IAFP2018
ANNUAL MEETING
Salt Lake City, Utah
JULY 8-11

IAFP 2018 PROGRAM BOOK

The Leading Food Safety Conference

www.foodprotection.org

International Association for Food Protection®

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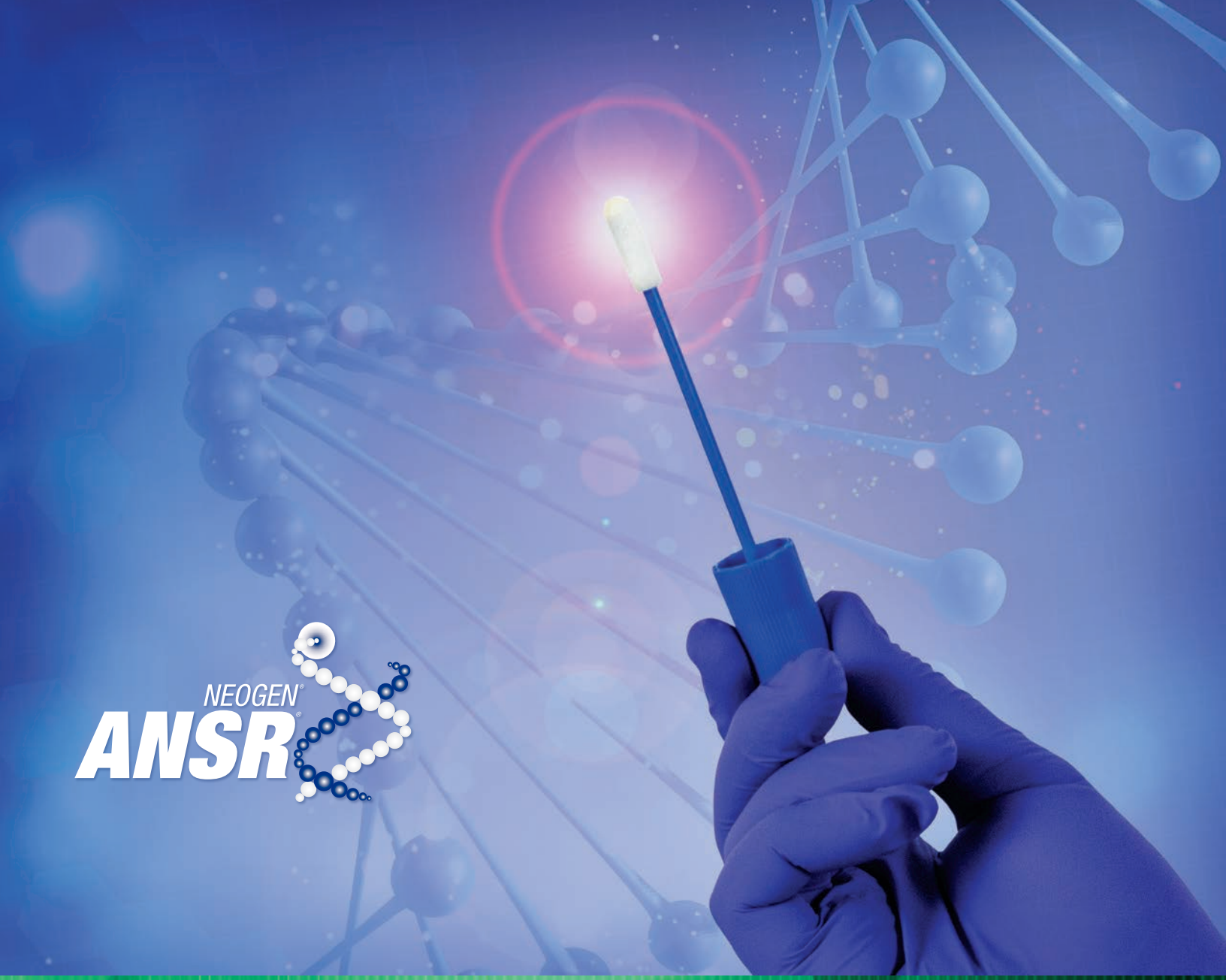

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Welcome From The Executive Board

PRESIDENT
Mickey Parish
U.S. Food and Drug Administration

On behalf of the Executive Board, I would like to welcome you to IAFP 2018 and to Salt Lake City, Utah. Colleagues and friends from around the world are joining us for the next few days. First and foremost, we are here to help fulfill the Association's mission: *To provide food safety professionals worldwide with a forum to exchange information on protecting the food supply.*

Food safety remains a top priority in today's interconnected world. Our meeting will help you stay in touch with current and emerging issues, the latest science, and solutions to new and ongoing problems. And the opportunity to network with our colleagues and developing scientists is of equal or greater importance... often times the most valuable information can be gathered in an impromptu conversation in the hallway. Thank you for joining us to play your role as part of the solution for tomorrow's food safety issues.

The Executive Board offers a special thank you to Renee Boyer, Program Committee Chair, and the entire Program Committee for organizing an outstanding lineup of symposia, roundtables, technical presentations, posters and interactive sessions. The only thing in short supply will be the time needed to attend all of the interesting sessions! Your greatest challenge will be determining where best to spend your time, so review the program carefully and plan your time accordingly.

We extend our sincere gratitude to our valued exhibitors, sponsors and long-time attendees for making the IAFP Annual Meeting so successful every year. Our meeting would not be the same without your continued and dedicated support.

So, whether you are a new Member, long-time Member, student Member or even a prospective Member, the Board eagerly welcomes you and encourages you to actively participate in our annual professional family reunion. And if you see me, or any of our Board members, please come up and say hello. We would love to meet you.

Together, we are *Advancing Food Safety Worldwide*®!

Mickey Parish
IAFP President

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IAFP 2018 Schedule

All events held at Salt Palace Convention Center unless noted.

FRIDAY, JULY 6 AND SATURDAY, JULY 7

IAFP Workshops – 8:00 a.m. - 5:00 p.m. (unless noted)

Whole Genome Sequencing: A Tutorial and Hands-on Workshop to Help Understand This Emerging Technology (Friday, 1:00 p.m. – 5:00 p.m.)

Hygienic Design and Sanitation

SATURDAY, JULY 7

IAFP Workshops – 8:00 a.m. - 5:00 p.m.

Standardized Biofilm Methods for Laboratory Studies of Biofilms

Food Genomics 101

IAFP Registration Hours – 12:00 p.m. – 7:00 p.m.

Committee and PDG Meetings • 2:30 p.m. - 5:00 p.m.

Welcome Reception • 5:00 p.m. - 6:30 p.m. - *Sponsored by Eurofins*

SUNDAY, JULY 8

IAFP Registration Hours – 7:00 a.m. – 9:00 p.m.

Affiliate Council Meeting • 7:00 a.m. - 10:00 a.m.

Committee and PDG Meetings • 8:00 a.m. - 5:00 p.m.

Student Luncheon (ticket required) • 12:00 p.m. - 1:30 p.m. - *Sponsored by Prometric*

Editorial Board Reception (by invitation) • 4:30 p.m. - 5:30 p.m.

Opening Session and Ivan Parkin Lecture • 6:00 p.m. - 7:30 p.m.

Cheese and Wine Reception • 7:30 p.m. - 9:30 p.m. - *Sponsored by Mars, Incorporated; Cheese provided by Land O'Lakes*

Exhibit Hours • 7:30 p.m. - 9:30 p.m.

MONDAY, JULY 9

IAFP Registration Hours – 7:30 a.m. – 5:30 p.m.

Symposia, Roundtable & Technical Sessions • 8:30 a.m. - 5:00 p.m.

Poster Sessions • 10:00 a.m. - 6:00 p.m. - Authors present: 10:00 a.m. - 11:30 a.m., 2:00 p.m. - 3:30 p.m. and 5:00 - 6:00 p.m.

Exhibit Hours • 10:00 a.m. - 6:00 p.m.

Exhibit Hall Lunch • 11:30 a.m. - 1:30 p.m.

Exhibit Hall Reception • 5:00 p.m. - 6:00 p.m. - *Sponsored by Merck Animal Health*

TUESDAY, JULY 10

IAFP Registration Hours – 8:00 a.m. – 5:30 p.m.

Committee and PDG Chairperson Breakfast (by invitation) • 7:00 a.m. - 9:00 a.m.

Symposia, Roundtable & Technical Sessions • 8:30 a.m. - 5:00 p.m.

Poster Sessions • 10:00 a.m. - 6:00 p.m. - Authors present: 10:00 a.m. - 11:30 a.m., 2:00 p.m. - 3:30 p.m. and 5:00 - 6:00 p.m.

Exhibit Hours • 10:00 a.m. - 6:00 p.m.

Exhibit Hall Lunch • 11:30 a.m. - 1:30 p.m.

Business Meeting • 12:15 p.m. - 1:00 p.m.

Exhibit Hall Reception • 5:00 p.m. - 6:00 p.m. - *Sponsored by Diversey, Inc.*

President's Reception* (by invitation) • 6:00 p.m. - 7:00 p.m. - *Sponsored by Q Laboratories, Inc.*

Student Mixer • 7:00 p.m. - 9:00 p.m.

Past President's Dinner* (by invitation) • 7:00 p.m. - 9:00 p.m.

**Event to be held at the Salt Lake Marriott Downtown at City Creek*

WEDNESDAY, JULY 11

IAFP Registration Hours – 8:00 a.m. – 12:00 p.m.

Symposia, Roundtable & Technical Sessions • 8:30 a.m. - 3:30 p.m.

Poster Sessions • 9:00 a.m. - 3:00 p.m. - Authors present: 9:00 a.m. - 11:00 a.m. and 1:00 p.m. - 3:00 p.m.

Networking Lunch • 11:30 a.m. - 1:30 p.m.

John H. Silliker Lecture • 4:00 p.m. - 4:45 p.m.

Awards Reception and Banquet • 6:00 p.m. - 9:30 p.m.

*Held at the Salt Lake Marriott Downtown at City Creek

General Information

Speaker-Ready Room

The Speaker-Ready Room is located in *Room 252 A–B* and is available for speakers Sunday through Wednesday, 7:00 a.m. to 5:00 p.m.

Press Release Postings

A Press Release poster board will be available in the Exhibit Hall for Press Releases. Post your Press Release for maximum exposure.

Cell Phone Policy

As a courtesy to our presenters, we request that you turn off cell phones while attending sessions. Thank you for your cooperation.

Recording Policy

Unauthorized video, still photography or audio recording will not be allowed without prior approval. By attending the IAFP Annual Meeting, you authorize IAFP to take your picture and use it in our publications.

All sessions, with speaker approval, will be audio recorded by IAFP and posted on the IAFP Web site for attendees' access.

Sessions sponsored by ILSI North America will be video recorded.

Meeting App

The IAFP 2018 app is available through the App Store, the Android market and through a web-based version.

Internet Café

The Internet Café is in the IAFP Registration area.

Sponsored by FSNS Food Safety Net Services

WiFi Internet

Complimentary WiFi Internet is available throughout the lobbies, Exhibit Hall, and meeting rooms. To access:

Use the IAFP 2018 "WiFi" Network.
Password: IAFP2018

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Mickey Parish, U.S. Food and Drug Administration
Timothy Jackson, Driscoll's Inc.

IAFP Registration Hours

Saturday, July 7 – 12:00 p.m. – 7:00 p.m.
Sunday, July 8 – 7:00 a.m. – 9:00 p.m.
Monday, July 9 – 7:30 a.m. – 5:30 p.m.
Tuesday, July 10 – 8:00 a.m. – 5:30 p.m.
Wednesday, July 11 – 8:00 a.m. – 12:00 p.m.

Connect at IAFP 2018

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Schedule-at-a-Glance

All sessions will be held at the Salt Palace Convention Center

Room	Ballroom A + C	Ballroom B	Ballroom D	Ballroom G + I	Ballroom H	Ballroom J	Room 250 A–C	Room 251 A–C	Room 251 D–F	Room 255 B–C	Room 255 E	Room 255 F	Room 150 A–C + G	Room 151 D–F	Exhibit Hall
SUNDAY, JULY 8															
Sunday 6:00 p.m.–7:30 p.m.	**Opening Session - Ivan Parkin Lecture** – Ballroom E–J *Where Do You Put Your Chopsticks?* - **Gary Acuff**, Texas A&M University														
MONDAY, JULY 9															
Monday 8:30 a.m.–12:00 p.m.	S1 - 2018 Foodborne Outbreak Updates	RT1 - Updates on the Impact of Sampling Plans on Microbiology Results S6 - Developing a Risk-based Food Safety Plan for Fresh Produce in Retail Food Establishments	S2 - Global Food Protection Issues: Contemporary Chemical Challenges	RT2 - "One Size Does Not Fit All": Food Defense Planning for FSMA Compliance S7 - Rock on! Interdisciplinary Teams Protecting Nachos at a Concert Near You	RT3 - Precious Water – The Tricky Business of Balancing Water Sustainability and Food Safety RT5 - Identifying Knowledge Gaps Surrounding the Safe Production, Sale and Consumption of Cannabis and Cannabis-related Products	S3 - Rapid Testing Methods for Safety and Spoilage in the Dairy Industry – What is Needed, What Works and What Does Not S8 - From Cow to Curd: Defining Microbiomes in the Dairy Industry	RT4 - How Much of a Mystery Remains with Whole Genome Sequencing? S9 - Non-NGS Methods for Foodborne Pathogen Identifications	S4 - Building a Strategic Alliance for Sustainable Food Safety Risk Analysis Capacity Building in the Americas S10 - Non-thermal In-package Pasteurization of Food	S5 - Food Safety in Aisle 8: Science-based Messages for Consumer Food Safety Education Campaigns at Retail S11 - The Challenge of Challenge Studies				T1 Technical Session 1 - Modeling and Risk Assessment	T2 Technical Session 2 - Antimicrobials	**P1** Poster Session 1 - Microbial Food Spoilage, Beverages and Acid/Acidified Foods, Food Processing Technologies, Sanitation and Hygiene, Meat, Poultry and Eggs, Viruses and Parasites, Pre-harvest Food Safety, Produce, Water, Seafood
Monday 12:15 p.m.–1:15 p.m.	**U.S. Regulatory Update on Food Safety** – Ballroom G + I **Stephen Ostroff**, U.S. Food and Drug Administration and **Carmen Rottenberg**, U.S. Department of Agriculture														
Monday 1:30 p.m.–5:00 p.m.	S12 - Challenges for HACCP and Food Safety Systems in Multi-jurisdiction Food Facilities	RT6 - Food Safety Recalls in the Age of Online Grocery Stores RT8 - Best Practices for Safe Transportation of Food	SS1 - Listeriosis Outbreak - Special Session	S13 - Agricultural Water Quality Standards: Striving for Safety with Incomplete Science because Doing Nothing Was Not an Option	S14 - Pathogenic *E. coli* in Low-moisture Food Systems, Contamination, Survival, and Risks	S15 - Heat-resistant *E. coli* – Some Like It Hot S17 - How to Show "Done" is Done: Designing Cooking Procedures for RTE Foods	RT7 - Global Perspectives on Strengthening Food Safety Performance: How to Keep up in a Changing World S18 - Using "Big Data" to Predict Critical Food Safety Violations	S16 - The Meaning of "Clean" – Fit for Purpose Water for Field, Factory and Food Preparation S19 - No Nodding Off: Creative Ways to Make Food Safety Fun					T3 Technical Session 3 - Produce	T4 Technical Session 4 - Molecular Analytics, Genomics and Microbiome	
TUESDAY, JULY 10															
Tuesday 8:30 a.m.–12:00 p.m.	S21 - Biological Variability in Thermal Processing: Impact for Process Control and Validation – What You Need to Know about Microbiological Variability for Food Quality and Safety Control S28 - Cleaning Validations – Approaches in Retail Food and Food Manufacturing Facilities	S22 - International Experiences with Systems for Hazard Monitoring and Rapid Risk Assessment RT10 - Complex Risk Assessment and Classic Hazard Analysis on a Spectrum – Do We Really Need Both/Can We Really Do Both?	S23 - Integrated Approaches to Measure and Impact Consumer Food-handling Behaviors S29 - Multi-level Approach to Combating Antimicrobial Resistance	S20 - How Well Do We Understand Microorganisms in a Food-handling Environment?	S24 - Pathogens in Soil: A Focus on *Salmonella* and STEC Survival in Biological Soil Amendments of Animal Origin S30 - Soil Contamination with Foodborne Bacteria	S25 - What Do Genomics Tell Us about Controlling *Campylobacter* in Poultry and the Risk of Poultry-associated Illness? S31 - Pathogen Detection and Food Microbiome Characterization Using a Metagenomics Approach	RT9 - Do Lawsuits Play a Productive Role in Advancing Food Safety? RT11 - Antimicrobial Resistance: Current Knowledge and Steps Toward Understanding the Relative Role of Food and Other Resistance Sources	S26 (Withdrawn) S32 - Controlling Chemical Hazards in International Supply Chains – New Challenges with FSMA	S27 - Edible Insects: Food Safety Considerations for a Food Security Solution S33 - Food Safety Considerations in Alleviating Hunger and Food Insecurity				T5 Technical Session 5 - Low-water Activity Foods and Food Processing Technologies	T6 Technical Session 6 - Viruses and Parasites and Communication Outreach and Education	**P2** Poster Session 2 - Communication Outreach and Education, Retail and Food Service Safety, Epidemiology, Food Toxicology, Low-water Activity Foods, Food Chemical Hazards and Food Allergens, Food Law and Regulation, Food Safety Systems, Food Defense, Laboratory and Detection Methods, Molecular Analytics, Genomics and Microbiome

Schedule-at-a-Glance

All sessions will be held at the Salt Palace Convention Center

Room	Ballroom A + C	Ballroom B	Ballroom D	Ballroom G + I	Ballroom H	Ballroom J	Room 250 A–C	Room 251 A–C	Room 251 D–F	Room 255 B–C	Room 255 E	Room 255 F	Room 150 A–C + G	Room 151 D–F	Exhibit Hall
Tuesday 12:15 p.m.–1:00 p.m.	**IAFP Business Meeting** Room 250 A–C														
Tuesday 1:30 p.m.–5:00 p.m.	S34 - Food Fraud - Progress and Plans for Prevention and Management	RT12 - Is There Such a Thing as Too Much Transparency? Different Perspectives on Deciding When to Communicate during a Food Safety Outbreak RT14 - Responsible Use of Antibiotics – Are We Making Progress?	S35 - Converting WGS and Bioinformatic Jargon into Plain Language and Understanding the Science S41 - Can We Ever Accomplish a Standardized Protocol for Validating WGS-based Assays for the Detection of Foodborne Pathogenic Microbes?	S36 - The Saga Continues... What's on Your COA? How Can We Effectively Utilize This Tool? RT15 - Help! I'm New Management. How Do I Convince My Colleagues Food Safety is Important?	S37 - International Recognition of National Food Safety Systems S42 - Building a Network of Accredited Governmental Human and Animal Food Laboratories: Benefits to Public Health and Industry	S38 - Norovirus and Hepatitis A Virus Contamination: Emerging Monitoring Methods and Their Future Applications S43 - How Omics is Changing the Food-safety Landscape in Foodborne Parasitology: Sequencing, Not Just Seeing is Believing!	S39 - Validation and Verification – The Good, The Bad and The Ugly RT16 - Process Validations - Stories from the Trenches	S40 - Alignment between Reference Microbiological Methods – Reality or Dream? S44 - Developments and Novel Applications of Microbiome Research for Pre- and Post-harvest Food Safety and Quality	RT13 - *Salmonella* in Poultry: Where Do We Go from Here? RT17 - The Conundrum of *Campylobacter* Source Attribution				T7 Technical Session 7 - Retail and Foodservice Safety	T8 Technical Session 8 - Food Chemical Hazards and Food Allergens and Dairy	
WEDNESDAY, JULY 11															
Wednesday 8:30 a.m.–12:00 p.m.	S46 - State and Local Regulatory Agency Foodborne Illness Investigations SRT1 - Shiga toxin producing *Escherichia coli* and Leafy Greens: Is It Déjà vu All Over Again?	S47 - The Global Food Safety Impact of *Cyclospora cayetanensis*: An Issue Crossing Continents S53 - Enhancing Food Safety: Translating Molecular Biology to Microbiology: A Dialogue between Molecular and Traditional Microbiologists	S48 - Food Safety of Hydroponic Fruits and Vegetables – What We Do and Don't Know S54 - Improving Safety of Sprouted Seeds				RT18 - The Grey Area of Science: "Predatory" Publishers and Questionable Conferences RT19 - Insights into Food Safety Careers Roundtable	S49 - Novel Processing Technologies to Improve Food Safety and Quality S55 - Marrying Nanotechnology and Food Packaging: Benefits and Issues for Food Safety	S50 - Environmental Pathogen Monitoring and Control for the Food Safety Modernization Act (FSMA) Preventive Controls Implementation S56 - Maximizing Food Safety and Quality Through Application of Hygienic Design	S45 - Food Safety and Hurricanes – The Eye of the Storm	S51 - Surreptitious Connections: Exploring the Emerging Role of Heavy Metals in Antimicrobial Resistance S57 - Understanding Antibiotic Resistance from an Environmental Perspective	S52 - NGS Case Studies Beyond WGS and Outbreak Investigations S58 - WGS and Mass Spectrometry: The Paved Road to Routine Food Applications!	T9 Technical Session 9 - Pre-harvest Food Safety and Meat, Poultry and Eggs	T10 Technical Session 10 - Antimicrobials	P3 Poster Session 3 - General Microbiology, Laboratory and Detection Methods, Modeling and Risk Assessment, Packaging, Dairy, Antimicrobials
Wednesday 1:30 p.m.–3:30 p.m.	S59 - Utilizing Big Data to Revolutionize Food Safety, Traceability and Transparency in Food Systems	S60 - Risk Assessment of Listeriosis: Latest Developments for Food Safety Risk Management	S61 - The Future of Food Microbiology is Extra CRISPy: Novel Applications of CRISPR Technology				S62 - Use of Whole Genomic Sequencing Data for Source Attribution of Foodborne Pathogens	S63 - Science, Safety, and Sanity: Hot Topics in Food Toxicology	S64 - Closing in on the Research Gaps with *Listeria monocytogenes*, *Salmonella*, and Viruses in Low-moisture Foods	S65 - Starting Up after a Contamination-related Shut Down	S66 - Culturally-targeted Messages and Methods: The Next Generation of Food Safety Education Strategies	S67 - Spores in the Global Dairy Industry Significance, Issues and Challenges	T11 Technical Session 11 - General Microbiology	T12 Technical Session 12 - Laboratory and Detection Methods	
Wednesday 4:00 p.m.–4:45 p.m.	**John H. Silliker Lecture** – Ballroom A + C *Heroes Past and Future* - **Ann Marie McNamara**, Food and Essentials Safety and Quality Assurance, Target Corporation														

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Special Presentations

Gary Acuff
Professor
Texas A&M University

SUNDAY, JULY 8

Opening Session
Ivan Parkin Lecture
Where Do You Put Your Chopsticks?

6:00 p.m. – 7:30 p.m.

Join us for the IAFP 2018 Opening Session, where various awards will be presented, including the Fellow Awards, the Travel Awards, and the Student Travel Scholarships.

The first Dave Theno Food Safety Fellowship will also be awarded, with the Ivan Parkin Lecture closing the session. Enjoy the Cheese and Wine Reception in the Exhibit Hall following the Opening Session.

MONDAY, JULY 9

U.S. Regulatory Update on Food Safety

12:15 p.m. – 1:15 p.m.

Don't miss the U.S. Regulatory Update on Food Safety. Experts from the U.S. Food and Drug Administration and the U.S. Department of Agriculture will provide the latest updates and changes within their respective Agency, followed by a Q&A with attendees.

Stephen Ostroff
Deputy Commissioner for Foods and Veterinary Medicine
U.S. Food and Drug Administration

Carmen Rottenberg
Acting Deputy Under Secretary for Food Safety
U.S. Department of Agriculture

Ann Marie McNamara
Vice President, Food and Essentials Safety and Quality Assurance
Target Corporation

WEDNESDAY, JULY 11

Closing Session
John H. Silliker Lecture
Heroes Past and Future

4:00 p.m. – 4:45 p.m.

Take part in the John H. Silliker Lecture during the Closing Session. The John H. Silliker Lectureship was established in 2004 to honor Dr. Silliker's contributions to food safety through the Silliker Laboratories, now known as Mérieux NutriSciences.

Exhibit Hall Events and Information

CHEESE AND WINE RECEPTION

Sunday 7:30 p.m. – 9:30 p.m.
Sponsored by MARS incorporated
Cheese provided by LAND O'LAKES, INC.

EXHIBIT HALL BREAKS

Monday 10:00 a.m. Pastries and Coffee
Sponsored by DEIBEL LABORATORIES

3:00 p.m. Coffee Break
Sponsored by

Tuesday 10:00 a.m. Pastries and Coffee
Sponsored by NSF

3:00 p.m. Coffee Break

EXHIBIT HALL LUNCHES

Monday 11:45 a.m. – 1:30 p.m.

Tuesday 11:45 a.m. – 1:30 p.m.

EXHIBIT HALL RECEPTIONS

Monday 5:00 p.m. – 6:00 p.m.
Sponsored by MERCK Animal Health

Tuesday 5:00 p.m. – 6:00 p.m.
Sponsored by Diversey

Exhibit Hall Hours

SUNDAY, JULY 8
7:30 p.m. – 9:30 p.m.

MONDAY, JULY 9
10:00 a.m. – 6:00 p.m.

TUESDAY, JULY 10
10:00 a.m. – 6:00 p.m.

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IAFP2018 ANNUAL MEETING Salt Lake City, Utah JULY 8-11

Committee and PDG Meetings

All attendees are invited and encouraged to participate

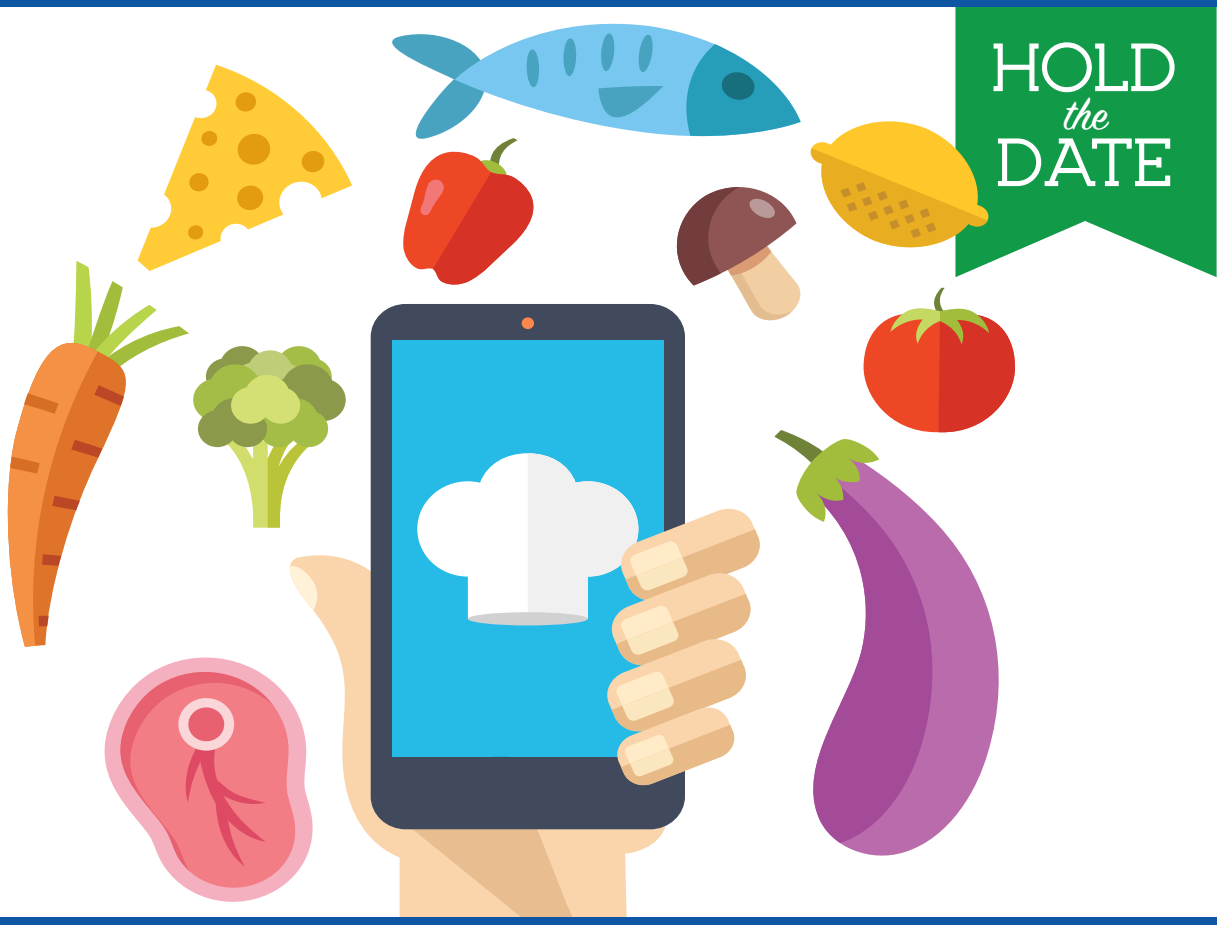
While attending IAFP 2018, we welcome your participation in one or more of IAFP's Professional Development Group (PDG) meetings. These groups provide the opportunity for food safety professionals to be part of open and in-depth discussions that help guide the efforts of the Association. The benefits are many with participants discussing a variety of timely and important topics; networking with other food safety professionals in similar positions; and being part of organized presentations on critical issues pertaining to the specific area of interest.

All meetings take place at the Convention Center.
Don't miss out on this additional Annual Meeting benefit!

TIMES	MEETING	ROOM
SATURDAY, JULY 7, 2018		
2:30 p.m. – 5:00 p.m.	International Food Protection Issues PDG	*250 B–C*
3:00 p.m. – 4:30 p.m.	Membership Committee	*250 D*
3:00 p.m. – 5:00 p.m.	Committee/PDG Chairs & Vice Chairs	*250 E–F*
3:30 p.m. – 4:30 p.m.	Past Presidents' Committee	*250 A*
SUNDAY, JULY 8, 2018		
7:00 a.m. – 10:00 a.m.	Affiliate Council	*Ballroom A + C*
8:00 a.m. – 5:00 p.m.	Committee on Control of Foodborne Illness	*254 C*
8:00 a.m. – 10:00 a.m.	Food Hygiene and Sanitation PDG	*Ballroom B*
9:00 a.m. – 10:45 a.m.	Webinar Committee	*151 B–C*
9:00 a.m. – 11:00 a.m.	Advanced Molecular Analytics PDG	*251 E–F*
9:00 a.m. – 11:00 a.m.	Microbial Modelling and Risk Analysis PDG	*Ballroom D*
9:00 a.m. – 11:00 a.m.	Pre Harvest Food Safety PDG	*250 B–C*
9:00 a.m. – 11:00 a.m.	Viral and Parasitic Foodborne Disease PDG	*254 B*
9:00 a.m. – 12:00 p.m.	Meat and Poultry Safety and Quality PDG	*151 D–G*
10:00 a.m. – 12:00 p.m.	3-A Committee on Sanitary Procedures	*251 D*
10:00 a.m. – 12:00 p.m.	Food Defense PDG	*150 A–G*
10:00 a.m. – 12:00 p.m.	*JFP* Management Committee	*251 A–B*
11:00 a.m. – 12:00 p.m.	Constitution and Bylaws Committee	*151 B–C*
12:00 p.m. – 1:30 p.m.	Student PDG	*Ballroom A + C*
1:00 p.m. – 3:00 p.m.	Beverages and Acid/Acidifed Foods PDG	*254 B*
1:00 p.m. – 3:00 p.m.	Dairy Quality and Safety PDG	*Ballroom B*
1:00 p.m. – 3:00 p.m.	Food Packaging PDG	*250 A*
1:00 p.m. – 3:00 p.m.	Food Safety Culture PDG	*Ballroom D*
1:00 p.m. – 3:00 p.m.	Fruit and Vegetable Safety and Quality PDG	*150 A–G*
1:00 p.m. – 3:00 p.m.	HACCP Utilization and Food Safety Systems PDG	*250 B–C*
1:00 p.m. – 3:00 p.m.	Retail and Foodservice PDG	*251 E–F*
1:00 p.m. – 3:00 p.m.	Seafood Safety and Quality PDG	*251 D*
2:00 p.m. – 4:00 p.m.	*FPT* Management Committee	*251 A–B*
2:00 p.m. – 4:00 p.m.	Low Water Activity Foods PDG	*151 D–G*
3:15 p.m. – 5:15 p.m.	Applied Laboratory Methods PDG	*150 A–G*
3:15 p.m. – 5:15 p.m.	Developing Food Safety Professionals PDG	*Ballroom B*
3:15 p.m. – 5:15 p.m.	Food Chemical Hazards and Food Allergy PDG	*251 D*
3:15 p.m. – 5:15 p.m.	Food Fraud PDG	*250 A*
3:15 p.m. – 5:15 p.m.	Food Law PDG	*254 B*
3:15 p.m. – 5:15 p.m.	Food Safety Assessment, Audit and Inspection PDG	*Ballroom D*
3:15 p.m. – 5:15 p.m.	Food Safety Education PDG	*251 E–F*
3:15 p.m. – 5:15 p.m.	Sanitary Equipment and Facility Design PDG	*250 B–C*
3:15 p.m. – 5:15 p.m.	Water Safety and Quality PDG	*250 E–F*
4:00 p.m. – 5:00 p.m.	Nominating Committee	*151 B–C*

From Consumers to Chefs

FOOD SAFETY EDUCATION MATTERS



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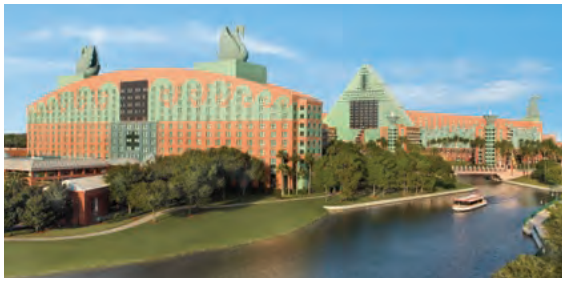
Abstract Submission Opens
June 21 — Closes August 2, 2018

- Program Tools: Refresh Your Outreach Toolbox
- Know the Data: Modifying Approaches to Increase Consumer Engagement
- Safe Food Handling in Today's Food Landscape
- Show It! Hands-on Demonstrations that Engage Consumers



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Student Activities

Student Luncheon

SUNDAY, JULY 8

12:00 p.m. – 1:30 p.m.

Ballroom A + C

Student Mixer

TUESDAY, JULY 10

7:00 p.m. – 9:00 p.m

Room 254 B

Job Fair

Attention Job Seekers and Employers!

Job announcements
will be posted
on the career board at the
Student PDG booth.

SUPPORT THE STUDENTS OF IAFP

The IAFP Student Professional Development Group will be selling T-shirts at the Annual Meeting. The shirts will be available at the Student PDG booth for $20.00.

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Opening Session

SUNDAY, JULY 8

Salt Palace Convention Center — 6:00 p.m.
Ballroom

WELCOME TO IAFP 2018

Mickey Parish, IAFP President

PEANUT PROUD STUDENT SCHOLARSHIP

Presented by: Darlene Cowart, Peanut Proud
Mengfei Peng

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Vickie Lewandowski, Foundation Chairperson

TRAVEL AWARDS

Presented by: Mickey Parish, IAFP President and Vickie Lewandowski, Foundation Chairperson

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FELLOWS AWARD

Presented by: Mickey Parish, IAFP President and Linda J. Harris, IAFP Past President

Loralyn Ledenbach
Ruth Petran

DAVE THENO FOOD SAFETY FELLOWSHIP AWARD

Presented by: Deirdre Schlunegger, STOP Foodborne Illness

THE IVAN PARKIN LECTURE

Introduction: Tim Jackson, IAFP President-Elect

Where Do You Put Your Chopsticks?
Gary R. Acuff, Ph.D.

CLOSING COMMENTS

Mickey Parish, IAFP President

CHEESE AND WINE RECEPTION

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IAFP Exhibit Hall, Salt Palace Convention Center — 7:30 p.m.

IAFP2018
ANNUAL MEETING
Salt Lake City, Utah
JULY 8-11

Ivan Parkin Lecture

SUNDAY, JULY 8, 2018
OPENING SESSION
6:00 p.m. – 7:30 p.m.

Where Do You Put Your Chopsticks?

Gary R. Acuff
Professor
Texas A&M University
College Station, Texas

Gary R. Acuff, Ph.D., is a Professor of Food Microbiology in the Department of Nutrition and Food Science at Texas A&M University in College Station, Texas, where he has been a faculty member for 37 years. In 2001, Dr. Acuff was designated a Texas AgriLife Research Faculty Fellow for research leadership. He served as Head of the Department of Animal Science at the university from 2004–2010 and as the Director of the Texas A&M Center for Food Safety from 2010–2016.

Dr. Acuff joined IAFP in 1982 and served as its President in 2008. He was inducted as an IAFP Fellow in 2013. Throughout his membership, he has served on numerous Committees and Professional Development Groups (PDGs), as well as on the Editorial Board for IAFP's *Journal of Food Protection (JFP)* and on the Management Committees for both *JFP* and *Food Protection Trends (FPT)*.

Dr. Acuff holds a B.S. in Biology from Abilene Christian University and both an M.S. and Ph.D. in Food Science and Technology, specializing in food microbiology, from Texas A&M University. His research has focused on improving the microbiological quality and safety of food, and recent activities have centered on pathogen survival in low-moisture foods and the effective use of surrogate bacteria for validation of process control in HACCP and Preventive Control systems.

Sponsored by IAFP FOUNDATION

Ivan Parkin Lecture Abstract

Where Do You Put Your Chopsticks?

Gary R. Acuff
Professor
Texas A&M University
College Station, Texas

We in the field of food safety have seen some substantial change over the last few decades, and the International Association for Food Protection has accompanied us through it all. Growth of IAFP over the last few years has been nothing short of phenomenal, and while many of us have been here long enough to have personally witnessed the changes and growth, there is a large percentage of our membership that knows IAFP only by its current state. We would all no doubt agree that IAFP is important to our careers, and it is great that we can now enjoy the success we have had; however, we need to consider what has made us successful and assure that we preserve this benefit for future food safety professionals.

Experience may be one of our most important resources – how can we assure that it is not wasted? There are probably many reasons for IAFP's success, but there is likely little disagreement that the members and their ability to mentor and network have had a major impact. In this year's Ivan Parkin Lecture, we will take a journey through history with past "food safety heroes" and talk about the impact of mentoring on our careers in food safety. We will talk about lessons learned and how we can impact the future health and sustained growth of our Association.

And we'll talk about chopsticks.

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Thank you to all our Gold and Silver Sustaining Members for your support. A portion of your Membership dues goes directly to the Foundation!

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IAFP 2018 PROGRAM

MONDAY MORNING
JULY 9

Posters will be on display 10:00 a.m. – 6:00 p.m.
(See details beginning on page 67)

S1 **2018 Foodborne Outbreak Updates**
Ballroom A + C
Organizers: Judy Greig, Kari Irvin, Ewen Todd
Convenors: Judy Greig, Kari Irvin
Sponsored by the IAFP Foundation

Epidemiology
International Food Protection Issues
Viral and Parasitic Foodborne Disease

8:30 *Salmonella* Outbreaks Associated with Papayas
BROOKE WHITNEY and HUGO FRAGOSO SANCHEZ, FDA Coordinated Outbreak Response and Evaluation Network, College Park, MD, USA

9:00 Hepatitis A Outbreak Associated with Consumption of Raw Scallops – Implications for Other Raw Seafood Commodities
MONIQUE FOSTER, CDC, Atlanta, GA, USA

9:30 Botulism Dispensed at a Service Station
MONIQUE SALTER, U.S. Food and Drug Administration, College Park, MD, USA

10:00 Break – Refreshments Available in the Exhibit Hall

10:30 Cyclosporiasis: The Saga Continues
BARBARA HERWALDT, Sheila Merriweather, CDC, Atlanta, GA, USA

11:00 Assessing Contributing Factors for Food Service-related STEC and Ready-to-eat Product-related *Salmonella* Investigations for FSIS-regulated Products, FY2018
ALICE GREEN, USDA/FSIS/OPHS/AES, Minneapolis, MN, USA

11:30 INFOSAN in Action to Manage the International Aspects of an Outbreak of Salmonellosis Linked to Infant Formula 2017–2018
PETER BEN EMBAREK, World Health Organization (WHO)/INFOSAN, Geneva, Switzerland

12:00 Lunch Available in the Exhibit Hall

S2 **Global Food Protection Issues: Contemporary Chemical Challenges**
Ballroom D
Organizers and Convenors: Linda Leake, Roger Cook

Food Chemical Hazards and Food Allergy
International Food Protection Issues

8:30 Managing Mycotoxins in Foods: Public Health Perspectives
HYUN JUNG LEE, University of Idaho, Moscow, ID, USA

9:00 Hot Stuff: International Initiatives and Management Tips for Dealing with the Safety Issues of Heat-induced Contaminants
BRENT KOBIELUSH, Cargill, Inc., Minneapolis, MN, USA

9:30 Environmental Unknowns: Are Radionuclides a Toxicological Issue about to Blow?
ANDREW PEARSON, Ministry of Primary Industries, Wellington, New Zealand

10:00 Break – Refreshments Available in the Exhibit Hall

10:30 From Pharmacokinetics to CLARITY-BPA: What We Have Learned about Bisphenol A
LUÍSA CAMACHO, FDA National Center for Toxicological Research, Jefferson, AR, USA

11:00 What's on the Horizon: Nanoparticles and Emerging Contaminants
CATHERINE SMITH, Health Canada Bureau of Chemical Safety, Ottawa, ON, Canada

11:30 The Latest Essentials: International Tools for Risk Assessment of Very Low Levels of Unexpected Chemicals in Food
ANDREW PEARSON, Ministry for Primary Industries, Wellington, New Zealand

12:00 Lunch Available in the Exhibit Hall

S3 **Rapid Testing Methods for Safety and Spoilage in the Dairy Industry – What is Needed, What Works and What Does Not**
Ballroom J
Organizer and Convenor: David Blomquist

Applied Laboratory Methods
Dairy Quality and Safety

8:30 Yeast and Mold and How to Quickly Find Their Presence
ALEJANDRO MAZZOTTA, Chobani, New York, NY, USA

9:00 Can Oxygen Levels Determine Potential for Spoilage?
DAVID BLOMQUIST, EAS Consulting Group, Hastings, MN, USA

9:30 Rapid Methods for Detecting *Cronobacter* spp. in Dairy Products and Infant Formula
MAYA ACHEN, Abbott Nutrition, Columbus, OH, USA

10:00 Break – Refreshments Available in the Exhibit Hall

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

S4 Building a Strategic Alliance for Sustainable Food Safety Risk Analysis Capacity Building in the Americas

Room 251 A-C

Organizer: Marcos X. Sanchez-Plata
Convenors: Fernando Sampedro, Clare Narrod

International Food Protection Issues
Microbial Modelling and Risk Analysis

8:30 The Risk Analysis Framework and International Public Health
SIMONE RASZL, PAHO, Rio de Janeiro, Brazil

9:00 Risk Analysis Framework Training and Institutional Adoption – Academic Initiatives
BING WANG, University of Nebraska-Lincoln, Lincoln, NE, USA

9:30 Building a Strategic Alliance for Sustainable Food Safety Risk Analysis Capacity Building in the Americas
FERNANDO SAMPEDRO, University of Minnesota, College of Veterinary Medicine, St. Paul, MN, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S5 Food Safety in Aisle 8: Science-based Messages for Consumer Food Safety Education Campaigns at Retail

Room 251 D-F

Organizer and Convenor: Hilary Thesmar

Communication, Outreach and Education
Food Safety Education
Retail and Foodservice

8:30 SHELLEY FEIST, Partnership for Food Safety Education, Arlington, VA, USA

SANDRIA GODWIN, Tennessee State University, Nashville, TN, USA

MICHAEL ROBERSON, Publix Super Markets, Inc., Lakeland, FL, USA

The speakers will collectively present two food safety education campaigns from concept through the research process. See online program for more information.

10:00 Break – Refreshments Available in the Exhibit Hall

RT1 Updates on the Impact of Sampling Plans on Microbiology Results

Ballroom B

Organizers: Preetha Biswas, Omar Oyarzabal
Convenor: Preetha Biswas

Advanced Molecular Analytics
Applied Laboratory Methods
HACCP Utilization and Food Safety Systems

8:30 Panelists:

MARC ALLARD, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA

ERIC EBEL, U.S. Department of Agriculture-FSIS-OPHS, Fort Collins, CO, USA

RABEB HENNEKINE, Danone Food Safety Center, Paris, France

FREDERIC MARTINEZ, Neogen Corporation, Lansing, MI, USA

DAVID TOMAS FORNES, Nestle Research Center - Nestec Centre De Recherches, Lausanne, Switzerland

10:00 Break – Refreshments Available in the Exhibit Hall

RT2 "One Size Does Not Fit All": Food Defense Planning for FSMA Compliance

Ballroom G + I

Organizer and Convenor: Debra Freedman

Food Defense
HACCP Utilization and Food Safety Systems

8:30 Panelists:

MARK KAZMIERCZAK, Gryphon Scientific, LLC, Takoma Park, MD, USA

AMY KIRCHER, Food Protection and Defense Institute, Saint Paul, MN, USA

VICKIE LEWANDOWSKI, Saputo Cheese, Lincolnshire, IL, USA

ASHLEY MILLER, National Restaurant Association, Chicago, IL, USA

RYAN NEWKIRK, U.S. Food and Drug Administration, College Park, MD, USA

JOSEPH SCIMECA, Cargill, Minneapolis, MN, USA

10:00 Break – Refreshments Available in the Exhibit Hall

RT3 Precious Water – The Tricky Business of Balancing Water Sustainability and Food Safety

Ballroom H

Organizers: Chad Galer, Gry Dawn Terrell
Convenor: Gry Dawn Terrell

Dairy Quality and Safety
International Food Protection Issues
Water Safety and Quality

8:30 Panelists:

PEGGY TOMASULA, Dairy and Functional Foods Research Unit USDA/ARS/Eastern Regional Research Center, Wyndmoor, PA, USA

JEREMY TRAVIS, Hilmar Cheese Company, Hilmar, CA, USA

PHYLLIS POSY, Atlantium Technologies, Har Tuv Industrial Park, Israel

10:00 Break – Refreshments Available in the Exhibit Hall

RT4 How Much of a Mystery Remains with Whole Genome Sequencing?

Room 250 A-C

Organizer and Convenor: Delia Murphy

Sponsored by ILSI North America Food Microbiology Committee

Advanced Molecular Analytics
Epidemiology
International Food Protection Issues

8:30 Panelists:

PETER GERNER-SMIDT, Centers for Disease Control and Prevention, Atlanta, GA, USA

KATHIE GRANT, Public Health England, Glasgow, UK

ERROL STRAIN, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA

MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

PAMELA WILGER-BUKARI, Cargill, Inc., Wayzata, MN, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S6 Developing a Risk-based Food Safety Plan for Fresh Produce in Retail Food Establishments

Ballroom B

Organizer and Convenor: Jill Hollingsworth

Food Hygiene and Sanitation
Fruit and Vegetable Safety and Quality
Retail and Foodservice

10:30 *Listeria monocytogenes* in Retail Produce Environments
HALEY OLIVER, Purdue University, West Lafayette, IN, USA

11:00 Strategies for Controling Pathogens in Fresh Produce at Retail Establishments
KARL MATTHEWS, Rutgers University, New Brunswick, NJ, USA

11:30 Essentials of a Food Safety Plan for Fresh Produce in Retail Food Establishments
JILL HOLLINGSWORTH, Chemstar Corp., Lithia Springs, GA, USA

12:00 Lunch Available in the Exhibit Hall

S7 Rock On! Interdisciplinary Teams Protecting Nachos at a Concert Near You

Ballroom G + I

Organizer and Convenor: Amy Kircher

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Food Defense
Food Fraud
Retail and Foodservice

10:30 Entertainment and Eating: How Do We Protect Our Guests
BILLY LANGENSTEIN, U.S. Bank Stadium, Minneapolis, MN, USA

11:00 Planning for an Additional Million People in Your City
DANIEL HUFF, Minneapolis Department of Health, Minneapolis, MN, USA

11:30 Criminal Investigation and Food
FRED STEPHENS, Federal Bureau of Investigation, Brooklyn Park, MN, USA

12:00 Lunch Available in the Exhibit Hall

S8 From Cow to Curd: Defining Microbiomes in the Dairy Industry

Ballroom J

Organizers: Kristin M. Schill, Chad Galer, Joelle K. Salazar
Convenors: Chad Galer, Stephen Walker, Kristin M. Schill

Dairy Quality and Safety
Sanitary Equipment and Facility Design

10:30 Omics Insights into Raw Milk Gouda Cheese
JOELLE K. SALAZAR, U.S. Food and Drug Administration, Bedford Park, IL, USA

11:00 Identifying the Microbiota of a Cheese Processing Facility
ZHENGYAO (ZEYA) XUE, University of California – Davis, Davis, CA, USA

11:30 Using Metagenomics to Evaluate Sanitation Effectiveness in a Dairy Facility
ANGELA ANANDAPPA, University of Nebraska-Lincoln, Lincoln, NE, USA

12:00 Lunch Available in the Exhibit Hall

S9 Non-NGS Methods for Foodborne Pathogen Identifications

Room 250 A-C

Organizers and Convenors: Jianfa Bai, Keith Lampel

Advanced Molecular Analytics
Applied Laboratory Methods

10:30 What Does Non-NGS Methods Offer for Food Safety
RODNEY MOXLEY, University of Nebraska-Lincoln, Lincoln, NE, USA

11:00 Methods Used in the Food Industry
PAMELA WILGER-BUKARI, Cargill, Inc., Wayzata, MN, USA

11:30 Current Status of PCR-based Technologies
JIANFA BAI, Kansas State University, Manhattan, KS, USA

12:00 Lunch Available in the Exhibit Hall

S10 Non-thermal In-package Pasteurization of Food
Room 251 A-C
Organizers: Gregory Fridman, Tony Jin
Convenors: Kay Cooksey, Claire Sand
Sponsored by the IAFP Foundation

Food Packaging
Fruit and Vegetable Safety and Quality
Meat and Poultry Safety and Quality

10:30 Antimicrobial Materials Developed for In-packaging Pasteurization: Approaches and Challenges
TONY JIN, U.S. Department of Agriculture - ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

11:00 Inactivation of Foodborne Pathogens in Fresh Produce by In-package Aerosolization of Antimicrobials
XUETONG FAN, U.S. Department of Agriculture - ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

11:30 Cold Plasma as an In-package Sanitizing Treatment: Challenges and Opportunities
BRENDAN A. NIEMIRA, U.S. Department of Agriculture - ARS, Wyndmoor, PA, USA

12:00 Lunch Available in the Exhibit Hall

S11 The Challenge of Challenge Studies
Room 251 D-F
Organizers: Jena Roberts, May Yeow
Convenor: Jena Roberts

Beverages and Acid/Acidified Foods
HACCP Utilization and Food Safety Systems
Microbial Modelling and Risk Analysis

10:30 When to Execute a Challenge Study to Meet FSMA and Other Regulatory Requirements
CARRIE FERSTL, Covance Food Solutions, Livermore, CA, USA

11:00 Microbial Methods for Challenge Studies with Case Studies and Insights
ELIZABETH GRASSO-KELLEY, Illinois Institute of Technology, Bedford Park, IL, USA

11:30 Regulatory Perspective
NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA

12:00 Lunch Available in the Exhibit Hall

RT5 Identifying Knowledge Gaps Surrounding the Safe Production, Sale and Consumption of Cannabis and Cannabis-related Products
Ballroom H
Organizers: Lily Yang, Stephanie Barnes, Daniel Weller
Convenor: Lily Yang

Food Chemical Hazards and Food Allergy
Food Law

10:30 Panelists:

FRANCIS BOERO, Famiglia Properties LLC, Plainfield, NJ, USA

MIEKO HESTER, NORML, San Francisco, CA, USA

SCOTT RIEFLER, Tarukino, Seattle, WA, USA

RUSTY ROCK, Oregon Department of Agriculture, Salem, OR, USA

ALEXANDRA TUDOR, TEQ Analytical Labs, Aurora, CO, USA

12:00 Lunch Available in the Exhibit Hall

T1 Technical Session 1 – Modeling and Risk Assessment
Room 150 A-C + G
Convenors: Nitin Dhowlaghar, Bala Kottapalli

T1-01 8:30 Assessing the Performance of *Clostridium perfringens* Cooling Models for Cooked, Cured Meat and Poultry Products
TIMOTHY MOHR, Vijay Juneja, U.S. Department of Agriculture – FSIS - OPHS, Salem, OR, USA

T1-02 8:45 Steak-Safe Temperature Estimator at a Klick: A Simple, Spreadsheet-based Tool to Create Safe Cooking Time Labels for Mechanically Tenderized Beef Steaks
JOYJIT SAHA, Ravirajsinh Jadeja, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

T1-03 9:00 Lis-RA: A Software Tool to Predict Listeriosis Risk in Different Ready-to-Eat Food Categories
Fernando Pérez-Rodríguez, SARA BOVER-CID, Elena Carrasco, Anna Jofré, Antonio Valero, IRTA, Food Safety Programme, Monells, Spain

T1-04 9:15 Quantitative Antimicrobial Risk Assessment: Data Gaps to Put Animal Source Foods in Perspective
FRANCISCO ZAGMUTT, Solenne Costard, Jane Pouzou, Mandy Carr, Paul Morley, Keith Belk, EpiX Analytics, Fort Collins, CO, USA

T1-05 9:30 Machine Learning Methods as a Tool for Risk Assessment Applying Next Generation Sequencing Data
PATRICK MURIGU KAMAU NJAGE, Clementine Henri, Pimlapas Leekitcharoenphon, Rene Hendriksen, Tine Hald, National Food Institute, Denmark Technical University, Lyngby, Denmark

T1-06 9:45 Comparative Risk Assessment to Prioritize Pork Products for Potential Foodborne Hepatitis E Virus Transmission
MARTIJN BOUWKNEGT, Bart-Jan van't Hooft, Karin Koppen, Henk Rietvelt, Gerrit Straatsma, Lourens Heres, Vion, Boxtel, The Netherlands

10:00 Break – Refreshments Available in the Exhibit Hall

T1-07 10:30 Modeling the Risk of Salmonellosis in the North American Market from Consumption of Walnut Kernels Produced in the United States
JAVAD BAROUEI, Donald W. Schaffner, Linda J. Harris, Prairie View A&M University, Cooperative Agricultural Research Center, Prairie View, TX, USA

T1-08 10:45 Modelling *Salmonella* Contamination and Survival on Tomatoes at the Farm and Packinghouse
JENNIFER TODD-SEARLE, Michelle Danyluk, Donald W. Schaffner, Rutgers University, New Brunswick, NJ, USA

T1-09 11:00 Performance Evaluation of the Canadian Food Inspection Agency Risk Assessment Model Considering Multiple Food Commodities and Sub-products
ROMINA ZANABRIA, Manon Racicot, Alexandre Leroux, Suzanne Savoie, Raphael Plante, Hargun Chandhok, Sunny Ng, Genevieve Comeau, Anna Mackay, Sylvain Quessy, Canadian Food Inspection Agency, Ottawa, ON, Canada

T1-10 11:15 Burden of Disease as a Metric for Risk-based Sampling of Imported Foods
JURGEN CHARDON, Eric Evers, cZ&O/RIVM, Bilthoven, The Netherlands

T1-11 11:30 Integrated Risk Assessment of Nonylphenol and Bisphenol A through Dietary Intake in Taiwan
HSIU-LING CHEN, Wei-Hsiang Chang, Ching Chang Lee, Department of Food Safety/Hygiene and Risk Management, National Cheng Kuang University, Tainan, Taiwan

T1-12 11:45 Identifying the Food Type and Location Source of Large-scale Outbreaks of Foodborne Disease
ABIGAIL HORN, Marcel Fuhrmann, Annemarie Käsbohrer, Matthias Filter, Federal Institute for Risk Assessment, Berlin, Germany

12:00 Lunch Available in the Exhibit Hall

T2 Technical Session 2 – Antimicrobials

Room 151 D-F

Convenors: Jovana Kovacevic, Deog-Hwan Oh

T2-01 8:30 Assessment of the Relationship between Foodborne Illnesses Due to Beef Contaminated with Antimicrobial-resistant Bacteria and Prophylactic Use of Antimicrobials in Beef Cattle
SOLENNE COSTARD, Jane Pouzou, Francisco Zagmutt, EpiX Analytics, Fort Collins, CO, USA

T2-02 8:45 Effect of "Functional Ice" on *Salmonella* Inoculated on Raw Poultry Parts during Storage
JASMINE KATARIA, Meredith Johnson, Avery Smith, Laura Garner, Amit Morey, Auburn University, Auburn, AL, USA

T2-03 9:00 Antimicrobial Activity of Commercial Protective Cultures against *Listeria monocytogenes* and *Escherichia coli* O157:H7
LANG SUN, Dennis D'Amico, University of Connecticut, Storrs, CT, USA

T2-04 9:15 Inhibition of *Listeria monocytogenes* on Cured Ready-to-Eat Meats by Sodium-free and Clean-label Antimicrobial Ingredients
JIEYIN LIM, Eelco Heintz, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA

T2-05 9:30 Effect of Storage Temperature on Injured *Salmonella* Bacteria on Apples Treated with Antimicrobial and Cold Plasma Combination
DIKE UKUKU, Brendan Niemira, U.S. Department of Agriculture-ARS-ERRC-FSIT, Wyndmoor, PA, USA

T2-06 9:45 Antimicrobial Activity of Fermented Milk Protein after Maillard Reaction to Enteropathogenic Bacteria
YUJIN KIM, Sejeong Kim, Nam Su Oh, Yohan Yoon, Kyoung-Hee Choi, Sookmyung Women's University, Seoul, South Korea

10:00 Break – Refreshments Available in the Exhibit Hall

T2-07 10:30 Recombinant Probiotic *Lactobacillus casei* Expressing the Internalins AB or *Listeria* Adhesion Protein (LAP) Affect Specific Stages in the *Listeria monocytogenes* Infection Process In-vitro
MOLOKO MATHIPA, Taylor Bailey, Mapitsi Thantsha, Arun Bhunia, University of Pretoria, Pretoria, South Africa

T2-08 10:45 Antimicrobial Hydrogel Patches to Control Gram-positive Bacteria on Food Surface
HYEMIN OH, Hyeji Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

T2-09 11:00 CRISPR/Cas9 Directed Inactivation of Polymyxin Expression in *Paenibacillus polymyxa* for Sole Production of the Bacteriocin, Paenibacillin
EMILY HOLMAN, Ahmed Yousef, The Ohio State University, Columbus, OH, USA

T2-10 11:15 Synergistic Antimicrobial Effect of Eugenol and Biologically Synthesized Silver Nanoparticles against *Listeria monocytogenes*
GIOVANA BODNAR, Peter Muriana, Gerson Nakazato, Li Ma, National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Oklahoma State University, Stillwater, OK, USA

T2-11 11:30 Antimicrobial Resistance in the Food Industry – Is It Really Related to Sanitation?
RUTH PETRAN, Scott Burnett and Elaine Black, Ecolab Inc., Eagan, MN

T2-12 11:45 Comparison of Thermal Inactivation between *Staphylococcus carnosus* CS-299 and CS-300 as Potential Hepatitis A Virus Surrogates
MAYURI PATWARDHAN, Mark Morgan, Doris D'Souza, University of Tennessee, Knoxville, TN, USA

12:00 Lunch Available in the Exhibit Hall

IAFP2018
ANNUAL MEETING
Salt Lake City, Utah
JULY 8-11

U.S. REGULATORY UPDATE ON FOOD SAFETY

Stephen Ostroff

Deputy Commissioner for Foods and Veterinary Medicine
U.S. Food and Drug Administration

Stephen Ostroff, M.D., is the Deputy Commissioner for Foods and Veterinary Medicine with the U.S. FDA, a position he assumed in May 2016. In this role, Dr. Ostroff oversees the food and animal health activities of the FDA, including FDA's responsibilities in the areas of food safety and nutrition; food labeling; food and color additives; cosmetics; dietary supplements; animal drugs and animal feed; and research to support the food and veterinary medicine mission of the FDA.

Carmen Rottenberg

Acting Deputy Under Secretary for Food Safety
U.S. Department of Agriculture

Carmen Rottenberg is Acting Deputy Under Secretary for the USDA's Office for Food Safety. In this position since August 2017, Ms. Rottenberg oversees development, implementation, and enforcement of all of the Food Safety and Inspection Service's (FSIS') regulations, policies, and programs. Prior to this position, she held leadership roles in FSIS' Office of the Administrator, including serving as the Chief of Staff, Chief Operating Officer and, most recently, Deputy Administrator.

Monday, July 9
12:15 p.m. – 1:15 p.m.
Ballroom G + I

MONDAY AFTERNOON
JULY 9

Posters will be on display 10:00 a.m. – 6:00 p.m.
(See details beginning on page 67)

12:15 P.M. – 1:15 P.M.

