

Phoenix • Arizona

IAFP 2021

JULY 18-21

Program Book

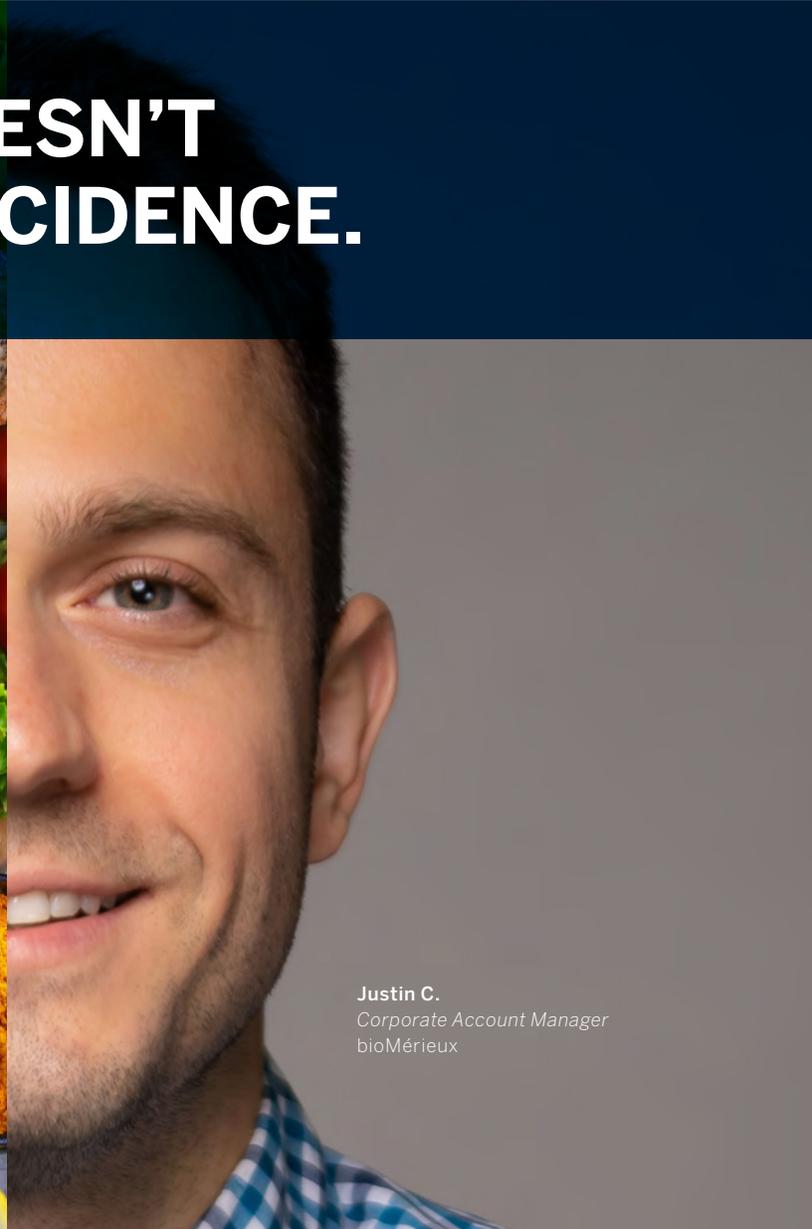


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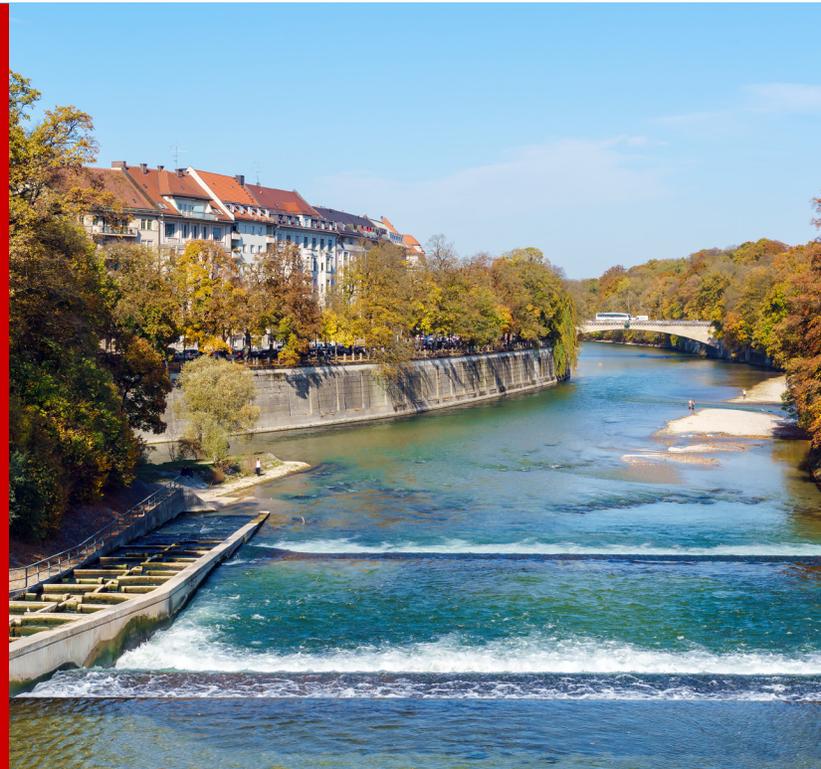
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IAFP's European Symposium on Food Safety

IAFP'S EUROPEAN SYMPOSIUM ON FOOD SAFETY has been shaping the future of food safety since 2005, bringing together hundreds of food safety professionals from across Europe and around the world to exchange ideas and gain knowledge about the latest in developments and techniques in food science and safety. The 2022 Symposium includes a vast array of diverse topics and speakers for those working in industry, government and academia.



MORE INFORMATION AVAILABLE AT
[foodprotection.org](https://www.foodprotection.org)

WELCOME FROM THE EXECUTIVE BOARD



PRESIDENT

Roger L. Cook
New Zealand Food Safety

On behalf of the Executive Board, it is my pleasure to welcome you to IAFP 2021. This year, similar to last year, the Annual Meeting will take on a new look. Last year, we conducted a Virtual Annual Meeting in October due to conditions resulting from COVID-19. This year's conference will be hybrid, meaning that speakers, exhibitors and attendees will be able to participate in-person in Phoenix or virtually from any place in the world via the Internet. The hybrid option provided the best choice for IAFP in our commitment to go forth with holding an Annual Meeting in order to continue providing the latest in food safety information and timely topics while protecting the health and safety of our Members and attendees.

Food safety is ongoing in today's interconnected world. IAFP 2021 will help you stay in touch with current and emerging issues, the latest science, and solutions to new and ongoing problems. While networking this year will be done carefully in-person and through a screen for our virtual attendees, we hope you continue to reach out to old friends and colleagues as well as extend a hand to those developing scientists who are attending for the first time.

The Executive Board offers a special thank you to Martin Duplessis, Program Committee Chair, and the entire Program Committee for organizing another exceptional lineup of symposia, roundtables, technical presentations, and posters – especially having to arrange for the program without meeting in-person. The added value with 2021's Annual Meeting is that attendees are able to take part in all sessions, presentations, and lectures by viewing the recordings after the conclusion of the actual meeting. You won't have to miss any part of this year's event!

We extend our sincere gratitude to our exhibitors, sponsors, and long-time attendees who continue to help us spread the food safety message through your ongoing and dedicated support. Whether you are a new Member, long-time Member, student Member, or even a prospective Member, the IAFP Executive Board eagerly welcomes you and encourages you to actively participate in IAFP 2021.

Together, we ARE Advancing Food Safety Worldwide!

Roger Cook
IAFP President



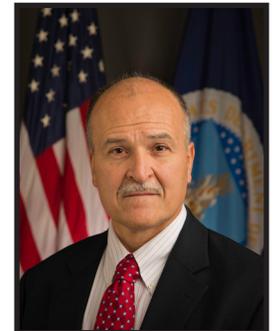
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& Inspection Service



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David W. Tharp
International Association
for Food Protection



PAST PRESIDENT

Kalmia Kniel
University of Delaware

GENERAL INFORMATION

Luggage Check Room

The Luggage Check Room is located in *Room 125B* and is available Sunday through Wednesday. The hours are listed below:

Sunday, July 18

8:00 AM — 10:00 PM

Monday, July 19

8:00 AM — 6:30 PM

Tuesday, July 20

8:00 AM — 6:30 PM

Wednesday, July 21

8:00 AM — 10:00 PM

Speaker-Ready Room

The Speaker-Ready Room is located in *Room 126B* 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 or audio recording will not be allowed without prior approval. By attending the IAFP Annual Meeting, you authorize IAFP to take your picture to be used in our publications.

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

Meeting App

The IAFP 2021 app is available at the App Store and the Android market.

WiFi Internet

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

Use the IAFP 2021 "WiFi" Network.

Password: iafp2021

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PROGRAM COMMITTEE

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Roger Cook, New Zealand Food Safety

Ruth Petran, Ruth Petran Consulting, LLC

CONNECT
AT IAFP 2021



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IAFP REGISTRATION HOURS

Saturday, July 17 — 12:00 p.m. — 7:00 p.m.

Sunday, July 18 — 8:00 a.m. — 9:00 p.m.

Monday, July 19 — 7:30 a.m. — 5:30 p.m.

Tuesday, July 20 — 8:00 a.m. — 5:30 p.m.

Wednesday, July 21 — 8:00 a.m. — 12:00 p.m.

WELCOME FROM LOCAL ARRANGEMENTS



Welcome from the Arizona Environmental Health Association (AZEHA).

The Arizona Environmental Health Association welcomes you to the Valley of the Sun, or what some refer to as the Valley of the Surface of the Sun! The Phoenix area is certainly no stranger to feeling the heat of the sun a little bit more than other places on Earth. Phoenix has recently experienced temperatures as high as 117 Degrees Fahrenheit! Although the Phoenix area experiences a dry heat and shade is helpful, it's always a good reminder to be mindful of the temperature, bring water, and know your limits. Also rest assured that virtually every building in Phoenix has air conditioning.

The 2021 IAFP Annual Meeting is sure to be another outstanding meeting place for professionals, scientists, and subject-matter experts who are committed to advancing food safety. The program offers a plethora of options for attendees to learn more about areas of food safety that are sure to benefit you, your team, and your workplace.

A little more about Phoenix: it is situated in Maricopa County which is the fourth largest county in the nation and the fastest growing. We have been experiencing record amounts of people moving into Maricopa County from West Coast states and internationally – all to get a taste of the heat and the amenities Arizona has to offer. Speaking of which, Arizona has an extremely diverse geography: from the world-famous, natural wonder of the world, the Grand Canyon; to Karchner Caverns with its stalagmites; to the popular science experiment Biosphere 2; to the red rock in Sedona; ancient ruins of Montezuma's Castle; to the real Tombstone; to the mountains and valleys in between, Arizona has so much to offer the adventure-seeker, the biologist, the outdoorsman, and the curious-minded person.

Phoenix has a variety of exciting amenities to offer, including: arts and culture; great dining; sporting events; historic buildings; retail; night-life; and community spaces; all within reasonable distance of the Phoenix Convention Center. Please check out the VisitPhoenix website to see what entertainment options are available to you during your stay.

We hope you have a great experience in Phoenix and an even better experience at the IAFP Annual Meeting.

Arizona Environmental Health Association Board



David Morales
President



Andres Martin
President-Elect



Cheri Dale
Past President



Blanca Caballero
Secretary



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Bianca Arriaga
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Danny Chhun
Board Member



Veronica Oros
Board Member



Jackie Ward
Board Member

COMMITTEE NETWORKING SCHEDULE

SUNDAY, JULY 18

MEETING TIME	MEETING	ROOM
8:00 AM – 5:00 PM	Committee on Control of Foodborne Illness	ROOM 232
8:00 AM – 10:00 AM	Food Hygiene and Sanitation	ROOM 231 BC
8:00 AM – 10:00 AM	Affiliate Council	ROOM 230
9:00 AM – 10:45 AM	Webinar Committee	ROOM 224 B
9:00 AM – 11:00 AM	Food Safety Assessment, Audit and Inspection	ROOM 222
9:00 AM – 11:00 AM	Advanced Molecular Analytics	ROOM 224 A
9:00 AM – 11:00 AM	HACCP Utilization and Food Safety Systems	ROOM 223
9:00 AM – 11:00 AM	Viral and Parasitic Foodborne Disease	ROOM 226 A
9:00 AM – 12:00 PM	Meat and Poultry Safety and Quality	ROOM 221 BC
10:00 AM – 12:00 PM	International Food Protection Issues	ROOM 226 BC
10:00 AM – 12:00 PM	3-A Committee on Sanitary Procedures	ROOM 231 A
10:00 AM – 12:00 PM	JFP Management	ROOM 228 B
10:15 AM – 12:15 PM	Food Defense	ROOM 231 BC
10:30 AM – 11:30 AM	Past Presidents'	ROOM 228 A
11:00 AM – 12:00 PM	Student (PDG Meeting)	ROOM 230
11:00 AM – 12:00 PM	Constitution and Bylaws	ROOM 224 B
12:00 PM – 1:30 PM	Student Luncheon	NORTH BALLROOM D
1:00 PM – 3:00 PM	Fruit and Vegetable Safety and Quality	ROOM 222
1:00 PM – 3:00 PM	Food Safety Culture	ROOM 231 BC
1:00 PM – 3:00 PM	Dairy Quality and Safety	ROOM 224 A
1:00 PM – 3:00 PM	Retail and Foodservice	ROOM 223
1:00 PM – 3:00 PM	Pre-Harvest Food Safety	ROOM 226 BC
1:00 PM – 3:00 PM	Beverages and Acid/Acidified Foods	ROOM 226 A
1:00 PM – 3:00 PM	Seafood Safety and Quality	ROOM 231 A
1:00 PM – 3:00 PM	Food Packaging	ROOM 230
1:00 PM – 3:00 PM	Membership	ROOM 228 A
2:00 PM – 3:00 PM	Diversity, Equity and Inclusion Council	ROOM 224 B
2:00 PM – 4:00 PM	Low Water Activity Foods	ROOM 221 BC
2:00 PM – 4:00 PM	FPT Management	ROOM 228 B
3:15 PM – 5:15 PM	Applied Laboratory Methods	ROOM 222
3:15 PM – 5:15 PM	Microbial Modelling and Risk Analysis	ROOM 231 BC
3:15 PM – 5:15 PM	Developing Food Safety Professionals	ROOM 224 A
3:15 PM – 5:15 PM	Food Safety Education	ROOM 223
3:15 PM – 5:15 PM	Food Fraud	ROOM 226 BC
3:15 PM – 5:15 PM	Food Chemical Hazards and Food Allergy	ROOM 226 A
3:15 PM – 5:15 PM	Food Law	ROOM 231 A
3:15 PM – 5:15 PM	Sanitary Equipment and Facility Design	ROOM 230
3:15 PM – 5:15 PM	Water Safety and Quality	ROOM 228 A
4:00 PM – 5:00 PM	Nominating	ROOM 224 B



SCHEDULE

FRIDAY AND SATURDAY, JULY 16–17

IAFP Workshop – 8:30 a.m. – 5:00 p.m.

Developing Environmental Monitoring Programs for Small and Midsize Processors

2 days – Friday, July 16 and Saturday, July 17
(8:30 a.m. – 5:00 p.m.)

SATURDAY, JULY 17

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

Air Quality and Mold Contamination in Food Production and Storage Facilities – Monitoring, Sampling, Testing, and Remediation Techniques
1 day – Saturday, July 17 (8:30 a.m. – 5:00 p.m.)

Genomics 101 for Food Safety

1 day – Saturday, July 17 (8:30 a.m. – 5:00 p.m.)

Welcome Reception • 5:00 p.m. – 6:30 p.m.

SUNDAY, JULY 18

Committee and PDG Networking • 8:00 a.m. – 5:00 p.m.

Student Luncheon (ticket required) • 12:00 p.m. – 1:30 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.

Exhibit Hours • 7:30 p.m. – 9:30 p.m.

MONDAY, JULY 19

Symposia & Technical Sessions • 8:30 a.m. – 5:15 p.m.

Poster Sessions • 8:30 a.m. – 6:15 p.m.

Exhibit Hours • 10:00 a.m. – 6:15 p.m.

Exhibit Hall Lunch • 11:45 a.m. – 1:30 p.m.

Exhibit Hall Reception • 5:15 p.m. – 6:15 p.m.

TUESDAY, JULY 20

Committee and PDG Chairperson Breakfast (by invitation) • 7:30 a.m. – 9:00 a.m.

Symposia & Technical Sessions • 8:30 a.m. – 5:15 p.m.

Poster Sessions • 8:30 a.m. – 6:15 p.m.

Exhibit Hours • 10:00 a.m. – 6:15 p.m.

Exhibit Hall Lunch • 11:45 a.m. – 1:30 p.m.

Business Meeting • 12:30 p.m. – 1:15 p.m.

Exhibit Hall Reception • 5:15 p.m. – 6:15 p.m.

Student Mixer • 7:00 p.m. – 9:00 p.m.

WEDNESDAY, JULY 21

Symposia & Technical Sessions • 8:30 a.m. – 3:30 p.m.

Poster Sessions • 8:30 a.m. – 3:30 p.m.

Networking Lunch • 11:45 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.

GENERAL SESSIONS

OPENING SESSION

SUNDAY, JULY 18

6:00 P.M. – 7:30 P.M.

IVAN PARKIN LECTURE

IT'S ALL ABOUT PEOPLE, ISN'T IT?



Robert B. Gravani, Ph.D.

Professor Emeritus of Food Science
Cornell University
Ithaca, New York, USA

CLOSING SESSION

WEDNESDAY, JULY 21

4:00 P.M. – 4:45 P.M.

JOHN H. SILLIKER LECTURE

WE ALL ARE WORKING ON THE SAME PUZZLE



Barbara J. Masters, DVM

Vice President, Regulatory Policy,
Food and Agriculture
Tyson Foods
Washington, D.C., USA



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SCHEDULE-AT-A-GLANCE

	North Ballroom A-C	North Ballroom D	121 A-C	122 A	122 B-C	123	124 AB
Sunday, July 18							
Sunday 6:00 p.m. – 7:30 p.m.	Opening Session – Ivan Parkin Lecture – North Ballroom A-C <i>It's All About People, Isn't It?</i> — Robert B. Gravani, Ph.D., Cornell University, Ithaca, New York, USA						
Monday, July 19							
Monday 8:30 a.m. – 12:15 p.m.	S1 – Foodborne Disease Outbreak Update	S2 – Physiological State of Mind: Detection Challenges for Stressed/Sub-lethally Injured Pathogens S6 – To Disinfect or Not? How to Appropriately Use Disinfectants in Food Settings	S3 – (v) New and Innovative Technologies for Sanitation in Dry Processing Environments RT5 – Are All <i>Salmonella</i> Equal? Genomic Approach for Risk Ranking <i>Salmonella</i> Strains	Technical Session 1 – Viruses and Parasites	RT1 – (v) Improving the Food Recall Effectiveness of Regulatory Agencies S7 – Log Reduction and Product Grouping Strategies for Validation – Does One Size Fit All?	RT2 – Don't You Forget about Me! Educating Underrepresented Growers on Produce Safety RT6 – Strengthening Food Safety Risk Management on the African Continent through International Collaboration	S4 – Advances in Powdered Food Safety and Quality Sampling Plans: Theory, Simulation, & Practice S8 – Reducing Food Safety Risks of Pork Products: Science-based and Data-driven Steps to Reduce <i>Salmonella</i>
Monday 12:30 p.m. – 1:30 p.m.	U.S. Regulatory Update on Food Safety – North Ballroom A-C Sandra Eskin, U.S. Department of Agriculture (USDA) and Frank Yiannas, U.S. Food & Drug Administration (FDA)						
Monday 1:30 p.m. – 5:15 p.m.	S10 – FSMA Turns 10! Achievements, Compliance, and the Future of Food Safety	RT9 ^A – NGS Case Study – The Challenges and Solutions to Implementing Genomics in a Live Factory Environment RT13 – (v) Frozen and Fresh Produce: Enteric Viruses Contamination, Detection and Public Health Impact	RT10 – Changing Lanes in the Middle of a Pandemic: Challenges and Lessons Learned from Managing SARS-CoV-2 in the Food Sector RT14 – Incentives for Preharvest Control of Zoonoses in Food Animals	Technical Session 3 – Antimicrobials	RT11 – Diversity in Food Culture from Sushi to Steak Tartare: An Interdisciplinary Approach to Understanding Roots of Food Safety Behaviors S15 – How COVID-19 Has Altered Consumers' Food Choices and Preferences and Their Hygienic Practices	RT12 – (v) Food Safety Interventions in Low- and Middle-Income Countries: How Can QMRA be Used Effectively?	S11 – (v) Tracing Back to the Source: Challenges to Link Parasite and Viral Genotypes between Outbreak Clinical Samples and On-farm Environmental Sources of Contamination RT14 – Agricultural Water Quality Management in a Changing Regulatory Landscape
Tuesday, July 20							
Tuesday 8:30 a.m. – 12:15 p.m.	S19 – One Size Does Not Fit All: Advancing Surrogate Science and Collaboration to Enable Pathogen Reduction Technologies in a Variety of Matrices RT20 - FDA's New Era of Smarter Food Safety: One Year after the "Blueprint" Release, How is the Industry Embracing This Change?	S18 – Recent State and Local Outbreak Investigations	S20 – Novel and Emerging Technologies for Food Processing Facility Environmental Control S24 – Latest Developments in Food Safety Standards for Water Reuse in Food Production and Processing	S22 – Identifying, Tracking, and Controlling Spoilage: "Toolbox" for Dairy Processing S27 – Use of Novel and Alternate Processing Technologies for Dairy Products	S21 – No Silver Bullet in Sight: How to Achieve Continuous Improvement in Fresh Produce Safety with Existing Knowledge and Tools RT21 – Riding the Tide of Multi-Disciplinary Approaches to Evaluate Behavior-Change Effectiveness of Food Safety Education	RT18 – Diversifying the Pipeline in Food Safety Education: Engaging Historically Black Colleges and Universities (HBCUs) RT23 ^A – Novel Foods, Novel Challenges: Food Safety Concerns in Plant-Based, Cell-Cultured, and "Clean Label" Products	RT17 –(v) A North American Perspective on Antimicrobial Resistance and Regulatory Action S25 – Decoding Codex Alimentarius – Not a Secret Society
Tuesday 12:30 p.m. – 1:15 p.m.	IAFP Business Meeting						
Tuesday 1:30 p.m. – 5:15 p.m.	S28 – C is for <i>Cyclospora</i> : A Crash Course in the Emerging Pathogen from Farm to Table	RT24 – Operational Choices and Risk-based Decision Making Around Clean Breaks in Dry Environments S34 – Risk Ranking Approaches to Inform Diverse Decisions in Government and Industry	S29 – (v) What to Decide? Making Informed Decisions for Process Validation and Food Safety Legislation Using Bayesian Risk Models RT26 ^A – A Support Group for Difficult Matrices – You're Not Alone with Your Detection and Confirmation Problems	Technical Session 7 – Meat, Poultry and Eggs	S30 – To Verify or Validate a Rapid Pathogen Method: What about the Matrix? S35 – We Quantified, Now What? Actual <i>Salmonella</i> Quantification Approaches Utilized in the Protein Industry Today		RT25 – Food Irradiation: Where We've Been, Where We are Now, and What's Next S36 – The Forgotten Option: Formulation-based Preventive Controls for Human Foods
Wednesday, July 21							
Wednesday 8:30 a.m. – 12:15 p.m.		S38 – Flour Safety: Challenges and Lessons Learned from the Recent Outbreaks and Sampling Study S46 – (v) Progressing Allergen Risk Management: Thresholds and Quantitative Risk Assessment	S39 – Root Cause Analysis: Approaches for Investigating Contamination Incidents and Preventing Recurrence RT29 – Can You Trust Third-Party Certification?	Technical Session 9 – Molecular Analytics, Genomics and Microbiome (1)	S41 – Every Flush Has Data: The Role of Wastewater Epidemiology in Improving Food Safety with Lessons Learned from COVID-19 RT30 – Microbial Resistance – Is It Related to Sanitation?	S40 – (v) Cannabis and Your Supply Chain – How to Protect Yourself and Your Customers S50 – (v) The Impact of Foodborne Disease: Emerging Research on Disease Outcomes and Economic Burden	S42 – Managing Meat and Poultry Safety: Uniting Food Safety Regulations and Industry Efforts for Process Control S47 – (v) WGS Quality and Quantity – Can You Have It All?
Wednesday 1:30 p.m. – 3:30 p.m.		S52 – Paradigm Shifting Foodborne Outbreaks and Their Impact on Food Safety	S53 – Safeguarding Food Security and Food Industry Workforce in Pandemic Times Using Breakthroughs in Molecular Diagnostics and Advances in Genomic Epidemiology	Technical Session 12 – Molecular Analytics, Genomics and Microbiome (2)	S54 – Defining Criteria for Assessment and Execution of Gluten-Free and Allergen-Free Claims	S55 – Environmental Transmission, Detection, and Molecular Characterization of Foodborne and Waterborne Parasites	S56 – Recent Advances in Understanding Phase Applications to Mitigate Food Safety Risk
Wednesday 4:00 p.m. - 4:45 p.m.	John H. Silliker Lecture – <i>We All are Working on the Same Puzzle</i> — Barbara J. Masters, DVM, Tyson Foods, Washington, D.C., USA						

(v) - virtual

^A - LIVE at scheduled time, NOT recorded

SCHEDULE-AT-A-GLANCE

	127 A-C	129 A	131 A-C	132 AB	132 C	Exhibit Hall
Sunday, July 20						
Sunday 6:00 p.m. – 7:30 p.m.	Opening Session – Ivan Parkin Lecture – North Ballroom A-C <i>It's All About People, Isn't It?</i> – Robert B. Gravani, Ph.D., Cornell University, Ithaca, New York, USA					
Monday, July 19						
Monday 8:30 a.m. – 12:15 p.m.		RT4 – Informal Markets: Building Consumer Demand for Food Safety in Low-Resource Environments	RT3 – Opportunities and Challenges: Developments in <i>Clostridium botulinum</i> Challenge Studies	S5 – How Regulators are Integrating Food Safety Culture into Food Safety Performance and Assessment Strategies	Technical Session 2 – Modeling and Risk Assessment	Poster Session 1 – Antimicrobials; Dairy; Food Chemical Hazards and Food Allergens; Low-water Activity Foods; Meat, Poultry and Eggs; Molecular Analytics, Genomics and Microbiome; Seafood
		RT7 – The Drive for Better Sanitation and Food Safety Compliance through Measurements, Management, and Culture	S9 – (v) Tracking and Combating Spoilage Microorganisms and Pathogens in Food Processing: Biosensing, Interventions, and Active Packaging	RT8 – When Crime Threatens Food Safety		
Monday 12:30 p.m. – 1:30 p.m.	U.S. Regulatory Update on Food Safety – North Ballroom A-C Sandra Eskin, U.S. Department of Agriculture (USDA) and Frank Yiannas, U.S. Food & Drug Administration (FDA)					
Monday 1:30 p.m. – 5:15 p.m.		S13 – Balancing Food Safety and Soil Health through the Use of Biological Soil Amendments	S12 – Food Safety Protection during Rendering of Animal Offal for Manufacturing Human and Animal Food/Feed: Needs and Opportunities	S14 – Dust Off That Data! – Transform Testing Results into Meaningful Food Safety Improvements	Technical Session 4 – Microbial Food Spoilage, Pre-Harvest Food Safety and Food and Chemical Hazards and Food Allergens	
		S16 – If You Want to Go Fast, Go Alone; But If You Want to Go Far, Go Together: Collaborating with Historically Black Colleges and Universities, Hispanic-serving Institutions, Non-Governmental Organizations, and Community-based Organizations on Produce Safety Education and Training	S17 – Can <i>Enterobacteriaceae</i> Testing Provide a Better Indicator of <i>Salmonella</i> Risk on Zone 1 Surfaces in Dry Processed Foods?	RT16 – Boo! Does That Delivery from a Ghost Kitchen Scare You?		
Tuesday, July 20						
Tuesday 8:30 a.m. – 12:15 p.m.		S23 – Your Significant Other: Using Statistics to Interpret Microbiological Data	RT19 ^A – Emergency Use of Microbial Methods of Detection by Industry – Alternative Routes Proving Fit for Purpose	Technical Session 5 – Produce	Technical Session 6 – Food Safety Systems, Sanitation and Hygiene and Packaging	Poster Session 2 – Beverages and Acid/Acidified Foods; Food Toxicology; General Microbiology; Laboratory and Detection Methods; Microbial Food Spoilage; Pre-Harvest Food Safety; Produce; Sanitation and Hygiene; Viruses and Parasites; Water
		S26 – Shelf-life Testing: Problems, Pitfalls, and Promise	RT22 – Collaboration in the Desert – A Research Model for Advancing Fresh Produce Safety			
Tuesday 12:30 p.m. – 1:15 p.m.	IAFP Business Meeting					
Tuesday 1:30 p.m. – 5:15 p.m.		S31 – To Be Acid or To Be Acidified, That is the Question	S32 – Communication for Risk Management: What, When, How, and Who?	S33 – (v) Allergen Management at Retail in the New Era of Smarter Food Safety: From the Front Lines of Restaurants, Food Service, and Retail Grocery	Technical Session 8 – Communication, Outreach and Education; Food Defense; Food Law and Regulation; Epidemiology	
			RT28 – Fact or Fiction? How to Evaluate Antimicrobial Products for Your Sanitation Program	RT27 – Ever Thought of Being an Expert Witness?		
Wednesday, July 21						
Wednesday 8:30 a.m. – 12:15 p.m.	S43 – (v) Making Donations Count: Reducing Waste in Hunger Relief Organizations	S44 – (v) Beyond Metagenomic Sequencing: Metadata, Ontologies, and Big Data	S37 – U.S. Army-Funded Research of Novel Food Safety Technologies	S45 – Failure to Launch – Learn to Live with Your Food Safety Plan Year Round	Technical Session 10 – General Microbiology, Food Processing Technologies; Water; and Seafood	Poster Session 3 – Communication Outreach and Education; Epidemiology; Food Defense; Food Law and Regulation; Food Processing Technologies; Food Safety Systems; Laboratory and Detection Methods; Modeling and Risk Assessment; Packaging; Retail and Food Service Safety
	S48 – General Update on <i>Bacillus</i> and Overview of Available Tools to Identify, Distinguish, and Trace <i>B. cereus</i> Microbial Hazard?	S49 – (v) After 2020, Where Do We Go Next in Enhancing Consumer Food Safety Education?		S51 – (v) A Growing Concern for Marine Biotoxins		
Wednesday 1:30 p.m. – 3:30 p.m.	S57 – (v) Developing Atmospheric Cold Plasma as a Nonthermal Food Safety Tool	S59 – Where's the Beef? Grinding Recordkeeping and Intended Use at Retail	S58 – Lessons Learned from Consumer Food Safety Initiatives Related to the COVID-19 Pandemic to Guide Future Outreach and Communication Practices	Technical Session 11 – Laboratory and Detection Methods	Technical Session 13 – Low Water Activity Foods	
Wednesday 4:00 p.m. – 4:45 p.m.	John H. Silliker Lecture – <i>We All are Working on the Same Puzzle</i> – Barbara J. Masters, DVM, Tyson Foods, Washington, D.C., USA					

(v) - virtual

^A - LIVE at scheduled time, NOT recorded

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(as of 6/23/21)

GENERAL SESSIONS



**Robert B. Gravani,
Ph.D.**

Professor Emeritus
of Food Science
Cornell University
Ithaca, New York, USA

SUNDAY, JULY 18

OPENING SESSION

IVAN PARKIN LECTURE

IT'S ALL ABOUT PEOPLE, ISN'T IT?

6:00 P.M. – 7:30 P.M.

Join us for the IAFP 2021 Opening Session, where various awards will be presented, including the Fellow Award, the Travel Awards, and the Student Travel Scholarship. Enjoy the Cheese and Wine Reception in the Exhibit Hall following the Opening Session.

TUESDAY, JULY 20

U.S. REGULATORY UPDATE ON FOOD SAFETY

12:30 P.M. – 1:30 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. Dept. of Agriculture will provide the latest updates and changes within their respective agency, followed by a Q&A with attendees.



**Frank Yiannas,
MPH**

Deputy Commissioner
Food Policy and
Response
U.S. Food & Drug
Administration (FDA)
Silver Spring, MD, USA



Sandra Eskin

Deputy Under Secretary
for Food Safety
U.S. Department of Agriculture
(USDA)
Washington, D.C., USA



**Barbara J. Masters,
DVM**

Vice President, Regulatory
Policy, Food and
Agriculture
Tyson Foods, Inc.
Washington, D.C., USA

WEDNESDAY, JULY 21

CLOSING SESSION

JOHN H. SILLIKER LECTURE

WE ALL ARE WORKING ON THE SAME PUZZLE

4:00 P.M. – 4:45 P.M.

EXHIBIT HALL EVENTS AND INFORMATION

CHEESE AND WINE RECEPTION

SUNDAY, JULY 18 7:30 p.m. – 9:30 p.m.

Sponsored by  **MERCK**
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The Science of Healthier Animals®

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EXHIBIT HALL BREAKS

MONDAY, JULY 19

10:00 a.m. Coffee Break

Sponsored by  **DEIBEL**
LABORATORIES

3:00 p.m. Coffee Break

TUESDAY, JULY 20

10:00 a.m. Coffee Break

3:00 p.m. Coffee Break

EXHIBIT HALL LUNCH

MONDAY, JULY 19 11:45 p.m. – 1:30 p.m.

Sponsored by  **Crystal**
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TUESDAY, JULY 20 11:45 p.m. – 1:30 p.m.

EXHIBIT HALL RECEPTIONS

MONDAY, JULY 19 5:15 p.m. – 6:15 p.m.

Sponsored by  **APPLIED FOOD**
DIAGNOSTICS

TUESDAY, JULY 20 5:15 p.m. – 6:15 p.m.

EXHIBIT HOURS

SUNDAY, JULY 18

7:30 p.m. – 9:30 p.m.

MONDAY, JULY 19

10:00 a.m. – 6:15 p.m.

TUESDAY, JULY 20

10:00 a.m. – 6:15 p.m.

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30-YEAR EXHIBITORS

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Stop Foodborne Illness
USDA-NAL, Food Safety Research Office (FSRIO)

STUDENT ACTIVITIES

STUDENT LUNCHEON

SUNDAY, JULY 18

12:00 p.m. – 1:30 p.m.

North Ballroom D

Sponsored by Mars Global Food Safety Center

STUDENT MIXER

TUESDAY, JULY 20

7:00 p.m. – 9:00 p.m.

Sheraton Phoenix Downtown

Sponsored by Smithfield Foods

JOB FAIR

**Attention Job Seekers
and Employers!**

Job announcements will be posted
at the Student PDG booth.



EXHIBITOR SHOWCASE

SCHEDULE OF PRESENTATIONS

MONDAY, JULY 19

- 10:15 a.m. ACO, Inc.
- 11:30 a.m. bioMérieux, Inc.
- 12:00 p.m. Satorius
- 12:30 p.m. INFICON Inc.
- 3:00 p.m. 3M Food Safety
- 4:30 p.m. Hamilton Company

TUESDAY, JULY 20

- 11:30 a.m. Bayer
- 12:30 p.m. Mérieux NutriScience
- 3:00 p.m. 3M Food Safety

The exhibitor showcase is located in the Exhibit Hall.



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6th Asia-Pacific Symposium on Food Safety 2021

IAFP Asia-Pacific Symposium

Post-Corona & Food Safety

Date | November 11~12, 2021

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International Association for
Food Protection

OPENING SESSION

SUNDAY, JULY 18

Phoenix Convention Center
Ballroom A–C

6:00 p.m.

WELCOME TO IAFP 2021

Roger Cook, IAFP President

IAFP FOUNDATION

Gary Acuff, Foundation Chairperson

DAVE THENO SAFETY FELLOWSHIP AWARD

Presented by: Mitzi Baum, STOP Foodborne Illness

PEANUT PROUD STUDENT SCHOLARSHIP

Presented by: Darlene Cowart, Peanut Proud
Daniel Vega

TRAVEL AWARDS

Presented by: Ruth Petran, IAFP President-Elect, Gary Acuff, Foundation Chairperson

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Jennifer Eberly

FOOD SAFETY PROFESSIONAL IN A COUNTRY WITH A DEVELOPING ECONOMY

Kubir Nath Bhattarai

Titilayo Falade

Amin Olaimat

FELLOWS AWARD

Presented by: Ruth Petran, IAFP President-Elect, and Kali Kniel, IAFP Past President
Jianghong Meng

THE IVAN PARKIN LECTURE

Introduction: Ruth Petran, IAFP President-Elect

It's All About People, Isn't It?

Robert Gravani, Ph.D.

CLOSING COMMENTS

Roger Cook, IAFP President

CHEESE AND WINE RECEPTION

Sponsored by:  **MERCK**
Animal Health
The Science of Healthier Animals®

Cheese provided by:  **LANDO'LAKES, INC.**

IAFP Exhibit Hall, Phoenix Convention Center

7:30 p.m. – 9:30 p.m.



IVAN PARKIN LECTURE

SUNDAY, JULY 18
OPENING SESSION
6:00 P.M. – 7:30 P.M.

