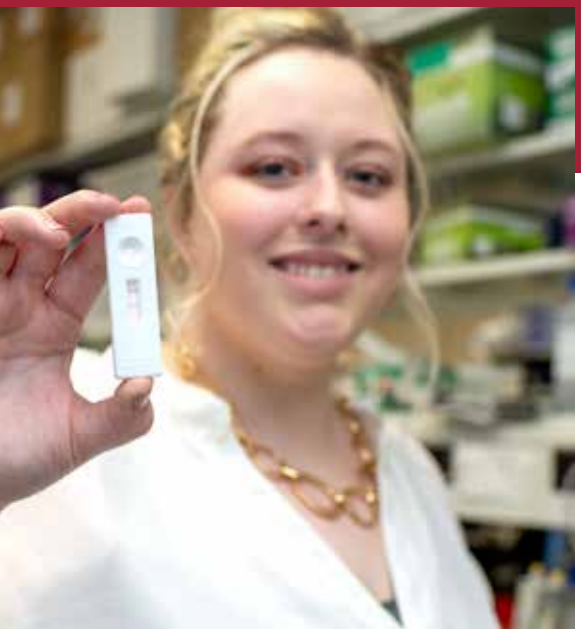
University of Arkansas for Medical Sciences (UAMS)

TRI

Translational Research Institute



2022

Annual Report

University of Arkansas for Medical Sciences (UAMS)

UAMS

Arkansas Children's

HOSPITALS • RESEARCH • FOUNDATION

THE TRANSLATIONAL RESEARCH INSTITUTE IS SUPPORTED BY THE NATIONAL INSTITUTES OF HEALTH (NIH) NATIONAL CENTER FOR ADVANCING TRANSLATIONAL SCIENCES (NCATS), CLINICAL AND TRANSLATIONAL SCIENCE AWARDS (CTSA) PROGRAM UL1 TR003107, KL2 TR003108 AND TL1 TR003109.

Translational Research Institute (TRI)

TRI PROVIDES SERVICES AND RESOURCES TO ENSURE THE SWIFT TRANSLATION OF RESEARCH INTO HEALTH CARE ADVANCES. THIS SUPPORT IS AVAILABLE TO RESEARCHERS AT UAMS, ARKANSAS CHILDREN'S HOSPITAL AND RESEARCH INSTITUTE, AND THE CENTRAL ARKANSAS VETERANS HEALTHCARE SYSTEM (TRI HUB PARTNERS).

Mission Statement

OUR MISSION IS TO DEVELOP NEW KNOWLEDGE AND NOVEL APPROACHES THAT WILL MEASURABLY ADDRESS THE COMPLEX HEALTH CHALLENGES OF RURAL AND UNDERREPRESENTED POPULATIONS.

Vision Statement

OUR VISION IS TO BE A THRIVING TRANSLATIONAL RESEARCH ECOSYSTEM THAT CATALYZES DISCOVERIES INTO HEALTH SOLUTIONS FOR RURAL AND UNDERREPRESENTED POPULATIONS.

Clare Nesmith, M.D., discusses her TRI-supported pilot project at TRI Research Day. More photos inside!

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This report is produced by the UAMS Translational Research Institute (TRI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Message from the Director

DEAR READER,

Tackling the chronic health issues of a rural southern state like Arkansas demands original thinking and a pioneering spirit. Fortunately, these traits are built into our mission at TRI, and I am excited for you to see them echoed throughout this 2022 Annual Report.

Despite the challenges of COVID-19, our TRI team, researchers and partners across the state are breaking new ground with impacts well beyond our borders. Now in our third year of CTSA funding, we are seeding consequential translational research and growing and sustaining novel programs that have quickly shown their value.

We celebrate many of the success stories here, not because they are TRI achievements, but because they are a reflection of noteworthy collaborations and partnerships. We celebrate, for example, the partnerships that have enabled the UAMS Rural Research Network to exceed its two-year goals. The network's UAMS partners include Regional Campuses, Winthrop P. Rockefeller Cancer Institute and the Office of Community Health and Research.

Arkansas Children's and the Central Arkansas Veterans Healthcare System are also enthusiastic supporters of numerous programs and projects. We cherish their partnership as well as UAMS institutional partners for translational science pipeline programs such as those for medical students, postdocs and faculty, including those underrepresented in research.

Our community engagement team continues to shine with the launch of a pilot study program that puts our community partners on equal footing with academic researchers. The Association of American Medical Colleges (AAMC) awarded its top honor for community engagement to UAMS in 2021.

Biomedical informatics also remains a priority for us. TRI-supported researchers have distinguished themselves with innovative contributions for data sharing to the National COVID Cohort Collaborative (N3C). A partnership between the Department of Biomedical Informatics and Arkansas Children's also led to the now nationally accredited Clinical Informatics Fellowship Program.

These highlights are just the beginning, so please read on.

I am grateful that TRI can play a role in so many collaborative programs, and I am excited about the opportunities ahead!

Sincerely,

Laura James, M.D.
Director, Translational Research Institute
Associate Vice Chancellor for Clinical and Translational Research, UAMS

"This study has been life changing for people in these rural communities."
— Molly Corbell, RRT

Rural Research Network

TWO-YEAR-OLD PROGRAM EXCEEDS GOALS BUILDING STATEWIDE NETWORK

Texarkana-based UAMS research coordinator Molly Corbell, RRT, RPSGT, has seen firsthand how research can improve the lives of Arkansans in and around her community.

She joined the UAMS Rural Research Network in 2021, and her experience recruiting participants for the Patient-Centered Outcomes Research Institute-funded Family Diabetes Self-Management Education (FDSME) study has been an eye-opener.

"This study has been life changing for people in these rural communities," Corbell said.

Many people don't know how to manage their diabetes, and the FDSME intervention gives them the help they need in a format they can understand, she said. "The people in the rural communities I serve average about an eighth- or ninth-grade reading level, and they are just doing the best they can," Corbell said.

Established in January 2020, the Rural Research Network aims to increase researchers' access to communities across Arkansas through UAMS' eight Regional Campuses.

The network's mission is to increase knowledge and innovation in

Continued on page 6

Ellen Hudson, M.D., visits with a diabetes patient at the UAMS Family Medical Center in Texarkana.

By spring 2022, the Rural Research Network had matured faster than anyone expected, with participant enrollment for nine studies/projects surpassing goals and research coordinator positions being filled at all eight campuses.

research that can drive health improvement in underserved minority and rural populations. It has provided UAMS the infrastructure to accommodate more nationally funded research across Arkansas.

By early 2022, the network had matured faster than anyone expected, with participant enrollment for nine studies/projects surpassing goals and research coordinator positions being filled at all eight campuses. The network's original three-year strategic plan envisioned having research coordinators at all eight regional campuses by year three, with possibly four research projects initiated, said Director Veronica Smith, MBA."We are happy to report that in only two years we have nine studies of which three were COVID-19 studies," she said.

Smith said credit goes to collaborative and supportive leadership, which includes UAMS partnerships involving:

- **Richard Turnage, M.D.,** vice chancellor for Regional Campuses
- **Laura James, M.D.,** director of TRI
- **Pearl McElfish, Ph.D., MBA,** director of the Office of Community Health and Research
- **Michael Birrer, M.D., Ph.D.,** vice chancellor and director of the Winthrop P. Rockefeller Cancer Institute

"The Rural Research Network also receives generous support from an amazing group of clinicians, their clinical teams and administrative staff within each of the regional sites who support our research efforts," Smith said. "Our work would not be possible without their help."

The program's fast startup has been important for TRI's focus on rural research, and it is already demonstrating improved outcomes for patients enrolled in the diabetes study.

"Some early data from the FDSME study suggest that A1C levels are improving," Smith said of the study led by McElfish.

Corbell, who sees the participants for their three-month follow-up tests, attests to its impact.

"It's just amazing, and they are super excited about the diabetes education classes they completed as part of the study," she said.

Corbell, whose mother had type 2 diabetes and was on an insulin pump, is an inspired recruiter for the FDSME study.

"I lost her over a year ago unexpectedly and felt like it was meant to be that I work on this study in her honor," she said. "It felt really personal to me that this program is helping so many people in areas that would normally be left out on their own."

Her enrollment goal is two participants per week, but she averages about eight.

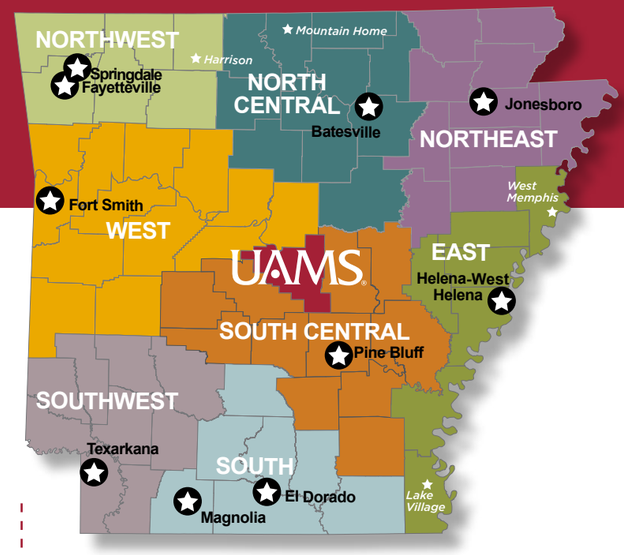
A registered respiratory therapist for 26 years in Texarkana, Corbell attributes her success to being well known in the medical community, which helped her initiate practices that integrate her coordinator role with the UAMS Family Medical Center in Texarkana. For example, she checks the clinic schedule daily and notes patients likely to qualify for the study, and the physicians alert her to patients willing to discuss the study.

Corbell has encountered her share of reluctant patients. She encourages them and asks that they logon to the remote sessions and "just try two classes."

She also reassures them. "I want them to know I'm on this journey with them."

UAMS Rural Research NETWORK

Rural Research Network Mission: To improve the health of Arkansans by engaging individuals living in rural areas of Arkansas in clinical and translational research.



Rural Research Network (RRN) Sites

Each of the **8 sites** offers unique opportunities, resources and access to special populations

Developing Infrastructure:

6 New Coordinators + leverage TRI resources/services

Assisted hiring **9 Community Health Navigators** within Regional Programs in partnership with Winthrop P. Rockefeller Cancer Institute (WPRCI)

9 studies/projects to date (includes Cancer Navigation Program)

4,467 total participants

- Diabetes Education/P. McElfish – **564 participants**
- Food Delivery/Insecurity Study/C. Long – **10 participants** (launched Oct. 2021)
- Digital Health and Parkinson's Disease/T. Virmani – **7 participants** (launched Oct. 2021)
- Impact of COVID-19/P. McElfish – **1,853 completed surveys**
- Seroprevalence study (Adult and Child)/L. James, J. Kennedy & J. Snowden – **~1,700 of 10,000 samples**

2 New Rural Funding Mechanisms:

WPRCI Rural Research Award – up to 3 awards per year; **$100,000 each**

TRI Team Science Champion Awards – 1-2 per year; **$75,000 each**

5 publications (Pearl McElfish, Ph.D., MBA)

Community Advisory Board - **14 Board Members**

RRN consultations available via TRI Request Services Portal at **TRI.uams.edu**

UAMS is safely linking de-identified patient information across national databases, aiding the national effort to accelerate COVID-19 research.

Solving the Puzzle

LINKING THREE NATIONAL DATABASES AMONG FIRSTS FOR 'NIMBLE' UAMS TEAM

A TRI-supported biomedical informatics team became the first to help link COVID-19 clinical data, radiology images and viral genomes from three national databases using privacy preserving record linkage.

The privacy protection technology allows researchers using the National COVID Cohort Collaborative (N3C) to access COVID-19 patients' radiology images stored in The Cancer Imaging Archive (TCIA).

The team employed the same technology in 2021 allowing researchers to link viral genomes stored in GenBank with patients' clinical data in the N3C repository. GenBank is the National Institutes of Health (NIH) genetic sequence database containing publicly available DNA sequences. The N3C enclave, which is supported by the National Center for Advancing Translational Sciences (NCATS), includes electronic health record information on more than 12 million patients, including 4.5 million COVID-19 positive patients.

"Our AR-CDR team was nimble enough to take on this major initiative and do it faster than many other institutions, and at a very high quality."

— Fred Prior, Ph.D.

The firsts are a credit to a team led by Ahmad Baghal, M.D., Ph.D., director of the TRI-supported Arkansas Clinical Data Repository (AR-CDR), said Fred Prior, Ph.D., distinguished professor and chair of the College of Medicine Department of Biomedical Informatics. The department's Shaymaa Al-Shukri, Ph.D., business intelligence analyst, and Michael Rutherford, a programmer and PhD student, also have critical roles.

"Our AR-CDR team was nimble enough to take on this major initiative and do it faster than many other institutions, and at a very high quality," said Prior, also director of TRI's Comprehensive Informatics Resource Center (CIRC). "They did this in addition to all their normal work supporting the research mission across our Clinical and Translational Science Awards (CTSA) hub."

The team's expertise also helped UAMS in 2020 be one of the first institutions in the country to share de-identified COVID-19 clinical data with the N3C enclave.

Under a contract with NCATS, the team led the way in 2021 sharing COVID-19 radiology images in the National Cancer Institute (NCI)-funded TCIA, which Prior leads as principal investigator. In addition to storing cancer patients' clinical images, TCIA was designated by NCI in 2020 as a repository for COVID-19 clinical images. Prior's team then implemented the privacy preserving record linkage allowing N3C users to acquire the images and image analyses from TCIA.

