



Office of Research & Creative Activity 2025 ANNUAL REPORT



WELCOME FROM THE OFFICE OF RESEARCH & CREATIVE ACTIVITY

WKU is proud to share the Fiscal Year 2025 Annual Report from the Office of Research & Creative Activity. We are especially grateful to our colleagues across campus for their contributions to research, creative activities, and sponsored projects during this year. The Annual Report celebrates the accomplishments of faculty, staff, and students. The impact of their work is far-reaching, benefitting science, solving problems for industry, and serving our community. Thanks to the efforts of our faculty and staff principal investigators, WKU was among the top 10 Kentucky organizations funded by the National Institutes of Health in FY 2025. In FY 2025, total R&D expenditures reached nearly \$11 million.

This year, we highlight the work of outstanding faculty researcher Dr. Zachary Suriano, Associate Professor in the Department of Earth, Environmental, and Atmospheric Sciences. We also celebrate the induction of two faculty members into the One Million Dollar Grant Club, recognizing their achievements in external funding awards: Dr. Simran Banga, Associate Professor of Biological Sciences, and Dr. Liz Sturgeon, Professor of Nursing.

We are also thrilled to share the work of our talented student researchers and scholars, including Calen Gibbs, a double-major in Dance and Asian Studies. Calen's Faculty Undergraduate Student Engagement (FUSE) grant, "Religion and Culture through Dance and the Arts" took him to Tokyo to study Japan's religious dance traditions.

In 2025, Western Kentucky University was designated a Research Colleges and Universities (RCU) institution in the Carnegie Classification of Institutions in Higher Education. We are one of 216 institutions nationwide to receive this designation. Importantly, the RCU category is brand new, introduced as part of the first Carnegie Classification release under a partnership between the Carnegie Foundation for the Advancement of Teaching and the American Council on Education (ACE), formed in 2022. More information on WKU's Carnegie Classification can be found on our website: wku.edu/research.

We applaud our faculty, staff, and students for the hours and energy they commit to research, creative, and scholarly endeavors. This work is essential to WKU's mission. The dedication of our faculty to preparing the next generation of scientists, artists, business leaders, teachers, health care providers, and other professionals is a core part of our institutional identity, interwoven into our externally and internally funded projects. I hope you will enjoy reading about the impressive accomplishments of the WKU community in this year's Annual Report.



Jenni L. Redifer, Ph.D.
ASSOCIATE PROVOST FOR RESEARCH

The mission of the Office of Research & Creative Activity (ORCA) at Western Kentucky University is to provide outstanding support for the research, service, creative activities, and scholarly endeavors of our faculty, staff, and students. Our staff is dedicated to partnering with the university community to increase external support for these activities, while ensuring compliance with federal, state, local, and institutional regulations.

Our unit includes the Office of Sponsored Programs, the Office of Research Integrity, and Grants and Contracts Accounting.

The **Office of Sponsored Programs (OSP)**, a service arm of ORCA, supports Western Kentucky University's faculty and staff in securing and administering extramural funding. Extramurally funded

Office of Research & Creative Activity

DEPARTMENT OVERVIEW

projects enhance faculty research, applied student research experiences, teaching, student services, creative and scholarly endeavors, public service, and community engagement, while promoting experiential learning through student involvement in

research, creative projects, and service.

The **Office of Research Integrity (ORI)** provides guidance in the protection of the rights, welfare, and security of faculty, staff, and students involved in research activities. Committed to maintaining the highest standards, ORI ensures all research at WKU adheres to institutional policies and oversight requirements mandated by law.

Grants and Contracts Accounting (GCA) oversees the post award financial management of all external grants, contracts, and agreements at WKU. For inquiries about expenditures, balances, reporting or other financial details related to these awards, GCA serves as the primary point of contact.



By the Numbers

In Fiscal Year 2025, Western Kentucky University continued to strengthen its research and creative activity by submitting 197 external funding proposals and securing a total of \$17,009,020 in awards across 151 funded projects. Research expenditures reached \$10,934,000.



Awards by College

Ogden College of Science & Engineering: \$4,740,463

College of Education and Behavioral Sciences: \$3,677,954

College of Health and Human Services: \$3,308,865

Potter College of Arts & Letters: \$1,115,731

Other units: \$4,166,007

Awards by Sponsor Type

Federal agencies continue to provide the largest share of support, complemented by vital contributions from state and local governments as well as private sponsors.

