Poster Session #1 Presentations

2 – Oscar Robles
How do undergraduate STEM research programs prepare students for future university careers in research?
The purpose of my proposed study is to analyze how undergraduate Science, Technology, Engineering, and Math (STEM) research programs prepare students for future careers in university research. The topic is important because the growth in university research careers helps universities achieve or maintain a very high research activity status.

5 – Arianna Villegas
Thermal Simulations of Embedded Single-Board Computers within 3D Printed Parts for Satellite Applications
The encapsulation of circuitry in additively manufactured parts has been explored recently and given rise to questions regarding thermal profiles generated by electrical components inside 3D printed parts. Questions pertain to the amount of heat transfer between embedded components and 3D printed material while 1) molten material is extruded, and 2) while the part is functioning after being printed. A steady state thermal simulation was conducted for a Central Processing Unit and a Copper block.

7 – Jehu Apaflo
Hydration May Help Improve Insulin Sensitivity
Water intake is an essential recommendation for maintaining metabolic health. This study evaluates the association between hydration status and insulin resistance among a Mexican-American population where prevalence of pre-diabetes and diabetes is greater than national average. This study shows a significant association between hydration status and insulin sensitivity. Adequate fluid consumption should be encouraged for glycemic control, especially among people with high diabetes risks.

9 – Gabriel Narvaez
The Effect of Moderate to Vigorous Physical Activity on Cardiovascular and Metabolic Health
The American College of Sports Medicine recommends 150 minutes of moderate to vigorous physical activity (MVPA) per week to lower cardiovascular disease (CVD) risk. This study showed that time spent in MVPA is associated with lower adiposity (BMI, Android/gynoid fat ratio), CVD risk factors (Triglycerides, VLDL, HDL) and lower insulin secretion (insulin sensitivity) in a Hispanic dominant population. Increasing time spent in MVPA can be important in improving cardiovascular and metabolic health.

11 – Jessica Bray
Spontaneous Trait Inferences Influence Perceiver’s Behavioral Intentions
Spontaneous trait inferences (STIs) occur when traits are inferred from observing behavior. We tested whether STIs lead to differences in befriending and aggression. Participants saw trait-implying or neutral descriptions of targets. Then they reported whether they would befriend targets on social media and administered “shots of bad karma” between target pairings. Results showed support for STIs. Additionally, positive STIs led to more befriending and negative STIs led to more bad karma shots.

4 – Oscar Acosta
Performance Assessment of Distributed Energy Resources for Modeling Residential HVAC Loads
This research aims to analyze and compare the effectiveness of applying offshore wind energy against onshore wind energy to target the portion of the U.S. residential electricity load brought upon by air conditioning and heating elements (HVAC). This is done through developing aggregated turbine arrays across multiple climate regions within the continental U.S. using both recorded and estimated capacity factor data sourced from various government affiliated organizations.

6 – Lili Lozada
Low Income Community Perception on the Electrified Technology
This study seeks to advance vital knowledge regarding environmental and social justice impacts of the electrified technology including, electric vehicles (EVs), EV charging stations, and electrified roadways. Due to equity and inclusion concerns, the study was implemented in underserved communities (UCs) (low income and/or minority populations) in El Paso. The goal is to evaluate perceptions, knowledge, and concerns of UCs about electrified technologies and their access to it.

8 – Joshua Labadah
Neutrophil count is indicative of cardiovascular and metabolic health among healthy non-diabetic individuals
This study sought to determine the relevance of neutrophil count as a biomarker for cardio-metabolic health. Forty participants without diabetes participated. After 12-hr fast, biochemical and hematologic indexes were measured. Neutrophil count is positively correlated with resting heart rate, triglycerides, globulin, fasting insulin, HOMA-IR, and negatively correlated with albumin/globulin ratio, HDL. Neutrophil count is indicative of cardio-metabolic and a potential therapeutic target.

10 – Julio Barrera Moreno
Ciudad de Paso
I’m a Photographer, a writer, and an immigrant. I’m leaving in El Paso, far from those I love. Every day I go to the Segundo Barrio, near to the border, and I take a single photograph, with my Polaroid SX-70. Why? Maybe because this neighborhood reminds me my people and my country. Gradually, I’m doing a photographic diary and an essay, about What? About this city I live in, about the distance that separates me from those I love, and about the experience of living in a city of passing through.

