Dr. Weida Tong of NCTR

SYSTEMATIC DISCOVERIES

DR. WEIDA TONG ON REPURPOSING DRUGS AND THE ARKANSAS BIOINFORMATICS CONSORTIUM

By AMP Staff

The mission of the U.S. Food and Drug Administration's National Center for Toxicological Research (NCTR), located in Jefferson County, is to address the FDA's needs with high-quality research and serve as a global resource for collaboration, training and innovative scientific solutions.

As the director of the Division of Bioinformatics and Biostatistics, ARA Academy Member Dr. Weida Tong and his team develop tools using information technology to advance the FDA's mission to protect and promote public health.

AMP: What are the resources available at NCTR that have enabled you to further your research?

Dr. Tong: In terms of computational resources, NCTR has established state-of-the-art, high-performance computing and information technology infrastructure that reflects the FDA's commitment to quality data management in a modernized technological environment. The FDA's and NCTR's strongest assets continue to be the dedicated teams of public health professionals, scientists, statisticians, analysts and staff who are driven to support scientific innovation to protect and promote public health.

AMP: You've dedicated a portion of your work to finding new uses for drugs long tested and used to treat other conditions. Why is this work so important?

Dr. Tong: Because drugs that have already been approved by the FDA have considerable scientific evidence about their risks, studying the repurposing of already approved drugs may require less time and expense than developing a new drug. In the past, however, the practice has largely relied on accidentally discovering new clinical uses for existing drugs. This "happy-accident" approach missed opportunities to identify drugs already approved for other uses that may be particularly good candidates for further study to determine whether they have potential novel uses, including the ability to address rare and difficult-to-treat diseases.

The potential benefit of repurposing FDA-approved drugs has become more apparent during the current pandemic, where emerging public health issues require solutions that draw on all sources of available information to help quickly make available interventions that appropriately balance risks and benefits. Because the drug-development process is increasingly expensive and lengthy, the scientific community began developing methodologies to transform this practice of happenstance into a more systematic discovery process. Computational approaches are in the forefront of this transformation — where my group, the FDA's Division of Bioinformatics and Biostatistics, has contributed.

AMP: You are a founder of the Arkansas Bioinformatics Consortium (AR-BIC). How is bioinformatics transforming the field of drug development?

Dr. Tong: Bioinformatics and data science have always been a part of drug discovery and development. Today, their role is more important than ever as technological advances change how drugs are developed, how drugs affect a person's body and the need to carefully evaluate long-term data on safety and effectiveness to inform patient care.

Thus, influencing how drugs are developed for generations to come. The role of bioinformatics will continue to grow in relation to the increase of technologies used in the drug-development process.

Tong with ARA founder Jerry Adams. (Photos provided)

AMP: The 2022 Arkansas Bioinformatics Consortium (AR-BIC) conference will be held in March and explore bioinformatics applications in precision medicine, agriculture, data sciences and artificial intelligence (AI). How is Arkansas positioned to take lead in this growing area of science?

Dr. Tong: AR-BIC is a consortium that consists of five major Arkansas universities and NCTR. Its mission is to facilitate collaboration across Arkansas campuses, provide training and education in bioinformatics and create opportunities for entrepreneurs. The consortium's work with educational, scientific and business communities ensures that Arkansas is well positioned to be a hub of growth in these critical, emerging fields.

AMP: How can we best increase knowledge and understanding through research and make sure research benefits the broader community?

Dr. Tong: We must continue to inform the public and stakeholders about our research findings and help them to understand why it is important to them. For more insights, we welcome anyone interested in bioinformatics research and how it impacts our communities to attend the 2022 AR-BIC conference.

AMP: What do you want the Arkansas business community and public officials to know about your research and how it's making a difference?

Dr. Tong: Attend the 2022 AR-BIC conference, and I will tell everyone all about it. You can also visit FDA.gov/NCTRbioinformatics to learn more about my division's research at NCTR.

Discovery Economics is a monthly feature highlighting the work of the ARA Academy of Scholars and Fellows, a community of strategic research leaders who strive to maximize the value of discovery and progress in the state. Learn more at ARAlliance.org. The 2022 AR-BIC conference will be held online March 10 and 11. Visit ARAlliance.org/ar-bic for more information.