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TRI

Translational
Research
Institute



2021
Annual Report



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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.

This report is dedicated to the memory of **Nancy Gray, Ph.D.**, for her tireless and joyful work on behalf of translational research at UAMS. She served as president of BioVentures, co-directed TRI's Health Sciences Innovation and Entrepreneurship Program, and was a member of TRI's Leadership Council.



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Message from the Director

DEAR READER,

The story we tell in these pages is one of accomplishment, resilience and courage.

As we wrapped up our report, the country was still trying to turn the page on COVID-19. Thanks to vaccines produced in record time, we hoped for more pre-COVID-19 normalcy as state leaders worked to overcome vaccine hesitancy.

We have also taken stock of this most consequential period of our lives, recognizing the UAMS research community's many contributions in the fight against SARS-CoV-2.

Over the last year, TRI has provided support to UAMS-affiliated faculty for 92 COVID-19-related research projects, including data-oriented studies, laboratory and diagnostic studies, prospective observational studies, and 17 therapeutic clinical trials.

TRI's clinical research coordinators also joined UAMS clinician scientists at the front lines of COVID-19. They obtained and processed COVID-19-positive blood samples and worked with hospitalized study participants. In spite of the risks and hurdles to recruiting hospitalized patients, they helped increase year-to-year research participant enrollment by 54%.

With COVID-19 research getting priority, TRI staff, in collaboration with other UAMS departments, helped open trials in weeks rather than months. I think it is important to recognize, as well, that UAMS' participation in the multi-center clinical trials means that Arkansas, a state historically underrepresented in national research agendas, is contributing to the development of life-saving COVID-19 therapies.

Other members of our research team participated in a national effort to compile more than 1.6 million (and growing) electronic health records of COVID-19-positive patients. This is a tremendous resource for researchers seeking to understand the complex presentation and impact of the virus across sex, race, ethnicity, and as a function of pre-existing conditions.

Despite the distractions caused by the pandemic, our leadership team has ensured that our CTSA-supported programs continue apace. We hope the message comes through loud and clear: Heroes really do work here, and our CTSA-supported programs are helping them soar.

Sincerely,

Laura James, M.D.

Director, Translational Research Institute
Associate Vice Chancellor for Clinical and
Translational Research, UAMS

Into the Breach

TRI HELPS UAMS RESEARCHERS RESPOND TO COVID-19

As a critical care pulmonologist, Nikhil Meena, M.D., sees firsthand the devastating impact of COVID-19, and he has felt the frustration of having limited therapies available. As a clinician-scientist, he is determined to address the issue, recognizing the need for effective treatments well into the future.

Despite his heavy ICU patient load, Meena has been the UAMS principal investigator on five active multi-center COVID-19 clinical trials and had completed one by April 2021 – more than any other physician.

"TRI really made it possible for me to pursue each of the clinical trials," said Meena, an associate professor in the College of Medicine Department of Internal Medicine. "Their experience, expertise and dedication have been the keys to accelerating the research startup, participant recruitment, and the many other aspects of clinical trials management."

David Avery, TRI senior director of Clinical Operations, said TRI, along with the rest of UAMS' research enterprise, responded to COVID-19's arrival with inspirational effort.

"I think we all felt a sense of urgency that was unlike anything in our experience," Avery said. "Everybody agreed that our highest priority was to open these COVID-19 clinical trials. As a result, we were able to open very complex studies within weeks rather than months."

"For clinical research professionals, there has never been a more relevant or urgent situation in any of our lifetimes."

— David Avery, TRI senior director of clinical operations

"UAMS clinicians really stepped up to meet the research challenge with COVID-19," said TRI Director Laura James, M.D. "Their willingness to lead COVID-19 clinical trials research has been inspiring, many stepping up to serve as site investigators for the first time."

Among them, Ryan Dare, M.D., is leading the Phase 3 Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV-1 IM) trial (funded by NIH Biomedical Advanced Research and Development Authority), which is testing three drugs for use against inflammatory reaction and cytokine storm.

"TRI was instrumental in helping me set up multiple COVID-19 related studies," said Dare, an assistant professor in the College of Medicine Department of Internal Medicine, Division of Infectious Diseases. "Since the onset of the pandemic, they have supported me from protocol development to enrolling clinical trial patients."

He added that TRI's support has helped him succeed with the projects and trials so that he could produce impactful manuscripts with new COVID-19 treatment insights.

"In a broader context," Meena said, "The superstars at TRI are helping UAMS respond to a global health crisis with clinical trials in an underrepresented part of the country."

"TRI was instrumental in helping me set up multiple COVID-19 related studies. As an early-career researcher, TRI provided an experience I desperately needed."

— Ryan Dare, M.D.



ACTIV-1 IM trial Principal Investigator Ryan Dare, M.D. (center), meets with TRI Research Coordinator Susan Smith Dodson, MBA, B.S.N., RN, and Co-Investigator Mitchell Jenkins, M.D.



Tina Ipe, M.D., and Anja Rassman, B.S.N., RN

Fear, Heartbreak and Team-Building

Starting in April 2020, TRI's team of clinical research coordinators began to shoulder its significant part of the COVID-19 clinical trials effort. The learning curve was steep and the work was emotionally draining, but it would ultimately bring the team closer.

"We've grown a lot as a research team, and not just the coordinators - everybody at TRI had to rally," said Amanda Stapleton, B.S.N., RN, one of 18 clinical research coordinators.

Their first study, led by TRI Associate Director John Arthur, M.D., Ph.D., a professor in the College of Medicine Department of Internal

Medicine, meant seeing COVID-19-positive volunteers who were not hospitalized. Stapleton remembers her anxiety at the time.

"In April, we were drawing and processing blood from COVID-positive patients in an outpatient setting. It was really scary, even with all the safety protocols, because so much about the virus was still unknown," she said.

By May 2020, Stapleton and her fellow TRI research coordinators were running inpatient clinical trials. They had to overcome the challenge of consenting patients attached to ventilators, and they witnessed COVID-19 related

deaths and medical teams stretched to the limit.

Cindy Witkowski, B.S.N., RN, who oversees the coordinator team as director of Clinical Research, said working with hospitalized COVID-19 patients was hard for the whole team.

"We're used to doing research with patients who are not at such high risk of death," Witkowski said. "We get to know them and their families, and we have all been heartbroken to learn of those who didn't make it."

Asking stressed medical teams to assist with the research was also difficult, but necessary, Stapleton said. "If we don't do

Continued on page 8

TRI's Amanda Stapleton, B.S.N., RN, assists Nikhil Meena, M.D., with a study involving hospitalized COVID-19 patients.



Since the beginning of the pandemic, TRI has provided support for **92** COVID-19-related research projects, including data-oriented studies, laboratory and diagnostic studies, prospective observational studies, and **17** therapeutic clinical trials. As of April 30, 2021, there were **10** therapeutic clinical trials open for participant enrollment.



Karl Boehme, Ph.D., co-developed the SARS-CoV-2 antibody test with UAMS researchers Craig Forrest, Ph.D., and Josh Kennedy, M.D. (story, page 10).

our job, then there's never going to be an end to COVID-19."

To show appreciation, the coordinators and other TRI employees contributed goodie bags for the COVID-19 patient care teams.

The dedication paid off. In December 2020, near the height of the pandemic, UAMS was ranked among the top five recruiting sites for both the ACTIV-1 IM trial (Dare) and the Otilimab in Severe COVID-19 Related Disease trial, sponsored by GlaxoSmithKline (Meena, principal investigator). Otilimab is an antibody-based therapy designed to dampen the immune dysfunction that has been associated with COVID-19.

The significance of this work is that it will determine which drugs work best in patients with major complications from COVID-19.

The coordinators' success recruiting participants has been a point of pride for the team.

"When we first started, I never would have imagined we could recruit 17 people into one study in six weeks," Stapleton said. In

another study, she added, with TRI's Anja Rassman, B.S.N., RN, as lead coordinator, 59 participants were enrolled.

TRI's participant recruitment from May 2020 to May 2021 jumped 54% above the previous year. Avery noted that the increase was achieved in spite of the many obstacles, including personal/familial COVID-19-related difficulties for staff.

"It was a challenging environment at every level," Avery said. "Our team rose to the occasion, and I'm really proud of them."



David Avery



TRI's Cindy Witkowski, B.S.N, RN, director of clinical trials, and research coordinators Lisa Richardson, RN, and Anja Rassman, B.S.N, RN, made masks in spring 2020 to donate to hospital staff.

In the early days of COVID-19, TRI's research coordinator team prepared to meet the mysterious threat with a fighting spirit: (l-r) Amanda Stapleton, B.S.N., RN, Shellah Rogers, B.S.N., RN, Lisa Richardson, RN, Anja Rassman, B.S.N., RN, Amanda Daniell, B.S., Gail Runnells, B.S., RN, Ashley Sides, and Diana Gregory, RN.

"It was really scary, even with all the safety protocols, because so much about the virus was still unknown."

— Amanda Stapleton, B.S.N., RN



TRI Community Liaison Appointed to ACTIV-1 Community Advisory Board

Anna Huff Davis, who chairs the TRI Community Advisory Board, was named in 2020 to the NIH/NCATS-supported ACTIV-1 Community Advisory Board (CAB).

ACTIV-1 (Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV)) is an initiative testing promising drugs that may prevent out-of-control immune responses.

"I am very excited to be part of this research and to be one of several voices for the community," Davis said.

Her six fellow advisory board members come from different states and bring a variety of perspectives, she said. Much of the CAB's work has involved reviewing materials used to recruit study participants who are in the hospital, such as consent forms, flyers, and a flipchart to be used by physicians.

Participant recruitment has been especially challenging for the COVID-19 study, she said, because of social distancing restrictions and hospital safety protocols.

"Recruitment is something I have learned to do face-to-face, so COVID-19 presents some unique challenges," Davis said. "But we developed some strategies that we hope will be very useful now and in the future."



Sudden Collaboration

COVID-19 REVEALS THE BEST OF UAMS RESEARCH

Possibly the largest research collaboration in UAMS' history started with a phone call in early March 2020 to UAMS clinician-scientist Joshua Kennedy, M.D., from Atul Kothari, M.D., at the Arkansas Department of Health.

"The state was in need of an assay for SARS-CoV-2 antibodies to give us an idea how many people were infected across the state," said Kennedy, an associate professor in the College of Medicine Department of Pediatrics based at Arkansas Children's Research Institute. "I didn't have one, but because of relationships I had formed through other work at UAMS, I knew people who could help."

From there, collaborations came together quickly. Kennedy, a 2015 graduate of the TRI KL2 Mentored Research Career Development Program, contacted UAMS colleagues Karl Boehme, Ph.D., and Craig Forrest, Ph.D., both associate professors in the College of Medicine Department of Microbiology and Immunology.

At the time, Boehme and Forrest were already developing an assay to detect

SARS-CoV-2 antibodies. Kennedy added a key piece that was needed to validate the assay – blood samples from COVID-19 patients.

Important funding support also came with a Time Sensitive COVID-19 award through the office of UAMS Vice Chancellor for Research and Innovation, Shuk Mei-Ho, Ph.D., to help establish a Four Antigen Confirmation Test (FACT) enzyme-linked immunosorbent assay (ELISA) – a test that measures antibodies to multiple SARS-CoV-2 proteins in a patient's blood. The team also received assistance from the UAMS Department of Pathology and UAMS Center for Microbial Pathogenesis and Host Inflammatory Responses.

As they began validating and refining their high-accuracy assay, Kennedy consulted TRI Director Laura James, M.D., who would become principal investigator of the statewide Arkansas Coronavirus Antibodies Seroprevalence Survey.

At the UAMS Fay W. Boozman College of Public Health, Dean Mark Williams, Ph.D., and Ben Amick, Ph.D., associate dean for

Continued on page 13

Jeffery Moran, Ph.D., an assistant professor in the College of Medicine Department of Pharmacology & Toxicology, with the robot purchased last year for high-speed blood sample processing. Moran led the installation and validation of the robotic instrumentation, which has aided UAMS' statewide SARS-CoV-2 antibody testing study.



“The interdisciplinary work involved in the seroprevalence study is the perfect model for our catchphrase, ‘Team UAMS,’ because teamwork is what made it possible.”

— Stephanie Gardner, Pharm.D., Ed.D.
*UAMS Provost, Chief Academic Officer
and Chief Strategist*



SEROPREVALENCE TEAM

Collaborating seroprevalence project team members included: Front row, l-r, Mark Williams, Ph.D., Joshua Kennedy, M.D., Laura James, M.D., and Katherine Caid, M.D.

Middle row, Sandra McCullough, Justin Bean, Veronica Smith, Ben Amick, Ph.D., Moya Kouassi, Hoda Hagrass, M.D., Ph.D., Nathan Petty, Shana Owens, Victor Cardenas, M.D., Ph.D., and Jing Jin.

Back row: Ericka Olgaard, D.O., Karl Boehme, Ph.D., Craig Forrest, Ph.D., and Ryan Mann.

“It was a Herculean effort, but we found ourselves with the right people at the right time.”

— Joshua Kennedy, M.D.

Research, oversaw the substantial epidemiology component of the study, which included the challenging task of recruiting research participants willing to provide blood samples. Research participants were identified through the COPH call center, an effort initially organized to track COVID-19 related concerns of Arkansans. Other partners, including the Arkansas Foundation for Medical Care (AFMC), and UAMS Regional Campuses in Pine Bluff, Fayetteville, and Fort Smith, provided significant and rapid support for blood sample collection. Their role was important from the start, guiding the team through the study design and providing data analysis along the way.

