

# UNDERGRADUATE RESEARCH & CREATIVE ARTS SYMPOSIUM 27th Anniversary

## Undergraduate Research & Creative Arts Symposium

April 29th, 2022

### Event Information

9:00am — 2:00pm MDT

Domenici Hall, Milton Hall

[honors.nmsu.edu/undergraduate-research/share\\_your\\_research/urcas/home.html](https://honors.nmsu.edu/undergraduate-research/share_your_research/urcas/home.html)

### CURCA Information

[honors.nmsu.edu/curca.html](https://honors.nmsu.edu/curca.html)

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Welcome to the NMSU Center for Undergraduate Research & Creative Activity!

We aim to get undergraduates involved in research and creative scholarship. Serving all NMSU students, the Center is a hub for connecting students with faculty mentors and opportunities, posting resources for student researchers, and organizing events to feature student and faculty research, art, and collaborations.

### Overview

The Undergraduate Research & Creative Arts Symposium (URCAS) is NMSU's showcase of undergraduate intellectual enterprises. Highlighting student research, artwork, performances, and more, URCAS is a great way to get experience presenting in your field. Thanks to the presenters for your hard work, faculty for your mentorship, and to attendees for your support!

### Schedule

8:30 — 9:30am	Breakfast and Mingling
8:45 — 8:50am	Welcome
9:00 — 10:00am	Session 1
10:00 — 11:00am	Session 2
11:00 — 12:00pm	Session 3
11:00 — 1:00pm	Poster Session
12:-00 — 1:00pm	Session 4
1:00 — 2:00pm	Session 5
3:00 — 4:30pm	Theatre Performance

Check in when you arrive in the Domenici Hall Atrium. Be sure to wear your nametag throughout the event. Refreshments will be available in the Atrium throughout the morning. Lunch will be provided at 11:30.

To be respectful to our presenters, please silence your phones and enter sessions between presentations.

### Program Guide

Paper Presentation Schedule	2
Poster Presentations	4
Pre-Recorded Presentations	7
URCAS After Hours Presentations	7



## UNDERGRADUATE RESEARCH & CREATIVE ARTS SYMPOSIUM 27th Anniversary

### Session 1 — Chemistry & Physics DOM 006

Fabiola Lujan, "Investigating the role of DNA-PKcs in R-loop abundance" ACES, advised by Dr. Amanda Ashley

Diana Grajeda, "Evaluating Inhibition of DUSP5 Using Enzyme Kinetics and Computational Modeling" Chemistry & Biochemistry, advised by Dr. Marat Talipov

Melissa Rivero Aria, "Temperature dependence of the direct band gap of InSb from 80 to 800 K" Physics, advised by Dr. Stefan Zollner

### Session 1 — Biology DOM 018

Ivan Sarabia, "Assessment of thioester-containing proteins (TEPs) within *Biomphalaria glabrata* granulocytes using *in situ* hybridization" Biology, advised by Dr. Maria Castillo

Brenda Esparza, "Flow Cytometry Alignment and Calibration Leads to Detection of Autofluorescence" Chemical Engineering, advised by Dr. Jessica Houston

Jesus Ayala, "A very stable virus: Relative thermal and temporal stability of dengue virus after evolution of resistance to ciprofloxacin" Biology, advised by Dr. Kathryn Hanley

### Session 1 — Engineering DOM 109

Huy Mai, "Effect of non-textile versus textile in NMC523 cathode material" Engineering, advised by Dr. Meng Zhou

Julia Bowden, Julissa Arteaga, "Autonomous Robotic Systems" Engineering, advised by Dr. Luis Rodolfo Garcia Carrillo & Dr. Hilda Cecilia Contreras Aguirre

Robert Armendariz, "Noisy Decoding for LDPC Codes with Radiation-Induced Errors" Engineering, advised by Dr. David Mitchell

### Session 1 — Education & Sociology Milton 169

Celeste Romero, "Advancing Latinx Aggies in STEAM through Mentoring" Education, advised by Dr. Hilda Cecilia Contreras Aguirre