U.S. REGULATORY UPDATE ON FOOD SAFETY
STEPHEN OSTROFF, U.S. Food and Drug Administration and CARMEN ROTTENBERG, U.S. Department of Agriculture
Ballroom G + I

SS1 Listeriosis Outbreak – Special Session

Ballroom D

Organizer and Convenor: Kalmia Kniel

Epidemiology
International Food Protection Issues
Viral and Parasitic Foodborne Disease

1:30 *Listeria monocytogenes* in South Africa – Overview and Next Steps
LUCIA ANELICH, Anelich Consulting, Pretoria, South Africa

2:00 Lessons Learned and Global Implications of *Listeria monocytogenes*
PETER BEN EMBAREK, World Health Organization/ INFOSAN Network, Geneva, Switzerland

2:30 *Listeria monocytogenes*: Molecular Mechanism during Gastrointestinal Phase of Infection
ARUN BHUNIA, Purdue University, West Lafayette, IN, USA

3:00 Break – Refreshments Available in the Exhibit Hall

3:30 *Listeria* in Rock Melons in Australia
DEON MAHONEY, Dairy Food Safety Victoria, Melbourne, Australia

4:00 *Listeria* Control Measures in Processing Plants
PETER TAORMINA, Etna Consulting Group, Cincinnati, OH, USA

4:30 *Listeria monocytogenes*: Future Considerations
CATHERINE DONNELLY, University of Vermont, Burlington, VT, USA

S12 Challenges for HACCP and Food Safety Systems in Multi-jurisdiction Food Facilities

Ballroom A + C

Organizers and Convenors: Sally Klinect, Loralyn Ledenbach

Food Law
HACCP Utilization and Food Safety Systems
International Food Protection Issues

1:30 Documenting Food Safety Plans in Multi-jurisdiction Food Facilities
SALLY KLINECT, Nestlé, Solon, OH, USA

2:00 Balancing Different Jurisdiction Guidance for Hazard Analysis
BALASUBRAHMANYAM KOTTAPALLI, Conagra Brands, Omaha, NE, USA

2:30 Dealing with Multiple Inspectors, Nationally and Internationally
LORALYN LEDENBACH, Kraft Heinz Company, Glenview, IL, USA

3:00 Break – Refreshments Available in the Exhibit Hall

3:30 Auditing against Different Regulatory Requirements
MICHAEL ROBACH, Cargill, Minneapolis, MN, USA

4:00 Training and Certification Challenges
ADAM BORGER, University of Wisconsin-Madison, Madison, WI, USA

4:30 Legal Challenges
MAILE HERMIDA, Hogan Lovells US LLP, Washington, D.C., USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S13 Agricultural Water Quality Standards: Striving for Safety with Incomplete Science because Doing Nothing Was Not an Option

Ballroom G + I

Organizers: Michelle Smith, Don Stoeckel
Convenors: Arie Havelaar, Phillip Tocco

Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety
Water Safety and Quality

1:30 Regulatory Update: Revisiting Agricultural Water Quality Standards
CHELSEA DAVIDSON, U.S. Food and Drug Administration, College Park, MD, USA

2:00 Alternative Methods for Evaluating Water Quality
CHANNAH ROCK, University of Arizona, Maricopa, AZ, USA

2:30 Optimizing Agricultural Water Sampling Strategies: Variability across Time and Space
DANIEL WELLER, Cornell University, Ithaca, NY, USA

3:00 Break – Refreshments Available in the Exhibit Hall

3:30 Water on Our Minds: Collective Findings and Recommendations from CPS Pew and Ag Water Summit
ELIZABETH BIHN, Cornell University, Geneva, NY, USA

4:00 Risk-based Approach to Identify Hazards, Provide Context for Monitoring and Inform Decision Making
JOHN RAVENSCROFT, U.S. Environmental Protection Agency, Washington, D.C., USA

4:30 Kiss: The Merits of a Simplified Approach to Agricultural Water Testing
TBD

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S14 **Pathogenic *E. coli* in Low-moisture Food Systems, Contamination, Survival, and Risks**
Ballroom H
Organizers: Elizabeth Grasso-Kelley, Susanne Keller, Aparna Tatavarthy
Convenors: Elizabeth Grasso-Kelley, Aparna Tatavarthy

Low-water Activity Foods

1:30 Routes of Contamination, Processing Measures, and Detection in Flour
KENT JULIOT, Ardent Mills, Denver, CO, USA

2:00 Influences of Food Matrix Compositions on the Resistance and Persistence of *E. coli* during Food Processing
PABLO ALVAREZ, Novolyze Inc., Cambridge, MA, USA

2:30 Regulatory Perspective: Targeting the Most Persistent Pathogen
SUSANNE KELLER, U.S. Food and Drug Administration, Summit-Argo, IL, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S15 **Heat-resistant *E. coli* – Some Like It Hot**
Ballroom J
Organizers: Mick Bosilevac, Phyllis Posy
Convenors: Uday Dessai, John Johnston
Sponsored by the IAFP Foundation

Applied Laboratory Methods
Meat and Poultry Safety and Quality
Water Safety and Quality

1:30 Heat-resistant Enteric Bacteria from Food Processing Facilities: A Cause for Concern?
LYNN MCMULLEN, University of Alberta, Edmonton, AB, Canada

2:00 Transferable Heat Resistance in Food and Clinical *E. coli* Isolates
JOERG HUMMERJOHANN, Agroscope, Food Microbial Systems, Bern, Switzerland

2:30 Extremely Heat-resistant *E. coli* in the Food–Water Nexus
NORMAN NEUMANN, University of Alberta School of Public Health, Edmonton, AB, Canada

3:00 Break – Refreshments Available in the Exhibit Hall

S16 **The Meaning of "Clean" – Fit for Purpose Water for Field, Factory and Food Preparation**
Room 251 A-C
Organizers: Leon Gorris, Sarah Cahill
Convenor: Leon Gorris
Sponsored by the IAFP Foundation

International Food Protection Issues
Microbial Modelling and Risk Analysis
Water Safety and Quality

1:30 Global Guidance on "Fit-for-purpose" Water Use in Food Production – Is It Enough?
ELISABETTA LAMBERTINI, RTI International, Rockville, MD, USA

2:00 Microbiological Risk Assessment Approaches to Assess Safety and Suitability of Water for Different Purposes in Food Production/Processing
PATRICK SMEETS, KWR Watercycle Research Institute, Nieuwegein, The Netherlands

2:30 Experiences in Water Recovery and Reuse in Beverage Production and Food Processing
SUCHART CHAVEN, PepsiCo, Dubai, United Arab Emirates

3:00 Break – Refreshments Available in the Exhibit Hall

RT6 **Food Safety Recalls in the Age of Online Grocery Stores**
Ballroom B
Organizers: Benjamin Chapman, Linda J. Harris, Donald W. Schaffner
Convenor: Linda J. Harris

Communication, Outreach and Education
Food Safety Culture
Retail and Foodservice

1:30 Panelists:

RICHARD BECKSTRAND, Utah Department of Agriculture and Food, Salt Lake City, UT, USA

BENJAMIN CHAPMAN, North Carolina State University, Raleigh, NC, USA

WILLIAM HALLMAN, Rutgers University, New Brunswick, NJ, USA

LINDA J. HARRIS, University of California-Davis, Department of Food Science and Technology, Davis, CA, USA

ALLISON JENNINGS, Amazon, Seattle, WA, USA

MICKEY PARISH, U.S. Food and Drug Administration, Washington, D.C., USA

3:00 Break – Refreshments Available in the Exhibit Hall

RT7 **Global Perspectives on Strengthening Food Safety Performance: How to Keep up in a Changing World**
Room 250 A-C
Organizers: Lone Jespersen, Laura Nelson, Wendy White
Convenor: Lone Jespersen

Food Safety Culture
HACCP Utilization and Food Safety Systems
International Food Protection Issues

1:30 Panelists:

RICHARD ARSENAULT, Canadian Food Inspection Agency, Ottawa, ON, Canada

AMANDA HILL, Dairy Food Safety, Victoria, Camberwell, Australia

XIUMEI LIU, China National Center for Food Safety Risk Assessment, Beijing, China

IAN MC WATT, Food Standards Scotland, Aberdeen, UK

STEPHEN OSTROFF, U.S. Food and Drug Administration, Silver Spring, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S17 How to Show "Done" is Done: Designing Cooking Procedures for RTE Foods

Ballroom J

Organizers and Convenors: Susan Hammons, Shinhey Kim

Sponsored by USDA-FSIS

Food Law
HACCP Utilization and Food Safety Systems
Meat and Poultry Safety and Quality

3:30 Regulatory Update on Cooking Procedures for RTE Foods
SUSAN HAMMONS, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

4:00 Impingement Ovens (NAMIF 2016 Final Report)
KATHLEEN GLASS, University of Wisconsin-Madison, Madison, WI, USA

4:30 A University Extension Perspective
JOHN MARCY, University of Arkansas, Fayetteville, AR, USA

S18 Using "Big Data" to Predict Critical Food Safety Violations

Room 250 A-C

Organizer and Convenor: Thomas Ford

Food Safety Culture
HACCP Utilization and Food Safety Systems
Retail and Foodservice

3:30 Using "Big Data" to Predict Food Safety Critical Violations
THOMAS FORD, Ecolab Inc., Greensboro, NC, USA

4:00 Using Big Data: Building the Model for Prediction
BENJAMIN CHAPMAN, North Carolina State University, Raleigh, NC, USA

4:30 Using Big Data: Taking It to the Store Level
CORY HEDMAN, Meijer Inc., Grandville, MI, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S19 No Nodding Off: Creative Ways to Make Food Safety Fun

Room 251 A-C

Organizer and Convenor: Linda Leake

Sponsored by the IAFP Foundation

Communication, Outreach and Education
Developing Food Safety Professionals

3:30 Food Safety Training Need Not be Tedious: Take Time to Grab a Guitar and Liven the Microbiome up with a Toe-tapping Song or Two
RONALD SCHMIDT, University of Florida (Retired), Gainesville, FL, USA

4:00 Food Safety Parodiomics: Changing Lyrics and Attitudes Using Contemporary Music
CARL WINTER, University of California-Davis, Davis, CA, USA

4:30 Microbiology Class Waiting List Madness: How to Pack 'Em in with Red Hot Chili Peppers, Glow Sticks, Hula Hoops and a Ukulele
DAVID BAUMLER, University of Minnesota, St. Paul, MN, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

RT8 Best Practices for Safe Transportation of Food

Ballroom B

Organizers: Vanessa Cranford, Michele Sayles, Aparna Tatavarthy
Convenor: Vanessa Cranford

Food Defense
Food Hygiene and Sanitation
HACCP Utilization and Food Safety Systems

3:30 Panelists:

BETSY BOOREN, OFW Law, Washington, D.C., USA

DONNA GARREN, American Frozen Food Institute, McLean, VA, USA

KEITH JACKSON, Performance Food Group, Richmond, VA, USA

ANSEN POND, Pilgrim's Pride, Mt. Pleasant, TX, USA

MICHELE SAYLES, Diamond Pet, Meta, MT, USA

KEVIN SMITH, U.S. Food and Drug Administration, College Park, MD, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

T3 Technical Session 3 – Produce

Room 150 A-C + G

Convenors: Achyut Adhikari, Erin L. DiCaprio

T3-01 1:30 Multi-regional Risk Analysis of Manure Use: Survival and Persistence of Foodborne Pathogens in Soil and Contamination Risk of Fresh Produce in Certified Organic Farms
ALDA PIRES, Thais Ramos, Michele Jay-Russell, Patricia Millner, James Stover, Paulo Pagliari, Mark Hutchinson, Jason Liley, Fawzy Hashem, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California, Davis, CA, USA

T3-02 1:45 Creek to Table – Investigating the Movement of Fecal Indicators, Bacterial Pathogens, and Total Bacterial Communities through Creek Water Irrigation of Kale and Radishes: A Conserve Study
SARAH ALLARD, Mary Theresa Callahan, Anthony Bui, Angela Marie C. Ferelli, Jessica Chopyk, Shirley A. Micallef, Amy Sapkota, Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health, College Park, MD, USA

T3-03 2:00 A Multi-regional Risk Analysis of Raw Manure Soil Amendment Use on Certified Organic Farms: Survival of Generic *Escherichia coli* in Soil and Produce
THAIS RAMOS, Michele Jay-Russell, Patricia Millner, James Stover, Paulo Pagliari, Mark Hutchinson, Jason Liley, Fawzy Hashem, Alda Pires, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California, Davis, CA, USA

T3-04 2:15 Molecular Characterization of Shiga Toxin-producing *Escherichia coli* and *Salmonella* Isolates from Untreated Cattle and Poultry Manure Sources at Livestock Farms and Composting Facilities in the Western United States
MICHELE JAY-RUSSELL, Rebecca L. Bell, James Pettengill, Paula Rivadeneira, Peiman Aminabadi, David Ingram, Hugh Rand, Pramod Pandey, Jane Van Doren, Yuhuan Chen, Western Center for Food Safety, University of California, Davis, CA, USA

T3-05 2:30 Infiltration of Bacteria through Leaf Stomatal Openings during a Vacuum Cooling Process: Mechanistic Understanding
MOHSEN RANJBARAN, Ashim Datta, Cornell University, Ithaca, NY, USA

T3-06 2:45 Evaluation and Validation of Non-living Bacterial Surrogates in Produce Wash Systems
LAURIE CLOTILDE, Antonios Zografos, Nicole Herbold, Molly Trump, Eric Wilhelmsen, SafeTraces, Pleasanton, CA, USA

3:00 Break – Refreshments Available in the Exhibit Hall

T3-07 3:30 Survival and Transfer of *Salmonella* on Fresh Cucumbers during Waxing
JIIN JUNG, Donald W. Schaffner, Rutgers University, New Brunswick, NJ, USA

T3-08 3:45 Establishing a Baseline for *Listeria monocytogenes* and *Listeria* spp. Prevalence 3 to 4 Hours into Production in Specialty Crop Facilities
GENEVIEVE SULLIVAN, Martin Wiedmann, Cornell University, Ithaca, NY, USA

T3-09 4:00 Harborage of *Listeria* spp. in Tomato Packinghouse Processing Equipment
ALEXIS HAMILTON, Faith Critzer, Annette Wszelaki, University of Tennessee, Department of Food Science, Knoxville, TN, USA

T3-10 4:15 Impact of Fusarium Fruit Rot Caused by *Fusarium fujikuroi* and *Fusarium oxysporum* on *Salmonella enterica* Newport Colonization and Growth on Melon
ROBERT KORIR, Kathryne Everts, Shirley A. Micallef, University of Maryland-College Park, College Park, MD, USA

T3-11 4:30 Use of Probiotics for Inhibition and Elimination of *Listeria monocytogenes* on Fresh and Caramel Apples
SIOBHAN REILLY, Edward Reidy, Michele Shewmaker, Miriam Velasco, Log10, LLC, Ponca City, OK, USA

T3-12 4:45 Protective Cultures and Caramel Apples: A Food Safety Mindset to Mitigate *Listeria monocytogenes*
Samantha White, William J. Henry, Besnik Hidri, VERONIQUE ZULIANI, Ben Howard, Chr Hansen, Arpajon, France

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

T4 Technical Session 4 – Molecular Analytics, Genomics and Microbiome

Room 151 D-F

Convenors: Francisco Diez-Gonzalez, Ying Li

T4-01 1:30 Metagenomic Investigations of Antimicrobial Resistance in Beef, Pork, and Broiler Meat
MARGARET WEINROTH, Noelle Noyes, Xiang Yang, Pablo Rovira, Enrique Doster, Chris Dean, Jennifer Parker, Zaid Abdo, Christina Boucher, Jamie Ruiz, Paul Morley, Keith Belk, Department of Animal Sciences, Colorado State University, Fort Collins, CO, USA

T4-02 1:45 Whole Genome Sequence Analysis and Antimicrobial Resistance Profiles of *Listeria monocytogenes* Isolated from Ready-to-Eat Meat Products in South Africa
ITUMELENG MATLE, Evelyn Madoroba, Agricultural Research Council – Bacteriology Division, Pretoria, South Africa

T4-03 2:00 Phage-like Plasmids are a Novel Class of Temperate Bacteriophages That Encode Antibiotic-resistance Genes of Clinical Importance
ANNA COLAVECCHIO, Margot Amitrano, Lawrence Goodridge, McGill University, Ste-Anne-de-Bellevue, QC, Canada

T4-04 2:15 Resistance Markers and Algorithm to Predict Antibiotic Resistance in *Salmonella* spp. by Whole Genome Sequencing
YE HTUT ZWE, Seow Fong Chin, Kyaw Thu Aung, Ramona Alikiiteaga Gutierrez, Lee Ching NG, Liang Yang, Hyun-Gyun Yuk, Food Science and Technology Programme, National University of Singapore, Singapore, Singapore

T4-05 2:30 Metagenomic Profiling of Antibiotic Resistance Genes Associated with Lettuce Leaf Surfaces Grown in Soils Receiving Cattle Manure-based Amendments
GISELLE KRISTI GURON, Amy Pruden, Monica Ponder, Virginia Tech, Blacksburg, VA, USA

T4-06 2:45 Core and Accessory Genome-wide Association Studies to Investigate Genetic Determinants Involved in *Listeria monocytogenes* Cold Adaptation
LENA FRITSCH, Jean-Francois Mariet, Arnaud Felten, Jean-Christophe Augustin, Laurent Guillier, Anses, Maisons-Alfort, France

3:00 Break – Refreshments Available in the Exhibit Hall

T4-07 3:30 Characterization of *Listeria monocytogenes* Isolates from Poultry Processing Plants
LAUREN HUDSON, Shaokang Zhang, Xiangyu Deng, Mark Berrang, Richard Meinersmann, Mark Harrison, University of Georgia, Athens, GA, USA

MONDAY PM

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

T4-08 3:45 Recto-Anal Junction Microbiota Composition in *Escherichia coli* O157:H7-Shedding Cattle
RAIES MIR, Vijay Sharma, Robert Schaut, Torey Looft, Heather Allen, Indira Kudva, National Animal Disease Center/Oak Ridge Institute for Science and Education, Ames, IA, USA

T4-09 4:00 Comparison of Automated and Manual Next Generation Sequencing Library Preparations for Analysis of *Salmonella* and *Escherichia coli*
SARITA RAENGPRADUB, Jiaojie Zheng, Timothy Freier, Hui Zhu, Beum Jun Kim, Rubina Yasmin, Richard Montagna, Merieux NutriSciences, Crete, IL, USA

T4-10 4:15 Re-classification of *Bacillus cereus* Group Dairy Isolates and Characterization of Their Pathogenic Potential
JASNA KOVAC, Laura Carroll, Rachel Miller, Sarah Beno, Manjari Mukherjee, Martin Wiedmann, The Pennsylvania State University, University Park, PA, USA

T4-11 4:30 Metabolic Profiling and Transcriptomic Response: Synergistic Action of Electrolyzed Water and Mild Heat on Inactivating *Escherichia coli* O157:H7
HONGSHUN YANG, Qin Liu, Lin Chen, National University of Singapore, Singapore, Singapore

T4-12 4:45 Detecting Genomic Contamination with Kalamari
LEE KATZ, Taylor Griswold, Rebecca Lindsey, Ana Lauer, Monica Im, Grant Williams, Jessica Halpin, Gerardo Gómez, Katie Roache, Zuzana Kucerova, Cheryl Tarr, Heather Carleton, Centers for Disease Control and Prevention, Atlanta, GA, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

EVENING OPTIONS

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

AFFILIATE MEETINGS

5:15 p.m. – 6:00 p.m.
Latin America Group Meeting, *Ballroom B*

5:15 p.m. – 6:30 p.m.
African Continental Association for Food Protection, *Ballroom D*

5:15 p.m. – 6:15 p.m.
Southeast Asia Association for Food Protection, *Room 151 D-G*

5:15 p.m. – 6:15 p.m.
China Association for Food Protection and Chinese Association for Food Protection in North America, *Room 150 A-C & G*

Notes

TUESDAY MORNING
JULY 10

Posters will be on display 10:00 a.m. – 6:00 p.m.
(See details beginning on page 77)

S20 **How Well Do We Understand Microorganisms in a Food-handling Environment?**
Ballroom G + I
Organizers: Jeffrey Kornacki, Ruth Petran, Purnendu Vasavada
Convenors: Ruth Petran, Purnendu Vasavada

Food Hygiene and Sanitation
HACCP Utilization and Food Safety Systems
Retail and Foodservice

8:30 Persistent vs. Transient Strains and How to Find Them
JEFFREY KORNACKI, Kornacki Microbiology Solutions, Inc., Madison, WI, USA

9:00 What Analysis Can be Used to Determine if Flora Changes
HENK DEN BAKKER, Center for Food Safety, University of Georgia, Griffin, GA, USA

9:30 What are Reasonable Reactions to Finding a New Organism?
TIMOTHY JACKSON, Driscoll's, Watsonville, CA, USA

10:00 Break – Refreshments Available in the Exhibit Hall

10:30 What Do We Know about Microorganisms in a Food Retail Setting?
HALEY OLIVER, Purdue University, West Lafayette, IN, USA

11:00 Legal Implication to Knowing and Understanding the Microbial Profile of a Processing Plant
SHAWN STEVENS, Food Industry Counsel, LLC, Random Lake, WI, USA

11:30 Regulatory Implications of the Microorganisms in a Food-handling Environment
DON ZINK, IEH Laboratories & Consulting Group, Taylors, SC, USA

S21 **Biological Variability in Thermal Processing: Impact for Process Control and Validation – What You Need to Know about Microbiological Variability for Food Quality and Safety Control**
Ballroom A + C
Organizer and Convenor: Marcel Zwietering
Sponsored by the IAFP Foundation

HACCP Utilization and Food Safety Systems
Low-water Activity Foods
Microbial Modeling and Risk Analysis

8:30 Impact of Natural Diversity in Heat Resistance of Bacteria and Bacterial Spores on Food Safety and Quality
HEIDY DEN BESTEN, Wageningen University, Wageningen, The Netherlands

9:00 Combining Challenge Tests and Predictive Microbiology in Thermal Process Validations of Low-moisture Food
MARIEM ELLOUZE, Nestlé, Lausanne, Switzerland

9:30 Impact of Variability in Regulation and Inspection
JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S22 **International Experiences with Systems for Hazard Monitoring and Rapid Risk Assessment**
Ballroom B
Organizers and Convenors: Leon Gorris, Janell Kause

HACCP Utilization and Food Safety Systems
International Food Protection Issues
Microbial Modeling and Risk Analysis

8:30 Identification, Triage and Tracking of Potential Emerging Food Safety Risks
MICHELLE CATLIN, U.S. Department of Agriculture– FSIS, Washington, D.C., USA

9:00 International Experience in Identification an Assesment of Emerging Risks in Food and Feed
LEON GORRIS, Unilever R&D Vlaardingen, Vlaardingen, The Netherlands

9:30 Enhancing Surveillance and Early Warning Capacities Locally, Improving Food Safety Intelligence Globally
SARAH CAHILL, Food and Agriculture Organization of the United Nations, Rome, Italy

10:00 Break – Refreshments Available in the Exhibit Hall

S23 **Integrated Approaches to Measure and Impact Consumer Food-handling Behaviors**
Ballroom D
Organizers: Ellen Thomas, Margaret Kirchner, Benjamin Chapman
Convenors: Margaret Kirchner, Ellen Thomas

Food Safety Culture
Food Safety Education

8:30 Consumer-handling Information Collected through Focus Groups and Online Surveys
SHERYL CATES, RTI International, Research Triangle Park, NC, USA

9:00 USDA-FSIS Approach to Consumer Food Safety
CHRIS BERNSTEIN, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

9:30 Panel Discussion

10:00 Break – Refreshments Available in the Exhibit Hall

S24 **Pathogens in Soil: A Focus on *Salmonella* and STEC Survival in Biological Soil Amendments of Animal Origin**
Ballroom H
Organizer: Christopher Baker
Convenors: Christopher Baker, Alan Gutierrez

Fruit and Vegetable Safety and Quality
Microbial Modelling and Risk Analysis
Pre Harvest Food Safety

8:30 Promulgating BSAAO Policy: Data sets, Risk Assessments and Regulations
DAVID INGRAM, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

9:00 Manure Pathogen Survey in the U.S.: Prevalence, Concentration, and Implications
MICHELE JAY-RUSSELL, Western Center for Food Safety, University of California, Davis, CA, USA

9:30 Pathogen Survival in BSAAO: Critical Factors, Key Findings, and Future Research
LAURA STRAWN, Virginia Tech - Eastern Shore AREC, Painter, VA, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S25 **What Do Genomics Tell Us about Controlling *Campylobacter* in Poultry and the Risk of Poultry-associated Illness?**
Ballroom J
Organizers: Peter Evans, Stevie Hretz
Convenor: Peter Evans
Sponsored by the IAFP Foundation

Advanced Molecular Analytic
Epidemiology
Meat and Poultry Safety and Quality

8:30 Analysis of *Campylobacter* Genomes from Routine Surveillance of Poultry Slaughter and Processing Operations
MUSTAFA SIMMONS, USDA-FSIS-OPHS-EALS, Athens, GA, USA

9:00 Using *Campylobacter* Genomes to Track Clusters and Lineages
TBD

9:30 Identifying *Campylobacter* Genes Associated with Survival in Poultry Rearing Environment and Severe Clinical Outcomes.
EDUARDO TABOADA, Public Health Agency of Canada, Lethbridge, AB, Canada

10:00 Break – Refreshments Available in the Exhibit Hall

S26 **Withdrawn**

10:00 Break – Refreshments Available in the Exhibit Hall

S27 **Edible Insects: Food Safety Considerations for a Food Security Solution**
Room 251 D-F
Organizers and Convenors: Douglas Marshall, Robert Williams

Food Chemical Hazards and Food Allergy
Food Law
HACCP Utilization and Food Safety Systems

8:30 Edible Insects: An Overview of Entomophagy
ROBERT WILLIAMS, Virginia Tech, Blacksburg, VA, USA

9:00 Food Safety Considerations for Insect-based Foods
DOUGLAS MARSHALL, Eurofins Scientific Inc., Fort Collins, CO, USA

9:30 Safety Considerations Bringing a New Food Category to Market
ODETE MENDES, Product Safety Labs, Cranbury, NJ, USA

10:00 Break – Refreshments Available in the Exhibit Hall

RT9 **Do Lawsuits Play a Productive Role in Advancing Food Safety?**
Room 250 A-C
Organizers: David Acheson, Timothy Lytton, Craig Wilson
Convenor: Timothy Lytton

Food Law
Food Safety Assessment, Audit and Inspection

8:30 Panelists:

DAVID ACHESON, The Acheson Group, Bigfork, MT, USA

BILL MARLER, Marler Clark, The Food Safety Law Firm, Seattle, WA, USA

BRAD SULLIVAN, L + G LLP, Salinas, CA, USA

PATRICIA WESTER, PA Wester Consulting, Alachua, FL, USA

ROBERT WHITAKER, PMA, Newark, DE, USA

CRAIG WILSON, Costco Wholesale, Issaquah, WA, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S28 **Cleaning Validations – Approaches in Retail Food and Food Manufacturing Facilities**
Ballroom A + C
Organizer: Duane Grassmann
Convenors: Duane Grassmann, Nadia Narine

Food Hygiene and Sanitation
Retail and Foodservice
Sanitary Equipment and Facility Design

10:30 Setting Cleaning Criteria for Validations – Science and Experience in Retail
ANNA STAROBIN, Ecolab Inc., Greensboro, NC, USA

11:00 What is Cleaning Validation – Can We be Clear?
DUANE GRASSMANN, Nestlé USA, Solon, OH, USA

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas s

11:30 Cleaning and Sanitation as a Preventive Control
VANESSA CRANFORD, Division of Produce Safety, Office of Food Safety (OFS); Center for Food Safety and Applied Nutrition (CFSAN); U.S. Food and Drug Administration (FDA), Washington, D.C., USA

12:00 Lunch Available in the Exhibit Hall

S29 Multi-level Approach to Combating Antimicrobial Resistance
Ballroom D
Organizer: Jeffrey LeJeune
Convenor: Lawrence Goodridge
Sponsored by the IAFP Foundation

International Food Protection Issues
Pre Harvest Food Safety

10:30 Global Action, Local Change: Shared Goals, and Coordinated Plans to Tackle Antimicrobial Resistance
SARAH CAHILL, Food and Agriculture Organization of the United Nations, Rome, Italy

11:00 What Goes Around, Comes Around: Antimicrobial Resistance and Regional Trade Pathways
ISSMAT KASSEM, American University of Beirut, Beirut, Lebanon

11:30 Local Action, Global Change: Challenges and Progress for Implementing Antimicrobial-resistance Mitigation in Low and Middle Income Countries (Bangladesh)
ERIC BRUM, FAO, Dhaka, Bangladesh

12:00 Lunch Available in the Exhibit Hall

S30 Soil Contamination with Foodborne Bacteria
Ballroom H
Organizers and Convenors: Joshua Gurtler, Manan Sharma
Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety

10:30 Factors That Affect Enteric Pathogen Survival in Manure Amended Soils
PATRICIA MILLNER, Manan Sharma, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA

11:00 Means of Mitigating Soil Contamination
JOSHUA GURTLER, U.S. Department of Agriculture-ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

11:30 The Place of GAPs in Soil Contamination Issues
ELIZABETH BIHN, Cornell University, Geneva, NY, USA

12:00 Lunch Available in the Exhibit Hall

S31 Pathogen Detection and Food Microbiome Characterization Using a Metagenomics Approach
Ballroom J
Organizers: Karen Jarvis, Andrea Ottesen, Eric Stevens
Convenor: Eric Stevens
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods
Fruit and Vegetable Safety and Quality

10:30 Quasi-Metagenomics and Real-time Sequencing Aided Detection and Subtyping of *Salmonella enterica* from Food Samples
XIANGYU DENG, University of Georgia, Center for Food Safety, Griffin, GA, USA

11:00 Utilizing Metagenomics to Characterize and Improve Culture Methods of STEC Detection in Fresh Produce
SUSAN LEONARD, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA

11:30 Examining a Suppressive Effect on Fecal Coliforms Associated with Sprout Water
ROBERT SANDERSON, Jonathan Sprouts Inc., Marion, MA, USA

12:00 Lunch Available in the Exhibit Hall

S32 Controlling Chemical Hazards in International Supply Chains – New Challenges with FSMA
Room 251 A-C
Organizers: Paul Hanlon, Rhoma Johnson, Sally Klinect
Convenors: Rhoma Johnson, Sally Klinect
Sponsored by the IAFP Foundation

Food Chemical Hazards and Food Allergy
HACCP Utilization and Food Safety Systems

10:30 A Perspective on Chemical Hazards and FSMA from Both Sides of the Atlantic Ocean
CLAUDIO GALLOTTINI, Euroservizi Impresa Srl, Torgiano, Italy

11:00 FDA Perspective on Control of Chemical Hazards in International Supply Chains
LAUREN JACKSON, U.S. Food and Drug Administration, Bedford Park, IL, USA

11:30 Developing Robust Programs for the Control of Chemical Hazards in International Supply Chains
CAROLYN MEDUSKI, Nestlé USA, Solon, OH, USA

12:00 Lunch Available in the Exhibit Hall

S33 Food Safety Considerations in Alleviating Hunger and Food Insecurity
Room 251 D-F
Organizers: Stephanie Barnes, Minh Duong, Caitlinn Lineback, Harry Schonberger
Convenor: Harry Schonberger

Food Safety Culture
Retail and Foodservice

10:30 Food Recovery from a Governmental Perspective
VIRGINIA TILL, U.S. Environmental Protection Agency, Denver, CO, USA

11:00 Food Recovery and Food Safety from Food Industry Perspective
LARRY KOHL, Retail Business Services an Ahold Delhaize USA Company, Salisbury, NC, USA

11:30 Food Recovery and Food Safety from Food Recovery Organization Perspective
MITZI BAUM, Feeding America, Chicago, IL, USA

12:00 Lunch Available in the Exhibit Hall

RT10 Complex Risk Assessment and Classic Hazard Analysis on a Spectrum – Do We Really Need Both/Can We Really Do Both?
Ballroom B
Organizers: Yuhuan Chen, Balasubrahmanyam Kottapalli, Marcel Zwietering
Convenor: Yuhuan Chen

10:30 Panelists:

DONALD W. SCHAFFNER, Rutgers University, New Brunswick, NJ, USA

ROBERT BUCHANAN, University of Maryland, College Park, MD, USA

ROBERT BRACKETT, Institute for Food Safety and Health, Bedford Park, IL, USA

MARIEM ELLOUZE, Nestlé, Lausanne, Switzerland

BALASUBRAHMANYAM KOTTAPALLI, Conagra Brands, Omaha, NE, USA

JANE VAN DOREN, U.S. Food and Drug Administration–CFSAN, College Park, MD, USA

12:00 Lunch Available in the Exhibit Hall

RT11 Antimicrobial Resistance: Current Knowledge and Steps Toward Understanding the Relative Role of Food and Other Resistance Sources
Room 250 A-C
Organizers: Keith Belk, Mandy Carr, Solenne Costard
Convenor: Solenne Costard

Meat and Poultry Safety and Quality
Microbial Modelling and Risk Analysis
Pre Harvest Food Safety

10:30 Panelists:

PAUL MORLEY, Department of Clinical Sciences, Colorado State University, Fort Collins, CO, USA

VIRGINIA STOCKWELL, U.S. Department of Agriculture – ARS, Corvallis, OR, USA

KENDRA WALDBUSSER, Pilgrim's Pride Corp, Loveland, CO, USA

FRANCISCO ZAGMUTT, EpiX Analytics, Fort Collins, CO, USA

12:00 Lunch Available in the Exhibit Hall

T5 Technical Session 5 – Low-water Activity Foods and Food Processing Technologies
Room 150 A-C + G
Convenor: Sara Bover-Cid, AyoJesutomi Abiodun-Solanke

T5-01 8:30 Effect of a Peracetic Acid-based Sanitizer on *Salmonella* Cocktail and Its Potential Surrogate, *Enterococcus faecium* NRRL B-2354, Inoculated on Chia Seeds, without Germination Loss or Mucilage Creation
REBECCA KAREN HYLTON, Alma Fernanda Sanchez-Maldonado, Pooneh Peyvandi, Fatemeh Rahmany, Fadi Dagher, Amir Hamidi, Agri-Neo Inc., Toronto, ON, Canada

T5-02 8:45 Impact of Four Carriers and Storage Temperature on the Stability of Five-strain Cocktail of *Salmonella*: A Contribution for Challenge Tests of Low-water Activity Foods
ANDERSON DE SOUZA SANT'ANA, Marianna Miranda Furtado, Verônica Ortiz Alvarenga, César Faviero, University of Campinas, Campinas, Brazil

T5-03 9:00 Comparison of Five Methods for Inoculating Macadamia Nuts with *Enterococcus faecium* NRRL B-2354 for Industrial-scale Validation of Peracetic Acid-based Sanitizer Efficacy on *Salmonella*
ALMA FERNANDA SANCHEZ-MALDONADO, Pooneh Peyvandi, Rebecca Karen Hylton, Fatemeh Rahmany, Fadi Dagher, Amir Hamidi, Agri-Neo Inc., Toronto, ON, Canada

T5-04 9:15 Impact of Glass Transition on Bacterial Cell Survival: Relationship between Glass Transition Temperature and Desiccation Tolerance in *Salmonella enterica*
SHODA MASAKI, Kiyoshi Kawai, Shuso Kawamura, Shigenobu Koseki, Hokkaido University, Sapporo, Japan

T5-05 9:30 Radiofrequency Inactivation of *Salmonella* spp. and *Enterococcus faecium* NRRL B-2354 in Cumin Seeds
LONG CHEN, Jeyamkondan Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA

T5-06 9:45 Effects of Elevated Hydrostatic Pressure for Decontamination of Raw Milk from *Listeria monocytogenes* and Background Microflora
ABIMBOLA ALLISON, Shahid Chowdhury, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA

10:00 Break – Refreshments Available in the Exhibit Hall

T5-07 10:30 High Pressure Superdormant Spore Characterization for Non-thermal Food Sterilization
YIFAN ZHANG, Alex Waser, Alexander Mathys, ETH Zurich, Zürich, Switzerland

T5-08 10:45 The Inactivation and Recovery of *Escherichia coli* O157:H7 Following High Pressure Processing at Different Stages of Drying during the Production of Dry Fermented Sausages
S. BALAMURUGAN, Christopher Gemmell, Philip Strange, Tsun Yin Alex Lau, Shai Barbut, Agriculture & Agri-Food Canada, Guelph, ON, Canada

T5-09 11:00 Optimization of the Radio Frequency Power, Time, and Cooling Water Temperature for Pasteurization of *Salmonella* Typhimurium in Shell Eggs
YISHAN YANG, David J. Geveke, U.S. Department of Agriculture – ARS, Philadelphia, PA, USA

T5-10 11:15 Inactivation of *Salmonella enterica* on Low-moisture Foods by Cold Atmospheric Plasma
CLAUDIA DIAZ, Juan Diaz, Carlos Somoza, Juan Cuellar, Chris Timmons, Kedar Pai, Li Ma, National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Oklahoma State University, Stillwater, OK, USA

T5-11 11:30 Mitigation of Furan in UV Light-treated Apple Cider
SUQIN SHAO, Gaofei Hu, Huaizhi Liu, Yan Zhu, Agriculture and Agri-food Canada, Guelph, ON, Canada

T5-12 11:45 Plasma-activated Water and Intense Pulsed Light Processing for Decontamination of Deoxynivalenol in Raw and Germinating Barley
DONGJIE CHEN, University of Minnesota, St Paul, MN, USA

12:00 Lunch Available in the Exhibit Hall

T6 Technical Session 6 – Viruses and Parasites and Communication Outreach and Education

Room 151 D-F

Convenors: Travis Chapin, Bertrand Lombard

T6-01 8:30 Detection of Norovirus Contamination in Outbreak Associated Ice Cream Samples
EFSTATHIA PAPAFRAGKOU, Zhihui Yang, Diana Ngo, Amy Saupe, Alida Sorenson, Elizabeth Cebelinski, Michael Kulka, U.S. Food and Drug Administration, Laurel, MD, USA

T6-02 8:45 Norovirus in Imported Raspberries Linked to Illnesses
JACQUELINA WOODS, Gail Wagley, Kristopher Stanya, Elizabeth Sachs, Khamphet Nabe, Heidi DeBeck, Aimee Treffiletti, Rachel Rodriguez, U.S. Food and Drug Administration, Dauphin Island, AL, USA

T6-03 9:00 Presence of Hepatitis E Virus in Commercially Available Ground Pork
LA'CHIA HARRISON, Erin DiCaprio, University of California-Davis, Davis, CA, USA

T6-04 9:15 Disinfection Efficacies of Rotaviruses Attached to the Surfaces of *Brassica oleracea* 'Starbor' Kale and *Brassica juncea* Southern Giant Curled Mustard with Chlorine
MIYU FUZAWA, Thanh Nguyen, University of Illinois at Urbana-Champaign, Urbana, IL, USA

T6-05 9:30 Prevalence and Molecular Characterization of *Toxoplasma gondii* in Retail Meats in Canada
BRENT DIXON, Asma Iqbal, Nicol Janecko, Frank Pollari, Bureau of Microbial Hazards, Food Directorate, Health Canada, Ottawa, ON, Canada

T6-06 9:45 Detection of *Cyclospora cayetanensis* in Agricultural Water by Combining the Dead-end Ultrafiltration Method with Sensitive Molecular Assays
MAURICIO DURIGAN, Helen Murphy, Amy Kahler, Mia Mattioli, Jennifer Murphy, Vincent Hill, Alexandre da Silva, U.S. Food and Drug Administration–CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA

10:00 Break – Refreshments Available in the Exhibit Hall

T6-07 10:30 Mishandling of Poultry Products by Consumers: Identification of Gaps in Knowledge and Safe-handling Practices of Raw Turkey
JENNIFER QUINLAN, Sloan Bennett, Drexel University, Philadelphia, PA, USA

T6-08 10:45 Investigating Cross-contamination to Fomite Surfaces in Consumer Kitchens Using MS2 as a Surrogate in Ground Turkey
MARGARET KIRCHNER, Minh Duong, Savana Everhart, Caitlin Smits, Lindsey Doring, Jeremy Faircloth, Rebecca Goulter, Lisa Shelley, Ellen Thomas, Sheryl Cates, Chris Bernstein, Lee-Ann Jaykus, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

T6-09 11:00 Barriers and Strategies to Safe Food-handling among Financially Disadvantaged Families: An Observation and Self Report Study
YAOHUA (BETTY) FENG, Christine Bruhn, Purdue University, West Lafayette, IN, USA

T6-10 11:15 Source Attribution of Illnesses Commonly Transmitted by Food and Water in the United States Using Structured Expert Judgment
ELIZABETH BESHEARSE, Beau Bruce, Gabriela Nane, Roger Cooke, Willy Aspinall, Tine Hald, Stacy Crim, Patricia Griffin, Kathleen Fullerton, Sarah Collier, Katharine Benedict, Michael Beach, Aron Hall, Arie Havelaar, University of Florida, Gainesville, FL, USA

T6-11 11:30 A Systematic Review and Meta-analysis of the Knowledge, Practices and Training Related to Food Allergies and Celiac Disease among Restaurant and Food Service Personnel
IAN YOUNG, Abhinand Thaivalappil, Ryerson University, Toronto, ON, Canada

T6-12 11:45 Food Safety Considerations from Concept to Commercialization: An Extension Training Program Targeted toward Food Entrepreneurs
AMANDA KINCHLA, University of Massachusetts, Amherst, MA, USA

12:00 Lunch Available in the Exhibit Hall

TUESDAY AFTERNOON
JULY 10

Posters will be on display 10:00 a.m. – 6:00 p.m.
(See details beginning on page 77)

12:15 p.m. – 1:15 p.m. IAFP Business Meeting
Room 250 A–C

S34 Food Fraud – Progress and Plans for Prevention and Management

Ballroom A + C

Organizers: DeAnn Benesh, Samuel Godefroy
Convenors: DeAnn Benesh, Deon Mahoney

Food Fraud
Food Law
International Food Protection Issues

1:30 Outcomes from the 2017/2018 Food Fraud Meetings (including CODEX)
SAMUEL GODEFROY, University Laval, Department of Food Science, INAF, Quebec City, QC, Canada

2:00 Role of INFOSAN as an Early Warning System for Food Fraud Events
PETER BEN EMBAREK, World Health Organization (WHO)/INFOSAN, Geneva, Switzerland

2:30 Practical Examples of Developing Prevention Frameworks for Food Fraud
KAREN EVERSTINE, USP, Rockville, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

3:30 U.S. Approach to Food Fraud
JENNIFER THOMAS, U.S. Food and Drug Administration, Washington, D.C., USA

4:00 China's Progress in Preventing and Mitigating Food Fraud
YONGNING WU, CFSA, Beijing, China

4:30 Food Fraud Prevention and Management Applied in Industry Settings
TBD

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S35 Converting WGS and Bioinformatic Jargon into Plain Language and Understanding the Science

Ballroom D

Organizers: Kari Irvin, Keith Lampel, Isha Patel
Convenors: Kari Irvin, Isha Patel

Advanced Molecular Analytics
Applied Laboratory Methods
Epidemiology

1:30 Genomics Applications – Preventative, Surveillance or Outbreak (Regulatory)
KARI IRVIN, U.S. Food and Drug Administration, CORE, CFSAN, College Park, MD, USA

2:00 Challenges in Genomics for Food Safety Communications
SHERRI MCGARRY, U.S. Food and Drug Administration, Washington, D.C., USA

2:30 Other Omics (Proteomics, Transcriptomics, Metagenomics, Metabolomics)
MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S36 The Saga Continues... What's on Your COA? How Can We Effectively Utilize This Tool?

Ballroom G + I

Organizers: Rocelle Clavero, Amanda Kinchla
Convenor: Amanda Kinchla

Applied Laboratory Methods
Food Law
HACCP Utilization and Food Safety System

1:30 The Limitations and Importance of Certificate of Analysis (COA) in a Food Safety System
BENJAMIN WARREN, Land O' Lakes, Arden Hills, MN, USA

2:00 Role of Third Party Labs in Sample Collection and Selection of Test Methods
TIMOTHY FREIER, Merieux NutriSciences, Crete, IL, USA

2:30 Regulatory Perspective on COAs in a Preventive Control System
JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S37 International Recognition of National Food Safety Systems

Ballroom H

Organizers: Sarah Cahill, Ian Jenson
Convenor: Ian Jenson
Sponsored by the IAFP Foundation

Food Law
HACCP Utilization and Food Safety Systems
International Food Protection Issues

1:30 Out of Africa: How to Understand the Performance of National Food Control Systems
LUCIA ANELICH, Anelich Consulting, Pretoria, South Africa

2:00 U.S. Recognition of Other Country's Food Safety Systems: What Does It Mean?
CAROLINE SMITH DEWAAL, U.S. Food and Drug Administration, College Park, MD, USA

2:30 Balancing Give and Take, Hazard and Risk: Recognition of a Small Country Down Under
ROGER COOK, New Zealand Ministry of Primary Industries, Wellington, New Zealand

3:00 Break – Refreshments Available in the Exhibit Hall

S38 **Norovirus and Hepatitis A Virus Contamination: Emerging Monitoring Methods and Their Future Applications**
Ballroom J
Organizers: Lee-Ann Jaykus, Efstathia Papafragkou, Geun Woo Park
Convenors: Yale Lary, Naim Montazeri

Food Hygiene and Sanitation
Viral and Parasitic Foodborne Disease

1:30 Surveillance Methods for Enteric Viruses in Water Samples
JOHN MESCHKE, University of Washington, Seattle, WA, USA

2:00 Monitoring Methods for Foodborne Viruses and Human Fecal Contamination on Environmental Surfaces
GEUN WOO PARK, Centers for Disease Control and Prevention, Atlanta, GA, USA

2:30 Enteric Virus Monitoring in the Environment: Is There a Future Role for More Routine Screening?
LEE-ANN JAYKUS, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh, NC, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S39 **Validation and Verification – The Good, the Bad and the Ugly**
Room 250 A-C
Organizers: Alvin Lee, Purnendu Vasavada
Convenors: Roy Betts, Purnendu Vasavada
Sponsored by the IAFP Foundation

HACCP Utilization and Food Safety Systems

1:30 Non-thermal and Thermal Process Validation and Verification (including FSMA Ramifications)
PURNENDU VASAVADA and ALVIN LEE, Institute for Food Safety and Health, Illinois Institute of Technology, Bedford Park, IL, USA

2:00 Microbiological Test Methods: Validation and Verification, What Does It Mean?
ROY BETTS, Campden BRI, Gloucestershire, UK

2:30 Validation and Verification and Regulatory Compliance: An Industry Perspective
JOHN O'BRIEN, Ulster University, Coleraine, Ireland

3:00 Break – Refreshments Available in the Exhibit Hall

S40 **Alignment between Reference Microbiological Methods – Reality or Dream?**
Room 251 A-C
Organizer and Convenor: David Tomás Fornés
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods
International Food Protection Issues

1:30 Standardization of ISO Food Microbiological Methods. Challenges and Opportunities
BERTRAND LOMBARD, Université Paris-Est, ANSES, Maisons-Alfort, France

2:00 AOAC, Official Methods of Analysis and Performance Tested Method – Experience from the Development and the Laboratory Side
ERIN CROWLEY, Q Laboratories, Inc., Cincinnati, OH, USA

2:30 FDA-Bacteriological Analytical Manual – Alignment and Development of Regulatory Methods
THOMAS HAMMACK, U.S. Food and Drug Administration, College Park, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

RT12 **Is There Such a Thing as Too Much Transparency? Different Perspectives on Deciding When to Communicate during a Food Safety Outbreak**
Ballroom B
Organizer and Convenor: Aaron Lavallee

Communication, Outreach and Education
Food Law
International Food Protection Issues

1:30 Panelists:

SARA COLEMAN, Health Canada – Communications and Public Affairs Branch, Ottawa, ON, Canada

ELIZABETH GREENE, Centers for Disease Control and Prevention, Atlanta, GA, USA

THOMAS GREMILLION, Director of Food Policy Institute at the Consumer Federation of America, Washington, D.C., USA

AARON LAVALLEE, USDA Food Safety and Inspection Service, Washington, D.C., USA

3:00 Break – Refreshments Available in the Exhibit Hall

RT13 ***Salmonella* in Poultry: Where Do We Go from Here?**
Room 251 D-F
Organizers: Elisabetta Lambertini, Barbara Kowalcyk, Juliana Ruzante
Convenor: Juliana Ruzante

Meat and Poultry Safety
Quality and Microbial Modelling and Risk Analysis

1:30 Panelists:

PAUL KIECKER, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

BARBARA KOWALCYK, The Ohio State University, Columbus, OH, USA

BETH RIESS, The Pew Charitable Trusts, Washington, D.C., USA

MICHAEL ROBACH, Cargill, Minneapolis, MN, USA

ROBERT TAUXE, Centers for Disease Control and Prevention, Atlanta, GA, USA

FRANK YIANNAS, Walmart, Bentonville, AR, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S41 **Can We Ever Accomplish a Standardized Protocol for Validating WGS-based Assays for the Detection of Foodborne Pathogenic Microbes?**
Ballroom D
Organizers and Convenors: Keith Lampel, Paul Morin
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods

3:30 Validation of NGS Workflows for Enteric Bacteria Subtyping
HEATHER CARLETON, Centers for Disease Control and Prevention, Atlanta, GA

4:00 Is it Really Necessary to Validate WGS Methods?
MARTIN WIEDMANN, Cornell University, Ithaca, NY

4:30 Why is It Important to Have Validated Methods for WGS-based Assays?
KENDRA NIGHTINGALE, Texas Tech University, Lubbock, TX, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S42 **Building a Network of Accredited Governmental Human and Animal Food Laboratories: Benefits to Public Health and Industry**
Ballroom H
Organizers: Robyn Randolph, Yvonne Salfinger
Convenor: Robyn Randolph

Applied Laboratory Methods
Retail and Foodservice

3:30 Retailer's Perspective of Laboratory Testing
STEVEN LYON, Chick-fil-A, Atlanta, GA, USA

4:00 FDA's View on Accredited State Laboratory Data and Its Impact on Recalls
DANIEL RICE, U.S. Food and Drug Administration, Bothell, WA, USA

4:30 Why Accreditation Matters: A State's Perspective
BRYANNE SHAW, Minnesota Department of Agriculture, Saint Paul, MN, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S43 **How Omics is Changing the Food-safety Landscape in Foodborne Parasitology: Sequencing, Not Just Seeing is Believing!**
Ballroom J
Organizers: Alexandre da Silva, Gopal Gopinath
Convenors: Alexandre da Silva, Benjamin M. Rosenthal
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods
Viral and Parasitic Foodborne Disease

3:30 A Tale of Two Cities: *Trichinella* and *Toxoplasma* Genomics and Their Impact on the Food Safety Landscape
BENJAMIN M. ROSENTHAL, U.S. Department of Agriculture, Beltsville, MD, USA

4:00 *Cryptosporidium:* Genomics and All the Omics
RACHEL CHALMERS, Public Health Wales, Microbiology and Health Protection, Singleton Hospital, Swansea, UK

4:30 *Cyclospora cayetanensis*: How Genomics and Source Tracking is Coming Together
YVONNE QVARNSTROM, CDC, Atlanta, GA, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

S44 **Developments and Novel Applications of Microbiome Research for Pre- and Post-harvest Food Safety and Quality**
Room 251 A-C
Organizer: Si Hong Park
Convenors: Si Hong Park, Steven Ricke
Sponsored by the IAFP Foundation

Meat and Poultry Safety and Quality
Pre Harvest Food Safety

3:30 Understanding Cross-talk between Gut Microflora and Host That Modulate Immune Response and Physiological Performance
K.C. JEONG, University of Florida, Gainesville, FL, USA

4:00 Developments in Microbiome Assessment of Food Processing Microbial Communities
STEVEN RICKE, University of Arkansas, Fayetteville, AR, USA

4:30 Investigation of Foodborne Pathogen Ecology throughout the Pastured Poultry Farm-to-Fork Continuum Using a Microbiome Approach
MICHAEL ROTHROCK, U.S. Department of Agriculture – ARS, U.S. National Poultry Research Center, Athens, GA, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

RT14 **Responsible Use of Antibiotics – Are We Making Progress?**
Ballroom B
Organizers: Bassam Annous, Rick Kanaby, Jodi Strong, Rodrigo Santibanez
Convenor: Rodrigo Santibanez
Sponsored by Merck

International Food Protection Issues
Meat and Poultry Safety and Quality
Pre Harvest Food Safety

3:30 Panelists:

BRIAN LUBBERS, Kansas State University, Manhattan, KS, USA

LINNEA NEWMAN, Merck Animal Health, Madison, NJ, USA

DON RITTER, Mountaire Farms, Little Rock, AR, USA

BIRTHE STEENBERG, European Poultry Association, Brussels, Belgium

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

RT15 **Help! I'm New Management. How Do I Convince My Colleagues Food Safety is Important?**
Ballroom G + I
Organizers: Julian Graham, Richard Huang, Angela Valadez
Convenor: Angela Valadez

Communication, Outreach and Education
Developing Food Safety Professionals
Food Safety Culture

3:30 Panelists:

JORGE HERNANDEZ, Wholesome International, Hinsdale, IL, USA

TIMOTHY JACKSON, Driscoll's, Watsonville, CA, USA

LONE JESPERSEN, Cultivate, Hauterive, Switzerland

KEVIN MURPHY, University of Central Florida, Orlando, FL, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

RT16 **Process Validations – Stories from the Trenches**
Room 250 A-C
Organizers: Nathan Anderson, Nancy Bontempo, Laurie Post
Convenor: Laurie Post

HACCP Utilization and Food Safety Systems
Low-water Activity Foods

3:30 Panelists:

NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA

TIM BIRMINGHAM, Almond Board of California, Modesto, CA, USA

BRIAN FARINA, Deibel Laboratories, Inc., Gainesville, FL, USA

LISA LUCORE, Shearer's Snacks, Massillon, OH, USA

ABDULLATIF TAY, PepsiCo, Barrington, IL, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

RT17 **The Conundrum of *Campylobacter* Source Attribution**
Room 251 D-F
Organizers: Michael Batz, David Goldman, Robert Tauxe
Convenor: Michael Batz

Dairy Quality and Safety
Epidemiology
Meat and Poultry Safety and Quality

3:30 Panelists:
MICHAEL BATZ, U.S. Food and Drug Administration, Silver Spring, MD, USA

BEAU BRUCE, Centers for Disease Control and Prevention, Atlanta, GA, USA

ARIE HAVELAAR, University of Florida, Gainesville, FL, USA

KRISTEN POGREBA-BROWN, University of Arizona, Tucson, AZ, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

T7 **Technical Session 7 – Retail and Foodservice Safety**
Room 150 A-C + G
Convenors: William Lanier, Carrie Rigdon

T7-01 1:30 Molecular Comparison of New Strains of Shiga Toxin-producing *Escherichia coli* Isolated from Beef Product Samples with Human Strains
WU SAN CHEN, Karen Becker, William Lanier, U.S. Department of Agriculture – FSIS, Atlanta, GA, USA

T7-02 1:45 Thanksgiving Day Outbreak of Norovirus with Multiple Modes of Transmission – Tennessee, 2017
D.J. IRVING, Julia Brennan, Steffany Cavallo, Katie Garman, Tim Jones, William Schaffner, John Dunn, Tennessee Department of Health, Nashville, TN, USA

T7-03 2:00 Foodborne Illness Source Attribution Estimates in 2013 for *Salmonella*, *Escherichia coli* O157, *Listeria monocytogenes*, and *Campylobacter* Using Multi-year Outbreak Surveillance Data, United States
MICHAEL BATZ, Michael Bazaco, Kristin Holt, Chris Waldrop, Beau Bruce, R. Michael Hoekstra, Gebrielle Johnston, Cary Chen Parker, LaTonia Richardson, Joanna Zablotsky-Kufel, U.S. Food and Drug Administration, Silver Spring, MD, USA

T7-04 2:15 Restaurant Grades are Difficult to Find and Understand
HARLAN STUEVEN, Dining Safety Alliance, Denver, CO, USA

T7-05 2:30 Cold-holding Compliance Rates in Food Establishments in North Carolina
VERONICA BRYANT, Natalie Seymour, Benjamin Chapman, NC Dept. of Health & Human Services, Raleigh, NC, USA

T7-06 2:45 Risk Factor Compliance of Food Establishments during Temporary Food Events
VERONICA BRYANT, Amber Daniels, Natalie Seymour, Benjamin Chapman, NC Dept of Health & Human Services, Raleigh, NC, USA

3:00 Break – Refreshments Available in the Exhibit Hall

T7-07 3:30 Deep Cleans, Optimized Sanitation Standard Operating Procedures and Management Engagement Can Reduce *Listeria monocytogenes* Prevalence in Retail Produce Departments
JOHN BURNETT, Chris Jordan, Clyde Manuel, Tongyu Wu, Haley Oliver, Purdue University, West Lafayette, IN, USA

TUESDAY PM

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

T7-08 3:45 Three-level Longitudinal Analysis of the Antecedents of Distributive Food Safety Training in the Food Service Industry
HEYAO YU, Jack Neal, Sujata A. Sirsat, University of Houston, Houston, TX, USA

T7-09 4:00 Food Service Small Medium Enterprises Contraventions Associated with Confidence in Management: Implications for Food Safety Culture
OMOTAYO IRAWO, Arthur Tatham, Deborah Clayton, Elizabeth C. Redmond, Cardiff Metropolitan University, Cardiff, UK

T7-10 4:15 Genotypic and Phenotypic Diversity of *Staphylococcus aureus* Isolates from Retailed Frozen Flour and Rice Products in Shanghai
FANGNING JIN, Chunlei Shi, Shanghai Jiao Tong University, Shanghai, China

T7-11 4:30 Evaluating Various Methods of Validating Sushi Rice Acidification in Retail Food Establishments
MARY YAVELAK, Veronica Bryant, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

T7-12 4:45 *Salmonella* Transfer and Survival on Fresh-cut Fruits
YINGSHU HE, Ruixi Chen, Shimei Zhang, Yan Qi, Xiangyu Deng, Wei Zhang, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

T8 Technical Session 8 – Food Chemical Hazards and Food Allergens and Dairy

Room 151 D-F

Convenors: Deann Akins-Lewenthal, Fatemeh Ataei

T8-01 1:30 Pesticide Monitoring of Foods Consumed in the United States
SHANKER REDDY, Diana Haynes, USDA AMS, Washington, D.C., USA

T8-02 1:45 Data Mining for Developing Efficient Food Hazard Sampling Plans
JOHN JOHNSTON, U.S. Department of Agriculture – FSIS, Fort Collins, CO, USA

T8-03 2:00 Relationship of Metal Concentrations in Soil as Related to Fruit and Leaves of Apple Trees in Selected Orchards in Michigan
LOAN CAO, Leslie Bourquin, Michigan State University, East Lansing, MI, USA

T8-04 2:15 Occurrence of Perchlorate in Bottled Water, Beverages, and Tea from Taiwan Markets by High-performance Liquid Chromatography-tandem Mass Spectrometry
CHING CHANG LEE, Wei-Hsiang Chang, Department of Environmental and Occupational Health, National Cheng Kung University, Tainan, Taiwan

T8-05 2:30 Microfluidic Paper-based Enzyme-linked Immunosorbent Assay for the Rapid and Sensitive Detection of Clenbuterol in Milk
LUYAO MA, Azadeh Nilghaz, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

T8-06 2:45 Risk Evaluation: Foodborne Titanium Dioxide Nanoparticles Pose Different Magnitudes of Adverse Effects in Obese and Non-obese Mice
XIAOQIONG CAO, Min Gu, Weicang Wang, Hang Xiao, University of Massachusetts-Amherst, Amherst, MA, USA

3:00 Break – Refreshments Available in the Exhibit Hall

T8-07 3:30 *Listeria monocytogenes* Cell Envelope Physiology is Affected by Exposure to Dairy-relevant Conditions
KATHRYN A. MAGEE, Veronica Guariglia-Oropeza, Martin Wiedmann, Thomas G. Denes, The University of Tennessee, Knoxville, TN, USA

T8-08 3:45 The Role of Farm and Bedding Practices in Reducing Mesophilic and Thermophilic Spore-forming Bacteria Levels in Bulk Tank Milk on Dairy Farms in the United States
SARAH MURPHY, David Kent, Nicole Martin, Rachel Evanowski, Kruthika Patel, Sandra Godden, Martin Wiedmann, Cornell University, Ithaca, NY, USA

T8-09 4:00 Fluid Milk-related Incidents in California (1996 to 2017)
MAHA HAJMEER, Jenna Tucker, Stephen Frink, Chunye Lu, Joseph Lavin, Christina Morales, Pat Kennelly, David Kiang, Michael Needham, California Department of Public Health, Sacramento, CA, USA

T8-10 4:15 Determining the Efficacy of Protective Cultures for the Control of *Listeria monocytogenes* and Non-O157 Shiga Toxin-producing *Escherichia coli* in Raw Milk for Cheesemaking
CATHERINE GENSLER, Dennis D'Amico, University of Connecticut, Department of Animal Science, Storrs, CT, USA

T8-11 4:30 Inhibition of *Listeria monocytogenes* in a Model Cheese System Based on pH, Moisture, and Acid Type
SARAH ENGSTROM, Christie Cheng, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA

T8-12 4:45 Quantitative Risk Assessment of Listeriosis from Traditional Brazilian Minas Artisanal Semi-hard and Fresh Soft Cheeses
FERNANDA BOVO CAMPAGNOLLO, Ursula A. Gonzales-Barron, Vasco A. P. Cadavez, Anderson de Souza Sant'ana, Donald W. Schaffner, University of Campinas, Campinas, Brazil

5:00 p.m. – 6:00 p.m. – Exhibit Hall Reception

EVENING OPTIONS

5:00 p.m. – 6:00 p.m.	**Exhibit Hall Reception**
6:00 p.m. – 7:00 p.m.	**President's Reception** (by invitation), *Salt Lake Marriott Downtown at City Creek, Ballroom A-E*
7:00 p.m. – 9:00 p.m.	**Student Mixer,** *Room 254 B*

AFFLIATE MEETINGS

5:15 p.m. – 6:15 p.m.	**Indian Association for Food Protection in North America,** *Room 151 D-G*
5:30 p.m. – 6:30 p.m.	**Korea Association of Food Protection,** *Room 150 A-C + G*

TUESDAY PM

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■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

WEDNESDAY MORNING JULY 11

Posters will be on display 9:00 a.m. – 3:00 p.m.
(See details beginning on page 87)

S45 **Food Safety and Hurricanes – The Eye of the Storm**
Room 255 B-C
Organizer: Michael Roberson
Convenor: Daniel Okenu
Sponsored by the IAFP Foundation

Crisis Management
Food Safety Assessment, Audit and Inspection
Retail and Foodservice

8:30 Hurricane Harvey and H-E-B
DANIEL OKENU, HEB Grocery Company LP, San Antonio, TX, USA

9:00 Hurricane Maria – FDA Impact in Puerto Rico
ELIZABETH ORMOND, U.S. Food and Drug Administration, Maitland, FL, USA

9:30 Hurricane Preparation and the State Regulatory Perspective
SUMMER WILLIAMS, Florida Department of Agriculture and Consumer Services, Division of Food Safety, Tallahassee, FL, USA

10:00 Break – Refreshments Available in the Poster Session Area

10:30 Hurricane Preparation and the Lack of Potable Water
JAMIE DEMENT, Florida Department of Health, Tallahassee, FL, USA

11:00 Hurricane Maria and Publix Super Markets
MICHAEL ROBERSON, Publix Super Markets, Inc., Lakeland, FL, USA'

11:30 Panel Discussion

12:00 Lunch Available in Hall BC

S46 **State and Local Regulatory Agency Foodborne Illness Investigations**
Ballroom A+C
Organizer and Convenor: Steven Mandernach
Sponsored by the Committee on Control of Foodborne Illness and Association of Food and Drug Officials

Epidemiology
Food Law

8:30 Washington State Retail Raw Milk Outbreak and Whole Genome Sequencing
RANDY J. TREADWELL, Washington State Dept. of Agriculture, Spokane, WA, USA

9:00 Nebraska 2017 *Salmonella* Coffee Shop Outbreak
TOM SAFRANEK, Nebraska Department of Health, Lincoln, NE, USA

9:30 Use of Environmental Sampling and Whole Genome Sequencing to Solve Outbreaks in New York State
DAVID NICHOLAS, New York State Department of Health, Albany, NY, USA

10:00 Break – Refreshments Available in the Poster Session Area

S47 **The Global Food Safety Impact of *Cyclospora cayetanensis*: An Issue Crossing Continents**
Ballroom B
Organizers: Alexandre da Silva, Helen Murphy
Convenors: Alexandre da Silva, Kari Irvin, Helen Murphy
Sponsored by the IAFP Foundation

Pre Harvest Food Safety
Viral and Parasitic Foodborne Disease
Water Safety and Quality

8:30 Outbreaks of Cyclosporiasis in North America: History of the U.S. Outbreaks
BARBARA HERWALDT, Centers for Disease Control and Prevention, Center for Global Health, Division of Parasitic Diseases and Malaria, College Park, MD, USA

9:00 Outbreaks of Cyclosporiasis in Europe: UK Outbreaks
RACHEL CHALMERS, Public Health Wales, Microbiology and Health Protection, Singleton Hospital, Swansea, UK

9:30 *Cyclospora cayetanensis* in Latin America and Its Impact in the Globalization of Foods
YNES ORTEGA, University of Georgia, Griffin, GA, USA

10:00 Break – Refreshments Available in the Poster Session Area

S48 **Food Safety of Hydroponic Fruits and Vegetables – What We Do and Don't Know**
Ballroom D
Organizers: Sanja Ilic, Melanie Ivey
Convenor: Annemarie Buchholz

Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety
Water Safety and Quality

8:30 Challenges and Opportunities of Implementing Food Safety Programs in Commercial Hydroponic Production of Fresh Fruits and Vegetables
TBD

9:00 Human Pathogens in Greenhouse Water and Fertilizer Solutions
MICHAEL EVANS, University of Arkansas, Horticulture, Fayetteville, AR, USA

9:30 Delphi Expert Elicitation to Prioritize Food Safety Management Practices in Greenhouse Production of Tomatoes
SANJA ILIC, The Ohio State University, Columbus, OH, USA

10:00 Break – Refreshments Available in the Poster Session Area

S49 **Novel Processing Technologies to Improve Food Safety and Quality**
Room 251 A-C
Organizers and Convenors: Abani Pradhan, Rohan Tikekar
Sponsored by the IAFP Foundation and Indian Association for Food Protection in North America (IAFPNA) Affiliate

Food Processing Technologies
Fruit and Vegetable Safety and Quality
Low Water Activity Foods

8:30 Photodynamic Treatment Using UV-A Light and Food Grade Ingredients to Improve Produce Safety
ROHAN TIKEKAR, University of Maryland, College Park, MD, USA

9:00 Radiofrequency Processing for Improving Safety of Low-moisture Food Products
JEYAMKONDAN SUBBIAH, University of Nebraska-Lincoln, Lincoln, NE, USA

9:30 Novel Non-thermal Technologies for Food Products Manufacturing and Shelf-life Extension
HARI NIWAS MISHRA, Indian Institute of Technology (IIT), Kharagpur, India

10:00 Break – Refreshments Available in the Poster Session Area

S50 **Environmental Pathogen Monitoring and Control for the Food Safety Modernization Act (FSMA) Preventive Controls Implementation**
Room 251 D-F
Organizers and Convenors: Douglas Marshall, Purnendu Vasavada

Dairy Quality and Safety
HACCP Utilization and Food Safety Systems
International Food Protection Issues

8:30 Environmental Pathogen Monitoring Programs – Design and Development, Sampling Strategy, Data Collection and Interpretation
DOUGLAS MARSHALL, Eurofins Scientific Inc., Fort Collins, CO, USA

9:00 *Listeria monocytogenes* and Environmental Pathogen Monitoring and Control – FDA Expectation and Guidance
JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

9:30 The Design of Pathogen Environmental Monitoring Sampling Plans
JOHN BUTTS, Land O'Frost, Lansing, IL, USA

10:00 Break – Refreshments Available in the Poster Session Area

S51 **Surreptitious Connections: Exploring the Emerging Role of Heavy Metals in Antimicrobial Resistance**
Room 255 E
Organizers: Séamus Fanning, Gopal Gopinath, Ben Tall
Convenor: Ben Tall
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Food Chemical Hazards and Food Allergy

8:30 Tolerance to Heavy Metals and Antimicrobial Resistance: An Overview
SCOTT NGUYEN, University College Dublin, Dublin, Ireland

9:00 Tentative: Intersection of Waterflow and Emergence of Antimicrobial Resistance in Soil
KATHIA LUNEBERG, Instituto de Geología, Mexico City, Mexico

9:30 Low Concentrations of Antibiotics and Heavy Metals as Drivers of the Resistance Problem
DAN ANDERSSON, Uppsala University, Dept. of Medical Biochemistry and Microbiology, Uppsala, Sweden

10:00 Break – Refreshments Available in the Poster Session Area

S52 **NGS Case Studies Beyond WGS and Outbreak Investigations**
Room 255 F
Organizer: Joe Heinzelmann
Convenor: Jesse Miller

Epidemiology
Low Water Activity Foods
Meat and Poultry Safety and Quality

8:30 Metagenomics for Plant Mapping and Cleaning Validations for Probiotic Applications in a Dry Clean Facility
MICHELE SAYLES, Diamond Pet, Meta, MT, USA

9:00 Metagenomics Approach to Understanding Beef Shelf Life and Storage Conditions
MICK BOSILEVAC, U.S. Department of Agriculture–ARS, Clay Center, NE, USA

9:30 Utilization of Next Generation Sequencing for Dietary Supplement Authentication
JESSE MILLER, NSF International, Ann Arbor, MI, USA

10:00 Break – Refreshments Available in the Poster Session Area

RT18 **The Grey Area of Science: "Predatory" Publishers and Questionable Conferences**
Room 250 A-C
Organizers: Matthew Moore, Clyde Manuel, Benjamin Chapman
Convenor: Matthew Moore

Developing Food Safety Professionals
Food Safety Education

8:30 Panelists:

ALLYSON MOWER, University of Utah, Salt Lake City, UT, USA

MICKEY PARISH, U.S. Food and Drug Administration, Washington, D.C., USA

ELLIOT RYSER, Michigan State University, East Lansing, MI, USA

MARCEL ZWIETERING, Wageningen University, Wageningen, The Netherlands

10:00 Break – Refreshments Available in the Poster Session Area

S53 **Enhancing Food Safety: Translating Molecular Biology to Microbiology: A Dialogue between Molecular and Traditional Microbiologists**
Ballroom B
Organizers: J. David Legan, Suresh D. Pillai, Shima Shayanfar
Convenor: J. David Legan
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods

10:30 What Can I Do with Molecular Results That I Can't Do with Culture? (And vice versa)
SHIMA SHAYANFAR, General Mills Inc., Minneapolis, MN, USA

11:00 What, Why, When and How Should I Test My Samples?
VIRGINIA DEIBEL, Covance, McKinney, TX, USA

11:30 Understanding "Moleculese": Can You Say That in English, Please?
ERIC BROWN, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA

12:00 Lunch Available in Hall BC

SRT1 **Shiga Toxin-producing *Escherichia coli* and Leafy Greens: Is It Déjà vu All Over Again?**
Ballroom A+C
Organizer: Linda J. Harris
Convenor: Roger Cook

HACCP Utilization and Food Safety Systems
Pre-harvest Food Safety
Fruit and Vegetable Safety and Quality

10:30 Panelists:

JAMES GORNY, U.S. Food and Drug Administration, Sacramento, CA, USA

KARI IRVIN, U.S. Food and Drug Administration, CORE, CFSAN, College Park, MD, USA

MICHELE JAY-RUSSELL, University of California-Davis, Davis, CA, USA

CHANNAH ROCK, University of Arizona, Maricopa, AZ, USA

VICKI-LYNNE SCOTT, Amigo Farms, Inc., Yuma, AZ, USA

12:00 Lunch Available in Hall BC

S54 **Improving Safety of Sprouted Seeds**
Ballroom D
Organizers: Annemarie Buchholz, Kaiping Deng, Tong-Jen Fu
Convenors: Annemarie Buchholz, Tong-Jen Fu

Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety
Water Safety and Quality

10:30 Sprouted Grains and Seeds: Commercial Applications, Production Practices and Risk Profiles
KEITH WARRINER, University of Guelph, Guelph, ON, Canada

11:00 Safety of Sprouted Seeds: FDA's Perspectives
PATRICIA HOMOLA, U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, Division of Produce Safety, College Park, MD, USA

11:30 Ensuring Seed Safety: A Seed Supplier's Perspective
RAYMOND JONES, International Specialty Supply, Cookeville, TN, USA

12:00 Lunch Available in Hall BC

S55 **Marrying Nanotechnology and Food Packaging: Benefits and Issues for Food Safety**
Room 251 A-C
Organizer: Linda Leake
Convenors: Linda Leake, Laura Patterson
Sponsored by the IAFP Foundation

Food Chemical Hazards and Food Allergy
Food Packaging

10:30 Nanotechnology in Food Packaging: Current Uses, Impacts and Benefits
JOZEF KOKINI, Purdue University, West Lafayette, IN, USA

11:00 Nanotechnology in Food Packaging: Antimicrobial and Pathogen Detection Capabilities for Food Safety, Protection and Defense
PAUL TAKHISTOV, Rutgers University, New Brunswick, NJ, USA

11:30 Nanotechnology in Food Packaging: Regulations in the United States, Canada and the European Union
JOAN SYLVAIN BAUGHAN, Keller and Heckman, LLP, Washington, D.C., USA

12:00 Lunch Available in Hall BC

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■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

S56 Maximizing Food Safety and Quality Through Application of Hygienic Design

Room 251 D-F

Organizer: Deb Smith
Convenor: John Holah

Food Hygiene and Sanitation
Sanitary Equipment and Facility Design

10:30 Why Hygienic Design?
JOHN HOLAH, UK:IE EHEDG & Holchem Laboratories, Bury, UK

11:00 Factoring Hygienic Design into Sanitation as a Preventative Control
VANESSA CRANFORD, U.S. Food and Drug Administration (CFSAN), Washington, D.C., USA

11:30 Hygienic Design – A Food Manufacturer's Perspective
DUANE GRASSMANN, Nestlé USA, Solon, OH, USA

12:00 Lunch Available in Hall BC

S57 Understanding Antibiotic Resistance from an Environmental Perspective

Room 255 E

Organizer and Convenor: Yifan Zhang
Sponsored by the IAFP Foundation

Fruit and Vegetable Safety and Quality
Meat and Poultry Safety and Quality
Pre Harvest Food Safety

10:30 Soil Microbiota as a Reservoir of Antibiotic Resistance in Urban Agriculture and Their Potential of Horizontal Gene Transfer
YIFAN ZHANG, Wayne State University, Detroit, MI, USA

11:00 A Metagenomic Odyssey to Assess Transfer of Antibiotic-resistance Genes from Biological Soil Amendments to Fresh Produce
MONICA PONDER, Virginia Tech, Blacksburg, VA, USA

11:30 Antimicrobial-resistance Profiling in Animal Feed
BEILEI GE, Food and Drug Administration, Laurel, MD, USA

S58 WGS and Mass Spectrometry: The Paved Road to Routine Food Applications!

