

BioUpdate

Department of Biology, Middle Tennessee State University

Spring 2026



In this issue

- Lab Updates
- Student Travel
- Full-Time/Temporary Faculty
- 2025-2026 GTAs
- Scholar's Week
- Scholarship Recipients

Message from the Chair

Greetings,

I am pleased to present the (slightly delayed) Spring edition of 2026 BioUpdate. As this is my first issue of our newsletter since taking on the Biology Chair position, I want to take this opportunity to thank my predecessor, Dr. Dennis Mullen, for his excellent leadership of our department over the past six years. He has had a tremendously positive effect on our faculty and students over his many years of service, and we wish him a very happy retirement. On a personal note, I would like to thank him for all the help and guidance he provided as I transitioned into this role. I could not have asked for a better mentor.

Over this past year, our department has seen several departures and new hires. We said goodbye to Dr. Brian Miller, who retired at the end of the Spring 2026 semester. Brian has been an outstanding teacher and researcher who was known for his work on the reptiles and amphibians of Tennessee. He will be greatly missed, and I encourage you to read our tribute to him later in this edition. We also completed a successful search for a tenure-track physiologist, resulting in the hire of Dr. Diana Voss, who will join us in Fall 2026 as a new assistant professor. Diana earned her PhD at the Medical University of South Carolina and comes to us following her postdoctoral work at the University of Pennsylvania. Her research program will focus on congenital heart disease and cardiac development, and our students can look forward to her General Physiology classes. We are delighted to welcome Diana as a new member of our faculty, and we look forward to all that she will accomplish at MTSU. Finally, in our office, we said goodbye to Sarah Clark, who has moved on to new opportunities, and welcomed Haley Bunney, who will help manage our departmental accounts.

This year has also been a productive time for our faculty. Collectively, they have published 37 peer-reviewed papers, many of which include undergraduate and graduate coauthors, and have brought in over \$1.2 million in new research funding. This includes funds from USDA (Giannoni-Guzman), NIH (Weissmiller), and HHMI (Google), as well as fellowship funding through NSF-GFRP awards to students in the Barnes and Walker labs. In other good news, we are delighted to report that both Drs. Danielle Brown and Siti Hidayati were promoted to Master Instructor, and Dr. Jessica Arbour was tenured and promoted to Associate Professor. In even more good news, Jessica was recognized with the 2026 MTSU Distinguished Early Career Research Award. This adds to her Outstanding Public Service Award from 2025!

To get all the latest Biology Department news, please check our webpage (<https://biology.mtsu.edu>), follow our usual social media channels (Facebook and Instagram), or connect with us on our new LinkedIn page.

Until next time!

Dave Nelson

Chair & Professor

Dept. of Biology, MTSU

Student Updates in the Weissmiller Lab

The students in the Weissmiller laboratory continue to achieve great success in their careers. Here are their updates:

Brittney Williams (undergraduate) has been accepted into Biomedical Ph.D. programs at prestigious UT Southwestern and The Ohio State University. She is currently deciding on which program to accept.

Isabel Jacober (undergraduate) has been accepted into the Neuroscience Ph.D. program at University of Michigan Ann Arbor. She was also awarded the Patrick Doyle Research Fund Scholarship to support her studies in the laboratory.

Donye Asberry (undergraduate) has been accepted into the Vanderbilt University Medical Center MSTP summer program for Summer 2026.

Maheswari Vaghela (doctoral student) and **Garrett Tessmer (MS student)** were awarded the Patrick Doyle Research Fund scholarship to support their studies.

Alexis Katz presented her research at the 2025 Fall Symposium and presented at Posters at the Capital and the National Conference on Undergraduate Research Spring 2026.



**Alexis Katz, presenting at the
Fall 2025 Research Open House**



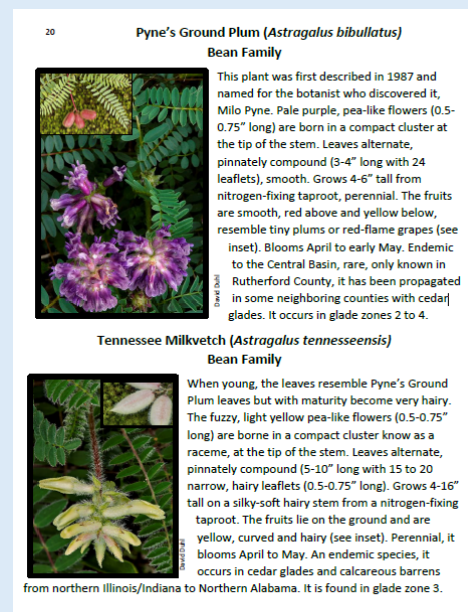
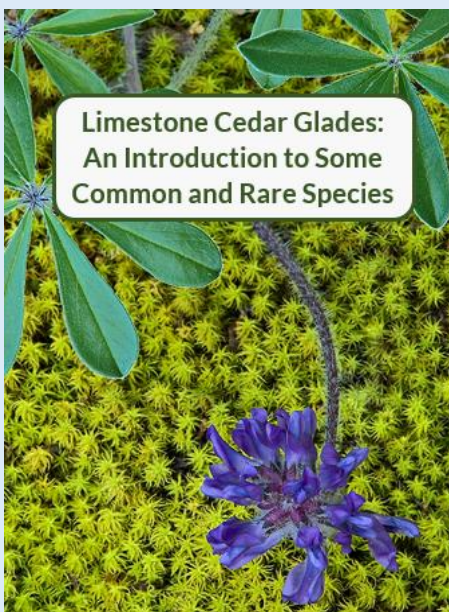
Kim Cleary Sadler, Co-director (Retired)

I retired at the end of August but have remained involved with the CCGS, focusing on public education about this unique ecological system. I've been an invited speaker for several organizations this past year. This region's staggering growth and development motivate me tremendously; limestone glades can't be put back once they are gone. It's hard to believe another year has passed in a blink, let alone that the Center for Cedar Glade Studies, established in 2005, has turned the corner to celebrate 21 years. Dr. Jeff Walck and I have been an effective team through shared and divided responsibilities, including the Center's annual Research Roundtable, associated cedar glade species research projects, committee work with conservation agencies, communication with the public, educational outreach, and many other activities. The printing of BioUpdate usually overlaps with the annual Elsie Quarterman Cedar Glade Wildflower Celebration held in partnership with Cedars of Lebanon State Park. The celebration is always the first weekend in May. Mark your calendars for 2026: April 30 – May 3, and plan for 2027: April 30 – May 2. You can also find out details on the CCGS website: www.mtsu.edu/glade-center.

Many of the weekend facilitators are associated with MTSU as former students or faculty. You can read more about the interesting and fun events that occur at the EQ Celebration by reading the March/April 2026 issue of the Tennessee Conservationist:

<https://digital.tnconservationist.org/article/Cedar+Glade+Wildflowers+in+May/5108805/860560/article.html>

The Tennessee Native Plant Society and the Center for Cedar Glade Studies partnered to produce a booklet with 114 species of interest in cedar glades. The MTSU Bookstore, owned by Barnes & Noble, was not willing to carry the booklet, but copies are available at the Cedars of Lebanon State Park gift shop, Barfield Nature Center, Oaklands Mansion, and at events where TNPS is attending at a table. Email me, kim.sadler@mtsu.edu, if you would like more information about purchasing a copy of *Limestone Cedar Glades: An Introduction to Some Common and Rare Species*. The plants are grouped by family to acquaint the user with shared characteristics. Learning to recognize the family to which a plant belongs is a good place to start. Follow up with the TNPS *Wildflowers of Tennessee* field guide for lots more information. This booklet is intended to be “thumbed” through to find your unknown plant!



Center for Environmental Education
Kim Cleary Sadler, Retired

I retired last August with every intention of continuing to work on projects that I care about. It's been a great year doing just that, overseeing the TAMP program, volunteering at schools, working on the MTSU Arboretum, putting up bluebird boxes in the SCI courtyard, and collaborating with others. With the extreme drought last summer, the Monarch/Native Plant garden became too difficult for me to maintain, but Drs. Walck and Herlihy have stepped in, along with Greenhouse student workers, to rescue the beautiful garden. I'm looking forward to working with them to reorganize the space and plant more species to enjoy!



The CEE hosted a series of wildflower workshops in fall 2025 and spring 2026, with 26 participants attending each 6-week course. Leslie Anne Allen, a former State Park Range Naturalist, facilitated the two workshops. The best part is getting out in the field with the class, which includes wandering around campus and visiting state natural areas.



Tennessee Amphibian Monitoring Program Wraps Up, 2004 to 2026

It is with some sadness that we received notice from TWRA that they have decided not to renew the Tennessee Amphibian Monitoring Project (TAMP) contract, which ends on June 30th, due to a shortage of available federal funds and a decline in hunting license purchases across the state. Bob English has been involved in the initial stages of the North American Amphibian Monitoring Program and TAMP program for more than 30 years and served as TAMP program director for 22 of those years. He has been compensated minimally for the work he has done training volunteers and overseeing data reporting to TWRA. He is a superb photographer who does whatever it takes to get the perfect image. He has great stories about that process. One memorable story to me is him, in a wetsuit, neck-high in a pond in early spring, with a plan to toss his camera to shore if he missteps; he is a dedicated wildlife photographer! Thank you, Bob, for providing valuable amphibian occurrence data for perpetuity. Who knows, a future MTSU student may be utilizing it to answer important questions about amphibian populations in Tennessee.

Bob English has this to share:

I'm quite proud of our many dedicated TAMP volunteers who have spent many hours in the field collecting observations of Tennessee's frogs and toads over the 22-year life of the TAMP program. I'm convinced that this data will become increasingly valuable over time. Many have shared how much they have learned from their field work and how much they enjoyed running their listening routes.

In the time spanned by the project we have seen the rapid eastward range expansion of Green Treefrog, *Hyla cineria*, all the way across the state. We suspect that warming winter temperatures due to climate change have precipitated this move. The effect of this range change on resident populations of Cope's Gray Treefrogs, *Hyla chrysoscelis*, has yet to be determined. Some species like the Crawfish Frog, *Lithobates areolatus*, look like they may be diminishing in numbers.