Significantly, UAMS Chancellor Cam Patterson, M.D., MBA, and Stephanie Gardner, Pharm.D., Ed.D., provost, chief academic officer and chief strategist, quickly lent their support to the project, marshalling resources and helping acquire \$3.4 million in federal aid allocated by the Arkansas Coronavirus Aid, Relief and Economic Security (CARES) Act Steering Committee created by Gov. Asa Hutchinson.

The funding helped purchase a robotic system to speed blood sample analysis for SARS-CoV-2 antibodies.

In all, the project involved nearly 30 people across multiple UAMS entities and from outside the institution. “It was a Herculean effort, but we found ourselves with the right people at the right time,” Kennedy said.

James said the statewide effort demonstrated “team science in action,” with experts from across the state and institution pulling together to contribute their unique skills to solve a public health crisis.

In addition to TRI, the collaboration included representation from:

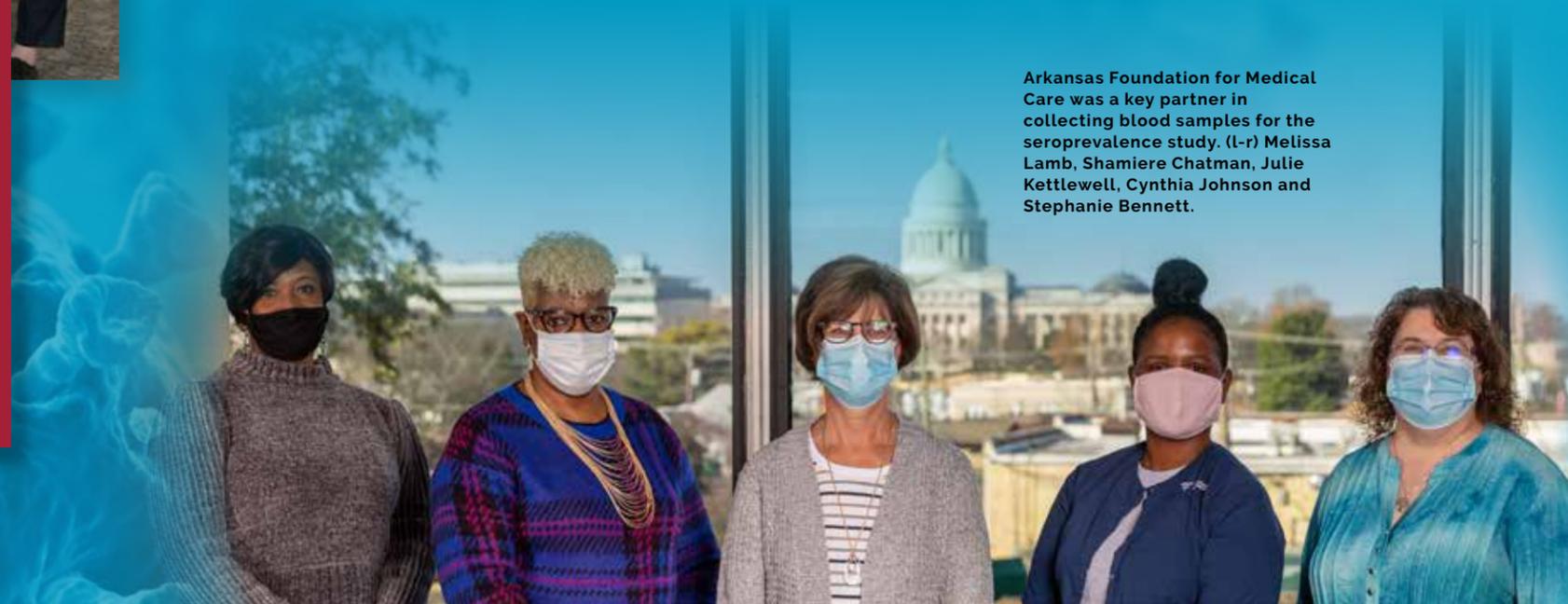
- Arkansas Children’s Research Institute
- College of Medicine departments of Pediatrics; Microbiology and Immunology; Internal Medicine; Pathology; Pharmacology and Toxicology; and Biomedical Informatics
- Fay W. Boozman College of Public Health
- UAMS Department of Biostatistics
- UAMS Regional Campuses and affiliated UAMS Rural Research Network
- Arkansas Department of Health
- Arkansas Foundation for Medical Care.

“The antibody study showcases the expertise, leadership and collaboration that UAMS and its partners can bring to bear for essential disease surveillance in a pandemic,” said UAMS Chancellor Cam Patterson, M.D., MBA. “It took extraordinary effort, and everyone involved deserves recognition.”

Gardner led meetings that brought the various research teams together. “The interdisciplinary work involved in the seroprevalence study is the perfect model for our catchphrase, ‘Team UAMS,’ because teamwork is what made this project possible,” she said.

Continued on page 14

Arkansas Foundation for Medical Care was a key partner in collecting blood samples for the seroprevalence study. (l-r) Melissa Lamb, Shamiere Chatman, Julie Kettlewell, Cynthia Johnson and Stephanie Bennett.



Hispanic populations were almost 19 times more likely to have SARS-CoV-2 antibodies than whites. Blacks were five times more likely to have antibodies as whites.

Study Findings

The team collected more than 10,000 blood samples from children and adults in three waves, from August to December 2020. For the adult samples, they found low rates of SARS-CoV-2 antibodies, averaging from 2.6% in the first wave (July / August 2020) to 7.4% by the third wave (November / December).

The low percentages are concerning, Kennedy said, given the high numbers of hospitalizations and deaths in Arkansas.

"If we had had a higher percentage of infections, how much worse might our hospitalizations and deaths have been?" he said.

Also troubling, he said, is that while the overall antibody rate was low, that was not the case for specific racial and ethnic groups. Hispanic populations were almost 19 times more likely to have SARS-CoV-2 antibodies than whites, and Blacks were five times more likely to have antibodies as whites during the course of the study.

"Our findings underscore the need for everyone to get vaccinated as soon as they can," Kennedy said.

The team found little difference in antibody rates between rural and urban residents, which surprised researchers who thought rural residents might be less exposed.

The team shared its findings in real time with UAMS leadership, the College of Public Health, and the state Department of Health.

Continued on page 15



Travis Smith (right), project director for the seroprevalence study, presents a gift card to a participant.

A participant in the study has his blood drawn.

Help From UAMS Regional Campuses, Rural Network

As the research team was ramping up participant recruitment through the College of Public Health-supported call center, the study's leaders also recognized the enormous potential of the UAMS Regional Programs Family Medical Centers to expand blood sample collections. The new UAMS Rural Research Network would also play an important role in facilitating the remnant sample collections (story, page 40).

Remnant blood samples for the statewide seroprevalence study began arriving in August from UAMS Family Medical Centers in Fayetteville, Fort Smith and Pine Bluff to support the UAMS-led seroprevalence survey.

In all, more than 1,400 remnant samples (patient blood samples that would have been discarded) were used to augment collections from UAMS clinics in Little Rock and from research volunteers.

Kennedy praised the Regional Programs and Rural Research Network leadership and staff.

"Without Regional Programs and the network, we wouldn't have collected the wide swath of samples that we did," he said. "They were instrumental in sending the samples on the fly, because we did this very quickly."

Spinoff Study

Efforts related to the seroprevalence study have provided researchers the knowledge and infrastructure to explore important new questions about COVID-19. In October 2020, the National Cancer Institute awarded \$1.3 million to support a study of the pandemic's short- and long-term impact on the physical, psychological and social health of underrepresented minority men and women in Arkansas.

Led by Wendy Nembhard, Ph.D., chair of the Epidemiology Department in the College of Public Health, the study is a collaboration with Kennedy, Boehme and Forrest, utilizing their SARS-CoV-2 antibody assay and the new robotic blood sample processing instrument to study disparities in immune response to the virus through serological testing in Arkansas. It is funded through the NCI's new national Serological Sciences Network (SeroNet).

When the study began, it assumed an unvaccinated population, but that has changed, Kennedy noted.

"Now we can follow people who have been vaccinated and see how long the immune benefits of the vaccine lasts," he said. "It's a great opportunity because it will help us decide how often we need to be vaccinated."



The Arkansas Foundation for Medical Care team in Jonesboro: (l-r) Natiayoun Williams, Melissa Roberts and Laura Ludwig-McClusky.

Accelerated Research

The RADx-UP project led by Pearl McElfish, Ph.D., MBA, gained national attention when it recruited **1,200 participants in just three months**, leading NIH to highlight it as an exemplar to President Joe Biden's administration.



Pearl McElfish, Ph.D., MBA



Henwel Gasper, a Marshallese resident and member of the contact team, is tested for COVID-19.

NIH FUNDS UAMS RADX COVID-19 TESTING STUDIES

UAMS researchers received two NIH Rapid Acceleration of Diagnostics Underserved Populations (RADx-UP) grants in 2020 to improve COVID-19 testing approaches and strategies.

Researchers at the UAMS Northwest Regional Campus hope the work supported by the grant can help prevent a repeat of spring 2020, when COVID-19 washed through local Marshallese and Hispanic/Latino communities like a tsunami.

A second RADx-UP grant awarded to researchers at the Fay W. Boozman College of Public Health focuses on individuals with a history of incarceration and low-income Hispanic/Latino communities.

Northwest Arkansas was one of the worst hotspots in the U.S., with racial and ethnic disparities so glaring that the Centers for Disease Control and Prevention (CDC) came to investigate in June and July. That visit was

followed in August by investigators from the NIH.

Pearl McElfish, Ph.D., MBA, is leading the one-year, \$715,920 RADx-UP grant, which supports the study's focus on increasing COVID-19 testing in Washington and Benton counties. McElfish is director of the UAMS Office of Community Health and Research and was recently named associate director of Community Outreach and Engagement at the UAMS Winthrop P. Rockefeller Cancer Institute. She is the outgoing vice chancellor for the UAMS Northwest Regional Campus. McElfish also leads the Special Populations Core for TRI.

As part of the RADx study, 2,400 residents will be tested for COVID-19 at drive-through testing sites and invited to complete a short survey to help determine the most effective testing approaches.

The effort is based on preliminary research supported by TRI in which 1,092 participants said in a survey (story, page 22) that clinics and

housing complexes/neighborhoods were their top choice for testing sites.

College of Public Health Professor Nick Zaller, Ph.D., is the lead researcher on UAMS' other RADx-UP grant. The two-year grant totals \$331,084, and is part of a \$3.7 million effort that also includes research institutions in Illinois, Indiana, Louisiana and Texas, all led by the University of Chicago.

The research is jointly supported by TRI and the UAMS Division of Research and Innovation.

Zaller's portion of the study is focused on individuals in the criminal justice system – people who are on probation or parole. His team will recruit 200 study participants, offering testing to these groups as well as their peer networks. The project will also use focus groups to help develop targeted messaging to combat misinformation related to COVID-19.

Taking it to the Streets

As SARS-CoV-2 raged through the Marshallese and Hispanic/Latino populations in Northwest Arkansas, 18 community groups joined forces to subdue it. At the heart of the effort was the UAMS Office of Community Health and Research team, led by Pearl McElfish, Ph.D., MBA.

The work was described in the December 2020 *Journal of Clinical and Translational Science*, and an essay in the January 2021 *Centers for Disease Control and Prevention's (CDC) Preventing Chronic Disease* journal.

The team has spent five-plus years building community engaged research capacity with the Marshallese and Hispanic/Latino communities, primarily to combat high rates of diabetes. When COVID-19 arrived, the CDC reported in July 2020 that 45% of all adult cases in the two-county region were among Hispanic/Latino patients and 19% were Native Hawaiian/Pacific Islander patients. These communities account for only 17% and 2.4% of the population, respectively.

"We were witnessing extreme disparities, so we knew we needed to come together to address this as a community with UAMS leading that effort," McElfish said.

McElfish is the outgoing vice chancellor for the UAMS Northwest Regional Campus, having recently been named associate director of Community Outreach and Engagement at the UAMS Winthrop P. Rockefeller Cancer Institute. McElfish also leads the Special Populations Core for TRI.

Her team joined with all of the regions' health care organizations and all nonprofits with a focus on meeting

the needs of the Hispanic/Latino and Marshallese communities.

One of the most successful components of the effort was its holistic services, McElfish said.

When anyone from the Marshallese or Hispanic/Latino communities tested positive in Benton or Washington counties, a contact tracing team called to determine if they could quarantine safely and if they needed support to do so. The residents received home deliveries of food and medication, rental assistance and utility assistance. The team also provided documentation to their employers to prevent them from losing their jobs, as well as health documentation needed to return to work.

The effort involved a communications strategy that covered prevention, testing, quarantine, and follow-up care. All materials were produced in English, Spanish and Marshallese, and service providers and contact tracing team members included bilingual native-language speakers.

A taskforce led by community members met weekly to map its highly coordinated plans. As funding came in to UAMS from public and private sources to support the effort, McElfish said her team made sure to provide subcontracts that allowed the

"This work and these results are thanks to the efforts of hundreds of people."

— Pearl McElfish, Ph.D., MBA

Volunteers load food boxes destined for quarantined Marshallese and Hispanic/Latino residents.

