

# NEWS FROM THE UNDERGRADUATE RESEARCH CENTER

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## URC FEATURED RESOURCE: MTSU LAB DIRECTORY

The URC is proud to share our updated laboratory directory. This resource was created to showcase MTSU's research labs across a variety of academic disciplines. Both new and experienced student researchers can utilize this document to find research positions, set up collaborations with other labs, or to establish a specific thesis mentor.

This directory is also a resource for faculty who are seeking student researchers. Each lab's accomplishments, publications, and goals are detailed within the pages of this directory.

This directory contains laboratory descriptions, the key skills necessary for each lab position, and semester openings for several labs, divided by specific college. Check out the MTSU Lab Directory [HERE](#).



Is your lab missing from the directory? If so, we would love to feature your lab. Please click [HERE](#) to enter your lab's information. Thank you!

Questions about the lab directory or need to update your information? Please contact Saman Kittani, URC Research Ambassador at [srk3y@mtmail.mtsu.edu](mailto:srk3y@mtmail.mtsu.edu).

## URC'S MISSION

The Undergraduate Research Center's (URC) mission is to be the central hub for communication about undergraduate research grant programs and other related opportunities on and off campus, to distribute university funds for undergraduate research and creative projects, and to promote dissemination of results through travel grants and by offering opportunities for students to present their research findings.



## Undergraduate Research and Creative Activity

# OPEN HOUSE

**MIDDLE  
TENNESSEE**  
STATE UNIVERSITY.

Office of Research and Sponsored Programs  
Undergraduate Research Center

The Undergraduate Research Center presents our 5th Annual Open House on November 3 from 11-1pm in the Science Building atrium, 2nd floor. This event is an informal poster session that showcases a sampling of current undergraduate research and creative projects at MTSU. All students, particularly new students and transfer students, are invited to attend.

This event presents the following opportunities for students:

- Introduction to undergraduate research and the importance of dissemination;
- Experience a variety of academic poster presentations representing an array of majors and disciplines;
- Present questions to current researchers about how they became involved in undergraduate research, how they balance coursework and research, and how they selected a faculty mentor;
- Find out more about our spring & summer URECA grants; and
- Learn about SOAR from current members.

**FACULTY:** We invite you to feature this event as an extra credit opportunity for your students. Attendees will be required to talk with a minimum of 5 student presenters, which will be verified by the presenter initialing their program. I will sign off on the program once all requirements are met. Students can then submit the program to you for extra credit.

## SIGN UP HERE!



To sign-up as a  
**PRESENTER,**  
please click [HERE](#).

**\*Max capacity: 30**

To sign-up as an  
**ATTENDEE,**  
please click [HERE](#).

**\*Max capacity: 50**

**Presenters and attendees  
will receive free lunch!**



### ***DID YOU KNOW?***

The URC has a facebook page!

Follow us :  
Undergraduate Research Center  
at MTSU or click the facebook icon  
for updates and stories.

# TIME TO PREPARE YOUR ABSTRACTS FOR NCUR & WORLDCUR!

*Check out the resources provided by the URC to ensure your abstract is top notch.*

*Resources - 1:1 Reviews, Snacks & Abstracts Workshop (see next page), abstract templates, and more.*

*Please email Foram Patel, SOAR Peer Mentor Ambassador, with questions or to schedule a 1:1 abstract review.*

*Email: [fp2n@mtmail.mtsu.edu](mailto:fp2n@mtmail.mtsu.edu)*



**APRIL 5-6, 2023**

The [World Congress on Undergraduate Research](#) will take place at the University of Warwick, near London, England. Students across the world are invited to share their research, discuss global issues, and create or strengthen international research partnerships. During the conference, research will be presented in thematic sessions to encourage interdisciplinary conversations and facilitate professional networking and project development. Attendees will also be able to attend the British World Conference, if desired.

Deadline to submit: Early November

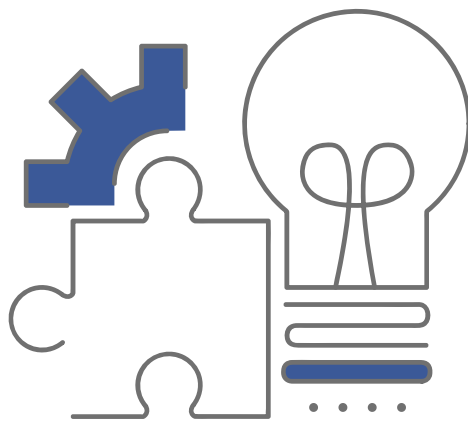


**APRIL 13-15, 2023**

The [National Conference on Undergraduate Research](#) (NCUR) brings together nearly 4,000 undergraduate students each year from all fields and disciplines. It is your opportunity to share with your peers the expertise you have gained over the course of your research experience and see the vast array of research taking place in all fields and disciplines, and meet students from other campuses who are doing similar research. The conference will also feature a graduate school and/or career fair, providing you with opportunities to meet with recruiters and consider next steps in your education and career path.

