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**New Cell Phone-Based Diagnostic System Offers Promise for
Infectious Disease Management in Resource-Limited Settings**

CHICAGO – A new report published online by the *Journal of Laboratory Automation* (JALA) introduces a low-cost, field-deployable diagnostic system for rapid antimicrobial susceptibility testing in resource-limited settings. The system's simplicity, cost-efficiency and effectiveness in detecting bacterial growth make it an ideal telemedicine tool for common tests performed in hospital and field environments.

The authors demonstrate how this portable, cell phone-based microphotometric system can be integrated with gas-permeable microwell arrays to allow rapid determination of antibiotic-resistance profiles of pathogens.

To determine the antimicrobial resistance phenotypically, the growth of pathogens in microwell arrays is detected under different antibiotic conditions. The use of a colorimetric cell viability reagent is shown to significantly improve the sensitivity of the assay compared with standard absorbance spectroscopy. Gas-permeable microwell arrays are incorporated for facilitating rapid bacterial growth and eliminating the requirement of bulky supporting equipment. Antibiotics also can be pre-coated in the microwell array to simplify the assay protocol toward point-of-care applications.

By optimizing the operating conditions, the cell phone-based microphotometric system allows antimicrobial susceptibility testing for samples with initial concentrations from 10^1 to 10^6 cfu/mL. Using urinary tract infection as the model system, the authors demonstrate rapid antimicrobial resistance profiling for uropathogens in both culture media and urine.

According to co-author Pak Kin Wong, Ph.D., associate professor in the departments of aerospace and mechanical engineering, agricultural and biosystems engineering, and biomedical engineering and the BIO5 Institute at the University of Arizona in Tucson, Ariz., “Multidrug-resistant pathogens are major global health problems, which are largely driven by the widespread use of antibiotics worldwide. Microfluidics provides a highly promising platform for addressing this issue by enabling rapid pathogen identification and antimicrobial susceptibility testing. This, in turn, will reduce the emergence of multidrug-resistant pathogens or superbugs.”

The complete report, entitled “A Cell Phone–Based Microphotometric System for Rapid Antimicrobial Susceptibility Testing” by Meichei Wang Kadlec, David You, Joseph C. Liao, and Pak Kin Wong is now available to SLAS members and JALA subscribers at JALA OnlineFirst (<http://jla.sagepub.com/content/early/recent>). The report is slated for print publication and pay-per-view access as part of a 2014 special issue of JALA on New Developments in Global Health Technologies by Guest Editor Peter B. Lillehoj, Ph.D., of Michigan State University in East Lansing.

JALA is one of two official journals published by the Society for Laboratory Automation and Screening (SLAS) in partnership with SAGE Publications. JALA editor-in-chief is Dean Ho, Ph.D., professor and co-director of the Jane and Jerry Weintraub Center for Reconstructive Biotechnology in the Division of Oral Biology and Medicine at the University of California Los Angeles School of Dentistry. For more information, visit www.slas.org.

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