12 – Michaela Castor, Nora Hernandez, Adriana Orozco
Assessing mental health and technology use in the time of COVID-19 among farmworkers in the U.S. - Mexico border
The COVID-19 pandemic has disproportionately impacted historically vulnerable populations (i.e., farmworkers). As part of a community-based participatory research project, we examined access and ability to use technology, attitudes and perceptions of technology, COVID-19 and mental health beliefs among farmworker males located in the U.S. - Mexico border. For this study, we utilized a qualitative research methodology which consisted of in-person interviews in Spanish with male farmworkers(n=10).
Poster Session #1 Presentations

13 – Daniel Gomez Bustos
Tandem photoredox catalysis of [Ir(ppy)2(dtb-bpy)]+: Identifying the co-catalyst by DFT
Photoredox catalysts are substances that convert light into chemical energy. In 2019, a tandem photo-redox catalytic cycle in which an iridium-based complex is involved was discovered. This process generated a previously unknown complex, which acts as a co-catalyst in the cycle. For it, we found a mismatch between the experimental and calculated redox potentials. Then we propose that the structure of the generated complex was misidentified, and we aim to find the correct structure with DFT.

14 – Kelvin Ofori-Minta
Progression-free survival of patients with prostate cancer under radiation therapy
Progression free Survival (PFS) - a period of tumor stability has seen increased interest as a substitute for overall survival (OS) endpoint, due to its ability to monitor situations where OS improvements by follow-up treatments were marginal. We study the effects of radiation therapy on PFS using several variables. We realized radiation therapy had a reduced but trivial effect on PFS among other findings. We further seek to ascertain the notion of Cox PH mode with screened medical indicators.

15 – Jorge Mayo
Setting up a Physically-Based distributed hydrologic model to predict Surface Soil Moisture and Evapotranspiration in the Jornada Experimental Range, Southwestern U.S.
In water-limited ecosystems, detailed knowledge of the soil, vegetation, and atmosphere interactions is critical to understanding the processes that control the partitioning of energy, water fluxes, and biogeochemical cycles within the critical zone. In this study, we propose the use of a physically-based distributed hydrological model to estimate soil moisture and evapotranspiration within the Jornada Experimental Range of the U.S. Department of Agriculture in southern New Mexico.

16 – Peter Girnt
Exploration and significance of metallacycle aromaticity in photoredox catalysts
Photo redox catalysts offer clean, green, solutions for energy intensive processes. Designing new photo redox transition metal catalysts is a difficult, multifactorial issue. Such a yet unexplored factor is the presence of an aromatic metallacycle in a state of the catalyst around the central transition metal. This would directly influence the energetics of the system and change the reduction potentials. Our results show that the existence of metallacycle has a large effect on the performance.

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https://tinyurl.com/bdhc7ead
1 – Claudia Chacon
What are the continuing education needs of fire officers?
Much is known about the continuing education needs of U.S. firefighters. However, little is known about the continuing education needs of U.S. fire officers. Therefore, the purpose of the proposed study is to explore the continuing education needs of U.S. fire officers in order to develop recommendations for a comprehensive program.

3 – Antonio Avila
Electric Power Transmission Grid Expansion Planning
Commercial electric vehicles (EVs) are the preeminent leading combatant for reducing CO2 emissions in the electrified-transportation sector. Consequently, mass transition into the commercial vehicle marketplace prompts additional strain and congestion to the EV-integrated power grids. This research aims to feasibly integrate commercial EVs to power grids and commercial businesses through an optimal centralized load shedding charging station response incorporating efficiency contingencies.

4 – Abigail Ortega
Rapid testing of ceramic paste formulations for 3D Printing
Advanced characterization is expensive and time-consuming, rapid testing is an alternative to provide rapid and comparable data to allow for testing material properties before use. Two tests are proposed, a drying rate test and a pressure test. These will demonstrate the drying kinetics and replicate the volumetric flow rate. They allow for the study of ceramic slurries viability without the use of advanced testing equipment saving time and resources to test variations of constituents.

5 – Nicholas Durand
Advanced Characterization of Barium Titanate (BTO) Paste for 3D Printing and Piezoelectric Applications using Rheological Methods
Additive Manufacturing has been utilized to produce ceramics with complex geometry for use as electrical insulation in high heat applications and piezoelectric sensors. Identification of ideal parameters can improve resolution of future iterations. To correlate data gathered from instrumented printers and determine key parameters for optimal printing conditions, rheometric tools have been used to evaluate certain variables and predict future viability of prints with a mathematical approach.

6 – Anamika Siddique, Christian Lozoya, Javier Martell
A Rapid Deployment, Modular CubeSat with On-orbit Hardware and Software Reconfiguration Capabilities
This research aims to improve the strategic capability of CubeSat technology. This advancement will enable experiments in space to be designed as a modular payload instead of a whole CubeSat. This modular CubeSat will fit together like building blocks, each payload will have its own objectives that must coincide with the 'Do No Harm' principle. It will be launched with the NanoRacks External CubeSat Deployer (ENRCSD) in 2024.

