Talks & Performances Abstracts

Name	Major	Faculty Advisor & Program/Course	Title	Abstract
Gabriel Agnew	Mathematics	Dr. Ilya Shapirovsky	On Locally Finite Modal Algebras	We study local finiteness for modal K4 algebras via the tunability of their dual general frames. In particular, we provide a sufficient condition for modal K4 algebras to be locally finite by identifying a structure which must be present in non-locally finite modal K4 algebras. We then show that this condition becomes both necessary and sufficient in complete modal K4 algebras. Next, we translate this condition into a pair of order-theoretic conditions on transitive Kripke frames, providing a classification of local finiteness on their dual modal algebras. This classification allows us to show that the logic of any class of well-founded transitive relations with no infinite antichains has the finite model property, and conclude that the logic of the class of well-quasi orderings has the finite model property.
Ema Alvarez	Animal Science	Dr. Ryan Ashley ACES Undergraduate Research Scholars and LEADING	Effects of Modulating CXCL12 Signaling on Inflammatory Cytokines During Gestation in Sheep	The placenta is essential for fetal development and maternal health, and impaired placental function can reduce livestock productivity and reproductive efficiency. Cytokines help maintain the inflammatory balance required for successful implantation and placentation. Disruptions in cytokine signaling contribute to complications such as implantation failure, recurrent pregnancy loss, and placental insufficiency. The CXCL12/CXCR4 chemokine axis regulates immune cell recruitment and cytokine signaling, but its role during early pregnancy remains unclear. This study investigated whether manipulating CXCL12/CXCR4 signaling at the fetal maternal interface alters inflammatory responses locally and systemically. Ewes received intrauterine treatments via osmotic pumps from day 12 of gestation: saline control, a CXCR4 inhibitor, and a CXCR4 activator. Cytokine gene expression was measured in placental and spleen tissues using qPCR. These findings suggest that targeted manipulation of the CXCL12/CXCR4 axis alters cytokine expression and may influence implantation in livestock.
Elijah Arenas	Communication Studies; Spanish; Sociology minor	Prof. John Dickinson	Changes in perception after enlightenment	Beginning as a qualitative, ethnographic research study, this project has transformed into an artistic installation. The inspiration for this exhibit took place while I was studying in and traveling around India in the Fall of 2025. While in India, I studied Hinduism and Buddhism, with particular emphasis on how perspectives shape quality of life. This installation probes at two primary questions: How do consciousness altering rituals impact interactions with art? Does the content of the mind change due to "enlightenment"? The medium will be a visual art installation utilizing sound, ready-made items, and curated room layouts. The goals of this exhibit are to raise questions regarding the nature of “enlightenment”, and its worthiness as a state to pursue. I intend to give a talk on the development and modification of my creative project over the course of my time in India.

Paula Bejarano Vega	Aerospace Engineering	Prof. Marieka Brown	Listening to music is more than just listening	In the modern world, music consumption has changed significantly. The rise of streaming platforms and constant exposure on social media have made music more accessible than ever, making it present in almost every moment of daily life. In many cases, music becomes background sound that fills the silence in social media trends, public spaces, or everyday activities. This research contributes to discussions in music psychology and media studies by examining how modern listening habits shape the way people experience music. Drawing on studies from neuroscience and the psychology of music, this paper explores how music affects emotional responses, behavior, and brain activity. The findings suggest that music involves much more than passive listening, as it can influence cognitive processes and brain health. Understanding these effects invites us to reflect on the role that music plays in modern society and encourages a more conscious relationship with what we listen to.
Samantha Brazil	Microbiology and Biology	Dr. Jennifer Curtiss U-RISE	Determining the role of the small GTPase Rap1 in morphogenesis during *Drosophila melanogaster* eye development	During morphogenesis, cells, tissues, and organisms develop their particular shapes, which are essential for proper function. An example is frog development, with the embryo transitioning from spherical egg to elongated tadpole. In epithelial tissues, morphogenesis is driven by E-cadherin-based cell adhesion and actomyosin contraction. *Drosophila melanogaster* is a traditional model system to study morphogenesis. Their compound eyes exhibit a precise pattern of cell shapes that enable proper function, providing insight into how morphogenetic processes are regulated. The small GTPase Rap1 is a molecular switch and is involved in signaling pathways related to cell adhesion and actomyosin contractility. We have knocked down the expression of Rap1 in specific cell types in the *Drosophila* eye, which leads to a rough eye phenotype. We are performing dissections to determine which cell types are being affected. We plan to perform a genetic screen to identify which genes involved in morphogenesis are interacting with Rap1.