The expertise that developed from that success was used by the UAMS team to establish the GenBank – N3C link.

Prior noted that the strides made by his team make it possible at UAMS to link a patient's de-identified clinical data, radiology images and SARS-CoV-2 genomic sequencing data.

"UAMS is now one of the few institutions in the United States that can put all of those puzzle pieces together," Prior said.

Having the ability to link such data stored in separate repositories creates exciting new research possibilities beyond COVID-19. Soon, he hopes to apply the privacy preserving record linkage to Arkansas Children's clinical databases.

"There's a huge interest nationally in lifespan-related studies, particularly for rural and underserved populations. Well, that's us," he said.

Pioneering MDs

UAMS, ARKANSAS CHILDREN'S ADD FELLOWS TO CTSA-SUPPORTED CLINICAL INFORMATICS PROGRAM

"It's applied clinical informatics, meaning when you leave this fellowship you will be ready to lead informatics efforts."

— Feliciano "Pele" Yu Jr., M.D.

One day, artificial intelligence will be a routine aid to clinicians making important patient care decisions.

Getting there will require a unique combination of medical and informatics skills - the perfect challenge for a CTSA Program like UAMS and its partner, Arkansas Children's (ACH).

"As it relates to translational science, it's very important to hardwire those physician decision points so you don't have to depend on human memory," said Feliciano "Pele" Yu Jr., M.D., chief medical information officer at ACH and professor and chief of the Section of Clinical Informatics at the UAMS Department of Pediatrics.

UAMS informatics leaders Yu and Fred Prior, Ph.D., professor and chair of the Department of Biomedical Informatics, have seized on the opportunity to build quality clinical decision support systems and apply machine learning to electronic health records data to help with decision-making. Prior also leads TRI's Comprehensive Informatics Resource Center (CIRC).

A major catalyst for the effort is one of the first nationally accredited clinical informatics fellowship programs in the country established by Prior and Yu in July 2020 with support from TRI. The two-year program welcomed two clinicians as its inaugural fellowship class and three additional clinicians in 2021. In early 2022, the program received full accreditation from the Accreditation Council for Graduate Medical Education (ACGME).

Yu, director of the Clinical Informatics Fellowship Program, said the fellows are primed to make significant advances in the field.

"They bring energy and an innovative spirit," he said. "They are all problem solvers with new insights and fresh ideas."

The senior fellows (year two) and their research projects are:

- **Daniel Liu, M.D.,** pediatrics residency: UAMS; medical school: UAMS; certified Epic Physician Builder (advanced and analytics)
  Project: *"Using Machine Learning to Advance Telehealth"*
- **Lori Wong, M.D.,** public health and general preventive medicine residency: University of Kentucky College of Medicine; medical school: Medical College of Wisconsin; certified Epic Physician Builder (advanced and analytics)
  Project: *"The Impact of an Organization-wide Electronic Health Record (EHR) System Upgrade on User's Daily EHR Activity Time"*
- **Jacob Wooldridge, M.D.,** fellowship: hematopathology, Columbia University Vagelos College of Physicians and Surgeons; pathology residency, University of Texas Medical Branch Hospitals Program; medical school: University of Texas Medical Branch School of Medicine. He is a transfer for year two from a clinical informatics fellowship at Stony Brook University, New York.

The junior fellows are (projects under development):

- **Salem AlGhamdi, MBBS,** emergency medicine residency: University of Maryland, Baltimore Medical School; Taif University College of Medicine
- **Obeid Shafi, M.D.,** pediatrics residency: Flushing Hospital Medical Center Program, New York; medical school: Jawaharlal Nehru Medical College, Aligarh

In addition to receiving specialized training, the fellows help run and improve UAMS and ACH clinical information systems, see patients and provide informatics consultations to medical residents through a partnership with the College of Medicine Office of Graduate Medical Education. The fellows also conduct research with support from TRI.

"The fellowship structure is applied clinical informatics, meaning when you leave this fellowship you will be prepared to lead informatics programs," Yu said.

TRI has supported biomedical informatics at UAMS and ACH through grant opportunities, access to national clinical data networks and partial salary support of 16 biomedical informatics faculty and staff.

Clockwise from top: Obeid Shafi, M.D., Salem AlGhamdi, MBBS, Daniel Lu, M.D., Lori Wong, M.D., and Jacob Wooldridge, M.D.

Biomedical Informatics Pilot Award

NOVEL STUDY AIDED BY HIGH SCHOOL STUDENT WITH MACHINE LEARNING EXPERTISE

Rural Arkansans with Parkinson's disease could see improved outcomes and avoid a long drive to UAMS thanks to cutting-edge research supported by TRI, as well as the remarkable computer skills of a high school student.

UAMS neurologist Tuhin Virmani, M.D., Ph.D., is leveraging a biomedical informatics-focused TRI pilot award to test digital health innovations that he hopes will benefit his rural patients.

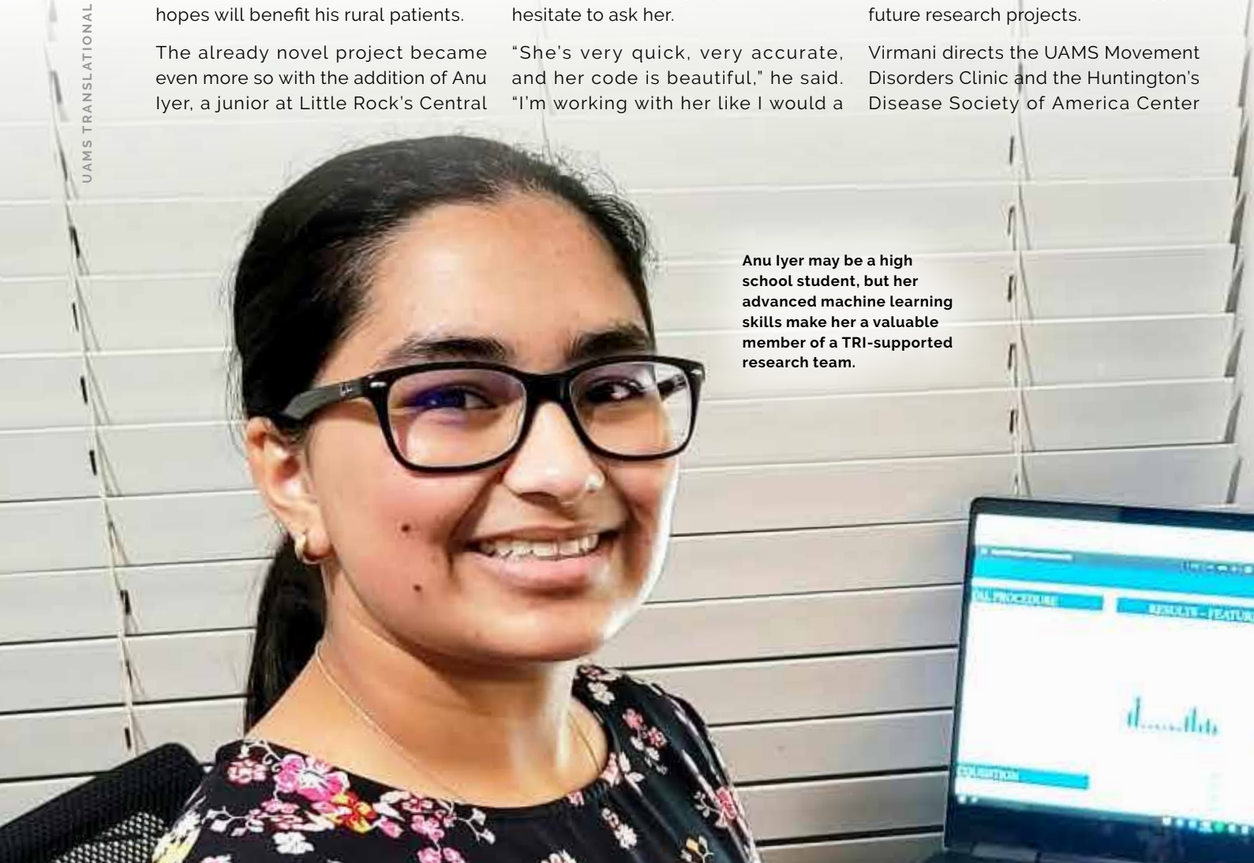
The already novel project became even more so with the addition of Anu Iyer, a junior at Little Rock's Central High School. She was asked to join the team by Fred Prior, Ph.D., her mentor on a previous project.

Prior, who leads TRI's Comprehensive Informatics Resource Center and is professor and chair of the College of Medicine Department of Biomedical Informatics, said Iyer is one of the best programmers he has known. When machine learning expertise was needed on the project, he did not hesitate to ask her.

"She's very quick, very accurate, and her code is beautiful," he said. "I'm working with her like I would a graduate student, and that's pretty amazing for someone in high school."

The team is testing new ways to monitor rural patients remotely, improve clinical outcomes and help patients participate in cutting-edge research with no need to visit Virmani's clinic in Little Rock. It is also building biomedical informatics tools that can organize the digital research data in a searchable format and will support future research projects.

Virmani directs the UAMS Movement Disorders Clinic and the Huntington's Disease Society of America Center of Excellence at UAMS. His UAMS research partners also include the TRI-supported Rural Research Network (story, page 5), Regional Campuses and the UAMS Institute for Digital Health & Innovation.



Anu Iyer may be a high school student, but her advanced machine learning skills make her a valuable member of a TRI-supported research team.

> **"She's very quick, very accurate, and her code is beautiful."**
> **— Fred Prior, Ph.D.**

The pilot project team is using the latest digital health technology to measure cognition and analyze voice recordings and writing samples. The project is an extension of an in-person gait analysis project that requires use of a special sensor mat at Virmani's clinic. The team is trying to develop ways to perform objective measures of disease progression, such as in gait, while continuing to respect current COVID-19 safety measures. The group found an alternative in speech analysis, which created the opportunity for Iyer.

"We found in the literature that we could get similar information on disease symptoms with voice recordings," Prior said. "I knew Anu was looking for another project, and this is a great fit for her skill set."

Virmani said Iyer has the ability to synthesize difficult concepts and apply her knowledge at a higher level.

"That's something that a lot of people are not able to do, even at the PhD level," he said.

Iyer's work since middle school has earned top regional and state science awards and qualified for the International Science and Engineering Fair (ISEF).

Prior was her mentor during her UAMS internship in 2021 with support from a $3,360 National Science Foundation (NSF) grant. She developed a machine learning tool that increased accuracy of cancer diagnoses from less than 90% to nearly 96%. The work was published in November 2021 in the national Journal of Student Research.

After she creates a machine learning model that can detect Parkinson's from audio files, she wants to do more extensive research on the disease's causes and effects and improve diagnostic accuracy.

The study team is testing new ways to monitor rural patients remotely, improve clinical outcomes, and help patients participate in cutting-edge research.

The 'Instigators'

UAMS DISCOVERS AUTOANTIBODIES AS POSSIBLE CAUSE OF LONG COVID-19

UAMS' groundbreaking long-COVID-19 research was supported by grants administered by TRI from the offices of UAMS Chancellor Cam Patterson, M.D., MBA and UAMS Vice Chancellor for Research and Innovation Shuk-Mei Ho, Ph.D.

The global search for answers to long COVID-19 yielded a possible cause in 2021 by a research team assembled with TRI support.

The team's discovery of rogue antibodies that appear to be key players in long COVID-19 was published in The Public Library of Science ONE (PLOS ONE). It has drawn national attention and hope for those with the syndrome. The condition's symptoms include fatigue, brain fog, difficulty breathing and joint pain. It has disrupted educations, careers and the basic activities of life.

"We put together a great group of investigators that had never worked together to produce these very exciting results."

— John Arthur, M.D., Ph.D.

Leading the UAMS research is John Arthur, M.D., Ph.D., who has treated patients with kidney failure caused by the virus, SARS-CoV-2. He became aware that a protein known as ACE2 (angiotensin-converting enzyme 2) plays a key role in the body's immune response to coronavirus. Arthur, a professor in the College of Medicine Department of Internal Medicine, has studied ACE2 for many years because of its role in kidney function.

"ACE2 just so happens to be the protein that the coronavirus hijacks to get into cells," said Arthur, also associate director of TRI.

His research in 2020 of ACE2's role in coronavirus infections, and then a 2021 conversation with UAMS' Terry Harville, M.D., Ph.D., led to the discovery of rogue antibodies that appear weeks after an initial COVID-19 infection. Harville is a professor in the College of Medicine Department of Pathology and Department of Internal Medicine, and medical director of the Histocompatibility and Immunogenetics Laboratories.

Arthur's work, along with other signature COVID-19 research at UAMS, has been supported by TRI Director Laura James, M.D., and Shuk-Mei Ho, Ph.D., vice chancellor for Research and Innovation. Ho provided pilot funding to jump-start Arthur's COVID-19 research in 2020, and James helped him quickly assemble the team needed to conduct the long-COVID-19 study starting in early 2021.

Arthur and his team are continuing the research in 2022 to build on their earlier findings.

'STUMPED'

For those with long COVID-19, Arthur said it appeared that the normal activity of ACE2 was continuing to be suppressed, interfering with the body's immune response. He wasn't sure why, so he called Harville. "I told him what I knew and where I was stumped, and it took him about 10 seconds to come up with the answer."

The two hypothesized that, in people with long COVID, the antibodies created to attack the virus lead to autoantibodies that attack the ACE2. The autoantibodies attach to the ACE2 and disrupt its work, a possible cause of long COVID-19.

