social and language skills for all children aged two years and older (Muppalla et al., 2023). Participants will be provided with high quality technological tools (such as apps and websites) that promote literacy skills for young children through interactive methods. Technology-free literacy activities (such as crafts and games) will also be explored. Extensive research has been conducted about the benefits of the literacy activities and apps.

Dance

WHAT IS BEHIND THE MASK? AN EXPLORATION OF THE HUMAN EXPERIENCE THROUGH MOVEMENT

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Oral

ABSTRACT:

What is it that makes a dance performance intriguing to an audience? Is it the elaborate costumes, brilliant lighting choices, or the complex soundtrack? Though these support the performance significantly, a work's triumph is not completely dependent on these variables. Spectators long to emotionally connect to the performers and kinesthetically empathize with the theatrical narrative. Gesture, spoken word, improvisation, and storytelling connect the spectator to the emotional intention behind the performance piece. In my research, I discovered a genre of performance that explores the thin line between theatre and dance. This line is known as "Physical Theatre" and is often used to express how the physical body portrays a person's experience through dramaturgical and kinesthetic research (Kriegler-Wenk 397).

Stemming from Fifteenth century Greek dramaturgy, Physical Theatre utilizes the human body to convey expression and gesture effectively. The incorporation of neutral masks, expressive masks, and "mime" all assist in conveying this art form. Physical Theatre and dance intersected in the late twentieth century, with credit to the historically renowned German choreographer, Pina Bausch. It is noted that Bausch has "defined the benchmark of template against which late twentieth-century Western dance and Physical Theatre can be considered" (Murray and Keefe 77). Bausch's work influenced many others, including progressive artist, Lloyd Newson. I argue that dancers should be knowledgeable about Physical Theatre and understand its importance as a useful tool for choreography and performance. I am currently incorporating the Physical Theatre methods used by Newson and Bausch to create a fifteen-minute choreographic piece that will be a part of the BFA Capstone Concert in April. My oral presentation will include descriptive and analytical narrative, video sources, and an explanation of my creative process.

SPARKLING SYNCHRONIZED SHOWGIRLS: RADIO CITY ROCKETTES AND THE ILLUSION OF INCLUSION

Lia Palermo

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Oral

ABSTRACT:

This research examines the aesthetic standards and physical requirements of the Radio City Rockettes and how these have limited diversity at the levels of race, body type, and physical ability. Since the 1920's the Rockettes have maintained a specific height requirement to supposedly maintain visual uniformity and precision. This requirement, among others examined in my research, reinforced standards of white female body types, and excluded dancers who did not fit the physical expectations.

Through historic research, and firsthand experiences—including the experiences of Jennifer Jones, the first Black Rockette—the study evaluates how policies contributed to racial discrimination and limited representation. The research also contrasts the Rockettes with more inclusive companies such as the Alvin Ailey American Dance Theater and AXIS Dance Company in order to demonstrate that uniformity/precision and equality can coexist and "stand side by side on a stage."

My research findings suggest that the performing arts are in constant negotiation with societal advancements. In the past decade even the Rockettes have compromised and made adjustments in the selection of their performers. Currently, their height requirement has slightly diminished, and racial representation has, to some extent, diversified. Still, there are barriers of inclusivity that need to be crossed and re-examined.

SACRED STEPS: "DANCING RELIGIONS" OF AFRO-DIASPORIC LATIN AMERICAN GENESIS

Paula Rodríguez-Alvarez, Emma Banic, Abbey Dowler, Bridget Emory, Herrman, Nora Hoy, Quinlyn Karns, Ray Martini, Sarah Meyers, Rebecca Niggel, Darby Parke, Syndee Staley, and Makayla Ulery

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Performance

ABSTRACT:

Dance has been a part of ritualistic practices for centuries around the world. While researching my topic, I realized that this is especially evident in Afro-diasporic religions that originate in Latin America, such as Candomblé in Brazil and Vodou in Haiti. In their rituals and traditions, dance is not a form of performance but rather a sacred act that closes the gap between the human and physical world and the supernatural and spiritual world. Through research and analysis of the aforementioned religions and their ritual practices, I will be answering the central question: what makes these ritual dances sacred? I argue that their sanctity lies in their ability to connect with the divine through dance, music, and community. Creating an energy and space open enough for the divine to descend to the human world and directly connect with practitioners of these religions. Through analysis and comparison of scholarly texts and recorded footage of ritual practices, my research reveals how dance becomes a spiritual form of communication in Afro-diasporic Latin American religions.

This research project journeyed from an academic paper presented at the Dance on Paper: Senior Research Presentations to the creation of a choreographic piece where I worked with 12 dancers. My presentation for the SRU Research Symposium will include excerpts of my written paper, slide presentation, video footage, and choreographic explorations. Some of the concepts examined in my choreographic work are circular formations, rhythmic patterns, and motifs such as walking patterns and body percussion, all informed by rituals from the above stated religions.

TACTILE CONNECTIONS: THE EXPLORATION OF PROPRIOCEPTION AND TOUCH IN CONTEMPORARY DANCE PARTNERSHIPS

Norah Spradling and Annalese Isenberg

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Performance

ABSTRACT:

Proprioception and touch in contemporary dance partnerships are integral for communication and collaboration between dancers to create dynamic choreography with smooth and safe transitions. In March, 2026, I participated in a five-day Microbatics workshop, facilitated by movement artist Winston Reynolds, at Danscentrumjette in Brussels, Belgium. This workshop provided training in proprioceptive techniques and a form of partnering with the floor, primarily in inverted positions. Complimenting this embodied research, I attended two dance performances to analyze how duet partners connect through touch, as well as with the floor and spaces in which they dance. Following this international program, I used my research findings to inform the creation of a duet over the course of 20-hours with duet partner, Annalese Isenberg, using proprioceptive techniques and experimental choreography. When completed, this duet will be performed through the Slippery Rock University Department of Dance.

Engineering

SERIES PRESSURE VESSELS FOR USE IN WATER ROCKETS

Jacob Cerra and Aedan Panzer

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Poster

ABSTRACT:

The main objectives of this research project are as follows: finding a repeatable construction method to splice together bottles, concluding on a safe pressurization level of the water rocket pressure vessels at various intervals, and optimizing and parameterizing the construction process. Through preliminary research, Loctite PL Premium Construction adhesive is the most promising adhesive tested so far based off results from Air Command Rockets. Air Command Rockets is a water rocket design group based in Australia. Expected pressure results using PL Premium adhesive and new construction method are 140 psi for 1-liter bottles and 100 psi for 2-liter bottles. While pressure testing these vessels, the vessels sit in a safe, advisor approved enclosure, so they can discharge in a contained area. More testing is required for both 1-liter and 2-liter bottles. The results produced by these pressure vessels will allow for the building of larger, and more complex rockets at Slippery Rock University.

ENERGY AUDIT OF THE HARMONY HOUSE AT THE MACOSKEY CENTER

Priscilla Cole, Sean Cole, and Todd Hallman

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Poster

ABSTRACT:

This project will include performing an energy audit on the upper-level room inside the Harmony House at the Macoskey Center. The purpose of the energy audit is to measure how much heat the room loses, determine where the heat escapes, and come up with improvements to create a more energy efficient space.

To complete the audit, temperature data will be measured and stored throughout a week straight to observe how the temperature changes. Thermal Images will be taken of each wall, ceiling, and floor of the room to help identify where the room is losing heat. These stored measurements will help in calculations to find the new heat loss as a function of time and provide a comparison of the heat transfer across the building surfaces. Based on the calculations and data, the main heat loss sources will be identified, and potential design improvement suggestions will be made.

Overall, this project will help identify where energy is being lost and provide practical solutions to improve efficiency and sustainability in the Harmony House.

COOL SPRINGS CREEK BRIDGE REPLACEMENT

Bethany DeRose, Amber Maurer, Ashley Rimmel, Rachel Ferrick and Zachary Donaldson

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Poster

ABSTRACT:

PennDOT District One has partnered with Slippery Rock University to provide senior students with the opportunity to design a replacement bridge for Cool Springs Creek Bridge, located in Mercer County, Pennsylvania. The previously existing steel stringer bridge, constructed in 1951, was found to be structurally deficient due to significant section loss in the steel girders and deterioration of the concrete abutments, including cracking and spalling, necessitating full replacement. Three feasible single-span replacement alternatives were developed in accordance with PennDOT and AASHTO design criteria: a Northeast Extreme Tee (NEXT) beam bridge, a PA bulb-tee beam bridge, and a steel girder bridge. The structure serves a rural minor collector roadway with an average daily traffic volume of approximately 540 vehicles, including passenger vehicles, agricultural equipment, and horse-and-buggy traffic. Preliminary cross-sections and comparative cost assessments were completed for each option. A-Z Engineers recommended the PA bulb-tee bridge to PennDOT due to its efficient construction and proven performance in numerous bridges throughout Pennsylvania. Ultimately, PennDOT District 1 selected the NEXT beam bridge as the preferred alternative due to its unique and modern design, reduced construction duration, and cost-effectiveness for short-span applications. The NEXT beam bridge design has been further developed using AutoCAD and RISA-3D to include detailed structural analysis, foundation design, a demolition plan, traffic control planning, erosion and sedimentation control measures, as well as a detailed cost estimate based on 2025 RSMeans data. This collaboration with PennDOT gave senior students practical exposure to bridge design processes, supporting the development of critical thinking and analytical skills necessary for professional engineering practice beyond graduation.

EXPERIMENTAL INVESTIGATION ON DISINFECTANT AND WASTEWATER MIXING IN WASTEWATER SYSTEMS

Rachell Lajara Flores and Van Westbrook

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Poster

ABSTRACT:

Water and wastewater networks are complex systems that depend on efficient mixing and distribution to ensure safe water quality. Sometimes the mixing and distribution of disinfectants can be insufficient, putting water quality at risk. This research studies the mixing of disinfectants in a scaled-down model of a combined sewer overflow (CSO) system, to understand optimal mixing characteristics. By introducing dye into the water to simulate disinfectants, we can observe the mixing dynamics and compare experimental results with the accepted simulated data.

To study this, the system was replicated using 2 ½ inch clear pipes and transparent panels to be able to observe the flow behavior. Two inlet flows of 1 ½ pipes were placed on adjacent sides of the chamber and two outlet pipes were placed on another adjacent side to replicate the original geometry. The amount of inlet flow was varied, as well as the amount of and placement of dye that was dropped into the system. Video recordings were used to track the movement and mixing of the dye through the system. Using this experimental setup, we are able to better understand how the flow rate, placement of inlet, and pipe size affect the distribution of our blue dye or disinfectant.

LEATHERWOOD CREEK BRIDGE REPLACEMENT

Samuel Miles, Van Westbrook, Dylan Rider, Austin Stein, and Hunter Frantz

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Poster

ABSTRACT:

This capstone project, conducted by Slimy Pebble Engineering (SPE) at Slippery Rock University, involved the comprehensive planning, design, and preliminary engineering of a replacement bridge on SR 861 over Leatherwood Creek in Clarion County, New Bethlehem, Pennsylvania. The project was provided to us through SAI Consulting Engineers and completed in accordance with PennDOT specifications.

SPE selected the Steel I-Beam as the preferred alternative based on structural analysis, material performance, environmental protection, stormwater management planning, erosion and sediment control design, and construction feasibility from start to finish. Cost estimates were evaluated using SAI foundation reports, AASHTO standards, and ECMS data from the PennDOT website. From these estimates, the Steel I-Beam option is projected to have a total cost of approximately $2 million.

MAPPING AND EFFICIENCY EVALUATION OF THE MACOSKEY CENTER GREENHOUSE RADIANT FLOOR HEATING SYSTEM

Janey Parks, Kurt Lambright, Shea Walton, Josh Gonzalez, and Eliza Bentley

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Poster

ABSTRACT:

An experimental investigation will be conducted to characterize and map the radiant floor heating system in the greenhouse at Slippery Rock University's Macoskey Center. The objectives are to determine the layout of the embedded piping network and evaluate the system's heat transfer performance. Controlled transient experiments were performed after clearing the greenhouse floor. Thermocouples were placed at multiple locations on the concrete surface to collect time-dependent temperature data during pipe heating. These measurements captured two-dimensional temperature distributions across the floor. In addition, a thermal imaging camera was used to visually identify areas of elevated temperatures corresponding to the piping system. The combined use of thermocouple measurements and thermal imaging allowed for precise identification of pipe placement, spacing, and orientation within the greenhouse floor. Heat transfer from the circulating hot water to the concrete floor was analyzed using conduction principles and conservation of energy methods. A three-dimensional heat transfer model of the concrete floor was developed in ANSYS to simulate thermal behavior. The experimental data was then used to validate and refine the model. Based on thermal energy transfer to the greenhouse environment, an underground pipe map was developed with associated uncertainty estimates, and the efficiency of the radiant heating system was evaluated. The results provided both a validated thermal model and a practical assessment of the system and its performance.