COVID-19 REVEALS THE POWER OF UAMS COMMUNITY-ENGAGED RESEARCH TO ADDRESS 'EXTREME DISPARITIES'

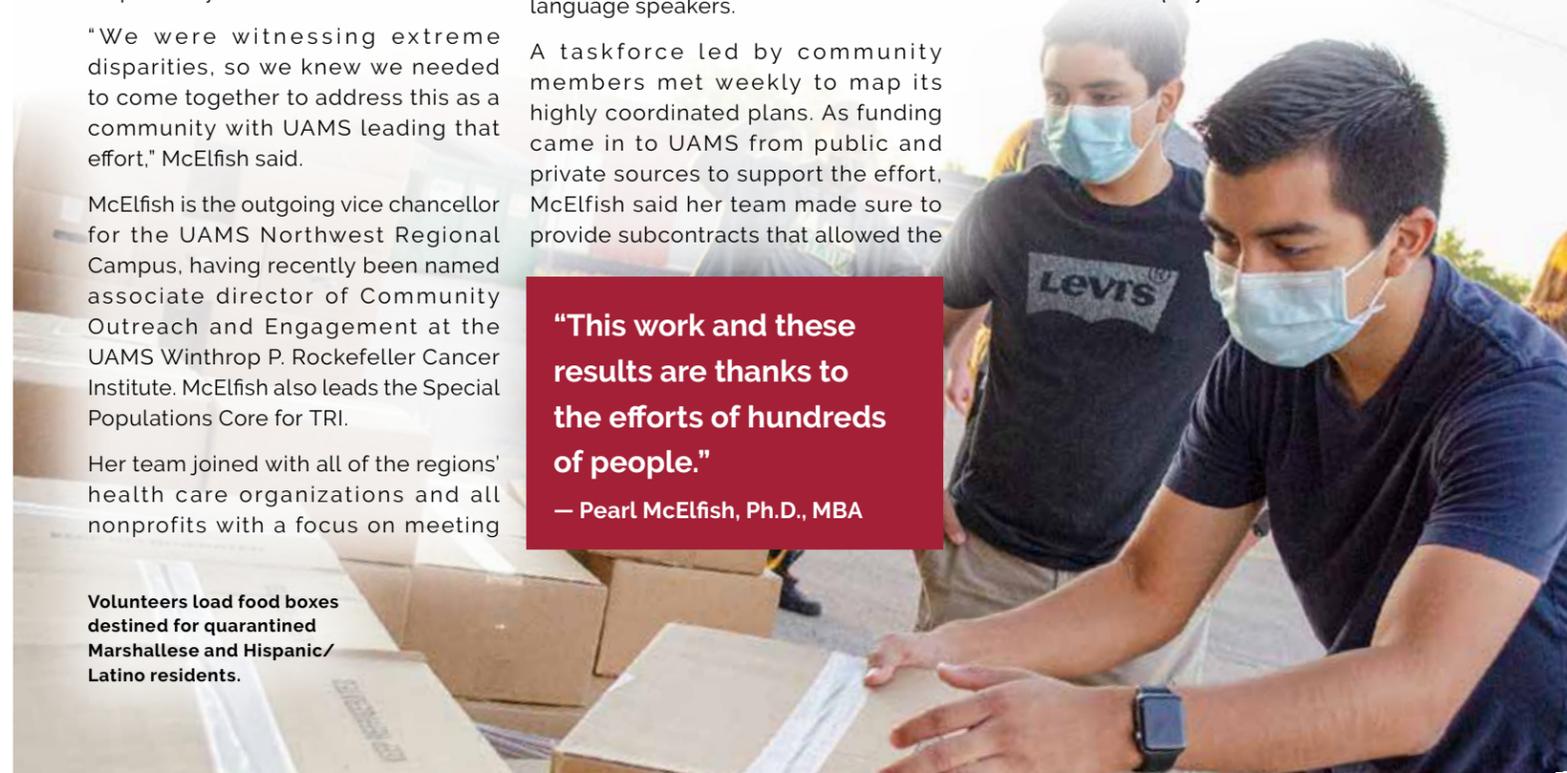
funds to flow to the community based organizations.

More than 3,000 Marshallese and Hispanic/Latino benefitted, and aid was provided to 137 Marshallese and Hispanic/Latino businesses.

Following the start of the community intervention in late July, the Hispanic/Latino weekly cases fell from almost 70% of the two counties' total case counts to about 20%, and remained mostly under 30% through 2020.

The Marshallese community experienced a similar response, with weekly cases plunging from more than 20% of the two-county area's weekly cases to less than 5%. The weekly cases remained well under 10% through the end of 2020.

"This work and these results are thanks to the efforts of hundreds of people," McElfish said. "This is what UAMS can do as a leader in the state when we partner with other organizations. We can reduce health disparities and increase health equity within our state."



Into High Gear

BIOMEDICAL INFORMATICS
TEAM AIDS NATIONAL BID TO
UNIFY COVID-19 CLINICAL DATA

The arrival of COVID-19 was a jolt for national research leaders grappling with the ongoing challenge of harmonizing clinical research data across institutions. For UAMS, it was a unique opportunity.

Well positioned with its robust TRI-supported biomedical informatics programs, UAMS became an immediate contributor to the effort.

At the forefront of the national data unification strategy has been the NIH/NCATS Center for Data to Health (CD2H).

"When COVID-19 hit, NCATS kicked that program into high gear and the National COVID Cohort Collaborative (N3C) was created," said UAMS' Fred Prior, Ph.D., who leads TRI's Comprehensive Informatics Resource Center (CIRC), and serves on the NCATS Governance Working Group and Tools Working Group. He is also chair of the College of Medicine Department of Biomedical Informatics.

N3C is a centralized database with de-identified health records of more than 1.6 million COVID-19-positive patients and more than 6 billion rows of data.

Critical to UAMS' leading role, Prior said, is the work of Ahmad Baghal, M.D., Ph.D., who directs the TRI-supported Arkansas Clinical Data Repository and led UAMS to become one of the first institutions in the country to begin sharing de-identified clinical data with the N3C enclave.



Ahmad Baghal, M.D., Ph.D.

UAMS was among the first of more than **70** institutions to contribute de-identified COVID-19 clinical data to the N3C Data Enclave.



Fred Prior, Ph.D.

UAMS was the **first** institution in the U.S. to upload de-identified COVID-19 images to The Cancer Imaging Archive.

The journal Nature has published **two papers** from the UAMS biomedical informatics team related to its COVID-19 data efforts.

THE CANCER IMAGING ARCHIVE AND COVID-19

Prior's role as principal investigator for The Cancer Imaging Archive (TCIA) has also put UAMS in the spotlight for COVID-19-related research. The NCI-funded TCIA was designated a repository to accelerate sharing of de-identified COVID-19 clinical images.

"The TCIA team became engaged because the NIH quickly realized that radiology images are important for COVID-19 diagnosis and treatment," Prior said. "They needed a place to gather, curate and distribute images, and TCIA was shovel ready for gathering image data."

Prior's team also has a contract with NCATS to link the UAMS COVID-19 images in TCIA with the related clinical data uploaded to N3C.

"We are building infrastructure that will be here in the long-term and leave us much better prepared for a potential future pandemic," he said.

UAMS, Arkansas Children's Partnership

UAMS and CTSA hub partner Arkansas Children's continued to build on their data network collaborations in the past year. Prior and Feliciano 'Pele' Yu, Jr., M.D., M.S.H.I., M.S.P.H., chief medical information officer at Arkansas Children's, have worked on multiple TRI-supported biomedical informatics projects to increase data sharing for research internally and externally.

In April 2021, Arkansas Children's joined the ACT (Accrual to Clinical Trials) Network, an open-access platform allowing researchers throughout the CTSA consortium to explore and validate feasibility for clinical studies using de-identified electronic health records data.

A key milestone for the partnership in 2020 was naming the first two fellows to the Clinical Informatics Fellowship Program:

- DANIEL LU, M.D., based at Arkansas Children's
- LORI WONG, M.D., MPH, based at UAMS



Kate Stewart, M.D., MPH

"The CBPR Program is a great example of the community and academia fully partnering as a team to develop research projects"

- Kate Stewart, M.D., MPH

Full Partners

NEW PROGRAMS BUILDING ACADEMIC AND COMMUNITY CAPACITY FOR PARTNERED RESEARCH

TRI has long boasted an innovative Community Engagement (CE) Program, and in the past two years it has added vital new initiatives that directly involve the community as partners in the research process.

In 2020, the CE team launched the Community-Based Participatory Research (CBPR) Scholars Program. Seven teams of community members and researchers were selected to participate in training and jointly develop CBPR projects.

The program follows the 2019 inception of the Community Partners Educated as Arkansas Research Leaders (CPEARL) Program, which nurtures research partnerships and teaches skills that help a community organization be more effective.

Both programs are building capacity for community research at UAMS as well as in the community, said Kate Stewart, M.D., MPH, director of the Community Engagement Program.

"The CPEARL and CBPR Scholars Program mark exciting milestones for us," said Stewart, also a professor in the Fay W. Boozman College of Public Health, Department of Health Policy and Management. "We're a long way from where we were as a CTSA 10 years ago."

The CBPR Scholars teams are working through online learning modules and participating in virtual discussions and mentoring to develop their projects in competition for pilot grants up to \$50,000. The teams are learning to

apply the principles of CBPR, a collaborative approach that works to involve all partners throughout the research process. The teams will use their new knowledge to improve health outcomes and reduce health disparities.

"We are very excited about the diversity of the seven partnerships and we look forward to working with them to develop research-based, sustainable health improvements," Stewart said.

"The CBPR Scholars Program is invaluable," said Eva Woodward, Ph.D., who is on one of the teams.

An assistant professor in the College of Medicine Department of Psychiatry, she said the program is providing her team with core, foundational knowledge about community-academic partnerships.

Her academic team has partnered with the Arkansas Freedom Fund, an organization that supports veterans, active duty military, and their families.

"The program is really focused on equity in our communities, and it is guiding us as we transform that knowledge into skills," she said. "After years of reading and seminars on CBPR, I feel like I'm finally learning to use a gold standard approach to health disparities research, and for that, I am very grateful."

"After years of reading and seminars on CBPR, I feel like I'm finally learning to use a gold standard approach to health disparities research, and for that, I am very grateful"

— Eva Woodward, Ph.D.





New and Improved

ARRESEARCH UPGRADES BENEFIT REGISTRANTS, RESEARCHERS

The ARresearch registry of potential research participants moved to a new platform in 2020, offering more to registrants and much richer data for the researchers who use it.

When TRI launched the new ARresearch platform last summer, it enabled a more efficient way to generate reports and simplified the process for researchers to disseminate surveys to registrants directly from the registry or to contact registrants about participating in other types of research. For registrants, the platform now allows them to update their registration information without having to contact a TRI administrator.

"It was a productive year for ARresearch," said Jean McSweeney, Ph.D., RN, who led TRI's launch of the registry in 2016. "We took some exciting steps forward with technology and continued to add volunteers to the registry."

The number of ARresearch registry volunteers grew by 9% in 2020, despite COVID-19 restrictions

that prevented face-to-face and community-based recruitment. By April 2021, there were more than 7,500 registrants available as potential research volunteers. Fourteen researchers used the registry between March 2020 and March 2021.

The new platform includes functionality using REDCap that allows registry data to be uploaded by researchers for analysis. In addition, researchers who use ARresearch now receive a report from the IRB that includes reminders to ask their study participants to consider joining the registry.

McSweeney also led development of a 10-minute, professionally produced tutorial video that shows researchers how they can maximize the registry's new capabilities.

"We're excited by the progress we've made, and to remain viable, our team remains committed to increasing the number of registrants," she said. "We encourage everyone to join our registry and to please spread the word to their friends and family."

By April 2021,
there were more
than **7,500**
ARresearch
registrants
available as
potential research
volunteers.

First-Time User

RESEARCHER DISCOVERS BENEFITS OF ARRESEARCH REGISTRY

When COVID-19 came to Arkansas last year, population sciences researcher Allen C. Sherman, Ph.D., saw his first opportunity to recruit participants from TRI's ARresearch registry of potential research volunteers.

Sherman, director of the Behavioral Medicine Division lab at the UAMS Winthrop P. Rockefeller Cancer Institute, had done what many researchers did in 2020; he shifted his disease focus to COVID-19. He was one of nine UAMS researchers who used the registry to recruit for surveys last year.

"We were interested in the impact of the pandemic on the day-to-day lives of Arkansans," said Sherman, a professor in the College of Medicine Department of Otolaryngology. "An effective way to get a bead on that was to reach out with a survey, and the ARresearch registry was the ideal forum for this research."

Of the 1,700 registrants contacted, he received 691 responses, or nearly 41%.

"We were delighted," he said. "It was significantly more than I anticipated, and it allowed for a sufficient number of people to drive meaningful analyses. The registry has a diverse membership across the state - folks from lots of different geographical areas and socioeconomic, cultural and ethnic backgrounds."

By April 2021, he anticipated the survey results could lead to four publications. The journal *Psychiatry Research* had published one, "Mental Health Outcomes Associated with the COVID-19 Pandemic: Prevalence and Risk Factors in a Southern U.S. State." Two other papers were under review in April, and he was planning a fourth.

Allen C. Sherman, Ph.D.

"I think ARresearch is a wonderful resource. It provides an opportunity to gather rich, useful data from a wide variety of people."

— Allen C. Sherman, Ph.D.