It's All About People, Isn't It?



Robert B. Gravani, Ph.D.
Professor Emeritus of Food
Science
Cornell University
Ithaca, New York, USA

Dr. Robert B. “Bob” Gravani is Professor Emeritus of Food Science at Cornell University in Ithaca, New York, where during a more than 40-year career, he has been actively engaged in Extension/Outreach, Teaching, and Research activities. Dr. Gravani has worked in all sectors of the food system, developing innovative and interactive food safety programs for constituents in production agriculture, food processing, food retailing, and food service as well as for regulatory agencies and consumers.

Dr. Gravani twice received the Cornell Institute of Food Science Teaching Excellence Award and was the 2009 recipient of the Cornell College of Agriculture and Life Sciences Outstanding Extension/ Outreach Award.

An IAFP Member since 1978, Dr. Gravani served as President of the Association in 1988–1989, and received the Honorary Life Award in 2016, the Fellow Award in 2003, the Harry Haverland Award in 2001, and the Elmer Marth Educator Award in 1995. He was a member of the Cornell University Institute of Food Science team that received the GMA Food Safety Award in 2010. During his tenure on the IAFP Executive Board, Dr. Gravani was instrumental in creating the Program Advisory Committee (now known as the Program Committee) and the Ivan Parkin Lecture.

IVAN PARKIN LECTURE ABSTRACT

It's All About People, Isn't It?

Robert B. Gravani, Ph.D.

Professor Emeritus of Food Science
Cornell University
Ithaca, New York, USA

In recent years, there have been some major and notable foodborne outbreaks and product defects resulting in national recalls of a wide variety of food products that were contaminated with biological, chemical or physical hazards and affected many people. When these incidents were analyzed, they were often found to be caused by failures of Good Manufacturing Practices (GMPs) and were rarely caused by true food system failures. Yes, GMPs, problems with people performing their tasks correctly. Consider some high profile events such as a major foodborne outbreak where *Salmonella*-contaminated product was shipped despite knowing that it was contaminated, food allergen recalls where product and package mismatches occurred, or recalls related to physical hazards like plastic, glass or metal pieces being found in processed food products. Recalls that are easily preventable by empowered employees taking action when a potential problem might threaten the safety of a product.

Organizations normally address these, as well as other challenging situations, by allocating a variety of resources, including monetary resources, technological innovations and personnel. Of these, personnel is often the one resource that may not receive as much attention as the others, since a company workforce is already in place. So let's talk about people. People are the major asset of any organization. Think about it...how can a company or organization prosper and advance without a well-trained, strong, knowledgeable workforce, dedicated to company values and mission, working toward a common goal of producing, processing, transporting, distributing, preparing or merchandising safe foods? Those employees need to perform their job responsibilities in food safety and quality with consistency, each and every time they perform them. Many companies have on-boarding training, refresher training, on-the-job training and many other kinds of programs designed to provide employees with more information about their job tasks. But, are these programs working and are they effective?

The answer to this question begins with thoughts about the common characteristics (core values) of world-class food companies. These core values frequently set the organization apart from the competition and give employees an understanding of the fundamental beliefs of the company. One of these core values, a culture of learning, can and does have a profound influence on the behaviors of employees throughout every department and job function within the company. People are unique and different from each other, so their perceptions, beliefs, attitudes, values, principles, practices and behaviors toward food safety and quality in an organization are crucial to them performing their tasks correctly, competently and consistently. Think about the evolution of a learning culture within an organization...from the very traditional, "basic" training (the minimum amount of information needed to do one's job), to actually creating a learning environment that empowers people to build upon their knowledge and skills and gives them new, updated information and practices to do their work at a higher level of proficiency.

It's about providing new ideas, innovative thinking, exciting and meaningful engagement in teaching and learning, to create behavioral changes in the workforce. A culture of learning is learner centered, performance based and focused on results. It is creating an organization workforce of individuals who have reached the stage where they are "unconsciously competent." Employees who perform their tasks regularly, routinely, capably, knowledgeably and proficiently! Each and every time! Several companies that have a learning culture and achieved success in the marketplace will be highlighted.

FOUNDATION CONTRIBUTORS



***Thank you to the following organizations
for your generous contributions:***

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***Thanks also to all our **GOLD** and **SILVER**
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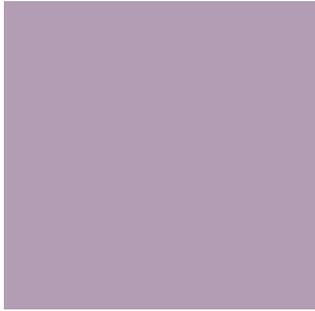


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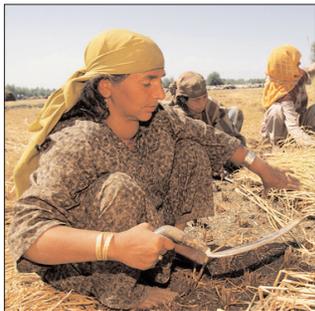
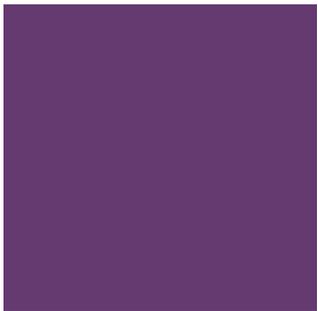
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Funds from the Foundation help to sponsor travel for deserving scientists from developing countries to our Annual Meeting, sponsor international workshops, distribute

JFP and *FPT* journals to developing countries through FAO in Rome, and supports the future of food scientists through scholarships for students or funding for students to attend IAFP Annual Meetings.

It is the goal of the Association to grow the IAFP Foundation to a self-sustaining level of greater than \$1.0 million by 2010. With your generous support we can achieve that goal and provide additional programs in pursuit of our goal of *Advancing Food Safety Worldwide*®.

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MONDAY, JULY 19

ALL DAY

8:30 a.m. – 6:15 p.m.

Exhibit Hall

MORNING

8:30 a.m. – 12:15 p.m.

North Ballroom A-C
122 A
132 C

S1 Foodborne Disease Outbreak Update
T1 Technical Session 1 – Viruses and Parasites
T2 Technical Session 2 – Modeling and Risk Assessment

8:30 a.m. – 10:00 a.m.

North Ballroom D
121 A-C
124 AB
132 AB
122 BC
123
131 A-C
129 A

S2 Physiological State of Mind: Detection Challenges for Stressed/Sub-lethally Injured Pathogens
S3 (v) New and Innovative Technologies for Sanitation in Dry Processing Environments
S4 Advances in Powdered Food Safety and Quality Sampling Plans: Theory, Simulation, and Practice
S5 How Regulators are Integrating Food Safety Culture into Food Safety Performance and Assessment Strategies
RT1 (v) Improving the Food Recall Effectiveness of Regulatory Agencies
RT2 (v) Don't You Forget about Me! Educating Underrepresented Growers on Produce Safety
RT3 (v) Opportunities and Challenges: Developments in *Clostridium botulinum* Challenge Studies
RT4 Informal Markets: Building Consumer Demand for Food Safety in Low-Resource Environments

10:00 a.m. – 10:45 a.m.

Break – Refreshments Available in the Exhibit Hall

10:00 a.m. – 5:30 p.m.

Exhibit Showcase Presentations in the Exhibit Hall

10:45 a.m. – 12:15 p.m.

North Ballroom D
122 BC
124 AB
131 A-C

S6 To Disinfect or Not? How to Appropriately Use Disinfectants in Food Settings
S7 Log Reduction and Product Grouping Strategies for Validation – Does One Size Fit All?
S8 Reducing Food Safety Risks of Pork Products: Science-based and Data-driven Steps to Reduce *Salmonella*
S9 (v) Tracking and Combating Spoilage Microorganisms and Pathogens in Food Processing: Biosensing, Interventions, and Active Packaging
RT5 Are All *Salmonella* Equal? Genomic Approach for Risk Ranking *Salmonella* Strains
RT6 Strengthening Food Safety Risk Management on the African Continent through International Collaboration
RT7 The Drive for Better Sanitation and Food Safety Compliance through Measurements, Management, and Culture
RT8 When Crime Threatens Food Safety

121 A-C
123
129 A
132 AB

11:45 a.m. – 1:45 p.m.

Lunch Available in the Exhibit Hall

AFTERNOON

12:30 p.m. – 1:30 p.m.

North Ballroom A-C

U.S. Regulatory Update on Food Safety

1:30 p.m. – 5:15 p.m.

North Ballroom A-C
122 A
132 C

S10 (v) FSMA Turns 10! Achievements, Compliance, and the Future of Food Safety
T3 Technical Session 3 – Antimicrobials
T4 Technical Session 4 – Microbial Food Spoilage, Pre-Harvest Food Safety and Food and Chemical Hazards and Food Allergens

1:30 p.m. – 3:00 p.m.

124 AB

S11 (v) Tracing Back to the Source: Challenges to Link Parasite and Viral Genotypes between Outbreak Clinical Samples and On-farm Environmental Sources of Contamination

131 A-C

S12 Food Safety Protection during Rendering of Animal Offal for Manufacturing Human and Animal Food/Feed: Needs and Opportunities

129 A

S13 Balancing Food Safety and Soil Health through the Use of Biological Soil Amendments

132 AB

S14 Dust Off That Data! Transform Testing Results into Meaningful Food Safety Improvements

North Ballroom D

RT9 NGS Case Study – The Challenges and Solutions to Implementing Genomics in a Live Factory Environment

121 A-C

RT10 Changing Lanes in the Middle of a Pandemic: Challenges and Lessons Learned from Managing SARS-CoV-2 in the Food Sector

122 BC

RT11 Diversity in Food Culture from Sushi to Steak Tartare: An Interdisciplinary Approach to Understanding Roots of Food Safety Behaviors

123

RT12 Food Safety Interventions in Low- and Middle-Income Countries: How Can QMRA be Used Effectively?

3:00 p.m. – 3:45 p.m.

Break – Refreshments Available in the Exhibit Hall

3:45 p.m. – 5:15 p.m.

122 BC

S15 (v) How COVID-19 Has Altered Consumers' Food Choices and Preferences and Their Hygienic Practices

129 A

S16 If You Want to Go Fast, Go Alone; But If You Want to Go Far, Go Together: Collaborating with Historically Black Colleges and Universities, Hispanic-serving Institutions, Non-Governmental Organizations, and Community-based Organizations on Produce Safety Education and Training

131 A-C

S17 Can *Enterobacteriaceae* Testing Provide a Better Indicator of *Salmonella* Risk on Zone 1 Surfaces in Dry Processed Foods?

North Ballroom D

RT13 (v) Frozen and Fresh Produce: Enteric Viruses Contamination, Detection and Public Health Impact

121 A-C

RT14 Incentives for Pre-Harvest Control of Zoonoses in Food Animals

124 AB

RT15 Agricultural Water Quality Management in a Changing Regulatory Landscape

132 AB

RT16 Boo! Does That Delivery from a Ghost Kitchen Scare You?

EVENING OPTIONS

5:15 p.m. – 6:15 p.m.

Exhibit Hall Reception

6:30 p.m. – 8:00 p.m.

bioMérieux Symposium, 121 A-C

IAFP PROGRAM

MONDAY MORNING JULY 19

Posters will be on display 8:30 a.m. – 6:15 p.m.
(See details beginning on page 59)

S1 Foodborne Disease Outbreak Update

North Ballroom A-C

Organizers: Laura Gieraltowski, Kari Irvin, Ewen Todd

Convenors: Laura Gieraltowski, Kari Irvin

Epidemiology

Fruit and Vegetable Safety and Quality

International Food Protection Issues

- 8:30 (v) *Salmonella* Newport Infections Linked to Red Onions
JOYCE CHENG, Outbreak Management Division, Centre for Foodborne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Guelph, ON, Canada and DIANE DUCHARME, U.S. Food and Drug Administration – CFSAN-Produce Safety Network, College Park, MD, USA
- 9:00 (v) *Listeria monocytogenes* in Deli Meat
AMANDA CONRAD, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA and ANDREA COTE, United States Department of Agriculture Food Safety Inspection Service (USDA – FSIS), Atlanta, GA, USA
- 9:30 Frozen Strawberries Linked to a Multi-Year International Hepatitis A Outbreak in Germany
CLAUDIA RUSCHER, State Office for Health and Social Affairs, Berlin, Germany
- 10:00 Break – Refreshments Available in the Exhibit Hall
- 10:45 (v) Multistate Outbreak of *Salmonella* Enteritidis Infections Linked to Fresh Peaches
MICHAEL VASSER, CDC, Atlanta, GA, USA and ASMA MADAD, U.S. Food and Drug Administration, College Park, MD, USA
- 11:15 (v) Overview of the New Federal Outbreak Investigation Tables
LINDSAY WALERSTEIN, U.S. Food and Drug Administration, College Park, MD, USA
- 11:45 (v) Late-Breaking Topic or Panel Discussion
- 12:15 Lunch Available in the Exhibit Hall

S2 Physiological State of Mind: Detection Challenges for Stressed/Sub-lethally Injured Pathogens

North Ballroom D

Organizer and Convenor: Preetha Biswas

Applied Laboratory Methods

Meat and Poultry Safety and Quality

Fruit and Vegetable Safety and Quality

- 8:30 (v) Physiological Stress Factors, Background Flora and Other Challenges in Food Safety Pathogen Detection
YI CHEN, U.S. Food and Drug Administration, College Park, MD, USA
- 9:00 Stress Tolerance Strategies in *Salmonella* Outbreak Strains Leading to Enhanced Survivability in Processing Environment
HALEY OLIVER, Purdue University, West Lafayette, IN, USA
- 9:30 Stresses Encountered in Food Processing Facility and Techniques Used to Find and Detect Pathogenic *Listeria*
MATHEW HENDERSON, Land O’Frost, Inc., Chicago, IL, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- S3 (v) New and Innovative Technologies for Sanitation in Dry Processing Environments
121 A-C
- Organizers:** VM Balasubramaniam, Abigail B. Snyder
- Convenors:** Dennis Heldman, Jena Roberts
- Food Hygiene and Sanitation
Low Water Activity Foods
- 8:30 (v) Establishing Critical Factors for Novel Dry Sanitation Technologies
ABIGAIL B. SNYDER, Cornell University, Ithaca, NY, USA
- 9:00 (v) Decontamination of Dry Food Plant with Superheated Steam: Current Status and Future Research Needs
VM BALASUBRAMANIAM, The Ohio State University, Columbus, OH, USA
- 9:30 (v) Tools for Dry Sanitation in the Spice Industry, Current Approaches and Remaining Needs
STEVE LOMBARDO, McCormick & Company, Baltimore, MD, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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

- S4 Advances in Powdered Food Safety and Quality Sampling Plans: Theory, Simulation, and Practice**
124 AB
Organizer: Brienna Larrick
Convenor: Timothy Stubbs
Sponsored by Institute for the Advancement of Food and Nutrition Sciences
Dairy Quality and Safety
Microbial Modelling and Risk Analysis
- 8:30 (v) Modelling the Effect of Sampling Methods on Detection Tests for Powdered Product
ROGER KISSLING, Fonterra, Waikato, New Zealand
- 9:00 Simulating Production and Hazard Scenarios in Powdered Product Sampling to Improve Food Safety Sampling Plans
MATTHEW J. STASIEWICZ, University of Illinois Urbana-Champaign, Champaign, IL, USA
- 9:30 Industry Need and Role for Improved Sampling of Powdered Products
PAMELA WILGER, Cargill, Inc., Wayzata, MN, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- S5 How Regulators are Integrating Food Safety Culture into Food Safety Performance and Assessment Strategies**
132 AB
Organizers and Convenors: Lone Jespersen, Laura Nelson
Food Safety Assessment, Audit and Inspection
Food Safety Culture
Food Safety Education
- 8:30 (v) Development of a Maturity Model to Evaluate Food Safety and Food Safety Culture Assessment Systems by Global Food Safety Regulatory Agencies
ROUNAQ NAYAK, Harper Adams University, Newport, United Kingdom
- 8:50 (v) Three-Prong Advancement of Food Safety Culture – Regulators, Industry and Consumers
CONRAD CHOINIERE, U.S. Food and Drug Administration, College Park, MD, USA
- 9:10 Management Commitment as a Key Pillar in Robust Food Safety Cultures
STEVEN WEARNE, VP Chair Codex, London, United Kingdom
- 9:30 (v) Introducing a Validated Industry Measurement System Integrating a Food Safety Culture Model
AMANDA HILL, Dairy Food Safety Victoria, Camberwell, Australia
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT1 (v) Improving the Food Recall Effectiveness of Regulatory Agencies**
122 B-C
Organizers: Joseph Corby, Steven Mandernach
Convenor: Steven Mandernach
Sponsored by Association of Food & Drug Officials (AFDO)
Developing Food Safety Professionals
Food Safety Education
HACCP Utilization and Food Safety Systems
- 8:30 (v) JESSICA BADOUR, Georgia Department of Agriculture, Atlanta, GA, USA
(v) MITZI BAUM, STOP Foodborne Illness, Chicago, IL, USA
(v) NANCY BEYER, Missouri Department of Health and Senior Services, Jefferson City, MO, USA
(v) JENNIFER PIERQUET, Association of Food & Drug Officials, Des Moines, IA, USA
(v) ARMANDO ZAMORA, U.S. Food and Drug Administration, Rockville, MD, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT2* (v) Don't You Forget about Me! Educating Underrepresented Growers on Produce Safety**
123
Organizers: Elizabeth Bihn, Benjamin Chapman, Sarah Cope, Minh Duong
Convenor: Minh Duong
Communication, Outreach and Education
Food Law
Fruit and Vegetable Safety and Quality
Pre-recorded, no live Q&A
- 8:30 ELIZABETH BIHN, Cornell University, Geneva, NY, USA
JOSIAH GRIFFIN, Indigenous Food & Agriculture Initiative, Fayetteville, AR, USA
NATHAN HARKLEROAD, Agriculture and Land-Based Training Association, Salinas, CA, USA
ANNALISA HULTBERG, University of Minnesota, St. Paul, MN, USA
ARMITRA JACKSON-DAVIS, Alabama A&M University, Madison, AL, USA
ANDREW WILLIAMS, The United Christian Community Association, Safford, AL, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT3 (v) Opportunities and Challenges: Developments in Clostridium botulinum Challenge Studies**
131 A–C
Organizer and Convenor: Kristin Schill
Sponsored by UW Food Research Institute
Applied Laboratory Methods
Food Defense
- 8:30 (v) STEPHEN GROVE, Nestlé Development Centre – Solon, Solon, OH, USA
(v) MICHAEL W. PECK, QIB Extra Ltd., Norwich, United Kingdom
(v) SABINE PELLETT, University of Wisconsin-Madison, Madison, WI, USA
(v) MAXINE ROMAN, Kraft Heinz, Glenview, IL, USA
(v) JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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

RT4 Informal Markets: Building Consumer Demand for Food Safety in Low-Resource Environments

129A

Organizers: Elisabetta Lambertini, Caroline Smith DeWaal
Convenor: Caroline Smith DeWaal

Communication, Outreach and Education
 Food Hygiene and Sanitation
 International Food Protection Issues

- 8:30 PETER BEN EMBAREK, World Health Organization, Geneva, Switzerland
 (v) ELISABETTA LAMBERTINI, GAIN – Global Alliance for Improved Nutrition, Rockville, MD, USA
 (v) STELLA NORDHAGEN, GAIN – Global Alliance for Improved Nutrition, Geneva, Switzerland
 (v) AUGUSTINE OKORUWA, GAIN – Global Alliance for Improved Nutrition, Abuja, Nigeria
 (v) DELIA GRACE RANDOLPH, Natural Resources Institute, University of Greenwich and International Livestock Research Institute, Kent, United Kingdom

10:00 **Break – Refreshments Available in the Exhibit Hall**

S6 To Disinfect or Not? How to Appropriately Use Disinfectants in Food Settings

North Ballroom D

Organizers: Jeffrey Anderson, Elaine Black, David Buckley, Clyde Manuel
Convenor: David Buckley

Food Hygiene and Sanitation
 Retail and Foodservice

- 10:45 (v) Regulatory Differences and Applications of Sanitizer and Disinfectants in Food Settings
 KRISTIN WILLIS, EPA, Washington, D.C., USA
 11:15 Best Practices for Sanitizer and Disinfectant Use in Food Settings
 CHARLES PETTIGREW, Procter & Gamble, Mason, OH, USA
 11:45 (v) Addressing Sanitizer and Disinfectant in the Code. What Changes Do We Need to Make?
 ANGELA FRASER, Clemson University, Clemson, SC, USA

12:15 **Lunch Available in the Exhibit Hall**

S7 Log Reduction and Product Grouping Strategies for Validation – Does One Size Fit All?

122 B-C

Organizers: Jena Roberts, Aparna Tatavarthy
Convenors: Rhoma Johnson, Jena Roberts, Aparna Tatavarthy

HACCP Utilization and Food Safety Systems
 Low Water Activity Foods
 Microbial Modelling and Risk Analysis

- 10:45 Risk Assessment and Product Categorization for Process Validation
 JULIANY RIVERA CALO, Ardent Mills, Denver, CO, USA
 11:10 (v) Breakdown of the Risk Assessment – Does It Add Up to a 5-Log Reduction?
 IAN HILDEBRANDT, Michigan State University, East Lansing, MI, USA

- 11:35 (v) FDA Perspective on Product Grouping
 NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA

12:00 Panel Discussion

12:15 **Lunch Available in the Exhibit Hall**

S8 Reducing Food Safety Risks of Pork Products: Science-based and Data-driven Steps to Reduce Salmonella

124 AB

Organizers: Robin Kalinowski, Jennifer Wages
Convenor: Jennifer Wages

Applied Laboratory Methods
 Meat and Poultry Safety and Quality
 Pre Harvest Food Safety

- 10:45 A Reflective Perspective on Performance Standards: Industry and Government Roles, Responsibilities and Limitations
 MINDY BRASHEARS, Texas Tech University, Lubbock, TX, USA
 11:15 Principles Behind Using Real-Time PCR (RT-PCR) for Quantification of *Salmonella* in Pork Matrices
 TYLER STEPHENS, Hygiene, Marion, TX, USA
 11:45 (v) *Salmonella* Prevalence, Serotypes and Pathogenicity Levels Associated with Swine
 JOHN SCHMIDT, U.S. Department of Agriculture – ARS, Clay Center, NE, USA

12:15 **Lunch Available in the Exhibit Hall**

S9 (v) Tracking and Combating Spoilage Microorganisms and Pathogens in Food Processing: Biosensing, Interventions, and Active Packaging

131 A-C

Organizer: (Christine) Xiaoji Liu
Convenor: Xianqin Yang

Food Hygiene and Sanitation
 Food Packaging
 Meat and Poultry Safety and Quality

- 10:45 (v) Can Nanotechnology for Chemical and Biochemical Sensing Impact the Food Industry?
 JUSTIN PAHARA, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada
 11:15 (v) What are We Forgetting: From Microbial Safety and Shelf Life to Microbiota of Meat and Functionality of Meat Products
 XIANQIN YANG, Agriculture and Agri-Food Canada, Lacombe, AB, Canada; Sampathkumar Balamurugan, Agriculture and Agri-Food Canada, Guelph, ON, Canada
 11:45 (v) Sustainability Meets Technology: Natural Polymers in Functional Food Packaging
 YIXIANG WANG, McGill University, Ste-Anne-de-Bellevue, QC, Canada

12:15 **Lunch Available in the Exhibit Hall**

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

RT5 Are All Salmonella Equal? Genomic Approach for Risk Ranking Salmonella Strains

121 A-C

Organizers: J. Emilio Esteban, Isabel Walls
Convenor: Isabel Walls

Advanced Molecular Analytics
Applied Laboratory Methods
Meat and Poultry Safety and Quality

- 10:45 (v) DAYNA HARHAY, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, USA
(v) KERI NORMAN, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX, USA
NOELLE NOYES, Food-Centric Corridor, Infectious Disease Laboratory, Department of Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota, Saint Paul, MN, USA
(v) MICHAEL ROBACH, GFSI, Atlanta, GA, USA
MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA
(v) BART WEIMER, University of California, Davis, Davis, CA, USA

12:15 Lunch Available in the Exhibit Hall

RT6 Strengthening Food Safety Risk Management on the African Continent through International Collaboration

123 A-C

Organizer and Convenor: Leon Gorris

Food Law
International Food Protection Issues
Microbial Modelling and Risk Analysis

- 10:45 (v) LUCIA ANELICH, Anelich Consulting, Pretoria, South Africa
(v) KEBEDE AMENU, Addis Ababa University, Bishoftu, Ethiopia
(v) JOYCE THAIYA, Ministry of Agriculture Nairobi, Kenya
(v) ABDOULIE JALLOW, Food Safety & Quality Authority of the Gambia, Serre Kunda, KMC, Gambia
BARBARA KOWALCYK, The Ohio State University, Columbus, OH, USA
(v) ADEWALE OLUSEGUN OBADINA, Federal University of Agriculture Abeokuta, Abeokuta, Nigeria

12:15 Lunch Available in the Exhibit Hall

RT7 The Drive for Better Sanitation and Food Safety Compliance through Measurements, Management, and Culture

129 A

Organizers: Elizabeth Demmings, Dale Grinstead
Convenor: Chris Jordan

Food Hygiene and Sanitation
Food Safety Assessment, Audit and Inspection
Food Safety Culture

- 10:45 (v) BARBARA CHAMBERLIN, New Mexico State University, Las Cruces, NM, USA
(v) PAULA HERALD, Steritech, Prospect, KY, USA
(v) LONE JESPERSEN, Cultivate, Hauterive, Switzerland

- (v) MARK MOORMAN, U.S. Food and Drug Administration-CFSAN, Laurel, MD, USA
HALEY OLIVER, Purdue University, West Lafayette, IN, USA
CHARLES SEAMAN, Hy-Vee, Ankeny, IA, USA

12:15 Lunch Available in the Exhibit Hall

RT8 When Crime Threatens Food Safety

132 AB

Organizers: Karen Everstine, Elise Forward
Convenor: Karen Everstine

Food Chemical Hazards and Food Allergy
Food Defense
Food Fraud

- 10:45 (v) ROY FENOFF, The Citadel, Charleston, SC, USA
(v) ELISE FORWARD, Forward Food Solutions, LLC, River Falls, WI, USA
KATIE ZAMMIT, Cargill, Wayzata, MN, USA
CLARE MENEZES, McCormick UK Ltd., Haddenham, United Kingdom
BONNIE STRANSKY, Federal Bureau of Investigation, Washington, D.C., USA
(v) JENNIFER VAN DE LIGT, Food Protection and Defense Institute, Saint Paul, MN, USA

12:15 Lunch Available in the Exhibit Hall

T1 Technical Session 1 – Viruses and Parasites

122 A

Convenors: TBD

- T1-01** 8:30 (v) Precise Detection of Human Norovirus Based on Magnetic Separation and RT-qPCR
YAN CUI, Yalong Bai, Shanghai Jiao Tong University, Shanghai, China
- T1-02** 8:45 (v) Replication of Infectious Human Norovirus Recovered from Common High-Touch Surfaces
KATIE OVERBEY, Kellogg Schwab, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA
- T1-03** 9:00 (v) Persistence of Inactivated Hepatitis A Virus RNA in Water, on Food Contact Surfaces and on Blueberries
MATHILDE TRUDEL-FERLAND, Éric Jubinville, Julie Jean, Institut sur la nutrition et les aliments fonctionnels, Université Laval, Québec, QC, Canada
- T1-04** 9:15 (v) Applicability of Pulsed Light Technology to Inactivate Foodborne Viruses and Impact on Sensory Properties of Berries
Éric Jubinville, Mathilde Trudel-Ferland, JANIE AMYOT, Julie Jean, Laval University, Quebec, QC, Canada
- T1-05** 9:30 (v) Fucose and Fucosidase: The Seemingly Contradictive Pair Can Both be Used to Fight Against Norovirus
DAN LI, Mohamad Eshaghi Gorji, Malcolm Tan, Department of Food Science and Technology, National University of Singapore, Singapore
- T1-06** 9:45 (v) Adaptation of Traditional Foodborne Virus Methodologies for Wastewater-based Epidemiology during the COVID-19 Pandemic
BRIENNA ANDERSON-COUGHLLIN, Kalmia Kniel, University of Delaware, Newark, DE, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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

- T1-07** 10:45 Assessment of the Infectivity of Coronavirus on Table Grapes during Storage and Following Sulfur Dioxide Fumigation
ASHLYN LIGHTBOWN, Erin DiCaprio, Department of Food Science and Technology, University of California-Davis, Davis, CA, USA
- T1-08** 11:00 Study on Persistence and Survival SARS-CoV-2 in Various Foods
JANAK DHAKAL, Jonathan Joyce, Mo Jia, Andrea Bertke, Reza Ovissipour, Virginia Tech University, Blacksburg, VA, USA
- T1-09** 11:15 (v) Study on Survival of Herpes Simplex Virus (HSV-1) on Foods, a Method Development for SARS-CoV-2 Study
Janak Dhakal, MO JIA, Jonathan Joyce, Reza Ovissipour, Andrea Bertke, Virginia Tech University, Blacksburg, VA, USA
- T1-10** 11:30 (v) *Salmonella* Serotypes from FSIS Samples Linked to Outbreaks
Wu San Chen, JEOFFREY LEVINE, United States Department of Agriculture, Food Safety and Inspection Service, Atlanta, GA, USA
- T1-11** 11:45 (v) Transfer of Norovirus Surrogate Bacteriophage MS2 from Glass, Stainless Steel and Polypropylene Surfaces to Raspberry
Maria Mayara de Souza Grilo, Geany Targino de Souza Pedrosa, Ruthchelly Tavares da Silva, Donald W. Schaffner, MARCIANE MAGNANI, Federal University of Paraiba, Joao Pessoa, Paraiba, Brazil
- T1-12** 12:00 (v) Comparative Analyses and Virulence Potential of Incompatibility Group FIB Plasmid Containing *Salmonella* Schwarzengrund Strains Isolated from Food and Clinical Sources
BIJAY KHAJANCHI, Monique Felix, Danielle Sopovski, Noah Yoskowitz, Carter Abbott, Christopher Grim, Ashlyn Carlton, Nesreen Aljahdali, Jing Han, Yasser M. Sanad, Shaohua Zhao, Steven Foley, Food and Drug Administration and National Center for Toxicological Research, Jefferson, AR, USA
- 12:15 Lunch Available in the Exhibit Hall
- T2** **Technical Session 2 – Modeling and Risk Assessment**
132 C
Convenor: Matthew Krug
- T2-01** 8:30 (v) Farm-to-Consumer Quantitative Risk Assessment Model for *Listeria monocytogenes* on Fresh-Cut Cantaloupe
SARAH I. MURPHY, Ece Bulut, Laura K. Strawn, Michelle Danyluk, Martin Wiedmann, Renata Ivanek, Cornell University, Ithaca, NY, USA
- T2-02** 8:45 (v) Farm-to-Fork Quantitative Microbial Risk Assessment Model for *Escherichia coli* O157:H7 on Fresh-Cut Lettuce
ECE BULUT, Sarah I. Murphy, Laura K. Strawn, Michelle Danyluk, Martin Wiedmann, Renata Ivanek, Cornell University, Ithaca, NY, USA
- T2-03** 9:00 (v) Heat Transfer Analysis of Dry Roasting Peanuts to Achieve Food Safety Goals
KAITLYN E. CASULLI, Donald W. Schaffner, Kirk Dolan, Michigan State University, East Lansing, MI, USA
- T2-04** 9:15 (v) Secondary Model for the Survival of *Salmonella* in Model Low Water Activity Matrix Based on Intrinsic and Extrinsic Factors
MATTHEW J. IGO, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- T2-05** 9:30 (v) Using Machine Learning to Predict Antimicrobial Resistance Non-Typhoidal *Salmonella enterica* from Poultry Products
COLLINS TANUI, Shraddha Karanth, Edmund Benefo, Abani Pradhan, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA
- T2-06** 9:45 An Exploratory Quantitative Risk Assessment Model for *Salmonella enterica* by Chicken Consumption at Home in the Central Region of Mexico: Inclusion of the Pathogen's Genotypic and Phenotypic Print
ANGÉLICA GODÍNEZ-OVIEDO, Francisco Garcés-Vega, Fernando Sampedro, Elisa Cabrera-Díaz, John P Bowman, Montserrat Hernandez-Iturriaga, Universidad Autonoma de Queretaro, Queretaro, QA, Mexico
- 10:00 Break – Refreshments Available in the Exhibit Hall
- T2-07** 10:45 (v) Using Bayesian Statistics to Model the Growth of Shiga Toxin-producing *Escherichia coli* (STEC) in Raw Meat during Dynamic Chilling and Freezing Conditions
SREE SOUNDARYA TEJASWI KARAMCHETI, Gale Brightwell, Matthew Schofield, Phil Bremer, University of Otago, Dunedin, New Zealand
- T2-08** 11:00 Comparison between Lasso and Classification and Regression Tree for Predicting of *E. coli* Prevalence in Pasture Poultry Farms
XINRAN XU, Michael Rothrock, Abhinav Mishra, University of Georgia, Athens, GA, USA
- T2-09** 11:15 (v) Development of a Predictive Modeling Approach to Evaluate Food Safety Compliance
AMANI BABEKIR, Anna Starobin, Ecolab Inc., Greensboro, NC, USA
- T2-10** 11:30 (v) Comparative Exposure to Antibiotic-Resistant *Salmonella enterica* in Beef from Different Countries
Gavin Fenske, JANE POUZOU, Solenne Costard, Macon Overcast, Francisco Zagmutt, EpiX Analytics, Fort Collins, CO, USA
- T2-11** 11:45 Characterizing the Risk of SARS-CoV-2 Infection Among Essential Food Workers: A Quantitative Microbial Risk Assessment Approach
DERRICK COOPER, Julia Sobolik, Elizabeth Sajewski, Juan S. Leon, Emory University, Atlanta, GA, USA
- T2-12** 12:00 SARS-CoV-2 Transmission Risks and Risk Mitigation Strategies Among Essential Workers in an Indoor Food Processing Facility
JULIA SOBOLIK, Derrick Cooper, Lee-Ann Jaykus, Elizabeth Sajewski, Juan S. Leon, Emory University, Atlanta, GA, USA
- 12:15 Lunch Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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



GENERAL SESSION

U.S. REGULATORY UPDATE

MONDAY, JULY 19

12:30 P.M. – 1:30 P.M.



FRANK YIANNAS, MPH

Deputy Commissioner,
Food Policy and Response
U.S. Food & Drug
Administration
Silver Spring, MD, USA

Frank Yiannas, MPH, is the Deputy Commissioner for Food Policy and Response, a position he assumed in December 2018.

Mr. Yiannas is the principal advisor to the U.S. FDA Commissioner in the development and execution of policies related to food safety, including implementation of the landmark FDA Food Safety Modernization Act (FSMA), helping reduce food safety risks and achieve high rates of compliance with FDA food safety standards. He previously served in leadership roles with Walmart and the Walt Disney Company.



SANDRA ESKIN

Deputy Under Secretary
for Food Safety
U.S. Department of Agriculture
Washington, D.C., USA

Sandra Eskin was appointed Deputy Under Secretary for Food Safety on March 16, 2021. In this role, Mrs. Eskin leads the Office of Food Safety at the U.S. Department of Agriculture, overseeing the Food Safety and Inspection Service (FSIS), which has regulatory oversight for ensuring that meat, poultry and egg products are safe, wholesome and accurately labeled.

Prior to joining USDA, Mrs. Eskin was the Project Director for Food Safety at The Pew Charitable Trusts in Washington, D.C., a position she held since November 2009. She also served as the Deputy Director of the Produce Safety Project (PSP), a Pew-funded initiative at Georgetown University from 2008–2009. While at PSP, she was a senior scholar with the O'Neill Institute for National and Global Health Law at Georgetown University.

Mrs. Eskin spent nearly 20 years as a public-policy consultant to numerous consumer advocacy and public-interest organizations, providing strategic and policy advice on a broad range of consumer-protection issues, in particular food and drug safety, labeling, and advertising. She has served as a member of multiple federal advisory committees related to consumer information on prescription drugs, meat and poultry safety, and foodborne illness surveillance. During her career, she has written numerous reports and articles on food-safety topics. Mrs. Eskin received her J.D. from UC Hastings College of the Law, and her B.A. from Brown University.

**MONDAY AFTERNOON
JULY 19**

12:30 p.m. – 1:30 p.m.

