

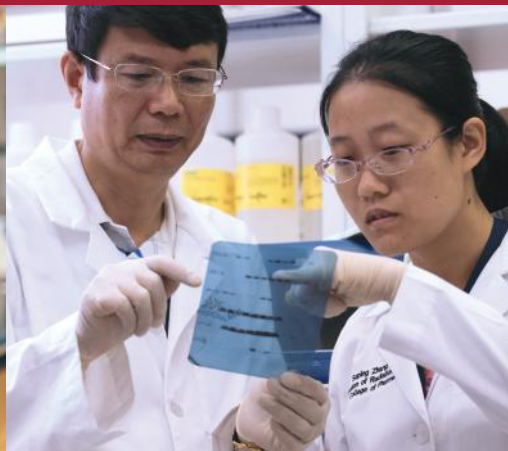
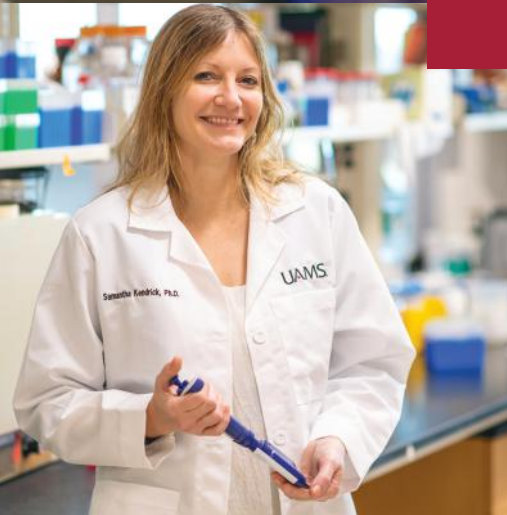


UAMS[®]

**RESEARCH
WINS**

VOL. 3

2022-2023





Mission

The UAMS Division of Research & Innovation provides leadership in formulating and enacting strategies to expand research activities across UAMS. Our researchers are supported by the National Institutes of Health, Department of Defense, National Science Foundation, and other national and international agencies to better the health of Arkansans.



Table of Contents

• • •

4 Vice Chancellor's Update

5 New Leaders

6 Notable Grants

10 Rising Stars

12 Research Funding

14 Research in Action

18 Excellence in Publishing

• • •

Vice Chancellor's Update

January 2024

I am thrilled to share some incredible news regarding our success in research at UAMS. Over the past 5 years (FY2019 to FY2023), our total extramural funding has skyrocketed, reaching a milestone of nearly \$151 million in biomedical research grants and contracts. This remarkable 86% surge in funding positions us as one of the leading National Institutes of Health (NIH)-funded Institutional Development Award (IDeA) institutions nationwide.

Our NIH funding alone has risen to over \$76 million, an increase of 71% over the past 5 years. This accomplishment has propelled us to the 5th position among the Best Medical Schools (Research) in our region according to the US News & World Report. This success is a testament to the dedication and excellence of our researchers, whose invaluable contributions align seamlessly with our commitment to enhancing health and healthcare in Arkansas—pivotal components of our Vision 2029 strategic plan.

UAMS stands out as one of the few IDeA states with three concurrent Centers of Biomedical Research Excellence awards, a testament to our thriving research environment. Our research contributions span various fields, including musculoskeletal conditions, infectious diseases, radiation injury and therapy, solutions to health disparities and inequity, and melanoma, garnering global recognition. Our unwavering focus on improving the health of rural populations and vulnerable minority groups serves as an exemplary model in the realm of healthcare research across the country.

Congratulations to each member of our research community for your outstanding achievements and contributions. Your dedication and pioneering work play a vital role in shaping the future of healthcare and advancing our institution's standing in the everchanging domain of biomedical research and application.

Sincerely,



Shuk-Mei Ho, Ph.D.

