

BULLETIN

CREATIVITY • INNOVATION • SERVICE

Hallmarks of excellence in higher education. Keys to success in life. Be a part of it. Ask how.

SBIR Grant Workshop!

April 17, 4:00 p.m.

The federal Small Business Innovation Research (SBIR) grant program supports R&D by small U.S. businesses. To qualify for SBIR funding businesses must partner with university researchers. SBIR funding is granted in a tiered scheme to match the development of innovations toward commercialization. Most federal grant-making agencies participate in the SBIR program.

ORSP is pleased to host experts from LaunchTN to present a workshop at MTSU on the basics of SBIR funding and how to know if it's a right fit for you.

The workshop will be available to MTSU faculty as a Skype for Business meeting to allow you to participate from your desk top. The presentation will be conducted live in the ORSP conference room, 012 ING with seating available for up to twelve guests.

[Register now!](#)

VOLUME 1, NUMBER 2

IN THIS ISSUE

SBIR Workshop	1
Upcoming Funding Opportunities	2
Faculty News	2
Upcoming Workshops	3
From the Desk of . . .	4
Undergraduate Research Center	4
URECA Recipients	5
Student Research Spotlight	7

UPCOMING FUNDING OPPORTUNITIES

Being aware of—and prepared for—funding opportunities can be challenging. To help faculty stay informed, MTSU's Office of Research and Sponsored Programs (ORSP) maintains a subscription to the comprehensive funding opportunity search engine, GrantForward. If you have not yet set up a researcher profile for opportunity notifications, please do so at grantforward.com.

Here are several future opportunities that we encourage faculty to consider.

Education Innovation and Research (EIR) Competition

Deadline: April 2

innovation.ed.gov/what-we-do/innovation/education-innovation-and-research-eir

The U.S. Department of Education EIR program is designed to generate and validate solutions to persistent educational challenges and to support the expansion of effective solutions to serve substantially larger numbers of students.

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)

Deadline: April 2

nsf.gov/pubs/2018/nsf18529/nsf18529.pdf

NSF INCLUDES is a national initiative intended to enhance U.S. leadership in science, technology, engineering, and mathematics (STEM) discoveries and innovations by broadening participation in these fields at scale.

Federal-State Marketing Improvement Program (FSMIP)

Deadline: April 5

ams.usda.gov/services/grants/fsmip

The U.S. Department of Agriculture offers grants to explore new market opportunities for U.S. food and agricultural products and to encourage innovation to improve the market system efficiency and performance. The program requires a one-to-one financial match.

National Institute of Justice Research and Development in Forensic Science

Deadline: April 11

nij.gov/funding/Documents/solicitations/NIJ-2019-15387.pdf

The U.S. Department of Justice (DOJ) invites applications for funding of basic or applied research in forensic science for criminal justice purposes. DOJ's mission includes the provision of objective, independent, evidence-based knowledge and tools to meet the challenges of criminal justice at the state and local levels.

Recent awards to MTSU:

- Tiffany Saul (sub-award), "Stable Isotope Analysis as a Geospatial Tool for Identification: Intra-Individual Isotopic Variability," \$94,021

Improving Undergraduate STEM Education: Computing in Undergraduate Education (IUSE: CUE)

Deadline: May 9

nsf.gov/pubs/2019/nsf19546/nsf19546.pdf

The National Science Foundation (NSF) will support teams of institutions of higher education (IHEs) to re-envision the role of computing in interdisciplinary collaboration within their institutions. NSF encourages partnering IHEs to integrate the study of ethics into their curricula within core Computer Science courses and across interdisciplinary application areas.

HERE TO HELP!