U.S. REGULATORY UPDATE ON FOOD SAFETY

North Ballroom A-C

- 12:30 (v) Update from U.S. Department of Agriculture
SANDRA ESKIN, Deputy Under Secretary for Food Safety,
U.S. Department of Agriculture, Washington, D.C.
- 12:50 (v) Update from U.S. Food and Drug Administration
FRANK YIANNAS, U.S. Food & Drug Administration (FDA),
Silver Spring, MD, USA
- 1:10 Audience Questions & Answers

**S10 (v) FSMA Turns 10! Achievements, Compliance,
and the Future of Food Safety**

North Ballroom A-C

Organizers and Convenors: Lillian Hsu, Jenny Scott

Food Law
HACCP Utilization and Food Safety Systems

- 1:30 (v) FSMA's Focus on Prevention – The Vision and
Challenges to Achieving It
MIKE TAYLOR, Former Deputy Commissioner, U.S. Food
and Drug Administration, Washington, D.C., USA
- 2:00 (v) What Do Inspections Reveal about Implementation
of Preventive Controls?
GLENN BASS, U.S. Food & Drug Administration, White
Oak, MD, USA
- 2:30 (v) A Good Food Safety System Gets Better – Impact
of FSMA
KELLY STEVENS, General Mills, Minneapolis, MN, USA
- 3:00 Break – Refreshments Available in the Exhibit Hall
- 3:45 (v) Benefits of FSMA for Consumers
BARBARA KOWALCYK, The Ohio State University,
Columbus, OH, USA
- 4:15 (v) Impact of FSMA on Trading Partners
DANIEL BURGOYNE, Canadian Food Inspection
Agency, Ottawa, ON, Canada
- 4:45 (v) Building on FSMA for the Decades to Come
FRANK YIANNAS, U.S. Food & Drug Administration
(FDA), Silver Spring, MD, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

**S11 (v) Tracing Back to the Source: Challenges to Link
Parasite and Viral Genotypes between Outbreak
Clinical Samples and On-Farm Environmental
Sources of Contamination**

124 AB

**Organizer: Mauricio Durigan
Convenors: Alexandre da Silva, Mauricio Durigan**

Viral and Parasitic Foodborne Disease
Water Safety and Quality

- 1:30 (v) Best Practices for Environmental Source Tracking
of Non-Cultivable Foodborne Pathogens
LEE-ANN JAYKUS, North Carolina State University,
Department of Food, Bioprocessing and Nutrition
Sciences, Raleigh, NC, USA

- 2:00 (v) Challenges with Sampling and Testing During
Cyclosporiasis Outbreak Investigations
ALEXANDRE DA SILVA, U.S. Food and Drug Admin-
istration – CFSAN, Office of Applied Research and Safety
Assessment, Laurel, MD, USA

- 2:30 (v) Foodborne Parasites: Genotyping Schemes for
Surveillance and Outbreak Investigations
RACHEL CHALMERS, Public Health Wales, Microbiology
and Health Protection, Singleton Hospital, Swansea,
United Kingdom

3:00 Break – Refreshments Available in the Exhibit Hall

**S12 Food Safety Protection during Rendering of Animal
Offal for Manufacturing Human and Animal Food/
Feed: Needs and Opportunities**

131 A-C

**Organizers: Kimberly Anderson, Thomas Taylor
Convenor: Xiuping Jiang**

HACCP Utilization and Food Safety Systems
Low Water Activity Foods
Meat and Poultry Safety and Quality

- 1:30 What's the Renderer to Do about Food Safety Protection?
An Industry Perspective
ANSEN POND, Pilgrim's Pride, Mt. Pleasant, TX, USA
- 2:00 Validating Pathogen Control in Carcass Components
during Rendering: Research Update and Existing Data
Gaps
THOMAS TAYLOR, Texas A&M University, College
Station, TX, USA
- 2:30 (v) FDA FSMA and Animal Food Safety Preventive
Controls Review and Implementation
JENNIFER ERICKSON, U.S. Food and Drug
Administration, Silver Spring, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

**S13 Balancing Food Safety and Soil Health through
the Use of Biological Soil Amendments**

129 A

**Organizers: Donna Clements, Alda Pires
Convenor: Donna Clements**

Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety

- 1:30 Food Safety Considerations of Rotational Grazing and
Integrated Crop-Livestock Systems
ALDA PIRES, Department of Population Health and
Reproduction, School of Veterinary Medicine, University
of California-Davis, Davis, CA, USA
- 2:00 Ecological and Agricultural Factors Influencing Pathogen
Die-Off in Conventional and Organic Vegetable Fields
Following Use of Biological Soil Amendments of Animal
Origin
MICHELE JAY-RUSSELL, Western Center for Food
Safety, School of Veterinary Medicine, University of
California-Davis, Davis, CA, USA
- 2:30 (v) Impact of the Plant-Soil Interface on Soil Health
and Food Safety
PATRICIA D. MILLNER, USDA-ARS, EMFSL, Beltsville,
MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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

MONDAY PM

- S14** **Dust Off That Data! – Transform Testing Results into Meaningful Food Safety Improvements**
132 AB
Organizers and Convenors: Neil Bogart, Josie Greve-Peterson
HACCP Utilization and Food Safety Systems
Dairy Quality and Safety
- 1:30 (v) Using Control Charts to Establish Statistical Process Control in Food Manufacturing
SARAH I. MURPHY, Cornell University, Ithaca, NY, USA
- 2:00 (v) Development and Utilization of Heat Mapping in Data Analysis
STEPHANIE MAGGIO, North Carolina State University, Raleigh, NC, USA
- 2:30 (v) Food Safety and Quality Data Management Using Artificial Intelligence
MEHRDAD TAJKARIMI, EAS Consulting Group, Los Angeles, CA, USA
- 3:00 Break – Refreshments Available in the Exhibit Hall
- RT9** **NGS Case Study – The Challenges and Solutions to Implementing Genomics in a Live Factory Environment**
North Ballroom D
Organizers: Clare Thorp, Brendan Ring
Convenor: John O’Brien and Panos Skandamis
Sponsored by Creme Global
Advanced Molecular Analytics
Microbial Modelling and Risk Analysis
Sanitary Equipment and Facility Design
Live only, not recorded
- 1:30 (v) DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
PABLO CARRION, Nestle Purina, St. Louis, MO, USA
(v) JOHN DONAGHY, Nestlé S.A., Vevey, Switzerland
(v) SÉAMUS FANNING, University College Dublin, Dublin, Ireland
(v) KALLIOPI RANTSIOU, University of Turin, Grugliasco, Italy
MARTIN WEIDMANN, Cornell University, Ithaca, NY, USA
- 3:00 Break – Refreshments Available in the Exhibit Hall
- RT10** **Changing Lanes in the Middle of a Pandemic: Challenges and Lessons Learned from Managing SARS-CoV-2 in the Food Sector**
121 A–C
Organizers: Benjamin Chapman, Michelle Danyluk
Convenor: Benjamin Chapman
Communication, Outreach and Education
Meat and Poultry Safety and Quality
Retail and Foodservice
- 1:30 (v) ROGER COOK, New Zealand Food Safety, Wellington, New Zealand
(v) DONNA GARREN, American Frozen Food Institute, Arlington, VA, USA
STEVEN MANDERNACH, Association of Food and Drug Officials, New York, NY, USA
KATIEROSE MCCULLOUGH, North American Meat Institute, Washington, D.C., USA
(v) ERIC MOORE, Testo Solutions USA, Inc., West Chester, PA, USA
(v) DONALD W. SCHAFFNER, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

- 3:00 Break – Refreshments Available in the Exhibit Hall
- RT11** **Diversity in Food Culture from Sushi to Steak Tartare: An Interdisciplinary Approach to Understanding Roots of Food Safety Behaviors**
122 BC
Organizers: Caroline Smith DeWaal, Phyllis Posy, Amarat (Amy) Simonne
Convenor: Amarat (Amy) Simonne
Food Hygiene and Sanitation
Food Safety Education
International Food Protection Issues
- 1:30 CAROLINE SMITH DEWAAL, Global Alliance for Improved Nutrition, Washington, D.C., USA
(v) BOBBY KRISHNA, Dubai Municipality, Dubai, United Arab Emirates
(v) DIMA FAOUR-KLINGBEIN, DFK for Safe Food Environment, Hannover, Germany
(v) ADEWALE OLUSEGUN OBADINA, Federal University of Agriculture, Abeokuta, Nigeria
(v) AMARAT (AMY) SIMONNE, University of Florida, Gainesville, FL, USA
(v) JOE MAC REGENSTEIN, Cornell University, Ithaca, NY, USA
- 3:00 Break – Refreshments Available in the Exhibit Hall
- RT12** **(v) Food Safety Interventions in Low- and Middle-Income Countries: How Can QMRA be Used Effectively?**
123
Organizers and Convenors: Marcel Zwietering and Arie Havelaar
HACCP Utilization and Food Safety Systems
International Food Protection Issues
Microbial Modelling and Risk Analysis
- 1:30 (v) KEBEDE AMENU, Addis Ababa University, Bishoftu, Ethiopia
(v) PETER BEN EMBAREK, World Health Organization, Geneva, Switzerland
(v) SINH DANG, CGIAR, Hanoi, Vietnam
(v) DELIA GRACE, International Livestock Research Institute, Nairobi, Kenya
- 3:00 Break – Refreshments Available in the Exhibit Hall
- S15** **(v) How COVID-19 Has Altered Consumers’ Food Choices and Preferences and Their Hygienic Practices**
122 BC
Organizers: Dima Faour-Klingbeil, Ewen Todd
Convenor: Ewen Todd
Epidemiology
Food Hygiene and Sanitation
Retail and Foodservice
- 3:45 (v) Knowledge and Practices Regarding Safe Household Cleaning and Disinfection for COVID-19 Prevention in the United States
MARGARET PERSON, Centers for Disease Control and Prevention, Atlanta, GA, USA

All times listed in Pacific time (U.S.)

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

- 4:15 (v) Perception of Risk, Food Shopping, and Hygienic Practices in Arab Countries during a Pandemic
DIMA FAOUR-KLINGBEIL, School of Biological and Marine Sciences, University of Plymouth, Devon, United Kingdom
- 4:45 (v) Food Safety during and after the Era of COVID-19 Pandemic
AMIN ELEIMAT (OLAIMAT), Department of Clinical Nutrition and Dietetics Faculty of Applied Medical Sciences, The Hashemite University, Zarqa, MB, Jordan

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

S16 If You Want to Go Fast, Go Alone; But If You Want to Go Far, Go Together: Collaborating with Historically Black Colleges and Universities, Hispanic-serving Institutions, Non-Governmental Organizations, and Community-based Organizations on Produce Safety Education and Training

129 A

Organizers: Michelle Danyluk, Armitra Jackson-Davis, Veerachandra Yemmireddy
Convenors: Armitra Jackson-Davis, Kristin Woods
Sponsored by the IAFP Foundation

Communication, Outreach and Education

- 3:45 Historically Black Colleges and Universities (HBCU) Role in Food Safety and the Produce Safety Rule
ARMITRA JACKSON-DAVIS, Alabama A&M University, Madison, AL, USA
- 4:15 Non-Governmental Organizations and Community-based Organizations Impact on the Food System and Education
BILLY MITCHELL, Local Food Safety Collaborative, Jeffersonville, GA, USA
- 4:45 Hispanic-Serving Institutions (HSIs) Role in Food Safety and the Produce Safety Rule
VEERACHANDRA K. YEMMIREDDY, University of Texas Rio Grande Valley, Edinburg, TX, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

S17 Can Enterobacteriaceae Testing Provide a Better Indicator of Salmonella Risk on Zone 1 Surfaces in Dry Processed Foods?

131 AC

Organizer and Convenor: Rocelle Clavero-Grabarek
Sponsored by The IAFP Foundation

Applied Laboratory Methods
HACCP Utilization and Food Safety Systems

- 3:45 Can Increased Zone 1 Testing for *Enterobacteriaceae* Reduce *Salmonella* Contamination in Low-Moisture Foods?
WARREN STONE, Zone One Consulting LLC, Napa, CA, USA
- 4:15 Rapid Detection of *Enterobacteriaceae* and Subsequent *Salmonella* Identification on Food Contact Surfaces
RICK KANABY, Neogen Corporation, Lansing, MI, USA
- 4:45 Practical Considerations in Using *Enterobacteriaceae* as Indicator for *Salmonella* in a Dry Food Manufacturing Plants
JOSEPH D. MEYER, Kerry, Waunakee, WI, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

RT13 (v) Frozen and Fresh Produce: Enteric Viruses Contamination, Detection and Public Health Impact
North Ballroom D

Organizers: Donna Garren, Sanjay Gummalla
Convenor: Lory Revell

Sponsored by American Frozen Food Institute

Applied Laboratory Methods
Fruit and Vegetable Safety and Quality
Viral and Parasitic Foodborne Disease

- 3:45 (v) SABAH BIDAWID, Health Canada, Ottawa, ON, Canada
(v) SOPHIE BUTOT, Nestlé Research Center, Lausanne, Switzerland
(v) LEE-ANN JAYKUS, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA
(v) JAN VINJÉ, Centers for Disease Control and Prevention, Atlanta, GA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

RT14 Incentives for Preharvest Control of Zoonoses in Food Animals

121 AC

Organizer and Convenor: Carl Custer

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

- 3:45 TODD CALLAWAY, University of Georgia, Athens, GA, USA
J. EMILIO ESTEBAN, United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C., USA
(v) BILL MARLER, Marler Clark, The Food Safety Law Firm, Seattle, WA, USA
(v) RAFAEL RIVERA, U.S. Poultry and Egg Association, Tucker, GA, USA
(v) TANYA ROBERTS, Center for Foodborne Illness Research & Prevention, Vashon, WA, USA
(v) CRAIG WILSON, Costco Wholesale, Issaquah, WA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

RT15 Agricultural Water Quality Management in a Changing Regulatory Landscape

124 AB

Organizers: Davis Blasini, Ricardo Orellana, Don Stoeckel

Convenor: Betsy Bihn

Fruit and Vegetable Safety and Quality
Water Safety and Quality

- 3:45 FAITH CRITZER, Washington State University, School of Food Science, Prosser, WA, USA
DREW MCDONALD, Taylor Farms, Sacramento, CA, USA
ROGER NOONAN, New England Farmers Union, Boston, MA, USA
HUGO POBLETE, Sociedad Agricola La Rosa Sofruco, Peumo, Chile
(v) KRUTI RAVALIYA, U.S. Food and Drug Administration, College Park, MD, USA
CHANNAH ROCK, University of Arizona, Maricopa, AZ, USA
LAURA K. STRAWN, Virginia Tech, Blacksburg, VA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

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RT16 **Boo! Does That Delivery from a Ghost Kitchen Scare You?**

132 AB

Organizer and Convenor: Paula Herald

Food Safety Assessment, Audit and Inspection
Retail and Foodservice

- 3:45 JORGE HERNANDEZ, Wendy's, Dublin, OH, USA
HOWARD POPOOLA, The Kroger Company, Cincinnati, OH, USA
ASHLEY RONDORF, Chick-fil-A, Atlanta, GA, USA
(v) ELEANOR YOST, Carlton Fields, Tampa, FL, USA
(v) KATHLEEN ZINGSHEIM, Maricopa County Arizona Environmental Services Department, Phoenix, AZ, USA

T3 **Technical Session 3 – Antimicrobials**

122 A

Convenors: Samantha Bolten, Janak Dhakal

- T3-01** *Ex Vivo* Evaluation of the Effectiveness of *Lactobacillus* Metabolites with Berry Phenolic Extracts Against *Campylobacter*
1:30 ZAJEBA TABASHSUM, Mengfei Peng, Zabdiel Alvarado-Martinez, Debabrata Biswas, University of Maryland, College Park, MD, USA
- T3-02** Adaptation of *Listeria* to Increasing Sanitizer Concentrations
1:45 SAMANTHA BOLTEN, Anna Sophia Harrant, Jordan Skeens, Martin Wiedmann, Cornell University, Ithaca, NY, USA
- T3-03** (v) β -Phenylethylamine as a Natural Food Additive Shows Antimicrobial Activity Against *Listeria monocytogenes* on Ready-to-Eat Foods
2:00 Francis Muchaamba, Roger Stephan, TAURAI TASARA, Institute for Food Safety and Hygiene, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland
- T3-04** (v) Network Assisted Variant Analysis Reveals Novel Genetic Elements Linked to Nisin Tolerance and Sensitivity in *Listeria monocytogenes*
2:15 JOSEPH WAMBUI, Marc J.A. Stevens, Patrick Murigu Kamau Njage, Taurai Tasara, Institute for Food Safety and Hygiene, Vetsuisse Faculty University of Zurich, Zurich, Switzerland
- T3-05** (v) Effect of *Ohelo* Berry (*Vaccinium calycinum*) Juice on Physicochemical Properties, Biofilm Formation, and Virulence Gene Expression of *Listeria monocytogenes*
2:30 BIYU WU, Xiaohan Liu, Stuart Nakamoto, Yong Li, University of Hawaii At Manoa, Honolulu, HI, USA
- T3-06** Disinfectant Efficacy Against *Staphylococcus aureus* and *Pseudomonas aeruginosa* Dry Surface Biofilms is Product, Time Point and Strain Dependent
2:45 CARINE A. NKEMNGONG, Gurpreet Kaur Chaggar, Haley Oliver, Purdue University, West Lafayette, IN, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**
- T3-07** (v) Efficacy and Quality Attributes of Antimicrobial Agents Applied Via a Commercial Electrostatic Spray Cabinet to Inactivate *Salmonella* on Chicken Thigh Meat
3:45 ANURADHA PUNCHIHEWAGE DON, Salina Parveen, Jurgen Schwarz, Lindsey Hamill, Caleb Nindo, Parker Hall, Bob Vimini, University of Maryland Eastern Shore, Princess Anne, MD, USA

- T3-08** In-Plant Validation of Novel On-Site Ozone Generation Technology (Bio-Safe) Compared to Lactic Acid on Beef Carcasses and Trim Using Natural Microbiota and *Salmonella* and *E. coli* O157 Surrogate Enumeration
4:00 DIEGO CASAS, David Vargas Arroyo, Emile Radazzo, Dan Lynn, Alejandro Echeverry, Mindy Brashears, Marcos X. Sanchez-Plata, Mark Miller, Texas Tech University, Lubbock, TX, USA
- T3-09** Association between Antibiotic Resistance and Sanitizer Resistance of *Escherichia coli* Isolated from Agricultural Water in Hawaii
4:15 YEN NGUYEN, Biyu Wu, Lynn Nakamura-Tengan, Yong Li, University of Hawaii at Manoa, Honolulu, HI, USA
- T3-10** (v) Selection of a Potential Synbiotic Against *Cronobacter sakazakii*
4:30 ALFRED KE, Valeria R. Parreira, Jeffrey M. Farber, Lawrence Goodridge, Canadian Research Institute for Food Safety (CRIFS), Department of Food Science, University of Guelph, Guelph, ON, Canada
- T3-11** Antifungal Activity and Bioprotective Potential of Lactic Acid Bacteria Isolated from Kunu-Zaki, a Nigerian Indigenously Fermented Beverage
4:45 OMOTADE R. OGUNREMI, First Technical University, Ibadan, Nigeria
- T3-12** (v) Antimicrobial Food-Grade Coatings on Hydrophobic Plastics for Reducing Cross-Contamination of Fresh Produce
5:00 JIYOON YI, Nitin Nitin, University of California, Davis, Davis, CA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

T4 **Technical Session 4 – Microbial Food Spoilage, Pre-Harvest Food Safety and Food and Chemical Hazards and Food Allergens**

132 C

Convenor: Matthew Moore

- T4-01** (v) An Evaluation of Inter-Laboratory Analytical Results for Mycotoxins in Cereal Grains
1:30 RONALD SARVER, Eric Bergeron, Chris Eakin, Mary Gadola, Mine Gezgin, Alex Kostin, Ben Strong, Neogen Corporation, Lansing, MI, USA
- T4-02** (v) Effect of Changes in Fermentation Conditions on the Selection of Appropriate Calibrants for the Quantitation of Gluten in Fermented-Hydrolyzed Foods
1:45 RAKHI PANDA, Marc Boyer, Eric Garber, U.S. Food and Drug Administration, College Park, MD, USA
- T4-03** (v) Maximum Levels for Carcinogenic Pyrrolizidine Alkaloids in Kitchen Herbs Introduced
2:00 ARNE DUEBECKE, Quality Services International GmbH, Bremen, Germany
- T4-04** (v) Nanoliposome Loaded with Chitosan-Epigallo-catechin Gallate Conjugate: Preparation, Characterization and Its Application for Shelf-Life Extension of Refrigerated Asian Sea Bass (*Lates calcarifer*) Slices
2:15 AJAY MITTAL, Avtar Singh, Soottawat Benjakul, International Center of Excellence in Seafood Science and Innovation, Prince of Songkla University, Hat Yai, Thailand

All times listed in Pacific time (U.S.)

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

- T4-05** 2:30 Advanced Bioinformatics for Highly Resolved Profiling and Quantification of Spoilage Microbiota and Prediction of Functions Influencing Food Spoilage
NUR HASAN, Shakur Abdullah, Mauricio Chalita, Jongsik Chun, EzBiome, Gaithersburg, MD, USA
- T4-06** 2:45 (v) A Meta-Analysis Assessment of the Bacterial and Fungal Contaminants in Caprine and Ovine Cheese
SHOLEEM GRIFFIN, Owen Falzon, Kenneth Camilleri, Vasilis P. Valdramidis, Department of Food Sciences and Nutrition, Faculty of Health Sciences, University of Malta, Msida, Malta
- 3:00 **Break – Refreshments Available in the Exhibit Hall**
- T4-07** 3:45 (v) Longitudinal Dynamics and Antimicrobial-Resistance Profiles of *Salmonella* in Beef Cattle and the Feedlot Environment
COLETTE NICKODEM, Keri Norman, Texas A&M University College of Veterinary Medicine & Biomedical Sciences, College Station, TX, USA
- T4-08** 4:00 Intracellular Autolytic *Salmonella* Vaccine in Preventing Salmonellosis
MENGFEI PENG, Jungsoo Joo, Debabrata Biswas, University of Maryland, College Park, MD, USA
- T4-09** 4:15 Effect of Turkey-Derived *Lactobacillus* Probiotics and Trans-Cinnamaldehyde Against Multidrug-Resistant *Salmonella* Heidelberg in Turkey Poults
GRACE DEWI, Shijinaraj Manjankattil, Claire Peichel, Timothy Johnson, Sally Noll, Carol Cardona, Anup Kollanoor Johny, University of Minnesota, St. Paul, MN, USA
- T4-10** 4:30 Effects of Common Litter Treatments on *Campylobacter jejuni* Cross-Contamination in Broilers
MATTHEW BAILEY, Dianna Bourassa, James Krehling, Luis Munoz, Aidan Talorico, Kaicie Chasteen, John Adkins, Kenneth Macklin, Auburn University, Auburn, AL, USA

- T4-11** 4:45 Growth of *Escherichia coli* O157:H7 on Romaine Lettuce Leaves Under Different Conditions of Relative Humidity is Associated with Leaf Properties and Composition of Resident Bacterial Communities
DIANA VANESSA SARRIA-ZUNIGA, Amanda J. Deering, Robert E. Pruitt, Purdue University, West Lafayette, IN, USA
- T4-12** 5:00 (v) Survival and Transfer of *Escherichia coli* in Soils and on Radishes
PUSHPINDER KAUR LITT, Alyssa Kelly, Alexis Omar, Gordon Johnson, Manan Sharma, Kalmia Kniel, Hygiene, Newark, DE, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

EVENING OPTIONS

5:15 p.m. – 6:15 p.m.

Exhibit Hall Reception

6:30 p.m. – 8:30 p.m.

bioMérieux Symposium

(Open to all attendees)

121 A-C

All times listed in Pacific time (U.S.)

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



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TUESDAY, JULY 20

ALL DAY

8:30 a.m. – 6:15 p.m.

Exhibit Hall

Poster Session 2

Food Toxicology; General Microbiology; Laboratory and Detection Methods; Microbial Food Spoilage; Pre-Harvest Food Safety; Produce; Sanitation and Hygiene; Viruses and Parasites; Water
P2-01 through P2-91 – Authors present 10:00 a.m. – 11:30 a.m. and 5:15 p.m. – 6:15 p.m.
P2-92 through P2-191 – Authors present 2:15 p.m. – 3:45 p.m. and 5:15 p.m. – 6:15 p.m.

MORNING

8:30 a.m. – 12:15 p.m.

North Ballroom D
132 AB
132 C

S18 Recent State and Local Outbreak Investigations
T5 Technical Session 5 – Produce
T6 Technical Session 6 – Food Safety Systems, Sanitation and Hygiene and Packaging

8:30 a.m. – 10:00 a.m.

North Ballroom A-C

121 A-C
122 BC
122 A
129 A
124 AB
123
131 A-C

S19 One Size Does Not Fit All: Advancing Surrogate Science and Collaboration to Enable Pathogen Reduction Technologies in a Variety of Matrices
S20 Novel and Emerging Technologies for Food Processing Facility Environmental Control
S21 No Silver Bullet in Sight: How to Achieve Continuous Improvement in Fresh Produce Safety with Existing Knowledge and Tools
S22 Identifying, Tracking, and Controlling Spoilage: "Toolbox" for Dairy Processing
S23 Your Significant Other: Using Statistics to Interpret Microbiological Data
RT17 (v) A North American Perspective on Antimicrobial Resistance and Regulatory Action
RT18 Diversifying the Pipeline in Food Safety Education: Engaging Historically Black Colleges and Universities (HBCUs)
RT19 Emergency Use of Microbial Methods of Detection by Industry – Alternative Routes Proving Fit for Purpose

10:00 a.m. – 10:45 a.m.

Break – Refreshments Available in the Exhibit Hall

10:00 a.m. – 5:30 p.m.

Exhibit Showcase Presentations in the Exhibit Hall

10:45 a.m. – 12:15 p.m.

121 A-C
124 AB
129 A
122 A
North Ballroom A-C
122 BC
131 A-C
123

S24 Latest Developments in Food Safety Standards for Water Reuse in Food Production and Processing
S25 Decoding Codex Alimentarius - Not a Secret Society
S26 Shelf-Life Testing: Problems, Pitfalls, and Promise
S27 Use of Novel and Alternate Processing Technologies for Dairy Products
RT20 FDA's New Era of Smarter Food Safety: One Year after the "Blueprint" Release, How is the Industry Embracing This Change?
RT21 Riding the Tide of Multi-Disciplinary Approaches to Evaluate Behavior-Change Effectiveness of Food Safety Education
RT22 Collaboration in the Desert – A Research Model for Advancing Fresh Produce Safety
RT23 Novel Foods, Novel Challenges: Food Safety Concerns in Plant-Based, Cell-Cultured, and "Clean Label" Products

11:45 a.m. – 1:45 p.m.

Lunch Available in the Exhibit Hall

AFTERNOON

12:30 p.m. – 1:15 p.m.

121 A-C

IAFP Business Meeting

1:30 a.m. – 5:15 p.m.

North Ballroom A-C
122 A
132 C

S28 C is for *Cyclospora*: A Crash Course in the Emerging Pathogen from Farm to Table
T7 Technical Session 7 – Meat, Poultry and Eggs
T8 Technical Session 8 – Communication, Outreach and Education; Food Defense; Food Law and Regulation; Epidemiology

1:30 p.m. – 3:00 p.m.

121 A-C

S29 (v) What to Decide? Making Informed Decisions for Process Validation and Food Safety Legislation Using Bayesian Risk Models
S30 To Verify or Validate a Rapid Pathogen Method: What about the Matrix?
S31 To Be Acid or To Be Acidified, That is the Question
S32 Communication for Risk Management: What, When, How, and Who?
S33 (v) Allergen Management at Retail in the New Era of Smarter Food Safety: From the Front Lines of Restaurants, Food Service, and Retail Grocery
RT24 Operational Choices and Risk-based Decision Making Around Clean Breaks in Dry Environments
RT25 Food Irradiation: Where We've Been, Where We are Now, and What's Next

3:00 p.m. – 3:45 p.m.

Break – Refreshments Available in the Exhibit Hall

3:45 p.m. – 5:15 p.m.

North Ballroom D
122 BC
124 AB
121 A-C
132 AB
131 A-C

S34 Risk Ranking Approaches to Inform Diverse Decisions in Government and Industry
S35 We Quantified, Now What? Actual *Salmonella* Quantification Approaches Utilized in the Protein Industry Today
S36 The Forgotten Option: Formulation-based Preventive Controls for Human Foods
RT26 A Support Group for Difficult Matrices – You're Not Alone with Your Detection and Confirmation Problems
RT27 Ever Thought of Being an Expert Witness?
RT28 Fact or Fiction? How to Evaluate Antimicrobial Products for Your Sanitation Program

EVENING OPTIONS

5:15 p.m. – 6:15 p.m.

Exhibit Hall Reception

7:00 p.m. – 9:00 p.m.

Student Mixer, *Sheraton Phoenix Downtown*

TUESDAY MORNING JULY 20

Posters will be on display 8:30 a.m. – 6:15 p.m.
(See details beginning on page 67)

S18 Recent State and Local Outbreak Investigations

North Ballroom D

Organizer and Convenor: Steven Mandernach

Sponsored by Association of Food and Drug Officials

Epidemiology

Food Safety Assessment, Audit and Inspection

- 8:30 (v) Imported Jar of Peppers Causes Botulism in Family
IRINA CODY, Texas Department of Health and Human Services, Austin, TX, USA
- 9:00 Raw Egg Usage Associated with *Salmonella* Outbreak
D.J. IRVING, Tennessee Department of Health, Nashville, TN, USA
- 9:30 (v) Multi-State *E. coli* Outbreak Involving Clover Sprouts in Restaurants
THAO SCHLICHT, Iowa Department of Inspections and Appeals, Des Moines, IA, USA

10:00 Break – Refreshments Available in the Exhibit Hall

- 10:45 (v) Scrombroid Outbreak Involving Imported Tuna Loins
BRENDALEE VIVEIROS, Rhode Island Department of Health, Providence, RI, USA
- 11:15 The Needle in the Haystack: Finding the Outbreak Strain of *Listeria monocytogenes* in Enoki
LAUREN EDWARDS, Michigan Department of Agriculture and Rural Development, Lansing, MI, USA
- 11:45 *Salmonella* London Outbreak at a Local BBQ Restaurant
KATIE GARMAN, Tennessee Department of Health, Nashville, TN, USA

12:15 Lunch Available in the Exhibit Hall

S19 One Size Does Not Fit All: Advancing Surrogate Science and Collaboration to Enable Pathogen Reduction Technologies in a Variety of Matrices

North Ballroom A-C

Organizers: Jennifer Acuff, Kathleen Glass, Kristin Schill

Convenors: Jennifer Acuff, Jarius David, Kristin Schill

Dairy Quality and Safety

Low Water Activity Foods

Applied Laboratory Methods

- 8:30 T D T Research on Surrogate Organisms in Low-Water Activity Foods and Ingredients
BRADLEY TAYLOR, Brigham Young University, Provo, UT, USA
- 9:00 Interpreting Validation Studies: How Do the Results Apply to the Real World?
JAMES DICKSON, Iowa State University, Ames, IA, USA
- 9:30 The Use of Surrogates in Industrial Applications for Low-Moisture Products: Challenges and Solutions
ERDOGAN CEYLAN, Mérieux NutriSciences, Crete, IL, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S20 Novel and Emerging Technologies for Food Processing Facility Environmental Control

121 A-C

Organizers and Convenors: Kathy Knutson, Jeffrey Kornacki

Food Hygiene and Sanitation

HACCP Utilization and Food Safety Systems

- 8:30 A Novel Fluorescent Approach to Verification of Cleaning Efficacy
KATHY KNUTSON, Kornacki Microbiology Solutions, Green Bay, WI, USA; YALE LARY, Holmes Smokehouse – RR Brand Foods, Lufkin, TX, USA
- 9:00 Generation of Reactive Oxygen Species to Control Microbiology in Food Processing Facilities
BRIAN TAYLOR, AirROS by SAGE Industrial, Fresno, CA, USA
- 9:30 Use of Probiotic Approaches and Metagenomics to Control the Microbiome of a Processing Facility
MICHELE SAYLES, Diamond Pet Food, Topeka, KS, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S21 No Silver Bullet in Sight: How to Achieve Continuous Improvement in Fresh Produce Safety with Existing Knowledge and Tools

122 BC

Organizer and Convenor: Genevieve Sullivan

Sponsored by SmartWash Solutions

Fruit and Vegetable Safety and Quality

Pre Harvest Food Safety

HACCP Utilization and Food Safety Systems

- 8:30 Taking Steps Beyond Data Collection: The Industry Need for Data-Driven Improvements
DREW MCDONALD, Taylor Farms, Salinas, CA, USA
- 9:00 Continual Improvement in Preventive Controls: Opportunities Drawn from Fresh Produce Case Examples
TREVOR V. SUSLOW, Product Marketing Association, Davis, CA, USA
- 9:30 (v) Moving the Mountain Together: The Industry, Academia, and Government Partnership is Essential for the Development of Best Practices
YAGUANG LUO, USDA–ARS, EMFSL, Beltsville, MD, USA

10:00 Break – Refreshments Available in the Exhibit Hall

S22 Identifying, Tracking, and Controlling Spoilage: “Toolbox” for Dairy Processing

122 A

Organizers: Erin Headley, Sarah I. Murphy, Phyllis Posy

Convenors: Sarah I. Murphy, Phyllis Posy

Dairy Quality and Safety

Developing Food Safety Professionals

Water Safety and Quality

- 8:30 (v) Identifying: Methods for Detection, Characterization, and Tracking Microbial Spoilage Organisms in Dairy
NICOLE MARTIN, Cornell University, Ithaca, NY, USA

All times listed in Pacific time (U.S.)

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

- 9:00 Tracking: Digital “Tools” for Identifying and Preventing Spoilage Risks
Michele Gorman, Chobani, LLC, Manlius, NY, USA
- 9:30 (v) Controlling: How Infrastructure, Equipment Design and Sanitation are Critical to Minimize and Prevent Spoilage
NEIL A. BOGART, Ecolab, Alabaster, AL, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- S23 Your Significant Other: Using Statistics to Interpret Microbiological Data**
129 A
Organizer and Convenor: Julie Weller
Applied Laboratory Methods
Food Safety Assessment, Audit and Inspection
- 8:30 AOAC Method Comparison: Equivalence or No Statistical Difference?
SHARON BRUNELLE, Brunelle Biotech Consulting, Corvallis, OR, USA
- 9:00 Beyond the POD: Taking a Deeper Dive into Evaluating Method Performance
ALEX BRANDT, Food Safety Net Services, San Antonio, TX, USA
- 9:30 (v) FSIS Regulatory Perspective on Evaluating Establishment Support for Product Dispositions
MERYL SILVERMAN, USDA FSIS, Washington, D.C., USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT17 (v) A North American Perspective on Antimicrobial Resistance and Regulatory Action**
124 AB
Organizers: Jessica Chen, Uday Dessai, Heather Harbottle
Convenor: Heather Harbottle
Meat and Poultry Safety and Quality
- 8:30 (v) UDAY DESSAI, USDA Food Safety & Inspection Service, Washington, D.C., USA
(v) JASON FOLSTER, Centers for Disease Control and Prevention, Atlanta, GA, USA
(v) HEATHER HARBOTTLE, U.S. Food and Drug Administration, Rockville, MD, USA
(v) MANISHA MEHROTRA, Health Canada, Ottawa, ON, Canada
(v) ENRIQUE PEREZ-GUTIERREZ, Pan American Health Organization, Washington, D.C., USA
(v) RON PHILLIPS, AHI, Washington, D.C., USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT18 Diversifying the Pipeline in Food Safety Education: Engaging Historically Black Colleges and Universities (HBCUs)**
123
Organizers: Shannon Coleman, Armitra Jackson-Davis, Shecoya White
Convenor: Armitra Jackson-Davis
Communication, Outreach and Education
Food Safety Education
- 8:30 OLGA BOLDEN-TILLER, Tuskegee University, Tuskegee, AL, USA
- MICHELLE DANYLUK, University of Florida CREC, Lake Alfred, FL, USA
ALIYAR FOULADKHAH, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
ARMITRA JACKSON-DAVIS, Alabama A&M University, Madison, AL, USA
SHECOYA WHITE, Mississippi State University, Mississippi State, MS, USA
KRISTIN WOODS, Alabama Cooperative Extension System, Grove Hill, AL, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- RT19 (^) Emergency Use of Microbial Methods of Detection by Industry – Alternative Routes Proving Fit for Purpose**
131 A–C
Sponsored by Institute for the Advancement of Food and Nutrition Sciences
Organizer and Convenor: Brienna Larrick
Applied Laboratory Methods
Food Safety Assessment, Audit and Inspection
^Live only, not recorded
- 8:30 (v) DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
PATRICK BIRD, PMB Biotek Consulting, West Chester, OH, USA
MEGAN S. BROWN, Eurofins Microbiology Laboratories, Inc., Madison, WI, USA
(v) THOMAS HAMMACK, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
(v) KELLY STEVENS, General Mills, Minneapolis, MN, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- S24 Latest Developments in Food Safety Standards for Water Reuse in Food Production and Processing**
121 A–C
Organizers: Leon Gorris, Phyllis Posy
Convenors: Leon Gorris, Elisabetta Lambertini
Food Law
Pre Harvest Food Safety
Water Safety and Quality
- 10:45 Agricultural Water Standards: Delivering Consumers Safe Food Products That Re-Use Water
DON STOECKEL, California Department of Food and Agriculture, Sacramento, CA, USA
- 11:15 (v) Regulating Water Re-Use in Food Processing to Ensure Acceptable Risk to Consumers
DIMA FAOUR-KLINGBEIN, DFK for Safe Food Environment, Hannover, Germany
- 11:45 (v) Standardizing Water Re-Use Standards Related to Food Safety on an International Level
KANG ZHOU, Food and Agriculture Organization of the United Nations, Rome, Italy

All times listed in Pacific time (U.S.)

