

THE TRIBUNE

JUNE - JULY 2022

Pilot Success

NIH Funds Rapid Genomic Testing of Antibiotic-Resistant Infections Study



Se-Ran Jun, Ph.D., discusses her TRI pilot award-supported findings with Fred Prior, Ph.D., distinguished professor and chair of the Department of Biomedical Informatics, at TRI Research Day in April.

A UAMS study that began with a Translational Research Institute (TRI) Pilot Award is developing real-time and accurate genomic methods that can be used routinely to deliver life-saving information to doctors treating antibiotic-resistant infections.

Backed by a two-year, \$418,000 National Institutes of Health (NIH) National Institute of Allergy and Infectious Diseases (NIAID) grant, Principal Investigator Se-Ran Jun, Ph.D., says the now-affordable real-time sequencing technology can be harnessed for everyday use in hospitals.

Continued on page 2



Dear Colleagues,

We are always excited to hear when the seeds we help plant grow into extramurally funded translational research projects.

In this issue of the TRIBUNE, we highlight such a project led by Dr. Se-Ran Jun, an assistant professor in the Department of Biomedical Informatics. Dr. Jun received a TRI pilot grant, which helped her develop the data she needed to secure a \$418,000 NIH/NIAID grant. The R21 will support her

efforts to develop real-time genomic methods that can be used in everyday practice by hospitals treating antibiotic-resistant infections. It is a fantastic example of translational research.

We also include a couple of big program announcements. First, we named nine new KL2 scholars for the 2022-2023 cycle, our largest-ever class. This expanded class was made possible thanks to funding support from the College of Medicine, Winthrop P. Rockefeller Cancer Institute, Arkansas Children's Research Institute and Central Arkansas Veterans

Healthcare System. Our latest KL2 cohort counts among a growing list of interinstitutional partnerships that are strengthening our vital translational research programs.

We also selected the first recipient of our Team Science Champion Award, Dr. Tuhin Virmani. He and his team are conducting consequential research into the potential for remote monitoring of Parkinson's disease patients who live in rural Arkansas. Dr. Virmani used data from a TRI pilot grant to develop the successful team science application. Congratulations!

Sincerely,

A handwritten signature in black ink, appearing to read "Laura James, M.D." with a stylized flourish at the end.

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

Pilot Success (continued from page 1)



In addition to helping doctors optimize antibiotic therapy, genome-based information could help hospitals identify and prevent hospital-acquired infections and their transmission.

“Current genomic methods do not have fast enough turnaround times and accuracy to serve as an effective epidemiology tool,” said Jun, an assistant professor of the Department of Biomedical Informatics in the College of Medicine. “Establishing an accurate real-time genomic pathogen surveillance system for

routine use would be revolutionary in clinical medicine and help make hospitals safer places.”

Jun is focusing her study on a group of six highly virulent and antibiotic-resistant bacterial pathogens: *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacter* species. The group is known by the acronym ESKAPE.

Antibiotic resistance occurs when bacterial and fungal infections develop the ability to defeat the drugs used to kill them. According to the Centers for Disease Control and Prevention (CDC), it is a top threat to the public’s health and a priority across the globe. In the United States alone, it causes more than 2.8 million infections and 35,000 deaths per year. Immunocompromised cancer patients are especially at risk of acquiring antibiotic-resistant infections.

Jun’s research builds on data she gathered using a translational biomedical informatics-focused pilot grant from TRI.

“This is a great example of translational biomedical informatics — leveraging the latest sequencing technology for a critical application in patient care,” said Laura James, M.D., TRI director and UAMS associate vice chancellor for Clinical and Translational Research.

If she is able to confirm her hypothesis, Jun said the genomic surveillance system would accurately and swiftly identify pathogen and transmission routes. It would also measure how vulnerable microbes are to antibiotics along with clinical microbiology laboratory tests.

“I am so excited because the output we generate could be translated directly into medical practice,” she said.

Jun, a data scientist whose doctorate is in mathematics, is using her expertise of real-time sequencing, genomics, microbiomics and computer science to conduct the study.

TRI Pilot Award Program

Researchers at UAMS and its hub partners, Arkansas Children’s 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; implementation science; and community/stakeholder collaborations.