For assistance with finding and preparing for funding opportunities, please contact your ORSP pre-award specialist:

Samantha Cantrell

samantha.cantrell@mtsu.edu

615-494-8751

Behavioral and Health Sciences, Liberal Arts, Media and Entertainment, Jones College of Business, Walker Library, University College, non-academic units

Jolene Gordon

jolene.gordon@mtsu.edu

615-898-5894

Basic and Applied Sciences, College of Education

FACULTY NEWS

MTSU professors help keep environment safe from toxic chemicals through international collaboration

In the world of chemical research and development there exists a problem: How do you establish safe levels for chemicals when little information is known, other than their chemical structure, below which no appreciable risk to the environment is expected? In 2016, the Health and Environmental Sciences Institute (HESI) established an international working group of scientists from government, academia, and industry to develop a practical solution to this problem. Two MTSU professors, Joshua L. Phillips and Ryan Otter, were invited onto the team because of their past work on interdisciplinary projects involving data science, computing, molecular science,

and innovative data base design. Last November, the project reached a significant milestone with the launch of the EnviroTox Database (envirotoxdatabase.org). This website, free to all, maintains a world-class eco-toxicological dataset (over 90,000 curated records), makes the data accessible via a user-friendly interface, and provides analysis tools for users. The EnviroTox Database project



Joshua L. Phillips



Ryan Otter

was published in early 2019 in the journal *Environmental Toxicology and Chemistry*, entitled "Creation of a Curated Aquatic Toxicology Database: EnviroTox." It also was recently highlighted in *the Science for Policy Report* by the Joint Research Centre, the European Commission's science and knowledge service, as a valued approach in the reduction of animal use in chemical testing. Phillips is an assistant professor in the Department of Computer Science and a member of the Computational Science Ph.D. faculty. Otter is a Department of Biology professor and a faculty member for the Data Science Institute and the Molecular Biosciences Ph.D. program.

FACULTY NEWS (CONTINUED)

MTSU hosts Library Carpentry data science workshop

By Mary Ellen Sloane

Three faculty at MTSU's James E. Walker Library coordinated a three-day Library Carpentry data science workshop during January to "provide librarians with the critical data and computational skills and tools they need to be effective digital stewards for their stakeholders and user communities." The workshop was funded by a grant from the Institute of Museum and Library Services to the California Digital Library.

The workshop was attended by **31 participants from 15 different institutions** in **five states, including 12 from MTSU**.

The development of data science tools and methodologies in research and publication has been stewarded in large part by the efforts of academic libraries nationwide to develop standards and methodologies by which researchers can share, discover, and reuse data.

The Library Carpentry organization provides a network of instructors and community-curated data science lesson plans. Lessons included in this workshop were: Data Introduction for Librarians, Bash Shell, GitHub, OpenRefine, Python and Jupyter Notebooks. Participants used sample datasets for each lesson and practice using commands and menus that allowed them to manipulate and analyze the data.

UPCOMING WORKSHOPS

Data Science at MTSU—Get Involved

March 21, 3 p.m. LT&ITC, Library 348

Are you interested in data science at MTSU and how it is being used by faculty and staff across campus? Now is your chance to hear more and find out how you can get involved. This event will feature a panel of fellow faculty on how they are using data within their research and to make a difference within the community. Also hear about the new Data Science undergraduate degree proposal, the activities and projects from the Data Science Institute, and much more. Refreshments and snacks will be provided prior to the event.

Panelists: Ken Blake, Lisa Green, and Charlie Apigian.

Moderated by: Mary Ellen Sloane

Developing Collaborative Data Science Opportunities

March 28, 3 p.m., LT&ITC, Library 348

The true power of data science is through collaboration opportunities where individuals from diverse disciplines work together. This panel will discuss the growth of opportunities to use big data within the classroom, research, grants, and external projects. Find out more about what your colleagues are doing and how you can get started and get involved. Refreshments and snacks will be provided prior to the event.

Panelists: Ryan Otter, Charlie Apigian, Cindy Chaffin, and Greg Rushton.

Moderated by: Mary Ellen Sloane

UNDERGRADUATE RESEARCH PROGRAMS CONFERENCE 2019

June 27–29, 2019

Columbus, Ohio

The Ohio State University is host for the June 27–29 conference, Building and Enhancing Undergraduate Research and Creative Inquiry Programs, in Columbus, Ohio.

For more information, visit

cur.org/what/events/conferences/urpc/2019/

GRANT WRITING ENHANCEMENT PROGRAM

- Succeed in the pursuit of external funds to support your scholarship
- Integrate sponsored programs in your career

To join the D2L class, email Jamie Burriss at Jamie.Burriss@mtsu.edu

FROM THE DESK OF . . .