SOIL TESTING AND PROPERTY ANALYSIS OF RARE EARTH ENRICHED ACID MINE DRAINAGE SLUDGE

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Poster

ABSTRACT:

Acid Mine Drainage (AMD) is the outflow of water from mining sites, often carrying high levels of toxic materials and dissolved solids, and presents environmental challenges due to its high levels of metals and acidity. However, the AMD precipitate contains valuable rare earth elements (REEs) and critical minerals (CMs) and is often underutilized or discarded. REEs and CMs are important for technology and clean energy, making the sludge not just an expensive to treat waste hazard but a valuable resource. Effective dewatering and management improve both environmental impact and sustainable REE recovery.

After a selective precipitation treatment, REE/CM-enriched sludge known as Hydraulic Pre-Concentrate (HPC) is formed, which has high water content (total solids ~ 1%). Evaluating the sludge's properties is critical to developing sustainable dewatering strategies for minimizing environmental hazards. However, doing this can be challenging for laboratory testing and geotechnical modeling due to its very soft nature.

This project investigates the geotechnical behavior of AMD-derived HPC to improve the management of the sludge and optimize mineral recovery strategies. The primary objective is to characterize the hydraulic strength, compressibility, and index properties of HPC through laboratory testing in accordance with ASTM standards. A secondary goal is to evaluate the slope stability of HPC stockpiles using finite element-based geotechnical modeling. Laboratory results will be used as input parameters for slope stability modeling to reflect realistic field conditions.

The expected outcome of this research is an improved understanding of the geotechnical behavior of AMD-derived HPC, which will contribute to more sustainable AMD management practices and better recovery of REEs and CMs. Overall, this research aims to optimize resource recovery and environmental remediation while improving its role in a circular economy.

ENERGY AUDIT OF THE MACOSKEY CENTER CLASSROOM

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Poster

ABSTRACT:

This project focuses on performing an energy audit of the classroom area in the Macoskey Center to support its goal of promoting sustainable practices. The purpose of this study is to measure heat loss in the room, determine where the most energy is being lost, and propose practical improvements to reduce heat loss. To complete this project, temperature data will be collected over a 24-hour period from at least five different locations inside the classroom. Surface temperature measurements will also be taken to better understand how heat moves through the space. These measurements will be used to calculate the net heat loss of the room as a function of time. Based on the analysis, the largest sources of heat loss will be identified. Possible design changes will then be proposed and evaluated to reduce one of the major sources of heat loss. The results of this study are expected to provide clear recommendations for improving energy efficiency in the classroom and further supporting the Macoskey Center's sustainability efforts.

Exercise Science

KICKOFF YOUR SHOES AND SQUAT: HOW FOOTWEAR AFFECTS MUSCLE ACTIVATION

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Poster

ABSTRACT:

Footwear selection during resistance training exercise has long been discussed due to its potential influence on stability, proprioception, and muscle activation. Training in unshod (i.e., shoeless) conditions is often associated with heightened sensory feedback and balance, whereas shod (i.e., with shoes) conditions may provide mechanical advantages through heel elevation and cushioning. Shod versus unshod conditions are often selected due to the exerciser's comfortability and performance during specific resistance training exercises, however, the right choice may provide additional benefit. To examine the acute effects of footwear on muscle activation during a goblet squat, healthy participants (n=7) completed two distinct sets of the squat, once wearing shoes and once barefoot, while holding a 20lb dumbbell. Prior to testing, each participant's maximal voluntary activation for the tibialis anterior (front lower leg), quadriceps, and hamstrings was recorded using surface electromyography (EMG). During both squat conditions, muscle activation was collected and expressed relative to these maximal values. Results indicated increased tibialis anterior activation during the unshod squat (43 v. 37%), minimal differences in quadriceps activity between conditions (35 v. 34%), and slightly greater hamstring activation in the shod squat (20.5 v. 18%). These findings suggest that footwear choice may meaningfully influence muscle recruitment patterns during squatting and should be considered when aligning exercise selection with specific training goals.

EXAMINING MUGWORT EXPANSION IN PENNSYLVANIA THROUGH TEMPORAL MAPPING

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Poster

ABSTRACT:

Herbs have been valued for their medicinal properties for centuries, long before the development of modern medical systems. Across cultures, people learned to identify useful plants in the landscape, distinguishing healing species from harmful ones. This study aims to examine the distribution of one of these medicinal plants, Mugwort (*Artemisia vulgaris* L.) across the state of Pennsylvania. The datasets used in this study are from iNaturalist researchgrade observations, Pl@ntNet user and AIidentified occurrences, and herbarium records from the Carnegie Museum of Natural History. These sources provide a combination of contemporary citizenscience observations and historically curated botanical collections. This study emerged as an extension of a broader project focused on critically assessing and synthesizing Complementary Alternative and Integrative Medicine (CAIM) resources.

Mugwort's antibacterial, antifungal, antioxidant, analgesic, and stressreducing effects are rooted in its diverse, welldocumented phytochemicals. Despite its medicinal value, Mugwort is now a highly invasive species in North America. Introduced unintentionally during early European colonization, it spread rapidly through disturbed landscapes, roadsides, and settlement corridors. Its invasiveness is driven by prolific seed production, up to 200,000 winddispersed seeds per plant, rhizome fragmentation, allelopathic effects that suppress neighboring vegetation, and strong tolerance of disturbance, drought, and seasonal fluctuations.

The research question guiding this study is: To what extent can longterm observation records (1995–2025) in Pennsylvania be used to evaluate shifts in the distribution and spread of Mugwort, and how does converting these observations into maps enhance interpretation of its spread over time? This question is explored by examining the Mugwort data recorded during 1995–2005, 2006–2015, and 2016–2025 to identify changes in its direction of movement and overall expansion. By mapping these longterm records, the study highlights spatial and temporal patterns of dispersal across Pennsylvania, enhancing understanding of Mugwort's invasion trajectory and supporting future ecological monitoring and management efforts.

VALIDATION OF WRIST WORN DEVICES FOR BLOOD PRESSURE MEASUREMENT

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Poster

ABSTRACT:

Wrist-worn blood pressure (BP) monitors have recently become available for commercial purchase. If such devices are valid, they would provide a valuable tool in out-of-office BP monitoring. **PURPOSE:** Determine the validity of device 1 (D1) and device 2 (D2) systolic and diastolic BP measurements. **METHODS:** Fifteen (n=15) participants were fitted with a smart watch (Tested Devices, D1 & D2) on each wrist, with appropriately sized SunTech Tango M2 BP monitors (Reference Device) on their upper arm, as well as a 12-lead electrocardiogram (ECG). Reference device measurements were taken directly prior to and directly following a test device measurement, allowing their values to be averaged for comparison. The aforementioned procedure will be referred to as a round. Ten rounds were collected during resting conditions. Next, a head-up tilt test consisting of 3 stages, supine, head-up positioning, and a return to supine, with 4 rounds taking place as soon as the participant has reached the desired position for each stage. The final intervention was isometric handgrip exercise held at 30% maximal voluntary isometric contraction for 1 minute, with 5 rounds collected immediately following exercise completion or voluntary failure. **RESULTS:** Validity was assessed using the Pearson Moment Correlation Coefficient, Bland-Altman analysis, and mean absolute percent error (MAPE). D1 systolic measures (n=252) correlated moderately with the reference device (r=0.49, bias=-1.3 mmHg, MAPE= 10.9%), with limits of agreement of -28 to 11. D2 systolic (n=292) showed weaker correlation (r=0.27, bias=6.6 mmHg, MAPE=16.8%), with limits of agreement of -40 to 53**.** D1 diastolic measures (n=252) exhibited poor correlation (r=0.04, mean bias=14.5 mmHg, MAPE=28.4%), with limits of agreement of -14 to 28. D2 diastolic measures showed weaker agreement (r=0.07, bias= 15.8 mmHg, MAPE=31%), with limits of agreement of -16 to 31. **CONCLUSION:** Caution should be used when using the tested devices for BP measurement.

VALIDATION OF COMMERCIALLY AVAILABLE WRIST-WORN DEVICES FOR MAXIMAL OXYGEN CONSUMPTION MEASUREMENT

Alaina Holmes

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Oral

ABSTRACT:

Wearable technology has been developed to estimate maximal oxygen consumption ($VO2_{max}$). $VO2_{max}$ is a strong indicator of cardiorespiratory fitness, overall health, and life longevity. This study aimed to investigate the accuracy of the Samsung Galaxy Watch 7 and Garmin Vivosmart 4 measuring $VO2_{max}$ compared to the gold-standard PARVO metabolic cart. Eleven (n=11) participants volunteered and consented to three testing visits. Participants completed two outdoor field tests, with a laboratory test in between, and had a minimum of 24 hours of rest between tests. For the field test, participants were asked to run or walk as far as possible for 12 minutes, with a 5-minute warm-up and a 5-minute cool-down, while wearing one watch on each wrist. Watch placement switched between the two tests to minimize potential confounding effects. Total distance, weather conditions, and $VO2_{max}$ readings were recorded from each test. The laboratory test utilized a PARVO metabolic cart. Participants then completed the Bruce protocol, a graded exercise test, until reaching maximal oxygen uptake to determine true VO2max. Validity was assessed using the Pearson Moment Correlation Coefficient, Bland-Altman analysis, and mean absolute percentage error (MAPE) based on preliminary data. Both the Samsung and Garmin watches showed strong correlations with the metabolic cart (r=0.72; r=0.79). The Samsung had a bias of 2.49 mL/kg/min with limits of agreement between -9.35 to 14.33. The Garmin had a bias of 2.06 mL/kg/min with limits of agreement between -8.51 to 15.91. The devices had a MAPE of 11.68% and 11.09%, respectively. One limitation of this study was its small sample size; larger sample sizes may be beneficial for supporting our conclusion. Overall, both devices tend to overestimate $VO2_{max}$ values by a similar amount relative to the gold standard, given the limited number of data points.

EVALUATING THE EXERCISE IS MEDICINE ON CAMPUS PROGRAM AT SLIPPERY ROCK UNIVERSITY

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Poster

ABSTRACT:

The Exercise is Medicine on Campus (EIM-OC) program at Slippery Rock University provides free exercise training to community members referred by healthcare providers. Upon referral, a Graduate Assistant (GA) and student interns complete health history and wellness questionnaires, fitness assessments, exercise logs, and satisfaction surveys for each participant through the 10-week exercise program. The purpose of this project was to evaluate the EIM-OC program by quantifying participant compliance, exercise time per week, and sedentary time per day. Descriptive statistics were calculated for age, sex, and program compliance. Inferential analyses were used to compare pre-post change of aerobic and resistance training exercise minutes per week, sedentary hours per day, and self-efficacy. Data was collected from 62 participants (25 males, 37 females) aged 56.7 ± 13.9 years across four semesters: Spring 2025, Fall 2024, Spring 2024, and Spring 2023. Completer analysis showed program compliance to be $88.9 \pm 15.1\%$. Aerobic and resistance training exercise time significantly increased by 96.4 ± 62.4 and 70.1 ± 24.1 minutes per week, respectively ($p<0.05$). Sedentary time significantly decreased by 1.64 ± 3.07 hours per day ($p<0.05$). Participants reported greater confidence ($p<0.05$) in exercising while in a bad mood (0.59 ± 0.93) and in bad weather (0.52 ± 1.1) per the Self-Efficacy questionnaire. While not statistically significant, participants did report greater confidence in exercising when tired (0.48 ± 1.3), with limited time (0.07 ± 1.1), and while on vacation (0.59 ± 1.5). In conclusion, the EIM-OC program assisted participants to increase their aerobic and resistance training exercise time per week and reduce their daily sedentary time. The EIM-OC program has successfully supported positive behavior change through high participant compliance.

