

# INQUIRIES

NEWSLETTER FROM THE UMKC OFFICE OF UNDERGRADUATE RESEARCH AND CREATIVE SCHOLARSHIP

## Showcasing Undergraduate Research All Year Long

Throughout the year, students presented projects that ranged from discovering more accurate methods for strain measurement, to testing how misregulation of genes affects muscle development; from exploring the ways that art challenges stereotypical views of women, to investigating how natural disasters intersect with health care, the economy, and the climate. The Office of Undergraduate Research offered four opportunities for students to share their work over the past year, continuing longstanding traditions, improving newer initiatives, and introducing new opportunities.

We kicked off the academic year with the 9<sup>th</sup> Annual SUROP Symposium, where 22 students presented projects that had been funded with UMKC's Summer Undergraduate Research Opportunity Grants. Later in the fall semester, the EUREka! Symposium, now in its fifth year, featured presentations from students enrolled in EUREka! Courses. A brand new Lightning Talk event launched at the beginning of the spring semester, where students shared their work in flashy three-minute talks. To conclude the year, we hosted the 24<sup>th</sup> Annual Symposium of Undergraduate Research & Creative Scholarship in April. With so many opportunities to present, we featured a total of 171 projects from 332 students.





OFFICE OF

## Undergraduate Research and Creative Scholarship

[www.umkc.edu/undergraduate-research](http://www.umkc.edu/undergraduate-research)

*The Office of Undergraduate Research and Creative Scholarship supports high-impact learning opportunities by funding the work of undergraduate researchers, scholars, and artists; linking students with research opportunities; providing opportunities to enhance intellectual and career-building skills; and supporting quality faculty mentorship.*

### Staff

Jane Greer, PhD, Director  
[greerj@umkc.edu](mailto:greerj@umkc.edu)

Audrey Lester, Assistant Director  
[lesterak@umkc.edu](mailto:lesterak@umkc.edu)

Laura Bohlman, Administrative Assistant  
[laurabohlman@umkc.edu](mailto:laurabohlman@umkc.edu)

### Faculty Advisory Board

Shuhao Cao, Mathematics

Alison Graettinger, Earth & Environmental Science

Jane Greer, English

Amanda Grimes, Health Sciences

Lani Hamilton, Music Education / Conservatory

Saul Honigberg, Biological Sciences

Kimberly Johnson, Multicultural Student Affairs

School of Education, Social Work, & Psychological Sciences

Seung Lark Lim, Psychology

Debra Leiter, Political Science

Paul Rulis, Physics

Jeff Rydberg-Cox, Classical Studies

Maria Spletter, Biology

### Student Ambassadors

Asayiel Alhajeri, Biology

Aleigha Dollens, Earth & Environment Science

Layla Liwaru, Biology

Alijah Smith, English

Olivia Sours, Health Sciences

Lindsay Todd, Biology

## Plan Ahead for Fall

### Work-Study Research Associates

Faculty interested in mentoring an Undergraduate Research Associate through the Federal Work-Study Program should email Audrey Lester:

[lesterak@umkc.edu](mailto:lesterak@umkc.edu).

### SUROP Poster Symposium

Students with Summer Undergraduate Research Opportunity (SUROP) Grants will present posters in Miller Nichols Learning Center Lobby.

**10:00 a.m.-2:00 p.m., August 29, 2024**

### SEARCH Grant Funding

Students may apply for up to \$1,250 in reimbursable research expenses for student-led, faculty-mentored projects undertaken during the academic year.

**Application Deadline: September 13, 2024**

### Undergraduate Research Fellows

Students who have been deeply engaged in the process of research, scholarly, and artistic production from the point of inquiry to publication, presentation, or performance may apply to be recognized with this transcript designation.

**Application Deadline: October 1, 2024**

### URD@C Nominations

Undergraduate Research Day at the Capitol highlights the unique opportunities available to students at Missouri's public research universities. Faculty may nominate undergraduate researchers, scholars, and artists to present at this event.