Pearl A. McElfish, Ph.D., MBA
(pre-COVID-19)

“ARresearch really demonstrated the critical role it can play in advancing our knowledge and research grant success.”

— Pearl A. McElfish, Ph.D., MBA

The Payoff

ARRESEARCH HELPS SECURE NIH COVID-19 FUNDING

There were virtual high-fives among all the collaborators when the NIH announced a \$715,920 Rapid Acceleration of Diagnostics (RADx) grant for a UAMS COVID-19 study in late 2020. Pearl A. McElfish, Ph.D., MBA, principal investigator, gives credit to the ARresearch registry.

Survey data was key to acquiring the one-year grant, which is focused on increasing COVID-19 testing in Washington and Benton counties (story, page 16).

“Had we not been able to gather data in a short timeframe, it's unlikely we would have

secured this important grant,” McElfish said. “ARresearch really demonstrated the critical role it can play in advancing our knowledge and research grant success.”

When the survey went out to the 4,077 ARresearch registrants, 1,288 Arkansas adults (32%) completed a survey.

“The response from registrants was impressive,” McElfish said. “Clearly we have a motivated cohort of volunteers in ARresearch, and that is a priceless resource.”

The survey provided a snapshot of experiences, hardships and health in Arkansas during the COVID-19 pandemic. Researchers also gained a better understanding of the public's preferences for COVID-19 testing locations, and which sources of COVID-19 information they trust the most. The survey also provided a better understanding of attitudes towards vaccines and hesitancy or willingness to get a COVID-19 vaccine before any vaccine had received the FDA's emergency use authorization.

“We are building the infrastructure, increasing our capacity to do more of this kind of work.”

— Carolyn Greene, Ph.D.



Team Science in Action

VOUCHER PROGRAM, DATA SCIENCE, ADD INFRASTRUCTURE FOR HEALTH IMPROVEMENT

Carolyn Greene, Ph.D., has led TRI's Team Science Voucher Program since 2019, promoting it to faculty and launching the novel funding opportunity last year.

Seven teams received vouchers ranging from under \$20,000 to \$50,000 in 2020, and by spring 2021, she could point to exciting examples of team science in action.

In one example, a TRI-supported team led by Nalin Payakachat, Ph.D., is tackling chronic pain, one of the most challenging health care issues of our time. The team of UAMS doctors, data science experts, and a basic scientist, has already developed an efficient way for patients to report their pain experiences (including anxiety, depression and weight gain) during their clinic visits.

“We are integrating patient reported outcomes information directly from patients to the electronic medical record system,” said Payakachat, an associate professor in the College of Pharmacy. “Our hope is to have a tool that clinicians will want to use to enhance communication with their patients and help manage pain conditions.”

The team includes Johnathan Goree, M.D., director of the Chronic Pain Division at UAMS, Joseph Sanford, M.D., director of the UAMS Institute for Digital Health and Innovation (IDHI), Erika Petersen, M.D., director of the Section of Functional and Restorative Neurosurgery at UAMS, Kevin Sexton, M.D., associate director of IDHI and associate chief medical informatics officer for Innovation, Research, and Entrepreneurship at UAMS; and Kimberly Stephens, Ph.D., MPH, a TRI KL2 program awardee (story, page 30), whose research focus is chronic pain.

“This is an impressive multi-disciplinary team and the work from their voucher project has already translated into improved clinical care. It has also opened the door to partnerships with other organizations,” said Greene, director of the Team Science program and a co-director of the KL2 Mentored Research Program. “This team is laying the groundwork to acquire extramural funding for a much larger study.”

Goree implemented the “patient reported outcomes” intervention in his clinic in summer 2020. The impact was dramatic, revealing patient health issues that were previously unknown. In fact, it has led him to hire a psychologist to help address mental health issues related to chronic pain.

“I was excited to try this when Dr. Payakachat presented it to me last year, and we saw very early that it could help us improve care,” Goree said.

Sanford and Sexton have had critical roles in showing the team how it could use Epic, the electronic medical records system to create a robust reporting tool patients, Payakachat said.

“Their expertise helped the team think through all the components of the project,” she said. “They helped us understand Epic's capabilities, how to visualize the information for clinicians and how to produce the patient-facing information.”

TRI was awaiting applications for its second cohort of the Team Science Program in spring 2021.

Team Science Vouchers provide seed funds to groups of collaborators proposing innovative research approaches with high potential for future funding and health improvement.

Project team members (l-r): Nalin Payakachat, Ph.D., Kevin Sexton, M.D., Joseph Sanford, M.D., and Erika Petersen, M.D. Not pictured, Kimberly Stephens, Ph.D.



Brain on Fire

INSPIRED BY TRI DATA SCHOLARS PROGRAM, NEONATOLOGIST ENTERS PH.D. PROGRAM

Nahed El-Hassan, M.D., MPH, discovered that data science is not only fun, it could help her understand the data she sees routinely as a neonatologist. She could also use it to explore neonatal outcome health research questions.

As TRI's first Data Scholar in 2020, she helped pilot the program, said Bradley C. Martin, Pharm.D., Ph.D., who leads program.

El-Hassan, a professor in the College of Medicine Department of Pediatrics, said the strong mentoring from faculty such as Martin, Chenghui Li, Ph.D., and others, led her to pursue a PhD in Pharmaceutical Evaluation and Policy in the College of Pharmacy. Martin is a professor and Li is an associate professor in the Division of Pharmaceutical Evaluation and Policy.

"I just love to sit in their classes and learn," El-Hassan said. "Dr. Martin makes his class enjoyable, but your brain is on fire the whole time. He and his group have helped me so much to know how to really understand my data."

By spring 2021, El-Hassan already had an abstract accepted for poster presentation at the Pediatric Academic Society Meeting and a manuscript in progress. The project examines the emotional and behavioral problems in adolescence of former preterm and term infants of different races/ethnicities.

She has a second data science project in progress that proposes using the Arkansas All-Payer Claims Database and the Prescription Drug Monitoring Database to examine opioid use in pregnancy and its impact on neonatal abstinence syndrome.

"Dr. Martin and his group have helped me so much to know how to really understand my data."

— Nahed El-Hassan, M.D., MPH

DATA SCHOLARS PROGRAM BUILDS CAPACITY

TRI continues to build depth in data science and data analytics through its Data Scholars Program.

Two data scholars were announced in spring 2021, bringing the total to six since 2019. The two most recent scholars and their project titles are:

- **MICHAIL MAVROS, M.D.**, Assistant Professor, College of Medicine Department of Surgery; "Extended Venous Thromboembolism Prophylaxis in Cancer Patients Undergoing Abdominal Surgery: Clinical Outcomes and Barriers to Implementation."
- **MELANIE MACNICOL, PH.D.**, Associate Professor, College of Medicine Department of Neurobiology and Developmental Studies; "A Multidisciplinary Approach to Identify the Role and Regulation of Pituitary Function in Mediating Appropriate Responses to Metabolic Signals."

The scholars receive close mentoring from UAMS faculty in conducting a data-oriented research project. They also receive 20% salary support and reimbursement for tuition and fees up to \$5,000 to support coursework in data science or data analytics.

The program is led by Bradley C. Martin, Pharm.D., Ph.D., a professor in the College of Pharmacy Division of Pharmaceutical Evaluation and Policy. It falls under TRI's Team Science umbrella, which is led by Carolyn Greene, Ph.D., Associate Professor in the College of Medicine Department of Psychiatry.

Data analytics and data sciences are common components in the team science realm, Greene said.

"The future of health care is about these data science, data analytics approaches and we don't have enough people who know how to do it," she said. "But we are building the infrastructure, increasing our capacity to do more of this kind of work."

Implementation Science

FIRST YEAR OF TRI PROGRAM TRANSLATING TO IMPROVED CARE, OUTCOMES

The UAMS Implementation Science Scholars Program wrapped up its first year with a bang, showcasing the significant progress of its five-member inaugural class.

The UAMS clinician-scholars' presentations at the halfway mark of the program impressed their mentors, program leaders and an outside evaluator, Elvin Geng, M.D., MPH, director of the Center for Dissemination and Implementation Science at Washington University in St. Louis.

"This program and work here illustrate the virtuous cycle between implementing science and implementation science," Geng, a professor of medicine, said after hearing the project reports. "That's exciting to see."

The program is a collaboration between TRI and the Center for Implementation Research, directed by Geoffrey Curran, Ph.D., a professor in the UAMS College of Pharmacy.



KAPIL ARYA, M.D., Associate Professor, Division of Pediatric Neurology, Department of Pediatrics
Project: "Implementation of Newborn Screening for Spinal Muscular Atrophy and Operationalizing Appropriate Patient Management" (story, page 26-27)



JOHNATHAN GOREE, M.D., Associate Professor, Department of Anesthesiology; director, Chronic Pain Division, Chair, Opioid Stewardship Committee
Project: "Implementation of Safe Post-Operative Opioid Prescribing at University of Arkansas for Medical Sciences with a New Post-Operative Opioid Prescribing Protocol"



EMILY KOCUREK, M.D., Assistant Professor, Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine.
Project: "Improving Implementation of the ICU Liberation Bundle at UAMS"



DEBOPAM SAMANTA, M.D., Associate Professor, Department of Pediatrics, Medical Director for Epilepsy/Neurophysiology/MEG
Project: "Optimization of the Presurgical Evaluation in Intractable Epilepsy"



MEGHA SHARMA, M.D., Assistant Professor, Division of Neonatology, Department of Pediatrics.
Project: "NICU Choose Wisely Initiative: Minimizing Iatrogenic Blood Losses in Very Low Birth Weight Infants by Promoting Provider Awareness and Optimal Use of EMR"

2021 Implementation Science Scholars

In December 2020, TRI and the UAMS Center for Implementation Research announced its second cohort of Implementation Science Scholars. The five UAMS clinical faculty will receive oversight and mentoring from UAMS implementation research faculty as they participate in 10 didactic sessions per year and work on their experiential implementation science projects. The two-year program provides 20% salary support. The scholars and their project titles are:

LAURA JEAN HOBART-PORTER, D.O., Assistant Professor, Developmental Pediatrics and Physical Medicine and Rehabilitation Division (Arkansas Children's), and Physical Medicine and Rehabilitation (UAMS); Medical Director, Spinal Cord Disorders Program, Concussion Clinic, and Children's Rehabilitation Center (Easter Seals of Arkansas), Department of Pediatrics, Arkansas Children's/UAMS College of Medicine.

Project: "Prevention of Sleep-Associated Mortality through Implementation of Guidelines for the Care of People with Spina Bifida"



KYLE J. KALKWARF, M.D., Assistant Professor, Acute Care Surgery Division, Department of General Surgery and Critical Care, UAMS College of Medicine
Project: "Implementation of Combined Strategies to Reduce Opioid Consumption for Acute Pain in the Surgical ICU at UAMS"



RILEY LIPSCHITZ, M.D., Assistant Professor, Division of General Internal Medicine, Department of Internal Medicine, College of Medicine
Project: "TelePrEP – Utilizing Technology to Prevent HIV and Improve Health Equity among Vulnerable Arkansans"



ELIZABETH RILEY, D.N.P., RNC-NIC, CNE, Clinical Assistant Professor, Neonatal Intensive Care Unit, UAMS College of Nursing
Project: "Implementation of Standardized Bedside Interprofessional Rounds in Neonatal Intensive Care"



ARAVINDHAN VEERAPANDIYAN, M.D., Assistant Professor, Director, Comprehensive Neuromuscular Program; Medical Director, Headache Clinic, Division of Pediatric Neurology, Department of Pediatrics, Arkansas Children's/UAMS College of Medicine
Project: "Implementation of Evidence-Based Practice to Improve Care for Children with Headaches"

