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Laser optical sensor for rapid on-plate screening of water and food-borne pathogens

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Rapid pathogen testing tools are in high demand. A novel, label-free on-plate colony screening tool employing light scattering technology, called BARDOT (bacterial rapid detection using optical scattering technology) for pathogens from water, food, clinical specimens and environmental samples is described. When a red diode laser (635 nm) is illuminated in the center of a bacterial colony, it generates unique scatter signature for each phylogeny. BARDOT was used for detection and identification of *Vibrio* spp., *Salmonella* spp, Shiga-toxin producing *Escherichia coli* O157:H7, *Listeria* and *Bacillus* spp. using scatter image libraries. It was also used successfully for detection and identification of *Enterobacter*iciae and coliforms from food and water samples. The colonies are further confirmed by PCR or genome sequencing, thus BARDOT could serve as a pre-screening tool for molecular analysis of pathogens from food and water.

Biography

Arun K Bhunia has received his PhD from University of Wyoming and Postdoctoral training from University of Arkansas. Currently, he is a Professor of Food Microbiology at Purdue University and the Chair of Microbiology Training Group of Purdue University interdisciplinary life sciences program (PULSe). His expertise is in the area of food borne pathogen detection, pathogenesis and probiotic vaccine. He has published 154 research articles, 2 text books (*Fundamental Food Microbiology & Food borne Microbial Pathogens*) and 3 edited books and delivered over 115 talks in national and international venues. He holds 3 patents and has received Purdue Agriculture Research Award, Purdue Faculty Scholar, Purdue Team Award, IFT R&D Award, Outstanding Graduate Educator Award and the recipient of High-End Foreign Experts Recruitment Program (China) fellowship. He is also a Member of the USDA National Advisory Committee on Microbiological Criteria for Foods (NACMCF).

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