REPS UNTIL REGRET: A SCIENTIFIC LOOK AT TRAINING TO FAILURE

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Poster

ABSTRACT:

Motor unit recruitment' refers to the percentage of a given muscle's fibers activated by an exercise. When the relative load lifted is increased, generally, recruitment increases. Alternately, when a load is lifted for repetitions approaching muscular failure, recruitment also increases. To investigate the acute effect of training to failure on motor unit recruitment, healthy individuals were fit with EMG sensors on their biceps brachii muscles and completed various sets and repetitions of single-arm biceps curls. On day one, before comparison testing, we recorded the maximal motor unit recruitment in each arm for all participants by having them contract their biceps muscles against an immovable weight rack. We then had the participants complete one set of biceps curls until failure (i.e., not able to complete another full range of motion repetition). Forty-eight hours later, the participants were asked to complete the same number of repetitions as day one, however, divided into four sets with a one-minute rest period between each. The resulting EMG recruitment data was divided into the original maximal data to calculate percentages. We anticipated that training until failure would markedly increase muscle recruitment of the biceps and found a ~10% increase in activation (27 v. 15.5%) when exercising to failure. However, individuals who did not regularly train using high-volume methods approaching failure experienced extreme muscle soreness in the 48-72h following training, which may confound recommendations. Future studies should consider training goals and recent resistance training experience when examining the effects of training to failure.

DOES ENGAGING IN AN INTERGENRATIONAL COMMUNICATION PROGRAM CHANGE AGEIST ATTITUDES IN FIRST-YEAR COLLEGE OF HEALTH PROFESSIONS STUDENTS

Seth Scuilli and Rahel Hartman

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Poster

ABSTRACT:

Due to advances in medical treatment, older adults are living longer but are requiring more resources across all scopes of the healthcare system. Ageism is present and negatively impacts overall patient care. Giving undergraduate College of Health Professions students the opportunity to interact with older adults may reduce the subsequent development of ageism. Does exposure to an intergenerational communication program between first-year College of Health Professions students and community dwelling older adults change student attitudes around ageism? Fifty-five first-year students (n = 30 Exercise Science (ExSci) majors and n = 25 Recreational Therapy (RT) majors) took the brief scale on ageism in university students' assessment (BSAUS). Students were randomly paired with a community-dwelling older adult volunteer as a component of a service-learning program associated with their FYRST Seminar course at SRU. The pairs consisted of 2-3 students to 1 community-dwelling older adults. The initial meeting was held in-person, followed by ~3 phone calls (~30 minutes each) where students had guided prompts to foster conversation. Subsequently, all volunteers were re-invited to have a second in-person meeting. At the conclusion of the program, students repeated the BSAUS and responded to a guided reflection prompt about their experience in the program. At baseline, RT students (52.30±5.68) had a significantly lower mean ageist score compared to ExSci students (56.68±6.31) ($p=0.0121$). Ageist scores significantly increased after the intergenerational communication program ($p<0.001$) in both majors. These findings indicate that a short-term intergenerational communication program may be insufficient to reduce age-related bias among first-year College of Health Professions students, highlighting the need for more educational strategies. Further, analysis of the student reflections could highlight the broader impact of this intergenerational communication program.

Health & Rehabilitation Sciences

OCCUPATIONAL THERAPY IN CANCER CARE: PREPAREDNESS AND BARRIERS

Sophia Duncan

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Poster

ABSTRACT:

There is a current gap in the literature on occupational therapy (OT) practitioners' cancer education and the barriers that OT practitioners face while providing services to the cancer population, resulting in variable clinical preparedness and utilization of occupational therapy across the cancer care continuum. The purpose of the project was to investigate the barriers OT practitioners face and the training they received regarding cancer rehabilitation. The goal of this study was to identify experiences and learning opportunities received by occupational therapy practitioners in cancer rehabilitation. This study can be defined as a mixed-method, cross-sectional, exploratory study with two data collection phases. Phase one was the survey that consisted of demographic, Likert-scale, and open-ended questions. The survey took approximately 15-20 minutes to complete, with each question taking approximately 1-2 minutes. The second phase was the semi-structured interviews via Zoom to provide more in-depth information on the participants' preparedness, gaps in education, and barriers to providing cancer care. The interview took approximately 30-45 minutes and had the potential to go longer due to the nature of open-ended questions. The Likert scale responses were analyzed using descriptive statistics, including identification of the median and mode. The quantitative data was analyzed using non-parametric statistical analysis, including a one-sample Wilcoxon signed-rank test and the Spearman's ranked-order correlations. A thematic analysis was conducted to identify emerging themes from the responses in the semi-structured interview until thematic saturation was reached. Findings from this study have the potential to increase awareness of educators of the importance of cancer education during the student's time in the occupational therapy program. By identifying and addressing the barriers OT practitioners face working in cancer care, OT's will be able to raise awareness and educate other health professionals about the positive impact this profession can have on this population.

FONTANELLES: "SOFT SPOTS” ON THE SKULLS OF NEWBORN BATS

Julia Loeffler

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Poster

ABSTRACT:

Fontanelles are membranous “soft spots” on the cranium of infants. Along with widely separated (or patent) sutures, fontanelles make the newborn human skull deformable, to aid passage of relatively large perinatal heads through the birth canal. At least some non-human primates also appear to rely on fontanelles for the same reason, but primates vary in brain size at birth. In the current study we examine the crania of perinatal bats, another mammalian order in which the young are variably developed at birth. Here, we studied 5 species of bats (late fetal vampire bat, perinatal little brown bat, perinatal big brown bat, perinatal common noctule bat, and the perinatal large flying fox) using micro-CT and histology methods. Through this we discovered the late fetal vampire bat has very large fontanelles and widely patent sutures. Additionally, the anterior fontanelle in other species is frequently small, sometimes absent at birth. The posterior fontanelle is also absent at birth, but the sutures intersecting at this fontanelle are widely patent. Bilaterally to this fontanelle are posterolateral fontanelles, which are large with widely patent intersecting sutures. Our results suggest that in bats, like primates, cranial sutures are patent at birth for continued brain growth, but also likely permitting some flexibility of the skull. In particular, the posterolateral cranium of perinatal bats is likely highly deformable at birth. Like primates, bats vary in how precocial they are at birth, and deformable crania may be beneficial for birth of those that accomplish the most brain growth prenatally.

Healthcare and Administration

EXPLORING INTEREST IN EMERGENCY MEDICAL TECHNICIAN TRAINING AMONG UNDERGRADUATE HEALTH PROFESSIONS STUDENTS

Spencer Freysinger

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Poster

ABSTRACT:

This study aimed to assess student interest and the perceived feasibility of offering an on-campus Emergency Medical Technician (EMT) training program at Slippery Rock University. Given ongoing workforce shortages in Emergency Medical Services (EMS), particularly in rural communities, evaluating the viability of university-based EMT training is both timely and relevant. Additionally, undergraduate students pursuing health-related careers often seek clinical experience or patient contact that EMT training and subsequent certification could provide. Therefore, an on-campus EMT course could offer both community benefit and expanded experiential learning opportunities for students.

A mixed-methods approach was used to evaluate student demand and perceived barriers. An electronic survey was distributed to students within the College of Health Professions to measure overall interest in EMT training, perceived feasibility, and potential barriers such as cost, scheduling, and academic workload. Follow-up semi-structured interviews were conducted with volunteer participants to explore motivations, anticipated benefits, and perceived challenges in greater depth.

Results indicated moderate student interest in an on-campus EMT course. Interest was most strongly associated with the opportunity to earn academic credit, flexible scheduling options, and hands-on clinical experience. Time constraints and competing academic responsibilities emerged as primary barriers. These findings offer practical guidance for future program design and provide preliminary evidence to inform institutional decision-making regarding the development of an on-campus EMT training model that supports both student success and local EMS workforce needs.

History

ANARCHISTS OF THE ALLEGHENY: GERMAN RADICALS IN GILDED AGE PITTSBURGH

Cameron Antoniotti

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Poster

ABSTRACT:

This poster examines the understudied history of German American radical-leftist activism in Gilden Age and early Progressive Era Pittsburgh, challenging prevailing narratives that center German American anarchism in cities such as Chicago and New York. The traditional focus on the 1892 Homestead Strike has obscured Pittsburgh's earlier contributions to national radical politics. This study argues that Pittsburgh hosted a vibrant anarchist movement in the late nineteenth century, one largely forgotten due to its distinctly German character, internal divisions, police suppression, and the absence of a defining confrontation, such as Chicago's Haymarket Affair. Situating Pittsburgh within the broader context of industrial capitalism, mass immigration, and transnational radicalism, this research demonstrates how German immigrants adapted socialist and anarchist traditions from Europe to the challenges of American wage labor. Their associations, publications, and cultural societies fostered a distinct working-class counterculture that merged political education with community life. Drawing from original research in newspaper archives and radical publications, this analysis reconstructs the networks and activities of Pittsburgh's anarchists and reexamines their participation in national events, such as the 1883 Pittsburgh Congress, which produced the *Pittsburgh Manifesto,* a foundational text of American anarchism. By tracing these developments, this project examines why Pittsburgh, despite its industrial significance and radical activity, failed to become a lasting center of anarchism in American money. Recovering Pittsburgh's anarchist past reveals how industrial cities nurtured forgotten experiments in working-class radicalism whose histories remain vital for understanding both the limits and resilience of labor movements in the history of American capitalism.

THE MADMAN'S AMBITION: CHARLES GUITEAU, MEMORY, AND THE ASSASSINATION OF JAMES GARFIELD, 1881

Leah Harris

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Poster

ABSTRACT:

On September 19, 1881, newspapers across the United States ran an extra column right below the main headline that stated one word: DEAD! James Garfield, the 20th president of the United States, had just died after two months of suffering from an assassin's bullet. Charles Julius Guiteau assassinated President James Garfield on July 2, 1881, in the second successful assassination attempt in American history. A man commonly described by observers as a disappointed office seeker or a madman, Charles Guiteau not only testified under a three-day cross-examination, but he also wrote an entire book explaining his motivations for shooting President Garfield. Charles Guiteau's egotistic beliefs directly influenced his violent actions, which in turn formed contradictory historical perceptions of him.

This poster is a historical analysis on Charles Guiteau's life, crime, and beliefs. It explores the parallel lives of President Garfield and the assassin Guiteau before the assassination, through death of Garfield, and the trial of Guiteau using primary and secondary sources. It also covers potential theories behind Guiteau's actions through a historiographic lense. This historical analysis provides unique and invaluable insights into the motivations of political assassins, shedding light on the complex interplay of personal beliefs, societal influences, and historical context that drive individuals to commit such heinous acts.

MISREPRESENTATION OF INDIGENOUS CULTURE IN HORROR MEDIA

Chris Kirchner

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Poster

ABSTRACT:

This project will present on how American horror media has distorted Indigenous culture and how authors and directors can make media that deals with Native cultures in appropriate, respectful ways. Since the 1970s there has been an increase in horror media using tropes that misrepresent Indigenous cultures and paints Native Americans as purely antagonistic or as mere exposition. This is harmful because it perpetuates a narrative of Native Americans being a subsection in a larger, white-centered story. Through welcoming Indigenous perspectives into the writing room, authors and directors can create a media environment which breaks down harmful stereotypes and treats Indigenous culture as real and present today.

THE PRINCESS DE LAMBALLE: A WOMAN'S DEATH AND THE MEMORY OF VIOLENCE IN THE FRENCH REVOLUTION

Greta Walk

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Poster

ABSTRACT:

On September 3rd, 1792, in the beginning stages of the French Revolution, an aristocratic woman named Marie Thérèse Louise of Savoy, more famously known as the Princess de Lamballe, was brutally murdered. Mobs committed thousands of murders within the surrounding days of Lamballe's death, but hers stood out as arguably different from the rest.

This presentation claims that the Princess de Lamballe's death was utilized as a symbol by both the royalists and revolutionaries for their ideas on the woman's role within the revolution, yet she herself did not fit into the perfect mold for women sensationalized from the violence of the revolution. To do this, the presentation will begin by going over Lamballe's life, how she was not a stereotypical woman in the 1790s, and the context of how she got killed. Next, it will go over the role of women at the time and the philosophy, or activism, that influenced these beliefs. Then it will utilize relevant historiography and gender analysis to confirm that Lamballe's death was in fact an essential example of the women's role for both royalists and revolutionaries. All of this is proven through the usage of newspaper accounts, pamphlets, period relevant books, and the assistance of several credited historians' previous analysis. With this, the presentation will display the importance of Lamballe's death and how a singular woman's death can be manipulated to fit the narrative for political use, even though she herself did not fit into that image they wanted to build.

Languages, Literatures, Cultures, and Writing

“Sex” in the City: Analyzing the Female in Urban Writing

Costello Keene

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Oral

ABSTRACT:

In modern and historical literature and art, urban environments are portrayed through a gendered lens. Male creators treat the city as a backdrop for self-definition and exploration, while female artists and writers frame the city as an environment that requires constant self-adaptation and resistance for survival, what follows is an ongoing negotiation between visibility, vulnerability, and creative agency. I aim to examine this distinction using the works of Margaret Atwood, Robert Frost, Edna St. Vincent Millay and an infantry of academic analyses in hopes that identifying such stark differences will work to de-homogenize works of urban literature and highlight the importance of women’s literature as, not only, its own literary genre, but a contrasted lived experience.

