

Rapid Antibiotic Susceptibility Screening by Super-Resolution Microscopy



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Prof. Dayong JIN
University of Technology Sydney
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Hosted by: Prof. Songnan QU

Abstract

Rapid and accurate antibiotic susceptibility testing (AST) has become critical for effective infection management and antimicrobial resistance (AMR) mitigation. While current clinical methods require more than 72 hours - significantly delaying life-saving treatments - our newly developed HAPA Platform offers an ultra-fast phenotyping solution capable of classifying Gram-negative pathogen susceptibility in just 2-4 hours.

Clinical validation studies demonstrate exceptional performance, with 97% concordance relative to FDA-approved broth microdilution methods across 75 clinical isolates, and a remarkably low 1.51% minor error rate that comfortably surpasses the FDA's stringent <3% threshold.

The HAPA Platform combines multiple key advantages including cost-effectiveness, scalability, automation compatibility, and point-of-care deployment potential. This positions the technology as both a future cornerstone for accelerated diagnostics and a powerful driver of global antimicrobial stewardship initiatives, promising to transform current clinical practice in infection management.

Biography

Prof. Dayong JIN is a Distinguished Professor at UTS, an ARC Laureate Fellow, Fellow of Australian Academy of Technology and Engineering, and a Clarivate Top 0.1% Highly Cited Researcher, with expertise covering biomedical engineering, nanotechnology, microscopy, microfluidics, and analytical chemistry, to enable rapid detection of cells and molecules. He established the UTS Institute for Biomedical Materials & Devices (IBMD) to transform advances in phonics and materials into disruptive biotechnologies. In 2024, he established Zhejiang Provincial Engineering Research Center for Organelles Diagnostics and Therapy at Eastern Institute of Technology, Ningbo. He is the recipient of the 2017 Australian Academy of Science Engineering Science Award, and the 2017 Australian Prime Minister's Prize for Science. He published 300+ papers, including 40+ in Nature and its sister journals.