# Contents

1. **Food Microbiology Laboratory Safety and Notebook Record** ................................................................. 1

2. **Staining Technology and Bright-Field Microscope Use** ........... 9

3. **Enumeration of Bacteria in Broth Suspension by Spread and Pour Plating** ........................................................... 15

4. **Isolation of Foodborne Pathogens on Selective, Differential, and Enriched Medium by Streak Plating** ......................... 19

5. **Enumeration of Aerobic Plate Counts, Coliforms, and *Escherichia coli* of Organic Fruit Juice on Petrifilm** .................. 25

6. **Enumeration and Identification of *Staphylococcus aureus* in Chicken Salads** .......................................................... 31

7. **Enumeration and Identification of *Listeria monocytogenes* on Ready-to-Eat (RTE) Frankfurters** .............................. 37

8. **Isolation and Identification of *Salmonella* and *Campylobacter* spp. on Broiler Carcasses** .............................................. 43

9. **Thermal Inactivation of *Escherichia coli* O157:H7 in Non-intact Reconstructed Beef Patties** ............................................. 51

10. **Cultivation of Anaerobic Bacteria in Canned Food** ................. 59

11. **Observation and Numeration of Molds from Spoiled Bread** ....................................................................................... 65

12. **PCR Identification of *Listeria monocytogenes* in Deli Meat** ..................................................................................... 71

13. **Cheese Making and Characterization** ........................................ 75

14. **Wine and Pickle Making and Characterization** ........................ 79

15. **Antimicrobial Resistance of Commensal Bacteria from the Environment** ............................................................. 87
Cangliang Shen is an assistant professor/extension specialist at Davis College, Animal and Nutritional Science and Families and Health Center, at West Virginia University. Dr. Shen worked at IEH Laboratories and Consulting Group, USDA ARS, and Western Kentucky University as postdoctoral research microbiologist and assistant professor of microbiology after obtaining his Ph.D. from Colorado State University. Dr. Shen is currently teaching undergraduate-/graduate-level microbiology courses including general microbiology lecture with lab and food microbiology lab. Dr. Shen has 10 years of research experience in postharvest sanitizing procedures for reducing food safety risks on poultry meat products and fresh produce at both laboratory and pilot plant levels. Dr. Shen has published 23 papers in peer-reviewed food microbiology journals and has presented 25 times in national or international food science conferences.

Yifan Zhang is an associate professor in the Department of Nutrition and Food Science at Wayne State University, Michigan. She is an editorial board member of the Journal of Food Protection and a member of the International Association for Food Protection (IAFP), Institute of Food Technologists (IFT), and American Society for Microbiology (ASM). She earned her Ph.D. in Food Science from University of Maryland, College Park. Prior to joining the Wayne State University faculty, Dr. Zhang has worked as a postdoctoral researcher at The Ohio State University. Dr. Zhang’s research is on the molecular characterization and risk analysis of foodborne bacteria, the food and agricultural reservoir of antimicrobial resistance, urban agriculture, and the development of novel food safety control. Dr. Zhang is currently teaching introductory food science and advanced food science at the undergraduate level and microbial food safety at the graduate level.