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.

Learn more at TRI.uams.edu, and stay tuned for future requests for applications.



Join the Summer Writing Challenge!

Could this be a cure for writer’s block? Join the Summer 2022 Writing Challenge for friendly competition and motivation to write and submit your manuscripts! The challenge runs through August.

Last year’s competition boasted 85 separate manuscripts submitted. This year’s competition hopes to bring additional submissions. You are eligible to compete if you received any research project support from TRI.

The challenge will conclude with a TRI-hosted mixer with food, fun and announcements of this year’s prizewinners at both the Little Rock and Northwest Arkansas campuses.

Join the fun! Visit TRI.uams.edu to learn more and access our writing resources.

Questions? Contact Chaz England, CEngland@uams.edu.

UAMS' Tuhin Virmani, M.D., Ph.D., Wins \$75,000 TRI Team Science Champion Award

The Translational Research Institute (TRI) recently announced Tuhin Virmani, M.D., Ph.D., as the recipient of its first \$75,000 Team Science Champion Award. The award will allow Virmani and his team to further investigate the potential benefit for remote assessment of people with Parkinson's disease.

Virmani is an associate professor in the College of Medicine Department of Neurology, director of the Movement Disorders program, and director of the Huntington's Disease Society of America Center of Excellence at the University of Arkansas for Medical Sciences (UAMS). He began the remote assessment research in 2021 with a TRI pilot grant.

Virmani, selected from five applicants, aims to discern the quality of care that remote assessments offer to Parkinson's patients in rural communities. By incorporating UAMS Regional Programs and the UAMS Rural Research Network, the study aims to determine which patients may benefit from utilizing care facilities closer to home to obtain specialist health care.

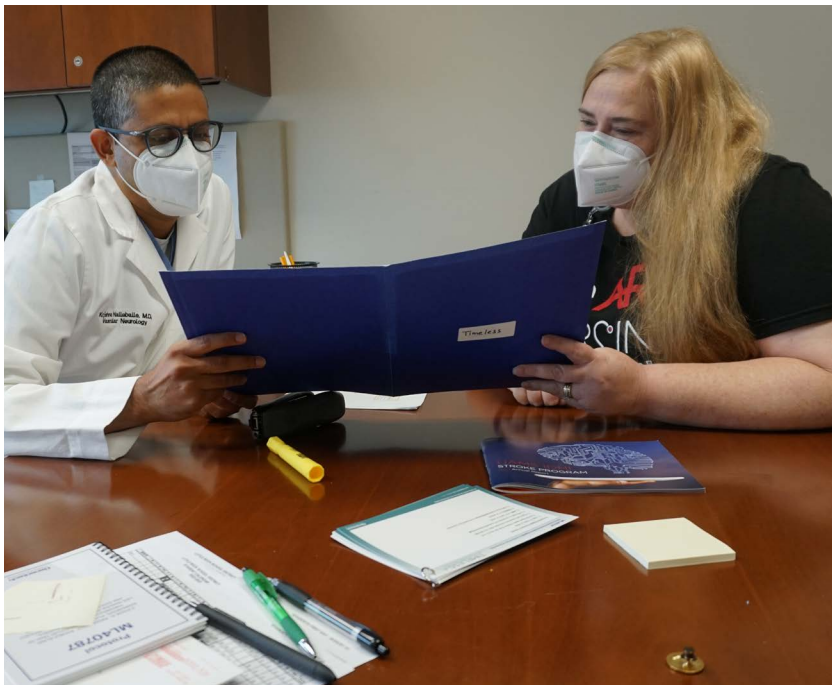
The grant will also fund the team's efforts to strengthen its biomedical informatics tools that analyze voice and handwriting samples collected remotely.

The full story is at TRI.uams.edu.



Members of the research team include, clockwise from top left, Anu Iyer, Fred Prior, Ph.D., Yasir Rahmatallah, Ph.D., Linda Larson-Prior, Ph.D., Tuhin Virmani, M.D., Ph.D., and Aaron Kemp, MBA.

TRI Study of the Month



Krishna Nalleballe, M.D., consults with TRI Research Coordinator Susan Smith Dodson, MBA, B.S.N., RN.

