

**15TH ANNUAL
UNDERGRADUATE RESEARCH, CREATIVITY
AND INNOVATION FESTIVAL**



APRIL 11, 2023

OFFICIAL PROGRAM

The Undergraduate Research, Creativity and Innovation Festival

is brought to you by

ACU Undergraduate Research, Creativity and Innovation

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A Message from the Director:

Welcome to ACU's 15th annual Undergraduate Research, Creativity, and Innovation Festival. This conference celebrates some of the best of our students' work from ACU and beyond – work that requires intellectual curiosity, creativity, and critical thinking. Together we also honor the partnership between the student researchers and the faculty who mentor them. Many hours of hard work have gone into the preparation for this event, so many thanks to the URCI Festival Planning Committee. And finally, whether you are presenting your art or research, judging the entries, or simply learning about others' creative scholarship, we are so appreciative of your support for our Undergraduate Scholars. Enjoy the Festival!

Dr. Dan Morrison

Interim Faculty Director of Undergraduate Research, Creativity, and Innovation



**UNDERGRADUATE
SCHOLARS**

Festival Schedule Overview

8:00 – 3:00 PM Registration

Lobby of the Hunter Welcome Center

9:30 – 10:50 AM Oral Presentations

AHS1: Social and Natural Science – McCaleb Room Zone A

HUM1: Empires and Lore – McCaleb Room Zone B

STEM1: Medical Isotopes and Nuclear Reactors – AT&T Theater

SOCIAL1: Research in Communication and the Social Sciences – LYNAY Classroom

11:00 – 11:30 AM Chapel – LYNAY Classroom

11:30 – 1:00 PM Lunch is served

McCaleb Room Zone C

11:30 – 12:10 PM Poster Session I

Hunter Welcome Center Atrium

12:15 – 1:00 PM Poster Session II

Hunter Welcome Center Atrium

1:30 – 2:50 PM Oral Presentations

AHS2: Social Science and Humanities – McCaleb Room Zone A

HUM2: Pioneers and Transitional Figures – McCaleb Room Zone B

STEM2: Research in the Chemical Sciences – AT&T Theater

STEM3: Research in the Physical Sciences – LYNAY Classroom

3:00 – 4:20 PM Oral Presentations

STEM4: Research of Biological Phenomena – AT&T Theater

STEM5: Nuclear Reactor Research – McCaleb Room Zone A

4:30 – 6:00 PM Top Scholars Presentations

HUM3: Top Scholars in the Humanities – McCaleb Room Zone A

STEM6: Top Scholars in STEM 1 – McCaleb Room Zone B

STEM7: Top Scholars in STEM 2 – AT&T Theater

SOCIAL2: Top Scholars in the Social Sciences 1 – Biblical Studies Building 112

SOCIAL3: Top Scholars in the Social Sciences 2 – Biblical Studies Building 129

6:00 – 7:00 PM Awards Ceremony

McCaleb Room Zone C

Sessions

9:30 to 10:50

Abilene High 1: Social and Natural Science (McCaleb Room Zone A)

- AHS1 – *The Death of Community: An Analysis of the Widespread Impact of Collegiate Budget Cuts*
Ethan Dunn
- AHS2 – *What happened to PE? A Study that categorizes the disconnects in Physical Education*
Paul Nguyen
- AHS3 – *Clean energy not so clean? Protecting the environment from energy wind turbine oil leaks*
Jack Flores

Humanities 1: Empires and Lore (McCaleb Room Zone B)

- HM1 – *Guinevere: A Mirror for Culture and Society*
Langley Smith
- HM2 – *Morgan Le Fay: Villain or Heroine?*
Caitlin Martin
- HM3 – *The Everlasting Empire: Museum as Fortification for the British Empire*
Jane Anne Carroll
- HM4 – *The Social and Political Benefits of Protestantism in the Holy Roman Empire*
Aidan Beck

STEM 1: Medical Isotopes and Nuclear Reactors (AT&T Theater)