DUOLINGO APP: HOW EFFECTIVE IS USING DIGITAL PLATFORMS FOR LANGUAGE LEARNING IN THE LONG-TERM?

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Oral

ABSTRACT:

This research focuses on theories in Second Language Acquisition (SLA) using digital language learning tools such as Duolingo as a form of online supplement in education. Students in the Second Language (L2) classes to describe their experience in SLA beyond a traditional classroom by acquiring some language content experiences using Duolingo software replacing the in class instructions. The terminating goal of the research project is to uncover the framework of SLA theories and methods for the digital language learning platform; Duolingo. The Zone Proximal Development (ZPD) and i+1 theories in SLA can be applied in the project by observing output activities that Duolingo provides on the screen while connecting the contents to learn for long term language learning.

The focus of study discipline is on college level students acquiring L2. In this project, the researcher will complete the assigned activities for 15 minutes daily to observe the Duolingo App with the provided programs, lessons, stories, and games to acquire a higher level of Spanish language learning outside of the classroom. In completing the activities, the researcher will evaluate the qualitative data in the application of SLA theories using ZPD and i+1 as the online language learning platform provides effective language content retention in the long term as opposed to in person language course sessions.

By immersing in the digital learning on Duolingo Platform within the SLA theories, the project seeks to amplify the pedagogical strengths and caveats from a standpoint of app based instruction in lieu of or additional to traditional classroom.

NEMURITOR DRĂCULEA VAMPIRUL: A COMPREHENSIVE HISTORY OF VAMPIRES IN FILM AND LITERATURE

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Oral

ABSTRACT:

Vampires are steeped in Romanian history and culture. They are a literary and cinematic phenomenon, that has greatly impacted cinematography and pop culture. The history of vampires begins in Romania with Vlad the Impaler and the legends of the Strigoi Morti. A legend and important cultural aspect of Romania usurped by white colonizers inspired nearly every text about vampires as mythological creatures. Le Fanu's vampire Carmilla is the first and most foundational vampire in print publication. She served as the blueprint for the attributes of all cinematic and literary vampires.

The core attributes of vampires include: shape shifting abilities, drinking blood, never sleeping, an aversion to day time or the sunlight, superhuman speed and strength, and exotic descriptions and seduction abilities which are often tied to the appearance of ethnically Romani people. Another common theme is that there is always a mysterious ending in which the vampire seems to transcend the efforts of the hero to destroy them.

My presentation illustrates how these attributes derived from the original myths of Strigoi Morti and were made foundational by Le Fanu which has continued to serve as the blueprint for all vampiric legends, texts and cinematography. My presentation highlights key cultural aspects of vampiric legends as the granddaughter of a Romanian Vrăjitoare who passed her spiritual practices on to me and contextualizes the foundational literary and cinematic vampires in a comprehensive history based in Romanian culture and spiritual practices.

ADOLESCENCE AND THE REFRAMING OF MASCULINITY

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Oral

ABSTRACT:

The Netflix series *Adolescence* reframes contemporary discussions of masculinity by shifting the focus from toxic entitlement to systemic emotional suppression, social alienation, and the absence of emotional education for young men. Centered around the character Jamie Miller, a 13-year-old boy influenced by the Manosphere and later arrested for murdering a female classmate, the study asks, "How does *Adolescence* reshape the culture surrounding masculinity and toxic entitlement as products of emotional repression, isolation, and vulnerability to harmful ideologies?"

The scope of the project involves a close analysis of key episodes and character interactions, such as Jamie's relationships with his father, peers, and therapist. Through careful analysis of the show, this project will examine dialogue, narrative, structure, and character development to identify how traditional, masculine norms such as emotional stoicism, athletic competence, and avoidance of vulnerability contribute to Jamie's internalized shame, inability to articulate emotions, and eventual reliance on misogynistic online communities for validation and belonging.

The analysis finds that adolescence complicates dominant narratives that frame incel culture and male violence primarily as expressions of entitlement and power. Instead, the series portrays entitlement as a secondary emotional response rooted in the unmet developmental needs of emotional neglect and social disconnection. Jamie's emotional outbursts, susceptibility to radical ideologies, and desire for approval are shown as consequences of a broader societal failure to equip young men with healthy emotional tools and supportive spaces.

Ultimately, this concludes that *Adolescenc*e advocates for a reframing of masculinity that emphasizes emotional education, vulnerability, and connection by highlighting systemic shortcomings rather than individual moral failure. The series calls for more empathetic and preventative approaches to addressing male alienation from the pathways that lead young men toward harmful ideologies.

THE "ELITIFICATION" OF ENGLISH:

CHAUCER'S *THE ROMANCE OF THE ROSE* AND THE WIFE OF BATH

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Poster

ABSTRACT:

The Middle Ages was a fraught time for the English language; English was deemed the commoner's language and thus unfit for high literature or verse. And yet, we see elite courts, royals, eventually listening to high literature in the English language. Chaucer translates a famous French romance into English and, later, writes some of his own works in entirely in English.

Chaucer uses an incredible array of rhetorical devices and linguistic techniques in his writing. That is to say, Chaucer would be going in front of a court of royals and performing their beloved classics in a "hillbilly" accent—potentially dragging those silken sonnets through a pile of horse dung. However, his masterful use of these linguistic techniques instead subverts typical court expectations in a way that is compelling rather than blasphemous. In his doing so, Chaucer elite-ifies the English language into an era of upper-class culture at a rate that far surpassed previous projections. My question is, what rhetorical devices and linguistic techniques does Chaucer use to help to make the argument that English is a language worth learning?

Chaucer's use of established and famous works in his own constructions lend credence to his stories. I explore on a small scale the sociolinguistic effect of Chaucer using a very elite French work—*The Romance of the Rose*—to create his English character, the Wife of Bath; and how, in his doing so, he created a by-product which elevated the English language itself. To describe this consequential process, I use my neologism "elitification." I examine in two separate sections both Chaucer's linguistic and rhetorical techniques, and their effect on the work as a whole: most notably, Chaucer's double-meanings and play with conventions create a depth to both his character and the language that was previously unseen.

Mathematics, Statistics, and Physics

RAMAN SPECTROSCOPY'S ROLE IN THE SHERLOC MARS MISSION

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Poster

ABSTRACT:

Raman Spectroscopy is a method to identify the chemical composition of matter by analyzing the scattering and energy changes that take place when matter reacts with light rays. Since different materials respond to Raman Spectroscopy in unique ways, it effectively helps us identify unknown materials without making any alterations to the samples. In this project, I will try to identify the utility of Raman Spectroscopy as applied to the SHERLOC (Scanning Habitable Environments with Raman and Luminescence for Organics and Chemicals) detector that is part of NASA's Perseverance rover mission. SHERLOC has a deep ultraviolet laser that can be used to study Martian geological features from a distance. Its use in the Martian environment is appropriate because of the extreme conditions prevailing on Mars. Raman Spectroscopy and fluorescence analysis help to identify chemicals that can be found on Mars. This project will try to analyze related studies of SHERLOC to identify the contributions of Raman Spectroscopy.

INFRARED SPECTROSCOPY BY JWST

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ABSTRACT:

Infrared spectroscopy has recently become a transformative technology aboard the James Webb Space Telescope (JWST). With the utilization of Webb's Mid-Infrared Instrument (MIRI), the JWST has enabled astrophysicists to observe light emissions obscured by dust and across previously inaccessible wavelengths, including redshifted cosmic light. With the high-resolution spectral data abilities of the Near-Infrared Spectrograph (NIRSpec), JWST has analyzed the physical properties of distant stars, galaxies, and exoplanet atmospheres hidden to visible-light telescopes. This project discusses the physics behind infrared spectroscopy on board the JWST as well as explores recent images produced by the telescope. Understanding the spectrographs and cameras launched on the JWST as well as their achievements highlights the future of astrophysical discovery and observational reach.

QUANTUM WELLS AS LIGHT SOURCES

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Poster

ABSTRACT:

A quantum well is an extremely thin layer of low-bandgap semiconductor material sandwiched between two thicker layers of high-bandgap material. The thin nature of this well creates discrete energy levels and changes electron-hole transport through the semiconductor. Prominent one-dimensional effects, such as quantum well excitons—bound electron-hole pairs—and the quantum-confined Stark effect emerge. These phenomena allow the emission and absorption wavelengths of light to be fine-tuned, which has led to a new branch of optoelectronics. Utilizing quantum wells in modern light sources advances laser technology by increasing modulation speeds, lowering energy loss through heat, and optimizing control and clarity. This research project examines the complex physics behind quantum wells and the importance of these advancements in modern technology.

EXTENSION PROBLEMS FOR PRISM MANIFOLDS

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Oral

ABSTRACT:

We explore the concept of a higher dimensional object. If a circle is 2D and a sphere is 3D, then our focus is on objects in 4D. We decompose these objects into 3D representations, called face pairings. In this project, we investigate how one such object may fit inside another.

CAPABILITIES AND APPLICATIONS OF SEM, AFM, AND STM

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Poster

ABSTRACT:

Modern physics and nanoscience rely on advanced microscopy techniques to study materials at extremely small scales. This presentation introduces three commonly used methods: Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), and Scanning Tunneling Microscopy (STM). Each technique, images surfaces in a different way and is used for various types of samples. My research project intends to explain how each microscopy method works and compares their advantages and limitations. SEM is useful for fast imaging over large areas; AFM is ideal for detailed surface measurements, and STM is best for investigating atomic structure and electronic properties. Understanding the differences between these techniques helps researchers choose the most appropriate tool for studying materials at the nanoscale.

COMPARISON OF PARTICLE COLLIDERS

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Poster

ABSTRACT:

Particle colliders play a major role in advancing our knowledge of the subatomic world. In my project, I will be comparing several types of particle colliders, also known as particle accelerators, that are used for modern physics research around the world. The project primarily focuses on the design of these accelerators, for instance how particles are accelerated to high speeds or are guided into collision, as well as their typical applications. Additionally, I will also be comparing their overlapping functions between different particle collider varieties and describing the benefits and drawbacks associated with each. The methodology of gathering information will primarily involve searching through reputable scientific websites, academic articles, textbooks, and other library resources.

SUPERCONDUCTING QUANTUM INTERFERENCE DEVICES

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Poster

ABSTRACT:

Superconducting Quantum Interference Devices (SQUIDs) are extremely sensitive instruments used to detect very small changes in magnetic flux. Their real-world applications are numerous, such as magnetoencephalography in medical diagnostics, mineral exploration, and experimental physics research. By combining superconducting loops with Josephson junctions, SQUIDs exploit quantum mechanical effects to achieve measurement sensitivities far beyond those of conventional magnetic sensors. In my project I will study the physical principles governing SQUID operation and highlight their significance in modern scientific and engineering applications. My research will focus on the fundamental concepts of superconductivity, flux quantization, and quantum interference that enable SQUID functionality.

IMPORTANCE OF QUANTUM DOTS IN DNA DETECTION

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Poster

ABSTRACT:

The history behind a quantum dot (QD) started as a theory in the 1930s to challenge the fundamental behavior of electrons by shrinking a material so much that it acts under the rules of quantum mechanics. Creating such an atomic-level detector was proposed by physicists to allow them to control the color and brightness of light emitted or absorbed, furthermore leading to advanced detection on a microscopic scale. The evolution of these nanocrystals has been phenomenal over the past half century, as the applications of it span throughout every field of study. In particular, it has been a key aspect in the study of biology in both cost-efficiency and controlled detection for diagnostics. With dimensions of 5-10 nanometers, QD's are an effective tool of biomolecular research. Researchers apply them as donors in Fluorescence Resonance Energy Transfer (FRET) sensors to label and image certain molecules, as well as DNA strands. This research project aims to analyze the importance of FRET sensors and how the use of QD's detect origins of cancers, genetic diseases, and other mutations.

NUCLEAR FUSION REACTORS (TOKAMAK)

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Poster

ABSTRACT:

The best hope for a future of clean energy is Fusion reactor. Currently, we have two of these reactors, ITER (International Thermonuclear Experimental Reactor) and EAST (Experimental Advanced Superconducting Tokamak) are in the construction and experimenting phases respectively. In my project I will research the physics behind fusion reactors, the benefits of using different fuels, and how tritium breeding will work.