Room 255 F

Organizers: Patrice Arbault, Daniele Sohier
Convenors: Patrice Arbault, David Tomas Fornes

Advanced Molecular Analytics
Applied Laboratory Methods

10:30 Regulatory Perspectives for the Integration of Omics Technologies in Food Testing
THOMAS HAMMACK, U.S. Food and Drug Administration, College Park, MD, USA

11:00 Global Certification Scheme for Identification and Characterization Methods: One Key for Recognition
ERIN CROWLEY, Q Laboratories, Inc., Cincinnati, OH, USA

11:30 Selection, Implemention and Use of Omics Methods in Daily Analyses of Isolates
DOUGLAS MARSHALL, Eurofins Scientific Inc., Fort Collins, CO, USA

12:00 Lunch Available in Hall BC

RT19 Insights into Food Safety Careers Roundtable

Room 250 A-C

Organizers: Tiah Ghostlaw, Wendy White
Convenor: Wendy White

Developing Food Safety Professionals
Food Safety Education

10:30 Panelists:

ADAM BORGER, University of Wisconsin-Madison, Madison, WI, US

AMANDA KINCHLA, University of Massachusetts, Amherst, MA, USA

SEAN LEIGHTON, Cargill, Wayzata, MN, USA

JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

MANAN SHARMA, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA

DON ZINK, IEH Laboratories & Consulting Group, Taylors, SC, USA

12:00 Lunch Available in Hall BC

T9 Technical Session 9 – Pre-harvest Food Safety and Meat, Poultry and Eggs

Room 150 A-C + G

Convenors: M. Alexandra Calle, Hana Brožková

T9-01 8:30 The Identification of *Cronobacter sakazakii* and Its Traceability by Matrix-assisted Laser Desorption Ionization Time of Flight Mass Spectrometry
XING-AN LU, Wei Wang, Hongyang Zhao, Yan Lu, Mingyu Wang, Yingjian Sun, Jiaojiao Song, Shunhe Zhang, Chinese Academy of Inspection and Quarantine, Beijing, China

T9-02 8:45 The United States Department of Agriculture Food Safety and Inspection Service Beef and Veal Carcass Baseline Survey
EVELYNE MBANDI, Melanie Abley, Philip Bronstein, Hans Allender, Zanethia Eubanks, Naser Abdelmajid, Stephanie Buchanan, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

T9-03 9:00 Prevalence of *Salmonella* in the Environment of New Zealand Egg Layer Farms
JOANNE KINGSBURY, Lisa Olsen, Tanya Soboleva, Institute of Environmental Science and Research Ltd., Christchurch, New Zealand

T9-04 9:15 Fate of *Salmonella* Species within Refrigerated Ground Turkey Cooked in a Frying Pan
MINH DUONG, John Luchansky, Anna Porto-Fett, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

T9-05 9:30 Evaluation of Cinnamaldehyde and Lactic Acid Spray Wash Formulations for Pre-slaughter Cattle for Meat and Hide Decontamination and Quality
WILBERT LONG III, Majher Sarker, Cheng-Kung Liu, U.S. Department of Agriculture – ARS, Wyndmoor, PA, USA

T9-06 9:45 Comparative Genomics Analysis of Multidrug-resistant *Salmonella* Dublin from Sick Cattle and Retail Meats in the United States
SHAOHUA ZHAO, Chih-Hao Hsu, Cong Li, Maria Hoffmann, Patrick McDermott, Jason Abbott, Sherry Ayers, Gregory Tyson, Heather Tate, Kuan Yao, Marc Allard, U.S. Food and Drug Administration – Center for Veterinary Medicine, Laurel, MD, USA

10:00 Break – Refreshments Available in the Poster Session Area

T9-07 10:30 Off the Radar: Identifying Food Safety Practices and Educational Resource Needs of Small Farm Owners and Processors Exempt from the Food Safety Modernization Act
LINDSAY SPRINGER, Elizabeth Bihn, Cornell University, Geneva, NY, USA

T9-08 10:45 Persistence of Generic *Escherichia coli* and Enteric Pathogens in Blueberry Pre-harvest and Post-harvest Environments
EDUARDO GUTIERREZ, Brianna Reed, Memoree Blackmon, Morgan Young, Bill Cline, North Carolina State University, Raleigh, NC, USA

T9-09 11:00 Metagenomic Characterization of Alfalfa Sprout Spent Irrigation Water from *Salmonella*-contaminated Seeds
ELIZABETH REED, Padmini Ramachandran, Andrea Ottesen, Eric Brown, Jie Zheng, U.S. Food and Drug Administration, College Park, MD, USA

T9-10 11:15 Thermal Inactivation of *Salmonella* Surrogate and Indicator Microorganisms in Turkey Litter Compost during Physical Heat Treatment Process: A Plant Validation Study
HONGYE WANG, Zhao Chen, Muthu Dharmasena, Mengzhe Li, Annel Greene, Brian McSpadden Gardener, Blaize Holden, Jingxue Wang, Xiuping Jiang, Clemson University, Clemson, SC, USA

T9-11 11:30 Changes in Susceptibility to Ciprofloxacin and Ceftriaxone in Epidemic *Salmonella enterica* Strains after Exposure to Simulated Gastrointestinal Conditions in Chicken Breast
MARCIANE MAGNANI, Camila V. de Sales, Tereza C. M. de Oliveira, Evandro L. de Souza, Donald W. Schaffner, Federal University of Paraiba, João Pessoa, Brazil

T9-12 11:45 Die Off Kinetics and Preharvest Intervention Practices to Reduce Contamination of Enterohemorrhagic *Escherichia coli* (EHEC) and Shiga Toxin-producing *E. coli* (STEC) from Cilantro Surfaces
BRIANNA REED, Nitya Sarjapuram, Christopher Gunter, Siddhartha Thakur, Eduardo Gutierrez, North Carolina State University, Raleigh, NC, USA

12:00 Lunch Available in Hall BC

T10 Technical Session 10 – Antimicrobials

Room 151 D-F

Convenors: Norma Heredia, Fernanda Bovo Campagnollo

T10-01 8:30 A Comparison Study between Conventional and Mathematical Modeling on the Antimicrobial Effect of Cinnamon Oil, Encapsulated Curcumin, Zinc Oxide Nanoparticles and Their Combinations against Foodborne Pathogens
MOHAMMED HAKEEM, Khalid Asseri, Luyao Ma, Keng Chou, Michael Konkel, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

T10-02 8:45 The Effect of pH on the Antimicrobial Activity of *Cryptolepsis sanguinolenta* and *Psidium guajava* against *Salmonella* and *Escherichia coli*
EMEFA MONU, Shelli Laskowitz, Auburn University, Auburn, AL, USA

T10-03 9:00 Effect of *Thymus vulgaris* Essential Oil on the Fatty Acid Profile of the Antibiotic-resistant *Bacillus cereus* Cell Membrane
GAOFETOGE SETLHARE, Ntsoaki Malebo, Jane Nkhebenyane, Central University of Technology, South Africa, Bloemfontein, South Africa

T10-04 9:15 Antimicrobial Effect of Conjugated Linoleic Acid Over-producing *Lactobacillus* with Berry Phenolics on Enteric Pathogens
ZAJEBA TABASHSUM, Mengfei Peng, Cassie Bernhardt, Puja Patel, Debabrata Biswas, University of Maryland, College Park, MD, USA

T10-05 9:30 A Meta-Analysis on the Effectiveness of Electrolyzed Water Treatments in Reducing and Inactivating Foodborne Pathogens on Different Foods
GEORGE KWABENA AFARI, Yen-Con Hung, University of Georgia, Griffin, GA, USA

T10-06 9:45 Efficacy of Bacteriophages Alone or as a Co-Treatment in Reducing *Listeria monocytogenes* Contamination of Non-food Contact Surfaces
JIA LIU, Haley Oliver, MaryKate Harrod, Rachel Makowski, Danielle Marks, Kristen Sequiera, Brooke Siefert, Aishwarya Chitnis, Paul Ebner, Purdue University, Department of Animal Sciences, West Lafayette, IN, USA

10:00 Break – Refreshments Available in the Poster Session Area

T10-07 10:30 Enzyme-based Control of *Vibrio parahaemolyticus* by the Marine Bacterium *Pseudoalteromonas piscicida*
GARY RICHARDS, Michael Watson, U.S. Department of Agriculture – ARS, Dover, DE, USA

T10-08 10:45 Biocontrol of Shiga Toxin-producing *Escherichia coli* on Fresh Produce Using Bacteriophages
PUSHPINDER KAUR LITT, Ravirajsinh Jadeja, Radhika Kakani, Joyjit Saha, Tony Kountoupis, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

T10-09 11:00 Development and Evaluation of a Novel Assay to Identify Prophage Inducers as a New Class of Antimicrobials in Foods
ELIZABETH TOMPKINS, Brigitte Cadieux, Lawrence Goodridge, McGill University, Ste-Anne-de-Bellevue, QC, Canada

T10-10 11:15 Transferability of IS*26*-Class 1 Integron-IncHI2 Plasmid in Antimicrobial-resistant *Salmonella* Typhimurium
HANG ZHAO, Chunlei Shi, Shanghai Jiao Tong University, Shanghai, China

T10-11 11:30 Prevalence and Mobility of Antibiotic-resistance in *Salmonella* under Conventional or Organic Farm Environments
MENGFEI PENG, Serajus Salaheen, Debabrata Biswas, University of Maryland, College Park, MD, USA

T10-12 11:45 Molecular Characterization of Non-O157 Shiga Toxin-producing *Escherichia coli* Isolated from Sustainable Farming Systems Using Whole Genome Sequencing
AYANNA GLAIZE, Eduardo Gutierrez, Christopher Gunter, Siddhartha Thakur, North Carolina State University, Raleigh, NC, USA

12:00 Lunch Available in Hall BC

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

Notes

WEDNESDAY AFTERNOON JULY 11

Posters will be on display 9:00 a.m. – 3:00 p.m.
(See details beginning on page 87)

12:15 **Assessment of AFRI Food Safety Challenge Area**
Room 151 D-G
Organizers: Ellen Thomas, Barbara Kowalcyk

NIFA – AFRI Report Session

See online program for more information

Presented by:

BARB KOWALCYK, Ohio State University, Columbus, Ohio, USA

ALAN O'CONNOR, RTI International, Research Triangle Park, NC, USA

ELLEN THOMAS, RTI International, Research Triangle Park, NC, USA

S59 **Utilizing Big Data to Revolutionize Food Safety, Traceability and Transparency in Food Systems**
Ballroom A + C
Organizers and Convenors: Margaret Kirchner, Stephanie Pollard

Advanced Molecular Analytics
Food Defense
Food Safety Culture

1:30 Using Big Data from GenomeTrakr to Transform Food Safety
MARC ALLARD, U.S. Food and Drug Administration, College Park, MD, USA

2:00 The Application of NGS Technologies in Rapid Detection of Foodborne Pathogens
RAMIN KHAKSAR, Clear Labs Inc., Menlo Park, CA, USA

2:30 Practical Integration of Blockchain Technology into Food Safety Management Systems
FRANK YIANNAS, Walmart, Bentonville, AR, USA

3:00 Utilizing Big Data to Enhance Food Safety Management Systems
TIMOTHY JACKSON, Driscoll's, Watsonville, CA, USA

3:30 Refreshments Available outside Ballroom A + C

S60 **Risk Assessment of Listeriosis: Latest Developments for Food Safety Risk Management**
Ballroom B
Organizers: Yuhuan Chen, Fanny Tenenhaus-Aziza, Jane Van Doren
Convenor: Jane Van Doren
Sponsored by the IAFP Foundation

Epidemiology
International Food Protection Issues
Microbial Modelling and Risk Analysis

1:30 EFSA Opinion on *L. monocytogenes* Contamination of Ready-to-Eat Foods and the Risk for Human Health in the European Union
ROLAND LINDQVIST, National Food Agency, Uppsala, Sweden

2:00 Management of *L. monocytogenes* in the French Dairy Sector Using Risk Assessment Outputs
FANNY TENENHAUS-AZIZA, CNIEL (French Dairy Board), Paris, France

2:30 Risk Ranking Using FDA-iRISK: *L. monocytogenes* in Selected RTE Foods Considering Recent Data on Contamination, Intrinsic Parameters of Foods, and Dose Response for Susceptible Populations
YUHUAN CHEN, U.S. Food and Drug Administration–CFSAN, College Park, MD, USA

3:00 Advances in WGS and the Implications on the Conduct and Application of Risk Assessment in Food Safety Decision Making: Summary from IRAC Workshop
JANELL KAUSE, U.S. Department of Agriculture–FSIS, Washington, D.C., USA

3:30 Refreshments Available outside Ballroom A + C

S61 **The Future of Food Microbiology is Extra CRISPy: Novel Applications of CRISPR Technology**
Ballroom D
Organizers: Arun Bhunia, Byron Brehm-Stecher, Suresh D. Pillai
Convenors: Arun Bhunia, Byron Brehm-Stecher
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods

1:30 CRISPR Biology and Technology, an Overview
RYAN JACKSON, Utah State University, Logan, UT, USA

2:00 CRISPR Technologies for Food Microbiology
CHASE BEISEL, Department of Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, USA

2:30 Characterization of a Novel Lytic Bacteriophage from an Industrial *Escherichia coli* Fermentation Process and Elimination of Virulence Using a Heterologous CRISPR–Cas9 System
JAMES ZAHN, DuPont Tate & Lyle Bio Products, London, TN, USA

3:00 Efficient Gene Disruption in Diverse Strains of Toxoplasma gondii Using CRISPR/CAS9
KEVIN BROWN, Department of Molecular Microbiology, Washington University School of Medicine, St. Louis, MO, USA

3:30 Refreshments Available outside Ballroom A + C

S62 **Use of Whole Genomic Sequencing Data for Source Attribution of Foodborne Pathogens**
Room 250 A–C
Organizer and Convenor: Weidong Gu
Sponsored by the IAFP Foundation

Advanced Molecular Analytics
Applied Laboratory Methods
Epidemiology

1:30 Promise and Challenges of Whole Genome Sequencing for *Campylobacter* Source Attribution
TBD

2:00 Microbial Propensity for a Specific Habitat: Biotyping by WGS and Microbial Ecology
KALLIOPI RANTSIOU, University of Torino-DISAFA, Grugliasco, Italy

2:30 Use of Machine Learning to Predict Food Sources of *Listeria monocytogenes* Isolates Based on Whole Genomic Multilocus Sequence Typing (wgMLST) Metadata
WEIDONG GU, CDC, Atlanta, GA, USA

3:00 TBD

3:30 Refreshments Available outside Ballroom A + C

S63 Science, Safety, and Sanity: Hot Topics in Food Toxicology
Room 251 A-C
Organizer: Mark Moorman
Convenors: Paul Hanlon, Kaye Ivens

Communication, Outreach and Education
Food Chemical Hazards and Food Allergy

1:30 The Science of Genetic Engineering (GMOs, Gene Editing)
ALEX EAPEN, Cargill, Wayzata, MN, USA

2:00 The Science of Pesticides and BPA
ALEXANDRIA LAU, E & J Gallo Winery, Modesto, CA, USA

2:30 The Science of Process-formed Chemicals
PAUL HANLON, Abbott Nutrition, Columbus, OH, USA

3:00 The Science of Food Colors and Flavors
JOANNA DRAKE, FEMA, Washington, D.C., USA

3:30 Refreshments Available outside Ballroom A + C

S64 Closing in on the Research Gaps with *Listeria monocytogenes*, *Salmonella*, and Viruses in Low-moisture Foods
Room 251 D-F
Organizer: Delia Murphy
Convenors: Edith Wilkin, Julie Ann Kase

Sponsored by: ILSI North America Food Microbiology Committee

Low-water Activity Foods

1:30 Survival and the Potential for Genome Changes during the Storage of *Listeria monocytogenes* in Model Low-moisture Foods
JEFFREY FARBER, University of Guelph, CRIFS, Department of Food Science, Guelph, ON, Canada

2:00 Survival and Pathogenicity of Foodborne Viruses on Low-moisture Foods
SABAH BIDAWID, Health Canada, Ottawa, ON, Canada

2:30 Survival and Virulence of *Salmonella* in Model Low-moisture Foods
SOPHIA KATHARIOU, North Carolina State University, Raleigh, NC, USA

3:00 *Listeria monocytogenes* Thermal Resistance: Role of Water Activity in Cocoa Powder, Skim Milk Powder, and Almond Flour/Meal
MEIJUN ZHU, Washington State University, Pullman, WA, USA

3:30 Refreshments Available outside Ballroom A + C

S65 Starting Up after a Contamination-related Shut Down
Room 255 B-C
Organizers and Convenors: Jeffrey Kornacki, Kevin Lorcheim

Food Hygiene and Sanitation
Food Law
HACCP Utilization and Food Safety Systems

1:30 Considerations of Legal Counsel in a Microbiological Plant Shut Down
ELIZABETH FAWELL, Hogan Lovells, Washington, D.C., USA

2:00 Microbiological Root Cause Investigative Approaches
JEFFREY KORNACKI, Kornacki Microbiology Solutions, Inc., Madison, WI, USA

2:30 Remediation with In-plant Treatment with Chlorine Dioxide Gas
KEVIN LORCHEIM, ClorDiSys Solutions, Inc., Lebanon, NJ, USA

3:00 Diamond Pet Foods: Recall and Recovery
MICHELE SAYLES, Diamond Pet, Meta, MT, USA

3:30 Refreshments Available outside Ballroom A + C

S66 Culturally-targeted Messages and Methods: The Next Generation of Food Safety Education Strategies
Room 255 E
Organizers: Yaohua (Betty) Feng, Jennifer Quinlan
Convenors: Christine Bruhn, Yaohua (Betty) Feng
Sponsored by the IAFP Foundation

Developing Food Safety Professionals
Food Safety Culture and Food Safety Education

1:30 A Novel Education Intervention: Conceptual Change Teaching Method
JULIE ALBRECHT, University of Nebraska, Lincoln, NE, USA

2:00 Utilization of the Conceptual Change Teaching Method to Reach Diverse Audiences with Food Safety
RACHEL SINLEY, Metropolitan State University, Denver, CO, USA

2:30 Effectiveness of Discussion Maps and Cooking Classes to Non-English Speaking Immigrants and Refugees
ABBY GOLD, North Dakota State University, Fargo, ND, USA

3:00 Use of Photonovellas to Reach Consumers with Different Cultural Backgrounds
JENNIFER QUINLAN, Drexel University, Philadelphia, PA, USA

3:30 Refreshments Available outside Ballroom A + C

S67 Spores in the Global Dairy Industry Significance, Issues and Challenges
Room 255 F
Organizers: Purnendu Vasavada, Nicole Martin, Martin Wiedmann
Convenors: Nicole Martin, Nancy Huls
Sponsored by the IAFP Foundation

Dairy Quality and Safety
Food Hygiene and Sanitation

1:30 Spores in Global Dairy Industry: Significance, Issues and Challenges
PURNENDU VASAVADA, University of Wisconsin-River Falls, River Falls, WI, USA

2:00 New Insights into On-farm Spore Sources in Dairy and Control
NICOLE MARTIN, Cornell University, Ithaca, NY, USA

2:30 Bacterial Spores in the Dairy Industry: An Industry Perspective
ANNIE BIENVENUE, U.S. Dairy Export Council, Arlington, VA, USA

3:00 Troubleshooting Spores in Dairy Processing
JESSIE HEIDENREICH, Hilmar Cheese Company, Hilmar, CA, USA

3:30 Refreshments Available outside Ballroom A + C

T11 Technical Session 11 – General Microbiology
Room 150 A-C + G
Convenors: Abigail Horn, Mapitsi Thantsha

T11-01 1:30 Blockchain: Accelerating Traceback Investigations in Food Poisoning Outbreaks
JORY LANGE, The Lange Law Firm, PLLC, Houston, TX, USA

T11-02 1:45 Evaluating Trends in Foodborne Outbreaks and Outbreak-associated Illnesses for Various Pathogen Food Category Pairs from 1998 to 2015
MICHAEL BAZACO, LaTonia Richardson, Michael Batz, Joanna Zablotsky-Kufel, Beau Bruce, U.S. Food and Drug Administration, College Park, MD, USA

T11-03 2:00 Dysbiosis of Commensal Microbes and Its Correlation with Increased Systemic Dissemination and Gastrointestinal Pathology during Listeriosis
MOHAMMAD ALAM, Christopher Cavanaugh, Carmen Tartera, Jayanthi Gangiredla, Nur Hasan, Tammy Barnaba, Kristina Williams, U.S. Food and Drug Administration, CFSAN, Laurel, MD, USA

T11-04 2:15 Seasonal Prevalence of *Salmonella* Typhimurium and Its Monophasic Variant Serovar I 4,[5],12:I:-, in United States' Feed Mills
GABRIELA MAGOSSI, Natalia Cernicchiaro, Steve Dritz, Terry Houser, Jason Woodworth, Cassandra Jones, Valentina Trinetta, Kansas State University, Food Science Institute, Manhattan, KS, USA

T11-05 2:30 Transcriptional Response of *Salmonella enterica* Serovar Enteritidis to Ethanol Treatment
SHOUKUI HE, Siyun Wang, Xianming Shi, Shanghai Jiao Tong University, Shanghai, China

T11-06 2:45 Genetic and Virulent Difference between Pigmented and Non-pigmented *Staphylococcus aureus*
CHUNLEI SHI, Jing Zhang, Department of Food Science, Shanghai Jiao Tong University, Shanghai, China

T11-07 3:00 Identification of a *Pseudomonas* Locus Associated with Color Defect in Fluid Milk Using Comparative Genomics
RENATO ORSI, Rachel Evanowski, Samuel Reichler, Nicole Martin, Martin Wiedmann, Cornell University, Ithaca, NY, USA

T11-08 3:15 Spatiotemporal Variability in Microbial Quality of Western Agricultural Water Supplies: A Multistate Study
Melissa L. Partyka, Ronald F. Bond, JENNIFER A. CHASE, Edward R. Atwill, University of California-Davis, Davis, CA, USA

3:30 Refreshments Available outside Ballroom A + C

T12 Technical Session 12 – Laboratory and Detection Methods
Room 151 D-F
Convenors: Arne Dübecke, Malebo Ntsoaki

T12-01 1:30 A 3D Cell-based Assay to Detect Shiga Toxin-producing
CELINA TO, Arun Bhunia, Purdue University, West Lafayette, IN, USA

T12-02 1:45 Comparison of Real-time PCR Results from *Listeria monocytogenes*-spiked Food Samples Grown in Rapid Media and Half-Fraser Broth: An Interlaboratory Study
CHRISTINA HARZMAN, Benjamin Junge, Hanna Hartenstein, Ivo Meier Wiedenbach, Cordt Grönewald, Kornelia Berghof-Jäger, BIOTECON Diagnostics, Potsdam, Germany

T12-03 2:00 Development of a Molecular *Listeria* Pattern Recognition Assay, a Novel Rapid Method for Identifying Resident *Listeria*
MORGAN WALLACE, Stephanie Morse, Jessica Pecone, Sarah Kozak, Amanda Ruby, Kyleen Sorensen, Gwendolyn Spizz, Rheonix, Inc., Ithaca, NY, USA

T12-04 2:15 Comparison in the Recovery of *Salmonella* from Poultry Slaughter Establishments Using Buffered Peptone Water with and without Neutralizers to Address Antimicrobial Carryover
STEVIE HRETZ, Michael Williams, Eric Ebel, Neal Golden, U.S. Department of Agriculture-FSIS-OPPD-RIMS, Washington, D.C., USA

T12-05 2:30 Detection and Characterization of Environmental Samples Naturally Contaminated with *Salmonella enterica*
TAMAR DICKERSON, Joseph A. Russell, Elizabeth Reed, Christina M. Ferreira, Joseph Baugher, Guojie Cao, Rachel Pfuntner, Laura Truitt, Laura Strawn,

Steve Rideout, Rebecca L. Bell, Hua Wang, Marc Allard, Eric Brown, Jonathan Jacobs, MRIGlobal, Gaithersburg, MD, USA

T12-06 1:30 Using the Isotopic Composition of Water to Detect Honey Adulteration
ARNE DUEBECKE, Cord Luellmann, Tentamus Group, Bremen, Germany

T12-07 3:00 Determining the Impact on Varying Methods for Acid Adaptation on Thermal Resistance of Shiga Toxigenic *Escherichia coli* (STEC), *Listeria monocytogenes*, and *Salmonella enterica* in Orange Juice
VALERIE ORTA, Mark Morgan, Faith Critzer, University of Tennessee, Department of Food Science, Knoxville, TN, USA

T12-08 3:15 Study of the Microbiomes of Catfish Treated with Natural Preservatives Using 16S Metagenomics
JUNG-LIM LEE, Delaware State University, Dover, DE, USA

3:30 Refreshments Available outside Ballroom A + C

4:00 p.m. – 4:45 p.m.

JOHN H. SILLIKER LECTURE, *Ballroom A + C*

Heroes Past and Future
ANN MARIE MCNAMARA, Target Corporation, Minneapolis, MN, USA

EVENING OPTIONS

6:00 p.m. – 7:00 p.m.
Reception
South Foyer

7:00 p.m. – 9:30 p.m.
IAFP Awards Banquet
Ballroom

Check the Program Addendum for changes to the Program.

■ – Symposia ■ – Roundtables ■ – Technicals ■ – Developing Scientist Competitor ■ – Topic Areas

Notes

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IAFP2018
ANNUAL MEETING
Salt Lake City, Utah
JULY 8-11

John H. Silliker Lecture

WEDNESDAY, JULY 11, 2018
CLOSING SESSION
4:00 p.m. – 4:45 p.m.
Heroes Past and Future

Ann Marie McNamara
Vice President, Food and Essentials Safety and Quality Assurance
Target Corporation
Minneapolis, Minnesota

Ann Marie McNamara, Ph.D., is Vice President of Food and Essentials Safety and Quality Assurance at Target, Inc. in Minneapolis, Minnesota. Dr. McNamara joined Target in 2017 and leads the food and essentials safety and quality policy and program development, regulatory compliance, supplier approval, and compliance/quality testing for approximately 1,800 retail stores, five food distribution centers, and a robust supply chain of national and international scope.

Dr. McNamara played a central role in the nation's *E. coli* O157:H7 outbreak linked to contaminated beef patties 25 years ago. In 1992, she served as Director of Microbiology at the USDA's Food Safety and Inspection Service (FSIS). She moved to Sara Lee Corporation in 1999 as Corporate Vice President of Food Safety and Technology out of Memphis, Tennessee and Cincinnati, Ohio, before joining Silliker (now Mérieux NutriSciences, Inc.) in 2003 as Vice President of Food Safety and Scientific Affairs in Chicago, Illinois. In 2008, Dr. McNamara joined Jack in the Box, Inc. in San Diego, California as Vice Presiden of Food Safety and Regulatory Compliance, helping maintain the tradition of leadership in food safety.

An IAFP Member since 1996, Dr. McNamara received the IAFP Fellow Award in 2012. She has served on numerous IAFP Selection Committees and is a member of several Professional Development Groups (PDGs). She also serves as an editorial advisory board member for *Food Safety Magazine* and received its Distinguished Service Award in 2014.

Dr. McNamara earned her Ph.D. from the University of Pittsburgh and conducted a post-doctoral fellowship at the Centers for Disease Control and Prevention. She has authored more than 100 publications, given more than 100 scientific presentations, developed corporate food safety programs widely recognized for their excellence, and provided expert food safety advice to more than 100 businesses as a consultant.

John H. Silliker Lecture Abstract

Heroes Past and Future

Ann Marie McNamara
Vice President, Food and Essentials
Safety and Quality Assurance
Target Corporation
Minneapolis, Minnesota

This year marks the 25th anniversary of the Jack in the Box *E. coli* O157:H7 outbreak – an event that changed food safety more than any other in recent memory. This crisis resulted in changes in regulation, innovations in industry practices, new research methods and tools for detection, and a changed public awareness of the importance of food safety. It led to a decade of unprecedented innovation, research and reform in food safety. Every IAFP Annual Meeting since still has dozens of papers and presentations that point to this crisis and name it as a pivotal event for change.

Anniversaries are important opportunities to focus on both lessons learned and how to do better in the future. Some of the heroes of this crisis are well known – many belong to IAFP – but many will be a surprise, even though they made important contributions. The heroes of this crisis include government and industry scientists, academicians, and test kit developers who contributed to the basic knowledge of this deadly bacterium and its detection and control; physicians; public health officials; epidemiologists and veterinarians who contributed to understanding the transmission, treatment and reservoirs of this disease; engineers, entrepreneurs and industry experts who contributed interventions in both food processing and retail settings; and regulators, lawyers and parents of the victims who contributed to regulatory reform and increased public awareness.

My background as a government scientist and regulator during the crisis, as a scientific leader at Silliker (now Mérieux NutriSciences) after this event, and as Dave Theno's successor at Jack in the Box uniquely qualify me to recognize the many heroes who have contributed to improving food safety in the wake of this crisis, and to look at how the current generation of IAFP Members can help address future problems in food safety.

This presentation will use the lessons learned from this past crisis to look toward the future and challenge current IAFP Members to use their knowledge, skills and abilities to confront current and emerging foodborne threats. What will be the next crisis? Who will be our next food safety heroes? Will it be you?

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Posters

MONDAY POSTERS
10:00 AM – 6:00 PM

P1 POSTER SESSION 1

Microbial Food Spoilage
Beverages and Acid/Acidified Foods
Food Processing Technologies
Sanitation and Hygiene
Meat, Poultry and Eggs
Viruses and Parasites
Pre-harvest Food Safety
Produce
Water
Seafood
Salt Palace Convention Center, Exhibit Hall

P1-01 through P1-127 – Authors present 10:00 a.m. – 11:30 a.m. and 5:00 p.m. – 6:00 p.m.

P1-128 and above – Authors present 2:00 p.m. – 3:30 p.m. and 5:00 p.m. – 6:00 p.m.

Microbial Food Spoilage

P1-01 Influence of High-pressure Processing on the Microbiological Safety in Coffee Beans — Hsiao-Wen Huang, Bang-Yuan Chen, CHUNG-YI WANG, National Taiwan University, Nantou, Taiwan

P1-02 MC-Media-Pad: AOAC- and Microval-approved Culture Media Method for Rapid and Convenient Detection and Enumeration of Food Spoilage Microorganisms — Anke Hossfeld, Celine Marion, Anthony Larere, RENAUD CHOLLET, Millipore SAS, Molsheim, France

P1-03 Molecular Characterization, Biofilm Formation, and Spoilage Potential of *Bacillus* Isolates from Different Milk Samples — ELNA BUYS, James Elegbeleye, University of Pretoria, Pretoria, South Africa

P1-04 Contamination Profile of Lactic Acid Bacteria in Production Environments of Sausage and Mayonnaise Factories — SUWIMON KEERATIPIBUL, Panida Pisaisawat, Wanida Mukkana, Saengrawee Jongvanich, Wipa Kongsakul, Yodlak Saengprao, Nongnuch Promla, Chulalongkorn University, Phyathai Road, Bangkok, Thailand

P1-05 Evaluation of Commercial Cultured Food Ingredients Used to Maintain the Quality of Fresh Refrigerated Soup — Matt Hundt, SHELLY GEBERT, Gregory Siragusa, Jodi Benson, Bryan Dieckelman, Third Wave Bioactives, Wauwatosa, WI, USA

P1-06 Antimicrobial Ability of Modified Bacterial Cellulose Film against Spoilage Microorganisms — WEI WANG, Zhilong Yu, Mengshi Lin, Azlin Mustapha, University of Missouri, Columbia, MO, USA

P1-07 Withdrawn

P1-08 Innovative High-throughput Automated Membrane-based Real-time PCR Detection of *Salmonella* — Radha Singh, Amruta Farande, Mita Bhandarkar, Sneha Thakur, Kushminda Bangera, Sujata Hajra, Kavita Khadke, RAJAS WARKE, HiMedia Laboratories Pvt. Ltd., Mumbai, India

P1-09 Association of Fungal Genera with Processed Foods and Production Failures — ABIGAIL SNYDER, John Churey, Randy Worobo, The Ohio State University, Columbus, OH, USA

P1-10 Metagenomic Analysis of Microbial Communities in Commercial Catfish Treated with Grapefruit Seed Extract — GINA ACCUMANNO, Jung-lim Lee, Delaware State University, Dover, DE, USA

P1-11 Withdrawn

P1-12 Edible Nano-Coating for Extending Shelf Life and Improving Food Safety of Blueberries — AROSHA LOKU UMAGILIYAGE, Ruplal Choudhary, Southern Illinois University, Carbondale, IL, USA

P1-13 *Pseudomonas* Spoilage Leading to a Lack of Foam Stability in Fluid Milk — Michaela Ewing, Sarah Guffey, Kaylen Gibbens, JOY WAITE-CUSIC, Oregon State University, Corvallis, OR, USA

P1-14 *Salmonella* Survival in Pan-fried and Flash-fried Chicken Livers — Kevin Pigao, JOY WAITE-CUSIC, Oregon State University, Corvallis, OR, USA

P1-15 Relative Thermal Tolerance of Isolates Responsible for Off-flavor Development and Spoilage of Fat-free Chocolate Milk — Sarah Guffey, Danton Batty, Lisbeth Meunier-Goddik, JOY WAITE-CUSIC, Oregon State University, Corvallis, OR, USA

P1-16 Inactivation of Natural Spoilage Microflora in Refrigerated Raw Pineapple Juice with Added Isoeugenol — EMALIE THOMAS-POPO, Aubrey Mendonca, Byron Brehm-Stecher, James Dickson, Angela Shaw, Floyd Woods, Iowa State University, Ames, IA, USA

P1-17 *Staphylococcus aureus* Growth in Egg Roll Filling at Different Storage Temperatures — IRIS TENORIO, Christian Kennedy, BYU, Provo, UT, USA

Beverages and Acid/Acidified Foods

P1-18 Evaluation of the Survival and Growth of *Listeria monocytogenes* and Lactic Acid Bacteria in Mango (*Mangifera indica*), Custard Apple (*Annona muricata*) and Blackberry (*Rubus ursinus*) Pulps from Costa Rica — MARIA LAURA ARIAS, Sharon Maynard, Mariela Alvarado, Universidad de Costa Rica, San Jose, Costa Rica

P1-19 Evaluation of an ATP Bioluminescence Detection-based Technology for Testing Microbial Contamination in Commercially Sterile Dairy UHT Products — María del Carmen Malagón-Rivera, Gabriel Cárdenas-Romero, Angélica Alejandra De la Torre-Anaya, GUSTAVO GONZÁLEZ-GONZÁLEZ, Maltie Erandy Cabello-Aceves, 3M Food Safety Mexico, Guadalajara, Mexico

P1-20 Growth and Survival of *Escherichia coli* O157:H7 in Model Vegetable Fermentations under Varying Salt Conditions — Robert Price, FRED BREIDT, JR., U.S. Department of Agriculture – ARS, Raleigh, NC, USA

P1-21 Persistence of *Salmonella* on Different Dry Tea Types and Fate under a Range of Brewing Processes — KAYLA MURRAY, Chelsey Tremblay, Fan Wu, Keith Warriner, University of Guelph, Guelph, ON, Canada

Blue Text – Developing Scientist Competitor Green Text – Undergraduate Student Competitor

P1-22 Concentration of *Lactobacillus brevis* from Experimentally Infected American Lager Beer by InnovaPrep's Concentrating Pipette and Be Flat Degassing Jar — MICHAEL HORNBACK, InnovaPrep, Drexel, MO, USA

P1-23 Modeling the Survival of *Salmonella* in Soy Sauce-based Products Stored at Two Different Temperatures — ANA ARCINIEGA, Jayne Stratton, Andreia Bianchini, Hidehito Kai, Bing Wang, University of Nebraska-Lincoln, Lincoln, NE, USA

Food Processing Technologies

P1-24 Growth Inhibitory Effect of D-Tryptophan on *Vibrio* spp. in Broth Culture, Seawater, and Live Oysters — JIAN CHEN, Shigenobu Koseki, Hokkaido University, Sapporo, Japan

P1-25 Comparison of *Listeria monocytogenes* Inactivation on Cellulose Filter Membranes during Hot-air Roasting — LINDSAY HALIK, Quincy Suehr, Elizabeth Grasso-Kelley, Susanne Keller, Nathan Anderson, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

P1-26 Water Activity Limits High-pressure Processing Efficacy to Control Fungi in Apple Juice Concentrate — ELIZABETH BUERMAN, Randy Worobo, Olga Padilla-Zakour, Cornell University, Ithaca, NY, USA

P1-27 Effects of High-pressure Processing and Hot Water Pasteurization on Inactivation of *Listeria monocytogenes* in Cooked Sausages Stored at 4 and 10˚C — S. BALAMURUGAN, Pawinee Inmanee, James De Souza, Philip Strange, Tantawan Pirak, Shai Barbut, Agriculture & Agri-Food Canada, Guelph, ON, Canada

P1-28 Impact of UV-C Irradiation on the Safety and Cytotoxicity of Cranberry-flavored Water Using a Novel Continuous Flow UV System — Vybhav Gopisetty, ANKIT PATRAS, Agnes Kilonzo-Nthenge, Rishipal Bansode, Michael Sasges, Che Pan, Hang Xiao, Tennessee State University, Nashville, TN, USA

P1-29 Effect of Continuous Intense Pulsed Light on *Cronobacter sakazakii* Inoculated in Different Powder Samples — DONGJIE CHEN, University of Minnesota, St Paul, MN, USA

P1-30 Reduction of Molds in Multi-grain Bread by Targeted Directional Microwave Technology — KATHLEEN FERMIN, Don Stull, Andreas Neuber, Mindy Brashears, Texas Tech University, Lubbock, TX, USA

P1-31 Effect of Processing Temperature on Pathogen Inactivation in Juice Using High-pressure Processing — REBECCA CHENG, Jessie Usaga, Oscar Acosta, Randy Worobo, Cornell University, Ithaca, NY, USA

P1-32 Withdrawn

P1-33 Fate and Decontamination of O157 and Non-O157 Serogroups of Shiga Toxin-producing *Escherichia coli,* including ATCC 43895, as Affected by Elevated Hydrostatic Pressure — AKILIYAH SUMLIN, Kristin Day, Kayla Sampson, Abimbola Allison, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA

P1-34 Assessing the Efficacy of Chemical Treatments to Control *Salmonella* Typhimurium in Rendered Chicken Fat Applied in Pet Foods — JANAK DHAKAL, Charles Aldrich, Carl Knueven, Kansas State University, Manhattan, KS, USA

P1-35 Cold Plasma Treatment of Valencia Oranges Reduces Persistence of *Salmonella* — Sarah M. Hertrich, Glenn Boyd, Joseph Sites, BRENDAN A. NIEMIRA, U.S. Department of Agriculture - ARS, Wyndmoor, PA, USA

P1-36 Use of *Listeria innocua* and *Clostridium sporogenes* as Surrogate Organisms for In-plant Validation of a Sous Vide Process for Chicken Breasts Using Celery Nitrite — DENNIS PLETCHER, Audrey Boeken, Manish Aryal, Peter Muriana, Oklahoma State University, Stillwater, OK, USA

Sanitation and Hygiene

P1-37 Applied Pre-Inoculation and Resistance Development of Lactic Acid Bacteria for Competitive Exclusion of Environmental Pathogens in a RTE Frozen Food Processing Environment — SOSSE KENDOYAN, Duncan Dowdle, California State University of Fresno, Fresno, CA, USA

P1-38 Changes in Concentrations of AMP, ADP, and ATP over Time in Bovine and Porcine Muscle Tissue — NICHOLAS SMITH, Robert Weyker, Scott Rankin, Jeffrey Sindelar, University of Wisconsin-Madison, Department of Food Science, Madison, WI, USA

P1-39 Cleaning Tools and Utensils – Everything You Need to Know about GFSI Audit Scheme Compliance Requirements — DEB SMITH, UK:IE EHEDG & Vikan, Swindon, United Kingdom

P1-40 The Comparison of Detection Sensitivities for Allergens in Foods between the ATP+ADP+AMP (A3) Test and the Protein Swab Test — Wataru Saito, MIKIO BAKKE, Kikkoman Biochemifa Company, Noda, Chiba, Japan

P1-41 Development of a Laboratory Method Using Stainless Steel Coupons to Determine the Efficacy of Surface Sampling Devices — GEOFF BRIGHT, Nerie Roa, N. Robert Ward, World Bioproducts, Bothell, WA, USA

P1-42 Strain-specific Differences in Response of Human Noroviruses to pH Challenge — Justin Bradshaw, JEREMY FAIRCLOTH, Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA

P1-43 Ease of Biofilm Accumulation and Efficacy of Sanitizing Treatments in Removing the Biofilms Formed on Selected Abiotic Surfaces — HIMABINDU GAZULA, University of Georgia, Griffin, GA, USA

P1-44 Evaluation of Surface Cleanliness in Seafood Production Lines by ATP Bioluminescence Application — Pitima Sinlapapanya, Saengrawee Jongvanich, Panida Pisaisawat, Yodlak Saengprao, Wanida Mukkana, Wipa Kongsakul, NONGNUCH PROMLA, Kitiya Vongkamjan, 3M Thailand Limited, Bangkok, Thailand

P1-45 Thermal and Chemical Inactivation of Human Norovirus: Impacts on Viral Capsid Integrity — NAIM MONTAZERI, Eric Moorman, Blanca Escudero-Abarca, Lee-Ann Jaykus, Food Science and Human Nutrition Department, University of Florida, Gainesville, FL and Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh, NC, USA

P1-46 Effect of Drying Conditions and Microbial Species on Biofilm Formation and Resulting Probability of Detection by Various Swab Types — Nicole Familiari, Paul Meighan, DELIA CALDERON, Brandon Katz, Ryan Marder, Delaram Nikooei, Hygiena, Camarillo, CA, USA

P1-47 Hydrogen Peroxide and Hypochlorite Disinfectants are More Effective against *Pseudomonas aeruginosa* Biofilms Than Quaternary Ammonium Compounds — CAITLINN LINEBACK, Peter Teska, Haley Oliver, Purdue University, West Lafayette, IN, USA

P1-48 Changes of Lethal Activities of Gaseous Chlorine Dioxide as Affected by Relative Humidity against *Escherichia coli* O157:H7 on Stainless Steel — JEONGMIN LEE, Sujin Jang, Nam-Taek Lee, Jee-Hoon Ryu, Department of Biotechnology, College of Life Sciences and Biotechnology, Korea University, Seoul, South Korea

P1-49 Optimization of the CDC Biofilm Reactor for Generation of *Listeria monocytogenes* Biofilms and Impact of Biofilm Age on the Efficacy of Chemical Sanitizers — ERIC MOORMAN, Lee-Ann Jaykus, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh, NC, USA

P1-50 Treat Water Like Glass – Sanitation's War on Water to Reduce Pathogen Risk — KARL THORSON, General Mills, Minneapolis, MN, USA

Blue Text – DevelopBlue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

P1-51 Effects of Slightly Acidic Electrolyzed Water Treatment on Microbial Reduction in Salted Young Radish — SUNGGYU AHN, Gyiae Yun, Ki-Hwan Park, Seojeong College, Yangju, South Korea

P1-52 Comparison of Dual Enzyme Treatment with Alkaline Treatment for Removal and Sanitation of *Listeria innocua* Biofilm Components Attached to Stainless Steel Surfaces — GARY GAMBLE, U.S. Department of Agriculture – ARS, Athens, GA, USA

P1-53 Survival and Inactivation of Human Norovirus Gii. 4 Sydney on Airplane Plastic Tray Table Surfaces — DORRA SIMMONS, Mohammed Alhejaili, Marlene Janes, Wenqing (Wennie) Xu, School of Nutrition and Food Sciences, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-54 Evaluating Environmental Monitoring Protocols for *Listeria* spp. and *Listeria monocytogenes* in Frozen Food Manufacturing Environments — BRITTANY MAGDOVITZ, Sanjay Gummalla, Harshavardhan Thippareddi, Mark Harrison, University of Georgia, Athens, GA, USA

P1-55 Determination of an Effective Cleaning Regime for *Listeria* spp. for Squeegees Used in Condensation Mitigation Strategies — Bismarck Martinez, Andreia Bianchini, Oriana Leishman, Steve Swanson, JAYNE STRATTON, University of Nebraska-Lincoln, Lincoln, NE, USA

P1-56 Survival of *Listeria* spp. on 3M Condensation Management Tape and Its Potential Application in the Food Industry — Bismarck Martinez, Eric Oliver, JAYNE STRATTON, Andreia Bianchini, Steve Swanson, David Peterson, Kurt Halverson, University of Nebraska-Lincoln, Lincoln, NE, USA

P1-57 Transfer of *Listeria* spp. to Water Droplets and Surfaces When Using a Squeegee as a Condensation Mitigation Strategy — Bismarck Martinez, Luis Sabillon, Andreia Bianchini, Oriana Leishman, Steve Swanson, JAYNE STRATTON, University of Nebraska-Lincoln, Lincoln, NE, USA

P1-58 Comparison of Swabbing Efficiency of Hygiena 1" Foam Swabs with Large Foam Swabs — Paul Meighan, BRANDON KATZ, Hygiena, Camarillo, CA, USA

P1-59 Evaluating the Hygiene Conditions and the Food Safety Level in Fresh Produce Wholesale Markets in Doha, Qatar — ISRAA EL-NEMR, Mohanad Mushtaha, Ipek Goktepe, Qatar University, Doha, Qatar

P1-60 Evaluation of Disinfectants and Wiping Substrate Combinations to Inactivate *Staphylococcus aureus* on a Hard, Non-porous Surface — ELIZABETH BROWN, Calvin Waldron, Karthik Dhanireddy, Renee Boyer, Joseph Eifert, Peter Teska, Virginia Tech Food Science and Technology, Blacksburg, VA, USA

P1-61 Surface Charge Studies of Cetylpyridinium Chloride on Sanitation of *Salmonella* Typhimurium in Poultry Processing — YAGMUR YEGIN, Alejandro Castillo, Thomas M. Taylor, Mustafa Akbulut, Texas A&M University, College Station, TX, USA

P1-62 Fluid Milk and Milk Processing Environment Surveillance Using Amplicon Metagenomics — Sapna Chitlapilly Dass, Bing Wang, Jayne Stratton, Andreia Bianchini, ANGELA ANANDAPPA, University of Nebraska-Lincoln, Lincoln, NE, USA

P1-63 Microplate Lethality Assay to Determine the Efficacy of Commercial Sanitizers for Inactivation of *Listeria monocytogenes*, *Escherichia coli* O157:H7, and *Salmonella* spp. in Extended Biofilms — MANISH ARYAL, Peter Muriana, Oklahoma State University, Stillwater, OK, USA

P1-64 Evaluating Food Safety Risk of *Toxoplasma gondii* in Naturally Infected Meat Animals in the United States — SURABHI RANI, Jitender P. Dubey, Abani Pradhan, University of Maryland, College Park, MD, USA

P1-65 Rapid Bacterial Detection Using β-Cyclodextran and Surface Enhanced Raman Spectroscopy in Ground Beef — MADELINE TUCKER, Brooke Pearson, Lili He, Lynne McLandsborough, University of Massachusetts-Amherst, Amherst, MA, USA

P1-66 Outbreak-associated *Salmonella* Heidelberg Isolates Have Higher Baseline Expression of Genes Encoding Heat Shock Proteins, Stress Tolerance Mechanisms, and Virulence Systems at 37°C — ANDREA ETTER, Haley Oliver, University of Vermont, Burlington, VT, USA

P1-67 Inactivation of *Escherichia coli* and *Enterococcus faecium* on Beef Surfaces Using Microwaves — IAN JENSON, Mike Shevalev, William Centrella, Vlad Skliarevich, Meat & Livestock Australia, North Sydney, Australia

P1-68 *Yersinia enterocolitica* in Tonsils and Heads of Swine Slaughtered in Minas Gerais, Brazil — Bruna Torres Furtado Martins, Juliana Libero Grossi, Natália Romanholi, João Paulo Araújo, Everton C. Azevedo, Ricardo Seiti Yamatogi, LUÍS AUGUSTO NERO, Universidade Federal de Viçosa, Viçosa, Brazil

Meat, Poultry and Eggs

P1-69 A Statistical Overview of Hygiene Indicator Microorganisms on Slaughtered Cattle as a Function of Process Steps and Regions in Brazil — Anderson Carlos Camargo, Marcus Vinícius Coutinho Cossi, Wladimir Padilha Silva, Luciano dos Santos Bersot, József Baranyi, LUÍS AUGUSTO NERO, Universidade Federal de Viçosa, Viçosa, Brazil

P1-70 Distribution and Virulence of *Listeria* spp. in a Pork Production Chain in Brazil — Danilo Augusto Lopes Silva, Clarisse Vieira Botelho, Bruna Torres Furtado Martins, Frederico Germano Piscitelli Alvarenga Lanna, Juliana Libero Grossi, Ricardo Seiti Yamatogi, Luciano dos Santos Bersot, LUÍS AUGUSTO NERO, Universidade Federal de Viçosa, Viçosa, Brazil

P1-71 Inhibition of *Listeria monocytogenes* by a Bacteriocinogenic Strain of *Lactobacillus curvatus* in a Fresh Sausage System — Natália Parma Augusto Castilho, Luciano dos Santos Bersot, LUÍS AUGUSTO NERO, Universidade Federal de Viçosa, Viçosa, Brazil

P1-72 *Campylobacter* Multi-locus Sequence Typing Subtypes Detected on Chicken Livers Available at Retail — MARK BERRANG, Richard Meinersmann, Nelson Cox, Tori Thompson, U.S. Department of Agriculture-ARS-USNPRC, Athens, GA, USA

P1-73 Relationship between Shopping Practices and Contamination by Meat Juice from Raw Poultry Packages — FUR-CHI CHEN, Sandria Godwin, Delores Chambers, Edgar Chambers IV, Sheryl Cates, Richard Stone, Amy Donelan, Tennessee State University, Nashville, TN, USA

P1-74 Shiga Toxin-producing *Escherichia coli* O157:H7, Non-O157 STEC, and *Salmonella* spp. Occur in Raw Beef Product Samples Independently of Each Other — STEPHEN W. MAMBER, Nacola Alexander, Wu San Chen, Robert Witte, Bryan Trout, Kristina Barlow, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

P1-75 Older Adults and Parents Have Different Handling Practices for Raw Poultry — KATHERINE KOSA, Sheryl Cates, Jenna Brophy, Sandria Godwin, Delores Chambers, Edgar Chambers IV, RTI International, Research Triangle Park, NC, USA

P1-76 Spoilage and Safety Impact Associated with Sodium Reduction in Cooked Ham — Cristina Serra-Castelló, Anna Jofré, Margarita Garriga, SARA BOVER-CID, IRTA. Food Safety Programme, Monells, Spain

P1-77 *Enterobacteriaceae* Levels and Pathogen Prevalence in Commercial Poultry Processing Facilities in Colombia — ALEJANDRA RAMIREZ-HERNANDEZ, Andrea Varon-Garcia, Ana Karina Carrascal, Mindy Brashears, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA

P1-78 Antimicrobial Resistant Patterns and Pathogen WGS of Chicken Carcass Rinse Samples Collected during Processing — ALEJANDRA RAMIREZ-HERNANDEZ, Marie Bugarel, Sanjay Kumar, Harshavardhan Thippareddi, Mindy Brashears, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA

P1-79 *Escherichia coli* O157:H7 and Non-O157 Shiga Toxin-producing *Escherichia coli* in Veal Samples Collected by the Food Safety and Inspection Service — Stephen W. Mamber, Victoria Oliver, JENNIFER WEBB, Christine Alvarado, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

P1-80 Growth of Proteolytic *Clostridium botulinum* in Beef under Isothermal Conditions from 10 to 46°C — Vijay Juneja, MAX GOLDEN, Chase Golden, Abhinav Mishra, Timothy Mohr, Kathleen Glass, University of Wisconsin-Madison, Madison, WI, USA

P1-81 Food Safety Practices of Consumers When Grilling Meat and Poultry Outdoors — SANDRIA GODWIN, Edgar Chambers IV, Taylor Terry, Delores Chambers, Edgar Chambers V, Tennessee State University, Nashville, TN, USA

P1-82 Rapid Detection of *Salmonella* in Poultry Farm Environmental Samples Using Real-time PCR Combined with Immuno-magnetic Separation and Whole Genome Amplification — Ji-Yeon Hyeon, DAVID A. MANN, Jiquan Wang, Osman Yasir Koyun, Woo Kyun Kim, Xiangyu Deng, University of Georgia, Center for Food Safety, Griffin, GA, USA

P1-83 Evaluation of Roka Atlas System for Detection of *Salmonella* in Egg Products in Comparison with Culture Method, PCR Assay, and Isothermal Amplification Methods — LIJUN HU, Xiaohong Deng, Laila Ali, Guodong Zhang, U.S. Food and Drug Administration, College Park, MD, USA

P1-84 Integrating Molecular Data into a Risk Assessment Framework for *Salmonella* spp. in Poultry — SHRADDHA KARANTH, Abani Pradhan, University of Maryland, College Park, MD, USA

P1-85 Chicken Liver-associated Outbreaks and Contamination in the United States, 2000 through 2017 — Opportunities for Outreach and Education — WILLIAM LANIER, Danah Vetter, Daniel Dewey-Mattia, USPHS/U.S. Department of Agriculture – FSIS, Salt Lake City, UT, USA

P1-86 Evaluate the Efficacy of Commercial Antimicrobials against Unstressed, Acid-, Starvation-, or Cold-Stress-adapted *Campylobacter jejuni* on Broiler Wings — LACEY LEMONAKIS, Ka Wang Li, Cangliang Shen, West Virginia University, Morgantown, WV, USA

P1-87 Pork Juice is Hotbed for Biofilm Formation in *Listeria monocytogenes* — CHUNLEI SHI, Aili Liu, Department of Food Science, Shanghai Jiao Tong University, Shanghai, China

P1-88 Thermal Inactivation of *Salmonella* spp. in Chicken Liver Pâté — ANNA PORTO-FETT, Bradley Shoyer, Laura Shane, Manuela Osoria, YangJin Jung, Elizabeth Henry, John Luchansky, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P1-89 Inactivation of *Salmonella* spp. on the Surface of Chicken Livers and in Chicken Liver Pâté Using High-pressure Processing — ANNA PORTO-FETT, Bradley Shoyer, Laura Shane, Manuela Osoria, YangJin Jung, Elizabeth Henry, John Luchansky, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P1-90 Recovery of Regulated Non-O157 Serogroups of Shiga Toxin-producing *Escherichia coli* from Ground Veal and Ground Beef Collected from Retail Stores in the Mid-Atlantic Region of the United States — YANGJIN JUNG, Anna Porto-Fett, Bradley Shoyer, Elizabeth Henry, Zachary Trauger, Laura Shane, Manuela Osoria, Christopher Rupert, Benjamin Chapman, Salina Parveen, Joan Meredith, Jurgen Schwarz, Rodney Moxley, John Luchansky, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P1-91 Risk of Aerotolerant Strains of *Campylobacter jejuni* under Various Conditions — HEEYOUNG LEE, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P1-92 National Survey of *Salmonella* Prevalence in Lymph Nodes of Sows and Market Hogs — ASHLEY ARNOLD, Baylee Bessire, Milton Thomas, Kerri Gehring, Jeff Savell, Davey Griffin, Matt Taylor, Benjy Mikel, Jonathan Campbell, Joy Scaria, Texas A&M University, College Station, TX, USA

P1-93 Effects of Cooling Time on the Growth of *Clostridium perfringens* in Roast Beef Treated with a Concentrated Buffered Vinegar Solution — SYDNEY PORTER, Leah Catmull, Jeremy Arbon, Frost Steele, Brigham Young University, Provo, UT, USA

P1-94 *Salmonella* in Shell Eggs from Non-commercial Sources — Geraldine Santos-Norris, S. JEAN WEESE, Ywh-Min Tzou, Evelyn Willmon, Auburn University, Auburn, AL, USA

P1-95 Survival of *Listeria monocytogenes* and *Staphylococcus aureus* on Ready-to-Eat, Shelf-stable, Poultry-based Meat Bars during Vacuum-packaged Storage — BRITTNEY BULLARD, Robert Delmore, Ifigenia Geornaras, Jennifer Martin, Dale Woerner, Keith Belk, Colorado State University, Fort Collins, CO, USA

P1-96 *Salmonella* and *Escherichia coli* O157 in Beef Retail Channels in Colombia — M. ALEXANDRA CALLE, Ana Karina Carrascal, David Acosta, Mindy Brashears, Texas Tech University, Lubbock, TX, USA

Viruses and Parasites

P1-97 Assess Hepatitis A Virus Survival on Dried Berries during Month-long Storage — YAN ZHANG, Runan Yan, Arlette Shazer, Y. Carol Shieh, Illinois Institute of Technology, Chicago, IL, USA

P1-98 Inter- and Intra-host Nucleotide Variations of Hepatitis A Virus in Culture and Clinical Samples Detected by Next-generation Sequencing — ZHIHUI YANG, Mark Mammel, Chris Whitehouse, Diana Ngo, Michael Kulka, U.S. Food and Drug Administration, Laurel, MD, USA

P1-99 Inactivation of Tulane Virus on Blueberries with Gaseous Chlorine Dioxide — DAVID KINGSLEY, Rafael Perez, Brendan Niemira, Xuetong Fan, U.S. Department of Agriculture, Dover, DE, USA

P1-100 Detection of *Cyclospora cayetanensis* in Prepared Food Dishes: Strengthening Laboratory Approaches for Future Outbreak Investigations — Sonia Almeria, ALEXANDRE DA SILVA, Hediye Cinar, Mauricio Durigan, Gopal Gopinath, Helen Murphy, U.S. Food and Drug Administration – CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA

P1-101 Effect of Bacterial Lipopolysaccharide and Peptidoglycan on the Resistance of Human Norovirus Surrogate, Tulane Virus, to Heat and Chlorine — ADRIENNE SHEARER, Kalmia Kniel, University of Delaware, Newark, DE, USA

P1-102 A Cloth-based Hybridization Array System for Rapid Detection and Identification of the Food- and Waterborne Parasites *Giardia*, *Cryptosporidium*, and *Toxoplasma* — SARAH REILING, Liviu Clime, Nathalie Corneau, Teodor Veres, Brent Dixon, Bureau of Microbial Hazards, Food Directorate, Health Canada, Ottawa, ON, Canada

P1-103 Evaluation of Porcine Gastric Mucin as Control in Human Norovirus Bacteria Binding Experiments — IRENE YIM, Erin DiCaprio, University of California Davis, Davis, CA, USA

P1-104 Evaluation of a Hand Sanitizer for Evidence of Residual Activity against Human Norovirus — BLANCA ESCUDERO-ABARCA, Rebecca Goulter, Lee-Ann Jaykus, Department of Food, Bioprocessing, and Nutritional Sciences, North Carolina State University, Raleigh, NC, USA

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P1-105 Dual Transcriptomic and Metabolomic Profiling of *Toxoplasma gondii* Infection Uncovers Parasite Manipulation of the Host Metabolome and the Discovery of a Novel Parasite Metabolic Capability — WILLIAM OLSON, Daniel Amador-Noguez, Laura Knoll, University of Wisconsin Madison, Madison, WI, USA

P1-106 Evaluation of Pure Copper Surface for Inactivation of Human Norovirus Gii.4 Sydney by Porcine Gastric Mucin Binding Assay — Jordan Recker, XINHUI LI, University of Wisconsin-La Crosse, La Crosse, WI, USA

P1-107 Efficacy of Sodium Hypochlorite and Peroxyacetic Acid in Reducing Levels of a Human Norovirus Surrogate in Chinese Cabbage and Green Onion — MYEONG-IN JEONG, Shin Young Park, Ji Yeon Jo, Mi Rae Kim, Sa Reum Park, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansung, South Korea

P1-108 Detection of Protozoan Parasites Endemic to Surface Irrigation Water Using Three Water and Biofilm Sampling Methods — KATHERINE WAKELEY, Ynes R. Ortega, The University of Georgia, Athens, GA, USA

P1-109 Characteristics of Cau-STP-1 Bacteriophage against *Salmonella enterica* Serovar Typhimurium from Sewage in South Korea — SOO-JIN JUNG, Hye-Ran Cho, Jin Hee Kim, Min-Jung Cho, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansung, South Korea

P1-110 An Independent Evaluation of Novel Molecular Methods for the Detection of Hepatitis A Virus and Norovirus in Multi-component Foods and Dry Spices — DANIEL BARKET, Benjamin Bastin, Erin Crowley, James Agin, David Goins, Q Laboratories, Inc., Cincinnati, OH, USA

P1-111 Evaluation of Four Typing Strategies for *Cyclospora cayetanensis* Using Stool Samples from Past United States Outbreaks — FERNANDA NASCIMENTO, Jessica Hofstetter, Subin Park, Erik Van Roey, Joel Barratt, Eldin Talundzic, Michael Arrowood, Yvonne Qvarnstrom, CDC, Atlanta, GA, USA

P1-112 Inactivation of Hepatitis A Virus on Strawberries and Blueberries by High-pressure Processing — MU YE, Yingyi Zhang, Catherine Rolfe, Alvin Lee, Institute for Food Safety and Health, Illinois Institute of Technology, Bedford Park, IL, USA

P1-113 Verification of Thermo Scientific SureTect *Salmonella* Species PCR Assay on Dairy Matrices, Raw Ingredients, and Environmental Samples for an Accredited Laboratory — LAURA VAAHTORANTA, Jukka-Pekka Palomäki, Hanna Lehmusto, Thermo Fisher Scientific, Vantaa, Finland

P1-114 Rational Design of Bacteriophage-based Antimicrobial to Eliminate the Formation of Bacteriophage Insensitive Mutants — ZEYAN ZHONG, Anna Colavecchio, Sudhakar Bhandare, Julie Jeuken, Jean-Guillaume Rheault, Luca Freschi, Jeremie Hamel, Irena Kukavica-Ibrulj, Roger Levesque, Lawrence Goodridge, McGill University, Ste-Anne-de-Bellevue, QC, Canada

P1-115 Parasitic Inactivation in Processed Food — JESSICA HOFSTETTER, Christina Stam, KraftHeinz, Glenview, IL, USA

P1-116 Effect of Vinegar on the Viability of *Cryptosporidium parvum* Oocysts — YNES R. ORTEGA, Karen Ezenne, University of Georgia, Griffin, GA, USA

P1-117 Factors Affecting the Virucidal Efficacy of Cold Plasma against Hunov as Compared to Its Surrogate, Feline Calicivirus — HAMADA ABOUBAKR, Yishan Yang, James Collins, Peter Bruggeman, Sagar Goyal, University of Minnesota, College of Veterinary Medicine, St. Paul, MN, USA

P1-118 Assessment of Virulence Using a *Galleria mellonella* Model for *Listeria monocytogenes* Grown in Different Foods — MIRA RAKIC MARTINEZ, Atin Datta, U.S. Food and Drug Administration, Laurel, MD, USA

P1-119 Independent Performance Evaluation of a Real-time PCR for the Detection of *Salmonella* in Poultry Primary Production Samples — VIKRANT DUTTA, Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA

P1-120 Performance Feasibility of Ceeramtools Hepatis A and Norovirus GI/Gii Kits — Upasana Hariram, VIKRANT DUTTA, bioMérieux, Inc., Hazelwood, MO, USA

P1-121 Photodynamic Inactivation of Hepatitis A Virus on a Contact Surface Mediated by Grapeseed Extract and Light — MOSTAFA ABOTALEB, Mayuri Patwardhan, Doris D'Souza, University of Tennessee, Knoxville, TN, USA

P1-122 Internalization of Murine Norovirus in *Pseudomonas aeruginosa* Biofilm — Idrissa Samandoulgou, Allison Vimont, Benoit Fernandez, Ismaïl Fliss, JULIE JEAN, Laval University, Laval, QC, Canada

P1-123 A Comparison of the Prevalence of Protozoan Parasites in Potential Alternative Sources of Agricultural Water — SHANI CRAIGHEAD, Brienna Anderson, Adam Vanore, Samantha Gartley, Walter Betancourt, Charles Gerba, Derek Foust, Rico Duncan, Chanelle White, Eric May, Salina Parveen, Fawzy Hashem, Sarah Allard, Mary Theresa Callahan, Shirley A. Micallef, Amy Sapkota, Kalmia Kniel, University of Delaware, Newark, DE, USA

P1-124 The Use of Pulsed Light to Inactivate *Cryptosporidium parvum* oocysts on Mesclun Lettuce — SHANI CRAIGHEAD, Runze Huang, Haiqiang Chen, Kalmia Kniel, University of Delaware, Newark, DE, USA

P1-125 Application of High-pressure Processing for Inactivation of Norovirus and Quality Stability in Fresh Sea Squirt (*Halocynthia roretzi*) — SHIN YOUNG PARK, Kye-Hwan Byun, Shamsun Nahar, Angela Ha, Kyung Won Na, Sang-Do Ha, Department of Seafood and Aquaculture Science, Gyeongsang National University, Tongyeong, South Korea

P1-126 Synergistic Effects of Chlorine and Thiamine Dilauryl Sulfate Combination on the Reduction of Norovirus Titers in Raw Shucked Oyster (*Crassostrea gigas*) — SHIN YOUNG PARK, Myeong-In Jeong, Angela Ha, Hee Jeong Kim, Sang-Do Ha, Department of Seafood and Aquaculture Science, Gyeongsang National University, Tongyeong, South Korea

Preharvest Food Safety

P1-127 Decontamination of Cattle Carcasses by a Commercial Steam Vacuuming Treatment Implemented after Slaughtering in a Cattle Abattoir — Mirjam Hochreutener, CLAUDIO ZWEIFEL, Sabrina Corti, Roger Stephan, University of Zurich, Zurich, Switzerland

P1-128 Establishment of Culture Method for the Detection of *Clostridium difficile* in Meat Samples — HYUN-WOO LIM, Dong-Hyeon Kim, Kun-Ho Seo, Konkuk University, Seoul, South Korea

P1-129 Co-Regulation of Fumonisin Risk in the Texas High Plains — TIMOTHY HERRMAN, Office of the Texas State Chemist, Texas A&M AgriLife Research, College Station, TX, USA

P1-130 Assessment of Contaminants in Cottonseed and Rice Following Hurricane Harvey — TIMOTHY HERRMAN, Office of the Texas State Chemist, Texas A&M AgriLife Research, College Station, TX, USA

P1-131 *Listeria monocytogenes Sigb* Allelic Type and Pulsotype Diversity in Scat and Agricultural Water Samples Collected on a New York Produce Farm — ALEXANDRA BELIAS, Laura Strawn, Martin Wiedmann, Daniel Weller, Cornell University, Ithaca, NY, USA

P1-132 Evaluation of Microbial Safety and Quality of Louisiana Strawberries after Flooding — SHIFA SHIRAZ, Dorra Djebbi-Simmons, Mohammed Alhejaili, Kathryn Fontenot, Marlene Janes, Wenqing (Wennie) Xu, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-133 Survival of *Escherichia coli* in Manure-amended Soils and Transfer to Tomato, Radish, and Spinach on a Maryland Certified Organic Farm — ANNETTE KENNEY, Fawzy Hashem, Alda Pires, Michele Jay-Russell, Patricia Millner, University of Maryland Eastern Shore, Princess Anne, MD, USA

P1-134 Phylogenetic Characterization of *Listeria monocytogenes* Isolates Collected from Surface Waters Used for Irrigation in the Lower Mainland of British Columbia, Canada — JUSTIN FALARDEAU, Clement K.M. Tsui, Siyun Wang, Food, Nutrition and Health, University of British Columbia, Vancouver, BC, Canada

P1-135 Food Safety Assessment of Fresh Produce Served at School Feeding Programs in South Africa — THABANG MSIMANGO, Stacey Duvenage, Erika du Plessis, Lise Korsten, University of Pretoria, Pretoria, South Africa

P1-136 Fate of 30 *Salmonella* Strains on Two Lettuce and Tomato Cultivars — CATHERINE WONG, Siyun Wang, Pascal Delaquis, Food, Nutrition and Health, University of British Columbia, Vancouver, BC, Canada

P1-137 Impact of Withdrawal Periods between Cattle Grazing and Harvest on Food Safety Risk of Native Pecans — CLAUDIA DIAZ, Santiago Molina, Carlos Somoza, Li Ma, National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Oklahoma State University, Stillwater, OK, USA

P1-138 Preliminary Data on the Prevalence and Concentration of Shiga Toxin-producing *Escherichia coli* in Bovine Manure in Florida — CHRISTOPHER BAKER, Bruna Bertoldi, Ploy Kurdmongkoltham, Laurel Dunn, Travis Chapin, Michele Jay-Russell, Michelle Danyluk, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA

P1-139 Effect of Dry and Wet Heat Treatments on *Clostridium difficile* Endospores during Composting — MUTHU DHARMASENA, Xiuping Jiang, Clemson University, Clemson, SC, USA

P1-140 Soil Bio-remediation Practices to Reduce *Salmonella* Contamination in Melon Production Systems — BRIANNA REED, Christopher Gunter, Siddhartha Thakur, Eduardo Gutierrez, North Carolina State University, Raleigh, NC, USA

P1-141 Effect of a Dairy-origin Probiotic Bacterium, *Propionibacterium freudenreichii* spp. *freudenreichii* Nrrl 3523, against Multidrug-resistant *Salmonella* Heidelberg in Turkeys — DIVEK V. T. NAIR, Jijo Vazhakkattu Thomas, Grace Dewi, Jason Langlie, Anup Kollanoor Johny, University of Minnesota, St. Paul, MN, USA

P1-142 Preliminary Survey of Microbial, Chemical, and Physical Parameters of Chicken Litter in Florida — ALAN GUTIERREZ, Keith Schneider, University of Florida, Gainesville, FL, USA

P1-143 Manure Pathogen Survey of *Salmonella* and Shiga Toxin-producing *Escherichia coli* in Untreated Poultry and Cattle Manure of the Mid-Atlantic Region — SAMANTHA GARTLEY, Thais Ramos, Esmond Nyarko, Tenille Ribeiro de Souza, Michele Jay-Russell, Yuhuan Chen, Paula Rivadeneira, Peiman Aminabadi, Rebecca L. Bell, David Ingram, Jane Van Doren, Kalmia Kniel, University of Delaware, Newark, DE, USA

P1-144 Impact of Irrigation Run-off Water on the Survival of *Salmonella* and *Escherichia coli* in Soil and on Lettuce Plants — ANNE-LAURE MOYNE, Laura A. Murphy, Michael D. Cahn, Steven T. Koike, Linda J. Harris, Food Science and Technology Dept., Western Center for Food Safety, University of California, Davis, CA, USA

P1-145 Sampling on Maryland's Eastern Shore Farms: Keeping an Eye Out for Pathogens and Providing a Service to Produce Growers — JUSTINE BEAULIEU, University of Maryland, College Park, MD, USA

P1-146 *Escherichia coli* O157:H7, Non-O157 Shiga Toxin-producing *E. coli*, and Generic *E. coli* Survival in Manure-amended Sandy and Clay Soils — Laura Truitt, Rachel Pfuntner, Steve Rideout, LAURA STRAWN, Virginia Tech - Eastern Shore AREC, Painter, VA, USA

Produce

P1-147 *Listeria monocytogenes* Transfer Potential during Field-pack Handling of Cantaloupe — Rachel Pfuntner, Laura Truitt, Michelle Danyluk, Benjamin Chapman, LAURA STRAWN, Virginia Tech - Eastern Shore AREC, Painter, VA, USA

P1-148 How Evaporating Water Can Promote Internalization of Bacteria through the Leaf Stomate — MOHSEN RANJBARAN, Ashim Datta, Cornell University, Ithaca, NY, USA

P1-149 Sanitizing Role of Berry Pomace Extracts in Controlling Enteric Pathogens on Fresh Produce — ZAJEBA TABASHSUM, Serajus Salaheen, Alex Lebovic, Christine Mui, Anthony Dattilio, Debabrata Biswas, University of Maryland, College Park, MD, USA

P1-150 Withdrawn

P1-151 Survival of *Salmonella* in Tomato Stem Scars as Affected by Sanitizer Wash and Antimicrobial Coating — SUDARSAN MUKHOPADHYAY, Kimberly Sokorai, Dike Ukuku, Tony Jin, Xuetong Fan, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P1-152 Apple Peel Morphology and Attachment of *Listeria innocua* through Aqueous Environment as Shown by Using Scanning Electron Microscopy — EWA PIETRYSIAK, Girish M. Ganjyal, Washington State University, Pullman, WA, USA

P1-153 Evaluation of a Batch Wash Ozone Sanitation System for Reduction of Microorganisms on Fresh Produce — Giselle Almeida, CAILIN DAWLEY, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA

P1-154 Overview of Leafy Greens-related Incidents with a California Link: 1996 to 2016 — Kali Turner, Chee Nou Moua, MAHA HAJMEER, Amber Barnes, Michael Needham, California Department of Public Health, Sacramento, CA, USA

P1-155 Colonization and Internalization of *Salmonella enterica* in Cantaloupe Plants — KELLIE P. BURRIS, Otto Simmons, Hannah M. Webb, Robin Grant Moore, Lee-Ann Jaykus, Jie Zheng, Elizabeth Reed, Christina M. Ferreira, Eric Brown, Rebecca L. Bell, North Carolina State University, Raleigh, NC, USA

P1-156 Internalization of *Salmonella* Newport in Transplanted Tomato Plants through the Roots — CAMERON BARDSLEY, Renee Boyer, Robert Williams, Steve Rideout, Laura Strawn, Virginia Tech, Blacksburg, VA, USA

P1-157 Prevalence and Levels of Shiga Toxin-producing *Escherichia coli* and *Salmonella* in Untreated Cattle and Poultry Manure in the West Coast of United States — MICHELE JAY-RUSSELL, Yuhuan Chen, Paula Rivadeneira, Regis Pouillot, Peiman Aminabadi, Pramod Pandey, Rebecca L. Bell, David Oryang, David Ingram, Kalmia Kniel, Jane Van Doren, Western Center for Food Safety, University of California, Davis, CA, USA

P1-158 Assessing the Inactivation of *Listeria monocytogenes* on Raspberries by Chlorine and Peroxyacetic Acid Spray Treatments — NICOLE MAKS, Sara Swanson, Korinne Elston, Brittany Swicegood, Alvin Lee, Britt Freeman, Kaiping Deng, Institute for Food Safety and Health, Illinois Institute of Technology, Bedford Park, IL, USA

Blue Text – Developing Scientist Competitor Green Text – Undergraduate Student Competitor

P1-159 Identity, Prevalence, and Chlorine Demand of Major Organic Compounds in Fresh Produce Wash Water Concerning Food Safety — ZI TENG, Sam Van Haute, Bin Zhou, Cathleen Hapeman, Patricia Millner, Qin Wang, Yaguang Luo, U.S. Department of Agriculture–ARS, Beltsville, MD, USA

P1-160 Presence of Bacterial Pathogens in Fresh Produce from Local Retail Markets in Maryland Region — Vaidehi Bhagat, JITU PATEL, U.S. Department of Agriculture, Beltsville, MD, USA

P1-161 Assessment of Preparation Methods to Create a Postharvest Wash Water Model for Food Safety Validation — PAOLA MARTINEZ-RAMOS, Wesley Autio, Amanda Kinchla, University of Massachusetts-Amherst, Amherst, MA, USA

P1-162 Impact of Wastewater and Roof-harvest Water Irrigation on Microbial Quality of Spinach — HSINBAI YIN, Ganyu Gu, Xiangwu Nou, Jitu Patel, University of Maryland Baltimore County, Beltsville, MD, USA

P1-163 Quantification of *Listeria monocytogenes* Transfer during Slicing of Fresh Produce Based on Inherent Product Characteristics — HAMOUD ALNUGHAYMISHI, Elliot Ryser, Michigan State University, East Lansing, MI, USA

P1-164 The Efficacy of Peroxyacetic Acid-based Sanitizer for Disinfection of Seeds Artificially Inoculated with *Salmonella* as Affected by Treatment Time, Concentration, and Seed Type — Prinkesh Raka, Paixuan Wu, TONG-JEN FU, U.S. Food and Drug Administration, Division of Food Processing Science and Technology, Bedford Park, IL, USA

P1-165 Validation of Three-step Wash Process with Commercial Antimicrobials for Control of *Salmonella* and *Listeria monocytogenes* on West Virginia Locally Grown Tomatoes, Cucumbers, and Squashes — KA WANG LI, Lisa Jones, Hanna Khouryieh, Cangliang Shen, West Virginia University, Morgantown, WV, USA

P1-166 Environmental Microbial Evaluation in a Papaya (*Carica papaya* L.) Packing Facility Located in Mexico — JORGE ADRIÁN MUÑIZ-FLORES, Julia Perez-Montano, Ma. Ofelia Rodríguez-García, Gustavo González-González, Elisa Cabrera-Diaz, Universidad de Guadalajara, Guadalajara, Mexico