Funded Projects by Sponsor Type

Federal	89
State	21
Local	9
Private	32

Top 10 Sponsors

US Department of Education: \$2,833,537.00

US Department of Health & Human Services: \$2,521,007.66

Council on Postsecondary Education: \$1,592,464.00

National Institutes of Health: \$1,225,249.00

Corporation for Public Broadcasting: \$1,222,645.00

Health Resources & Services Administration: \$1,092,556.00

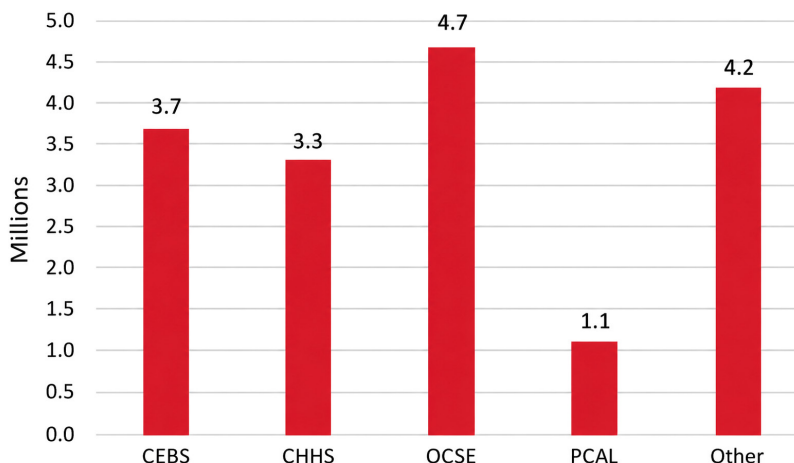
US Department of Agriculture: \$911,457.68

National Science Foundation: \$666,038.00

National Oceanic & Atmospheric Administration: \$611,419.55

Kentucky Cabinet for Health & Family Services: \$575,329.00

External Funding by College



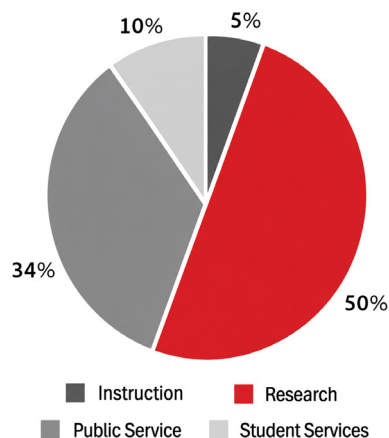
Awards by Project Type

Funded initiatives span a mix of research, instruction, public service, and student services.

Funded Projects by Project Type

Instruction	8
Research (Applied)	43
Research (Basic)	30
Research (Development)	3
Public Service	52
Student Services	15
Total	151

Awards by Project Type



Empowering Faculty and Student Researchers

A defining strength of WKU's research efforts is the deep involvement of students. ORCA's internal grant programs — including the Research

and Creative Activities Program (RCAP), Faculty-Undergraduate Student Engagement (FUSE) grants, Graduate Student Research Grants, Graduate Student Travel Grants, and Quick Turn-Around Grants (QTAG), as well as general start-up/commit-

ment support, provide critical funding that supports faculty mentorship and student scholarship.

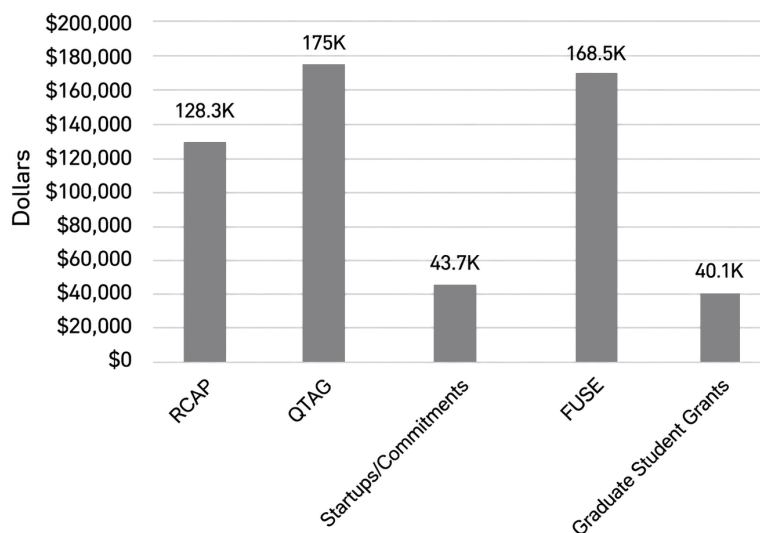
In FY25, WKU invested \$555,607 across 162 internal grant awards:

