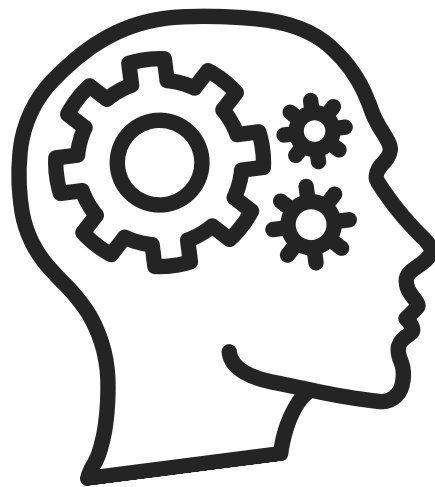
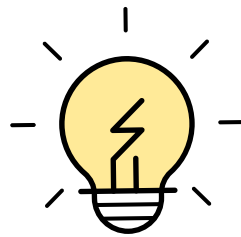


presenting
The 10th Annual

LYCEUM

Student Research Showcase



April 11, 2025
University Center, 3rd Floor



UTTyler **HONORS**
COLLEGE



Dear Friends,

Welcome to the tenth annual Lyceum Student Research Showcase! Whether you attend the panels in the morning or the poster session in the afternoon, you will have the opportunity to learn about so many things, from elastomeric bearings, to consumer perceptions of time travel in media, to AI's role in balancing security and civil liberties. The students at this year's Lyceum make up a diverse group of scholars, who, alongside their professors, have expanded the boundaries of our knowledge. The creation, expansion, and communication of knowledge lies at the heart of UT Tyler's mission, and today's showcase demonstrates the ability, insight, and work ethic of our entire campus community.

If you are a presenter today, whether a graduate student explaining part of a thesis or an undergraduate making your first foray into formal academic conversation, welcome! Discussing your ideas in public is a significant step in the research process. The name "Lyceum" harkens back to a school in ancient Athens, founded by the philosopher Aristotle. Students at the original Lyceum studied the world around them and reported their findings; in the same way, our community of scholars has asked questions and developed answers, and in presenting today, participates in an exercise that is thousands of years old.

Finally, to our guests, student presenters, faculty & staff judges, and audience, we thank you for your presence here and hope you enjoy all that our students and campus have to offer.

Sincerely,

A handwritten signature in blue ink that reads "Paul D. Streufert". The signature is fluid and cursive, with a long horizontal line extending from the end.

Dr. Paul D. Streufert—Dean of the Honors College

Showcase Program

Oral Presentations

9 a.m. - Oral Presentation Sessions

<i>9A: Health & Recovery.....</i>	<i>UC 3140</i>
<i>9B: Potions & Prohibition.....</i>	<i>UC 3422</i>
<i>9C: Wellness & Therapy.....</i>	<i>UC 3322</i>

10 a.m. - Oral Presentation Sessions

<i>10A: AI Applications.....</i>	<i>UC 3140</i>
<i>10B: Controlling the Narrative.....</i>	<i>UC 3422</i>

Service & Leadership Roundtable

<i>11 a.m. - 12 p.m.....</i>	<i>UC 3322</i>
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Poster Presentations

1-3 p.m. - Poster Presentations

<i>Posters 1-56.....</i>	<i>UC Ballroom</i>
<i>Posters 57-77.....</i>	<i>3rd Floor Atrium</i>

Awards Ceremony

<i>3:15 - 3:45 p.m.....</i>	<i>UC Ballroom</i>
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Oral Presentations

Session 9A: Health & Recovery - UC 3140

Moderator: Dr. Colleen Swain

Feranmi Obe

Graduate Student

Mentor: Dr. Ali Azghani

Investigating tight junction remodeling in pulmonary epithelial cells following pneumolysin induced injury

Sam Schott

Undergraduate Student

Mentors: Dr. Howard Patterson
& Dr. Andrew Cage

Student-Athlete Knowledge Discerning Fructose & Glucose

Tanvir Ahmed

Graduate Student

Mentors: Dr. Mayzan Isied
& Dr. Mena Souliman

Optimizing Asphalt Balance Mix Design with Facemask Reinforcement: A Rudimentary Study

Session 9B: Potions & Prohibition - UC 3422

Moderator: Ms. Codee Scott

John Faulkner

Graduate Student

Mentor: Dr. Mandy Link

Magnum Opus: History of Alchemy

Brendon D. Shannon

Undergraduate Student

Mentor: Dr. Mandy Link

Liquid Devils: A History of the Church During Prohibition

Oral Presentations

Session 9C: Wellness & Therapy - UC 3322

Moderator: Dr. Katie Stone

Megan Folk

Undergraduate Student

Mentors: Mr. John Mogle
& Ms. Kim Livingston-Cobb

Wellness Wednesdays: A Semester of Weekly Relaxation, Awareness, and Connection for UT Tyler Students