7 – Manuel Gomez
Effects of Eccentric Cycling Exercise on Blood Flow Patterns and Vascular Reactivity
Decrease blood flow due to atherosclerotic plaque formation produces mortality and morbidity. Vascular homeostasis depends in direct interaction between blood flow and endothelial cells known as ESS. ECC increases muscle performance without increasing metabolic demands. To determine effects of ECC in blood flow patterns and vascular reactivity. Significant increase on blood flow patterns and vascular reactivity on the upper extremity. ECC produces blood flow patterns that are intensity dependent.

8 – Hunter Turnipseed
Obesity Management Tools for Primary Care: An Implementation Evaluation
With limited number of clinical obesity specialists, primary care providers (PCPs) have the capacity to deliver effective obesity management. Evidence-based tools were developed to enhance obesity care. A qualitative evaluation was conducted to guide expanded program implementation. CFIR framework was used to identify barriers and facilitators with PCPs and patients regarding obesity management tools. These tools were well-received by the users, and suggested improvements are being addressed.

9 – Luis Menendez
Building the Revolution: How Students Constructed Nationalism in Latin America
My short essay deals with nationalism in Latin America during the mid 20th century. It presents two events, the 1965 student-led protests in Chile and the 1959 student-led march in Nicaragua as examples of student activism being responsible for a growth in nationalist attitudes after the neo-colonial period in Latin America. These student efforts led to the founding of revolutionary parties which would use armed resistance to further advance the nationalist movements happening in both countries.

10 – Elisa Floristán
Moroccan youth on the move to Europe. Resistance and social exclusion trajectories
Moroccan youth on the move to Europe are a group of mostly boys who escape from oppressive contexts by irregular migration to Europe without any adult companion. During the itinerary, the borders classify them as possible minors and possible economic migrants, unifying a diverse social group. This youth finds ways for moving using their age, their life stories and their diasporic network. While moving through this classifications and resistances, a collective subject emerges.

11 – Vianney Zuniga
Double tense marking by Advanced Second Language Learners of English
The present study examines the effects of oral corrective feedback on “double-tense marking” in past tense negative statements and wh-questions among advanced L2 English speakers. Some advanced L1 Spanish speaking English learners inflect the verbs in structures in which the auxiliary do is already inflected for the past tense as in: "I didn’t knew about chemistry" What did he knew? This study will determine if feedback can help advanced learners go beyond this stage of negation.
12 – Jagadish Paudel
Strategies for Promoting Social Justice in Multilingual Composition Classes in Higher Education Pedagogy: Policies, Practices, and Experiences
I examine and explore three distinct ways of enacting social justice for multilingual students in first-year writing classes at the undergraduate level in the US: 1. Through policies and artifacts; 2. Through pedagogical practices; and 3. Through students’ lived experiences in the first-year writing classrooms. In my dissertation, I use artifacts (policies, syllabi, assignment sheets, assessment criteria, etc.) analysis, interview questionnaire prompts, and life history as research tools.

13 – Rui Dong
Biochemical and Biophysical Characterization of a Putative Virophage Integrase
MV02 is a putative member of retrovirus integrase, produced by a virophage called Mavirus. Mavirus uses MV02 to insert its genome into the host, Cafeteria roenbergensis. To study its unique features, MV02 was expressed in bacteria and recombinant protein was purified. Biochemical and biophysical features of MV02 with and without DNA were examined by dynamic light scattering (DLS), size exclusion chromatography (SEC), circular dichroism (CD), and transmission electron microscope (TEM).

14 – Amanda Bataycan
Analysis of Single Nucleotide Variants on Patients with Leukemia.
The overall goal of the study is to identify and analyze the single nucleotide genomic variants found in patients with leukemia and conduct a comparison of the mutational profiles between patients with acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL). Additionally, we will look beyond the mutational data by including patient demographical and clinical details correlation on an individuals overall survival rates.

15 – Andrew Ucello
Arctic Plant Trait Responses to Long Term Mammal Exclusion
Small mammals are major herbivore consumers that exert significant bottom up and top down forces on arctic ecosystems. We explored the effect of over 50 years of small mammal herbivore exclusion on plants in the tundra outside of Utqiaġvik Alaska. Our results suggest that changing plant traits may be a response to a lack of herbivory allowing for a shift of energy expenditure away from defensive traits or a feedback from increased litter biomass in exclosure plots.