Terry Harville, M.D., Ph.D., and John Arthur, M.D., Ph.D., hypothosized that autoantibodies are responsible for long COVID-19.

Arthur then turned to a UAMS immunology team that had developed a high accuracy SARS-CoV-2 antibody test used statewide in 2020.

For Arthur's study, a new antibody test was developed by researchers Craig Forrest, Ph.D., professor; Karl Boehme, Ph.D., associate professor; and Shana Owens, Ph.D., post-doctoral fellow, in the College of Medicine Department of Microbiology and Immunology.

Although skeptical there would be autoantibodies against the ACE2 because there is so little precedent for it, Forrest got a surprise when he reviewed the first lab results.

"I texted Karl, 'Holy cow, we may actually have something here,'" he said. "Although I thought it wouldn't work, I also thought it was 100% worth giving it a try because it's a really compelling hypothesis."

Josh Kennedy, M.D., who worked with Boehme and Forrest on the 2020 antibody test, is also a collaborator on Arthur's project. Kennedy is a clinical researcher at Arkansas Children's Research Institute and associate professor in the Department of Pediatrics, Division of Allergy and Immunology.

The team tested de-identified blood samples for ACE2 antibodies in 67 patients with known SARS-CoV-2 infection and 13 with no history of infection. In 81% of patients with a history of COVID-19, the samples had the autoantibodies that attacked the ACE2. In participants with no history of COVID-19, no autoantibodies were created to attack the ACE2 enzyme.

"Everything that we've found is consistent with these autoantibodies as the instigators of long COVID, so it's an exciting development that merits further study," Arthur said. "We will also use UAMS' high-speed robotic instrumentation to automate the aliquoting and analysis of samples in the future."

The robotic equipment was purchased with funds awarded to UAMS through the the Arkansas Coronavirus Aid, Relief and Economic Security (CARES) Act. Jeff Moran, Ph.D., adjunct professor in the UAMS College of Medicine Department of Pharmacology and Toxicology, will oversee this component of the work.

WHAT'S NEXT

Arthur is moving his research into the next phase to determine whether there is an association between the long COVID-19 symptoms and the rogue autoantibodies. In spring 2022, his team was sending surveys to every person tested for COVID-19 in the UAMS system – more than 100,000. His team is also collecting some 10,000 remnant blood samples.

"This will give us a fuller picture and answer some key questions that we couldn't in our first study," he said. "If our next steps confirm that these antibodies are the cause of long COVID-19 symptoms, there are medications that should work to treat them."

The multidisciplinary team also includes College of Medicine researchers Christian Herzog, Ph.D., in the Department of Internal Medicine, and Juan Liu, M.D., Ph.D., from the Department of Pathology.

"This is true team science," Arthur said. "We put together a great group of investigators that had never worked together to produce these very exciting results."

"I texted Karl, 'Holy cow, we may actually have something here.'"

— Craig Forrest, Ph.D.

"We are developing methods for improving both trust and access to vaccines."
— Pearl McElfish, Ph.D., MBA

Community Focused

COVID-19 PROJECT PART OF NATIONAL EFFORT TO REDUCE INFECTIONS IN HARDEST HIT POPULATIONS

In 2021, UAMS researchers began co-leading an NIH-funded study to help determine the causes behind COVID-19's devastating impact on minorities and rural communities and to begin developing strategies for increasing vaccination rates.

The large UAMS research team was one of 11 selected nationally as part of the NIH Community Engagement Alliance (CEAL) Against COVID-19 Disparities.

Called COVID-19 PREVENT (Partnership for Rapid Engagement to Enhance Vaccine Uptake for Everyone: Neighbors Working Together), the UAMS project ramped up within weeks of its $1.4 million award and met or exceeded its goals in less than a year.

Examples of its many accomplishments include:

- The team began to address the disproportionate burden of COVID-19 in Arkansas with a survey of 1,500 participants using community-engaged strategies. The number exceeded researchers' goal by 500 participants and oversampled for minority participants. By early 2022, the team had submitted six research manuscripts with community co-authors and five more were in development.
- The team partnered with 18 faith-based organizations that served as vaccination sites, double its goal. Nearly 1,950 participants received vaccines at those sites.

In spring 2022, the UAMS team secured a second round of funding — $1.8 million — from the NIH CEAL program to continue its work.

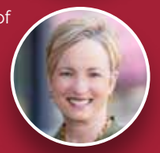
In 2020, the Centers for Disease Control and Prevention (CDC) identified Arkansas as a national hot spot for COVID-19 disparities among Marshallese and Hispanic populations. The disparities were so severe that CDC and NIH officials visited the state to investigate. Black/African American and rural communities across the state also have been struck hard. Life expectancy for Blacks has declined nearly three years since 2019.

By early 2022, the team had submitted six research manuscripts with community co-authors, and five more were in development.

The study's co-principal investigators are:

Pearl McElfish, Ph.D., MBA, associate professor and director of the UAMS Office of Community Health and Research; associate director of Community Outreach and Engagement at UAMS Winthrop P. Rockefeller Cancer Institute; and director of the TRI Special Populations Core.

Pebbles Fagan, Ph.D., MPH, professor and director of the Center for the Study of Tobacco at the UAMS Fay W. Boozman College of Public Health.



Laura James, M.D., director of the Translational Research Institute and UAMS associate vice chancellor for Clinical and Translational Research.

Critical to the project's success, McElfish said, has been leveraging a network of UAMS community partners representing more than 150 health clinics, community groups and faith-based organizations.

'Reverberating Impact'

UAMS EARNS AAMC'S TOP AWARD FOR COMMUNITY ENGAGEMENT

Years of dedicated efforts building sustained community partnerships earned UAMS the Association of American Medical Colleges' (AAMC) top honor for community engagement in 2021.

The Spencer Foreman Award for Outstanding Community Engagement is given annually to an AAMC-member medical school or teaching hospital with a long-standing, major institutional commitment to partnering with the community it serves to identify and address community needs.

"The impact of UAMS reverberates throughout its community and beyond," the AAMC stated.

"How the community experiences our intent is of the utmost importance," said Pearl McElfish, Ph.D., MBA, director of the Office of Community Health and Research on UAMS Northwest Regional Campus in Fayetteville and associate director of community outreach and engagement at the UAMS Winthrop P. Rockefeller Cancer Institute. "We value and rely on the local community's wisdom and expertise to address community health needs."

McElfish also co-directs TRI's Integrating Special Populations function and her team's work has been supported by TRI for the past 10 years. Her long-standing community partnerships were instrumental in securing additional grants for work on COVID-19 testing and vaccination. These include two NIH Community Engagement Alliance (CEAL) Against COVID-19 Disparities awards.

Shuk-Mei Ho, Ph.D., UAMS vice chancellor for Research and Innovation, said UAMS' faculty and staff are skilled in bidirectional communication.

"We listen intentionally and strive to work together with our community partners on innovative interventions," said Ho, who, in addition to her bench science, spent 12 years in community engagement and outreach.

Arkansas is racially, economically and ethnically diverse with one of the largest communities of Pacific Islanders, the Marshallese, in the United States. Arkansas also has the fourth fastest growing immigrant population nationally, and nearly half of the state's population lives in rural areas.

UAMS has leveraged state and federal funding, Ho said, to foster productive community partnerships that have mitigated health disparities and made significant strides in health equity for many Arkansans.

"By empowering our community partners, policies may be changed and innovative approaches may emerge, liberating unparalleled impacts," she said.

Eldon Alik, consulate general for the Marshall Islands, offered praise for UAMS' community efforts. "UAMS researchers don't tell us what they are going to do; they ask us what they can do to help. "

The grant program is a first for UAMS with academic and community partners **sharing project leadership equally.**

Tiffany Haynes, Ph.D.

In the Driver's Seat

THREE ACADEMIC-COMMUNITY RESEARCH TEAMS EARN TRI PILOT AWARDS

The TRI Community Engagement Program implemented a novel approach to TRI's Pilot Award Program in 2022 — putting the community in the driver's seat with the researchers.

TRI awarded pilot grants to three teams of academic researchers and their community organization partners seeking to address health disparities.

The three pilot projects will help the teams address high suicide rates in jails, high suicide rates among veterans in rural areas and hearing loss in infants.

The grant program is a first for UAMS with academic and community partners sharing project leadership equally. Each project has an academic co-principal investigator and a community co-principal investigator.

"This milestone is a result of having increased research capacity among our community partners and improved community engagement skills of our academic researchers," said Tiffany Haynes, Ph.D., director of the TRI Community Engagement Program.

"Our three funded teams spent the last year getting to know each other, forming those relationships that helped them secure these pilots grants."
— Tiffany Haynes, Ph.D.

Haynes serves as a mentor and helped lead development of curriculums for training programs known as Community Partners Educated as Arkansas Research Leaders (CPEARL) and the Community-Based Participatory Research (CBPR) Scholars program.

The CPEARL program, which started in 2019, teaches leaders of community-based organizations in Arkansas the skills that will help the organizations be more effective.

The CBPR program builds on CPEARL with additional training for the community-academic teams. Seven teams worked to develop research proposals and applied for the TRI pilot awards of up to $50,000 each.

PROJECT TITLE: PREVENTING SUICIDE IN JAILS: COMMUNITY-DEVELOPED STRATEGIES TO SUPPORT AN EDUCATIONAL INTERVENTION

UAMS academic partners: Melissa Zielinski, Ph.D., and Katy Allison, Ph.D.
Community partners: AR Foundation for Suicide Prevention – Susie Reece and Wendy Thompson

A BLUEPRINT FOR SUICIDE PREVENTION IN JAILS

BY: SETH HOOKER

UAMS' Melissa Zielinski, Ph.D., and Katy Allison, Ph.D., MPH, are working with Susie Reece (center) of AR Foundation for Suicide Prevention to address suicides in jails.

The Arkansas chapter of the American Foundation for Suicide Prevention (AFSP) teamed up with UAMS' Melissa J. Zielinski, Ph.D., and Katy Allison, Ph.D., MPH, to research strategies for getting suicide prevention curricula into Arkansas jails. Zielinski is an assistant professor in the College of Medicine Department of Psychiatry. Allison is a research assistant professor in the Fay W. Boozman College of Public Health Department of Health Behavior and Health Education.

"The goal is to create a blueprint on how best to administer suicide prevention in these settings," said Susie Reece, a published author and speaker on violence prevention, and the community principal investigator in her capacity as chair of the Arkansas chapter of the AFSP.

The project team is identifying implementation science strategies to support implementation of suicide prevention education in two Arkansas jails. The resulting data will be used to develop an implementation toolkit for AFSP. The pilot data will also support grant applications for additional suicide prevention research in jails.

"We are excited to be part of this historic pilot program because it is allowing us to lay the foundation for what comes next," Zielinski said.

PROJECT TITLE: ADAPTING SAFETY PLANNING INTERVENTION FOR VETERANS TO BE DELIVERED OUTSIDE HEALTH CARE SETTINGS IN RURAL ARKANSAS

UAMS academic partners: Eva Woodward, Ph.D., Jennifer Gan, and Irenia Ball
Community partners: AR Freedom Fund – Rae Brown, Anthony Smith and Heather Brown

Eva Woodward, Ph.D.

MEETING VETERANS WHERE THEY ARE TO PREVENT SUICIDE

Veterans account for a disproportionate amount of all suicides. Rural veterans are even more at risk – double that of their urban counterparts. In an effort to reduce these numbers and meet veterans where they are, the Arkansas Freedom Fund (AFF) has partnered with UAMS' Eva Woodward, Ph.D., to train volunteers in these communities to deliver brief suicide interventions. Woodward is an assistant professor in the College of Medicine Department of Psychiatry and a psychologist at the Central Arkansas Veterans Healthcare System. Her community co-investigator is Rae Brown, veteran of the U.S. Army and Air Force and CEO of Arkansas Freedom Fund, a veterans community organization.

Long driving distances, limited mental health professionals, and stigma about mental health limit rural veterans' access to mental health professionals. Veterans' first preference is to speak to family and friends about suicide, so that is what this research will try to facilitate.

First, a workgroup of suicide experts and rural Arkansas veterans will modify an existing suicide treatment so that it can be delivered by community members in rural counties. The workgroup will identify potential barriers to implementing their adapted treatment in Arkansas community organizations and rural counties. Their next step would be to pilot this innovation with additional funding.

PROJECT TITLE: UNDERSTANDING BARRIERS TO NEWBORN HEARING SCREENING FOLLOW-UP IN ARKANSAS USING A COMMUNITY BASED APPROACH

UAMS academic partners: Deanne King, M.D., Ph.D., Charia Hall, Au.D., Rachel Glade, Ph.D. (University of Arkansas, Fayetteville)
Community partners: AR Hands and Voices: Mandy Jay, Liana Robbins

Deanne King, M.D., Ph.D.

