16TH ANNUAL Undergraduate Research, Creativity And Innovation Festival



APRIL 16, 2024 Official Program

The Undergraduate Research, Creativity, and Innovation Festival is brought to you by ACU Undergraduate Research, Creativity, and Innovation blogs.acu.edu/undergradresearch blogs.acu.edu/researchfest uresearch@acu.edu

A Message from the Director:

Welcome to the festival! I am excited to announce that this year is the 16th annual Undergraduate Research, Creativity, and Innovation Festival. Sweet 16!

To begin, I would like to express gratitude for various constituencies who have made the festival possible. We first recognize faculty who have spent many hours mentoring students and passing on to them a love for scholarly discovery and creative pursuits. Thank you, faculty, for forging research and creative partnerships with students that allow them to grow intellectually. We also thank and congratulate the students who have worked diligently to produce original research and creative work about fascinating topics. You will find in the festival program diverse projects regarding, for example, Viking culture, the movie Barbie, and feral cats on ACU's campus. The many research and creative projects at the festival show the breadth of research activity conducted at ACU and beyond. The URCI Festival Planning Committee as well as ACU's Office of Research and Sponsored Programs were also essential to planning this year's festival. Also, I would like thank Amanda Spell in the Political Science and Criminal Justice department for her amazing administrative assistance. Many thanks to all the faculty and staff who coordinated this event.

I want to highlight a few new features of the URCI Festival. This year we partnered with ACU Compass to create a Festival Badge. To receive the URCI Festival Badge, a student must complete three required activities at the festival (registration, check-in, and the post-survey) and, additionally, choose another two activities to attend on the day of the festival. We strongly encourage all ACU students to earn the Festival Badge. Students visiting from another school/university can inquire about the badge and its related activities at the festival check-in. Students who complete the badge will be eligible for a prize drawing! This year's festival also features two invited oral presentation panels that include a new presentation format. One panel, entitled "Beyond the Bib: Lightning Talks," features first-year students in the Honors College who have transformed their Cornerstone bibliographies into an agenda for future researchers. These students will present (1:30-2:50pm) in about five minutes in a "lighting round" format. Another panel (3:00-4:20pm), entitled "Research Behind the Scenes" looks at two research/creative endeavors on campus and pulls back the curtain on scholarly conversations and the research process. Finally, please don't miss the URCI Dinner Banquet that will include a brief keynote presentation by Dr. John Xu. Dr. Xu is this year's recipient of the Provost's Award for Scholarship and he will speak about his research and how it fulfills ACU's mission: to conduct "significant research...that informs and impacts issues of global importance to the academy, church, and society."

Thank you for attending this year's festival!

Dr. Candice Ortbals-Wiser Director of Undergraduate Research, Creativity, and Innovation Professor of Political Science and University Scholar

Festival Schedule Overview

7:45 – 3:00 PM Registration

Lobby of the Hunter Welcome Center

8:00 – 9:20 AM Oral Presentations

HS1: Research in the Arts and Humanities – McCaleb Room Zone A AH1: Perspectives on the Human Experience – McCaleb Room Zone B SOCIAL1: Perception and Decision Making – AT&T Theater STEM1: Research in the Chemical and Biological Sciences – LYNAY Classroom

9:30 - 10:50 AM Oral Presentations

HS2: The Educational and Work Experience – McCaleb Room Zone B AH2: Original Works – McCaleb Room Zone A SOCIAL2: Applications of Communication and Legal Theories – AT&T Theater STEM2: Nuclear Reactor Research – 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

HS3: The Familial and Developmental Experience – McCaleb Room Zone A AH3: Perspectives on Women in Literature, Film, and Religion – Alumni Conference Room Invited Panel: Beyond the Bib Lightning Talks – AT&T Theater STEM3: Research & Education in Computational & Physical Sciences – LYNAY Classroom