P1-167 Gamma Irradiation Reduces the Survival and Regrowth of Inoculated Antibiotic-resistant Bacteria and Antibiotic Resistance Genes on Romaine Lettuce — Vaishali Dharmarha, Kelsey Trimble, Amy Pruden, Renee Boyer, Laura Strawn, Brendan Niemira, MONICA PONDER, Virginia Tech, Blacksburg, VA, USA

P1-168 Plant Water Stress Limits the Growth of *Salmonella* on Lettuce — XINGCHEN LIU, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-169 Microbial Quality of Aquaculture Water for Produce Irrigation — EVELYN WILLMON, Geraldine Santos-Norris, Ywh-Min Tzou, Michelle Hayden, Tian Ren, Jean Weese, Tung-Shi Huang, Auburn University, Auburn, AL, USA

P1-170 Nature Versus Nurture – Survival and Growth on Fresh Produce of Pathogens When Pre-Grown under Different Conditions — ANNA SOPHIA HARRAND, Veronica Guariglia-Oropeza, Jordan Skeens, David Kent, Martin Wiedmann, Cornell University, Ithaca, NY, USA

P1-171 Effect of Residual Chlorine and Organic Acids on the Survival and Attachment of *Listeria monocytogenes* and *Escherichia coli* O157:H7 on Spinach — VIJAY SINGH CHHETRI, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-172 Influence of Plant Defense Response on Survival and Interaction of *Escherichia coli* O104:H4 on *Arabidopsis* Plant and Lettuce — HYEIN JANG, Licheng Huang, Karl Matthews, Rutgers University, New Brunswick, NJ, USA

P1-173 Investigation of Microbial Contamination Source during Production of Dried Red Pepper — SE-RI KIM, Bao Hung Nguyen, Min Hae Kim, Hyo Bin Chae, Won-Il Kim, Hyeonheui Ham, Hyun-Ju Kim, Seungdon Lee, Microbial Safety Team, Agro-Food Safety & Crop Protection Department, National Institution of Agricultural Science, Rural Development Administration, Wanju, South Korea

P1-174 Antimicrobial Effects of Chlorine Dioxide on Pathogenic *Escherichia coli* and *Salmonella* spp. Colonized on Alfalfa Seeds — SE-RI KIM, Woon-Ra Park, Bao Hung Nguyen, Bohyun Yun, Won-Il Kim, Hyun-Ju Kim, Seungdon Lee, Microbial Safety Team, Agro-Food Safety & Crop Protection Department, National Institution of Agricultural Science, Rural Development Administration, Wanju, South Korea

P1-175 Papaya-associated Outbreaks of *Salmonella* Illnesses in 2017 – Traceback and Laboratory Results — BROOKE WHITNEY, Sharon Seelman, Tyann Blessington, Evelyn Pereira, Joseph Blankenship, Marianne Fatica, Martin Guardia, William Muszynski, Jason Strachman-Miller, Peggy Carter, Terri McConnelll, James Pettengill, Phillip Curry, Kevin Fritz, Crystal McKenna, Kenneth Nieves, Rashid, FDA Coordinated Outbreak Response and Evaluation Network, College Park, MD, USA

P1-176 Development of Hot Water Process for Inactivating *Salmonella enterica* on Inoculated Mung Bean Seeds for Enhancing Microbial Safety of Mung Bean Sprouts — BASSAM A. ANNOUS, Angela Burke, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P1-177 Effectiveness of Aqueous Chlorine Dioxide Treatment in Reducing Microbial Food Safety Risk during Sprouting of Alfalfa Seeds — KARUNA KHAREL, Achyut Adhikari, Vijay Singh Chhetri, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-178 Growth Potential of *Listeria monocytogenes* in Artificially Contaminated Cut Apple — SURASRI SAHU, Girdhari Sharma, Martine Ferguson, Atin Datta, U.S. Food and Drug Administration - CFSAN, Laurel, MD, USA

P1-179 Microbiological Quality and Prevalence of Pathogens in Strawberries (*Fragaria x ananassa*) in the United States — JOSE FUENTES, Jose Brandao Delgado, Gustavo Lira, Marlene Janes, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-180 Field Validation of Minimum Application Intervals for Raw Animal Manure Used as a Soil Amendment at a Certified Organic Research Farm in California — PEIMAN AMINABADI, Laura Patterson, Alda Pires, Patricia Millner, Michele Jay-Russell, Western Center for Food Safety, University of California, Davis, CA, USA

P1-181 Efficacy of Two Hand-hygiene Interventions at Reducing Hand Contamination among Produce Farmworkers in Northern Mexico — MOLLY NACE, Jessica Prince-Guerra, Anna M. Fabiszewski de Aceituno, Faith Bartz, Jennifer Gentry-Shields, Lee-Ann Jaykus, Norma Heredia, Santos Garcia, Juan Leon, Center for Global Safe Water, Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, GA, USA

P1-182 *Salmonella* Infiltration into Whole Mangoes — Loretta Friedrich, LAUREL DUNN, Michelle Danyluk, University of Florida, Lake Alfred, FL, USA

P1-183 Effect of Aqueous Ozone Treatment on the Survival of *Listeria monocytogenes* during Sprouting of Alfalfa Seeds — CAMERON CASON, Vijay Chhetri, Phillip Luu, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-184 Survival of *Listeria* in Imazalil with Added Peracetic Acid and in Soda Ash Fresh Citrus Fungicide Solutions — SETAREH SHIROODI, Linda J. Harris, Food Science and Technology Dept., Western Center for Food Safety, University of California, Davis, CA, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

P1-185 Biofilm-forming Capability of *Salmonella enterica* on Papaya Epicarp (*Carica papaya* L.) — BEATRIZ LUZ-MARTÍNEZ, Ramón Martínez-Peniche, Montserrat Iturriaga, Universidad Autónoma de Querétaro, Querétaro, Mexico

P1-186 Efficacy of Aqueous Chlorine Dioxide in Reducing *Salmonella*, *Escherichia coli* O157:H7, and *Listeria monocytogenes* on Sweet Potatoes — PHILLIP LUU, Veerachandra Yemmireddy, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-187 Survival of Human Pathogens at Room and Refrigerated Temperatures on Tomato and Kale — HOLLY PADEN, Kevin Mo, Nikola Kurbatfinski, Kristin Motil, Sanja Ilic, Ohio State University, Columbus, OH, USA

P1-188 Influence of Outside Factors on the Concentration and Stability of Peracetic Acid-based Produce Sanitizers over Time — TIAH GHOSTLAW, Frank Martens, Wesley Autio, Maria Corradini, Amanda Kinchla, University of Massachusetts, Amherst, MA, USA

P1-189 Transfer of Indicator *Escherichia coli* to Spinach Grown in Soil Amended with Raw Animal Manure Associated with Heavy Winter Rains in California, 2016 to 2017 — ZHAO CHEN, Peiman Aminabadi, Anna Zwieniecka, Xiaohong Wei, Michele Jay-Russell, Western Center for Food Safety, University of California, Davis, CA, USA

P1-190 Control of *Salmonella* on Fresh Spinach by Application of a Sodium Bisulfate/Peroxyacetic Acid Solution — DANIEL UNRUH, Katelynn Stull, Bennett Uhl, Luke Edmunds, Laila Carter, Brock Brethour, Christine Rock, Sara Gragg, Kansas State University, Olathe, KS, USA

P1-191 Effects of Low Salt Concentration on the Microbial Safety of Spontaneously Fermented Cabbage — Surbhi Khanna, JENNIFER PERRY, Beth Calder, University of Maine School of Food and Agriculture, Orono, ME, USA

P1-192 Survival of *Listeria monocytogenes* on Cantaloupe Field Pack Food Contact Surfaces — LORETTA FRIEDRICH, Laurel Dunn, Benjamin Chapman, Laura Strawn, Michelle Danyluk, University of Florida, Lake Alfred, FL, USA

P1-193 Impact of Disinfection Treatments on Sprouting Alfalfa Seed Contaminated with *Salmonella* Revealed by Metabolomics — YUE DAI, Pascal Delaquis, Siyun Wang, University of British Columbia, Vancouver, BC, Canada

P1-194 Effect of Commercial Sanitizers in the Inactivation of *Salmonella enterica* Biofilms on Cherry Tomatoes — MARLA LEAL-CERVANTES, Rocio Morales-Rayas, Montserrat Hernández-Iturriaga, Universidad Autónoma de Querétaro, Querétaro, Mexico

P1-195 Growth and Survival of *Listeria monocytogenes* on Broccoli and Cauliflower Held at Varying Storage Temperatures — SOPHIA PINTON, Cameron Bardsley, Erika Estrada, Renee Boyer, Laura Strawn, Virginia Tech, Blacksburg, VA, USA

P1-196 Investigating the Prevalence and Persistence of *Listeria* spp. and *Listeria monocytogenes* in Produce Packinghouses — ERIKA ESTRADA, Rachel Pfuntner, Laura Truitt, Alexis Hamilton, Faith Critzer, Laura Strawn, Virginia Tech, Blacksburg, VA, USA

P1-197 The Effect of Biological Soil Amendments and Indigenous Bacteria on *Salmonella* Newport Survival and Growth in Soil — RHODEL BRADSHAW, Eric Handy, Cheryl East, Esmond Nyarko, Patricia Millner, Deborah Neher, Thomas Weicht, Manan Sharma, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA

P1-198 Comparison of Genotypic and Phenotypic Antibiotic Resistance Patterns in *Citrobacter* spp. — SUDHAKAR BHANDARE, Anna Colavecchio, Julie Jeukens, J-G. Emond-Rheault, Luca Freschi, Jeremie Hamel, I. Kukavica-Ibrulj, Roger Levesque, Lawrence Goodridge, McGill University, Ste-Anne-de-Bellevue, QC, Canada

Water

P1-199 *Salmonella* Isolation Not Associated with *Escherichia coli* Concentration in Agricultural Water Samples Collected from New York Streams — DANIEL WELLER, Natalie Brassill, Sherry Roof, Renata Ivanek, Erika Mudrak, Channah Rock, Martin Wiedmann, Cornell University, Ithaca, NY, USA

P1-200 Prevalence, Distribution, and Serotypes of *Salmonella* in Public Access Watersheds Near Leafy Green Growing Regions in Central California during 2011 to 2016 — LISA GORSKI, Anita Liang, Michael Cooley, U.S. Department of Agriculture – ARS, WRRC, Albany, CA, USA

P1-201 Evaluating the Effect of Green Manures on Populations of *Listeria* spp. and *Escherichia coli* in Soil and on Lettuce Crops — MARY THERESA CALLAHAN, Samantha Bolten, Govindaraj Dev Kumar, Louisa Martinez, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-202 Surface River Waters on the Maryland Eastern Shore are a Reservoir for Antibiotic-resistant *Salmonella enterica* — MARY THERESA CALLAHAN, Jo Ann Van Kessel, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-203 Effect of Irrigation Water on the Microbiological Quality of Commercially Produced Fresh Spinach from Farm to Retail — LOANDI RICHTER, Erika du Plessis, Stacey Duvenage, Lise Korsten, University of Pretoria, Pretoria, South Africa

P1-204 Public Private Partnership in Self-Monitoring of Water Quality — Atef Idriss, DIANA KASSAR, MEFOSA, Hamra, Beirut, Lebanon

P1-205 Improving the Safety of Strawberry Irrigation Water Using a Hexadecyltrimethylammonium Bromide Modified Zeolite Filtration System — JOSE BRANDAO DELGADO, Jose Fuentes, Kathryn Fontenot, Achyut Adhikari, Marlene Janes, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-206 Prevalence of Fecal Indicator Bacteria in Surface and Recycled Water: A Conserve Study — SULTANA SOLAIMAN, Mary Theresa Callahan, Sarah Allard, Eric Handy, Cheryl East, Prachi Kulkarni, Rianna Murray, Anthony Bui, Joseph Haymaker, Samantha Gartley, Eric May, Fawzy Hashem, Salina Parveen, Kalmia Kniel, Manan Sharma, Amy Sapkota, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-207 Pathogenicity of *Aeromonas* spp. Isolated from Surface and Recycled Water and Transfer Potential to Lettuce: A Conserve Study — SULTANA SOLAIMAN, Mary Theresa Callahan, Manan Sharma, Amy Sapkota, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-208 Reduction of Enteric Pathogens in Irrigation Water by Zero-valent Iron and Sand Filtration — CLAIRE MARIK, Brienna Anderson, Samantha Gartley, Shani Craighead, Rhodel Bradshaw, Prachi Kulkarni, Pei Chiu, Manan Sharma, Kalmia Kniel, University of Delaware, Newark, DE, USA

P1-209 Evaluation of Microbiological Quality of Agricultural Water and the Effect of Water Source, Sample Storage Conditions, and Methods of Analysis — Andrea Camas, VEERACHANDRA YEMMIREDDY, Marlene Janes, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA

P1-210 Development of User-friendly *Escherichia coli* Water Testing Method for Iowa Produce Farmers to Enhance Food Safety — MANREET BHULLAR, Angela Shaw, Joe Hannan, Iowa State University, Ames, IA, USA

P1-211 Differential Growth Dynamics among *Salmonella* Serovars in Surface and Reclaimed Waters Affect Transfer Potential onto Tomatoes — ANGELA MARIE C. FERELLI, Brooke Szczesny, Shirley A. Micallef, University of Maryland, College Park, MD, USA

P1-212 Prevalence of Generic *Escherichia coli* in Mid-Atlantic Surface and Recycled Irrigation Water Sources and Comparison to Food Safety Modernization Act Water Quality Standards: A Conserve Study — ANTHONY BUI, Sarah Allard, Sultana Solaiman, Mary Theresa Callahan, Hillary Craddock, Rianna Murray, Joseph Haymaker, Derek Foust, Rico Duncan, Maryam Taabodi, Samantha Gartley, Adam Vanore, Eric May, Fawzy Hashem, Salina Parveen, Kalmia Kniel, Manan Sharma, Eric Handy, Cheryl Ea, Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health, College Park, MD, USA

P1-213 Prevalence of Generic *Listeria* spp. and *Listeria monocytogenes* in Surface Waters in the Mid-Atlantic Region of the United States — JIN QING, Alec Barlow, Cary Coppock, Matthew Stocker, Dana Harriger, Edward Wells, Yakov Pachepsky, Dumitru Macarisin, U.S. Food and Drug Administration, College Park, MD, USA

P1-214 Presence of Viral, Bacterial, and Chemical Indicators in Recycled, Surface, and Processing Water Used for Crop Irrigation — BRIENNA ANDERSON, Shani Craighead, Sarah Allard, Suraj Panthi, Adam Vanore, Samantha Gartley, Joseph Haymaker, Derek Foust, Rico Duncan, Chanelle White, Mary Theresa Callahan, Rianna Murray, Fawzy Hashem, Salina Parveen, Eric May, Amy Sapkota, Shirley A. Micallef, Manan Sharma, C, University of Delaware, Newark, DE, USA

P1-215 Levels of *Listeria monocytogenes* and Bacterial Fecal Indicators in Surface Waters in the Mid-Atlantic Region of the United States — DUMITRU MACARISIN, Jin Qing, Alec Barlow, Cary Coppock, Dana Harriger, Edward Wells, Yakov Pachepsky, U.S. Food and Drug Administration, College Park, MD, USA

P1-216 Suitability of *Escherichia coli* as an Indicator of Human Pathogens in Irrigation Water — ZACHARY GEURIN, Alex Williamson, Bryan Schindler, Kyle Martin, Jesse Miller, Marc Verhougstraete, NSF International, Ann Arbor, MI, USA

P1-217 Prevalence of *Salmonella* spp., *Listeria monocytogenes,* and *Escherichia coli* in Irrigation Water Sources in the Mid-Atlantic United States: A Conserve Project — Eric Handy, Cheryl East, Prachi Kulkarni, Rhodel Bradshaw, Mary Theresa Callahan, Sarah Allard, Shirley A. Micallef, Shani Craighead, Brienna Anderson, Adam Vanore, Samantha Gartley, Kalmia Kniel, Joseph Haymaker, Fawzy Hashem, Salina Parveen, Eric May, Amy Sapkota, MANAN SHARMA, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA

P1-218 Occurrence of *Salmonella* and *Listeria monocytogenes* in Alternative Irrigation Water Sources on the Eastern Shore of Maryland: A Conserve Study — CHANELLE WHITE, Fawzy Hashem, Salina Parveen, Eric May, Joseph Haymaker, Eric Handy, Cheryl East, Sarah Allard, Shirley A. Micallef, Manan Sharma, Kalmia Kniel, Amy Sapkota, University of Maryland Eastern Shore, Princess Anne, MD, USA

Seafood

P1-219 Foodborne Pathogens in Fish Product Samples and Their Inactivation with Nisin and Ethylenediaminetetraacetic Acid — OLUWATOSIN ADEMOLA IJABADENIYI, Mandy Pillay, Durban University of Technology, Durban, South Africa

P1-220 Prevalence and Virulence Genes of *Salmonella* Recovered from Seafood — ADIB ADNAN, Salah Elbashir, Fawzy Hashem, Salina Parveen, James M Bennett High School/ University of Maryland Eastern Shore, Salisbury/Princess Anne, MD, USA

P1-221 Growth and Histamine Production of *Photobacterium* Species at Refrigeration Temperatures — KRISTIN BJORNSDOTTIR-BUTLER, Katie L. Baltzer, Jessica Nash, Ronald A. Benner Jr., FDA Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA

P1-222 Characterization and Control of Histamine-producing — KRISTIN BJORNSDOTTIR-BUTLER, Susan McCarthy, Ronald A. Benner Jr., FDA Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA

P1-223 Histamine-related Quality Changes of Japanese Spanish Mackerel during Storage — YI-CHEN LEE, Chung-Saint Lin, Siang-Mei Zeng, Yung-Hsiang Tsai, Yu-Ru Huang, National Kaohsiung Marine University, Kaohsiung City, Taiwan

P1-224 Application of High-pressure Processing on Preservation of Tuna Muscle during Storage — YUNG-HSIANG TSAI, Yi-Chen Lee, Hsien-Feng Kung, Chung-Saint Lin, Tung-Shi Huang, National Kaohsiung Marine University, Kaohsiung City, Taiwan

P1-225 Accumulation and Survival of *Salmonella enterica* in Live Oyster Shell Stock — Sandeep Tamber, Katie Eloranta, Enrico Buenaventura, ALEX MONTGOMERY, Science Branch, Canadian Food Inspection Agency, Burnaby, BC, Canada

P1-226 Evaluation of an Alternative Method for Detection of *Vibrio cholera*, *V. parahaemolyticus*, and *V. vulnificus* in Seafood Products Using Real-time PCR — LAURENT JAIN, André Quintanar, Fanny Margotteau, Olivier Pradillon, Frédéric Pastori, Christophe Quiring, Sophie Pierre, Bio-Rad Laboratories, Marnes-la-Coquette, France

P1-227 Genetic Characteristics, Heat Resistance, and Antibiotic Resistance of *Vibrio parahaemolyticus* Isolated from Seafood-related Environments — YEWON LEE, Yukyung Choi, Seul-Ki Park, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P1-228 Surveillance and Prevalence of *Salmonella* spp. and Sanitary Indicators in Wild Caught and Farm-raised Catfish (Siluriformes) Carcasses in the United States— BILAN COSTLEY JESSIE, Janet Simonson, Marlene Janes, Louisiana State University, Baton Rouge, LA, USA

Notes

TUESDAY POSTERS
10:00 AM – 6:00 PM

P2 POSTER SESSION 2

Communication Outreach and Education
Retail and Food Service Safety
Epidemiology
Food Toxicology
Low-water Activity Foods
Food Chemical Hazards and Food Allergens
Food Law and Regulation
Food Safety Systems
Food Defense
Laboratory and Detection Methods
Molecular Analytics, Genomics and Microbiome

Salt Palace Convention Center, Exhibit Hall

P2-01 through P2-115 – Authors present 10:00 a.m.– 11:30 a.m. and 5:00 p.m. – 6:00 p.m.

P2-116 and above – Authors present 2:00 p.m. – 3:00 p.m. and 5:00 p.m. – 6:00 p.m

Communication Outreach and Education

P2-01 The Role of Safe Quality Food Certification in Food Production — ADENIYI ADEDAYO ODUGBEMI, Wayne Farms LLC, Oakwood, GA, USA

P2-02 Factors Associated with Food Safety Behaviors in Cancer Patients Seeking Treatment — Sanja Ilic, LAILA ETTEFAGH, Holly Paden, Irene Hatsu, Kathleen Kane, The Ohio State University, Columbus, OH, USA

P2-03 Effects of Food Safety Training on Achieving Food Safety Knowledge and Practices in Restaurants in the Emirates of Dubai — ABDUL AZEEZ EBRAHIM, M R S International Food Consultants, Dubai, United Arab Emirates

P2-04 Using Interactive Learning to Educate Youth about Safe Handling and Preparation of Poultry and Eggs — John Ricketts, SANDRIA GODWIN, Mathew Smith, Tennessee State University, Nashville, TN, USA

P2-05 BAC Fighters' Perception of Effectiveness of the "Don't Wing It!" Poultry Education Campaign — SANDRIA GODWIN, Douglas Miller, Edgar Chambers IV, Sheryl Cates, Shelley Feist, Tennessee State University, Nashville, TN, USA

P2-06 Evaluation of User-friendly Tools to Support Food Microbiology Practical Laboratory Classes — Valentina Trinetta, GABRIELA MAGOSSI, Natalia Cernicchiaro, Kansas State University, Food Science Institute, Manhattan, KS, USA

P2-07 Blockchain Solutions for Food Safety — JESSE DOWDLE, RizePoint, Salt Lake City, UT, USA

P2-08 Development of Add-on Training Materials Customized for the Western United States to Supplement the Standardized Curricula for the Food Safety Modernization Act's Preventive Controls for Human Food and Produce Safety Rules — JOVANA KOVACEVIC, Marisa Bunning, Christina DeWitt, Erin DiCaprio, Linda J. Harris, Robert McGorrin, Michael Morrissey, Barbara Rasco, Aurora Saulo, Oregon State University, Portland, OR, USA

P2-09 Consumer Food Safety Education Needs across the State of Washington — STEPHANIE SMITH, Mirza Rachmat, Rachael Beck, Washington State University, Pullman, WA, USA

P2-10 The Missing Ingredient: Food Safety Messages on Recipe Blogs — EMILY MORRISON, Ian Young, Ryerson University, Toronto, ON, Canada

P2-11 Effect of a Training Intervention on Vomit and Diarrhea Clean-up Guidelines, Food Safety Manager Knowledge and Attitudes, and Organizational and Environmental Change — CATHERINE VIATOR, Jonathan Blitstein, Jenna Brophy, Sheryl Cates, Kinsey Porter, Angela Fraser, RTI International, Houma, LA, USA

P2-12 The Composition of an Intervention Programme Based on the World Health Organization's Five Keys to Safer Foods and the Assessment of Hospice Food Preparation Surface Cleanliness — JANE NKHEBENYANE, Central University of Technology, FS SA, Bloemfontein, South Africa

P2-13 Consumer Knowledge, Perceptions, and Purchasing Behaviors Associated with Food Processing Technologies in the United States — NICOLE ARNOLD, Tiffany Drape, Melissa Chase, Renee Boyer, Robert Williams, Virginia Tech, Blacksburg, VA, USA

P2-14 Food Safety Cognition of Parents with Young Children and the Potential Use of Online Parenting Communities to Obtain Food Safety Information — Ellen W. Evans, Kayleigh J. Knowles, DAVID LLOYD, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-15 Consumer Awareness of *Campylobacter* in the United Kingdom — Ellen W. Evans, Robert Bowler, Simon Dawson, DAVID LLOYD, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-16 A Narrative Review of International Research Studies Detailing Food Safety Awareness of Professional Food Handlers and Practices in Catering and Manufacturing Environments — Ellen W. Evans, Rebecca L. A. Evatt, DAVID LLOYD, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-17 Public Worry Regarding Specific Food Safety Issues in Lebanon — Ellen W. Evans, Victoria J. Gould, Elizabeth C. Redmond, Nisreen Alwan, Laura Hjeij, DAVID LLOYD, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-18 A Comparison of Food Safety Knowledge, Attitudes and, Training Experiences of Trainee Dietitians from a Welsh and a Lebanese University — Victoria J. Gould, Ellen W. Evans, Elizabeth C. Redmond, Nisreen Alwan, Laura Hjeij, DAVID LLOYD, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-19 Food Safety Behaviors and Practices of Vendors at Mississippi Farmers' Markets — SARA FARMER, Courtney Crist, Mississippi State University, Starkville, MS, USA

P2-20 The First Year of Implementing Food Safety Modernization Act Produce Training — SHAUNA HENLEY, Justine Beaulieu, Rohan Tikekar, David Martin, Deanna Baldwin, University of Maryland Extension, Baltimore County, Cockeysville, MD, USA

P2-21 Consumer Response to "Don't Wing It!" Web Site on Safe-handling of Raw Poultry — SHERYL CATES, Sandria Godwin, Jenna Brophy, Katherine Kosa, Edgar Chambers IV, Delores Chambers, RTI International, Research Triangle Park, NC, USA

P2-22 Evaluating a Consumer-focused Intervention Designed to Identify Food Safety Hazards in Retail Food Stores — KATRINA LEVINE, Benjamin Chapman, John Luchansky, Anna Porto-Fett, Veronica Bryant, Celia Herring, North Carolina State University, Raleigh, NC, USA

P2-23 Midwest Region Round Two Needs Assessment for the Food Safety Modernization Act's Produce Safety Rule — BRIDGET PERRY, Arlene Enderton, Catherine Strohbehn, Angela Shaw, Linda Naeve, Iowa State University, AMES, IA, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

P2-24 Investigating the Accuracy of Food Test Strips to Measure pH Values of Home-preserved Foods — Katrina Levine, CHRISTOPHER RUPERT, Sarah Cope, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

P2-25 Strategies to Reach Television Chefs with Safe-handling Information — CHRISTINE BRUHN, Yaohua (Betty) Feng, University of California-Davis, Davis, CA, USA

P2-26 Investigating Cross-contamination from Raw to Ready-to-Eat Foods during Consumer Meal Preparation Using MS2 as a Surrogate — MARGARET KIRCHNER, Minh Duong, Savana Everhart, Caitlin Smits, Lindsey Doring, Jeremy Faircloth, Rebecca Goulter, Lisa Shelley, Ellen Thomas, Sheryl Cates, Chris Bernstein, Lee-Ann Jaykus, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

P2-27 Investigating the Impacts of a Media Campaign Targeting Food Safety Practices — SARAH COPE, John Luchansky, Anna Porto-Fett, Jill Hochstein, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

P2-28 Development and Assessment of a Visual Educational Food Safety Tool for Farmers Market Vendors — Lilly Jan, Shannon Coleman, LEAH GILMAN, Lakshman Rajagopal, Iowa State University, Ames, IA, USA

P2-29 Needs Assessment for Exempt Home Food Operations and Home Bakeries in Iowa — LEAH GILMAN, Shannon Coleman, Melissa Cater, Arlene Enderton, Alice Topaloff, Iowa State University, Ames, IA, USA

P2-30 A Comparison of Food Safety Training Methods and an Investigation of Factors Impacting Training Outcomes — KRISTEN SANIGA, Clint Stevenson, North Carolina State University, Raleigh, NC, USA

P2-31 Effectiveness of On-line Versus Face-to-Face Produce Safety Training for Farmers and Farmers' Market Managers — JUDY HARRISON, Renee Boyer, Mark Harrison, Melinda Pethel, University of Georgia, Athens, GA, USA

P2-32 Investigating Handwashing Practices of Consumers during Meal Preparation: An Observational Approach — LINDSEY DORING, Minh Duong, Lydia Goodson, Margaret Kirchner, Lisa Shelley, Rebecca Goulter, Ellen Thomas, Sheryl Cates, Chris Bernstein, Lee-Ann Jaykus, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA

Retail and Food Service Safety

P2-33 Development and Implementation of a Culinary Science Course for Food Science Students — MARK WENKE, Jennifer Richards, University of Tennessee, Knoxville, TN, USA

P2-34 Alternative Methodologies for Quantifying and Understanding Food Safety Behavior Relationships among Restaurant Food Handlers — JEFFREY CLARK, Phil Crandall, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA

P2-35 Examination Delivery Methods for Food Safety Training – Does Phrasing Make a Difference? — KARLA ACOSTA, Heyao Yu, Sujata A. Sirsat, University of Houston, Houston, TX, USA

P2-36 Assessment of Microbiological and Chemical Quality of Bubble Tea Beverages Sold in Taiwan — SIANG-MEI ZENG, Chung-Saint Lin, Yi-Chen Lee, Yung-Hsiang Tsai, National Kaohsiung Marine University, Kaohsiung City, Taiwan

P2-37 Retail Deli Employees' Food Safety Perceptions and Behaviors Align with *Listeria monocytogenes* Contamination Risks — TONGYU WU, Susan Hammons, Jack Neal, Jingjin Wang, Haley Oliver, Purdue University, West Lafayette, IN, USA

P2-38 Development, Implementation, and Evaluation of a Food Service Focused Handwashing Intervention: A Pilot Study to Indicate Effectiveness — EMMA SAMUEL, Valerie Scholey, Elizabeth C. Redmond, David Lloyd, Cardiff Metropolitan University, Cardiff, UK

P2-39 Comparison of Sanitary Inspection Results on Cutting Boards in Different Types of Children's Foodservice — HYE-KYUNG MOON, Seong-Il Kang, Changwon National University, Changwon, South Korea

P2-40 Consumers' Self-Reported and Objectively Assessed Knowledge and Risk Perception of Fresh-cut Produce — HEYAO YU, Jack Neal, Sujata A. Sirsat, University of Houston, Houston, TX, USA

P2-41 Occurrence of *Listeria* spp. and *Listeria monocytogenes* on Avocados Acquired from Retail Establishments — ELISA CABRERA-DIAZ, Liliana Martínez-Chávez, N. E. Martínez-Gonzáles, Juan José Varela-Hernández, Ramón García-Frutos, José Luis Montañez-Soto, Universidad de Guadalajara, Guadalajara, Mexico

P2-42 Significance of Health Code Violations in Food Service and Retail Operations Located in Low- and High-income Communities — ALBERTO BEIZA, Sujata A. Sirsat, University of Houston Main, Houston, TX, USA

P2-43 Withdrawn

P2-44 Withdrawn

P2-45 Antimicrobial Resistance Patterns of *Enterococcus* and *Staphylococcus* Species Isolated from Grocery Store Shopping Carts — Hector Garnica, ANDREA ENGLISH, Darvin Cuellar, Alejandro Echeverry, Texas Tech University, Lubbock, TX, USA

P2-46 Ability of Foodborne Pathogens to Survive in Kitchen Grease — HANNAH BOLINGER, Sani-Professional, Montvale, NJ, USA

P2-47 Cooling Techniques: Characterizing *Escherichia coli* Population Changes in Low-sodium Marinara Sauce — Lindsay Beardall, Paola Paez, Randall Phebus, Tracee Watkins, SARA GRAGG, Kansas State University, Olathe, KS, USA

P2-48 *Listeria* Controls at Retail: Nationwide Surveillance Results — CARRIE CLARK, Susan Hammons, Kristina Barlow, U.S. Department of Agriculture–FSIS, Washington, D.C., USA

P2-49 Quality Changes in Abalone and Seaweed Rice Porridge Product for Infants after Addition of *Lactobacillus plantarum* Ln1 during Accelerated Storage — NARAE LEE, Shin Hana, Hyundong Paik, Wansoo Hong, Kyeong Ryu, Hyeja Chang, Dankook University, Department of Food Science and Nutrition, Cheonan, South Korea

Epidemiology

P2-50 Trends in *Salmonella* Infection Rates in Urban and Rural Counties in North Carolina and the Impact of Urbanization, 1997 to 2014 — MELANIE FIRESTONE, Craig Hedberg, University of Minnesota, Minneapolis, MN, USA

P2-51 Reactions of Broiler Sera to *Salmonella* Flgk and Flid Flagellar Proteins — HUNG-YUEH YEH, Aimee Silvestry Acosta, Katherine Vargas Serrano, U.S. Department of Agriculture – ARS PMSPRU, Athens, GA, USA

P2-52 Feel the Dragon's Breath Burn: Investigation of Liquid Nitrogen Exposure after Consuming a Dessert from a Local Fair in Florida — LAURA MATTHIAS, Jamie DeMent, Dorothy Kramer, Candy Luciano-Green, Patrick Lynch, Florida Department of Health, Tallahassee, FL, USA

P2-53 Food Poisoning Outbreaks and Climate Change in Korea over the Past Two Decades — JONG-GYU KIM, Joong-Soon Kim, Keimyung University, Dalseo-Gu, Daegu, South Korea

P2-54 Features of Norovirus Food Poisoning Outbreaks in Korea — JONG-GYU KIM, Joong-Soon Kim, Keimyung University, Dalseo-Gu, Daegu, South Korea

P2-55 Presence of *Campylobacter* spp. in Food Stuffs, Animal Feces, and Rivers of East Tennessee — MOLLY WEST, Jennifer Richards, Faith Critzer, Alexis M. Hamilton, The University of Tennessee, Knoxville, TN, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

P2-56 Estimating the Burden of Foodborne Illness for *Campylobacter*, *Salmonella*, and *Vibrio parahaemolyticus* in Japan, 2006 to 2015 — KUNIHIRO KUBOTA, Hiroshi Amanuma, Masaru Tamura, Kiyoko Tamai, Masahiro Shimojima, Shunsuke Shibuya, Yoshiharu Sakurai, Mayumi Komatsu, Fumiko Kasuga, National Institute of Health Sciences, Kawasaki, Japan

P2-57 Epidemiology of Foodborne Norovirus Outbreaks in the United States, 2009 to 2016 — Zachary Marsh, Minesh Shah, Mary Wikswo, Hannah Kisselburgh, Anita Kambhampati, Jennifer Cannon, Umesh Parashar, JAN VINJÉ, Aron Hall, Centers for Disease Control and Prevention, Atlanta, GA, USA

P2-58 Risk Factors Associated with *Campylobacter* Prevalence in Livestock Raised on Small-scale Diversified Farms in California — LAURA PATTERSON, Nora Navarro-Gonzalez, Peiman Aminabadi, Michele Jay-Russell, Alda Pires, University of California-Davis, Department of Population Health & Reproduction, Davis, CA, USA

P2-59 *Clostridioides* (*Clostridium*) *difficile* in the Human Diet: Systematic Review and Meta-Analysis to Assess Ingestion Risk — Alexander Rodriguez-Palacios, KEVIN MO, Bavan Shan, Joan Misuya, Abishek Desphande, Nina Bijedic, Sanja Ilic, Ohio State University, Columbus, OH, USA

P2-60 Prospective Whole Genome Sequencing for *Salmonella* Has Highlighted Problems with Frozen Breaded Chicken Products in Canada — Ashley Kerr, RIMA KANDAR, Joyce Cheng, Jenne Cunliffe, Jennifer Cutler, Ashley Kearney, Jillian Rumore, Florence Tanguay, Cynthia Misfeldt, Lorelee Tschetter, Celine Nadon, Mythri Viswanathan, Outbreak Management Division, Centre for Food-Borne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Ottawa, ON, Canada

P2-61 The Impact of Prospective Whole Genome Sequencing for *Listeria monocytogenes* on Outbreak Detection and Response: A Canadian Perspective — RIMA KANDAR, Ashley Kerr, Philippe Belanger, Rita Finley, Monica Gerrie, Elizabeth Hillyer, Ashley Kearney, Celine Nadon, Stephen Parker, Erin Szidonya, Lorelee Tschetter, Jennifer Cutler, Outbreak Management Division, Centre for Food-Borne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Ottawa, ON, Canada

P2-62 Treatment Failure in a Patient with Multidrug-resistant *Shigella* Linked to Attending a Wedding in Ireland, Tennessee, 2017 — SAMIR HANNA, Katie Garman, John Dunn, Louise Watkins, Azizat Adediran, Christy Bennett, Lori Gladney, Tennessee Department of Health, Nashville, TN, USA

P2-63 Modulating Effect of ZnO Nanoparticles on Immunological and Histopathological Alterations Induced by Chlorpyrifos in Rats — SARA ESSA, Eiman M. El-Saied, Osama S. El-Tawil, Inas M. Gamal, Immune Section, Research Institute for Animal Reproduction, Cairo, Egypt

P2-64 Production of Aflatoxin B_1 and B_2 during the Production of Wheat Malt for Use in Craft Beer Production — Danieli C. Schabo, Marta H. Taniwaki, Donald W. Schaffner, MARCIANE MAGNANI, Federal University of Paraiba, João Pessoa, Brazil

Food Toxicology

P2-65 Deposition of Copper in Cattle and Buffalo Tissues Slaughtered in Assiut Province, Egypt — TAREK YOUSSEF, Yehia Hefnawy, Assiut University, Food Hygiene Department, Faculty of Veterinary Medicine, Assuit, Egypt

P2-66 Rapid Classification of Aflatoxin Levels in Single Corn Kernels by UV-Vis-NIR Spectroscopy — XIANBIN CHENG, University of Illinois at Urbana-Champaign, Urbana, IL, USA

P2-67 Growth and Ochratoxin A Production by *Aspergillus fresenii* and *Aspergillus sulphureus* on Niger Seeds at 0.82 and 0.86 Water Activity at 37°C — YUNG-CHEN HSU, Dawit Gizachew, W.T. Evert Ting, Purdue University Northwest, Hammond, IN, USA

P2-68 Studies of Aflatoxin B1 (AFB1) Production by *Aspergillus parasiticus* on Niger Seeds — DAWIT GIZACHEW, Chih-Hsuan Chang, W.T. Evert Ting, Purdue University Northwest, Department of Chemistry and Physics, Hammond, IN, USA

P2-69 A Comparative Study of Heavy Metal Exposure Risk from the Consumption of Some Common Varieties of Cultured and Captured Fishes in Bangladesh — MOHAMMAD RUZLAN HABIB, Md. Mozammel Hoque, Yeasmin Nahar Jolly, M.Sc. Student, Dhaka, Bangladesh

P2-70 Assessing Cumulative Dietary Organophosphate Pesticide Exposure from Fruit and Vegetable Consumption in the United States — ELIZABETH JARA, Carl Winter, University of California Davis, Davis, CA, USA

P2-71 Comparison of the *Aspergillus flavus* Spores Reduction on Stored Doenjang with Gamma and Electron Beam Irradiation — KYE-HWAN BYUN, Soo-Jin Jung, Iqbal Hossain, Do Hyoung Kim, Jung Kyu Chae, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansung, South Korea

Low-water Activity Foods

P2-72 Detection of Chitinase and β-1, 3 Glucanase Genes against *Aspergillus flavus* in Transformed Peanuts — Premila Achar, RILWAN SOLARIN, Jozef Petrak, Kennesaw State University, Kennesaw, GA, USA

P2-73 Effectiveness of Dry Purging for Removing *Salmonella* from a Contaminated Lab-scale Auger Conveyor System — QUINCY SUEHR, Susanne Keller, Nathan Anderson, U.S. Food and Drug Administration, Bedford Park, IL, USA

P2-74 Survival of *Salmonella enterica* in Low-moisture Military Ration Products— GENEVIEVE FLOCK, Andre Senecal, Michelle Richardson, Dominique Pacitto, Courtney Cowell, Gianna Prata, Patrick Marek, U.S. Army NSRDEC, Natick, MA, USA

P2-75 Characterization of *Pediococcus acidilactici* ATCC 8042 as a Potential *Salmonella* Surrogate in Toasted Oats Cereal — BRONWYN DEEN, Francisco Diez-Gonzalez, University of Georgia, Griffin, GA, USA

P2-76 Comparison of the Thermal Resistance of *Salmonella enterica* Serotypes in Peanut Butter and Soy Protein Powder — RACHEL STREUFERT, Xiyang Liu, Nathan Anderson, Susanne Keller, Elizabeth Grasso-Kelley, U.S. Food and Drug Administration, Summit-Argo, IL, USA

P2-77 A Review of Inoculation Techniques for Low-moisture Foods — CRYSTAL MOSS, Spencer Swick, Daniel Connelly, Niraj Shrestha, Gretchen Gutierrez, Northland Laboratories, Green Bay, WI, USA

P2-78 Survival of *Salmonella* spp., *Listeria monocytogenes*, Shiga Toxin-producing *Escherichia coli*, and *Enterococcus faecium* on Sunflower Kernels during Oil Roasting — KELLY DAWSON, Stephanie Nguyen, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA

P2-79 Survival of *Listeria monocytogenes* in Peanut Butter under Shelf-stable Conditions — ASHLEY CUNNINGHAM, Brent Flemmer, Nancy Dobmeier, Buffy Montgomery, Balasubrahmanyam Kottapalli, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA

P2-80 Evaluation of "Story of Your Dinner" Food Safety Campaign Video in 2016 and 2017 — YAOHUA (BETTY) FENG, Christine Bruhn, Shelley Feist, Purdue University, West Lafayette, IN, USA

P2-81 An Examination of Microbiological Risks Associated with Almond Soaking and Drying — YAOHUA (BETTY) FENG, Vanessa Lieberman, Linda J. Harris, Purdue University, West Lafayette, IN, USA

P2-82 Long-term Survival and Thermal Death Kinetics of Entero-hemorrhagic *Escherichia coli* Serogroups O45, O121, and O145 in Wheat Flour — FEREIDOUN FORGHANI, Meghan den Bakker, Alexandra Nicole Futral, Francisco Diez-Gonzalez, Postdoctoral Research Assocate, Griffin, GA, USA

P2-83 Survival of Shiga Toxin-producing *Escherichia coli* (STEC) O26, O111, and O121 in All-Purpose Flour — VALERIE ORTA, Stuart Gorman, Faith Critzer, University of Tennessee, Department of Food Science, Knoxville, TN, USA

P2-84 Identification of Novel Genes Mediating Survival of *Salmonella* under Low-moisture Conditions — VICTOR JAYEOLA, Brandon Stone, Steffen Porwollik, Weiping Chu, Michael McClelland, Sophia Kathariou, North Carolina State University, Raleigh, NC, USA

P2-85 Analysis of Desiccation Resistance of *Listeria monocytogenes* Strains — TANVI MHETRAS, Joelle K. Salazar, Lauren J. Gonsalves, Vidya Natarajan, Chinmyee Sule, Shreya Baid, Lindsay Halik, Diana Stewart, Mary Lou Tortorello, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

P2-86 Effect of Water Activity and the Mixture of Sodium Lactate and Sodium Acetate on *Aspergillus flavus* Growth and Aflatoxin Production in Beef Jerky — YEON HO KIM, Ki Sun Yoon, Kyung Hee University, Seoul, South Korea

P2-87 Validation of *Enterococcus faecium* NRRL B-2354 as a Surrogate for Thermal Inactivation of *Salmonella* in Date Paste — NURUL HAWA AHMAD, Roshan Conrad D'Souza, Ian Hildebrandt, Harshavardhan Thippareddi, Bradley Marks, Elliot Ryser, Michigan State University, East Lansing, MI, USA

P2-88 Effect of Talc on Thermal Resistance of *Enterococcus faecium* NRRL B-2354 in Almond Meal at a Water Activity of 0.45 — NURUL AHMAD, Cemre Oztabak, Bradley Marks, Elliot Ryser, Michigan State University, East Lansing, MI, USA

P2-89 Influence of Water Activity on the Thermal Inactivation of *Salmonella enterica* in Low-moisture Pet Foods — BINA GAUTAM, Michael Gänzle, Roopesh Mohandas, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

P2-90 Establishing the Microbial Profile of Retail "Raw" Almonds Purchased in the United States, 2013 to 2017 — ERIN DORMEDY, Brittany Blanco, California State University, Fresno, CA, USA

P2-91 Effects of Temperature, Water Activity, and Physical Structure on Thermal Resistance of *Salmonella* Enteritidis PT30 on Multiple Almond, Date, and Wheat Products — PICHAMON LIMCHAROENCHAT, Michael James, Nicole Hall, Kirk Dolan, Bradley Marks, Michigan State University, East Lansing, MI, USA

P2-92 Survival of Various Microorganisms in Powdered Infant Formula — SHANNON PICKENS, Hossein Daryaei, Robert Newkirk, Samantha Lindemann, Matthew Kmet, Ravinder Reddy, Illinois Institute of Technology / IFSH, Bedford Park, IL, USA

P2-93 Use of Residence Time Versus Screw Speed in the Response Surface Model for Microbial Inactivation during Single-screw Extrusion of Low-moisture Food — TUSHAR VERMA, Jeyamkondan Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA

P2-94 Radio Frequency Pasteurization Process for Inactivation of *Salmonella* spp. and *Enterococcus faecium* NRRL B-2354 on Ground Black Pepper — XINYAO WEI, Soon Kiat Lau, Sibel Irmak, Jayne Stratton, Andreia Bianchini, Jeyamkondan Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA

P2-95 Survival of *Listeria monocytogenes* on Pistachios, Corn Flakes, and Chocolate Liquor at 4 and 23°C — VIVIAN LY, Valeria R. Parreira, Fernanda Sanchez, Jeffrey Farber, University of Guelph, CRIFS, Department of Food Science, Guelph, ON, Canada

P2-96 A Comparison between Two Methods for Determining Thermal Resistance of Microorganisms in Low-moisture Foods: TDT Disks and TDT Sandwiches — SOON KIAT LAU, Sabrina Vasquez, Jeyamkondan Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA

P2-97 Modeling Inactivation of *Salmonella* during Spray Drying — PHILIP STEINBRUNNER, Elliot Ryser, Kirk Dolan, Bradley Marks, Sanghyup Jeong, Michigan State University, East Lansing, MI, USA

P2-98 Comparison of the U.S. Food and Drug Administration's Bacteriological Analytical Manual and Metagenomic Shotgun Sequencing Methodologies in the Microbiological Isolation and Characterization of *E. coli* from Recalled Chapati "Atta" Flour — Tina Pfefer, Narjol Gonzalez-Escalona, Elizabeth Reed, Andrea Ottesen, Padmini Ramachandran, Mark Mammel, David Lacher, JULIE ANN KASE, U.S. Food and Drug Administration, College Park, MD, USA

Food Chemical Hazards and Food Allergens

P2-99 Detection of Milk Proteins in Alkaline CIP Solutions Using High-resolution Mass Spectrometry — SHYAMALI JAYASENA, Sally Klinect, Heidi Hau, Melanie Downs, University of Nebraska-Lincoln, Lincoln, NE, USA

P2-100 Validation of a Rapid Immunochromatographic Method for Specific Detection of Coconut Protein in Clean-in-Place Water, Environmental Samples, and Food Matrices — LUKE EMERSON, Thomas Grace, Gabriela Lopez Velasco, Mara Celt, Lisa Monteroso, Mach Patrick, Bia Diagnostics, Burlington, VT, USA

P2-101 Improved Sampling Methods for Detection of Food Allergens on Food Contact Surfaces — MAGDALENA NAZIEMIEC, Lanlan Yin, Binaifer Bedford, Lauren Jackson, Illinois Institute of Technology, Chicago, IL, USA

P2-102 Effectiveness of Push-through Cleaning Methods for Removing Milk Chocolate from a Stainless Steel Pipe and Butterfly Valve — LIYUN ZHANG, Joshua Warren, Quincy Suehr, Nathan Anderson, Binaifer Bedford, Lauren Jackson, IIT/IFSH, Bedford Park, IL, USA

P2-103 Investigation of Toxigenic Fungi and Mycotoxins in Baled Silage Produced in Korea — HYEONHEUI HAM, Jiseon Baek, Mijeong Lee, Sung Kee Hong, Theresa Lee, Seungdon Lee, Microbial Safety Team, Agro-Food Safety & Crop Protection Department, National Institution of Agricultural Science, Rural Development Administration, Wanju, South Korea

P2-104 Rapid Detection of Added Sudan Dyes in Chilli Powder Using Magnetic Nanoparticle-based Extraction Techniques — HONGSHUN YANG, Xi Yu, National University of Singapore, Singapore, Singapore

P2-105 Background Monitoring of Nonylphenol and Bisphenol a Levels in Foods around Taiwan and BPA Migrating Test from Packaging Materials of Coffee Products — WEI-HSIANG CHANG, Hsiu-Ling Chen, Shou-Chun Liu, Ching Chang Lee, Research Center for Environmental Trace Toxic Substances, National Cheng Kung University, Tainan, Taiwan

P2-106 Development of Monoclonal Antibody Specific to Thermal Stable-soluble Protein in Egg Whites as a Food Allergen — SOL-A KIM, Jeong-Eun Lee, Hyo-In Kim, Ah-Yoon Kim, Ji-Hye Park, Won Bo Shim, Gyeongsang National University, Jinju, South Korea

P2-107 Concentrations of Perfluoroalkyl Substances, Phthalate Esters, Gallium, and Indium in Food — CHIA-YANG CHEN, Kuan-Ping Chao, You-Chen Liu, National Taiwan University, Taipei City, Taiwan

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P2-108 Doses of Specific Peanut Allergens in Bamba — Stephanie Filep, BRYAN SMITH, Denise Block, Eva King, Martin Chapman, Indoor Biotechnologies, Inc., Charlottesville, VA, USA

P2-109 The Enzymatic Detoxification of Deoxynivalenol Via Epimerization — Jason Carere, Yousef Hassan, TING ZHOU, Agriculture and Agri-Food Canada-Guelph Research and Development Center, Guelph, ON, Canada

P2-110 Development and Characterization of a Novel Monoclonal Antibody-based Sandwich Enzyme-linked Immunosorbent Assay for the Quantitative Detection of Lupin — JOHN GRAY, LeAnna Willison, Henry Grise, Jason Robotham, BioFront Technologies, Tallahassee, FL, USA

P2-111 Development and Validation of a Quantitative Monoclonal Antibody-based Enzyme-linked Immunosorbent Assay for the Detection of Mustard in Differentially Processed Commercial Products — HENRY GRISE, LeAnna Willison, Ken Roux, Jason Robotham, BioFront Technologies, Tallahassee, FL, USA

P2-112 Determination of the Fungal Flora and Aflatoxin Content of Garri from Two Open Markets in Parts of Akwa Ibom State, Nigeria — ADENIYI SANYAOLU, Etineobong Akpasoh, University of Uyo, Uyo, Nigeria

Food Law and Regulation

P2-113 The Compliance Level of Pesticide Residues within the Canadian Marketplace — EZRA H. AZMAN, Leigh Miller, Jeff Van de Riet, Canadian Food Inspection Agency, Ottawa, ON, Canada

P2-114 The Political Economy of Antibiotics in Animal Feed — TANYA ROBERTS, Center for Foodborne Illness Research & Prevention, Vashon, WA, USA

P2-115 Food Safety Enforcement and Regulation in Ghana: Current Situation and Future Outlook — Emefa Monu, MARIA LOVELACE-JOHNSON, Food and Drug Authority, Accra, Ghana

Food Safety Systems

P2-116 Lethality of *Salmonella* spp., *Escherichia coli*, and *Listeria monocytogenes* during Ketchup Processing — STEPHANIE NGUYEN, Balasubrahmanyam Kottapalli, Ashley Cunningham, Amanda Sisney, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA

P2-117 Microbiological Growth Profile of *Staphylococcus aureus* and *Bacillus cereus* in High-moisture Foods during Routine Manufacturing Conditions — STEPHANIE NGUYEN, Balasubrahmanyam Kottapalli, Davide Quaranta, Maurisa Mansaray, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA

P2-118 Comparison of Quantitative PCR and Crystal Diagnostic Immunoassay-based Method for Studying the Distribution of *Salmonella* and Shiga Toxin-producing *Escherichia coli* in the Air of Beef Abattoirs — ZAHRA MOHAMMAD, Samuel Beck, Maria King, Alejandro Castillo, Texas A&M University, College Station, TX, USA

P2-119 Modeling the Effect of Temperature on the Growth of *Staphylococcus aureus* in Fresh-cut Lettuce — Hui-Erh Chai, Kuan-Hung Lu, Tsui-Ping Huang, Chun-Lung Cheng, Lihan Huang, Cheng-An Hwang, Shiowshuh Sheen, LEE-YAN SHEEN, Institute of Food Science and Technology, National Taiwan University, Taipei, Taiwan

P2-120 Statistical Process Control Systems for Assessing and Responding to Preharvest, Postharvest, and Processing Plant Pathogen Testing — TIMOTHY BUISKER, Smart Data Science Solutions, LLC, Galena, IL, USA

P2-121 Consumers' Perception of Food Safety of Perishable Foods Sold at Northern West Virginia and Western Pennsylvania Farmers Markets — KA WANG LI, Hanna Khouryieh, Lacey Lemonakis, Lisa Jones, Cangliang Shen, West Virginia University, Morgantown, WV, USA

P2-122 The Prevalence of Shiga Toxin-producing *Escherichia coli* and *Salmonella* on Sheep Hides, Pre-eviscerated and Final Carcasses in Various Honduran Slaughter Facilities — SAVANNAH FORGEY, April Englishbey, Diego Casas, Mindy Brashears, Mark Miller, Texas Tech University, Lubbock, TX, USA

P2-123 Effect of Bacteria on Bleach Inactivation of Human Norovirus Surrogates on Stainless Steel Surfaces — WENJUN DENG, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA

P2-124 The South African Food System: Regulation and Control in the Context of the Recent *Listeria* Outbreak — LISE KORSTEN, University of Pretoria, Pretoria, South Africa

P2-125 Detachment Kinetics of *Escherichia coli* O157:H7 and Non-living Surrogate from Surface of Spinach — SAMANTHA BOLTEN, Laurie Clotilde, Ganyu Gu, Yaguang Luo, Shirley A. Micallef, Antonios Zografos, Xiangwu Nou, U.S. Department of Agriculture–ARS, Beltsville, MD, USA

P2-126 Evaluation of Different Postharvest Cooling Processes on the Microbial Quality and Storage of Florida Peaches — Jaysankar De, BRUNA BERTOLDI, Jeffrey Brecht, Steven Sargent, Keith Schneider, University of Florida, Gainesville, FL, USA

P2-127 Probiotic Potential of Phage-resistant *Lactobacillus plantarum* against Foodborne Pathogens — VINOD NAGARAJAN, Zajeba Tabashsum, Debabrata Biswas, University of Maryland, College Park, MD, USA

P2-128 Food Consumption Habits and Handling Practices among the Mexican Central Region Population and Their Association with Salmonellosis — ANGÉLICA GODÍNEZ-OVIEDO, Montserrat Iturriaga, Universidad Autónoma de Querétaro, Querétaro, Mexico

P2-129 *Salmonella* and *Listeria* in Ready-to-Eat Products: Improving the Estimates of Positive Test Probabilities by Product Categories — Christopher Aston, Meryl Silverman, Brad Webb, Carrie Clark, Jude Smedra, Yoel Izsak, Andrew Pugliese, UDIT MINOCHA, U.S. Department of Agriculture–FSIS, Washington, D.C., USA

P2-130 Comparison of Nine Surface Adenosine Triphosphate Test Devices at Different Environmental Control Temperatures and Their Consistency in Signal over Time — HELEN TAYLOR, Katie Pressdee, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom

P2-131 Behavior of *Listeria monocytogenes* in Hummus — Fengmin Li, ZHIHAN XIAN, Ji Yoon Yoo, Yong Xue, Chadni Patel, Hee jin Kwon, Padmini Ramachandran, Andrea Ottesen, Thomas Hammack, Yi Chen, University of Maryland, College Park, MD, USA

P2-132 Correlation between Enzyme Inactivation and Pathogen Lethality during Water and Steam Blanching of Vegetables — ERDOGAN CEYLAN, Donna Garren, Sanjay Gummalla, Mérieux NutriSciences, Crete, IL, USA

P2-133 Impact of Air Movement on the Lethality of *Salmonella* and *Pediococcus acidilactici* during the Cooking Step of Beef Jerky Production — ANTHONY PARIS, Joy Waite-Cusic, John Jorgensen, Oregon State University, Corvallis, OR, USA

P2-134 Validation of Lactic Acid Spray Applied to Beef Shoulder Clod Subprimals as an Antimicrobial Intervention in a Beef Processing Environment — APRIL ENGLISHBEY, Savannah Forgey, Mark Miller, Alejandro Echeverry, Mindy Brashears, Texas Tech University, Lubbock, TX, USA

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P2-135 Evaluation of *Listeria monocytogenes* Sub-lethal Injury under Different Stress Conditions Related to Food Processing — DANAE SIDERAKOU, Eleni Ouranou, Sofia Poimenidou, Evangelia Zilelidou, Konstantinos Papadimitriou, Panagiotis Skandamis, Agricultural University of Athens, Athens, Greece

P2-136 Growth of *Salmonella* during "Sprouting" of Nut, Seed, and Grain Products — ALEX EMCH, Javier Gaspar-Hernandez, Anthony Paris, Joy Waite-Cusic, Oregon State University, Corvallis, OR, USA

P2-137 Suitability of *Enterococcus faecium* ATCC 8459 as a Surrogate for *Salmonella* during Dehydration of Infused Fruit Products — ALEX EMCH, Javier Gaspar-Hernandez, Richard Keller, Joy Waite-Cusic, Oregon State University, Corvallis, OR, USA

P2-138 Benefits of Using Cloud-based Temperature Data Loggers for Temperature-sensitive Food Storage and Transportation — JÉRÉMY LAURENS, Dean Hornsby, Blulog, Poznan, Poland

P2-139 Fate of *Salmonella enterica* on Raw Chicken Breast Meat Marinated in Lemon Juice with Added Thyme Oil and Yucca Extract — SAMUEL KIPROTICH, Aubrey Mendonca, Shannon Coleman, Emalie Thomas-Popo, Iowa State University, Ames, IA, USA

Food Defense

P2-140 Determination of Zilpaterol in Sheep Urine and Tissues Using Immunochromatographic Assays — WEILIN SHELVER, Amy McGarvey, David Smith, U.S. Department of Agriculture, Fargo, ND, USA

P2-141 Multiple Fingerprinting Analysis for Investigating Quality Control of Cassiae Semen Polysaccharides — PU JING, Shanghai Jiao Tong University, Shanghai, China

P2-142 Inactivation Kinetics of *Bacillus cereus* Biofilms Grown on Leafy Greens with Slightly Acidic Electrolyzed Water Combined with Ultrasound and Mild Heat — MOHAMMAD SHAKHAWAT HUSSAIN, Deog-Hwan Oh, Kangwon National University, Chuncheon, South Korea

Laboratory and Detection Methods

P2-143 A Filtration-facilitated, Aptamer-based Detection of *Salmonella* Using Ultra-fast Surface-enhanced Raman Spectroscopic Mapping — SIYUE GAO, Lili He, University of Massachusetts-Amherst, Amherst, MA, USA

P2-144 Evaluation of the Bio-Rad iQ-Check *Salmonella* II Assay in Select Foods: A Collaborative Study — PATRICK BIRD, Benjamin Bastin, Joe Benzinger, Erin Crowley, James Agin, David Goins, Mike Clark, Wendy Lauer, Jean-Philippe Tourniaire, Sophie Pierre, Q Laboratories, Inc., Cincinnati, OH, USA

P2-145 Simultaneous Enrichment of *Salmonella* Typhimurium, *Escherichia coli* O157:H7, and *Listeria monocytogenes* in Cheese — KIRSTEN HIRNEISEN, Venugopal Sathyamoorthy, Atin Datta, Richelle Richter, Donna Williams-Hill, U.S. Food and Drug Administration, Irvine, CA, USA

P2-146 Rapid Enumeration of *Salmonella* Using Roka Atlas *Salmonella* SEN Detection Assay — XIAOHONG DENG, Lijun Hu, Laila Ali, Guodong Zhang, U.S. Food and Drug Administration, College Park, MD, USA

P2-147 Evaluation of a Real-time PCR Method for Verification and Serogroup Identification of *Listeria monocytogenes* Isolates — LAUREL BURALL, Devayani Srinivasan, Sadra Sepehri, Rohini Nambiar, Atin Datta, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA

P2-148 Analysis of Biofilm Formation among *Staphylococcus aureus* Isolates Collected from a Firm Implicated in Multiple Staphylococcal Food Poisoning Outbreaks — JENNIFER HAIT, James Pettengill, Sandra Tallent, U.S. Food and Drug Administration, College Park, MD, USA

P2-149 Development of Method Combined with Filtration and DNA Concentration for Rapid Detection of Foodborne Pathogens by Real-time PCR — JIN-HEE KIM, Seunghae Gwak, Se-Wook Oh, Kookmin University, Seoul, South Korea

P2-150 Rapid Pre-concentration and Detection of *Salmonella* in Food Samples Using Magnetic Ionic Liquids and Recombinase Polymerase Amplification — STEPHANIE HICE, Kevin Clark, Jared Anderson, Byron Brehm-Stecher, Iowa State University, Ames, IA, USA

P2-151 Detection of *Salmonella* Typhimurium and *Listeria innocua* from Environmental Samples Collected from a Facility Processing Lyophilized Lactic Acid Bacteria — Wilfredo Dominguez, James Walrath, RAJ RAJAGOPAL, 3M Food Safety, St. Paul, MN, USA

P2-152 A Localized Surface Plasmon Resonance Sensor Coupled with Magnetic Nanobeads-based Immunoseparation for Rapid and Sensitive Detection of *Escherichia coli* O157:H7 — WENQIAN WANG, Ronghui Wang, Yanbin Li, University of Arkansas, Program of Poultry Science, Fayetteville, AR, USA

P2-153 Evaluation of Three Enrichment Procedures for Improved Detection and Isolation of *Escherichia coli* O157:H7 in Artificially Contaminated Sprouts — WILLIS FEDIO, Ruben Zapata, Lyssa White, Ken Yoshitomi, Karen Jinneman, Steve Weagant, New Mexico State University, Las Cruces, NM, USA

P2-154 Comparative Growth of Alternate Environmental *Listeria* Strains in Selective Enrichments and Competitive Effect on Detection and Recovery of *Listeria monocytogenes* — JANNETH PINZON, David Hill, Mariya Skots, Trevor Suslow, University of California-Davis, Davis, CA, USA

P2-155 Development and Evaluation of Sequence-based Typing Services for Epidemiological Tracking of *Vibrio parahaemolyticus* — TOM EDLIND, Gary Richards, MicrobiType LLC, Plymouth Meeting, PA, USA

P2-156 CbMT Sequence Typing for Identification and Tracking of Foodborne *Clostridium botulinum* Outbreaks — TOM EDLIND, MicrobiType LLC, Plymouth Meeting, PA, USA

P2-157 Sequence-based Typing for Tracking Foodborne Shiga Toxin-producing *Escherichia coli* — TOM EDLIND, MicrobiType LLC, Plymouth Meeting, PA, USA

P2-158 Toward an Advanced Analytical Approach for Detection of Enterohemorrhagic *Escherichia coli* in Food Using New Genetic Markers — Frédéric Lehembre, Patrice Chablain, Sabine Delannoy, Patrick Fach, FABIENNE HAMON, bioMérieux, Grenoble, France

P2-159 Withdrawn

P2-160 Performance Evaluation of Lyophilized *Listeria monocytogenes* and *Salmonella* spp. Green Fluorescent Protein Variant Strains for Industrial Quality Control Applications — VIKRANT DUTTA, Christine Aguilhon, Caroline Kassim-Houssenaly, Deborah Briese, John Mills, Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA

P2-161 Performance Evaluation of a Fluorescence Resonance Energy Transfer-based Real-time PCR Assay for the Detection of *Salmonella* spp. in Pecans — Mai Blia Xiong, Thomas Jones, VIKRANT DUTTA, bioMérieux, Inc., Hazelwood, MO, USA

P2-162 Comparison of Serological Method with Two Molecular Methods in Serotyping *Salmonella* Strains — JIANFA BAI, Xuming Liu, Hewei Zhang, Xiaorong Shi, Yin Wang, Elizabeth Porter, Lance Noll, Vijai Pasupuleti, Aneta Karczmarek, T G Nagaraja, Gary Anderson, Kansas State University, Manhattan, KS, USA

P2-163 Validation of the 3M Molecular Detection Assay for the Detection of *Salmonella* Version 2 in a Variety of Foods against Traditional Methods — CHRISTIAN BLYTH, Carlos Leon-Velarde, Saleema Saleh-Lakha, 3M Canada Corporation, London, ON, Canada

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P2-164 Amplified Luminescent Proximity Homogenous Assay-linked Immunosorbent Assay for the Detection of Shiga Toxin 2 in Foods Containing Shiga Toxin-producing *Escherichia coli* — CHERYL ARMSTRONG, Joseph Capobianco, Pina Fratamico, Leah Ruth, Terence P. Strobaugh Jr., Fernando Rubio, Dandan Zhang, Andrew Gehring, U.S. Department of Agriculture–ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

P2-165 A Fit-for-Purpose Evaluation of VIDAS LPT and LIS Immunoassays Compared to U.S. Food and Drug Administration Bacteriological Analytical Manual Cultural Methods for Growth and Detection of *Listeria monocytogenes* in Fermentation Starter Culture Products — LeAnne Hahn, Sue Kelly, LAURIE POST, Holly Jaeger, Brian Farina, Charles Deibel, Patricia Rule, Stan Bailey, Nikki Palen, Deborah Briese, Deibel Laboratories, Inc., Bethlehem, PA, USA

P2-166 Evaluation of Several bioMérieux VIDAS Assays and U.S. Food and Drug Administration Bacteriological Analytical Manual Cultural Methods for the Detection of *Salmonella* Typhimurium in Fermentation Starter Culture Products — Sue Kelly, LeAnne Hahn, LAURIE POST, Holly Jaeger, Brian Farina, Charles Deibel, Patricia Rule, Stan Bailey, Nikki Palen, Deborah Briese, Deibel Laboratories, Inc., Bethlehem, PA, USA

P2-167 Comparison of Shiga Toxin-producing *Escherichia coli* Detection Systems — ROBERT BARLOW, Kate McMillan, CSIRO Agriculture & Food, Brisbane, Australia

P2-168 Evaluation of Pall GeneDisc STEC Top 7 Test System for Detecting Shiga Toxin-producing *Escherichia coli* — ROBERT BARLOW, Kate McMillan, CSIRO Agriculture & Food, Brisbane, Australia

P2-169 Metagenomic Assessment of Manufacturing Beef Enrichment Broths — ROBERT BARLOW, Theo Allnutt, Kate McMillan, CSIRO Agriculture & Food, Brisbane, Australia

P2-170 Modification of Thread-based Microfluidic Device with Polysiloxanes for the Development of an Innovative Immunoassay to Detect *Salmonella* in Foods — KAIDI WANG, Jane Ru Choi, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

P2-171 In Vivo Screening Platform for Shiga Toxin-producing *Escherichia coli* Using *Caenorhabditis elegans* Model — SUBIN HWANG, Jung-Gu Choi, Shuai Wei, Ramachandran Chelliah, Byung-Jae Park, Deog-Hwan Oh, Kangwon National University, Chuncheon, South Korea

P2-172 Development of a Liquid Crystal-based Immunoassay for *Campylobacter* spp. — SHUANG WU, Curtis Stumpf, Brian Bullard, Stephanie Kuzenko, Emily Rusnak, Gary Niehaus, Crystal Diagnostics Ltd., Rootstown, OH, USA

P2-173 Real-time Detection of *Escherichia coli* O157:H7 and *Salmonella* in Raw Milk Using the BAX System — JULIE WELLER, Andrew Farnum, Anastasia Likanchuk, Priyanka Surwade, Qualicon Diagnostics LLC, A Hygiena Company, Wilmington, DE, USA

P2-174 A High Throughput DNA Hybridization Test to Detect of *Listeria* spp. — LEI ZHANG, Andrew Laseck, Debra Foti, Lin Li, Robert Donofrio, Preetha Biswas, Neogen Corporation, Lansing, MI, USA

P2-175 Evaluation of the TRANSIA PLATE Staphylococcal Enterotoxins Kit for the Detection of Staphylococcal Enterotoxins in Selected Foods — DAVID KERR, Cory Bergfalk, Philip Feldsine, Lisa John, MilliporeSigma, Bellevue, WA, USA

P2-176 Robustness Study of Assurance GDS Assays on the Rotor-Gene Q Platform — DAVID KERR, Tim Kelly, Khyati Shah, Khanh Soliven, Markus Jucker, Lisa John, MilliporeSigma, Bellevue, WA, USA

P2-177 Detection of *Escherichia coli* O157:H7 and *Salmonella enterica* serotype Typhimurium Based on Cell Elongation Induced β-Lactam Antibiotics — MOHAMMED HAKEEM, Xiaonan Lu, Hongyan Zhang, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

P2-178 Comparative Evaluation of the Detection of *Salmonella* spp., *Salmonella* Typhimurium, and *Salmonella* Enteritidis in Different Poultry Matrices from a Slaughterhouse in Brazil — MIKE CLARK, Luiza Guido, Wendy Lauer, Simone Piltz, Bio-Rad Laboratories, Hercules, CA, USA

P2-179 Rapid Detection of *Salmonella* Using Real-time PCR Assay in Meat, Poultry, and Whole Liquid Egg Enriched with an Improved Culture Broth — MARIE-CHRISTINE ETTY, Marie Goreth Nicizanye, Smina Messaoudene, Anna Yattara, Anne Helmer, Alex Charbonneau, Sergiy Olishevskyy, FoodChek Laboratories Inc., Saint-Hyacinthe, QC, Canada

P2-180 Improving the Recovery of *Shigella,* and Potentially Other Foodborne Pathogenic *Enterobacteriaceae,* in Presence of Commensal *Escherichia coli* — OLUWASEUN AGBAJE, Soyeon Lee, Robert Duvall, Zahra Aligabi, Rachel Binet, U.S. Food and Drug Administration, College Park, MD, USA

P2-181 Evaluation and Comparison of Rapid Methods for the Detection of *Salmonella* in Sprouted Chia Powder Using Different Preenrichment Media — ANNA MAOUNOUNEN-LAASRI, Andrew Jacobson, Thomas Hammack, Hua Wang, U.S. Food and Drug Administration, College Park, MD, USA

P2-182 Evaluation of PCR-based Methods for the Identification of Hemorrhagic Enteroaggregative *Escherichia coli* in Sprouts — Luca Rotundo, GEORGE PAOLI, U.S. Department of Agriculture – ARS - ERRC, Wyndmoor, PA, USA

P2-183 Identification of a Single Selective Enrichment Media for the Simultaneous Recovery of *Salmonella* and *Escherichia coli* O157 from Ground Beef Samples — AKHIL REDDY BORA, Mindy Brashears, Kendra Nightingale, Alejandro Echeverry, M. Alexandra Calle, Texas Tech University, Lubbock, TX, USA

P2-184 Interlaboratory Validation of a Streamlined Method for the Enumeration of *Salmonella* and Shiga Toxin-producing *Escherichia coli* in Cattle and Poultry Manure Samples — PEIMAN AMINABADI, Thais Ramos, Samantha Gartley, Xiaohong Wei, Anna Zwieniecka, Kalmia Kniel, Michele Jay-Russell, Western Center for Food Safety, University of California, Davis, CA, USA

P2-185 A High Throughput DNA Hybridization Test for *Salmonella* spp. — LIN LI, Lei Zhang, Andrew Laseck, Debra Foti, Robert Donofrio, Preetha Biswas, Neogen Corporation, Lansing, MI, USA

P2-186 Rapid and Reliable Detection of *Salmonella* in Animal Food Via Duplex Loop-mediated Isothermal Amplification with an Internal Amplification Control — KELLY DOMESLE, Qianru Yang, Beilei Ge, Food and Drug Administration, Laurel, MD, USA