Kelly Beym, "Examining Potential Inequities in the USDA Nutrition Programs Serving Indigenous Communities and Analyzing Opportunities for Change" Sociology, advised by Dr. Rebecca Campbell

Circe Harrison, "The Kids are Alright: Mutual Aid for Mutable Effects" Sociology, advised by Dr. Julie Steinkopf

### Session 2 — Chemistry & Physics DOM 006

Haley Woolf, "Optical and x-ray characterization of Ge-Sn alloys on GaAs" Physics, advised by Dr. Stefan Zollner

Jaden Love, "Optical constants of CaF<sub>2</sub> at 300K from 0.03 to 6.5 eV" Physics, advised by Dr. Stefan Zollner

### Session 2 — ACES DOM 018

Sarah Shank, "Precision of Age Estimates between Cleithra and Sagittal Otoliths for Northern Pike from a High Elevation Reservoir in Northern New Mexico" ACES, advised by Dr. Colleen Caldwell

Fisher Easley Smith, "Building The Foundation: Skills Desired By Undergraduate Students In Agricultural Communications Courses" ACES, advised by Dr. Shannon Norris

Phoebe Rychener, "Collecting Bovine Rumen Content and Rumen Fluid for Bacterial Separation and Acquisition of Knowledge" ACES, advised by Dr. Sergio Soto

### Session 2 — Bilingual Engineering DOM 109

Sara Hurd, "Hemp at New Mexico State University" Engineering, advised by Dr. Catherine Brewer

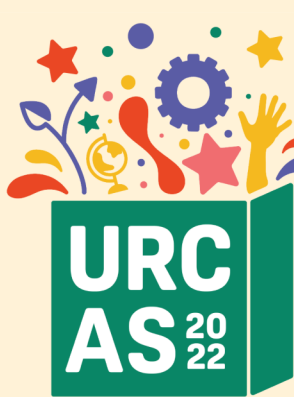
Karla Ortega-Sandoval, "Hemp at New Mexico State University" Engineering, advised by Dr. Catherine Brewer

### Session 2 — Government & Borders Milton 169

Skye Wootton, "The Indigenous communities of Bolivia and Guatemala" Government, advised by Dr. Neil Harvey

Ana Suarez, "Explaining what went wrong in Mauricio Macri's Government in Argentina (2015-19)" Government, advised by Dr. Neil Harvey

Brennan Ramsey, "International Relations Theory and Migration" Government, advised by Dr. Sabine Hirschauer



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### Session 3 — English DOM 018

Emily Radell, “Diversification in Publishing and a Response to a Lack of Transparency” Humanities, advised by Dr. Tracey Miller-Tomlinson

Katie Miller, “Survival is Insufficient”: An Examination of Shakespeare, Pandemics, and Cultural Perseverance in Emily St. John Mandel’s *Station Eleven*. Humanities, advised by Jeff Frawley, MFA

Christian Cramer, “Stages and Scripts: Theatricality in Milton’s *Paradise Lost*” Humanities, advised by Dr. Tracey Miller-Tomlinson

### Session 3 — Performance DOM 109

“Victor Ewald’s Quintet No. 1” Performance, advised by Dr. Michael Mapp

Kevin Vigil, tuba

Kali Ivy, trumpet

Tommy Yoder, trumpet

Serina Turrieta, horn

Juan Nuñez, trombone

### Session 3 — Government & Borders Milton 169

Isabella Nguyen, “Inequality gaps in Mexico and Brazil” Sociology, advised by Dr. Neil Harvey

Danielle Dowis, “How Covid is highlighting inequality in Mexico and Brazil” Political Science, advised by Dr. Neil Harvey

### Session 4 — First-Generation Representation in the Arts Panel DOM 018

Heidi Rodriguez & Nicole Aldaz, “Representation in three Films of Educational Achievement”

Advised by Eveline Vazquez and Dr. Phame Camarena

Alessa Ibanez, Ivonne Estrada, Leonella Vazquez Perez, Oscar Chavez, “Contemporary Representations of First-Gen Experience: Diversity and Justice”