Jacarthie Kim Brazil	Chemistry	Dr. Catherine E. Brewer U-RISE	The Mosquito Repellent Properties of Hedge Apples	The use of effective repellents is a reliable method to protect the public from contracting vector-borne diseases. Currently, there is a growing interest in bio-based repellents. Hedge apple (*Maclura pomifera*) fruits have been used as a traditional pest repellent; people typically placed them in outdoor spaces around the home. [HL1.1]The goal of this project was to collect quantitative data on hedge apple's effectiveness against mosquitoes. Using a Taxis Cage assay, the behavior of 25 female yellow fever mosquitos (*Aedes aegypti*) was observed in the presence of a human volunteer and a sample of hedge apple fruit. The fruit's volatile compounds were collected and chemically characterized using headspace gas chromatography-mass spectrometry (HS-GC-MS). Fresh, cut fruit significantly reduced mosquito attraction compared to the control and the other treatments. Chemical characterization of the volatiles is anticipated to identify certain compounds that can be synthesized and formulated into novel repellents.
Esai Cisneros	Genetics & Biotechnology	Dr. Elba Serrano U-RISE	Quantifying Membrane Elasticity in Cancerous and Healthy Glial Cells	Biophysical properties of cells, including membrane elasticity, regulate proliferation, migration, and disease progression, and evidence suggests that tumor microenvironment stiffness influences glioma behavior and cell fate. Reported Young's modulus (YM) values for live glial cells vary widely in the literature, making it unclear whether mechanical

				differences reliably distinguish noncancerous astrocytes from glioma cells. To address this question, I established a standardized biological atomic force microscopy (Bio-AFM) pipeline to measure membrane elasticity in CTX-TNA2 astrocytes and F98 glioma cells. Using a Bruker NanoWizard® 4 XP Bio-AFM, 8 × 8 force maps were collected over 2.5 μm × 2.5 μm regions of the cell body. Findings indicate that F98 glioma cells are mechanically softer on average than CTX-TNA2 astrocytes. These results represent a step toward a reproducible framework for quantifying glial cell mechanics and provide evidence in support of membrane elasticity as an emerging biophysical marker of the glioma disease state.
Jade Collins	Computer Science and Biology	Dr. Donovan Bailey Discovery Scholars	Investigating the evolutionary history of mimosine production in mimosoid legumes	Mimosine is an amino acid-like molecule produced by plants in the mimosine clade of the legumes. These plants are important due to their geographic range, ecological and agricultural significance, and scientific contributions. They are significant as a model for genetic studies due to their multiple whole genome duplications (WGDs). However, the evolution of mimosine production remains unclear. The objective of this project is to explore the evolutionary history of the genes involved in mimosine production and degradation by collecting relevant genomes, determining orthologous gene groups, and analysing the evolutionary history for the species and gene trees through the lens of gene duplications. The progress to date includes the collection of 14 mimosoid genomes, 2 outgroups, and 7 reference sequences known to be involved in mimosine production/degradation. The preliminary results from an orthofinder analysis identify gene family expansions in the mimosine-producing plants for all three reference sequence ortholog groups.
Laisha Ruby Corona	Biology	Dr. Paulette Vincent-Ruz McNair Scholars Program	Mentorship experiences from first generation undergraduates	Mentorship is a critical factor in supporting student persistence in STEM, yet first-generation college students often face unique challenges in accessing guidance and resources. This study, conducted under the guidance of Dr. Katy Hosbeline and Dr. Vincent Ruz, examines how first-generation students at a Yucca State Institution and Carnation State Institute experience mentorship and leverage it for academic success. Using Yosso's Community Cultural Wealth framework (Yosso, 2005), we conducted interviews with first-generation STEM students to identify who they consider mentors and how these relationships provide familial, social, and navigational support. At Yucca inst., students frequently identified parents as mentors, highlightingthe role of familial capital in providing emotional encouragement even without direct knowledge of higher education. Students also described professors and university mentors as sources of navigational capital, assisting in course selection and major decisions. At carnation in St., students reported strong social and navigational capital, identifying mentors within their fields who offered guidance on professional development and integration into the academic community. Across both institutions, mentorship extended beyond academic advice, shaping students' confidence, sense of belonging, and decisions to persist in STEM. By highlighting the perspectives of first-generation students, this study emphasizes the importance of both family and professional mentors and

				provides actionable insights for programs aiming to improve STEM retention and support pathways in higher education.