Justice Johnson

TJC Student

Mentor: Dr. Andrea Hathcote

Language Beyond Words: The Effect of Dance Therapy in Special Populations

Sara Maldonado

Undergraduate Student

Mentor: Dr. Cecilia Cuellar

Cost of Childcare, Cost of Opportunity: Childcare Prices and Women's Labor Supply Trade-Offs

Session 10A: AI Applications - UC 3140

Moderator: Dr. Neil Gray

Jim Clayton

Undergraduate Student

Mentor: Dr. Amentahru Wahlrab

A.I., Drones, and the Domestic Extremist: Balancing Security and Civil Liberties

Ayesha Khalid

Undergraduate Student

Mentors: Dr. Sagnik Dakshit
& Dr. Kouider Mokhtari

AI-Enhanced Classroom Support: The Virtual Teaching Assistant Project

Oral Presentations

Session 10B: Controlling the Narrative - UC 3422

Moderator: Ms. Rebecca Hale

Kaitlyn Holian

Graduate Student

Mentor: Amentahru Wahlrab

Silenced Narratives: The Interplay Between Academic Censorship and Authoritarianism

Jeremy Nichols

Undergraduate Student

Mentor: Dr. Paul Streufert

Creating History Through Storytelling in Absalom, Absalom!

Service & Leadership Roundtable

Moderator: Dr. Paul Streufert - UC 3322

As a part of their engagement in the Honors College, many of our students undertake service and leadership projects related to their respective fields of study. These projects are designed and executed by the students under the guidance of an experienced mentor. The roundtable session gives the students the opportunity to share their experience and discuss the effects their projects have had on their own academic and personal growth as well as how they have impacted campus and the wider East Texas community.

Poster Session

Posters 1-56

Location: UC Ballroom

1 - Desiney Young

TJC Student

Mentor: Dr. Andrea Hathcote

Are Smartphones Harmful? Device effects on Physical and Mental Health

2 - Whitney Worley

Undergraduate Student

Mentors: Dr. Kerri Camp
& Dr. Kevin James

Impact of Visual Cues on Consumer Preferences Regarding Streaming Versus Movie Theater Attendance

3 - Andrea Lizet Valdez Torres

Undergraduate Student

Mentor: Dr. Robert Sterken

The Cost of Separation: How Immigration Policies Shape Mexican Family Relationships

4 - Alisha Upreti

Undergraduate Student

Mentor: Dr. Santosh Aryal

Engineering liposomal extracellular vesicular nanomedicine

5 - Rhythem Tahrin

Graduate Student

Mentor: Dr. Shawana Tabassum

Designing Shape Morphing Sensors and Actuators with Applications in Molecule Delivery and Biomimetic Sensing

6 - Mahammad Solaiman

Graduate Student

Mentor: Dr. Shawana Tabassum

A Multimodal Deep Learning Approach for Precision Nitrogen Monitoring: Integrating Image Analysis, Soil Nitrate, and SPAD-Based Leaf Nitrogen Estimation in Cotton Cultivation

7 - Mason Smith

Undergraduate Student

Mentor: Dr. Nelson Fumo

Ratliff Relay Optimization

8 - Rachel Smith and Ashlyn Peppler

Undergraduate Students

Mentor: Dr. Angela Preston

A secondary analysis of the psychological capital and gratitude of high school students in Northeast Texas

9 - Katrina Smith

TJC Student

Mentor: Dr. Andrea Hathcote

From political stagnation to innovation: Questioning Maximum age limits and term limits for political position

10 - Fatema Smadi

TJC Student

Mentor: Dr. Andrea Hathcote

The Black Death Turns Red: Analyzing a Medieval Ebola Pandemic

11 - Kriti Sigdel

Graduate Student

Mentors: Dr. Mena Souliman
& Dr. Mayzan Isied

Classifying and Forecasting Pothole Area Using Multilayer Perceptron Model

12 - Kriti Sigdel

Graduate Student

Mentors: Dr. Mena Souliman
& Dr. Mayzan Isied

Application of Machine Learning Model to predict California Bearing Ratio(CBR) of Pavement Subgrade

13 - Reagan Shofner and Aryanna Blakeney

Undergraduate Students

Mentor: Dr. May Abdelaziz

Mutations in the sensor VraS histidine kinase alter Staphylococcus aureus virulence