**Nomination Deadline: November 1, 2024**

### Fall Symposium of Undergraduate Research & Creative Scholarship

Undergraduate students are invited to share their research, scholarly, and creative projects at this poster symposium. The symposium will also feature work from students enrolled in EUREKA! Classes.

**4:00-5:15 p.m., November 20, 2024**

**10:00 a.m.-2:15 p.m., November 21, 2024**

## Undergraduate Researchers at Work

As students seek to discover new knowledge and develop original work through research, scholarship, and creative activity, they also discover and develop new skills and confidence.

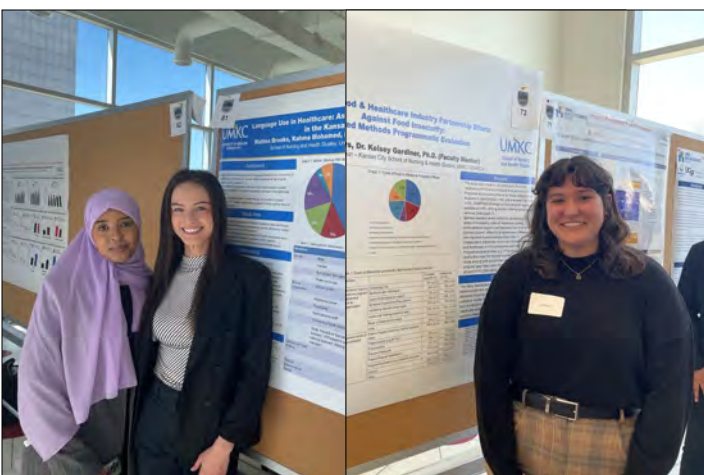
### UMKC Student Wins Competitive Research Scholarship



**Kailynn Barnt** (Computer Science, '25) was awarded a Chishiki-AI in Civil Engineering Scholarship. Chishiki-AI is an NSF-funded groundbreaking initiative designed to revolutionize the field of Civil and Environmental Engineering (CEE) through the integration of artificial intelligence (AI). This summer, Kailynn will travel to Austin and work with experts at The University of Texas to further develop her research on the use of generative AI for disaster-scene understanding to aid in rapid decision-making for post-disaster recovery. Over the last year, Kailynn has been working as an Undergraduate Research Associate with Dr. ZhiQiang Chen in UMKC's School of Science & Engineering.

### Undergraduate Students Present at Health Science Student Research Summit

The 12<sup>th</sup> Annual Health Science Student Research Summit at Children's Mercy Research Institute featured two presentations from SEARCH Grant recipients this year. **Olivia Sours** (Health Sciences, '24) shared her evaluation of health care-food bank partnerships that employs a "food is medicine" approach to interventions. **Mattea Brooks** (Health Sciences, '24) and **Rahma Mohamed** (Health Sciences, '24) presented their analysis of medical translation services at health care institutions in the metro area.



### Professional Conferences Feature UMKC Students' Research



**Mya Thomas** (Earth & Environmental Science, '25) presented her research at the Geological Society of America (GSA) North-Central and South-Central Section Meeting. Her presentation, "Characterizing Lava Flow Behavior Using Digital Models of Small Tubes from 1961 Pahoehoe Flows from Askja, Iceland," was part of a panel organized by her mentor, Dr. Alison Graettinger, and a faculty member from Kansas State University, Dr. Matthew Brueseke. Mya's work has been supported by SEARCH and SUROP Grants, and was recently presented at Undergraduate Research Day at the Capitol.



**Olivia Sours** (Health Sciences, '24) will present her research at the Annual Meeting of the American Society of

Nutrition (ASN), which is one of the leading nutrition science organizations in the world. This summer, Olivia will travel to Chicago, Illinois, to present her poster titled, "Charitable Food & Healthcare Industry Partnership Efforts Against Food Insecurity: A Mixed Methods Programmatic Evaluation." This project was developed with support from a UMKC SEARCH Grant and with mentorship from Dr. Kelsey Gardiner in UMKC's School of Nursing & Health Studies.