Samantha Cantrell, Ph.D., Proposal Development Specialist



When writing a proposal, always be sure you are doing the work for your reviewers. Keep in mind that the material is new to the people scoring you. Give them as much context as possible instead of referring them to a different section of your proposal and expecting them to flip back and forth to collect the information they need. Visualize each element that the reviewer has to score, and craft your proposal so that those elements are easy to spot and in a logical order.

Suggested reading: "What Words Are Worth: National Science Foundation Grant Abstracts Indicate Award Funding," doi.org/10.1177/0261927X18824859

UNDERGRADUATE RESEARCH CENTER

Upcoming Events and Opportunities

Save the Date! URECA Luncheon: April 8, 11:30 a.m.–12:30 p.m., MT Center, Ingram Building

In conjunction with National Undergraduate Research Week and the Alumni Spring Showcase, the Undergraduate Research Center invites current and previous URECA scholars and mentors to join us for lunch as we celebrate the successes of undergraduate research. Robert "Hoot" Gibson, a former American naval officer and aviator, aeronautical engineer, and retired NASA astronaut, will be the guest speaker.

Scholars Week 2019, March 18–22

MTSU Scholars Week is an annual, week-long celebration of research, scholarship, and creative projects. The week features guest speakers, a speech contest, and other events hosted by each college. It culminates in a University-wide poster exposition featuring student research posters and creative performances on Friday, March 22. Food will be served.

More details: mtsu.edu/scholarsweek

Undergraduate Research Experience and Creative Activity (URECA) Grants Applications

Did you know that you can get paid to do research while gaining valuable experience alongside a faculty mentor? The Office of Research and Sponsored Programs administers University funds to directly support mentored undergraduate research through URECA grants. Awards range from \$500 for beginners to \$3,500 for experienced researchers. Check out our [website](#) for application requirements.

Summer applications are due Thursday, March 28, by 3 p.m.

Undergraduate Research Programs Conference 2019

The Ohio State University is host for the June 27–29 conference, Building and Enhancing Undergraduate Research and Creative Inquiry Programs, in Columbus, Ohio.

For more information, visit
cur.org/what/events/conferences/urpc/2019/

Seven MTSU students present posters on Capitol Hill

Undergraduate students from MTSU and eight other Tennessee state universities presented their research posters to legislators and guests at the Tennessee State Capitol on Feb. 26. This longstanding tradition gives undergraduate students an opportunity to present their research to our state legislators. Congratulations to the following students who were selected to represent MTSU at this prestigious event:



Tessa Antonelli

"Violence of American Serial Killers in the 1970s Using the Criminological Psychology of John Wayne Gacy as the Model"
Faculty mentor: Molly Taylor-Polesky



Caldwell Charlet

"Whole Cell Biocatalysis of Major Ginsenosides in Ginseng Beer Wort Using *Saccharomyces Cerevisiae*"
Faculty mentor: Seockmo Ku



Abigail Choisser

"Insight into Interrelationships among Density, Viscosity, Crystallinity and Chemical Composition within Hypocrystalline Intermediate Lavas, Mt. Hood Volcano, Oregon"
Faculty mentor: J. Warner Cribb



Joseph Gulizia

"The Influence of Kudzu (*Pueraria montana* var. *lobata*) Age on In Situ Rumen Degradation"
Faculty mentor: Kevin Downs



Hannah Hall

"Inducing Somatic Embryogenesis of Grape (*Vitis aestivalis* "Norton/Cynthiana") Callus"
Faculty mentor: John Dubois



Kaylee Lindgren

"Service Dogs in the Classroom for Children with Autism"
Faculty mentor: Nikki Jones



Sabrina Spicer

"Towards a Clinical Antifungal Peptoid; Investigations into the Therapeutic Potential of AEC5"
Faculty mentors: Kevin Bicker and Erin McClelland

URECA GRANTS AWARDED FOR FALL AND SPRING SEMESTERS

To support its vision of nurturing a culture of research and creative activity at MTSU through support for undergraduate students and their faculty mentors, the Undergraduate Research Center (URC) offers Undergraduate Research Experience and Creative Activity (URECA) grants to students three times a year.

The URC's commitment to excellence in research, scholarship, and creative projects is exemplified through the URECA program, which presents an opportunity for undergraduate students to work alongside distinguished faculty mentors through a structured mentored program. The application process is competitive, but the benefits are rewarding.