Vice Chancellor of Research and Innovation



New Leaders

UAMS WELCOMED NEW LEADERS IN RESEARCH

• • •



Sean Taverna, Ph.D., joined UAMS from the Johns Hopkins University School of Medicine and succeeds Robert E. McGehee, Jr., Ph.D., as dean of the Graduate School. Taverna is also a professor in the Department of Biochemistry and Molecular Biology. His research focuses on how changes to histones affect gene expression in human cancers such as leukemia.



Amit Tiwari, Ph.D., joined the UAMS College of Pharmacy as the associate dean of research and graduate studies. His research focuses on developing targeted anticancer therapies, particularly for multidrug-resistant cancers.



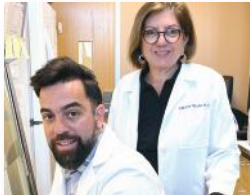
Steven Webber, M.D., was named dean of the UAMS College of Medicine and executive vice chancellor. Webber joins UAMS from the Vanderbilt University School of Medicine. He is an internationally renowned expert on solid organ transplantation in children.

Notable Grants

• • •



Steven Barger, Ph.D., received \$1.9 million from the National Institutes of Health (NIH) to study how glucose transport affects the progression of Alzheimer's disease. Barger is a professor of geriatrics at the UAMS Donald W. Reynolds Institute on Aging.



Teresita Bellido, Ph.D., and **Jesús Delgado-Calle, Ph.D.,** received more than \$2.2 million from the National Cancer Institute to continue their study of multiple myeloma. Specifically, they will investigate how bone cells called osteocytes contribute to the musculoskeletal effects of multiple myeloma.



UAMS received \$15 million from the Patient-Centered Outcomes Research Institute (PCORI) to test the effectiveness of the **Telehealth MOM** program for postpartum care. The five-year study will be led by **Jennifer Callaghan-Koru, Ph.D., MBA,** *(pictured)* and **Pearl A. McElfish, Ph.D., MBA.**



UAMS received \$1 million from the U.S. Department of Justice to implement **STARLITE**, a multiyear initiative to improve school safety through trauma-informed education. Led by **Stanley Ellis, Ed.D.,** the initiative is a collaboration between the UAMS Institute for Digital Health & Innovation, the Pine Bluff school district and community-based organizations.



Se-Ran Jun, Ph.D., received funding from the NIH and the National Science Foundation to develop a genomic surveillance system to quickly and accurately identify bacterial pathogens and their susceptibility to specific antibiotics. Jun is an associate professor in the UAMS Department of Biomedical Informatics.



Vladimir Lupashin, Ph.D., received \$1.6 million from the NIH to continue studying intracellular membrane traffic. Lupashin and his team study how mutations affecting the Golgi apparatus produce diseases, specifically congenital disorders of glycosylation.



Roy Morello, Ph.D., and his team **received** over \$1.5 million from the NIH to study osteogenesis imperfecta (OI), also known as brittle bone disease. OI is caused by defects in how the body produces collagen and can affect multiple organs. Morello is working to identify potential treatments for OI-associated respiratory disease.



Andrew Morris, Ph.D., received the prestigious **Research Career Scientist Award** from the Veterans Affairs Office of Research and Development. The award will provide five years of funding toward his research on the health effects of exposure to toxic manmade chemicals, such as per- and poly-fluorinated alkyl substances.

Notable Grants

• • •



Ashley Nemec-Bakk, Ph.D., was one of three researchers nationwide **awarded** a postdoctoral fellowship from the Translational Research Institute for Space Health (TRISH) at Baylor College of Medicine. Her research focuses on the health effects of space travel.



UAMS **received** more than \$11 million from the NIH to continue funding the **Center for Musculoskeletal Disease Research (CMDR)**, which is led by **Charles O'Brien, Ph.D.** This is the second phase of funding support for the CMDR provided by the Centers of Biomedical Research Excellence (COBRE) program. COBRE grants can be renewed for up to three phases and help junior investigators establish independent research careers. Investigators in the CMDR study bone conditions such as osteoporosis, osteoarthritis and cancer.