We want to celebrate your students' accomplishments! Please share news of your students' projects, presentations, publications, performances, or off-campus research experiences. Email details to Audrey Lester, [lesterak@umkc.edu](mailto:lesterak@umkc.edu).



# Presentations of Distinction

24<sup>th</sup> Annual Symposium of Undergraduate Research & Creative Scholarship

## Arts & Humanities

### Josie Newman

Media, Art, & Design, '24

“Welcome to Womontown”

Mentor: Prof. Zachary Frazier

## KC Works

### Olivia Sours

Health Science, '24

“Charitable Food & Healthcare Industry Partnership Efforts Against Food Insecurity”

Mentor: Dr. Kelsey Gardiner

## Computing & Engineering

### Kailynn Barnt

Computer Science, '25

“Testing of Generative AI for Disaster Scene Computing and Human-in-the-loop Post-disaster Decision-Making”

Mentor: Dr. ZhiQiang Chen

## Physical & Natural Sciences

### Aleigha Dollens

Earth & Environmental Sciences, Geology, '24

“Electrical Resistivity Tomography Imaging of the Motagua Fault along the 1976 Earthquake Rupture in Guatemala”

Mentor: Dr. Tina Niemi

## Behavioral & Social Sciences

**Andi Basalo**, Political Sci / Accounting, '24

**Vari Patel**, Political Science / Finance, '25

“Legislative Term Limits and Representational Loss”

Mentor: Dr. Greg Vonnahme

**Kate McKown**, Psychology, '25

**Ainsley Pickering**, Psychology, '25

**Emma Angle**, Biology, '24

“Trauma-Related Nightmares Predicted by Rumination in Adults”

Mentor: Dr. Westley Youngren

### Ellery Vaughn

Psychology

“Examining Conflict Resolution Styles and Self Control in Couples”

Mentor: Dr. Lark Lim

## Biological & Life Sciences

### Trevor Bell

Biology, '24

“The Role of rRNA Post-Transcriptional Modifications in Escherichia coli Ribosome Biogenesis”

Mentor: Dr. Michael O'Connor

### Sam Herman

Biology, '27

“An Expression Map for Axon Guidance Molecules in the Fruit Fly”

Mentor: Dr. Haluk Lacin

### Allessandra Smith

Biology, '26

“A Single-dose of rWNT5A During Facial Bone Mineralization Results in Midface Differences”

Mentor: Dr. Erin Bumann

## Three Faculty Recognized for Excellence in Mentoring

This year we honored three faculty members for Excellence in Mentoring Undergraduate Researchers, Scholars, and Artists.



**Dr. Debra Leiter**, Associate Professor of Political Science, is an expert in comparative politics whose research examines the intersection of elections, parties, and voting; election forecasting; and how context shapes political decision-making, primarily in Western Europe. She shares her passion for research through her classes, individual mentorship, communication with colleagues, presentations to campus groups, and publications on the pedagogy of incorporating research into teaching. Not only does Dr. Leiter incorporate components of research in upper-level courses, but she also teaches a EUREka! class that allows students to develop, execute, and present a research project while completing an introductory course requirement for the political science major. Students who have conducted independent research projects under Dr. Leiter's mentorship have published in undergraduate research journals, presented at professional conferences, and pursued graduate studies. Her mentees describe Dr. Leiter as vibrant, captivating, passionate, and dedicated.



As Program Director and Assistant Professor of Public Health, **Dr. Joseph Lightner** has developed various ways to immerse students in research throughout their undergraduate studies. Dr. Lightner's research focuses on increasing physical activity for large populations, and students have been able to engage with that work through EUREka! courses, work-study opportunities, and mentored independent research projects. Dr. Lightner is particularly adept at helping students formulate research questions about the public health issues that interest them and guiding them to answer their questions through a systematic and scientific process. He and his students can be found working in local schools and partnering with municipal governments to foster healthier communities. Dr. Lightner's confidence in his students' abilities and potential have led them to pursue opportunities they might not have thought possible without his encouragement.