Andrea Mariana Cruz	Psychology	Dr. Dominic Simon U-RISE	Learning Japanese – English Words Pairs	Language learners often have to acquire new vocabulary but rarely get instructions about how to do so. In this study participants will learn 48 Japanese nouns. In study each Japanese word will be paired with a) its English equivalent, or b) a picture depicting the noun. In addition, words will be presented once or twice, and the second presentation of twice-presented words will be either close (1 item between) or far (8 items between); also, twice presented pictures will be either the same, or different from one another. After initial study, a distractor period will occur (10 mins) followed by a test in which Japanese words will be presented, and participants will type their English Equivalents. Consistent with earlier findings, we anticipated that recall of the English equivalents will be affected by the manipulated variables. Results may assist in suggesting ways for students to learn new foreign vocabulary.
Emerald Davis	Mechanical-Aerospace Engineering	Dr. Shabnam Mohammadshahi URS	Fabrication, Characterization, and Optimization of Microtextured Superhydrophobic Surfaces	This project aims to investigate the effects of microtextured surface geometry and nanoparticle-based hydrophobic coatings on the water-repellent and anti-icing performance of superhydrophobic surfaces. By systematically varying microstructure dimensions and applying low-surface-energy coatings, the study seeks to optimize surface design for reduced ice adhesion. The objective is to advance the understanding of how hierarchical roughness and surface energy modification contribute to ice-phobic behavior, with potential applications in aerospace environments where passive anti-icing strategies are critical for operational safety and efficiency.
Esha Desai	Kinesiology	Dr. Kimberly Oliver	"I'm forever changed": Women Supporting Women in STEM	This presentation reflects my experience being an undergraduate consultant to a doctoral student in Educational Leadership whose doing her PhD research with Dr. Oliver. This research examines women's experiences in graduate Mathematics and uses an Activist Approach (Oliver & Kirk, 2015) to create supportive spaces for women in a male dominated field. My role, as an undergraduate consultant allows me to participate in collaborative research meetings and pedagogy seminars while contributing to creating a community of learners. Through this experience, I have developed more intentional academic and non-academic habits to further my own education. Interacting with participants has allowed me to start developing an understanding of the importance of community and how it can foster positivity and resilience in people. This experience highlights the importance of community, a sense of belonging, and promotes intervention to support women in male dominated fields.
Flavia Gabaldón Asúnsolo	Animal Science	Dr. Ryan Ashley ACES Undergraduate Research Scholar Program	Effects of Treated Produced Water on Parental Generation Mice	Treated produced water (TPW), a by-product of oil and gas extraction, is considered a potential alternative water source in arid agricultural regions. However, its biological safety remains poorly understood. This study evaluates the effects of two treated produced water types (TPW-1 and TPW-2) on the parental generation of mice. Animals were assigned to three treatment groups: control water (reverse osmosis water without remineralization), TPW-1, or TPW-2. Daily water consumption and

				body weight were monitored to assess physiological responses over time. At necropsy, tissues were collected and processed for molecular analysis. RNA was isolated, quantified, and purified for gene expression studies. Preliminary results show no significant differences in body or organ weights among groups. However, early reproductive indicators, including conception rates, suggest possible differences between treatments. Ongoing analyses of pregnancy outcomes, litter characteristics, and gene expression will evaluate reproductive and physiological effects of TPW exposure.
Julian Gallegos	Geography & Environmental Studies	Dr. Christopher Brown	Project Jupiter: Water, Energy, and Regional Planning	Project Jupiter is a live environmental planning case in southern Dona Ana County near Santa Teresa. Where Oracle says it will operate an AI data-center campus for OpenAI. This project asks: if project Jupiter proceeds, under what water, energy, and governance conditions could it be regionally defensible in a hot, water-stressed border region? Using a case-study model, we analyze public documents, permit materials, county actions, project messaging, and comparative desert-region cases. We focus on three planning lenses: water claims tied to closed-loop cooling and long-term accountability; energy claims tied to the behind-the-meter natural-gas-microgrids, permits, and emissions; and regional/community impacts tied to jobs, incentive, burden-sharing, and contested public process. We argue that Project Jupiter should be judged not only by promised investment, but by whether its environmental and civic commitment are clear, measurable, and enforceable over time.