A REVIEW OF ZNS CRYSTAL DEFECTS AND APPLICATIONS

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Poster

ABSTRACT:

Zinc sulfide (ZnS) is a wide–band gap II–VI semiconductor that is currently playing an important role in modern optoelectronic and photonic technologies due to its high transparency in the visible range, strong ultraviolet absorption. With a direct band gap of approximately 3.6–3.8 eV depending on phase, ZnS is well suited for a variety of optical and electronic applications from industrial processing to nanoengineered materials. This project analyzes current literature on ZnS optoelectronic response to crystal defects generated via doping, crystal growth chemistry, and irradiation and the primary applications of different methods. Vital to the advancement of zinc sulfides applications is the role of crystal defects, which strongly influence the material's electronic and optical properties. Intrinsic point defects such as sulfur vacancies or zinc interstitial defects introduce localized energy levels within the band gap that modifies carrier concentration, recombination dynamics, and photoluminescence behavior. Overall, precise control of defect chemistry in ZnS remains essential for optimizing charge transport, emission efficiency, and long-term material stability for many upcoming optoelectronic systems.

TESTING GENERAL RELATIVITY ABOUT SGR A*

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Poster

ABSTRACT:

Einstein's theories of relativity totally changed the way physicists viewed the nature of reality. His theory of general relativity suggested that gravity was not simply an attractive force, but that objects which have mass physically warp the fabric of space and time around them. After analyzing some of the implications of general relativity, modern scientists have developed means by which we can test whether these implications reflect what we observe in our universe. Fittingly, a great deal of the research into a theory which makes such grand claims would involve black holes. My research project tests one aspect of his theory: gravitational redshift. I will be reviewing literature on S2, a star which orbits very close to the black hole at the center of our galaxy, and whose orbit helped confirm gravitational redshift.

LIGHT'S MAGNETIC INFLUENCE ON MATTER

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Poster

ABSTRACT:

This project explores the magnetic influence of light on matter, focusing on new scientific research that challenges long-standing ideas about how light interacts with materials. For over 180 years, scientists believed that only the electric field of light played a role in the Faraday Effect, a phenomenon where the polarization of light rotates as it passes through a material placed in a magnetic field. Recent studies show that the magnetic field of light contributes about 17% of the light's rotation in the visible spectrum and up to 70% in the infrared range.

My research involves understanding how light's magnetic component affects atomic spins inside materials and how this changes the way light behaves as it travels through them. I will also examine the new possibilities for future technologies, including optical data storage, spintronics, and quantum computing, by allowing scientists to control magnetic properties using light. These findings demonstrate that light does more than illuminate matter; it magnetically influences it as well.

Music

RECORDING REALITIES: FACULTY-STUDENT EXPLORATION OF STUDIO PRODUCTION

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Exhibit

ABSTRACT:

This creative project involved three students working closely with a faculty mentor to explore their interest in music performance, production, mixing, and electronics. Together, they visited three professional recording studios in the Pittsburgh area to record three original songs, gaining hands-on experience tailored to their individual interests and professional goals.

The project unfolded through distinct student roles. One student, the artist, wrote original music, performed it in the studio, arranged parts for other musicians, and made the final creative decisions. Another student, the audio engineer, focused on recording technology, learning audio software, recording techniques, and the use of studio equipment. The third student, the producer, developed skills in shaping the musical direction of the songs and refining the final product.

To share the outcomes of their work, the student artist performed one of the original songs, Stranger (All My Secrets), at the Music Therapy Benefit Concert using backing tracks created during the studio sessions. Additionally, the three fully produced recordings and accompanying music videos will be published on YouTube upon completion of the project. It is anticipated that the student artist will also release the recordings on streaming services to further showcase their work.

Video interviews of the students were captured during the recording process to gather real-time reflections and insights that highlight the learning process as it unfolded. Once the recording process is complete, these interview clips will be synthesized to demonstrate how the students have progressed in their understanding of the music recording process and how they have integrated these experiences into their own musical identity and professional interests.

Psychology, Social Work, and Recreational Therapy

FAMILIAL RELATIONSHIPS EFFECTS ON ENDORSEMENT OF TRADITIONAL ROMANTIC RELATIONSHIP EVENTS

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Poster

ABSTRACT:

The purpose of the present study was to examine whether there was an association between the quality of one's familial relationships (i.e., a "good" or "bad" family life) and one's personal endorsement of traditional romantic relationship events (i.e., wanting to be in a relationship, holding hands, meeting the family, etc.). It was hypothesized that the worse one's family relationships are, the less they would endorse traditional romantic relationship events. Previous research (Zagefka et al., 2021) supports the hypothesis that negative family experiences will be adversely associated with one's views on traditional romantic relationship events. Experiencing familial dysfunction, Zagefka (2021) described, is a significant predictor for later romantic relationship impairment. To test the hypothesis, a Pearson bivariate correlation analysis was conducted. The correlation test resulted in a significant relation between the variables tested. As predicted, decreased quality of familial relationships was associated with reduced endorsement of traditional romantic relationship events. Previous literature supports the findings of the negative effects that poor familial relationships have on romantic relationships (Vasilenko et al., 2025). Overall, these findings suggest that early family relationship quality plays an important role in how individual's approach and value significant events associated with traditional romantic relationship milestones.

THE ASSOCIATION BETWEEN PSYCHOLGOCIAL STRAIN AND DEPRESSION AMONG COLLEGIATE ATHLETES

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Poster

ABSTRACT:

Collegiate athletes balance physical training, competition, and academics, often with limited time for rest and recovery. Some research suggests that sports participation supports mental health, while others indicate that student athletes may experience increased psychological strain. Understanding how psychological strain - defined as the cumulative mental health burden associated with self-regulation demands, coping challenges, and performance pressures - may contribute to mental health difficulties in college athletes. This study examined whether psychological strain and related psychosocial factors predict depression symptoms using secondary data from the Healthy Minds Network dataset (HMN), a nationwide college mental health survey.

The sample included 1,266 collegiate athletes who completed all measures used in the analysis. Psychological strain was assessed using a composite score incorporating measures of strain, self-regulation, coping, and performance. Multiple linear regression was used to examine whether psychological strain, isolation/loneliness, psychological inflexibility, flourishing, and perceived academic impact predicted depression symptoms among collegiate athletes. Higher psychological strain, psychological inflexibility, isolation/loneliness and perceived academic impact were significant predictors of depression, whereas flourishing was associated with lower depression. Findings highlight psychosocial factors associated with depression among college athletes and may inform university mental health programming and support services for students.

COPING SKILLS GROUPS WITH PRISONERS

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Oral

ABSTRACT:

People in correctional settings face high rates of psychological distress, trauma exposure, and unmet behavioral health needs due to chronic environmental stressors and limited access to sustained services (McLennan et al., 2025; Winicov, 2019). Coping and resilience are dynamic, modifiable processes linked to psychological well-being in confinement. Both offer brief, skills-based opportunities for intervention reflecting social work's focus on dignity, empowerment, and equity. Research shows group-based coping programs in correctional care, such as cognitive-behavioral or DBT-informed groups, have positive effects through relaxation, creative expression, peer support, and animal-assisted interventions (Moore et al., 2018; Verona et al., 2025; Eaton-Stull et al., 2025; Peng et al., 2026).

This study evaluated a multisession, integrated coping skills group within a prison-based intervention. Participants reported statistically significant, clinically relevant improvements in overall perceived coping capacity pre- vs. post-intervention, with a large effect size indicating increased self-efficacy in stress management. The Brief COPE subscales (Carver, 1997) did not show significant change, possibly due to measurement sensitivity, ceiling effects, or stable coping styles. Exploratory analyses with age and incarceration history found no meaningful differences, suggesting broad applicability. Resilience, measured by the Brief Resilience Scale (Smith et al., 2008), offers another perspective on adaptive functioning during confinement.

These findings add to a growing literature supporting short, flexible coping strategies in correctional settings. In terms of social work, the results highlight the effectiveness of accessible, strengths-based, trauma-informed group methods focused on emotional management, adaptive coping, and peer support. Integrating multiple coping strategies into a unified framework centered on participants' experiences is a promising mechanism for improving psychological health among justice-involved individuals.

EXERCISE FOR WELLNESS

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Oral

ABSTRACT:

Limited access to structured physical fitness programming in county jails presents a significant barrier to supporting the mental and physical well-being of incarcerated individuals. In response to this gap, *Exercise for Wellness* implemented two six-week exercise-based group interventions for incarcerated men in a county jail setting. These groups emphasized accessible, equipment-free movement and included lower-body, upper-body, core, full-body exercises, and DOGA (dog yoga), integrating physical activity with mindfulness and stress reduction.

The primary aim of this research project is to evaluate the impact of structured exercise programming on mental well-being, subjective vitality, and overall mental health among incarcerated participants. A pre-test/post-test research design was employed, with participants completing validated measures assessing subjective vitality, mental well-being, depression, aggression, and loneliness prior to and following the intervention.

Data collection is ongoing, and quantitative results will be presented at the symposium. Despite the absence of finalized outcomes, this study highlights the feasibility of implementing low-cost, trauma-informed wellness programming within correctional environments. Exercise-based interventions may represent a promising and underutilized approach to promoting psychological well-being, emotional regulation, and quality of life for individuals incarcerated in resource-limited jail settings.

COPING SKILLS FOR TRAUMA WITH AND WITHOUT THERAPY DOGS

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Oral

ABSTRACT:

Jails in Pennsylvania offer limited access to behavioral health treatment, a gap that likely contributes to high rates of trauma-related distress and recidivism among incarcerated individuals. This study evaluated the impact of trauma-informed coping-skills groups delivered with animal-assisted (AA) support and without animal assistance (non-AA) in a rural county jail. Five-week trauma-informed coping-skills groups were implemented for incarcerated men and women, including two AA groups incorporating certified therapy dogs and two non-AA groups.

Participants completed pre- and post-intervention assessments using the Trauma Screening Questionnaire and the Brief COPE. Findings revealed extensive trauma exposure, with 94% of participants reporting a history of trauma, 72% experiencing multiple trauma types, and 44% reporting trauma within the year preceding their current incarceration. Group sessions utilized two trauma-informed resources shown to enhance engagement and skill acquisition: a coping-skills for trauma card deck to facilitate discussion and reflection, and dogs-for-comfort cards featuring positive affirmations and coping strategies, which participants received upon group completion.

Both AA and non-AA groups demonstrated statistically significant improvements in self-reported coping skills from pre- to post-assessment, indicating the effectiveness of trauma-informed group interventions within a correctional setting. Seven therapy dogs participated in AA sessions and provided observable emotional support and increased participant engagement. Notably, spontaneous interactions—such as therapy dogs approaching distressed participants—often prompted emotional regulation, laughter, and deeper sharing of lived experiences.

Qualitative feedback further underscored the intervention's impact. One participant reflected, "I wanted to fight today, but then came to group and talked about things," while another stated, "My mood changed entirely for the better." These findings highlight the feasibility and value of trauma-informed coping-skills groups in jail settings and suggest that animal-assisted interventions may enhance emotional safety, engagement, and therapeutic connection for incarcerated individuals.

NEUROTICISM AS A PERSONALITY RISK FACTOR FOR DEPRESSION SYMPTOM SEVERITY

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Poster

ABSTRACT:

Objective

The research examined the association between neuroticism traits and depression symptom severity in a nationally representative sample.

Methods

Data was obtained from the National Longitudinal Study of Adolescent to Adult Health (Add Health, N = 3,227). Neuroticism, a Big Five personality trait characterized by negative emotions and emotional instability, was measured using a composite score. Depression symptom severity was measured using a summed depression symptom score. A one-way analysis of variance (ANOVA) was conducted to examine whether depression symptom severity differed across neuroticism composite scores. Tukey post hoc tests showed that participants with the highest neuroticism score reported significantly higher depression symptom severity compared to participants with moderate/ low scores.

Results

Results of this study showed a significant effect of neuroticism on depression symptom severity, $F(14, 3212) = 2.42$, $p = .002$. Tukey post hoc tests showed that participants with a higher neuroticism score reported significantly higher depression symptom severity. A correlation analysis also showed a statistically significant positive association between neuroticism and depression severity, $r(3225) = .044$, $p = .012$.

Conclusion

The findings of this research support the hypothesis that higher neuroticism scores are associated with greater depression symptom severity. These results are consistent with prior research linking neuroticism to chronic depressive symptoms. This research suggests that screening for neuroticism-related emotional instability may help identify individuals at increased risk for more severe depressive symptoms.