3:00 – 4:20 PM Oral Presentations

HS4: Research in Science and Technology – McCaleb Room Zone A AH4: Investigating the Contemporary Human Experience – Alumni Conference Room Invited Panel: Research Behind the Scenes – AT&T Theater STEM4: Chemistry and Controls in Nuclear Reactor Research – Onstead-Packer BSB 129

4:30 – 6:00 PM Top Scholars Presentations

AH5: Top Scholars in the Arts and Humanities – Onstead-Packer BSB 129 STEM5: Top Scholars in STEM – McCaleb Room Zone A SOCIAL3: Top Scholars in the Social Sciences – Onstead-Packer BSB 121

6:00 – 7:00 PM Awards Ceremony

McCaleb Room Zone B-C

Sessions

8:00 to 9:20

High School 1: Research in the Arts and Humanities (McCaleb Room Zone A)

- HS1 The Popularity Contest of Modern Film Composition Emma Elliott
- HS2 Fixer Upper: Bringing Gothic Architecture into Nonprofit Buildings in Order to Boost the Morale of Clientele and Workers Isabel Gebhart
- HS3 Scout Honor, Code, & Law; The Fall of the Boy Scout-Mormon Partnership in the United States Carlo Lopez Villamor
- HS4 European Epistemology: Political and Protestant Relationships Through European Philosophy Mallory Traylor

Arts & Humanities 1: Perspectives on the Human Experience (McCaleb Room Zone B)

- AH1 The "Other Selves": A Journey of Growth and Self-Discovery in Literature Hannah Grace Wilson
- AH2 "This is a Battle!": A Marxist Reading of Dead Poets Society Abby Madera
- AH3 "You Will Never Enter This School": Analyzing the Delay in Integrating the Mansfield Independent School District Molly Fortner

Social Sciences 1: Perception and Decision Making (AT&T Theater)

- SS1 *TikTok in the Middle East: Adapt or Die* Langley Smith
- SS2 Can Terrorism Be Good News? How the Negative Connotation to the Word "Terrorism" Can Impact How People Perceive News Around the Subject Jaylynn Ward
- SS3 The Race to Invest: What Is the Driving Cause of the European Union's Increased Involvement in Latin America?

Alyssa Powell, Bryson Frank, SooBin Im

SS4 – Child Recruitment in Terrorist-Infected Countries: How to Break the Cycle Ryleigh Moore

STEM 1: Research in the Chemical and Biological Sciences (LYNAY Classroom)

- ST1 Indium(III) Triflate, a Green Catalyst for Friedel-Crafts Reactions Caden-Jack Walls
- ST2 Development of Novel Polyureas from Modified Amines Jessica Edo
- ST3 New Dinuclear Complexes from Reactions of Osmium Carbonyl with 3-tert Butyl Pyrazole and Indazole

Nathaniel McKinney

ST4 – Synthesis of Five New Osmium Compounds with Ligands Derived from Pyridine Adrienne Schumacher

9:30 to 10:50

High School 2: The Educational and Work Experience (McCaleb Room Zone B)

HS5 – The Advanced Placement Problem: The AP Program Has Strayed Away From the Goal of Education and How to Fix It

Marin Murray

HS6 – Analyzing the Effectiveness of Rehabilitative In-school Suspension Within Schools in Comparison to a Punitive Approach Alexis Taylor

HS7 – Staying In: The Effects of Remote Work on Communities in America Macy Loudermilk

HS8 – Evaluating the Effectiveness of New Dairy Milk Advertisements in the United States Austin Hendrickson

Arts & Humanities 2: Original Works (McCaleb Room Zone A)

- AH4 Original Creative Essay: A Different Perspective Hannah McKean
- AH5 The Frigid Beginnings of My Video Game Music Brandon Cheever

AH6 – Mirage

Lily Yaro

AH7 – Conducting, Teaching, and Performing: My Time at the CBDNA Conference Matthew Darby

Social Sciences 2: Applications of Communication and Legal Theories (AT&T Theater)