Estel Galo	Mechanical & Aerospace Engineering	Dr. Francisco Torres Herrador	Study of Pyrolysis Gases Through Carbon Fiber Felts	During atmospheric reentry, space vehicles need a Thermal Protection System (TPS) to withstand the extreme aerothermal environment. Designing TPS for these extreme environments requires a deep understanding of internal gas generation and heat management. This study investigates the pyrolysis behavior of a multi-material cylindrical model under plasma wind tunnel conditions. The assembly consists of a TACOT core, which undergoes active decomposition, encased in a Carbon Fiber Preform (CFP) layer. Simulations were performed using the Porous-material Analysis Toolbox (PATO) within OpenFOAM, coupling heat transfer, material degradation, and gas transport. Post-processing in ParaView enabled detailed visualization of temperature gradients and the specific gas-flow pathways through the porous CFP shell. The results clarify how internal gases migrate through multi-layered porous structures under intense heating. By refining the accuracy of predictive models for ablative systems, this research supports the development of robust TPS architectures for high-speed atmospheric entry.
Evan King	Genetics & Biotechnology	Dr. Brook Milligan	Relative Guanine/Cytosine content of species from the insect order *Hymenoptera*, and its implications for environmental DNA monitoring of insect pollinators	Environmental DNA (eDNA) barcoding of samples collected from flowers has recently been proven as a feasible method to monitor insect pollinators of conservation concern. However, detection rates vary by taxa. The order Hymenoptera, which contains vital pollinators like bees and wasps, is not often detected, even with confirmed flower visitation. There is speculation that this is due to DNA degradation in the environment, possibly hastened by a low ratio of guanine/cytosine base pairs (GC content) in the genomes of Hymenoptera. However, previous studies of GC content have focused on few genera, and initial results

				suggest substantial variation within taxa. Using the National Center for Biotechnology Information genome database, we describe the GC content of the diverse taxa within Hymenoptera and compare that with taxa of insects that are more frequently detected with eDNA. We also discuss the possible implications of these findings regarding improving eDNA detection of insect pollinators.
Diego Langevin	Math	Dr. Andre Kornell Research Training Group in Logic and Its Applications	Regular Quantum Graphs in M3(C)	Co-Authors: Remi Salinas, Gabriel Agnew, and Trevor Jess Quantum graphs are an analog of classical vertex set, edge set graphs. Formally, they are subspaces of the vector space of complex nxn matrices that are closed under the operation of taking the conjugate transpose. They arise in error correction in quantum communication. We developed a notion of regularity of a quantum graph and proved a result concerning isomorphism of 3-regular quantum graphs.
Kaylin Lashley	Biochemistry / Biology	Dr. Paulette Vincent-Ruz	What do you wish you knew?	Retention in demanding STEM disciplines such as biochemistry remains a significant concern, particularly in underserved regions with high proportions of first-generation and non-native English speaking students. This honors capstone project investigates whether a structured video, from peers and faculty, intervention can influence students' perceptions of their academic experience and intention to remain in the biochemistry program. Students complete a survey at the beginning of the semester to assess demographics, baseline attitudes, sense of belonging, academic self-efficacy, career relevance, and commitment to the major. Following exposure to the video and completion of the semester, students complete a second survey to evaluate changes in these measures. By comparing pre- and post-semester responses, this study seeks to determine whether targeted academic messaging can serve as a practical and scalable retention strategy. Findings from this research aim to update program design and support initiatives, already in progress within the department, that strengthen persistence and resilience among biochemistry students in underserved educational contexts.
Miriam LeHouillier	Sociology	Dr. Stephanie Arnett Discovery Scholars Program	Understanding Women in STEM; A Research Proposal	In Spring 2026, I will begin work with Dr. Stephanie Arnett (Sociology) on her research about STEM environments. The main question posed in Dr. Arnett's research is why STEM students decide to stay in or leave their STEM majors? The specific areas I would like to focus on are discovering why women may be more likely to leave their STEM majors than men. Or is there a specific attitude or behavior upheld in the STEM field that is not conducive to an environment where students are encouraged to stay? I will be conducting a focus group on women in multiple STEM majors and will ask about their experiences in their majors. I will find my research subjects by contacting clubs or organizations specifically for women in STEM and asking whether they would like to participate in the study.