**JOIN US!**

# **SNACKS & ABSTRACTS WORKSHOP**



**Are you submitting an abstract to a local, regional or national conference? If so, this workshop is for you!**

## **Objectives:**

**Walk through primary components of an abstract;  
Provide you with resources to review peer-reviewed abstracts to get your brain juices flowing; and  
Pair you up with an experienced abstract writers to develop your abstract.**

**End Goal: To walk away with an abstract ready for submission.**

**And, let's not forget the "snacks"!  
As in Chick-fil-a chicken mini snacks!!**

**FRIDAY, OCTOBER 14, 2022**

**11:00-12:00PM**

**LIB 264A**

**REGISTER  
HERE BY  
10/12**



# FEATURED SOAR STUDENT

Student Organization for  
the Advancement of Research

## FORAM PATEL

**Major:** Computer Science

**Faculty Mentor:** Dr. Joshua L. Phillips

### **Current Research Focus:**

Validating the 1GB1 folding pathway using Greedy-Proximal A\*

### **Project Description:**

This project is a validation study for the application of the greedy-proximal A\* (GPA\*) algorithm on the complex and fast-folding 1GB1 protein. Once this is validated, the approach may be applied to even larger proteins and across a broader spectrum of biological systems. We seek to compare computational folding paths of 1GB1, a tiny protein that is a mix of the primary structural components that make up most protein systems (helices and sheets), to experimental folding pathways described in the literature.

### **Why does this topic interest you?**

I have always wanted to combine the two fields I am passionate about, Biology and Computer Science. This project has proved to be a perfect combination of both.

### **What are your professional aspirations?**

The next step will be graduate school (I am looking for a program in Computational Biology), but nothing is set in stone yet, as I am keeping an open mindset for the future now. I am gaining a new perspective and am evolving as a learner every day and want to explore my options by gaining experience. I am currently a tutor for the MTSU Computer Science department and would love to continue helping other students in the future.



### **Do you have any advice for future researchers?**

The start of any research project will always be overwhelming, but to balance this, try to maintain a clear objective and take it one step at a time, setting manageable goals. It can be very easy to lose track of time and get overwhelmed by the long path ahead, so don't forget to take care of yourself. Try to keep an open mind as your project might end in a different direction than you started. Embrace this change, because the beauty of research lies in exploring new ways. Do not be afraid to try, or even fail sometimes. Most importantly, don't forget to learn from those failures. In the end, it will all work out, it always does!

**Check out more  
SOAR profiles here!**

[MTSU.EDU/URC/SOAR-  
PROFILE/](https://www.mtsu.edu/urc/soar-profile/)



# URC FEATURED FACULTY MENTOR

**DR. EMILY FARRIS**



**Department:** Center for Dyslexia

**Bio:** Emily Farris is the Assistant Director for Educational Services and Research Initiatives at the Tennessee Center for the Study and Treatment of Dyslexia at Middle Tennessee State University. She co-leads many of the research activities within the laboratory and serves as adjunct graduate faculty. She completed her B.A. in psychology and M.A. in clinical/counseling psychology from Midwestern State University, her Ph.D. in experimental psychology at the University of Texas Arlington, and her postdoctoral fellowship in psychiatry and neuroscience at the University of California San Francisco under the mentorship of Dr. Fumiko Hoeft. While an assistant professor of psychology she received the Golden Windmill award from the La Mancha Society at the University of Texas of the Permian Basin in recognition of completed intellectual contributions and pursuit of new research projects. She is a developmental cognitive psychologist, who specializes in cognitive neuroscience. Much of her research focuses on enhancing our understanding of reading difficulties with the ultimate goal of improving our ability to identify individuals with reading difficulties and develop treatment programs that are tailored to suit the individual's needs in order to enhance every person's ability to learn to read. She pursues these interests using a variety of behavioral, cognitive, and neuroimaging methodologies and statistical analysis techniques.



**Research Interests:** Enhancing understanding of reading difficulties with the ultimate goal of improving ability to identify individuals with reading difficulties and develop treatment programs tailored to the individual's needs.

**Mentored URECA Projects:**

- Child-level reading variables and gist-based memory: An interactive model (Fall 2021)
- Childhood Reading Experiences and Adult Reading Performance (Spring 2021)
- The Examination of Neural Connectivity with Resting-State EEG (Summer 2019)

# INTERNSHIPS & RESEARCH OPPORTUNITIES

Check out the following opportunities for fall research !

## [Advanced Technological Education](#) - NSF

- Supports partnerships between two-year institutions of higher education, other academic institutions, industry and other entities to improve the education of technicians in science and engineering.