Faculty: \$346,972 (72 awards)
Students: \$208,635 (90 awards)

With the opportunities created by faculty-initiated internal grants, which actively engage undergraduate and graduate students in meaningful research, hundreds of students gained authentic research experience, developed professional skills, and contributed directly to knowledge creation.

WKU's rising research expenditures and expanding student research opportunities are building a vibrant culture of inquiry that advances the university's mission and strengthens its trajectory toward even greater impact.

FY25 Internal Funding





Dr. Zachary Suriano

Leading Climate Resilience Research with Dual NSF Awards

Dr. Zachary Suriano, Associate Professor of Meteorology in the Department of Earth, Environmental, and Atmospheric Sciences (EEAS), secured two major National Science Foundation (NSF) grants that significantly strengthen WKU's research portfolio in atmospheric and climate science.

Dr. Suriano is the Principal Investigator for WKU's \$2,157,174 portion of the \$20 million NSF EP-SCoR Track-1 project titled *Climate Resilience through Multidisciplinary*

Big Data Learning, Prediction & Building Response Systems (CLIMBS). This statewide initiative (2024–2029) leverages big data, AI modeling, and multidisciplinary collaboration across seven research components to better predict Kentucky's hazardous weather, improve risk assessment and warning systems, and build community resilience to climate impacts and geohazards.

WKU leads two of the seven statewide components: Climate

Science (led by Dr. Suriano) and Disaster Management (led by Dr. David Oliver, Department of Environmental Health & Safety) and is actively involved in a third. Co-PIs on WKU's \$2.157 million award include Dr. Gerald Brotzge, Dr. Joshua Durkee, Dr. Xingang Fan, Dr. Gregory Goodrich, and Dr. Jason Polk. The project utilizes key assets including the Kentucky Climate Center, the Disaster Science Operations Center, and Kentucky's top meteorology program.

40+ Students Gaining Hands-On Research Experience

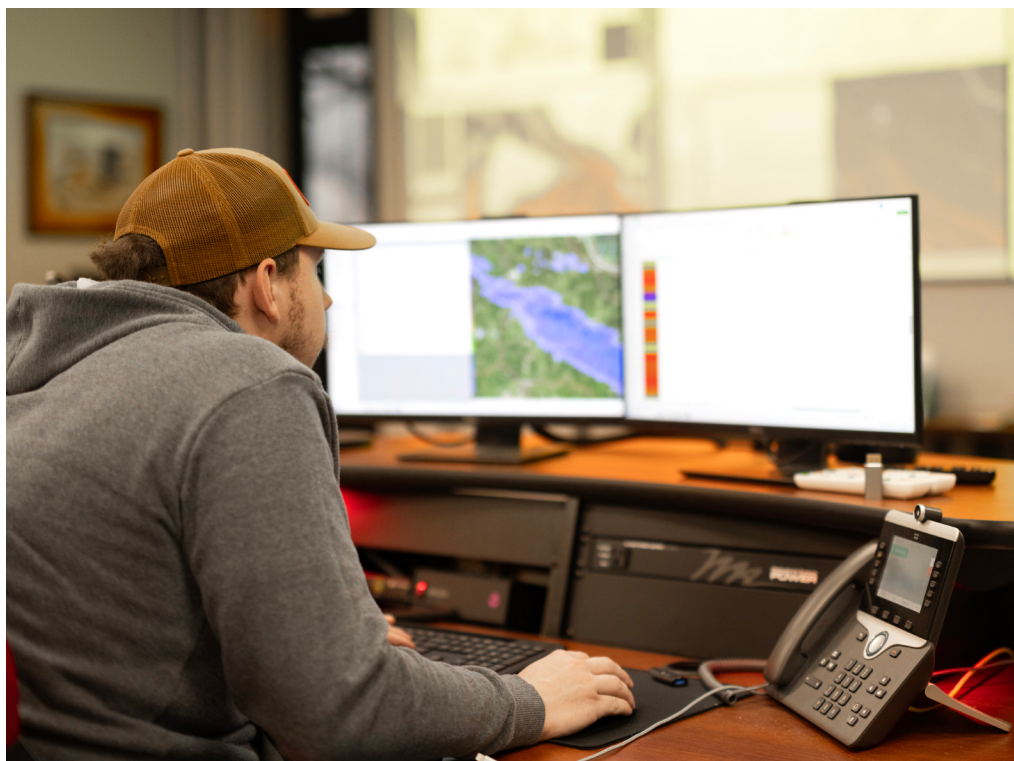
Building on this success, Dr. Suriano received WKU's first-ever NSF CAREER Award in February 2025. The five-year grant of \$443,791, titled CAREER: Historical and Projected Atmospheric and Energetic Forcings of Eastern United States Snow Ablation, runs from July 2025 through June 2030. This project investigates snowmelt processes, atmospheric drivers, historical trends, and future projections across the eastern U.S., with direct implications for water resources, flooding risks, and hazard mitigation in the Ohio River Basin and Kentucky.