I am very thankful for the support of Drs. Cindi Smith-Walters and Kim Sadler of the MTSU Center for Environmental Education, and Pandey Upchurch and Chris Simpson of the Tennessee Wildlife Resources Agency, for their help and encouragement in all phases of this project. The partnership we shared with Dr. Mathew Gray of UT Knoxville's Department of Wildlife and Fisheries provided us with over two decades of data from East Tennessee. We cannot thank them enough. We did many training workshops for UTK in connection with that partnership, and they have incorporated the TAMP training modules we created for the TAMP website into their curriculum.

We plan to keep the TAMP website as a legacy site. A notice of the project's completion will be added, but links to all the learning resources will remain in place. We are currently conducting the second sampling run of the year, and we will also conduct the third run, which will be completed on June 15th. All data from this year will be added to the TAMP database and submitted to TWRA.

We will continue to look for ways to use the TAMP data in future projects. Pandey Upchurch and I started this journey over thirty years ago, spending all our free time traveling throughout the state, photographing and recording frogs and toads. We later conducted workshops across the state to train volunteers for the North American Amphibian Monitoring Program, NAAMP, from which TAMP was formed in 2016. I acted as the Coordinator for both NAAMP and TAMP from 2004 to the present. From the bottom of my heart, thanks to everyone who contributed. It's been a wonderful ride.



Eastern Cricket Frog
© 2026 Robert English Leaps

Department Retirement

Dr. Brian Miller has been a truly exceptional faculty member who will be greatly missed by all. I want to make sure that we thank him properly for his many contributions to the department before he leaves for a well-earned retirement.

Brian earned his bachelors and masters degree at the University of Missouri before completing his PhD at Washington State University in 1989. He then joined the Biology faculty at MTSU in August of 1989 and has been here ever since, providing ~37 years of service (almost four decades!), and achieving tenure in 1994 and promotion to full professor in 1999.

When he arrived here, he was hired to teach *Comparative Anatomy* and *Embryology*, but also took over *Vertebrate Zoology* and *Herpetology*, and has also taught *General Biology*, *Anatomy & Physiology*, *Ornithology*, and our *Electron Microscopy* courses. His courses have been loved by our students. That much is evidence from his evaluations and his numerous letters of recognition. When I started to look through his file this morning, it was loaded with “faculty member who makes a difference letters” I counted at least 13 by 2004 and those are just the ones that we had on file in the Biology office. I believe he has had so many more over the years. His electron microscopy courses were dearly loved as well, and many of his former students have told me as much (including Logan and Sarah Clark).

Much of Brian’s career has been devoted to the study of amphibian population trends, distribution, and ecology. While I found it difficult to piece together a complete picture of his research activities over the years as not all of it is in faculty success – and much is contained in paper records – it became quite clear that he has been one of our most active faculty in terms of publications and his work with graduate students. Just taking 2008 for example, he had five national publications that year and was directing the research of five graduate students. This level of productivity was kept up for most of his career, with him producing at least 15 publications since 2019, which is a remarkable level of productivity. His output has not been limited to peer reviewed publications. He contributed to various important books for his field, including “Amphibians of Tennessee” and “Reptiles of Tennessee,” which he served as a co-editor of. His work has also been funded by the Nature Conservancy, and by the Tennessee Wildlife Resources Agency numerous times, and he has received national recognition in the form of the State Wildlife Action Plan Partnership Award for his research on the Tennessee Hellbender.

This only scratches the surface of what Brian has done during his time at MTSU. Again, we are so grateful for his contributions to our department and to our students, and I hope we can all take a moment to thank him.

-Dr. Dave Nelson



BIOLOGY STUDENT TRAVEL

Emily Callison
BS Biology
International Conference on Undergraduate Research (ICUR)
Warwick, UK
June 18th-19th

This summer, I had the privilege of traveling to the United Kingdom to deliver an oral presentation on my research in fungal pathogenesis at the International Conference of Undergraduate Research (ICUR) at the University of Warwick. My project, conducted under the mentorship of Dr. David Nelson and Derek Wiggins, a Molecular Biosciences PhD candidate in the Nelson lab, employs live-cell imaging to investigate the intracellular growth rate of the fungal pathogen *Cryptococcus neoformans* within macrophage cells. This opportunistic pathogen can cause severe illness in immunocompromised individuals, and understanding its mechanisms for survival and replication inside host immune cells is essential for advancing our knowledge of fungal pathogenesis and improving treatment strategies.

In addition to presenting my research, I also served as a panel facilitator, mentoring more than 20 fellow undergraduate researchers through preparatory meetings and practice sessions prior to the conference and leading multiple panels during throughout the two-day event. I also served as an abstract reviewer, evaluating submissions from undergraduate students, providing constructive feedback, and assisting in the selection of projects accepted for presentation at ICUR.

This transformative experience was made possible through the generous support of the MTSU Honors College, the MTSU College of Basic and Applied Sciences, and the Undergraduate Research Center at MTSU. Presenting at ICUR not only enhanced my academic growth but also enriched my cross-cultural awareness, reinforcing the vital role of diverse perspectives in challenging assumptions, exchanging ideas, and expanding the boundaries of possibility. I am deeply grateful to have been inspired and transformed by the brilliant thinkers, innovators, and dreamers I met from around the globe.



BIOLOGY STUDENT TRAVEL

J. Hayes

BS Biology Student

**Science Communication Education Research Network (SCERN) and Society for the Advancement of Biology Education Research (SABER) Annual Meeting
Minneapolis, MN
July 7-13, 2025**

My name is J. Hayes, and I'm an undergraduate research assistant in Dr. Liz Barnes's Social Perceptions of Science Lab who recently travelled to present a study at both the Science Communication Education Research Network (SCERN) First Annual Meeting and the Society for the Advancement of Biology Education Research (SABER) in Minneapolis, Minnesota. In our lab, we study science communication within biology education, and for my project, we're focusing specifically on how Christian undergraduates studying biology think, feel, and talk about climate change. This group of students interests us because we know that they make up over half of all undergraduates in biology courses in the United States, and Christianity is correlated to skepticism among Americans about climate change – a pressing societal issue relating to core biology *concepts* like systems thinking and energy transfer, which prior work from our lab shows undergraduates are already talking about with others in their personal lives. Christian biology students may have higher acceptance of climate change due to their education, and they could communicate this higher acceptance within their religious communities, especially since communication is a core *competency* in biology. Basically, they could act as boundary spanners between their religious and scientific communities based on their shared beliefs and identities both as Christians and as biology students.

So, to learn more about them, we surveyed 1,249 students enrolled in biology courses about their acceptance of climate change and their risk perception, or how worried they are about it, using measures with validity evidence. We also surveyed specifically our Christian participants about the extent to which they view connections between their religious identities and their beliefs about climate change as well as how often they talk about it with others. Then, we interviewed 20 Christian students who took our survey to learn more about their perceptions and communication.

We found that our Christian undergraduate biology students accepted and worried about climate change more than the average American, according to available 2024 estimates based on national polls. When we compare them to their non-Christian peers in their biology courses, however, they had lower acceptance and risk perception. On a scale from 1 (lowest) to 5 (highest), our Christian students scored a 3.93 on average, indicating that they did tend to accept climate change, just less than other students, whose scores averaged a 4.33. This signals that we have some room for progress in reaching our Christian biology students about climate change, and their lower perceptions could be limiting their potential for boundary spanning. We also found, through interviewing them about what shapes these perceptions, that experiences with climate change were major influences on their acceptance and risk perception. For example, one student with mid acceptance and low risk perception described how they don't perceive climate change impacting their personal life where they live in a rural area, whereas another student with high acceptance and risk perception described how they've noticed climate change impacting them throughout their life through changing trends in weather patterns. Additionally, a student with high acceptance attributed their reason for believing in climate change to learning about the science behind it in their biology classes. On the other hand, students described perceiving climate change as inevitable negatively influencing their risk perception, while others described how doing research on their own time had mixed effects on their acceptance and risk perception due to conflicting narratives about climate change online.

BIOLOGY STUDENT TRAVEL

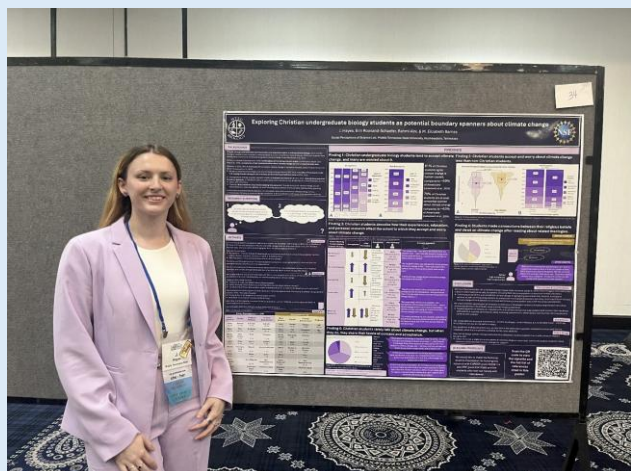
We also found that many of our interviewees did not report viewing strong connections between their religious identities and their beliefs about climate change before the interview. During the interview, though, we presented them with a vignette of a fictional discussion about Bible verses that relate to environmentalism, and after reading it, they were able to see and reflect on those connections. For example, one student went from viewing climate change as only a scientific fact, to drawing conclusions about how a couple of the theologies included in the vignette could work together to inform environmentalism and climate action. Finally, we found that our interviewees described talking about climate change much less than what previous studies from our lab with broader student samples have shown. Students with high risk perception described wanting to avoid conflict surrounding the controversial topic, while students with low risk perception reported feeling like it just isn't an important conversation to have. Regardless of whether students had high or low acceptance or risk perception, though, when they described a rare conversation about climate change (or what they *would* say about it), they mentioned sharing or convincing others of their own views.