THE EFFECTIVENESS OF LISTENING TO PREFERRED MUSIC DURING ACADEMIC TASKS FOR STUDENTS WITH ADHD

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Poster

ABSTRACT:

Attention Deficit Hyperactive Disorder (ADHD) affects more than 15.5 million Americans (including college students) and is characterized by inattention, impulsivity, and hyperactivity (Centers for Disease Control, 2025; National Institutes of Mental Health, 2025). Inattention can lead to difficulties with staying on task, organization, and academic success. Common medications cause negative side effects, and nonpharmacological interventions are increasingly being explored. Emerging evidence suggests that music may reduce stress and improve engagement, and studies in adults with dementia indicate that preferred music, selected by the individual, can enhance outcomes. However, research on the effects of preferred music for college students with ADHD remains limited.

This study examined whether listening to preferred music during academic tasks could increase time on task for students with ADHD. Using a mixed method, quasi experimental pre- post design, participants served as their own controls. The sample included freshmen, juniors, three seniors, and one graduate student (ages 19 to 25) with ADHD diagnoses ranging from early childhood to adulthood. Participants reported challenges with motivation, procrastination, distractions, and sustained attention.

Over the 15 days studied, overall ADHD symptoms remained moderate to high, with slight increases in inattention, hyperactivity, and impulsivity. However, during the specific academic work sessions with preferred music, participants consistently reported improvements in focus, motivation, stress reduction, performance, relaxation, and staying on task (ratings 4.0 to 4.75 out of 5), while negative effects were low and decreased over time (1.5 to 2.5 out of 5).

These findings suggest that while preferred music does not reduce underlying ADHD symptoms, it may serve as a practical, short-term strategy to support focus, task persistence, and stress management in college students with ADHD. This research highlights the potential role of preferred music as an accessible, nonpharmacological tool to enhance academic performance and engagement.

ANIMAL-ASSISTED GRIEF SUPPORT IN CORRECTIONAL SETTINGS: A COMPARATIVE STUDY

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Oral

ABSTRACT:

Animal-assisted interventions (AAI) are being used more often in clinical and community settings. They can be found in hospitals, schools, libraries, and counseling agencies. Research has shown that AAI can reduce stress, provide comfort, support coping with hardships, and increase engagement in therapeutic settings. Research on AAI is still developing, and even less is known about its use with individuals who are incarcerated.

Individuals who are incarcerated experience many kinds of loss, including loss of freedom, daily connection with loved ones, and, at times, the death of a loved one while incarcerated. Grieving in correctional settings comes with additional challenges due to prison culture, in which showing emotion is often discouraged or shamed. As a result, many individuals struggle with grief without adequate support to process these emotions.

This study examined whether adding therapy dogs to grief and loss support groups in a correctional facility reduced bereavement symptoms, lessened prolonged grief disorder, and improved resilience. Four grief and loss support groups were conducted in a county jail. Two groups included therapy dogs and their handlers, and two were conducted without therapy dogs. Both sets of groups lasted six weeks, and participants completed assessments at the beginning and end measuring bereavement, prolonged grief, and resilience. Groups with therapy dogs showed reductions in bereavement symptoms, while groups without therapy dogs showed little change. Overall, the combined results demonstrated reductions in grief.

This research showed that therapy dogs appear to make grief support groups more effective and provide an additional resource within the limited mental health supports in jails. While more research is needed, these findings suggest that therapy dogs may help incarcerated individuals process grief more effectively.

RECOVERY LIFESTYLE

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Oral

ABSTRACT:

Research shows that individuals who are involved in the criminal justice system often have substance abuse disorders, yet there is minimal treatment provided in correctional facilities.

This collaborative research project includes the implementation and evaluation of 6-week recovery lifestyle groups for those incarcerated who struggle with substance abuse issues in a rural jail. Looking at 4 groups in total- two women's groups and two men's groups. One women's group and one men's group had therapy dogs present and the other two did not. All groups followed the same recovery lifestyle curriculum. Participants were taught various strategies to manage their addiction. Through the interventions, the research project aims to increase recovery skills for individuals with a history of substance abuse. The methods included a pre-test post-test design, measuring the stage of change via the Readiness to Change scale (McConnaughy et al, 1983) and feelings about recovery via the Recovery Assessment Scale (RAS-24) (Corrigan et al., 2004). Additionally, an initial informational survey was conducted in session 1 and a reflective qualitative survey about their group experience was conducted at the conclusion of group, during session 6. Preliminary results will be shared, along with perceived benefits for participants as well as student researchers. A therapy dog will be present for attendees to experience the benefits of certified dogs.

THE ASSOCIATION BETWEEN PERCEIVED STRESS AND COGNITIVE PERFORMANCE

Angela Russell

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Poster

ABSTRACT:

The purpose of this research is to examine the impact of perceived stress on cognitive functioning. Prior research suggests that this association will be present and that stress is related to cognitive task performance. Participants were drawn from Wave IV of the Add Health database. Using bivariate correlational analyses, tests were run to determine the relationship between a quantitative measure of average perceived stress (explanatory variable) and a quantitative measure of cognitive performance assessed via a number recall task (response variable). Results revealed a statistically significant but very weak negative correlation between the response and explanatory variables. This indicates that number recall scores slightly decreased as perceived stress increased. This study emphasizes the importance of stress management, even in younger populations. Additionally, addressing stress-associated cognitive changes may support prevention and intervention efforts for individuals experiencing severe stress.

THE LATE-POSITIVE POTENTIAL: TAGGING WORDS AND PHRASES FOR EMOTIONAL MEMORY ENCODING

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Poster

ABSTRACT:

The late-positive potential (LPP) is known to elicit in response to attention and emotional stimuli; however, previous research remains unclear on what part of emotional stimuli the LPP is specifically elicited to. This research study aims to investigate if the LPP tags words and phrases for emotional memory processes, including memory encoding and long-term consolidation, similar to how the established P300 component does. The primary objectives are to identify the LPP in its elicitation state, distinguish it from the overlapping P300 component, and identify the variance and magnitude of the LPP between emotional stimuli (positive, neutral, negative). It will be additionally beneficial to identify whether these emotional stimuli will be encoded into emotional memory.

To achieve these objectives, consenting participants will be subject to a electroencephalography (EEG) study involving a presentation of emotionally positive, neutral, and negative words. After the initial presentation, participants will complete a recognition/recall memory test to test for memory encoding upon the presented words. The results are expected to reveal that emotionally connotated words and phrases (i.e. positive and negative versus neutral) will have an increased magnitude on the elicitation of the LPP and therefore a mark on emotional memory encoding.

This research is significant as it contributes to understanding how the brain selects information for memory processing and storage. It additionally contributes to the clarification of the manipulation and underlying role of LPP for the sequence in emotional memory encoding and consolidation. This will benefit and enhance memory performance across a large pool of the population, including individuals with dementia-related conditions, those with other medical or neurological disorders, and students engaged in intensive fields, as tactics and techniques encompassing memory storage and performance within medical applications, student-based studying models, and cognitive stimulation for contextual memorization can be begin to emerge into focus.

Public Health Sciences

PERCEIVED NEIGHBORHOOD ENVIRONMENT, MENTAL HEALTH CONDITIONS, AND CANNABINOIDS VAPING AMONG U.S. ADOLESCENTS: A MEDIATION ANALYSIS

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Oral

ABSTRACT:

Significance: Adolescent vaping of cannabinoids (cannabis and cannabidiol [CBD]) is an emerging public health concern in the U.S. While neighborhood environments and mental health are each associated with adolescent substance use, their interrelated effects on cannabinoids vaping remain understudied. This study examined 1) associations of Perceived Neighborhood Environment (PNE) and mental health conditions with cannabinoids vaping, and (2) whether mental health conditions mediate the relationship between PNE and cannabinoids vaping. **Methods:** Data came from the 2023 National Youth Tobacco Survey, a nationally representative sample of U.S. students in grades 6–12 (n = 16,530). PNE was the primary exposure. Outcomes were ever and current cannabis and CBD vaping. Anxiety and depression symptoms were tested as mediators. Weighted adjusted logistic regression models and causal mediation analyses estimated direct and indirect effects. **Results:** Higher perceived neighborhood environment problems were associated with increased odds of ever cannabis (aOR = 2.96) and CBD vaping (aOR = 3.14), but not current use. Anxiety was associated with greater odds of ever cannabis (aOR=2.17), current cannabis (aOR=1.96), and ever CBD (aOR=2.37) vaping. Depression showed similar associations (ever cannabis: aOR=2.57; current cannabis: aOR=1.73; ever CBD: aOR=2.66; current CBD: aOR=1.43). Mediation analysis showed that anxiety and depression accounted for 13.5% and 15.7% of the association between PNE and ever cannabis vaping, respectively. Mediation was stronger for current cannabis vaping, with 37.3% and 26.5% of the association explained by anxiety and depression. Similarly, anxiety and depression mediated 14.8% and 15.8% of the association between PNE and ever CBD vaping. **Conclusion:** Our findings highlight the complex pathways linking neighborhood environment and mental health to adolescent cannabis and CBD vaping. Integrated public health strategies to improve social determinants such as neighborhood conditions and enhance mental health support are needed to address adolescent cannabinoids vaping behaviors.

School of Business

PA211: REFERRAL METHODS, CLIENT INFORMATION, AND THEIR IMPACT ON UNMET CLIENT NEEDS

Cassandra Clemency

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Oral

ABSTRACT:

This paper analyzes and documents the relationships between several relevant client statuses, and the unmet needs of those clients: Pennsylvania residents who contact PA211 for assistance. My literature review suggested pronounced disparities in urban-rural food security, and methodological challenges created by gendered behavioral differences and mental health problems among clients. Data provided by PA211 uses a three-tier structure, containing unique IDs to differentiate client interactions from referrals, categorizations of services provided, as well as a numbering system to allow counting of needs. Unmet needs, or services which clients were unable to find assistance with after contacting PA211, intersect in varying ways with client demographic information, repeat-client status, location, and timing. Using multiple and logistic regression, a stacked bar chart, and a correlation matrix, I analyze and visualize these relationships. Findings reveal that age is the most significant predictor of differing unmet need composition and volume, while gender, race, income, and veteran status have only minor effects. Repeat clients disproportionately seek assistance in housing, while first-time clients seek utility assistance, suggesting that repeat clients contend with long-term deprivation. This also suggests insufficiency of housing assistance in Pennsylvania. Further, rural and urban categorization of location is insufficient for meaningful analysis, with county-level examination proving superior, in some cases. This research outlines flaws in PA211's data procurement process, including geographic categorization (rural/urban versus county-level) and survey strategies. I suggest remedies including more rigid surveying of client assets, housing, and employment status, as well as closer examination of heightened unmet needs among those who fail to divulge ethnic identity.

Social Sciences

HOW DOES PARTISAN LEADERSHIP AFFECT VOTERS' WILLINGNESS TO USE MAIL-IN BALLOTS?

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Oral

ABSTRACT:

Partisan leadership plays a central role in shaping public attitudes toward electoral processes. This research explores the impact of partisan leadership cues on voters' willingness to use mail-in ballots, a topic of heightened political debate and discussion following the 2020 U.S. presidential election. As mail-in voting was at the center of political debate, partisan leaders framed the controversy such that it encouraged or discouraged public trust in the process. This study aims to determine whether exposure to party-aligned messaging impacts people's beliefs about mail-in voting integrity and their inclination to use it.

Using a randomized survey design, participants are shown one of three cues: a Republican leadership cue, a Democratic leadership cue, a control group with no partisan messaging. The study measures voter willingness to use mail-in ballots on a continuous scale and analyzes differences across conditions. By incorporating control variables such as party identification, age, education, and voting history, the study seeks to isolate the effect of partisan messaging on voter attitudes.

Recent studies suggest that Republican leadership cues decrease willingness to use mail-in ballots, while Democratic cues increase willingness. These results significantly impact understanding of how political elites shape public trust in election integrity. Additionally, the study explores the long-term impact of partisan rhetoric on democratic participation and voter behavior beyond the immediate electoral cycle.

The research's findings will contribute to the existing literature by providing experimental evidence of partisan influence on voting behavior and informing policymakers, election officials, and scholars about the potential consequences of polarized messaging on democratic participation. Understanding how leadership cues shape voter perceptions is crucial for developing strategies to enhance electoral confidence and participation.

DEBUNKING THE CLAIM THAT IMMIGRANTS TAKE JOBS FROM AMERICANS

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Poster

ABSTRACT:

This poster investigates the claim that immigrants reduce job opportunities of US-born workers. To investigate this misconception, our research employs a meta-analysis of existing literature: drawing largely on *The Truth About Immigration* by Zeke Hernandez and other policy focused academic studies. We aim to explore the relationship between migration and labor market outcomes.