Prior to these NSF awards, Dr. Suriano received external support from the National Oceanic and Atmospheric Administration (NOAA)'s Climate Program Office (2023–2026)

and internal support through WKU's Research and Creative Activities Program (RCAP) in FY24. His RCAP project, *Extreme Precipitation Events in Kentucky: Analysis of Variations,*

Weather Conditions and Implications, funded an undergraduate research student and provided a dedicated computer workstation that set the stage for the larger CLIMBS project.

Together, these awards underscore Dr. Suriano's leadership in climate and atmospheric research while amplifying WKU's commitment to high-impact, student-engaged scholarship that addresses pressing environmental challenges in Kentucky and beyond.



IMPACT AT A GLANCE

- 40+ students (30 undergraduates and 10 graduate students) gaining hands-on research experience
- 1 new faculty member, Dr. Manmeet Singh, hired in Disaster Science
- Establishment of a CLIMBS Learning Hub that will provide applied, hands-on training for Kentucky students (led by Dr. Jason Polk)

NATIONAL
SCIENCE
FOUNDATION



CELEBRATING OUR ONE MILLION DOLLAR GRANT CLUB RECIPIENTS

The Office of Research & Creative Activity recognized the members of the One Million Dollar Grant Club, comprised of faculty who have secured more than \$1 million in cumulative external funding. In FY25, **Dr. Simran Banga** and **Dr. Liz Sturgeon** joined this distinguished group through their student and community-centered research and training programs.

Dr. Simran Banga Advancing Bacterial Pathogenesis Research

Dr. Simran Banga, Associate Professor of Biological Sciences, secured a four-year, \$709,868 NIH SuRE award from the National Institute of Allergy and Infectious Diseases. The project investigates how the bacterium that causes Legionnaires' disease, a severe form of pneumonia, survives and replicates inside host cells by using epigenetic modifications to alter host gene expression. This research will deepen understanding of bacterial pathogenesis and support the development of new therapeutic strategies.

Dr. Banga's NIH-funded project actively involves undergraduate and graduate students, providing them with hands-on experience in microbiology, molecular biology, and advanced laboratory techniques. Dr. Banga credits the Kentucky INBRE program, which provided \$69,544 in startup funding in 2024, with helping establish her BSL-2 research lab and generating the critical preliminary



data needed for this competitive NIH application.

Dr. Banga was also awarded \$50,656 for a new *ChemiDoc MP Imaging System*, a state-of-the-art

instrument for high-resolution imaging and quantification of nucleic acids and proteins in gels and western blots.

IMPACT AT A GLANCE

- \$709,868 four-year NIH SuRE award
- \$69,544 KY INBRE startup funding that supported BSL-2 lab development and preliminary data
- \$50,656 for a new ChemiDoc MP Imaging System
- Active involvement of undergraduate and graduate students in cutting-edge bacterial pathogenesis research

"This grant allows us to explore fundamental mechanisms of bacterial survival while providing valuable research opportunities for our undergraduate and graduate students."

DR. SIMRAN BANGA

Dr. Liz Sturgeon

Investing in Kentucky's Healthcare Workforce

Dr. Liz Sturgeon, Professor in the School of Nursing and Allied Health, is making a significant impact on Kentucky's healthcare workforce through the Healthcare Training Scholarship Partnership program. In FY25, she secured \$994,268 to support the WKU BSN track and an additional \$200,000 in partnership with the Medical Center of Bowling Green, for a combined total of \$1,194,268.