- **UAMS Principal Investigator:** Krishna Nalleballe, M.D., assistant professor, Stroke Care, Department of Neurology, College of Medicine
- **Summary:** A double-blind, randomized phase III trial to evaluate the efficacy and safety of Tenecteplase (a blood clot dissolving agent) compared with placebo in participants with acute ischemic stroke (AIS).
- **Significance:** Stroke is a major cause of mortality and morbidity and is the leading cause of long-term disability in the U.S. Tenecteplase, already approved for heart attacks, is a modified version of alteplase, currently the only FDA-approved thrombolytic for AIS. Tenecteplase may be a better thrombolytic agent for AIS, based on the available evidence.
- **TRI Services:** Medicare coverage analysis, study budget development, IRB submission and regulatory startup, oversight of enrollment startup, and research nurse/coordinator services and post-award financial administration.
- **Sponsor:** Genentech, Inc.

TRI Announces Nine KL2 Scholars for 2022-2024

The Translational Research Institute's (TRI) KL2 Mentored Research Career Development Scholars Program announced nine new scholars for 2022-2024, its largest-ever class.

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

Additional scholars were selected this year thanks to funding support from the College of Medicine, Winthrop P. Rockefeller Cancer Institute, Arkansas Children's Research Institute and Central Arkansas Veterans Healthcare System.

The new scholars, their project titles and mentors are:



Jennifer Andersen, Ph.D., assistant professor, Northwest Regional Campus, Office of Community Health & Research

"Feasibility and Acceptability of a Remote Glucose Monitoring Program for Pregnant Marshallese Women whose Pregnancies are Complicated by Diabetes"

Primary Mentor: Hari Eswaran, Ph.D.



Timothy "Cody" Ashby, Ph.D., M.S., assistant professor, College of Medicine Department of Biomedical Informatics

"Determining Multiple Myeloma Risk and Heterogeneity at a Single-Cell Resolution"

Primary Mentor: Fenghuang Zhan, M.D., Ph.D.



Nishank Jain, M.D., assistant professor, College of Medicine Department of Internal Medicine, Division of Nephrology

"Platelet, Inflammation and Thrombosis in Chronic Kidney Disease"

Primary Mentor: John Arthur, M.D., Ph.D.



Akilah Jefferson-Shah, M.D., M.Sc., assistant professor, College of Medicine Department of Pediatrics, Division of Allergy and Immunology

"Delineating Individual and Population-level Factors that Contribute to Disparate Pediatric Asthma Outcomes to Develop Predictive Models for Identifying Children at Risk for Poor Outcomes"

Primary Mentor: Tamara Perry, M.D.



Nakita Lovelady, Ph.D., MPH, assistant professor, Fay W. Boozman College of Public Health Department of Health Behavior and Health Education

"A Feasibility Study for the Implementation of a Hospital-based Violence Intervention Program in the Rural South"

Primary Mentor: Nickolas Zaller, Ph.D.



Sayem Miah, Ph.D., assistant professor, College of Medicine Department of Biochemistry and Molecular Biology

"Targeting BRK with PROTAC to Halt Metastatic Triple Negative Breast Cancer"

Primary Mentor: Alan Tackett, Ph.D.



Deepa Raghavan, M.D., assistant professor, College of Medicine Department of Internal Medicine, Division of Pulmonary and Critical Care; medical director, VA Medical ICU

"Implementation of COPD Clinical Practice Guidelines with Incorporation of Telehealth"

Primary Mentor: JoAnn Kirchner, M.D.



Jennifer Rumpel, M.D., assistant professor, College of Medicine Department of Pediatrics, Neonatology Section

"Advancing Care of Neonates with Acute Kidney Injury Utilizing the Children's Hospitals Neonatal Consortium Database"

Primary Mentor: Mario Schootman, Ph.D.



Amy Sato, Ph.D., assistant professor, College of Medicine Department of Physiology and Cell Biology

"Identification of Cardioprotective Signatures Induced by Targeting MuRF1 and Vitamin D Signaling in Glucocorticoid-Associated Cardiac Disease"

Primary Mentor: Marjan Boerma, Ph.D.