P2-187 A Novel Selective Medium for Simultaneous Enrichment of Shiga Toxin-producing *Escherichia coli* and *Salmonella* in Ground Beef — JOSEPH EGGERS, Joellen Feirtag, Alan Olstein, Mick Bosilevac, University of Minnesota, St. Paul, MN, USA

P2-188 Non-Cultural Confirmation of Presumptive Positive *Escherichia coli* O157:H7 Test Results Using the BAX System STEC Screening Assay — ANDREW FARNUM, Julie Weller, Nisha Corrigan, Kyle Rhoden, Thomas Moeller, Qualicon Diagnostics LLC, A Hygiena Company, Wilmington, DE, USA

P2-189 Development of a Sensitive Single-tube Nested PCR Assay for Rapid Detection of *Campylobacter jejuni* — BIYU WU, Yong Li, University of Hawaii at Manoa, Honolulu, HI, USA

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P2-190 Quantitative Detection of *Listeria monocytogenes* in Cheese and Bean Sprouts Using Droplet Digital PCR — LI MA, Santiago Molina, Akhilesh Ramachandran, National Institute for Microbial Forensics & Food and Agricultural Biosecurity, Oklahoma State University, Stillwater, OK, USA

P2-191 Wyss Accelerated Sample Enrichment Technology for Food Safety Testing — MICHAEL SUPER, Robert Cunningham, Mark Cartwright, Ben Seiler, Don Ingber, Wyss Institute at Harvard University, Boston, MA, USA

P2-192 Comparison and Recovery of Extended Spectrum β-Lactamase *Escherichia coli* on MacConkey Agar Acquired from Global Sources — SHIVARAMU KEELARA, Megan.E. Jacob, Paula.J. Fedorka-Cray, Department of Population Health and Pathobiology, CVM, NCSU, Raleigh, NC, USA

P2-193 An Evaluation of *Salmonella* Supplement in Ready-to-Use Tablets — JOHN MILLS, Stan Bailey, Vikrant Dutta, Peter Ladell, Patricia Rule, bioMerieux, Inc., Hazelwood, MO, USA

P2-194 Multianalyte Lateral-flow Immunoassays Using Universal Protein G-Liposomal Nanovesicles for the Detection of *Escherichia coli* O157:H7, *Salmonella*, and *Listeria monocytogenes* — CHIEN-SHENG (JASON) CHEN, National Cheng Kung University, Tainan, Taiwan

Molecular Analytics, Genomics and Microbiome

P2-195 ST73 *Escherichia coli* Strain 0.1229 Amplifies *Stx*2a Production of O157:H7 — HILLARY FIGLER, Maria Hoffmann, Kuan Yao, Edward Dudley, The Pennsylvania State University, University Park, PA, USA

P2-196 Acid Treatment of Sprouts Enhances Detection of Shiga Toxin-producing *Escherichia coli* in Enriched Sprout Microbiome — SUSAN LEONARD, Mark Mammel, David Lacher, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA

P2-197 Isolation and Characterization of Extraintestinal Pathogenic *Escherichia coli* from the Skin of Retail Chicken Meat — AIXIA XU, Shannon Tilman, Kristy Wisser-Parker, O. Joseph Scullen, Shiowshuh Sheen, Christopher Sommers, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA

P2-198 Whole Genome Sequence and Pulsed Field Gel Electrophoresis Analysis of Environmental *Listeria monocytogenes* Isolates from an Ice Cream Processing Facility — LAURA HOWARD, Paul Morin, Food and Drug Administration, Jamaica, NY, USA

P2-199 Phylogenic Relationships between Bacteria Found in Cultured Food Starters and Dietary Supplement-associated Species — TAMMY BARNABA, Carmen Tartera, Jayanthi Gangiredla, Mark Mammel, Christopher Elkins, U.S. Food and Drug Administration, CFSAN, Laurel, MD, USA

P2-200 Prevalence and Distribution of Efflux Pump Complex Genes in *Cronobacter sakazakii* Using Whole Genome and Pan-genomic Datasets — FLAVIA NEGRETE, Jayanthi Gangiredla, Samantha Finkelstein, Hyein Jang, JungHa Woo, YouYoung Lee, Isha Patel, Hannah Chase, Ben Tall, Gopal Gopinath, U.S. Food and Drug Administration, Laurel, MD, USA

P2-201 Characterization of Plant-associated *Cronobacter sakazakii* Strains Using Molecular, Whole Genome, and Pan-genome Sequence Analyses and Zebrafish Infectivity Studies Identifies Clinically Relevant and Virulent Sequence Types — Hyein Jang, Athmanya Eshwar, Gopal Gopinath, Jayanthi Gangiredla, Isha Patel, Junia Jean Gilles Beaubrun, Hannah Chase, Nicole Addy, Laura Ewing, Flavia Negrete, Samantha Finkelstein, JungHa Woo, YouYoung Lee, Séamus Fanning, Roger Stephan, Angelika Lehner, BEN TALL, U.S. Food and Drug Administration, Laurel, MD, USA

P2-202 Phylogenomic Analyses of Type II Toxin-antitoxin Genes in the Foodborne Pathogen *Cronobacter sakazakii* Using Sequence-based Bioinformatics — SAMANTHA FINKELSTEIN, Hyein Jang, Gopal Gopinath, Jayanthi Gangiredla, Isha Patel, Flavia Negrete, Hannah Chase, JungHa Woo, YouYoung Lee, Ben Tall, U.S. Food and Drug Administration, Laurel, MD, USA

P2-203 Diversity Among Bacterial Isolates from Naturally Fermented Foods and Their Relatedness to Live Microbes in Dietary Supplements — MICHAEL KOTEWICZ, Jayanthi Gangiredla, Mark Mammel, Tammy Barnaba, Jonah Einson, David Sela, Carmen Tartera, Christopher Elkins, U.S. Food and Drug Administration CFSAN, Laurel, MD, USA

P2-204 PerC Homologue pchE Controls *Escherichia coli* O157:H7 Biofilm Expression — Elisa Andreozzi, Erin Reichenberger, GAYLEN UHLICH, USDA,ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

P2-205 The Effects of Microbiome on the Abundance of *Vibrio parahaemolyticus* and *Vibrio vunlificus* in Oysters — Sylvia Ossai, Padmini Ramachandran, Andrea Ottesen, Elizabeth Reed, Angelo DePaola, SALINA PARVEEN, University of Maryland Eastern Shore, Princess Anne, MD, USA

P2-206 Gold Nanoparticle-based Colorimetric Detection of Nucleic Acids Using Loop-mediated Isothermal Amplification Coupled with Differential Centrifugation — LUYAO MA, Mohamed Shehata Draz, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

P2-207 The Effect of the Previous Life Cycle Phase on the Proteomic and Transcriptomic Profiles of *Salmonella* Typhimurium DT104 in Brain Heart Infusion Broth and Ground Chicken Extract — Jabari Hawkins, PINA FRATAMICO, Nereus Gunther, Gian Marco Baranzoni, Gwanghee Kim, Salina Parveen, U.S. Department of Agriculture–ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

P2-208 Clinical and Retail Meat *Salmonella* Typhimurium Var. O5 Isolates That Match by PFGE and Drug Resistance Can be Distinguished by Whole-Genome Sequencing — ANDREA KEEFER, Nkuchia M'ikanatha, Kuan Yao, Maria Hoffmann, Edward Dudley, The Pennsylvania State University, University Park, PA, USA

P2-209 Allelic Variants of *Shigella sonnei* Genes Predict Phylogenetic Global Lineages — REBECCA ABELMAN, Nkuchia M'ikanatha, Edward Dudley, The Pennsylvania State University, University Park, PA, USA

P2-210 Antibiotic Resistance Genes on Lettuce and Radishes Field-grown in Soils Amended with Manure or Compost from Antibiotic-treated Cattle — Kendall Fogler, Giselle Kristi Guron, Lauren Wind, Leigh Anne Krometis, Cully Hession, Amy Pruden, MONICA PONDER, Virginia Tech, Blacksburg, VA, USA

P2-211 16S rRNA Gene Sequence Analysis of Bacterial Microbiota Fluctuations in Cold-smoked Salmon Stored at 4°C for 30 Days — Karen Jarvis, CHIUN-KANG HSU, Christopher Grim, James Pettengill, ORISE, Oak Ridge, TN, USA

P2-212 Status of Selected Virulence Genes in Antibiotic-resistant and Sensitive *Salmonella* Clinical Isolates from Tennessee — DALENIECE HIGGINS, Irshad Sulaiman, Samir Hanna, John Dunn, Pratik Banerjee, University of Memphis, Memphis, TN, USA

P2-213 Virulence Factors and Acquired Antimicrobial-resistance Genes of Shiga Toxin-producing *Escherichia coli* Isolated from Meat Processing Plants in Honduras — DIEGO CASAS, Mindy Brashears, Mark Miller, Kendra Nightingale, Texas Tech University, Lubbock, TX, USA

Blue Text – Developing Scientist Competitor Green Text – Undergraduate Student Competitor

P2-214 SeqSero2: Rapid and Improved *Salmonella* Serotype Determination Using Whole Genome Sequencing Data — SHAOKANG ZHANG, Hendrik Den-Bakker, Blake Dinsmore, Charlotte Lane, Ana Lauer, Patricia Fields, Xiangyu Deng, University of Georgia, Center for Food Safety, Griffin, GA, USA

P2-215 Evaluation of a High-throughput Next Generation Sequencing Assay for Rapid Detection of Spoilage Indicators via Microbiome Analysis — STEPHANIE POLLARD, Ramin Khaksar, Hossein Namazi, James Maloney, Clear Labs Inc., Menlo Park, CA, USA

P2-216 Biofilm and Virulence Gene Profiling of *Listeria monocytogenes* Strains Isolated from Environmental and Clinical Sources in Korea — HYE-RAN CHO, Furkanur Rahaman Mizan, Ashrafudoulla, Hyun-Jung Joo, Heedae Park, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansung, South Korea

P2-217 Bacterial Microbiota of Wooden Boards Used for Aging Semi-soft Cheese — KIRTY WADHAWAN, Scott Rankin, Garret Suen, Charles Czuprynski, University of Wisconsin- Madison Department of Pathobiological Sciences, Madison, WI, USA

P2-218 Microbial Community of Naturally Fermented Soymilk and Soymilk-Kefir Produced from Sprouted Soybeans under Optimized Sprouting Conditions — AJIBOLA OYEDEJI, John Mellem, Dennis Sandris Nielsen, Oluwatosin Ademola Ijabadeniyi, Durban University of Technology, Durban, South Africa

P2-219 Development of Colorimetric Loop-mediated Isothermal Amplification (LAMP) Assay Using Molecular Beacon Horseradish Peroxidase-mimicking for the Rapid Detection of *Vibrio* spp. — JEONG EUN LEE, Won Bo Shim, Sol-A Kim, Ah-Yoon Kim, Hyo-In Kim, Ji-Hye Park, Gyeongsang National University, Jinju, Korea

P2-220 Whole Genome Analysis of *Salmonella* Serovars Isolated from Produce Irrigation Water from the State of Georgia — BAOGUANG LI, Erin Lipp, John Maurer, Weimin Wang, Susan Leonard, Michele Jay-Russell, George Vellidis, Mark Mammel, Huanli Liu, Christopher Grim, U.S. Food and Drug Administration, Laurel, MD, USA

P2-221 Genotypic and Phenotypic Mechanisms of Biofilm Formation by Emetic Toxin-producing *Bacillus cereus* Strains — EUN-JI PARK, Mohammad Shakhawat Hussain, Shuai Wei, Deog-Hwan Oh, Kangwon National University, Chuncheon, South Korea

P2-222 Rapid Discovery of an Emerging Contamination Event in Nut Butter Using Whole Genome Sequencing — MARC ALLARD, Errol Strain, James Pettengill, David Melka, William Correll, Leslie Hintz, Andrea Ottesen, Dumitru Macarisin, Rebecca L. Bell, Jie Zheng, Maria Hoffmann, Narjol Gonzalez-Escalona, Eric Stevens, Ruth Timme, Sandra Tallent, Eric Brown, U.S. Food and Drug Administration, College Park, MD, USA

P2-223 Genometrakr Proficiency Testing for Foodborne Pathogen Surveillance — RUTH TIMME, Hugh Rand, Maria Sanchez Leon, Maria Hoffmann, Errol Strain, Marc Allard, Dwayne Roberson, Joseph Baugher, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA

P2-224 Comparative Genomic Analysis of *Salmonella enterica* subsp. *enterica* Serovar Senftenberg Isolates from Recurrent Outbreaks — JULIE HAENDIGES, Tyann Blessington, Jie Zheng, Gordon Davidson, Jesse Miller, Maria Hoffmann, NSF International, Ann Arbor, MI, USA

P2-225 Transcriptomic Analysis of *Listeria monocytogenes* Adaptation on Fresh-cut Produce — YAN QI, Shaoting Li, David A. Mann, Yingshu He, Wei Zhang, Xiangyu Deng, University of Georgia, Center for Food Safety, Griffin, GA, USA

P2-226 Mitochontrakr: Mitochondrial Genome Assemblies of Insects Commonly Known to Infest Foods — PADMINI RAMACHANDRAN, Andrea Ottesen, Monica Pava-Ripoll, U.S. Food and Drug Administration, College Park, MD, USA

P2-227 Anaerobic Physiological Pre-enrichment Improves *Salmonella* Yield from Naturally Contaminated Papayas and Allows Detection and Subtyping Using Metagenomics — PADMINI RAMACHANDRAN, Elizabeth Reed, Karen Jarvis, Christopher Grim, Christina Ferreira, Jie Zheng, Hua Wang, Andrew Jacobson, Rebecca L. Bell, Oluwaseun Agbaje, Eric Brown, Thomas Hammack, Sandra Tallent, Steven Musser, Errol Strain, Andrea Ottesen, Rachel Binet, April Hill, U.S. Food and Drug Administration, College Park, MD, USA

P2-228 Genetic Context of Antimicrobial-resistant *Escherichia coli* at the Livestock-Wildlife Interface — JEFFREY CHANDLER, Nicolas Blouin, James Bono, Alan Franklin, Lawrence Goodridge, Jeff Root, Susan Shriner, Bledar Bisha, U.S. Department of Agriculture-APHIS-WS-NWRC, Fort Collins, CO, USA

P2-229 Identification of a New Shiga Toxin-producing *Escherichia coli* O26:H11 *Stx*2 Single Nucleotide Polymorphism Clonal Complex in the United States — JAMES BONO, Nancy Strockbine, USDA ARS U.S. Meat Animal Research Center, Clay Center, NE, USA

P2-230 Comparative Analysis of Genome and Methylome of a Multidrug-resistant *Campylobacter jejuni* strain YH002 from Retail Beef Liver — Sandeep Ghatak, YIPING HE, Sue Reed, Terence Strobaugh, Peter Irwin, USDA, Agricultural Research Service, Eastern Regional Research Center, Wyndmoor, PA, USA

P2-231 A Comparison of In Silico Methods to Serotype *Salmonella* enterica Isolates from Food and Agricultural Environments — ANNA COLAVECCHIO, Sebastien Joseph, Zeyan Zhong, Yella Zahirovich-Jovich, Shannon Coleman, Jeffrey Chandler, Bledar Bisha, Alma Perez-Mendez, Rachel McEgan, Michelle Danyluk, Kally Probasco, Douglas Marshall, Julie Jeukens, Luca Freschi, Jean-Guillaume Emond Rheault, Jeremie Hame, McGill University, Ste-Anne-de-Bellevue, QC, Canada

Blue Text – Developing Scientist Competitor Green Text – Undergraduate Student Competitor

Notes

WEDNESDAY POSTERS
9:00 AM – 3:00 PM

P3 POSTER SESSION 3

General Microbiology
Laboratory and Detection Methods
Modeling and Risk Assessment
Packaging
Dairy
Antimicrobials

Salt Palace Convention Center, Hall BC

P3-01 through P3-104 – Authors present 9:00 a.m. – 11:00 a.m.

P3-105 and above – Authors present 1:00 p.m. – 3:00 p.m.

General Microbiology

P3-01 Phenotypic and Genotypic Detection of Methicillin Heat-resistant *Staphylococcus aureus* in Pasteurized Camel Milk Distributed in Saudi Arabia — MOHAMMED ALAMRI, Hany Yehia, King Saud University, Riyadh, Saudi Arabia

P3-02 Evidence of *Bacillus cereus* Spores as the Target Pathogen in Thermally Processed Extended Shelf-life Refrigerated Foods — TRAVIS MORRISSEY, Viviana Aguilar, N. Rukma Reddy, Guy Skinner, Kristin M. Schill, U.S. Food and Drug Administration, Bedford Park, IL, USA

P3-03 Survival of *Escherichia coli* O157:H7 in Spent Sprout Irrigation Water — WILLIS FEDIO, Ruben Zapata, Lyssa White, Tong-Jen Fu, New Mexico State University, Las Cruces, NM, USA

P3-04 Antibiogram and Phylogenetic Relatedness of Non-O157 Shiga Toxin-producing — June Bong Lee, JANG WON YOON, Kangwon National University, Chuncheon, South Korea

P3-05 Identification and Characterization of Two Novel Staphylococcal Enterotoxins — Dao-Feng Zhang, YAN CUI, Xianming Shi, Shanghai Jiao Tong University, Shanghai, China

P3-06 Microbiological Growth Assessment of *Staphylococcus aureus* and *Bacillus cereus* in Biscuit Dough Systems Using Simulated Manufacturing Conditions — ASHLEY CUNNINGHAM, Balasubrahmanyam Kottapalli, Nancy Dobmeier, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA

P3-07 *Clostridium perfringens* Has New Roles Other Than Its Well-known Role in Foodborne Illness — HEEYOUNG LEE, Kyoung-Hee Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-08 Genetic Characterization of 60 Proteolytic *Clostridium botulinum* Strains Using Pulsed-field Gel Electrophoresis and High-throughput Sequencing — KRISTIN M. SCHILL, Melissa Widel, Yun Wang, Guy Skinner, N. Rukma Reddy, Travis Morrissey, Behzad Imanian, U.S. Food and Drug Administration, Bedford Park, IL, USA

P3-09 Genetic Characterization of 15 Nonproteolytic *Clostridium botulinum* Type B and E Strains Using Pulsed-field Gel Electrophoresis and High-throughput Sequencing — KRISTIN M. SCHILL, Melissa Widel, Yun Wang, Guy Skinner, N. Rukma Reddy, Travis Morrissey, Behzad Imanian, U.S. Food and Drug Administration, Bedford Park, IL, USA

P3-10 Transcriptomic Analysis of Arginine-induced Botulinum Neurotoxin Repression in *Clostridium botulinum* Strain ATCC3502 Using RNA Sequencing — KRISTIN M. SCHILL, Chase Fredrick, Marite Bradshaw, Shaoting Li, Xiangyu Deng, Melissa Widel, Yun Wang, Guy Skinner, N. Rukma Reddy, Travis Morrissey, Eric Johnson, U.S. Food and Drug Administration, Bedford Park, IL, USA

P3-11 Validation of the 3M Petrifilm Rapid Yeast and Mold Count Plate for the Enumeration of Yeast and Mold in a Variety of Food in Canada — ANA LOZANO, Virendra Gohil, Fariha Houssain, Christian Blyth, 3M Canada Corporation, London, ON, Canada

P3-12 Comparing the Lytic Activity and Genetic Makeup of Bacteriophages Targeting Shiga Toxin-producing — TONY KOUNTOUPIS, Pushpinder Kaur Litt, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

P3-13 Extremely Heat-resistant *Escherichia coli* among Cattle and Beef — MICK BOSILEVAC, U.S. Department of Agriculture–ARS, Clay Center, NE, USA

P3-14 A Comparison of the Prevalence of Antibiotic-resistant Bacteria Found in Ground Beef from Conventionally and Naturally Raised Cattle — KEVIN THOMAS, Margaret Weinroth, Amit Vikram, John Schmidt, Terrance Arthur, Tommy Wheeler, Jennifer Parker, Jessica Metcalf, Dale Woerner, Robert Delmore, Hua Yang, Paul Morley, Keith Belk, Department of Animal Sciences - Colorado State University, Fort Collins, CO, USA

P3-15 A Novel Role of Foodborne *Clostridium difficile* in Intestine — SOOMIN LEE, Kyoung-Hee Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-16 Survival of *Salmonell*a and *Escherichia coli* O121 in Flour during 270 Days of Storage and Evaluation of Storage Time on Heat Resistance in Flour and Muffin Batter — MINTO MICHAEL, Jennifer Acuff, Keyla Lopez, Daniel Vega, Harshavardhan Thippareddi, Lakshmikantha Channaiah, Randall Phebus, Kansas State University, Manhattan, KS, USA

P3-17 Validation of Simulated Commercial Baking of Cheesecake to Control *Salmonella* — DANIEL VEGA, Minto Michael, Jennifer Acuff, Lakshmikantha Channaiah, Harshavardhan Thippareddi, George Milliken, Randall Phebus, Kansas State University, Manhattan, KS, USA

P3-18 Evaluation of Pesticide Residues on *Beta vulgaris* spp., *Brassica oleracea* var. *capitata,* and *Solanum tuberosum* in Bloemfontein, South Africa — NTHABISENG MOTSHABI, Ntsoaki Malebo, Zenzile Khetsha, Gaofetoge Setlhare, Author, Bloemfontein, South Africa

P3-19 Transmission of Human Enteric Pathogens from Artificially Inoculated Flowers to Vegetable Sprouts/Seedlings Developed Via Contaminated Seeds — DA LIU, Yue Cui, Ronald R. Walcott, Viktor Tishchenko, Jinru Chen, University of Georgia, Department of Food Science and Technology, Griffin, GA, USA

P3-20 Effect of Routine Sanitation and Surface Material on the Shift in Microbial Communities in Fresh Produce Processing Environments — GANYU GU, Andrea Ottesen, Samantha Bolten, Lan Wang, Yaguang Luo, Steve Rideout, Shuxia Lyu, Eric Brown, Xiangwu Nou, Virginia Tech, Painter, VA, USA

P3-21 Dynamics of Microbial Communities on Spinach Irrigated by Ground Water, Reclaimed Water, and Roof-harvest Water — GANYU GU, Hsinbai Yin, Andrea Ottesen, Samantha Bolten, Jitu Patel, Steve Rideout, Xiangwu Nou, Virginia Tech, Painter, VA, USA

P3-22 Association of Tulane Virus with Bacterial Cell Components in Suspension — Giselle Almeida, KRISTEN GIBSON, University of Arkansas, Fayetteville, AR, USA

P3-23 Thermal Resistance of *Listeria monocytogenes* in Low-moisture Foods Using a Dry Inoculation Procedure — AI KATAOKA, Bradley Taylor, Elena Enache, Richard Podolak, Adam Quinn, Grocery Manufacturers Association, Washington, D.C., USA

P3-24 Genetic Determinants of *Salmonella enterica* Critical for Biofilm Formation on Abiotic Surfaces and Attachment to Vegetable Seeds — JINRU CHEN, Yin Wang, University of Georgia, Department of Food Science and Technology, Griffin, GA, USA

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P3-25 Effects of Different Moisture and Temperature on *Salmonella* Survival in Poultry Fat — TAYLOR KUFAHL, Gabriela Magossi, Austin McDaniel, Umut Yucel, Cassandra Jones, Valentina Trinetta, Food Science Institute - KSU, Manhattan, KS, USA

P3-26 Evaluation of Whole Genome Sequencing Web-based Methods and Bead-based Molecular Methods for the Serotyping of *Salmonella* Isolated from Food and Environmental Samples — KAYLEIGH MACMASTER, Melissa Nucci, Shauna Madson, Gail Wagley, Karen Jinneman, Michelle Moore, Food and Drug Administration, Bothell, WA, USA

P3-27 Synergistic Antimicrobial Efficacy of Essential Oils against *Escherichia coli* O157:H7 and Their Application Potential in Lettuce — Wenqian Yuan, Teo Hui Min Constance, HYUN-GYUN YUK, Korea National University of Transportation, Chungju, South Korea

P3-28 Survival of *Listeria monocytogenes* in Dual-species Biofilms with *Pseudomonas fluorescens* at Different Colonization Sequences during Desiccation and Disinfection — Xinyi Pang, HYUN-GYUN YUK, Korea National University of Transportation, Chungju, South Korea

P3-29 Antimicrobial Activity of 405-Nm Light-emitting Diode in the Presence of Riboflavin against *Listeria monocytogenes* on the Surface of Smoked Salmon — MIN-JEONG KIM, Da-Min Jeong, Hyun-Gyun Yuk, Korea Food Research Institute, Wanju-gun, South Korea

P3-30 Ultrasound-induced Bacterial Cell Death Exhibits Physical Disruption and Biochemical Apoptosis — KAIDI WANG, Jiao Li, Tian Ding, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

P3-31 Detection of *Salmonella* from Manure and Soil Samples Collected from Multiple Commodity Farms — Nicole Addy, Tiffany Hewitt, Laura Ewing, JUNIA JEAN-GILLES BEAUBRUN, U.S. Food and Drug Administration, Laurel, MD, USA

P3-32 Utilizing Rhamnose as the Primary Carbohydrate in Buffered *Listeria* Enrichment Broth Increases Post-enrichment *Listeria monocytogenes* Populations in Some Food Matrices — RONALD SMILEY, Anthony Hitchins, U.S. Food and Drug Administration/ORA/Arkansas Laboratory, Jefferson, AR, USA

P3-33 Effect of Hydrophobicity and Surface Charge of Abiotic Surfaces on Dynamics of Initial Phases of Bacterial Attachment — Jun Kyun Oh, YAGMUR YEGIN, Thomas M. Taylor, Alejandro Castillo, Luis Cisneros-Zevallos, Mustafa Akbulut, Texas A&M University, College Station, TX, USA

P3-34 Biofilms Assessment of *Escherichia coli* and *Salmonella* Isolates from Poultry Farms in Ilorin, Kwara State, Nigeria — AHMAD AL-MUSTAPHA, Ibrahim, Victoria Adetunji, University of Ibadan-Nigeria, Ibadan, Nigeria

P3-35 *Bacillus thuringiensis*: Navigating the Crossroads between Sustainable Agriculture and Food Safety — DANIEL ZOMMICK, Valent Biosciences LLC, Libertyville, IL, USA

P3-36 Characterization of Culturable Bacterial Communities on Romaine Lettuce Leaves: Application of a New Optical Scattering Technology — DIANA VANESSA SARRIA ZUNIGA, Euiwon Bae, Amanda Deering, M. Catherine Aime, Robert Pruitt, Purdue University, West Lafayette, IN, USA

P3-37 Nutrient Starvation Enhances the Resistance of *Listeria innocua* to Atmospheric Cold Plasma and Decreases the Extent of Sublethal Injury in Survivors — Rkia Moutiq, AUBREY MENDONCA, Shashi Pankaj, Zifan Wan, William Colonna, Eliseo De Leon, Kevin Keener, Iowa State University, Ames, IA, USA

Laboratory and Detection Methods

P3-38 Rapid Detection of *Listeria monocytogenes* in Natural Cheese and Meat Products by Loop-mediated Isothermal Amplification Bioluminescent Assay — TETSUYA MORI, Kanae Kishino, Shoko Saito, Takatoshi Moriyama, Shintaro Wada, Toyohiko Nanba, Takeshi Ito, Incorporated Foundation Tokyo Kenbikyo-in, Tokyo, Japan

P3-39 Performance Evaluation of a Loop-mediated Isothermal Amplification Bioluminescent Assay for Rapid Detection of *Salmonella* spp. in Brazilian Poultry Matrices — VANESSA TSUHAKO, Sandra Heidtmann, Sedenir Conrado, Alice Sulchinski, Luciana Almeida, Marciana Provense, Liliam Enderle, Camila Plieski, Mirian Rech, Rosleine Magnani, Cátia Bauer, Samara Trentin, Daniel Tasca, Raj Rajagopal, 3M Brasil, Sumaré, Brazil

P3-40 Performance of Rapid Enumeration Methods for Lactic Acid Bacteria and Yeast and Mold in Sauces and High-fat Food Products from Brazil — VANESSA TSUHAKO, Reziane Reichert, Bruna Russo, 3M Brasil, Sumaré, Brazil

P3-41 Confirmation and Identification of *Salmonella* spp.*, Cronobacter* spp., and Other Gram-negative Organisms by the Matrix-assisted Laser Desorption Ionization Biotyper Method: Collaborative Study — PATRICK BIRD, Benjamin Bastin, Erin Crowley, James Agin, David Goins, Daniele Sohier, Gongyi Shi, Markus Timke, Markus Kostrzewa, Q Laboratories, Inc., Cincinnati, OH, USA

P3-42 Confirmation and Identification of *Listeria monocytogenes, Listeria* spp., and Other Gram-positive Organisms by the Matrix Assisted Laser Desorption Ionization Biotyper Method: Collaborative Study — PATRICK BIRD, Benjamin Bastin, Erin Crowley, James Agin, David Goins, Daniele Sohier, Gongyi Shi, Markus Timke, Markus Kostrzewa, Marian Awad, Q Laboratories, Inc., Cincinnati, OH, USA

P3-43 Independent Evaluation of a Sturdy Polyurethane Sampling Sponge Tip for Bacterial Recovery from Non-porous Food Contact Surfaces — PATRICK BIRD, Joe Benzinger, Erin Crowley, James Agin, David Goins, Tony Gonzalez, Q Laboratories, Inc., Cincinnati, OH, USA

P3-44 Application of Matrix-assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry for Rapid and Reliable Identification of Foodborne Bacteria from Chromogenics — Benjamin Bastin, Yannick Bichot, PATRICK BIRD, Erin Crowley, Markus Kostrzewa, Sophie Pierre, Daniele Sohier, Markus Timke, Q Laboratories, Inc., Cincinnati, OH, USA

P3-45 AOAC PTM Validation of the Clear *Salmonella* Detection and Identification Kit in Select Foods and Environmental Surfaces Using Next Generation Sequencing Technology — PATRICK BIRD, Benjamin Bastin, Joe Benzinger, Erin Crowley, James Agin, David Goins, Ramin Khaksar, Christopher Haney, Q Laboratories, Inc., Cincinnati, OH, USA

P3-46 Pathogen Detection by Loop-mediated Amplification: Is Inhibition a Concern? — MEGAN S. BROWN, Josephine D. Greve, J. David Legan, Covance Food Solutions, Madison, WI, USA

P3-47 Evaluation of Loop-mediated Isothermal Amplification Bioluminescent Technology for the Detection of *Listeria monocytogenes* and *Salmonella* in Cooked Sausage — GUSTAVO GONZÁLEZ-GONZÁLEZ, Lucila Trigueros-Díaz, María Cristina Luquin-Rosas, María del Carmen Tinajero-Arriola, 3M Food Safety Mexico, Guadalajara, Mexico

P3-48 Rapid Detection of *Campylobacter* in Meat Matrices and Environmental Samples Utilizing a Ready-to-Use (RTU) Enrichment Broth and Loop Mediated Isothermal Amplification (LAMP)-Bioluminescent Detection. — Christina Barnes, Neil Percy, Cynthia Zook, Gabriela Lopez Velasco, RAJ RAJAGOPAL, 3M Food Safety, St. Paul, MN, USA

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P3-49 Rapid Detection of *Salmonella* spp. in Poultry-related Matrices Using a Loop-mediated Isothermal Amplification Bioluminescent Assay — Jerri Lynn Pickett, Melissa Sisemore, Jamie Casimir, Gabriela Lopez Velasco, John David, RAJ RAJAGOPAL, 3M Food Safety, St. Paul, MN, USA

P3-50 Comparative Study on the Detection of *Cronobacter* spp. Using Loop-Mediated Isothermal Amplification Bioluminescent Detection in a Variety of Dairy Food Matrices — RAJ RAJAGOPAL, Gabriela Stancanelli, Luciana Maiorano, 3M Argentina, Buenos Aires, Argentina

P3-51 Performance Evaluation of Loop-mediated Isothermal Amplification Bioluminescent Assay for Rapid Detection of *Salmonella* spp. and *Listeria monocytogenes* in Quinoa — ANYI GUTIERREZ-STERLING, Vanezza Correa, Luz López, Rosita Saucedo, 3M FSD ANDEAN, Lima, Peru

P3-52 Design of a Novel Loop-mediated Isothermal Amplification Assay for Detecting *Salmonella* Typhimurium — LIJUN HU, Li Ma, Thomas Hammack, Eric Brown, Guodong Zhang, U.S. Food and Drug Administration, College Park, MD, USA

P3-53 Co-Extraction and Quantification of DNA from Enteric Pathogens in Surface Water Samples from Watersheds in California — MICHAEL COOLEY, Diana Carychao, Lisa Gorski, U.S. Department of Agriculture – ARS, WRRC, Albany, CA, USA

P3-54 Evaluation of a Shorter Protocol of the Pall Genedisc® Shiga Toxin-producing *Escherichia coli* Top 7 Test System for Same Day Release of Raw Ground Beef Samples — Florine Leroux, Isabelle Billet, Bernard Collin, SYLVIE HALLIER-SOULIER, Pall Corporation, Bruz, France

P3-55 Performance Assessment of the Thermo Scientific Rapidfinder *Salmonella* spp., *Salmonella* Typhimurium, and *Salmonella* Enteritidis Flex Kit with Poultry House Primary Production Samples — David Crabtree, KEVIN FOTH, Thermo Fisher Scientific, Lenexa, KS, USA

P3-56 Identification of *Campylobacter jejuni* and *Campylobacter coli* Isolates Recovered from Poultry and Environmental Samples by Matrix-assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry and rRNA Sequence Analysis — IRSHAD SULAIMAN, Ying-Hsin Hsieh, Steven Simpson, Khalil Kerdahi, U.S. Food and Drug Administration, Atlanta, GA, USA

P3-57 Comparison of an Automated Most Probable Number Method with Direct Colony Count Methods for the Enumeration of Total Viable Count, Total Coliforms, *Bacillus cereus*, *Staphylococcus aureus*, and Yeast and Mold in Various Processed Food Products — KYUNG YOON KWON, Ji Hye Nam, Seung Wook Seo, Kwang Yong Ko, CJ Cheiljedang, Suwon, South Korea

P3-58 Isolation, Characterization, and Immunological Reaction of *Proteus mirabilis* Isolates from Broilers — HUNG-YUEH YEH, J. Eric Line, Arthur Hinton, U.S. Department of Agriculture – ARS PMSPRU, Athens, GA, USA

P3-59 Development of a Loop-mediated Isothermal Amplification Method for Rapid *Campylobacter jejuni* Detection — HUNG-YUEH YEH, Arife Ezgi Telli, U.S. Department of Agriculture – ARS PMSPRU, Athens, GA, USA

P3-60 Method Verification of Dehydrated Film Media for Quantification of Microbial Quality Indicators in Egg Products — ANNIE LUNDQUIST, 3M, St. Paul, MN, USA

P3-61 Loop-mediated Isothermal Amplification Bioluminescent Assay for Rapid Detection of *Cronobacter* spp. in Powdered Infant Formula — Nicole Valenzuela Riffo, JULIO PARRA FLORES, Fabiola Cerda Leal, Laboratorio de Epidemiología y Microbiología Molecular, Universidad del Bio Bio, Chillán, Chile

P3-62 Comparison of Methods for the Enumeration of Lactic Acid Bacteria in Ready-to-Eat Meat and Sauce Matrices — Jerri Lynn Pickett, Melissa Sisemore, Jamie Casimir, CARI LINGLE, John David, 3M Food Safety, St. Paul, MN, USA

P3-63 Comparison of Sensitivity by Three Methods for Counting Coliforms and *Escherichia coli* in Cheese — DIANA HUALPA, Eliana Baculima, Cecilia Romero, Miguel Meneses, Universidad Técnica Particular de Loja, Loja, Ecuador

P3-64 Improved Detection and Isolation of *Listeria monocytogenes* from Environmental Samples to Support Outbreak Investigations in New York State — DANIELLE WROBLEWSKI, Charles MacGowan, Ashley Cukrovany, Amy Saylors, Michelle Dickinson, Lisa Thompson, Samantha Wirth, Jaclyn Carey, William Wolfgang, Deb Baker, Nellie Dumas, Kim Musser, Lisa Mingle, NYSDOH-Wadsworth Center, Albany, NY, USA

P3-65 Effect of Shipping Time, Temperature, and Transport Media on Recovery of *Listeria monocytogenes* from Environmental Swabs — YADWINDER SINGH RANA, Geethanjali Vijayakumar, Kaiping Deng, Diana Stewart, Illinois Instituite of Technology, Bedford Park, IL, USA

P3-66 Improve Workflow Flexibility with up to 72-Hour Preenrichment Hold at 2 to 8°C with RapidChek *Listeria* NextDay Pur-Blue DUO Samplers for Environmental *Listeria*Testing — LOIS FLECK, Romer Labs, Newark, DE, USA

P3-67 Detection of Low Levels of *Salmonella* and *Escherichia coli* O157 in Compost Using the RapidChek Select *Salmonella* and RapidChek *E. coli* O157 (Including H7) Test Methods — LOIS FLECK, Romer Labs, Newark, DE, USA

P3-68 Robustness Study of a Hermetically Sealed and Permanently Locked Detection Tube for Pathogen Assays in a Food Production Environment — JOHN BODNER, Michael Toribio, Nevin Perera, Holly Urquhart, Takuya Kurimoto, Kiyoshi Yamaki, CERTUS Food Safety, Chicago, IL, USA

P3-69 Bio-contained, Real-time Detection of Growing Environmental *Listeria* in the Presence of a Large Foam Collection Swab — JOHN BODNER, Nevin Perera, Holly Urquhart, Erin Carruthers, CERTUS Food Safety, Chicago, IL, USA

P3-70 Application of Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry for the Monitoring of *Staphylococcus* Strain Isolated from Foods in Korea — HYUN-JOONG KIM, Eiseul Kim, Hae-Yeong Kim, Kyung Hee University, Yongin, South Korea

P3-71 Isolation of *Bifidobacterium* Strain Characterizing the Utilization of Resistant Starch — HYUN-JOONG KIM, Chang Joo Lee, Kyung Hee University, Yongin, South Korea

P3-72 Performance Assessment of the 3M Petrifilm Lactic Acid Bacteria Count Plate According to ISO 16140-2:2016 Standard in Food Products and Environmental Samples: Method Comparison and Interlaboratory Studies — NICOLAS NGUYEN VAN LONG, Cécile Bernez, Claudie Le Doeuff, Sarah Peron, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France

P3-73 Performance Assessment of the GENE-up *Cronobacter* spp. According to ISO 16140-2 (2016) Standard in Infant Formula with and without Probiotics — NICOLAS NGUYEN VAN LONG, Justine Baguet, Florian Quero, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France

P3-74 Performance Assessment of the 3M Molecular Detection Assay 2 – *Cronobacter* According to ISO 16140-2 (2016) Standard in Infant Formula, Infant Cereals, Raw Materials and Environmental Samples — NICOLAS NGUYEN VAN LONG, Claudie Le Doeuff, Cécile Bernez, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France

P3-75 Evaluation of the bioMérieux GENE-up Real-time PCR Assay for the Detection of *Listeria* species in a Variety of Environmental Surfaces — Carlos Leon-Velarde, Saleema Saleh-Lakha, NATHAN LARSON, Zheng Wu, Shu Chen, Stephanie Bonneau, Ron Johnson, Stan Bailey, AFL, University of Guelph, Guelph, ON, Canada

P3-76 Evaluation of Sampling Devices to Identify an Environmental Swabbing Protocol to Detect Genetically Modified Organisms on Stainless Steel Surfaces — JIAOJIE ZHENG, Sarita Raengpradub, Timothy Freier, Merieux NutriSciences, Crete, IL, USA

P3-77 Validation of the RapidChek *Listeria monocytogenes* Test System for the Detection of *Listeria monocytogenes* in Foods and on Environmental Surfaces — GREGORY JUCK, Vera Gonzalez, Ann-Christine Allen, Meredith Sutzko, Kody Seward, Mark Muldoon, Romer Labs, Inc., Newark, DE, USA

P3-78 Colorimetric Detection of *Cronobacter sakazakii* in Artificially Contaminated Powdered Infant Formula Using Microfluidic Paper-based Analytical Devices — CODI JO BROTEN, John B. Wydallis, Thomas Reilly, III, Bledar Bisha, University of Wyoming, Laramie, WY, USA

P3-79 Detection of *Listeria* spp. from Environmental Surfaces without Enrichment — Lei Zhang, Lin Li, Andrew Laseck, Robert Donofrio, PREETHA BISWAS, Neogen Corporation, Lansing, MI, USA

P3-80 Rapid Detection of *Salmonella* in Infant Formula and Infant Cereals Compared to ISO 6579 — ANDREW LIENAU, Philip Feldsine, Florian Quero, Justine Baguet, Maryse Rannou, Lisa John, MilliporeSigma, Bellevue, WA, USA

P3-81 Comparative Validation Study to Demonstrate the Equivalence of an Alternate Next-day Enrichment Protocol for VIP Gold for *Salmonella* Method to Culture Methods for the Detection of *Salmonella* in Selected Foods and Environmental Surfaces — DAVID KERR, George Shen, Andrew Lienau, Mandeep Kaur, Amy Immermann, Philip Feldsine, Lisa John, MilliporeSigma, Bellevue, WA, USA

P3-82 Performance Evaluation of a Real-time PCR for the Simultaneous Detection of *Salmonella* and STECs in Co-enriched and Wet Pooled Green Leafy Produce— VIKRANT DUTTA, Peter Ladell, John Mills, Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA

P3-83 Performance Evaluation of a Real-time PCR for the Detection of *Cronobacter* spp. in Powdered Infant Formula — VIKRANT DUTTA, Peter Ladell, Nikki Palen, John Mills, Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA

P3-84 Key Role of Enrichment Broth for the Detection of Sublethally Injured *Listeria* in Environmental Samples — SERGIY OLISHEVSKYY, Carolina Mejia-Wagner, Elva De la Rosa, Alex Eyraud, Melissa Buzinhani, Michael Giuffre, FoodChek Laboratories Inc., Saint-Hyacinthe, QC, Canada

P3-85 Analyzing Food Integrity Using Paramagnetic Particles — CHRIS MORELAND, Promega, Madison, WI, USA

P3-86 Validation of a Lateral Flow Device for the Detection of Ricin in Foods — AMIE MINOR, Christian Robinson, Zachary Kuhl, Justin Ferrell, Brenda Keavey, West Virginia Department of Agriculture, Charleston, WV, USA

P3-87 Inactivation of *Salmonella* on Fresh Produce with a Water-assisted Ultraviolet System in Combination with Chlorine and Peroxyacetic Acid — RUNZE HUANG, Danielle de Vries, Haiqiang Chen, University of Delaware, Newark, DE, USA

P3-88 Detection of Viable but Non-culturable State of Enteric Bacterial Pathogens in Fresh Produce — LU HAN, Lina Ma, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

P3-89 Using Whole Genome Sequencing for Detection of *Bacillus cereus* Toxin Genes in Food — Angela Nguyen, SANDRA TALLENT, U.S. Food and Drug Administration, College Park, MD, USA

P3-90 Comparison between Real-time PCR and Enzyme-linked Immunosorbent Assay for the Detection and Quantitation of Crustacean Allergens — SARAH STADIG, Anne Eischeid, Prasad Rallabhandi, U.S. Food and Drug Administration, College Park, MD, USA

P3-91 Relative Effectiveness of Lactose Broth and Selected Buffered Preenrichment Media for the Detection of *Salmonella* in Artificially Contaminated Whole Almonds and Creamy Peanut Butter — ANDREW JACOBSON, Hua Wang, Anna Laasri, Lanlan Yin, James Smiley, Melanie Butler, Thomas Hammack, U.S. Food and Drug Administration, College Park, MD, USA

P3-92 A Comparison of Two Chromogenic Agars for *Vibrio* Growth — JOEY MARCHANT-TAMBONE, Joshua Dickens, Jessica Jones, FDA Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA

P3-93 A Label-free Quartz Crystal Microbalance Sensor for Rapid Detection of Avian Influenza Virus Based on Polydopamine Surface-imprinted Recognition Polymer — RONGHUI WANG, Xinge Xi, Jingyi Chen, Yanbin Li, University of Arkansas, Department of Biological and Agricultural Engineering, Fayetteville, AR, USA

P3-94 Application of Surface Plasmon Resonance Biosensor for Detection of *Salmonella* Typhimurium in Leafy Vegetables — DEVENDRA BHANDARI, Fur-Chi Chen, Tennessee State University, Nashville, TN, USA

P3-95 Detection of RNase Treated and Untreated Enteric Viruses in Shellfish Concentrates — RACHEL RODRIGUEZ, Trenton O'Neal, Jacquelina Woods, U.S. Food and Drug Administration, Dauphin Island, AL, USA

P3-96 Lytic, Tailed *Bacillus cereus*-specific Phage Suggests Its Novel Employment in a Ferromagnetoelastic Biosensor as Biorecognition Element — MIN-JEONG LEE, In Young Choi, Hae-Yeong Lee, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea

P3-97 Identification of Foodborne Pathogens in Shellfish Samples Using a New Generation Microarray Assay — Christine Yu, Sinead Keaveney, Hediye Cinar, Jayanthi Gangiredla, Zhihui Yang, Bill Dore, MICHAEL KULKA, U.S. Food and Drug Administration, Laurel, MD, USA

P3-98 Advanced Mapping of Pesticides on Biological Samples Using Surface-enhanced Raman Spectroscopy — TIANXI YANG, Lili He, University of Massachusetts-Amherst, Amherst, MA, USA

P3-99 Amplifying Weak Surface Enhanced Raman Scattering of Organochlorine Pesticides through a Facile Rolling Approach — YANQI QU, Lili He, University of Massachusetts-Amherst, Amherst, MA, USA

P3-100 Simultaneous Detection of Major Food Allergens Using Fluorescent Multiplex Array — STEPHANIE FILEP, Bryan Smith, Kristina Reid Black, Brian Murphy, Eva King, Martin Chapman, Indoor Biotechnologies, Inc., Charlottesville, VA, USA

P3-101 Comparing Quantitative MPN and PCR *Vibrio parahaemolyticus* Methods in Oyster Samples: A Six-year Study — SAMANTHA LINDEMANN, Robert Newkirk, Jodie Ulaszek, Hossein Daryaei, Ravinder Reddy, U.S. Food and Drug Administration, Summit-Argo, IL, USA

P3-102 Heat-Killing *Vibrio parahaemolyticus* Improves Its Immunoreactivity with a Commercial Antibody — SHUANG WU, Curtis Stumpf, Brian Bullard, Stephanie Kuzenko, Emily Rusnak, Gary Niehaus, Crystal Diagnostics Ltd., Rootstown, OH, USA

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P3-103 Specific Detection of *Listeria monocytogenes* at a Concentration of 10 Cells in 100 ml of Leafy Green Environmental Swab Eluate without Incubation — REED WALTER, Mark Byrne, Proteosense, Columbus, OH, USA

P3-104 Combatting *Cryptosporidium* in Raw Milk — AMY KAHLER, Mia Mattioli, Jennifer Murphy, Centers for Disease Control and Prevention, Division of Foodborne, Waterborne and Environmental Diseases, Atlanta, GA, USA

Modeling and Risk Assessment

P3-105 Predictive Model for Growth of *Bacillus cereus* during Cooling of Cooked Rice — VIJAY JUNEJA, Chase Golden, Abhinav Mishra, Timothy Mohr, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P3-106 The Semi-quantitative Rapid Detection Method of *Bacillus cereus* for Fresh-cut Lettuce and Baby Leafy Vegetables — YUKYUNG CHOI, Sujung Lee, Yewon Lee, Yujin Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-107 Using Reliability Analysis to Assess the Utility of Non-pathogenic Surrogates — FRANCISCO GARCÉS-VEGA, Bradley Marks, Michael James, Michigan State University, East Lansing, MI, USA

P3-108 Measuring and Modeling the Influence of Relative Humidity and Buffer Type on the Survival of *Enterobacter aerogenes* — MATTHEW IGO, Donald W. Schaffner, Rutgers University, Medford, NJ, USA

P3-109 Growth and No Growth Boundary of *Clostridium perfringens* in Cooked Beef — LIHAN HUANG, Cheng-An Hwang, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P3-110 An Agent-based Model for Norovirus Contamination of Berries by Infected Farm Workers — ROBYN MIRANDA, Donald W. Schaffner, Rutgers University, New Brunswick, NJ, USA

P3-111 Quantitative Risk Assessment of *Salmonella* spp. for Yellow Broiler Supply Chain in China — XINGNING XIAO, Wen Wang, Jianmin Zhang, Ming Liao, Yanbin Li, Guiling Yang, Hua Yang, Qiang Wang, Chase Rainwater, John Kent, Zhejiang University, College of Biosystems Engineering and Food Science, Hangzhou, China

P3-112 Predictive Modeling Using a Monte Carlo Simulation to Estimate the Probability of Bacterial Spore Survival — HIROKI ABE, Kento Koyama, Shuso Kawamura, Shigenobu Koseki, Hokkaido University, Sapporo, Japan

P3-113 Exposure Assessment of *Salmonella* in Street-vended Grilled Chicken Intestines — ABIGAIL ATIENZA, Ida Dalmacio, University of the Philippines Los Banos, Los Banos, Philippines

P3-114 Reinterpretation of the Mathematical Description of Variability in Bacterial Inactivation: A Stochastic Formulation and Its Application to the Time-to-Inactivation of Bacterial Populations — KENTO KOYAMA, Hiroki Abe, Shuso Kawamura, Shige Koseki, Hokkaido University, Sapporo, Japan

P3-115 A Method for Estimating the Pathogenic Microbial Risk Level Using Bayesian Inference — GA-RAM KIM, Yong-Soo Kim, Gyung-Jin Bahk, Kunsan National University, Gunsan, South Korea

P3-116 Development of Wireless Time-temperature Monitoring Sensors to Identify Temperature-abuse Conditions in Products That Support Growth of *Listeria monocytogenes* — PAULA DUARTE-GUEVARA, Xiaofan Jiang, Charilaos Mousoulis, Dimitrios Peroulis, Haley Oliver, Purdue University, West Lafayette, IN, USA

P3-117 Isolation of *Bacillus cereus* from Soft Soybean Curd and Developing a Dynamic Model to Describe Its Kinetic Behavior — HYEMIN OH, Joo-Sung Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-118 Growth and Survival of Pathogenic *Escherichia coli* in Jellied Mung Bean during Storage — HYEMIN OH, Joo-Sung Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-119 Growth of *Escherichia coli* on Diced Melon for Catering Service — HYEMIN OH, Joo-Sung Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-120 Modeling the Survival of *Salmonella* on Fresh Cucumbers under Different Storage Temperatures and Relative Humidity — JIIN JUNG, Donald W. Schaffner, Rutgers University, New Brunswick, NJ, USA

P3-121 Quantitative Microbial Risk Assessment of *Bacillus cereus* in Packaged Tofu — Mi jin Kwon, YUN JIN LEE, Hye Jin Moon, Ki Sun Yoon, Kyung Hee University, Seoul, South Korea

P3-122 Predictive Model of *Clostridium perfringens* Growth in Egg Products — SOO HWAN SUH, Won-Seok Choi, Na-Ry Son, Myeongkyo Jeong, Eun Jeong Heo, Sun Young Hwang, Chi Yeun Cheung, Yong-Hoon Kim, Mi-Gyeong Kim, Hyo-Sun Kwak, Jin-Hwan Hong, Ministry of Food and Drug Safety, Cheongju, South Korea

P3-123 Quantitative Microbial Risk Assessment of *Bacillus cereus* in Fermented Pastes — SEJEONG KIM, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-124 Hand Hygiene Interventions to Reduce Norovirus Contamination of Ready-to-Eat Fresh Produce during Produce Harvesting and Packing on Farms — JULIA SOBOLIK, Kira Newman, Lee-Ann Jaykus, Juan Leon, Emory University, Atlanta, GA, USA

P3-125 Risk Assessment of *Clostridium perfringens* in Korean Traditional Soy Sauce — YEWON LEE, Sejeong Kim, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-126 Quantification of Statistical Power for Surrogate-based Lethality Validation Studies — IAN HILDEBRANDT, Bradley Marks, Michigan State University, East Lansing, MI, USA

P3-127 Estimating the Effect of Retailer's Handling Practices and Socioeconomic Disparities on Food Safety Indicators at the Time of Purchase — Rossy Bueno Lopez, Marta Gozzi, Lynne McLandsborough, MARIA CORRADINI, University of Massachusetts, Amherst, MA, USA

P3-128 Using Food Safety and Inspection Service Data and a Prevalence-based Model to Modernize Hog Slaughter Inspection — DAVI LABARRE, Gurinder Saini, Berhanu Tameru, Lindsay Ward-Gokhale, Michelle Catlin, U.S. Department of Agriculture – FSIS, Washington, D.C., USA

P3-129 Mathematical Models to Describe the Kinetic Behavior of *Staphylococcus aureus* in Meat Jerky — JIMYEONG HA, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-130 Efficacy of Bacteriophages as Beef Trim Intervention Treatment against Shiga Toxin-producing *Escherichia coli* — JOYJIT SAHA, Ravirajsinh Jadeja, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

P3-131 Quantitative Microbial Risk Assessment Approach for Selecting Pathogen Control Strategies during Ground Beef Processing — JOYJIT SAHA, Ravirajsinh Jadeja, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

P3-132 Function Genomics Analysis of Next-Generation Sequencing Data Using Machine Learning Algorithms — WEN ZOU, Weizhong Zhao, Karvina Munshi, NCTR/FDA, Jefferson, AR, USA

Packaging

P3-133 Effect of Layer-by-Layer Antimicrobial Edible Coating for Shelf-life Extension of Shrimp (*Litopenaeus vannamei*) Stored at 4°C — JIN-HEE KIM, Mi-Jung Park, Hee-Jung Park, Se-Wook Oh, Kookmin University, Seoul, South Korea

P3-134 Shelf-life Extension of Pacific White Shrimp (*Litopenaeus vannamei*) Using Chitosan and ε-Polylysine during Cold Storage — MI-JUNG PARK, Jin-Hee Kim, Hee-Jung Park, Se-Wook Oh, Kookmin University, Seoul, South Korea

P3-135 Use of Lipid Nanoemulsion-doped Anti-fungal Packaging Films to Control Post-harvest Disease in Small Fruits — AUSTIN MCDANIEL, Bade Tonyali, Umut Yucel, Valentina Trinetta, Kansas State University, Food Science Institute, Manhattan, KS, USA

P3-136 Structure and Performance Investigation of Novel Barrier Coating Packaging Technologies for Microwave-assisted Thermal Sterilization — SHANNON MCGRAW, Christopher Oldham, Marek Hempel, Gregory Parsons, Danielle Froio-Blumsack, U.S. Army NSRDEC, Natick, MA, USA

Dairy

P3-137 Prevalence and Characteristics of Shiga-toxigenic *Escherichia coli* (STEC) Isolates in Raw Cow Milk from Agro-pastoral Farms in Ghana — JAMES OWUSU-KWARTENG, Fortune Akabanda, Addai-Mensah Donkor, Kwaku Tano-Debrah, University for Development Studies, Navrongo, Ghana

P3-138 Inhibitory Activity of Reduced pH on *Salmonella* Survival in Calf Milk Replacer — HANNAH PILCH, Robert Musser, Tom Earleywine, Charles Czuprynski, University of Wisconsin-Madison Department of Pathobiological Sciences, Madison, WI, USA

P3-139 Reduction of Surface-contaminated *Listeria monocytogenes* on Commercial Mozzarella Cheese by Electrostatic Spraying with the Probiotics *Lactobacillus salivarius* L28 and *Enterococcus faecium* J19 — DAVID CAMPOS, Angela Perdomo, Jorge Franco, Luis Jimenez, Kendra Nightingale, Mindy Brashears, Texas Tech University, Muleshoe, TX, USA

P3-140 Prevalence and Characteristics of Foodborne Pathogens in Farmstead Cheeses — JEEYEON LEE, Kyeong-a Jang, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-141 Survival of Foodborne Pathogens in Raw Milk Cheddar Cheese during Ripening — JEEYEON LEE, Kyeong-a Jang, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea

P3-142 Fate of *Listeria monocytogenes* during 90-day Aging of Gouda Cheese Prepared from Unpasteurized Milk — VIDYA NATARAJAN, Joelle K. Salazar, Lauren J. Gonsalves, Tanvi Mhetras, Chinmyee Sule, Arlette Shazer, Kristin M. Schill, Mary Lou Tortorello, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

P3-143 Population Dynamics of *Escherichia coli* O157:H7 during Unpasteurized Gouda Cheese Manufacture and Aging — LAUREN J. GONSALVES, Joelle K. Salazar, Arlette Shazer, Karl Reineke, Vidya Natarajan, Tanvi Mhetras, Chinmyee Sule, Kristin M. Schill, Mary Lou Tortorello, U.S. Food and Drug Administration, Bedford Park, IL, USA

P3-144 The Effect of Modified Atmosphere Packaging Conditions on Microbial Contaminants in Queso Fresco — STEPHANIE BROWN, Emily Forauer, Dennis D'Amico, University of Connecticut, Department of Animal Science, Storrs, CT, USA

P3-145 Surface Application of a Novel Glycolipid to Control *Listeria monocytogenes* on Queso Fresco — EMILY FORAUER, Stephanie Brown, Dennis D'Amico, University of Connecticut, Storrs, CT, USA

P3-146 High-pressure Pasteurization for Inactivation of Rifampin-resistant *Cronobacter sakazakii* in Reconstituted Infant Formula — MONICA HENRY, Abimbola Allison, Shahid Chowdhury, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA

P3-147 Growth of *Listeria monocytogenes* on the Surface of Camembert Cheese is Influenced by Timing of Contamination — Danton Batty, Lisbeth Meunier-Goddik, JOY WAITE-CUSIC, Oregon State University, Corvallis, OR, USA

P3-148 Comparative Recovery of *Listeria* spp. from Dairy Environmental Surfaces Using 3M and World Bioproducts Environmental Sponges and Standard Enrichment and Enumeration Methods — MARIE LIMOGES, Gina Frontino, Catherine Donnelly, University of Vermont, Burlington, VT, USA

P3-149 Exposure of *Bacillus cereus* Spores to Sublethal Stresses Prior to Spray Drying Increase Their Survival and Recovery in Milk Powder throughout a Storage Period of 180 Days — Verônica Ortiz Alvarenga, Fernanda Bovo Campagnollo, Rosicleia A. Silva, Miriam Dupas Hubinger, ANDERSON DE SOUZA SANT'ANA, University of Campinas, Campinas, Brazil

P3-150 Comparison of 3M Petrifilm Rapid Aerobic Count to Petrifilm Aerobic Count with a Bovine Raw Milk Matrix — MEGHAN PELTIER, Carl Franconi, Florida Department of Agriculture and Consumer Services, Tallahassee, FL, USA

P3-151 Microbial Quality of Unpasteurized Ruminant Milk for Retail Sale in Maine, 1997 to 2008 — Robson Machado, JENNIFER PERRY, University of Maine School of Food and Agriculture, Orono, ME, USA

P3-152 Assessment and Mitigation of Aflatoxin and Fumonisin Contamination in Animal Feeds and Aflatoxin M1 in Milk in Rwanda — KIZITO NISHIMWE, Erin Bowers, Jean de Dieu Ayabagabo, Richard Habimana, Samuel Mutiga, Dirk Maier, Iowa State University, Ames, IA, USA

Antimicrobials

P3-153 Neomycin Selects for Antibiotic Resistance Genes in the Cecal Microbiome of Commercial Turkey Poults — MORRINE OMOLO, David Baumler, Timothy Johnson, University of Minnesota, St. Paul, MN, USA

P3-154 Report of Macrolide Resistance Gene *Erm(B)* in *Campylobacter* in the United States — JESSICA CHEN, Kaitlin Tagg, Yoo Jin Joung, Christy Bennett, Louise Francois Watkins, Dana Eikmeier, Jason Folster, IHRC Inc., Atlanta, GA, USA

P3-155 Identification and Characterization of a Multidrug-resistant *Salmonella enterica* serotype Heidelberg Outbreak Associated with Dairy Cattle in the United States — Jason Folster, Jessica Chen, Kaitlin Tagg, CHRISTY BENNETT, Lousie Francois Watkins, Linda Schlater, Brenda Morningstar-Shaw, Kristina Lantz, Nicole Aulik, Donald Sockett, Lina Elbadawi, Kristin Gundlach, Ann Valley, Rachel Klos, Lauren Stevenson, Megin Nichols, Division of Foodborne, Waterborne, and Environmental Diseases, Centers for Disease Control and Prevention, Atlanta, GA, USA

P3-156 Transfer of Class 1 Integron-mediated Antibiotic-resistant Genes from *Salmonella* of Fly Origin to Susceptible *Escherichia coli* and *Salmonella* Strains — YUMIN XU, Jinru Chen, University of Georgia, Griffin, GA, USA

P3-157 Detection and Molecular Characterization of *Escherichia coli* O26 from Cattle Fecal Samples in the North-West Province of South Africa — WIHKOCHOMBOM BUMUNANG EMMANUEL, Collins Njie Ateba, Ajay Kumar, Tim A McAllister, Kim Stanford, Yan D Niu, North West University South Africa/Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre/Alberta Agriculture and Forestry, Lethbridge, AB, Canada, Lethbridge, AB, Canada

P3-158 Efficacy of Ferrous and Alkaline Activated Persulfate in Inactivating *Escherichia coli* O157:H7 — HANG QI, Qingguo Huang, Yen-Con Hung, University of Georgia, Griffin, GA, USA

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P3-159 Antibiotic Resistance Profile of *Salmonella* Isolated from Leafy Green Vegetables in Ghana — JOYCELYN K. QUANSAH, Jinru Chen, University of Georgia, Department of Food Science and Technology, Griffin, GA, USA

P3-160 Efficacy of Limonene Nano-Coatings on Postharvest Shelf Life of Strawberries — RAJIV DHITAL, Ruplal Choudhary, Southern Illinois University, Carbondale, IL, USA

P3-161 A Novel Peracetic Acid-based Meat Grinder Sanitation Process Optimization — SABRA BILLUPS, Conner McDaniel, Tony Kountoupis, Charley Rayfield, Joyjit Saha, Divya Jaroni, Ravirajsinh Jadeja, Oklahoma State University, Stillwater, OK, USA

P3-162 MICs of Eco-Friendly and Traditional Sanitizers against *Listeria monocytogenes* — CARA BOUCHER, Joy Waite-Cusic, David Stone, Jovana Kovacevic, Oregon State University, Portland, OR, USA

P3-163 Antibiotic Resistance Gene Profiles of *Escherichia coli* Isolated from Fresh Produce Sold at Informal Market in Tembisa, Gauteng Province, South Africa — GERMÁN VILLAMIZAR-RODRÍGUEZ, Stacey Duvenage, Tintswalo Baloyi, Erika du Plessis, Lise Korsten, University of Pretoria, Pretoria, South Africa

P3-164 Comparison of the Effectiveness of Antimicrobial Interventions on Reducing Antibiotic-resistant and Susceptible Beef-associated *Salmonella* — Yangjunna Zhang, Sapna Chitlapilly Dass, Tommy Wheeler, Norasak Kalchayanand, BING WANG, University of Nebraska-Lincoln, Lincoln, NE, USA

P3-165 Use of a Drip Flow Reactor to Evaluate Foodborne Pathogen Biofilm Formation and Interventions in Meat and Poultry Processing Environments — ILAN ARVELO, Catherine Wakeman, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA

P3-166 Microbial Profiling and Pathogen Inactivation by Copper-containing Coating Materials and Drains at Poultry and Pork Processing Facilities — ILAN ARVELO, Sergio Rocha, Patricia Landaida, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA

P3-167 Characterization of Antimicrobial-resistant Genes and Plasmids of *Salmonella* Enteritidis Isolated from Clinically Ill Children in Shanghai, China — Li Xu, XiuJuan Zhou, XIANMING SHI, Shanghai Jiao Tong University, Shanghai, China

P3-168 Withdrawn

P3-169 High Prevalence of Antibiotic Resistance Associated with Urban Agricultural Environment with the Potential of Horizontal Gene Transfer — ABDULLAH IBN MAFIZ, Yingshu He, Wei Zhang, Yifan Zhang, Wayne State University, Detroit, MI, USA

P3-170 Comparative Assessment of Antimicrobial Resistance in *Escherichia coli* isolated from Beef Production Systems and Human Sewage — EMELIA ADATOR, Claudia Narvaez, Rahat Zaheer, Tim A. McAllister, University of Manitoba, Winnipeg, MB, Canada

P3-171 Antimicrobial-resistance Profiling of Bacteriophage-insensitive *Salmonella enterica* Mutants — KAREN FONG, Siyun Wang, Food, Nutrition and Health, University of British Columbia, Vancouver, BC, Canada

P3-172 The Effect of Third Generation Cephalosporin Use on Antimicrobial Resistance in Dairy Farms in Korea — JAE HEE KIM, Kun Taek Park, Chung Wung Kim, Young Kyung Park, Sook Shin, Yong Ho Park, Seoul National University, Seoul, South Korea

P3-173 Prevalence and Antimicrobial Susceptibility of *Acinetobacter* spp. on Swine Farms in Korea — CHUNG WUNG KIM, Kun Taek Park, Jae Hee Kim, Young Kyung Park, Sook Shin, Yong Ho Park, Seoul National University, Seoul, South Korea

P3-174 Biofilm Formation of Wild-type and Pressure-stressed *Cronobacter sakazakii* and *Salmonella* Serovars and Their Sensitivity to Sodium Hypochlorite — ABIMBOLA ALLISON, Shahid Chowdhury, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA

P3-175 Antimicrobial Resistance Profiles of *Escherichia coli* from European Starlings (*Sturnus vulgaris*) Associated with Concentrated Animal Feeding Operations — JENNIFER ANDERS, Jeffrey Chandler, James Carlson, Jeffrey LeJeune, Lawrence Goodridge, Baolin Wang, Leslie Day, Anna Mangan, Dustin Reid, Shannon Coleman, Bledar Bisha, University of Wyoming, Laramie, WY, USA

P3-176 Low Levels of Antimicrobial Resistance among Indicator Bacteria Isolated from Wildlife Associated with Produce Fields — SULAIMAN ALJASIR, Jeffrey Chandler, Alan Franklin, Sarah Bevins, Kevin Bentler, Jeremy Ellis, Codi Jo Broten, Bledar Bisha, University of Wyoming, Laramie, WY, USA

P3-177 Antibiotic Susceptibility-resistance Profiles of Super-shed *Escherichia coli* O157:H7 — RAIES MIR, Terrance Arthur, Indira Kudva, National Animal Disease Center/Oak Ridge Institute for Science and Education, Ames, IA, USA

P3-178 Clonal Spread of Bla_{CMY-2}-producing *Salmonella* Heidelberg ST15 Isolated from Commercial Chicken Meat in Brazil — DANIEL MONTE, Andressa Mem, Louise Cerdeira, Monique Casas, Paula J. Fedorka-Cray, Nilton Lincopan, Mariza Landgraf, Department of Food and Experimental Nutrition, Food Research Center, Faculty of Pharmaceutical Sciences, University of São Paulo, São Paulo, Brazil

P3-179 Prevalence of Antimicrobial-resistant *Enterobacteriaceae* and Survival of *Salmonella* and *Escherichia coli* in Plant-based Milk — WINNIE MUKUNA, Agnes Kilonzo-Nthenge, Tennessee State University, Nashville, TN, USA

P3-180 Control of *Salmonella* spp. by Food Grade Antimicrobials Following Various Stressors — LUKE EDMUNDS, Daniel Unruh, Sara Gragg, Kansas State University, Olathe, KS, USA

P3-181 Validation of Electrostatic Antimicrobial Application on Surrogate-inoculated Poultry and Beef in a Continuous Flow System — HALEY DAVIS, Ifigenia Geornaras, Robert Delmore, Jennifer Martin, Dale Woerner, Bob Ogren, Elis Owens, Bruce Sebring, Keith Belk, Colorado State University, Fort Collins, CO, USA

P3-182 The Efficacy of Wash Water Antimicrobials in Inactivating MS2 Bacteriophage on Strawberries Prior to and after Refrigeration and Frozen Storage — LICHENG HUANG, Xin Luo, Jingwen Gao, Karl Matthews, Rutgers University, New Brunswick, NJ, USA

P3-183 Assessment of Combined Effect of Polysaccharide Gums and Antimicrobial Agents on Susceptibility and Protein Expression of Select Pathogens in Milk — BERNICE KARLTON-SENAYE, Sarah Adjei-Fremah, Mulumebet Worku, Leonard Williams, North Carolina A&T State University-Center of Postharvest Technologies (CEPHT), Kannapolis, NC, USA

P3-184 In Situ Generation of Chlorine Dioxide for Decontamination of Sprout Seeds — Jing Ni Tan, CHENG-AN HWANG, Lihan Huang, Vivian Chi-Hua Wu, Hsin-I Hsiao, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P3-185 Antimicrobial Properties of *Artemisia afra* against Bacteria Isolated from Bulk Tank Milk — Ntsoaki Malebo, TSHEGOFATSO NHABE, Student, Bloemfontein, South Africa

P3-186 Antimicrobial Activities of Gaseous Essential Oils against Xerophilic Mold (*Penicillium corylophilum*) — HYEGEUN JI, Hoikyung Kim, Jee-Hoon Ryu, Department of Biotechnology, College of Life Sciences and Biotechnology, Korea University, Seoul, South Korea

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P3-187 The Use of (Bacterio) Phage for *Listeria* Lethality on Frozen Ready-to-Eat Vegetables — Giovanni Eraclio, Joël van Mierlo, ROBIN PETERSON, Bert de Vegt, Micreos, Atlanta, GA, USA

P3-188 Genomic Characterization of a Novel *Aeromonas hydrophila*-Specific Phage and Confirmation of Its Lytic Activity for Use as a Biocontrol Agent — IN YOUNG CHOI, Sung Hyeok Park, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea

P3-189 Combination Effect of Four Essential Oils against *Escherichia coli* O157:H7, *Salmonella* Enteritidis, *Staphylococcus aureus,* and *Listeria monocytogenes* in Tryptic Soy Broth — HUAIQIONG CHEN, Leslie D. Thompson, Mindy Brashears, Texas Tech University, Lubbock, TX, USA

P3-190 Antimicrobial Activities of Natural Antimicrobial Agents in Organic Foods — SO-HYUN LEE, Jee-Hoon Ryu, Department of Biotechnology, College of Life Sciences and Biotechnology, Korea University, Seoul, South Korea

P3-191 Synergistic Lethal Effects between Gaseous Essential Oils in Inactivating *Listeria monocytogenes* in a Laboratory Medium and Radish Sprouts — YURIM CHO, Hoikyung Kim, Jee-Hoon Ryu, Department of Biotechnology, College of Life Sciences and Biotechnology, Korea University, Seoul, South Korea

P3-192 Antimicrobial Properties of High Molecular Weight Water Soluble Chitosan against Gram Negative and Gram Positive Foodborne Pathogens — NANCY RUBIO, Rita Quintero, Jose Fuentes, Marlene Janes, Witoon Prinyawiwatkul, Louisiana State University, Baton Rouge, LA, USA

P3-193 Antibiofilm Effect of Chitosan and Oligochitosans against Biofilm-forming Foodborne Bacterial Pathogens — MIN-CHUL JEONG, Eun-Hye Kang, Yu-Mi Jang, Seul-Ki Park, Won-Kyo Jung, Myung-Suk Lee, Young-Mog Kim, Pukyong National University, Busan, South Korea

P3-194 Evaluate the Effectiveness of Sodium Acid Sulfate to Reduce *Escherichia coli* O157:H7 from Chopped Bell Peppers — CONNER MCDANIEL, Sabra Billups, Divya Jaroni, Ravirajsinh Jadeja, Oklahoma State University, Stillwater, OK, USA

P3-195 Reduction of *Listeria monocytogenes* on the Surface of Commercial Brie Cheese by Electrostatic Spraying of Lactic Acid Bacteria (*Lactobacillus salivarius* L28 and *Enterococcus faecium* J19) — JORGE FRANCO, David Campos, Angela Perdomo, Luis Jimenez, Kendra Nightingale, Mindy Brashears, Texas Tech University, Lubbock, TX, USA

P3-196 Reduction of Foodborne Pathogens on Low-moisture Foods Using Gaseous Chlorine Dioxide — BHARGAVI RANE, David Bridges, Vivian Chi-Hua Wu, University of Maine, Orono, ME, USA

P3-197 Efficacy of Lauric Arginate and Cetylpyridinium Chloride Applied Electrostatically to Pre-rigor Veal Carcasses Followed by an Acidified Peracetic Acid Spray Chill Application to Control Shiga Toxin-producing *Escherichia coli* (STEC) — NICHOLAS SEVART, Daniel Vega, Karina Desiree, Minto Michael, Carla Schwan, Christopher Vahl, Randall Phebus, Kansas State University, Manhattan, KS, USA

P3-198 Investigating the Inactivation of *Salmonella enterica* on Shell Eggs Using Commercially Available Natural Antimicrobial Rinses — ALESCIA KING, Jealae Jackson, Armitra Jackson-Davis, Salam Khan, Alabama A&M University, Normal, AL, USA

P3-199 Evaluation of Antimicrobial Solutions, with and without a Surfactant, for Reducing Inoculated Bacterial Populations on Beef Trimmings, Chicken Wings, and Cantaloupes — BRIANNA BRITTON, Ifigenia Geornaras, Dale Woerner, Robert Delmore, Jennifer Martin, James Reagan, Keith Belk, Department of Animal Sciences, Colorado State University, Fort Collins, CO, USA

P3-200 Plant Extracts for Control of Norovirus — UCHENNA ILOGHALU, Janak Khatiwada, Leonard Williams, North Carolina A&T State University-CEPHT, Kannapolis, NC, USA

P3-201 Thyme Oil and Thyme Oil Hydrosol Coating as Alternative to Synthetic Fungicides against *Phyllosticta citricarpa* Post-harvest — BHEKI THAPELO MAGUNGA, Ntsoaki Malebo, Obiro Wokadala, Student, Bloemfontein, South Africa

P3-202 Potential Antimicrobial Combinations Controlling *Listeria monocytogenes* in Hot Dogs — AARON BODIE, Sun Ae Kim, Dana Dittoe, Laura Meyer, Carl Knueven, Steven Ricke, University of Arkansas, Fayetteville, AR, USA

P3-203 Replacement of Calcium Propionate in Bread with Natural Preservatives Based on Cultured Sugar and Natural Vinegar — JABIN OLDS, Joost Verheezen, Ricardo Moreira, Olav Sliekers, Corbion, Lenexa, KS, USA

P3-204 Filamentation in *Salmonella*: A Transitional Morphotype in Response to Stress — GOVINDARAJ DEV KUMAR, Shirley A. Micallef, Dumitru Macarisin, University of Maryland, College Park, MD, USA

P3-205 Modeling the Effect of Corpo Citrik Sanitizers on the Inhibition of *Pseudomonas aeruginosa*, *Salmonella* Typhi, and *Salmonella* Typhimurium on Stainless Steel Surfaces — NYDIA AZENEDH ORUÉ-ARREOLA, Raul Avila-Sosa, Carlos Enrique Ochoa-Velasco, Addí Rhode Navarro-Cruz, Obdulia Vera-López, Martin Alvaro Lazcano-Hernandez, Alan Cristopher López-Romero, Corpo Citrik SA de CV, CDMX, Mexico

P3-206 Indoor Fungi of Food Companies at Monterrey, Mexico — Efren Robledo-Leal, Karen Martinez-Carranza, NYDIA AZENEDH ORUÉ-ARREOLA, Corpo Citrik SA de CV, CDMX, Mexico

P3-207 Viability of *Listeria monocytogenes* on Commercial, Fully Cooked Pork Patties Formulated with and without Buffered Vinegar during Extended Refrigerated and/or Frozen Storage — JOHN LUCHANSKY, Stephen Campano, Brian Smith, Paul Hargarten, Lonna Kennedy, Jaclyn Cooper, Bradley Shoyer, Laura Shane, Manuela Osoria, Haley Leibenberg, YangJin Jung, Elizabeth Henry, Anna Porto-Fett, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA

P3-208 *Lactobacillus salivarius* L28 in Dog Kibble Results in Shifts in Microbial Indicators in Pet Fecal Samples after Feeding — ISHWAR KATAWAL, Mindy Brashears, Andrea English, Kendra Nightingale, Nathaniel J. Hall, Texas Tech University, Lubbock, TX, USA

P3-209 Synergistic Antibacterial Effect of *Ishige okamurae* Extract in Combination with Antibiotics against Foodborne Bacteria and Cutaneous Pathogenic Bacteria — YU-MI JANG, Bo-Geum Kim, Min-Chul Jeong, Min-Sung Kim, Seul-Ki Park, Won-Kyo Jung, Young-Mog Kim, Myung-Suk Lee, Pukyong National University, Busan, South Korea

P3-210 *Lactobacillus* with Over-Production of Linoleic Acids in Combating against Enteric Bacterial Infections — MENGFEI PENG, Zajeba Tabashsum, Debabrata Biswas, University of Maryland, College Park, MD, USA

P3-211 Antimicrobial Potential of Chinese Cabbage Using Different Solvents — RUBAB MOMNA, Ramachandran Chelliah, Mohammad Shakhawat Hussain, Kandasamy Saravanakumar, Deog-Hwan Oh, Department of Food Science and Biotechnology, Kangwon National University, Chuncheon, South Korea

P3-212 Antimicrobial Activity of Pecan Shell Extracts against Various Foodborne Bacterial Pathogens — VEERACHANDRA YEMMIREDDY, Cameron Cason, Charles Graham, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA

P3-213 Identification and Heterologous Expression of Novel Antimicrobial Bacteriocins from a Soil Metagenome — SAYMA AFROJ, David Mead, Mark Liles, Emefa Monu, Auburn University, Auburn, AL, USA

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Green Text - Undergraduate Student Competitor

P3-214 Antibacterial Activity of *Carnobacterium* spp. Isolated from Vacuum-packaged Meats under Chilled Anaerobic Conditions — PEIPEI ZHANG, Katie Petrella, Xianqin Yang, Agriculture and Agri-Food Canada, Lacombe, AB, Canada

P3-215 Evaluation of Antimicrobial Activities of Plant Aqueous Extracts against Different Strains of *Salmonella* Typhimurium and Their Application to Improve Safety of Pork Meat — ALKMINI GAVRIIL, Angelis Papadopoulos, Evangelia Zilelidou, Chryssavgi Gardeli, Serko Haroutounian, Panagiotis Skandamis, Agricultural University of Athens, Athens, Greece

P3-216 Validation of Novel Cultured Cane Sugar and Vinegar Powder Solution to Provide Double Shelf Life from *Listeria monocytogenes* Inhibition in Uncured Deli Sliced Chicken Stored at 40°F in Comparison with Vinegar Solution — SAURABH KUMAR, Garrett McCoy, Sara LaSuer, Corbion, Lenexa, KS, USA

P3-217 Addition of Oregano Extract to a Cranberry Marinade Enhances Inhibition of *Listeria* on Chicken — ARCHANA VASANTHAKUMAR, Chayapa Techathuvanan, Christopher McNamara, Margarita Gomez, Ocean Spray Cranberries, Inc., Lakeville-Middleboro, MA, USA

P3-218 Cranberry Extract Inhibits Foodborne Bacteria without Detectable Resistance — CHAYAPA TECHATHUVANAN, Archana Vasanthakumar, Christopher McNamara, Margarita Gomez, Ocean Spray Cranberries, Inc., Lakeville-Middleboro, MA, USA

P3-219 Antibacterial and Antibiofilm Activities of Ginger (*Zingiber officinale)* Extracts against Some Isolates of *Escherichia coli* O157:H7 from Retailed Dispensed Powdered Milk in Ibadan, Nigeria — MARVEL ADEDEJI, Victoria Adetunji, Department of Veterinary Public Health and Preventive Medicine, University of Ibadan, Nigeria, Ibadan, Nigeria

P3-220 Use of Green-label Bacteriocin-containing Microbial Fermentates for Control of *Listeria monocytogenes* in RTE Meat Applications — AUDREY BOEKEN, Peter Muriana, Oklahoma State University, Stillwater, OK, USA

P3-221 Antimicrobial Effectiveness of Iso-Eugenol against Human Enteric Pathogens in Refrigerated Raw Pineapple Juice with Added *Yucca schidigera* Extract — EMALIE THOMAS-POPO, Aubrey Mendonca, Byron Brehm-Stecher, James Dickson, Angela Shaw, Armitra Jackson-Davis, Iowa State University, Ames, IA, USA

P3-222 Isolation of Bacteriocin-producing Lactic Acid Bacteria from Fermented Foods Using Improved Deferred Antagonism Assay — Zhijun Zhan, Jin Dong, Chin Nyean Lee, YONG LI, University of Hawaii at Manoa, Honolulu, HI, USA

P3-223 Determining the Efficacy of Chemical and Bacteriophage Treatments to Disrupt *Escherichia coli* O157:H7 Biofilms — MORGAN SARCHET, Joyjit Saha, Tony Kountoupis, Pushpinder Kaur Litt, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA

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Start Where You Are!