Funded by the Kentucky Council on Postsecondary Education, these awards foster collaboration between healthcare education programs and providers to address critical workforce shortages. At least 65% of the funds provide scholarships to students pursuing high-demand healthcare professions, while up to 35% recognize excellence in Kentucky healthcare education programs.

Scholarship recipients must maintain a minimum 3.25 GPA and commit to practicing in Kentucky for one year per year of funding. The program emphasizes preparing compassionate, well-trained nurses ready to serve rural and underserved communities across the Commonwealth.

Dr. Sturgeon's leadership in these scholarship partnerships exempli-



fies WKU's commitment to student success and meaningful community contributions through high-quality healthcare education.

IMPACT AT A GLANCE

- \$1,194,268 in scholarship funding awarded in FY25
- Supports BSN students from rural and underserved areas
- Dollar-for-dollar matching from healthcare partners
- Builds a stronger, more equitable healthcare workforce for Kentucky

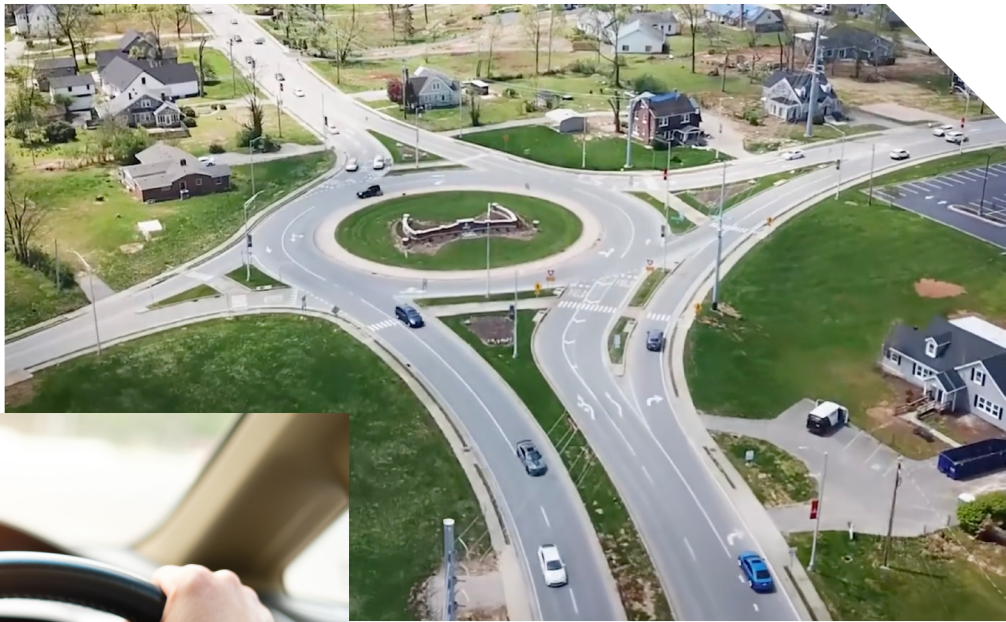
STUDENT VOICES

"Every person deserves quality healthcare... Through nursing, I can provide excellent patient care to help strengthen our rural community."

"My goal is to work in community/public health nursing, where I can educate families, promote preventative care, and support underrepresented populations."

Internal Grants: Supporting Faculty and Student Research

WKU's internal grant programs reflect a core belief: that meaningful research and creative work begins with institutional investment in the people doing it. In FY25, the Office of Research and Creative Activity supported faculty research through the Research and Creative Activities Program (RCAP) grant and supported undergraduate students through



the Faculty-Undergraduate Student Engagement (FUSE) program. These opportunities do far more than move dollars; they move careers forward, open doors for students who might not otherwise step into a research lab or studio, and generate knowledge that reaches beyond campus into the communities WKU serves.