These results have hopeful implications about Christian biology students' potential to be boundary spanners when examining just their acceptance of climate change, but their infrequent communication about it indicates that they may not be aware of or realizing this potential. To increase their acceptance and communication, educators could use a couple of strategies. One is teaching the science behind climate change and its associated risks and hazards in a way that emphasizes personal and local impacts, while also showcasing mitigation efforts to prevent doomsday apathy or anxiety. Another is presenting ways that religion can intersect with perceptions about climate change and highlighting notable boundary spanners, such as religious climate scientists. We're still analyzing the transcripts from this study and hope to report more findings soon, but we'd also like to build on what we're learning by developing and testing climate change instruction that highlights the science behind it, its associated risks, hazards, and mitigation efforts, and effective science communication and boundary spanning strategies.

This work wouldn't have been possible without the leadership and guidance provided by Dr. Liz Barnes and Dr. Erin Rowland-Schaefer, who has also aided me in coding transcripts, among other things. Travis Ray and Casey Epting, current and former undergraduate researchers in our lab, respectively, assisted me by conducting a few of the interviews. My quantitative analyses were only made possible by Rahmi Aini, a student here at the MTSU Mathematics and Science Education (MSE) Ph.D. Program, who taught me how to code in R. The work and my travel to disseminate it were funded by NSF CAREER grant #2238174, NSF IPRF grant #2411565, the MTSU Biology Department, and the Patrick Doyle Student Research Fund.

When I travelled to present our work at the SCERN and SABER conferences, I was delighted by both communities' interest and engagement with the project. At SCERN, I received feedback from science communication practitioners and researchers unrelated to the field of education research, including ideas I never would have otherwise considered when approaching the project through the lens of biology education. I learned so much over those couple of days about how our work can fit into the larger context of science communication education research, and I made connections within the network to established scientists that I look forward to learning even more from in the future. At SABER, I was overwhelmed by the number of visitors to my poster, who brought with them questions and conversations that have inspired me with so many new ideas about the future of this research. I am beyond grateful for the opportunity to have attended my first SABER and to have had my efforts honored by the Undergraduate Poster Award. I am so excited to spend the coming days reviewing the pages and pages of notes I took during those encounters, as well as during the many talks and posters I attended over the course of the four-day-long conference. I will forever cherish the memories and connections I made on this trip and can't wait to return next year.

BIOLOGY STUDENT TRAVEL



J. Hayes next to her poster, titled “Exploring Christian undergraduate biology students as potential boundary spanners about climate change”

J. Hayes holding her Undergraduate Poster Award next to Dr. Miriam Segura, President of SABER



Dr. Erin Rowland-Schaefer, co-advisor, next to J. Hayes holding her Undergraduate Poster Award from SABER (not pictured: Dr. Liz Barnes, co-advisor)

Social Perceptions of Science (SPS) Lab at SABER 2025; From left: Undergraduate Researcher (UR) Travis Ray, MSE PhD Student Rahmi Aini, UR Fatimah Alnassari (back), UR Donye Asberry (front), Post-Doctoral Student (PDS) Dr. Erin Rowland-Schaefer, UR J. Hayes, Principal Investigator Dr. Liz Barnes, MSE PhD Student Kate Coscia, PDS Dr. Mary Foley (back), UR Zaynab Alnassari (front), UR Khadijah Alnassari, and UR Ahmed Alnassari



Department Graphic Shirts

The department is offering shirts, backpacks, insulated lunch bags, coffee mugs, and stadium cups that sport the department graphic. The T-shirts come in short-sleeve royal blue with the Biology logo front and center. Several faculty and students have been spotted wearing the shirts. Come by and check out the merchandise in SCI 2044.

Short-Sleeve:	\$15
Insulated Lunch Bag:	\$8

All items can be purchased in the department office (SCI 2044)
or by email at
Biology@mtsu.edu.



Full-Time Temporary and Adjunct Faculty Play Major Roles

The combination of increased enrollment and decreased funding creates a challenge when it comes to assigning instructors to the ever-growing number of course sections. This need is met primarily by full-time temporary and adjunct faculty. This academic year, the department has hired full-time temporary and four adjunct faculty members.

These faculty are teaching Exploring Life lectures, General Biology II lectures, Human Anatomy and Physiology I and II labs, Comparative Anatomy of the Vertebrates labs, Genetics lectures and labs, Ecology labs, Invertebrate Zoology lecture and labs, Senior Seminar, and Biometry labs. Considering the expertise of each of these instructors, their students are obviously getting a great education. Their service to the department not only helps fill instructor roles but also helps fill in for research faculty who have received grants and/or contracts that include release time. A few of these instructors are using some of their out-of-class time to conduct their own research, often including graduate and undergraduate students. The department is forever grateful for their service.

Full-Time Temporary Faculty

Dr. Logan Bowling, B.S. 2013, Middle Tennessee State University; Ph.D. 2020, Middle Tennessee State University. Teaching: Genetics lecture and labs and Cell and Molecular Biology Labs

Dr. Danielle Brown, B.S. 2001, Cornell University; M.S. 2006 and Ph.D. 2011, University of California—Davis. Teaching: General Biology II lecture, Human Anatomy and Physiology I and II labs, and Ethology

Dr. Siti Hidayati, B.S. 1986, University of Gadjah Mada; M.S. 1993 and Ph.D. 2000, University of Kentucky. Teaching: Exploring Life lecture, Ecology labs, and Senior Seminar

Dr. Alexander Kirk, B.S. 2017, University of South Florida; Ph.D. 2024, University of South Florida. Teaching: Human Anatomy and Physiology I and II lecture and labs

Dr. Amy Massengill, B.S. 1993, Stetson University; D.V.M. 1997, University of Florida. Teaching: Human Anatomy and Physiology II labs and Comparative Anatomy of the Vertebrates labs

Dr. Angelique Troelstrup, B.S. 2000, M.S. 2003, Ph.D. 2016, Middle Tennessee State University. Teaching: Human Anatomy and Physiology I and lab

Adjunct Faculty

Hannah Brown, Teaching: Principles of Radiation in Medicine

Andrea Y. King, B.S. 2016, Middle Tennessee State University. Teaching: Introduction to the Forensic Science Major

BioUpdate

David Nelson, department Interim Chair (David.E.Nelson@mtsu.edu)

Produced by: MTSU Department of Biology

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2025-26 Graduate Teaching Assistants

For the 2024-2025 academic year, the department is providing support to 26 M.S.- level and 8 Ph.D.- level graduate students who serve as graduate teaching assistants (GTAs). Thirteen of these students have received undergraduate degrees from colleges and universities other than MTSU. Seven hold baccalaureate degrees in subjects other than biology (agriculture, biochemistry, exercise science, forensic science, and microbiology). All have the requisite training in biology to serve as departmental teaching assistants. Without these GTAs, the department would be unable to offer the many sections of the non-majors biology course (BIOL 1030) and the majors freshman courses (BIOL 1110/1120), along with some sophomore and junior laboratories. The department is very pleased to have them.

M.S. Biology Graduate Teaching Assistants

Carson Bailey, B.S., Biology, 2023, University of Tennessee Southern

Collin Clark, B.S., Biology, Biology, 2025, Middle Tennessee State University

Grace Curley, B.S., Biology, 2023, Middle Tennessee State University

Valerie Davis, B.S., Biology, 2023, Middle Tennessee State University

Ayodele Demuren, B.S., Biochemistry, 2014, Olabisi Onabanjo University

Sandi Flippo, B.S., Political Science, 1996, University of North Alabama

Lydia Folorunsho, B.S., Biology, 2025, Middle Tennessee State University

Lillian Gulliver, B.S., Biology, 2022, Middle Tennessee State University

Charitha Guntupalli, B.T., Biotechnology, 2023, Vignan's University

Rayzar Hawrami, B.S., Biology, 2025, Middle Tennessee State University

Katelyn Johnson, B.S., Biology, 2025, Middle Tennessee State University

Cedra Kamel, B.S., Biology, 2024, Middle Tennessee State University

Tia King, B.S., Biology, 2022, Middle Tennessee State University



2025-26 Graduate Teaching Assistants

Seamus Koch, B.S., Biochemistry, 2024, Middle Tennessee State University

Katelyn Lovell, B.S., Chemistry, 2023, Tennessee Technological University

Taylor Mayes, B.S., Biology, 2024, Middle Tennessee State University

Zuhayra Mohamed, B.S., Biology, 2025, Middle Tennessee State University

Olivia Moreno, B.S., Biology, 2025, Middle Tennessee State University

Alyssa Quinn, B.S., Biology, 2021, San Francisco State University

Lael Reel, B.S., Biology, 2023, Tennessee Technological University

Ross Rubin, B.S., Biology, 2024, State University of New York

Laura Scott, B.S., Biology, 2025, Middle Tennessee State University

Ian Tomazzolli, B.S., Biology, 2023, Middle Tennessee State University

Deborah Webb, B.S., Biology, 2024, Middle Tennessee State University

Joshua Whitlock, B.S., Biology, 2024, Middle Tennessee State University



2025-26 Graduate Teaching Assistants

Ph.D. Graduate Teaching Assistants

Molecular Biosciences Program

Jocelyn Bransford, B.S., Biology, 2024, Middle Tennessee State University

Josh Griggs, B.S., Biochemistry, 2024, Middle Tennessee State University

Prianca Griggs, B.S., Biology, 2020, Middle Tennessee State University

Joy Harrison, B.S., Biology, 2014, Georgia Southern University

Tolani Odufuye, B.S., Forestry and Wildlife Management, 2018, Federal University of Agriculture

Matthew Stout, B.A., Biology, 2023, Carson-Newman University

Michael Swaenepoel, B.S., Biology, 2017, Western Carolina University

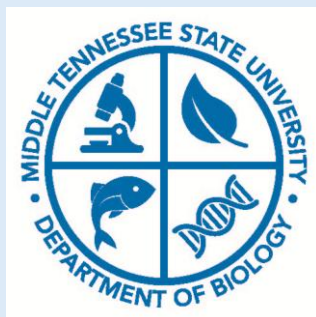
Caitlyn Wells, B.A., Psychological Science, 2022, California State University-San Marcos