When **Dr. Mohammad Rafiee** came to UMKC as an Assistant Professor of Chemistry in 2019, he immediately began seeking undergraduate students to join his lab as researchers. Over the last five years, he has developed a vibrant team of researchers that has included 17 undergraduate students. Dr. Rafiee's research on the use of electroanalytical techniques to explore and expand the scope of electrosynthetic reactions has a unique appeal to undergraduate researchers in that they can develop new experiments to be used in educational settings. Not only have Dr. Rafiee's students developed experiments that are used in UMKC's chemistry courses, but his students have also published this work in peer-reviewed scientific journals so that the techniques can be adopted in educational settings throughout the world. Dr. Rafiee's projects are ambitious and he has high standards for his students, but he teaches the skills and offers the support students need to meet their goals in the lab, in their careers, and beyond.

## Students Represent UMKC in Jefferson City

UMKC students presented their research in Jefferson City at UM System's Undergraduate Research Day at the Capitol. State senators, representatives, legislative staff, and members of the public who attended this poster session learned how participating in research contributes to students' academic success as well as to positive outcomes for the state's economy, technological advancement, public health outcomes, and cultural opportunities.



### Sophia Baugher

Earth and Environmental Science, '25  
The Urban Heat Island Effect: Creating An Interactive Model.

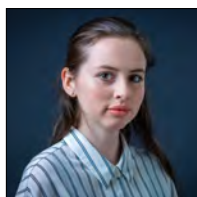
Faculty Mentor: **Dr. Fengpeng Sun**



### Anna Shaw

Biology BS / Chemistry BA, '26  
Sleep Cycles in Drosophila Melanogaster

Faculty Mentor: **Dr. Ryan Mohan**



### Emily Bledsoe

Biology, '25  
What Zebrafish and Your Ears Have in Common

Faculty Mentor: **Dr. Hillary McGraw**



### Olivia Sours

Health Sciences, '24  
Physical Activity, Sleep, & Demographic Patterns in Urban Missouri Youth: A Quasi-Experimental Study

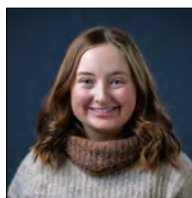
Faculty Mentor: **Dr. Amanda Grimes**



### Chris Ekengren

Biology, '24  
Circadian Regulation of Spt Ada Gcn5 Acetyltransferase (SAGA) in Drosophila Melanogaster

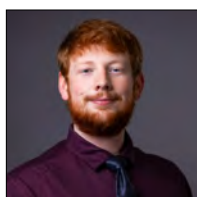
Faculty Mentor: **Dr. Ryan Mohan**



### Emma Stauffer

English, '24  
Disability Rhetoric and Humor: Breaking Down Barriers and Promoting Inclusion

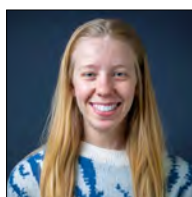
Faculty Mentor: **Dr. Jane Greer**



### Austin Evans

Biology, '27  
Circadian Regulation of Spt Ada Gcn5 Acetyltransferase (SAGA) in Drosophila Melanogaster

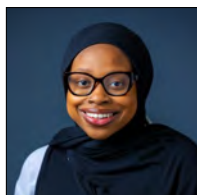
Faculty Mentor: **Dr. Ryan Mohan**



### Mya Thomas

Geology, '25  
Characterizing Lava Flow Behavior Using Digital Models of Small Tubes

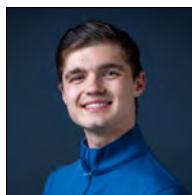
Faculty Mentor: **Dr. Alison Graettinger**



### Maryam Oyebamiji

Urban Planning and Design, '24  
Unveiling Urban Trauma: The Impact of Design on Community Well-being

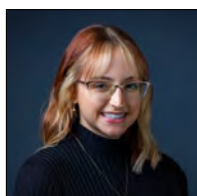
Faculty Mentor: **Dr. Jacob Wagner**



### Brady Wolff

Music Composition / Music Theory, '24  
A Perfect Tuning System?