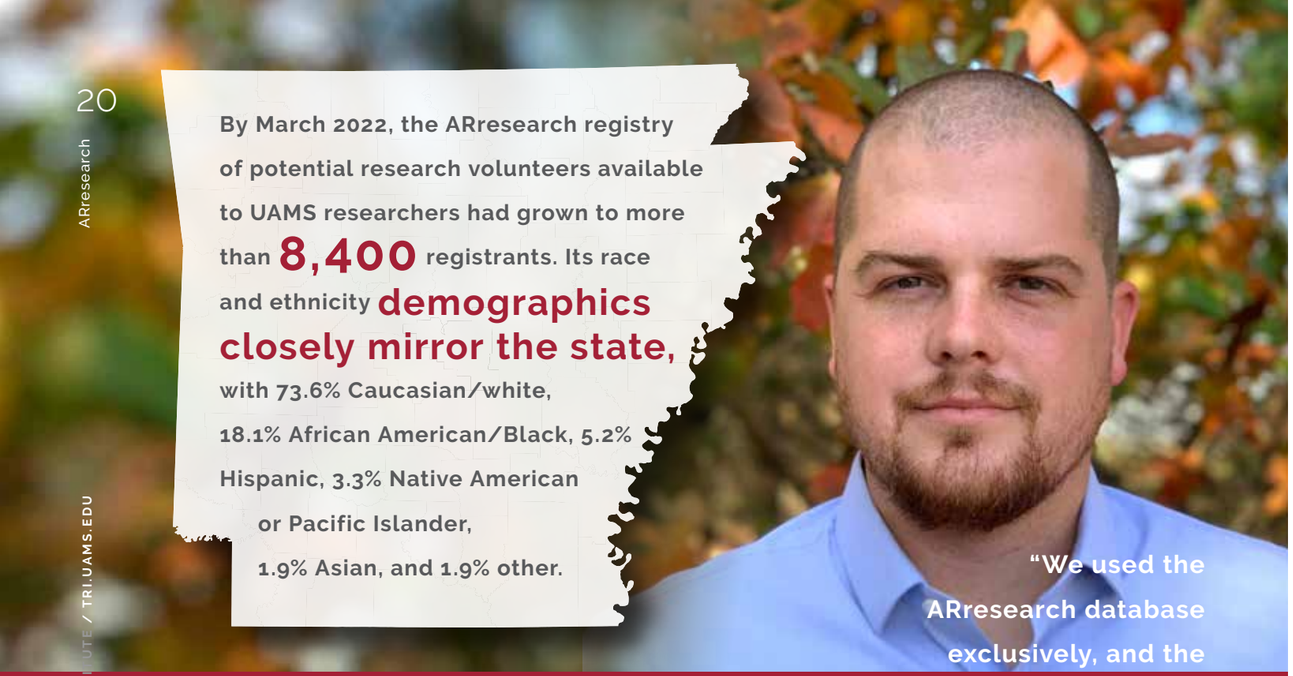
ADDRESSING HEALTH DISPARITIES FOR CHILDREN IN ARKANSAS WITH HEARING LOSS

Interventions to address hearing loss by 6 months of age are critical to aiding vocabulary and language development, but many parents do not follow up after the initial infant hearing screening.

Mandy Jay, a parent of two deaf children, and the community investigator acting on behalf of Arkansas Hands and Voices (AH&V), wants to address this problem. Aiding her in this fight for health equity is UAMS' Deanne L. King, M.D., Ph.D. King is the director of clinical research for the Department of Otolaryngology-Head and Neck Surgery in the College of Medicine.

The pilot award program has afforded Jay and her organization a unique opportunity. "As a community organization, we're not typically brought in at this level. We help and assist, but are not usually equal players. At Arkansas Hands and Voices, we are excited because we're passionate about all children in our state receiving the service they deserve."

Over the next year, the team will collect and analyze data to help understand the reasons behind the low rate of follow-up to infant hearing screenings. Information from surveys will help design strategies to improve timely follow-ups to newborn hearing screenings.



By March 2022, the ARresearch registry of potential research volunteers available to UAMS researchers had grown to more than **8,400** registrants. Its race and ethnicity **demographics closely mirror the state,** with 73.6% Caucasian/white, 18.1% African American/Black, 5.2% Hispanic, 3.3% Native American or Pacific Islander, 1.9% Asian, and 1.9% other.

"We used the ARresearch database exclusively, and the sample was really good and really diverse in terms of race and ethnicity."
— Don Willis, Ph.D.

Volunteer Rich

TRI PARTICIPANT REGISTRY HELPS COVID STUDY EARN TRANSLATIONAL SCIENCE AWARD

Having thousands of research volunteers available through TRI was not only convenient for a UAMS research team, it helped earn a major publication award.

The team's article on COVID-19 vaccine hesitancy became the most downloaded paper in 2021 from the journal Clinical and Translational Science, and it received the 2022 Clinical and Translational Science Award from the journal's publisher, the American Society for Clinical Pharmacology & Therapeutics (ASCPT).

The study, "COVID-19 Vaccine Hesitancy: Race/Ethnicity, Trust and Fear," resulted from a survey using TRI's ARresearch registry, which by March 2022 included more than 8,400 residents from all 75 Arkansas counties.

"We used the ARresearch database exclusively, and the sample was really good and really diverse in terms of race and ethnicity," said Don Willis, Ph.D., lead author of the study by the UAMS Office of Community Health and Research.

In a notification to Pearl A. McElfish, Ph.D., MBA, who directs the Office of Community Health and Research, John Wagner, M.D., Ph.D., the Clinical and Translational Science journal's editor-in-chief, said the award recognizes the journal's paper that most reflects ASCPT's goals of advancing diversity, equity and inclusion (DEI).

"This paper best fit the bill as a terrific example both of DEI and translational science," Wagner said.

The award was announced by ASCPT during its annual meeting in March.

The ARresearch registry generated a 31.6% survey response rate (1,288 of 4,077 registrants contacted), a high percentage considering the extensive length of the survey, Willis said. The high number and diversity of respondents helped generate the paper's high quality results.

The Study Highlights section of the paper states, "This study was the first to look at sociodemographic differences in COVID-19 vaccine hesitancy in a highly vulnerable rural state that ranks third for prevalence of individuals at high risk for serious illness from COVID-19. The COVID-19 vaccine hesitancy was highest among respondents with lower household income, some college and little to no fear of infection from COVID-19."

Willis said access to the free registry made it possible to conduct the study much more quickly. It also avoided the high cost of purchasing valid emails or phone numbers for a random sample survey.

"The registry is an incredible resource because it includes people who are already motivated to participate in research," he said. "It's very different from random sample surveys in which you're emailing or calling people who may not want to be bothered, and the response rate with those can be very low."

By March 2022, the comprehensive survey had led to five published papers and more were in production.

Bearing Fruit

TEAM SCIENCE VOUCHERS HELP RESEARCHERS SECURE NATIONAL FUNDING

UAMS researcher Craig Porter, Ph.D., was disappointed to see his resubmitted grant application rejected without discussion by the NIH in 2020. His 2019 version of the application had at least been scored.

"It kind of felt like I was going backward," said Porter, an associate professor in the College of Medicine Department of Pediatrics.

His proposed research, "The Role of Mitochondrion in the Hypermetobolic Stress Response to Burn Trauma," was criticized for being too focused on basic science, not translational enough, and lacking institutional support.

A few months later, he reluctantly agreed to give a Pediatric Grand Rounds presention on his unfunded burn research. The presentation prompted two clinical colleagues who treat pediatric burn victims to let him know they would be interested in collaborating.

Then he heard about the Team Science Voucher Program offered by TRI.

"The stars aligned, and the voucher got us off and running," said Porter, associate director of the Physical Activity Core Laboratory and lead of the Physical Activity, Energetics and Metabolism Research Laboratory at Arkansas Children's Nutrition Center.

With TRI's voucher support, he and his new team established a new burn research program for Arkansas, bought needed equipment, retooled his NIH application and landed a five-year, $2 million award from the National Institute of General Medical Sciences.

"I think the TRI support and Team Science Voucher helped us make this application more fundable," Porter said.

The team members are:

- **Elisabet Borsheim, Ph.D.,** professor, College of Medicine Department of Pediatrics and Department of Geriatrics. She directs metabolic research involving pediatric populations, pregnant women and older adults at the Arkansas Children's Nutrition Center and UAMS.
- **Esther Teo, M.D.,** assistant professor, College of Medicine Department of Surgery, Burn Surgery Division.
- **Miranda Yelvington, M.S., OTR/L,** occupational therapist and certified burn therapist.

The new translational research team will work to deliver timely new knowledge that reduces suffering and speeds the recovery of burn patients.

Craig Porter, Ph.D., used a portion of his Team Science Voucher Award to purchase a new portable device that measures energy expenditure of burn patients, which can be used to determine a patient's food/nutrient needs.

"The stars aligned, and the voucher got us off and running."
— Craig Porter, Ph.D.

Corey Hayes, Pharm.D., Ph.D.

Voucher Leveraged for $1 Million VA Award to Support Opioid Project

In 2020, UAMS and Central Arkansas Veterans Health Care System (CAVHS) researcher Corey Hayes, Pharm.D., Ph.D., MPH, was considering how to pursue development of a predictive analytics tool to improve the care of veterans with opioid use disorder.

The idea is to help clinics identify patients most likely to drop out of their medication-assisted treatment (buprenorphine, methadone, naltrexone) after six months. While this standard of care has been shown to reduce drug use, overdoses and deaths, Hayes found that only 50% of veterans remained on buprenorphine after six months.

Hayes wanted to apply for a Veterans Affairs (VA) Health Services Research and Development Career Development Award, but he needed compelling evidence that his predictive modeling idea had merit.

"That's where the Team Science Voucher came in," said Hayes, an assistant professor in the College of Medicine Department of Biomedical Informatics and College of Pharmacy Department of Pharmacy Practice. "The voucher award provided some seed money to develop preliminary models to include in the Career Development Award application to show the reviewers that it has a strong probability of working."

It worked. In December 2021, he received a five-year, $1 million VA Career Development Award.

"In this type of model, it really took a lot of people to think through this in their particular area of expertise," Hayes said.

His multidisciplinary team members are:

- **Keith Bush, Ph.D.,** associate professor, College of Medicine Department of Psychiatry, Brain Imaging Research Center; expertise in natural language processing and machine learning.
- **Michael Cucciare, Ph.D.,** associate professor, College of Medicine Department of Psychiatry; clinical psychologist and researcher who sees opioid use disorder patients.
- **Bo Hu, Ph.D.,** data analyst, College of Medicine Department of Psychiatry, Center for Health Services Research and Behavioral Sciences.
- **Bradley C. Martin, Pharm.D., Ph.D.,** professor, College of Pharmacy; opioid research experience and expertise in data science/predictive modeling.
- **Adam Gordon, M.D., MPH,** professor of medicine and psychiatry, University of Utah.

Hayes recently added UAMS/CAVHS consultants to the team with psychology and implementation science expertise: They are:

- **Traci Abraham, Ph.D.,** assistant professor, College of Medicine Department of Psychiatry; core faculty, UAMS Center for Implementation Research; researcher and medical anthropologist, CAVHS.
- **Sara Landes, Ph.D.,** associate professor and clinical psychologist, College of Medicine Department of Psychiatry; core faculty, UAMS Center for Implementation Research; psychologist and researcher, CAVHS.

The Team Science Voucher Program provides up to $20,000 to enable a group of potential collaborators to develop into a successful team. The support of these early-stage cross-disciplinary collaborations aims to expand the translational potential of existing research programs.

2021 Team Science Voucher Recipients

Five teams were selected to receive TRI Team Science Voucher Program Awards in 2021. The vouchers of up to $20,000 each will help the teams generate key data and increase their projects' translational potential. TRI also provides resources and mentoring to the teams.

The principal investigators, team members and project titles are:

AKILAH JEFFERSON, M.D., assistant professor, College of Medicine Department of Pediatrics; *"Association of Quality Metrics and Adverse Outcomes for Children with Asthma"*

Team members: Clare Brown, Ph.D., MPH, Arina Eyimina, M.A., Anthony Goudie, Ph.D., Tamara Perry, M.D., Mandana Rezaeiahari, Ph.D., and Mick Tilford, Ph.D.

ERIKA PETERSEN, M.D., professor, College of Medicine Department of Neurosurgery; *"Gamified Quantification of Normal and Pathological Movement Using 2D and Virtual Reality Interfaces and Haptic Sensing for Therapeutic Efficacy and Disease Progression in Movement Disorders"*

Team members: Tuhin Virmani, M.D., Ph.D., Joseph Sanford, M.D.

ANALIZ RODRIGUEZ, M.D., PH.D., assistant professor, College of Medicine Department of Neurosurgery; *"Immunotherapy for Melanoma Brain Metastases"*

Team member: Alan Tackett, Ph.D.

RACHEL SLOTCAVAGE, M.D., assistant professor, College of Medicine Department of Surgery; *"Evaluation of Neurocognitive Dysfunction in Primary Hyperparathyroidism"*

Team member: Neil M. Masangkay, M.D.

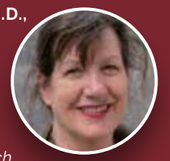
CHRISTOPHER WALTER, D.P.T., PH.D., PT, assistant professor, College of Health Professions Department of Physical Therapy; *"Physical Therapy Team Science to Address Movement Deficits in the Marshallese Community"*

Team members: Don Willis, Ph.D., and Holly Felix, Ph.D.

Two Data Scholars Named in 2021

TRI announced two Data Scholars in 2021. The Data Scholars Program supports UAMS faculty in learning and applying the principles and methods of data analytics and data sciences to inform clinical practice and policy. Scholars pursue formal course work and receive mentoring support during their data science-focused research project. Scholars receive 20% salary support, reimbursement for tuition and fees up to $5,000 per year.