Mathamatics and Science Education

Comfort Boadu, B.S., Science Education, 2017, University of Cape Coast

Kate Coscia, B.S., Biology, 2020, Georgia Gwinnett College

Saya Shahoy, B.S., Human Biology, 2023, UC San Diego



Theses and Dissertations Completed 2025-2026

Master's Theses

Fall 2025

Daniel Knorp, 2025, Pollination Ecology of the Endangered Pyne's Ground-plum (*Astragalus bibullatus*): Flowering Phenology, Insect Visitors, and Visitation Rates (Dr. Jeffrey Walck, Dr. Chris Herlihy, Dr. Grant Gardner – Thesis Committee)

Alyssa Everhart, 2025, Investigations into the Pathogenesis of Two Intracellular Bacteria: "Candidatus Berkiella cookevillensis" and *Legionella lytica* DSB2004 (Dr. Mary Farone, Dr. Anthony Farone, Dr. Stephen Wright – Thesis Committee)

Matthew Stout, 2025, A COMPARATIVE ANALYSIS OF TWO ASTRAGALUS CONGENERS: PHENOLOGY AND REPRODUCTIVE SUCCESS (Dr. Chris Herlihy, Dr. Jeffrey Walck, Dr. Jessica Arbour – Thesis Committee)

Carson Bailey, 2025, Phenology and consequences of *Xylocopa virginica* nectar robbing on two cedar glade endemics, *Astragalus bibullatus* and *Pediomelum subacaule* (Dr. Jeffrey Walck, Dr. Chris Herlihy, Dr. Jessica Arbour – Thesis Committee)

Ph.D. Theses

Fall 2025

Rodderick Moore, 2025, Mass Spectrum Analysis of Biological Compounds from Natural Sources (Dr. Justin Miller, Dr. Jeff Leblond, Dr. Iris Gao, Dr. Ngee Sing Chong, Dr. Tony Johnston – Dissertation Committee)

Spring 2026

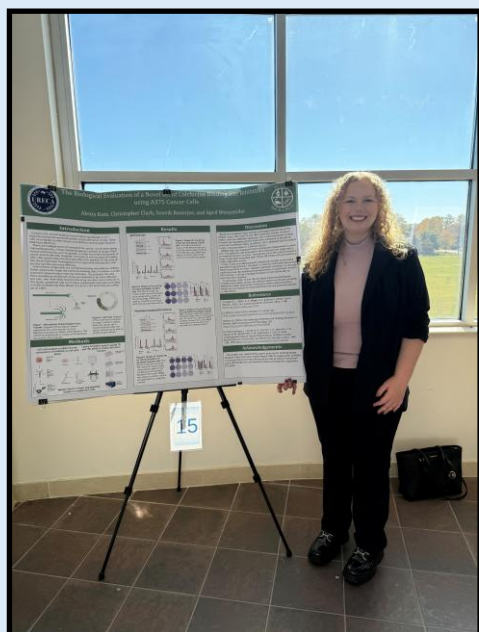
Csilla Szepe, 2026, Evaluation of Novel Anti-Staphylococcal Treatments (Dr. Mary Farone, Dr. Scott Handy, Dr. Anthony Farone, Dr. Anthony Newsome, Dr. Keying Ding – Dissertation Committee)

MTSU Undergraduate Research Center

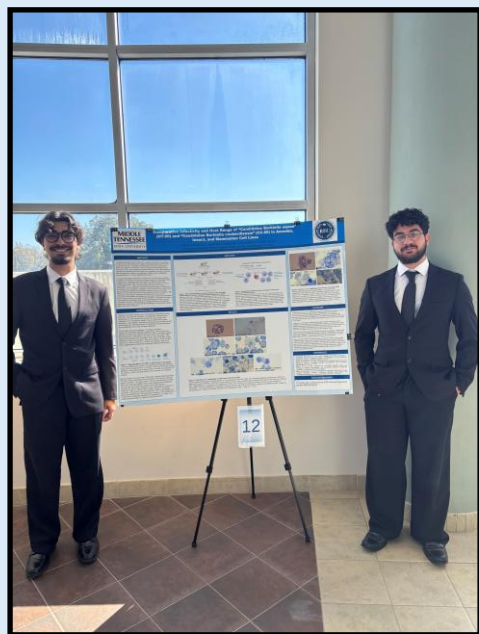
The 2025 Fall Research Open House



The Fall Research Open House, held 11/6/2025, was an informal poster session that showcased a sampling of current undergraduate student research and creative projects at MTSU. All students, particularly new students and transfer students, were invited to attend. This event was an awesome opportunity to experience the world of undergraduate research – learn more about the different projects that students pursue, ask questions about how they became involved in undergraduate research, meet some current faculty mentors, find out details about the spring and summer URECA grants, and learn about SOAR, the student organization devoted to undergraduate research. And, FREE lunch!



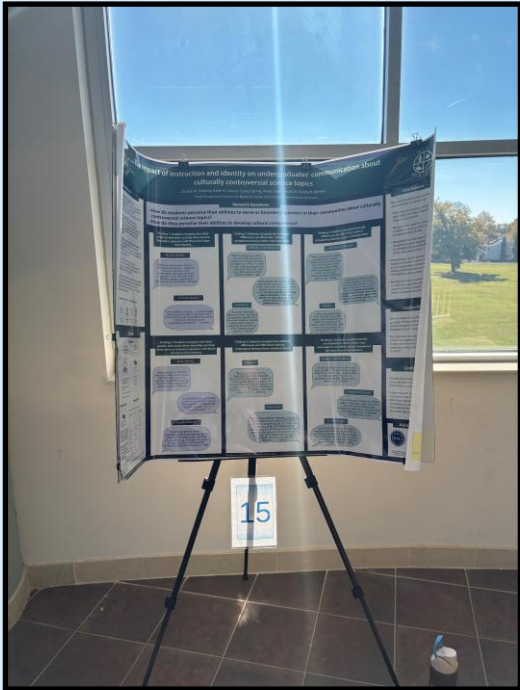
Alexis Katz, Biology; Dr. April Weissmiller (faculty sponsor);
“Investigating the Effect of Novel Colchicine-Binding Site Inhibitors on Cancer”



Anthony Atta and Abanoub Sayed Saleh, Biology; Dr. Mary Farone (faculty sponsor);
“Infectivity of Two Novel Obligate Intracellular Bacteria for Insect Cells”

MTSU Undergraduate Research Center

The 2025 Fall Research Open House



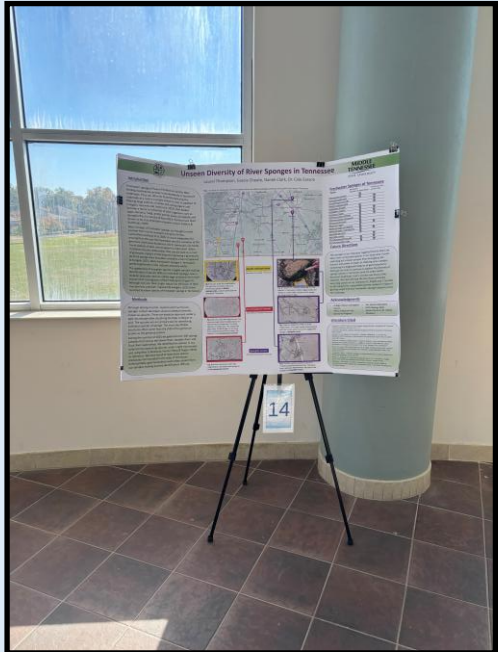
Donye Asberry, Biology; Dr. Elizabeth Barnes (faculty sponsor);
"The impact of instruction and identity on undergraduates' communication about culturally controversial science topics"



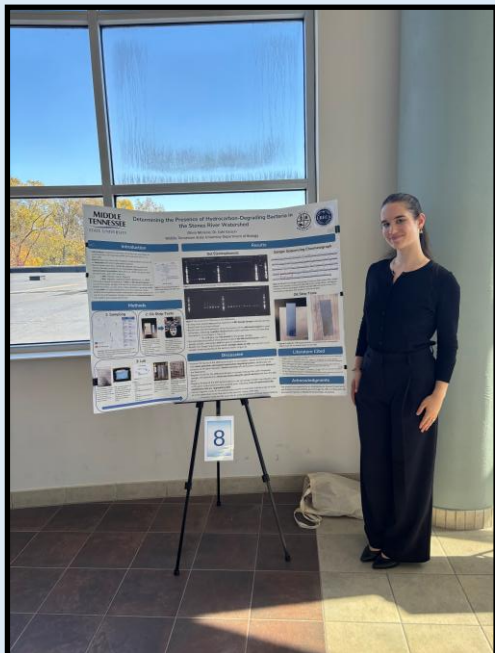
Johanna Crick, Biology; Dr. Donald Walker (faculty sponsor);
"Chryseobacterium and Stenotrophomonas as models to understand pathogen induced dysbiosis of the microbiome"

MTSU Undergraduate Research Center

The 2025 Fall Research Open House



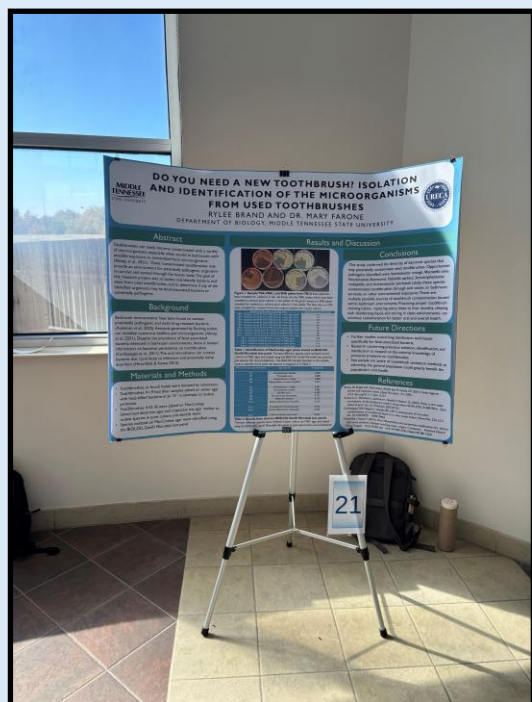
Laurel Thompson, Gracie Choate, Daniel Clark, Biology; Dr. Cole Easson (faculty sponsor);
"Unseen Diversity of Middle Tennessee River sponges"