BioVentures, LLC, led by **Kevin Sexton, M.D.**, was **awarded** nearly \$3 million from the U.S. Department of Commerce. The award will fund the Arkansas Collaborative for Technological and Innovative Venture Equality (ACTIVE). The ACTIVE technology incubator will assist socially and economically disadvantaged business owners in Arkansas with developing health care technologies and businesses.



Amanda Stolarz, Pharm.D., Ph.D., **received** a prestigious **MERIT** Award from the National Cancer Institute. Stolarz and her team study how the chemotherapy drug doxorubicin causes a complication called lymphedema and are working to identify ways to prevent it.



Benjamin Stronach, M.D., *(pictured)* and **C. Lowry Barnes, M.D.,** received intramural funds to further their research in orthopedics. Stronach received a Barton Pilot Award to test the effect of tourniquet use on muscle recovery after knee replacement, and Barnes received funds to purchase a Bertec Instrumented Staircase for the UAMS Biomechanics Lab.



The UAMS **Center for the Study of Obesity** **received** \$1.2 million from the NIH to study how the availability of school meals affects students' behavior and mental health. **Michael Thomsen, Ph.D.,** directs the center and will lead the study. Thomsen is a professor in the UAMS Fay W. Boozman College of Public Health.

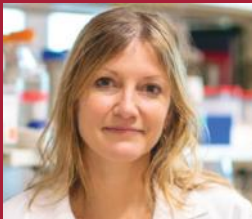


Fang Zheng, Ph.D., was **awarded** \$1.8 million by the NIH to study how abnormalities in cerebral blood flow contribute to epilepsy. Zheng is an associate professor in the UAMS Department of Pharmacology and Toxicology.

Rising Stars



Neha Dole, Ph.D., received funding from the Department of Defense to study the role of specific bone cells in posttraumatic osteoarthritis. Dole is an assistant professor in the UAMS Department of Physiology and Cell Biology.



Samantha Kendrick, Ph.D., received funding from the U.S. Department of Defense to study diffuse large B-cell lymphoma, a type of cancer that is common among veterans and military personnel who were exposed to toxic substances. Kendrick is an assistant professor in the UAMS Department of Biochemistry and Molecular Biology.



Bolni Marius Nagalo, Ph.D., received a 2022 American Association for Cancer Research Career Development Award to Further Diversity, Equity and Inclusion. Nagalo's research focuses on using oncolytic viruses to treat advanced pancreatic cancer. Nagalo is an assistant professor in the UAMS Department of Pathology.



Soumiya Pal, M.Sc., received a highly competitive predoctoral fellowship from the American Heart Association. His research focuses on how high blood pressure contributes to the development of lymphedema after cancer treatment. Pal is a student in the College of Pharmacy and is mentored by Amanda Stolarz, Pharm.D., Ph.D.



Hayley Sabol and Ravi Sun were awarded highly competitive Ruth L. Kirschstein Predoctoral Individual National Research Service Awards from the NIH. Sabol is a graduate student under the mentorship of **Jesús Delgado-Calle, Ph.D.** Sabol's research focuses on treatments for multiple myeloma. Sun is a student in the M.D./Ph.D. program under the mentorship of **Graham Strub, M.D., Ph.D.** Sun's research focuses on vascular abnormalities in children.

