Genomic Epidemiology: Whole-Genome-Sequencing–Powered Surveillance and Outbreak Investigation of Foodborne Bacterial Pathogens

Xiangyu Deng,¹ Henk C. den Bakker,² and Rene S. Hendriksen³

¹Center for Food Safety and Department of Food Science and Technology, University of Georgia, Griffin, Georgia 30269
²International Center for Food Industry Excellence, Department of Animal and Food Sciences, Texas Tech University, Lubbock, Texas 79409
³National Food Institute, Research Group of Genomic Epidemiology, Technical University of Denmark, Kongens Lyngby, DK-2800 Denmark

Abstract
As we are approaching the twentieth anniversary of PulseNet, a network of public health and regulatory laboratories that has changed the landscape of foodborne illness surveillance through molecular subtyping, public health microbiology is undergoing another transformation brought about by so-called next-generation sequencing (NGS) technologies that have made whole-genome sequencing (WGS) of foodborne bacterial pathogens a realistic and superior alternative to traditional subtyping methods. Routine, real-time, and widespread application of WGS in food safety and public health is on the horizon. Technological, operational, and policy challenges are still present and being addressed by an international and multidisciplinary community of researchers, public health practitioners, and other stakeholders.

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