16 – Madison Woelfel
Paradox diapir inclusions as a window into diapiric processes in proximity to the Uncompahgre uplift and the early history of the Paradox Basin, Utah and Colorado
Inclusions of non-evaporite lithologies are common in salt diapirs, but little is known about their nature and origin. I aim to close this gap in knowledge by studying exceptionally well exposed inclusions in the Paradox Basin salt diapirs.

17 – Yohannes Getahun
NANO-ENGINEERED ORGANIC AND INORGANIC SOFT MAGNETS AND THEIR POTENTIAL APPLICATION IN WATER TREATMENT, BIOMEDICAL AND ENERGY
In this work, organic and inorganic magnetic nanostructured materials were developed using green simple coprecipitation and reduction at the supercritical condition of liquids. Then, characteristic properties and potential applications were investigated using advanced instrumental methods. An efficient water treatment agent with alternative recyclability was produced. We introduced a novel platform for nanoparticles used in hyperthermia. We also discovered room-temperature molecular magnets.

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Poster Session #3 Presentations

1 – Alisha Paudel
Short-term PV power generation forecasting using artificial intelligence approach
Increasing deployment of photovoltaic (PV) power generation, owing to its intermittent and output power variability nature, leads to the necessity of the development of accurate forecasting of PV power, which is an important asset for planning and operation of electric power systems. A reliable forecast helps in decision-making for energy generation and purchase. This research adopts the application of a neural network model for day-ahead solar PV power forecasting.

2 – Jason McCleary
Ceramic paste extrusion printer development
A ceramic paste extrusion printer was designed and developed by UTEP students, this includes CAD models, electrical systems, motion systems, firmware, and assembly of the printer. The reason for this development was to allow for the study of ceramic paste as it is being dispensed. The future work involves fitting the printer with a pressure sensor, CMOS camera, and 2D laser profile scanner for in-situ monitoring and development of a closed-loop system.

3 – Juan Pablo Garcia
Towards Automating Thermal Monitoring for Large Area Additive Manufacturing.
Additive manufacturing (AM) is maturing and establishing itself in industry because it is becoming more reliable. There are areas of additive manufacturing, though, where its potential remains untapped. Large Area Additive Manufacturing for polymers and composite materials is still largely unreliable but the possibilities for this new technology are endless. For one, since the extruded bead is large and compact, heat dissipation is slower than in any other kind of polymer extrusion.

4 – Samantha Gaytan
MMP-5 deficiency attenuates chemotherapy-induced cardiotoxicity
Doxorubicin (DOX) is a chemotherapeutic drug that is known to have a cytotoxic effect that results in myopathy and failure of the heart. We found that DOX produced a high mortality rate in wild type (WT) mice compared to MMP-5 deficient (KO) mice. Further, WT mice had a significantly lower heart weight, suggesting cardiac atrophy. Our findings suggest a potential role of MMP-5 in DOX-induced cardiotoxicity and may be a viable therapeutic strategy to prevent serious effects of chemotherapy.

5 – Jaime Perales
The Role of MAP Kinase Phosphatase-5 in Cardiac Adaptations to Endurance Exercise
Endurance exercise induces a beneficial effect on the cardiovascular system and promotes cardioprotection against heart disease. It has been established that the mitogen-activated protein kinases (MAPKs) promote the improvement of cardiac function in response to endurance exercise. However, molecular mechanisms of how MAPK signaling pathways regulate the cardiac adaptation remain to be unclear. Therefore, this investigation looks to identify mechanisms that improve endurance exercise capacity.

6 – Heather Vanderhoof
Simulated Pregnancy and Localized Fatigue Pilot Study
Pregnant women fall from loss of balance. The purpose was to quantify balance with simulated-pregnancy mass, pre & post-fatigue. Data from one female volunteer (23 yr, 1.62 m, 60.2 kg) were obtained (1000 Hz) and filtered (12.5 Hz). A repeated measures ANOVA was used to test statistical significance. Results found no significant difference between fatigue conditions in both limbs. But significance was found with increasing mass between single limbs post-fatigue.

7 – Sergio Rodriguez, Kyela Cosby, Brandon Vaughn, Nicole Klein
The Acute Effects of NMES on Pennation Angle and Vertical Jump Performance: A Pilot Study
Neuromuscular electrical stimulation (NMES) is used to induce involuntary contractions of skeletal muscle. Previous studies have explored the effects of long-term NMES training regimens on athletic performance including sprinting and jumping. The purpose of this study was to observe the association of vertical jump performance (VJ) and muscle architecture assessed via pennation angle (PA) with and without NMES at 2, 35 and 150 Hz.