- ST1 – *Simulation of technetium-99m generator*
Arella Kangsudarmanto, Diego Zometa
- ST2 – *Investigations into the Separation of Molybdenum-99 from Other Fission Fragments Using A Phase-Transfer Catalyst*
Sophia Wagle, Diego Zometa-Paniagua
- ST3 – *The Development of a Dilution System for use with Molten Salt Aerosol*
Ryan Rogers

Social Sciences 1: Research in Communication and the Social Sciences (LYNAY Classroom)

- SS1 – *Contradictory Responses and Late Apologies: Analyzing Facebook's Privacy Crisis Response with Situational Crisis Communication Theory*
Caroline McKnight
- SS2 – *Immigration at the Mexican Border: A Migrant's Experience*
Emily McDonald
- SS3 – *The Mark of the "Slut": Iranian Women & Tattoos as Political Protest*
Gracyn McGathy
- SS4 – *Winners Rule, Losers Wear A Dress: Fantasy Football and White Masculinity*
Amelia Little

11:30 to 12:10: Poster Session 1 (Hunter Welcome Center Atrium)

Humanities

- HM01 – *Older Adult Well-Being During the Covid-19 Pandemic, Phase 2: An Exploration of Coping Responses Amid Social Isolation*
Emily Hand, Heidi Morris

Social Sciences

- SS02 – *What Would It Take For the United States to Adopt the French Healthcare System? A Social Theory Perspective*
Elizabeth Bryant
- SS04 – *Access To Healthy and Affordable Food and Why It Matters*
Hermela Aregay

Science, Technology, Engineering, and Mathematics

- ST01 – *Molten Salt Test System (MSTS)*
Drew Reiley
- ST03 – *Reactions of osmium carbonyl with pyridine and pyrimidine ligands*
Adrienne Schumacher
- ST05 – *MSTS Platforming*
Rae Chavira
- ST07 – *Camera Trapping Survey of Abilene State Park in 2022: The Year of the Porcupine.*
Blakely Eller, Gracie Granados, Tom Lee
- ST09 – *NEXT Gas Backwash System*
Evan Stone, Tim Head, Julia Parker
- ST11 – *Detection of New Species in the Rodent Genus Thomasomys*
Yourim Cho, Johnathon Goode, Anya Hahn, Noah Bales, Parker Carson, Grace Oglesby, Joshua Brokaw, Thomas Lee
- ST13 – *Using ANSYS to Test Heat Flow in the Core of the NEXT Molten Salt Research Reactor*
Greyson Camp
- ST15 – *Terrestrial Remote Sensing Technology for Improved Forest Biomass Monitoring*
Elizabeth Elkins, Kashif Mahmud
- ST17 – *Counter Weight System (CWS)*
John Stai, Danny Marsh
- ST19 – *Development of Microsatellite Markers for Population Genetics in Mentzelia pectinata*
Kennedy Laney, Si'An Means, Ellie Crawford, Jiyeon Kim, Adam Thomas, Joshua Brokaw
- ST21 – *Optimization and Development of a Calibration Curve for a Molybdenum Indicator*
Kylie Davis

12:15 to 1:00: Poster Session 2 (Hunter Welcome Center Atrium)

Social Sciences

- SS01 – *Recent Trends in Confidence in Medicine from the General Social Survey*
Elizabeth Bryant
- SS03 – *The Relationship between the Spiritual and Physical Views of the Body*
Zachry Valentine, Jordan Edwards, Cierrah Fulenwilder, Emily Locke, Paidamoyo Makomo, Shalom E. Ochu, Rheagan Smith, Allison Witherspoon
- SS05 – *Who is my Enemy? The United States and China's Rivalry in the Middle East*
Emma Horn
- SS06 – *STAR Portfolio Returns and Outlook*
Jillian Fifield