Make a difference! Unite with other food safety professionals by joining or forming an IAFP Affiliate in your area. IAFP currently has over fifty Affiliates on six continents whose objectives are consistent with those of our Association. If you are an IAFP Member or an IAFP Annual Meeting attendee, your knowledge of and dedication to food safety will contribute toward the many opportunities your local Affiliate can offer.

Start now by getting involved today!

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Find IAFP Affiliate opportunities and contacts at www.foodprotection.org

About the Award Winners

Black Pearl Award

Eurofins Scientific, Inc.

Des Moines, Iowa

Celebrating 30 years in 2018, Eurofins Scientific, Inc. began as a business in food testing, when Gilles Martin purchased the rights to the SNIF-NMR® technology, developed by his parents. Dr. Martin then expanded application of the method to a wide range of products, including fruit juices and other non-alcoholic beverages. The business quickly grew, and today includes more than 400 laboratories across 44 countries, a curriculum of training courses, and award-winning auditing and certification services.

The Eurofins' mission is to contribute to a safer and healthier world by providing innovative and high-quality laboratory and advisory services for all food industries at every stage of production. Food is at the heart of our lives and our health. There are few other areas where testing can have a bigger positive impact for life. With a portfolio of more than 150,000 analytical methods and a commitment to outstanding client service, Eurofins has grown to become a global leader in food safety.

Eurofins' continuous innovation and ceaseless vigilance mean millions of people can trust the products they consume – working beside businesses every day, at every step, to make our world better.

30 years Testing For Life 1987–2017

Sponsored by F&H FOOD EQUIPMENT COMPANY

Fellow Award

Loralyn H. Ledenbach
Glenview, Illinois

Loralyn H. Ledenbach is a recipient of the 2018 IAFP Fellow Award. Ms. Ledenbach is a Principal Scientist at the Kraft Heinz Company in the Food Safety & Regulatory Department in Glenview, Illinois, responsible for HACCP and food safety programs, as well as FSMA and regulatory compliance efforts.

Early in her 38-year career at Kraft Heinz, Ms. Ledenbach worked on new method development and evaluation, authoring several papers on *L. monocytogenes* and *E. coli* identification/enumeration methods, as well as a chapter on the spoilage of dairy products in *Compendium of the Microbiological Spoilage of Foods and Beverages*, and the chapter on methods for acid-producing microorganisms for the *Compendium of Methods for the Microbiological Examination of Foods*. Ms. Ledenbach is one of the internal process authorities for Kraft Heinz process cheese products, and helped create the training curriculum for Better Process Control School for LACF Process Cheese, where she continues to participate as an instructor. She is a Lead Instructor and Trainer of Trainers for FSPCA Preventive Controls for Human Foods and a Lead Instructor for FSPCA Foreign Supplier Verification Program courses.

Ms. Ledenbach holds a B.S. in Biological Sciences from Northern Illinois University in DeKalb and an M.S. degree in Food Science from the University of Illinois in Urbana-Champaign.

A member of IAFP since 1988, Ms. Ledenbach has organized, convened, and/or presented at 17 IAFP Annual Meetings. She has served on the *Journal of Food Protection* Management Committee, the Program Committee, and as Chair of the Dairy Quality and Safety PDG. She currently serves as Chair of the HACCP Utilization and Food Safety Systems PDG. She received the Harold Barnum Industry Award in 2013.

Ruth Petran
St. Paul, Minnesota

Dr. Ruth Petran is a recipient of the 2018 IAFP Fellow Award. Dr. Petran is Vice President, RD&E Food Safety and Public Health at Ecolab in Saint Paul, Minnesota, where she provides technical expertise and risk-based consultation to internal and external customers on food safety and public health issues by identifying and tracking emerging food safety trends and new control strategies.

Prior to joining Ecolab, Dr. Petran was a Research Microbiologist and Supplier Quality Manager at Pillsbury, as well as Specifications Manager and Quality Regulatory Operations Manager at General Mills.

Dr. Petran served two terms on the National Advisory Committee for the Microbiological Criteria for Foods and chairs the Minnesota Food Safety and Defense Task Force. As a 32-year IAFP Member, she has presented in or led symposia at many IAFP Annual Meetings and actively participates in PDGs and on the Committee for Control of Foodborne Illness. She received the IAFP Developing Scientist Award in 1987; has served on several award juries; and is a founding member of the IAFP Affiliate, the Minnesota Food Protection Association. She also serves on the Editorial Board of IAFP's *Food Microbiology and Food Safety* book series, published by Springer, and served on the *Food Protection Trends* Editorial Committee from 2005–2013.

Dr. Petran received the Darsh Wasan Food Safety Award from the Institute for Food Safety and Health in 2017. She is also a member of the Institute of Food Technologists and is a Certified Food Scientist.

Dr. Petran earned a B.Sc. in Consumer Food Science from Cornell University, an M.Sc. in Food Science from the University of Minnesota, and a Ph.D. in Public Health from the University of Minnesota. Her thesis focused on the value of leveraging data from health department inspections to improve food safety.

President's Lifetime Achievement Award

Jenny Scott
College Park, Maryland

Jenny Scott is the recipient of the 2018 IAFP President's Lifetime Achievement Award. This award is given at the discretion of the Association's President to recognize an individual who has made a lasting impact on "Advancing Food Safety Worldwide" through a lifetime of professional achievement in food protection. Ms. Scott is a Senior Advisor in the Office of Food Safety with the U.S. Food and Drug Administration's (FDA) Center for Food Safety and Applied Nutrition (CFSAN) in College Park, Maryland, where she leads the FDA teams on the Preventive Controls for Human Food rule and guidance. Prior to joining the FDA in August 2009, she served as Vice President of Science Policy, Food Protection, at the Grocery Manufacturers Association in Washington, D.C., where she held various positions over her 29-year tenure.

An active IAFP Member since 1982, Ms. Scott was IAFP President from 2000–2001 and is a Fellow of both IAFP (2005) and the Institute of Food Technologists. She received the IAFP Harold Barnum Industry Award in 2007, the IAFP Harry Haverland Citation Award in 2014, and was the Ivan Parkin Lecturer at IAFP 2012.

In addition, Ms. Scott serves as the U.S. Delegate to the Codex Committee on Food Hygiene and co-leads working groups on the revision of the General Principles of Food Hygiene and its HACCP Annex, as well as the development of a Code of Practice on Allergen Management for Food Business Operators.

Ms. Scott received a B.A. degree in Biology from Wellesley College, an M.S. in Bacteriology from the University of Wisconsin, and an M.S. in Food Science from the University of Maryland.

Honorary Life Membership Award

P. Michael Davidson
Coeur D'Alene, Idaho

Dr. P. Michael Davidson is a recipient of the 2018 IAFP Honorary Life Membership Award. Dr. Davidson is a University of Tennessee (UT) Institute of Agriculture Chancellor's Professor Emeritus and former Head (2005–2013) of the Department of Food Science & Technology at UT. Prior to retirement in 2016, he served on the faculty at UT for 30 years and was Professor in Food Science and Toxicology at the University of Idaho for eight years, preceding his time at UT.

Dr. Davidson earned a Ph.D. in Food Science from Washington State University, an M.S. in Food Science from the University of Minnesota, and a B.S. in Microbiology from the University of Idaho. His research program involved microbiological food safety. His primary research areas in food safety were characterizing naturally occurring food antimicrobials and novel thermal processes to control pathogenic and spoilage microorganisms in foods. He is co-editor of the book *Antimicrobials in Foods*, 3rd Edition, along with John Sofos and Larry Branen. Dr. Davidson has authored or co-authored more than 200 refereed journal articles, book chapters, and books and has given over 300 scientific presentations at national and international meetings, industry workshops, and universities.

An IAFP Member since 1981, Dr. Davidson served as a Co-Scientific Editor for the *Journal of Food Protection* for 15 years, ending in December 2016. He received the Frozen Food Foundation's Freezing Research Award in 2016, the IAFP Fellow Award in 2008, and the IAFP President's Recognition Award in 2005.

Dr. Davidson sits on the Board of Directors of the Institute of Food Technologists (IFT). He was presented with the inaugural IFT Gerhardt Haas Award in 2017 for outstanding contributions to food safety and the IFT Food Microbiology Division Distinguished Service Award in 2000. He was elected Chair of the IFT Food Microbiology Division in 1996 and Chair of the Food Microbiology Division of the American Society for Microbiology in 1993. For his contributions to microbiology, food safety, and food science and technology, Dr. Davidson is also a Fellow of the American Academy of Microbiology and the Institute of Food Technologists.

Michael Doyle
Peachtree City, Georgia

Dr. Michael Doyle is a recipient of the 2018 IAFP Honorary Life Membership Award. Dr. Doyle is the Regents Professor of Food Microbiology (retired) at the University of Georgia's Center for Food Safety in Athens. His research focuses on food safety and security, working closely with the food industry, government, and consumer groups on issues related to the microbiological safety of foods. His upbringing on a Wisconsin dairy farm helped set the stage for his career in food safety, which has largely focused on developing better ways to detect, control, and eliminate foodborne bacterial pathogens from the farm to the table.

Dr. Doyle has published more than 500 scientific papers, 19 patents, and 24 books on food microbiology and topics, serving as a scientific advisor to many groups, including the World Health Organization (WHO); the National Academy of Science – National Research Council; the Centers for Disease Control and Prevention (CDC); the U.S. Department of Agriculture (USDA); the U.S. Department of Defense; and the U.S. Environmental Protection Agency (EPA).

An active IAFP Member since 1974, Dr. Doyle presented the John H. Silliker Lecture in 2008. He received the GMA Food Safety Award in 1999 and the IAFP Fellow Award in 1998. Dr. Doyle is also the recipient of several other awards for his research accomplishments, including the USDA Silver Plow Award for exceptional service in food safety and pioneering research in detecting and controlling harmful bacterial associated with foods. In addition, he is a Fellow of the American Academy of Microbiology; the American Association for the Advancement of Science; the Institute of Food Technologists; and the National Academy of Inventors.

Honorary Life Membership Award

Steven C. Murphy
Freeville, New York

Steven C. Murphy is a recipient of the 2018 IAFP Honorary Life Membership Award. Mr. Murphy retired from Cornell University in the Department of Food Science in August 2016, where he had been employed for more than 36 years. He began his career as a laboratory technician, working his way up to a Senior Extension Associate position where he coordinated, developed, and participated in extension-based programs addressing milk and dairy product testing, quality, and safety, along with writing peer-reviewed publications and extension handouts for the dairy industry. He is an experienced HACCP instructor and program developer and a Lead Instructor for the FSMA Preventive Controls for Human Foods curriculum.

Mr. Murphy has been an active member of IAFP since 1987. He served as the Affiliate Council Delegate for the IAFP Affiliate, New York State Association for Food Protection (NYSAFP) (1998–2017) and as Affiliate Council Chair representing the Council on the IAFP Executive Board (2003–2004). He was a member of the Program Committee (2000–2003); the *Food Protection Trends* Editorial Board (2003–2008); and the Dairy Quality and Safety PDG (1991–present), where he co-organized and spoke at IAFP symposia. He has been on the Constitution and By-Laws Committee since 2003, serving as Chair (2008–2011).

As an NYSAFP Member, Mr. Murphy assisted with its Annual Meeting (the "AV guy"); was a frequent speaker; and was active on the Laboratory Committee where he planned and implemented workshops with the New York State Agriculture and Markets. He has been active in the National Conference on Interstate Milk Shipments (NCIMS Lab and HACCP Committees) and the Dairy Practices Council (DPC Task Force III member and director). In January 2017, he took a part-time position as the DPC Executive Director.

Mr. Murphy lives in upstate New York and enjoys travel and the outdoors in many ways throughout the year. He holds a B.Sc. in Microbiology and Masters of Professional Studies in Food Science, both from Cornell University.

Terence Peters
Richmond, British Columbia, Canada

Terence (Terry) Peters is a recipient of the 2018 IAFP Honorary Life Membership Award. Mr. Peters is retired from a 40-year career, working 30 of those years in food safety for the Canadian government. He has an extensive background as a food chemist, inspector, technical specialist, and a manager for food safety. Throughout his career, he served on many technical committees and was responsible for policy development, program delivery, and assessment for food safety, providing leadership, technical support, and training both within and outside government.

An IAFP Member since 1990, Mr. Peters has been a member of two PDGs and served on both the Nomination Committee and the Awards Committee. He served as Delegate for the IAFP Affiliate, British Columbia Food Protection Association, for nine years, during which time he also served as the Affiliate Council Secretary, then Chair (2004–2006), providing the opportunity to serve on the IAFP Executive Board.

Mr. Peters was one of the founders of the British Columbia Affiliate, serving as its Vice President for three years, President for seven years, and Past President for four years, working to educate and promote food safety in British Columbia and elsewhere. Under his lead, the Affiliate won eight Affiliate Achievement Awards, two of which included the C.B. Shogren Memorial Award. Following retirement, he continued to represent the Affiliate on various local committees and assisted at its meetings and conferences.

Mr. Peters obtained his B.Sc. in Chemistry from the University of British Columbia and his M.Sc. in Food Science from the University of Manitoba, specializing in Food Safety. He continued his interest in food technology and articled for three years to qualify as a Professional Agrologist.

Honorary Life Membership Award

Kathleen T. Rajkowski
Harleysville, Pennsylvania

Dr. Kathleen T. Rajkowski is a recipient of the 2018 IAFP Honorary Life Membership Award. Dr. Rajkowski is retired after 30 years in government service. Her career began with the U.S. Food and Drug Administration (FDA) before working at U.S. Customs. She transferred to the U.S. Department of Agriculture's (USDA) Agricultural Research Service (ARS) and began a research career with emphasis on pathogen reduction on food products, studying the use of non-thermal and chemical interventions to reduce human pathogens on finfish, sprout seeds, and fresh produce. Dr. Rajkowski researched the re-growth potential of gram negative bacteria in reconditioned waste-water and the microbial safety of non-homogeneous food products. She has published more than 60 publications, including research papers, abstracts, and book chapters.

An IAFP Member since 1992, Dr. Rajkowski received the IAFP Fellow Award in 2009 and the Maurice Weber Laboratorian Award in 2004. Throughout her membership, she has attended numerous Annual Meetings, organized symposia, and given many presentations. Dr. Rajkowski has chaired the Seafood Safety and Quality PDG, as well as the Water Quality PDG, served on the editorial board of the *Journal of Food Protection,* and published in the Association's journal. She is also a Fellow in the Institute of Food Technologists, received the 2007 Lifetime Achievement Award from the Food Irradiation Processing Alliances and the 2006 FPA Food Safety Award.

Dr. Rajkowski received her master's degree from the University of Connecticut in Storrs and her Ph.D. from The Ohio State University in Columbus.

CALL FOR AWARD NOMINATIONS

DUE DATE:
FEBRUARY 19, 2019

International Association for Food Protection®
www.foodprotection.org

Harry Haverland Citation Award

Vickie Lewandowski
Lincolnshire, Illinois

Vickie Lewandowski is this year's recipient of the Harry Haverland Citation Award. This award honors Ms. Lewandowski for her many years of dedication and devotion to the Association's ideals and objectives. She is the Corporate Food Safety Manager for Saputo Cheese, USA, in Lincolnshire, Illinois, with oversight of food safety programs and initiatives for 14 U.S. facilities, and a PCQI Lead Instructor responsible for Saputo internal food safety training and PCQI certification. She has worked in the food industry as a Food Safety Microbiologist for more than 30 years.

A shy, quiet graduate student, Ms. Lewandowski attended her first IAFP Annual Meeting in 1996. Transformed by the energy of that meeting, she broke out of her shell and has been an active IAFP Member and Annual Meeting attendee (with perfect attendance) since! She served on numerous committees integral to planning and preparing for the Annual Meeting including the Local Arrangements Committee for the 2001 Annual Meeting (Minneapolis, MN), and the Program Committee, initially as a committee member, then as Vice Chair and lastly as Chair for the 2002–2006 Annual Meetings. Following this position, Ms. Lewandowski served on the Executive Board for the next six years, culminating with the honor of serving as IAFP President from 2009–2010. Upon completion of her duties as IAFP Past President in 2011, she accepted an appointment to Chair the IAFP Foundation Committee, on which she currently serves. She received the IAFP President's Recognition Award in 2014.

Ms. Lewandowski demonstrates dedication to food safety through industry work as well. In 2012, she joined a team of subject matter experts working through the Innovation Center (IC) for U.S. Dairy. The initiatives have been numerous, including the development of dairy plant and supply chain food safety training materials and subsequently training more than 2,500 people across 60 workshops. Additional projects Ms. Lewandowski has served on within this framework include publication of *"Control of* Listeria monocytogenes *Guidance for the U.S. Dairy Industry*," and participation on the IC's *Listeria* Research Consortium, a group tasked with identifying and funding research that will ensure consumer protection by developing new tools for use in dairy plants and products.

Ms. Lewandowski holds a master's degree in Food Microbiology from the University of Minnesota.

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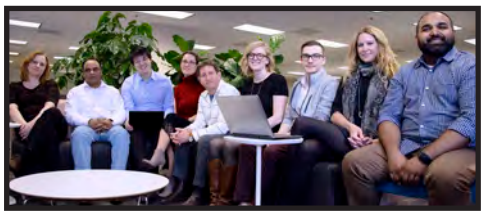
Food Safety Innovation Award



Mérieux NutriSciences
Chicago, Illinois

Mérieux NutriSciences is the recipient of the 2018 Food Safety Innovation Award for its development of QualMap. As a leading global food safety and quality partner, Mérieux NutriSciences offers testing, labeling, auditing, consulting, sensory, training and research services to the food & nutrition industry. Focused on customer excellence, the company protects consumers' health through nutritional research, scientific excellence and innovation. Mérieux NutriSciences customizes to meet the needs of individual manufacturers, food processors, caterers, restaurants, and retailers.

QualMap® was developed as a component to Mérieux NutriSciences' suite of Digital Solutions, to help companies understand their food safety and quality data, enabling them to provide the highest quality food to their consumers. The QualMap application enables food manufacturers, food service operators and food retailers the opportunity to integrate, manage and visualize their data in order to fulfill food safety and quality standards, while being able to anticipate ways to create operational savings and overall continuous improvement throughout their supply chain.

QualMap enables product development team members to input and utilize data, with the purpose of streamlining go-to-market strategies. Purchasing and procurement teams are able to dive into supply chain data to assist in making data-driven sourcing decisions, and food safety and quality team members are able to utilize QualMap to monitor their own plants, products or supplier networks. Lastly, food processors can utilize our application to analyze their data and report pertinent information to their customers within the tool, versus manually reporting, which saves time and money.

Sponsored by Walmart

International Leadership Award

Roy Biggs
Whanganui, New Zealand

The 2018 International Leadership Award goes to Roy Biggs for his dedication to the high ideals and objectives of the IAFP and his promotion of the mission of the Association in countries outside the U.S. and Canada. A native of the United Kingdom, Mr. Biggs is currently an independent consultant for Biggs Food Consultancy, LTD, after spending the previous 19 years of his career as the Senior Technical Manager at Tegel Foods, LTD in Auckland, New Zealand. In his current consultancy role, he provides food safety advice for many food sectors in New Zealand, Australia, South Africa, United Kingdom, Cambodia, and Papua New Guinea.

Tegel Foods, LTD is the largest poultry farmer and processor in New Zealand, with the ability to control the processes associated with farming, feed production, and processing through to the delivery of finished raw and cooked products. When he joined Tegel in 1997, the incidence rate of *Salmonella* on raw poultry delivered to the market was 17%; in the past five years that rate has not exceeded 0.2% in New Zealand. Control was achieved through effective measures on farms, hatcheries, and feed mills, with Mr. Biggs playing a significant leadership role in achieving this very low rate.

In 2006, New Zealand was considered the "*Campylobacter* Capital" of the world, with high rates of human infection. Source attribution studies indicated that poultry was the major cause. With Mr. Bigg's involvement, industry took action, playing a significant role in helping reduce infections by more than 60% through cooperation agreements put into place between poultry companies with a joint strategy developed between the industry and government.

An IAFP Member since 2001, Mr. Biggs was one of the inaugural members of IAFP's Affiliate, the New Zealand Association for Food Protection, serving as President for two years. He has attended the IAFP European Symposium on Food Safety and presented at the 3rd Asia Pacific International Conference in Asia, as well as delivered lectures and been a panel member at IAFP Annual Meetings. Mr. Biggs has presented at other food safety meetings in the United Kingdom, U.S., Turkey, and the Philippines, all including the food safety messages and principles promoted by IAFP.

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GMA Food Safety Award

Jenny Scott
College Park, Maryland

The recipient of the 2018 GMA Food Safety Award is Jenny Scott. Ms. Scott is a Senior Advisor in the Office of Food Safety with the U.S. Food and Drug Administration's (FDA) Center for Food Safety and Applied Nutrition (CFSAN) in College Park, Maryland, where she leads the FDA teams on the Preventive Controls for Human Food rule and guidance. Prior to joining the FDA in August 2009, Ms. Scott served as Vice President of Science Policy, Food Protection, at the Grocery Manufacturers Association in Washington, D.C., where she held various positions over her 29-year tenure.

An active IAFP Member since 1982, Ms. Scott was IAFP President from 2000–2001 and is a Fellow of both IAFP (2005) and the Institute of Food Technologists. She received the IAFP Harold Barnum Industry Award in 2007, the IAFP Harry Haverland Citation Award in 2014, and was the Ivan Parkin Lecturer at IAFP 2012.

In addition, Ms. Scott serves as the U.S. Delegate to the Codex Committee on Food Hygiene and co-leads working groups on the revision of the General Principles of Food Hygiene and its HACCP Annex, as well as the development of a Code of Practice on Allergen Management for Food Business Operators.

Ms. Scott received a B.A. degree in Biology from Wellesley College, an M.S. in Bacteriology from the University of Wisconsin, and an M.S. in Food Science from the University of Maryland.

Sponsored by GMA The Association of Food, Beverage and Consumer Products Companies

Frozen Food Foundation Freezing Research Award

Donald W. Schaffner
New Brunswick, New Jersey

Dr. Donald W. Schaffner is the recipient of the 2018 Frozen Food Foundation Freezing Research Award. This award honors an individual, group or organization for pre-eminence and outstanding contributions to research that impacts food safety attributes of freezing.

Dr. Schaffner is Distinguished Professor and Extension Specialist in Food Science at Rutgers University. His research interests include quantitative microbial risk assessment, predictive food microbiology, cross-contamination, and handwashing. Dr. Schaffner has published more than 160 peer-reviewed papers on these and other topics. He has served on national and international expert committees, including service to the U.S. National Academy of Sciences, the World Health Organization, and the Food and Agriculture Organization of the United Nations.

An active IAFP Member since 1989, Dr. Schaffner served as the Association President in 2013–2014. He received the IAFP Fellow Award in 2017 and the Elmer Marth Educator Award in 2009. Dr. Schaffner is also active in several other scientific associations, including the Institute of Food Technologists (IFT), the Society for Risk Analysis, and the American Society for Microbiology (ASM). He was elected a Fellow of IFT in 2010 and a Fellow of the American Academy of Microbiology in 2014. He is an Editor for the ASM journal, *Applied and Environmental Microbiology*.

Dr. Schaffner holds a B.S. in Food Science from Cornell University in Ithaca, New York, and a M.S. and Ph.D. in Food Science and Technology from the University of Georgia in Athens. He co-hosts "Food Safety Talk," a podcast on microbial food safety for professionals and the public.

Sponsored by Frozen Food Foundation

Food Safety Magazine Distinguished Service Award

Darin Detwiler
Boston, Massachusetts

Dr. Darin Detwiler is the recipient of the 2018 Food Safety Magazine Distinguished Service Award. Dr. Detwiler is the Assistant Dean at Northeastern University's College of Professional Studies in Boston, Massachusetts, where his work includes quality assurance supervision for all undergraduate and graduate programs. He is also a professor of Food Regulatory Policy, responsible for the development and instruction of courses related to food safety, global economics of food and agriculture, and food policy for graduate students who work in the food industry. In addition, Dr. Detwiler advises industry and government agencies, addressing food safety and authenticity issues in the U.S. and abroad.

After the loss of a son to *E. coli* in a landmark outbreak 25 years ago, Dr. Detwiler consulted with the U.S. Department of Agriculture (USDA) in strengthening food safety policies, particularly in the areas of consumer education, product labeling, and its pathogen reduction program. Along with serving in various educational and advisory capacities, his committee work includes appointments to two terms as a member of the National Advisory Committee on Meat and Poultry Inspection for the USDA, where his work improved standards and policies related to risk-based sampling.

As the senior policy coordinator for a national food safety organization, Dr. Detwiler evaluated pertinent regulatory issues for the USDA and the U.S. Food and Drug Administration (FDA) as a consumer advocate in their stakeholder advisory group. He later served two terms as a council member for the Conference for Food Protection, identifying and addressing emerging problems of food safety to influence model laws and regulations among all government agencies.

Dr. Detwiler received his doctorate of law and policy from Northeastern University, with a research focus on state implementation of the FDA's Food Safety Modernization Act.

Sponsored by FoodSafety magazine

Maurice Weber Laboratorian Award

Manan Sharma
Beltsville, Maryland

Dr. Manan Sharma is the 2018 recipient of the Maurice Weber Laboratorian Award. This award recognizes an IAFP Member for dedicated and exceptional contributions in the laboratory, and commitment to the development and/or application of innovative and practical analytical approaches in support of food safety.

Dr. Sharma is a Research Microbiologist in the Environmental Microbial and Food Safety Laboratory of the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS). His research focuses on produce safety, including the survival of enteric bacterial pathogens in biological soil amendments and irrigation water, and on fruit and vegetable commodities, and the use of lytic bacteriophages to reduce foodborne pathogen contamination.

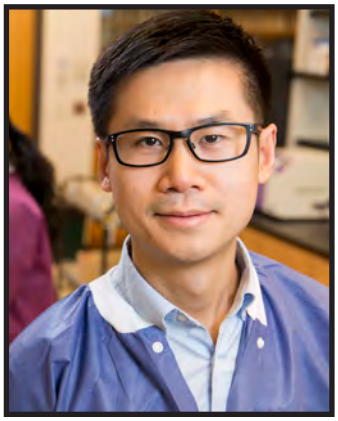
Dr. Sharma has authored or co-authored 45 peer-reviewed articles and six book chapters. He has hosted numerous high school, undergraduate and graduate students, and several post-doctoral research associates at USDA ARS.

Dr. Sharma received the 2009 USDA ARS Beltsville Area Early Career Scientist Award. He is currently an Affiliated Faculty member in the University of Delaware's Animal and Food Sciences Department, Center for Food Safety and Security Systems at the University of Maryland and the University of Maryland Eastern Shore.

An IAFP Member since 1999, Dr. Sharma currently serves on the Editorial Boards of the *Journal of Food Protection* and *Applied and Environmental Microbiology.* His IAFP professional activities include past terms as the Chair of the *Journal of Food Protection* Management Committee; President of the IAFP Affiliate, the Capital Area Food Protection Association, and Secretary of the IAFP Affiliate, the Indian Affiliate of Food Protection in North America. Dr. Sharma was the recipient of the IAFP Larry Beuchat Young Investigator Award in 2011.

Sponsored by WEBER SCIENTIFIC

Larry Beuchat Young Researcher Award



Xiangyu Deng
Peachtree City, Georgia

Dr. Xiangyu Deng is the 2018 recipient of the Larry Beuchat Young Researcher Award, which recognizes a young researcher who has shown outstanding ability and professional promise in the early years of their career.

Dr. Deng is an Assistant Professor at the Center for Food Safety (CFS) at the University of Georgia (UGA) in Athens, and Guest Researcher in the Enteric Diseases Laboratory Branch, Centers for Disease Control and Prevention (CDC). He conducts research in the interdisciplinary areas among food microbiology, bioinformatics, and public health. As a co-founder of the Food Safety Informatics Group at UGA CFS, Dr. Deng is particularly interested in a genomics and data science approach to studying foodborne pathogens and improving microbial food safety. Examples of his work include quasi-metagenomics detection and subtyping of *Salmonella* from foods; machine learning-based genomic source attribution of *Salmonella*; and SeqSero – a bioinformatics tool used worldwide for *Salmonella* serotype prediction from whole genome sequencing (WGS) data. He operates VoluntaryNet, a public-private initiative that utilizes WGS and molecular subtyping to analyze foodborne pathogens.

Dr. Deng graduated from Shanghai Jiao Tong University with a bachelor's in Biotechnology. He was trained in molecular biology at the University of Vienna before receiving his Ph.D. in Microbiology from the Illinois Institute of Technology. Prior to his employment at UGA, Dr. Deng was a Food Safety Scientist at Kraft Foods and a postdoctoral fellow at CDC. He is a recipient of the American Society for Microbiology/CDC Fellowship and an awardee of the UGA Creative Research Medal.

Sponsored by BIOMÉRIEUX

Ewen C.D. Todd Control of Foodborne Illness Award

Barbara B. Kowalcyk
Columbus, Ohio

Dr. Barbara B. Kowalcyk is the recipient of the Ewen C.D. Todd Control of Foodborne Illness Award. This award recognizes an individual for dedicated and exceptional contributions to the reduction of risks of foodborne illness. In 2017, Dr. Kowalcyk joined the faculty at The Ohio State University (OSU) in Columbus in the Department of Food Science and Technology and the Translational Data Analytics Institute

Dr. Kowalcyk is a recognized expert in food safety and has broad experience and training in epidemiology, public health informatics, risk science, regulatory decision making, and public policy. For more than 15 years, her efforts have focused on advancing a more systems-based approach to food safety that promotes evidence-based decision-making from farm-to-fork-to-physician and considers the broader connectedness of human, animal, and environmental health.

In 2006, Dr. Kowalcyk co-founded the Center for Foodborne Illness Research & Prevention, a national 501(c)(3) non-profit organization dedicated to advancing a stronger, more science-based food safety system that prevents foodborne illness and protects public health. She has served on many national committees, including two National Academy of Sciences committees and her current appointment to the U.S. Food and Drug Administration's Science Board. In addition to her extensive experience in food safety, Dr. Kowalcyk has more than 10 years of experience as a biostatistician, conducting clinical research and providing support to data safety monitoring boards in the pharmaceutical industry. Dr. Kowalcyk's research interests include linking public health information with data from across the food system to enhance the understanding of foodborne disease epidemiology, supporting the development of evidence-informed policies and practices that prevent foodborne illness, and changing behaviors around food safety across the food system.

Sponsored by MARLER CLARK
THE FOOD SAFETY LAW FIRM

Sanitarian Award

Connie Freese
Dayton, Ohio

The 2018 Sanitarian Award goes to Connie Freese. The Sanitarian Award honors an IAFP Member for dedication and exceptional service to the profession of the sanitarian, serving the public and the food industry. Ms. Freese is currently a Sanitarian Supervisor with Public Health – Dayton & Montgomery County, a 22-year career of improving the quality of life within a diverse community of 535,000 people by employing the three pillars of public health: prevention, promotion, and protection through environmental health.

Ms. Freese is a Registered Sanitarian in the State of Ohio and has conducted countless inspections in restaurants and grocery stores as well as other state-mandated inspection programs such as school environments, swimming pools, campgrounds, and manufactured home parks. She has prepared and presented information and classes on a variety of topics, including Level I Food Safety Training, to a wide and varied audience. She has investigated foodborne illness outbreaks from the receipt of the initial complaints to identifying the causative agent. Through her current supervisory role, she helps to train the next generation of sanitarians.

An IAFP Member since 2007, Ms. Freese has been a member of the IAFP Affiliate, the Ohio Association for Food Protection (OAFP), for 22 years, currently serving as Second Vice President. She was the Special Events Chairperson on the Local Arrangements Committee at IAFP's Annual Meeting in Columbus, Ohio in 2008.

Ms. Freese holds a B.S. in Environmental Health and an M.P.H., both from Wright State University in Dayton, Ohio. She is an active member of Delta Omega, a National Honor Society for Graduate Studies in Public Health.

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Elmer Marth Educator Award

Trevor Suslow
Davis, California

Dr. Trevor Suslow is the 2018 recipient of the IAFP Elmer Marth Educator Award, which recognizes an IAFP Member for dedicated and exceptional contributions to the profession of educator. Dr. Suslow is an Extension Research Specialist at the University of California – Davis (UCD) in Davis, with statewide responsibility for the post-harvest quality and safety of perishable horticultural foods. Prior to his current position, Dr. Suslow was a Research Scientist and Director of Product Research for DNA Plant Technologies, Inc. for 15 years.

Since arriving at UCD in 1995, microbial food safety rapidly came to dominate Dr. Suslow's applied research and extension and outreach education program. His research combines lab and on-farm research on *E. coli, Salmonella,* and *Listeria* in conventional and organic production systems for the purpose of identifying opportunities for optimal microbial reductions and delivery of safe food to the consumer. Since developing a produce safety program at UCD, he has been heavily involved in extension and education, splitting his time between IAFP and the American Phytopathological Society to integrate and support cross-disciplinary awareness and effective approaches to food protection for fresh and fresh-cut produce.

Dr. Suslow has served on the Center for Produce Safety Board of Directors and Technical Committee since 2008. He received the United Fresh Produce Association Technical Award in 2012 and was selected to The Packer 25 Profiles in Leadership Award in 2014. He was named to *Food Safety News'* list of *The Best of Food Safety in Education* and honored with the National Steinbeck Center's Valley of the World Award in Education in 2017.

Dr. Suslow received both his B.Sc. in Agricultural Sciences (with high honors) and his Ph.D. in Plant Pathology from the University of California, Berkeley.

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Harold Barnum Industry Award

Pamela Wilger
Minneapolis, Minnesota

As the recipient of the 2018 Harold Barnum Industry Award, Pamela Wilger is being honored for her dedication and exceptional service to IAFP, the public, and the food industry. Ms. Wilger, aka "Go to Gal," is a regional Senior Applied Microbiologist and Food Safety Expert in Cargill's Corporate Food Safety, Quality & Regulatory Department in Minneapolis, Minnesota and an internationally-recognized expert in food safety and microbiology. She has been with Cargill since 2001, interacting globally with customers, suppliers, laboratories, and Cargill's hundreds of manufacturing plants, implementing food safety policy and initiatives, determining microbiological risks, and applying microbiological best practices and procedures.

Ms. Wilger is a key participant of many organizations, including representing the U.S. as an expert on Microbiology to the International Organization for Standardization (ISO). She is a Delegate on the Codex Committee on Food Hygiene, working on HACCP revision and Allergen Management; a Project Leader for the ILSI North America Microbiology Committee; and a voting member of AOAC's International Stakeholder Panel on Alternative Methods (ISPAM) group focused on global harmonization of method validation. She has also spoken multiple times at the AOAC national and Midwest AOAC meetings on microbiological testing and validation. Ms. Wilger has been a contributing member of IAFP since 2001. She currently serves on IAFP's Program Committee. She served as Vice-Chair and Chair of the Applied Laboratory Methods PDG, followed by the Food Safety Education PDG. As a member of the HACCP Utilization and Food Safety Systems PDG, she helped author the HACCP "Back to Basics" three-part publication published in 2015 by IAFP's journal, *Food Protection Trends*.

Ms. Wilger is a founding member, served as first Vice President, and is the current Past President of the IAFP Affiliate, the Minnesota Food Protection Association. She has been a speaker, convenor, and submitted ideas for several IAFP meetings in the U.S., Europe, and Latin America.

Ms. Wilger holds her B.Sc. and M.Sc. degrees in Bacteriology from the University of Wisconsin in Madison.

Sponsored by NSF

Travel Award for a Food Safety Professional in a Country with a Developing Economy

AyoJesutomi Abiodun-Solanke
Victoria Island Lagos, Nigeria

AyoJesutomi Abiodun-Solanke is a recipient of 2018 Travel Award. Ms. Abiodun-Solanke lectures at Federal College of Fisheries and Marine Technology at Victoria Island in Lagos, Nigeria where she coordinates a local chapter of an international ocean conservation organization, Mundus Maris-Science and Arts for Sustainability, that improves awareness while empowering marginalized fisherfolk communities on fish safety.

Ms. Abiodun-Solanke is currently working on developing safe and quality smoked fish products methodology by quality control assurance of fish itself and the unit operations involved. She has worked extensively on the performance evaluation of some improved smoking kilns using the product quality of African catfish.

Ms. Abiodun-Solanke has many publications to her credit and has participated in many capacities and personal development programs. She has received several research grants and many travel grants to attend international conferences. Ms. Abiodun-Solanke was the Value Addition Officer of the West African Agricultural Productivity Program (WAAPP) from 2013–2017. She is a Fellow of the prestigious program, African Women in Agricultural Research and Development (AWARD). She belongs to many professional organizations, including the International Institute of Fisheries Economics and Trade (IIFET); Institute of Food Technologists (IFT); Fisheries Society of Nigeria (FISON); and the Society of Environmental Toxicologists and Chemists (SETAC).

Ms. Abiodun-Solanke serves as the General Secretary of Nigerian Women in Agricultural Research for Development and the African Women Fish Processors and Traders (Awfishnet) and belongs to many networks, e.g., African Transdisciplinary Network, responsible for developing context for this approach in Africa. She is very passionate about achieving fish food safety and security in Nigeria.

Ms. Abiodun-Solanke hopes to contribute immensely to the achievement of a safe, sustainable and fish food-secured continent through resource management and value addition. She loves challenges and thinking through these. Her primary area of interest is fish safety and utilization.

Fernanda Bovo Campagnollo
São Paulo, Brazil

Dr. Fernanda Bovo Campagnollo is the recipient of the 2018 Travel Award. She is currently a post-doctoral researcher in the Laboratory of Quantitative Food Microbiology at the Faculty of Food Engineering, the University of Campinas at Campinas in São Paulo, Brazil.

Dr. Campagnollo's research interests include food technology, food microbiology and food safety, mainly topics considering foodborne diseases, food hygiene, dairy technology, mycotoxins, microbial modeling, and quantitative microbial risk analysis. She has been working with decontamination processes using lactic acid bacteria against chemical and microbiological hazards.

Dr. Campagnollo completed both her master's and Ph.D. at the University of São Paulo in São Paulo, with part of her Ph.D. project developed at the University of Missouri in Columbia. The focus of her research was on the use of inactivated lactic acid bacteria cells for decontamination of milk or animal feed containing aflatoxins. During her current post-doctoral fellowship at the University of Campinas and at Rutgers – The State University of New Jersey in New Brunswick, the focus has been the use of active lactic acid bacteria cells with anti-listerial activity to reduce the growth or inactivate *Listeria monocytogenes* in traditional Brazilian cheeses. Dr. Campagnollo's post-doc project has also included modeling the competition between these microorganisms in this food matrix and the development of risk assessment models of listeriosis in cheeses.

Sponsored by IAFP FOUNDATION

Travel Award for a Food Safety Professional in a Country with a Developing Economy

Mauricio A. Redondo-Solano
San Jose, Costa Rica

Dr. Mauricio A. Redondo-Solano is the recipient of the 2018 Travel Award. Dr. Redondo-Solano works as an Associate Professor on the Faculty of Microbiology at the University of Costa Rica in San Jose. He is also a researcher of the Food and Water Microbiology Laboratory and the Centro de Investigación en Enfermedades Tropicales (CIET).

As a professor, Dr. Redondo-Solano is involved in several teaching activities, including the Food Microbiology and the Laboratory of Food Microbiology courses for microbiologists. He also serves as a lecturer for the Specialty in Food Safety Program at the Universidad Autónoma de Querétaro in Mexico. His research interests focus on the microbiology of meat and poultry products where he evaluates the factors affecting the behavior and survival of pathogenic and spoilage microorganisms in animal foods. His research topics include the biofilm formation capacity of *Listeria monocytogenes*; the spore germination and outgrowth of *Clostridium perfringens* and *Clostridium difficile* in meat products; the microbiology of emerging meat products; and the development of microbial predictive models for *L. monocytogenes* and spore-forming bacteria. Additionally, Dr. Redondo-Solano collaborates with other research areas, including quantitative risk assessment for allergens and micotoxins in foods and the role of lactic acid bacteria in fermented food products.

Dr. Redondo-Solano obtained his bachelor´s degree in Clinical Microbiology from the University of Costa Rica prior to obtaining his master´s and Ph.D. in Food Science and Technology from the University of Nebraska – Lincoln, becoming the first microbiologist from Costa Rica to obtain a higher degree in Food Science.

On behalf of the University of Costa Rica, Dr. Redondo-Solano serves as collaborator for the scientific committee of ComBase and is the official contact in Costa Rica for the International Congress of Meat Science and Technology (IComst). Aside from his teaching and research activities, Dr. Mauricio has been working with other food safety professionals in the Central America region to consolidate collaborative efforts.

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Travel Award for State or Provincial Health or Agricultural Department Employees

Luisa F. Castro
Honolulu, Hawaii

Dr. Luisa F. Castro is a recipient of the 2018 IAFP Travel Award. Dr. Castro is the Agriculture Farm Food Safety Program Manager for the Hawaii Department of Agriculture (HDOA) in Honolulu. She received her Masters of Education in Educational Technology and holds a Ph.D. in Learning Design and Technology, both from the University of Hawaii in Manoa.

Dr. Castro's experience includes more than 19 years of program management and extension in higher education, developing and delivering training programs for professionals in the agricultural sector and in food preservation. In her new position at the HDOA, Dr. Castro is utilizing her expertise in food storage, preservation, and safety to establish Hawaii's Produce Safety Program to educate and regulate on the safe production of fresh fruits and vegetables and increase knowledge of and compliance with the U.S. Food and Drug Administration's Produce Safety Rule (as part of FSMA).

Dr. Castro is the Principal Investigator for the *State and Territory Cooperative Agreement to Enhance Produce Safety in Preparation of Implementation of FDA's Rule: Standards for the Growing, Harvesting, Packing, & Holding of Produce for Human Consumption*. She appreciates the opportunity to participate and engage with other participants at IAFP 2018 in Salt Lake City, Utah.

Jason Crowe
Tallahassee, Florida

Dr. Jason Crowe is a recipient of the 2018 IAFP Travel Award. Dr. Crowe is currently a Biological Administrator II at the Florida Department of Agriculture and Consumer Services in Tallahassee. He has been with the department for more than eight years and currently manages the Division of Food Safety's molecular biology lab and FERN grant programs, and also serves as Responsible Official for the laboratory's Select Agent program.

Dr. Crowe is a recent graduate of the Association of Public Health Laboratories' Emerging Leader Program Cohort 9, where the group developed a set of training modules to educate future scientific leaders on laboratory budgeting and financial management. He actively participates in laboratory outreach and has given numerous presentations, been a guest lecturer at the University of South Florida's Masters of Public Health Program, and published a public interest article on DNA sequencing in *Florida Restaurant and Lodging Magazine*.

Prior to becoming an administrator, Dr. Crowe spent two years with the department as a food microbiologist and two years as a molecular biologist. He received his Ph.D. in Molecular Biophysics from Florida State University in Tallahassee and his B.S. in Biomolecular Science (with Honors) from Clarkson University in Potsdam, New York. Pleasures enjoyed outside of the laboratory include camping and astronomy, and he is an avid fan of the Buffalo Bills and Sabres, Florida State Seminoles, and Everton F.C.

Sponsored by IAFP FOUNDATION

Travel Award for State or Provincial Health or Agricultural Department Employees

Pongpan Laksanalamai
Baltimore, Maryland

Pongpan Laksanalamai is a recipient of the 2018 IAFP Travel Award. Dr. Laksanalamai is the Principal Developmental Scientist at the Laboratories Administration, State of Maryland Department of Health in Baltimore.

Dr. Laksanalamai started his career in food safety at the Center for Food Safety and Applied Nutrition (CFSAN), U.S. Food and Drug Administration (FDA) as a 2008 FDA Commissioner's fellow. His research was mainly focused on the genomics and transcriptomics of *Listeria monocytogenes*, under the supervision of Dr. Atin Datta.

Dr. Laksanalamai joined the Laboratories Administration, State of Maryland Department of Health in 2014. As a lead scientist, he has served as a project leader for the Division of Microbiology to perform several multi-laboratories validations of the bioMérieux VITEK-MS MALDI-TOF in collaboration with federal agencies and public health organizations, including CDC, FDA and APHL. He also leads several projects to validate methods for the detection of foodborne pathogens such as *Clostridium perfringens* and *Listeria* sp. for the food laboratory ISO accreditation.

Dr. Laksanalamai earned his B.S. in Microbiology from Chulalongkorn University in Thailand; his M.S. in Biology from Western Illinois University; and his Ph.D. in Marine Estuarine and Environmental Sciences (MEES) from the University of Maryland, College Park.

Dr. Laksanalamai is dedicating his time to focus on the problem of antimicrobial resistance. He works closely with the research and epidemiology teams for the Maryland Antibiotic Resistance Laboratory Network (ARLN) and has served as the Principal Investigator for the FDA National Antimicrobial Resistance Monitoring System (NARMS) for the State of Maryland since 2017. Dr. Laksanalamai is grateful and excited for the opportunity to attend IAFP 2018 in Salt Lake City, Utah.

Jessica Laurent
Saint Paul, Minnesota

Jessica Laurent is a recipient of the 2018 IAFP Travel Award. Ms. Laurent is the Project Analyst for the Minnesota Department of Agriculture (MDA) Rapid Response Team (RRT) in Saint Paul, Minnesota. She earned her B.F.A. in Sculpture from the University of Wisconsin, Madison, and is currently completing her M.P.H. in Epidemiology at the University of Minnesota School of Public Health in Minneapolis.

Since joining the RRT in April 2017, Ms. Laurent has worked on traceback and record collection for numerous local and national outbreaks. She is also involved in the coordination of routine and investigatory sampling; responses to complaints of illness and pesticide misuse; analysis of response metrics and other data; and emergency preparedness activities.

Ms. Laurent is thrilled for the opportunity to attend IAFP 2018 and hopes this is the first of many years of membership and participation in IAFP.

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Travel Award for State or Provincial Health or Agricultural Department Employees

Danielle Wroblewski
Albany, New York

Danielle Wroblewski is a recipient of the 2018 IAFP Travel Award. Ms. Wroblewski is Laboratorian for the New York State Department of Health's (NYSDOH) Division of Infectious Disease in Albany, New York. She joined the Department in the Enteric section of the Bacteriology Laboratory in 2016. She holds a B.S. in Biology from Trinity College of Vermont and an M.S. in Microbiology and Immunology from Albany Medical College.

Ms. Wroblewski began her career at the NYSDOH in 2005 as a Research Scientist. Her time is dedicated to public health laboratory service, training, and foodborne outbreak investigations. She is the lead scientist on much of the foodborne outbreak testing in the state. A majority of her efforts are focused on using molecular-based testing methods to detect a multitude of enteric pathogens, including *Listeria monocytogenes* and *E. coli* O157:H7. She recently helped develop a real-time PCR assay for the detection of *Bacillus cereus* group and *Clostridium perfringens* for toxin-related food outbreaks.

Throughout her tenure with NYSDOH, Ms. Wroblewski has taught courses focused on food defense, validation methods, and foodborne-related diseases. She has also improved testing capabilities to reduce costs and reporting times.

Ms. Wroblewski is excited and honored to have the opportunity to attend and present at IAFP 2018.

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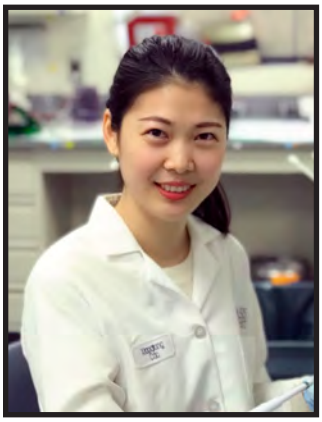
Student Travel Scholarship Award

Abimbola Allison
Tennessee State University
Nashville, Tennessee

Abimbola Allison is a Ph.D. candidate in the Department of Agricultural and Environmental Sciences at Tennessee State University in Nashville, working under the direction of Dr. Aliyar Fouladkhah. Ms. Allison received her B.Sc. (with honors) in Microbiology from the University of Benin in Nigeria and her M.S. in Agricultural Sciences from Tennessee State University. Upon completion of her undergraduate degree, Ms. Allison worked with the World Health Organization as a State Technical Facilitator, where she was responsible for coordinating studies/planning into the control of infectious diseases in two states in Northern Nigeria. From this experience, she saw the challenges posed by public health and food safety issues, and quickly learned the importance of science-based interventions for improving the quality of lives of the teeming population.

Ms. Allison's current research involves conducting hurdle validation studies for the control of pathogens of public health concern, using elevated hydrostatic pressure and various antimicrobial compounds. After graduation, she plans to pursue a career dedicated to combating pathogens of public health concerns, assisting emerging entrepreneurs safely process products, and reducing the burden of microbial and infectious diseases. A certified Produce Safety Alliance Trainer, she is currently working on a USDA-funded project aimed at helping stakeholders comply with the regulatory requirements of the Food Safety Modernization Act.

Ms. Allison is extremely honored to receive the 2018 Student Travel Scholarship Award. She hopes to use this experience as an opportunity to gain knowledge about cutting-edge food safety research, share her research findings, and receive feedback to expand her research path in applied food safety.



Xiaoqiong Cao
University of Massachusetts Amherst
Amherst, Massachusetts

Xiaoqiong Cao is a Ph.D. candidate in the Department of Food Science at the University of Massachusetts, Amherst. Ms. Cao is currently working on an innovative and significant research topic on risk evaluation of foodborne titanium dioxide (TiO_2) nanoparticles (NPs). In her research, she utilized both *in vitro* and *in vivo* models to evaluate the toxicity of TiO_2 NPs, a whitening agent in various food products, and also the interactions of TiO_2 NPs with other food components, which may impact the biological fate of NPs. Ms. Cao's work has led to three research articles in peer-reviewed journals, including the *Journal of Agricultural and Food Chemistry, RSC Advances*. Additionally, she has given five presentations at multiple international conferences where it showed her ability to demonstrate her research through clear, concise, and informed presentations.

Ms. Cao has received numerous awards and honors, including first place in the Hultin Graduate Research competition; People's Choice Award in the IAFP 3-Minute Student Thesis Competition; Phi Tau Sigma Student Achievement Scholarship; and Northeast Dairy Associate Annual Scholarship. She also received travel grants from the 252nd American Chemical Society (ACS) National Meeting, as well as from Pepsico and the New York Academy of Science.

In addition to her research, Ms. Cao has extensive mentoring and teaching experiences. At her university, she is a teaching fellow in the College of Natural Science (2017–present) and instructs the one-credit seminar, "Food matters: How does food impact health?," where she developed the curriculum that includes lectures, discussions, and debate. She has taught three sections, receiving positive feedback from her students.

Ms. Cao is honored to receive the IAFP Student Travel Scholarship and believes this will be a great opportunity to develop professional connections and receive feedback from peers.

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Student Travel Scholarship Award

Vijay Singh Chhetri
Louisiana State University
Baton Rouge, Louisiana

Vijay Singh Chhetri is a Ph.D. candidate in the School of Nutrition and Food Sciences at Louisiana State University in Baton Rouge, under the supervision of Dr. Achyut Adhikari. Mr. Chhetri received both his undergraduate and master's degrees in Microbiology from Tribhuvan University in Nepal, India. After completing his master's, he served as an instructor in food microbiology for five years at several colleges in Kathmandu Valley and also worked as a food safety consultant for Quality and Environmental Management Services Pvt. Ltd. in Kathmandu.

In 2015, Mr. Chhetri started his Ph.D. work in Food Science and Technology, specializing in produce safety. One of his current research endeavors evaluates the influence of pre-harvest environment on the survival and attachment of bacterial pathogens on fresh produce. An additional research project evaluates the role of residual sanitizers on minimizing the risks associated with post-sanitizing cross-contamination. He believes results from these studies will be useful in developing improved food safety risk management strategies.

Mr. Chhetri is extremely honored to receive the IAFP Student Travel Scholarship. He looks forward to presenting his research work and networking with food safety professionals, knowing that this incredible opportunity will help him embark on a successful career in food safety.

Anna Colavecchio
McGill University
Montreal, Canada

Anna Colavecchio is a Ph.D. candidate in the Food Safety and Quality Program at McGill University in Montreal, Canada, under the supervision of Dr. Lawrence Goodridge. She received her B.Sc. in Microbiology and Immunology at the University of Montreal and her M.Sc. in Food Science and Food Safety at McGill University.

Ms. Colavecchio's current research is focused on characterizing a novel class of temperate bacteriophages, called phage-like plasmids, that disseminate antimicrobial and heavy metal resistance genes between bacteria of foodborne importance. As part of her Ph.D. studies, she has delivered several international oral and poster presentations, lectures on food safety for the Industry Workshops held at McGill University, and is a "Let's Talk Science" volunteer.

Ms. Colavecchio is extremely grateful and excited to receive the IAFP Student Travel Scholarship to attend IAFP 2018 and have the opportunity to share her current research, network, and gain additional knowledge on current issues in food microbiology and food safety.

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Student Travel Scholarship Award

Angela Marie C. Ferelli
University of Maryland – College Park
College Park, Maryland

Angela Marie C. Ferelli is a Ph.D. candidate in the Plant Sciences and Landscape Architecture Department at the University of Maryland, College Park (UMD) under the direction of Dr. Shirley Micallef. Ms. Ferelli was "infected" with the passion for food safety while completing her B.Sc. in Food Science and Biochemistry at the University of Delaware in Newark.

Ms. Ferelli's dissertation investigates factors that may contribute to foodborne pathogen persistence on the farm, focusing on: (1) *S. enterica* mutual recognition and response pathways on tomato plants by manipulation of plant-derived nitric oxide; and (2) *S. enterica* differential fitness in Maryland irrigation water and transfer ability to crops. She hopes this research can offer a more holistic view of pathogen persistence from farm-to-fork and augment on-farm risk assessments.

During her graduate career, Ms. Ferelli has placed great importance in developing science communication skills among graduates to the agricultural community. To this effect, she has presented both research and policy talks at grower meetings throughout Maryland; became a Produce Safety Alliance Grower Trainer; and has organized a graduate-based science communication seminar series in her department. Moving forward post-graduate studies, Ms. Ferelli envisions a future career developing holistic approaches to food safety for growers and small processors, empowering this community with the regulatory literacy and tools informed by research to farm safely, equitably, and sustainably.

Ms. Ferelli is extremely humbled to receive the 2018 Student Travel Scholarship. Throughout her graduate career, IAFP Annual Meetings have provided indispensable platforms to share her research, connect with diverse food safety perspectives, and discuss complex issues in food safety and policy. She looks forward to IAFP 2018 as a great opportunity during a pivotal time in her career to listen, learn, and lead as a developing food safety professional.

Mohammad Ruzlan Habib
Shahjalal University of Science and Technology
Sylhet, Bangladesh

Mohammad Ruzlan Habib is an M.Sc. of Engineering student in the Food Engineering and Tea Technology Department at Shahjalal University of Science and Technology in Sylhet, Bangladesh, where he also received his B.Sc. in Engineering. Mr. Habib is very passionate in his food safety studies and food-related public health concerns. To gain practical knowledge of food safety and quality control, he also works in a leading food manufacturing industry in Bangladesh.

Mr. Habib conducted heavy metal toxicology research on prawns during his undergraduate studies, which was published in a peer-reviewed journal. With profound interest in working with public health, he has also conducted research on food toxicology under the supervision of Dr. Md. Mozammel Hoque and Dr. Yeasmin Nahar Jolly during his graduate studies. Mr. Habib is honored that his research was selected to be a poster presentation at IAFP 2018.

A native of Bangladesh, Mr. Habib feels the urge to work in public health for the betterment of mankind and thus, plans to continue research in food safety and relevant food processing technologies. He is incredibly grateful to receive the Student Travel Scholarship to attend IAFP 2018 and is excited to share knowledge; be introduced to novel research methods and technologies; and meet and network with academic professionals and researchers, allowing him to learn and apply this to his future research.

Sponsored by IAFP FOUNDATION

Student Travel Scholarship Award

Anna Sophia Harrand
Cornell University
Ithaca, New York

Anna Sophia Harrand is a Ph.D. student in Dr. Martin Wiedmann's Food Safety Lab at Cornell University in Ithaca, New York. She holds degrees in Biology and Molecular Life Sciences at Free University Berlin in Germany and Humboldt University of Berlin in Germany, respectively.

What makes Ms. Harrand so fascinated about pathogens is how they manage to fine-tune their adaptations to their environments. Her recently completed project explored a key question in challenge and validation studies – whether "multi-strain" or "multi-growth" conditions better represent the range of responses for a given stress. For her undergraduate research at the Federal Institute of Risk Assessment in Germany, Ms. Harrand investigated atypical *Listeria monocytogenes* detection, focused on differential phospholipase-C activity and ß-hemolysis. For her master's degree, she worked on molecular subtyping studies to understand the prevalence and persistence of *Listeria* in a pre-harvest environment and stress response regulation on a single-cell level focusing on gene regulators PrfA and sigB. She is now characterizing the non-typhoidal *Salmonella*'s cytolethal distending toxin and developing a new cloning tool for *Listeria monocytogenes*.

Ms. Harrand is thankful to have been awarded the IAFP Student Travel Scholarship. She is looking forward to discussing new research developments with all of the like-minded people at IAFP who enjoy the challenge of food safety every day.

Shoukui He
Shanghai Jiao Tong University, Shanghai, China
The University of British Columbia, Vancouver, British Columbia, Canada

Shoukui He is a Ph.D. student at Shanghai Jiao Tong University in Shanghai, China, working under the direction of Professor Xianming Shi. Since January 2018, Mr. He has been a visiting student at The University of British Columbia in Vancouver, British Columbia, Canada, co-supervised by Dr. Siyun Wang.

Mr. He's current research focuses on the ethanol stress response mechanism of *Salmonella enterica* serovar Enteritidis. Ethanol adaptation was found to induce direct protection and cross-protection against freezing stress in *S*. Enteritidis. Physiological, transcriptional, proteomics and mutagenic analyses have been performed to elucidate the molecular mechanisms underlying this phenomenon. He has delivered several oral and poster presentations related to these findings at national and international conferences on food safety, with the support of Professor Shi.

After completion of his Ph.D. next year, Mr. He wishes to find a position in food safety research at a university, focusing on the stress response systems and regulatory networks in foodborne pathogens. His goal is to translate this knowledge into improved control measures for foodborne pathogens.

Mr. He is extremely honored to receive the 2018 Student Travel Scholarship. He enjoyed attending IAFP 2016 and looks forward to presenting his research to food safety professionals in the Technical Session of General Microbiology and staying informed of current and future directions in food safety while in Salt Lake City, Utah.

Sponsored by IAFP FOUNDATION

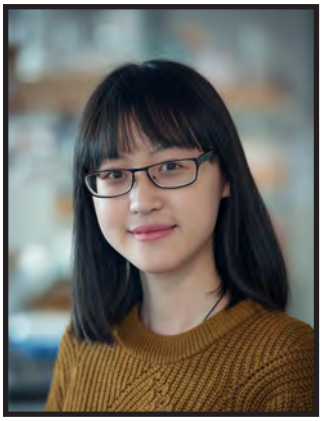
Student Travel Scholarship Award

Kento Koyama
Hokkaido University
Sapporo, Japan

Kento Koyama is a Ph.D. student in the Agricultural Engineering Department of Hokkaido University in Sapporo, Japan, working with Dr. Shige Koseki. Mr. Koyama was recently a visiting doctoral student at Aristotle University in Thessaloniki, Greece, working with Kostas Koutsoumanis for 18 months conducting collaboration research on variability and uncertainty in bacterial growth and inactivation behavior.

Mr. Koyama has studied predictive microbiology for food safety, especially probabilistic modeling for inactivation of *Salmonella enterica* population under a desiccated environment and low-water activity food. His current research is stochastic calculation of bacterial population inactivation via mathematical description and computer simulation, so that stochastic description would calculate sterilization time instead of conventional Decimal reduction time (*D*-value). This study will be useful for assessing a risk of survivors and setting a sterilization time. The progress enables an appropriate food treatment, benefitting food processors and risk assessors. Additionally, as a data scientist, Mr. Koyama aims to develop stochastic growth calculation for systematic understanding of whole bacterial growth and inactivation behavior based on mathematical approach and computer simulation related to a probabilistic approach to describing microbiological behavior and food quality in the future.

Mr. Koyama is honored to receive an IAFP Student Travel Scholarship. He will present a poster on a stochastic description of bacterial inactivation behavior and is eager to share his current stochastic study and other issues on food safety.



Luyao Ma
University of British Columbia
Vancouver, British Columbia, Canada

Luyao Ma is a Ph.D. candidate in the Food Science Program at the University of British Columbia (UBC) in Vancouver, BC, Canada, working under the supervision of Dr. Xiaonan Lu. Ms. Ma received her Bachelor's of Engineering in Food Science and Engineering from Zhejiang University in China in 2014. During her undergraduate thesis project, Ms. Ma investigated the antimicrobial effect of plant essential oils against pathogenic fungus *Alternaria alternate* on tomatoes and discovered her great passion for food safety, which led her to pursue her M.Sc. in Food Science at UBC in 2016. She continues her doctoral studies with full financial support under a UBC International Doctoral Fellowship.

Ms. Ma's current research focuses on the investigation of antimicrobial resistance evolution and transmission in *Campylobacter*. Her long-term academic goal is to uncover the mechanism of antimicrobial resistance in *Campylobacter* under specific conditions, such as bacterial biofilms, food processing conditions, and human gastrointestinal tract. Since her master's study in Dr. Lu's group, Ms. Ma has also worked on the rapid detection of microbial and chemical hazards using microfluidic lab-on-a-chip technique and Raman spectroscopy, as well as the development of antibiofilm polymers.