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

12:15 Lunch Available in the Exhibit Hall

S25 Decoding Codex Alimentarius – Not a Secret Society
124 AB
Organizers: Alexandria Lau, Paul Hanlon, Brent Kobielush
Convenor: Alexandria Lau
Food Chemical Hazards and Food Allergy
Food Hygiene and Sanitation
International Food Protection Issues

10:45 (v) What is the Codex Alimentarius and Why Everyone Working in Food Safety Should Pay Attention to It
SARAH CAHILL, Joint FAO/WHO Food Standards Programme, Rome, Italy

11:15 (v) Allergen Controls and Thresholds: An Example of How Codex is Working Toward Science-based, Harmonized Food Safety Standards
JENNY SCOTT, U.S. Food and Drug Administration – CFSSAN, College Park, MD, USA

11:45 The Cadmium in Cocoa Story: How Codex Accounts for Production, Trade and Safety in Standards for Contaminants
MARTIN SLAYNE, Slayne Consulting LLC, New York, NY, USA

12:15 Lunch Available in the Exhibit Hall

S26 Shelf-Life Testing: Problems, Pitfalls, and Promise
129 A
Organizers: Jeffrey Kornacki, Cari Lingle
Convenors: John David, Jeffrey Kornacki
Applied Laboratory Methods
Microbial Modelling and Risk Analysis

10:45 (v) What is (and is Not) Shelf Life?
NICOLE MARTIN, Cornell University, Ithaca, NY, USA

11:15 An Approach to Accelerated Shelf-Life Determination (and Case Study)
BRADLEY STAWICK, Stawick Laboratory Management, Rutherford, NJ, USA

11:45 Why Environmental Monitoring Programs Appropriately Executed Can Reduce Costs and Improve Shelf Life and Product Safety
JEFFREY KORNACKI, Kornacki Microbiology Solutions, Inc., Madison, WI, USA

12:15 Lunch Available in the Exhibit Hall

S27 Use of Novel and Alternate Processing Technologies for Dairy Products
122 A
Organizers: Roy Betts, Alvin Lee, Purnendu Vasavada
Convenors: Alvin Lee, Purnendu Vasavada
Dairy Quality and Safety
Food Safety Assessment, Audit and Inspection

10:45 (v) New Technologies and the Hurdles They Face to Achieve Broad Adoption
TIMOTHY STUBBS, National Dairy Council, Rosemont, IL, USA

11:15 (v) Validating High-Pressure Processing for Dairy Products
DEON MAHONEY, DeonMahoney Consulting, Melbourne, Australia

11:45 (v) The U.S. Regulatory Pathway to Nonthermal Pasteurization of Milk Products
STEPHEN WALKER, U.S. Food and Drug Administration, Bedford Park, IL, USA

12:15 Lunch Available in the Exhibit Hall

RT20 FDA's New Era of Smarter Food Safety: One Year after the "Blueprint" Release, How is the Industry Embracing This Change?
North Ballroom A-C
Organizer and Convenor: Vidya Ananth
Food Safety Assessment, Audit and Inspection
Food Safety Culture
Food Defense

10:45 NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA
AARON ASMUS, Hormel Foods, Austin, MN, USA
DERRICK BAUTISTA, Del Monte Foods, Inc., Walnut Creek, CA, USA
MONISHA P. CHAKRABORTY, Taylor Farms Pacific, Tracy, CA, USA
(v) ANDREW KENNEDY, USFDA, Silver Spring, MD, USA
PAMELA WILGER, Cargill, Inc., Wayzata, MN, USA

12:15 Lunch Available in the Exhibit Hall

RT21 Riding the Tide of Multi-Disciplinary Approaches to Evaluate Behavior-Change Effectiveness of Food Safety Education
122 BC
Organizers: Yaohua (Betty) Feng, Benjamin Chapman, Vijay Juneja
Convenor: Yaohua (Betty) Feng
Food Safety Education
Communication, Outreach and Education
Food Safety Assessment, Audit and Inspection

10:45 (v) YAOHUA (BETTY) FENG, Purdue University, West Lafayette, IN, USA
(v) LAWRENCE GOODRIDGE, University of Guelph, Guelph, ON, Canada
(v) JOHN BOYCE, J.M. Boyce Consulting, LLC, Middletown, CT, USA
AARON LAVALLEE, USDA FSIS OPACE, Washington, D.C., USA
(v) AMY REIBMAN, Purdue University, West Lafayette, IN, USA

12:15 Lunch Available in the Exhibit Hall

RT22 Collaboration in the Desert – A Research Model for Advancing Fresh Produce Safety
131 A–C
Organizer and Convenor: Channah Rock
Sponsored by Arizona Leafy Greens Marketing Agreement and Yuma Safe Produce Council
Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety
Water Safety and Quality

10:45 (v) JOHN BOELTS, Desert Premium, Yuma, AZ, USA
(v) ELSTON GRUBAUGH, Wellton Mohawk Irrigation and Drainage District, Wellton, AZ, USA
(v) JULIE ANN KASE, U.S. Food and Drug Administration, College Park, MD, USA
TERESSA LOPEZ, Arizona LGMA, Phoenix, AZ, USA
CHANNAH ROCK, University of Arizona, Maricopa, AZ, USA

All times listed in Pacific time (U.S.)

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

12:15 Lunch Available in the Exhibit Hall

RT23 Novel Foods, Novel Challenges: Food Safety Concerns in Plant-Based, Cell-Cultured, and “Clean Label” Products

123

Organizers: Crista Righi and Todd Napolitano

Convenors: Kurt Westmoreland

Food Safety Assessment, Audit and Inspection

Food Safety Culture

HACCP Utilization and Food Safety Systems

Live only, not recorded

10:45 (v) DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA

JOCELYN ALFIERI, Mérieux NutriSciences, Markham, ON, Canada

DAVID RASMUSSEN, KraftHeinz, Chicago, IL, USA

LILIA M. SANTIAGO-CONNOLLY, Kellogg Company, Battle Creek, MI, USA

TRACIE SHEEHAN, Mérieux NutriSciences, Chicago, IL, USA

12:15 Lunch Available in the Exhibit Hall

T5 Technical Session 5 – Produce

132 AB

Convenors: Govindaraj Dev Kumar, Manreet Bhullar

T5-01 (v) Farms Preparedness for FSMA PSR Inspections Based on Farm Size

8:30 MEREDITH MELENDEZ, Elizabeth Bihn, Michelle Danyluk, Christopher Gunter, Phillip Tocco, Wesley Kline, Rutgers NJAES Cooperative Extension, Trenton, NJ, USA

T5-02 Harvest Practices Aid in Pathogen Transfer as a Result of Animal Intrusion

8:45 BAN SABER, Jessica L. Dery, Natalie Brassill, Teresa Reyes, Stevi Zozaya, Channah Rock, University of Arizona, Dept. of Environmental Science, Yuma Agricultural Center, Yuma, AZ, USA

T5-03 Sunlight Affects Both Viability and Die-Off of *Salmonella* and *Escherichia coli*

9:00 GOVINDARAJ DEV KUMAR, Dumitru Macarasin, Laurel Dunn, Abhinav Mishra, University of Georgia, Griffin, GA, USA

T5-04 (v) Fate of *Salmonella* and *Listeria monocytogenes* on the Surface of Whole Mangoes during Storage

9:15 JOYJIT SAHA, Loretta Friedrich, Michelle Danyluk, Tampa Maid Foods, Lakeland, FL, USA

T5-05 (v) Effect of Sanitizers and Organic Load on Removal of Silver Nanoparticles from Contaminated Lettuce

9:30 GAYATHRI GUNATHILAKA, Jianzhou He, Hui Li, Wei Zhang, Elliot Ryser, Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI, USA

T5-06 (v) Efficacy of Chlorine and Peroxyacetic Acid Against *Salmonella* and Shiga-Toxigenic *Escherichia coli* in Simulated Postharvest Water Systems with Varying Levels of Chemical Oxygen Demand

9:45 KORY ANDERSON, Faith Critzer, Washington State University, Prosser, WA, USA

10:00 Break – Refreshments Available in the Exhibit Hall

T5-07 (v) Isolation and Characterization of AmpC and Extended Spectrum β -Lactamase-producing Enterobacterales from Fresh Vegetables

10:45 Sun Hee Moon, Xinhui Li, Xu Yang, EN HUANG, University of Arkansas for Medical Sciences, Little Rock, AR, USA

T5-08 (v) Tomato Fruit Surface Metabolome Changes as Fruit Ripen Affect *Salmonella* Newport Association with Fruit

11:00 SHIRLEY A. MICALLEF, Sanghyun Han, University of Maryland, College Park, MD, USA

T5-09 (v) Differences in Colonization and Internalization of *Salmonella enterica* Serovars in Cucumber Fruit

11:15 KELLIE P. BURRIS, Robin Grant Moore, Lee-Ann Jaykus, Otto D. Simmons III, Jie Zheng, Elizabeth Reed, Christina M. Ferreira, Eric Brown, Rebecca L. Bell, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, Raleigh, NC, USA

T5-10 Plant Growth-promoting Rhizobacteria *Pseudomonas* Strains as Possible Agents to Enhance Food Safety by Limiting *Salmonella enterica* Association with Kale

11:30 XINGCHEN LIU, Chiun-Kang Hsu, Shirley A. Micallef, University of Maryland, College Park, MD, USA

T5-11 (v) Prevalence of *Listeria* Species on Food Contact Surfaces in Washington State Apple Packinghouses

11:45 BLANCA E. RUIZ-LLACSAHUANGA, Alexis Hamilton, Robyn Zaches, Ines Hanrahan, Faith Critzer, Washington State University, School of Food Science, Prosser, WA, USA

T5-12 (v) Characterization of the Relationship between Post-Harvest Fungal Rot and *Listeria innocua* Die-Off Rates on Gala Apples during Long-Term Storage

12:00 ALEXIS HAMILTON, Blanca E. Ruiz-Llacsahuanga, Manoella Mendoza, James Mattheis, Ines Hanrahan, Faith Critzer, Washington State University, School of Food Science, Prosser, WA, USA

12:15 Lunch Available in the Exhibit Hall

T6 Technical Session 6 – Food Safety Systems, Sanitation and Hygiene and Packaging

132C

Convenor: Zahra Mohammad

T6-01 (v) Remote Inspection and Audit: First Pilot Project in the World That Uses Augmented Reality to Conduct Remote Inspections on Food Safety with the Official Italian Authority in Italy

8:30 MARCO PIERANTONI, Noemi Trombetti, Fabio Mannarino, Franco Rapetti, Claudio Gallottini, AUSL Parma, Regione Emilia Romagna Italy, Parma, Italy

T6-02 (v) Crop-Livestock Integration in Vegetable Production; Survival of Generic *E. coli* and Non-O157 STEC in Organic Fields Grazed by Sheep

8:45 SEJIN CHEONG, Michele Jay-Russell, Carolyn Chandler, Viktoria Haghani, Peiman Aminabadi, Sequoia Williams, Nicole Tautges, Amelie Gaudin, Alda Pires, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California-Davis, Davis, CA, USA

All times listed in Pacific time (U.S.)

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

- T6-03** (v) How Does Cross-Contaminated *Escherichia coli* O157:H7 on Fresh-Cut Lettuce Behave?
9:00 AKIHIRO ANDO, Ryoma Honda, Kento Koyama, Shigenobu Koseki, Hokkaido University, Sapporo, Japan
- T6-04** (v) Pre-Exposure to Protective Bacterial Cultures in Food Attenuates *Listeria monocytogenes* Virulence
9:15 SULAIMAN ALJASIR, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- T6-05** Persistence of the Enveloped phi6 Bacteriophage on the Surface Farmers' Markets Fomites
9:30 ZAHRA MOHAMMAD, Sujata Sirsat, University of Houston, Houston, TX, USA
- T6-06** Development and Characterization of Electrospray Starch/ Yellow Mustard Mucilage Coatings for the Preservation of Cherry Tomatoes
9:45 ANTO PRADEEP RAJA CHARLES, Tony Jin, Ying Wu, Agnes Kilonzo-Nthenge, Fur Chi Chen, Tennessee State University, Nashville, TN, USA
- 10:00 Break – Refreshments Available in the Exhibit Hall
- T6-07** (v) The Physicochemical Properties of Powders are Associated with the Ease of Removal from Surfaces Using Scraping and Brushing
10:45 LONG CHEN, Yadwinder Singh Rana, Dennis Heldman, Abigail B. Snyder, Cornell University, Ithaca, NY, USA
- T6-08** (v) Prevalence and Mapping of *Listeria* spp. and *Listeria monocytogenes* in Small and Very Small Food Manufacturing Facilities in Nebraska
11:00 CYRIL ETAKA, Bismarck Martinez, Carmen Cano, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA
- T6-09** Evaluation of the Ability of Two *Enterococcus* spp. Strains to Inhibit *Listeria monocytogenes* in Monoculture and in the Context of a Complex Microbiome
11:15 Priscilla Sinclair, Jasna Kovac, Luke LaBorde, JINGZHANG FENG, The Pennsylvania State University, University Park, PA, USA
- T6-10** (v) Inactivation of *Listeria monocytogenes* on Cantaloupe by Eugenol Nanoemulsion in Combination with Commercial Sanitizers
11:30 BRINDHALAKSHMI BALASUBRAMANIAN, Kimberly Rankin, Jodie Allen, Abhinav Upadhyay, Department of Animal Science, University of Connecticut, Storrs, CT, USA
- T6-11** (v) Cleaning and Sanitizing in Produce Facilities: Training Gaps, Opportunities and Industry Preferences
11:45 JOVANA KOVACEVIC, Stephanie Brown, Joy Waite-Cusic, Oregon State University, Corvallis, OR, USA
- T6-12** (v) Characterization of Lytic *Escherichia coli* O157:H7 Specific Phage Focusing on Its Novelty
12:00 SU-HYEON KIM, Damilare Emmanuel Adeyemi, Yu-Bin Jeon, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- 12:15 Lunch Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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

**TUESDAY AFTERNOON
JULY 20**

12:30 p.m. – 1:15 p.m.
IAFP Business Meeting
121 A-C

S28 C is for Cyclospora: A Crash Course in the Emerging Pathogen from Farm to Table

North Ballroom A-C

Organizers: Minh Duong, Savana Everhart, Margaret Kirchner
Convenor: Jennifer Acuff

Fruit and Vegetable Safety and Quality
Pre Harvest Food Safety
Viral and Parasitic Foodborne Disease

- 1:30 Overview of *Cyclospora* spp. and Untraditional Characteristics
YNES R. ORTEGA, University of Georgia, Griffin, GA, USA
- 2:00 (v) Outbreaks and Typing – Overview of Outbreaks in the Last Decade, Methodologies and Limitations
ASMA MADAD, U.S. Food and Drug Administration, College Park, MD, USA
- 2:30 Pre-Harvest Sources of *Cyclospora* Contamination and Strategies to Prevent It
KALMIA KNIEL, University of Delaware, Newark, DE, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**
- 3:45 (v) *Cyclospora* in the Processing Environments and Interventions for Control
JENNIFER MCENTIRE, United Fresh Produce Association, Washington, D.C., USA
- 4:15 Challenges with *Cyclospora* the Retail Level
TIMOTHY JACKSON, Driscoll's of the Americas, Watsonville, CA, USA
- 4:45 Panel Discussion

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

S29 (v) What to Decide? Making Informed Decisions for Process Validation and Food Safety Legislation Using Bayesian Risk Models

121 A-C

Organizer: Heidy Den Besten
Convenor: Marcel Zwietering

Microbial Modelling and Risk Analysis

- 1:30 (v) A Definition of Probabilistic Models Including Variability of the Bacterial Response Using a Multilevel (Bayesian) Approach
ALBERTO GARRE, Wageningen University, Wageningen, The Netherlands
- 2:00 (v) How Can Stochastic Models Including Variability be Used in Developing Scientific Basis for Manufacturing Preventive Controls
DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
Not recorded, only available at time of presentation
- 2:30 (v) How Can Stochastic Models Including Variability be Used in Risk Assessments for Regulatory Purposes?
SOFIA SANTILLANA FARAKOS, U.S. Food and Drug Administration–CFRAN, College Park, MD, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**

S30 To Verify or Validate a Rapid Pathogen Method: What about the Matrix?

122 BC

Organizers: Erin Headley, Wendy McMahon
Convenor: Erin Headley

Applied Laboratory Methods
Dairy Quality and Safety

- 1:30 (v) Risk to the Industry When Methods are Not Sufficiently Validated for the Product Matrix Being Tested
STEPHEN J. BURBICK, The Kraft Heinz Company, Glenview, IL, USA
- 2:00 The Past, the Present, and the Future of Method Validations
WENDY MCMAHON, Mérieux NutriSciences, Crete, IL, USA
- 2:30 The Method or the Matrix? Case Studies
JEFFREY KORNACKI, Kornacki Microbiology Solutions, Inc., Madison, WI, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**

S31 To Be Acid or To Be Acidified, That is the Question

129 A

Organizers and Convenors: April Bishop, May Yeow

Beverages and Acid/Acidified Foods

Food Law

Microbial Modelling and Risk Analysis

- 1:30 Utilizing Buffer Capacity Modeling to Help Determine the Safety of an Acid/Acidified Food Product
Fred Breidt, USDA/ARS, Raleigh, NC, USA
- 2:00 (v) Process Authority Perspective on Acidified Foods Evaluation
DAVID BRESNAHAN, Bresnahan TPC, Inc., Kenmore, WA, USA
- 2:30 What is the Likelihood of Vegetative Pathogens Survive in Low pH Products?
ERDOGAN CEYLAN, Mérieux NutriSciences, Crete, IL, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**
- S32 Communication for Risk Management: What, When, How, and Who?**

131 A-C

Organizers: Amani Babekir, Kara Baldus, Robert Buchanan, J. David Legan

Convenors: J. David Legan, Dennis Seman

Sponsored by The IAFP Foundation

Food Safety Culture
Food Hygiene and Sanitation
Developing Food Safety Professionals

- 1:30 (v) Why is It so Hard to Talk about Risk and How Can We Do It Better?
KARIN HOELZER, Maximus, Washington, D.C., USA
- 2:00 Risk Communication for the Corporate Executive: What, When and How?
JOHN PETIE, WellPet, Boston, MA, USA
- 2:30 (v) What Should Scientists Know about Company Insurance?
JEN PINO-GALLAGHER, M3 Insurance, Madison, WI, USA
- 3:00 **Break – Refreshments Available in the Exhibit Hall**

All times listed in Pacific time (U.S.)

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

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S33 (v) Allergen Management at Retail in the New Era of Smarter Food Safety: From the Front Lines of Restaurants, Food Service, and Retail Grocery
132 A-B

Organizer and Convenor: Michael Roberson

Food Chemical Hazards and Food Allergy
Retail and Foodservice

- 1:30 (v) The Grocery Store is the Last Line of Defense for the Consumer
STEVE OSWALD, Wakefern Food Corp., Elizabeth, NJ, USA
- 2:00 (v) Menu Management and Allergens in the Restaurant
AL BAROUDI, The Cheesecake Factory, Calabasas, CA, USA
- 2:30 (v) A Regulatory Perspective on Food Allergens at Retail
GLENDA LEWIS, Food & Drug Administration, CFSAN, College Park, MD, USA

3:00 Break – Refreshments Available in the Exhibit Hall

RT24 (v) Operational Choices and Risk-based Decision Making Around Clean Breaks in Dry Environments
North Ballroom D

Organizers: Chad Galer, Sarah I. Murphy, Abigail B. Snyder

Convenor: Abigail B. Snyder

Dairy Quality and Safety
Food Hygiene and Sanitation
Low Water Activity Foods

- 1:30 (v) NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA
(v) ELIZABETH GRASSO-KELLEY, U.S. Food and Drug Administration, Bedford Park, IL, USA
(v) LESLIE HINTZ, U.S. Food and Drug Administration, College Park, MD, USA
(v) YVONNE MASTERS, John B. Sanfilippo & Son, Inc., Chicago, IL, USA
(v) BENJAMIN WARREN, Land O' Lakes, Arden Hills, MN, USA
(v) EDITH WILKIN, Leprino Foods Co, Denver, CO, USA

3:00 Break – Refreshments Available in the Exhibit Hall

RT25 Food Irradiation: Where We've Been, Where We are Now, and What's Next
124 AB

Organizer and Convenor: Katherine Marshall

Fruit and Vegetable Safety and Quality
Food Hygiene and Sanitation
Meat and Poultry Safety and Quality

- 1:30 LANE HIGHBARGER, U.S. Food and Drug Administration, College Park, MD, USA
BARBARA KOWALCYK, The Ohio State University, Columbus, OH, USA
(v) UDIT MINOCHA, USDA FSIS, Atlanta, GA, USA
KATHLEEN O'DONNELL, Wegmans Food Markets, Inc., Rochester, NY, USA
(v) MISHA ROBYN, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA

3:00 Break – Refreshments Available in the Exhibit Hall

S34 Risk Ranking Approaches to Inform Diverse Decisions in Government and Industry
North Ballroom D

Organizers: Yuhuan Chen, Sofia Santillana Farakos
Convenors: John Bassett, Sofia Santillana Farakos

Food Chemical Hazards and Food Allergy
HACCP Utilization and Food Safety Systems
Microbial Modelling and Risk Analysis

- 3:45 Integrated Multi-Expert and Multi-Criteria Approach for the Hierarchization of Food – Biological and Chemical Hazards for Food Safety
MYRIAM MERAD, Université Paris Dauphine-CNRS, Paris, France
- 4:15 Qualitative and Quantitative Risk Evaluation and Risk Management for Food Safety in a Multinational/ Multiproduct Environment
DANE BERNARD, Bold Bear Food Safety, Arnold, MD, USA
- 4:45 (v) Risk-Ranking Model for Food Tracing to Inform FDA Decisions in Developing Traceability Regulations
YUHUAN CHEN, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

S35 We Quantified, Now What? Actual *Salmonella* Quantification Approaches Utilized in the Protein Industry Today
122 BC

Organizer: April Englishbey

Convenors: April Englishbey, Stacy Stoltenberg

Sponsored by Hygiene

Applied Laboratory Methods
Meat and Poultry Safety and Quality
Microbial Modelling and Risk Analysis

- 3:45 Now We Can Count! Utilizing *Salmonella* Quantitation Tools for Food Safety Progress across Multiple Matrices
JACQUELYN ADAMS, Tyson Foods, Inc., Springdale, AR, USA
- 4:15 Quantification: A Tool to Assess Risk in HACCP Plans
MELODY THOMPSON, Cargill Meat Solutions, Wichita, KS, USA
- 4:45 Using *Salmonella* Limits Testing to Make Informed Decisions
SHERRI WILLIAMS, JBS, Greeley, CO, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

S36 The Forgotten Option: Formulation-based Preventive Controls for Human Foods
124 AB

Organizers: Adam Borger, Erdogan Ceylan
Convenor: Erdogan Ceylan

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

- 3:45 Current Guidance and Challenges for Formulation-based Preventive Controls for Foods
LORALYN LEDENBACH, Kraft Heinz Company, Glenview, IL, USA

All times listed in Pacific time (U.S.)

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- 4:15 An Industry Perspective on Validation of Formulation-based Preventive Controls
DERRICK BAUTISTA, Del Monte Foods, Inc., Walnut Creek, CA, USA
- 4:45 (v) an Academic Approach to Validation of Formulation-based Preventive Controls: Microbiological Modeling and Challenge Studies
HEIDY DEN BESTEN, Wageningen University and Research, Wageningen, The Netherlands

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

- RT26 A Support Group for Difficult Matrices – You’re Not Alone with Your Detection and Confirmation Problems**
121 A-C
Organizers: Elizabeth Palmer, Sarita Raengpradub
Convenor: Sarita Raengpradub

Applied Laboratory Methods
Low Water Activity Foods
Live only, not recorded

- 3:45 ANDREA CIPRIANI, Mérieux NutriSciences, Chicago, IL, USA
DANIEL SMIESZEK, Nestlé, Dublin, OH, USA
CÉCILE VADIER, Barry-Callebaut France, Louviers, France
PAMELA WILGER, Cargill, Inc., Wayzata, MN, USA
(v) BRADLEY ZIEBELL, Conagra Brands, Omaha, NE, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

- RT27 Ever Thought of Being an Expert Witness?**
132 A-B
Organizers: Robert Buchanan, Christopher Griffith, Ewen Todd
Convenor: Ewen Todd

Epidemiology
Food Law
International Food Protection Issues

- 3:45 DAVID ACHESON, The Acheson Group, Bigfork, MT, USA
(v) ROBERT L. BUCHANAN, University of Maryland-College Park, College Park, MD, USA
(v) CHRISTOPHER GRIFFITH, Professor Emeritus, Cardiff Metropolitan University, Cardiff, UK, Dorchester, United Kingdom
(v) LEE-ANN JAYKUS, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA
DAVID SHARFSTEIN, Hogan Lovells, Washington, D.C., USA
(v) EWEN TODD, Ewen Todd Consulting, Okemos, MI, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

- RT28 Fact or Fiction? How to Evaluate Antimicrobial Products for Your Sanitation Program**
131 A-C

Organizers: Jeffrey Anderson, David Buckley, Dale Grinstead,
Convenor: Charles Pettigrew

Food Hygiene and Sanitation
Retail and Foodservice

- 3:45 (v) TAJAH BLACKBURN, Environmental Protection Agency, District of Columbia, D.C., USA
DAVID BUCKLEY, Diversey, Charlotte, NC, USA
(v) JEFF EDELEN, Whole Foods Market, Austin, TX, USA
(v) ANGELA FRASER, Clemson University, Clemson, SC, USA
ROSIMEIRE MIRANDA, LSG Sky Chefs, Irving, TX, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

- T7 Technical Session 7 – Meat, Poultry and Eggs**
122 A
Convenors: Adeniyi Odugbemi, M. Alexandra Calle

- T7-01 Effect of Poultry Litter Moisture Content on Litter to Dust Transfer of *Salmonella***
1:30
AMRIT PAL, Matthew Bailey, Kenneth Macklin, Dianna Bourassa, Auburn University, Auburn, AL, USA

- T7-02 Effect of Litter Treatments on Persistence of *Salmonella* Enteritidis in Reuse Poultry Litter**
1:45
AIDAN TALORICO, James Krehling, Kaicie Chasteen, Luis Munoz, Matthew Bailey, Dianna Bourassa, Kenneth Macklin, Auburn University, Auburn, AL, USA

- T7-03 (v) Characteristics of Multi-Jurisdictional Poultry Associated Whole Genome Sequencing Clusters in Canada**
2:00
Danielle Dumoulin, JENNIFER LIANG, Rima Kandar, Ashley Kerr, Russell Forrest, Cynthia Misfeldt, Jennifer Cutler, Outbreak Management Division, Centre for Food-borne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Guelph, ON, Canada

- T7-04 Effect of Antimicrobial Interventions on *Salmonella* Percent Positive in Raw Poultry Slaughter Establishments**
2:15
Selena Kremer-Caldwell, Sarah McMillan, LESLEY GOOD, United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C., USA

- T7-05 Application of Yellow Mustard Mucilage in Micro-encapsulation of Essential Oil and Polyphenols for Targeted Delivery to Gastrointestinal Tract of Poultry**
2:30
HAONA BAO, Tennessee State University, Nashville, TN, USA

- T7-06 A Value Chain Approach to Identify Hazards and Risks to Child Health Associated with Enteropathogens Carried by Chickens in Maputo, Mozambique**
2:45
Frederica Lamar, Kelsey Jesser, AMÉLIA MONDLANE-MILISSE, Courtney P. Victor, Hermógenes Mucache, Eric Fèvre, José M. Fafetine, Joaquim Ângelo Osvaldo Saide, Matthew C. Freeman, Karen Levy, Universidade Eduardo Mondlane, Maputo, Mozambique

- 3:00 Break – Refreshments Available in the Exhibit Hall

All times listed in Pacific time (U.S.)

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- T7-07** (v) Probability of *Salmonella* Foodborne Outbreaks by Consumption of Chicken Cooked with Different Methods
3:15 Hyemin Oh, Jang Won Yoon, Se-Wook Oh, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- T7-08** (v) Thermal Inactivation of *Salmonella* in Chicken Wings Cooked in an Air Fryer and a Convection Oven
3:30 CARMEN CANO, Cyril Etaka, Xinyao Wei, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA
- T7-09** (v) Microbial Assessment of Fresh Meats and Blends Sold as Raw Pet Foods by Online Retailers
3:45 LESLIE PEARL CANCIO, Franklin Sumargo, Byron Chaves, Gary Sullivan, Emily Robinson, Mary-Grace C. Danao, University of Nebraska-Lincoln, Lincoln, NE, USA
- T7-10** (v) Comparison of the Inactivation of *Salmonella* spp. and *E. coli* O157:H7 during the Manufacture of Dry Fermented Sausages: Is It Necessary to Perform a Challenge Study for Each Pathogen?
4:00 SAMPATHKUMAR BALAMURUGAN, Laura Arvaj, Shai Barbut, Tsun Yin Alex Lau, James De Souza, Philip Strange, Agriculture and Agri-Food Canada, Guelph, ON, Canada
- T7-11** (v) Assessing Shiga Toxin-producing *Escherichia coli* in FSIS Regulatory Pork Samples
4:15 JOSEPH M. BOSILEVAC, Maria Scott, Jeanetta Tankson, USDA/ARS, Clay Center, NE, USA
- T7-12** (v) NARMS Expansion Project: Exploring *Salmonella* Isolates from Cattle Lymph Nodes in FSIS
4:30 MUSTAFA SIMMONS, Jamie Wasilenko, Labeed Ben-Ghaly, Leslie Manis, William Shaw, Uday Dessai, Gamola Fortenberry, Sheryl Shaw, Glenn Tillman, United States Department of Agriculture, Food Safety and Inspection Service, Athens, GA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

T8 Technical Session 8 – Communication, Outreach and Education; Food Defense; Food Law and Regulation; Epidemiology

132 C

Convenor: Jessica Cox

- T8-01** Evaluation of Consumers' Behavior, Knowledge, and Attitudes Around the Recommendation Not to Wash Raw Poultry
1:30 CHRISTOPHER VATRAL, Jennifer Quinlan, Drexel University, Philadelphia, PA, USA
- T8-02** Everyday Risks Every Time We Eat – Global Poll Findings of Perceived and Experienced Risks from Unsafe Foods
1:45 SARAH CUMBERS, Lloyd's Register Foundation, London, United Kingdom
- T8-03** Development of a Rational Approach to Identify and Characterize Hypervirulent Non-Typhoidal *Salmonella* and Associated Genomic Signatures
2:00 RUIXI CHEN, Renato Orsi, Rachel Cheng, Martin Wiedmann, Cornell University, Ithaca, NY, USA

- T8-04** (v) Dietary and Socioeconomic Risk Factors for Fumonisin Exposure Among Reproductive Age Women in Guatemala
2:15 ARIEL GARSOW, Olga Torres, Jorge Matute, Ronald Riley, Archana Lamichhane, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA

- T8-05** Food, Agriculture, and Veterinary Defense (FAV-D) Architectural Framework
2:30 MARK WITTROCK, Debbie Joseph, Kevin Morgan, Micheal Burke, Department of Homeland Security, Countering Weapons of Mass Destruction – Food, Agriculture, and Veterinary Defense Division, Washington, D.C., USA

- T8-06** (v) Testing and Evaluation Countermeasure Tools for African Swine Fever Preparedness, Response, and Recovery
2:45 John Neilan, LINDSAY GABBERT, Jose Barrera, David Brake, Barbara Kamicker, Victoria Primavera, William Hurtle, Lauren Martignette, Mariceny Zurita, Michael Puckette, SAIC, Plum Island Animal Disease Center, Greenport, NY, USA

3:00 Break – Refreshments Available in the Exhibit Hall

- T8-07** Potential Utility of the Intentional Adulteration Assessment Tool (IAAT) – Survey of Food Industry
3:45 RABIH JABBOUR, Joseph Zarzycki, Shelly Stobierski, DHS, APG, MD, USA

- T8-08** Characterization and Prioritization of Ingested Chemical Threats
4:00 JESSICA COX, Todd Army, Nathaniel Rice, Carol Brevett, DHS CSAC, Washington, D.C., USA

- T8-09** (v) Developing a New Quantitative Risk Metric Tool to Support Individual Sanitary Measure Equivalence Reviews
4:15 Janell Kause, Eric Ebel, Wayne Schlosser, MICHAEL WILLIAMS, Berhanu Tameru, Stephanie Defibaugh-Chavez, United States Department of Agriculture, Food Safety and Inspection Service, Fort Collins, CO, USA

- T8-10** (v) A Novel Approach to FSIS Species Identification in Response to the 2018 Farm Bill
4:30 TYE BOYNTON, Courtney Johnson, USDA-FSIS, Athens, GA, USA

- T8-11** (v) Risk Ranking of FSIS Shiga Toxin-Producing *Escherichia coli* (STEC) Based on Virulence Genes
4:45 JAMIE WASILENKO, Mustafa Simmons, Susan Hammons, Maria Scott, Michael Day, William Shaw, Glenn Tillman, United States Department of Agriculture, Food Safety and Inspection Service, Athens, GA, USA

- T8-12** (v) Aligning Confirmation Criteria for *E. coli* O157:H7 and the “Top Six” Non-O157 Shiga Toxin-Producing *E. coli* (STEC)
5:00 MICHAEL DAY, Susan Hammons, Lorenza Rozier, Maria Scott, Glenn Tillman, Mustafa Simmons, William Shaw, USDA-FSIS, Athens, GA, USA

5:15 p.m. – 6:15 p.m. – Exhibit Hall Reception

EVENING OPTIONS

5:15 p.m. – 6:15 p.m.
Tuesday Exhibit Hall Reception

7:00 p.m. – 9:00 p.m.
Student Mixer, Sheraton Phoenix Downtown

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SHINING LIGHT

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* The FDA has issued regulations for the safe treatment of food by Pulsed Light during its production, processing and handling (Code 21CFR179.41 Pulsed Light for the treatment of food).

WEDNESDAY, JULY 21

ALL DAY

8:30 a.m. – 3:30 p.m.

Exhibit Hall

Poster Session 3

Communication Outreach and Education; Epidemiology; Food Defense; Food Law and Regulation; Food Processing Technologies; Food Safety Systems; Laboratory and Detection Methods; Modeling and Risk Assessment; Packaging; Retail and Food Service Safety

P3-01 through P3-96 – Authors present 9:00 a.m. – 11:00 a.m.

P3-97 through P3-187 – Authors present 1:00 p.m. – 3:00 p.m.

MORNING

8:30 a.m. – 12:15 p.m.

131 A-C

122 A

132 C

S37

T9

T10

(v) U.S. Army-Funded Research of Novel Food Safety Technologies

Technical Session 9 – Molecular Analytics, Genomics and Microbiome (1)

Technical Session 10 – General Microbiology, Food Processing Technologies; Water; and Seafood

8:30 a.m. – 10:00 a.m.

North Ballroom D

121 A-C

123

122 BC

S38

S39

S40

S41

Flour Safety: Challenges and Lessons Learned from the Recent Outbreaks and Sampling Study

Root Cause Analysis: Approaches for Investigating Contamination Incidents and Preventing Recurrence

(v) Cannabis and Your Supply Chain – How to Protect Yourself and Your Customers

Every Flush Has Data: The Role of Wastewater Epidemiology in Improving Food Safety with Lessons Learned from COVID-19

124 AB

127 A-C

129 A

132 AB

S42

S43

S44

S45

Managing Meat and Poultry Safety: Uniting Food Safety Regulations and Industry Efforts for Process Control

(v) Making Donations Count: Reducing Waste in Hunger Relief Organizations

(v) Beyond Metagenomic Sequencing: Metadata, Ontologies, and Big Data

Failure to Launch – Learn to Live with Your Food Safety Plan Year Round

10:00 a.m. – 10:45 a.m.

Break – Refreshments Available in the Poster Session Area

10:45 a.m. – 12:15 p.m.

North Ballroom D

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S46

S47

S48

S49

S50

S51

RT29

RT30

(v) Progressing Allergen Risk Management: Thresholds and Quantitative Risk Assessment

(v) WGS Quality and Quantity – Can You Have It All?

General Update on *Bacillus* and Overview of Available Tools to Identify, Distinguish, and Trace *B. cereus* Microbial Hazard

(v) After 2020, Where Do We Go Next in Enhancing Consumer Food Safety Education?

(v) The Impact of Foodborne Disease: Emerging Research on Disease Outcomes and Economic Burden

(v) A Growing Concern for Marine Biotoxins

Can You Trust Third-Party Certification?

Microbial Resistance – Is It Related to Sanitation?

11:45 a.m. – 1:45 p.m.

Lunch Available in the Poster Session Area

AFTERNOON

1:30 p.m. – 3:30 p.m.

North Ballroom D

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122 BC

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124 AB

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131 A-C

S52

S53

S54

S55

S56

S57

S58

Paradigm Shifting Foodborne Outbreaks and Their Impact on Food Safety

Safeguarding Food Security and Food Industry Workforce in Pandemic Times Using Breakthroughs in Molecular Diagnostics and Advances in Genomic Epidemiology

Defining Criteria for Assessment and Execution of Gluten-Free and Allergen-Free Claims

Environmental Transmission, Detection, and Molecular Characterization of Foodborne and Waterborne Parasites

Recent Advances in Understanding Phage Applications to Mitigate Food Safety Risk

(v) Developing Atmospheric Cold Plasma as a Nonthermal Food Safety Tool

Lessons Learned from Consumer Food Safety Initiatives Related to the COVID-19 Pandemic to Guide Future Outreach and Communication Practices

129 A

132 AB

122 A

132 C

S59

T11

T12

T13

Where's the Beef? Grinding Recordkeeping and Intended Use at Retail

Technical Session 11 – Laboratory and Detection Methods

Technical Session 12 – Molecular Analytics, Genomics and Microbiome (2)

Technical Session 13 – Low Water Activity Foods

3:00 p.m. – 3:45 p.m.