Science, Technology, Engineering, and Mathematics

- ST02 – *Syntheses and structures of 3,5-diphenyl pyrazole osmium complexes*
Rebecca Atkins, Nathaniel McKinney
- ST04 – *Applications of SpinLaunch on other Celestial Bodies*
Joshua Murphy
- ST06 – *Molten Salt Pipe Flange*
Lydia Sanchez, Tom Bailey, Ashton Guerry, Sam Lopez, Jessica Yerger
- ST08 – *Genetic Diversity and Breeding Patterns of ACU's Feral Cat Population Based on Three Microsatellite Loci.*
Jessica Edo, Jennifer Edo, Sanskruti Gandhi, Sarah Hudson, Bryan Herrera, Joshua Brokaw
- ST10 – *Molten Salt Level Sensing using Vegapuls 62 Radar Sensor*
Matson Camp
- ST12 – *Antimicrobial-Producing Bacterial Strains Isolated From Sorcerer's Cave, Texas*
Macy Frost, Joshua Holt, Sophia Wagle
- ST14 – *Research on nickel alloys for Fluoride Salt Purification*
Minjun Baik, Sidney Osae Kwame Asante, Sam Lopez
- ST16 – *SARS-CoV-2 Spike Protein Variation Sequence Variation Among Non-Symptomatic Test Subjects*
Noah Bales, Carson Parker, Grace Oglesby, Yourim Cho, Johnathan Goode, Anya Hahn, Rebecca Hunter, Joshua Brokaw
- ST18 – *Infrared Spectroscopy as a Method of Measuring Molecular Species in Molten Salt*
Sophia Neale
- ST20 – *Development of Microsatellite Markers for Population Genetics in *Mentzelia Thomsonii**
Nathan Palomino, Annie Escobar, Jochebed Oduro, Joshua Brokaw
- ST22 – *Molten Salt Filtration by Helium Bubbling Processes*
Kaleb Reyna, Bertha Sanchez

1:30 to 2:50

Abilene High 2: Arts and Social Science (McCaleb Room Zone A)

AHS4 – *A piece of art or a piece of work? A study on copyright policies and how they are connected to performing arts*

Jericho Pace

AHS5 – *An Unlikely Payoff: Ethical Consumerism and Conscientious Behavior During COVID-19*

Vicky Gao

AHS6 – *Where Are Students Going: The Implications of the COVID-19 Pandemic on United States Unemployment and Post-Graduate Enrollment Rates*

Alan Mercer

Humanities 2: Pioneers and Transitional Figures (McCaleb Room Zone B)

HM5 – *Hortense Sparks Ward: Wins for the Women Who Came After Her*

Hailey Pasley

HM6 – *A sky full of stars: Barbara Jordan one of the brightest stars in the Texas sky*

Oluwatamilore Kayode-Adele

HM7 – *Paving the Way for Women: The Feminist Writings of Lady Margaret Cavendish and their Gender Nonconforming and Lesbian Implications.*

Hatley Whitfield

HM8 – *Bianca the Sex Doll: A Transitional Object*

Isabel Gallegos

STEM 2: Research in the Chemical Sciences (AT&T Theater)

ST4 – *Development of novel polyureas from modified amines*

Emma Bonamie, Jessica Edo, Brad Rix

ST5 – *Polymerization of Capsaicin Derivatives*

Cortland Baum, Rachel Browning

ST6 – *Manganese(III) catalyzed Allylic Oxidations and Optimization of a One-pot Reaction in the Synthesis of Phorbasone A*

Thor Peterson, Kathleen Lee

STEM 3: Research in the Physical Sciences (LYNAY Classroom)

ST7 – *Designing an Efficient Speaker Attachment for a Drone*

Kaylee Berdoll

ST8 – *Spectroscopy with Telescopes*

Caleb Melton

3:00 to 4:20

STEM 4: Research of Biological Phenomena (AT&T Theater)

ST09 – *The impact of extracts from Pseudomonas species isolated from Sorcerer's Cave on quorum sensing phenotypes*