Advised by Isaias Rogel & Dr. Phame Camarena

Antonio Garcia & Ashley Infante, “Hollywood and the First-Gen Experience: What is Taught and What is Missing”

Advised by Travis Juszkiewicz and Dr. Phame Camarena

### Session 4 — Performance DOM 109

Original Music Composition Concert, Performance

Advised by Dr. Lonnie Chaffin

Albert Yoshimoto “Small Steps”

Ethan Moore “Currents”

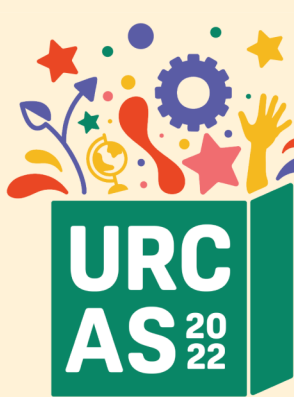
Nicholas Gallegos “Get Away”

### Session 5 — Biology DOM 018

Marcos Marmolejo, “The influence of global warming on melanized fungi” Biology, advised by Dr. Adriana Romero-Olivares

Andrea Perez,, Samantha Valentino, “Detecting NAD(P)H lifetime shifts in breast cancer cells with time-resolved flow-cytometry as a metabolic mapping study” Biology, advised by Dr. Jessica Houston

Carlo Martinez, “Optimization of a cell sorter to facilitate future fluorescent lifetime-based sorting” Biology, advised by Dr. Jessica Houston



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### Posters — DOM Atrium

#### ACES

Christopher Gomez, advised by Dr. Ivette Guzman

“Peak Photosynthesis in Onion Species”

Cristina Benitez, advised by Dr. F. Omar Holguin

“Antifungal Properties of Onions”

Emilee Montoya, advised by Dr. Ryan L. Ashley

“Determining if phytoene exposure increases DNA damage and decreases cell viability in melanoma cells”

Jilian Hughes, advised by Dr. Ryan L. Ashley

“Suppressing the CXCL12-CXCR4 chemokine axis at the fetal-maternal interface during implantation in altered expression of Inflammatory cytokines in ovine placenta at midgestation”

Julissa Barrera, advised by Dr. Sergio Martinez

“Making better ice-cream through hydrodynamic cavitation”

Kaihre Brightwater, advised by Dr. Soum Sanogo

“Evaluation of antagonistic activity of endophytic bacteria isolate ed from London Rocket against three agricultural pathogens”

Karina Tovar, advised by Dr. Nicole Pietrasiak

“How to turn lunar regolith into a plant growth promoting soil”

Kaitlin Marry, advised by Dr. April Ulery

“Monitoring lunar regolith leachate composition for nutrients and toxins affecting plants”

Lorena Rizo, advised by Dr. Omar Holguin

“Ozone effects on plants”

Mariah M. Leonard, advised by Dr. Ryan L. Ashley

“Suppressing the CXCL12-CXCR4 chemokine axis at the fetal-maternal interface during implantation alters expression of this axis in ovine placenta at mid and late gestation”

Mason Curtin, advised by Dr. Young Park, Dr. David Dubois, & Dr. Delia Valles-Rosales

“Internet of Things (IoT) Rain Gauge - USDA Group Project”

Mohammad Badawy, advised by Dr. Sergio Martinez

“Improving the Quality of High-Protein Ice Cream via Hydrodynamic Cavitation”

#### ACES (cont)

Samuel Orozco, advised by Dr. Omar Holguin

“Algal Metabolism of Cellulose”

#### Arts — Exhibitions

*INCOMPREHENSIBLE*, 2022 Spring BFA exhibition

Location: Mullennix Bridge Gallery, University Art Museum

Ruben Bustamante, Julianna Lerma, Bethany Roberts, Ivory Turner, advised by Professor Motoko Furuhashi

*Dichotomy*, Pre-BFA Exhibition

Location: Sarafino Student Collaboration Space, 2nd floor of the Devasthali Hall

Jessica Aldaz, Tessa Bond, Jasmine Gobeo, advised by Professor Motoko Furuhashi

#### Engineering

Abd Alrahman Elaksher, advised by Dr. Christopher Baker

“Developing a Rapid Prototyping Microfabrication Technology with Conventional Photolithography Techniques”