The methodology explores the complementarity between foreign-born and native-born workforces. Rather than acting as direct substitutes, data suggests that immigrants often fill roles that allow industries to expand, which in turn increases the labor demand for native-born workers in certain fields. Furthermore, the study addresses the concern that immigration lowers native-born workers' wages. While public concern often centers on wage suppression, broader economic trends indicate that immigration has a neutral to slightly positive effect on the average wages of native-born workers by boosting overall productivity growth and consumer demand.

The research acknowledges that while specific, localized sectors may experience short-term adjustments, the aggregate data shows no correlation between increased immigration and native-born unemployment. In fact, periods of high immigration have frequently coincided with record-low unemployment for US-born citizens. This poster concludes that the immigrant workforce does not take jobs away from Americans. Immigrants, instead, complement millions of domestic jobs and strengthens the broader economy.

MORAL VALUES AND DEMOCRATIC EVALUATIONS OF DOMESTIC MILITARY DEPLOYMENT

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Oral

ABSTRACT:

This project examines how moral values influence evaluations of democracy when individuals are exposed to images of domestic military deployment. Using the moral foundations framework, the study focuses on three moral value clusters: tradition, compassion, and liberty. The purpose of this project is to explain why people can view the same images of the National Guard and come away with different conclusions about democratic health and legitimacy.

The study will use an experimental survey design. Participants will be randomly assigned to view one of three images: an orderly National Guard deployment, a disorderly deployment involving visible conflict, or a non-political control image. After viewing the image, respondents will answer questions measuring their satisfaction with democracy and how important they believe it is to live in a democracy. Moral values will be measured by asking participants to identify which moral cluster best reflects their beliefs, along with standard demographic and ideological controls.

We expect moral values to shape how respondents react to the images. Individuals high in tradition are expected to respond more positively to National Guard deployments, especially when the deployment appears orderly. In contrast, individuals high in compassion or liberty are expected to report lower satisfaction with democracy when exposed to military imagery, particularly under disorderly conditions. At the same time, these individuals are expected to express a stronger belief in the importance of democratic principles. Overall, this project argues that democratic evaluations are shaped not only by political events but by the moral values people use to interpret them.

DO MASKS ON LAW ENFORCEMENT AFFECT AN INDIVIDUAL'S DEMOCRATIC SATISFACTION?

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Oral

ABSTRACT:

Democratic stability relies heavily on the public's perception of institutional transparency and the belief that state actors are held accountable for their actions. While prior research has extensively examined how the militarization of local policing impacts state legitimacy, there is a gap in understanding how specific visual cues within federal immigration enforcement, namely the practice of officer masking, impact broader social evaluations of democratic quality. Using a symbolic-interactionalist framework, this research investigates whether the visual representation of masked Immigration and Customs Enforcement (ICE) agents serve as a symbolic signal of institutional secrecy, consequently eroding public satisfaction with democracy.

This study uses a randomized survey experiment using AI-generated stimuli to isolate the effect of masking. All survey data is collected virtually through a Qualtrics survey that will be distributed via social media platforms Instagram, Facebook, and Snapchat. Participants are randomly assigned to one of three groups: viewing an ICE arrest scenario featuring masked agents, the same scenario without masks, or a control group with no image but a question about their voting activity in the last general election. Following the treatment, participants rate their overall satisfaction with democracy and the perceived importance of living in a democratic system on a 1-10 scale. Data is then analyzed using Excel and JASP, utilizing an ANOVA to compare groups.

We hypothesize that the presence of masks will trigger perceptions of reduced institutional accountability, leading to a statistically significant decrease in democratic satisfaction. These findings would suggest that seemingly minor visual choices in enforcement tactics can have profound consequences for the perceived health and legitimacy of US democratic governance.

THE INFLUENCE OF SOCIAL MEDIA PLATFORMS ON DEMOCRATIC PERCEPTIONS

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Oral

ABSTRACT:

Our research on existing studies has shown that increased political polarization is being driven through social media sites; users are now associating select social media sites with political affiliations. We want to better understand how politicized social media sites are impacting people's views of democracy. Our research study is investigating how information presented through various polarized social media platforms (Facebook, X, and TikTok) impacts both respondents' satisfaction with democracy and their importance of living in a democracy. Respondents will be asked demographic questions and their political identification for post hoc analysis. Our study will present voluntary respondents with a convenience survey through a Qualtrics link in which they will receive one of four possible treatments: a control group that only receives the dependent variables, and three independent variable groups, each presenting the same caption but formatted to their randomized treatment group. Each of the independent variable groups will randomly be sorted into their treatment groups, where they will view the same political news headline, "Breaking News: Statewide rollout of updated electronic voting machines is making elections more secure", but it will be presented in the form of one of the three chosen politically polarized social media apps. After the visual, respondents will answer two questions measuring their satisfaction with democracy and the importance of living in one, based on a scale of 1-10. We hypothesize that H_1 exposure to information formatted through a polarized social media platform, compared to that of someone with the treatment, will decrease support for democracy, and H_2 that exposure to political content on X, Facebook, and TikTok will affect democratic satisfaction differently depending on party identification.

THE INFLUENCE OF LOBBYING FRAMING ON PERCEPTIONS OF DEMOCRACY IN THE UNITED STATES

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Oral

ABSTRACT:

This study aims to investigate how the linguistic framing of lobbying influences public perceptions of American democracy. We hope to fill a gap in existing literature, one that has not previously investigated a connection between perceptions of lobbying and opinions of democracy. The survey aims to collect opinions on a target population identified as Slippery Rock University (SRU) adjacent adults.

Data will be collected through an online format using a Qualtrics questionnaire. The survey will be shared by researchers through social media. It will be posted to Instagram, Snapchat, Facebook, and X. Along with gathering responses through social media, there will be a QR code posted in various local businesses on their community boards. The survey will feature various demographic questions. The experimental treatments have three forms along with a control treatment. The experimental treatments are presented in the form of a lobbying definition. They are manipulated to introduce a value judgement to the definition: positive, neutral, and negative. The control is presented with a neutral definition of voting. Following the treatment, respondents rank the importance of democracy and satisfaction of democracy in the United States on a 1-10 scale. Results from this survey will be interpreted through a post-hoc analysis. This will be done using the platform JASP through multiple analysis of variance (ANOVA) comparisons. It aims to find a statistically significant correlation between the two dependent variables and treatments.

DO IMMIGRANTS MAKE US LESS SAFE?

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Poster

ABSTRACT:

Our project will be a poster that answers the question: Do immigrants make the United States less safe? We define safety based on three distinct factors: crime rates in communities with notably high percentages of immigrants, rates of violent crimes committed by immigrants as opposed to US-born citizens, and rates of domestic versus foreign terrorism in the US. We conducted a systematic literature review on our research question, drawing on research and data collected across the US. While conducting our research, we found that 39% of people in the US have the misconception that immigrants make their communities less safe. However, social scientists have found that native-born citizens are over two times more likely to commit violent crimes than undocumented immigrants (Proceedings of the National Academy of Sciences, 2020). Immigrants also have a significantly higher likelihood than native-born citizens to report crimes to the authorities and work with authorities in criminal cases (Cato Institute, 2025). We conclude that immigrants have increased community safety since 1990.

INVESTIGATING THE CLAIM THAT ALL U.S. IMMIGRANTS ARE CRIMINALS

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Poster

ABSTRACT:

With immigration being a very controversial topic in American politics today, there are many misconceptions surrounding the characterization of immigrants. These false narratives are rapidly spread through politicians, the media, and social media platforms. Immigrants are consistently portrayed as "criminals" who break the laws and traditions that make the United States of America the country it is meant to be. The goal of our research is to use existing literature to disprove this myth and demonstrate that immigrants make us safer. We conducted a systematic literature review on this topic and found that immigrants commit crime at a significantly lower rate than native-born Americans. Evidence shows that immigration makes us safer by contributing to innovations that make safer communities possible.

The research in this study is relevant as it breaks the negative stigma surrounding immigrants. Scholars of immigration policy and experts in demographic research refute faulty portrayals of immigrants and emphasize necessity of immigration the face of worker shortages and looming population decline. By proving that most immigrants are, in fact, not criminals, our research encourages others to be less oppressive of immigrants and more welcoming to the dedicated work ethic they bring to American culture.

DO IMMIGRANTS TAKE AMERICAN JOBS?

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Poster

ABSTRACT:

Immigration is a major political issue in the United States, with many believing that immigrants take jobs away from American workers. This project examines whether this belief is true by comparing public opinion with economic research and job data. Many Americans worry that immigrants increase job competition and reduce wages, especially for lower-income workers. However, research shows that immigrants often fill jobs where there are worker shortages that support the economy.

This study examines how immigration affects jobs in the United States by looking at employment trends and industries that depend heavily on immigrant workers, such as agriculture, construction, and food service. This project also explores why the belief that immigrants take American jobs is so common in political discourse and media coverage.

The research shows that immigrants usually do not take jobs away from American workers. Instead, immigrants often help businesses grow and fill important positions that might otherwise remain empty. Understanding the difference between what people believe and what research shows is critical for making better decisions about immigration policy. This project helps explain one of the most common immigration myths and provides a clearer picture of how immigrants affect the American job market.

Malapportionment and the Mind: How Partisan Advantage Shapes Beliefs About Democracy

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Oral

ABSTRACT:

The United States Senate grants equal representation to all states regardless of population, creating substantial inequalities where voters in small states receive dramatically more representation than those in large states. This study examines how partisan framing of Senate malapportionment influences democratic attitudes. Specifically, we investigate whether individuals' satisfaction with democracy and their valuation of democratic governance shift when they learn that malapportionment advantages or disadvantages their preferred political party. We conducted a randomized survey experiment with respondents recruited through social media platforms. Participants were randomly assigned to view one of two infographic treatments or a neutral control condition. The Republican-favored treatment displays Wyoming's population advantage over California in Senate representation, while the Democrat-favored treatment shows Vermont's advantage over Texas. Following exposure, respondents rated their satisfaction with American democracy and the importance of living in a democracy on 10-point scales. We employed one-way and two-way analysis of variance to test treatment effects, with partisan identification measured on a 7-point scale serving as a moderating variable. Data collection is currently underway. Based on partisan motivated reasoning theory, we expect Republicans shown the Democrat-favored infographic and Democrats shown the Republican-favored infographic to report lower democratic satisfaction and reduced importance of democracy compared to those viewing partisan-favorable information or neutral text. This research contributes to understanding how partisan identity conditions citizens' tolerance for structural inequalities in democratic representation.

MYTH: UNAUTHORIZED IMMIGRANTS DO NOT PAY TAXES BUT STILL RECEIVE FEDERALLY FUNDED SAFETY NET PROGRAMS

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Poster

ABSTRACT:

The idea that unauthorized immigrants do not pay taxes but do collect the benefits of government funded programs is a common misconception prevalent in United States political and economic structures today. This myth persists in public discourse and is often used to justify restrictive immigration policies, despite substantial evidence to the contrary. The reality is that many unauthorized immigrants contribute billions of dollars annually in federal, state, and local taxes through payroll deductions, sales taxes, property taxes, and the use of Individual Taxpayer Identification Numbers. At the same time, their access to most federal public benefits is highly restricted under existing law which limits their eligibility for programs such as Social Security, Medicaid, and Supplemental Nutrition Assistance. Examining the economic contributions of unauthorized immigrants and legal framework surrounding immigration policy reveals a clear gap between political rhetoric and documented contributions, underscoring the need for more evidence-based discussions about immigration and public spending in the United States.

INNOVATION WITHIN IMMIGRATION

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Poster

ABSTRACT:

Approximately one out of seven people in the United States are foreign born. This literature review examines myths surrounding immigration and the economy, as well as providing clear statistics and examples stemming from immigration. We are investigating how the integration of foreign-born ideas helped drive the American economy and innovations as well as how restrictive policy might affect it. We will focus on the correlation between immigration and innovation within the United States. Cross-referencing several academic articles, datasets, and various other sources, we have concluded that economic growth is made possible by immigration and the diversity that it brings to different areas of the job market and economic sector. Our findings combat the myth that immigrants have a negative impact on the fiscal economy, in fact, their inclusion in the market has long-term net positive effects for the health of the economy. Immigration brings in new advances, diverse backgrounds, and international relationships which all help to increase collaboration and flow of ideas from one culture to another.

AFFECTIVE POLARIZATION AND DEMOCRATIC IDEALS

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Oral

ABSTRACT:

This research aims to investigate relationships between election outcome messaging and democratic ideals, and how this relationship is moderated by an individual's level of affective polarization (the difference between an individual's positive feelings toward one party and their negative feelings toward another).