Matthew Dalzell, Claire Ely, Brianna Garrett, Jennifer Hennigan, Caleb Rosenblad

ST10 – *Biogeography of Mentzelia thompsonii (Loasaceae)*

Gracie Granados, Joshua Brokaw

STEM 5: Nuclear Reactor Research (McCaleb Room Zone A)

ST11 – *Effects of varying temperature and pressure on the gas leakage of a non-contacting, gas-lubricated mechanical seal for a molten salt pump application.*

Aimée Diane Uwineza

ST12 – *GC-MS for MSTL Analysis*

Yeji Kim

4:30 to 6:00: Top Scholars

Humanities 3 (McCaleb Room Zone A)

HM09 – *No Laughing Matter: Crisis at the Ellen Show*

Abigayle Taylor

HM10 – *Belt and Road Initiative: The Bigger Picture*

Jackson Smith

HM11 – *The Middle Voice in Galatians*

Mike Roberts

HM12 – *The Modernist Mind as a Social and Philosophical Construct: Tracing Modernist Characters of British Literature from the 17th century to 19th century*

Tuan Anh Chau

HM13 – *The Witch Hunts of Early Modern Scotland: Superstition, Sexism and Self-Fashioning*

Kendyll Jacobs

STEM 6 (McCaleb Room Zone B)

ST13 – *Genetic Variation in Thomasomys Fumeus*

Claire Dunn, Joshua Brokaw, Thomas Lee

ST14 – *Generation of zebrafish biliverdin reductase mutants using CRISPR-Cas technology in an undergraduate research lab.*

Youngseo Choi, Andrew Holowiecki

ST15 – *Analyzing geometric distortions in CT and MRI image fusion*

Madison Meador

STEM 7 (AT&T Theater)

- ST16 – *CuAAC 'Click' Chemistry and the Formation of Double-Tethered DNA Curtains on Supported Lipid Bilayers*
Conner Crawford
- ST17 – *New diosmium sawhorses with pyrazolate, acetate, and diphosphane ligands*
Elizabeth Bryant
- ST18 – *Investigation of Possible Phase Transitions and Polymorphism in LiNaK-Nitrate*
Raul Romero
- ST19 – *Evaluation and Assembly of the Components of a Molten Salt Electrochemical System*
Victory Egot, Alli Mae Berry

Social Science 2 (Biblical Studies Building 112)

- SS05 – *HEARD IT HERE: Gangs, Poverty, & the Black Experience*
Hansen Penya
- SS06 – *The Pandemic and Terrorism: A Comparative Study of Terrorist Recruitment during the COVID-19 Pandemic*
Hannah Maniscalco
- SS07 – *Murals Challenging Gender Violence in the Military: Assessing the Political Memory of Vanessa Guillen*
Jaylynn Ward

Social Science 3 (Biblical Studies Building 129)

- SS08 – *Student Trading and Research Abstract*
Sydney Meyers, Jillian Fifield, STAR
- SS09 – *Comparing Returns between Curricular and Cocurricular Student Investment Funds*
Kathryn Crawford
- SS10 – *Cost of Counseling and Impact in Texas Universities*
Skye Gill
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...the ACU Undergraduate Scholars Panel