The scholars, both from the College of Medicine, and their project titles are:



MELANIE MACNICOL, PH.D., assistant professor, Department of Neurobiology and Developmental Sciences

A Multidisciplinary Approach to Identify the Role and Regulation of Pituitary Function in Mediating Appropriate Responses to Metabolic Signals

MICHAIL MAVROS, M.D., assistant professor, Department of Surgical Oncology

Extended Venous Thromboembolism Prophylaxis in Cancer Patients Undergoing Abdominal Surgery: Clinical Outcomes and Barriers to Implementation

Research Day

RANGE OF TRI-SUPPORTED RESEARCH ON DISPLAY AT INAUGURAL RESEARCH DAY

TRI's inaugural Research Day 2022 drew 125 research faculty and staff to Heifer International Headquarters on a perfect spring day, featuring TRI-supported projects with six oral presentations and a competition involving the 33 poster presenters.

The first face-to-face TRI event in more than two years also included keynotes from luminaries in translational science, as well as lunch and a happy hour gathering to close out the day.

"This is something we have dreamed about doing," TRI Director Laura James, M.D., said in her welcoming remarks, noting the plans for such a day were in writing more than three years ago. "We're excited to be able to do this today."

Keynote speaker Rachel Hess, M.D., M.S., co-principal investigator at the Utah Clinical and Translational Science Institute, talked about key elements of translational science, such as informatics, community engagement and implementation science.

UAMS' Stacie Jones, M.D., the second keynote speaker, shared her research journey leading to the first FDA-approved treatment for peanut allergy. She is a professor and board-certified specialist in pediatrics and allergy and immunology. She is also director of the Arkansas Children's Food Allergy Program and co-director of the Lung Cell Biology Laboratory at the Arkansas Children's Research Institute (ACRI).

The poster session included 33 posters representing eight TRI-supported programs.

Comments from attendees' evaluations:

"It was so good to meet in person again. Really nice to see the great work that the TRI is supporting across the campus."

"This event was executed very well. The speakers were great and the format was engaging."

"Wonderful to see some success stories of the different training programs."

"This is something we have dreamed about doing."
— Laura James, M.D.

Research Day keynote speakers Stacie Jones, M.D., (left) and Rachel Hess, M.D., with TRI Director Laura James, M.D. (center).

Rachel Hess, M.D., delivers her keynote on translational science.

SIX ORAL PRESENTATIONS

Researchers who gave oral presentations and the TRI-supported projects they represented are:

Britni Ayers, Ph.D., assistant professor, Community Health & Research; KL2 Mentored Research Career Development Program

Emily Kocurek, M.D., assistant professor, Department of Internal Medicine; Pilot Award Program

Sara J. Landes, Ph.D., associate professor, Department of Psychiatry; investigator, Center for Implementation Research; Pilot Award Program

Shana Owens, Ph.D., postdoctoral fellow, Department of Microbiology and Immunology; TL1 Health Sciences Innovation and Entrepreneurship Training Program

Thomas Nienaber, MBBS, postdoctoral fellow, Department of Pediatrics – Division of Neonatology; TL1 Health Sciences Innovation and Entrepreneurship Training Program

Jennifer Vincenzo, Ph.D., MPH, PT; associate professor, College of Health Professions Department of Physical Therapy; KL2 Mentored Research Career Development Program

Meghan Breckling, Pharm.D., and Leah Tobey, D.P.T., PT MBA, review their Research Day programs at the poster session.

Elaine Prewitt, Dr.P.H., discusses her poster with Sharon Sanders, Ph.D.

Poster judges Susan Smyth, M.D., Ph.D., and Rick Owen, M.D., listen to a presentation from medical student Layth Al Hindi.

TRI Director Laura James, M.D., announces the poster winners.

POSTER SESSION WINNERS

The poster winners in five categories are:

OVERALL VISUAL:

Cody Ashby, Ph.D., M.S., assistant professor, Department of Biomedical Informatics (Pilot)

Racial Differences in Multiple Myeloma Genomics and Outcome in Rural Populations

OVERALL CONTENT:

Yasir Rahmatallah, Ph.D., assistant professor, Department of Biomedical Informatics (Data Science)

Disease Trajectory Analysis From Electronic Health Records

OVERALL ORAL/DISCUSSION:

Melissa Zielinski, Ph.D., assistant professor, Department of Psychiatry (Pilot)

Incarcerated Pregnant Women in Arkansas: Expanding Foundational Knowledge and Building Research Capacity

OVERALL IMPACT:

Isabelle Racine Miousse, Ph.D., assistant professor, Department of Biochemistry and Molecular Biology (KL2)

Dietary Methionine Restriction Improves the Response to Immune Checkpoint Inhibitors

PEOPLE'S CHOICE:

Nishank Jain, M.D., assistant professor, Department of Internal Medicine (Data Science) (with assistance from Layth Al-Hindi, medical student)

Event Rates and Risk Factors for Intracranial Bleeds Among Dialysis Patients on P2Y12 Inhibitors

Poster judges were College of Medicine **Dean Susan Smyth, M.D., Ph.D.,** as well as **Paul Drew, Ph.D., Laura Dunn, M.D., Bradley Martin, Pharm.D., Ph.D., Richard Owen, M.D.,** and **Jessica Snowden, M.D.**

STARs PROGRAM SHINES

GRANT WRITING TRAINING, MINI-GRANT BENEFIT UNDERREPRESENTED FACULTY

Dina M. Jones, Ph.D., MPH, honed her grant-writing skills in a TRI program that coupled her training with an opportunity for a $10,000 grant.

An assistant professor in the UAMS Fay W. Boozman College of Public Health, Jones participated in the 2021 TRI STARs (Strategies for Training and Advancing underrepresented Researchers) Program, an effort to foster more research from underrepresented minority faculty.

In February 2022, Jones was among four investigators awarded a mini-grant after completing the fall training program. The grant will support her research using mobile health technology to assess Black/African American menthol cigarette smokers in real time as they try to quit smoking and identify momentary risk factors of relapse. Her goal is to use the data to help develop an intervention to prevent smoking relapse.

"The grant may be relatively small, but the feedback that I got on my proposal and the refinement of my grant writing skills will carry me beyond just this one grant," Jones said.

The TRI program is a partnership with the UAMS Division for Diversity, Equity and Inclusion. The training was co-led by three well established NIH-funded UAMS researchers: Jessica Snowden, M.D.; TRI Director Laura James, M.D.; and Alexei Basnakian, M.D., Ph.D.

"We thought this program was important because when we were looking at why our underrepresented minority faculty didn't apply for some of TRI's pilot funding opportunities, we learned that many didn't feel like they were confident in grant writing," said Snowden, co-director of TRI's Workforce Development Program and chief of the Division of Pediatric Infectious Disease in the College of Medicine.

Jessica Snowden, M.D.

It makes sense, she said, because physicians and PhDs often aren't taught the specific skills required for successful grant writing.

"Our goal is to include more diverse scientists in the research pipeline because we know from lots of data that the more diverse we are as researchers, the better our research is," said Snowden, also co-principal investigator of the NIH-funded IDeA (Institutional Development Awards Program) States Pediatric Clinical Trials Network Data Coordinating and Operations Center.

Having been through two previous grant-writing trainings, one as a T32 postdoctoral fellow and another at the University of Utah, Jones said the STARs program was the best. And while it may be designed for underrepresented faculty, it could benefit any early career investigator, she said.

"The STARs Program has been a great opportunity to get solid grant coaching, a small pilot award and a chance to network with other early-career investigators," Jones said.

Each biweekly lesson started with a 20-minute lecture by Basnakian, a professor in the College of Medicine Department of Pharmacology and Toxicology. The mini lectures were a hit, in part, Jones said, because he pulled examples from the four participants' proposals to highlight good grantsmanship and writing no-nos. Following his lecture, Snowden and James offered feedback on all the proposals, allowing the participants to hear constructive critiques on all four projects, which was beneficial, Jones said.

"The lectures on how to write a grant really stood out for me," she said. "It helped reinforce what we learned."

Snowden said she is looking forward to what comes of the participants' research.

"They brought great research ideas and questions, and now we've given them the tools to get the funding they need to actually answer them," she said. "I can't wait to see what the answers are."

"The STARs Program has been a great opportunity to get solid grant coaching, a small pilot award and a chance to network with other early-career investigators."
— Dina Jones, Ph.D., MPH

STARS PROGRAM

UNDERREPRESENTED FACULTY RECEIVE TRAINING, MINI-GRANTS

TRI and the UAMS Division for Diversity, Equity and Inclusion (DDEI) launched the STARs Program in 2021, offering grant-writing training and mentoring support as well as $10,000 grants. The available seed funding received additional support from a UAMS Chancellor's Circle grant of $30,000. Three of the four underrepresented faculty who attended the grant-writing training in fall 2021 applied for and received mini-grants. Grant applications were also accepted from faculty who did not participate in the STARs training program, resulting in one mini-grant award.

STARs grant awardees and their project titles are:

JENNIFER ANDERSEN, PH.D., assistant professor, College of Medicine Department of Internal Medicine, Office of Community Health and Research.
"Feasibility and Acceptability of a Wearable Device for Research with Marshallese Adults with Type 2 Diabetes"

MICHAEL BAUER, PH.D., assistant professor, College of Medicine Department of Biomedical Informatics
"Oral Microbiome: A Minimally Invasive Biomarker for Breast Cancer"

DINA JONES, PH.D., MPH, assistant professor, Fay W. Boozman College of Public Health Department of Health Behavior and Education
"Predictors of Momentary Smoking Lapse Among Black/African American Menthol Cigarette Smokers"

BOLNI (MARIUS) NAGALO, PH.D., assistant professor, College of Medicine Department of Pathology, Experimental Pathology Division
"Preclinical Evaluation of Oncolytic Virus in Hepatobiliary Cancers"

'UNICORN' PROTOCOLS

COMMON PURPOSE, CREATIVE SOLUTIONS ACCELERATE COVID-19 RESEARCH

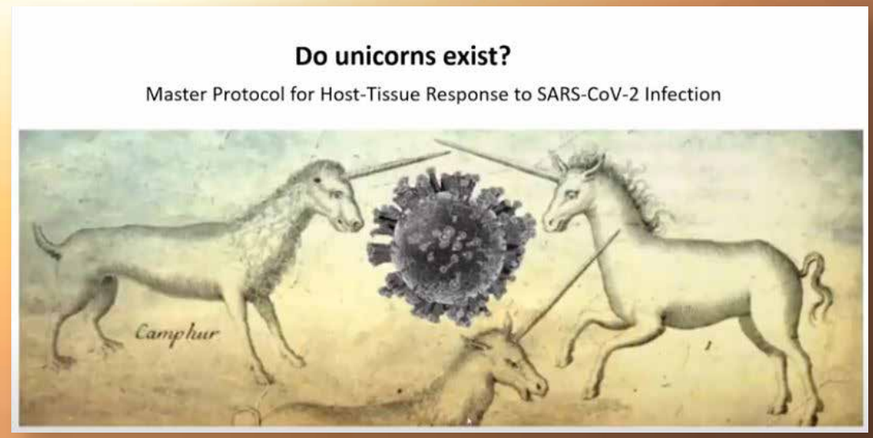
"With the common purpose to solve problems, we were able to move rapidly from a pre-COVID era of very traditional trials to a post-COVID era of decentralized virtual trials."

— Chris Lindsell, Ph.D.

TRI's annual Research Regulatory Conference, "Virtual Research in a Complicated World," drew 175 attendees.

Chris Lindsell, Ph.D.

Erin Rothwell, Ph.D.



"Every day you waste, thousands of people will die."

That motivational statement, said Chris Lindsell, Ph.D., from Vanderbilt University, was voiced multiple times a day as researchers ramped up the national effort in 2020 to find treatments for COVID-19.

Lindsell, director of the Vanderbilt Institute for Clinical and Translational Research Methods Program and a professor of Biomedical Informatics and Biostatistics, was a keynote speaker at TRI's Oct. 28, 2021, Research Regulatory Conference, "Virtual Research in a Complicated World."

He presented, "ACTIV6, TREAT-NOW and Other Stories: Lessons Learned from Running Decentralized Platform Trials during a Pandemic."

Lindsell said the pressure to move quickly with COVID-19 clinical trials has raised ethical questions for consent and other issues. In one example, he said a trial was designed and running with the first patient enrolled in just 12 days, but it took about three months to get the data published.

"Because there was no test, and because there was no vaccine, the early emphasis of all of the clinical trials work was to go fast to find treatments," said Lindsell, who worked with a large consortium of research institutions and regulators across the United States to streamline the research.

The idea of addressing so many COVID-19-related challenges in a single clinical trial protocol, he said, was like asking if unicorns exist. His team ultimately generated a master protocol for a multisite clinical trial that has provided the platform for other trials.

"With the common purpose to solve problems, we were able to move rapidly from a pre-COVID era of very traditional trials to a post-COVID era of decentralized virtual trials," Lindsell said.

The conference also featured Erin Rothwell, Ph.D., associate vice president for Research at the University of Utah and a professor in the Department of Obstetrics and Gynecology School of Medicine.

Rothwell, a bioethicist, presented, "Promoting Informed Decision Making for Consent in Virtual Research."

She has been tackling big questions around how to create more equitable and sustainable consenting platforms in a virtual world – using remote or e-consents. She has compared consent approaches using game technology, brochures, videos, smartphone apps and comics/graphic novels.

"How do we create a process that's sustainable that goes beyond just one project for improving virtual consents?" she asked. "I do think this is the academic medical centers' responsibility."

She has found that a comic/graphic novel consent vastly improves participant comprehension of consent information compared to other materials such as videos, smartphone apps and brochures.

Rothwell is part of a national Clinical and Translational Science Awards (CTSA) working group to better understand the challenges of consent that resulted from COVID-19. The effort has included discussions with Institutional Review Board (IRB) directors at 15 CTSA institutions and a white paper on the different types of consent.