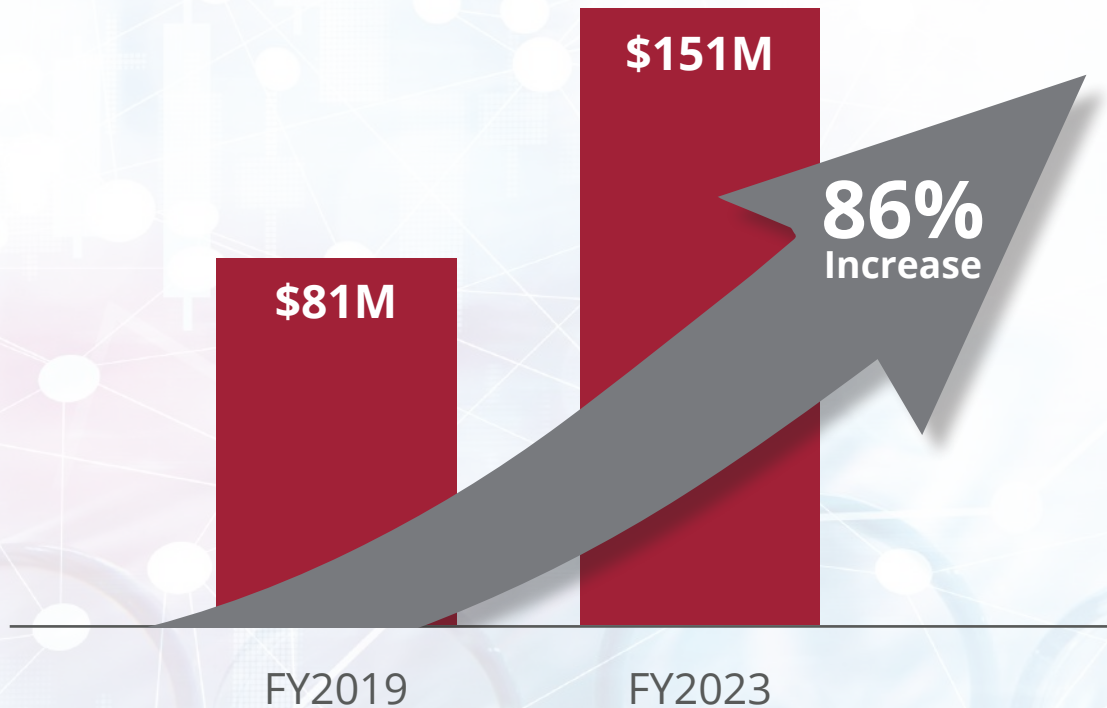


Adam Wolfe, M.D., Ph.D., received a four-year Clinician Science Development Grant from the American Cancer Society to study how pancreatic cancer becomes resistant to radiation treatment. His research focuses on the oncogene *KRAS* and how targeting this gene and associated signaling pathway can make treatment more effective.

Research Funding

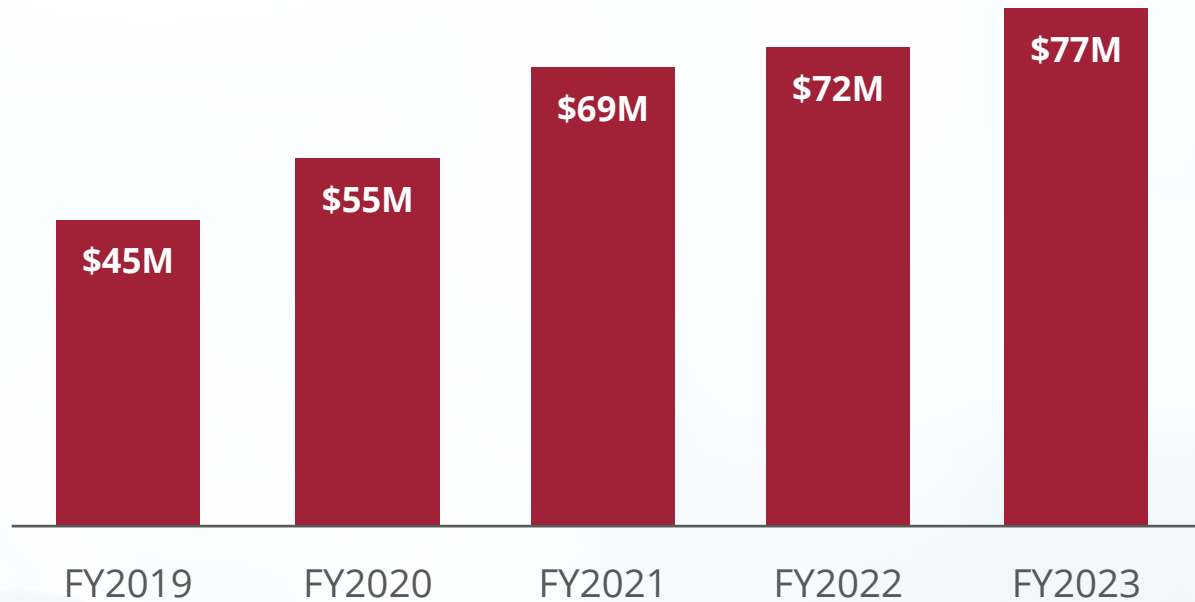
...