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Mariana Castillo

Ethan Conatser

Karis Cox

Elizabeth Crawford

Blakely Eller

Brianna Garrett

Skyler Gill

Gracie Granados

Erin Hodgson

Kaleigh Martin

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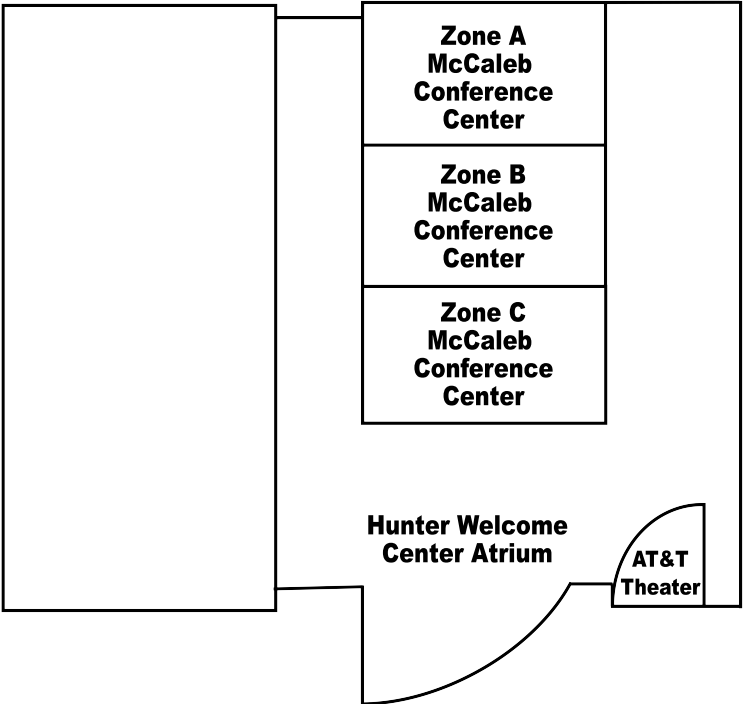
Trey Shirley

...our many presentation judges from offices and disciplines across the university