RCAP provides seed funding to full-time faculty and instructors pursuing new research, creative and scholarly projects. As a key capacity-building initiative, RCAP provides this funding to help faculty generate preliminary data and strengthen their competitiveness for external

funding. In May 2025, **Dr. Kirolos Haleem Mesiha**, Assistant Professor of Civil Engineering, received a \$14,213 RCAP award for his applied research project, *Enhancing Driver and Pedestrian Safety at Roundabouts: A Driving Simulator-Based Study*. Using the high-fidelity driving simulator housed at the WKU Center for Transportation Research (CTR), Dr. Haleem Mesiha is investigating safety risks associated with drivers and pedestrians navigating roundabouts in Kentucky and developing feasible recommendations to improve traffic safety. This internal investment has already yielded a strong return,



WKU RCAP | Research & Creative Activities Program

WKU FUSE | Faculty-Undergraduate Student Engagement

resulting in multiple Kentucky Transportation Cabinet (KYTC) external awards and pending submissions.

The FUSE program brings the opportunity for funded scholarship to undergraduate students. FUSE grants support independent student projects carried out under faculty mentorship, building the research skills, professional confidence, and scholarly portfolios that prepare students for graduate study, meaningful careers, and lives of purposeful inquiry. For many WKU undergraduates, a FUSE grant is their first real experience of what it means to ask a question no one has answered yet.

When a research opportunity can't wait, Quick Turn-Around Grants (QTAGs) are there. QTAGs return a portion of WKU's external

research success directly back into the research enterprise. Small in size but significant in impact, these awards cover research supplies, travel, equipment, assistants, and dissemination costs, with funding decisions typically made within weeks. For faculty who need to move quickly on a time-sensitive project or unexpected opportunity, QTAGs make sure the answer is never simply "wait until next cycle."

Graduate students are supported through that same spirit of reinvestment. The Graduate Student Research Grant provides funding for the materials, supplies, equipment, and assistance that thesis, dissertation, and independent research projects demand. The Graduate Student Travel Grant helps graduate students

cover costs associated with presenting findings and participating in professional conferences and workshops. Like QTAGs, both programs are funded through F&A cost recovery, meaning that every external grant WKU wins helps sustain the next generation of scholars working right here on the Hill.

Together, these five programs form ORCA's internal grants engine: a coordinated investment in faculty ambition, undergraduate curiosity, and graduate excellence. They cultivate a campus culture where every stage of the scholarly journey is supported, mentorship is woven into the fabric of academic life, and knowledge is created in service of the public good.

Undergraduate Research Student Scholar Showcase

At Western Kentucky University, student-initiated research is more than an opportunity – it is a defining part of their collegiate experience. In FY25, hundreds of students engaged in original scholarly and creative work, supported by dedicated faculty mentors and ORCA's internal grant programs. From the Student Scholar Showcase to presenting at the state capitol, WKU undergraduates are asking meaningful questions and contributing real solutions.

On April 5, 2025, the 55th annual WKU Student Scholar Showcase featured 233 projects by graduate, undergraduate, dual-credit, and Gatton Academy students, including 149 posters and 84 oral presentations.



Held in the Downing Student Union, the event showcased the creativity and rigor of WKU student scholarship across all colleges and stands as a powerful testament to WKU's student-centered approach.

Organized by ORCA and the WKU Student Scholar Showcase Council, the Showcase provides students with a platform to present their

work and engage with both the university and broader community. Participants report gains in presentation skills, confidence, and professional connections leading to future research opportunities, internships, and graduate study. The event celebrates student passion, dedication, and scholarly achievement while reflecting Western

Kentucky University's commitment to student research supported through internal funding, faculty mentorship, and opportunities to share work locally, regionally, nationally, and internationally – extending learning beyond the lab and studio into communities across Kentucky and beyond.

Calen Gibbs Dance, Religion, and Cultural Identity in Japan

Caelen Gibbs, a senior double major in Dance and Asian Studies from Brentwood, Tennessee, received a Spring 2025 FUSE grant for his project *Religion and Culture Through Dance and the Arts*. The grant supported his international travel to Tokyo in Spring 2025, where he immersed himself in Japan's religious dance traditions. Caelen examined how sacred and traditional forms of dance serve as conduits between bodily ritual, spiritual values, and cultural identity. Mentored by

Professors Anna Patsfall and Meghen McKinley, Caelen created a new contemporary choreographic work that translates these traditions into modern dance. His piece was featured in WKU's Last Chance to Dance (Fall 2025) and Evening of Dance (Spring 2026). Caelen's project

demonstrates how undergraduate research at WKU, including support for international travel and field research, fosters interdisciplinary inquiry, cultural understanding, and creative innovation.