Alexander Acuna, advised by Dr. Paul Furth

“Optical Sensor for Visual Emergency Vehicle Detection”

Andrea Loya Lujan, advised by Dr. Catherine Brewer

“Heavy Metals Adsorption from Wastewater using Char Obtained from Hydrothermal Liquefaction Process”

Avery Torez, advised by Dr. Ehsan Dehghan-Niri

“Material Characterization of Polymer Additive Manufacturing FFF process using Ultrasound Time of Flight and Attenuation”

Corina Valenzuela, advised by Dr. Douglas Cortes

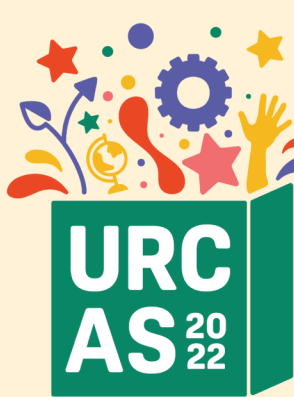
“Determination of Porosity of Lunar Regolith from Ultrasonic Velocity and Thermal Conductivity Measurements”

Dylan Allen, advised by Dr. Abdessattar Abdelkefi

“Continuation of Experimental and Numerical Investigations on the Asymmetry of Bolted Joint Cantilevered Beams”

Alejandra Cano, advised by Dr. Martha Mitchell

“Chemical and Physical Analysis of Enzyme-Induced Calcium Carbonate Precipitation (EICP) Cemented Sands”



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### Engineering (cont.)

Hunter Sedillo, advised by Dr. Abdessattar Abdelkefi

“Test Design and Scalability of the BARC Structure: Linear and Nonlinear Investigations”

Jesus Diaz, advised by Dr. Delia Valles-Rosales

“Characterizing the 3D printing of pecan shell composite filament ASTM specimens”

Jonah Madrid, advised by Dr. Abdessattar Abdelkefi

“Investigation on optimal accelerometer placement on the BARC structure”

Julia Bowden, advised by Dr. Luis Rodolfo Garcia Carrillo & Dr. Hilda Cecilia Contreras Aguirre

“Autonomous Robotic Systems”

Justice Armijo, advised by Dr. Catherine Brewer

“Hydrothermal Liquefaction of Guayule Resin and Bagasse”

Luis Corral Cano, advised by Dr. Abdessattar Abdelkefi

“Comparison of PLA and ABS Based Beams”

Micah Cheng-Guajardo, advised by Dr. Abdessattar Abdelkefi

“Investigations on the existence of multiple dynamic solutions of PLA-based beams”

Miguel Jaquez-Sagarnaga, advised by Dr. Delia J. Valles-Rosales

“Characterizing the 3D printing of pecan shell and PHA composite filament ASTM”

Nicolas Mendoza, advised by Dr. Mahdi Haghshenas-Jaryani

“Inflatable Soft Crawling Robot”

Randy Ferrell, advised by Dr. Douglas Cortes

“Geotechnical Low Gravity Lunar Regolith Simulant: Shear Strength”

Rodrigo Diaz, advised by Dr. Young Park and Dr. Valles-Rosales

“IoT Cold Chain Monitoring”

Stephen Simpko, advised by Dr. Andrea Gross

“Modal Analysis of Wake Passing Effect on Endwall Flow for High-Lift Low-Pressure Turbine Airfoil”

### HEST

Marin Kelly, Sophia Jaramillo, advised by Dr. Christopher Aiken

“OPTIMAL learning: Not all practice manipulations are equal”

### Museum Display

Rose Burns, advised by Sarah Thomson

“Display about New Mexico's permian era marine life to be displayed at the Las Cruces Museum of Nature and Science”

### Sciences: Biology

Ana Maldonado, advised by Dr. Patrick Trainor

“Relationship between D-Dimer Levels and Reporters of Fibrinolytic Activity in Acute Myocardial Infarction and Identification of Degradation Products Following MI”