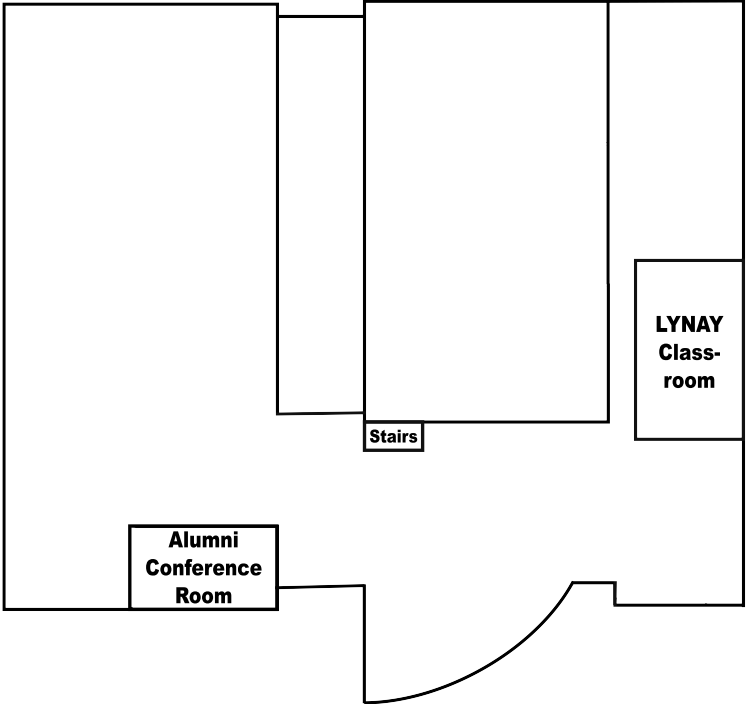


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|---|--|---|--|
| 1 – A.B. Barret Hall (BRT) | 22 – Duncum Center (DUN) | 49 – McGlothlin Campus Center, The Campus Store, Wildcat Central, World Famous Bean (MCG) | 68 – Sherrod Building (SHB) |
| 2 – A.B. Morris Hall (MOR) | 23 – Eager Tennis Pavilion (EAG) | 50 – McKinzie Hall (MCK) | 69 – Shore Art Gallery (SHO) |
| 3 – ACU Press and Leafwood Publishers (B05 and B06) | 24 – Edwards Hall (EDW) | 51 – Medical and Counseling Care Center | 70 – Siggie Pavilion |
| 4 – ACU Museum, Jennings House (JEN) | 25 – Engineering and Physics Laboratories at Bennett Gymnasium (BEN) | 52 – Money Student Recreation and Wellness Center (MRW) | 71 – Sikes Hall (SIK) |
| 5 – Adams Hall (ADH) | 26 – Elmer Gray Stadium (ELG) | 53 – Moody Coliseum and Anthony Arena (COL) | 72 – Smith Hall (SMH) |
| 6 – Advanced Research Center (ARC) | 27 – Faubus Fountain Lake | 54 – Moore House, eHub (MRE) | 73 – Soccer and Softball Fieldhouse (SSF) |
| 7 – Anthony Field at Wildcat Stadium (WLD) | 28 – Faulkner Meditation Garden | 55 – Nelson Hall (NEL) | 74 – Softball Batting Building (HEF) |
| 8 – Beauchamp Amphitheatre (AMP) | 29 – Flag Plaza | 56 – Nichols House (NIC) | 75 – Stevens Park |
| 9 – Beach Volleyball Courts | 30 – Galaxy Park | 57 – North House (NRT) | 76 – Teague Center (TEC) |
| 10 – Bonneau Family Indoor Batting Facility (BON) | 31 – GATA Fountain | 58 – Nursing Annex (B13) | 77 – The Ascension Trailhead |
| 11 – Boone Family Theatre (THR) | 32 – Gilbreth-Scott Teamroom (GST) | 59 – Omega Point Sculpture | 78 – Tower of Light |
| 12 – Brown Library, Learning Commons, AT&T Learning Studio, Starbucks, Adams Center for Teaching and Learning (LIB) | 33 – God's Messenger Sculpture | 60 – Onstead-Packer Biblical Studies Building (BSB) | 79 – University Mail and Copy Center (B14) |
| 13 – Bullock Hall (BKH) | 34 – Gray Stadium Throwing Events (GTE) | 61 – Onstead Science Center (OSC) | 80 – University Park Apartments (UPA) |
| 14 – Byron Nelson Clubhouse (NGC) and Golf Practice Facility | 35 – Halbert-Walling Research Center (HAL) | 62 – OT Learning Center (B07-09) | 81 – Vanderpool Building (VAN B12) |
| 15 – Chapel on the Hill | 36 – Hardin Administration Building (ADM) | 63 – Phillips Education Building (EDB) | 82 – Wally Bullington Practice Field |
| 16 – Coach Don W. Hood Fieldhouse (TFF) | 37 – Hope for the Future Sculpture | 64 – Physical Resources Building (PRB) | 83 – Wells Field (WEL) |
| 17 – Computer Service Center (B10) | 38 – Hunter Welcome Center (HWC) | 65 – Police Department (B04) | 84 – Wessel Hall (WIL) |
| 18 – Crutcher Scott Field (CSF) | 39 – Jacob's Dream Sculpture Site | 66 – Powell Fitness Center (PFC) | 85 – Wildcat Disc Golf Course |
| 19 – Dillard Hall (DLH) | 40 – Jones Tennis Building (JTB) | 67 – Sewell Theatre (SWL) | 86 – Wildcat Way |
| 20 – Dillard Science and Engineering Research Center (DEC) | 41 – Labyrinth, Rich Welcome Plaza | | 87 – Williams Performing Arts Center (WPA) |
| 21 – Don H. Morris Center (DMC) | 42 – Larry Sanders Intramural Fields (SIF) | | 88 – Willingham Way |
| | 43 – Lean on Me Sculpture | | 89 – Witt House (WIT) |
| | 44 – Lunsford Foundation Trail | | 90 – Zellner Hall (ZEL) |
| | 45 – Lunsford Overlook | | 91 – Zona Luce Building (ZON) |
| | 46 – Mabree Business Building (MBB) | | |
| | 47 – Mabree Hall (MAB) | | |
| | 48 – McDaniel House (DAN) | | |

Hunter Welcome Center 1st Floor



Hunter Welcome Center 2nd Floor



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