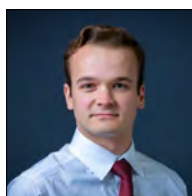
Faculty Mentor: **Dr. David Thurmaier**



### Sydney Rogers

Health Sciences, '27  
Sleep Cycles in Drosophila Melanogaster

Faculty Mentor: **Dr. Ryan Mohan**



### Isaac Woodward

Mechanical Engineering, '25  
The Growth Plate and Its Role in Youth ACL Injuries

Faculty Mentor: **Dr. Antonis Stylianou**

# SUROP Grants Awarded to 19 Projects

Summer Undergraduate Research Opportunity (SUROP) grants were awarded to 21 student-led, faculty-mentored research projects. Students receive a \$2,000 tuition grant and up to \$1,250 in research expenses. Students will present their work at the SUROP Poster Symposium on Thursday, August 29, in the first-floor lobby of Miller Nichols Learning Center.

## Aaron Beckman

Urban Planning & Design, '25  
 "Floodplain Buyout Incident Outcomes in Missouri"  
 Mentor: Dr. Sungyop K. Kim & Dr. Julia Crowley

## Julia Bruno

Earth & Environmental Science, '25  
 "The Mechanism for Magma and Sediment Mixing at Cerro Overo Maar"  
 Mentor: Dr. Alison Graettinger

## Kayla Bushart

Biomedical Engineering, '27  
 "The Vortex Funnel Elimination System and its Effect on Microsphere Production"  
 Mentor: Dr. Stefan Lohfeld

## Gianna Cado

Mathematics & Statistics, '24  
 "Using A Mathematical Model to Analyze the Spread of Antimicrobial-Resistant E. coli Between Farms and Communities"  
 Mentor: Dr. Majid Bani Yaghoob

## Lydia Cripe

Health Science, '24  
 "Move More KC"  
 Mentor: Dr. Joey Lightner

## Andrew Custis

Earth & Environmental Science, '27  
 "Microplastic detection: Analyzing the effectiveness of SEM and NIR imaging in microplastic detection."  
 Mentor: Dr. Jejung Lee

## Max Diaz

Biology, '25  
 "Testing if m6A modification catalyzed by the enzyme Mettl3 is required in Drosophila muscle development and function"  
 Mentor: Dr. Maria Spletter

**Tessa Eads**, Biology, '24

**Aminatu Idowu**, Biology/Chemistry, '24  
 "Satellite cells of Saccharomyces cerevisiae"  
 Mentor: Dr. Saul M. Honigberg

## Emmanuel Fabian

Spanish / Film / Business Admin, '26  
 "Oral Literature In Modern Day Cusco: Language and Cultural Attitudes in Two Generations"  
 Mentor: Dr. Alberto Villamandos

## Audrey Harper

Psychology / Chemistry, '24  
 "Examining the Effects of Introspection on Self-Control and Long-Lasting Relationships"  
 Mentor: Dr. Seung Lark Lim

## Karissa Jenesse

Earth & Environmental Science, '24  
 "Determining the Composition of 18th Century Mortar and Bricks from Carmen Church in Antigua, Guatemala, and the Potential for Earthquake Resilience"  
 Mentor: Dr. Tina Niemi

## Sudhiksha Kumar

Mathematics & Statistics, '25  
 "Effect of Climate Change on Zoonotic Transfer"  
 Mentor: Dr. Aaron W. Reed

## Savanah Manion

Biomedical Engineering, '27  
 "The Effect of Alginate Beads on the Flow of PLA Microspheres During 3D-Printing"  
 Mentor: Dr. Stefan Lohfeld