Bethany Ruff, advised by Dr. Timothy Wright

“Preliminary data on how age affects vocal learning in budgerigars and showcase the extensive troubleshooting done with the IHC protocol”

Clarissa Nunez, advised by Dr. Charles B. Shuster

“Applying high-throughput analysis to understand cell proliferation under different adhesion conditions”

Daniel Montes, advised by Dr. Graciela A. Unquez

“Regeneration response by myogenic stem cells in tissues of electric fish following serial tail amputations”

Daniela Palacios, advised by Dr. Adrian Romero Olivares

“Growing Biomaterials”

Dat Doi, advised by Dr. Jessica Houston

“Instrumentational development of flow cytometry”

Elise Olivas, advised by Dr. Charles B. Shuster

“Recruitment of nonmuscle myosin II minifilaments into the forming contractile ring”

Henry Gatica-Gutierrez, advised by Dr. Elba Serrano

“Querying open access spaceflight data for changes in neural gene expression”

Ian Alvarado, advised by Dr. Jennifer Curtiss

“Clarifying the role of the CG46385 gene in *Drosophila melanogaster*”



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### Sciences: Biology (cont.)

Katalina Lopez, advised by Dr. Kevin Cheung

“Runx1 Inhibition of TGFβ1 & TGFβ1 Induced Cancer Cell Death”

Kathryn Overman, advised by Dr. Christopher S. Cramer

“Evaluation of mycelium inoculation methods for Fusarium basal rot development in onion”

Kayla Moehn, advised by Dr. Timothy Wright

“Immunohistochemistry to Study the Effects of Chronic Stress on Glucocorticoid and Mineralocorticoid Receptors in the Budgerigar Brain”

Megan Osiecki, advised by Dr. Jiannong Xu

“Transcriptional Response to Glucose Impulse in Malaria Mosquito *Anopheles Gambiae*”

Mustafa Muhyi, advised by Dr. Jessica P. Houston

“Immunophenotyping Panel done on Veri-cells using a Spectral Flow Cytometer”

Oscar Velasquez, advised by Dr. Graciela Unquez

“Robust regeneration of adult electric pulse fish and the formation of its electric organ from fast muscle fibers”

Rosalinda Corchado, advised by Dr. Elba Serrano

“Assessing Seed Germination for Altered Gravity Experiments”

Samantha Lucero & Samantha Valentino, advised by Dr. Jessica P. Houston

“Learning how flow cytometry is used for the measurement of cells and microspheres”

Sandy Arce, advised by Dr. Jennifer Curtiss

“Investigating Genes Linked to Stargardt Disease in Flies”

Taylor Landfair, advised by Dr. Charles B. Shuster

“Exploring the mechanical state of dividing cells with a two-color biosensor”

Theresa Lukitsch, advised by Dr. Teri Orr

“Morphology of the Bat Reproductive System”

### Sciences: Chemistry, Physics, Geology

Amber Rivera, advised by Dr. Nancy McMillan

“Comparing Lunar Regolith to Earth Rock Samples”

### Sciences: Chemistry, Physics, Geology (cont.)

Desiree Gutierrez, advised by Dr. Kevin Houston

“Insulin-Like-Growth-Factor Binding Protein 3 (IGFBP-3) May Lead to Drug Resistance in Breast Cancer Cells”

Gloria Sepulveda, Chemistry & Biochemistry. Advised by Dr. Amanda Ashley

“NEK4 negatively regulates cell proliferation in BT20 cells”

Isabella Shoffstall, advised by Dr. Kevin Houston

“Breast Cancer Poster”

Jacob DeVargas, advised by Dr. Amanda K. Ashley

“Opposing cellular phenotypes following NEK4 knockdown”

Nadia Samaniego, advised by Dr. Kevin Houston

“Insulin-Like Growth Factor Binding Protein-4 exerts differential effects on breast cancer cell proliferation based on the expression status of Pregnancy Associated Plasma Protein A”

Tania A Ibarra, advised by Dr. Kevin Houston

“Using Bioinformatics to Learn and Conduct RNA Sequencing Analysis on Breast Cancer Cell Lines Overexpressing IGFBP-3”