Gateway to Success

CTS MASTER'S PROGRAM GETS TOP GRADES FROM CLINICIAN CLASS

A scholarship program was developed in 2021 to attract junior faculty to the existing Clinical and Translational Science Master of Science Program at UAMS. The scholarships provide 20% faculty effort, enabling their participation. The program is a collaboration among TRI, the UAMS Graduate School, Arkansas Children's, Division of Internal Medicine, College of Medicine and the Winthrop P. Rockefeller Cancer Institute.

Tara Johnson, M.D., is among four early-career UAMS clinicians who could not resist a chance to learn clinical and translational science skills that would help her become an independent researcher.

When she heard in 2021 about the UAMS Clinical and Translational Science (CTS) Master of Science Program, which offered scholarships and protected time, she went online to learn about the classes.

"It was exactly what I wanted to learn, so I jumped at the opportunity," said Johnson, assistant professor in the College of Medicine Department of Pediatrics, Division of Pediatric Neurology. "I had the perfect project — an extension of my KL2 work, so I thought, 'That's great, it will help with that project and developing future projects.'"

Johnson is studying neurodevelopmental outcomes in children with single ventricle heart disease.

The changes to the CTS master's program in 2021 made it more attractive to clinician scientists, with the scholarships providing needed flexibility. As part of TRI's CTSA Workforce Development Program, the CTS master's program serves as a "feeder program" to TRI's KL2 Mentored Research Career Development Program (story, page 36).

"I thought it was a wonderful opportunity for me to actually learn how to do research," said Harmeen Goraya, M.D., an assistant professor in the College of Medicine Department of Internal Medicine, Division of Pulmonary and Critical Care Medicine. Goraya said she hopes to lead clinical trials in cystic fibrosis, and the master's program is helping her reach that goal.

"Everything they are teaching is applicable to my work," she said.

For example, she said she is learning R software, which will help her with statistical analyses. "That was a real eye-opener for me."

Megha Sharma, M.D., an assistant professor in the College of Medicine Department of Pediatrics, Division of Neonatology, sees the master's program as the gateway for advancing her research career.

"I have been able to learn advanced biostatistics, epidemiology, clinical trial design and management, bioinformatics, and have started to develop the art and science of asking the right research question," she said.

She said the program has also been invaluable for getting to know TRI-supported researchers and their areas of expertise, and finding prospective research mentors.

"I love that there is strong focus on grant writing skills right as you walk into this program," she said.

Jenny Rumpel, M.D., an assistant professor in the College of Medicine Department of Pediatrics, Division of Neonatology, said she was impressed with the quality of the class lectures and the new skills she is learning.

"The program has broadened my understanding of the possibilities in clinical research design through collaboration with researchers from other departments," said Rumpel, who is researching neonatal acute kidney injury and mortality using the Children's Hospitals Neonatal Consortium Database.

She also noted the benefits of getting to know the faculty leading the program, as well as her classmates.

"I have met some great new friends," Rumpel said. "I am grateful to be included in this group of impressive female clinician scientists. I have enjoyed their comradery and support as we juggle the demands of the classwork, our research, clinical work and family life."

Johnson said grant writing can be intimidating, but the course leaders have done a great job of helping the class navigate the experience with confidence.

"The senior faculty have been quite reassuring in bringing us forward and showing us all the good things we're doing and how we're all succeeding," she said.

Goraya added: "All the faculty leading the program are very approachable, and they're very helpful."

"The program has been very rigorous and time-consuming, but the knowledge I have gained has been extremely rewarding."
— Harmeen Goraya, M.D.

"This program, along with my previous training in the Implementation Science Scholars Program, is providing me the foundation to build upon my clinical research skills as well as prepare for a future Career Development Award."
— Megha Sharma, M.D.

"Everything we've been doing in the program has been relevant to my research. It's a lot of work, but it's all paying off."
— Tara Johnson, M.D.

"I am developing valuable skills in statistics and clinical trial design that will greatly benefit my career."
— Jenny Rumpel, M.D.

Tackling Falls

KL2'S INTERVENTION ADDRESSES LEADING CAUSE OF INJURY AND DEATH IN OLDER ADULTS

As a physical therapist for more than 20 years, Jennifer Vincenzo, Ph.D., MPH, PT, saw first-hand the fear and impact a fall or fall-related injury had in older adults.

"They were extremely afraid of falling again and afraid of moving, which greatly impacted their independence and quality of life," said Vincenzo, an associate professor in the UAMS College of Health Professions Department of Physical Therapy. "It was heartbreaking because we know that many falls are preventable, but they remain one of the leading causes of morbidity and mortality in older adults."

The Centers for Disease Control and Prevention (CDC) addressed falls prevention by developing a toolkit in 2012 called STEADI (Stopping Elderly Accidents, Deaths & Injuries). The idea is for primary care providers to use the toolkit to help screen, assess and intervene to decrease falls among older adults.

The reality is that use and uptake of the screening toolkit has been low, and "the needle hasn't moved much," Vincenzo said.

Having identified the gap, she began to address it through research as part of a 2019 TRI KL2 Mentored Research Career Development Award.

She is developing a falls prevention self-management plan to involve older adults in addressing their fall risks in consultation with a health care professional.

Early in her KL2 training, Vincenzo was introduced to the principles of implementation science through her mentor Pearl McElfish, Ph.D., and the UAMS Center for Implementation Research (story, page 46). Those lessons were directly applicable to her research goals, and a one-year extension of her KL2 in 2021 allowed her to make implementation science the focus of year three of her project. Geoffrey Curran, Ph.D., who directs the Center for Implementation Research, became Vincenzo's primary mentor. Her other mentors are Jeanne Wei, M.D., Ph.D., and Leanne Lefler, Ph.D.

"I'm excited to have found my research focus in the implementation science of falls prevention, and it wouldn't have happened without the KL2 experience," Vincenzo said.

She will be the first to analyze the implementation of the STEADI toolkit in outpatient rehabilitation clinics in a health system in Oregon from 2018-2021, collaborating with the clinician who led that effort in 34 outpatient clinics.

Vincenzo said that her KL2 support also led to her gaining the time, experience, and mentorship to apply for future grant funding. In December, 2021, she found out she was awarded a pilot grant from the Center on Health Services Training and Research to study the barriers and facilitators to implementing the STEADI in outpatient rehabilitation in the health system in Oregon.

"I'm excited to have found my research focus in the implementation science of falls prevention, and it wouldn't have happened without the KL2 experience."

— Jennifer Vincenzo, Ph.D., MPH, PT

In February 2022, Vincenzo received a excellent score for an NIH Emerging Leaders Career Development Award (K76) application. She hopes to learn by summer if it was funded.

The award would help her integrate the falls prevention self-management plan with the CDC's STEADI toolkit and implement her plan as a standard of care in outpatient physical therapy clinics at UAMS.

"I have a passion for working with older adults and helping them have the best quality of life and independence for as long as possible," Vincenzo said. "One of the best ways to do that is to prevent them from falling."

Jennifer Vincenzo, Ph.D., MPH, PT, has used her KL2 to help produce **15** peer-reviewed publications, with **five** under review or in revisions and **seven** manuscripts in progress. Her KL2 work also led to state and national leadership appointments, including:

- **Chair of the Balance and Falls Special Interest Group** – American Physical Therapy Association-Geriatrics (APTA-G); she became a member of the APTA-G Board in February 2022.
- **Chair of the Governor's Advisory Council on Aging in Arkansas**

Jennifer Vincenzo, Ph.D., MPH, PT, is the first KL2 Scholar from the UAMS College of Health Professions and the first based at the UAMS Northwest Regional Campus.

TRI Names Five KL2 Scholars in 2021

TRI's KL2 Mentored Research Career Development Scholars Program announced five new scholars in 2021.

These promising early-career researchers receive two years of funded support and mentored translational research training. The program selects scholars through a competitive application process and provides 75% salary support and up to $25,000 a year for research, tuition, travel and education.

Three scholars are supported by TRI's CTSA funding, and two are supported institutionally – by the UAMS Winthrop P. Rockefeller Cancer Institute (WPRCI) and the Central Arkansas Veterans Healthcare System (CAVHS).

The two institutionally supported scholars, both in the College of Medicine, and their project titles are:

JOSEPH HOLTHOFF, M.D., PH.D., nephrology fellow physician, Department of Internal Medicine, Division of Nephrology
"Investigation of the Role of IGFBP-1 in a Murine Model of Acute Kidney Injury (CAVHS)"

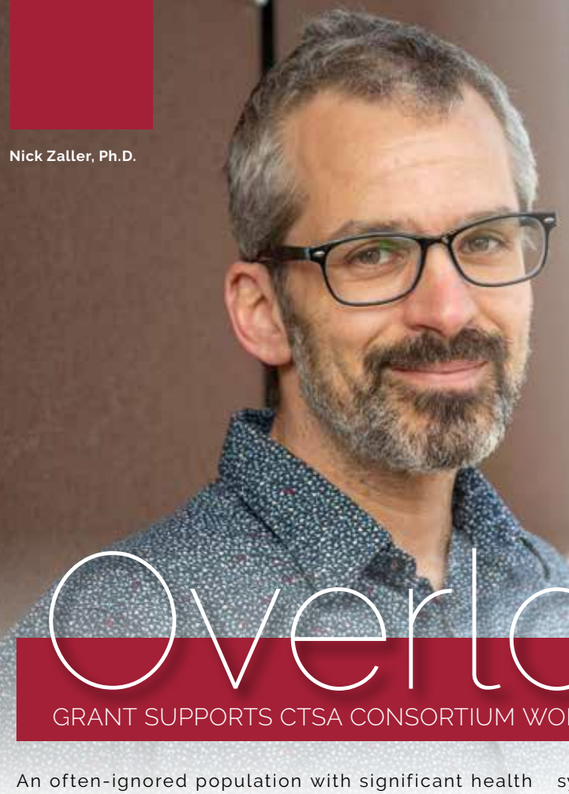
YONG-CHEN "WILLIAM" LU, PH.D., assistant professor, Department of Pathology
"A Pilot Study of Developing T Cell-Based Cancer Immunotherapies for African American and Hispanic Populations (WPRCI)"

The CTSA-funded scholars, all in the College of Medicine, are:

MARYAM Y. GARZA, PH.D., MPH, MMCI, instructor, Department of Biomedical Informatics
"Innovative Solutions to Streamline Data Collection, Exchange, and Utilization in Translational Research"

TREMAINE WILLIAMS, ED.D., assistant professor, Department of Biomedical Informatics
"Quantifying Clinical Team Social Network Influences on Care of Medically Complex Patients Using an Electronic Medical Record (EMR)"

ADAM WOLFE, M.D., PH.D., assistant professor, Department of Radiation Oncology
"Targeting Homologous Repair to Overcome Genotoxic Therapy Resistance in Pancreatic Cancer"



Nick Zaller, Ph.D.

The collaborators from UAMS, the University of Kansas Medical Center and the University of Kentucky are aiming to **create a sustainable network** that supports translational science to improve health outcomes of inmates as well as cultivate new scholars in the field.

Overlooked

GRANT SUPPORTS CTSA CONSORTIUM WORK WITH INCARCERATED POPULATIONS

An often-ignored population with significant health disparities has the attention of UAMS researcher Nick Zaller, Ph.D., and his CTSA collaborators. The only catch is that the participants are incarcerated.

Studies involving justice-involved populations have unique challenges, but there's also a significant need and opportunity for translational research, Zaller said.

"This is a legitimate area of research that offers great potential for innovation because this is a population that is often overlooked," he said.

Zaller is co-leading a pilot study on the issue with collaborators at the University of Kansas Medical Center and the University of Kentucky. They are aiming to create a sustainable network to support translational science to improve health outcomes of the incarcerated as well as cultivate new scholars in the field. The pilot study is funded by the CTSA Consortium of Rural States (CORES) Research Collaborative Interinstitutional Pilot Award program.

The collaborators have surveyed other researchers at six CTSA institutions: University of New Mexico, University of Iowa and University of Utah, as well as the three collaborating institutions.

The survey, which received responses from more than 100 researchers, has provided insight into researchers' appetite for working with incarcerated populations. Responses revealed interest in such research, as well as concerns about ethics, restricted access to those in the justice system and mistrust of researchers among criminal justice administrators and inmates.

Zaller said a history of ethics violations in research of incarcerated populations should not prevent research today.

"Automatically excluding people in criminal justice settings from research is not ethical either, because then you're not allowing them the opportunity to potentially benefit from being in research," he said.

Even so, he said working with the incarcerated can be challenging.

"Going into prisons or jails is a difficult thing to do," he said. "You have to have the necessary relationships with people in order to actually do this work. That's a critical piece."

"This is a legitimate area of research that offers great potential for innovation because this is a population that is often overlooked."

— Nick Zaller, Ph.D.

The collaborators have developed four videos to share with researchers about research in criminal justice settings. The videos address their concerns and opportunities.

The *Journal of Clinical and Translational Science* also agreed to devote a special issue to research in prisons, and manuscripts were submitted in March 2022.

"I'm really excited about it because I think that more than anything else it's going to really get this on the radar of the CTSA consortium," Zaller said. "I'm hopeful that more CTSAs will start paying attention to this area, and that more will say, 'Yeah, we haven't been conducting research in criminal justice settings and maybe it's time we start.'"

Pilot Program Awards

Four Receive Implementation Science Pilot Awards

Four UAMS researchers received pilot grants in 2021 of up to $50,000 each to help improve health services using the principles of implementation science.