## [MEMOs Internship Scheme - Medieval and Early Modern Orients](#)

- The MEMOs Internship Scheme is a digital placement aimed at undergraduate students of relevant disciplines (English, History, etc). The scheme is designed to offer insight and experience in a major digital humanities project and provide academic guidance and mentorship for students interested in specialising in medieval and/or early modern studies. Placements are run four times a year in spring, summer, autumn and winter. Each placement runs for a period of eight weeks with an expected time commitment of six hours a week. The internship is conducted remotely so students from any part of the world are welcome to apply.

## [U.S. Department of Energy Science Undergraduate Laboratory Internships \(SULI\) Program](#)

- The Science Undergraduate Laboratory Internships (SULI) program encourages undergraduate students and recent graduates to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories. Selected students participate as interns appointed at one of 17 participating DOE laboratories/facilities. They perform research, under the guidance of laboratory staff scientists or engineers, on projects supporting the DOE mission.

## [U.S. Department of Energy Visiting Faculty Program \(VFP\)](#)

- Applications for the Visiting Faculty Program (VFP) are now open for the 2023 Spring Term. This is the first time VFP is being offered for the Spring Term. Applications are due October 5, 2022 at 5:00 PM ET. VFP seeks to increase the research competitiveness of faculty members and their students at institutions historically underrepresented in the research community in order to expand the workforce vital to the Department of Energy (DOE) mission areas. As part of the program, selected university/college faculty members collaborate with DOE laboratory research staff on a research project of mutual interest. Faculty member participants may invite up to two students (one of which may be a graduate student) to participate in the research project.

## [wegeprize.org](#) - Wege Center for Sustainable Design, Kendall College of Art and Design of Ferris State University

- Do you want to be a part of the next circular design solution? Apply to Wege Prize 2023! Build a team. Propose an idea. Get expert feedback & support. Compete for cash prizes. Calling all college/university students: Submit a research plan for a circular economy based solution to one of the world's wicked problems: climate change, resource scarcity, biodiversity loss, waste, pollution, or something else you identify. Applications are open through October 31st. Program highlights: - Open to all full-time college/university students around the world at all degree levels.

# UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY AWARDS FALL 2022

## ASSISTANT AWARDS

**Marzea Akter** - Examine the effect of acute oxytocin administration on social behavior in male and female mice

*Faculty Mentor: Tiffany Rogers, Psychology*

**Kadejah Browne** - Cybertechnology Development and Exploration of Learning Processes in Augmented Reality Team Environments (CyberLearnAR)

*Faculty Mentor: Michael Hein, Psychology*

**Jonathan Duke** - Investigating Parameter Estimation and Tracking Functions Used in the Conformation of Autonomous Vehicle Radar Detections

*Faculty Mentor: Jorge Vargas, Engineering Technology*

**Katherine Fincher** - Different Methods of Learning Astronomy Concepts

*Faculty Mentor: Michael Hein, Psychology*

**Josh Griggs** - Measuring changes in CITED1 expression in macrophage and IFN $\gamma$ -responsive cells lines

*Faculty Mentor: David Nelson, Biology*

**Tadros Hana**- Cellular progression of the Huntingtin protein throughout development, and its impact on the health and physiology of *Drosophila Melanogaster*

*Faculty Mentor: Kiel Ormerod, Biology*

**Tyler Lansford** - Exploring the Benefits of Artificial Intelligence in Plant Health and Growth

*Faculty Mentor: Chaney Mosley, Agriculture*

**Keaton Mills**- Determining the impact of earthworms and manure on crops and soil

*Faculty Mentor: Chaney Mosley, Agriculture*

**Weston Williams**- Rapid foodborne pathogen Detection via Tangential Flow Nano/Microfilter Bioseparation System

*Faculty Mentor: Seockmo Ku, Agriculture*



# UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY AWARDS FALL 2022

## SILVER AWARDS

**Erika Allen** - Implicit Leadership Theory - Reaction Time Experiments  
*Faculty Mentor: James Houston, Psychology*

**Avery Biddle** - Collaborative Dance Film  
*Faculty Mentor: Aaron Allen Jr., Theatre and Dance*

**Stephen Clifford** - Do Deficits in Key Motor Proteins Impact Muscle Physiology and Highly Stereotyped Rhythmic Behavior?  
*Faculty Mentor: Kiel Ormerod, Biology*

**Kendra Givens** - StrXL: Adapting Set Transformer to Model Arbitrary Length Sets  
*Faculty Mentor: Joshua Phillips, Computer Science*

**Dalton Lewis** - A comparison of waste management practices for plastic food containers and packaging using the Waste Reduction Model (WARM)  
*Faculty Mentor: Minia Mohebbi, Engineering Technology*