Congratulations to our Fall 2018 and Spring 2019 URECA recipients.

NAME	LEVEL	PROJECT TITLE	MENTOR	DEPARTMENT
FALL 2018 URECA RECIPIENTS				
Baber, Garrett	Assistant	NASA FOCUS Lab: Do Effective Debriefs Lead to Better Performance?	Glenn Littlepage	Psychology
Bishara, Gina	Assistant	A Social Network Analysis of Introductory Biology Students' In- and Out-of-Class Study Group Interactions	Grant Gardner	Biology
Brannan, Kriston	Assistant	NASA FOCUS LAB Training Needs Analysis	Michael Hein	Psychology
Carter, Daviesha	Assistant	Confirming Novel Genes related to <i>Cryptococcus neoformans</i> Infection of Humans	Rebecca Seipelt-Thiemann	Biology
Cheruiyot, Amos	Assistant	Drag Reduction on Rotating Cylinders Utilizing Stallion 3D	Nate Callender	Aerospace
Choisser, Abigail	Gold	Insight into interrelationships among density, viscosity, crystallinity, and chemical composition within lavas erupted at Mt. Hood Volcano, Oregon	Warner Cribb	Geosciences
Dixon, Robert	Silver	Evaluating <i>Leveanworthia stylosa</i> defensive chemistry and fitness in the wake of invasion by the cabbage seedpod weevil, <i>Ceutorhynchus obstructus</i>	Joshua Grinath	Biology
Earls, Korissa	Assistant	Food Security, Coping and Support Strategies, and Diet Quality in College Students from a Moderate-Sized University	Elizabeth Smith	Nutrition and Food Science
Edwards, Regan	Gold	Utility of Photogrammetry for Virtual Curation and Metric Analysis of Skeletal Rema	Tiffany Saul	Sociology and Anthropology
Ghobrial, Merna	Silver	Investigating the ability of spice extracts to inhibit bacterial growth and/or histamine accumulation associated with scombroid food poisoning	Rebecca Seipelt-Thiemann	Biology
Gulizia, Joseph	Silver	Early and late season Kudzu (<i>Pueraria montana var. lobata</i>) age variability effects on Total and Nutrient-Specific In Situ Rumen Degradation	Kevin Downs	Agriculture
Haase, Will	Silver	Unitization Applied to deep reinforcement learning	Joshua Phillips	Computer Science
Ibrahim, Marina	Silver	Gene Discovery and Annotation of <i>Gardnerella vaginalis</i> , a Bacterium Associated with Bacterial Vaginosis	Rebecca Seipelt-Thiemann	Biology
Jenkins, Steffany	Assistant	A "Self-Destruct Button" for Yeast: a Method to Improve Industrial Protein Production	James Robertson	Biology
Lay, Zachary	Silver	Isolation and Identification of Fungal Endophytes Present in <i>Vitis aestivalis</i> Originating from Vineyards Located in Virginia and New York Compared to Mid-Western States	Rebecca Seipelt-Thiemann	Biology
Little, Daniela	Assistant	Mini Health and Nutrition Screen	Elizabeth Smith	Nutrition and Food Science
Martin, Autumn	Silver	Examining mindset theory with respect to different ability domains pertaining to college success	Thomas Brinthaupt	Psychology
Midgett, Shelby	Silver	Aurones and their Antibacterial Possibilities against Two Hospital-Acquired Bacteria	Mary Farone	Biology
Molina, Chelsey	Silver	Using <i>Caenorhabditis elegans</i> as an infection model for novel bacteria CC99	Anthony Farone	Biology
Nadeau, Allie	Assistant	Utilizing Fermentation to Create Eco-Friendly Dyes (Rudd, Johnston, Handy Group)	Tony Johnston	Agriculture
Owen, Robert	Gold	Examining the Role of F56F11.4 in Sperm of <i>Caenorhabditis elegans</i>	Lynn Boyd	Biology
Patrick, Sarah	Assistant	Mental Health Disorders Among Mast Cell Activation Syndrome Patients	Angela Bowman	Health and Human Performance
Riley, Rebekkah	Silver	Somatic Embryogenesis in Grape (<i>Vitis aestivalis</i> "Norton/Cynthiana") Callus Generated from Ovary Tissue	John DuBois	Biology
Sessler, Robyn	Assistant	Positive and Negative Qualities of Relationships	Cameron Gordon	Psychology
Shirk, Isaac	Gold	Constructing a novel experimental apparatus for use with acoustics research	William Robertson	Physics and Astronomy
Srisuriyo, Don	Assistant	Dyeing to Know: A Natural Approach to Dyeing Textiles (Rudd, Johnston, Handy Group)	Scott Handy	Chemistry
Stinnett, McKenna	Assistant	Dyeing to Know: A Natural Approach to Dyeing Textiles (Rudd, Johnston, Handy Group)	Lauren Rudd	Human Sciences
Welch, Kristen	Silver	Characterization of Aurone 1009 on <i>Cryptococcus neoformans</i>	Erin McClelland	Biology
Whitworth, Casey	Assistant	The effects of 3D biology lessons on student learning	Ryan Jones	Education
Wolfe, Brenna	Assistant	Link between prosody sensitivity and reading comprehension: a combined EPR and individual difference approach	Cyrille Magne	Psychology
Woods, Nolton	Gold	Synthesis and Application of Non-Halogenated Phosphorus FR for Polycarbonate	Dwight Patterson	Chemistry

