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Exploring detection methods for foodborne pathogens: Shiga toxin-producing *E. coli* as an example

Foodborne pathogens are a growing concern for human health worldwide. The Center for Disease Control and Prevention estimated that there are approximately 48 million new cases of foodborne illness each year, resulting in 128,000 hospitalizations and 3,000 deaths in the United States alone. To ensure food safety, demands for methods that are rapid and reliable for detecting foodborne pathogens are increasing. As improvements in biotechnology, new molecular methods, such as DNA-based PCR and antibody-based immunoassays are being developed and improved continuously. These methods enable faster and more sensitive detection of foodborne pathogens. However, challenges in food matrix effect, sample preparation, detection and recovery of viable cells, and reducing test time still exist. This presentation reviews the evolution of detection methods for foodborne pathogens using Shiga toxin *E. coli* as an example, discusses the deficiencies of currently available methods in relation to the industry's needs.

Biography

Xiaohua He is a Research Molecular Biologist at USDA ARS, WRRRC, Albany, California. She has received her PhD in Plant Pathology from University of California, Riverside, and had Postdoctoral experience at Purdue and Cornell Universities. Her research focuses on development of molecular tools and technologies for sensitive detection of zoonotic pathogens and toxins in food, environment and clinical samples; investigation of toxin synthesis and mechanisms of host cell injury by toxins. She has received the 2015 USDA Federal Laboratory Consortium, Far West Region, Outstanding Technology Development Award for her contribution to the development of novel monoclonal antibodies against a broad range of Shiga toxins. She has served as Academic Editor and Editorial Board Member of leading journals. Her work has involved significant international collaborations, with applications to food safety and defense. She is an author/inventor of over 80 publications and patents, with 14 technologies licensed to industry.

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