**Christopher Meherg** - New Algorithms for the Discrete Gauss Transform  
*Faculty Mentor: Jing Kong, Chemistry*

**Garrett Tessmer** - Investigating the Significance of MYC in Small Cell Carcinoma of the Ovary Hypercalcemic Type  
*Faculty Mentor: April Weissmiller, Biology*

**Teckanous VanTrease** - Evaluating Dyslexia Knowledge in School Professionals  
*Faculty Mentor: Kathryn Blankenship, Behavioral and Health Sciences*

# UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY AWARDS FALL 2022

## GOLD AWARDS

**Mina Abdulkareem** - Crystal Formation Induced by Melamine Interactions with Physiological Components

*Faculty Mentor: Beng Ooi, Chemistry*

**Lillian Bergman** - Internal and external factors shaping the picoplankton diets of prominent sponges on Florida reefs

*Faculty Mentor: Cole Easson, Biology*

**Charlotte Daigle** - Through a Different Eye: An Honors Creative Thesis

*Faculty Mentor: Rhonda McDaniel, English*

**Luke Gormsen** - Electrical ring resonator: Experiments and program development

*Faculty Mentor: William Robertson, Physics and Astronomy*

**Grace Oconnell** - A Collection of Unaccompanied and Accompanied Trumpet Works

*Faculty Mentor: Michael Arndt, Music*

**Lacon Parton** - Antibiotic Resistance eDNA in the Stones River Watershed

*Faculty Mentor: Rebecca Seipelt-Thiemann, Biology*

**Jenna St Pierre** - Assessing Cusp Morphologies Between Different Ancestries

*Faculty Mentor: Shannon Hodge, Anthropology*

**Lindsey Tran** - Creation of electro-magnetic assisted "Star-like" formation from cancer cells using a laser trap

*Faculty Mentor: Daniel Erenso, Physics*

# UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITY AWARDS FALL 2022

## TEAM AWARDS

**Kathryn Baumann and Hannah Bates** - Geochemical and Mineralogical Investigation of the History of Metamorphic Rocks Exposed at Glade Gap, Chunky Gal Mountain in the Blue Ridge Mountains  
*Faculty Mentors: Warner Cribb, Geosciences*

**Sophia Roberts and Marissa Pickett** - Don't Sweat It: An Exploration of Effective Heat Risk Communication to Today's Youth  
*Faculty Mentors: Alisa Hass, Geosciences*

**Sarah Streeter and Alexandria Williams** - Investigation of a two new protein targets in N-MYC amplified neuroblastoma  
*Faculty Mentors: April Weissmiller, Biology*

**Yuqi Duan and Zihan Zhang** - Actuarial Modeling for Medical Loss Prediction and Trend Analysis  
*Faculty Mentors: Don Hong, Mathematics*

## Thank you to our 2022-23 URECA Committee!

*Anne Anderson, Chair, Economics and Finance, Business*

*Tiffany Rogers, Psychology, Behavioral and Health Sciences*

*Hanna Terletska, Physics and Astronomy, Basic and Applied Sciences*

*Sean Foley, History, Liberal Arts*

*Keely O'Brien, Agriculture, Basic and Applied Sciences*

*Yixiang Wu, Mathematics, Basic and Applied Sciences*

*Kim Evert, Educational Leadership, Education*

*Yi (Vanessa) Liu, Health and Human Performance, Behavioral and Health Sciences*

*Bridget Donnelly, English, College of Liberal Arts*

*Tricia Farwell, Journalism, College of Media and Communications*

# UNDERGRADUATE RESEARCH GRADUATION DISTINCTION



## LEVELS OF RECOGNITION

### Distinction in Undergraduate Research

- Students receive a dark blue, light blue, and white cord

### Scholar Distinction in Undergraduate Research

- Students receive a dark blue, light blue and white cord  
AND a medallion (see image to the right)

## DISTINCTION CRITERIA

### Distinction in Undergraduate Research

\*Students must fulfill all requirements

- 1 Successful completion of an Assistant level URECA project - 50 hours of research or more.
- 2 Poster presentation or creative performance at one of the URC's signature events: Fall Open House, Scholars Week, or Summer Research Celebration.
- 3 Active participation for at least one academic year in the Student Organization for the Advancement of Research (SOAR).
- 4 Confirmation of support from URECA faculty mentor.

### Scholar Distinction in Undergraduate Research

\*Students must fulfill all requirements

- 1 Successful completion of a Scholar level URECA project - 100 hours of research or more.
- 2 Poster presentation or creative performance at one of the URC's signature events: Fall Open House, Scholars Week, or Summer Research Celebration.
- 3 Active participation for at least one academic year in the Student Organization for the Advancement of Research (SOAR).
- 4 Poster or presentation at the National Conference on Undergraduate Research or published in a peer-reviewed academic journal.
- 5 Confirmation of support from URECA faculty mentor.