14 - Israel Joshua Santhosh

Graduate Student

Mentor: Dr. Santosh Aryal

Determining Performance of immune Cell-Based Drug Delivery Systems against cancer

15 - Elvis Sangmen

Graduate Student

Mentor: Dr. Shawana Tabassum

In-Situ Methanol Gas Sensing for Early Detection of Nitrogen Deficiency in Cotton Plants

16 - Amirhossein Sanaei Ardakani

Undergraduate Student

Mentor: Dr. Ashley Dalby

Effect of targeted exercise prescription through community-based program on individual with inclusion body myositis: A case study

17 - Ruby Salas

Graduate Student

Mentor: Dr. Adam McGuire

A Review of Culturally Responsive CBT Therapy for Latinos: Addressing Sociocultural Values and Mental Health Barriers

18 - Hope Sabella and Ana Rivera

Graduate Students

Mentor: Dr. Farah Deba

Advancing Osteoarthritis Pain Treatment with Stem Cell-Based Therapies

19 - Leslie Rosales

Undergraduate Student

Mentor: Dr. Jenny Hong

Luxury Branding in the Digital Age: How Social Media Shapes Prestige and Perception

20 - Amaya Rolling and Nataly Sanchez

Undergraduate Students

Mentor: Dr. Ayman Hamouda

Enantiospecific Positive Allosteric Modulation of $\alpha 4\beta 2$ Nicotinic Receptor Subtypes

21 - Melissa Rodriguez-Sanchez

Undergraduate Student

Mentor: Dr. Madeline Dawsey

Permutations and Number Puzzles

22 - Jason Rivera

Undergraduate Student

Mentor: Dr. Kostas Kalfas

Elastomeric Bearings

23 - Julian Ramirez, Kingsley Kwaku Amoateng, Sora Kim, and Ivan Mendez

Undergraduate Students

Mentor: Dr. Wei-Chin Ho

Effects of Historical Adaptation of Microbes in New Environments

24 - Brent Orji, Christian Buford, Julian Ramirez, and Natalie Zarate

Undergraduate Students

Mentor: Dr. Wei-Chin Ho

Spontaneous Mutations for Antibiotic Resistance in Escherichia coli

25 - Sayla Prova

Graduate Student

Mentors: Dr. Mena Souliman
& Dr. Mayzan Isied

Predictive Maintenance of Pavements: A Multilayer Perceptron Model for Patch Area Analysis

26 - Sayla Prova

Graduate Student

Mentors: Dr. Mena Souliman
& Dr. Mayzan Isied

Enhancing Asphalt Binder Performance with Recycled Facemasks: A Sustainable Solution for Pavement Engineering

27 - Samuel Petta and Jasmine Miles

Undergraduate Student

Mentor: Dr. Eric Stocks

Identifying Barriers to Help-Seeking for Domestic Violence in East Texas

28 - Cade Parker

Undergraduate Student

Mentor: Dr. Paul Streufert

A Moment of Computational Video or How I Learned to Stop Worrying and Love the Framebuffer

29 - Lexi Osborn and Cailey Rocquemore

Undergraduate Students

Mentor: Dr. Dustin Patterson

Investigating Methods for Small Molecule Polymerization Inside the HK97 Virus-like Particle

30 - Emily Phelps and Khaldoun S. Abdelwahed

Graduate Students

Mentor: Dr. Ayman Hamouda

Computational Analyses with recently resolved Positive allosteric modulator-bound Cryo-EM Structure of the $(\alpha 4)2(\beta 2)3$ nicotinic acetylcholine receptor

31 - Michael Nunez

Graduate Student

Mentor: Dr. Elizabeth Cory Sills

The Technology of Ancient Maya Fishing Weights from the Placencia Area of Belize

32 - Lana Mousa

Undergraduate Student

Mentor: Dr. Marco Castaneda

Health Insurance Coverage and Neonatal Mortality: An Analysis of Texas Hospital Discharge Data

33 - Madeline Mochmer

Undergraduate Student

Mentor: Dr. Brent Bill

Structural Comparison of Nicotinic Acetylcholine Receptor Protein from Zebrafish

34 - Adiam Michael and Nolawit Tilahun

Undergraduate Students

Mentor: Dr. Brent Bill

Cellular and Zebrafish Larvae toxicity of substituted piperidines $(\alpha 4)3(\beta 2)2$ nicotinic acetylcholine receptor positive allosteric modulators