### Government

Madeline Carreon, advised by Dr. Mary Alice Scott & Dr. Ivan De La Rosa

“Perceptions of Screening for Social News in Primary Care”

Johanna Nelson, advised by Dr. Kathryn Olszowy

“Psychological and physiological stress among adult males and females in Vanuatu”

Skye Wootton, advised by Dr. Neil Harvey

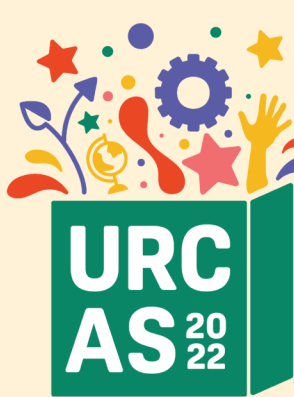
“The Indigenous communities of Bolivia and Guatemala”

### Sociology

Isabella Nguyen, advised by Dr. Neil Harvey

“Inequality gaps in Mexico and Brazil”





## UNDERGRADUATE RESEARCH & CREATIVE ARTS SYMPOSIUM 27th Anniversary

### Virtual & Pre-Recorded Posters

Lauren Stone, Sociology. Advised by Dr. Marlena Fraune

"Human robot interaction"

Taylor Tuono, Biology. Advised by Dr. Maria G. Castillo

"Assessment of growth rate and fecundity on two *Physella acuta* strains indigenous of New Mexico"

### Be sure to check out all of URCAS 2022!

#### Online

**BFA exhibit:** Visit our website for the full works of our BFA students.

**Pre-Recorded Presentations:** Visit our website for the virtual paper and poster presentations.

**2022 University Art Museum Juried Student Show:** Visit our website for all photos.

#### After Hours

"The Complete Works of William Shakespeare (Abridged) [Revised]"  
with Omar Moreno, Eliza Phillips, and Gus Sanchez.  
Directed by [Darcy Harman](#)

3:00 — 5:00pm

**Night on Broadway:** Join us at the Center for the Arts for a theatrical performance of movie magic!

4/29 7:30pm    4/30 2:00pm

**Indigenous Poetry Presentation:** Join [Lehua Taitano](#) and [Natalie Streander](#) for a presentation and short MFA reading in the Annex auditorium next to Clara Belle Williams.

5:30 — 7:00pm

**Night at Museums:** Look at the stars and listen to live music at the College of Arts & Sciences for its fundraising event at the University Museum and Art Museum! Proceeds benefit the Aggie Jumpstart Program. 7:00 — 9:00pm

### Virtual & Pre-Recorded Presentations

Daniel Ibanez, Biology. Advised by Dr. Teri J. Orr

"Urbanization and bat presence at bridges across the Rio Grande"

Jaclyn Rivas, Biochemistry. Advised by Dr. Shelley Lusetti & Dr. Lee Uranga

"The Biochemical Characterization of RecA and SSB proteins in *Helicobacter Pylori*"

Jessica Aldaz, Tessa Bond, Jasmine Gobeo, Art. Advised by Professor Motoko Furuhashi

"Dichotomy-collaborative artist talk"

### *Testimonios from the Borderlands: Pre-Recorded Presentations*

The students in HNRS 336V and GNDR 450/550 have created digital testimonios of their personal experience living on the borders of nations and cultures. Hear their powerful stories on our website.

All advised by Dr. Judith Flores Carmona

[Anonima](#), That Friday Night

[Anonymous](#), A Body Violated: A Mind Isolated: A Testimonio

[Anonymous](#), Finding Safety

[Anonymous](#), Finally on the Healing Path

[Belen Calderon](#), Mis Propios Pasos

[Flora Saenz](#), The Home of the Starving Artist: My Own Alebrije

[Heidi Rodriguez](#), College as a First-Gen Student

[Jazmin Hinojos](#), Finding My Strength and My/Self

[Judith Diaz](#), Para las Mujeres de mi Vida

[Memory Falcon](#), Torn Apart: Family Separation

[Michelle Zapata](#), La Jaula de Oro

[Rene Rodriguez](#), The Boy Who Lived