Break – Refreshments Available Outside Ballroom D

4:00 p.m. – 4:45 p.m.

North Ballroom D

John H. Silliker Lecture

We All Are Working on the Same Puzzle

Barbara Masters, Tyson Foods, Washington, D.C., USA

EVENING OPTIONS

6:00 p.m. – 7:00 p.m. Reception, North Ballroom Foyer

7:00 p.m. – 10:00 p.m. IAFP Awards Banquet, North Ballroom A-C

WEDNESDAY MORNING JULY 21

Posters will be on display 8:30 a.m. – 3:30 p.m.
(See details beginning on page 75)

S37 U.S. Army-Funded Research of Novel Food Safety Technologies

131 A–C

Organizers and Convenors: Genevieve Flock, Shannon McGraw, Michael Wiederoder

Food Defense
Food Packaging
Water Safety and Quality

- 8:30 (v) Food Safety Challenges in Military Field Feeding
SHANNON MCGRAW, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- 9:00 (v) AI-Enabled Nondestructive Surveillance of Foodborne Pathogens – A Toolkit for Multiplex Identification of Viable Pathogens in Military Rations
BOCE ZHANG, University of Massachusetts, Lowell, Lowell, MA, USA
- 9:30 Rapid Detection of Foodborne Pathogens Using Enzymatic Digestion and Phage-based Separation / Detection
SAM NUGEN, Cornell University, Ithaca, NY, USA
- 10:00 Break – Refreshments Available in the Poster Session Area
- 10:45 (v) Detection of Food Pathogens and Toxic Chemicals Using Laser-induced Breakdown Spectroscopy
ROSALIE MULTARI, Creative LIBS Solutions, Bernalillo, NM, USA
- 11:15 (v) Electrochemical Detection of Toxic Metals and Organics in Water
PRADEEP KURUP, University of Massachusetts-Lowell, Lowell, MA, USA; CONNOR SULLIVAN, University of Massachusetts-Lowell, Lowell, MA, USA; ERIC BRACK, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- 11:45 (v) Multi-Year Package Integrity and Vitamin Stability for Space Flight
DANIELLE FROIO-BLUMSACK, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- 12:15 Lunch Available in the Poster Session Area

S38 Flour Safety: Challenges and Lessons Learned from the Recent Outbreaks and Sampling Study

North Ballroom D

Organizers: Nathan Anderson, Aparna Tatavarthy
Convenors: Nathan Anderson, Linda Verrill

Food Safety Education
International Food Protection Issues
Low Water Activity Foods

- 8:30 (v) Learnings from the FDA Retail Flour Sampling Program
APARNA TATAVARTHY, U.S. Food and Drug Administration, College Park, MD, USA
- 9:00 (v) Persistence of Shiga Toxin-Producing *E. coli* in Baking Flour
ALEXANDER O. GILL, Health Canada, Ottawa, ON, Canada
- 9:30 Challenges and Opportunities for Flour Millers
JULIANY RIVERA CALO, Ardent Mills, Denver, CO, USA
- 10:00 Break – Refreshments Available in the Poster Session Area

S39 Root Cause Analysis: Approaches for Investigating Contamination Incidents and Preventing Recurrence

121 A–C

Organizer: Jack Guzewich
Convenors: Jack Guzewich, Kari Irvin, Timothy Jackson

Epidemiology
Food Safety Assessment, Audit and Inspection
HACCP Utilization and Food Safety Systems

- 8:30 (v) A Guide for Conducting a Food Safety Root Cause Analysis
JACK GUZEWICH, Retired, Albany, NY, USA
- 9:00 Root Cause Analysis in a New Era of Smarter Food Safety
MARK MOORMAN, U.S. Food and Drug Administration, College Park, MD, USA
- 9:30 Industry Implementation of Root Cause Analysis for Near Miss Investigations
ANGIE SIEMENS, Cargill, Inc., Wichita, KS, USA
- 10:00 Break – Refreshments Available in the Poster Session Area

S40 (v) Cannabis and Your Supply Chain – How to Protect Yourself and Your Customers

123

Organizer and Convenor: Jesse Miller

Applied Laboratory Methods
Beverages and Acid/Acidified Foods
Food Law

- 8:30 (v) Recent Trends in Cannabis Law and Food
REND AL-MONDHIRY, Amin Talati Wasserman, Washington, D.C., USA
- 9:00 (v) Best Practices for Producing Safe Food from a Former FDA Investigator
LARISA PAVLICK, United Natural Products Alliance, Salt Lake City, UT, USA
- 9:30 (v) Transparency in Testing Cannabis – Mitigate Risk While Getting a Return on Your Investment in Quality
ELAN SUDBERG, Alkemist Labs, Garden Grove, CA, USA
- 10:00 Break – Refreshments Available in the Poster Session Area

S41 Every Flush Has Data: The Role of Wastewater Epidemiology in Improving Food Safety with Lessons Learned from COVID-19

122 BC

Organizers: Olfa Mahjoub, Manan Sharma, Ewen Todd

Convenors: Dima Faour-Klingbeil, Manan Sharma

Applied Laboratory Methods
Viral and Parasitic Foodborne Disease
Water Safety and Quality

- 8:30 Wastewater and Pathogens: Using the Past to Inform the Future
KALMIA KNIEL, University of Delaware, Newark, DE, USA
- 9:00 (v) What Does the Presence of Foodborne Pathogens in Wastewater Tell Us?
LAWRENCE GOODRIDGE, University of Guelph, Guelph, ON, Canada

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- 9:30 Better Together: A Metagenomic Approach to Detection of Target Pathogens and Microbial Communities in Wastewater
GREGORY SIRAGUSA, Scout Microbiology LLC, Waukesha, WI, USA
- 10:00 Break – Refreshments Available in the Poster Session Area
- S42 Managing Meat and Poultry Safety: Uniting Food Safety Regulations and Industry Efforts for Process Control**
124 AB
Organizers: John David, Thomas Taylor
Convenor: John David
Sponsored by 3M Company
HACCP Utilization and Food Safety Systems
Meat and Poultry Safety and Quality
- 8:30 Challenges in Poultry Processing for the Control of *Salmonella* and *Campylobacter*
MANPREET SINGH, University of Georgia, Athens, GA, USA
- 9:00 *Salmonella* and STECs in Beef – Changing Regulations
THOMAS TAYLOR, Texas A&M University, College Station, TX, USA
- 9:30 Pork Safety and the New Swine Inspection System
JAMES DICKSON, Iowa State University, Ames, IA, USA
- 10:00 Break – Refreshments Available in the Poster Session Area
- S43 (v) Making Donations Count: Reducing Waste in Hunger Relief Organizations**
127 A-C
Sponsored by: RTI International
Organizers: Nicole Arnold, H. Lester Schonberger, Ellen Thomas Shumake
Convenor: Nicole Arnold
Food Safety Education
Food Chemical Hazards and Food Allergy
Communication, Outreach and Education
- 8:30 (v) Understanding How Food Waste and Food Safety Impact Food Donations to Address Food Insecurity in North Carolina
ELLEN THOMAS SHUMAKER, RTI International, Research Triangle Park, NC, USA
- 9:00 (v) Ensuring Safety When Connecting Food-Insecure Patients to Salvaged/Gleaned Food
LAUREN SASTRE, East Carolina University, Greenville, NC, USA
- 9:30 (v) Identifying How Food Safety Impacts Food Waste within Virginia Food Banks
H. LESTER SCHONBERGER, Virginia Tech, Blacksburg, VA, USA
- 10:00 Break – Refreshments Available in the Poster Session Area
- S44 (v) Beyond Metagenomic Sequencing: Metadata, Ontologies, and Big Data**
129 A
Organizer: Pushpinder Kaur Litt
Convenors: Christopher Grim, Pushpinder Kaur Litt
Advanced Molecular Analytics
Applied Laboratory Methods
Epidemiology
- 8:30 (v) Development of a Mixes Food Metadata Standard
CHRISTOPHER GRIM, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, Laurel, MD, USA
- 9:00 (v) Use of a Site Ontology for Characterizing Manufacturing Environmental Space
ABIGAIL B. SNYDER, Cornell University, Ithaca, NY, USA
- 9:30 (v) Harmonizing and Future-Proofing Food Data with Ontologies
EMMA GRIFFITHS, Faculty of Health Sciences, Simon Fraser University, Vancouver, BC, Canada
- 10:00 Break – Refreshments Available in the Poster Session Area
- S45 Failure to Launch – Learn to Live with Your Food Safety Plan Year Round**
132 AB
Organizers: Neil Bogart, Lone Jespersen
Convenor: Neil Bogart
Food Safety Culture
Food Safety Assessment, Audit and Inspection
- 8:30 How Can Food Safety Audits Drive Complacency in the Corporate C-Suite?
JORGE HERNANDEZ, Wendy's, Dublin, OH, USA
- 9:00 Nudges to Create C-Suite Change before You Have to
LONE JESPERSEN, Cultivate, Hauterive, Switzerland
- 9:30 (v) Arming the QA Team to Effectively Implement the Food Safety Systems
NEIL A. BOGART, Ecolab, Alabaster, AL, USA
- 10:00 Break – Refreshments Available in the Poster Session Area
- S46 (v) Progressing Allergen Risk Management: Thresholds and Quantitative Risk Assessment**
North Ballroom D
Organizer: Neal Saab
Convenor: Kevin Boyd
Sponsored by Institute for the Advancement of Food and Nutrition Sciences
Food Chemical Hazards and Food Allergy
- 10:45 (v) Bayesian Hierarchical Evaluation of Dose-Response for Peanut Allergy in Clinical Trial Screening
LYNNE HABER, University of Cincinnati, Cincinnati, OH, USA
- 11:15 (v) Occurrence of Allergens in Pre-Packaged Foods in Conjunction with the Use of Precautionary Labeling in Canada: Learnings and Future Directions
SAMUEL GODEFROY, Université Laval, Department of Food Science, Faculty of Agriculture and Food Sciences, Quebec City, QC, Canada

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- 11:45 (v) Practical Applications of Quantitative Risk Assessment of Allergens
BENJAMIN REMINGTON, University of Nebraska, Lincoln, NE, USA
- 12:15 Lunch Available in the Poster Session Area
- S47 (v) WGS Quality and Quantity – Can You Have It All?**
124 AB
Organizers: Angela Nguyen, Sarita Raengpradub
Convenor: Sarita Raengpradub
Advanced Molecular Analytics
Applied Laboratory Methods
- 10:45 (v) Update on Whole Genome Sequencing Draft International Standard (ISO WG25)
PETER EVANS, USDA, Washington, D.C., USA
- 11:15 (v) Routinely Generating High-Quality WGS Data for a Non-Routine Test
ANGELA NGUYEN, Mérieux NutriSciences, Crete, IL, USA
- 11:45 (v) Impact of Quality Data on Use of WGS in the Food Industry
JEROME COMBRISSE, Mars Global Services, Aimargues, France
- 12:15 Lunch Available in the Poster Session Area
- S48 General Update on *Bacillus* and Overview of Available Tools to Identify, Distinguish, and Trace *B. cereus* Microbial Hazard**
127 A–C
Organizers: Florence Postollec, Sandra Tallent
Convenor: Pamela Wilger
Advanced Molecular Analytics
Applied Laboratory Methods
Food Hygiene and Sanitation
- 10:45 (v) A General Update on *Bacillus cereus* Group and Overview of Available Tools to Identify, Distinguish and Trace *B. cereus sensu lato*
FLORENCE POSTOLLEC, ADRIA Food Technology Institute - UMT ACTIA 19.03 ALTER'IX, France, Quimper, France
- 11:15 (v) *Bacillus Thuringiensis*: More Than 50 Years of Safe Use as a Biopesticide
BRIAN FEDERICI, University of California Riverside, Riverside, CA, USA
- 11:45 (v) Modeling *B. cereus* Growth and Cereulide Formation in Different Matrices
MARIEM ELOUZE, Nestlé Research, Lausanne, Switzerland
- 12:15 Lunch Available in the Poster Session Area
- S49 (v) After 2020, Where Do We Go Next in Enhancing Consumer Food Safety Education?**
129 A
Organizer and Convenor: Michael Roberson
Communication, Outreach and Education
Food Safety Education
Food Safety Culture
- 10:45 (v) New Era of Smarter Food Safety: Develop and Promote a Smarter Food Safety Consumer Education Campaign
SHARMI DAS, U.S. Food and Drug Administration, Washington, D.C., USA
- 11:15 (v) The Importance of Enhancing Food Safety Education
SHELLEY FEIST, Partnership for Food Safety Education, Arlington, VA, USA
- 11:45 (v) Relentless Focus on the Consumer and Their Culture of Food Safety
MICHAEL ROBERSON, Publix Super Markets, Inc., Lakeland, FL, USA
- 12:15 Lunch Available in the Poster Session Area
- S50 (v) The Impact of Foodborne Disease: Emerging Research on Disease Outcomes and Economic Burden**
123
Organizers: Sandra Hoffmann, Elaine Scallan Walter
Convenor: Sandra Hoffmann
Epidemiology
Microbial Modelling and Risk Analysis
Viral and Parasitic Foodborne Disease
- 10:45 (v) Review of Post-Infectious Complications and Chronic Outcomes Following Major Foodborne Illness
ERIKAAUSTHOF, University of Arizona, Tucson, AZ, USA
- 11:15 (v) Systematic Review and Meta-Analyses of Post-Infectious Complications and Chronic Outcomes Following *Listeria monocytogenes*
KRISTEN POGREBA-BROWN, University of Arizona, Tucson, AZ, USA; Erika Austhof, University of Arizona, Tucson, AZ, USA
- 11:45 (v) Preliminary Estimate of the Costs of Foodborne U.S. Illnesses
SANDRA HOFFMANN, USDA, Economic Research Service, Washington, D.C., USA
- 12:15 Lunch Available in the Poster Session Area
- S51 (v) A Growing Concern for Marine Biotoxins**
132 AB
Organizers and Convenors: Robert Donofrio, Ewen Todd
Epidemiology
Food Chemical Hazards and Food Allergy
Seafood Safety and Quality
- 10:45 (v) Memory Loss, Zombies, and Other Seafood Toxin Stories
EWEN TODD, Ewen Todd Consulting, Okemos, MI, USA
- 11:15 (v) Advances in Marine Toxin Detection
DANA DVORACEK-DRIKSNA, Neogen Corporation, Lansing, MI, USA
- 11:45 (v) Global Collaborative Research on Paralytic Shellfish Toxins
TIM HARWOOD, New Zealand Food Safety Science & Research Centre, Palmerston North, New Zealand
- 12:15 Lunch Available in the Poster Session Area
- RT29 Can You Trust Third-Party Certification?**
121 A–C
Organizer and Convenor: Marie-Claude Quentin
Food Safety Assessment, Audit and Inspection
International Food Protection Issues
- 10:45 (v) MITCH GILGOUR, Sysco, Houston, TX, USA
(v) CLIONA MURPHY, PepsiCo, Cork, Ireland
(v) MARIE-CLAUDE QUENTIN, The Consumer Goods Forum, GFSI, Paris, France
TRACIE SHEEHAN, Mérieux NutriSciences, Chicago, IL, USA
WENDY WHITE, Georgia Institute of Technology, Greensborough, GA, USA
- 12:15 Lunch Available in the Poster Session Area

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RT30 Microbial Resistance – Is It Related to Sanitation?

122 BC

Organizers: Dale Grinstead, Ruth Petran
Convenor: Dale Grinstead

Food Hygiene and Sanitation

- 10:45 (v) HENK C. DEN-BAKKER, University of Georgia, Center for Food Safety, Griffin, GA, USA
CHARLES GIAMBRONE, Rochester Midland Corporation, New Hope, PA, USA
(v) ERIC MOORMAN, Butterball, Mt. Olive, NC, USA
(v) ELIZABETH GRASSO-KELLY, U.S. Food and Drug Administration, Bedford Park, IL, USA
(v) SIDDHARTHA THAKUR, Department of Population Health and Pathobiology, CVM, NCSU, Raleigh, NC, USA
(v) DIANE WALKER, MSU Center for Biofilm Engineering, Bozeman, MT, USA
MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

12:15 Lunch Available in the Poster Session Area

T9 Technical Session 9 – Molecular Analytics, Genomics and Microbiome (1)

122 A

Convenors: Anand Soorneedi, Douglas Marshall

- T9-01** (v) Trace Amounts of Antibiotic in Feed Modified Fecal
8:30 Microbiota of Weaning Pigs Experimentally Infected with a Pathogenic *Escherichia coli*
KWANGWOOK KIM, Cynthia Jinno, Yanhong Liu, University of California, Davis, Davis, CA, USA
- T9-02** (v) Genomic Analysis of the Locus of Heat Resistance
8:45 in *Escherichia coli*
PEIPEI ZHANG, Xianqin Yang, Agriculture and Agri-Food Canada, Lacombe, AB, Canada
- T9-03** Target-Enriched Long-Read Sequencing (TELS): Meta-
9:00 genomic Profiling of Foodborne Pathogens, Antimicrobial Resistance, Virulence, and Mobilization Potential in Public Health Surveillance
ILYA SLIZOVSKIY, Jarno Alanko, Daniel Lokshtanov, Travis Gagie, Christina Boucher, Noelle Noyes, Food-Centric Corridor, Infectious Disease Laboratory, Department of Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota, Saint Paul, MN, USA
- T9-04** Multiplexing Long-Read Sequencing and Automated
9:15 Analysis for *Salmonella* Serotype Prediction
JIAOJIE ZHENG, Xuwen Wieneke, Younous Adrouji, Sarita Raengpradub, Mériex NutriSciences, Crete, IL, USA
- T9-05** (v) Deciphering the Transition of *Listeria monocytogenes*
9:30 into Injury Using Fluorescent Microscopy and RT-qPCR
MARIANNA ARVANITI, Panagiotis Tsakanikas, Spiros Paramithiotis, Vasiliki Papadopoulou, Artemis Giannakopoulou, Panagiotis Skandamis, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University of Athens, Athens, Greece
- T9-06** (v) New Insights into Foodborne Outbreaks Caused
9:45 by *egc* Enterotoxins from *S. aureus*
LIVIA SCHWENDIMANN, Thomas Berger, Jacques-Antoine Hennekinne, Yacine Nia, Michel-Yves Mistou, Hans-Ulrich Graber, Agroscope, Bern, Switzerland
- 10:00 Break – Refreshments Available in the Poster Session Area

- T9-07** (v) Comparative Genomic Analysis of Persistent and
10:45 Non-Persistent *Escherichia coli* O157:H7 Isolated from Cattle
Lin Teng, MIJU KIM, Zhengxin Ma, Amber Ginn, Tong Ding, David J. Baumler, Charles W. Kaspar, Dongjin Park, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA

- T9-08** (v) Transmission of Antimicrobial-Resistant Genes at the
11:00 Wildlife-Livestock Interface
TING LIU, Shinyoung Lee, Peixin Fan, Raoul Boughton, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA

- T9-09** Genetic Diversity and Virulence of *Listeria monocytogenes*
11:15 Recovered from an Artisan Cheese Facility over a Decade
REBECCA BLAND, Stephanie Brown, Lorraine McIntyre, Sion Shyng, Jovana Kovacevic, Oregon State University, Portland, OR, USA

- T9-10** Metagenomic Analysis of the Microbiome Associated
11:30 with Single-Use Glove Manufacturing
BARRY MICHAELS, Jenna Brooks-McLaughlin, Ryan McLaughlin, Katherine Sandoval, Stephen Ardagh, B. Michaels Group Inc., Palatka, FL, USA

- T9-11** (v) Comparative Whole Genome Analysis of MRSA to
11:45 Understand Genetic Features Associated with Host Adaptation and Dissemination in Both Humans and Food Animals
YUTING ZHAI, John Morris, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA

- T9-12** (v) Comparison of Pathogenic Characteristics for
12:00 *Listeria monocytogenes* Isolated from Various Foods and Identification of Variations in Whole Genome Sequences
Jihye Ryu, Yukyung Choi, Kyoung-Hee Choi, YOCHAN YOON, Sookmyung Women's University, Seoul, South Korea

12:15 Lunch Available in the Poster Session Area

T10 Technical Session 10 – General Microbiology, Food Processing Technologies; Water; and Seafood

132 C

Convenor: Alvin Lee

- T10-01** Withdrawn
- T10-02** Frontiers in Pressure-based Treatment of Bacterial
8:45 Spores and Pressure-Stressed Pathogens of Public Health Concern
ALIYAR FOULADKHAH, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- T10-03** Inactivation of *Salmonella*, Shiga Toxin-producing
9:00 *E. coli* and *Listeria monocytogenes* in Raw Diet Pet Foods Using High Pressure Processing
ALVIN LEE, Nicole Maks, Viviana Aguilar, Karolina Piszczor, Brittany Swicegood, Mu Ye, Korinne Elston, Josh Warren, Edward O'Neill, Mark Fleck, Susy Tejayadi, Institute for Food Safety and Health, Illinois Institute of Technology, Bedford Park, IL, USA

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- T10-04** (v) Lower Levels of Lipoprotein YhcN Likely Contribute to *Bacillus subtilis* Spores High Pressure Superdormancy
9:15 ALESSIA I. DELBRÜCK, Paolo Nanni, Rosa Heydenreich, Alexander Mathys, ETH Zurich, Zurich, Switzerland
- T10-05** Biofilm Formation of Wild-Type and Rifampicin-Resistant O157 and Non-O157 Shiga Toxin-producing *Escherichia coli* and Their Inactivation by Bactericidal Compounds
9:30 SABRINA WADOOD, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State Uni, Nashville, TN, USA
- T10-06** (v) Characterization and Application of Bacteriophages for Biocontrol of Shiga Toxin-producing *Escherichia coli*
9:45 YU TONG LINDA LU, Siyun Wang, University of British Columbia, Vancouver, BC, Canada
- 10:00 Break – Refreshments Available in the Poster Session Area
- T10-07** (v) Dynamic Changes in Bacterial Communities during Seafood Decomposition at Low Temperature
10:45 KRISTIN BUTLER, Marlee Hayes, Sarah May, Madison D. McGough, Ronald Benner, U.S. Food and Drug Administration, Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA
- T10-08** Effect of Acidified Fish Nutrients and Physiological State of *Vibrio cholerae* in the Biofilm Formation Capacity on Food Contact Surfaces
11:00 JOSE EDUARDO LUCERO-MEJIA, Andres De Luna-Bugallo, Montserrat Hernandez-Iturriaga, Universidad Autonoma de Queretaro, Queretaro, QA, Mexico
- T10-09** (v) Microbial Safety and Quality of Public Drinking Water in Ethiopia: Lessons Learned from Eleven Years Retrospective Data
11:15 SAMSON GABRE, Redwan Edicho, Firehiwot Abera Dera, Tesfaye Bedada, Waktola Gobana Sima, Yosef Beyene, Adey Feleke Desta, Addis Ababa University, Addis Ababa, Ethiopia
- T10-10** (v) Comparison and Evaluation of Methods for Monitoring Agricultural Water to Meet FSMA Produce Safety Rule Requirements
11:30 Elizabeth Bihn, LAURA PINEDA-BERMUDEZ, Lindsay Springer, Kelly Coughlin, Don Stoeckel, Cornell University, Geneva, NY, USA
- T10-11** The Effect of Rainfall on Spatiotemporal Patterns of *Salmonella enterica* and *Listeria monocytogenes* Survival in Irrigation Water Sources Using Empirical Orthogonal Functions
11:45 SEONGYUN KIM, Yakov Pachepsky, Kalmia Kniel, Shirley A. Micallef, Salina Parveen, Fawzy Hashem, Amy R. Sapkota, Manan Sharma, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA
- T10-12** (v) *E. coli* O157:H7 Viability after Storage within Ultrafilters or Ultrafilter Backflush
12:00 AI KATAOKA, Rebecca Zaayenga, Roberto Guzman, Andrew Battin, Pascal Iraola, Jennifer Wolny, Julie Ann Kase, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- 12:15 Lunch Available in the Poster Session Area

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WEDNESDAY AFTERNOON

JULY 21

S52 Paradigm Shifting Foodborne Outbreaks and Their Impact on Food Safety

North Ballroom D

Organizers: Minh Duong, Margaret Kirchner, Katie Overbey

Convenors: Margaret Kirchner, Lily Yang

Food Safety Culture

Epidemiology

Food Safety Education

- 1:30 (v) Epidemiology of Foodborne Outbreaks That Challenge Conventions
MICHAEL BAZACO, U.S. Food and Drug Administration, College Park, MD, USA; Stelios Viazis, U.S. Food and Drug Administration, Portland, OR, USA; Doug Karas, U.S. Food and Drug Administration, College Park, MD, USA
- 2:00 Managing Risk after Paradigm-Shifting Foodborne Outbreaks
DAVID ACHESON, The Acheson Group, Bigfork, MT, USA
- 2:30 Lessons Learned after the 2014 Caramel Apple Outbreak
KATHLEEN GLASS, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- 3:00 (v) How Foodborne Outbreaks Have Informed FSIS Policy
KIS HALE, USDA, Washington, D.C., USA

3:30 Refreshments Available Outside North Ballroom D

S53 Safeguarding Food Security and Food Industry Workforce in Pandemic Times Using Breakthroughs in Molecular Diagnostics and Advances in Genomic Epidemiology

121 A–C

Organizers: Marc Allard, Ramin Khaksar

Convenor: Marc Allard

Advanced Molecular Analytics

Food Defense

Viral and Parasitic Foodborne Disease

- 1:30 What Can the Food Manufacturers Do to Mitigate the Critical Risk Factors Associated with a Fast-Spreading Contagion?
TIMOTHY JACKSON, Driscoll's of the Americas, Watsonville, CA, USA
- 2:00 (v) Role of FDA in Assisting Food Manufacturers in Preventing Outbreaks through the Use of WGS
MARC ALLARD, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- 2:30 Creative Strategies in Providing Access to Faster Testing in Rural and Resource-Limited Settings
Douglas Marshall, Eurofins Scientific Inc., Fort Collins, CO, USA
- 3:00 Leveraging NGS, Automation and Cloud Technologies to Provide Real-Time Genomic Epidemiological Insights
RAMIN KHAKSAR, Clear Labs Inc., San Carlos, CA, USA

3:30 Refreshments Available Outside North Ballroom D

S54 Defining Criteria for Assessment and Execution of Gluten-Free and Allergen-Free Claims

122 B–C

Sponsored by Mérieux NutriSciences

Organizers: Shruthi Shankar, Tracie Sheehan
Convenor: Tracie Sheehan

Food Chemical Hazards and Food Allergy

Food Safety Assessment, Audit and Inspection

International Food Protection Issues

- 1:30 (v) Requirements for Gluten-free Certification Audits
BARRY MEIKLE, BRCGS, Guelph, ON, Canada
- 2:00 (v) Summary of Research on Dose-Response Data in Celiac Disease and Food Allergic Patients
STEVE L. TAYLOR, University of Nebraska, Lincoln, NE, USA
- 2:30 (v) VITAL and Criteria for Assessment and Execution of Gluten-Free and Allergen-Free Claims
KIRSTEN GRINTER, Allergen Bureau, Sydney, NSW, Australia
- 3:00 Industry Best Practices for Gluten-Free and Allergen-Free Claims on Foods and Ingredients
TRACIE SHEEHAN, Mérieux NutriSciences, Chicago, IL, USA

3:30 Refreshments Available Outside North Ballroom D

S55 Environmental Transmission, Detection, and Molecular Characterization of Foodborne and Waterborne Parasites

123

Organizers: Sonia Almeria, Monica Santin

Convenors: Sonia Almeria, Alexandre da Silva, Monica Santin

Applied Laboratory Methods

Viral and Parasitic Foodborne Disease

Water Safety and Quality

- 1:30 (v) Novel Approaches to Detection and Molecular Characterization of Waterborne Parasites
ERIC VILLEGAS, WECD, CEMM, ORD, EPA, Cincinnati, OH, USA
- 2:00 (v) Molecular Detection of *Cyclospora* in Agricultural Water
MAURICIO DURIGAN, U.S. Food and Drug Administration – CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA
- 2:30 (v) Challenges in the Detection of Food and Waterborne Parasites in Environmental Samples and Use of Molecular Technologies
LIHUA XIAO, College of Veterinary Medicine, South China Agricultural University, Guangzhou, Guangdong, GA, China
- 3:00 (v) Application of Next Generation Amplicon Sequencing to Detect Mixed Infections of Food and Waterborne Parasites
JENNY MALONEY, ARS, USDA, Beltsville, MD, USA

3:30 Refreshments Available Outside North Ballroom D

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- S56 Recent Advances in Understanding Phage Applications to Mitigate Food Safety Risk**
124 AB
Organizers: Thomas G. Denes, Sofia Feng, Matthew D. Moore
Convenors: Sofia Feng, Matthew D. Moore
Developing Food Safety Professionals
Food Hygiene and Sanitation
- 1:30 (v) Advances in Understanding Infection Dynamics of *Listeria* Phages
THOMAS G. DENES, Department of Food Science, University of Tennessee, Knoxville, TN, USA
- 2:00 (v) Phages as an Intervention for *Salmonella* Kill in Poultry Operation during 2nd Processing
JOËL VAN MIERLO, Microcos Food Safety, Wageningen, The Netherlands
- 2:30 (v) Free and Immobilized Bacteriophage Applications to Enhance Food Safety from Farm to Fork
HANY ANANY, Agriculture and Agri-Food Canada, Guelph Research and Development Center, Guelph, ON, Canada
- 3:00 (v) Advancements in Gram-Negative Phage Biology
LONE BRONDSTED, University of Copenhagen, Copenhagen, Denmark
- 3:30 Refreshments Available Outside North Ballroom D
- S57 (v) Developing Atmospheric Cold Plasma as a Nonthermal Food Safety Tool**
127 A-C
Organizers: Rick Falkenberg, Brienna Larrick
Convenors: Chad Galer, Kathleen Glass, Timothy Stubbs
Sponsored by Institute for the Advancement of Food and Nutrition Sciences
Applied Laboratory Methods
Meat and Poultry Safety and Quality
- 1:30 (v) Cold Plasma: Introduction to Technology, Path to Commercialization, Regulatory Approval and Worker Safety
BRENDAN A. NIEMIRA, USDA-ARS, Wyndmoor, PA, USA
- 2:00 (v) Case Study: Inactivation of Aflatoxin/Grains
KEVIN KEENER, University of Guelph, Guelph, ON, Canada
- 2:30 (v) Case Study: Inactivation of *Listeria monocytogenes* in Soft Cheese
MELHA MELLATA, Department of Food Science and Human Nutrition, Iowa State University, Ames, IA, USA
- 3:00 (v) Case Study: From Bench to Prototype for Fresh Produce Safety
PAULA BOURKE, University College Dublin, Dublin, Ireland
- 3:30 Refreshments Available Outside North Ballroom D

- S58 Lessons Learned from Consumer Food Safety Initiatives Related to the COVID-19 Pandemic to Guide Future Outreach and Communication Practices**
131 A-C
Organizers: Nicole Arnold, Londa Nwadike, Adrienne Shearer, Lily Yang
Convenors: Londa Nwadike, Adrienne Shearer, Lily Yang
Communication, Outreach and Education
Food Safety Culture
Food Safety Education
- 1:30 (v) Rapid Response during the Pandemic for the Development and Dissemination of Consumer Information through Cooperative Extension
NATALIE SEYMOUR, Ecolab Inc., Saint Paul, MN, USA
- 2:00 Expanding Consumer Outreach during the Pandemic through Technology and Collaboration with Municipalities
WENQING (WENNIE) XU, LSU AgCenter, Baton Rouge, LA, USA
- 2:30 (v) Consumer Perceptions and Behaviors during the Pandemic: Navigating a Food Safety Communications Challenge
ALI WEBSTER, IFIC, Washington, D.C., USA; SILVIA DUMITRESCU, IFIC, Washington, D.C., USA
- 3:00 (v) Consumer Food Safety Education and Practices in the Retail Space during the Pandemic
ZHINONG YAN, Walmart, Bentonville, AR, USA
- 3:30 Refreshments Available Outside North Ballroom D
- S59 Where's the Beef? Grinding Recordkeeping and Intended Use at Retail**
129 A
Organizers: Kristina Barlow, Robert Witte
Convenor: William Lanier
Meat and Poultry Safety and Quality
Retail and Foodservice
- 1:30 State Perspective on Grinding Record Keeping and Intended Use
JENNIFER EBERLY, Maine Department of Agriculture, Conservation, and Forestry, Augusta, ME, USA
- 2:00 (v) Grinding Record Keeping and Intended Use
ROBERT WITTE, U.S. Department of Agriculture – FSIS, Omaha, NE, USA; THOMAS COLLARO, U.S. Department of Agriculture – FSIS, Waltham, MA, USA
- 2:30 (v) Grinding Record Keeping at Retail
TODD ROSSOW, Publix Super Markets, Inc., Lakeland, FL, USA
- 3:00 Intended Use of Intact Products
SHERRI WILLIAMS-TRUJILLO, JBS/USA, Greeley, CO, USA
- 3:30 Refreshments Available Outside North Ballroom D

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T11 Technical Session 11 – Laboratory and Detection Methods

132 AB

Convenor: Catharine Carlin

T11-01 Reference Method Selective Media Differ Significantly in Their Ability to Support *Listeria* spp. Growth
1:30 CATHARINE R. CARLIN, Mérieux NutriSciences, Chicago, IL, USA

T11-02 Validation of the Environ Assay for the Detection of *Listeria*, *Listeria monocytogenes* and *Salmonella* in Environmental Surface Samples
1:45 BENJAMIN KATCHMAN, Cory Newland, Melissa May, Michael Hogan, PathogenDx, Tucson, AZ, USA

T11-03 Verification of Quantification and Limits Testing of *Salmonella* in Finely Textured Beef (FTB) Using Hygiena's BAX® System Real-Time PCR Assay for *Salmonella*
2:00 APRIL ENGLISHBEY, Stacy Stoltenberg, Melody Thompson, Hygiena, Magnolia, TX, USA

T11-04 (v) A Rapid Assurance® Gds Method for Quantitative Estimation of *Salmonella* Contamination Level in Raw Beef
2:15 CONG YU, Charlotte Lindhardt, Ta Deng, Ellis Marschand, Brian Connolly, Khyati Shah, Lisa John, MilliporeSigma, Bellevue, WA, USA

T11-05 (v) Rapid Identification and Molecular Characterization of *Escherichia coli* Isolates from Food and Environment through Whole Genome Sequencing
2:30 Nicolas Lopez, Li Ma, Claudia Diaz, GUODONG ZHANG, Food and Drug Administration, College Park, MD, USA

T11-06 (v) Using an Impedance Cytometer for the Enumeration of Bacteria Commonly Found on Food Production Surfaces and Foodstuff
2:45 STEFAN WIDMANN, Romer Labs Division Holding GmbH, Tulln, MO, Austria

T11-07 Rapid Identification of Food Pathogens Using Magnetic Nanoparticles and Supervised Machine Learning Algorithms Applied to High Resolution Microscope Images
3:00 SAAD ASADULLAH SHARIEF, Evangelyn Alocilja, Michigan State University, East Lansing, MI, USA

T11-08 (v) Custom Baits with Mitochondrion to Detect and Identify Insects in Food
3:15 MONICA PAVA-RIPOLL, Andrea Ottesen, Mark Mammel, Elizabeth Reed, Padmini Ramachandran, Food and Drug Administration, Center for Food Safety & Applied Nutrition, Office of Food Safety, College Park, MD, USA

3:30 Refreshments Available Outside North Ballroom D

T12 Technical Session 12 – Molecular Analytics, Genomics and Microbiome (2)

122 A

Convenors: Salina Parveen, Varalakshmi Sudagar

T12-01 (v) Multi-Serovar *Salmonella* Populations Hide Antimicrobial Resistance Reservoirs in Food Animals
1:30 NIKKI W. SHARIAT, Amy Sicheloff, Naomi Ohta, Keri Norman, Guy Loneragan, Bo Norby, H. Morgan Scott, University of Georgia, Athens, GA, USA

T12-02 Preliminary Analysis of the Role of the Noncoding RNA Rli47 in the *Listeria monocytogenes* Response to Lactic Acid Stress
1:45 BIENVENIDO CORTES, Faith Seggerman, Marissa Stroud, Stephan Schmitz-Esser, Iowa State University Interdepartmental Microbiology Program, Ames, IA, USA

T12-03 Impact of *Lactobacillus*-Originated Metabolites on EHEC in Collected Rumen Fluid
2:00 ARPITA ADITYA, Mengfei Peng, Debabrata Biswas, University of Maryland, College Park, MD, USA

T12-04 (v) Effects of Electrolyzed Water Treatment on the Metabolic Responses of "Big Six" in Vegetable Sprouts
2:15 YUE WANG, Hongshun Yang, National University of Singapore, Singapore

T12-05 Purified Plant-Derived Phenolic Acids on *Salmonella* Typhimurium and in *Ex Vivo* Simulated Gut Microbiota
2:30 ZABDIEL ALVARADO-MARTINEZ, Zajeba Tabashsum, Mengfei Peng, Debabrata Biswas, University of Maryland, College Park, MD, USA

T12-06 Investigation of Microbiome Shift by Plant Probiotic in Strawberry Plants
2:45 JUN HAENG NAM, Alyssa Thibodeau, Si Hong Park, Oregon State University, Corvallis, OR, USA

T12-07 (v) Romaine Lettuce Phyllosphere Microbial Communities Shift as the Crop Develops and in Relation to Irrigation Water Type by the Time of Harvest
3:00 Sultana Solaiman, Mary Theresa Callahan, Chris Bollinger, Donald L. Murphy, Zhao Chen, Jianghong Meng, SHIRLEY A. MICALLEF, University of Maryland, College Park, MD, USA

T12-08 (v) Expansion of *Salmonella* Infantis pESI Plasmid to Additional *Salmonella* Serotypes
3:15 GLENN TILLMAN, Jamie Wasilenko, Mustafa Simmons, Frankie Beacorn, Labeed Ben-Ghaly, William Shaw, Elizabeth McMillan, Jonathan Frye, Gregory Tyson, Jason Folster, United States Department of Agriculture, Food Safety and Inspection Service, Athens, GA, USA

3:30 Refreshments Available Outside North Ballroom D

T13 Technical Session 13 – Low Water Activity Foods

132 C

Convenor: Kristin Schill

T13-01 (v) Combined Effect of Protein and Fat on Thermal Resistance of *Salmonella enterica* Enteritidis PT 30 in Low-Moisture Foods
1:30 Yalan Zhang, Siqi Lv, Haitao Xiong, SHUXIANG LIU, Sichuan Agricultural University, Ya'an, China

All times listed in Pacific time (U.S.)