Implementation science is the study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice to improve the quality and effectiveness of health services.

The awardees, all from the College of Medicine, and their project titles are:

EMILY KOCUREK, M.D., assistant professor, Department of Internal Medicine, Division of Pulmonary and Critical Care Medicine
"Implementation of a UAMS Pulmonary Embolism Response Team (PERT) with Expansion to a Statewide Arkansas Pulmonary Embolism Response Tele-Network"

DEBOPAM SAMANTA, M.D., associate professor, Department of Pediatrics, medical director for Epilepsy, Neurophysiology Laboratory and MEG Laboratory
"Qualitative Assessment of Stigma Experience and Self-Management of Epilepsy in the African-American Population and Implementation of an Adapted Booster Telehealth Intervention"

TAREN SWINDLE, PH.D., associate professor, Department of Family and Preventive Medicine, Division of Research and Evaluation, and Department of Pediatrics, Section of Developmental Nutrition
"Assessing the Feasibility and Acceptability of a Virtual Approach to De-implementation of Inappropriate Feeding Practices in Early Care and Education"

ARAVINDHAN VEERAPANDIYAN, M.D., assistant professor, Department of Pediatrics, Division of Pediatric Neurology
"Psychological Health in Children with Duchenne and Becker Muscular Dystrophy"

The Consortium of Rural States (CORES) Research Collaborative Interinstitutional Pilot Award Program offers $25,000 from each institution for each awarded project. Projects include at least three participating institutions, but may involve more (story, page 38).

Three Receive 2021 Pilot Awards for Rural Research Projects

TRI named three recipients of pilot research grants in 2021 that will support projects benefiting rural populations. Awardees receive up to $50,000 for one-year projects. The recipients, all from the College of Medicine, and their project titles are:

ROHIT DHALL, M.D., professor, Department of Neurology
"Developing a Digital Resource Library for Arkansans with Parkinson's Disease"

DAVID CHURCH, PH.D., instructor, Department of Geriatrics
"A Novel Method of Identifying Anabolic Resistance: Oral Amino Acid Tolerance Test (OATT)"

MANISHA SINGH, M.D., associate professor, Department of Internal Medicine, Division of Nephrology
"Pragmatic Approach to Chronic Kidney Disease Education in the Delta"

Scaling His Impact

LIFELONG EXPERIENCE AS ENTREPRENEUR SERVING KEVIN SEXTON, M.D., IN TRI ROLE

Kevin Sexton, M.D., caught the entrepreneurial bug as a 5-year-old, cleaning out vehicles for a quarter each at his father's used car lot.

"It taught me the value of owning and running a business," said Sexton, an associate professor in the College of Medicine Department of Surgery and co-director of the TRI TL1 Health Sciences Innovation and Entrepreneurship (HSIE) Training Program for UAMS postdoctoral fellows.

He learned and pursued entrepreneurial ventures in high school and college — on a tobacco farm and then as a tutor for the University of Kentucky.

"I ran my own tutoring business for high school and college students," he said. That experience evolved into managing the Medical College Admission Test (MCAT) preparation course for Princeton Review.

FIRST PATENT APPLICATION

Sexton continued cultivating entrepreneurial ventures throughout his medical training and while pursuing another passion — computer science. The combination of advanced medical and computer software skills helped generate his first patent application as a surgical resident at Vanderbilt University. A conversation with an anesthesiologist about IV infiltrations sparked the idea.

"We put a pressure sensor on an IV and found a waveform that would show whether the IV was in a vein," he said. He continues to study venous waveforms, which provide novel signals that can help predict critical health changes in patients.

His experiences in residency showed him that entrepreneurship can improve health for many more people than he could possibly help by seeing patients individually. He also realized his computer skills could play a big role.

"I wanted to scale my impact on patient outcomes, and software was a natural fit with my entrepreneurship experience," he said.

By early 2022, Sexton had three issued patents and six more in progress, and he had founded and sold two companies.

After joining UAMS in 2015, Sexton focused on his position as a trauma surgeon while continuing to grow his knowledge in research and computers' roles in health care.

'SWEET SPOT'

He obtained a second board certification in clinical informatics and did much of the work scoping new software systems for UAMS, analyzing how best to integrate systems and how the electronic health record could be used for research.

"I loved it," Sexton said. "It is my sweet spot, and the entrepreneurial experience I had was a great fit because I knew how to do these integrations when I was on the vendor side."

His many leadership hats include associate chief clinical informatics officer for Innovation, Research, and Entrepreneurship and co-director of Health Care Analytics at the UAMS Institute for Digital Health & Innovation (IDHI).

He is also interim director of BioVentures LLC, based on the UAMS campus to help equip researchers with technology licensing, patent protection and other resources that are required for company startups.

Sexton shares leadership of the HSIE Program with Nancy Rusch, Ph.D., vice dean for Research in the College of Medicine, and professor and chair in the Department of Pharmacology and Toxicology. The HSIE Program, she said, is fortunate to have Sexton.

"Dr. Sexton is an amazing leader," she said. "His experience as a surgeon, entrepreneur and co-director at IDHI is invaluable to the HSIE program. He is also a fantastic mentor to both undergrads and to our clinical fellows and postdocs."

'TON OF FUN'

Sexton wishes there had been a program like HSIE when he was a resident. Having entrepreneurial aspirations was sometimes awkward.

"Absolutely no one knew what to do with me," he said. "There are very few academic physicians who want to do entrepreneurship as a career."

Even today, he said, there is stigma related to potential conflicts of interest for academic researchers who are also entrepreneurs.

"The truth is, most all conflicts can be managed if they are known," Sexton said. "You just have to be completely transparent and detail oriented, meaning really good at paperwork."

Sexton loves mentoring the scholars in the HSIE Program. He can draw on his many experiences to help them navigate the academic-entrepreneurial path.

"I get to tell the scholars all the ways that I've messed up and try to spare them the same pain," he said. "It's a ton of fun, because the scholars are super bright people working on hard problems, and if I can help them take the next step, they can start down a path where their technologies will benefit patients. Truth be told, I learn as much from them as they do from me."

"Dr. Sexton's experience as a surgeon, entrepreneur and co-director at IDHI is invaluable to the HSIE program."

— Nancy Rusch, Ph.D.

"I wanted to scale my impact on patient outcomes, and software was a natural fit with my entrepreneurship experience."

— Kevin Sexton, M.D.

TRI Names Five HSIE Scholars in 2021

TRI's Health Sciences Innovation and Entrepreneurship (HSIE) Postdoctoral Training Program named five postdoctoral scholars in 2021. The scholars receive two years of mentored entrepreneurship training. The program includes salary support and is designed to help promising new scientists move their discoveries into everyday practice by teaching them commercialization and team science skills.

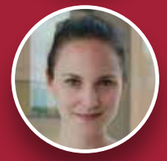
The new scholars, all from the College of Medicine, and their research project plans are:

KINDANN FAWCETT, PH.D., Department of Pediatrics, Division of Neurology. Her project is focused on development of a tool to assess risk and best practices in nutrition and its role in the standard care provided for patients at Arkansas Children's and UAMS. She is also focusing on the creation of a digital media and virtual interactive learning platform for a nutrition and exercise curriculum to educate the youth of Arkansas.

TIFFANY MILES, PH.D., Department of Neurobiology and Developmental Sciences. Her project focuses on hormonal deficiencies related to obesity and establishing a platform to educate Arkansans on the impact of maternal nutrition in offspring development.

THOMAS NIENABER, M.D., Department of Pediatrics - Division of Neonatology. His project aims to improve neonatal mechanical ventilation by optimizing the endotracheal tube.

MEGAN REED, PH.D., Department of Biochemistry and Molecular Biology. Her project will use comparative transcriptomics to generate and validate patient-specific treatment options for glioblastoma tumors.



JULIA TOBACYK, PH.D., Department of Pharmacology and Toxicology. Her project is focused on the development of new treatments for opioid use disorder in pregnancy.

Snowball Effect

POSTDOC SEES IDEA GROW TO PROVISIONAL PATENT, PRODUCT DEVELOPMENT IN 11 MONTHS

In December 2020, UAMS' Shana Owens, Ph.D., was struggling to advance her basic science-inspired idea for a cancer prevention tool.

Although it was a noble goal, she needed an idea she could cultivate more quickly as a scholar in the two-year TRI Health Sciences Innovation and Entrepreneurship (HSIE) Training Program. She got her answer in a conversation with Nancy Gray, Ph.D., now deceased, then co-director of the program.

"Dr. Gray suggested that I look at veterinary applications, and that's exactly what I did," she said.

Owens was aware that, like humans, cats are susceptible to viruses that cause cancers. Interviews with local veterinarians revealed that gastrointestinal lymphoma, which stems from a virus, is the most common cat cancer they treat. Importantly for Owens' entrepreneurial goal, there is currently no diagnostic test for *Felis catus* gammaherpesvirus 1, which causes the deadly cancer of the digestive tract.

In March 2021, Owens first proposed her virus test, a lateral flow assay, to program leaders at an HSIE class. By September, she was pitching it to the UAMS Patent Committee, and by November, she had a provisional patent filed on her device, which she plans to call GammaFlow. In March, she won the top $25,000 prize in the Arkansas Governor's Cup Collegiate Business Plan Competition.

"This really snowballed. If you had asked me a year ago if I would be working on an assay to detect feline viruses right now, I probably would have told you you're crazy," Owens said. "Now we're looking at dimensions for shipping in boxes and thinking about where we would manufacture and store our products."

Once completed, the rapid test will allow a veterinarian to use a small blood sample to determine within minutes if a cat has the virus that would predispose it to GI lymphoma.

"GI lymphomas are such a big problem that local vets want answers, so they've been helping our team develop the prototype," Owens said.

The GammaFlow prototype development received additional help from $2,000 her team won at a 2021 pitch competition by the Office of Entrepreneurship at the University of Arkansas.

Owens is CEO of her team, GammaVet, whose other founding members are:

- **Zach Waldrip, Ph.D.,** chief scientific officer; HSIE scholar and postdoctoral fellow in the College of Medicine Department of Surgery, Division of Surgery Research.
- **Brett LittleJohn,** chief finance officer; also director of product development and sourcing at Sam's Club and an executive MBA candidate.
- **Braden Bateman,** chief marketing officer; formerly a John Deere sales representative; and master's degree candidate, agricultural economics.

"The HSIE Program has really changed how I view my science," Owens said. "Learning how to see basic bench science from an entrepreneurial perspective has been an amazing experience."

What will be Owens' next bench discovery to leverage into a health care product? Working with her research mentor, Craig Forrest, Ph.D., professor of Microbiology and Immunology, Owens continues to explore how gammaherpesviruses (GHVs) establish lifelong infections in immune cells that can lead to lymphomas in humans as well as animals. By understanding the mechanisms GHVs use to manipulate host immune responses, she aspires to develop a therapeutic vaccine for the prevention of lymphoma in infected individuals.

"Learning how to see basic bench science from an entrepreneurial perspective has been an amazing experience." — Shana Owens, Ph.D.

Shana Owens, Ph.D., won the top **$25,000** prize in the Arkansas Governor's Cup Collegiate Business Plan Competition for her invention of a test to diagnose a feline virus that causes a deadly cancer in cats.

IMMERSIVE LEARNING

MEDICAL STUDENTS GAIN RESEARCH EXPERIENCE IN NEW PROGRAM

The TRIP summer program provides a $5,000 stipend for projects with a rural research component.

As a first-year medical student and aspiring researcher, Evie Cannon viewed TRI's new summer research program in 2021 as a great learning opportunity and way to expand on an existing project with her mentor.

"I wanted to be in the program because it allowed me to study the rural populations of Arkansas," said Cannon, who is studying eosinophilic esophagitis (EoE), a once rare disease of the esophagus that is becoming more common. She was among six first-year medical students to participate in the program.

Offered in partnership with the UAMS College of Medicine Honors in Research program, the Translational Research Innovations and Partners (TRIP) summer program leverages the UAMS Rural Research Network to help students achieve their rural research goals.

The program expands UAMS' pipeline for clinical and translational research education.

Now entering its second year, the program provides a $5,000 stipend and an immersive experience for students that includes learning about informatics approaches, digital health innovations, community-based fieldwork, collaborations in medically underserved areas and team science.

The program is offered at the UAMS campus in Little Rock and the UAMS Northwest Regional Campus in Fayetteville.

When she heard about the summer program, Cannon was already studying EoE with her mentor, Robert Pesek, M.D., associate professor in the College of Medicine Department of Pediatrics, Division of Pediatric Allergy and Immunology, and medical director for the Allergy and Eosinophilic Gastrointestinal Disorders Clinic at Arkansas Children's.

"The summer program was a good way for us to begin studying urban versus rural populations looking at differences in how EoE manifests itself as well as the treatments patients receive and their quality of life."

Cannon said the knowledge she gained through the TRIP program and the resources she was provided were exactly what she needed to help compile her data and begin recruiting adolescents and their parents/caregivers in late 2021. "It helped me a lot," she said.

Important to her project, she said, was the program's statistical support.

"I really appreciated the help with finding a statistician because that was a big missing piece of our project," she said.

She also got first-hand experience writing a protocol and learned the many steps required to get a study through the IRB process.

"I think it will make me a better writer and just more prepared to develop protocols and experiments later on when I'm actually a doctor," she said.

"I think it will make me a better writer and more prepared to develop protocols and experiments when I'm actually a doctor."

— Evie Cannon, medical student

Evie Cannon with her mentor, Robert Pesek, M.D.