- SS5 Instagram Whistleblower: The Success in Their Use of Situational Crisis Communication Theory Jessi Boaz
- SS6 Operational Risk Factors in Childcare Kali Mendoza
- SS7 Zuckerberg's Map: Getting Lost in the Virtual Frontier Ashlee Reed
- SS8 The Me Too Movement in Consideration of the Effect of Defamation Cases and Other Aspects of the Legal System That Limit a Person's Ability to Speak Out in Relation to Societal Standards of Gender Jaylynn Ward

STEM 2: Nuclear Reactor Research (LYNAY Classroom)

- ST5 NEXT Lab's First FLiNaK Salt Purification and Subsequent Chemical Analysis Raul Romero
- ST6 Thermochemical Analysis of Cryolite in FLiNaK Madison Chedester
- ST7 Analyzing Molten Salt Aerosol Using Atomic Absorption Spectroscopy Sean McDonald
- ST8 Testing an Aerosol Dilution System with Molten Salt Aerosol Ryan Rogers
- ST9 Analysis of Gas Headspaces Using GC-MS Bonnie Gibson

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

Arts & Humanities

AH01 – "I Want to See How Far I Can Push The Envelope": Creation Within the Realm of Sculpture Painting

Jonna White

AH03 – *Winter Survival Project* Chaz McKell

AH05 – A Deep Dive into The Little Mermaid Faith Johnson

AH07 – The Yanks Over Here: The Sinking of the Lusitania from the Perspective of the American Government Tyson Manis

Social Sciences

SS01 – Income's Impact: Who Turned Out to Vote in 2020 Hansen Penya

- SS03 *STAR Returns for 2023* Madison Hopcus, Mickaela Williams, Joseph Chapa
- SS05 How to Eliminate Hamas: Factors Involved in the Ending of a Terror Group Jayden Scarborough

Science, Technology, Engineering, and Mathematics

- ST01 Movements of Feral Cats on the Campus of Abilene Christian University Brissa Guzman, Emily Thornock, Avy Langston
- ST03 Assembly of the Backwash System to Clean Molten Salt Filters Kaleb Reyna
- ST07 Attaching Dithiolate Ligands to Diosmium Complexes Nathan Palomino
- ST09 Level Sensing of Molten Salt Matson Camp
- ST11 Exploring the Role of Bacteria Infection in the Development of Inflammatory Bowel Disease (IBD): A Protein-Centric Approach Chase McMahon, Tommy Thomas
- ST13 Avulsion Injury to Nail and Nail Bed on Digitus Medicinalis of the Right Hand Emily Castillo
- ST15 Quality Score Analysis of a Gene that Controls Fatty Acid Composition in Peanuts Truett Corder
- ST17 Control of Measuring Devices Jayden Smith
- ST19 Primer Design: Developing New Tools for DNA Sequence Investigation in the Plant Genus Mentzelia.

Amy Osborn, Kseniia Schneider

- ST21 Third Metacarpal Fracture in Football player Josette Villanueva
- ST23 Health Informatics Platform to Understand The Impact of Insulin to Control Diabetes Using an Object Oriented Approach Yordanos Ayelework

- ST25 Furnace Panel Construction and Obstacles John Stai
- ST27 Interspecific Diversity Within the Genus Thomasomys (Rodentia: Cricetidae) in Ecuador. Yourim Cho
- ST29 Using a 3-D Model for Online Monitoring of the Filter Backwash System for NEXT Lab Jose Castro
- ST31 Gene Flow Among Populations of the Annual Wildflower Mentzelia pectinata (Loasaceae) Jessica Edo, Yourim Cho

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

Arts & Humanities

- AH02 Video Game Risks
 - Joseph Dattola
- AH04 The Mystery of God, Children's Spiritual Formation, and the Practice of Ministry Britt Garland, Grace Sukach
- AH06 The Complexity of the Vikings in the Culture and People of Britain Charley Hellums
- AH08 The Importance of "Family" in Foster Family Diana Weilbacher