■ – Symposia

■ – Roundtables

■ – Technicals

■ – Developing Scientist Competitor

■ – Topic Areas

v – Virtual

T13-02 (v) Comparing Efficacy of Neo-Temper and Lactic Acid
1:45 in Reducing *Enterococcus faecium* on Wheat Applied in
Tempering Stage of Milling
GOZE DEMIRCIOGLU, Fadi Dagher, Fatemeh Rahmany,
Jay Pandya, Ashley Cloutier, Amir Hamidi, Agri-Neo Inc.,
Toronto, ON, Canada

T13-03 Effect of Steam Conditioning on Microbial Safety
2:00 and Quality of Pecans

KARUNA KHAREL, Achyut Adhikari, Louisiana State
University AgCenter, Baton Rouge, LA, USA

T13-04 (v) Thermal Inactivation of *Salmonella* and *Enterococcus*
2:15 *faecium* during Walnut Toasting
JIIN JUNG, Linda J. Harris, University of California-Davis,
Department of Food Science and Technology, Davis, CA,
USA

T13-05 (v) Potassium Lactate as a Strategy for Sodium Content
2:30 Reduction without Compromising Salt Associated
Antimicrobial Activity in Salami
FRANCIS MUCHAAMBA, Helena Stoffers, Ralf Blase,
Ueli von Ah, Roger Stephan, Taurai Tasara, Institute for
Food Safety and Hygiene, Vetsuisse Faculty, University
of Zurich, Zurich, Switzerland

T13-06 (v) Viability, Membrane Integrity and Metabolic Activity
2:45 of *Salmonella enterica* in Conventionally and Osmotically
Dehydrated Coconut Flakes during Storage
Ruthchelly Tavares da Silva, Maria Mayara de Souza
Grilo, Geany Targino de Souza Pedrosa, Thatyane
Mariano Rodrigues de Albuquerque, Evandro L. de Souza,
Verônica Ortiz Alvarenga, Donald W. Schaffner,
MARCIANE MAGNANI, Federal University of Paraiba,
Joao Pessoa, Paraiba, Brazil

T13-07 (v) Neo-Pure Achieves >1-Log CFU/g Reduction in
3:00 Aerobic Plate Counts (APC) on Crude Dehydrated
Onion Flakes
JAY PANDYA, Ashley Cloutier, Goze Demircioglu,
Rebecca Karen Hylton, Pooneh Peyvandi, Fatemeh
Rahmany, Fadi Dagher, Amir Hamidi, Agri-Neo Inc.,
Toronto, ON, Canada

T13-08 (v) Neo-Pure Achieves >4-Log Reduction in *Salmonella*
3:15 Surrogate *Enterococcus faecium* NRRL B-2354 on
Dehydrated Onion Flakes
JAY PANDYA, Ashley Cloutier, Goze Demircioglu,
Rebecca Karen Hylton, Pooneh Peyvandi, Fatemeh
Rahmany, Fadi Dagher, Amir Hamidi, Agri-Neo Inc.,
Toronto, ON, Canada

3:30 Refreshments Available Outside North Ballroom D

4:00 p.m. – 4:45 p.m.

JOHN H. SILLIKER LECTURE

North Ballroom D

We All are Working on the Same Puzzle
BARBARA MASTERS, DVM, Tyson Foods, Inc.
Washington, D.C., USA

EVENING OPTIONS

6:00 p.m. – 7:00 p.m.

Awards Banquet Reception, North Ballroom Foyer

7:00 p.m. – 9:30 p.m.

IAFP Awards Banquet, North Ballroom A-C

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All times listed in Pacific time (U.S.)

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



JOHN H. SILLIKER LECTURE

WEDNESDAY, JULY 21

CLOSING SESSION

WE ALL ARE WORKING ON THE SAME PUZZLE



Barbara J. Masters, DVM
Vice President, Regulatory
Policy, Food and Agriculture
Tyson Foods, Inc.
Washington, D.C., USA

Dr. Barbara J. “Barb” Masters is the Vice President of Regulatory Policy, Food and Agriculture for Tyson Foods, Inc. in Washington, D.C., where she provides regulatory vision and support for food safety and quality policies and procedures.

Prior to joining Tyson Foods, Dr. Masters served as the Global Vice President for Food Safety and Quality at Keystone Foods (now owned by Tyson Foods). She previously spent nine years as a Senior Policy Advisor at the law firm of Olsson-Frank Weeda, working closely with the meat and poultry industry to ensure regulatory compliance.

Dr. Masters also served as Administrator of the U.S. Department of Agriculture’s (USDA) Food Safety and Inspection Service (FSIS), where she established a solid infrastructure of science-based policies and data analysis to reduce foodborne illness and product recalls. She was responsible for reenergizing the Agency’s training program and ensuring training reflecting national policies.

A Member of IAFP since 2008, Dr. Masters holds a Doctor of Veterinary Medicine from Mississippi State University and a Food Animal Internship from Kansas State University. She also did advanced coursework in biotechnology at Texas A&M University.

JOHN H. SILLIKER LECTURE ABSTRACT

WE ALL ARE WORKING ON THE SAME PUZZLE

Barbara J. Masters, DVM

Vice President, Regulatory Policy,
Food and Agriculture
Tyson Foods, Inc.
Washington, D.C., USA

I am honored and humbled to present the John H. Silliker Lecture. Dr. Silliker was a pioneer and a visionary when it comes to *Salmonella*, so it seems fitting to present on the pathogen we are all still at war with. Each year we attend the IAFP Annual Meeting to learn the latest and greatest scientific information on food safety. I have personally attended many presentations on *Salmonella*, focusing on poultry to produce – on-farm to processing. There are many sessions this year dedicated to the topic. Yet the CDC's Surveillance for Foodborne Disease Outbreaks United States, 2017: Annual Report reports: The pathogen-food category pairs responsible for the most illnesses in outbreaks with a single confirmed etiologic agent were *Salmonella* in turkey (580 illnesses), *Salmonella* in fruits (421), and *Salmonella* in chicken (299).¹

Why are the pieces to this particular puzzle so hard to put together?

Having had the opportunity to wear the hat of a regulator, consultant, industry representative and member of a consumer education organization, I will attempt to examine the efforts taken to reduce *Salmonella* contamination and to ponder what the next steps may be.

The Food Safety and Inspection Service (FSIS) implemented performance standards for raw meat and poultry products in 1996. The performance standards have continued to evolve over the past twenty plus years. FSIS data demonstrates that establishments have met the standards and reduced *Salmonella* contamination in products over time.²

FSIS, CDC, and industry are all using newer laboratory methods. We have genetic sequencing, quantification and enumeration and other laboratory tools being developed.

Industry (beef, pork, and poultry alike) has been working through their respective trade organizations. I am speaking broadly for industry, not for any one company, plant or commodity. My observations have been that there has been sharing of best practices, research projects, and even multi-species task force formation. The trade groups have worked closely with FSIS, the Agricultural Research Service and the Centers for Diseases Control to exchange information and ideas. The poultry industry has shared learnings with the beef and pork industry and vice-versa. The industry is working aggressively to address this as a holistic concern.

The food safety education community has made efforts to continue to improve their tools. There has been information added to recipe cards to educate on handwashing and thermometer usage. There are biennial food safety education conferences to help participants gain insights into how to change consumer behavior to improve food safety practices. FSIS hosted their own food safety education conference in 2020.

The research community is actively engaged in *Salmonella* research. There are projects taking place on quantification methodology and highly pathogenic serotypes. There are on-going projects attempting to compare what comes from a farm or ranch to what is observed at a processing plant.

Having worn all these different hats, I feel I can speak with confidence when I say that when it comes to looking for the solution and fighting this pathogen – everyone is “all in.” I used to think that each group was engaged in working on their own puzzle. I have come to realize we are all working on a different part of the same puzzle, but perhaps sometimes we are working too far apart to see how the pieces fit together. Perhaps this has prevented us from successfully completing the entirety of the complex puzzle laid before us.

Attending conferences like IAFP where we take off our “day job hat” and listen to the latest science – each through our own lens – provides one of the greatest opportunities for us to work together to find answers. I feel strongly there are answers to this challenge, and if we all look together using science-based, data-driven approaches, we are most likely to complete this frustrating puzzle that has long been challenging us all.

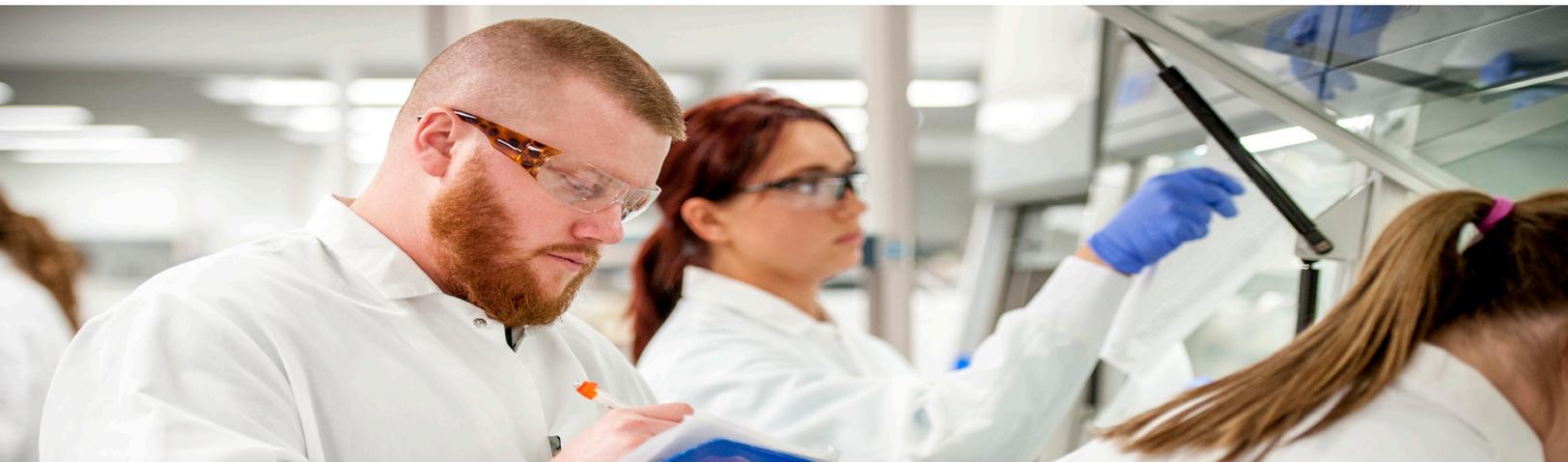
1. https://www.cdc.gov/fdoss/pdf/2017_FoodBorneOutbreaks_508.pdf

2. <https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/microbiology/quarterly-reports-salmonella>



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INFLUENCE OF SALT CONTENT IN PROCESSED FOODS FOR NEXT-DAY LISTERIA MONOCYTOGENES SCREENING

TUESDAY, JULY 20 2021 • 8:00AM - 6:00PM
AUTHOR & PRESENTER: CAROL SIVEY

A METHOD COMPARISON STUDY TO EVALUATE RECOVERY OF BIFIDOBACTERIUM LONGUM FROM PET FOOD PRODUCTS

WEDNESDAY, JULY 21, 2021 • 8:00AM - 3:00PM
AUTHOR & PRESENTER: GABRIEL SANGLAY

We are sorry to miss you at our booth this year but look forward to seeing everyone again at IAFP 2022 in Pittsburgh. Until then, visit our website or contact us for more information about working with NQAC Dublin.

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POSTER SESSIONS

POSTER SESSION 1

MONDAY, JULY 19 • 8:30 a.m. – 6:15 p.m.

Antimicrobials
Beverages and Acid/Acidified Foods
Dairy
Food Chemical Hazards and Food Allergens
Low-Water Activity Foods
Meat, Poultry and Eggs
Molecular Analytics, Genomics and Microbiome
Seafood

P1-01 through P1-88 – Authors present 10:00 a.m. – 11:30 a.m. and 5:15 p.m. – 6:15 p.m.
P1-89 through P1-192 – Authors present 2:15 p.m. – 3:45 p.m. and 5:15 p.m. – 6:15 p.m.

POSTER SESSION 2

TUESDAY, JULY 20 • 8:30 a.m. – 6:15 p.m.

Food Toxicology
General Microbiology
Laboratory and Detection Methods
Microbial Food Spoilage
Pre-Harvest Food Safety
Produce
Sanitation and Hygiene
Viruses and Parasites
Water

P2-01 through P2-91 – Authors present 10:00 a.m. – 11:30 a.m. and 5:15 p.m. – 6:15 p.m.
P2-92 through P2-191 – Authors present 2:15 p.m. – 3:45 p.m. and 5:15 p.m. – 6:15 p.m.

POSTER SESSION 3

WEDNESDAY, JULY 21 • 8:30 a.m. – 3:30 p.m.

Communication Outreach and Education
Epidemiology
Food Defense
Food Law and Regulation
Food Processing Technologies
Food Safety Systems
Laboratory and Detection Methods
Modeling and Risk Assessment
Packaging
Retail and Food Service Safety

P3-01 through P3-96 – Authors present 9:00 a.m. – 11:00 a.m.
P3-97 through P3-187 – Authors present 1:00 p.m. – 3:00 p.m.

POSTERS

MONDAY POSTERS 8:30 A.M. – 6:15 P.M.

P1 POSTER SESSION 1

Antimicrobials
Beverages and Acid/Acidified Foods
Dairy
Food Chemical Hazards and Food Allergens
Low-water Activity Foods
Meat, Poultry and Eggs
Molecular Analytics, Genomics and Microbiome
Seafood

Phoenix Convention Center, Exhibit Hall

P1-01 through P1-88– Authors present 10:00 a.m. – 11:30 a.m. and 5:15 p.m. – 6:15 p.m.

P1-89 through P1-192 – Authors present 2:15 p.m. – 3:45 p.m. and 5:15 p.m. – 6:15 p.m.

Antimicrobials

- P1-01 **Switchgrass Extractives Against *Salmonella enterica* Serovar Typhimurium Populations *In Vitro* and *In Planta*** — EMILY CAMFIELD, Alexander Bowman, Kimberly Gwinn, Bonnie Ownley, Nicole Labbe, Doris D'Souza, University of Tennessee, Knoxville, TN, USA
- P1-02 (v) **Inhibitory Activity of Aqueous Extracts of Pomegranate Peel Products and Juice Powder Against *Salmonella enterica*** — WEIFAN WU, Kevin Mis Solval, Kirk Kealey, Jinru Chen, University of Georgia, Griffin, GA, USA
- P1-03 (v) **Antimicrobial and Chemical Assessment of Two Green Tea Extracts** — MORTEN HYLDGAARD, Jana Fischer, International Flavors and Fragrances Inc. (IFF), Brabrand, Denmark
- P1-04 **The Antimicrobial Activity of Two Phenolic Acids Against *E. coli* O157:H7 and *L. monocytogenes* and Their Effectiveness in a Meat System** — Oluwatosin Ademola Ijabadeniyi, Austin Govender, AJIBOLA OYEDEJI, University of Johannesburg, Johannesburg, South Africa
- P1-05 **Catfish Gelatin Coating on Shrimp as an Antimicrobial Agent** — HUNTER SONGY, Katheryn Parraga, Hope Eeseose, Robert Corsino II, Wenqing (Wennie) Xu, Julie Lively, Evelyn Watts, LSU AgCenter, Baton Rouge, LA, USA
- P1-06 **Enhancement of Fresh Catfish Fillets Quality by the Application of a Catfish Skin Gelatin and Antimicrobial Coating** — KATHERYN PARRAGA, Hunter Songy, Hope Eeseose, Robert Corsino II, Evelyn Watts, LSU AgCenter, Baton Rouge, LA, USA
- P1-07 (v) **Comparison of Antimicrobial Activities of Essential Oil Vapors Against *Salmonella enterica* as Affected by the Types of Diluents** — TAEHYUNG LEE, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-08 (v) **Comparison of Antimicrobial Activities of Organic Acid Vapors Against *Bacillus cereus* and *Shigella flexneri*** — HYE-WON YANG, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-09 **Chemical Disinfection of Sessile Cells of *Listeria monocytogenes* Under Single- and Dual-Species (with *Lactobacillus* spp.) Conditions** — MAGDALENA OLSZEWSKA, Francisco Diez-Gonzalez, University of Georgia Center for Food Safety, Griffin, GA, USA
- P1-10 **Biofilm Formation and Phytochemical Disinfection of Sessile Cells of *Listeria innocua* from Processing Surfaces** — MAGDALENA OLSZEWSKA, Astrid Gędas, Francisco Diez-Gonzalez, University of Warmia and Mazury in Olsztyn, Olsztyn, Poland
- P1-11 (v) **Effect of Anthocyanins in Okinawan Sweet Potato on Growth and Physicochemical Properties of *Salmonella* Typhimurium and *Listeria monocytogenes*** — ANDREA FLORES CALLE, Lianger Dong, Yong Li, Marisa Wall, University of Hawaii at Manoa, Honolulu, HI, USA
- P1-12 **Antibacterial Effect of Plant-based Essential Oil Against *Salmonella* spp. in Hummus** — KATIE EVANS, Kyla Asher, Taylor Ladner, Shecoya White, Mississippi State University, Mississippi State, MS, USA
- P1-13 (v) **Application of Cinnamon Oil Nano-Emulsion to Inhibit *Salmonella* spp. on Alfalfa Seeds and Sprouts** — Sridevi Pamula, KANIKA BHARGAVA, Hari Kotturi, University of Central Oklahoma, Edmond, OK, USA
- P1-14 **Use of Novel Antimicrobials to Mitigate Risk of *E. coli* in Cake Mixes** — Govindaraj Dev Kumar, KAYLAN HAYMAN, Abhinav Mishra, Kevin Mis Solval, Jasdeep Saini, Jaya Sundaram, University of Georgia, Griffin, GA, USA
- P1-15 **Plant-based Microemulsions Inactivate *Escherichia coli* O157:H7 and *Pseudomonas fluorescens* on Iceberg Lettuce and Improve Visual Quality during 28-Day Storage** — STEPHANIE ARELLANO, Bibiana Law, Sadhana Ravishankar, University of Arizona, Tucson, AZ, USA
- P1-16 **Behavior of *Listeria monocytogenes* upon Exposure to Muscadine Extract and Chlorine Dioxide *in vitro* and on Leafy Greens** — Angelica Abdallah Ruiz, Jose A. Eusse, M. Gabriela Hidalgo Sindoni, Shecoya White, JUAN SILVA, Mississippi State University, Mississippi State, MS, USA
- P1-17 **Application of Nanobubble-Antimicrobial Solutions to Remove Fresh *Listeria monocytogenes* Biofilms on Stainless Steel Food Surfaces** — Monipel Babb, Amninder Singh Sekhon, Arshdeep Singh, Phoebe Unger, Yaeseol Yang, MINTO MICHAEL, Washington State University, Pullman, WA, USA
- P1-18 **Functional Qualities, Antimicrobial Activities and Geospatial Investigation of Retailed Nigerian Honey** — PAUL AKINDUTI, Yemisi Obafemi, Oluwaseun Ejilude, Okanlawon Onagbesan, Covenant University, Ota, Nigeria
- P1-19 **Antimicrobial Efficacy of Photosensitizer Curcumin on Food Contact Surfaces in Cold-Smoked Fish Industry** — AISH-WARYA VENGATESAN, Karl Matthews, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P1-20 **Efficacy of Citrus Essential Oil Applications on the Shelf Life of Strawberries** — JACINDA LEOPARD, Dianna Wilson, Lauryn Heidelberg, Shecoya White, Mississippi State University, Mississippi State, MS, USA
- P1-21 **Survival of *Escherichia coli* (STEC) *In vitro* and on Leafy Greens Exposed to Natural Antimicrobials and Chlorine Dioxide** — M. GABRIELA HIDALGO SINDONI, Angelica Abdallah Ruiz, Jose A. Eusse, Juan Silva, Shecoya White, Mississippi State University, Mississippi State, MS, USA

- P1-22 Temperature-Dependent Antimicrobial Activity of Menhaden Fish Oil *In Vitro* and on Pet Food Kibbles Against *Salmonella* spp. — JANAK DHAKAL, Charles. G. Aldrich, Virginia Tech University, Blacksburg, VA, USA
- P1-23 (v) Application of a Natural Bioactive Glycolipid to Control *Listeria monocytogenes* Biofilms and as Post-Lethality Contaminants in Milk — LANG SUN, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- P1-24 (v) Antimicrobial Effects of a Bioactive Glycolipid on Spore-forming Spoilage Bacteria in Milk — LANG SUN, Kathleen Atkinson, Mengtian Zhu, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- P1-25 Use of White Mustard Essential Oil-based Solutions in Natural Produce Washes Against *E. coli* — SHIJIE QIN, Emefa Monu, Amit Morey, Auburn University, Auburn, AL, USA
- P1-26 (v) Impact of Enhanced Organic Acids-based Leavening Ingredients in Shelf-Life Extension of Baked Cupcakes — Jaya Sundaram, Jasdeep Saini, PURVI CHATTERJEE, Zack Overacker, WTI Inc., Jefferson, GA, USA
- P1-27 (v) Preventing Pathogen Outgrowth and Extending Shelf Life of Ready-to-Eat Convenience Meal Kit Products Using a Secondary Inhibitor — PURVI CHATTERJEE, Jaya Sundaram, Jasdeep Saini, WTI Inc., Jefferson, GA, USA
- P1-28 (v) Natural Disinfectant to Reduce *Listeria monocytogenes* Contamination on Food Contact Surfaces — PURVI CHATTERJEE, Jaya Sundaram, Jasdeep Saini, WTI Inc., Jefferson, GA, USA
- P1-29 (v) Control of *Clostridium perfringens* Outgrowth Under Abusive Conditions Using Buffered Vinegar as a Secondary Inhibitor in a Simple Food Model — PURVI CHATTERJEE, Jaya Sundaram, Jasdeep Saini, WTI Inc., Jefferson, GA, USA
- P1-30 Effects of Cranberry Extract on Conditioning Films and Bacterial Biofilm Formation — Adam Leff, Christopher McNamara, Chayapa Techathuvanan, LAURA LEFF, Kent State University, Kent, OH, USA
- P1-31 Effect of Organic Acids-Enhanced Nano Size Ice Slurry Chilling Techniques on the Microbial and Physicochemical Properties of Black Drum (*Pogonias cromis*) — HOPE ESEOSE, Kathryn Parraga, Hunter Songy, Robert Corsino II, Evelyn Watts, LSU AgCenter, Baton Rouge, LA, USA
- P1-32 (v) *Salmonella* spp. and *Listeria monocytogenes* Behavior with Chitosan Application on Pig Carcasses Samples — Maria Ciriaco, MÁRCIO MOURA-ALVES, Rui Silva, Isabel Pinto, Cristina Saraiva, Alexandra Esteves, Department of Veterinary Sciences, School of Agrarian and Veterinary Sciences (ECAV), University of Trás-os-Montes e Alto Douro (UTAD), Vila Real, Portugal
- P1-33 Impact of Antimicrobial Application Sequence on Destruction of *Salmonella* and *Campylobacter* in Raw Poultry — SARA LASUER, Robert Ames, Garrett McCoy, Daniel Unruh, Corbion, Lenexa, KS, USA
- P1-34 Ultrasonic Formulation of Bergamot Oil and Linalool Nano-emulsions and Their Bactericidal Activity — GABRIELLA MENDES CANDIDO DE OLIVEIRA, Yaguang Luo, Xiangwu Nou, USDA-ARS, EMFSL, Beltsville, MD, USA
- P1-35 Antimicrobial Effects of Corn Zein Impregnated with Nisin as Edible Coating for Mangoes Stored at Different Temperatures — GABRIELLA MENDES CANDIDO DE OLIVEIRA, Antonios Zografos, Yaguang Luo, Xiangwu Nou, USDA-ARS, EMFSL, Beltsville, MD, USA
- P1-36 Development of Applied Antimicrobial Intervention to Control *Salmonella* spp. during Wheat Milling — DANIEL VEGA, Kellen Habib, Katia Pozuelo, Randall Phebus, Kansas State University, Manhattan, KS, USA
- P1-37 (v) Effects of Liquid Smoke Preparations on Shelf Life and Growth of Wild-Type Mold and *Aspergillus flavus* in a Model Semi-Moist Pet Food — AISWARIYA DELIEPHAN, Janak Dhakal, Charles. G. Aldrich, Kansas State University, Manhattan, KS, USA
- P1-38 (v) Effectiveness of Natural Antimicrobials for Control of Mold Growth on Artificially Inoculated Shredded Cheddar Cheese Held at 7°C — EMALIE THOMAS-POPO, Aubrey Mendonca, Stephanie Clark, Allison Little, Verilyn Hartanto, Kia Barry, Iowa State University, Ames, IA, USA
- P1-39 Exploring the Antimicrobial Efficacy of Spearmint, Peppermint, and Dill Essential Oils and Fumes — SAMANTHA BURROUGHS, Joy Waite-Cusic, Oregon State University, Corvallis, OR, USA
- P1-40 Product Depth and Air Velocity Impact Microbial Reduction during Hazelnut Roasting — Samantha Burroughs, JOY WAITE-CUSIC, Oregon State University, Corvallis, OR, USA
- P1-41 (v) Mature and Immature Biofilms of *Listeria monocytogenes* Isolated from Vermont Dairy Production Environments are Susceptible to Sodium Hypochlorite — EMILY FORAUER, Andrea Etter, The University of Vermont, Burlington, VT, USA
- P1-42 (v) Evaluating the Effect of Organic Load on Peroxyacetic Acid Measurement in a Model Flume Tank — CHRISTOPHER PABST, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- P1-43 (v) Inactivation of *Escherichia coli* O157:H7 in Cabbage Seeds by Combined Treatments of Gaseous Chlorine Dioxide and Mild Wet Heat — WOORIM YEOM, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-44 (v) Antimicrobial Activities of Combined Treatments of Gaseous Chlorine Dioxide and Mild Wet Heat Against *Xanthomonas campestris* and *Salmonella enterica* — XI LI, Woorim Yeom, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-45 Use of Antimicrobials and the Fate of *Salmonella* in Marinated Pork Loins — SHERITA LI, Samantha Marecek, Haley Konoval, Siroj Pokharel, California Polytechnic State University, San Luis Obispo, CA, USA
- P1-46 Control of *Listeria monocytogenes* in Model Wet Dog Foods by Using AAFCO-approved Inhibitor — SUBASH SHRESTHA, Shelly Riemann, Kevin Kroeger, Cargill, Inc., Wichita, KS, USA
- P1-47 In Plant Validation Study of Peracetic Acid Intervention on Whole Beef Carcasses Using *Escherichia coli* Surrogates — DAVID VARGAS ARROYO, Diego Casas, Alejandro Echeverry, Marcos X. Sanchez-Plata, Mark Miller, Texas Tech University, Lubbock, TX, USA
- P1-48 (v) Impact of Isolation Environment and Temperature on the Susceptibility of *Salmonella* to Biocides — VICTOR JAYEOLA, Jie Zheng, Maria Hoffmann, Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, MD, USA
- P1-49 (v) Efficacy of Disinfectants Against Human Norovirus on Food Contact Surfaces — JEREMY FAIRCLOTH, Clyde Manuel, James Arbogast, Rachel Leslie, Rebecca M. Goulter, Lee-Ann Jaykus, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA

- P1-50 (v) Effect of Growth Conditions on the Relative Transcription of Plantaricin Genes and Antilisterial Capacity of *Lactiplantibacillus plantarum* Strains — MARIA K. SYROKOU, Panagiota Stasinopoulou, Spiros Paramithiotis, Marios Mataragas, Panagiotis Skandamis, Eleftherios Drosinos, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University, Athens, Greece
- P1-51 (v) Evaluation of *Lactobacillus plantarum*, *Bifidobacterium longum* and *Saccharomyces boulardii* Attachment to Intestinal Mucosa and Inhibition of Pathogenic Microbes — AGNES KILONZO-NTHENGE, Samuel Nahashon, Tennessee State University, Nashville, TN, USA
- P1-52 (v) Isolation of *Listeria monocytogenes* Specific Bacteriophages and Application on Planktonic Cells and Biofilms Formed on Food Contact Surface — KYE-HWAN BYUN, Min Woo Choi, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansong, Gyunggi-Do, South Korea
- P1-53 (v) Isolation and Characterization of Bacteriophages Which is Specific for *Salmonella* Thompson in South Korea — KYE-HWAN BYUN, Hee Jeong Kim, Sangha Han, Sang-Do Ha, Advanced Food Safety Research Group, Brain Korea 21 Plus, Chung-Ang University, Ansong, Gyunggi-Do, South Korea
- P1-54 (v) Mutations Acquired on *Salmonella* Enteritidis upon Exposure to a Lytic Phage for 21 Days — Rocío Barrón, María Jesus Serrano, Dacil Rivera, Eduardo Castro-Nallar, Fernanda Arredondo, Pamela Camejo, ANDREA MORENO-SWITT, Pontificia Universidad Católica, Santiago, Chile
- P1-55 (v) Whole Genomic Characterization of Phage SB3-induced *Salmonella* Bacteriophage-Insensitive Mutants — BRIDGET XIE, Valeria R. Parreira, Sudhakar Bhandare, Jeff Gauthier, Roger Levesque, Lawrence Goodridge, University of Guelph, Department of Food Science, Guelph, ON, Canada
- P1-56 (v) Characterization of the Potential of Lactic Acid Bacteria Isolated from Agroindustrial Waste in Costa Rica for the Production of Antimicrobial Compounds — Jessica Montero-Zamora, MARÍA DANIELA ROJAS-VARGAS, Mauricio Redondo-Solano, Anibal Mora-Villalobos, Natalia Barboza, University of Costa Rica, San José, Costa Rica
- P1-57 (v) Changes of Antimicrobial Activities of UV Irradiation Against *Staphylococcus aureus* on Plastic Surfaces as Affected by Intensity and Wavelength of UV Light — DOHYUN KIM, Yujeong Kim, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-58 (v) Inactivation of *Salmonella enterica* by UV-A, UV-B and UV-C Irradiation as Affected by Types of Abiotic Surfaces — YUJEONG KIM, Dohyun Kim, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-59 (v) Comparison of Inactivation Efficacy of Plasma-activated Water Against Biofilms on Two Types of Lettuce — MANVEEN KAUR AHUJA, Qingyang Wang, Deepti Salvi, North Carolina State University, Raleigh, NC, USA
- P1-60 Investigation of Cross-Resistance Development between a Commercial Quaternary Ammonium Compound Sanitizer and Antibiotics in *Listeria monocytogenes* Isolated from Fresh Produce Environments — REBECCA BLAND, Joy Waite-Cusic, Jovana Kovacevic, Oregon State University, Portland, OR, USA
- P1-61 Comparison of Planktonic Cells and Biofilms of Pressure-Stressed and Wild-Type Bacterial Pathogens of Food Industry Significance — ALIYAR FOULADKHAH, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P1-62 (v) Occurrence and Distribution of Antibiotic-resistant *Staphylococcus aureus* in a Brazilian Pork Production Chain — LUÍS AUGUSTO NERO, Clarisse Vieira Botelho, Angela Sovinski, Juliana Libero Grossi, Douglas Call, Luciano dos Santos Bersot, Universidade Federal de Viçosa, Viçosa, Brazil
- P1-63 (v) Ciprofloxacin Resistance in *Salmonella enterica* Isolated from a Poultry Chain — Juliana Libero Grossi, Cibeli Viana, Ricardo Seiti Yamatogi, Douglas Call, LUÍS AUGUSTO NERO, Universidade Federal de Viçosa, Viçosa, Brazil
- P1-64 Characterization of Antimicrobial Resistance in Indicator Bacteria (*E. coli* and *Enterococcus* spp.) from Surface Waters of Wyoming — HARNEEL KAUR, Kelsey Ruehling, Sarah Collins, Bledar Bisha, University of Wyoming, Laramie, WY, USA
- Beverages and Acid/Acidified Foods**
- P1-65 Use of Surrogate Bacteria for Cold-fill Processes Validation and Verification — Virginie Pignard, Priscilla Piller, Pierre-Olivier Beal, VIDYA ANANTH, Pierre-Alexandre Juan, Novolyze Inc. (USA), San Francisco, CA, USA
- P1-66 Uptake and Redistribution of *Bacillus cereus* Spores in Kombucha Systems — ALEXANDRIA BROMLEY, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-67 (v) Assessing the Microbial Variability and Chemical Composition in Kombucha during Repeated Brewing Cycles and Refrigerated Storage — ADWOA DANKWA, Lewis Perkins, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-68 Control of Spoilage Microorganisms in Cold Mix and Cold-filled Salad Dressings and Condiments — Upasana Hariram, ANDREA GARCIA, Shivrajsinh Rana, Laura Bautista, Kraft Heinz Company, Glenview, IL, USA
- P1-69 Determination of 5-Log Reduction of Acid Tolerant Pathogens in Cold-Filled Sauces — Upasana Hariram, SHIVRAJSINH RANA, Laura Bautista, Kraft Heinz Company, Glenview, IL, USA
- Dairy**
- P1-70 (v) Development of D- and Z-Values for Shiga Toxin-producing *Escherichia coli* in Cheesemilk to Reduce Pathogen Risks in Cheese Made with Unpasteurized Milk — SARAH ENGSTROM, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- P1-71 Shifts of Microbiota during Cheese Production: Impact on Quality and Safety — JUN HAENG NAM, Yong Sun Cho, Lisbeth Goddik, Si Hong Park, Oregon State University, Corvallis, OR, USA
- P1-72 (v) Characterization of the Microbiome Present in Established Biofilms Collected from Dairy Environments — ANTONIO LOURENCO, Narciso Martin-Quijada, Viktoria Neubauer, Sarah Thalguter, Eva M. Wagner, Martin Wagner, Catherine M. Burgess, Olivia McAuliffe, Kathrin Rychli, Teagasc Food Research Centre, Fermoy, Co., Cork, Ireland
- P1-73 (v) Safety, Technological and Functional Characterization of Lactic Acid Bacteria Isolated from Sheep Milk and Dairy Products — MARKELLA TSIGKRIMANI, Konstantina Panagiotarea, Spiros Paramithiotis, Marios Mataragas, Eleftherios Drosinos, Panagiotis Skandamis, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University, Athens, Greece

- P1-74 (v) Pasteurization of Ice Cream Evaluated Using a Chemiluminescent Assay Measuring Alkaline Phosphatase Activity — AYLVA VAUGHN, Nate Banner, Ronald Sarver, Neogen Corporation, Lansing, MI, USA
- P1-75 Rapid Quantification of *Enterobacteria* in Raw Milk Using Real-Time PCR Methods — STEVEN WAGNER, Matthias Giese, Florian Priller, Cordt Grönwald, Kornelia Berghof-Jäger, BIOTECON Diagnostics, Potsdam, Germany