Total Research Funds at UAMS



Data are total extramural funds rounded to nearest million

UAMS NIH Funding

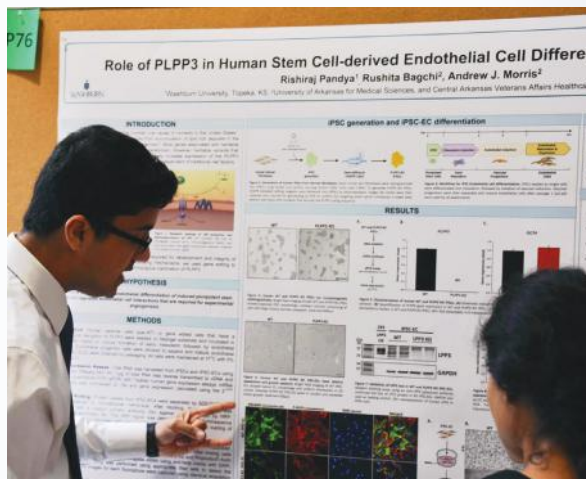


Data are total National Institutes of Health (NIH) funds rounded to nearest million

Research in Action

• • •

Karl Boehme, Ph.D., and **Roger Pechous, Ph.D.,** co-hosted the 2023 American Society for Microbiology–South Central Branch meeting in Little Rock. This is the annual research conference for microbiologists and immunologists in Arkansas, Louisiana, and Mississippi. Boehme and Pechous are associate professors in the UAMS Department of Microbiology and Immunology. In conjunction with this meeting, **Het Adhvaryu** and fellow graduate students founded the UAMS Student and Postdoctoral Chapter of the American Society for Microbiology–South Central Branch. The chapter will help recruit and engage students in Arkansas who are interested in microbiology and immunology.



Rishiraj Pandya of Washburn University in Topeka, Kansas, discusses his poster. Image by Nathan Tidwell

More than 130 student researchers **participated** in the 10th annual **Arkansas Undergraduate Summer Research Symposium** held at UAMS. Students presented the results of biomedical research projects conducted at various institutions, including UAMS. The symposium was supported by the UAMS Department of Biochemistry and Molecular Biology and the Arkansas IDEa Network of Biomedical Research Excellence (INBRE).

UAMS **received** \$5 million from the Health Resources and Services Administration to establish the **PRIMROSE** project. The project is directed by **Jennifer Callaghan-Koru, Ph.D.**, and will implement various initiatives to address disparities in maternal and infant health care. Arkansas has one of the highest rates of maternal mortality in the United States.



Researchers, led by **Susan Emmett, M.D., MPH**, and **Samantha Kleindienst Robler, Au.D., Ph.D.**, **identified** the most accurate tools for screening children in rural areas for hearing loss. They are also working to develop low-cost, cell phone-based tools that can be used in rural, underserved areas, where preventable, infection-related hearing loss is common.

Tiffany Haynes, Ph.D., **implemented** the **Barbershop Talk** program to help Black men avoid using alcohol to deal with stress. The program will be established in 60 barbershops in Arkansas over the next four years. Haynes is an associate professor in the UAMS Department of Health Behavior and Health Education in the College of Public Health.

The Arkansas Research Alliance (ARA) **named** **John Imig, Ph.D.**, an ARA Scholar and **Antiño Allen, Ph.D.**, an ARA Fellow. ARA Scholars and Fellows receive a monetary award toward funding their research. The ARA is a public-private partnership that invests in research that stimulates innovation and collaboration between industry, government and academia.