Social Sciences

- SS02 Effects of the Implementation of Mastery Grading Structure in the Introductory Biology I Course Darby Ice
- SS04 What's Influencing Your Relationships? Xhalli Greer

Science, Technology, Engineering, and Mathematics

- ST02 Camera Trapping Survey of the Mammals of Abilene State Park in 2023 Ray Ramos, Emily Thornock, Avy Langston
- ST04 Symmetry in the NEXT MSRR Kappa Core Greyson Camp
- ST08 Synthesis of Diosmium Hydrogenase Mimics Jermiah Polk
- ST10 Fluoride Salt Purification Rae Chavira
- ST12 Investigating Chloroplast DNA Diversity Within Populations of Mentzelia thompsonii Gisela Guerrero, Darren Pratt, Nadia Tuggle
- ST14 Anterior Cruciate Ligament (ACL) Surgery Delayed Due to Workers' Compensation Led to Flipped Meniscus Laci Harvey
- ST16 Haplotype Diversity Among Populations Representing Separate Varieties of Mentzelia Pectinata (Loasaceae). Sanskruti Gandhi, Ashley Moran
- ST18 System for Analysis of Molten salts and Useful RAdioIsotopes S.A.M.U.R.A.I Samuel Ash

- ST20 Phenazine-1-carboxylic Acid (PCA) and Phenazine-1-carboxamide (PCN) Inhibitory Effects on Quorum Sensing in C. Violaceum Sarah Hudson
- ST22 Midfoot Sprains of a Collegiate Football Player Amanda DuBois
- ST24 A Scheduling Platform for Computing Big Data in the Cloud Logan Schneider
- ST26 Molten Salt Test System (MSTS) Frame and Loop Assembly Thomas Lyons
- ST28 Inhibitory Effects of Oxymel Combined with Ampicillin on the Growth of Aeromonas Hydrophila Tris Flores
- ST30 Finding User Sentiments Using YouTube Comments Shannon Baldwin
- ST32 The Relationship Between Range of Motion of the Forearm and Hand in Various Anatomical Positions

Cali Carter

1:30 to 2:50

High School 3: The Familial and Developmental Experience (McCaleb Zone A)

- HS9 Birth Order Effects on Family Dynamics on Families with Children with Cerebral Palsy Sydney Spell
- HS10 Generational Fear of Nuclear War Zoe Prescott
- HS11 Growing up Abroad and its Effects Brynn Reese

Arts & Humanities 3: Perspectives on Women in Literature, Film, & Religion (Alumni Conference Room)

AH8 – de Beauvoir's "Mystery of Woman" in Beowulf

Ruth Haentsch

- AH9 The Feminine Mystique; Exploring Contemporary Feminist Interpretations of Medieval Female Mystics and their Writings Maddie Thompson
- AH10 Escaping the Eternal Woman in A Room with a View Eowyn Stewart
- AH11 Women's Speaking Role in the Church Ashley Kearns

Invited Panel 1: Beyond the Bib Lightning Talks (AT&T Theater)

- INV1 To Find the Problem, We Must Look in The Mirror: The Implications of Running the Church as a Business Model Abby Madera
 - The Literary Drohlem: Oue
- INV2 The Literacy Problem: Overcoming Low Childhood Literacy in Texas Molly Lucas
- INV3 The Role of Provided Mental Health Services for Refugees Resettling in the US Ashlyn Wright
- INV4 The Black Experience and Mental Health Bethany Coleman
- INV5 A Legacy of Hate: Analyzing the Influences and Actions of Right-Wing Extremism from the Ku Klux Klan of the 1920s to the Proud Boys of Today Molly Fortner

STEM 3: Research and Education in the Computational and Physical Sciences (LYNAY)

- ST10 An Assessment on Teaching Biomechanics to High School Students Aubrey Trumbo
- ST11 Spin-Exchange Relaxation-Free (SERF) Magnetometer for Biomagnetism Studies Ziyu Gao
- ST12 Stabilizing an Upward Inverted Double Pendulum on a Cart Using Physics Informed Learning Theodore Mirimo
- ST13 Application of Machine Learning for the Detection of Online Physics Misinformation Kathryn Hise
- ST14 A Comparative Study of Two Matrix Multiplication Algorithms Under Current Hardware Architectures Samuel Olatunde