Food Chemical Hazards and Food Allergens

- P1-76 (v) Demonstration of Hygiene High Sensitivity SuperSnap ATP Surface Monitoring as an Excellent Proxy Alternative Method for Remediation of True Allergens from Surfaces during Cleaning Verification — Paul Meighan, DELIA CALDERON, Hygiene, Camarillo, CA, USA
- P1-77 (v) Recovery of Gluten Residue from Environmental Swabs Following Specific Storage Times and Temperatures — JESSICA HUMPHREY, Shyamali Jayasena, Steve L. Taylor, Joseph Baumert, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-78 (v) Effectiveness of a Dry-Cleaning Strategy for Removal of Milk and Egg Powder from a Continuous Mixer/Auger System — REBECCA HARRIS, Binaifer Bedford, Riddhi Jain, Xun Guo, Sakshi Gandhi, Lauren Jackson, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P1-79 (v) Occurrence of Aflatoxins in Edible Vegetable Seeds and Oil Samples Available in Retail Markets and Estimation of Dietary Intake in Consumers — SHAHZAD ZAFAR IQBAL, Muhammad Waqas, Wajeaha Pervaiz, Muhammad Rafique Asi, Government College University Faisalabad, Faisalabad, Pakistan
- P1-80 Effects of High Hydrostatic Pressure on Allergenicity and Fish Protein of Mackerel — YI-CHEN LEE, Shao-Lan Chen, Hsien-Feng Kung, Yu-Ru Huang, Yung-Hsiang Tsai, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan
- P1-81 (v) Continued Monitoring of PFAS in U.S. Food Supply — IVAN LENOV, Alexander Domesle, J. Emilio Esteban, United States Department of Agriculture, Food Safety and Inspection Service, St. Louis, MO, USA
- P1-82 Application of a Universal ELISA Method to Detect Aflatoxin B1 in Diverse Commodities with Optimized Extraction Procedures — Gursharan Bakshi, Wondu Wolde-Mariam and Martin Easter, Hygiene, Santa Ana, CA, USA
- P1-83 (v) Comparison of Two Commercial ELISA Kits on Their Efficacy of Detecting Fish Proteins from Nine Different Fish Species Using Two Extraction Buffers — TENGFEI LI, Shyamali Jayasena, Joseph Baumert, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-84 (v) Performance Verification of an ELISA-based Assay and a Rapid Lateral Flow Immunoassay for Specific Quantification and Detection of Almond Protein in Food Matrices, Clean-in-Place (CIP) Rinse Water and Environmental Samples — GABRIELA LOPEZ VELASCO, Patrick Mach, David Mains, 3M, St. Paul, MN, USA
- P1-85 (v) Performance Verification of an ELISA-based Assay Fish Allergen in Asian Matrices — MABEL NG, lee Juan Chin, Jessie Lee, Yan Zhi Tan, Ng Chloe, Romer Labs Singapore Pte. Ltd., Singapore
- P1-86 (v) Performance Verification of an ELISA-based Assay Fish Allergen on Different Environmental Surfaces and Clean-in-Place (CIP) Rinse Water — MABEL NG, lee Juan Chin, Yong Wee Liau, Yan Zhi Tan, Romer Labs Singapore Pte. Ltd., Singapore
- P1-87 (v) Performance Verification of an ELISA-based Assay Milk in Chocolate Matrices — MABEL NG, Yong Wee Liau, Yan Zhi Tan, Romer Labs Singapore Pte. Ltd., Singapore

- P1-88 (v) Evaluation of Allergens in a Survey of Frozen Meals and Meals Ready-to-Eat (MREs) — Weilin Shelver, Amy McGarvey, KATHLEEN YEATER, U.S. Department of Agriculture, Fort Collins, CO, USA

Low-water Activity Foods

- P1-89 (v) USDA-FSIS Validation of Sodium Chloride Replacement in Biltong Marinade to Achieve >5-Log Reduction of *Salmonella* — CAITLIN KAROLENKO, Peter Muriana, Oklahoma State University, Stillwater, OK, USA
- P1-90 (v) Performance Evaluation of the Hygiene™ BAX® System for *E. coli* O157:H7 in Tree Nuts — VICTORIA KUHNEL, Julie Weller, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiene Company, New Castle, DE, USA
- P1-91 Effect of Flow Rate on *Salmonella* Removal in a Simple Model Peanut Butter Push-Through System — XIYANG LIU, Nathan Anderson, Susanne Keller, Elizabeth Grasso-Kelley, Illinois Institute of Technology, Institute of Food Safety and Health, Bedford Park, IL, USA
- P1-92 (v) Efficacy of UV-C Treatment to Inactivate *Salmonella* on Seeds, Treenuts and Their Flours — Rajat Sharma, Amandeep Singh, MD. ASFAKUR RAHMAN, Veerachandra Yemmireddy, University of Texas Rio Grande Valley, Edinburg, TX, USA
- P1-93 (v) Consumption of Raw Flour in the U.S.: Results from the 2019 FDA Food Safety and Nutrition Survey — LINDA VERRILL, Amy Lando, Fanfan Wu, Aparna Tatavarthy, Sheila Pack Merriweather, Donald Obenhuber, U.S. Food and Drug Administration, College Park, MD, USA
- P1-94 Fate of *Salmonella* and Shiga Toxin-producing *E. coli* (STEC) on Soft Wheat Kernels during Tempering — YAWEI LIN, Senay Simsek, Teresa Bergholz, Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI, USA
- P1-95 (v) Assessment of Consumer Flour Thermal Treatments on the Reduction of *Salmonella* — KASEY NELSON, Ian Hildebrandt, Michael James, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P1-96 (v) A Meta-Analysis of the Effect of Water Activity on the Thermal Inactivation of Different Microorganisms in Low Moisture Foods — YADWINDER SINGH RANA, Long Chen, Lynn Johnson, Abigail B. Snyder, Cornell University, Ithaca, NY, USA
- P1-97 (v) Impact of Water Activity Alteration during Heating and Extended Storage on Thermal Resistance of *Salmonella* in Almond Meal — Meijun Zhu, Xia Song, Hsieh-Chin Tsai, XIAOYE SHEN, Juming Tang, Washington State University, Pullman, WA, USA
- P1-98 (v) Effect of Relative Humidity on the Survival Kinetics of *Salmonella* in Different Treenut Flours — Rajat Sharma, Amandeep Singh, VEERACHANDRA YEMMIREDDY, University of Texas Rio Grande Valley, Edinburg, TX, USA
- P1-99 *Salmonella* and *Escherichia coli* Populations in Wheat Kernels are Reduced Following Tempering in Lactic Acid and Novel Lactic Acid Solutions — DANIEL UNRUH, Sara LaSuer, Luke Brown, Robert Ames, Corbion, Lenexa, KS, USA
- P1-100 (v) Thermal Resistance of *Bacillus* spp. in Naturally Contaminated Mesquite Flour with Two Water Activities — XUETONG FAN, Jessica Baik, Joshua Gurtler, USDA, ARS, Eastern Regional Research Center, Wyndmoor, PA, USA

- P1-101 (v) Radio Frequency Pasteurization Against *Salmonella* and *Listeria monocytogenes* in Cocoa Powder — Kenneth Ballom, Nitin Dhowlaghar, Hsieh-Chin Tsai, Ren Yang, Juming Tang, Meijun Zhu, ZI HUA, Washington State University, Pullman, WA, USA
- P1-102 Determination of Thermal Inactivation Parameters of *Salmonella* and *Listeria monocytogenes* in Brownie Batter — Phoebe Unger, ARSHDEEP SINGH, Lakshmikantha Channaiah, Aminder Singh Sekhon, Monipel Babb, Yaeseol Yang, Minto Michael, Washington State University, Pullman, WA, USA
- P1-103 Thermal Inactivation of *Enterococcus faecium* NRRL B-2354, *Escherichia coli*, and *Salmonella* in Peanut Butter Cookies at Various Moisture Levels — Rico Suhalm, Abdullatif Tay, Yimare Mativi Elliott, Nicole Cuthbert, ERDOGAN CEYLAN, Mérieux NutriSciences, Crete, IL, USA
- P1-104 (v) Correlation of Intracellular Moisture and Thermal Inactivation Kinetics of Desiccated *Salmonella* at Acidic pH Conditions — PHILIP STEINBRUNNER, Elizabeth Grasso-Kelley, Susanne Keller, Nathan Anderson, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P1-105 (v) Antimicrobial Efficacy of Gaseous Chlorine Dioxide for Inactivation of *Salmonella* and *Enterococcus faecium* NRRL B-2354 on Dried Basil Leaves — TUSHAR VERMA, Monica Ponder, Jennifer Acuff, Sibel Irmak, Jeyam Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-106 (v) Inactivation of *Salmonella* and *Enterococcus faecium* NRRL B-2354 in Black Peppercorn and Cumin Seeds Using Gaseous Chlorine Dioxide Technology — XINYAO WEI, Sibel Irmak, Monica Ponder, Jennifer Acuff, Jeyam Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-107 (v) Survival of *Salmonella* and *Enterococcus faecium* in Spices as Influenced by Water Activity during Storage — YUCEN XIE, Shuang Zhang, Sicheng Sun, Juming Tang, Washington State University, Pullman, WA, USA
- P1-108 Detection of *Salmonella* in Garlic Powder Using the Hygiena™ BAX® System — JULIE WELLER, Victoria Kuhnel, Celina To, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P1-109 Determining the Suitability of *Enterococcus faecium* NRRL B-2354 as a Potential Surrogate for *Salmonella enterica* in Fine Ground Black Pepper — Surabhi Wason, Xinyao Wei, Tushar Verma, JEYAM SUBBIAH, University of Arkansas, Fayetteville, AR, USA
- P1-110 Using Whole Genome Sequencing to Characterize the Genetic Diversity of *Salmonella enterica* Isolated from Raw Inshell Pistachios — ERIKA ESTRADA, Anne-Laure Moyne, Linda J. Harris, University of California Davis, Department of Food Science and Technology, Davis, CA, USA
- P1-111 Efficacy of Gaseous Chlorine Dioxide Against *Salmonella enterica* and *Enterococcus faecium* NRRL B-2354 on Chia Seeds — Surabhi Wason, JEYAM SUBBIAH, University of Arkansas, Fayetteville, AR, USA
- P1-112 (v) Natural Antimicrobials Suitable for Combating Desiccation-resistant *Salmonella enterica* in Milk Powder — AHMED ABDELHAMID, Ahmed Yousef, The Ohio State University, Columbus, OH, USA
- P1-113 Microbial Risks Associated with Soaking and Subsequent Drying of Walnut Kernels — Vanessa Lieberman, ERIKA ESTRADA, Linda J. Harris, University of California, Davis, CA, USA
- P1-114 *Enterobacteriaceae* and Coliform Contamination Patterns in Peanuts Produced and Sold in the Senegalese Peanut Basin — BRIANNA BRITTON, Yurani Granada, Ibrahima Sarr, Jacob Ricker-Gilbert, Jonathan Bauchet, Haley Oliver, Purdue University, West Lafayette, IN, USA
- P1-115 (v) Treatment of Wheat Kernels during Simulated Tempering to Control Foodborne Pathogens — MEGHAN DEN BAKKER, Govindaraj Dev Kumar, Francisco Diez-Gonzalez, University of Georgia Center for Food Safety, Griffin, GA, USA
- P1-116 Evaluation of Charged Chalk as a Seeding Medium of Low-Moisture Powders — KAYLAN HAYMAN, Govindaraj Dev Kumar, Abhinav Mishra, University of Georgia, Griffin, GA, USA
- P1-117 Difference in Growth Rates for Native and Antibiotic-resistant Strains of *E. coli* O26, O121, and O157:H7 — KAYLAN HAYMAN, Govindaraj Dev Kumar, Abhinav Mishra, University of Georgia, Griffin, GA, USA

Meat, Poultry and Eggs

- P1-118 Effects of the Early and Repeated Administration of the Lactic Acid Bacterium *Lactobacillus kefirifaciens* DN1 and the Yeast *Kluyveromyces marxianus* KU140723-05 on the Inhibition of *Salmonella* Enteritidis Colonization in Young Layers — DONGRYEOUL BAE, Kwang-Young Song, Kun-Ho Seo, Konkuk University, Gwangjin-Gu, Seoul, South Korea
- P1-119 Homespun *Salmonella* Biofilms: Invisible Chicken Guests in the Kitchen — CLAUDIA ALEJANDRA PEGUEROS-VALENCIA, Jose Eduardo Lucero-Mejia, Sofia Arvizu-Medrano, Montserrat Hernandez-Iturriaga, Angélica Godínez-Oviedo, Universidad Autonoma de Queretaro, Queretaro, QA, Mexico
- P1-120 (v) SMART Design of a Multi-Receptor Phage Cocktail to Tackle *Salmonella* in Poultry — CARLOS MARTINEZ-SOTO, Hany Anany, Cezar Khursigara, University of Guelph, Guelph, ON, Canada
- P1-121 Inhibition of *Clostridium perfringens* during Cooling of Model Uncured Poultry Products Using Combinations of Lactate, Diacetate, and Propionate — CYNTHIA AUSTIN, Max Golden, Jeffrey Sindelar, Steven Ricke, Kathleen Glass, Meat Science & Animal Biologics Discovery, University of Wisconsin-Madison, Madison, WI, USA
- P1-122 Novel Multi-Strain Probiotics Reduces *Pasteurella multocida* Induced Fowl Cholera Mortality in Broilers: A Randomized Control Study — RINE CHRISTOPHER REUBEN, Shovon Lal Sarkar, Habiba Ibnat, Pravas Roy, Md Ali Ahasan Setu, Iqbal Jahid, Jashore University of Science and Technology, Jashore, Bangladesh
- P1-123 Bio-Mapping of Pathogens and Indicator Organisms throughout the Poultry Processing Chain Using Hygiena's Microsnap™ and BAX® System SalQuant™, and bioMérieux Tempo® Methods — SAVANNAH APPLIGATE, Tyler Stephens, April Englishbey, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA
- P1-124 *Salmonella* Quantification (SalQuant™) with the Hygiena™ BAX® System for Ground Turkey — JULIE WELLER, Victoria Kuhnel, Stacy Stoltenberg, April Englishbey, Anastasia Likanchuk, Melody Thompson, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P1-125 (v) Evaluation of Ozonated Water as a Microbial Decontamination Strategy for Chicken Parts — CARMEN CANO, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-126 Efficacy of Multiple Sequential Interventions at Different Concentrations of Peracetic Acid on *Salmonella* and *Campylobacter* on Chicken Wings — AMANDA MOLLER, Jasmine Kataria, Sasikala Vaddu, Cortney Leone, Thiago Sakemoto Belem, Anju Singh, Manpreet Singh, Harshavardhan Thippareddi, University of Georgia, Athens, GA, USA

- P1-127 Shelf-Life Extension of Raw Chicken Drumsticks by Injection Application of Vinegar- and Ferment-based Antimicrobial Solutions — DANIEL UNRUH, Sara LaSuer, Robert Ames, Sean Baker, Garrett McCoy, Corbion, Lenexa, KS, USA
- P1-128 Impact of Set-up Temperatures and Pump Rates for Survival of *Salmonella* and the Surrogate *Enterococcus faecium* in Moisture-Enhanced, Reconstructed Chicken Patties after Double Pan-Broiling — WENTAO JIANG, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P1-129 Application of Peroxyacetic Acid in Combination with an Acidifier Post-Defeathering for Reduction of *Campylobacter* from Broiler Chicken — ANDREA URRUTIA GIRON, Amrit Pal, Alexandra Jackson, Dianna Bourassa, Auburn University, Auburn, AL, USA
- P1-130 Efficacy of On-Site Generated Peroxyacetic Acid (PAA) in Reducing *Salmonella* and *Campylobacter* Populations on Chicken Wings — SASIKALA VADDU, Jasmine Kataria, Thiago Sakemoto Belem, Gaganpreet Sidhu, Amanda Moller, Cortney Leone, Manpreet Singh, Harshavardhan Thippareddi, University of Georgia, Athens, GA, USA
- P1-131 Efficacy of Peracetic Acid Gel Against *Salmonella* Typhimurium Inoculated on Chicken Skin — AFTAB SIDDIQUE, Charles Herron, Indira Torres, Laura Garner, Amit Morey, Auburn University, Auburn, AL, USA
- P1-132 (v) Pathogens Turn Hypervirulent during Colonization of Food: *Salmonella* Enteritidis in Egg as an Example — YUMIN XU, Ahmed Abdelhamid, Ahmed Yousef, The Ohio State University, Columbus, OH, USA
- P1-133 *Salmonella* Quantification of Various Pork Matrices Utilizing Hygiena's BAX® System SalQuant™ — ROSSY BUENO LOPEZ, Savannah Applegate, Stacy Stoltenberg, April Englishbey, Tyler Stephens, Jennifer Wages, Marcos X. Sanchez-Plata, Texas Tech University, Lubbock, TX, USA
- P1-134 Detection and Prevalence of *Salmonella* in Swine Lymph Nodes at Harvest — Morgan Miller, Joshua Maher, SARA GRAGG, Kansas State University, Manhattan, KS, USA
- P1-135 Validation of Post-Harvest Antimicrobial Interventions to Control Shiga Toxin-producing *Escherichia coli* (STEC) on Market Hog Carcass Surfaces — KATIA POZUELO, Daniel Vega, Qing Kang, Kellen Habib, Francisco Najjar-Villarreal, Valentina Trinetta, Travis O'Quinn, Randall Phebus, Sara Gragg, Kansas State University, Manhattan, KS, USA
- P1-136 Creation and Characterization of a Film with a Color pH Indicator Coating to Determine the Spoilage of Beef, Using Bio-Based Materials — ANA ROMERO, Duncan Darby, Julia Sharp, Paul Dawson, Kay Cooksey, Clemson University, Clemson, SC, USA
- P1-137 (v) Occurrence and Distribution of Shiga Toxin-producing and Enterohemorrhagic *Escherichia coli* in Extensive and Intensive Beef Production Chain in Brazil — RAFAELA DE MELO TAVARES, Mallu Jagnow Sereno, Juliano Gonçalves Pereira, Ricardo Seiti Yamatogi, Luciano dos Santos Bersot, Luís Augusto Nero, Universidade Federal de Viçosa, Viçosa, Brazil
- P1-138 Lethality of *Salmonella* during the Drying of Restructured Beef Jerky — ASHLEY CAVALLO, Jessica Brown, Jason Scheffler, University of Florida, Gainesville, FL, USA
- P1-139 (v) *Escherichia coli* O157:H7 and *Salmonella* Occurrence in Raw Ground Beef Samples Collected at Retail — STEPHEN W. MAMBER, Kristina Barlow, Thomas Collaro, U.S. Department of Agriculture – FSIS, Washington, D.C., USA
- P1-140 (v) STEC Screening & Identification in Raw Beef: 8 Hour Foodproof® STEC Method Now AOAC-RI PTM Approved — Stefanie Wendrich, Hanna Hartenstein, Ivo Meier-Wiedenbach, STEVEN WAGNER, Astrid Grönwald, Cordt Grönwald, Kornelia Berghof-Jäger, BIOTECON Diagnostics, Potsdam, Germany
- P1-141 Using a Limits Approach to Detect Specific Levels of *Salmonella* in Beef Trim and MicroTally™ Swabs with the Hygiena™ BAX® System — JULIE WELLER, Victoria Kuhnel, Stacy Stoltenberg, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P1-142 (v) Use of New Markers for Precise Detection of Pathogenic Shiga Toxin-producing *Escherichia coli* — JOSEPH BOSILEVAC, Marie Bugarel, Miguel Machado, Joao Carriço, Patrice Chablain, Deborah Briese, John Murray, J. Stan Bailey, Vikrant Dutta, USDA/ARS, Clay Center, NE, USA
- P1-143 (v) Fagecapsules, Micro-Encapsulated *Salmonella* Bacteriophages with Targeted Intestinal Release — DACIL RIVERA, Fernando Dueñas, Camila Alfaro, Fernando Gonzalez-Nilo, Yorley Duarte, Aiko Adell, Andrea Moreno-Switt, Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile
- P1-144 Biofilm Formation of *Salmonella* Serovars at Two Temperature Conditions — TOMI OBE, Nikki W. Shariat, University of Georgia, Athens, GA, USA
- P1-145 (v) Does Enriching in Modified Tryptic Soy Broth with Novobiocin Lead to Selection Bias in *Escherichia coli* Populations? — XIANQIN YANG, Frances Tran, Peipei Zhang, Agriculture and Agri-Food Canada, Lacombe, AB, Canada

Molecular Analytics, Genomics and Microbiome

- P1-146 (v) Standardizing the Isolation Source Metadata for the Genomic Epidemiology of Foodborne Pathogens Using LexMapr — MARIA BALKEY, Michael Batz, Gopal Gopinath, Gurinder Gosal, Emma Griffiths, Heather Tate, Ruth Timme, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, College Park, MD, USA
- P1-147 (v) Genotypic Characterization of *Listeria monocytogenes* Isolates Collected through Provincial Dairy Inspection System in British Columbia, Canada from 2007 to 2017 — STEPHANIE BROWN, Rebecca Bland, Lorraine McIntyre, Sion Shyng, Jovana Kovacevic, Oregon State University, Portland, OR, USA
- P1-148 (v) Updated Prevalence and Persistence Evaluation of *Listeria monocytogenes* 4bV Subset — Abigail Kaufmann, Sadra Sepehri, Michael Kauffman, Gireesh Rajashekara, Erin Lipp, Anne Marie Zimeri, R. Scott Rozier, Manan Sharma, Amy R. Sapkota, Shirley A. Micallef, Kalmia Kniel, Salina Parveen, Fawzy Hashem, LAUREL BURALL, KFSAN, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-149 (v) Monitoring the Antimicrobial Resistance Dynamics of *Salmonella enterica* in Healthy Dairy Cattle Populations at the Individual Farm Level Using Whole-Genome Sequencing — LAURA CARROLL, Ariel Buehler, Julie Siler, Kevin Cummings, Rachel Cheng, Martin Wiedmann, European Molecular Biology Laboratory, Heidelberg, Germany
- P1-150 (v) Genomic Diversity of *Salmonella* Mississippi — RACHEL CHENG, Renato Orsi, Martin Wiedmann, Cornell University, Ithaca, NY, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

(v) Virtual

- P1-151 (v) Potential Antimicrobial Resistance Mitigation in Livestock Industry through Production System Management and Animal Breeding — PEIXIN FAN, Lin Teng, Zhengxin Ma, Shinyoung Lee, Corwin Nelson, Joseph Driver, Mauricio Elzo, Christina Boucher, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA
- P1-152 How Does Analytic Approach Impact Pathogen Population Structure When Analyzing Whole Genome Sequence Data? — PETER FERM, Enrique Doster, Ed Seabolt, James Kaufman, Noelle Noyes, University of Minnesota, Department of Veterinary Population Medicine, St. Paul, MN, USA
- P1-153 (v) Direct Detection of *Salmonella* Serotypes from Food Samples – Complete Solution from Sample to Identification with Next-Generation Sequencing — MARIO GADANHO, Tiina Karla, Hanna Lehmusto, Heikki Salavirta, Milja Tikkanen, Thermo Fisher Scientific, Lisbon, Portugal
- P1-154 (v) Precision Metagenomics Using a Hybrid Assembly for Classification of Shiga Toxin-producing *Escherichia coli* in Enriched Agricultural Water — Meghan Maguire, Julie Ann Kase, Andrea Ottesen, Padmini Ramachandran, Mark Mammel, Sandra Tallent, Eric Brown, Marc Allard, Steven Musser, NARJOL GONZALEZ-ESCALONA, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-155 (v) Copper Resistance in *Salmonella*: An Emerging Food Safety Issue — JULIE HAENDIGES, Eric Brown, Rohan Tikekar, Maria Hoffmann, Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-156 (v) Changes in Bacterial and Fungal Components of the Gala Apple Microbiome during Long-Term Storage Conditions — ALEXIS HAMILTON, Faith Critzer, Washington State University, School of Food Science, Prosser, WA, USA
- P1-157 Benchmarking Different Metagenomic Laboratory Pathways Based on Biodiversity Analysis of Environmental Samples Collected from a Chicken Farm — XINYANG HUANG, David L Erickson, Mostafa Ghanem, Jianghong Meng, Department of Nutrition and Food Science, University of Maryland, College Park, MD, USA
- P1-158 (v) Differences in *Salmonella* Survival between Strains in Low Water Activity Environments is Only Partially Explained by Genome Differences — MATTHEW J. IGO, Edward G. Dudley, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P1-159 Genome Sequence Analysis of Stress Tolerant *Listeria monocytogenes* Isolated from Foods and Humans — JUN HAENG NAM, Eiseul Kim, Hyun Jung Kim, Michael Rothrock, Hae-Yeong Kim, Sang-Do Ha, Si Hong Park, Oregon State University, Corvallis, OR, USA
- P1-160 (v) Comparative Genomic Characterization of *Cronobacter* Species Obtained from a German Powdered Infant Formula Production Facility with Other Strains from Europe, Asia, and the United States — HYEIN JANG, Flavia Negrete, Leah Weinstein, Jayanthi Gangiredla, Isha Patel, Katie Ko, Hannah Chase, Samantha Finkelstein, Yi Chen, Roger Stephan, Angelika Lehner, Athmanya Eshwar, Séamus Fanning, Melinda Hayman, Ben Tall, Felix Reich, Gopal Gopinath, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-161 (v) Prevalence of Potentially Enterotoxin and Cereulide-producing *Bacillus cereus* in Selected Food Products — JELENA JOVANOVIC, Svitlana Tretyak, Katrien Begyn, Andreja Rajkovic, Laboratory of Food Microbiology and Food Preservation, Department of Food Technology, Safety and Health, Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium
- P1-162 (v) Lineage-Specific Differences Among *Salmonella enterica* Serovar Javiana Isolates Reveal Environmental Fitness — TOM JURKIW, Julie Haendiges, Rebecca L. Bell, Maria Hoffmann, Jie Zheng, Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-163 (v) Identification of Microbial Flora in Dry-Aged Beef to Evaluate the Rancidity during Dry Aging — SEJEONG KIM, Heeyoung Lee, Jong-Chan Kim, Yohan Yoon, Risk Analysis Research Center, Sookmyung Women's University, Seoul, South Korea
- P1-164 (v) Application of Metagenomic Methods to Define Microbial Diversity and Subtype *Listeria monocytogenes* in Dairy and Seafood Manufacturing Facilities — BRANDON KOCUREK, Karen Jarvis, Christopher Grim, Paul Morin, Laura Howard, Andrea Ottesen, Ruth Timme, Susan R. Leonard, Hugh Rand, Errol Strain, James Pettengill, David W. Lacher, Mark Mammel, Daniel Tadesse, Padmini Ramachandran, U.S. Food and Drug Administration, ORS, Jamaica, NY, USA
- P1-165 (v) Prevalence and Genetic Diversity of *Listeria monocytogenes* Isolated from Whole Fresh Avocado Skins — HEE JIN KWON, Mallory Lovett, Marc Allard, Thomas Hammack, Errol Strain, Ruiqing Pamboukian, Amy Barringer, Eric Brown, Jianghong Meng, Yi Chen, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- P1-166 (v) Evaluation of a Bait-Capture Method for Metagenomic Detection of Shiga Toxin-producing *Escherichia coli* in Environmental Samples — Mark Mammel, Taylor K. S. Richter, David W. Lacher, Michael Kauffman, Solomon Gebru, Cassandra Champ, Gireesh Rajashekara, SUSAN R. LEONARD, Office of Applied Research and Safety Assessment, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-167 (v) Long Read Sequencing for Metagenomic Analysis and Detection of Stecs in Agricultural Water — MEGHAN MAGUIRE, Julie Ann Kase, Eric Brown, Marc Allard, Steven Musser, Narjol Gonzalez-Escalona, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-168 Utilization of Metagenomics for Evaluation of Three Enrichment Procedures for Detection and Isolation of *E. coli* O157:H7 in Mung Bean Sprout Irrigation Water — WILLIS FEDIO, Ruben Zapata, Lyssa White, Susan R. Leonard, David 30 Lacher, Mark Mammel, Office of Applied Research and Safety Assessment, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-169 (v) Microflora Analysis of Bacterial Biofilms in a Meat Processing Facility over an Eight-Week Period — ANNETTE SANSOM, Rob Limburn, Zoe Lambert, Jack Alderton, Alice Foxall, Sam Watts, Campden BRI, Chipping Campden, United Kingdom
- P1-170 (v) Development of a Bioinformatics Plasmid Search Engine for *Cronobacter* Species — FLAVIA NEGRETE, Ben Tall, Hyein Jang, Katie Ko, Leah Weinstein, Jayanthi Gangiredla, Isha Patel, Hannah Chase, Samantha Finkelstein, Mark Mammel, Najib El-Sayed, David W. Lacher, Roger Stephan, Angelika Lehner, Athmanya Eshwar, Séamus Fanning, Gopal Gopinath, U.S. Food and Drug Administration, Laurel, MD, USA

- P1-171 (v) Multidrug-resistant *Salmonella* from Swine Lymph Nodes in Different Brazilian States – A Genomic Approach — Nayla Kellen de Oliveira Ventura, Fábio Sossai Possebon, Cibeli Viana, Everton Cruz de Azevedo, Lorena Natalino Haber Garcia, LUÍS AUGUSTO NERO, Ricardo Seiti Yamatogi, Universidade Federal de Viçosa, Viçosa, Brazil
- P1-172 (v) Genomic Insights into Divergent Evolution of Virulence and Fitness Traits in Shiga Toxin-Producing *Escherichia coli* O121 — MICHELLE QIU CARTER, Antares Pham, USDA, ARS, WRRRC, Albany, CA, USA
- P1-173 Intracompany Proficiency Trial for Whole Genome Sequencing of *Listeria monocytogenes* and *Salmonella enterica* — SARITA RAENGPRADUB, Angela Nguyen, Norman Wiernasz, Phyllis Hu, Jiaojie Zheng, Justin Tanner, Steven Roblin, Yao Amouzou, Wain Wang, Cameron Parsons, Sébastien Leuillet, Mérieux NutriSciences, Crete, IL, USA
- P1-174 Longitudinal Metagenomic Study Correlating Soil Microbial Community and Abiotic Properties with STEC Survival in Soils with and without Untreated Dairy Manure Amendment — TAYLOR K. S. RICHTER, Michael Kauffman, Mark Mammel, David W. Lacher, Susan R. Leonard, Office of Applied Research and Safety Assessment, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-175 Genetic Relatedness of *Salmonella enterica* Serovar Corvallis from Environmental Isolates from Cambodia and Clinical Cases in the United Kingdom — CARLA L. SCHWAN, Timothy J. Dallman, Peter Cook, Jessie Vipham, Kansas State University, Manhattan, KS, USA
- P1-176 (v) Impacts of Manure-derived Fertilizer Application on the Bacterial Community in Raspberry Fields — XIAOYE SHEN, Yuan Su, Chris Benedict, Chad Kruger, Meijun Zhu, Washington State University, Pullman, WA, USA
- P1-177 (v) A *S. enterica* Isolate Persists in an *In Vitro* Simulator of the Human Intestinal Microbial Ecosystem (SHIME®) Model and Disrupts the Gut Metabolome — CEYLON SIMON, Alfred Ke, Ives Ivusic Polic, Valeria R. Parreira, Gisèle LaPointe, Lawrence Goodridge, Canadian Research Institute for Food Safety (CRIFS), Department of Food Science, University of Guelph, Guelph, ON, Canada
- P1-178 (v) Evaluation of *Salmonella* Serotype Prediction with Multiplex Nanopore Sequencing — XINGWEN WU, Hao Luo, Feng Wu, Chongtao Ge, Shaoting Li, Xiangyu Deng, Martin Wiedmann, Robert Baker, Abigail Stevenson, Guangtao Zhang, Silin Tang, Mars Global Food Safety Center, Beijing, China
- P1-179 Evaluation of Nanopore Sequencing Technology to Identify *Salmonella enterica* Choleraesuis Var. Kunzendorf and Orion Var. 15*, 34* — FENG XU, Chongtao Ge, Shaoting Li, Silin Tang, Xingwen Wu, Hao Luo, Xiangyu Deng, Guangtao Zhang, Abigail Stevenson, Robert Baker, Mars Global Food Safety Center, Beijing, China
- P1-180 (v) Pathogenic Characterization of *Listeria monocytogenes* Isolates from Enoki Mushroom and Sequences of *L. monocytogenes* SMFM2019-FV16 Whole Genome — Suyoun Choi, Yukyung Choi, Kyoung-Hee Choi, YOCHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P1-181 (v) Phenotypic and Genotypic Characterization of *Salmonella* Resistance within the U.S. Food and Drug Administration's Foods Program — SHENIA YOUNG, Kelly Domesle, Gregory Tyson, Chih-Hao Hsu, Errol Strain, Mercedes Loftis, Traci Bickell, Michael Maselli, Celicia Brown, Stephanie Rogers, Marie Buen-Bigornia, Lisa Michel, Omara Ousley, Connie Kiessling, William Kiessling, Kathy Watts, Ebony Laster, Doris Farmer, Joshua Armstrong, Heather Tate, Jason Abbott, Patrick McDermott, Bellei Ge, U.S. Food and Drug Administration – Center for Veterinary Medicine, Laurel, MD, USA
- P1-182 Characterization of Microbial Community Dynamics and Detection of *Listeria* in Food Manufacturing Facilities Using 16S rRNA Gene Sequencing — PADMINI RAMACHANDRAN, James Pettengill, Karen Jarvis, Christopher Grim, Paul Morin, Laura Howard, Ruth Timme, Susan R. Leonard, Hugh Rand, Daniel Tadesse, Errol Strain, Mark Mammel, Andrea Ottesen, Brandon Kocurek, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, Office of Regulatory Science, College Park, MD, USA
- Seafood**
- P1-183 Application of a Mitochondrial Sequence Profiling Tool (MitoKmer) to Identify Imported Seafood from Metagenomic Sequences — PADMINI RAMACHANDRAN, Brandon Kocurek, Elizabeth Reed, Karen Jarvis, Christopher Grim, Paul Morin, Laura Howard, Ruth Timme, Susan R. Leonard, Daniel Tadesse, Errol Strain, Andrea Ottesen, Mark Mammel, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, Office of Regulatory Science, College Park, MD, USA
- P1-184 (v) Detection and Survival of *Listeria monocytogenes* on Seaweed (Sugar Kelp) during Storage — SAMUEL AKOMEA-FREMPONG, Denise Skonberg, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-185 (v) The Effect of Dry Salting and Brining on the Physico-chemical and Microbial Properties of Sugar Kelp — RICHA ARYA, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-186 (v) Population Dynamics of *Vibrio*, Oyster Microbiome and Effects of Aquaculture Practices — ESAM ALMUHAIDEB, Salina Parveen, Shah Rashed, Nur Hassan, University of Maryland Eastern Shore, Princess Anne, MD, USA
- P1-187 (v) Qualitative Application of Fourier Transform Near-Infrared (FT-NIR) for Freshness Assessment of Fresh Shrimps (*Litopenaeus setiferus*) — Imran Ahmad, TONI-ANN BENJAMIN, Florida International University, Miami, FL, USA
- P1-188 Bacteriophages Reduce *Listeria* Contamination in RTE Seafoods — Sonali Sirdesai, Alessandra Moncho, Joël van Mierlo, SOFIA FENG, Robin Peterson, Microcos, Atlanta, GA, USA
- P1-189 (v) Optimization of *Carcinus maenas* Fermentation — DELANEY GREINER, Denise Skonberg, Lewis Perkins, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-190 The Power of Good Bacteria: A Natural Food Safety Hurdle for *Listeria monocytogenes* Inhibition on Smoked Salmon — Besnik Hidri, Jenny Triplett, Luc Cherion, DIRK HOFFMANN, Veronique Zuliani, Chr. Hansen, Pohlheim, Germany
- P1-191 Efficacy of Phage Intervention Against *Salmonella* on Salt and Fresh-Water Fish — Alessandra Moncho, Sonali Sirdesai, Joël van Mierlo, ROBIN PETERSON, Sofia Feng, Microcos, Alpharetta, GA, USA
- P1-192 (v) Prevalence of Antibiotic-resistant Bacteria in Retail Shrimp — Laxmi Sharma, Charlene Jackson, Ravinder Nagpal, PRASHANT SINGH, Florida State University, Tallahassee, FL, USA

TUESDAY POSTERS 8:30 A.M. – 6:15 P.M.

P2 POSTER SESSION 2

Food Toxicology
General Microbiology
Laboratory and Detection Methods
Microbial Food Spoilage
Pre-Harvest Food Safety
Produce
Sanitation and Hygiene
Viruses and Parasites
Water

Phoenix Convention Center, Exhibit Hall

P2-01 through P2-91 – Authors present 10:00 a.m. – 11:30 a.m. and 5:15 p.m. – 6:15 p.m.

P2-92 through P2-191 – Authors present 2:15 p.m. – 3:45 p.m. and 5:15 p.m. – 6:15 p.m.