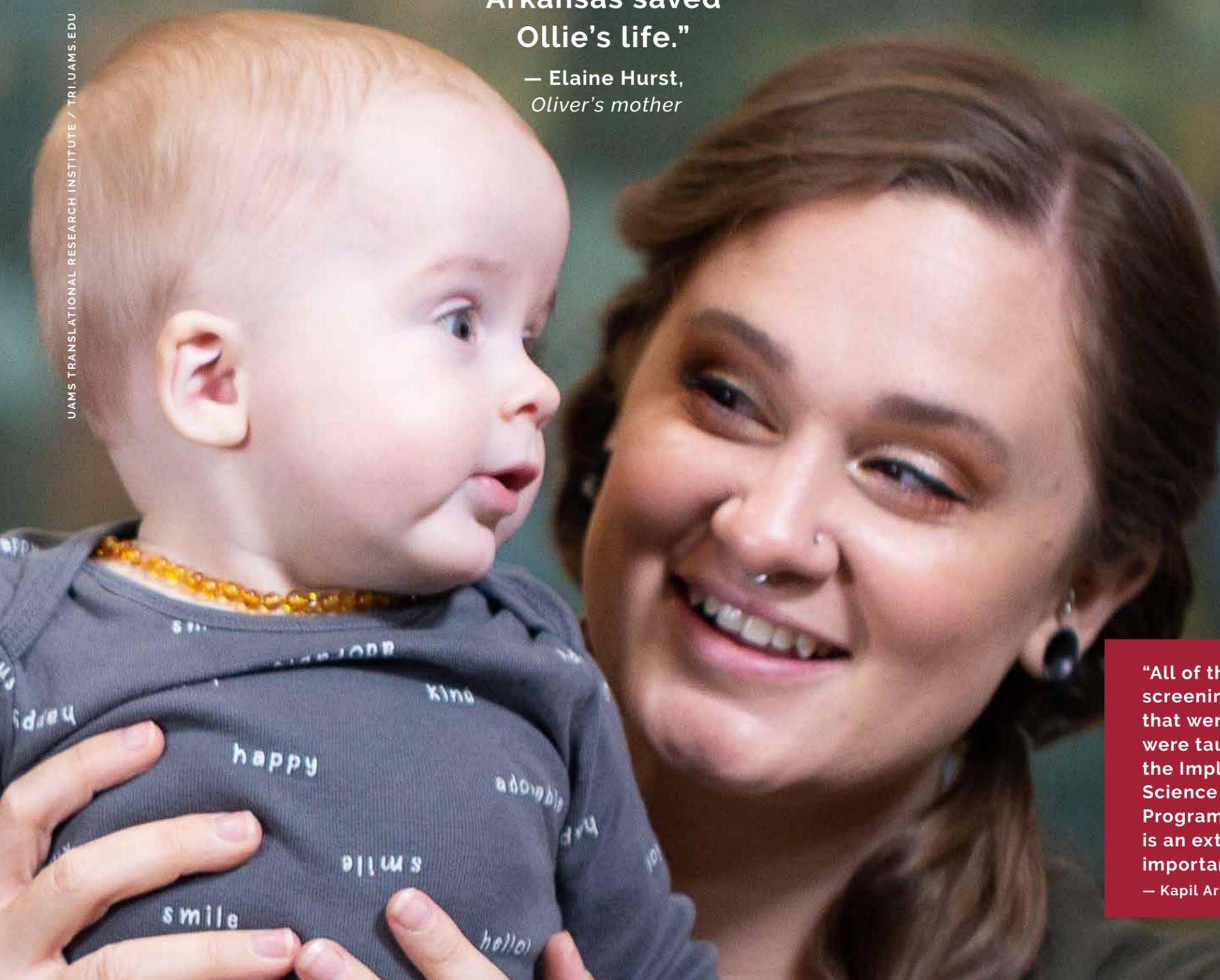


Good Timing

IMPLEMENTATION SCIENCE HELPS ESTABLISH STATEWIDE NEWBORN SCREENING FOR DEADLY, DISABLING DISEASE

“Moving to Arkansas saved Ollie’s life.”

— Elaine Hurst,
Oliver’s mother



Oliver Hurst owes his life to a luckily timed move across the country. His father and mother, who was then three months pregnant with Oliver, arrived in Vilonia, Ark., from California in March 2020.

At the time, UAMS’ Kapil Arya, M.D., was developing strategies as a TRI Implementation Science Scholar to establish statewide newborn screenings for spinal muscular atrophy (SMA), a rare disease that can disable a newborn within months.

The only effective treatment for SMA is a single-dose \$2.1 million gene editing therapy – the most expensive one-time treatment in the world, Arya said. It must be provided within a few weeks of birth to counter the most severe form of SMA, which can be fatal in the first few years of life. Less severe forms can cause a lifetime of disability.

Arya, an associate professor in the College of Medicine Department of Pediatrics, Division of Neurology, is part of the 2020 Implementation Science Scholar class, sponsored by TRI and the UAMS Center for Implementation Research. He saw the program as an opportunity to learn skills that would help him implement the statewide SMA screening.

“Implementation science is the science of teaching you how to do a particular thing in the best way possible,” said Arya, who is based at Arkansas Children’s Hospital. “I knew the goals we wanted to achieve with the newborn screening, and implementation science taught me how to achieve those goals.”

The Arkansas SMA screening law was enacted in 2019, but a complex system was still necessary to make the screening routine across the state. Arya helped facilitate the purchase and validation of sophisticated testing equipment, developed

training programs and created materials to reach all corners of the state. He also worked with insurers to secure coverage of the treatment cost, and persuaded them to accelerate their approval timeline by several months.

By the time Oliver was born in August, the screenings were being conducted statewide.

The scholars program may have given him the skills to implement the screening, but Arya’s tireless commitment also played a role, said Sara Landes, Ph.D., his primary mentor as a core faculty member at the Center for Implementation Research.

“To go from legislation to full implementation so fast sounds made-up – it just doesn’t usually work that way,” said Landes, an associate professor in the College of Medicine Department of Psychiatry. “He has engaged with stakeholders at all levels – patients, providers, health systems, payers and policymakers. It’s really impressive.”

With about 1 in 10,000 newborns diagnosed with SMA, Arkansas will have an estimated 3-4 cases each year.

Oliver happened to be one of them in 2020. His mother, Elaine Hurst, said she and her husband Darrell were “wrecked” by the news but hopeful the proposed treatment would work.

Oliver received the single dose infusion of Zolgensma, which uses a common virus to carry the gene-editing tools that should cure him of SMA.

So far so good, Hurst said, and she is thankful for her family’s good fortune. California, they learned later, did not have the SMA screening when Oliver was born.

“Moving to Arkansas saved Ollie’s life,” she said.

“All of the newborn screening strategies that were implemented were taught to me by the Implementation Science Scholars Program. This is an extremely important program.”

— Kapil Arya, M.D.



BERD Branches Out

PARTNERSHIPS, NEW BIOSTATISTICS PROFESSOR HELP REVAMP CLINICAL AND TRANSLATIONAL SCIENCE PROGRAM



Robert E. McGehee, Ph.D.



Shelley Crary, M.D.

UAMS will begin educating more clinicians as translational researchers this year thanks to a wide-ranging collaboration.

Five clinicians signed up for UAMS' Clinical and Translational Science (CTS) Master of Science Program following a few key curriculum adjustments along with new scholarships. One of the more important changes is allowing students/clinicians the opportunity to write a grant proposal as a capstone project in place of the traditional master's thesis.

That and other moves related to the CTS program are aimed at clinicians interested in research, rather than master's-seeking undergraduates. As a CTSA Workforce Development program, it complements the KL2 Program (story, page 30) in preparing junior faculty to compete more effectively for external grants.

"The CTS program was previously administered like a post-graduate program," said Jun Ying, Ph.D., a TRI-supported professor in the UAMS Department of Biostatistics. "Our priority is to align the program with the needs of clinicians who want to conduct research and want to learn the right methods to be successful."

Ying, who joined the department in 2020, has co-led the CTS program changes with Shelley Crary, M.D., a professor in the Department of Pediatrics, based at Arkansas Children's, and Graduate School Dean Robert E. McGehee, Ph.D.

Crary is a 2009 graduate of a similar program at the University of Texas Southwestern (UTSW) Medical Center. She is excited to

see key elements of that program being replicated at UAMS/Arkansas Children's.

"It was very helpful to me as an early-career clinician to join a community of young clinical scientists in a safe space to develop research skills and presentation skills, and have mentored assistance in developing a research program leading to publication and grant funding," Crary said. "I believe these changes in the CTS master's program will help us emulate those qualities here."

Meanwhile, TRI continues to require all pilot awardees to receive biostatistics assistance as part of their research project planning. Over the last year, BERD and bio-informatics consultations have occurred jointly, providing a more comprehensive approach to study design and data collection.

She, Ying and McGehee worked with an ad hoc group of UAMS and Arkansas Children's research leaders to develop the new CTS capstone option. To help kick-start the program, five scholarships were awarded with funding from the College of

Medicine Department of Internal Medicine, the Winthrop P. Rockefeller Cancer Institute and Arkansas Children's Research Institute. The scholarships cover 20% faculty effort, providing recipients time to focus on developing their research skills.

"I am really excited about this new scholarship opportunity for our junior

"Our partnership with TRI should significantly increase the number of formally trained physician scientists."

— Robert E. McGehee, Ph.D.



Paula Roberson, Ph.D.

"We're working to coordinate our functions better so there's better interaction between informatics and biostatistics," Roberson said. "This will help facilitate having the data structure developed according to the informatics standards, and it will also facilitate the biostatistics needs for later data analysis."

faculty," McGehee said, noting that the CTS program has been available at the Graduate School for the past decade with a graduate certificate, MS and PhD degrees.

"It has been successful, although for many faculty, it was out of reach due to a lack of protected time," he said. "This new level of support tackles the issue head on. Our partnership with TRI should significantly increase the number of formally trained physician scientists."

Prior to joining UAMS, Ying was at the University of Cincinnati, where one of his signature achievements was leading the accreditation for its Master of Public Health program by the national Council on Education for Public Health.

BIOSTATISTICS PLUS

"Dr. Ying has been a great addition to our department," said Paula Roberson, Ph.D., chair of the Department of Biostatistics and director of TRI's Biostatistics, Epidemiology, Research and Design (BERD) Program.

Ying will also help coordinate new biostatistics initiatives between TRI and the Winthrop P. Rockefeller Cancer Institute, which is moving toward National Cancer Institute (NCI) designation.

In addition to expanding its role in UAMS research, BERD has been busier than ever, Roberson said.

Thanks in part to COVID-19 research opportunities, BERD responded to 163 biostatistics assistance requests through TRI's online service portal between March 1, 2020, and Feb. 28, 2021. That compares to 99 requests over the same period in the prior year.

"Our priority is to address the needs of clinicians who want to conduct research and want to learn the right methods to be successful."

— Jun Ying, Ph.D.



Pathway to Success

John Arthur, M.D., Ph.D. (pre-COVID-19)

KL2 PROGRAM HELPING ADVANCE UAMS RESEARCH

John Arthur, M.D., Ph.D., sees TRI's KL2 Mentored Research Career Development Program as a template for the successful development of translational researchers.

As TRI's associate director and director of the KL2 Program, Arthur knows firsthand how the program can benefit aspiring researchers and impact UAMS research.

TRI's KL2 Program graduates have helped lead important COVID-19 research, acquired major external funding on their first attempt, earned perfect NIH grant application scores, and have become independently funded.

"As one of the NIH K programs, the KL2 Program is really the way forward for us to advance our research structure," said Arthur, also professor and chief of the Division of Nephrology in the College of Medicine Department of Internal Medicine. "It's something I feel strongly about and I think is fundamentally important to the whole institution."

KL2 recipients must compete for the two-year awards, which provide up to \$50,000 in research funding, plus salary support and mentoring.

"I can't overstate the value of providing early-career researchers the time to conduct their research while learning the translational research skills and techniques to be successful," Arthur said.

Institutional support for the program has grown, with Arkansas Children's and the UAMS Winthrop P. Rockefeller Cancer Institute sponsoring additional KL2 recipients in recent years.

Arthur, who became program director in 2020, is joined by co-directors Elisabet Borsheim, Ph.D., a professor in the Department of Pediatrics, and Carolyn Greene, Ph.D., an associate professor in the Department of Psychiatry. All are excited about the two groups of scholars named in 2019 and 2020.

They are already making their mark.

Isabelle Racine Miousse, Ph.D., part of the 2019 cohort, received a five-year \$1.25 million NIH award that began April 1, 2021 (story page 31).

Three in the same class presented their work nationally as part of the CTSA Visiting Scholars lecture series, as well as to other national audiences: Stefanie Kennon-McGill, Ph.D., (story, page 32) Pearman Parker, Ph.D., and Racine-Miousse. Other KL2s in the class have also presented to multiple national organizations including to the American Academy of Pediatrics Virtual National Conference and Exhibition (Tara Johnson, M.D.); and to the Gerontological Society of America Conference (Jennifer Vincenzo, Ph.D., MPH).



The KL2 Program is really the way forward for us to advance our research structure.

— John Arthur, M.D., Ph.D.

The 2020 KL2s, their college and project titles are:



BRITNI AYERS, PH.D., Assistant Professor, College of Medicine, UAMS Northwest Regional Campus; "Exploring the Feasibility of a Group Prenatal Program, Kömmour Prenatal, to Reduce Maternal and Infant Health Disparities among Marshallese Pacific Islander Women."