3:00 to 4:20

High School 4: Research in Science and Technology (McCaleb A)

- HS12 Artificial Intelligence in Pharmacy: Implementing in Rural and Developing Areas Amara McGee
- HS13 Invasive Rainbow Trout in Colorado Maddox Loudermilk
- HS14 Alternative Quail Population Survey Method: Automatic Recognition via Drone Sampling Luke Padon
- HS15 Veterans Need a Hand in the Workforce Nikolas Versyp

Arts & Humanities 4: Investigating the Contemporary Human Experience (Alumni Conference Room)

- AH12 (Re)constituting the Abortion Debate: Constitutive Rhetoric in the Novel Unwind Megan Roos
- AH13 Unreliable Narrator in Crisis: An Analysis of Sam Bankman-Fried's Image Restoration Strategies

Ashlee Reed

- AH14 A Quest for Intellectual Freedom: What Can Libraries Learn from the Movie Industry? Genevieve Graessle
- AH15 There's Too Many Words on the Paper: Experiencing Reading Through a Child's Lens Lyndsey Kaufmann

Invited Panel 2: Research Behind the Scenes (AT&T Theater)

Publishing The Shinnery Review: Editorial Work as Research Beyond the Classroom

- INV6 Araliya Dooldeniya
- INV7 Katherine Spruce

INV8 – Hallie Wright

Real-Time Enhancements in the Classroom Through Student and Faculty Research Partnership INV9 – Jennifer Edo

INV10 – Ashton Martin

INV11 – Jessica Edo

STEM 4: Chemistry and Controls in Nuclear Reactor Research (Onstead-Packer BSB 129)

ST15 – Purification of Molybdenum From Other Fission Fragments Found Within the Molten Salt Nuclear Reactor

Thomas Hamilton

- ST16 Separation of Molybdenum from Other Fission Fragments by Using Phase Transfer Agents Ashirafu Tuyishime
- ST17 Assessing Performance of the Molten Salt Pump Akur Mading
- ST18 Controlling the Molten Salt Testing System Akram Idriss

4:30 to 6:00: Top Scholars

Arts & Humanities 5 (Onstead-Packer BSB 129)

- AH16 Who's Your Daddy Now: The Podcast "Dungeons and Daddies" Reimagining Fatherhood Jessi Boaz
- AH17 "It's Literally Impossible to Be a Woman": Female Depictions in the Films of Greta Gerwig Genevieve Graessle
- AH18 The "Other Selves": A Journey of Growth and Self-Discovery in Literature Hannah Grace Wilson
- AH19 *Chaos -- a Poem out of Chaos Theory* Ben Camp
- AH20 Congregational Factors that Create Barriers to the Spiritual Formation of Children Arriyana Graham

STEM 5 (McCaleb Room Zone A)

- ST19 EPICS Utilization and Application Strategies at ACU NEXT Lab Aidan Boisvert, Austin Geisert
- ST20 Increasing Chromatic Aberration in Defocused Image Regions (Bokeh) for a Novel Lens Design Utilizing Diffraction Gratings and Fourier Optical Planes Kaden Vasquez
- ST21 Analysis of Tetracycline Resistant Bacteria Within the Lake Fort Phantom Hill Watershed Leah Sanchez
- ST22 Investigating the Reactions of Triosmium Dodecacarbonyl with Triazoles Emily Osborn
- ST23 Enhancing Programming Error Messages in Real Time with Generative AI Bailey Kimmel, Hunter Vaught, Taylor Hotchkiss, Austin Geisert, Lily Yaro, Brendan Gipson, Sidney Osae-Asante, Grant Wininger, Chase Yamaguchi

Social Science 3 (Onstead-Packer BSB 121)

- SS9 Dissatisfaction and Eroding Institutional Confidence: Examining German Perspectives of the Alternative für Deutschland and Its Impact on the German Party System Erin Hodgson
- SS10 Decision Making Under Scarcity: Do Poverty and Hope Matter? Blake Hoybach
- SS11 Peek Behind the Pixels: Analyzing Portrayals of Refugees in Academic and News Articles Through AI Imaging

Ashlee Reed, William Culp, Avery Cottrell

SS12 – The Disconnect: A Study of Health Research and American Women's Lifestyles Ariel Summeril

A special thanks to...