NAME	LEVEL	PROJECT TITLE	MENTOR	DEPARTMENT
SPRING 2019 URECA RECIPIENTS				
Adcox, Devin	Silver	The Utility of 3-D Laser Scanning for the Virtual Curation and Metric Analysis of Skeletal Remains	Tiffany Saul	Sociology NS Anthropology
Anwar, Avraz	Assistant	Optimization of Reaction Conditions for Beta-Lactone Ringing Coupling	Norma Dunlap	Chemistry
Berry, Kaitlyn	Silver	Evaluating Chronic Oxytocin Effects on Social Behaviors	Tiffany Rogers	Psychology
Blackmon, Mark	Silver	Non-Christian and Immigrant Christian Communities and the Programs Available to their Youth in Middle Tennessee	Rebekka King	Philosophy and Religious Studies
Brown, Britney	Assistant	Evaluation of breed, milk production, and udder characteristics on somatic cell count and udder pathogens in lactating Holstein and Jersey cows	Jessica Carter	Agriculture
Burton, Chase	Silver	Determining Whether a Virulence-Related Non-Coding RNA	Becky Seipelt-Thiemann	Biology
Frazier, Jared	Assistant	Fast Screening of Explosives by Ambient Ionization Mass Spectrometry	Mengliang Zhang	Chemistry
Ghobrial, Madonna	Silver	Annotation of Immune System Genes in Maize Genome	Rebecca Seipelt-Thiemann	Biology
Gulizia, Joseph	Gold	Comparison of dietary kudzu leaf meal and alfalfa meal supplementation on broiler performance and carcass characteristics	Kevin Downs	Agriculture
Gwirtsman, Gabriel	Silver	A Comparison of Dyes	Andrienne Friedli	Chemistry
Haase, William	Silver	Unitization and Catastrophic Interference in Reinforcement Learning	Joshua Phillips	Computer Science
Hellervick, Nikolaus	Assistant	Aside Aurones and Click Chemistry	Scott Handy	Chemistry
Jenkins, Steffany	Silver	Genetic regulation of a camphor mediated light switch	James Robertson	Biology
Khan, Nibraas	Assistant	Combining Models for Observable and Non-Observable Task Switching to Achieve Working Memory for Autonomous Systems	Joshua Phillips	Computer Science
Matchinske, Miles	Silver	Confirmation of ploidy for putative haploid isolates	Sarah Bergemann	Biology
Mohammed, Alaa	Silver	Using CRISPR to Knockout a Gene Encoding a Virulence Related Non-Coding	Rebecca Seipelt-Thiemann	Biology
Mohammed, Asfah	Silver	N-Substituted Azaaurones: Synthesis, Photochemistry, and Biological Applications	Scott Handy	Chemistry
Moilanen, Aric	Silver	The Role of Electron-Electron Interactions on Metal-Insulator Transitions	Hanna Terletska	Physics and Astronomy
Moore, Sara	Silver	Somatic embryogenesis from stamen callus tissues in <i>Vitis aestivalis</i> "Norton/Cynthiana"	John DuBois	Biology
Morin, Gabriella	Gold	Fluorescent Tagging of Genomic Parkin in Human Osteosarcoma Cells Using CRI	David Nelson	Biology
Morphis, Harlee	Assistant	The Impact of 3D Biology Lessons within the Classroom	Seth Jones	Education
Oldham, Cameron	Silver	The Effects of Pesticide Chemicals on the Microorganisms Responsible for Nitrification and How It Affects Soil Fertility	John DiVincenzo	Biology
Omatu, Ngozi	Assistant	Dimensional Attention Learning for Working Memory	Joshua Phillips	Computer Science
Park, Jiwoo	Silver	Examining the Effects of Inflammation on Parkin-Dependent Mitochondrial Quality Control in Parkinson's Disease Using Cell Line Models of Neurons and Microglia	David Nelson	Biology
Patel, Payal	Assistant	Inducing Somatic Embryogenesis in Industrial Hemp Tissue	John DuBois	Biology
Pergande, Simon	Assistant	Quantifying the activity of forensically-important flies (FIF) as a factor influencing the pattern and rate of human decomposition in East Tennessee	Yangseung Jeong	Biology
Remedios, Lucas	Assistant	Creating Keras Layer for Facilitating Building Neural Networks for Multi-Task Learning in Partially Observable and Non-observable Environments	Joshua Phillips	Computer Science
Schroeder, George	Assistant	Identification and Quantification of Ginsenosides in American Ginseng	Glenn Littlepage	Biology
Sessler, Robyn	Silver	The Effects of Mindfulness on Positive and Negative Relationship Quality	Cameron Gordon	Psychology
Shutes, Tia	Assistant	Initiation and Cannabinoid	John DuBois	Biology
Trail, Autumn	Assistant	Body Forms: 3D Scanning/Printing	Rick Cottle	Human Sciences
Turner, Marissa	Assistant	The distribution and population based predictors of foodborne illnesses incidence by county in Tennessee, 2015–2017	Kahler Stone	Health and Human Performance
Valencia, Hellen	Assistant	Developing Procedures for Capturing Video and Audio of Small Group Interactions in Large Classroom Data Collection	Seth Jones	Education
Walsh, Alyssa	Assistant	Determining Differences in CBD Levels from Cloning Industrial Hemp	John DuBois	Biology