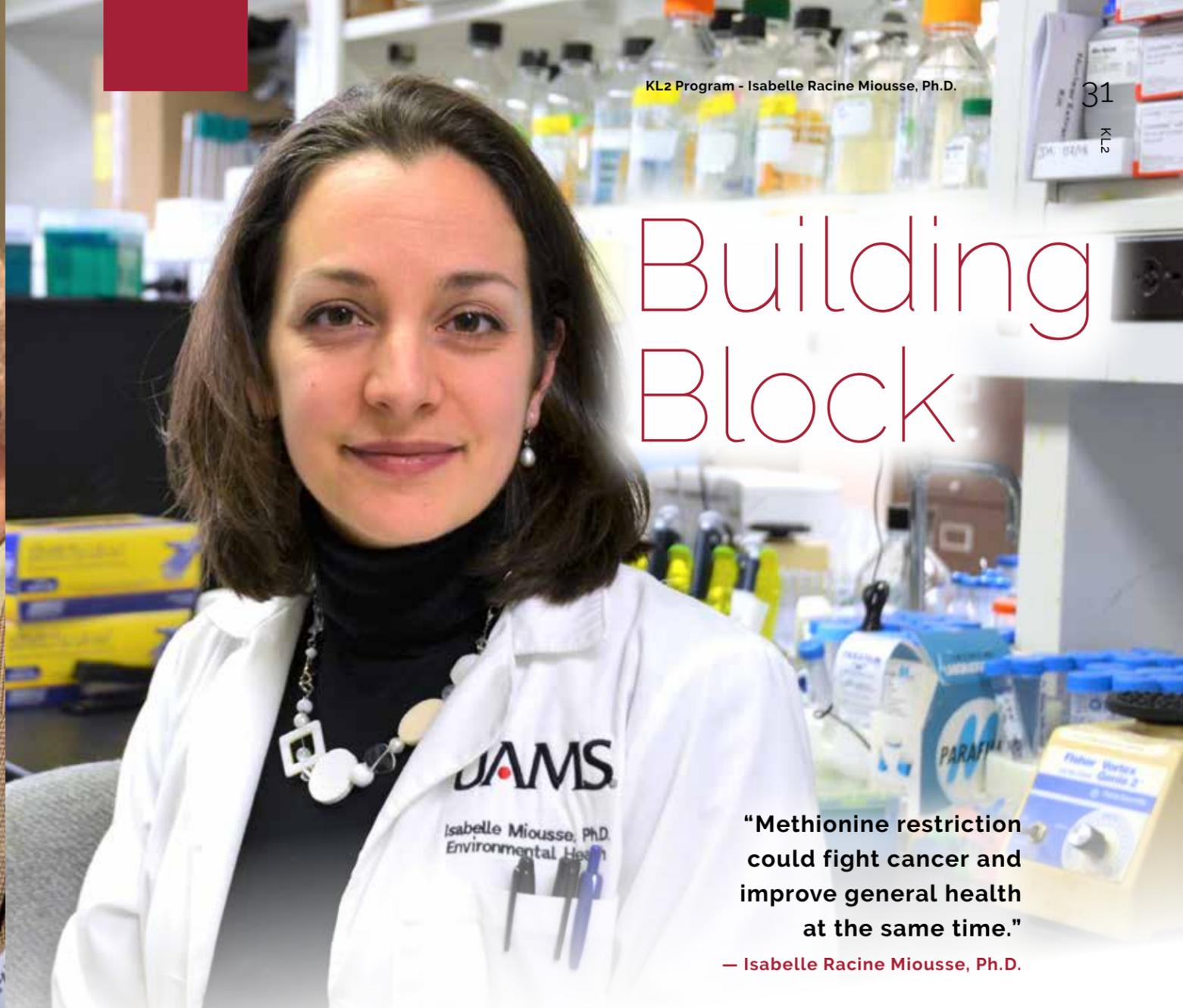


JURE BALOH, PH.D., M.H.A., Assistant Professor, Health Policy and Management, College of Public Health; "Adapting a Supervision Strategy for Sustaining Fidelity to Evidence-Based Practices in Substance Use Disorder Treatment Settings." (story, page 33)



KIMBERLY STEPHENS, PH.D., MPH, Assistant Professor, Department of Pediatrics, College of Medicine; Arkansas Children's Research Institute (ACRI) Division/Center for Applied Research and Evaluation; "Changes in Epigenetic Mechanisms and Symptom Clusters Associated with the Resolution of Persistent Pain following Spinal Cord Stimulation."

Building Block



"Methionine restriction could fight cancer and improve general health at the same time."

— Isabelle Racine Miousse, Ph.D.

KL2 WORK LEADS TO COBRE GRANT FOR CANCER STUDY

A productive two years in the KL2 program has translated into a sizeable research grant for Isabelle Racine Miousse, Ph.D., who is studying a possible treatment for melanoma.

Awarded in April, Miousse will receive \$220,000 a year for up to five years as one of four project leaders at the Arkansas Integrative Metabolic Research Center, a new NIH-funded Center of Biomedical Research Excellence (COBRE) at the University of Arkansas, Fayetteville.

The funding will support her preclinical cancer studies involving

methionine, an amino acid important for human growth and derived primarily from consuming meat. Miousse, an assistant professor in the UAMS College of Medicine Department of Biochemistry and Molecular Biology, will use animal models to test whether reducing dietary methionine can augment immunotherapy drugs used to treat melanoma patients.

"This has never been tried in combination with immune checkpoint inhibitors," Miousse said, noting that immunotherapy drugs work remarkably well, but only for

50% of melanoma patients. "So far the results of this research are very encouraging, and I am hopeful that this next phase of study will take us into clinical trials."

Unlike most cancer treatments, she notes, this one has beneficial side effects.

"Reducing methionine in the diet promotes the metabolism of fats and sugars in animal models," Miousse said. "Methionine restriction could fight cancer and improve general health at the same time."

DELIVERING KNOWLEDGE

KL2 SCHOLAR SEEKS ANSWERS FOR PREGNANT WOMEN WHO USE MARIJUANA

UAMS TRANSLATIONAL RESEARCH INSTITUTE / TRI.UAMS.EDU



Stefanie Kennon-McGill, Ph.D.

Stefanie Kennon-McGill, Ph.D., is combining her expertise as a neuroscientist and toxicologist to answer some tough questions for pregnant women about marijuana and cannabis-derived cannabinoids (CBDs).

Kennon-McGill is recruiting pregnant women in their third trimester to participate in a study that uses blood tests, DNA analysis and developmental assessments through their baby's first year.

"Many pregnant women see marijuana as a safe alternative to other drugs, but there has been little research into the effect it may have on their babies," said Kennon-McGill, an instructor in the Fay W. Boozman College of Public Health Department of Environmental and Occupational Health. Some studies estimate that the rate of pregnant women who use cannabis nearly doubled from 2009 to 2017. Blood samples from 30 mothers and

their infants will be used to measure their tetrahydrocannabinol (THC) and cannabidiol levels. The results will be compared against a control group of non-users.

Such quantitative measures differ from past studies with conflicting results that relied on self-reporting by marijuana users, Kennon-McGill said.

While her study has been delayed by the COVID-19 pandemic, she has added two research projects:

- A statewide survey on perceptions about marijuana and CBD, which received more than 800 volunteer responses from Arkansans in TRI's ARresearch registry.
- Pursuing an NIH R03 grant to understand the prevalence of marijuana and CBD use among pregnant women in Arkansas.

HIGH RISK, HIGH REWARD

KL2 USING IMPLEMENTATION SCIENCE TO IMPROVE SUBSTANCE USE TREATMENT

Eight months into his two-year KL2 project, Jure Baloh, Ph.D., had met with more than 30 leaders and counselors from Arkansas substance use treatment programs and agencies as part of an ambitious effort to improve treatment.

Substance use disorder is one of the most challenging behaviors to treat and costs the United States more than \$740 billion a year.

"Unfortunately, treatment is not always effective, and one problem is inconsistent implementation of evidence-based treatments," said Baloh, an assistant professor in the Fay W. Boozman College of Public Health, Department of Health Policy and Management.

The existing treatment system is hamstrung by funding challenges and high turnover among counselors,

he said. Working with providers, Baloh will try to adapt a successful supervision strategy developed for child welfare services. A key feature is the recurring support and feedback to help ensure counselors use proven treatment strategies.

"In addition to training, I think we'll have the most 'bang for our buck' by improving the support for counselors and helping treatment centers provide that support effectively," he said.

His mentors include Geoffrey Curran, Ph.D., director of the UAMS Center for Implementation Research (story, page 25).

Baloh hopes to continue the work by using his KL2 data to acquire funding from the NIH National Institute on Drug Abuse.

"The KL2 program has been very beneficial to my professional development. TRI brings the KL2 scholars together as a community, where we share ideas, feedback and resources."

— Jure Baloh, Ph.D.



Jure Baloh, Ph.D.

photo pre-COVID-19



"It was just the help I needed for a successful NIH application."

— Nirmala Parajuli, DVM, Ph.D.

UAMS Research Academy

INSTITUTIONAL LEADERS GET BEHIND PROGRAM TO BOOST SUCCESS

As Nirmala Parajuli, DVM, Ph.D., considered the path to her first NIH R01 grant, she discovered a new program for early-career investigators just like her: The UAMS Research Academy Scholars Program.

The concept for the UAMS Research Academy was introduced by Shuk-Mei Ho, Ph.D., vice chancellor for Research and Innovation, when she arrived at UAMS in 2019. She and her team at the Division of Research and Innovation launched the Research Academy early in 2020. Its mission is to enhance the UAMS research community, create innovative/sustainable care models, enable transformative medical breakthroughs, and elevate UAMS' overall research excellence. The academy's inaugural program, the Mentored Grant-Writing Program, began with TRI's co-sponsorship and

a strong collaboration with TRI Director Laura James, M.D.

Parajuli had the preliminary data to support her research idea, but she needed significant funding to see it through.

She participated in a free grant-writing workshop for aspiring R01 applicants, led by grant-writing expert Peg AtKisson, Ph.D., who has a national reputation for her work.

Those who attend the workshop are eligible to apply for a scholar designation, which entitles them to the nine-month Mentored Grant-Writing Program provided by the AtKisson Training Group as they prepare their R01 submissions.

Parajuli was one of six Research Academy Scholars named in 2020 through a peer-review process. In 2021 she became the first to

In 2021, Nirmala Parajuli, Ph.D., became the **first** Research Academy Scholar to receive an NIH R01 - a **five-year, \$2.46 million** grant.

receive an R01, a five-year, \$2.46 million grant.

"As an early-career investigator, I thought it was important to apply for the Research Academy Scholars training program," said Parajuli, an assistant professor in the College of Medicine Department of Pharmacology and Toxicology. "It was just the help I needed for a successful NIH application. The grant writing courses were excellent, and the mentoring was very important."

Parajuli's research aims to improve outcomes for patients who receive kidneys from deceased donors. She is testing a novel therapy that could reduce damage to kidneys during cold storage preservation.

In addition to the scholar benefits, the academy provides voucher incentives for faculty mentors who participate.



Building on Success

In 2021, the Research Academy's Mentored Grant-Writing Program added a new partner and co-sponsor – the UAMS Winthrop P. Rockefeller Cancer Institute, led by Michael Birrer, M.D., Ph.D., director and vice chancellor.

Under the Research Academy umbrella, Shuk-Mei Ho, Ph.D., is building an inclusive environment for all researchers to allow easy sharing of skills, knowledge and ideas for research and professional development. For example, the academy is sponsoring a monthly Research Antipasto that brings researchers and mentors together for informal, online networking over lunch. It also organizes the quarterly UAMS Showcase of Medical Discoveries and a variety of workshops aimed at sharpening the skills and insights of all UAMS researchers.

In the coming year, the Research Academy will provide faculty recognition awards for innovation, impact and service.

"We want to actually create a family environment," Ho said. "We are a group of learning communities; we are a group of highly collaborative people who are willing to share and help each other advance."

In addition to Parajuli, the Research Academy Scholars named in April 2020, are:



JIN-RAN CHEN, PH.D.
Associate Professor,
Department of Pediatrics,
College of Medicine



BRENDAN FRETT, PH.D.
Assistant Professor,
Department of
Pharmaceutical Sciences,
College of Pharmacy



SARA JONES, PH.D., APRN
Assistant Professor,
Department of Nursing
Science, College of Nursing



MOHAMMED ORLOFF, PH.D.
Associate Professor,
Department of Epidemiology,
College of Public Health



KRISTIN ZORN, M.D.
Professor, Department of
Obstetrics and Gynecology,
Gynecologic Oncology,
College of Medicine

The UAMS Research Academy, launched in 2020 by the Division of Research and Innovation, includes the Mentored Grant-Writing Program co-sponsored by TRI and the Winthrop P. Rockefeller Cancer Institute.

Shuk-Mei Ho, Ph.D., vice chancellor for Research and Innovation



BIOMEDICAL RESEARCH CENTER

Seeding Rural Research

2020 PILOT AWARDEES USING BIOMEDICAL INFORMATICS AND IMPLEMENTATION SCIENCE

One of TRI's most important rural health initiatives is its Pilot Award Program. With its focus on improving rural health, TRI has invested more than \$742,923 in pilot grants since the 2019 start of TRI's five years of CTSA funding.

Researchers at UAMS and its hub partners Arkansas Children's Research Institute and Central Arkansas Veterans Healthcare System are invited to apply for pilot awards twice a year. The focus of these one-year, \$50,000 grants rotates among four themes: rural and underrepresented populations; translational biomedical informatics approaches to rural health; implementation science; and community/stakeholder collaborations.

TRI also provides inter-institutional pilot awards, offered annually as part of a multi-site consortium of CTSA institutions in states with similar populations and health challenges. Each collaborating institution provides \$25,000 for its researcher's contributions.

Pilot applicants must produce a short video explaining their project in plain language, and awardees are selected by a study section of UAMS and external faculty reviewers, as well as community reviewers. The videos are available at TRI.uams.edu, in the Pilot Awards section.

In 2020, TRI invited applications for two rounds of pilot funding focused on translational biomedical informatics and implementation science. Each round resulted in four pilot awards.

The pilots awarded in 2019 and 2020 were affected by COVID-19, with some delayed more than others based on how much the study design was affected by COVID barriers. "Despite the setbacks, our awardees are showing a lot of resilience to see their projects through," said Donald Mock, M.D., Ph.D., director of the Pilot Award Program.

For example, when pandemic restrictions forced Sara Landes, Ph.D., a 2019 awardee, to abandon in-person visits with community pharmacists across Arkansas, she adapted with the help of Zoom video conferencing (story, page 37).



Donald Mock, M.D., Ph.D.

UAMS faculty, including at Arkansas Children's and CAVHS, are invited to apply for themed pilot research grants twice a year.