Anakat Lopez (with collaborators)	BFA Museum Conservation	Dr. Eowyn Kerr-Di Carlo	Preserving our Artistic Heritage: The conservation of Olive Rush's fresco The Cotton Industry and Farming	In 1934, Olive Rush, one of New Mexico's distinguished women artists, was commissioned through the government's Federal Art Project to create a fresco cycle for the entrance of Foster Hall on the "Agricultural Industries of Dona Ana County". Emphasizing regional plant and agricultural life, Rush drew technical inspiration from artists like Diego

				Rivera while basing her method in the medieval fresco tradition of Giotto at the Basilica of St. Francis in Assisi. Rush's frescoes in Foster Hall are a representation of our community, not only the NMSU community but the Mesilla Valley as a whole. However, their location at the building's entrance has exposed the delicately painted surfaces to sunlight, insects, animal nesting, and weathering, resulting in deterioration. Now over ninety years old, the frescoes are in need of care. This paper presents the Spring 2026 processes for the treatment and restoration of one wall, depicting The Cotton Industry and Farming.
Chianna Lopez	Government and Law & Society	Dr. Sabine Hirschauer	The Link Between Powerful Populist Parties and the Economy: A case study of the United States and France	This paper examines the rise of populist governments during the past 20 years through the case studies of the United States and France and the analysis of key economic events. This paper argues that when states show a high GDP index and a high unemployment rate, populist candidates will have more successful campaigns. By exploring the two governments' contextual conditions and their economic priorities, this paper will analyze the economic campaign promises made by populist leaders in the U.S. (Donald Trump) and France (Marie Le Pen and Jean-Luc Melenchon). This study argues that by examining campaign strategies in a multi-contextual way, through means of campaign and economic analysis, political scientists may be able to better understand the behaviors of voters, politicians, and the rise of populist leadership. Such analysis – exploring economic data and comparing these datapoints to the successful campaigns of populist candidates – will strengthen our understanding of these relationships.
Joshua Martinez	English	Jayden Presley	Always and Forever	My project is a creative writing piece that discusses the impact of loss on a persons life. I write about a husband who is living through the grief in the loss of his husband. While making an ordinary trip to the mall, a shooter enters the store, eventually taking the life of our male protagonists husband. After this loss, the anger, the depression, the barganing, the acceptance, is what pushes him through the plot of the story.
Ruben Morales Jr.	Justice, Political Philosophy, and Law & Sociology	Dr. Sabine Hirschauer	Responsibility Without Rescue: Community-Based Participatory Research, Legal Insecurity, and Ethical Accountability in Borderland Courtrooms	This research contributes to socio-legal and migration studies by examining how access to justice is produced within courtroom practices along the U.S.–Mexico border. Drawing on fieldwork conducted in the Paseo del Norte region (El Paso, Texas; Las Cruces, New Mexico; and Ciudad Juárez, Mexico), the study asks how legal rights are translated and enacted within immigration and criminal proceedings. Using ethnographic courtroom observation, interviews with community advocates and legal actors, and a CBPR approach, the project analyzes how legal meaning emerges through interactions among judges, attorneys, defendants, and institutional procedures. Findings suggest legal rights don't operate automatically; rather, they must be actively argued into visibility within courtrooms structured by unequal distributions of legal knowledge, power, and narrative authority. The study also reflects on the ethical implications of research in highly securitized environments and considers how participatory methods can reshape both the study of law and the production of legal knowledge.

Astrid Montanez	Psychology	Dr. Paulette Vincent-Ruz McNair Scholars Program	PRIDE: Supporting the science identity development of queer students	Queerness is more than sexuality or gender; it's an intrinsic identity that interacts with every facet of life. This research aims to understand the identity, border crossing, or intersectionality of queer students regarding their STEM identities. Using photo-elicitation methodology and focus group interviews, we aim to examine attitudes toward STEM fields among current and former queer STEM majors. Participants were asked to produce a photo or drawing representing a time they felt welcomed and unwelcome in their current or former major, alongside a short-written description of what is being expressed in the provided photos. We designed the focus groups to contain two different phases. First, students were asked general questions about their majors and identities, allowing for open discussion between questions. Researchers shared personal anecdotes to build rapport with participants and encourage open communication. The last section of the focus group focused on an open discussion of the photos collected in a prior step.