Implementation Science Scholars Program

FIRST FIVE GRADUATES IMPRESS EVALUATOR AND MENTORS WITH CARE IMPROVEMENTS

The impact on health care by the first five Implementation Science Scholars Program participants may be hard to top.

Their life-saving projects are addressing a range of complex health care issues, and in some cases, already documenting improved outcomes.

As they wrapped up the two-year program in December 2021, the UAMS implementation science scholars revealed their substantial progress at a TRI-sponsored symposium. The audience included their UAMS colleagues and the program's external evaluator, Jane Mahoney, M.D., director of the Dissemination & Implementation Launchpad at the University of Wisconsin Institute for Clinical and Translational Research.

"This really made my day, seeing these projects come to fruition and providing incredible benefits," Mahoney told the scholars and all those attending via Zoom. "This is a very novel program."

The two-year scholars program is a partnership between TRI and the Center for Implementation Research (CIR), led by Geoffrey Curran, Ph.D., professor in the UAMS College of Pharmacy. Curran and his CIR team lead didactic sessions and provide close mentoring to the scholars.

CLINICAL CHAMPIONS

Mahoney said the projects illustrated the importance of having a clinical champion to see them through.

"A clinical champion is someone who gets the buy-in, who really understands how to use implementation science to drive the change," she said.

She noted that each project also showed the need for multiple strategies -- adapting them for a variety of settings and using qualitative methods to understand them. She challenged the group to publish and help implement their work on a national level.

"All the work you're doing to improve the Arkansas health system can benefit the whole country."

Reflecting on the first two years, Curran said he is grateful for TRI's support of the new program and for the scholars who took a chance on it, too.

"I cannot imagine a more well-suited set of scholars to help us start this program," he said. "It was an extremely motivated and passionate group, and they were ready to dive in and get out of their comfort zone and learn lots of new skills."

The scholars' work, summarized below, addresses a range of health care gaps.

> **"It was an extremely motivated and passionate group, and they were ready to dive in and get out of their comfort zone and learn lots of new skills."**
> **— Geoffrey Curran, Ph.D.**

The first graduates of the program received their certificates of completion during an outing with program director Geoffrey Curran, Ph.D.

Kapil Arya, M.D., associate professor, Division of Pediatric Neurology, Department of Pediatrics

Implemented a statewide process for screening Arkansas newborns with spinal muscular atrophy (SMA), a rare genetic condition that causes death and disability if not diagnosed in the first weeks of life. He also led the establishment of a system to ensure expedited treatment before onset of the disease. The incidence rate for SMA is 7.8-10 per 100,000 live births. Since implementation in April 2020, about 40,000 blood samples were tested by December 2021, with two neonates diagnosed and treated for the condition.

Johnathan Goree, M.D., associate professor, Department of Anesthesiology; director, Chronic Pain Division; chair, Opioid Stewardship Committee

Implemented a safe post-operative opioid prescribing protocol with implementation tailored to specific surgical units. The protocol now requires all UAMS surgeons to note in the electronic health record their expected patient pain severity post-surgery, which prompts recommendations for opioid dosing. The comprehensive implementation program has reduced the duration of opioid prescriptions to fewer than five days on average, the project's goal. Elements of the implementation program have been adopted system-wide to support UAMS opioid prescribing goals. The goal also became a UAMS Medical Center priority as Goree worked on the project.

Emily Kocurek, M.D., assistant professor, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine

Implemented an ICU liberation bundle using a comprehensive package of implementation strategies, including new clinical protocols, clinical decision support tools, quality monitoring steps, training, team-building efforts, and identifying and preparing champions to help improve use of the protocols. The ICU liberation bundle includes care practices that are focused on patient recovery (e.g., treating pain, assessing delirium). The goal is to improve ICU care to reduce post-intensive care syndrome and increase survival. About 60% of ICU patients have some form of the syndrome, including cognitive impairment, depression and disability. Based on her work to develop new clinical decision support tools, Kocurek now works with Clinical Informatics to develop these tools for other areas of the hospital.

Debopam Samanta, M.D., associate professor, Department of Pediatrics, medical director for Epilepsy, Clinical Neurophysiology Laboratory and MEG Laboratory

Established and implemented an interdisciplinary epilepsy clinic at Arkansas Children's to better evaluate patients with drug-resistant, intractable seizures to address the underutilization of evidence-based epilepsy interventions, including surgery. The clinic also uses new educational strategies and prompts for patients, families and referring physicians to ensure that more Arkansas children who are candidates for underused interventions are identified and evaluated. The clinic reviewed 76 patients in its first 11 months of operation, with 39 deemed suitable for further epilepsy surgery evaluation and 24 (31.6%) being considered for vagus nerve stimulation therapy.

Megha Sharma, M.D., assistant professor, Division of Neonatology, Department of Pediatrics

Developed and implemented protocols and implementation strategies in the electronic medical record system and education/awareness strategies to reduce the amount of blood drawn from very low birthweight infants to help reduce medical complications. The implementation package also included prompts and signs on care staff computer monitors to promote awareness and mindfulness when blood tests are considered. Since implementation on Oct. 1, 2020, the total amount of blood drawn has decreased by 20%, and the number of blood tests ordered has dropped by 15%.

> **"All the work you're doing to improve the Arkansas health system can benefit the whole country."**
> **— Jane Mahoney, M.D.**

Taren Swindle, Ph.D.

Implementation Science Helps Land $3.1 Million NCI MERIT Award

A $3.1 Million MERIT Award in 2021 can be attributed in large part to implementation science principles used in developing the project, said UAMS researcher Taren Swindle, Ph.D., principal investigator.

The funding supports testing of an intervention to reduce cancer by addressing eating habits in early childcare and education settings.

The project will reach about 5,000 children and 500 teachers across Arkansas and Louisiana. Originally submitted as an R01 application, the five-year NIH National Cancer Institute (NCI) grant was upgraded to an R37 MERIT Award, giving Swindle the option to extend the project another two years.

"The NCI is one of the most supportive institutes of innovation in the implementation science space," said Swindle, an associate professor in the College of Medicine and graduate of TRI's KL2 Mentored Research Career Development Program. "A core part of this project is about advancing the science of implementation. How do we take adaptive implementation approaches to better leverage limited resources and put these into practice in community settings?"

Swindle learned the exciting potential of implementation science during her two years as a KL2 scholar, under the mentorship of Geoff Curran, Ph.D., director of the UAMS Center for Implementation Research and TRI's Implementation Science Scholars Program. She is now a core faculty member at the center.

GRADUATE CERTIFICATE APPROVED FOR IMPLEMENTATION SCIENCE

The state's 2021 approval of the Graduate Certificate in Implementation Science marked a major milestone for the field at UAMS.

"This is a big win for us," said Geoffrey Curran, Ph.D., director of the Center for Implementation Research. The graduate program builds on a range of educational and career development opportunities in implementation science, including two graduate courses directed by Curran.

The University of Arkansas Board of Trustees and Arkansas Higher Education Coordinating Board approved the program, which will launch in summer 2022.

Half of UAMS Mentoring Awards Go to Implementation Science Faculty

"This is a BIG WIN for us."
— Geoffrey Curran, Ph.D.

Geoffrey Curran, Ph.D.

TRI implementation science leader Geoffrey Curran, Ph.D., and two other implementation science faculty received 2022 UAMS Mentoring Awards.

Curran received the Research Legend Faculty Mentoring Excellence Award for his work with early career implementation scientists. He oversees TRI's implementation science initiatives, including the Implementation Science Scholars Program, and he is director of the UAMS Center for Implementation Research (CIR). A professor in the College of Pharmacy, he is also a mentor of two other implementation science faculty who won mentorship awards. The three were among the six faculty honored during the inaugural Mentors Appreciation Day in January.

The other implementation science faculty awardees are:

TAREN SWINDLE, PH.D., who received the 2022 UAMS Research Emerging Faculty Mentoring Excellence Award. She is an associate professor in the College of Medicine Department of Family and Preventive Medicine, and a core faculty team member at CIR. She is also a former TRI KL2 Mentored Research Career Development Award Scholar and 2021 recipient of a TRI Implementation Science Pilot Award.

MELISSA ZIELINSKI, PH.D., who received the Women Faculty Mentoring Excellence Award. She is an assistant professor and clinical psychologist in the College of Medicine Department of Psychiatry and Behavioral Sciences and an affiliate faculty member with CIR. She is a 2019 and 2022 TRI Pilot Award recipient, and she is co-leading an academic-community partnership research team as part of the TRI-funded Community Based Participatory Research Scholars Program.

Implementation Science Researcher Earns 'Best Paper Award'

Benjamin Teeter, Ph.D., an assistant professor in the UAMS College of Pharmacy, and his collaborators won the 2021 Best Paper Award in Exploratory Research in Clinical and Social Pharmacy (ERCSP).

The publication, "Perceptions of HPV Vaccination and Pharmacist-Physician Collaboration Models to Improve HPV Vaccination Rates," stems from a two-year NIH R21 award totaling $413,750. The award application was prepared in consultation with the Center for Implementation Research and mentoring support from center Director Geoffrey Curran, Ph.D.

According to ERCSP, Teeter's work "has momentous implications for practice and further research."

The paper's co-authors are: Catherine Jensen; Jeremy Thomas, Pharm.D.; Bradley Martin, Pharm.D., Ph.D.; Pearl McElfish, Ph.D., MBA; Cynthia Mosley; and Curran.

Benjamin Teeter, Ph.D.

TRI Announces Five Implementation Science Scholars

TRI and the UAMS Center for Implementation Research (CIR) selected five clinical faculty as the 2022 Implementation Science Scholars. The two-year program provides 20% salary support (up to salary cap).

The scholars and their project titles are:

AMIT AGARWAL, MBBS, M.D., associate professor, College of Medicine Department of Pediatrics
Implementation of Standardized Tracheostomy Care Method by Multidisciplinary Team Model (MDT) and Incorporating High-Fidelity Simulation to Train Caregivers of Children Requiring Long-Term Mechanical Ventilation

SHIPRA BANSAL, M.D., assistant professor, College of Medicine Department of Pediatrics
Implementing Standardized Bone Health Care Guidelines in Children with Duchenne Muscular Dystrophy

HOLLY D. MAPLES, PHARM.D., associate professor, College of Pharmacy Department of Pharmacy Practice
Reducing the Variations in Diagnosis and Treatment of Pediatric UTI's in Arkansas

SPYRIDOULA MARAKA, M.D., M.S., assistant professor, College of Medicine Department of Internal Medicine
Implementation of Combined Strategies to Minimize Levothyroxine Overuse

DEEPA RAGHAVAN, M.D., FCCP, assistant professor, College of Medicine Department of Internal Medicine
Bridging Gaps in COPD Care

TRI LEADERSHIP

Laura James, M.D.
Principal Investigator and Director; Associate Vice Chancellor for Clinical and Translational Research, UAMS; Professor, Department of Pediatrics, College of Medicine

John Arthur, M.D., Ph.D., Associate Director; Co-Director, KL2 Mentored Research Career Development Award Program; Local Medical Director, Trial Innovation Network; Professor and Chief, Division of Nephrology, Department of Internal Medicine, College of Medicine

Carolyn Greene, Ph.D., Associate Director of Programmatic and Strategic Planning; Associate Director, KL2 Mentored Research Career Development Scholars Program

Robin Liston, MPH, Executive Director

Michael Birrer, M.D., Ph.D., Vice Chancellor and Director, Winthrop P. Rockefeller Cancer Institute, UAMS

Elisabet Borsheim, Ph.D., Co-Director, KL2 Mentored Research Career Development Award Program; Professor, departments of Pediatrics and Geriatrics, College of Medicine; Director, Arkansas Children's Nutrition Center Physical Activity Core Laboratory

Mathias Brochhausen, Ph.D., Director, Pilot Translational and Clinical Studies Program; Professor and Vice Chair for Academic Programs and Faculty Development, Department of Biomedical Informatics, College of Medicine

Keneshia Bryant-Moore, Ph.D., RN, FNP-BC, Associate Director, Community Engagement Core; Assistant Dean for Diversity, Equity and Inclusion, Fay W. Boozman College of Public Health; Associate Professor, Health Behavior and Health Education, Fay W. Boozman College of Public Health

Shelley Crary, M.D., Associate Director, Pilot Translational and Clinical Studies Program; Professor, Department of Pediatrics, College of Medicine

Geoffrey Curran, Ph.D., Director, Implementation Science Scholars Program; Professor, Department of Pharmacy Practice, College of Pharmacy; Research Health Scientist, Central Arkansas Veterans Healthcare System; Director, Center for Implementation Research

Anna Huff Davis, Leadership Council Community Representative; Community Liaison, Office of Community-Based Public Health, Fay W. Boozman College of Public Health

Hari Eswaran, Ph.D., Director of Research, Institute for Digital Health & Innovation, UAMS; Professor, Department of Obstetrics and Gynecology, College of Medicine

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Tiffany Haynes, Ph.D., Director, Community Engagement Core; Associate Professor, Health Behavior and Health Education, Fay W. Boozman College of Public Health

Chris Long, Ph.D., Senior Director of Research and Evaluation; Assistant Professor, Office of Community Health and Research, UAMS Northwest Regional Campus

Pearl McElfish, Ph.D., MBA, Director, Integrating Special Populations; Director, Office of Community Health and Research, UAMS Northwest Regional Campus; Associate Director, Community Outreach and Engagement, Winthrop P. Rockefeller Cancer Institute; Associate Professor, Department of Internal Medicine, College of Medicine

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