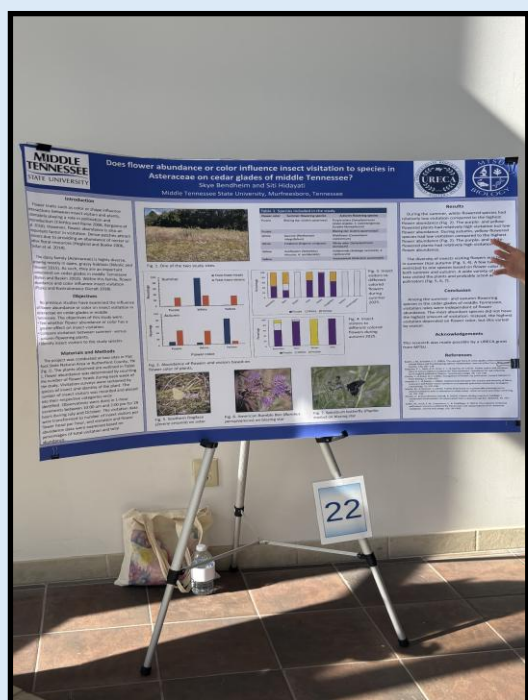
Olivia Moreno, Biology; Dr. Cole Easson (faculty sponsor);
"Determining the Presence of Hydrocarbon-Degrading Bacteria in the Stones River Watershed"

MTSU Undergraduate Research Center

The 2025 Fall Research Open House



Rylee Brand, Biology; Dr. Mary Farone (faculty sponsor); "Do You Need a New Toothbrush? Isolation and Identification of Microorganisms from Used Toothbrushes"

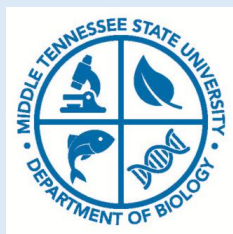


Skye Bendheim, Biology; Dr. Siti Nur Hidayati (faculty sponsor); "Does flower abundance or color influence insect visitation to species in the daisy family (Asteraceae) on Cedar Glades of Middle Tennessee"

MTSU Undergraduate Research Center

The 2025 Fall Research Open House

Cathrine Hasan, Biology; Dr. David E. Nelson (faculty sponsor); “Investigating the Relationship Between HIF-1 Pathway Activation and the Glycolytic Shift in Fetal Liver-Derived Alveolar Like Macrophages”



Zahraa Alrubaye, Biology; Dr. Rebecca Seipelt-Thiemann and Dr. Cole Easson (faculty sponsors); “Levels of Chlorophyll A in Local Waterways in Murfreesboro, TN”

Scholars Week Highlights Faculty and Student Research

Scholars Week March 23-27, 2026

Middle Tennessee State University held the 20th Annual Scholars Week March 23-27, 2025.

Scholars Week is a weeklong tradition during which MTSU's academic colleges celebrate scholarship, research, and creative activity through a variety of events and activities. The department presented 24 posters at the CBAS poster day in the SCI atrium and 18 at the university-wide poster session. Authors of these posters included 14 faculty members, 10 graduate students, and 19 undergraduate students. Faculty members involved in mentoring these students deserve credit for their time, effort and expertise in these research projects. Many people from across campus saw the quality of research being conducted in the department.

Congratulations to all authors for a job well done!

To see the Scholars Week program, visit <https://www.mtsu.edu/scholarsweek/index.php>

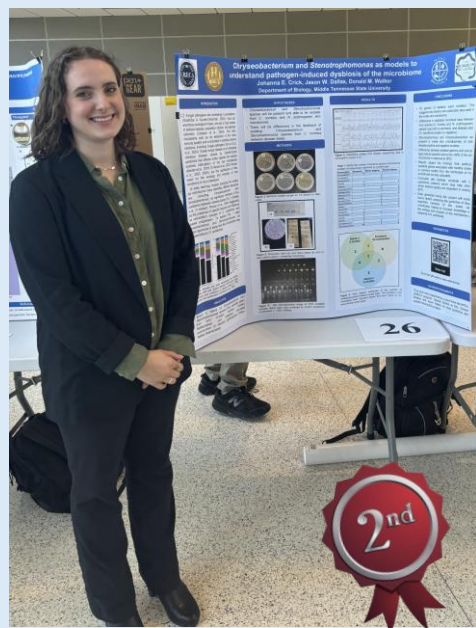
The following are posters from the Department of Biology.

Congratulations to the CBAS 2026 Poster Day Competition authors and their faculty mentors!

CBAS 2026 Poster Day Competition Winners

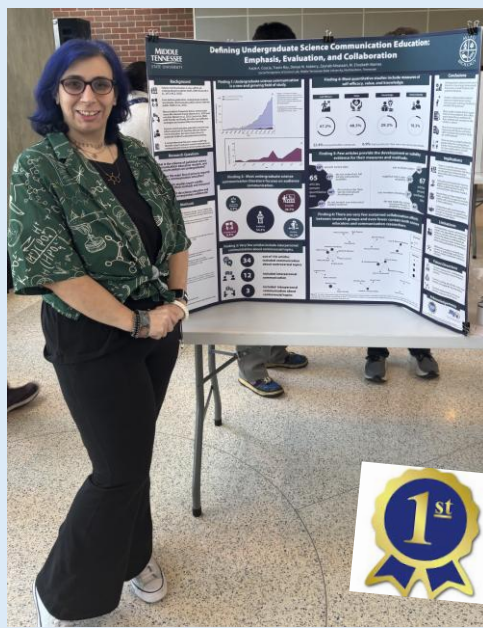
BS PROGRAM

Johanna Crick, Biology; **Dr. Donald Walker** (faculty mentor), Biology; "Chryseobacterium and Stenotrophomonas as models to understand pathogen induced dysbiosis of the microbiome"

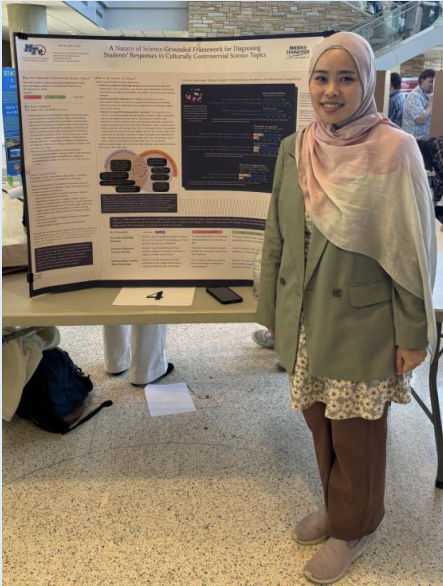


MSE PROGRAM

Kate Coscia, PhD MSE-BioEd; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; "Defining Undergraduate Science Communication Education: Emphasis, Evaluation, and Collaboration"

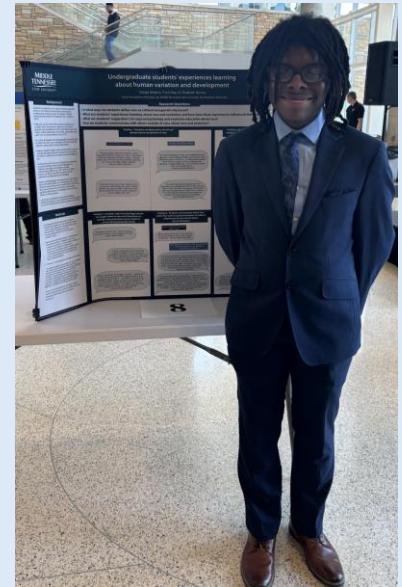


Scholars Week - CBAS Poster Day March 24, 2026

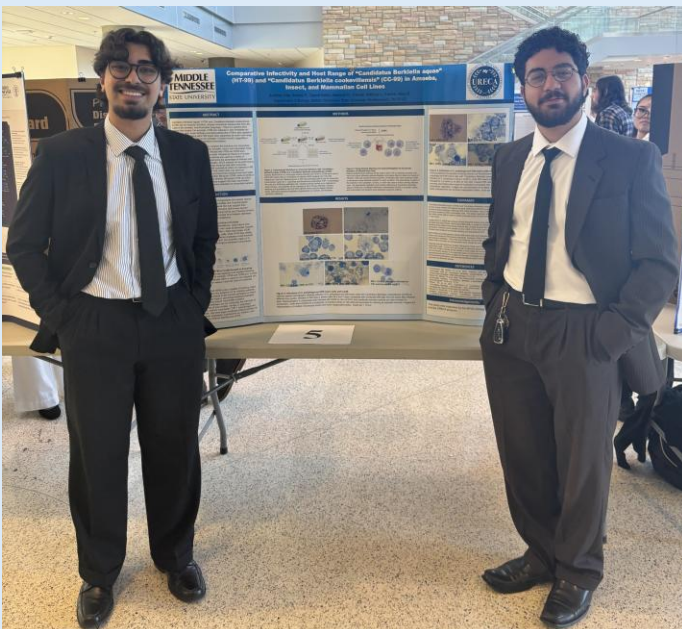


Rahmi Aini, Biology; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; "A Nature of Science-Grounded Framework for Diagnosing Students' Responses to Culturally Controversial Science Topics"

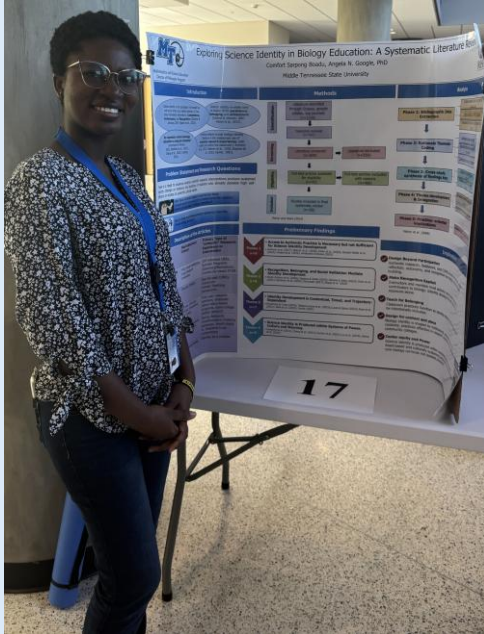
Donye Asberry, Biology; **Dr. M Elizabeth Barnes** (faculty mentor), Biology; "Undergraduate biology students experiences learning about human variation and development"