Samantha Zaboronak

Protecting Public Health Through Karst Groundwater Research

Junior Samantha Zaboronak, a Crawford Hydrology Lab researcher and pre-med student majoring in Biological Sciences, received a Spring 2025 FUSE grant for her project examining the presence of the bacterium *Helicobacter pylori* in untreated Kentucky karst drinking water sources. Working under the mentorship of University Distinguished Professor Dr. Chris Groves, Samantha utilized

polymerase chain reaction (PCR) techniques to detect harmful bacteria in groundwater. She presented her findings in an oral paper presentation titled *Is the Bacterium Helicobacter Pylori in Untreated Kentucky Karst Drinking Water Sources?* at the 2026 Student Scholar Showcase. She also presented a poster on the project at the Kentucky Academy of Science in November 2025. Samantha's

research addresses critical public health concerns in karst regions, where groundwater serves as a primary drinking water source for many rural communities.

Director of the Crawford Hydrology Lab and University Distinguished Professor of Geological Sciences, Dr. Chris Groves has been involved in WKU Student Scholar Showcases for many years. His first experience dates to 1984, when he participated as a student presenter. Reflecting on that time, he recalls, "There were maybe 25 to 30 of us presenting, and the entire group – along with advisors and guests – fit into an upstairs meeting room at the Kentucky Museum for a celebration banquet."

Since joining the WKU faculty, Dr. Groves has continued to take part in the annual Showcase and believes its impact has grown tremendously over the years. Even so, he notes that some things remain unchanged: "The excitement and nervousness – and the relief when presentations are over – are still the same. Like me, I'm sure the students who presented this year will still remember the experience 40 years from now."



Ava Lich Posters at the Capitol

On March 6, 2025, twelve WKU undergraduates represented the university at Posters at the Capitol in Frankfort, Kentucky, presenting their research to legislators and the public. Senior Ava Lich, mentored by Dr. Chris Groves and Dr. Thomas Richmond, was selected to deliver a lightning talk on her project *Calculus, Caves, and Climate Change*. Ava described how researchers at Mammoth Cave National Park are studying how limestone dissolution removes CO₂ from the atmosphere by measuring the flow rate of an underground river using a barrel weir, calculus, and Python modeling. This data quantifies how karst landscapes, like those in Southcentral Kentucky, contribute to global carbon cycling.

WKU Celebration of Research & Sponsored Activities

*An Annual Recognition
of Faculty and Staff
Achievements*

Each year, the Office of Research & Creative Activity hosts a special celebration to honor the outstanding contributions of WKU faculty and staff who advance research, creative endeavors, and sponsored projects across campus. The event highlights both the submission of funding proposals and the successful securing of external funding during the fiscal year, while underscoring the role of collaboration and support that drives scholarly and artistic impact at Western Kentucky University.

The FY2025 celebration took place on February 26, 2026. The afternoon opened with a social hour, during which attendees networked with colleagues and explored research posters showcasing awardees' projects. President Timothy C. Caboni delivered welcoming remarks, highlighting the significance of the event and congratulating faculty and staff for their FY25 proposal submissions and award successes. Associate Provost for Research Dr. Jenni Redifer led the awards presentation, recognizing the honorees.





2025 Award Recipients

First-Time Lead Award (Individuals awarded their first external grant in FY 25)

Dorothea Browder
Kanita DuCloux
Ann Embry
Stephanie Hagan
Daniel Liddle
MM Nabi

Prolific Proposer Award (Individuals who submitted more than five external funding proposals in FY 25)

Christina Noel
Ali Oguz Er
Kirolos Haleem
Catherine Malin



One Million Dollar Grant Club

(Individuals whose external funding to date totaled to one million dollars in FY 25)

Simran Banga
Liz Sturgeon

Outstanding Research Administrator Award

Stacey Calvert

Department with the Largest Number of Proposing Faculty

Physics & Astronomy

Department with the Largest Number of Faculty Awardees

Biological Sciences

College with the Highest Amount of External Funding

Ogden College of Science & Engineering

"To the applicants we honor this evening, be proud of your work. Your efforts strengthen our research enterprise; elevate our students, institution and region; and move our institution closer to becoming the first comprehensive university in Kentucky to achieve R-2 status."

PRESIDENT TIMOTHY C. CABONI





Office of Research
& Creative Activity

wku.edu/research