THE FOUR RECIPIENTS OF THE TRANSLATIONAL BIOMEDICAL INFORMATICS-FOCUSED PILOTS WERE:

HARI ESWARAN, PH.D., Professor, Department of Obstetrics & Gynecology; Identification of Pregnant Women at High Risk of Maternal Morbidity

SE-RAN JUN, PH.D., Assistant Professor, Department of Biomedical Informatics; Using Genomics to Track Carbapenem-Resistant Enterobacteriaceae (CRE) Linking Rural and Urban Health in Arkansas

SACHA MCBAIN, PH.D., Assistant Professor, Department of Psychiatry; Digital PTSD Screening and Intervention to Meet Rural Needs

TUHIN VIRMANI, M.D., PH.D., Associate Professor, Department of Neurology; Utilization of a Neuroinformatics Research Platform (ARIES) to Develop Quantitative Tools for Clinical Assessment and Treatment of Parkinson's Disease Patients in Rural Arkansas

THE FOUR UAMS RESEARCHERS RECEIVING IMPLEMENTATION SCIENCE-BASED PILOTS WERE:

EMILY KOCUREK, M.D., Assistant Professor, Division of Pulmonary & Critical Care Medicine, Department of Medicine, College of 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, College of Medicine; Chief, Child Neurology (Interim), Arkansas Children's Hospital and UAMS; "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., Assistant Professor, Department of Family and Preventive Medicine, Research and Evaluation Division, and Department of Pediatrics, Developmental Nutrition, College of Medicine; Department of Health Behavior and Health Education, UAMS College of Public Health; "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, Pediatric Neurology, Department of Pediatrics, College of Medicine; "Psychological Health in Children with Duchenne and Becker Muscular Dystrophy."



"Thanks to the TRI pilot award, I was able to collaborate with community pharmacists across Arkansas to find a potential mental health intervention."

— Sara Landes, Ph.D.

Rural Mental Health

RESEARCHER, COMMUNITY PHARMACISTS SEEK TO IMPROVE MENTAL HEALTH IN RURAL ARKANSAS

Health care providers can be hard to find in rural Arkansas, with one exception — community pharmacists.

There are at least two pharmacists in all 75 counties, and patients see their pharmacist an average 35 times a year. This caught the attention of UAMS' Sara Landes, Ph.D., an associate professor in the College of Medicine Department of Psychiatry, who was looking for ways to address Arkansas' dismal mental health ranking. The state ranked 50th (the worst) in 2018 for poor mental health days, and rural Arkansans fared even worse.

Community pharmacists, Landes thought, might offer a way to help. She used a one-year TRI pilot grant to test the waters. Her grant collaborators were Geoffrey

Curran, Ph.D., and Megan Smith, Pharm.D. Curran is director of the Center for Implementation Research and professor in the colleges of Pharmacy and Medicine, and Smith is an assistant professor in the College of Pharmacy.

With the insight of 17 community pharmacists across the state, Landes found a possible path forward. Of the many interventions discussed, they liked the idea of "progress monitoring," which involves using an assessment tool or survey to monitor patients' progress with their medications. It could be used, for example, with anti-depressant medications to track changes in depression.

A stakeholder meeting helped solidify the progress monitoring

plans. The group agreed to pursue the intervention with the additional collaboration of primary care providers and to include mental health crisis training for pharmacists.

"In a collaborative agreement with a patient's doctor, the pharmacist could potentially change a prescription based on progress monitoring," Landes said. "This could be critical if the patient lives in a rural area, say 30 miles from their doctor."

In April 2021, Landes was preparing a manuscript about her findings as well as an application for an NIH R34 grant to pilot implementation of the progress monitoring plan.

"In 2020 we have to understand that everybody who is a minority is not low socioeconomic status or illiterate or underserved."

— Quincy Byrdsong, Ed.D.

Research and Race

REGULATORY CONFERENCE PUTS FOCUS ON DIVERSITY, EQUITY AND INCLUSION



Quincy Byrdsong, Ed.D.

TRI's first UAMS Research Regulatory Conference in October 2020 struck a chord with many of its 169 attendees.

In keeping with the theme, Connecting while Complying, the virtual conference featured Quincy Byrdsong, Ed.D., vice provost for Health Affairs at Lipscomb University in Nashville, Tenn. His keynote address, "Achieving Excellence in Research: Moving from Diversity and Inclusion to Equity and Justice," inspired numerous positive comments in a follow-up attendance survey.

"Dr. Byrdsong was excellent!!" wrote one attendee. "His presentation was most timely and necessary. His inclusion but no equality, equity, justice explanation was one of the best that I have ever heard."

His presentation, "brought up some really good points that I had not thought about," wrote another attendee.

"In the past I have heard people use the word diversity to mean minority,"

Byrdsong said, as he expanded on definitions of diversity, equality, equity and justice. "Diversity just means how we are different."

Christopher Trudeau, J.D., the conference's leader and director of TRI's Regulatory Knowledge and Support function, said he loved Byrdsong's description of America as a salad, rather than a melting pot. A salad's ingredients, Byrdsong told the audience, maintain their own identity as they contribute to the salad.

To illustrate the definitions of equality, equity and justice, he showed three images of three people of different heights watching a soccer game from behind a wood fence. "Equality" showed each standing on equal-sized boxes, with the shortest still unable to see. In "Equity," all can see because the shortest has two boxes and the tallest has no box. It represents the original concept of affirmative action, Byrdsong said,

with additional supports to help someone succeed.

"Justice" shows the three people behind a chain-link fence. "Now the barrier that caused the inequity has been addressed. That's what justice is," he said.

To overcome the challenge of recruiting minorities as research participants, he said, it is critical to understand the makeup of today's minority populations.

"In 2020 we have to understand that everybody who is a minority is not low socioeconomic status or illiterate or underserved," he said.

Ensuring equity in participant recruitment starts with ensuring that all stakeholders, including health care providers and researchers, understand the importance of equity and justice.

"We need to plant these seeds in students who will be researchers, right now," he said.

"My grand vision is for every researcher in the country to use this tool to create clearer consent forms that participants can understand." — Christopher Trudeau, J.D.

Write Aide

'CONSENT NAVIGATOR' AIMS TO HELP RESEARCHERS IMPROVE READABILITY OF CONSENT DOCUMENTS

TRI's Christopher Trudeau, J.D., led the launch of an ambitious project in 2020 to greatly simplify the research participant consenting process.

Trudeau, the TRI-supported Center for Health Literacy and the College of Medicine's Department of Biomedical Informatics are transforming the already innovative plain language consent template into an even better tool – the Consent Navigator.

"Many researchers use the plain language template that we created with the Institutional Review Board," said Trudeau, who directs TRI's Regulatory Knowledge and Support function, a role that puts him at the intersection of community, health literacy, and the regulatory compliance aspects of research. "That gave us the foundation to begin work on the Consent Navigator."

When the prototype is ready later this year, the Consent Navigator will walk users through a series of steps that help them produce a clear, compliant consent document.

"The issue we're addressing is that researchers are not trained to write in plain language, so the reading level usually goes up several grades when they fill in the study specific parts of the current template," Trudeau said. The Consent Navigator will help remedy that issue.

The Consent Navigator team built the underlying logic of the tool using the Informed Consent Ontology developed by other institutions. But the team took it a step further by integrating the newly added

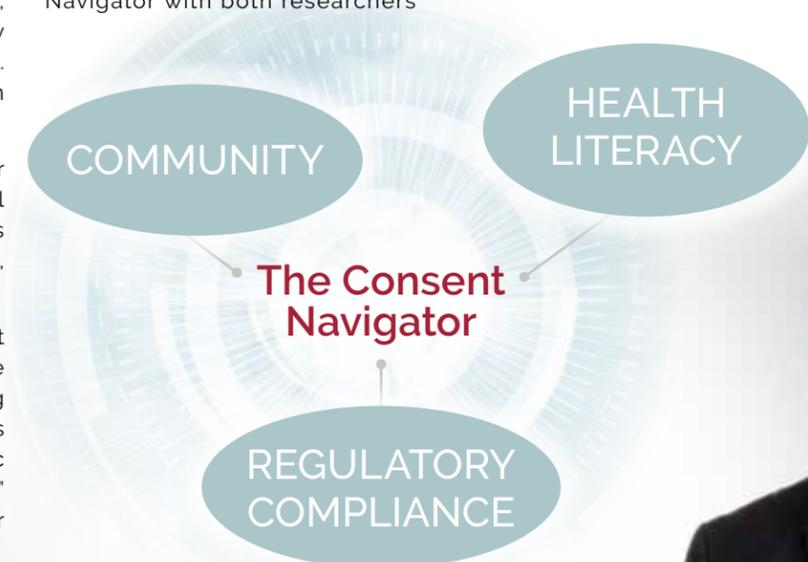
requirements in the Revised Common Rule, ethics standards for U.S. government-funded research that involves human participants.

"In the end, we want the Navigator to send researchers down the path they need to ensure compliance with the Revised Common Rule, while also producing clear, consistent end products that are more easily understandable by research participants, no matter their health literacy level," Trudeau said.

User testing comes next. "As we move into the next phase later this year, we will test both the Consent Navigator's user interface and the consent form generated from the Navigator with both researchers

and community members. We want to create something that helps everyone, both researchers creating consent forms and potential research participants," said Trudeau.

Trudeau's collaborators on the project include Jonathan Bona, Ph.D., assistant professor, and Joseph Utecht in the Department of Biomedical Informatics; Alison Caballero, MPH, director, and Jennifer Gan, MBA, faculty instructor, at the Center for Health Literacy; and Aaron Kemp, research project manager in the Neurocognitive Dynamics Laboratory at the UAMS Psychiatric Research Institute.



Christopher Trudeau, J.D.

Rural Evolution



REGIONAL
CAMPUSES
MAKE
RESEARCH
NETWORK
POSSIBLE

By May 2021, the RRN was assisting **nine** studies, with an additional **five** studies pending.



Michael J. Birrer, M.D., Ph.D.

"The Rural Research Network is innovative, collaborative and practical, enhancing the utilization of an existing resource such as UAMS Regional Campuses to expand research across the state."

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

When UAMS needed remnant blood samples for the Arkansas Coronavirus Antibodies Seroprevalence Survey last year, research leaders had the luxury of tapping a new resource for help: the UAMS Rural Research Network (RRN).

Established in January 2020, the RRN increases researchers' access to communities across Arkansas through eight UAMS Regional Campuses.

The RRN was started with support from TRI; UAMS Office of the Provost, led by Stephanie Gardner, Ed.D., Pharm.D., also chief academic officer and chief strategist; the UAMS Office of Community Health & Research, led by Pearl McElfish, Ph.D., MBA; Regional Programs, led by Amy Wenger, vice chancellor; and the Winthrop P. Rockefeller Cancer Institute, led by Michael J. Birrer, M.D., Ph.D., vice chancellor.

"This is an exciting intra-institutional partnership because it presents new research and community engagement opportunities that are more inclusive of rural Arkansas," Birrer said. "Having this network available is critical as we seek National Cancer Institute Designation."

By May 2021, the RRN was assisting nine studies, with an additional five studies pending.

The RRN's first project is a five-year, \$4.13 million diabetes education study led by McElfish and funded by the Patient

Centered Outcomes Research Institute. It started in early 2020 and aims to recruit 1,200 Arkansans. More than 200 participants had joined the study by May 2021.

The RRN delivered key support at a critical time in the statewide seroprevalence study, supplementing blood collections from volunteers and UAMS clinics in Little Rock. The Family Medical Centers within the Regional Campuses at Fayetteville, Fort Smith and Pine Bluff contributed more than 1,300 remnant samples.

In 2021, the RRN began assisting the \$1.3 million NCI-funded Disparities in Immune Response to SARS-CoV-2 in Arkansas (DISCOVAR) study, which aims to recruit 600 adults across the state. The study is led by Wendy Nembhard, Ph.D., chair of the Department of Epidemiology in the Fay W. Boozman College of Public Health.

"Over the last year, the Rural Research Network has positioned UAMS to deliver on a key aim of the CTSA – providing research participation opportunities to rural, underrepresented populations," said TRI Director Laura James, M.D.

Beyond Race

NEW PARTNERSHIP AIMS TO INCREASE RESEARCH DIVERSITY

TRI leaders hope a partnership with the UAMS Division for Diversity, Equity and Inclusion (DDEI) can help foster an environment that leads to more underrepresented faculty researchers.

"The aim is to help develop researchers from groups that are less likely to be leading UAMS research studies," said Beatrice Boateng, Ph.D., TRI director of Evaluation and Continuous Improvement, and professor and assistant dean for Faculty Assessment and Evaluation in the College of Medicine. "Our efforts go beyond race to include other groups that are underrepresented in research."

TRI, as part of a broader UAMS effort, has a goal for racial minorities and women to constitute 10% and 50% of faculty, respectively, by 2024.

The latest efforts are in response to TRI-sponsored surveys in 2016 and 2018 to assess the institutional climate on diversity and inclusion and how it impacts the UAMS academic workforce. The initial survey found that mentoring and other support for translational research were important for for underrepresented minority (URM) faculty in deciding whether to stay at UAMS. A follow-up survey to URM faculty in 2018 inquired about barriers to conducting research. A lack of support, as well as feeling isolated and lacking confidence in their grantsmanship were the top three barriers identified.

"It was clear in their survey responses that research support means mentoring, better access to resources and better access to funding," Boateng said.

In response, TRI and DDEI launched a mini-grant program - \$10,000 each for one year - to kick-start research projects proposed by underrepresented faculty.