Ms. Ma is honored to receive the IAFP Student Travel Scholarship to attend IAFP 2018 in Salt Lake City, Utah. She is extremely excited to deliver her most recent research findings to the IAFP audience in both oral and poster presentations. She also looks forward to interacting with food safety professionals and enhancing her food safety knowledge.

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Student Travel Scholarship Award

Robyn C. Miranda
Rutgers, The State University of New Jersey
New Brunswick, New Jersey

Robyn Miranda is a Ph.D. candidate in the Department of Food Science at Rutgers, The State University of New Jersey in New Brunswick, working under the direction of Dr. Donald W. Schaffner. Ms. Miranda received both her B.Sc. and M.Sc. in Food Science from Rutgers University. She discovered her passion for food safety while working as an undergraduate on a project for Rutgers University Dining to manage food microbiology risks in dining halls.

Ms. Miranda's current research is aimed at assessing the risk of norovirus associated with the consumption of frozen berries and the determination of the efficacy of different mitigation scenarios along the farm-to-fork chain through a quantitative microbiological risk assessment. The findings from this research will contribute to reducing the prevalence of norovirus in frozen berry products and the burden of norovirus illness in the population.

Throughout her doctoral studies, Ms. Miranda has attended and presented her research at several national and international conferences on food safety and food microbiology. Ms. Miranda is incredibly honored and grateful to receive the 2018 Student Travel Scholarship. She looks forward to using this opportunity to share her work with the IAFP community, learn about current food safety research, and develop professional relationships with new colleagues.

Zahra H. Mohammad
Texas A&M University
College Station, Texas

Zahra Hassan Mohammad is a Ph.D. candidate and a Food Safety and Microbiology Specialist at Texas A&M University in College Station, working under the direction of Dr. Alejandro Castillo. Mrs. Mohammad has seven years of research experience while pursuing both graduate degrees at Texas A&M University, focusing on food safety and microbiology. She realizes that food microbiologists work on the front line of food safety, and that their research ensures food products abide by government regulations regarding food health and safety. Her research focuses on "Detection of Shiga-toxigenic *Escherichia coli* and *Salmonella* aerosolized in various areas of commercial slaughter plants by using dynamic bioaerosol monitoring techniques."

Mrs. Mohammad holds certificates in Produce Safety; Food Safety; Produce Safety Alliance Train the Trainer Course; HACCP; FDA Food Safety for Carriers Awareness Module; Aggies Professional Development Advanced Level; Communication & Leadership; and Awareness of ISO Standard 9001. Her many awards include a Cochran Fellowship Program for Agricultural Professionals (2008); Borlaug Institute Full Scholarship to attend a master's program in the U.S. (2011); IEFS Graduate Scholarship (for outstanding graduate student) (2017); 4th Annual International Livestock Forum Student Travel Fellowship (2018); and ASM Travel Fellowship (2018). She is an active member of IAFP and its Affiliate, the Texas Association for Food Protection; the Institute for Food Technology; the American Society for Microbiology; and the Food Science Graduate Student Association at Texas A&M.

Mrs. Mohammad received a master's in Food Science & Technology, majoring in Food Safety and Microbiology from Texas A&M University, and holds a Chemical Engineering Degree from the University of Technology in Baghdad, Iraq.

Mrs. Mohammad is honored to receive an IAFP Student Travel Scholarship to attend IAFP 2018 in Salt Lake City, Utah. She looks forward to this opportunity to learn more about current food safety research, share her research work with other researchers around the world, and gain professional relationships with other new colleagues.

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Student Travel Scholarship Award

Daniel F. M. do Monte
University of São Paulo
São Paulo, Brazil

Daniel F. M. do Monte is a Ph.D. candidate in the Department of Food and Experimental Nutrition at University of São Paulo in Brazil, under the supervision of Dr. Mariza Landgraf and co-supervision of Dr. Nilton Lincopan. Mr. Monte received his B.Sc. in Animal Science and his M.Sc. in Food Science and Technology, both from Federal University of Paraíba in Brazil. As an undergraduate, he studied antimicrobial resistance and molecular epidemiology of foodborne pathogens from dairy farms. During his master's studies, he continued his work focusing on antimicrobial resistance of *Salmonella enterica* isolates from poultry.

Mr. Monte's current research focuses on characterizing genetic diversity, virulence genes and antimicrobial resistance of *Salmonella enterica* isolated from poultry slaughterhouses. In addition, he has developed his research work using whole genome sequencing approaches as a visiting scholar at North Carolina State University in Raleigh under the supervision of Dr. Paula Fedorka-Cray.

Throughout his doctoral studies, Mr. Monte has attended several international conferences on food microbiology to share his current research work while developing side projects and publishing two articles as first author in high impact journals. He has co-authored two additional publications.

Mr. Monte is extremely honored to receive the IAFP Student Travel Scholarship. During IAFP 2018, he will be presenting results from his recent findings. His goal is to meet as many people as possible, exchanging information and gathering input on his work, as well as gaining knowledge on new trends in food microbiology research.

Thabang Msimango
University of Pretoria
Gauteng, South Africa

Thabang Msimango is an M.Sc. student in Biotechnology in the Department of Plant and Soil Sciences at the University of Pretoria in Gauteng, South Africa, under the supervision of Professor Lise Korsten, co-director of the Department of Science and Technology-National Research Foundation (DST-NRF) Centre of Excellence in Food Security. Ms. Msimango holds a B.Sc. in Biotechnology and a B.Sc. Honours in Biotechnology, both obtained from the University of Pretoria.

Ms. Msimango's current research focuses on food safety issues in school feeding schemes. Her project aims to determine whether fresh produce served by the National School Nutrition Programme (NSNP) in South African schools is safe. In addition, she aims to determine the school environment factors that can contribute to contamination of fresh produce served in schools.

Upon completion of her master's degree, Ms. Msimango plans to pursue her Ph.D. She is honored to receive a Student Travel Scholarship to attend IAFP 2018, which will allow her to share her work with the global food safety community and broaden her food safety knowledge. This meeting is a great platform to meet food safety experts and fellow students, build new networks, and create contacts in the food safety industry which are important for future work and collaborations.

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Student Travel Scholarship Award

Flavia Negrete
University of Maryland – College Park
College Park, Maryland

Flavia Negrete is an undergraduate student at the University of Maryland – College Park, matriculating in a dual B.S. program in Biochemistry and Cell Physiology & Neurobiology. Over the last two years, Ms. Negrete has researched the genomic differences and phylogenetic variation in efflux pumps between different species of *Cronobacter*, a genus of foodborne bacteria responsible for human disease, particularly in children. To date, little is known about the phylogenomic and virulence traits possessed among plant-associated *Cronobacter sakazakii* strains. *Cronobacter sakazakii* strains were obtained from various plant-derived foods and food manufacturing environments located in the U.S., Middle East, Asia, and Europe. Finding virulent *Cronobacter sakazakii* strains of clinically relevant STs which were associated with plant-based foods suggests that these foods can serve as potential transmission vehicles and supports widening the scope of continued surveillance of this important foodborne pathogen. Concurrently, other research detailing a brother geographic range includes the characterization of *Salmonella enterica* serovar Infantis strains bearing a $bla_{CTX\text{-}M\text{-}65}$ genes (cefotaximase) gene associated with 13 hospitals located in Peru.

While attending IAFP 2017, Ms. Negrete had the opportunity to meet and develop professional relationships with food safety experts from around the world. She is incredibly honored to be chosen as a recipient of the 2018 Student Travel Scholarship Award, allowing her to experience first-hand information on up-and-coming food safety issues and offering the opportunity to develop strong relationships with food microbiologists from different continents.

Ms. Negrete would like to thank Dr. Ben Tall and Dr. Gopal Gopinath for the immense support in their teachings in recent years. She believes they are the best mentors ever!

Loandi Richter
University of Pretoria
Pretoria, Gauteng, South Africa

Loandi Richter is completing her M.Sc. in the Department of Plant and Soil Sciences at the University of Pretoria in South Africa under the supervision of Professor Lise Korsten, Dr. Erika du Plessis and Dr. Stacey Duvenage.

After completion of her undergraduate degree in biotechnology, Ms. Richter continued her B.Sc. Honours degree in Plant Science in 2016, specializing in plant biotechnology and plant pathology. Her research focused on the prevalence and characterization of extended-spectrum-β-lactamase (ESBL) producing *Enterobacteriaceae* on fresh produce purchased from different markets. Ms. Richter's current research is a continuation of this topic where she is investigating food safety in the fresh produce supply chain from farm to market (formal and informal) retailers. Fresh produce from processing facilities, including food processing surfaces, hands of workers, and the irrigation water, were investigated. In addition, prevalence of antibiotic-resistant pathogens was determined as these pathogens may be present in the water used to irrigate the fresh produce and poses a potential health risk.

During her first year of her M.Sc. study, Ms Richter delivered poster presentations at two conferences in South Africa. She is honored to be a recipient of this year's IAFP Student Travel Scholarship to attend the Annual Meeting, where she will be presenting results from her most recent study in a poster session. She is excited to interact with colleagues in food safety and believes that IAFP 2018 will broaden her horizons, enable her to make informed decisions regarding future studies and work, and equip her with the necessary skills to contribute to ensuring food safety in the South African fresh produce supply chain.

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Student Travel Scholarship Award

Joyjit Saha
Oklahoma State University
Stillwater, Oklahoma

Joyjit Saha is a Ph.D. candidate in the Animal Science Department at Oklahoma State University in Stillwater, under the supervision of Dr. Divya Jaroni. Mr. Saha's research focuses on developing predictive models, specifically in food microbiology, to reduce costly validation-studies in the food industry and on risk-mitigation of biofilm-forming foodborne pathogens, such as *Salmonella* and Shiga-toxigenic *Escherichia coli*, in the food industry. His dissertation project involves the development of Quantitative Microbial Risk Assessment model to determine the necessity of beef trim interventions, during ground beef processing. Throughout his Ph.D. program, Mr. Saha has worked on several research projects related to microbial predictive modeling, developing kinetic and inactivation models to determine bacteriophage stability under various environmental conditions. In addition, Mr. Saha developed an App, "Safe Temperature Estimator at a Klick (STEAK)," to determine and create labels for safe cooking times of mechanically tenderized beef steaks.

Mr. Saha obtained his B.S. and M.S. in Food Engineering from India, and completed several internships in global food companies, including Pepsico-Frito Lay; Coca-Cola; ITC Limited; and Heineken-International. He worked on developing models to optimize fermentation conditions for underutilized tropical fruits during wine-vinegar production. He also developed a low-cost soup powder, replacing corn starch with sweet potato, while maintaining its rheological and sensory properties.

Mr. Saha is passionate about research in food microbiology and plans to pursue a research career in this area. His goal is to integrate experimentally-generated data into advanced-statistical models to improve understanding of microbial behavior in different food matrices and under various scenarios.

Mr. Saha is honored to receive the IAFP Student Travel Scholarship and excited to present his research, network with professionals, and obtain first-hand information on upcoming research issues across the globe. To date, he has attended two IAFP Annual Meetings and is positive about attending more in the future.

Carla Schwan
Kansas State University
Manhattan, Kansas

Carla Schwan is a Ph.D. student in the Department of Food Science at Kansas State University (KSU) in Manhattan, working under the direction of Dr. Jessie Vipham. A native of Brazil, Ms. Schwan graduated from the Federal University of Santa Maria – Brazil with a B.S. in Food Science and Technology. During her undergraduate studies, she received the Science Without Borders international scholarship, allowing her to take part in an exchange program at KSU. During that time, she led a large USDA-funded study looking at the impact of standardized food safety messaging on consumer food preparation behaviors. Her master's degree at KSU was under the supervision of Dr. Randall Phebus, where her research project involved characterizing differences in Shiga toxin-producing *Escherichia coli* attachment to pre-rigor and chilled beef carcass surfaces.

Ms. Schwan is currently working to enhance food safety training and infrastructure in developing nations, e.g., Cambodia and Ethiopia, through collaboration with KSU's USAID Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification. Her research objectives include antimicrobial interventions to minimize the risk of *Escherichia coli* in beef; outreach and food safety training modules; and collaboration in the development of a food safety master's program at Hawassa University in Ethiopia.

Following graduation, Ms. Schwan plans to pursue a career either in academia or as a food safety specialist in the food industry.

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Student Travel Scholarship Award

Katarina Simunovic
University of Ljubljana
Ljubljana, Slovenia

Katarina Simunovic is a Ph.D. student in Agro-Food Microbiology in the Biotechnical Faculty, Department of Food Safety and Technology at the University of Ljubljana in Slovenia, where she also received her B.Sc. and M.Sc. in Microbiology. Her master's thesis focused on the food pathogen *Campylobacter jejuni* and its resistance to antimicrobials, for which she was awarded the prestigious 2016 Prešeren Award in the field of Microbiology from the Biotechnical Faculty.

Ms. Simunovic has continued her research on *C. jejuni* for her Ph.D. under the supervision of Professor Smole Možina in the Department of Food Science and Technology, with a focus on bacterial interactions and their manipulation for the control of *C. jejuni* in the food chain.

Ms. Simunovic finds the study of food pathogens a challenging but rewarding topic and hopes her research will provide new knowledge about *C. jejuni* and new ways of controlling food pathogens in the meat industry. Her research has been shared at international conferences and in workshops. Ms. Simunovic is honored to be a recipient of the 2018 Student Travel Scholarship Award and sees the Annual Meeting as an opportunity to network with specialists and other students in the field of food safety and quality to help further her research and career.

Varalakshmi Sudagar
Ghent University
Ghent, Belgium

Varalakshmi Sudagar (Varalakshmi S) is a doctoral candidate in the Department of Veterinary Public Health and Food Safety, Faculty of Veterinary Medicine, at Ghent University in Ghent, Belgium, as a recipient of the ICAR (Indian Council of Agricultural Research) International Fellowship from India. She works as a scientist for ICAR – National Dairy Research Institute (NDRI), India. She earned a Masters of Veterinary Science in the Department of Veterinary Microbiology at Tamil Nadu Veterinary and Animal Sciences University (TANVASU) in Chennai, India.

Throughout her doctoral studies, Ms. S has researched the effectiveness of different hurdle techniques in controlling *Listeria monocytogenes* in Paneer, a traditional Indian dairy product. She also conducts research on the survival of *E. coli, Salmonella* and *Listeria monocytogenes* in dry aged beef.

At NDRI in India, Ms. S teaches courses in dairy microbiology, food safety, and quality assurance courses at the postgraduate level and conducts research in the areas of Bacterio-phages and lactic acid bacteria.

In 2014, Ms. S received the VLIR–UOS Fellowship, Belgium, to participate in a three-month international training program on food safety, quality assurance, and risk analysis at Ghent University, which increased her passion to work in food safety. She plans to pursue a career in food safety and quality with public health implications.

Ms. S attended IAFP 2017 in Tampa, Florida, where she was awarded third place for the "3-Minute Student Thesis Competition." She is extremely honored to be a recipient of this year's Student Travel Scholarship and looks forward to attending IAFP 2018 to receive updates in food safety research, as well as to network with food safety professionals to exchange ideas and gain knowledge in food protection.

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Peanut Proud Student Scholarship Award

The Peanut Proud Student Scholarship Award provides a $2,000 academic scholarship and travel funding for a U.S. student in the field of food microbiology – specifically in the area of peanuts and peanut butter food safety – to attend the Annual Meeting. Peanut Proud is a nonprofit industry organization based in Georgia.

Mengfei Peng
University of Maryland
College Park, Maryland

Mengfei Peng is pursuing his Ph.D. in Biological Sciences at the University of Maryland in College Park. Mr. Peng is dedicated to both research of and service for food safety and the food microbial area. His current research is focused on developing and investigating the combined effectiveness of prebiotic-like food ingredients and probiotics in modulation of gut microflora against foodborne infections and improvement of host health through anti-inflammation and strengthened gut immunity.

Mr. Peng's long-term research applies modern microbiological techniques to prevent enteric diseases in humans through gut microbiome modulation. His research outcomes of the functional properties of peanut fractions on beneficial and pathogenic bacteria and their potential use in the food industry has been reported by several associations and in the media, including the National Peanut Board; the Institute of Food Technologists; Nutrition & Public Health – *Food Safety News*; Food Navigator; and FoodQualitynews.com.

Mr. Peng has also served as a reviewer, invited guest lecturer, judge, and undergraduate research committee member within and outside of his university. These services include volunteer judging for the Breakthrough Junior Challenge science competition; the Graduate Research Appreciation Day Oral Competition on Environmental and Food Sciences; the Bioscience Day poster competition on agriculture and animal sciences; the Nutrition and Food Science Research Day poster competition; and the senior thesis conference committee and discussant in the Gemstone research program. Mr. Peng's extensive experience in foodborne pathogens and food protection led to an invitation as a guest lecturer for Zoonotic Disease and Control courses at both the graduate and undergraduate levels.

As a passionate Ph.D. student with a drive in research and the desire to serve in the food safety and food microbiology interdisciplinary areas, Mr. Peng is devoted to improving the human gut defensive system, as well as ensuring the safety and best quality of food.

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Hot topics for Managing Food Safety & Achieving Regulatory Compliance

Keynotes by…

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Commissioner,
Health and Food Safety,
European Commission

Stephen Ostroff
Deputy Commissioner for
Foods and Veterinary Medicine,
U.S. Food & Drug Administration

Karen McIntyre
Director General,
Food Directorate – HPFB,
Health Canada

Bernhard Url
Executive Director,
European Food Safety Authority

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(As of May 26, 2018)

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Alchemy is the global leader of innovative solutions and services that help food companies engage with their employees to drive safety, quality, and productivity. More than three million workers at over 50,000 locations use Alchemy's tailored learning, coaching, and reinforcement programs to reduce workplace injuries, safeguard food, and improve operations. From farm to fork, Alchemy works with food producers, manufacturers, packagers, distributors, retailers, and restaurants of all sizes to build successful safety cultures.

Alpha Biosciences, Inc. **904**
3651 Clipper Mill Road
Baltimore, MD 21211-1935, USA
Phone: +1 410.467.9983 **Fax: +1 410.467.5088**
www.alphabiosciences.com

Alpha Biosciences, Inc., located near historic Meadow Mill in Baltimore, MD, was founded in 2000 and is a leading manufacturer of dehydrated culture media. Alpha distributes its products, designed for the detection and enumeration of bacteria, around the world through both direct sale and distribution. We at Alpha Biosciences are committed to operating a company that constantly exceeds the service level expected by our customers. This is achieved by supplying products that are of the highest quality, consistent from lot to lot, and delivered in a timely manner.

American Thermal Instruments **531**
2400 E River Road
Dayton, OH 45439, USA
Phone: +1 937.429.2114
www.americanthermal.com

American Thermal Instruments provides temperature monitoring solutions for the most critical applications. Whether you need to know if a product has reached a certain temperature threshold or you need time and temperature history, ATI has a full portfolio of chemical and electronic solutions. ATI's free app and cloud technology provides you with digital temperature data to protect your brand's integrity – anytime, anywhere. We ensure you can trust the journey from the time your product is packaged to the time it is delivered. Trust the experts to provide you with the proper temperature monitoring solution for your needs.

API Group-LGC **520**
1159 Business Park Drive
Traverse City, MI 49686, USA
Phone: +1 855.366.3781
www.lgcstandards.com

American Proficiency Institute (API) Group, now part of the LGC Group, offers independent, third-party proficiency testing programs for food microbiology and chemistry laboratories. Laboratories can monitor their test performance and compare results to others performing the same test. The use of lyophilized organisms provides superior sample stability. Together with LGC, API offers the most comprehensive catalog of proficiency testing schemes available to the food and beverage industry.

Arizona/California Leafy Greens Marketing Agreement **634**
1688 W Adams St.
Phoenix, AZ 85007, USA
Phone: +1 602.542.0945 **Fax: +1 602.542.0898**
www.arizonaleafygreens.org

In 2017, both the Arizona and California LGMA program standards have been recognized by the FDA for their alignment to the Produce Safety Rule.

The Arizona and California Leafy Greens Marketing Agreements are dedicated to preserving the integrity of the lettuce and leafy greens industry through rigorous food safety handling practices, innovative training and audits conducted by government-certified inspectors. These programs incorporate science-based food safety practices and mandatory government inspections by USDA auditors. Arizona and California LGMA members are committed to protecting public health through this un-precedented programs and are working to provide products that are healthy and safe.

Art's Way Scientific, Inc. **505**
P.O. Box 878, 203 Oak St.
Monona, IA 52159, USA
Phone: +1 563.539.2336 **Fax: +1 563.539.2789**
www.buildingsforscience.com

When time, quality, safety, and cost are critical, an Art's Way Scientific modular laboratory is the only way to go. It's a brilliantly designed, quickly built, green and operational-ready modular building for food safety, bio-containment, laboratory animal science, public health, and biomedical and biosafety requirements. You can bring the lab to the sample. Visit us at our lab at booth #505.

Association of Food and Drug Officials **732**
155 W Market St., 3rd Floor
York, PA 17401, USA
Phone: +1 717.757.2888 **Fax: +1 717.650.3650**
www.afdo.org

The Association of Food and Drug Officials (AFDO), established is 1896, successfully fosters uniformity in the adoption and enforcement of food, drug, medical devices, cosmetics and product safety laws, rules, and regulations. AFDO is an international, non-profit professional organization consisting of state, federal and local regulatory officials as members, with industry representatives participating as associate members. AFDO is a mechanism for advancing regulatory program standards that will help to advance a national integrated food safety system.

Atlantium Technologies **225**
11 HeMelacha, Har Tuv Industrial A
Bet Shemesh, DE 99100, Israel
Phone: +972.299.25001
www.atlantium.com

Atlantium Technologies makes water safe with non-chemical ultraviolet (UV) water disinfection that meets latest FSMA water biosecurity criteria. Atlantium UV is validated to EPA 4-log virus disinfection credit and meets FDA criteria for pasteurized equivalent water. It can replace chemicals and heat for safer and more sustainable disinfection.

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BCN Research Laboratories, Inc. **501**
2491 Stock Creek Blvd.
Rockford, TN 37853-3056, USA
Phone: +1 865.573.7511 **Fax: +1 865.573.7298**
www.bcnlabs.com

BCN Research Labs is a full-service microbiology laboratory. It offers an extensive selection of microbiological and mycological tests, training and auditing programs. It specializes in food and beverage spoilage with a strong background in heat-resistant molds (HRM), *Alicyclobacillus* (ACB), preservative-resistant and xerophilic yeast and molds as well as in pathogen contamination, shelf-life, and challenge studies. BCN Labs' staff is proficient in bacteria, yeast, and mold identifications using molecular and traditional identification techniques. BCN Labs is certified by the U.S. EPA for microbiological testing of drinking water, is ISO 17025 accredited, and is a WBENC certified women-owned company.

Bia Diagnostics **1022**
480 Hercules Drive
Colchester, VT 05446, USA
Phone: +1 802.540.0148 **Fax: +1 802.540.0147**
www.biadiagnostics.com

Bia Diagnostics is an ISO 17025 certified (GLP, GMP and AOAC compliant) food diagnostics laboratory located in Colchester, Vermont. We offer same-day turnaround on all food allergen ELISA diagnostics! We are proud to announce that we now offer real-time PCR testing for GMO and food authenticity. Bia Diagnostics is proud to be the exclusive North American distributor of Generon PCR extraction and detection kits. Come see us at booth #1022.

BioFront Technologies **428**
3000 Commonwealth Blvd., Suite 2
Tallahassee, FL 32303, USA
Phone: +1 850.727.8107
www.biofronttech.com

BioFront Technologies is an ISO 9001:2015 manufacturer of food allergen detection kits and the authorized U.S. agent for FAPAS proficiency tests and QC/reference materials. BioFront's MonoTrace® kits provide a comprehensive line of monoclonal antibody-based ELISA and lateral flow assays that accurately detect trace amounts of food allergens on surfaces, rinse waters and complex matrices. The MonoTrace Gluten ELISA kit utilizes a novel non-toxic extraction for faster quantification of gluten within processed and unprocessed foods. BioFront offers over 20 unique ELISA and lateral flow assays targeting peanut, ten tree nuts, milk, egg, soy, lupine, mustard, buckwheat, sesame seed, shellfish, and gluten.

Bioionix, Inc. **421**
4603 Triangle St.
McFarland, WI 53558, USA
Phone: +1 608.838.0300 **Fax: +1 608.838.0301**
www.bioionix.com

Bioionix provides their customers with food safety solutions by the use of an electrochemical system for disinfection of food and food processing waters. It is 100% effective against pathogens and spoilage organisms. Since it uses no chemicals, it is safe and environmentally friendly. It eliminates the cost and handling of chemicals, disposal fees and allows plants to reuse their processing water/brine that is treated by Bioionix. It provides cost-effective processing solutions to alternative treatments like ozone, ultraviolet and filtration while providing additional benefits like residual disinfection, data capturing (HACCP) and full automation. The systems come with performance guarantees to ensure customer satisfaction.

BIOLYPH LLC **801**
4275 Norex Drive
Chaska, MN 55318, USA
Phone: +1 952.936.0990 **Fax: +1 952.936.0880**
www.biolyph.com

BIOLYPH helps maximize the quality and value of your food safety assays by endowing them with years of room temperature stability, simplified user work flow, and instant rehydration. With BIOLYPH's LyoSphere™ technology, microliter and nanoliter aliquots of lyophilized reagents can be presented to the end user in virtually any device – 8 tube strips, screw and snap cap tubes, 96 well plates, and custom devices. Detection tests produced as LyoSpheres™ include *Salmonella*, *Listeria monocytogenes*, *Listeria* spp., *Campylobacter*, *E. coli*, STEC, *Vibrio*, *Shigella*, and more. Visit our booth to discuss how BIOLYPH can serve you.

bioMérieux, Inc. **718**
595 Anglum Road
Hazelwood, MO 63042, USA
Phone: +1 800.634.7656
www.biomerieux-usa.com

bioMérieux Industry offers a full range of microbiology solutions for food and pharmaceutical companies worldwide. Visit our booth to learn about the latest solutions for media and sample preparation including MASTERCLAVE®, APS ONE™, DILUMAT™ and SMASHER™; pathogen testing with VIDAS® and GENE-UP®; food culture media; quality indicator testing with TEMPO®; in-process control and release testing using BACTIFLOW®, D\COUNT® and BACT/ALERT®; pathogen identification/ confirmation using VITEK® and API® Systems and CHROMID® Culture Media. Be sure to inquire about our laboratory services for workflow optimization and temperature monitoring with LABGUARD® 3D. bioMérieux brings confidence to the table by meeting all of your microbial analysis needs.

Bio-Rad Laboratories **821**
255 Linus Pauling Drive
Hercules, CA 94547, USA
Phone: +1 800.4BIO.RAD **Fax: +1 510.741.5630**
www.bio-rad.com

Bio-Rad Laboratories has played a leading role in the advancement of scientific discovery for over 60 years. We manufacture tests for food safety with a complete line of solutions for food pathogen testing. We offer a full menu of real-time PCR test kits for the detection of key pathogens, culture media for nutritive enrichment and RAPID chromogenic media with easy colony identification for detection of pathogens and enumeration of quality indicators. As an instrument manufacturer, Bio-Rad also provides instrument options for both low- and high-volume users, including our iQ-Check® Prep automation system.

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Bioscience International, Inc. **410**
11333 Woodglen Drive
Rockville, MD 20852, USA
Phone: +1 301.231.7400 **Fax: +1 301.231.7277**
www.biosci-intl.com

The newest generation of SAS microbial air monitors for ensuring full compliance with ISO 14698, cGMP and other international monitoring guidelines will be displayed.

Biosynth International **528**
725 N Baker Drive, Suite A
Itasca, IL 60143, USA
Phone: +1 630.305.8400
www.biosynth.com

Biosynth is an accomplished player with a successful history in the field of biochemicals for the diagnostics and chemical industries, food and environmental analysis. Biosynth's own labs constantly drive the further development of molecules for the sensitive detection of pathogens and introduced successfully innovative chromogenic, fluorogenic and luminescence-based systems into the field. In many cases, these products achieve the highest sensitivity of all commercially available methods for the detection of microbial contamination in food or drinking water. The Swiss-based organization has branches in the USA, China and the EU that reach the entire diagnostics industry.

BluLine Solutions **1212**
100 South Commons, Suite 102
Pittsburgh, PA 15212, USA
Phone: +1 724.351.1228
www.blulinesolutions.com

BluLine makes LIVE and on-demand wireless temperature and temperature/humidity monitoring, recording and reporting a reality. Utilizing the innovative blulog temperature data loggers, monitoring and recording systems are available for reefer transport, cold storage, retail refrigeration, refrigerated totes and more. Full history time and temperature data storage and reports are accessible through the complimentary, cloud-based BluConsole dashboard software that is accessible to all parties within the cold chain. Learn more at www.blulinesolutions.com.

BootieButler **735**
P.O. Box 22897
Knoxville, TN 37933, USA
Phone: +1 800.710.9863 **Fax: +1 866.817.8537**
www.bootiebutler.com

The innovative BootieButler Automatic Shoe Cover system addresses four critical areas associated with the use of shoe covers: (1) SAFETY – reducing slip/fall accidents associated with applying shoe covers (2) COMPLIANCE – increasing employee compliance by making the process easier, (3) INCREASED PRODUCTIVITY – improving throughput by eliminating wasted minutes and (4) REDUCE CROSS CONTAMINATION – reducing cross-contamination by using a hands free-approach.

BootieButler is committed to providing a unique PPE solution that will fit your facilities-specific needs. We offer the hands-free Kinetic automatic shoe cover dispenser, shoe cover remover and variety of shoe covers to accommodate your needs.

Bruker Corporation **321**
40 Manning Road
Billerica, MA 01821, USA
Phone: +1 978.663.3660
www.bruker.com

A leading innovator in instrumentation, Bruker Corporation provides complete solutions for food safety and quality control as displayed in our booth:

- The AOAC-OMA approved MALDI Biotyper provides reliable confirmation and identification of pathogens and other microbial isolates within minutes. A single workflow is used for all types of microorganisms directly from many selective media.
- New MPA II Spectrometer for composition analysis – one pre-calibrated instrument for solids, liquids and cultured products.
- NMR FoodScreener for honey, wine, and juice authenticity offers rapid and cost-effective detection of adulteration and mislabelling.

Join us for a demo in Booth 321.

CDC NCEH/ATSDR **1230**
1600 Clifton Road, MS F61
Atlanta, GA 30329, USA
Phone: +1 770.488.0589 **Fax: +1 770.488.3570**
www.cdc.gov

The CDC's National Center for Environmental Health prevents and controls diseases and injuries; provides information on critical health issues; and promotes healthy living. The Agency for Toxic Substances and Disease Registry evaluates the health effects of exposure to hazardous substances at sites on the Environmental Protection Agency's National Priorities List and other sites when petitioned.

Cedarlane **1214**
1210 Turrentine St.
Burlington, NC 27215, USA
Phone: +1 800.721.1644 **Fax: +1 336.513.5138**
www.cedarlanelabs.com

Providing today's food safety professionals with products of the highest quality, Cedarlane provides reagents from over 1,000 top global supplier brands. Featured products include water, dairy, and food testing kits (toxins, chemicals, hormones, drug residues, allergens, nutritional profile, etc.), PCR kits, antisera, microbiological media and DNA/RNA isolation/purification kits.

CERTUS **301**
4809 N Ravenswood Ave., Suite 113
Chicago, IL 60640, USA
Phone: +1 872.810.4123 **Fax: +1 872.810.4125**
www.certusfoodsafety.com

CERTUS™ delivers new tools for food-safety testing. Empowering food producers of all sizes to proactively achieve FSMA and HACCP compliance with confidence, CERTUS changes the game with simple rapid pathogen tests. Introducing patented SERS technology that combines enrichment and high sensitivity detection in a homogenous no wash format for real-time monitoring, CERTUS provides accurate results. The CERTUS technology, applied to

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environmental monitoring and food testing, will eliminate complex workflow enabling any food processor to conduct safe and easy on-site testing, receive instant alerts, and take immediate action to remediate. CERTUS allows companies to get ahead of potential problems, make informed decisions and take definitive action based on accurate and timely information—at the source.

Charles River **834**
251 Ballardvale St.
Wilmington, MA 01887, USA
Phone: +1 781.222.6000
www.criver.com

As a proven innovator in the development of dependable, robust testing solutions, Charles River continues to set the standard for managing microbial quality control. We've purposefully built our portfolio to deliver the most comprehensive and flexible set of microbial solutions available from a single provider. We lead the market with products and services that meet the diverse needs of the dairy, beverage, and food industries. Our unique combination of Celsis® rapid microbial detection and Accugenix® microbial identification and strain typing keeps your manufacturing operations running efficiently and smoothly, lowers your cost to manufacture, and protects your reputation. Learn more at www.criver.com/microbialsolutions.

Charm Sciences Inc. **909**
659 Andover St.
Lawrence, MA 1843, USA
Phone: +1 978.687.9200 **Fax: +1 978.687.9216**
www.charm.com

Charm Sciences is a world leader in food safety diagnostics. Charm's two-pronged Sanitation Monitoring Program ensures the highest level of food safety, quality control, and audit compliance using the novaLUM® II ATP Detection System and Charm Peel Plate® Microbial Tests with Colony Counter. Charm offers simplified diagnostics and data management solutions to track and trend results with integration to LIMS system. Rely on Charm Sciences for excellence in quality, innovation, and sensitivity to protect your brand! Booth #909.

Check Points **320**
Binnenhaven 5
Wageningen, 6709 PD, The Netherlands
Phone: +31.0.3.17.45.39.08 **Fax: +31.0.3.17.21.01.47**
www.check-points.com

Check-Points' innovative Check&Trace Salmonella method can discriminate over 300 *Salmonella* serotypes, including the most relevant ones like *S.* Typhimurium, due to the differences in their DNA sequences. This allows the Check&Trace Salmonella test to significantly decrease serotyping lead times and enable quick tracing. The Check&Trace Salmonella confirms *Salmonella* presence and the serotype with a single test in one day.http://checkandtrace.com/info@checkandtrace.com.

Cherney Microbiological Services, Ltd. **1127**
1110 S Huron Road
Green Bay, WI 54311-8024, USA
Phone: +1 920.406.8300 **Fax: +1 920.406.0070**
www.cherneymicro.com

Cherney Microbiological Services, Ltd. is an ISO 17025 and 17043 accredited testing laboratory and proficiency program provider that provides partnerships for companies by mitigating risk through proactive testing approaches, continual improvement and focus on quality. The greatest asset we provide to customers is the expertise to support their testing programs. Microbiological & analytical testing, nutritional analysis, training programs and consulting are all a part of our capabilities to deliver solutions for you. Headquartered in Green Bay, Wisconsin, Cherney has a second ISO 17025 accredited facility in Clovis, New Mexico.

Clear Labs **810**
3565 Haven Ave., Suite 2
Menlo Park, CA 94025, USA
Phone: +1 650.462.1676
www.clearlabs.com

Clear Labs powers stronger food safety and quality programs with comprehensive, genomics-based testing and cutting-edge science.

ClorDiSys Solutions, Inc. **609**
50 Tannery Road, Suite 1
Branchburg, NJ 08876, USA
Phone: +1 908.236.4100 **Fax: +1 908.236.2222**
www.clordisys.com

ClorDiSys Solutions, Inc. is a worldwide leader in contamination control and decontamination. ClorDiSys provides decontamination services for contamination mitigation as well as preventive control, utilizing chlorine dioxide gas to leave your facility cleaner and safer than ever before by eliminating the persistent pathogens from the hardest-to-reach areas. Portable CD gas generators are also available for the in-house decontamination of rooms, tanks, chambers, and processing areas of all sizes.

ComBase **208**
University of Tasmania
Churchill Ave., Private Bag 74
Hobart, 7001, Australia
Phone: +61.428.520.583
www.combase.cc

ComBase is a free, online database of microbial responses to food environments. The database includes over 65,000 records, currently accessed by more than 42,000 registered users, which show how food formulations and storage conditions affect the growth and survival of pathogenic and spoilage microorganisms. ComBase also includes highly used models that predict microbial growth and inactivation in different matrices, using an intuitive model interface. ComBase assists food companies and researchers in developing new food products, and to understand safer ways of processing and storing food. ComBase data and models also help teach students how microorganisms respond to food environments.

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Cooper-Atkins Corporation **503**
33 Reeds Gap Road
Middlefield, CT 06455, USA
Phone: +1 860.349.3473 **Fax: +1 860.349.8994**
www.cooper-atkins.com

Cooper-Atkins Corporation is a leading manufacturer and provider of high quality temperature, time, and humidity instruments and extensive wireless solutions, dedicated to providing the highest level of customer service and expert advice.

COPAN Diagnostics **727**
26055 Jefferson Ave.
Murrieta, CA 92562, USA
Phone: +1 951.473.4774 **Fax: +1 951.600.1832**
www.copanusa.com

With a reputation for innovation in pre-analytics, COPAN is the leading manufacturer of collection and transport systems, including products like FLOQSwabs™ which recover over 90% of the specimen. COPAN's line of SRK (Swab Rinse Kits) offers comprehensive sampling systems for the food industry. COPAN's wide selection of products includes Buffered Peptone Water, Letheen Broth, Butterfields, and SRK Neutralizing Solution, all available with different fill volumes and different swab lengths suitable for wide range applications. COPAN's CYCLONE AUTOPREP is the only instrument in its class to fully automate pour plate preparation for total viable bacterial digital counts on liquid samples.

Corning Incorporated **1020**
1 Riverfront Plaza
Corning, NY 14831, USA
Phone: +1 607.974.9000
www.corning.com

Corning, a leading brand in Life Sciences Solutions, long recognized by scientists as the supplier of high quality laboratory products, presents its line of sample preparation equipment and disposable labware for quality control and microbiology, optimized for food and beverage testing. Manufactured to the most rigorous standards, Corning's beginning-to-end test solutions balance superior quality with unsurpassed value. From petri dishes to reusable PYREX® glassware, look to Corning for your microbiology testing needs.

CosmosID **628**
1600 East Gude Drive
Rockville, MD 20850, USA
Phone: +1 561.531.2654
www.cosmosid.com

CosmosID is a genomic big data company focused on rapid identification of microorganisms for food safety inspections, infectious disease diagnostics, public health surveillance, pharmaceutical discovery, and microbiome analysis for health and wellness. Our software platform offers unrivaled sensitivity and specificity in microbial identification and characterization. From a single universal test, we provide precise identification of bacteria, viruses, fungi, and parasites at strain level with individual relative abundance and comprehensively characterize their antibiotic-resistance genes and virulence factors.

Covance Inc. **1101**
3301 Kinsman Blvd.
Madison, WI 53704, USA
Phone: +1 608.395.3793
www.covancefoodsolutions.com

Covance now offers integrated solutions that span the life cycle of your product. As your full-continuum partner of choice, our experts offer you insights and services from concept to commercialization, including product and process development, nutritional and contaminant analysis, and food safety consulting and training. Covance can work with you to help ensure the protection of your brand and unique perspectives shaped by decades of experience. We provide custom, precision delivery and a passion for breakthrough products and science at our locations in North America, Europe and Asia. Together we'll build the program you need. Visit Covance.com/foodsolutions for more information.

Crystal Diagnostics **408**
510 Compton St., Suite 106
Broomfield, CO 80020, USA
Phone: +1 720.351.4855 **Fax: +1 720.351.4910**
www.crystaldiagnostics.com

Crystal Diagnostics is a biotech company specializing in rapid food pathogen detection. Our platforms utilize liquid crystal biosensors for our detection process, which amplify the targeted signal and reduce background noise. This patented technology provides industry leading speed to result paired with unmatched accuracy. Our newest platform, the CDx AutoXpress™, is a fully automated high-throughput system capable of completing 480 tests every 8 hours. The CDx AutoXpress™ has one of the lowest costs per test in the industry. Reduce labor expense and human errors by automating your food testing. Stop by booth #408 and see the revolution in automation for yourself.

CultureMediaConcepts® **309**
970 E Orangethorpe Ave.
Anaheim, CA 92801, USA
Phone: +1 714.773.1726 **Fax: +1 714.773.1793**
www.culturemediaconcepts.com

CultureMediaConcepts® is an independent manufacturer of culture media and reagents utilized in microbiological testing. Screening for indicator organisms, environmental monitoring, or testing for foodborne pathogens require specified culture media formulations recommended by the methodology used, the manufacturer of the testing platform, or a governing agency. We specialize in formatting culture media formulations for your specific needs. Our SampleReady™ line of prepared dehydrated culture media, offers a RTU format that will eliminate steps of preparing your media and save you hours to results. Our DiluteReady™ Sample Dilution Bags offer more culture media option for your specific testing application. Our EnviroReady™ sample collection device will give you leverage on environmental monitoring. Get Ready! For your testing needs.

Decon7 Systems LLC **633**
8541 East Anderson Drive, Suite 106
Scottsdale, AZ 85255, USA
Phone: +1 843.302.6168
www.d7food.com

D7 is a proprietary blend of ordinary household substances that aggressively hunts and destroys bacteria and viruses in agricultural, live harvest, and food processing facilities. Validated by multiple third-

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party organizations, including USDA, D7 is a proven antimicrobial disinfectant that will enhance and maximize the effectiveness of your food safety program.

D7 is a patented, EPA-registered formula for use in a multitude of applications including, but not limited to, deep cleans, drain maintenance, and entryway sanitizing for controlling cross-contamination.

Once blended, the three-part D7 solution becomes an unrivaled antimicrobial disinfectant. Our focus markets include, but are not limited to, red meat, poultry, seafood, dairy, and fruits and vegetables. Visit us at www.d7food.com to learn more about our solutions and to hear back from some of the most notable industry references.

Deibel Laboratories **626**
7120 N Ridgeway Ave.
Lincolnwood, IL 60712, USA
Phone: +1 847.329.9900 **Fax: +1 847.329.9903**
www.deibellabs.com

Deibel Laboratories was founded by Dr. Robert H. Deibel, a former Dean of the Bacteriology Department at the University of Wisconsin and published author of over 80 scientific publications, over forty years ago. Since its inception, Deibel Labs has continually grown with the ever-changing scientific community and has become an integral part of the global food safety industry. With a network of ISO 17025 Laboratories throughout the United States and Canada, Deibel Labs is able to provide exceptional service while controlling test prices in order to create the perfect combination of value and quality for any size clientele.

Detectamet Detectable Products Inc. **827**
5111 Glen Alden Drive
Richmond, VA 23231, USA
Phone: +1 804.303.1983 **Fax: +1 804.303.6971**
www.detectamet.com

Detectamet Inc. is now the North American distribution center in Richmond, actively delivering the world's leading range of products that are fully metal and X-ray detectable and are magnetically extractable. They reduce the risks of physical contamination of food. The company's special plastic is 'visible' to detection systems used in the food industry. It has been approved for contact with food in compliance with U.S. and EU standards. Products range from pens to ear plugs, gloves to hair nets, scrapers to mixer blades, and much more. Auditors, inspectors and grocery retailers recognize that Detectamet products make an important contribution to successful HACCP management systems.

Diversey, Inc. **1008**
2415 Cascade Pointe Blvd.
Charlotte, NC 28208 USA
Phone: +1 980.221.3235
www.diversey.com

Diversey's purpose is to protect and care for people every day. We deliver revolutionary cleaning and hygiene technologies that bring confidence to our customers across our global sectors by integrating chemistry, systems, machines, services, consulting, and sustainability programs. Everything we do has our customers' needs at its heart and is based on the belief that cleaning and hygiene are life essentials. With over 94 years of expertise, we safeguard our customers' businesses, contributing to productivity improvements, lower total operating costs and brand protection. For more information, visit www.diversey.com and follow us on social media.

Eagle Protect PBC **604**
3079 Harrison Ave., Suite 21
South Lake Tahoe, CA 96150, USA
Phone: +1 800.384.3905
www.eagleprotect.com

Eagle Protect provides the food-handling industries with food-safe disposable gloves and clothing, with a focus on improving their customers' food safety practices and processes.

In conjunction with international food safety specialist Barry Michaels, Eagle leads the industry in scientific research of disposable gloves and their cross-contamination potential. From January 2018, Eagle discontinued supplying vinyl gloves due to well documented food safety risks.

Eagle is sustainability focused to help their customers reduce waste because of better quality products, is the world's only disposable glove and clothing specialists to be B Corp certified and is certified Child Labor Free.

EcoClear Coil Cleaning and Sanitization **213**
90 Hickory Springs Industrial Drive
Canton, GA 30115, USA
Phone: +1 404.919.9023
www.EcoClearClean.com

EcoClear Coil Cleaning and Sanitization specializes in cleaning and sanitizing refrigeration systems and food processing facilities. Our cleaning service removes the biofilms and biohazards present on dirty refrigeration coils and equipment, such as grime, mold, *E. coli*, *Salmonella*, and *Listeria*. Following the cleaning, EcoClear uses an EPA, NSF D2-approved, non-corrosive, stabilized chlorine dioxide solution to sanitize the coils, food processing equipment and facility surfaces to eliminate all bio-hazards. As an added bonus, the clean coils will use up to 30% less energy! Every customer receives a job report documenting the results.

Ecolab **402**
1 Ecolab Place
St. Paul, MN 55102, USA
Phone: +1 651.250.4469
www.ecolab.com

A trusted partner at nearly three million customer locations, Ecolab (ECL) is the global leader in water, hygiene and energy technologies and services that protect people and vital resources. With annual sales of $14 billion and 48,000 associates, Ecolab delivers comprehensive solutions, data-driven insights and on-site service to promote safe food, maintain clean environments, optimize water and energy use, and improve operational efficiencies for customers in the food, healthcare, energy, hospitality and industrial markets in more than 170 countries around the world.

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Emport LLC **526**
P.O. Box 40188
Pittsburgh, PA 15201, USA
Phone: +1 412.447.1888
https://emportllc.com

Emport LLC specializes in food safety and quality assurance kits that combine user-friendly design with rigorous scientific standards. Our core focus is rapid tests for detecting traces of gluten and other allergens. Kits include GlutenTox Pro, AOAC-PTM certified for detecting as little as 5 ppm gluten in foods and environments; and AlerTox Sticks, for checking foods and surfaces for trace amounts of peanut, almond, hazelnut, soy, fish, casein, egg, and more. Friendly, fast service and leading technology help us live up to our motto: More safe food, more happy people.

Eppendorf **500**
102 Motor Pkwy., 4th Floor
Hauppauge, NY 11788, USA
Phone: +1 800.645.3050
www.eppendorf.com

Eppendorf is a leading life science company that develops and sells instruments, consumables, and services for liquid, sample, and cell handling in laboratories worldwide. The Eppendorf brand stands for premium products and services, comprehensive solutions, advice, and support. The broad portfolio covers a variety of applications and biological materials ensuring efficient laboratory processes and reliable results. Eppendorf sets laboratory standards in research but also for laboratories performing process analysis, production and quality assurance including the field of food and beverage. Eppendorf offers pipettes, centrifuges, thermal cyclers, mixers, shakers, automated liquid handlers, spectrophotometers, consumables and services such as calibration.

Eurofins Scientific **506**
2200 Rittenhouse St., Suite 175
Des Moines, IA 50321, USA
Phone: +1 515.265.1461
www.eurofins.com/food

Eurofins Scientific is the ideal partner to protect your brand. With a portfolio of over 150,000 analytical methods, Eurofins is committed to outstanding client service, high quality standards and scientific excellence. Our international group of laboratories provides a unique range of analytical testing services to the pharmaceutical, food, environmental and consumer products industries and to governments. Our 35,000 trained staff in 400 laboratories across 44 countries are prepared to provide local expertise wherever your business is located. In addition to being a trusted source for reliable laboratory services, Eurofins is a full-service food safety provider.

Eurofins Technologies **507**
2425 New Holland Pike
Lancaster, PA 17601, USA
Phone: +1 717.945.3653
www.eurofins-technologies.com

Building on the experience and scientific excellence of the Eurofins Group, Eurofins Technologies is a fast growing, global provider of diagnostic test kits and lab consumables in the fields of bioanalytical testing for the food, feed, environmental, biopharma, and clinical industries. We offer a broad range of product test kits for pathogens, allergens, GMOs, mycotoxins, veterinary drug residues, animal species, veterinary diagnostics and water testing. With our suite of product and service solutions, we guarantee that your testing will be fast, reliable, and cost effective.

Our webshop offers a convenient solution to discover our products and order kits online www.eurofins-technologies.com.

FlexXray **1100**
3751 New York Ave., Suite 130
Arlington, TX 76014, USA
Phone: +1 817.453.3539 **Fax: + 1 817.453.3542**
www.flexxray.com

FlexXray is the leader in inspection and recovery services dedicated to serving food companies. We X-ray finished food products for all types of contaminants, which we can see down to 0.8 mm or smaller. We are able to achieve this by using medical grade X-ray technology, self-developed in-house, running at very slow speeds. Metal, plastic, gasket material, glass, stones, and bone are a few of the items for which our customers ask us to inspect. Currently, we help more than 500 customers salvage product instead of simply throwing it away or trying to rework it internally. This helps save our customers millions of dollars a year.

FOAM-iT **403**
3833 Soundtech Court SE
Grand Rapids, MI 49512-5400, USA
Phone: +1 616.656.9225
www.foamit.com

FOAM-iT products help you manage and apply chemicals – safely, efficiently and reliably. We specialize in foam cleaning – why? Foam has a longer contact time, clings to vertical surfaces, and is a visual marker to ensure complete coverage. Product options include: portable foam, spray, and gel units, wall and doorway systems, footwear sanitizers, and chemical management. The company was built on finding creative answers to common problems, allowing employees to work faster and more efficiently.

Food Microbiological Laboratories, Inc. **1202**
10653 Progress Way
Cypress, CA 90630, USA
Phone: +1 714.657.7527
www.foodmicrolabs.com

Food testing and research services with expertise in food safety and quality. Introducing automated data mapping, tracking and trending software, eBacMap®. Food Microbiological Laboratories, Inc. is State of California (ELAP) and ISO/IEC 17025 accredited. Our leadership team includes Melissa Calicchia, M.S., CFS, Chief Science Officer and Karilyn Gonzales, M.S., CFS, Laboratory Director with over 50 years of combined experience in the industry. Our expert microbiologists specialize in helping our clientele with technical interpretation of data relative to routine quality screening and shelf life testing, making us known for exceptional client satisfaction.

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Food Protection and Defense Institute **230**
R285 LES Bldg., 1954 Buford Ave.
St. Paul, MN 55108, USA
Phone: +1 612.624.2458 **Fax: +1 612.624.3229**
www.foodprotection.umn.edu

The Food Protection and Defense Institute (FPDI) was established as a multidisciplinary and action-oriented research consortium addressing the vulnerability of the global food system. We partner with industry, government and academic stakeholders to help assure product integrity and brand protection through food system and supply chain resiliency. We address vulnerabilities of the global food system through a comprehensive, farm-to-table view. Our impact touches all aspects of the food system from primary production through retail and food service including food processing and transportation.

Food Quality & Safety Magazine **1129**
111 River St.
Hoboken, NJ 07030-5774, USA
Phone: +1 480.419.1851
http://www.foodqualityandsafety.com/

Food Quality & Safety's mission is to advise all levels of quality and safety decision makers in food manufacturing, food service/retail, and regulatory and research institutions on strategic and tactical approaches required in a rapidly changing food market by examining current products, technologies, and philosophies.

Food Safety CTS, LLC **833**
1320 Goodyear Drive, Suite 205
El Paso, TX 79936, USA
Phone: +1 864.633.6325
www.foodsafetycts.com

Food Safety Consulting & Training Solutions, LLC (El Paso, TX & Chihuahua, Mexico) develops customized food safety and training solutions for the industry including e-learning programs (allucantrain.com). Our industry-wide recognized training programs are culturally compatible and science based. Stop by to see a demonstration our Doctum-All U Can Train e-learning food safety training service. We can customize it to your needs. It is easy to use and affordable. Food Safety CTS experts have helped companies to set up food safety programs and verify suppliers' food safety plans abroad and domestically. Let us be your food safety qualified individuals and conduct an assessment on your behalf.

Food Safety Magazine **1001**
1945 W Mountain St.
Glendale, CA 91201, USA
Phone: +1 818.842.4777 **Fax: +1 818.955.9504**
www.foodsafetymagazine.com

Food Safety Magazine is a bimonthly publication serving food safety/quality professionals worldwide. Issues feature contributions from food and beverage industry leaders discussing: regulations, technologies, trends, and management strategies essential when applying science-based solutions to assure food safety and quality. Also, the popular podcast "Food Safety Matters" offering twice monthly episodes that feature news and trends, or another surprise segment, followed by a conversation with a food safety professional sharing their experiences and insights. Visit our booth or website www.foodsafetymagazine.com to begin your free subscription and learn more about Food Safety Matters.

Food Safety Net Services **813**
199 W Rhapsody
San Antonio, TX 78216, USA
Phone: +1 888.525.9788 **Fax: +1 210.525.1702**
www.fsns.com

Food Safety Net Services (FSNS), headquartered in San Antonio, Texas, is a national network of ISO 17025 accredited testing laboratories open 24/7, 365 days a year. FSNS provides expert technical resources that assist companies with implementing food safety and quality programs that deliver critical information needed to continually improve process controls. Additional services include GFSI, SQF and PAACO, approved auditing and certification capabilities. For more information, visit fsns.com.

Food Safety News **111**
14117 W 61st St.
Shawnee, KS 66216, USA
Phone: +1 913.205.3791
www.foodsafetynews.com

Food Safety News is the only daily publication that reports exclusively on food safety issues. We are the first to talk with the most important people behind breaking news. We bring our readers the kind of old-fashioned, in-depth journalism that many people thought didn't exist anymore.

As a result, our readers trust our reporting and actively respond to the marketing messages they see in our publication. Our advertisers tell us that we are their #1 source of solid sales' leads, month-after-month. Talk with us now about how an ad schedule can help you increase your sales and your brand recognition.

Food Safety Summit Conference & Expo **1102**
155 N Pfingsten Road, Suite 205
Deerfield, IL 60015, USA
Phone: +1 847.405.4120
www.foodsafetysummit.com

The Food Safety Summit is a solutions-based conference and expo designed to meet the educational and informational needs of the entire food industry including growers, processors, retailers, distributors, foodservice operators, regulators and academia. The Summit provides 4 days of comprehensive education, certification and training courses, to learn from subject matter experts and exchange ideas; an expansive Exhibit Hall packed with leading industry solutions providers; and exclusive networking events to help you make meaningful industry connections. Join us at the Food Safety Summit, May 6–9, 2019 at the Donald E. Stephens Convention Center in Rosemont, IL.

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Food Safety Tech **104**
P.O. Box 980
Edgartown, MA 2539, USA
Phone: +1 267.266.8876
www.foodsafetytech.com

Food Safety Tech is an eMagazine, eNewsletter and food safety conference series serving the global food industry. Article coverage includes hazards and pathogen detection, sanitation, FSMA and GFSI compliance and food safety supply chain management. Also, topic-specific Resource Centers, the FSMA IQ Test and a comprehensive searchable Food Safety Training Calendar, listing food safety training courses available across North America are all great resources. The weekly eNewsletter subscription is free but requires you to opt-in at www.FoodSafetyTech.com. Stop by our booth and learn more about the Food Safety Consortium Conference & Expo, November 14–16 in Chicago.

FoodChek Systems, Inc. **832**
1414 8th St. SW, Suite 450
Calgary, AB T2R 1J6, Canada
Phone: +1 403.269.9424 **Fax: +1 403.263.6357**
www.foodcheksystems.com

FoodChek Systems. Inc. specializes in developing and commercializing proprietary food safety tests focused on *E. coli* O157, *Listeria* spp., *Listeria monocytogenes*, and *Salmonella* spp. for the human and pet food production chains. Actero™ Elite Enrichment Media is a ground-breaking patented formulation compatible with any pathogen testing system, offering single-step enrichment, fastest "time-to-results" and accuracy above what is available on the market today. Actero™ Universal Enrichment Media represents established media formulations used for standard testing protocols employed in today's labs. The MICT® System uses magnetic nanotechnology via a compact, diagnostic reading device that reports test results from disposable assay cassettes.

FoodLogiQ **1225**
2655 Meridian Pkwy.
Durham, NC 27713, USA
Phone: +1 919.484.4377 **Fax: +1 919.484.4377**
www.foodlogiq.com

FoodLogiQ® provides traceability, food safety compliance and supply chain transparency software solutions. We help restaurant operators, food retailers and other food companies achieve end-to-end traceability while supporting safe and high quality food products across the supply chain. With FoodLogiQ's platform, food companies can build an online supplier community, onboard suppliers all at once and stay on top of supplier audits and assessments. Manage quality incidents, report them directly to suppliers and recoup the costs of stock withdrawals. And with lot-level traceability, see exactly where your product is at all times, especially when it matters most during an investigation.

GeneReach USA **1227**
No. 19, Keyuan 2nd Road, Central Taiwan Science Park
Taichung City, 407, Taiwan
Phone: +886.4.2463.9869 **Fax: +886.4.2463.8255**
www.genereach.com

GeneReach USA is dedicated to bringing the innovation to global health management. By developing, manufacturing and marketing products for applied nucleic acid detection technology, we offer pathogen detection platforms, including equipment and reagents, to multiple industries. The applications of our products include aquaculture, agriculture, food, companion animal, livestock and human health industries. Developing the high performance and user friendly products is the major driving force of our research and development team. Our goal is to provide the best detection products and service worldwide and down to the extreme of Point of Need market.

GFSI – The Consumer Goods Forum **203**
22/24 rue du Gouverneur Eboue
Issy-les Moulineaux, 92130, France
Phone: +33.1.82.00.95.88
www.mygfsi.com

The Global Food Safety Initiative (GFSI) brings together key actors of the food ecosystem to collaboratively drive continuous improvement in food safety management systems around the world. With a vision of safe food for consumers everywhere, food industry leaders created GFSI in 2000 to reduce food safety risks and inefficiencies while building trust throughout the supply chain. The GFSI community is composed of experts from the full stakeholder spectrum, across industry and international organizations to governments and academia. GFSI is powered by The Consumer Goods Forum (CGF), a global industry network working to support Better Lives Through Better Business.

Glo Germ Company **120**
P.O. Box 189, 1101 Murphy Lane
Moab, UT 84532, USA
Phone: +1 800.842.6622 **Fax: +1 435.259.5930**
www.glogerm.com

Glo Germ is celebrating 50 years of innovation, setting the standard among industry leaders. The original, dependable, go-to for your training and infection control needs.

Global ID Group **226**
504 N 4th St.
Fairfield, IA 52556, USA
Phone: +1 641.209.4556 **Fax: +1 641.209.4556**
www.global-id-group.com

Global ID serves the food industry with a market-leading portfolio of testing, training, certification and specialty services. At IAFP 2018, we will be showcasing HorizonScan, a powerful online database with over 110,000 records of global food safety and authenticity incidents affecting nearly 600 commodities from over 180 countries. Customizable e-alerts and a user-friendly interface allow food safety professionals to quickly identify and prioritize potential supply chain threats and research the food safety history of over 22,000 suppliers as part of their food safety and FSMA compliance programs. Global ID is the exclusive North American distributor for HorizonScan. www.globalhorizonscan.com.

Guardian Ozone **1007**
2971 Oxbow Circle, Suite A
Cocoa, FL 32926, USA
Phone: +1 321.631.4580
www.guardianozone.com

Guardian Ozone's science and engineering approach is revolutionizing food safety and sanitation for the food industry. As an ISO9001 registered manufacturer and UL 508A listed panel shop, all Guardian systems are designed and built entirely in the USA to the highest industrial standards. Guardian Ozone is confident in its ability to meet or exceed our customers' expectations for their most challenging ozone process needs. Contact us to learn more about our capabilities and solutions.

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Hardy Diagnostics **423**
1430 W McCoy Lane
Santa Maria, CA 93455, USA
Phone: +1 805.346.2766
www.hardydiagnostics.com

Hardy Diagnostics has been in business since 1980 and is 100% employee owned. The company is ISO 13485 certified and manufactures over 2,700 products for microbiological testing. With over 9,000 laboratory customers across a broad spectrum of markets, Hardy Diagnostics understands the microbiological needs of the food testing industry and offers an extensive product portfolio for sample collection and preparation, microbial identification, HACCP compliance, and environmental monitoring. Hardy Diagnostics is uniquely qualified to assist the food processor in achieving its quality goals.

Heateflex Corporation **831**
405 E Santa Clara St.
Arcadia, CA 91006 USA
Phone: +1 626.599.8566
www.heateflex.com

Since 1974, Heateflex Corporation has led the way in providing ultra-pure heating equipment to the semiconductor, life science, food and beverage, and other industries requiring precision heating. Offering a broad range of customizable, high-purity equipment for heating and cooling fluids, including chemical heaters, deionized water heaters, gas heaters, steam heaters and heat exchangers.

The company's latest Demeter™ media preparation system is used for pathogens testing in food labs, and can increase lab throughput in the media preparation process by up to 7 times. Demeter is engineered for accuracy, traceability and sterility, and with a LIMS interface, improves recordkeeping for regulatory compliance.

HiMedia Laboratories Pvt. Ltd. **502**
A-516 Swastik Disha Business Park
via Vadhani Industrial Estate
Mumbai, 400 086, India
Phone: +1 484.734.4401 **Fax: +1 484.734.4402**
www.himedialabs.com

Founded 40 years ago, HiMedia, a leader in Bacteriological Culture Media formulations, now spans over 130 countries. Comprehensive identification kits for various food spoilage organisms as well as conventional and animal-free culture media are part of the HiMedia repertoire. Conforming to WHO-GMP standards and ISO updated protocols, HiMedia's world class facilities bring to you reliable products. Our tech-service team is available to assist you wherever you are, to match our products to your precise needs. Products available in North America from HiMedia Laboratories LLC, infous@himedialabs.com, www.himediastore.com.

Hygiena **413**
941 Avenida Acaso
Camarillo, CA 93012, USA
Phone: +1 805.388.8007 **Fax: +1 805.388.5531**
www.hygiena.com

Hygiena delivers rapid microbial detection, monitoring, and identification solutions to improve food safety. Hygiena's EnSURE™ monitoring system collects, analyzes, and reports data from multiple quality indicators, including ATP and indicator organisms. The BAX® System uses PCR technology to identify pathogens in food ingredients, finished products and production environments. The RiboPrinter® System is an automated genetic-based system that identifies and characterizes bacteria which helps food manufacturers monitor microbial trends in their facility and trace contamination back to its source. Hygiena utilizes advanced technologies and patented designs to provide industry-leading microorganism detection, allergen tests, environmental collection devices, and more.

Hygienically Clean Uniforms and Linens **530**
1800 Diagonal Road, Suite 200
Alexandria, VA 22314, USA
Phone: +1 703.519.0029 **Fax: +1 703.519.0026**
www.hygienicallyclean.org

Hygienically Clean Food Service certification verifies that uniform service processes align with HACCP, Global Food Safety Initiative (GFSI), U.S. Food and Drug Administration (FDA) and Centers for Disease Control and Prevention (CDC) guidelines. Inspections cover washing, drying, sorting, inspection and transportation. Each certified laundry's operational flowchart is evaluated, ensuring procedures are mapped. To quantify the outcome of textile cleanliness, certified laundries' linens and uniforms are subjected to third-party microbiological testing. When reviewing uniform service options, food manufacturers and processors are urged to consider contracting with only certified operations.

IEH Laboratories & Consulting Group **212**
15300 Bothell Way NE
Lake Forest Park, WA 98155, USA
Phone: +1 206.522.5432 **Fax: +1 206.306.8883**
www.iehinc.com

IEH delivers comprehensive support services, encompassing all aspects of microbiology and chemistry analysis, process validation, food safety plans, and recall/outbreak assistance. Our network of over 100 ISO/IEC-17025-accredited laboratories provide expedited services to addresses quality and safety concerns.

In addition, through our family of brands; Microbiologique, Roka Bio and Sample6, IEH provides options for pathogen testing, indicators, allergens, mycotoxins, meat speciation, spoilage organisms, sampling supplies, laboratory disposables, media and instruments.

We validate client's products at no charge for regulatory compliance. Come learn about how we assist with risk management and service clients with internationally recognized experts in food safety.

IFC **1106**
13420 West 99th St.
Lenexa, KS 66215, USA
Phone: +1 913.782.7600 **Fax: +1 913.782.6299**
www.indfumco.com

IFC is a national provider of pest management and sanitation solutions exclusive to the food industry. The knowledge and expertise we have gained comes from working directly with the food and commodity industries since 1937. IFC has developed a market-leading reputation for providing consistent, reliable and high quality service to our clients. We maintain this reputation by focusing our efforts on sustaining the highest standards of quality, safety, honesty and integrity in all areas of our business.

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IFPTI **733**
5220 Lovers Lane, Suite LL-130
Portage, MI 49002, USA
Phone: +1 269.488.3489 **Fax: +1 269.488.3939**
www.ifpti.org

IFPTI improves public health through competency-based learning solutions while cultivating strong leadership in the global food protection community. This translates to custom-designed learning organized around curriculum frameworks aligned with specific workforce competencies.

Augmented by close collaboration with industry, academia, federal, state international governments, IFPTI is the model for creating and fostering partnerships committed to addressing food protection and public health needs worldwide.

Illumina **1206**
5200 Illumina Way
San Diego, CA 92122, USA
Phone: +1 858.882.3630
www.illumina.com

Illumina is improving human health by unlocking the power of the genome. Our focus on innovation has established us as the global leader in DNA sequencing and array-based technologies, serving customers in the research, clinical and applied markets. Our products are used for applications in the life sciences, oncology, reproductive health, agriculture, microbiology and other emerging segments. To learn more, visit www.illumina.com and follow @illumina.

Indoor Biotechnologies, Inc. **1211**
700 Harris St.
Charlottesville, VA 22903, USA
Phone: +1 434.984.2304 **Fax: +1 434.984.2709**
www.inbio.com

Indoor Biotechnologies specializes in allergens and immunoassay products/services for the food industry, indoor air quality and biopharmaceutical industries, academic and government researchers, and Fortune 500 companies. Our mission is to improve patient care through research, education and developing cutting-edge technologies that serve our customers worldwide.

Indoor Biotechnologies' Molecular Diagnostics for Food Allergen Detection is the first immunoassay technology that allows the detection of clinically important food allergens. Molecular food allergen detection provides food manufacturers with a more comprehensive tool for safety testing that for the first time truly measures specific allergens including peanut, hazelnut, cashew, egg, shrimp, soy and milk.

InnovaPrep **930**
132 East Main St., # 68
Drexel, MO 64742, USA
Phone: +1 816.619.3375 **Fax: +1 816.619.3375**
www.innovaprep.com

InnovaPrep's Concentrating Pipette Select™ provides rapid concentration of pathogens, spoilage organisms, and particulate contamination from liquid food samples and beverages. The system is perfectly suited for use with rapid molecular analysis methods for same shift results. Please visit our booth for a demonstration.

INTEGRA Biosciences **1221**
2 Wentworth Drive
Hudson, NH 03051, USA
Phone: +1 603.578.5800 **Fax: +1 603.577.5529**
https://www.integra-biosciences.com/united-states/en

Here at INTEGRA Biosciences our ambition is to make pipetting more innovative but more importantly productive! It is our passion to work side by side with our customers to understand your liquid-handling challenges and answer your needs with innovative products.

Integrated Nano-Technologies, Inc. **806**
999 Lehigh Station Road, Suite 200
Henrietta, NY 14467, USA
Phone: +1 585.334.0170
www.integratednano.com

Integrated Nano-Technologies, Inc. is committed to providing fast, accurate test results that improve biological identification in the field and in operating facilities such as food processing plants. Founded in 2000 by an interdisciplinary team of scientists and engineers, INT has developed a robust platform for diagnostics and sample processing, replacing traditionally time-intensive and complex lab processes. INT's innovative Palladium™ system for rapid, on-site diagnostics is currently in the pilot testing phase. Palladium and its tests were developed in keeping with AOAC standards, and INT will be seeking approval in 2018.

International Association for Food Protection
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2864, USA
Phone: +1 800.369.6337 **Fax: +1 515.276.8655**
www.foodprotection.org

IAFP provides food safety professionals worldwide with a forum to exchange information on protecting the food supply. This is achieved through two monthly journals; the *Journal of Food Protection* and *Food Protection Trends*, an online newsletter titled the *IAFP Report* and through an Annual Meeting in North America where research topics on food safety issues are presented. IAFP also holds a three-day symposium in Europe each year and a separate, annual international symposium in addition to supporting food safety events in Dubai and China. Membership information can be obtained at our booth or visit our Web site at www.foodprotection.org.

International Association for Food Protection — Student PDG
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2864, USA
Phone: +1 800.369.6337 **Fax: +1 515.276.8655**
www.foodprotection.org

Welcome, students, to IAFP 2018! If you wish to take control of your career and enrich your IAFP experience by interacting with other students and networking with professionals, get involved with the IAFP Student Group. We are an organization of undergraduate and graduate students who wish to enhance food safety through active participation in IAFP. Stop by our booth to meet your colleagues, exchange ideas, and become involved in future student group activities.

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International Committee of Food Microbiology and Hygiene (ICFMH) **1229**
Finca Camps i Armet s/n
Monells, 17121, Spain
Phone: +34972630052
www.icfmh.org

Since 1953, the ICFMH represents the IUMS in all issues related to food microbiology. Its major aim is to contribute to food safety internationally with activities such as the "FoodMicro" Conference, workshops, publications (e.g., the *International Journal of Food Microbiology*), mobility grants and awards for young scientists, and by supporting and initiating education and training in food microbiology. The ICFMH particularly focuses on the food safety situations in developing countries.

The 26th International ICFMH Conference, FoodMicro 2018, will take place in Berlin (Germany) at Freie Universität Berlin, 3–6 September 2018, with the theme "Biodiversity of Foodborne Microbes" (http://www.foodmicro2018.com/). We shall be pleased to welcome you there!

International Food & Meat Topics **630**
Thorpe House, Kellythorpe Estate
Driffield, East Yorkshire YO25 9DJ, UK
Phone: +44.1377.241724 **Fax: +44.1377.253640**
www.positiveaction.co.uk

International Food & Meat Topics is a global magazine that focuses on all aspects of food and meat safety in production and processing. It carries regular features on laboratory testing and relevant research. Its editorial covers subjects as diverse as *Campylobacter*, HACCP, food safety, labelling and shelf life, and foreign body detection. Its targeted readership is QA/QC managers in food and meat production and processing plants, food testing laboratories, and responsible food safety professionals.

Interscience Laboratories Inc. **708**
32 Cummings Park
Woburn, MA 01801, USA
Phone: +1 781.937.0007 **Fax: +1 781.937.0017**
www.interscience.com

Interscience has been a global designer, manufacturer, and supplier of solutions for quick and safe microbiological analyses for more than 30 years. Please stop by our booth to view our complete product line, including the DiluFlow® gravimetric dilutor, the FlexiPump® dispensing pump, the silent BagMixer® 400 SW lab blender, the easy Spiral Dilute dilutor and spiral plater, and the new Scan 4000 automatic colony counter.