## Ben Nelson

Chemistry, '25  
 "Asymmetric Electrochemical Reduction of Ketones"  
 Mentor: Dr. Mohammad Rafiee

## Kyndall Robinson

Chemistry, '25  
 "Teaching electrochemistry through demonstration."  
 Mentor: Dr. Mohammad Rafiee

## Allison Scobee

Psychology / Biology, '26  
 "Developmental and Morphological Analysis of Drosophila Jump Muscle and Jump Circuit"  
 Mentor: Dr. Haluk Lacin

## Nathan Vanzeyl

Urban Planning & Design, '26  
 "Home Mortgage Lending by Race in Missouri's Largest Cities – A Comparison of St. Louis to Kansas City."  
 Mentor: Dr. Michael Frisch

## Kaden Walker

Earth & Environmental Science, '27  
 "Taxonomic and paleoenvironmental exploration of a Camelid fossil from a fossil spring on the Jordan Plateau"  
 Mentor: Dr. Caroline Davies

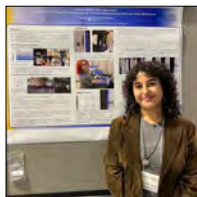
## Gabriel Worcester

Biomedical Engineering, '26  
 "Creating a Method for Gathering Biological Hyperspectral Data using Gaussian Splatter Modeling"  
 Mentor: Dr. ZhiQiang Chen

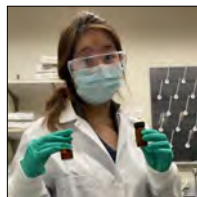


# Undergraduate Research Fellows

By demonstrating significant involvement in the development, execution, and circulation of original research, 18 students were recognized with the Undergraduate Research Fellow designation at the Annual Symposium of Undergraduate Research & Creative Scholarship. This honor is recorded on students' official transcripts and is listed in the commencement program. Applications are due on October 1 for Fall semester and on March 1 for Spring semester.



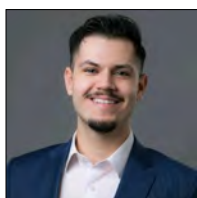
**Asayiel Alhajeri**  
Biology, '24



**Grace Dang**  
Biology, '24



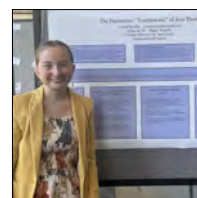
**Alijah Smith**  
English, '24



**Victor Arellano**  
Public Health, '24



**Sheyda Dehghani**  
Biology, '25



**Emma Stauffer**  
English, '24



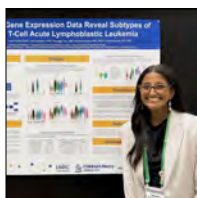
**Trevor Bell**  
Biology, '24



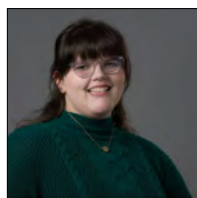
**Aleigha Dollens**  
Geology, '24



**Mya Thomas**  
Geology, '25



**Meghana Bhumireddy**  
Biology / Chemistry, '24



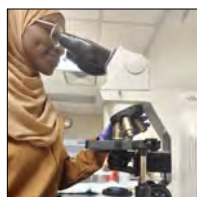
**Hannah P. Edwards**  
Music Therapy, '24



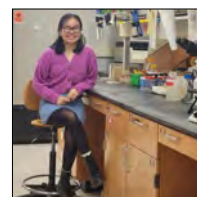
**Lindsay Todd**  
Biology, '24



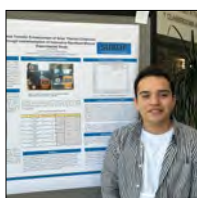
**Mattea Brooks**  
Health Sciences, '24



**Nusaybah Ibrahim**  
Biology, '24



**Quynh Tran**  
BA/MD, '29



**Juan Calderon**  
Mechanical Engineering, '24



**Laylah Liwaru**  
Biology, '24



**Jennifer Vanderslice**  
Physics, '24