35 - Dixy Melendez, Madeline Adair, and Emily Barena

Graduate Students

Mentor: Dr. Olga Berkout

Unpacking Loneliness: The Roles of Self-Compassion and Self-Concealment

36 - Angela McKnight

Undergraduate Student

Mentor: Dr. Riqing Yu

Mercury Reduction Gene merA Detection in Caddo Lake

37 - Cloie McKee and Yesenia Pineda

Undergraduate Students

Mentor: Dr. Eric Stocks

The Relationship Between Malicious Envy and the Desire to Cause Harm

38 - Sarah Mauldin

TJC Student

Mentor: Dr. Andrea Hathcote

Navigating Defense Dollars: Tracking Economic Trends in Relation to Military Spending

39 - Margaret Elizabeth Manning

Undergraduate Student

Mentor: Dr. Jiyong Lee

Novel hydrophobic-tagging molecules for targeted protein degradation

40 - Alyah Lopez

TJC Student

Mentor: Dr. Andrea Hathcote

Creciendo Juntos: Breaking Barriers, Building Success

41 - Selena Kwok

Undergraduate Student

Mentor: Dr. Sean Butler

Synthesis, Modification, and Self-Assembly of Coiled-Coil Oligopeptides

42 - Ayaan Khan

Undergraduate Student

Mentor: Dr. Farah Deba

Salvianolic Acid-A Prevents Oxidative Stress-Induced Osteoporosis

43 - Millie Jeske

Undergraduate Student

Mentor: Dr. Madeline Dawsey

Integer Partitions and Their Tableaux

44 - Anavya Jernigan

Undergraduate Student

Mentor: Dr. Santosh Aryal

Studying the effectiveness of macrophage-derived exosomes coating on gold nanorods for photothermal therapy

45 - Alanna Jenkins

TJC Student

Mentor: Dr. Andrea Hathcote

Wibbly-Wobbly, Timey-Wimey Stuff: Consumer Perceptions of Time Travel in Media

46 - Yushe Nazrul Islam and Kwadwo Appiah-Poku

Graduate Students

Mentor: Dr. Brent Bill

Effect of $\alpha 4\beta 2$ nicotinic acetylcholine receptor positive allosteric modulators on 6-OHDA-induced Parkinson-like Zebrafish model**47 - Nick Habibelahian**

Undergraduate Student

Mentor: Dr. Sagnik Dakshit

VaultFin: A Personal Finance Management Application

48 - Charlie Goodson, Preston Miller, and Marcuz Valenzuela

Undergraduate Students

Mentor: Dr. Shih-Feng Chou

Design and build of a flow-through in-vitro drug dissolution system with an integrated autosampler

49 - Jennifer Gasset, MSN, RN, RNC-OB, CNEcl

Graduate Student

Mentor: Dr. Christine Gipson

An Evidence-Based Initiative to Improve Bowel Preparation Quality for Colonoscopy

50 - Luz Garza

Undergraduate Student

Mentor: Dr. Matthew Greenwold

Analysis of the skin microbiome of paedomorphic and normal adult tiger salamanders (Ambystoma tigririum)

51 - Maelynn Fuller

TJC Student

Mentor: Dr. Andrea Hathcote

Adapting Minds: College Students and the Power of Human Adaptation

52 - Benjamin J. DiGiovanna

Graduate Student

Mentor: Dr. Adam McGuire

Addressing Moral Injury's Prevalence in Military Populations: A Review of Current Literature

53 - Brandy Dial and Terasita Cowan

Graduate Students

Mentor: Dr. Robert Carpenter

Empowering Caregivers: HRD Solutions to Family Responsibility Discrimination in an Evolving Legal Landscape

54 - Troy Dane

Undergraduate Student

Mentor: Dr. Santosh Aryal

Determining the Optimal Ethylene Glycol Chain Length for Liposomal-Doxorubicin Nanodrug Delivery to Maintain Cellular Drug Concentration for Enhanced Anticancer Effect

55 - Aspen Cunningham

TJC Student

Mentor: Dr. Andrea Hathcote

Sexual Assault: Emotions and Trauma Experienced by Survivors

56 - Shelby Cumbie and Angelina Florville

Undergraduate Students

Mentor: Dr. Sean Butler

Dead End and Detours: Toward the Synthesis of the Lipopeptide Dragonamide E

Posters 57-77 continued on next page

Location: UC, 3rd Floor Atrium

Posters 57-77

Location: UC, 3rd Floor Atrium

57 - Stephen Craig

Undergraduate Student

Mentor: Dr. Leonard Brown

Caption Snap

58 - Terasita Cowan

Graduate Student

Mentor: Dr. Greg Wang

Linking HRD to Organizational Success: A Systematic Review of Interventions, Performance Outcomes, and Theoretical Models