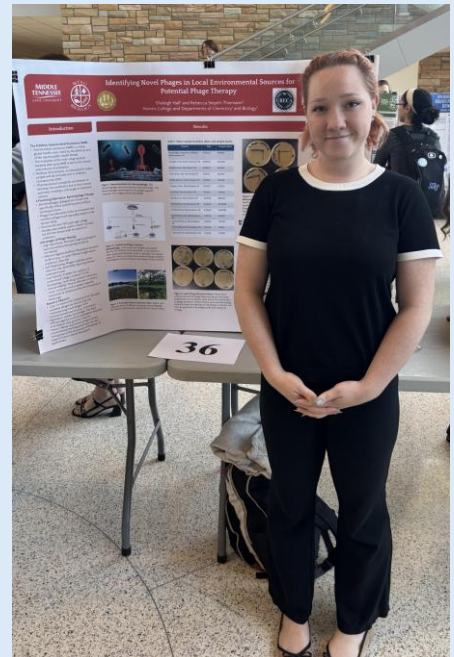
Antony Atta, Biology; **Dr. Mary Farone** (faculty mentor), Biology; "Comparative Infectivity and Host Range of "Candidatus Berkiella aquae" (HT-99) and "Candidatus Berkiella cookevillensis" (CC-99) in Amoeba, Insect, and Mammalian Cell Lines"



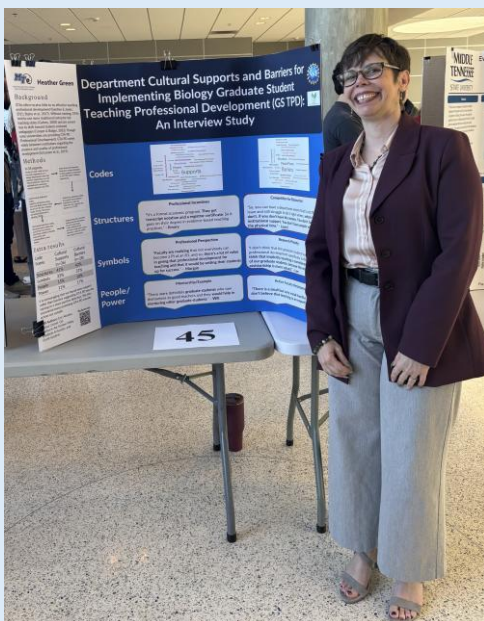
Scholars Week - CBAS Poster Day March 24, 2026



Comfort Boadu, MSE-BioEd; Dr. Angela Google (faculty mentor), Biology; “Exploring Science Identity in Biology Education: A Systematic Literature Review”

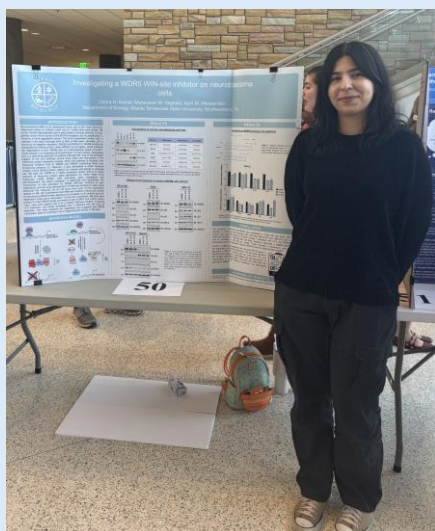


Ellaleigh Hall, Biology; Dr. Rebecca Seipelt-Theimann (faculty mentor), Biology; “Identifying Novel Phages in Local Environmental Sources for Potential Phage”



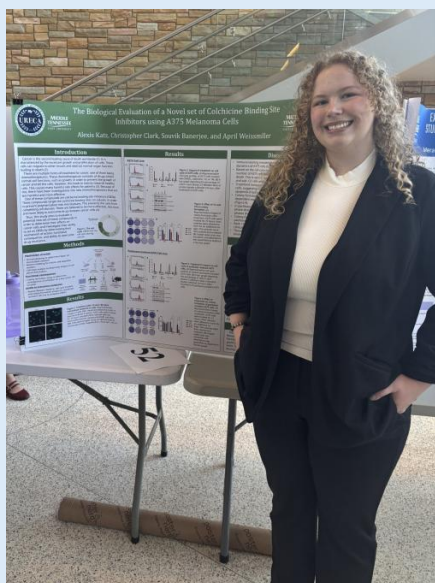
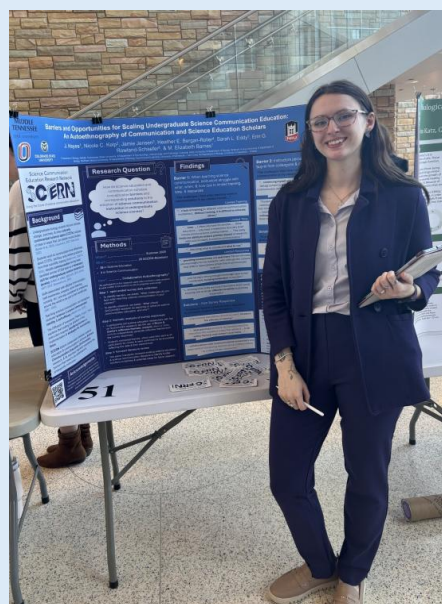
Heather Green, MSE-BioEd; Dr. Grant Gardner (faculty mentor), Biology; “Departmental Supports and Barriers to Graduate Student Teaching Professional Development: An Interview Study”

Scholars Week - CBAS Poster Day March 24, 2026

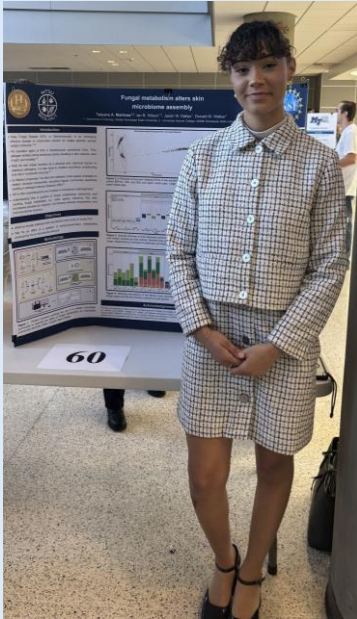


Cedra Kamel, MS Biology; **Dr. April Weissmiller** (faculty mentor), Biology; “Investigating the role of MDM4 inactivation in response of neuroblastoma cells to WDR5 WIN-site inhibitors”

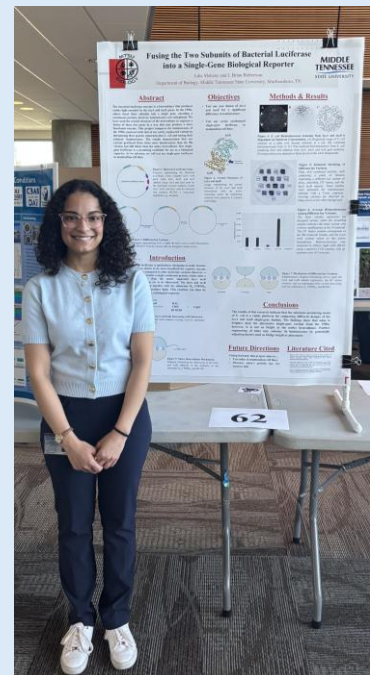
J. Hayes, Biology; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; “Barriers and Opportunities for Scaling Undergraduate Science Communication Education: An Autoethnography of Communication and Science Education Scholars”



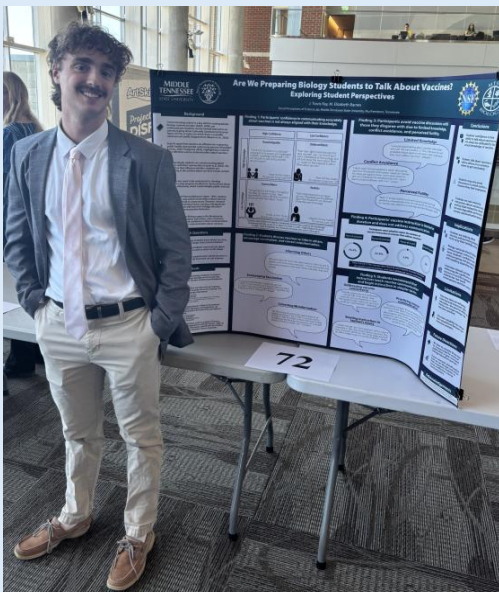
Alexis Katz, Biology; **Dr. April Weissmiller** (faculty mentor), Biology; “The Biological Evaluation of a Novel Set of Colchicine Binding Site Inhibitors Using A375 Melanoma Cancer Cells”



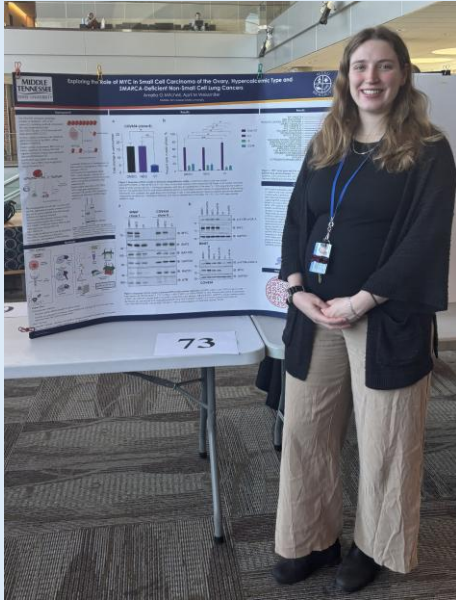
Tatyana Martinez, Biology; **Dr. Donald Walker** (faculty mentor), Biology; "Metabolites of an emerging fungal pathogen alter snake-skin microbiome assembly"



Julie Mehany, Biology; **Dr. Brian Robertson** (faculty mentor), Biology; "Fusing the Two Subunits of Bacterial Luciferase into a Single-Gene Biological Reporter"