Vee Prochaska	Digital Filmmaking	Joshua Ball	Song for a Sinking Town	This creative nonfiction piece shares my emotional connection with an abandoned supermarket in Missouri. The store went under due to health violations and a roof leak that went without repair, contaminating the food, and when the building was closed the remaining groceries were left inside to rot for months until the city cleaned it up. 'Song for a Sinking Town' deals with themes of longing, loneliness, intimacy, and suicidal ideation, exploring four times I've been to visit this building and how each visit impacted me. I want the audience to feel the brick wall under their hand and hear the building's story the way I did.
Ciara Reneé Quezada	Project & Supply Chain Management & Information Systems	Dr. Arturo Cano Bejar	Understanding Individual Factors and Their Relation to Types of Adoption of AI Type of Study: Directed Study	Over the years, we have witnessed technology expand and grow in many ways especially Artificial Intelligence. Understanding the individual factors that determine the use of AI is important when it comes to its consequences and not just solely by the technology itself. Individual factors include emotions, personality, skills, perception and more. We can classify these factors as the 4 S's: Situational assessment such as a sense of control, Support assessment to feel more confident with others and regulations, Self-related factors like internal resources and personal characteristics, and Strategies to manage AI (Griffin & Gilbert, 2015) . We will utilize a survey design to have a better understanding of the factors mentioned above. We expect to find that the type of use of AI will depend on the individual understanding and their input. Learning about the individual factors is important because it allows us to have better policies that guide individuals in their use of AI.

Gabriel Revalee	Computer Science	Christine Snyder	Natural Resource History, Management, and Experience in Laguna Pueblo	19th-century anthropologist, E.B. Tylor defined culture as "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society". The identity formed through the coalescing of these cultural elements, while unique to each of us, is deeply rooted in the communities from which we originate. Utilizing the ethnographic method of participant-observation, my research focused on how one Laguna family related to natural water resources, and how those resources are managed by the Pueblo. By expanding my circle of sources, I learned about the system of water management and the historical transformation of land use, in relation to the personal experience of the Laguna family; as well as learning to reflect on my own culturally-influenced experience of the natural world.
Jesse Reyes	Biochemistry / Physics	Dr. Brian Gold U-RISE	Electronic Tuning of Strained Alkynes vis Sonogashira Coupling for Development of New Reactive Scaffolds	Click chemistry has enhanced molecular sciences through innovative synthetic strategies for various applications. The strain-promoted azide–alkyne cycloaddition (SPAAC) is a 1,3-dipolar cycloaddition between azides and strained cycloalkynes that proceeds without copper catalysis, enabling bioorthogonal reactions in living systems to probe and control biological processes. Development and optimization of reagents for SPAAC hinges on the balance between cyclooctyne stability and reactivity. Cyclooctynes such as 2-azabenzo-benzocyclooctyne (ABC) and oxa-azabenzo-benzocyclooctyne (O-ABC) simultaneously harness both strain and electronic activation, highlighting the advantages of integrating design strategies.1,2 We seek to design and optimize cycloalkyne reagents by fine-tuning electronics within the strained cyclic framework. Synthetic strategies include Sonogashira cross-coupling reactions and other approaches that enable systematic modification of alkyne electronics. Computational methods complement our syntheses by elucidating the effects of structural modifications on reactivity. Together, these approaches aim to guide the development of next generation cycloalkynes with potential applications in drug discovery, medicinal chemistry, chemical biology, and materials science.
Brianna Rios	Biochemistry	Dr. Brook Milligan	Monitoring bee communities or driving them extinct? Improvements to lethal traps may prevent bycatch of sensitive bumble bee queens	Bees provide crucial ecosystem services in natural and agricultural ecosystems and play a vital role in food security. Recent worldwide declines of bee populations have generated increased interest in monitoring and protecting sensitive species. Passive lethal traps are a commonly used tool to monitor bee populations and communities, and come in many forms. However, they have recently been criticized for collecting non-target insects at high rates, in particular queen bumble bees. In this study, we modified commercially available vane traps with inexpensive adapters to limit the capture of sensitive bumble bee queens. Our results indicate that existing traps can be customized to exclude large-bodied individuals, even excluding queen bumble bees but not workers in some trials. Simple modifications to commonly used passive traps may facilitate the continued use of this important monitoring tool while also minimizing harm to bumble bee populations.