Erika Petersen, M.D., pauses to look at a monitor during surgery to implant a neural-enhanced prosthetic hand in a patient who had an amputation. (L-R) John Bracey, M.D., Brooke Elbersen, M.D., Ph.D., Bridgette Vinyard-Hartwick, and Mark Tait, M.D.

Surgeons at UAMS and researchers at the University of Arkansas **Institute for Integrative and Innovative Research (I³R)** surgically **implanted** a **neural-enhanced prosthetic hand** in a patient who had an amputation. Innovative technology allows the patient's brain to communicate with the prosthetic, giving the patient a sense of touch through the prosthetic. This was the second patient in the world to receive the prosthetic, and the only one in Arkansas.

Mitch McGill, Ph.D., **reported** in *The Journal of Applied Laboratory Medicine* that the amount of lactate dehydrogenase in a person's blood, measured with a common laboratory test, could be used to predict the outcome for patients with acute liver failure. The test could be used to predict which patients may or may not need a liver transplant.

A phase II clinical trial led by **Mayumi Nakagawa, M.D., Ph.D.,** was featured in the United for Medical Research 2023 Rural Report: *How Rural States Benefit from NIH Funding*. The trial tested the effectiveness of the PepCan therapeutic vaccine to treat precancerous lesions in the cervix.

The online networking service Doximity **ranked** the **UAMS Harvey & Bernice Jones Eye Institute ophthalmology residency program** ninth for research output out of 125 programs nationally in 2023. The program was ranked 13th nationally in 2022.