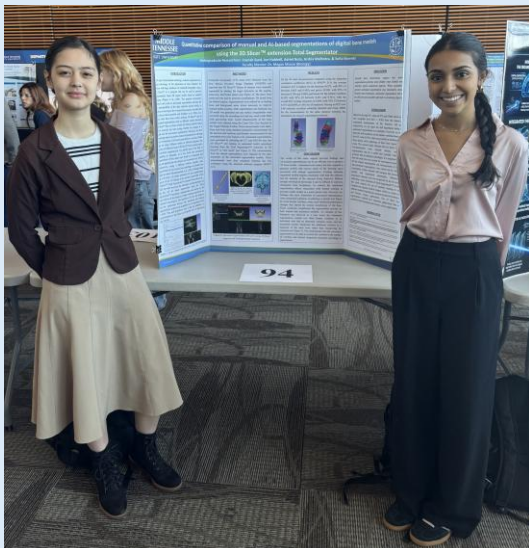
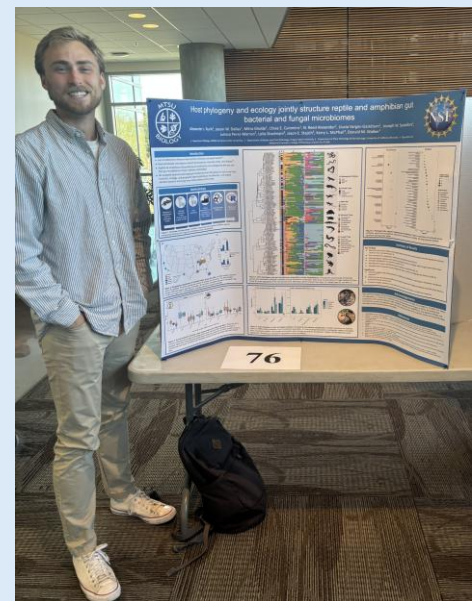


Travis Ray, Biology; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; "Are we Preparing Biology Students to Talk About Vaccines? Exploring Student Perspectives"



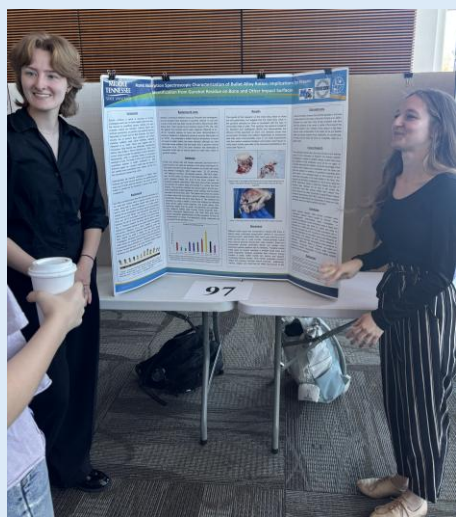
Amelia Mitchell, MS Biology; **Dr. April Weissmiller** (faculty mentor), Biology; “Exploring the Role of MYC in a SMARCA4-deficient Cancer, Small Cell Carcinoma of the Ovary, Hypercalcemic Type”

Alexander Rurik, MOBI; **Dr. Donald Walker** (faculty mentor), Biology; “Host phylogeny and ecology jointly structure reptile and amphibian gut bacteriomes and mycobiomes”



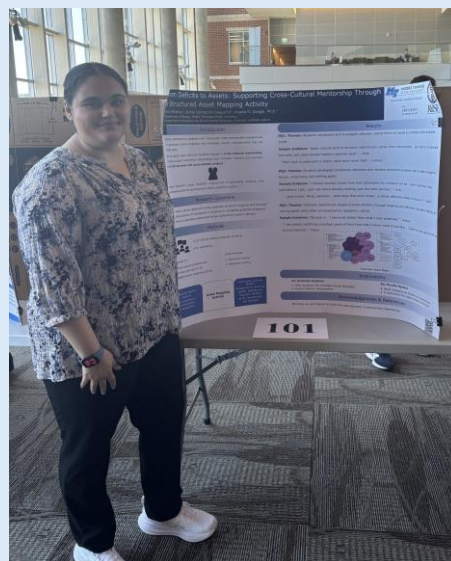
Zaynab Syed, Biology; **Dr. Megan Moore** (faculty mentor), Biology; “Quantitative comparison of manual and AI-based segmentations of digital bone models using the 3D Slicer™ extension Total Segmentator”

Scholars Week - CBAS Poster Day March 24, 2026



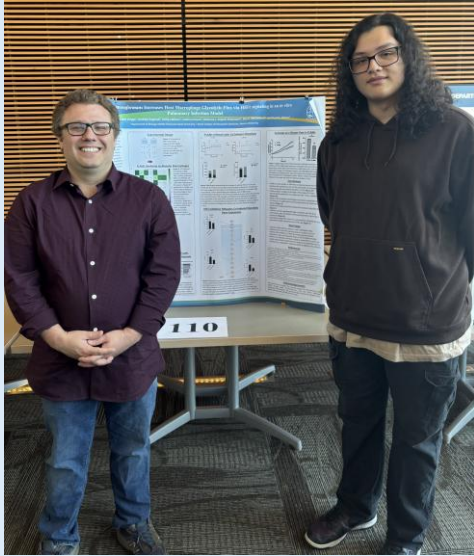
Ava Ruzzo, Chemistry; **Dr. Megan Moore** (faculty mentor), Biology; Dr. Jan Halamek (faculty mentor), Chemistry; “Atomic Absorption Spectroscopic Characterization of Bullet Alloy Ratios: Implications for Firearm Identification from Gunshot Residue on Bone and Other Impact Surfaces”

Saya Shahoy, MSE-BioEd; **Dr. Angela Google** (faculty mentor), Biology; “Supporting Cross-Cultural Mentorship Among Graduate Students Through an Asset-Mapping Tool”

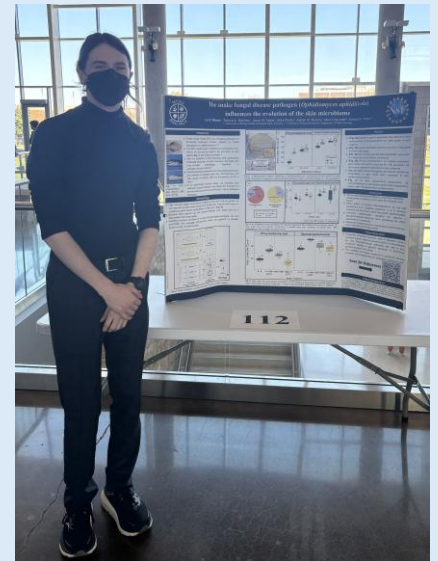


Maheswari Vaghela, MOBI; **Dr. April Weissmiller** (faculty mentor), Biology; “Impact of WDR5 and G9a Inhibition on MYCN-Driven Neuroblastoma”

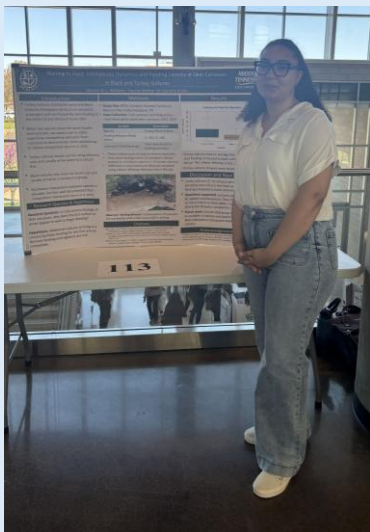
Scholars Week - CBAS Poster Day March 24, 2026



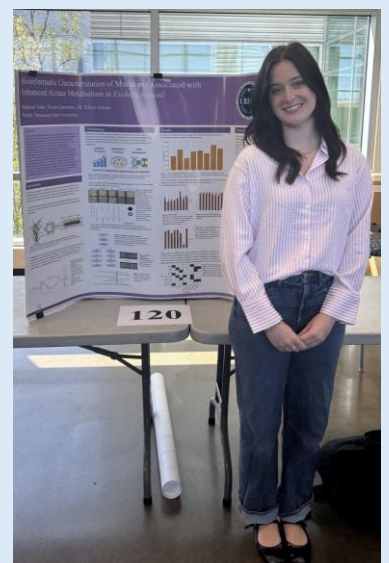
Derek Wiggins, MOBI; Josh Griggs, MOBI; Dr. David Nelson (faculty mentor), Biology; "Cryptococcus neoformans Increases Host Macrophage Glycolytic Flux via HIF1 signaling in an in vitro Pulmonary Infection Model"



Ian Wilson, Biology; Dr. Donald Walker (faculty mentor), Biology; "The snake fungal disease pathogen (*Ophidiomyces ophidiicola*) influences the evolution of the skin microbiome"

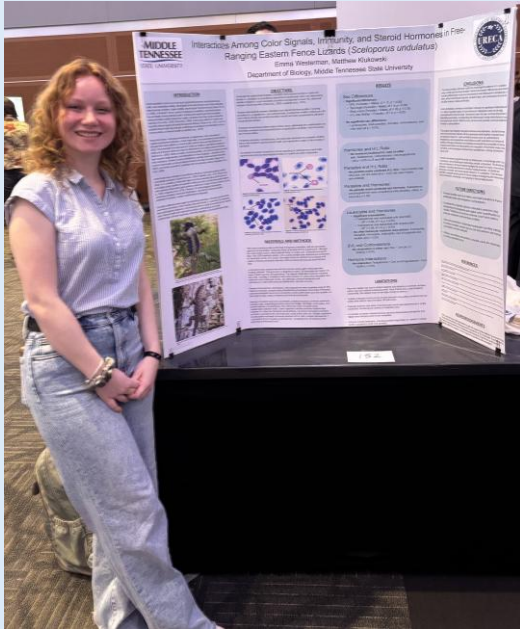


Marjoni Williams, Biology; Dr. Danielle D. Brown (faculty mentor), Biology; "Waiting to Feed: Interspecies Dynamics and Feeding Latency at Deer Carcasses in Black and Turkey Vultures"