Kayden Robey	Biology and Microbiology	Dr. Hansen & Hailey Luker URS	From Pokes to Protein: How *Aedes aegypti* RPLP2 Reacts to Stress and Damage	*Aedes aegypti*, the yellow fever mosquito, is a major vector of dengue, yellow fever, and chikungunya. Ae. aegypti relies on ribosome-driven protein synthesis after blood meals to support egg production. This project investigates the functional role of the ribosomal P-stalk protein RPLP2. In a preliminary RNAi-mediated knockdown of RPLP2, we unexpectedly found significant upregulation of RPLP2 expression 72 hours post-injection. We hypothesized that injecting 1 µl of dsRNA solution triggers immune response and RPLP2 overexpression. To test this, RPLP2 expression was examined under four conditions: (1) uninjected, ice-anesthetized control, (2) sterile APS injection, (3) sterile needle puncture, and (4) bacterial-contaminated needle puncture. RNA was collected at 24 and 72 hours post-treatment and analyzed by qPCR. While no changes occurred at 24 hours, by 72 hours puncture injury increased RPLP2 expression about fourfold. These results suggest RPLP2 plays a role in cellular injury-responses in mosquitoes.
Caden Saiza & Angel Carrillo	Computer Science	Dr. Ayman Alzaid	Brain Blobber	Livestreamed talk: demonstration of trivia game or pygame.
Ulises E. Salas Muro	Physics	Dr. David Ruth	Modeling Energy Deposition in a Layered D3 System with EGSnrc	This project develops a Monte Carlo simulation workflow using EGSnrc to study energy deposition in layered materials relevant to D3 systems. Material interaction properties were defined using PEGS4, and voxel-based geometries were implemented in DOSXYZnrc. An initial 44-slice model with a thick aluminum entrance layer showed that an 11.5 MeV electron beam was fully stopped near the surface, preventing interaction with deeper layers. To address this, the geometry was modified by reducing the total thickness from ~22 cm to ~2 cm while preserving the layered structure and increasing spatial resolution. The updated model enabled full beam penetration, revealing scattering and energy deposition across all materials. Particle track visualization and dose analysis confirmed physically meaningful transport behavior. These results demonstrate that accurate simulation of layered systems requires careful matching of geometry and beam energy, and establish a validated framework for future studies involving frozen ammonia and neutron irradiation.
Lucas Samaniego	Electrical & Computer Engineering	Dr. Renteria-Pinon URS	Open-Source Software(OSS) for RRAM Circuit Design and Implementation	Modern integrated circuit (IC) design relies heavily on proprietary electronic design automation (EDA) tools, such as Cadence, which impose significant accessibility barriers for academic institutions and independent researchers. This study investigates whether an open-source software (OSS) design flow can provide a practical alternative for developing and fabricating ICs. The research focuses on establishing a Linux-based OSS environment capable of supporting the design and implementation of a resistive random-access memory (RRAM) array. Using ChipFoundry's open-source design flow, the project develops and configures the required toolchain, followed by schematic design, simulation, and physical layout of an RRAM array intended for fabrication through a multi-project wafer (MPW) process. The study evaluates the functionality, limitations, and usability of the OSS workflow for IC development. Preliminary results indicate that an OSS-based environment can support the complete design cycle,

				demonstrating potential for expanded research applications such as a planned project for undergraduate education in IC design.
Alex Segovia	English	Dr. Tracey Miller-Tomlinson	The Psychology of Hamlet: Representations of Insanity and Abnormal Behavior	In Shakespeare's "Hamlet," Hamlet exhibits several signs of insanity following the murder of his father, the taking of his throne, and the marriage of his mother to his uncle, Claudius. Hamlet displays insanity and does not fully comprehend the impact of his actions when he yells at Ophelia, kills Polonius, and flounders between the murder of Claudius. While Shakespeare's idea of psychological health was based mostly on the four humors, Hamlet's psychological health can be assessed through modern psychological findings. By using both the play itself and psychological journals, Hamlet's actions are analyzed through both a literary and psychological lens. Using both modern psychological research and an understanding of insanity and madness available to Shakespeare, this paper can evaluate Hamlet's actions.