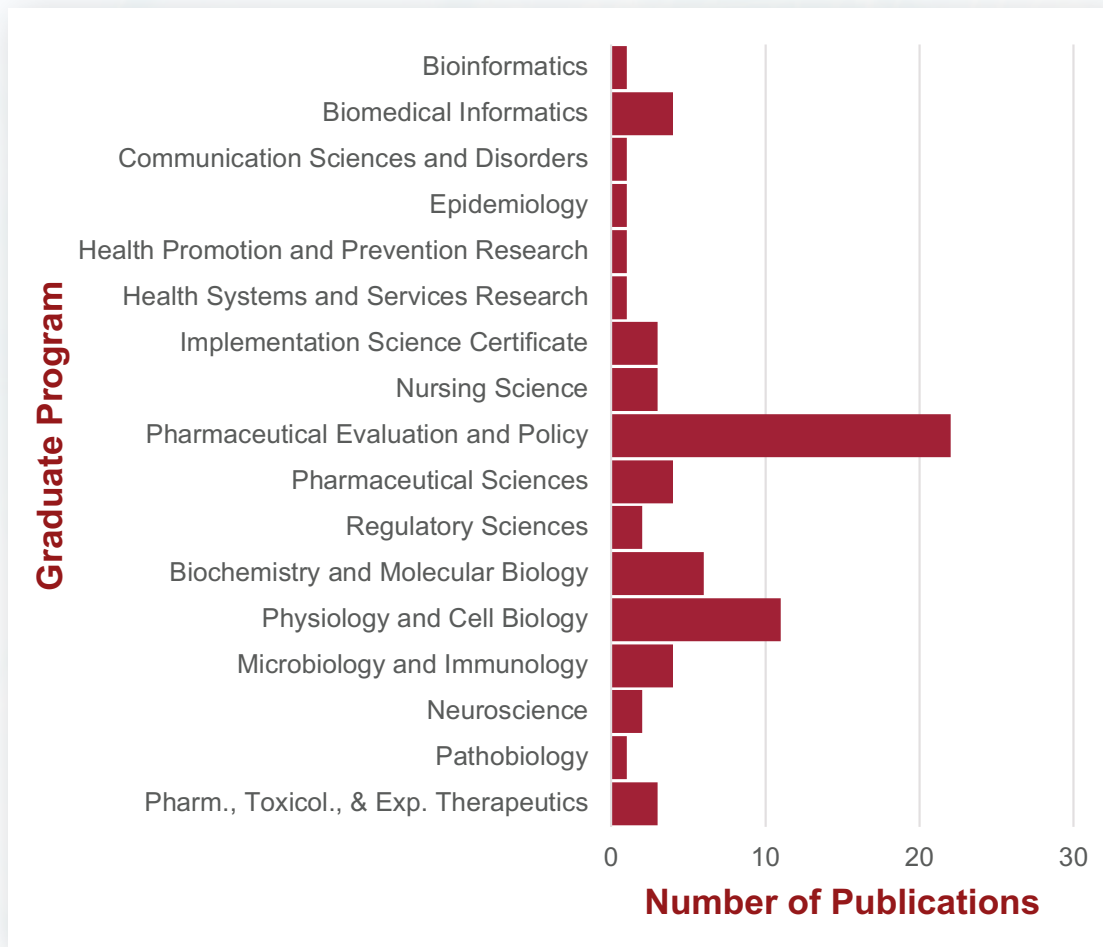


UAMS **received** funding from the Patient-Centered Outcomes Research Institute (PCORI) to establish the Women's Justice-Health Alliance. Led by **Melissa Zielinski, Ph.D.,** the alliance will initially identify research priorities on the topic of justice-involved women's health.

Excellence in Publishing

• • •

Graduate Student Publications 2022-2023



Michael Birrer, M.D., Ph.D., is a senior author on a **publication** in the journal **Cell** that describes a protein signature and genetic characteristics of a subset of ovarian cancers that are resistant to chemotherapy. The new findings could be used to determine the best course of treatment for patients.

Laura Gressler, Ph.D., is lead author on an **article** published in **Journal of the American Medical Association Health Forum**. The article, "Data-Driven Model Identifies Gaps in Biomedical Innovation: A Proof-of-Concept Study," describes a novel model for ranking biomedical research priorities.

Steven Post, Ph.D., Behjatolah Karbassi, Ph.D., and Thomas Kelly, Ph.D., served as guest editors for a special issue of the *International Journal for Molecular Sciences*, entitled *Tumor Microenvironment and Immune Response in Breast Cancer*.

Analiz Rodriguez, M.D., Ph.D., served as the site Principal Investigator of a multicenter clinical trial that tested a new immunotherapy treatment for patients with recurrent glioblastoma. The results were **published** in **Nature Medicine**.

The UAMS Data Coordinating and Operations Center (DCOC) for the Institutional Development Award States Pediatric Clinical Trials Network **contributed** to a nationwide clinical trial comparing two approaches to screening and treating infants for opioid withdrawal. Infants cared for under the "Eat, Sleep, Console" approach were less likely to need drug therapy and left the hospital earlier than infants receiving traditional care. The results were published in the **New England Journal of Medicine**. The DCOC is led by **Jessica Snowden, M.D.**, and **Song Ounpraseuth, Ph.D.**



UAMS researchers authored the **most cited and downloaded article** on COVID-19 vaccine hesitancy in the journal *Clinical and Translational Science*. **Don Willis, Ph.D.**, was the lead author.

UAMS is the state's only health sciences university, with colleges of Medicine, Nursing, Pharmacy, Health Professions and Public Health; a graduate school; a hospital; a main campus in Little Rock; a Northwest Arkansas regional campus in Fayetteville; a statewide network of regional campuses; and eight institutes: the Winthrop P. Rockefeller Cancer Institute, Jackson T. Stephens Spine & Neurosciences Institute, Harvey & Bernice Jones Eye Institute, Psychiatric Research Institute, Donald W. Reynolds Institute on Aging, Translational Research Institute, Institute for Digital Health & Innovation, and Institute for Community Health Innovation. UAMS includes UAMS Health, a statewide health system that encompasses all of UAMS' clinical enterprise. UAMS is the only adult Level 1 trauma center in the state. UAMS has 3,275 students, 890 medical residents and fellows, and five dental residents. It is the state's largest public employer with more than 12,000 employees, including 1,200 physicians who provide care to patients at UAMS, its regional campuses, Arkansas Children's, the VA Medical Center and Baptist Health.



UAMS Division of Research and Innovation

4301 W. Markham St.

Little Rock, AR 72205

research.UAMS.edu