8 – Augusto Rocha Ramírez
“The Mexican Revolution is Dead:” José Revueltas and the Left(s) during the Long Sixties
My research tries to answer the following question: how did the left(s) develop in Mexico City during the long 1960s? In doing so, the aim of my research is to examine the left, not as a coherent voice but rather as competing groups that had diverse understandings of both the role of social movements and of the actions of the state. In order to explore its general question, I examine the work of José Revueltas Sánchez from the mid-1950s to the late 1960s.

9 – Mohammad Rubaiyat Rahman
Judicial Deferece in the Inter-American Court of Human Rights: An Appraisal
The paper takes critical look at judicial deference in judgments and advisory opinions of the Inter-American Court of Human Rights (IACtHR) and evaluates the extent to which and under what conditions the judges at the IACtHR engage in forms of judicial deference. The analysis reveals whether the concept ‘judicial deference’ responds to exclusively Latin American reality and impacts interpretation of the IACtHR case decisions.

10 – Minerva Rodriguez
LONG TERM EFFECTS OF FLUOXETINE EXPOSURE ON AUTOPHAGY AND TAU PHOSPHORYLATION IN THE PREFRONTAL CORTEX AND HIPPOCAMPUS OF MALE MICE
The selective serotonin reuptake inhibitor (SSRI) fluoxetine (FLX) represents the current drug of choice for the management of pediatric mood-related illnesses. Of concern, accumulating preclinical evidence suggests that ontogenic SSRI exposure leads to depression-related phenotypes in adulthood. Depressive symptomatology constitutes a risk factor for other neurological disorders, such as Alzheimer’s disease (AD), and thus it is possible that juvenile FLX history may exacerbate the development
11 – Karen Valdez  
**Survey Of Fleas And Ticks For Rickettsia Rickettsii And Rickettsia Typhi And Surveys Of Wild Animals For Serological Evidence Of Infection By These Rickettsiae In Rural And Urban Areas Of El Paso, Texas And Other Areas Of Texas**

The ecology and epidemiology of Rocky Mountain Spotted fever and typhus fever pathogens are poorly understood along the United States-Mexico border. The objective of this dissertation was to understand the prevalence and distribution of Rickettsia rickettsii and Rickettsia typhi and associated tick and flea species and the prevalence of these Rickettsiae in domestic and feral mammals in urban and rural areas of the El Paso community and other areas of Texas.

12 – Angelica Chacon  
**Removal of nonylphenols from water using alginate-activated carbon beads**

Nonylphenols (NPs) are contaminants of emerging concern detected in all water systems. This study proposes the optimization ability of ecofriendly absorbent beads made from alginate and activated carbon aimed to remove NPs from water. A solventless extraction technique and thermal desorption gas chromatography with mass spectrometer were used for the analysis of NPs. The results show the ability of the alginate-activated carbon beads to successfully remove 100% NPs within one hour.

14 – Kaushik Pradhan  
**High Resolution Passive Seismic Imaging beneath Valles Caldera, New Mexico**

The Valles Caldera is one of the three Quaternary active supervolcanoes in North America. Although the other two supervolcanoes (Yellowstone and Long Valley Calderas) have garnered steady geophysical research attention over the years, Valles Caldera appears to have largely escaped scrutiny from a seismic perspective, and forays into any sort of tomography of the area date back almost 25 years. Beyond the significance of fundamental magmatic processes, it is prudent to constrain the modern state.

15 – Yeshey Seldon  
**Controlled-source seismic imaging of McMurdo Ice Shelf near Williams Airfield**

The McMurdo Ice Shelf is part of the Ross Ice Shelf, and ice shelf mass loss has been observed due to warming ocean conditions in the Ross Sea. During December 2021, the Thwaites Interdisciplinary Margin Evolution (TIME) project team collected a controlled-source seismic survey along an 1150-meter-long line near William’s Airfield on McMurdo Ice Shelf. We use Python ObsPy tools to visualize the seismic data and make observations about the data quality and wave propagation.

16 – Urbashi Basnet  
**Differential expression of stress-survival pathway genes related to Hispanic colorectal cancer disparities**

Colorectal cancer (CRC) is one of the most life-threatening cancers. It accounts for 11% and 9% of all cancer deaths in Hispanic men and women, respectively. Stress-survival pathways have been implicated in CRC tumorigenesis. Here, we have explored the role of stress-survival pathway genes in Hispanic and non-Hispanic White CRC tissues. The genes identified to be differentially expressed in Hispanic tissues maybe used as potential biomarkers or as therapeutic targets in Hispanic population.

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