... the co-sponsors of the Undergraduate Research, Creativity & Innovation Festival

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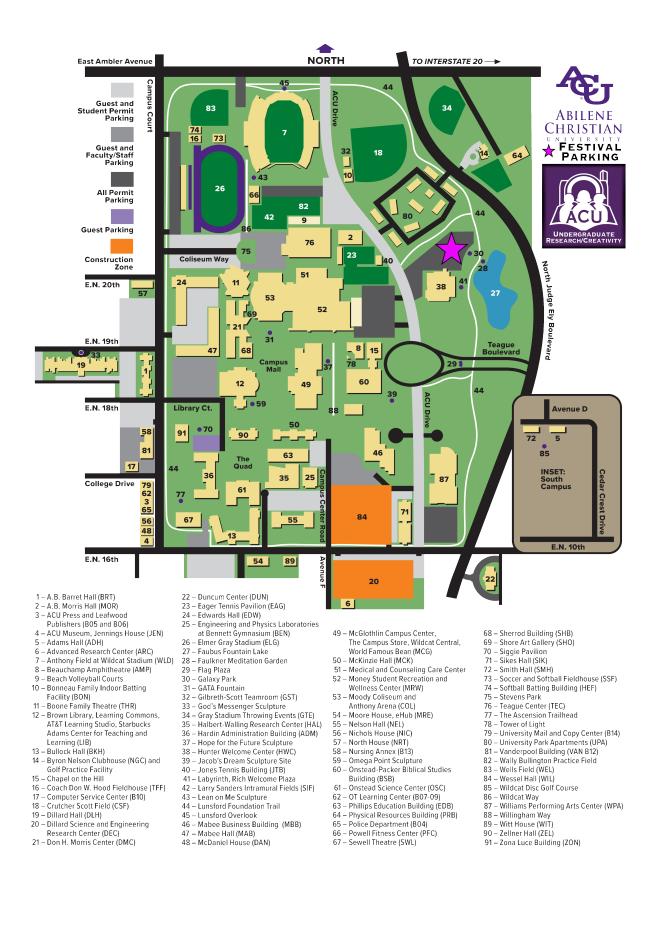
... the ACU Undergraduate Scholars Panel

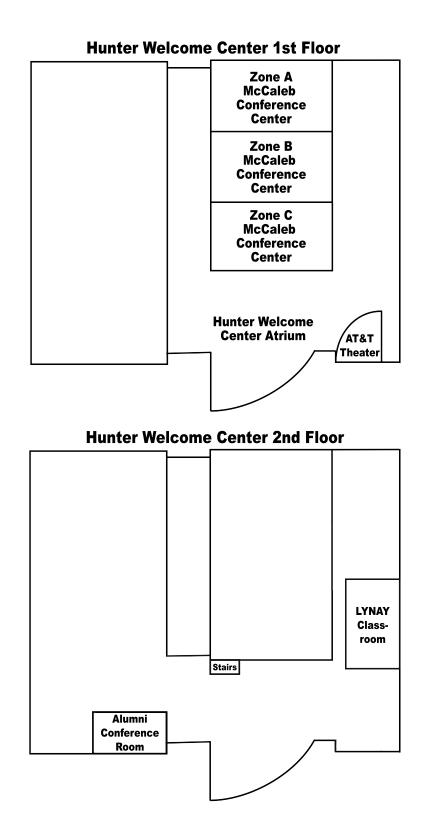
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