STUDENT RESEARCH SPOTLIGHT

Joseph Gulizia, recipient of a URECA Assistant award in Summer 2018, a URECA Silver Scholar award in Fall 2019, and a URECA Gold Scholar award for Spring 2019, presented his research titled "The influence of kudzu (*Pueraria montana* var. *lobata*) age on in situ rumen degradation" at the Southern Section American Society of Animal Science meetings in Oklahoma City (faculty mentor: Kevin Downs).

Augusta Hyberger, Chasidy Lauderdale, Keylee Lindgren, and Penelope Storm presented their research, "The Village: Cultivating Active Citizenship Among Undergraduate Social Work Students," at the Tennessee Conference on Volunteerism and Service Learning in Franklin (faculty mentors: Nikki Jones, Carmelita Dotson, and Donna Dopwell).

Gina Bishara, who received a URECA Assistant award in Fall 2018, presented her research titled "A Social Network Analysis of Introductory Biology Students' In-and-Out-of-Class Study Group Interactions" at the STEM Education Research Conference hosted by MTSU (faculty mentor: Grant Gardner).

Marilyn Kelley, recipient of a URECA Silver Scholar award in Spring 2018, presented her research titled "Analyzing Students' Understanding of Isomorphism" at the STEM Education Research Conference hosted by MTSU (faculty mentor: Jennifer Lovett).

Casey Whitworth, a Fall 2018 URECA Assistant award recipient, and Harlee Morphis, awarded a Spring 2019 URECA Assistant award, presented their research titled "3D Biology Lessons: Designing across biology, data modeling, and argumentation learning goals" at the STEM Education Research Conference hosted by MTSU (faculty mentor: Ryan Seth Jones).



MTSU SCHOLARS WEEK

POSTER EXPOSITION

Friday, March 22, 2019, 12:40–3:15 p.m.

Student Union Ballroom

Looking for events related to your college? Check our website at mtsu.edu/scholarsweek/ScholarsWeekScheduleofEvents.php