Invisible Sentinel **302**
3711 Market St., Suite 910
Philadelphia, PA 19104, USA
Phone: +1 267.969.6004
www.invisiblesentinel.com

Invisible Sentinel, a global molecular solutions company, is dedicated to providing first-in-class microbial detection tools. The Company's core technology, Veriflow®, is a patented, game-changing platform that integrates molecular diagnostics, antibody design, and immunoassays. The Veriflow® system has been validated in a broad range of food production and testing facilities in the U.S. and around the globe. The technology has been implemented in quality control processes to enable early action at critical control points and increase manufacturers' confidence in product quality and brand integrity by providing accurate, rapid results in even the most difficult to test matrices. www.invisiblesentinel.com.

Kikkoman Biochemifa Company **1010**
2-1-1, Nishi-Shinbashi, Minato-ku,
Tokyo, 105-0003, Japan
Phone: +81.3.5521.5481 **Fax: +81.3.5521.5498**
http://biochemifa.kikkoman.co.jp/e/

Kikkoman Biochemifa Company develops innovative technologies for food safely. Utilizing our advanced and patented technologies, Kikkoman offers the Kikkoman A3 test, a next generation ATP hygiene monitoring test, which is a far more sensitive and reliable rapid hygiene monitoring system than conventional ATP tests on the market and provides you with a more accurate verification of sanitation. We also offer a rapid, easy-to-use and quantitative test for Histamine in raw and frozen fish or canned tuna. With an emphasis on "Speed, Safety, and Simplicity," Kikkoman products can help you solve difficult detection issues and help you assure food product safety.

Labplas **808**
1951 Nobel
Sainte-Julie, QC J3E 1Z6, Canada
Phone: +1 450.649.7343 **Fax: +1 450.649.3113**
www.labplas.com

Labplas offers high precision sampling innovations to your industry. TWIRL'EM sampling bags provide a sterile, secure, contaminant-free container that ensures dependable analysis results.

Labplas is the sampling bag specialist! Our different brands of products are an economical and efficient way to collect, contain, and carry samples with confidence. Our sterile bags are used for environmental sampling, pharmaceutical research, quality assurance procedures (QA/QC), food industry applications, and veterinary medicine.

LexaGene **221**
500 Cummings Center, Suite 4550
Beverly, MA 01915, USA
Phone: +1 800.215.1824
www.lexagene.com

LexaGene is developing an instrument that makes pathogen detection super easy. It is designed for use in food packaging plants by individuals with no knowledge of microbiology. The instrument purifies the DNA and RNA from liquid samples and performs 22 PCR tests for pathogens and indicator species – all within ~ 1 hr. Such a quick turnaround time will provide food safety officers with the necessary information to determine whether their products can be shipped immediately or may be contaminated. In addition, the instrument is well suited for finding the source of a contamination within a single work shift.

Log10, LLC **701**
2402 Sykes Blvd.
Ponca City, OK 74601, USA
Phone: +1 580.304.7953
www.log10.com

Log10®, LLC is a comprehensive food safety company, supporting the food industry with services ensuring safety and quality food. We focus on common food pathogens and competing probiotics

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that prevent or eliminate these hazards. Log10® manufactures customized Pre-Liminate™ probiotic formulations that are proven to eliminate pathogens from food and environmental surfaces. Professional consulting services that are provided include: FMSA preparedness, GAP analyses, HACCP training, preventive controls for animal food (PCQI training), among others. Log10® offers ISO 17025 accredited laboratory services including standard microbiological testing and customized research studies. We partner with clients to ensure manufacturing of safe, high-quality food products.

Luminex Corporation **632**
12212 Technology Blvd.
Austin, TX 78727, USA
Phone: +1 512.219.8020 **Fax: +1 512.219.5195**
www.luminexcorp.com

Luminex Corporation is committed to creating innovative, breakthrough solutions to help our customers improve health and advance science worldwide. We serve the needs of our customers in diverse markets including clinical diagnostics, pharmaceutical drug discovery, biomedical research, genomic and proteomic research, and personalized medicine. Our goal is to transform global healthcare and life science research through the development, manufacturing, and marketing of proprietary instruments and assays that deliver cost-effective, rapid results to clinicians and researchers. For further information, please visit http://www.luminexcorp.com/.

Matrix Sciences **925**
1061 Feehanville Drive
Mount Prospect, IL 60056, USA
Phone: +1 847.272.8700 **Fax: +1 847.272.2348**
www.matrixsciences.com

Learn how with Matrix Sciences, we take food safety from complexity, to clarity and to confidence. Our portfolio of companies including Northland Laboratories, Richter International, Neumann Risk Services, pairs complex food safety matters with expertise that makes your food safety a priority and gives your company confidence to operate in competitive, regulated environment.

Come see us as we unveil Matrix Analytics, giving you data driven tools to manage your food safety and risks like never before.

MAXXAM Analytics **1133**
6660 Campobello Road
Mississauga, ON L5N 2L9, Canada
Phone: +1 416.389.3032
www.maxxam.ca

Founded over 40 years ago, MAXXAM Analytics is a market leader in analytical services and solutions to the energy, environmental, food, and DNA industries and a member of the Bureau Veritas Group of companies – a world leader in testing, inspection, and certification services. We provide unparalleled depth of technical and scientific expertise and serve customers through a national network of laboratories. MAXXAM skillfully combines efficiency and customer service with rigorous science and uncompromising quality management.

MediaBox by Microbiology International **932**
5350 Partners Court
Frederick, MD 21703, USA
Phone: +1 301.662.6835 **Fax: +1 301.662.8096**
www.enrichyourlab.com

Microbiology International will be demonstrating MediaBox™ Sterile Liquid Solutions, our revolutionary new product for ready-to-use liquid culture media. MediaBox™ Sterile Liquids are easy to use and store, conveniently packaged in a stackable box. Available in BPW, mTSB, modified UVM, sterile water, Butterfields, lactose broth, and more. Custom formulations upon request! MediaBox™ Sterile Liquids connect directly to the EZ-Flow gravimetric diluters or EZ-Dispense peristaltic pump for a completely closed system during sample preparation. Stop by our booth for a demonstration and make your lab's sample prep EZ!

Meridian Bird Removal **433**
17 N Franklin St.
Christiansburg, VA 24073, USA
Phone: +1 855.362.2200
www.meridanbirdremoval.com

At Meridian Bird Removal, we specialize in the guaranteed removal of birds from inside big box stores, warehouse stores, distribution centers and other commercial facilities. In addition, we assist facility managers to develop and implement proactive plans to get this issue under control long-term. Our live-capture and relocation service is fast, requires no operational shut-downs, public relations friendly, and 100% guaranteed.

Mérieux NutriSciences **207**
111 E Wacker Drive, Suite 2300
Chicago, IL 60625, USA
Phone: +1 312.938.5151
www.merieuxnutrisciences.com/us

Mérieux NutriSciences is a leading global food safety and quality partner — offering chemistry and microbiology testing, labeling, auditing, consulting, sensory testing, customized training, and research services to the food and nutrition industry. Focused on customer excellence, we protect consumers' health through nutritional research, scientific excellence, and innovation. We customize our services to meet the needs of individual manufacturers, food processors, caterers, restaurants, and retailers.

Headquartered in Chicago, Mérieux NutriSciences has grown from a single laboratory founded in Chicago Heights, Illinois, in 1967 to have a global presence. Present in 22 countries, Mérieux NutriSciences employs 7,000 people worldwide working in just under 100 laboratories.

Meritech **600**
720 Corporate Circle, Suite K
Golden, CO 80401, USA
Phone: +1 800.932.7707 **Fax: +1 303.790.4859**
www.meritech.com

Meritech is a world leader in automated handwashing and footwear scrubbing and sanitizing. CleanTech® systems are used in food processing, agriculture, food service, and other industries. CleanTech hand hygiene systems perform a fully automated 12-second hand wash, sanitize and rinse cycle, removing over 99.98% of dangerous pathogens. The systems use 75% less water and produce 75% less waste than manual handwashing. By making handwashing quick, easy and enjoyable, Meritech increases hand hygiene compliance up to 400%.

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METER Group, Inc. USA **601**
2365 NE Hopkins Court
Pullman, WA 99163, USA
Phone: +1 509.332.2756 **Fax: +1 509.332.5158**
www.metergroup.com

Demo the quality lab of the future, where the instruments you already own deliver data directly to permanent, verified digital records in Skala. Skala makes the data available in real time so food companies can use it to increase profitability, comply with regulatory requirements and improve customer satisfaction. No transcription errors. Records reviewed and approved in five minutes a day. Generate certificates of analysis with one click. Connects to our industry-leading AquaLab water activity meters.

Michelson Laboratories, Inc. **106**
6280 Chalet Drive
Commerce, CA 90040, USA
Phone: +1 562.928.0553 **Fax: +1 562.927.6625**
www.michelsonlab.com

Since 1970, Michelson Laboratories has provided complete chemical and microbiological analyses to the food and environmental industries throughout the country. We are an ISO/IEC 17025 Accredited Laboratory offering rapid turnaround time, accurate, reliable results and excellent customer service. We specialize in a number of methodologies for indicator organism and pathogen analysis, including PCR, as well as shelf life and challenge studies. Our chemistry lab offers antibiotic residue and melamine testing by LC/MS in addition to nutritional labeling, pesticide analysis, heavy metals by ICP/MS, GMO, Hepatitis A testing and more.

Michigan State University Online Food Safety Program **407**
1129 Farm Lane, Rm B-51, Food Safety & Toxicology Bldg.
East Lansing, MI 48824, USA
Phone: +1 517.884.2080
http://foodsafety.msu.edu

Michigan State University's Online Food Safety Program strives to educate professionals on how to make global food systems safe and support individuals as they advance in food safety-related careers. The program boasts 600 students and alumni representing over 350 organizations. The program is proud to educate food safety leaders. http://foodsafety.msu.edu.

Micro Essential Laboratory **311**
4224 Ave. H
Brooklyn, NY 11210-0824, USA
Phone: +1 718.928.2913 **Fax: +1 718.692.4491**
www.microessentiallab.com

Our company has been a market leader in pH and sanitizer testing technologies, serving the food service industry since 1934. Customer service and product quality are the company focus, and critical factors for success. Our goal is to develop lasting relationships.

Microbac Laboratories, Inc. **1226**
One Allegheny Square, Suite 400
Pittsburgh, PA 15212, USA
Phone: +1 412.459.1060
www.microbac.com

From farm to fork, Microbac Laboratories, Inc. helps you proactively manage food quality while staying ahead of safety risks. As a single-source supplier, our team and laboratory network provides complete ISO-accredited chemical, microbiological and molecular testing solutions. We collaborate with clients to design flexible food product testing and environmental monitoring programs with reliable turnaround times and informative data.

Keep product in play with Microbac's services for nutritional labels, shelf-life studies, ingredient authenticity, pathogen detection, allergen presence, non-GMO certification, and more. Our food testing experts understand the unique pressures and regulations of the food industry, and are ready to help.

Microbiologics **329**
200 Cooper Ave. N
St. Cloud, MN 56303, USA
Phone: +1 320.253.7400 **Fax: +1 320.253.6250**
www.microbiologics.com

Microbiologics is the leading provider of ready-to-use QC microorganisms for quality control testing in food laboratories. With over 900 strains available, we offer the largest and most diverse line of QC microorganisms including qualitative, quantitative, CRM, inactivated pathogens, synthetic molecular standards, and more. Visit booth 329 to learn how our QC microorganism products can save your laboratory time and money.

Microbiologique, Inc. **210**
8315 Lake City Way NE
Seattle, WA 98115, USA
Phone: +1 206.525.0412 **Fax: +1 206.306.8883**
www.microbiologique.com

IEH delivers comprehensive support services, encompassing all aspects of microbiology and chemistry analysis, process validation, food safety plans, and recall/outbreak assistance. Our network of over 100 ISO/IEC-17025-accredited laboratories provide expedited services to addresses quality and safety concerns.

In addition, through our family of brands; Microbiologique, Roka Bio and Sample6, IEH provides options for pathogen testing, indicators, allergens, mycotoxins, meat speciation, spoilage organisms, sampling supplies, laboratory disposables, media and instruments.

We validate client's products at no charge for regulatory compliance. Come learn about how we assist with risk management and service clients with internationally recognized experts in food safety.

Microbiology International **921**
5350 Partners Court
Frederick, MD 21703, USA
Phone: +1 301.662.6835 **Fax: +1 301.662.8096**
www.800ezmicro.com

Microbiology International will be exhibiting everything your lab needs for in-house media preparation, sample preparation, enumeration, confirmation, and destruction. Stop by our booth for demonstrations of our spiral plater, colony counter, media preparators/plate pourers, laboratory autoclaves, innovative sample preparation instruments, and a comprehensive line of rapid bacterial screening and identification kits for common food pathogens. We can help make your lab processes EZ!

MilliporeSigma **1121**
400 Summit Road
Burlington, MA 01803, USA
Phone: +1 800.645.5476
www.milliporesigma.com

MilliporeSigma is the U.S. life science business of Merck KGaA, Darmstadt, Germany. With 19,000 employees and 72 manufacturing sites worldwide, MilliporeSigma's portfolio spans more than 300,000 products enabling scientific discovery. MilliporeSigma has customers in life science companies, university and government institutions, hospitals and industry. More than 1 million scientists and technologists

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use its products. The company is committed to solving the toughest problems in life science by collaborating with the global scientific community.

National Registry of Food Safety Professionals **305**
6751 Forum Drive
Orlando, FL 32821, USA
Phone: +1 800.446.0257
www.nrfsp.com

National Registry of Food Safety Professionals (NRFSP) offers comprehensive certification programs for managers, in both food safety and HACCP. Nationally accredited by ANSI using CFP standards in the U.S. and ISO 17024 standards globally, NRFSP provides many options for the training and certification of managers and certificate programs for food handlers, as well as diagnostic reporting and tracking of data. Learn more at www.nrfsp.com or call 1.800.446.0257.

NEHA **902**
720 S Colorado Blvd., Suite 1000-N
Denver, CO 80246, USA
Phone: +1 303.756.9090
www.neha.org

The mission of the National Environmental Health Association (NEHA) is to "advance the environmental health professional for the purpose of providing a healthful environment for all." NEHA represents 5,000 members from the U.S. and abroad who work at federal/state/local agencies, academia, industry, and the armed forces. NEHA offers credentialing, education, and resources related to the broad spectrum of environmental health topics including air quality, food safety, hazardous materials, preparedness, sustainability, vector control, and water quality.

Nelson-Jameson, Inc. **1024**
2400 E. 5th St.
Marshfield, WI 54449, USA
Phone: +1 800.826.8302
www.nelsonjameson.com

Nelson-Jameson, Inc. has been a trusted source of food processing supplies for 70 years. We are a wide-line distributor representing over 850 vendors and tens of thousands of products in the broad categories of Processing & Flow Control, Safety, Sanitation & Janitorial, Production & Material Handling, Building & Facility Maintenance, Laboratory & QA/QC, and Packaging & Ingredients.

Neogen Corporation **627**
620 Lesher Place
Lansing, MI 48912, USA
Phone: +1 800.234.5333 **Fax: +1 517.372.0108**
www.foodsafety.neogen.com

Neogen's comprehensive line of rapid food safety products includes DNA-definitive tests for *Salmonella*, *Listeria*, *Listeria monocytogenes* and *E. coli* O157:H7; Listeria Right Now™ detects the pathogen in less than 60 minutes — without enrichment; simple and accurate tests for food allergens, including milk, egg and peanut; dairy antibiotics, including the BetaStar® receptor-based lateral flow assay for the rapid detection of beta-lactam residuals in milk; spoilage organisms (e.g., yeast and mold); mycotoxins; Neogen Culture Media; and sanitation, including the AccuPoint® Advanced ATP system.

Northland Laboratories **927**
1061 Feehanville Drive
Mount Prospect, IL 60056, USA
Phone: +1 847.656.0277 **Fax: +1 847.272.2348**
www.northlandlabs.com

See how at Northland Laboratories (a Matrix Sciences Company), your matters are what matter most to us. Our state-of-the-art laboratories deliver reliable, fast, and accurate microbiology, chemistry, sensory, process validation, and specialty testing to help you verify food quality and food safety.

With Northland Laboratories, you can rely on quality testing and responsive service that make your food quality and food safety tests a priority every time. ISO 17025 Accredited.

Novolyze **906**
185 Alewife Brook Pkwy.
Cambridge, MA 02138, USA
Phone: +1 925.336.6740
www.novolyze.com

Novolyze® is a company specializing in food safety. We have developed SurroNov®, the first range of dried, ready-to-use surrogate bacterial preparations. The SurroNov® Surrogates are harmless microorganisms that mimic the inactivation of foodborne pathogens like *Salmonella*. Since they are not pathogenic, they are used directly at plant- and pilot-scale to validate, verify and optimize a food process. SurroNov® offers the food industry a gold standard method to ensure the safety of processed foods and comply with international food safety regulations like FSMA. Let's meet at our booth to discuss your current Food Safety needs.

NSF International **800**
789 N. Dixboro Road
Ann Arbor, MI 48105, USA
Phone: +1 203.228.9160
http://www.nsf.org

NSF International has 70+ years of experience helping the agriculture, processing, food equipment, and retail industries navigate the complex food safety, quality, and regulatory environment. The NSF Applied Research Center is the R&D arm of NSF, offering customized testing solutions to companies and researchers. Expert testing services include Next Generation Sequencing, authenticity screens, food fraud assistance, toxicology research, chemical risk assessment, and product validation. As an AOAC Research Institute lab, we can partner on PTM and OMA projects. At the core we work toward the NSF mission of furthering public health. For more information, go to www.nsfresearch.org.

NSI Lab Solutions **522**
7212 ACC Blvd.
Raleigh, NC 27617, USA
Phone: +1 800.234.7837 **Fax: +1 919.789.3019**
www.nsilabsolutions.com

Manufacturer of Certified Reference Materials: Microbe Cocktails for Indicators, Pathogens and Food Matrix Microbiology CRMs. NSI Lab Solutions is an accredited PT provider too! Accredited to ISO Guide 34, ISO Guide 17025, ISO 9001, and ISO Guide 17043. www.nsilabsolutions.com.

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Ocean Optics **1108**
8060 Bryan Dairy Road
Largo, FL 33777, USA
Phone: +1 727.733.2447 **Fax: +1 727.733.3962**
www.oceanoptics.com

Ocean Optics is helping to take a bite out of food fraud with a full menu of spectrometers, sensors and accessories for applications involving food and beverage processing, authentication and packaging. Our miniature spectrometers are compact, portable and flexible, with systems available for the lab, field and line.

With food fraud now a global problem, authenticating goods – from fruit and honey to spices and spirits – requires robust equipment based on sound science. Modular spectroscopy fills that role, with absorbance, reflectance, fluorescence and Raman spectroscopy systems used effectively for authentication and safety testing of foods.

Orkin Pest Control **109**
2170 Piedmont Road NE
Atlanta, GA 30024, USA
Phone: +1 404.287.8074
www.orkincommercial.com

Orkin Food Safety Precision Protection™: Pest control down to a science™.

Orkin's Food Safety Precision Protection™ program is designed specifically for the highly regulated food processing industry. It comes complete with Orkin Gold Medal QA™, a system of comprehensive documentation and audit support anytime you need it. To learn more or to request a free consultation, call 1.800.ORKIN NOW or visit us at www.orkincommercial.com.

Oxford Nanopore Technologies Ltd. **1200**
Gosling Bldg., Edmund Halley Road
Oxford Science Park
Oxford, Oxon OX4 4DQ, UK
Phone: +44.1865.335.521
www.nanoporetech.com

Oxford Nanopore Technologies has developed the world's first nanopore DNA sequencer, the MinION. The MinION is a portable, real-time, long-read, low-cost device designed to bring easy biological analyses to anyone, whether in scientific research, education or real world applications such as disease/pathogen surveillance, environmental monitoring, food chain surveillance, self-quantification or microgravity biology.

The MinION is used by a thriving community of thousands in more than 70 countries, enabling a myriad of applications within the laboratory environment and in the field. The GridION and PromethION devices serve users with larger projects or more samples. All devices are for research purposes only.

Pall Corporation **931**
25 Harbor Park Drive
Port Washington, NY 11050, USA
Phone: +1 866.905.7255
www.pall.com/foodandbev

Pall Corporation is a global filtration, separation and purification leader providing solutions to meet the critical fluid management needs of customers across the broad spectrum of life sciences and industry. We work with our customers to advance health, safety and environmentally responsible technologies.

Pall Food and Beverage provides products and services to ensure product quality and maintain process reliability in beverage and food production. Our solutions also assist in consumer protection, the reduction of operating costs and waste minimization.

Partnership for Food Safety Education **331**
2345 Crystal Drive, Suite 800
Arlington, VA 22202, USA
Phone: +1 202.220.0651
www.fightbac.org

The non-profit partnership develops and promotes effective education programs to reduce foodborne illness risk for consumers. We support health and food safety educators with the tools they need to stay strong on the front lines of food safety. www.fightbac.org.

Passport Food Safety Solutions **535**
6935 Vista Drive
West Des Moines, IA 50266, USA
Phone: +1 515.334.8035 **Fax: +1 515.334.8048**
www.passportfoodsafety.com

Passport Food Safety Solutions, now part of the Arm & Hammer family, delivers the most comprehensive portfolio of pre- and post-harvest solutions. We deliver practical food safety solutions through a broad portfolio of technologies, predictive analytics and consultation, and a commitment to developing new innovations that meet the food safety needs of all sectors of the industry.

PrimusLabs **532**
2810 Industrial Pkwy.
Santa Maria, CA 93455, USA
Phone: +1 805.922.0055
www.primuslabs.com

For 30 years, Primus Group has remained the single point of contact in food safety for microbiological and pesticide residue testing, data management/analytics, consulting, and audit scheme ownership. PrimusLabs utilizes state-of-the-art technology, degreed technical staff, and QA oversight to raise your results to an actionable level. Azzule Systems offers data management solutions through the Azzule Supply Chain Program (SCP). By blending audit and laboratory data with analytics, the SCP's tools enhance the buyer's confidence in their suppliers and overall food safety program. Turn to PrimusLabs and Azzule for all your FSMA compliance and food safety needs.

Prometric **1231**
1501 South Clinton St.
Baltimore, MD 21224, USA
Phone: +1 443.455.6056 **Fax: +1 443.455.6417**
www.prometric.com/foodsafety

Prometric's food safety exams play a critical role in ensuring food service professionals have mastered the principles necessary to reduce risk to consumers. As one of the most respected and trusted sources of test development and delivery in the world, Prometric supports test takers worldwide who take more than 7 million tests each year on behalf of more than 300 clients in more than 180 countries. For additional information, please visit www.prometric.com/foodsafety.

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PureLine **809**
1241 N Ellis St.
Bensenville, IL 60106, USA
Phone: +1 847.732.7253
www.pureline.com

PureLine specializes in the generation and application of chlorine dioxide. PureLine understands that food safety is critical for any food processor. For 20 years, PureLine has been providing both large and small food processors with customized chlorine dioxide sanitation solutions. PureLine offers a full-line of chlorine dioxide products and services, including generators, Pure3000 (ppm) solution, PureVista, MobileClean and pHlor-San services. In addition, PureLine will thoroughly train your facility personnel on all aspects of safe and effective chlorine dioxide treatments.

Puritan Medical Products Co., LLC **1109**
31 School St., P.O. Box 149
Guilford, ME 04443, USA
Phone: +1 207.876.3311 **Fax: +1 207.876.3311**
www.puritanmedproducts.com

Puritan Medical Products Co., LLC is known worldwide as a trusted manufacturer of environmental sampling swabs and collection devices for your ideal application. Choose from handle, tip, and fill options that give you instant results, perfect for spot checks of virtually any surface. Whether you're testing meat for pathogens or trying to determine the effectiveness of a cleaning program, you can count on us for the highest quality products to get the job done.

Q Laboratories, Inc. **703**
1400 Harrison Ave.
Cincinnati, OH 45214-1606, USA
Phone: +1 513.471.1300 **Fax: +1 513.471.5600**
www.qlaboratories.com

Q Laboratories has served the food and beverage industries since 1966, offering comprehensive microbiology and chemistry laboratory, and research and development services. An ISO/IEC 17025 Accredited, GMP/GLP compliant laboratory, Q Laboratories can provide services to meet all of your testing and quality assurance needs. Capabilities include: pathogen detection, microbial identification (MALDI-TOF), nutritional analysis, allergen screening, challenge studies, shelf-life studies, environmental monitoring programs, and method validation/verification studies to help test kit manufacturers demonstrate proficiency of proprietary methods. Please contact Q Laboratories to discover how we can help you continue to produce safe, high quality products.

QA Line, LLC **802**
22842 Princeton Place
Castro Valley, CA 94552, USA
Phone: +1 952.484.5545
www.qaline.net

QA Line, LLC specializes in lab design, development, equipment, supplies and consumables for industrial (food) microbiology and chemistry labs. We have built labs from 400–20,000+ sq ft for a wide variety of food producers and reference labs. QA Line, LLC is unique in our ability to help with all aspects of lab design, lab development, construction, custom equipment, unique media solutions, lab procedures, and ISO 17025 preparation. Talk to us about how we can save you significant $$ while improving your QA data by building/utilizing your in-house lab. Come by for a free ROI on your current lab usage compared to in-house lab costs.

QualiTru Sampling Systems **1104**
471 Hayward Ave. North
Oakdale, MN 55128, USA
Phone: +1 651.501.2337 **Fax: +1 651.501.5797**
www.qualitru.com

QualiTru Sampling Systems is a trusted brand when it comes to aseptic sampling of your most critical fluid products. We have an ongoing commitment to the industry by providing an accurate sampling system for all your fluid sampling needs. Our patented products and processes allow for multiple sterile sampling channels into sterile sampling containers, thus eliminating the risk of sampling contamination and ensures the most accurate sampling techniques on the market today.

Quality Assurance & Food Safety Magazine **804**
5811 Canal Road
Valley View, OH 44125, USA
Phone: +1 216.393.0300 **Fax: +1 216.525.0515**
www.qualityassurancemag.com

QA Magazine, a bi-monthly publication from GIE Media, provides digital and print publications for the food and beverage processing industry with a specific focus on food safety, quality, and defense across the global supply chain. Through practical insights and analysis of plant processes, practices, regulation, and current issues, the QA Media family—including our print publication, Website and e-newsletters—addresses the growing market need for targeted information in these key areas. www.qualityassurancemag.com.

QWerks **333**
222 W Merchandise Mart Plaza, 1212
Chicago, IL 60654, USA
Phone: +1 929.279.3757
www.getqwerks.com

QWerks is a paperless platform for managing quality data that is FSMA compliant, audit-ready, and efficient for users and quality managers alike. Our quality monitoring software helps brands reduce risk with real-time, non-conformance alerts and corrective actions while safeguarding quality records for audits. QWerks' powerful analytics engine provides businesses with the tools to make informed decisions quickly, resulting in operational improvements and a justifiable ROI.

R & F Products **527**
2725 Curtiss St.
Downers Grove, IL 60515-4002, USA
Phone: +1 630.969.5300 **Fax: +1 630.969.5303**
www.rf-products.net

R & F Products is the developer/producer of chromogenic media in the forms of powdered and prepared plates and enrichment broths for food, environmental and clinical pathogens. R & F Products' mission is to produce unique and innovative chromogenic plating media and enrichment broths that will enhance and improve laboratory efficiency, accuracy, sensitivity and specificity for pathogen isolation. R & F Products has 13 media patent/patent applications for chromogenic media isolating the following pathogens: *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella*, *Bacillus cereus*/*Bacillus thuringiensis*, *Enterobacter sakazakii* (*Cronobacter* sp.), *Bacillus anthracis*, *Listeria* sp./*Listeria monocytogenes*, *Listeria* sp., *Shigella* sp., *Campylobacter jejuni*/*C. coli*, *Yersinia pestis*, and non-O157 STEC.

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Randox Food Diagnostics **529**
55 Diamond Road
Crumlin, BT29 4QY, United Kingdom
Phone: +944.22413
www.randoxfood.com

Randox Food Diagnostics is an international supplier of food safety analysers and reagents for the detection of mycotoxins, antimicrobials, growth promoting hormones and drugs of abuse in animals and produce.

The Randox product range includes the Biochip Array Technology (BAT) analyzer, the Evidence Investigator and a range of ELISAs. BAT allows simultaneous screening of multiple analytes from a single sample, offering major efficiencies in comparison to traditional ELISA. This technology is proven to be applicable in a wide range of settings including; drug residue screening, private/public research applications, clinical laboratories, and veterinary laboratories.

Reading Thermal **706**
7 Corporate Blvd.
Sinking Spring, PA 19608, USA
Phone: +1 610.678.5890
www.readingthermal.com

The SCORPION® 2 Profiling System has become a standard in the baking industry providing a complete measurement system to capture the four key baking parameters: Temperature, air velocity, heat flux and humidity. With the SCORPION® 2 System, you can measure and analyze baking, drying and cooling thermal processes. The SCORPION® 2 enables you to monitor real-time in-process conditions giving you the critical information you need to correct problems and maintain optimum process conditions.

Remco Products Corp. **1013**
4735 W 106th St.
Zionsville, IN 46077, USA
Phone: +1 317.876.9856 **Fax: +1 317.876.9858**
www.remcoproducts.com

Remco provides color-coded tools for cleaning and material handling where hygiene and safety are critical. In addition to its own hygienic shovels, scoops, and scrapers, Remco features Vikan's advanced line of brushes, brooms, and squeegees. Together with Vikan, Remco supports color-coding plans by offering more tools in more colors than other suppliers. Remco also provides training and support to end users, helping ensure regulatory compliance. Regardless of an operation's size or complexity, Remco has the tools and expertise to help execute HACCP color-coding plans. To contact Remco Products, please visit them at www.remcoproducts.com, email them at cs@remcoproducts.com, or call +1 317.876.9856.

Rentokil Steritech **1107**
1125 Bershire Blvd., Suite 150
Reading, PA 19610, USA
Phone: +1 610.372.9700
www.rentokil-steritech.com

Rentokil Steritech represents the North American division of Rentokil Initial PLC, one of the largest business services companies in the world. For nearly a century, we've been the leaders in pest control innovation protecting the health and reputation of brands worldwide. Through focusing on partnership and prevention, we help businesses protect their customers, products, and brands through comprehensive pest control solutions. With a network of pest control specialists located across North America, we offer customers local expertise and customized solutions. Wherever you may be in the United States, a Rentokil Steritech expert is never more than a few miles away.

Rheonix Inc. **926**
10 Brown Road, Suite 103
Ithaca, NY 14850, USA
Phone: +1 510.984.0087
www.rheonix.com

The Rheonix Encompass Optimum™ workstation is a fully automated system that provides rapid, highly multiplexed sample-to-answer molecular testing for food and beverage. With one pipette step per sample, the system offers true walkaway simplicity. Rheonix's Listeria PatternAlert™ assay, launching in 2018, will enable food producers to quickly identify recurring *Listeria* patterns in their facilities direct from enrichments, with no need to isolate strains in pure culture. Rheonix's portfolio of multiplexed testing solutions also includes the Beer SpoilerAlert™ assay, the most comprehensive beer spoilage panel available. With Rheonix, getting more information from your sample has never been easier.

RizePoint **707**
2890 E Cottonwood Pkwy., Suite 250
Salt Lake City, UT 84121, USA
Phone: +1 888.313.7095 **Fax: +1 801.401.7168**
www.rizepoint.com

Only RizePoint provides the tools, technology, and expertise to proactively safeguard enterprise compliance. RizePoint mobile and cloud-based software helps organizations improve the quality, safety, and sustainability of their products, services and facilities. RizePoint's software is used by 5 of the top 8 hospitality brands and 5 of the top 8 food service brands. Considered the industry standard for food service, hospitality, and retail, RizePoint mobile and cloud-based solutions serve nearly 2 million audits with 200 million questions answered annually. Visit www.rizepoint.com.

Rochester Midland Corp. Food Safety Division **201**
155 Paragon Drive
Rochester, NY 14624, USA
Phone: +1 585.336.2200 **Fax: +1 585.336.2357**
www.rochestermidland.com

Rochester Midland Corporation provides a HACCP-based food safety program that offers sanitation solutions to food and beverage manufacturers. Our BrandGuard Program® is made up of seven steps which are all critical components of a consultative and effective food safety program. Built into each step are the environmental, social and financial legs of sustainability. With our 120+ years of experience, we have formed long-term partnerships with our customers to provide them with the integrated solutions that will protect their business financially.

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RokaBio, Inc. **113**
15300 Bothell Way NE
Lake Forest Park, WA 98155, USA
Phone: 206.522.5432 **Fax: 206.306.8883**
www.rokabio.com

IEH delivers comprehensive support services, encompassing all aspects of microbiology and chemistry analysis, process validation, food safety plans, and recall/outbreak assistance. Our network of over 100 ISO/IEC-17025-accredited laboratories provide expedited services to addresses quality and safety concerns.

In addition, through our family of brands; Microbiologique, Roka Bio and Sample6, IEH provides options for pathogen testing, indicators, allergens, mycotoxins, meat speciation, spoilage organisms, sampling supplies, laboratory disposables, media and instruments.

We validate client's products at no charge for regulatory compliance. Come learn about how we assist with risk management and service clients with internationally recognized experts in food safety.

Romer Labs® **1113**
130 Sandy Drive
Newark, DE 19713, USA
Phone: +1 302.781.6400 **Fax: +1 302.781.6378**
www.romerlabs.com

Romer Labs® is a leading provider of diagnostic test solutions for the food industry. We specialize in analytical services and rapid test kits for the detection of food pathogens, food allergens, mycotoxins, drug residues, and GMOs. Our broad range of innovative tests and services play a pivotal role in integrated food safety management programs. Our fundamental objective at Romer Labs® is to provide cost-effective, validated products and services for "Making the World's Food Safer."

RQA, Inc. **606**
10608 W 163rd Place
Orland Park, IL 60467, USA
Phone: +1 630.512.0011
www.rqa-inc.com

RQA is a global leader in providing quality assurance and food safety solutions to the food industry, including retail quality audits, counterfeit investigation, consumer complaint retrieval, product retrieval and recall services. With our crisis planning and management and RQA's Food Forensics™ contaminant investigation services, we offer the most comprehensive quality and risk management support available. Whether you need to assess your product quality and market conditions at retail, retrieve consumer complaint or competitive samples, perform vulnerability assessments as part of your Food Defense Plan development, optimize your Crisis Management capabilities, or even execute a product recall, RQA can help.

Safe Food Alliance **1005**
701 Striker Ave.
Sacramento, CA 95834, USA
Phone: +1 916.561.5900
www.safefoodalliance.com

SafeTraces, Inc. **110**
6111 Johnson Court, Suite 200
Pleasanton, CA 94588, USA
Phone: +1 925.326.1200
www.safetraces.com

SafeTraces is committed to revolutionizing food safety, using patented DNA tagging technology. We market the only on-food source assurance solutions for fruits and vegetables that protect producers, processors, and consumers. Our patented, food-safe solutions enable customers to gain full transparency into origin, protect their brand, and reduce processing and recall costs:

- SafeTracers™ are invisible, on-food seaweed-based barcodes that trace the product, not the packaging, providing full transparency of source, purity or authenticity within minutes.
- SaniTracers™ are non-living pathogen surrogates that monitor the lethality, not the chemistry, enabling instant produce wash process verification and validation.

SafeTraces – TAG. TRACE. TRUST.

SafetyChain Software **300**
711 Grand Ave., Suite 290
San Rafael, CA 94901, USA
Phone: +1 888.235.7540
www.safetychain.com

SafetyChain is a Quality Management System (QMS) that helps food and beverage companies improve productivity, profitability and compliance with a flexible, user-friendly software platform that captures, manages and analyzes real-time operations data. Our cloud-based solutions include programs for Quality Assurance, Food Safety and Supplier Compliance to help drive operational effectiveness for every facility.

SAI Global **1204**
20 Carlson Court, Suite 200
Toronto, ON M9W 7K6, Canada
Phone: +1 800.247.0802 **Fax: +1 216.654.0889**
www.saiglobal.com

SAI Global offers organizations a range of specific and generic solutions to achieve certification, delivering first-and second-party audits, achieve compliance, manage and monitor risks, train staff, improve communications and transparency with suppliers and implement food safety management systems.

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2018 Exhibitors

Sartorius **100**
5 Orville Drive
Bohemia, NY 11716, USA
Phone: +1 631.254.4249
www.sartorius.us

Sartorius is a broad-based premium supplier of high-quality laboratory instruments, consumables and services. Our customers are from research and quality assurance laboratories of the pharmaceutical, chemical and food industries as well as from the academic sector. The product portfolio of our division focuses on high-value laboratory instruments, such as lab balances, pipettes and laboratory water purification systems. We offer the widest range of consumables, such as laboratory filters and pipette tips. In laboratory weighing technology, our company ranks as the world's second largest equipment supplier, and is among the leading global suppliers for consumables, pipettes and laboratory water purification systems.

SenesTech, Inc. **228**
3140 N Caden Court
Flagstaff, AZ 86004, USA
Phone: +1 928.779.4143 **Fax: +1 928.526.0243**
www.senestech.com

SenesTech is changing the paradigm of pest management by targeting the root of the problem: reproduction. ContraPest®, SenesTech's flagship product, targets the reproductive capabilities of Norway and roof rats. The highly-palatable formulation promotes sustained consumption, reducing fertility in male and female rats. Whether as a fertility-control anchor within your Integrated Pest Management (IPM) program to magnify the success of your IPM protocols, or as a standalone, non-lethal solution for customers looking to reduce or eliminate the use of lethal methodologies, ContraPest® is a vital tool for success. *ContraPest® is a Restricted Use Pesticide. Please read and comply with label instructions.

Seward Laboratory Systems Inc. **324**
155 Keyland Court Bohemia
New York, NY 11716, USA
Phone: +1 631.337.1808
www.seward.co.uk

Seward manufactures a leading range of Stomacher® paddle blenders used in sample preparation for microbiological analysis. For accurate results, choose the best in sample preparation.

SGS **427**
201 Route 17 North
Rutherford, NJ 07070, USA
Phone: +1 201.508.3000
www.foodsafety.sgs.com

SGS is a world leading inspection, verification, testing, and certification company. Recognized as the global benchmark for quality and integrity, we provide competitive advantage, drive sustainability, and deliver trust. With more than 95,000 employees, we operate a network of more than 2,400 offices and laboratories around the world. SGS offers a wide range of solutions covering the entire food supply chain from primary production and manufacturing, to retail and foodservice. With a comprehensive range of independent inspection, testing, training, certification, and technical services specific for the food sector, we help companies worldwide to monitor and validate safety, quality, and sustainability.

Sika Industrial Flooring **401**
201 Polito Ave.
Lyndhurst, NJ 7041, USA
Phone: +1 800.933.7452 **Fax: +1 800.294.6408**
www.sikafloorusa.com

Sika's high performance, FSMA-compliant floor and wall systems are trusted and relied upon by designers and facility managers for their outstanding performance, durability, easy maintenance, and aesthetic enhancement in the food and beverage.

Sikafloor is a hygienic and durable polymer product line specifically formulated to create sturdy, seamless floor surfaces that are long-lasting and exhibit unparalleled resistance to hazards in industrial settings. Aesthetic and functional benefits include excellent chemical, mechanical and slip resistance, and fast-cure options for quick turnarounds. Sika also offers a diverse selection of epoxy and urethane floor coatings and resurfacers that comply with air quality mandates.

SmartSense **215**
186 Lincoln St., 8th Floor
Boston, MA 02111, USA
Phone: +1 952.912.3104
http://www.smartsense.co

SmartSense by Digi transforms how organizations sense, monitor, and make decisions. Utilizing the power of the Internet of Things (IoT), SmartSense improves compliance, quality, and efficiency by automating monitoring for food safety, pharmacy safety, product quality, and preventative equipment maintenance. Today, SmartSense has earned the trust of the most critical government, commercial, and non-profit institutions in the world, enabling real-time sensor driven decisions for over 2,000 organizations in 75 countries.

Solus Scientific **1205**
9 Mansfield Network Centre
Millennium Business Park, Concord Way
Mansfield, Nottinghamshire NG19 7JZ, UK
Phone: +00.44.755.11.58004 **Fax: +00.44.1623.620977**
www.solusscientific.com

In a fast-paced food testing environment, it is critical to process samples quickly and efficiently, plus you need the ability to cope with varying demands. Solus Scientific produces pathogen testing systems that have been specifically developed with these constraints in mind. The latest addition to the range: Solus One *Listeria*, provides next day results for environmental samples. Our tests have AOAC and AFNOR approval and are used by testing laboratories worldwide. Committed to food safety excellence, our assays bring significant productivity benefits to our customers. Talk to us to learn how we can save you time and money.

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Springer Nature **400**
1 New York Plaza
New York, NY 10004, USA
Phone: +1 212.726.9200
www.springernature.com

Springer Nature is one of the world's leading global research, educational and professional publishers, home to an array of respected and trusted brands providing quality content through a range of innovative products and services. Springer Nature is the world's largest academic book publisher and numbers almost 13,000 staff in over 50 countries. www.springernature.com.

StateFoodSafety **121**
711 Timpanogos Pkwy., Bldg. M, Suite 3100
Orem, UT 84097, USA
Phone: +1 801.494.1416 **Fax: +1 801.226.4315**
www.statefoodsafety.com

StateFoodSafety develops technology-enhanced, online food safety training and certification solutions for restaurant, hospitality, and regulatory communities at an affordable price. Our products include food-handler training, food manager training and certification exam, food allergens training, and alcohol server/seller training. Each course developed by StateFoodSafety is customized to comply with local regulatory requirements. Talk with one of our representatives at booth #121 to see how we can benefit your company or community.

Steamericas, Inc. **108**
808 Hindry Ave., Unit E
Inglewood, CA 90301, USA
Phone: +1 310.327.8900 **Fax: +1 866.275.3582**
www.steam.am

Dry and high temperature steam generated by the Optima Steamer can be easily incorporated into daily and periodic cleaning (both CIP and COP) to ensure proper sanitation and removal of bio-films and most common food pathogens such as *Listeria, E. coli*, *Salmonella* and *Campylobacter*. Dry steam requires a fraction of water and no chemicals (ideal for kosher and organic processors). Steam cleaning does not generate wastewater run-off or overspray, which provides a flexible solution for dry clean facilities.

Sterilex Corporation **312**
111 Lake Front Drive
Hunt Valley, MD 21030, USA
Phone: +1 443.541.8800 **Fax: +1 443.541.8803**
www.sterilex.com

Sterilex develops proprietary, sanitation technologies designed to remove biofilm, provide high level disinfection, and enhance sanitation. Sterilex award-winning products are considered a best practice for the control of harmful organisms such as *Listeria*, *E. coli* and *Salmonella* on a wide variety of food contact and environmental surfaces. Sterilex products are used in a variety of sanitation applications including foaming and soaking programs, drain treatment, spiral freezer sanitization, and microbial threat detection. Sterilex technologies have proven to eliminate environmental sanitation challenges and increase shelf life, resulting in an enhanced sanitation program. Visit us to learn more about innovative solutions for microbial control.

STOP Foodborne Illness **232**
4809 N Ravenswood Ave., Suite 214
Chicago, IL 60640, USA
Phone: +1 773.269.6555 **Fax: +1 773.883.3098**
www.stopfoodborneillness.org

STOP Foodborne Illness is a national nonprofit, public health organization dedicated to preventing illness and death from foodborne pathogens by promoting sound food safety policy and best practices, building public awareness, and assisting those impacted by foodborne illness.

TandD US, LLC **429**
534 N Guadalupe St., #32886
Santa Fe, NM 87501, USA
Phone: +1 518.669.9227
www.tandd.com

TandD Corporation manufactures a comprehensive line of wireless and stand-alone data loggers with innovative web-based data collection, remote monitoring and notification features, included in the product lineup are models that incorporate Wi-Fi connectivity for automatic uploading of data to the company's free WebStorage Service, where customers can view, share and archive their recorded data without paying monthly fees. TandD Corporation, a leading supplier of wireless data loggers, and has been engaged in the design, development and manufacture of high reliability, high quality electronic measurement systems since 1986.

Testo Solutions USA, Inc. **1105**
2 West Market St., Suite 500
West Chester, PA 19382, USA
Phone: +1 800.227.0729 x200
www.testo.com/solutions

Testo Solutions USA, Inc. is a world leader in the design, development, and manufacture of portable test and measurement instrumentation. Backed by 60 years of measuring engineering experience, our mission is to provide the best quality, service and value in the industry. With the launch of a fully integrated system (Hardware/Software/Services) focused on fulfilling a gap for automation and compliance, the testo Saveris system leads the food safety market into a new era. Food safety executives can now automate many of today's manual food safety checks; create visibility across the business to improve accountability; and provide leadership with sought-after tools to control food safety risks. The Saveris system changes the dynamic from managing paper, updating binders, and manually reporting progress up the chain to automation and managing exceptions through software notifications to improve food safety and lowering risk. solutions@testo.com

Thermo Fisher Scientific **521**
12076 Santa Fe Trail Drive
Lenexa, KS 66215, USA
Phone: +1 800.255.6730 **Fax: +1 800.864.4739**
www.thermofisher.com

Thermo Fisher Scientific is a world leader in serving science. Our mission is to enable our customers to make the world healthier, cleaner and safer. Through our Thermo Scientific, Ion Torrent and Applied Biosystems brands, we offer complete solutions for each

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2018 Exhibitors

step of your microbiological food-safety and integrity testing workflow with market-leading instrumentation, sample preparation capability, and molecular technology. Positioned to meet your changing needs, we can help you to remain adaptive, responsive, and competitive. To find out more stop by booth #521, visit www.thermofisher.com/foodmicrosolutions or join our blog at www.thermofisher.com/examiningfood.

ThermoWorks **127**
741 E Utah Valley Drive
American Fork, UT 84003, USA
Phone: +1 801.756.7705 **Fax: +1 801.756.8948**
www.thermoworks.com

ThermoWorks is a family-owned business located in American Fork, UT. Founded in 1997, the company has grown steadily over the past two decades into an industry leader for professional temperature tools. ThermoWorks offers scientific precision and robust industrial design across their entire product line. An advanced A2LA-accredited calibration lab on premises assures ThermoWorks products meet the highest performance standards. As such, ThermoWorks is proud to be an official house purveyor of the James Beard House in Manhattan and the preferred brand for temperature and timer instruments among award-winning chefs, top test kitchens, commercial foodservice, and discriminating home cooks nationwide.

TraceGains, Inc. **1208**
10385 Westmoor Drive, Suite 200
Westminster, CO 80021
Phone: +1 720.465.9400
www.tracegains.com

TraceGains provides food and beverage companies and brokers with a web-based, full-service supplier, compliance, and regulatory document management solution that automates the management of supplier risk, data, and documentation, and makes companies 365 Audit Ready™. TraceGains' cloud-based SAAS solution works with incumbent in-house solutions to close the loop on upstream risk and provide collaborative supplier management, and eases compliance requirements. TraceGains not only digitizes all incoming supplier documents, making them easily searchable, but also extracts critical data and analyzes them against customer-specific business and compliance rules, alerting stakeholders to any non-compliance. Recently, TraceGains was listed as one of Food Logistics Top 100 software and technology providers.

TriStrata Group **124**
12685 Miller Road
Bainbridge Island, WA 98110, USA
Phone: +1 206.780.5552
www.tristratagroup.com

TriStrata ozone systems add strategic interventions as part of your multi-hurdle food protection approach. We provide an added layer of food safety protection without the health risks and environmental drawbacks associated with conventional chemicals.

Our direct product aqueous applications improve food safety and quality by controlling microorganisms on products and contact surfaces. Our atmospheric ozone systems, provide a continuously effective and safe means of controlling cross-contamination and reducing pathogens, molds and yeasts.

TriStrata's Lifecycle Support approach provides you the processes, service and technologies to keep the systems in your facility performing at their optimal level. To schedule a free site evaluation, e-mail sales@tristratagroup.com.

USDA Food Safety and Inspection Service **122**
1400 Independence Ave. SW
Washington, D.C. 20250, USA
Phone: +1 202.418.8830
www.fsis.usda.gov

The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.

USDA National Agricultural Library **705**
Food Safety Research Information Office (FSRIO)
10301 Baltimore Ave., Room 108-H
Beltsville, MD 20705, USA
Phone: +1 301.504.6369
https://www.nal.usda.gov/fsrio

The Food Safety Research Information Office (FSRIO) supports the research community by collecting, organizing and disseminating food safety information in accordance with the Agricultural Research, Extension, and Education Reform Act of 1998. Our mission is to provide the food safety research community and general public with information on publicly and privately funded food safety research. FSRIO works to assist the federal government and private research entities in the assessment of food safety research needs and priorities, and to prevent unintended duplication of food safety research.

Weber Scientific **711**
2732 Kuser Road
Hamilton, NJ 8691, USA
Phone: +1 800.328.8378 **Fax: +1 609.584.8388**
www.weberscientific.com

On display is Kikkoman's new LuciPac™ A3™ Sanitation System, distributed by Weber Scientific, produces a test result an order of magnitude or higher than competitive products. All living organisms contain adenosine triphosphate (ATP). However ATP can be unstable and decompose into monophosphate (AMP) or diphosphate (ADP). Until now all bioluminescent systems only measured the presence of ATP. The patented A3 system measures all three. "With the Kikkoman A3 System you can find what others can't," reports Sharon Wilson, VP of marketing at Weber Scientific. Ms. Wilson continued, "This revolutionary technology leaves residue with no place to hide." Many other products are on display.

Whirl-Pak **1131**
901 Janesville Ave.
Fort Atkinson, WI 53538, USA
Phone: +1 920.538.7707 **Fax: +1 920.563.8296**
www.enasco.com/whirlpak/

At Whirl-Pak, we are committed to making the world a safer place by providing better products that produce better integrity in the results.

For almost 60 years, Whirl-Pak has held itself to a higher standard. As an ISO 9001 certified facility, we have been a trusted partner to the lab sampling and testing industry by providing solutions for the critical requirements of our customers. From post-manufacturing sterilization to puncture-proof tabs, Whirl-Pak has a long history of providing value through our commitment in developing leading-edge products that set a new standard in reliability. At Whirl-Pak, we share a dedication to providing results you can trust.

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World Bioproducts **409**
17280 Woodinville Redmond Road NE, Suite B-818
Woodinville, WA 98072, USA
Phone: +1 425.242.4153
www.worldbioproducts.com

World Bioproducts is dedicated to producing innovative, high quality environmental sample collection products to support food safety testing while providing world class service and support to our customers. The EZ Reach™ Sponge Sampler and PUR-Blue™ Swab Sampler are designed to address the specific challenges of recovering microorganisms from the food processing environment. Both are available with our D/E Neutralizing Broth as specified by FDA BAM and USDA FSIS as well as our proprietary HiCap™ Neutralizing Broth, proven to more effectively neutralize residual sanitizers than traditional media such, as Letheen broth and Neutralizing Buffer, to provide a more accurate assessment of surface quality. Visit our booth to learn what's new in the world of environmental sampling.

Wyss Institute at Harvard **533**
3 Blackfan Circle
Boston, MA 02115, USA
Phone: +1 617.432.1761
www.wyss.harvard.edu

The Wyss Institute for Biologically Inspired Engineering at Harvard University (http://wyss.harvard.edu) uses nature's design principles to develop bioinspired materials and devices that will transform medicine and create a more sustainable world. Wyss researchers are developing new innovative engineering solutions for healthcare, energy, architecture, robotics and manufacturing that are translated into commercial products and therapies through collaborations with clinical investigators, corporate alliances and formation of new startups. The Wyss Institute creates transformative technological breakthroughs by engaging in high-risk research, and crosses disciplinary and institutional barriers, working as an alliance that includes Harvard's Schools of Medicine, Engineering, Arts & Sciences and Design.

Zarifa USA **223**
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Midvale, UT 84047, USA
Phone: +1 385.645.0255
www.zarifausa.com

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2019 CALL FOR SUBMISSIONS

DEADLINES:

OCTOBER 2, 2018 – SYMPOSIA, ROUNDTABLES AND WORKSHOPS

JANUARY 15, 2019 – TECHNICAL AND POSTER ABSTRACT SUBMISSIONS

Questions regarding submissions can be directed to Tamara Ford
Phone: +1 515.276.3344 or +1 800.369.6337
E-mail: tford@foodprotection.org

IAFP'S EUROPEAN SYMPOSIUM ON FOOD SAFETY

DEADLINES:

2 October 2018 – Symposia, Roundtables and Workshops

15 January 2019 – Technical and Poster Abstract Submissions

Questions regarding submissions can be directed to Tamara Ford
Phone: +1 515.276.3344 or +1 800.369.6337
E-mail: tford@foodprotection.org

www.foodmicro2018.com

FoodMicro

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Conference Theme: “Biodiversity of Foodborne Microbes”

Main Topics

- Exploring biodiversity in microbial ecosystems along the food chain
- Ecology and interactions in food-associated microbial communities
- Impact of interventions during food production on microbial biodiversity
- Microbiological spotlights

Congress Presidents

Herbert Schmidt (DE)
Barbara Becker (DE)
Thomas Alter (DE)

Conference Venue

Henry Ford Building
Freie Universität Berlin
Garystrasse 35
14195 Berlin, Germany

PCO

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Markgrafenstrasse 56
10117 Berlin, Germany
+49 30 204590
+49 30 2045950
foodmicro@mci-group.com

Policy on Commercialism
for Annual Meeting Presentations

1. INTRODUCTION

No printed media, technical sessions, symposia, posters, seminars, short courses, and/or other related types of forums and discussions offered under the auspices of the International Association for Food Protection (hereafter referred to as to Association forums) are to be used as platforms for commercial sales or presentations by authors and/or presenters (hereafter referred to as authors) without the express permission of the staff or Executive Board. The Association enforces this policy in order to restrict commercialism in technical manuscripts, graphics, oral presentations, poster presentations, panel discussions, symposia papers, and all other type submissions and presentations (here-after referred to as submissions and presentations), so that scientific merit is not diluted by proprietary secrecy.

Excessive use of brand names, product names or logos, failure to substantiate performance claims, and failure to objectively discuss alternative methods, processes, and equipment are indicators of sales pitches. Restricting commercialism benefits both the authors and recipients of submissions and presentations.

This policy has been written to serve as the basis for identifying commercialism in submissions and presentations prepared for the Association forums.

2. TECHNICAL CONTENT OF SUBMISSIONS AND PRESENTATIONS

2.1 Original Work

The presentation of new technical information is to be encouraged. In addition to the commercialism evaluation, all submissions and presentations will be individually evaluated by the Program Committee chairperson, technical reviewers selected by the Program Committee chairperson, session convenor, and/or staff on the basis of originality before inclusion in the program.

2.2 Substantiating Data

Submissions and presentations should present technical conclusions derived from technical data. If products or services are described, all reported capabilities, features or benefits, and performance parameters must be substantiated by data or by an acceptable explanation as to why the data are unavailable (e.g., incomplete, not collected, etc.) and, if it will become available, when. The explanation for unavailable data will be considered by the Program Committee chairperson and/or technical reviewers selected by the Program Committee chairperson to ascertain if the presentation is acceptable without the data. Serious consideration should be given to withholding submissions and presentations until the data are available, as only those conclusions that might be reasonably drawn from the data may be presented. Claims of benefit and/or technical conclusions not supported by the presented data are prohibited.

2.3 Trade Names

Excessive use of brand names, product names, trade names, and/or trademarks is forbidden. A general guideline is to use proprietary names once and thereafter to use generic descriptors or neutral designations. Where this would make the submission or presentation significantly more difficult to understand, the Program Committee chairperson, technical reviewers selected by the Program Committee chairperson, session convenor, and/or staff, will judge whether the use of trade names, etc., is necessary and acceptable.

2.4 "Industry Practice" Statements

It may be useful to report the extent of application of technologies, products, or services; however, such statements should review the extent of application of all generically similar technologies, products, or services in the field. Specific commercial installations may be cited to the extent that their data are discussed in the submission or presentation.

2.5 Ranking

Although general comparisons of products and services are prohibited, specific generic comparisons that are substantiated by the reported data are allowed.

2.6 Proprietary Information (See also 2.2.)

Some information about products or services may not be publishable because it is proprietary to the author's agency or company or to the user. However, the scientific principles and validation of performance parameters must be described for such products or services. Conclusions and/or comparisons may be made only on the basis of reported data.

2.7 Capabilities

Discussion of corporate capabilities or experiences are prohibited unless they pertain to the specific presented data.

3. GRAPHICS

3.1 Purpose

Slides, photographs, videos, illustrations, art work, and any other type visual aids appearing with the printed text in submissions or used in presentations (hereafter referred to as graphics) should be included only to clarify technical points. Graphics which primarily promote a product or service will not be allowed. (See also 4.6.)

3.2 Source

Graphics should relate specifically to the technical presentation. General graphics regularly shown in, or intended for, sales presentations cannot be used.

3.3 Company Identification

Names or logos of agencies or companies supplying goods or services must not be the focal point of the slide. Names or logos may be shown on each slide so long as they are not distracting from the overall presentation.

3.4 Copies

Graphics that are not included in the preprint may be shown during the presentation only if they have been reviewed in advance by the Program Committee chairperson, session convenor, and/or staff, and have been determined to comply with this policy. Copies of these additional graphics must be available from the author on request by individual attendees. It is the responsibility of the session convenor to verify that all graphics to be shown have been cleared by Program Committee chairperson, session convenor, staff, or other reviewers designated by the Program Committee chairperson.

4. INTERPRETATION AND ENFORCEMENT

4.1 Distribution

This policy will be sent to all authors of submissions and presentations in the Association forums.

4.2 Assessment Process

Reviewers of submissions and presentations will accept only those that comply with this policy. Drafts of submissions and presentations will be reviewed for commercialism concurrently by both staff and technical reviewers selected by the Program Committee chairperson. All reviewer comments shall be sent to and coordinated by either the Program Committee chairperson or the designated staff. If any submissions are found to violate this policy, authors will be informed and invited to resubmit their materials in revised form before the designated deadline.

4.3 Author Awareness

In addition to receiving a printed copy of this policy, all authors presenting in a forum will be reminded of this policy by the Program Committee chairperson, their session convenor, or the staff, whichever is appropriate.

4.4 Monitoring

Session convenors are responsible for ensuring that presentations comply with this policy. If it is determined by the session convenor that a violation or violations have occurred or are occurring, he or she will publicly request that the author immediately discontinue any and all presentations (oral, visual, audio, etc.) and will notify the Program Committee chairperson and staff of the action taken.

4.5 Enforcement

While technical reviewers, session convenors, and/or staff may all check submissions and presentations for commercialism, ultimately it is the responsibility of the Program Committee chairperson to enforce this policy through the session convenors and staff.

4.6 Penalties

If the author of a submission or presentation violates this policy, the Program Committee chairperson will notify the author and the author's agency or company of the violation in writing. If an additional violation or violations occur after a written warning has been issued to an author and his agency or company, the Association reserves the right to ban the author and the author's agency or company from making presentations in the Association forums for a period of up to two (2) years following the violation or violations.

2018 Workshops

Friday, July 6 and Saturday, July 7 (8:00 a.m. – 5:00 p.m.) – 2 days

Hygienic Design and Sanitation

Workshop Instructors

Vanessa Cranford, FDA-CFSAN, Washington, D.C., USA

Nathan Mirdamadi, Commercial Food Sanitation, Aliquppa, PA, USA

Workshop Organizer

Richard Brouillette, Commercial Food Sanitation, South Burlington, VT, USA

Sanitation practices are essential to provide safe foods to consumers. During this workshop, the participants will learn about the NAMI and GMP Equipment Design Principles and utilize the checklists to assess the design of different equipment during hands-on exercises. They will also learn about the importance of designing utilities such as compressed air, water system, etc. and working with the maintenance department. Also, an overview of on Food Safety Modernization Act (FSMA) Sanitation as a Preventive Control.

During the second day, the workshop with a focus on implementing and managing a master sanitation schedule, cleaning and sanitizing principles, and a case study to conclude and summarize the learning. The second day will also include a hands-on cleaning exercises.

Friday, July 6 (1:00 p.m. — 5:00 p.m) and Saturday, July 7 (8:00 a.m. – 5:00 p.m.) – 1.5 days

Whole Genome Sequencing: A Tutorial and Hands-on Workshop to Help Understand This Emerging Technology

Workshop Instructors

Peter Cook, University of Georgia – Griffin, Griffin, GA, USA

Zachary Geurin, NSF International, Ann Arbor, MI, USA

Leslie Hintz, U.S. Food and Drug Administration, College Park, MD, USA

Maria Hoffmann, U.S. Food and Drug Administration, College Park, MD, USA

Kari Irvin, U.S. Food and Drug Administration, CORE, CFSAN, College Park, MD, USA

Bill Klimke, National Institutes of Health, Bethesda, MD, USA

Jesse Miller, NSF International, Ann Arbor, MI, USA

Eric Stevens, U.S. Food and Drug Administration– CFSAN-ORS-DM, College Park, MD, USA

Ruth Timme, U.S. Food and Drug Administration, College Park, MD, USA

Workshop Organizers

Jesse Miller, NSF International, Ann Arbor, MI, USA

Maria Hoffmann, U.S. Food and Drug Administration, College Park, MD, USA

Whole Genome Sequencing (WGS) has taken the Front Stage as a tool to understand the environment around us. It is being used globally to track outbreak strains of bacteria, monitor microbial communities and understand changes in populations of organisms based on temporal and forced stimuli. WGS is more complex than past methodologies (such as PFGE) and has more components that need to be understood. What IS WGS? What is the science behind the technology? How do I perform an experiment? How do I analyze my data? What do the data mean? This workshop seeks to shed light on WGS so that the student will have a more holistic view of the applications of WGS. We will provide sessions on technology, data analysis and data interpretation that the FDA, CORE and Compliance employ for outbreak investigations and regulatory decision-making. Each attendee will be analyzing WGS datasets in command-line format to trim, assemble and build a phylogenetic tree. Finally, we will also learn about some available open source tools for data analysis that may be implemented for data analysis upon return from the workshop.

2018 Workshops

Saturday, July 7
(8:00 a.m. – 5:00 p.m.) – 1 day

Food Genomics 101

Workshop Instructors

Marc Allard, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA

Jesse Miller, NSF, Ann Arbor, MI, USA

Nur Hassan, CosmosID, Columbia, MD, USA

Joe Heinzelman, Neogen, Lansing, MI, USA

Karen Jarvis, FDA/CFSAN, Laurel, MD, USA

Ryan Kemp, Zymo, Irvine, CA, USA

Gregory Siragusa, Eurofins Microbiology, New Berlin, WI, USA

Workshop Organizer

Gregory Siragusa, Eurofins Microbiology, New Berlin, WI, USA

Following a 2017 IAFP roundtable ("Zero Tolerance in the Genomic Era") there was still a need for education of the audience of the language and terminology (i.e., nomenclature) used throughout the session.

To be accurate, the applications of genomics methods in food microbiology are indeed rapidly increasing in both scope and frequency of use. Yet, despite this rapid growth, there is a very significant knowledge gap among practicing food protection scientists on the uses of these tools, the nomenclature and jargon surrounding them and their basis.

This workshop addresses that very gap. Before people can attend and benefit from hands-on bioinformatics workshop they must have some grasps of the language and terminology used.

We will assemble instructors to present and then use terminology followed by summaries/application examples of the main genomic and bioinformatics tools. At the end of the course, the participant will have been exposed to the glossary of genomics nomenclature as well as understand applications. They will also have on hand both printed and online resources for further use and study.

Saturday, July 7
(8:00 a.m. – 5:00 p.m.) – 1 day

Standardized Biofilm Methods for Laboratory Studies of Biofilms

Workshop Instructors

Diane Walker, MSU Center for Biofilm Engineering, Bozeman, MT, USA

Kelli Buckingham-Meyer, MSU Center for Biofilm Engineering, Bozeman, MT, USA

Albert Parker, MSU Center for Biofilm Engineering, Bozeman, MT, USA

Bryan Warwood, BioSurface Technologies Corporation, Bozeman, MT, USA

Workshop Organizer

Diane Walker, MSU Center for Biofilm Engineering, Bozeman, MT, USA

Standard methods development is the creation of laboratory protocols for the purpose of comparison, both within a single laboratory and among various laboratories. Researchers choose to use a standard method for various reasons. For instance, a standard method is useful for teaching proper laboratory protocol or monitoring equipment performance. The impetus for the development of many microbial standard methods, however, is efficacy testing for product registration with a regulatory agency such as the U.S. Environmental Protection Agency (EPA) or the U.S. Food and Drug Administration (FDA). The mission of the Standardized Biofilm Methods Laboratory at the Center for Biofilm Engineering is the development and validation of biofilm methods for growing, treating, sampling and analyzing biofilm bacteria. The biofilm growth methods presented will include the CDC biofilm reactor (ASTM Method E2562), drip flow biofilm reactor (ASTM 2647) and MBEC Assay (ASTM Method 2799). The treatment methods presented will include the Single Tube Method (ASTM Method 2871) and the MBEC method (ASTM Method 2799). During this workshop, participants will learn each component of the three biofilm growth methods and critical parameters of each component. Emphasis will be on selecting a reactor system to grow a biofilm representative of a particular environment of interest and considerations for modifying the standards to other microorganisms. Small group activities will allow the participants to work hands-on with the reactors and to ask specific questions of the instructors. During the biofilm analysis portion of the workshop, the statistical attributes of repeatability, reproducibility, responsiveness and ruggedness of a standard method will be demonstrated using recent multiple-laboratory study results.

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1912 Milwaukee, WI
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1920 Chicago, IL
1921 New York, NY
1922 St. Paul, MN
1923 Washington, D.C.
1924 Detroit, MI
1925 Indianapolis, IN
1926 Philadelphia, PA
1927 Toronto, Ontario
1928 Chicago, IL
1929 Memphis, TN
1930 Cleveland, OH
1931 Montreal, Quebec
1932 Detroit, MI
1933 Indianapolis, IN
1934 Boston, MA
1935 Milwaukee, WI
1936 Atlantic City, NJ
1937 Louisville, KY
1938 Cleveland, OH
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1941 Tulsa, OK
1942 St. Louis, MO
1943 Cancelled
1944 Chicago, IL
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1950 Atlantic City, NJ
1951 Glenwood Springs, CO
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2002 San Diego, CA
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2005 Baltimore, MD
2006 Calgary, Alberta
2007 Lake Buena Vista, FL
2008 Columbus, OH
2009 Grapevine, TX
2010 Anaheim, CA
2011 Milwaukee, WI
2012 Providence, RI
2013 Charlotte, NC
2014 Indianapolis, IN
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July 21–24, 2019
Kentucky International Convention Center
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Notes

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This award was established to recognize research teams whose original findings are significantly contributing to the impact of *FPT* and global food safety. The award is based upon the number of citations of a work by others for research articles published five years prior to the year of the IAFP Annual Meeting.

Use of Surface Water in the Production of Fresh Fruits and Vegetables: A Survey of Fresh Produce Growers and Their Water Management Practices

Elizabeth A. Bihn, Christine D. Smart, Christine A. Hoepting and Randy W. Worobo

Published September–October 2013

Most-viewed Peer-reviewed Research Publication Award

This award was established to recognize highly viewed peer reviewed research and review papers in addition to general interest papers which are significantly contributing to the impact of *FPT* and global food safety. The award is based upon the number of times a publication that was published over the last two calendar years was viewed.

Food Safety of Farmstead Cheese Processors in Pennsylvania: An Initial Needs Assessment

Robson A. M. Machado, Rama Radhakrishna and Catherine Cutter

Published March–April 2017

Most-viewed General Interest Publication Award

Prevention of Hepatitis A through Food Handler Immunization

Jill Roberts

Published May–June 2017

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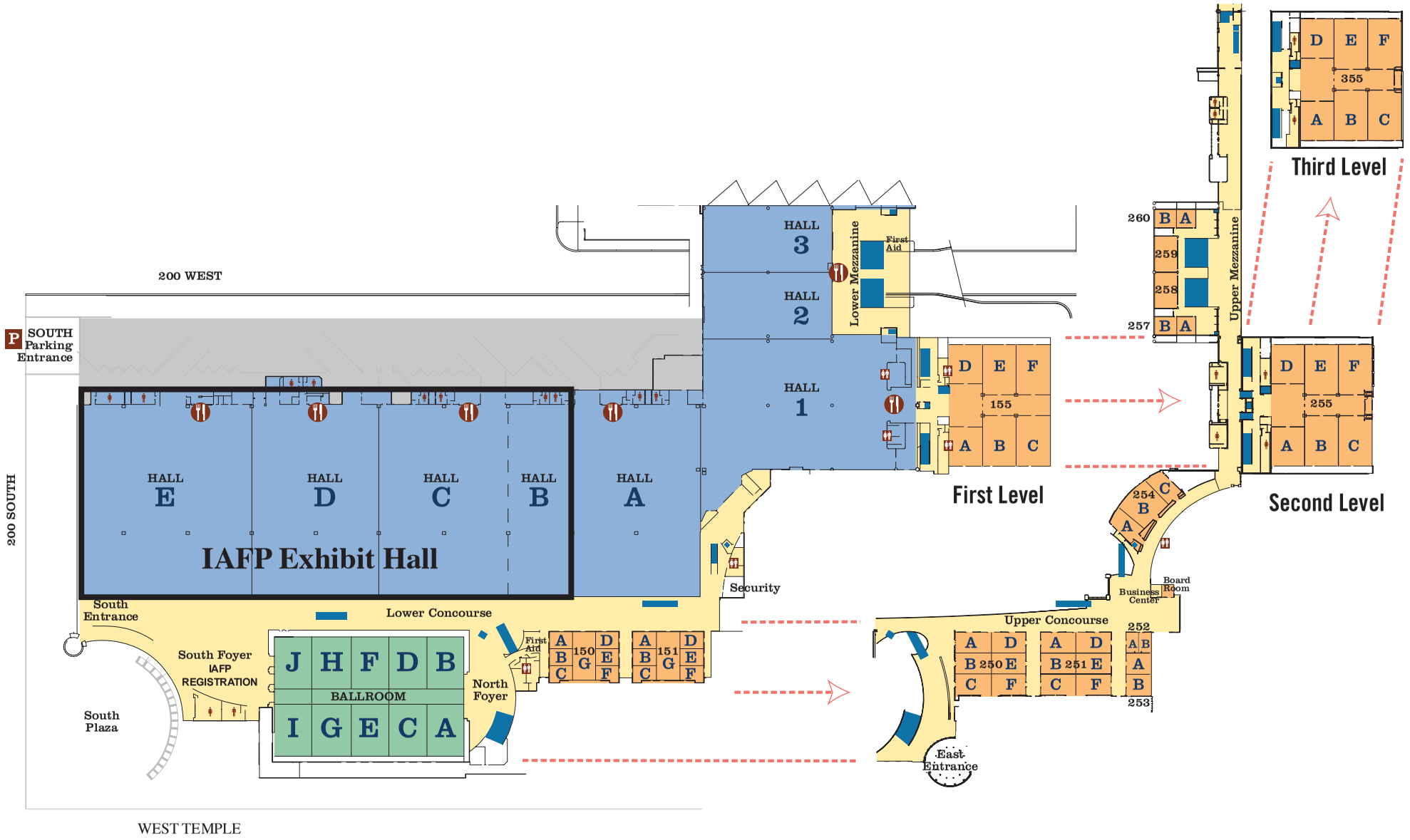

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