Two of the six underrepresented faculty who applied were selected for mini-grants in 2020. They are:



■ **TIFFANY WEINKOPFF, PH.D.**, Assistant Professor, College of Medicine Department of Microbiology and Immunology
Project: Endothelial Cells Promote Immune Cell Entry into Sites of Inflammation



■ **ANALIZ RODRIGUEZ, M.D., PH.D.**, Director, Neuro-Oncology; Assistant Professor, College of Medicine Department of Neurosurgery
Project: Patient Derived Melanoma Brain Metastasis Organoids for Immunotherapy

In 2021, TRI and DDEI built on the mini-grant program with the launch of the STARS Program, which is focused on developing practical research skills and grantsmanship, as well as addressing isolation issues for URM faculty.

Tiffany Haynes, Ph.D., Named to CTSA Diversity, Equity, and Inclusion Task Force

Tiffany Haynes, Ph.D., associate director of TRI's Community Engagement Core, was named in April 2021 to the CTSA Program Steering Committee's Diversity, Equity, and Inclusion (DEI) Task Force.

Haynes, nominated by TRI Director Laura James, M.D., is also a former TRI KL2 Mentored Research Career Development Program scholar. As part of the Community Engagement team, Haynes has led the development of a new Community-Based Participatory Research (CBPR) Scholars Program, which partners community organization leaders with academic researchers to teach the basics of CBPR and CBPR grant-writing.

"It is exciting to see how Dr. Haynes' hard work is contributing to a paradigm shift within research programs at UAMS that will align with the institution's mission to establish a better state of health for all Arkansans," James said. "Her extensive background and expertise will be a great service to the DEI Task Force and the CTSA consortium's mission."

Haynes, an assistant professor in the Fay W. Boozman College of Public Health, has devoted her career to addressing racial disparities in mental health service use. She has a specific interest in the use of faith-based interventions to increase access to care in rural African-American communities.



Tiffany Haynes, Ph.D., at a TRI planning retreat (pre-COVID-19).

NCATS-CTSA Grant Supplements Help UAMS Researchers



"I'm really happy for this research opportunity."

— Chenghui Li, Ph.D.

A NCATS Re-Entry Research Supplement grant came at an opportune time for UAMS' Chenghui Li, Ph.D.

The associate professor in the College of Pharmacy was ready to restart her research career after being sidelined for two years due to unplanned life events.

She secured a two-year, \$221,000 grant that will support her research into if and why many breast cancer patients in Arkansas are not receiving or adhering to potentially life-saving endocrine therapy. She notes that breast cancer mortality in Arkansas exceeds the national average (20.6 deaths per 100,000 compared to 19.9 nationally), especially among Black women, at 27.9 deaths per 100,000 compared to 19.5 for white women.

"I'm really happy for this research opportunity," Li said. "It's an important research question because there is a lot of literature showing this targeted hormonal therapy can reduce the mortality rate for breast cancer patients if taken consistently."

The study will use the Arkansas All Payer Claims Database and Arkansas Cancer Registry database to assess the disparity of endocrine therapy use in Arkansas women with stage 1-3 estrogen responsive tumors. Patients and providers will also be interviewed to determine barriers to endocrine therapy.

NCATS SUPPORTS TELEHEALTH STUDY OF RURAL PREGNANT WOMEN

UAMS researchers are using a 2020 NCATS supplement of \$228,000 to test telehealth as a way to improve Arkansas' death rate among pregnant women, which ranks fifth nationally.

The one-year grant is a supplement to TRI's 2019 CTSA funding.

Led by Hari Eswaran, Ph.D., a professor in the College of Medicine Department of Obstetrics and Gynecology, the research team is focusing on remote health monitoring of pregnant women in rural areas with few health providers or resources. The goal is to determine if remote health monitoring can improve care for rural pregnant women with high blood pressure.

The team is recruiting 50 pregnant women to test whether patient care can be improved using telemedicine with UAMS maternal-fetal specialists, remote health monitoring, and the UAMS Institute for Digital Health & Innovation Call Center.



Hari Eswaran, Ph.D.



HSIE co-directors Nancy Rusch, Ph.D., and Nancy Gray, Ph.D. (pre-COVID-19)

The entrepreneurship training program is conducted in partnership with the University of Arkansas Sam M. Walton College of Business.

EDITOR'S NOTE:

We are saddened to report that Nancy Gray, Ph.D., died unexpectedly as this publication was in production. She was a member of TRI's Leadership Council, president of BioVentures, and one of UAMS' brightest lights. We all mourn her passing.

Embedding Entrepreneurship

NEW TRI TRAINING PROGRAM GAINS FOOTING AT UAMS

UAMS' Nancy Rusch, Ph.D., Nancy Gray, Ph.D., and Kevin Sexton, M.D., believe innovations and discoveries deserve more than a manuscript.

"We don't want our research findings collecting dust on a shelf," said Rusch, executive associate dean for Research in the College of Medicine and chair of the Department of Pharmacology and Toxicology. "Discoveries should be applied in some way to help improve health and health care."

Rusch, Gray and Sexton are co-directors of TRI's TL1 Health Sciences Innovation and Entrepreneurship (HSIE) Postdoctoral Training Program. The innovative two-year program ensures that academic researchers are equipped with the

entrepreneurship skills required to move their innovations into everyday practice.

Established in 2019, the HSIE Program provides two years of training to promising postdoctoral fellows selected through a competitive application process.

The unique program is conducted in partnership with the University of Arkansas, Fayetteville, Sam M. Walton College of Business. Four scholars selected in 2019 are wrapping up their two-year stints. Four others began July 1, 2020, and another six have been selected to begin July 1, 2021.

The program holds promise for making the scholars more successful, strengthening UAMS' research enterprise and ultimately improving health outcomes. TRI's External Advisory Committee, which includes CTSA

institution leaders from across the United States, recently praised the program as innovative.

"What excites me is that most of our postdocs will take faculty positions here, so we are embedding entrepreneurship in departments across UAMS and at Arkansas Children's Research Institute," Rusch said.

Whether they ever start their own business, Gray said, the true value of the program is helping researchers understand how their work can translate into a meaningful product that helps patients.

"If you're doing research to benefit patients, you have to think about the commercial path because that's the No. 1 way to deliver to patients," said Gray, also a professor in the Department of Pharmacology and Toxicology.



Emilie Darrigues, Ph.D.

Her project focuses on improving circulating-tumor DNA detection in glioblastoma liquid biopsies and devising therapeutic nanoparticles as a strategy to specifically target glioblastoma.



Shana Owens, Ph.D.

She is working to develop an improved gammaherpesvirus (GHV) vaccine.



John Sherrill, MPH, Ph.D.

He is working to design a customized 3D printed stabilizer for orthopaedic applications.



Zachary Waldrip, Ph.D.

His research is focused on targeting specific kinases to improve transplant immunotherapy.

HSIE Scholar's Vascular Graft Invention Wins Startup Funds

Astha Malhotra, Ph.D., a postdoctoral fellow in the College of Medicine Department of Internal Medicine, joined the inaugural Health Sciences Innovation and Entrepreneurship (HSIE) class with plans for a novel vascular graft, hoping to reduce vascular surgery-associated complications and health care costs.

She hopes to use her proprietary technology to offer surgeons an easily storable, ready-to-use, conformable, and infection-resistant graft with better mechanical properties than current market options. The technology also could lead to other surgical product opportunities. She is preparing a patent application on the technology used in the graft with Nancy Gray, Ph.D., president of BioVentures and co-director of the HSIE Postdoctoral Scholars Program.

Malhotra and her University of Arkansas, Fayetteville student team, ReGen Technologies, received \$15,000 for second place in the 2021 Arkansas Governor's Cup Collegiate Business Plan Competition. She also won \$8,000 in a second place finish at the international Stu Clark New Venture Championships: Graduate Edition at the University of Manitoba in Canada. She had previously won a \$2,000 seed funding competition and is a finalist in the 2021 Heartland Challenge Global Collegiate Business Startup Competition. She was selected as one of three 2021 Science Venture Studio fellows by the University of Arkansas, Fayetteville Office of Entrepreneurship and Innovation.



Astha Malhotra, Ph.D.

Malhotra demonstrates that the vascular graft material is conformable and maintains its integrity, even when twisted.



Precaution Leads to Device That Could Benefit Rural Populations



Kevin Sexton, M.D.

The ClipBeat device will allow health care professionals to listen to a patient's heart during a virtual visit.

UAMS surgeon Kevin Sexton, M.D., recalled taping a stethoscope to a smartphone last year to help conduct a socially-distant exam.

"That was version one, our prototype," said Sexton, co-director of TRI's Health Sciences Innovation and Entrepreneurship (HSIE) Postdoctoral Scholars Program. "To avoid unnecessary staff exposure, we were trying to find ways to make examining patients easier with disposable technology. This led us to design a disposable stethoscope that was mechanical and could work with any smartphone or tablet with a microphone."

By spring 2021, the safety precaution had evolved into a product called ClipBeat™,

which was the centerpiece of the capstone marketing and commercialization project for three HSIE scholars: Melody Greer, Ph.D., Samir Jenkins, Ph.D., and Aaron Storey, Ph.D. The ClipBeat™ team, which also included a UA Little Rock MBA student, was a finalist in the 2021 Arkansas Governor's Cup Collegiate Business Plan Competition in April 2021.

The device was developed by a team that includes Sexton, Joseph Sanford, M.D., director of the UAMS Institute for Digital Health and Innovation (IDHI), Adria Abella VillaFranca, a mechanical engineer at IDHI, and Nikiya Simpson, an instructor in the Fay W. Boozman College of Public Health and an information systems developer

who helped develop the software application.

The inexpensive plastic device can attach to any cell phone and amplify heart and lung sounds for health care providers listening at a distance. The sound can be transmitted using cellular technology and does not require a smartphone or broadband.

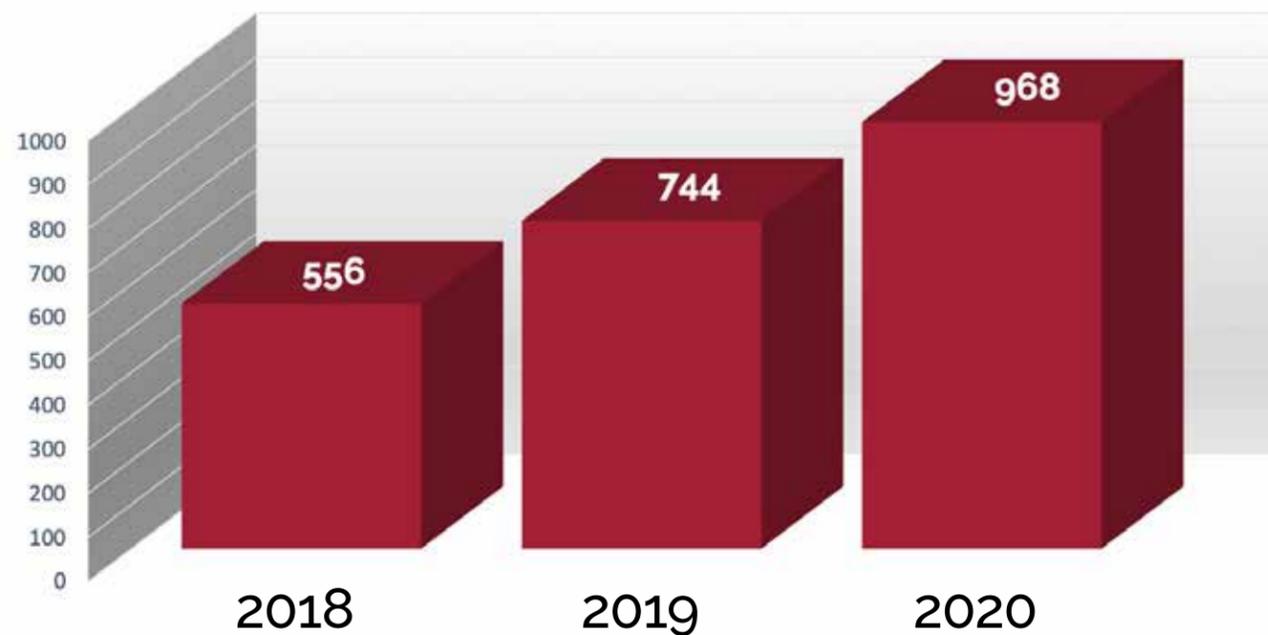
"Innovation is lacking for resource constrained environments, because most companies develop technology for the largest market-customers in urban centers," Sexton said. "ClipBeat™ helps address this issue as a product that can be used anywhere with cell phone service, and can be produced for pennies per device."

Research Services

BY THE NUMBERS

TRI offers easy access to research resources and services with its online Request Services Portal. The portal, at TRI.uams.edu, is available to all UAMS-affiliated researchers, which includes Arkansas Children's and the Central Arkansas Veterans Healthcare System.

REQUESTS FOR SERVICE



904 people from 9 institutions participated in TRI seminars and workshops.

50 people received mentorship training (Mentoring Matters Annual Workshop)

TOP THREE REQUESTS:

Request Category	Count
Help with research study protocol development	177
Access to Arkansas Clinical Data Repository (AR-CDR)	146
Biostatistics (study design) support	111

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A large, stylized virus particle graphic is centered on the page. It consists of a circular body with several smaller circles inside, and numerous spike-like protrusions extending from the outer edge. The graphic is rendered in a dark red color against a lighter red background. There are also smaller, similar virus particle graphics in the corners of the page.

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