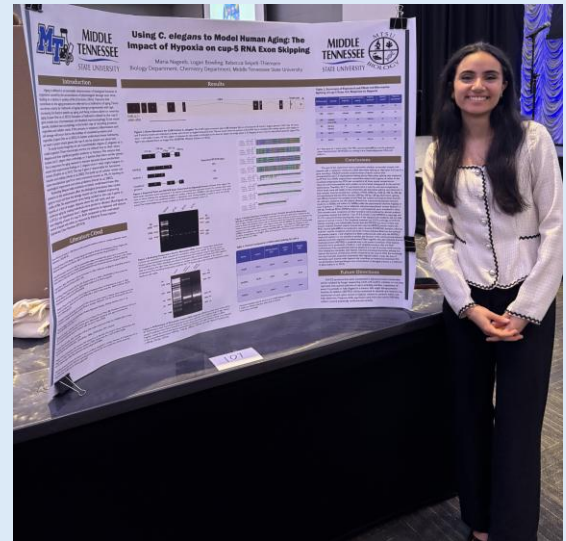


Madison Yahn, Biology; Dr. Elliot Altman (faculty mentor), Biology; "Bioinformatic Characterization of Mutations Associated with Enhanced Acetate Metabolism in *Escherichia coli*"

Scholars Week - CBAS Poster Day March 24, 2026



Emma Westerman, BS Biology; **Dr. Matthew Klukowski** (faculty mentor); "Interactions Among Color Signals, Immunity, and Steroid Hormones in Free-Ranging Eastern Fence Lizards (*Sceloporus undulatus*)"

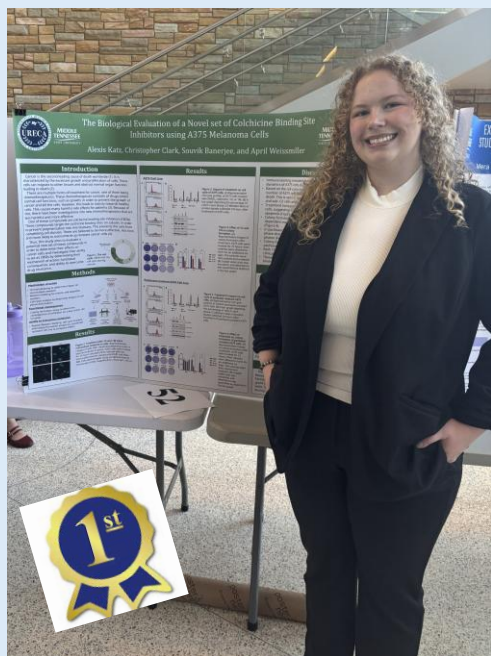


Maria Nageeb, BS Biology; **Dr. Logan Bowling** (faculty mentor); "Using *C. elegans* to Model Human Aging: The Impact of Hypoxia on *cup-5* RNA Exon Skipping"

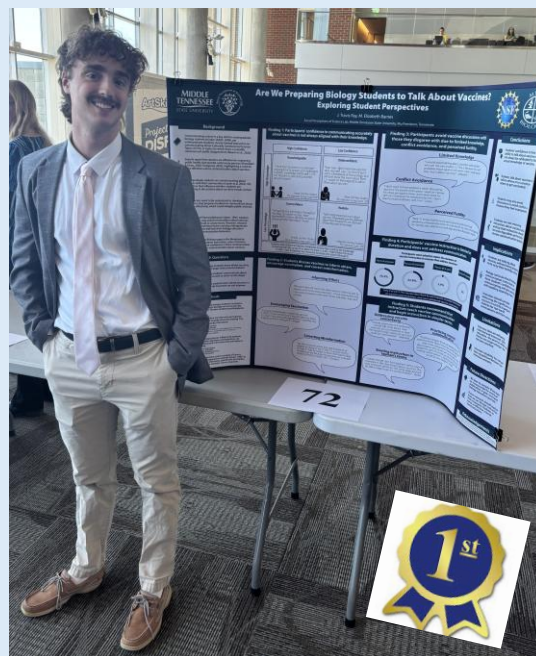


Joshua Whitlock, MS Biology; **Dr. Jeffrey Leblond** (faculty mentor); "Galactolipids of the Aerial Dinoflagellate *Rufusella insignis*: Comparison to Aquatic Dinoflagellates"

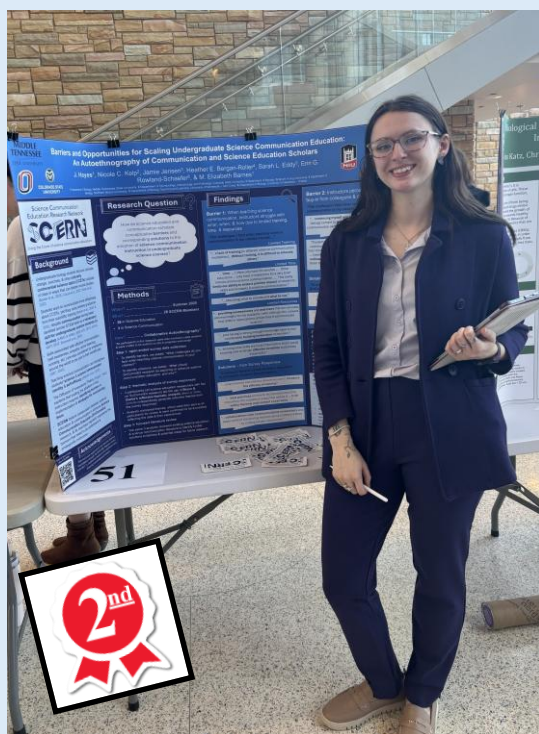
Scholars Week University-Wide Winners



Alexis Katz, BS Biology; **Dr. April Weissmiller** (faculty mentor), Biology; “The Biological Evaluation of a Novel Set of Colchicine Binding Site Inhibitors Using A375 Melanoma Cancer Cells”



Travis Ray, BS Psychology; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; “Are we Preparing Biology Students to Talk About Vaccines? Exploring Student Perspectives”



J. Hayes, BS Biology; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; “Barriers and Opportunities for Scaling Undergraduate Science Communication Education: An Autoethnography of Communication and Science Education Scholars”



Rahmi Aini, MSE; **Dr. M. Elizabeth Barnes** (faculty mentor), Biology; “A Nature of Science-Grounded Framework for Diagnosing Students' Responses to Culturally Controversial Science Topics”

2026 Biology Fund & Scholarship Recipients

Each year the Biology faculty is honored to be able to work with outstanding students who excel in the classroom, conduct independent research, attend courses at field stations, present papers at scientific meetings, and perform exceptionally well on national standardized tests. To help defray the costs of these activities and to recognize these students, the department is pleased to offer a number of scholarships. Although these scholarships include monetary awards, their intention is to recognize students for efforts above and beyond the expected. A description of each award can be found on the Biology website under Student Resources. The Biology faculty congratulates every student recipient.

Outstanding Student Awards 2026

Clay M. Chandler Outstanding Freshman Scholarship

Caylin Delaney

Ralph E. Sharp Outstanding Sophomore Scholarship

Handan Mutlu

Madhur Patel

Philip M. Mathis Outstanding Junior Scholarship

Sarah Anderson

Gwargeous Luka

Peter I. Karl Outstanding Senior Scholarship

Johanna Crick

Sahasraara Hemanth

David Sanborn Scholarship

Skye Bendheim

Misael Avalos Madera

2026 Biology Fund & Scholarship Recipients

Elliott P. Dawson BioVentures, Inc. Scholarship

*Carin Klada Gwargeous Luka Alexis Katz
Alyssa Hildebrandt Amanda Maldonado Dylan Beerman
Roan Brown Mina A. Kaldas Makenzie Ray*

C. W. Wiser Medical/Allied Health Scholarship

Brent Harper Shen Maestre

Undergraduate Scholarships

Mary C. Dunn Quasi-Endowment

*Karla Guerra Cecilia Roberts Kira Tjaarda
Virounika Maged Yowakim Alexis Katz
Alyssa Hildebrandt Shen Maestre*

Freeman P. Jordan, Jr. Memorial Scholarship

*Hayley Haddock Virounika Maged Yowakim Cecilia Roberts
Mitchell Coons Emma LaBean Chloe Williams*

Horace B. and Helen Weeks Reed Endowed Scholarship

*Roan Brown Nelly Chuquicallata Quispe
Hayley Haddock Alexis Katz Carin Klada
Gwargeous Luka Amanda Maldonado Allyson Moore
Kira Tjaarda Virounika Maged Yowakim*

2026 Biology Fund & Scholarship Recipients

Padgett Kelly Research Scholarship

Roan Brown

John Patton Scholarship

Roan Brown

Stephen M. Wright Research Scholarship

Alyssa Hildebrandt Malaika Ellahi

Graduate Scholarships

Sarah F. Barlow Biology Scholarship

Joy Harrison Alyssa Quinn

Mary C. Dunn Graduate Scholarship

Maheswari Vaghela

Dennis Mullen Vertebrate Biology/Aquatic Ecology Research Scholarship

Caitlyn Wells

John Patten Scholarship

Cedra Kamel Maheswari Veghela

Charles Holland Scholarship

Cedra Kamel Jayden Smith

2026 Biology Fund & Scholarship Recipients

Summer Stipends

The Department of Biology funded stipends for eight graduate students to support summer research.

John Patton Scholarship

Ian Tomazzolli

Mary C. Dunn Quasi-Endowment

Alyssa Quinn

Horace B. and Helen Weaks Reed Endowed Scholarship

Deborah Webb Cedra Kamel

Charles Holland Scholarship

Tia King Collin Clark

Sarah Barlow Scholarship

Lilly Gulliver Cedra Kamel



Let us hear from you

BioUpdate wants to feature the accomplishments of alumni,
and we encourage you to update us!

Send us your name, MTSU degree/year, and an update of your professional/career activities, awards, accomplishments. You may also include any personal news of interest that you would like to share with our readers.

Please include an email address so we can contact you if we need additional information.

Send contact information and updates to Department of Biology, MTSU Box 60, Murfreesboro, TN 37132 Email: biology@mtsu.edu