59 - Aditya Chowdhury

Isied

Mentors: Dr. Mayzan

Graduate Student

& Dr. Mena Souliman

A Simplified Approach to Calculate the Pavement Condition Index (PCI) using Artificial Neural Network (ANN)

60 - Aditya Chowdhury

Graduate Student

Mentors: Dr. Mayzan Isied

& Dr. Mena Souliman

Artificial Neural Network (ANN) Driven Model to Backcalculate the Elastic Modulus of Rigid Pavements using Falling Weight Deflectometer Parameters

61 - Sydnee Chamberlain

Graduate Student

Mentor: Dr. Adam McGuire

A Literature Review of Therapy Techniques Applied to Complicated Grief and Implications for Treatment

62 - Britney Castillo

Undergraduate Student

Mentor: Dr. Brent Bill

Assessing Nicotine and Varenicline Exposure in a Zebrafish Anxiety Model

63 - Matthew Castillo and Rafael Reyes-Ramirez

Undergraduate Students

A Comparative Analysis of Traditional and Data-Driven Smoke Detection Systems Using Machine Learning

64 - Christian Buford

Undergraduate Student

Mentor: Dr. Wei-Chin Ho

Phenotypic Diversity of Escherichia coli in North & East Texas

65 - Virginia Bradway

Undergraduate Student

Mentor: Dr. Tanya Brown

Serratia marcescens Strain-Specific Immune Responses in the Cnidarian Exaiptasia diaphana

66 - Brianna Botelho

Undergraduate Student

Mentor: Dr. Jared Dickson

Chemical Characteristics of Natural Waters that Drive Crayfish Species Occurrences

67 - Deverre Borah

Undergraduate Student

Mentor: Dr. Tanya Brown

The Effects of Nutrient Runoff on Nematostella vectensis Reproduction and Larval Survival

68 - Cheyenne Barnes and Lizbeth Salazar Sanchez

Undergraduate Students

Mentor: Dr. Mandy Golman

Reviewing the Relationship Between Congenital Syphilis and Access to Care

69 - Daniel Flynn Bankard

Graduate Student

Mentor: Dr. Adam McGuire

Control as a Transdiagnostic Mechanism for Mental Health Disorders: A Literature Review

70 - Kingsley Kwaku Amoateng

Graduate Student

Mentor: Dr. Wei-Chin Ho

Experimental Evolution of Escherichia coli in Acidic Environments

71 - Amal Ehab Al-Shweiky, Robert Beaudoin, Nathalia M. Pinheiro Menegasso

Graduate Students

Mentor: Dr. Ayman Hamouda

Toxicity and Inflammatory Response of Cannabidiol (CBD) in Lung Epithelial Cells

72 - Dana Al-manaseer

Undergraduate Student

Mentor: Dr. May Abdelaziz

Exploring the Effect of VraS Mutations on Crosstalk in the Two - Component System Signaling Network of Staphylococcus aureus

73 - Risa L. Alger and Keiston Howard

Undergraduate and Graduate Student

Mentor: Dr. Jason Smee

Towards the Synthesis of a Small Molecule Mimic of Nickel Superoxide Dismutase

74 - Tanvir Ahmed

Graduate Student

Mentors: Dr. Mayzan Isied
& Dr. Mena Souliman

Development of Physics-Guided Neural Networks for IRI Prediction in Jointed Plain Concrete Pavements

75 - Tanvir Ahmed

Graduate Student

Mentor: Dr. Zain Al-Houri

Advancing Water Demand Predictions Through Artificial Neural Networks for The City of Austin

76 - Dane Adams

Undergraduate Student

Mentor: Dr. Kerri Camp

American Infrastructure and the Future of Sustainable Development

77 - Madison Adams

Undergraduate Student

Mentor: Dr. Jiyong Lee

Engineering virus-like particles to target triple-negative breast cancer

Awards Ceremony immediately to follow poster session in the UC Ballroom

Acknowledgements

Thank you for attending the 10th Annual Lyceum Student Research Showcase! We hope you leave today enriched by your experience and inspired to learn and discover more about the world around us.

We'd like to take a moment to thank our sponsors, judges, moderators, mentors and, most of all, our students! This event could not happen without each and every one of you. We're extremely grateful for your participation, and we look forward to seeing you for the 11th Annual Lyceum in April 2026!

"Educating the mind without educating the heart is no education at all."

- Aristotle



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