Francis Silva	Conservation Ecology	Dr. Obed Hernandez-Gomez URS	Microbiome on the Skin of Chiricahua Leopard Frogs	Chiricahua leopard frogs (Lithobates chiricahuensis; CLF) are a vulnerable species of frog native to the southwestern United States and northern Mexico. They face many threats to their continued survival, including water pollution, habitat loss, and fungal disease. The fungus Batrachochytrium dendrobatidis (Bd) causes the skin disease chytridiomycosis in CLF, which is thought to be one of the major causes of their population's decline. A robust skin microbiome may improve survival rates of CLF in the presence of Bd, although it's currently unknown if captive breeding for reintroduction purposes negatively impacts CLF microbiomes. The knowledge generated in my study will be beneficial in identifying the effect of captivity on CLF skin microbiomes. Subsequently, these bacteria are being evaluated as potential probiotics in another laboratory project. Identifying the bacteria using genetic methods will provide us with the ability to grow the organisms more efficiently for further study.
Will Turner	English	Dr. Ryan Cull	Familiar silence	A poetry collection based in the feelings and emotions of a toxic relationship, 6-7 poems depicting both individuals and a relationship as a whole in which both parties are accepting the way things go and living with it regardless. Feelings are mutual no matter how harmful, like a sinking ship, the crew stays on anyways. They are not fighting to survive, just waiting in the graveyard they created for each other.
Andrés Uribe	Social Work; Political Science	Dr. Dulcinea Lara	Culturally and Linguistically Relevant Curriculum Inventory	In 2018, a class-action lawsuit (Martinez-Yazzie v. State of New Mexico) brought by marginalized New Mexico families found the state failed to provide a sufficient and uniform education. Through a historical exploration of education in New Mexico and collection of culturally and linguistically relevant curricula, this talk discusses an ongoing research project in the Borderlands and Ethnic Studies Department's Research Center to investigate ethnic studies as a remedy to the lawsuit. Drawing on personal experience as a native Las Crucen and student advocate, this talk explores how personal social identity shapes understandings of New Mexican education. Sharing preliminary findings, this talk will discuss the complex definitions of curriculum through examples and encourage listeners to imagine new ways of thinking about how we define

				curriculum - highlighting non-traditional curricula in New Mexico and how they can inform the future trajectory of education in the state.
Jonathon Valencia	Animal Science	Dr. Jennifer Hernandez Gifford U-RISE	The effect of repeated low-dose endotoxin injections on circulating steroid hormones in nulliparous Rambouillet ewes	Unprecedented declines in female fertility underscore challenges in reproductive biology across populations. Lipopolysaccharide (LPS), a component of the outer membrane of gram-negative bacteria, stimulates proinflammatory cytokine release and suppresses estradiol (E2) production; however, the persistence of these effects following repeated low-dose exposure remains unclear. This study evaluated the impact of multiple low-dose LPS injections on circulating E2 and progesterone (P4) across two estrous cycles. Fourteen Rambouillet ewes were stratified by body weight and assigned saline (CON; n = 4), 1.5 μg/kg LPS (LOW; n = 5), or 3.0 μg/kg LPS (HIGH; n = 5) on d 5, 10, and 15 of a synchronized cycle. Serum analyzed by radioimmunoassay indicated similar hormone concentrations among groups on d 0. By d 10, HIGH exhibited reduced P4 ($P < 0.05$), and LPS-treated ewes showed decreased E2 by d 16 ($P < 0.01$). Reduced E2 persisted into the second cycle, indicating sustained endocrine disruption.
Emma Varela	Fisheries and Wildlife Conservation Ecology	Dr. Martha Desmond McNair Scholars	Assessing the environmental effects of the growth of nestling Western Bluebirds at Los Alamos National Laboratory	Changes in environmental factors, such as land use and drought, have affected many forest songbirds, leading to population declines. Cavity-nesting, insectivorous birds like the Western Bluebird (Sialia mexicana) may be especially impacted due to potential reductions in vegetation complexity and changes in the abundance and composition of insect communities. To test the effect of habitat on diet and nestling fitness, nestling measurements (wing chord, tarsus, tail feather, and weight) and fecal samples were collected at 5, 12, and 18 days post-hatch (n = 193 nestlings). Ongoing analyses for this project include analyzing fecal samples using DNA metabarcoding, which will be used to assess differences in nestling diet across different habitat types. Understanding these relationships will help predict how bluebird populations respond to ongoing drought and changing habitats and improve our ability to manage habitat for the conservation of Western Bluebirds.