The hypotheses for this research are as follows: H_1: Exposure to an expected severe partisan loss will result in decreased satisfaction with democracy and beliefs about the importance of democracy. H_2: The results of H_1 will be moderated by an individual's level of affective polarization, with higher affective polarization leading to an increased effect of the treatment. The theory behind these hypotheses is that when faced with a scenario where democracy does not work in their favor, individuals will view democracy less favorably, and a severely polarized individual will view it even less favorably.

The survey will proceed as follows: an online survey will be distributed to participants where they will begin by answering basic demographic questions and questions meant to measure their affective polarization. The participants will then be split into a control group, an experimental group which will be shown a graphic depicting a major advantage for the Democratic Party in the 2026 midterms, and an experimental group viewing the same scenario for the Republican Party.

Following treatment, participants will be asked to rank how important it is for them to live in a democracy and how satisfied they are with the way democracy works in the United States. Various statistical tests will be conducted in the Excel and JASP programs.

Support for our democratic institutions is important. It is necessary for a functioning democracy that those who are not in power, or are soon to lose it, are still loyal to the system. This research seeks to test the steadfastness of this crucial feature.

POLITICAL IMAGERY AND PUBLIC OPINION STUDY

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Oral

ABSTRACT:

The survey will be conducted to determine if there is any correlation between an individual's satisfaction with democracy and their willingness to accept violence as a political tool. The survey will feature three AI generated images that will be used as treatments. Treatment one will depict the aftermath of a protest that occurs on a public street, the street being littered with debris and paraphernalia that will give the impression the protesters were on the political right. The second treatment will be a very similar scene except the debris and paraphernalia will be indicative of the protesters being on the political left. The third treatment is a neutral control treatment featuring a parade for the 4th of July that implies positive attitudes and impressions of the United States but is otherwise devoid of a political leaning. The survey itself will be disseminated through social media. The primary ones I expect to use are Discord, Facebook and Instagram. This is to ideally achieve a wider demographic of respondents. The survey itself should not take more than 5 to 10 minutes. And the preferred range for respondents is a minimum of 50 and maximum of 500. My hypothesis is that individuals showing a greater dissatisfaction with how democracy is working in the United States and their overall satisfaction of democracy and how it is playing out in the United States will have a higher tolerance for the use of violence as a political tool and a means to an end.

THE IMPACT OF GENDER ON CITIZEN'S PERCEPTIONS OF DEMOCRATIC PERFORMANCE

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Oral

ABSTRACT:

The growing equality in democracies amongst men and women has not translated into politics as women are still not seen as qualified or capable as men. Research has been done showing how men and women are portrayed differently in the media even when they've committed the same act. Men are often shown as strong and decisive while women are associated more with qualities like cooperation and empathy. One existing theory is that there is a direct connection between women's political representation and if a democracy is legitimate. The more women involved within the government make the public feel more positively about democracy. Previous research seems to focus on the politicians themselves, not the possible constituents of these politicians. We use data from Qualtrics about people's opinions regarding the importance of living in a democracy and their personal satisfaction with the United States democracy, and how those opinions could be changed by seeing a male and female politician. The data will be sorted into an ANOVA table to determine if there's differences between the three groups measured. We hypothesize that people's satisfaction with democracy will go down as well as their opinion of the importance of living in a democracy when shown the image of the female-presenting politician compared to the male-presenting politician. This will show that there is still a prominent implicit bias surrounding women in politics.

Special Education

DEVELOPING FUTURE SPECIAL EDUCATORS

Paige Temple and Ellery Phanco

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Poster

ABSTRACT:

This project focuses on developing future special educators through structured experiential learning opportunities (ELOs) for 48 secondary students at A.W. Beattie Career Center. With support from faculty in the special education department and a $20,000 grant from the Pennsylvania Department of Education (PDE), three ELOs focused on career exploration, instructional learning, and social engagement were created in partnership with a local postsecondary institution.

Students participated in a visit to SRU for a Special Education Major for a Day experience, classroom-based learning about disabilities and inclusive practices, and a sensory-friendly community engagement activity that allowed them to work alongside students with disabilities. These experiences helped students better understand the roles and responsibilities of special educators. Each activity was intentionally designed to connect students to career pathways by increasing awareness of special education career options and explaining the requirements for admission into college for special education programs. A pre- and post-survey was given to students for each of the ELOs to collect insights about their experiences.

The goal of this partnership was to strengthen students' understanding of the field and encourage them to consider becoming special educators. As a result of participating in these ELOs, students increased their awareness of career opportunities, developed a stronger interest in the profession, and felt more prepared to apply to special education programs after graduation.

Theatre

PROJECTION MAPPING IN ARCHITECTURAL AND ENTERTAINMENT BASED DESIGNS

Ryan Mounteer

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Exhibit

ABSTRACT:

Working as the projections programmer for Slippery Rock University's production of Ride the Cyclone, my role was largely limited to casting a single projector onto the set to display static images and minimal video. This was a very basic example of projection mapping that, while effective, left me wondering how this could be further developed within the scope of theatrical or architectural projection-based design. Using this project as a jumping off point, I wanted to research how this could be improved upon by expanding the projected surface with multiple sources. By blending the edges of multiple displays to create a seamless surface area of video display and utilizing the projection software to mask and map the hard elements of the projection surface, these techniques should effectively cast two-dimensional video onto a three-dimensional surface to highlight or negate the existing architectural features.

Achieving this requires in-depth usage of Qlab, the software we will use to playback and manage our projection sources as well as display devices. This allows us to map out our surfaces, implanting masking layers (video blackout filters) and warping/manipulating specific points within the video layer to fit to our surfaces. As the physical set of Ride the Cyclone will not exist past the point of its production run, we will be using a portion of West Stoner as our architectural surface. The front face of this building, with its porch, columns, staircase, and semicircular over-hang will provide ample 3d elements to showcase these techniques and how they could be applied to scenic elements in future production work.

Faculty Presentation

Implementing Intergenerational Communication Programs in FYRST Seminars: Lessons Learned

Dr. Maureen Walsh and Dr. Betsy Kemeny

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Oral

ABSTRACT:

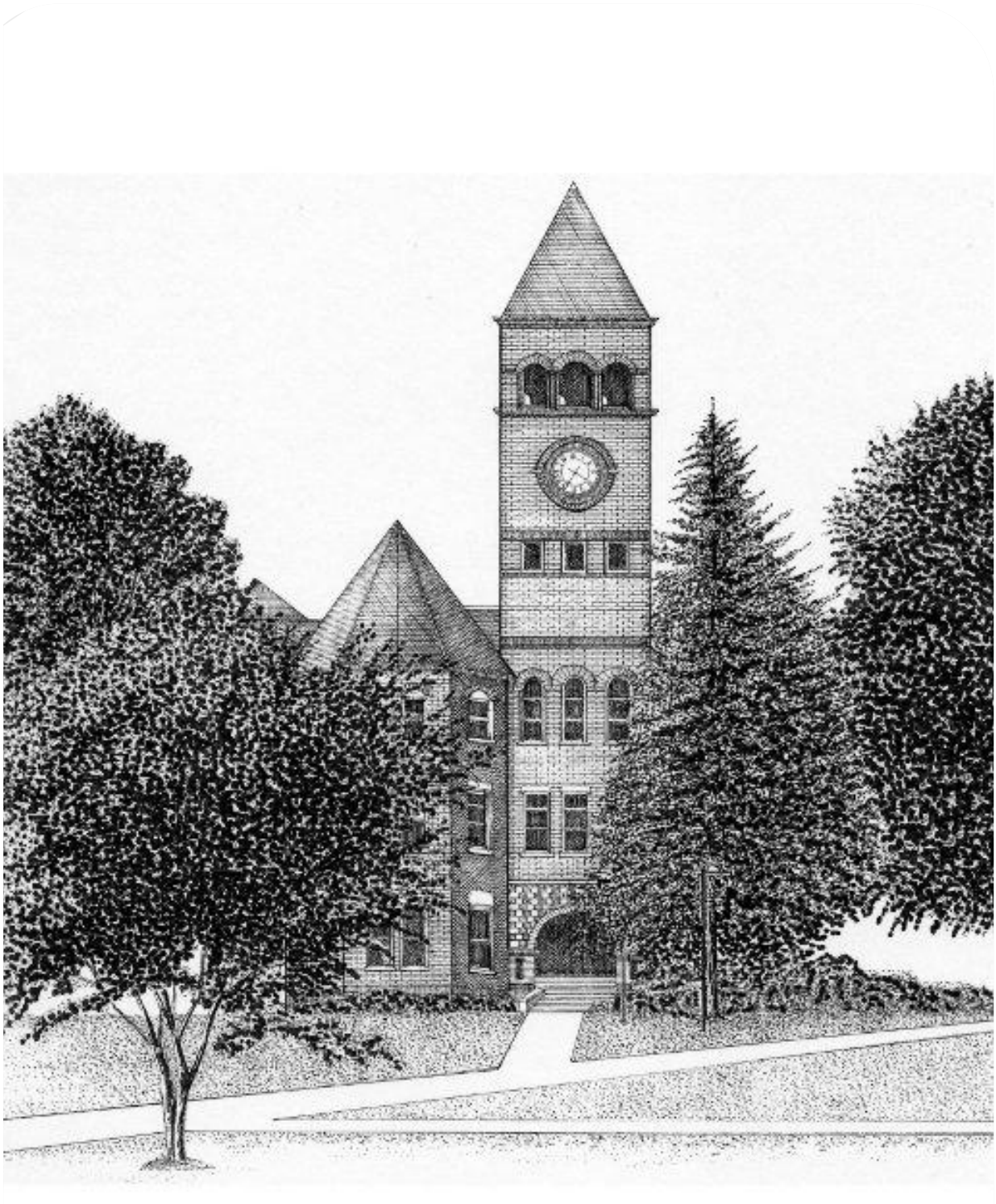
The number and proportion of older adults is rising rapidly as advances in modern medicine extend life expectancy. By 2034, adults over the age of 65 will outnumber those under 18 for the first time in U.S. history. Increased longevity is also associated with higher rates of age-related chronic conditions such as heart disease, cancer, and dementia, with many older adults managing multiple comorbidities that require frequent interaction with healthcare systems. As a result, healthcare professionals across disciplines will increasingly serve older patients. Because future healthcare workers will typically by younger than their patients, it is essential they are prepared to recognize ageist language and communicate in intergenerational contexts. Despite this need, undergraduate students in the College of Health Professions at Slippery Rock University previously had limited opportunities to develop intergenerational communication skills early in their academic training. To address this gap, we developed the Cultivating Opportunities for New Engagement, Communication, and Teamwork between First-Year Students and Community-Dwelling Older Adults (CONNECT) Program. Implemented within two FYRST Seminar classrooms during Fall 2025, CONNECT was designed to provide structured, faculty-facilitated intergenerational engagement. The CONNECT Program educated first-year students on ageism, intergenerational communication, engagement strategies, teamwork, and professional responsibility. Students were paired with community-dwelling older adults and participated in two in-person meetings and biweekly phone calls across the semester. Participants included first-year College of Health Professions students majoring in Exercise Science and Recreational Therapy, along with community-dwelling older adults. Students completed pre- and post-assessments measuring ageism and submitted reflective feedback. This session emphasizes lessons learned and practical considerations for others interested in implementing intergenerational or service-learning programs. By the end of the session, attendees will be able to: (1) evaluate the relevance of intergenerational communication within their discipline, and (2) identify common barriers to implementing intergenerational programs and strategies to overcome them.

Significance of Work:

The CONNECT Program sits at the intersection of teaching, scholarship, and service, highlighting its substantial impact on student success and faculty scholarly growth. From a teaching perspective, the program is embedded within the classroom, where students develop knowledge, skills, and abilities that can be applied to future coursework, graduate programs, and professional settings. Students also earned a micro-credential, as they were certified in "Ageism First Aid" by the Gerontological Society of America. In terms of scholarship, IRB approval was obtained to examine pre- and post-assessment data. Finally, community members had the opportunity to interact with students who were new to the SRU area, helping them feel welcomed, while students simultaneously created opportunities for meaningful social connection with older adults.

Student Involvement

In the Spring 2026 semester we hired 2 undergraduate students (1 Exercise Science and 1 Recreational Therapy) to assist in the data analysis. As this service-learning program occurred in our Fall 2025 FYRST Seminar Classrooms these 2 students were also the student FYRST Seminar Peer Leaders in our Respective sections.



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