Food Toxicology

- P2-01 (v) Multi-Mycotoxin Occurrence in Asia Spices — MABEL NG, lee Jiuan Chin, Jessie Lee, Sharon Loh, Romer Labs Singapore Pte. Ltd., Singapore
- P2-02 (v) Multidetermination of Nitrofurans and Chloramphenicol in Food and by Enzyme-Linked Immunosorbent Assay — MABEL NG, Yan Zhi Tan, Yong Wee Liau, Belvick Lee, Romer Labs Singapore Pte. Ltd., Singapore
- P2-03 Withdrawn

General Microbiology

- P2-04 Changes in Sensitivity to Quaternary Ammonium Compound (QAC) in Seven *Listeria monocytogenes* Strains after Exposure to Gradually Increasing Concentrations — DIVYA KODE, Ramakrishna Nannapaneni, Mohit Bansal, Wen-Hsing Cheng, Chander Shekhar Sharma, Aaron Kiess, Mississippi State University, Mississippi State, MS, USA
- P2-05 **Developing Standard Reference Libraries of *Listeria monocytogenes* and *Escherichia coli* O157:H7 Using an Affordable Custom Assembled Hyper Spectral Imaging System** — Phoebe Unger, AMNINDER SINGH SEKHON, Xiongzhi Chen, Minto Michael, Washington State University, Pullman, WA, USA
- P2-06 (v) **Understanding Bacteria Adhesion and Biofilm Formation on Different Surfaces Using a Center for Disease Control and Prevention (CDC) Biofilm Reactor** — ERIN MANVILLE, Kaity Rhine, Ellen Mendez, Valentina Trinetta, Dan Boyle, Kansas State University – Food Science Institute, Manhattan, KS, USA
- P2-07 Changes in Sensitivity to Ciprofloxacin in Seven *Listeria monocytogenes* Strains after Exposure to Gradually Increasing Concentration of Quaternary Ammonium Compound — DIVYA KODE, Ramakrishna Nannapaneni, Mohit Bansal, Wen-Hsing Cheng, Chander Shekhar Sharma, Aaron Kiess, Mississippi State University, Mississippi State, MS, USA
- P2-08 (v) Sanitizer Tolerance and Attachment Capacity of Non-Outbreak and Outbreak-Associated *Salmonella enterica* Isolates from Multiple U.S. Outbreaks — ARIEL MARTIN, Andrea Etter, The University of Vermont, Burlington, VT, USA
- P2-09 **Cold Shock Domain Family Proteins: Investigation of Phenotypes and Regulons in *Listeria monocytogenes*** — FRANCIS MUCHAAMBA, Athmanya Eshwar, Ueli von Ah, Marc J.A. Stevens, Roger Stephan, Taurai Tasara, Institute for Food Safety and Hygiene, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland
- P2-10 Identification and Characterization of a *Salmonella enterica* Plasmid That Confers Increased Resistance to Bacteriophages — JOHN MCFARLANE, Eleanore Hansen, Steven Bowden, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN, USA
- P2-11 **Efficacy of Different Bacteriophage Multiplicities of Infection Against *Salmonella enterica*** — CATHERINE WONG, Siyun Wang, Food, Nutrition and Health, University of British Columbia, Vancouver, BC, Canada
- P2-12 (v) **Novel Approach-based on Mathematical Modeling for Determination of the Lytic Capacity of Two Bacteriophages in a Model of *Salmonella* Infantis** — ROCÍO BARRÓN, Rodrigo García, Dacil Rivera, Fernando Dueñas, Andrea Moreno-Switt, Universidad de Concepción, Concepción, Chile
- P2-13 A Comparison of *Salmonella* Survival and Detection Using an Enrichment Technique in Dry and Wet Inoculated Rendered Chicken Fat Treated with Sodium Bisulfate (SBS) — JANAK DHAKAL, Charles. G. Aldrich, Virginia Tech University, Blacksburg, VA, USA
- P2-14 (v) Evaluation of an Ozonated Water Spray on Microbial Decontamination of Domestic Kitchen Surfaces — Grace Gatima Mahoro, CARMEN CANO, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA
- P2-15 **Validation of the Baking Step to Control *Salmonella* and *Listeria monocytogenes* in Brownies** — PHOEBE UNGER, Lakshmikantha Channaiah, Arshdeep Singh, Amninder Singh Sekhon, Monipel Babb, Yaeseol Yang, Minto Michael, Washington State University, Pullman, WA, USA
- P2-16 (v) Microbiological Load of Edible Insects Sold in South-eastern Brazil — PRISCILA ALMEIDA, Thiago S. Santos, Daniele F. Maffei, University of Sao Paulo, Piracicaba, Brazil
- P2-17 (v) Ensuring *Escherichia coli* Possessing Colibactin Genes (*clb*) Linked to Colorectal Cancer Do Not Become a Food Safety Problem for Beef — MANITA GURAGAIN, John Schmidt, Norasak Kalchayanand, Joseph Bosilevac, U.S. Department of Agriculture, Hastings, NE, USA
- P2-18 (v) Growth of *Staphylococcus aureus* in Raw Fish over Time at Non-Refrigerated Conditions — CHRISTIE HANCOCK, Stephanie Nguyen, Balasubrahmanyam Kottapalli, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA
- P2-19 (v) **Efficacy of Peracetic Acid (PAA) on Agricultural Irrigation Water to Reduce Microbiological Pathogens and Indicators** — JESSICA L. DERY, Natalie Brassill, Zoe Scott, Manan Sharma, Seongyun Kim, Channah Rock, University of Arizona, Dept. of Environmental Science, Maricopa Agricultural Center, Maricopa, AZ, USA
- P2-20 Characterization of Novel *Salmonella* Bacteriophages Isolated from Wastewater for Use in Food Protection — ELEANORE HANSEN, Jacob Vitt, Steven Bowden, Department of Food Science and Nutrition, University of Minnesota, St. Paul, MN, USA
- P2-21 (v) Quasi-Metagenomic Comparison of Lactose and Universal Preenrichment Broths for *Salmonella* Detection in Spent Sprout Irrigation Water — ELIZABETH REED, Padmini Ramachandran, Andrea Ottesen, Jacob Marogi, Eric Brown, Hua Wang, Thomas Hammack, Jie Zheng, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P2-22 (v) **Growth Kinetics of *Salmonella enterica* on Heat-treated Potatoes during Storage** — PRAVALIKA LINGARED-DYGARI, Megan Fay, Amiya Patel, Jiaoyan Hu, Joelle K. Salazar, Girvin Liggans, Institute for Food Safety and Health, Illinois Institute of Technology, Bedford Park, IL, USA

- P2-23 (v) Can Probiotics be Used as Biotechnological Tools to Increase Bioaccessible Phenolics in Soursop Fruit Pulp? — Bianca Beatriz Torres de Assis, Aline Macedo Dantas, Marcos dos Santos Lima, Graciele da Silva Campelo Borges, MARCIANE MAGNANI, Federal University of Paraiba, Joao Pessoa, Paraiba, Brazil
- P2-24 (v) Microbial Diversity in Naturally Fermented Fruits from Brazilian Caatinga Biome — Elvira de Lourdes Chaves Macêdo, Rosane Freitas Schwan, Disney Ribeiro Dias, MARCIANE MAGNANI, Federal University of Paraiba, Joao Pessoa, Paraiba, Brazil
- P2-25 (v) Presence of *Clostridium difficile* in Fresh Mushrooms at Retail Stores in Spain — CRISTINA RODRIGUEZ DIAZ, Bernard Taminiu, Eduardo Garcia Fuentes, Nicolas Korsak, Georges Daube, IBIMA, Málaga, Spain
- P2-26 Withdrawn
- P2-27 (v) Surrogate and Baking Validation of *Salmonella enterica*, *Listeria monocytogenes*, and *Enterococcus faecium* in Sunflower Seed Crackers — JENNIFER TODD-SEARLE, Sarah Pappas, Kelly Poltrok-Germain, Nancy Bontempo, Mondélez International, East Hanover, NJ, USA
- P2-28 **Effect of Extended Storage on the Survivability and Thermal Resistance of *Listeria monocytogenes* in Dry and Hydrated Milk Powders** — YAESEOL YANG, Amninder Singh Sekhon, Arshdeep Singh, Phoebe Unger, Monipel Babb, Minto Michael, Washington State University, Pullman, WA, USA
- P2-29 Effect of Water Droplet Size and pH on the Growth and Survival of *Enterococcus faecium* in Margarine and Spread Products — MAY YEOW, Luis Espinoza, Judy Chen, Joseph Higgs, Mark Nugent, Rob Beauseau, Ventura Foods, Brea, CA, USA
- P2-30 **Testing an Affordable Hyperspectral Imaging System for Rapid Identification of Pathogens in Dairy Products** — PHOEBE UNGER, Amninder Singh Sekhon, Xiongzhi Chen, Minto Michael, Washington State University, Pullman, WA, USA
- P2-31 Prevalence and Antibiotic Susceptibility of *Salmonella enterica* Isolated from Meats and Their Related Samples in a One-Health Concept — FREDERICK ADZITEY, Martin Aduah, Rejoice Ekli, University for Development Studies, Tamale, Ghana
- P2-32 (v) **Antimicrobial Activities and Genotyping of Probiotic Lactobacilli in Nigerian Fermented Condiments as Potential Starter Cultures for Improved Food Safety** — YEMISI OBAFEMI, Solomon Oranusi, Kolawole Ajanaku, Paul Akinduti, Covenant University, Ota, Nigeria
- P2-33 (v) **Fate of *Listeria monocytogenes* on Citric Acid-treated Hard-cooked Eggs** — HUI ZENG, Joelle K. Salazar, Megan Fay, Diana Stewart, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA
- Laboratory and Detection Methods**
- P2-34 AOAC Emergency Response Validation of the TEMPO YM® Method for Enumeration of Yeast and Mold in Cannabis Flower: AOAC *Performance Tested Method*™ 041001 — John Mills, J. STAN BAILEY, Ron Johnson, bioMérieux, Inc., Athens, GA, USA
- P2-35 The Fit-for-Purpose Evaluation of the Bact/ALERT System for the Detection of Microbial Detection in a Variety of Plant-based Alternative Dairy Beverages — Patricia Rule, Michelle Keener, J. STAN BAILEY, bioMérieux, Inc., Athens, GA, USA
- P2-36 **Quantification of *Campylobacter jejuni* in Poultry Processing Rinses Utilizing Shortened Enrichment Times and RT-PCR** — AARON BODIE, Dana Dittoe, Savannah Applegate, Tyler Stephens, Steven Ricke, Meat Science & Animal Biologics Discovery, University of Wisconsin-Madison, Madison, WI, USA
- P2-37 **Determination of Detection Limits of a Commercial RT-PCR for *Campylobacter jejuni* in Poultry Rinsates** — AARON BODIE, Dana Dittoe, Savannah Applegate, Tyler Stephens, Steven Ricke, Meat Science & Animal Biologics Discovery, University of Wisconsin-Madison, Madison, WI, USA
- P2-38 Evaluation of the Hygiena™ BAX® System for the Detection of *Salmonella* and *L. monocytogenes* in Plant-based Meat Substitutes — JULIE WELLER, Victoria Kuhnel, Anastasia Likanchuk, Erin Dreyling, AJ McCardell, Hesham Elgaali, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-39 Method Validation of Shelled Pecans for *Salmonella* and *Listeria monocytogenes* Using the Hygiena™ BAX® System — JULIE WELLER, Victoria Kuhnel, Stacy Stoltenberg, Anastasia Likanchuk, Ryan Morrow, Cody Kiniry, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-40 Validation of a PCR Workflow Combining Wet-Pooling and Real-Time PCR for *Salmonella* Detection in Large Test Portions of Cocoa and Chocolate Products — Wesley Thompson, David Crabtree, Benjamin Bastin, Kateland Koch, MATTHEW HAHS, Daniele Sohier, Thermo Fisher Scientific, Lenexa, KS, USA
- P2-41 AOAC Validation Study of a Real-Time PCR Workflow for *Salmonella* Detection in Large Test Portions of Cocoa and Chocolate Products — Wesley Thompson, David Crabtree, Benjamin Bastin, Kateland Koch, MATTHEW HAHS, Daniele Sohier, Thermo Fisher Scientific, Lenexa, KS, USA
- P2-42 (v) Emergency AOAC PTM Certification of a Method to Detect for SARS-CoV-2 from Environmental Surfaces — Patrick Stephenson, David Crabtree, Daniele Sohier, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P2-43 Evaluation of Hygiena's New BAX® System Real-Time PCR Assay for *E. coli* O157:H7 Exact in Meat, Produce and Raw Dairy Matrices — Nisha Corrigan, Joe Benzinger, Benjamin Bastin, Paige Minka, VICTORIA KUHNEL, Priyanka Surwade, Julie Weller, Hygiena, New Castle, DE, USA
- P2-44 (v) Internal Validation of the Hygiena™ BAX® System for *E. coli* O157:H7 and *Salmonella* from Ready-to-Eat Chicken Sausage — VICTORIA KUHNEL, Julie Weller, Erin Dreyling, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-45 (v) Analysis of Individual and Pooled Environmental Samples Using the Hygiena™ BAX® System PCR Assays for Genus *Listeria* and *L. monocytogenes* — VICTORIA KUHNEL, Karina Aguilar, Julie Weller, Stacy Stoltenberg, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-46 **Development of a Novel Plating Medium for Selective and Differential Identification of *Escherichia albertii* from *E. coli* and *Salmonella enterica*** — SAMUEL ANNOR, Thomas Taylor, Texas A&M University, College Station, TX, USA
- P2-47 (v) Variability in the Detection of *Campylobacter jejuni* in Unpasteurized Dairy Milk By the FDA-BAM Method — Uma Babu, Lisa Harrison, Ariana Simeone, Marion Pereira, Kelli Hiett, KANNAN BALAN, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

(v) Virtual

- P2-48 (v) Advantages of Rapid ATP Sterility Testing Using Hygiena Innovate System for UHT and ESL Alternative Milk-based Products Compared to pH and Standard Plating — Paul Meighan, RAFAEL BARAJAS, Hygiena, Camarillo, CA, USA
- P2-49 Development of a Targeted Real-Time qPCR through the Isolation of the Microbiome of Select Sports Drinks — Emily Anschlowar, Matthew Brennan, Hunter Smith, NICOLE BARROW, Adam Joelsson, Benjamin Pascal, Vikrant Dutta, Body Armor, Whitestone, NY, USA
- P2-50 Evaluation of the GENE-UP® *Escherichia coli* O157:H7 Method for the Detection of *Escherichia coli* O157:H7: Collaborative Study — John Mills, Ron Johnson, Jean-Louis Pittet, J. Stan Bailey, PATRICK BIRD, Maria Nelson, Maryse Rannou, PMB BioTek Consulting, West Chester, OH, USA
- P2-51 Development of a Paper-based Test for Discrimination of *Listeria* spp. — CODI JO BROTEN, Bledar Bisha, University of Wyoming, Laramie, WY, USA
- P2-52 Performance Evaluation of Fluorescence Resonance Energy Transfer-based Real-Time PCR for Detection of *Salmonella* Enteritidis and Typhimurium — Nikki Taylor, Samoa Asigau, Louisiane Giovanetti, Marie Bugarel, VIKRANT DUTTA, John Mills, Ron Johnson, J. Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA
- P2-53 (v) Hygiena MicroSnap Total Viable Count Detection System Correlation with Standard Methods from Eighty-Eight Different Food Matrices Covering Dairy, Protein, Produce, Water and Miscellaneous — Paul Meighan, DELIA CALDERON, Hygiena, Camarillo, CA, USA
- P2-54 (v) Influence of Surface Morphologies of Fresh Produce on the Detection of *S. Typhimurium* Using a Phage-based Square Planar Inductor System — IN YOUNG CHOI, Si Eun Kang, So-Hui Park, Ye-Rim Park, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- P2-55 Comparative Evaluation of Hygiena's BAX® Real-Time PCR Assays for the Detection of Shiga Toxin *E. coli* (STEC) Against the ISO/TS 13136 Reference Method — NISHA CORRIGAN, Maryse Rannou, Lizaig Gouguet, Florian Quero, Hugo Gonzalez, Thomas Moeller, Hygiena, New Castle, DE, USA
- P2-56 (v) *Listeria* Confirmation with a New Platform of Mass Spectrometry Instruments for Microorganism Identification — Markus Timke, Karl Otto Kraeuter, OLAF DEGEN, Thomas Maier, Bruker Daltonics GmbH & Co. KG, Bremen, Germany
- P2-57 (v) *Salmonella* Confirmation and Strain Typing with a Two-Step Detection Solution Using Mass Spectrometry and Infrared Spectroscopy in Combination — Markus Timke, Miriam Cordovana, OLAF DEGEN, Thomas Maier, Bruker Daltonics GmbH & Co. KG, Bremen, Germany
- P2-58 (v) Validation of an Alternative Method for the Detection of *Escherichia coli* O157:H7 in Sprouts in Comparison with FDA Bacteriological Analytical Manual (BAM) Method — XIAOHONG DENG, Eric Brown, Thomas Hammack, Guodong Zhang, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P2-59 Evaluation of Molecular Methods for Detection of *Salmonella enterica* in Green Chile — Raghda Kailany, WILLIS FEDIO, New Mexico State University, Las Cruces, NM, USA
- P2-60 Validation of a Real-Time PCR Assay for Rapid Quantification of *Salmonella* in Commercial Ground Turkey Meat Samples — LAURA GARNER, Charles Herron, Aftab Siddique, Adam Joelsson, Vikrant Dutta, Heath LaFeviers, John Mills, Amit Morey, Auburn University, Auburn, AL, USA
- P2-61 AOAC-PTM Validation of the New Genedisc® Method for the Combo Detection of *Campylobacter* and *Salmonella* in Poultry Plants — Wesley Thompson, Benjamin Bastin, Christelle Nahuet, Stéphane Bonilla, Erin Crowley, SYLVIE HALLIER-SOULIER, Pall GeneDisc Technologies, Bruz, France
- P2-62 (v) Detection of Viable *Listeria monocytogenes* at Low Concentrations Using Whole Genome Amplification and Subsequent Polymerase Chain Reaction — HONGSHENG HUANG, Sohail Naushad, Alyssa Lee, Krishna Gelda, Fengcheng Sun, Jennifer Paquette-Stephenson, Ashley Mulvihill, Dele Ogunremi, Ottawa Laboratory – Fallowfield, Canadian Food Inspection Agency, Ottawa, ON, Canada
- P2-63 Evaluation of the GENE-UP® *Listeria monocytogenes* Method for the Detection of *Listeria monocytogenes* and the GENE-UP® *Listeria* spp. Method for the Detection of *Listeria* Species: Collaborative Study — Ron Johnson, JOHN MILLS, J. Stan Bailey, Jean-Louis Pittet, Patrick Bird, Maria Nelson, Olivier Mathia, bioMérieux, Inc., Hazelwood, MO, USA
- P2-64 Withdrawn
- P2-65 (v) Improvement of DNA Extraction from *Vibrio vulnificus* by Development of Membrane Lysis Buffer — JOOHYUN KANG, Jung-eun Hwang, Jei Oh, Yohan Yoon, Sookmyung Women's University, Seoul, Korea
- P2-66 (v) Development of Lysis Buffer to Improve DNA Extraction Efficiency for *Escherichia coli* — JOOHYUN KANG, Jung-eun Hwang, Jei Oh, Yohan Yoon, Sookmyung Women's University, Seoul, Korea
- P2-67 Real-Time Detection of Norovirus Capsid Protein with an OmpG Nanopore — MINJI KIM, Min Chen, Matthew D. Moore, University of Massachusetts Amherst, Amherst, MA, USA
- P2-68 (v) Matrix Evaluation Level Assessment Tool Case Study: Detection of *Salmonella* in Leaf Tea — Jordan Ramsby, Jessica Lodico, Megan Brown, J. DAVID LEGAN, Eurofins Microbiology Laboratories, Inc., Madison, WI, USA
- P2-69 Rapid Detection of Multiple Foodborne Pathogens in Complex Metagenomic Datasets — LI MA, Marie Sharp, Andres Espindola, Shefali Dobhal, Guodong Zhang, Oklahoma State University, Stillwater, OK, USA
- P2-70 (v) Influence of Salt Content in Processed Foods for Next-Day *Listeria monocytogenes* Screening — Carol Sivey, CAITLIN MACKKEY-QUICK, Nestle Quality Assurance Center, Dublin, OH, USA
- P2-71 (v) Performance Evaluation of a Loop-Mediated Isothermal Amplification (LAMP)-bioluminescent Assay for Rapid Detection of *Campylobacter* in Poultry from Brazilian Reference Laboratory — DAIANE MARTINI, Sylnei Santos, Camila Camargo Drummond, 3M, Chapecó, Brazil
- P2-72 Detection of Inoculated SARS-CoV-2 Virus Analogue from the Surfaces of Raw and Heat-Processed Meat Products — Daniel DeMarco, ERICA MILLER, Alex Angel, J. David Legan, Megan Brown, Cynthia Forsman, Richard Higby, Eurofins Microbiology Laboratories, Louisville, KY, USA
- P2-73 Characterization of Stress-Tolerant *Listeria* Species Isolated from Foods — JUN HAENG NAM, Hyun Jung Kim, Jungmin Choi, Michael Rothrock, Hae-Yeong-Kim, Sang-Do Ha, Si Hong Park, Kyung Hee University, Yongin, South Korea

- P2-74 Efficiency of Detection of Human Pathogens through Whole Carcass Enrichment and Rinsed Methods in Organic and Conventional Chicken Using Metagenomic Approach — ANURADHA PUNCHIHEWAGE DON, Nur Hasan, Shah Rashed, Salina Parveen, University of Maryland Eastern Shore, Princess Anne, MD, USA
- P2-75 (v) Detection and Quantitation of Dipicolinic Acid Released from *C. botulinum* Spores Using a Novel, Rapid Liquid Chromatography-Tandem Mass Spectrometry Method — BENJAMIN REDAN, Travis Morrissey, Viviana Aguilar, Catherine Rolfe, Guy Skinner, N. Rukma Reddy, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P2-76 **Withdrawn**
- P2-77 Rapid and Specific Detection of *Staphylococcus aureus* in Milk and Udder Exudate Based on Endolysin-Mediated ATP Release and Bioluminescent Detection — Sebastian Snowberger, David Trudil, Larry Loomis, GREGORY SIRAGUSA, Scout Microbiology LLC, Waukesha, WI, USA
- P2-78 (v) Detection of Aerobic Bacteria from Biofilm on Dried Surfaces Using ATP, Culture, and Selective Microbial Bioluminescent Detection Methods — LINDSEY TABER, Alexandra Garcia, Aderotimi Laniyan, Robert S. Salter, Charm Sciences, Inc., Lawrence, MA, USA
- P2-79 (v) Detection of *Enterobacteriaceae* from Biofilm on Dried Surfaces Using ATP Swab, Culture and Selective Microbial Bioluminescence Detection Methods — LINDSEY TABER, Robert S. Salter, Charm Sciences, Inc., Lawrence, MA, USA
- P2-80 Performance Evaluation of Multiplex Real-Time PCR for Detection of *Salmonella* spp., *Escherichia coli*, and *Staphylococcus aureus* in Nutraceutical and Dietary Supplement Matrices — OLIVIA TATEOKA, Megan Ward, Dylan Kimball, Adam Joelsson, Benjamin Pascal, Vikrant Dutta, ARL, LLC, Lehi, UT, USA
- P2-81 (v) High-Resolution Melt Assay for Detection of Virulent Lineages of Shiga Toxin-producing *Escherichia coli* O26 and O111 — FRANK VELEZ, Joseph Bosilevac, Prashant Singh, Florida State University, Tallahassee, FL, USA
- P2-82 Localized Surface Plasmon Resonance Biosensor Based on Polydopamine Molecular Imprinted Polymer for Detection of Multi-Antibiotics in Chicken Meat: Assay Optimization Process and Comparative Study with HPLC — WENQIAN WANG, Michael Kidd, Yanbin Li, Center of Excellence for Poultry Science, University of Arkansas, Fayetteville, AR, USA
- P2-83 Comparison of Two Bacteriophage-Based Rapid Assays for the Detection of *Salmonella* spp. — YUTONG WANG, Ives Ivusic Polic, Valeria R. Parreira, Lawrence Goodridge, Canadian Research Institute for Food Safety (CRIFS), Department of Food Science, University of Guelph, Guelph, ON, Canada
- P2-84 (v) Evaluation of a Real-Time PCR Assay for Rapid Detection of *Listeria monocytogenes* in Artificially Contaminated Soft Cheese and Environmental Surface Samples — LEAH WEINSTEIN, Hee Jin Kwon, Samira Mitias, Jianghong Meng, Thomas Hammack, Karen Jinneman, Yi Chen, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- P2-85 (v) Development of Selective Agar Media to Improve *Campylobacter jejuni* Detection in Food — Jimyeong Ha, Kyoung-Hee Choi, YOCHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P2-87 (v) Kerry's Citrapure® Citrus Extract Technology is Effective at Inhibiting Microbial Spoilage — CHRISTIE CHENG, Jennifer Wasieleski, John Menton, Kerry, Beloit, WI, USA
- P2-88 (v) Spoilage Potential of Biofilms and Planktonic Cells of *Bacillus subtilis* and *Bacillus velezensis* in Extended Shelf-Life Milk — Elna Buys, JAMES ELEGBELEYE, University of Pretoria, Pretoria, South Africa
- P2-89 (v) *Listeria* Control in Plant Protein-based Foods — EELCO HEINTZ, Simone Potkamp, Niacet Corp., Tiel, The Netherlands
- P2-90 Effect of Lactic Acid on Shelf Life of Fresh Crawfish Tail Meat — JUAN TOUZA, Evelyn Watts, Katheryn Parraga, Génesis Guerra, Maggie Morris, Louisiana State University, Baton Rouge, LA, USA
- P2-91 Impact of Polysaccharide Incorporated Ice on Microbial Load of Catfish Fillets during Chilled Storage — DIANNA WILSON, Shecoya White, Mississippi State University, Starkville, MS, USA
- P2-92 **Withdrawn**

Pre-Harvest Food Safety

- P2-93 (v) The Cantaloupe Farm Environment Has a Diverse Genetic Pool of Antibiotic-Resistance Genes — Janeth Pérez-Garza, Andrea Huerta-Escobedo, EDUARDO FRANCO-FRIAS, Angel Merino-Mascorro, Alam Garcia-Heredia, Santos Garcia, Juan S. Leon, Lee-Ann Jaykus, Norma Heredia, Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, NL, Mexico
- P2-94 Prevalence and Antibiotic Resistance of Pathogenic *E. coli* in Dairy Farm — ARPITA ADITYA, Mengfei Peng, Grace Suh, Debabrata Biswas, University of Maryland, College Park, MD, USA
- P2-95 (v) Current and Aggregative Pre-Harvest Sampling Comparison in Commercial Fields — JORGE QUINTANILLA PORTILLO, Gustavo A Reyes, Genevieve Sullivan, Matthew J. Stasiewicz, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- P2-96 Prevalence of *Salmonella* in Integrated Crop-Livestock and Dairy Farms in Maryland–Washington D.C. — ZABDIEL ALVARADO-MARTINEZ, Anna Phung, Grace Suh, Arpita Aditya, Sanjaya Mijar, Mengfei Peng, Zajeba Tabashsum, Debabrata Biswas, University of Maryland, College Park, MD, USA
- P2-97 *Salmonella* in Environmental Samples Differed between Virginia Produce Growing Regions and Was Associated with Land-Use and Weather Factors — CLAIRE MURPHY, Daniel Weller, Laura Strawn, Virginia Tech, Blacksburg, VA, USA
- P2-98 Seasonality Drives the Likelihood of Isolating *Listeria monocytogenes* from Field and Water Samples Collected from Virginia Produce Farms — CLAIRE MURPHY, Daniel Weller, Laura Strawn, Virginia Tech, Blacksburg, VA, USA
- P2-99 (v) Prevalence and Characterization of *Salmonella* spp. Isolated from Fresh Produce and Agricultural Environment in Korea — JI MIN HAN, Heejeong Lee, Hyeju Jung, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- P2-100 Prevalence of *Listeria* Species in Environmental Samples Collected from Urban Farms Along a North-South Gradient in the Eastern USA — LAURA STRAWN, Angela Marie C. Ferelli, Tanzy Love, Daniel Weller, Virginia Tech, Blacksburg, VA, USA

Microbial Food Spoilage

- P2-86 Intermediate Thermoresistance in Black Yeast Asexual Cells Variably Increases with Culture Age, Promoting Survival and Spoilage in Thermally Processed Shelf-Stable Foods — SHIYU CAI, Emilia Rico-Munoz, Abigail Snyder, Cornell University, Ithaca, NY, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

(v) Virtual

- P2-101 (v) Organic Farming Practices Versus Conventional Production: Associated Pathogens and Food Safety Concerns in a Sustainable Development — CRISTINA RODRIGUEZ DIAZ, Bernard Taminiou, Nicolas Korsak, Georges Daube, University of Liege, Faculty of Veterinary Medicine, FARA, Food Microbiology, Liège, Belgium
- P2-102 (v) Development of Sanitizing Methods to Reduce *Listeria monocytogenes* Contamination in Radish, Melon and Carrots during Post-Harvest Washing — RAJALINGAM NAGENDRAN, Song-yi Choi, HyoBin Chae, HyeonJin Chu, InJun Hwang, SeRi Kim, Rural Development Administration, Wanju-gun, South Korea
- P2-103 (v) Pre-Harvest Biocontrol of *Listeria* and *Escherichia coli* O157 on Lettuce by Lactic Acid Bacteria — Chi-Hung Chen, Hsin-Bai Yin, Christine Mayer, JITENDRA PATEL, USDA-ARS, Beltsville, MD, USA
- P2-104 (v) Application of Cinnamon Oil Nano-Emulsion in Inhibiting *Salmonella* spp. on Mungbean Seeds and Sprouts — Roshaniben Chaudhari, KANIKA BHARGAVA, Anam Fatima, Hari Kotturi, University of Central Oklahoma, Edmond, OK, USA
- P2-105 (v) Development of Plasma-based Decontamination Treatment for Hydroponic Nutrient Solution — WENDY RIVERO PENA, Deepti Salvi, Qingyang Wang, North Carolina State University, Raleigh, NC, USA
- P2-106 (v) Impact of Chlorine and PAA on Inactivation of *Salmonella* in Agricultural Water — ANJALI KRISHNAN, Faith Critzer, Washington State University-IAREC, Prosser, WA, USA
- P2-107 Validating Agricultural Water Treatment on Farms — BLESSING CHUKWUAJA, Joyjit Saha, Michelle Danyluk, University of Florida, Lake Alfred, FL, USA
- P2-108 Decrease in Disinfection Efficacy of Peracetic Acid (PAA) and Sodium Hypochlorite in the Presence of Nitrogen-based Fertilizers Used on Leafy Greens — ZOE SCOTT, Jessica L. Dery, Natalie Brassill, Channah Rock, University of Arizona, Dept. of Environmental Science, Maricopa Agricultural Center, Maricopa, AZ, USA
- P2-109 Effects of Abiotic and Biotic Factors on Survival of Enterohemorrhagic *Escherichia coli*, *Salmonella enterica*, and *Listeria monocytogenes* in Soil Extracts — DIMPLE SHARMA, Autumn Kraft, Teresa Bergholz, Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI, USA
- P2-110 (v) Survival and Transfer of *E. coli* to Fresh Produce from Organically Managed Soils Amended with Poultry Litter — PETRINA MCKENZIE-REYNOLDS, Patricia Millner, Annette Kenney, Salina Parveen, Amy Collick, Brett Smith, Lurline Marsh, Arthur Allen, Fawzy Hashem, University of Maryland Eastern Shore, Princess Anne, MD, USA
- P2-111 (v) Prevalence and Characterization of *Salmonella* Isolated from Goat Feces in the NAHMS Goat 2019 Study — STEPHANIE HEMPSTEAD, Catherine Gensler, Natalie Urie, Alyson Wiedenheft, Katherine Marshall, Shivaramu Keelara, Megan E. Jacob, Department of Population Health and Pathobiology, CVM, NCSU, Raleigh, NC, USA
- P2-112 Persistence of *Salmonella* Typhimurium in Poultry Litter as a Function of Water Activity and Total Ammonia Nitrogen — ALAN GUTIERREZ, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- P2-113 (v) Woodchips Increase the Inhibitory Abilities of White-Rot Fungi, *Pleurotus ostreatus*, in Manure Inoculated with *Escherichia coli* — ALEXIS OMAR, Aubrey Inkster, Sivaranjani Palani, Anastasia E. M. Chirnside, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P2-114 (v) Differential Interactions of *Pleurotus ostreatus* with *Escherichia coli* TVS355 and *Escherichia coli* O157:H7 — ALEXIS OMAR, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P2-115 (v) Differential Attachment of Wild Type *Salmonella enterica* Serotype Tennessee and Its Mutant Cells to Peanut Seeds — SEULGI LEE, Jinru Chen, Department of Food Science and Technology, The University of Georgia, Griffin, GA, USA
- P2-116 (v) Evaluation of the Hygiena™ BAX® System Real-Time PCR Assay for *Salmonella* in Poultry Primary Production Boot Swabs — Paige Minka, JULIE WELLER, Victoria Kuhnel, Karina Aguilar, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-117 *Salmonella* Quantification (SalQuant™) with the Hygiena™ BAX® System for Turkey Feet Swabs and Cloacal Swabs — JULIE WELLER, Victoria Kuhnel, Karina Aguilar, Tyler Stephens, Judith Sipple, Anastasia Likanchuk, Sayandro Versteylen, Angel Wilhelm, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-118 (v) Understanding the Environmental Prevalence of *Salmonella* spp. in Finishing Pigs at Commercial Swine Farms — OLIVIA HARRISON, Jordan Gebhardt, Chad Paulk, Jason Woodworth, Susan Rensing, Cassandra Jones, Valentina Trinetta, Kansas State University, ASI, Manhattan, KS, USA
- P2-119 (v) Prevalence of Biofilm Formation Among *E. coli* Isolated from Goat Feces — CATHERINE GENSLER, Stephanie Hempstead, Natalie Urie, Alyson Wiedenheft, Katherine Marshall, Shivaramu Keelara, Megan E. Jacob, Department of Agricultural and Human Sciences, CALS, NCSU, Raleigh, NC, USA
- P2-120 Effect of Type of Mulch on Microbial Food Safety Risk on Cucumbers Irrigated with Contaminated Water — Juan Moreira, Achyut Adhikari, KATHRYN FONTENOT, Louisiana State University AgCenter, Baton Rouge, LA, USA
- P2-121 (v) Comparison of the Microbiological Quality and Safety of South African Grown Cucumbers — Stacey Duvenage, SHIRLEY A. MICALLEF, Lise Korsten, University of Maryland, College Park, MD, USA

Produce

- P2-122 Melon Phytochemicals May Impact Foodborne Pathogen Persistence in Melon Juice — XINGCHEN LIU, Chris Bollinger, Wesley Deaver, Xiangwu Nou, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- P2-123 Survival of Planktonic and Biofilm-Grown *Listeria monocytogenes* on Apples as Affected by Waxing and Storage Conditions — NATASHA SLONIKER, Ourania Raftopoulou, Sophia Kathariou, Randy Beaudry, Elliot Ryser, Michigan State University, East Lansing, MI, USA
- P2-124 (v) Survival of *Listeria monocytogenes* in Romaine Lettuce Juice and Isolation of Antilisterial Bacteria — GANYU GU, Marina Lichtenwald, Yaguang Luo, Xiangwu Nou, USDA-ARS, EMFSL, Beltsville, MD, USA
- P2-125 Comparison of Existing and Novel Produce Intervention Chemistry Systems to Reduce Bioburden and Spoilage/Pathogenic Bacterial Load on Raw Leafy Produce Products — Charles Giambone, RACHEL PACELLA, Marcus Torpey, Rochester Midland Corporation Food Safety Division, Rochester, NY, USA
- P2-126 Leaf Phytochemical Profiles Differ by Lettuce Variety and Shift in Response to Water Stress, Impacting the Association with *Salmonella enterica* — XINGCHEN LIU, Chris Bollinger, Shirley A. Micallef, University of Maryland, College Park, MD, USA

- P2-127 Evidence of Microbial Transfer from Furrow Water to Leafy Greens during Irrigation — NATALIE BRASSILL, Jessica L. Dery, Ban Saber, Channah Rock, University of Arizona Maricopa Agricultural Research Center, Maricopa, AZ, USA
- P2-128 (v) Colonization of Cantaloupe Fruit with *Escherichia coli* O157:H7 through Blossom Inoculation — KELLIE BURRIS, Robin Grant Moore, Tina Pfefer, Lee-Ann Jaykus, Otto D. Simmons III, Julie Ann Kase, Jie Zheng, Elizabeth Reed, Christina M. Ferreira, Eric Brown, Rebecca L. Bell, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, Raleigh, NC, USA
- P2-129 (v) Effects of Short-Term Temperature Abuse during Storage of Fresh-Cut Cantaloupe on *Listeria monocytogenes* Growth — BRENDA KROFT, Patricia Millner, Yaguang Luo, Shirley A. Micallef, Xiangwu Nou, University of Maryland, College Park, MD, USA
- P2-130 Nationwide Survey of Microgreens Consumers' Food Safety Handling Practices and Perceptions — THOMAS YEARGIN, Isabelle do Prado Artiz, Anh Nguyen, Sujata A. Sirsat, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P2-131 (v) Persistence of Foodborne Pathogens during Microgreen Production in Soil-Free Cultivation Matrix and Subsequent Transfer to Mature Microgreens — WENJUN DENG, Gina M. Misra, Christopher (Adam) Baker, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P2-132 (v) Growth Kinetics of *Salmonella* in Fresh-Cut Papaya as Affected by the Storage Temperature and Relative Humidity — AMANDEEP SINGH, Veerachandra Yemmireddy, University of Texas Rio Grande Valley, Edinburg, TX, USA
- P2-133 (v) Comparison of the Behavior of *Salmonella* Typhimurium and *Listeria monocytogenes* on Papaya and Avocado during Storage and Chlorine Dioxide Treatment — LIANGER DONG, Yong Li, University of Hawaii at Manoa, Honolulu, HI, USA
- P2-134 (v) Evaluation of the Hygiena™ BAX® System PCR Assays for the Detection of *Salmonella* from 375 g Frozen Potatoes — PRIYANKA SURWADE, Julie Weller, Victoria Kuhnel, Celina To, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-135 (v) Evaluation of the Hygiena™ BAX® System Real-Time PCR Assays for the Detection of *E. coli* O157:H7 from Mixed Sprouts — JULIE WELLER, Victoria Kuhnel, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P2-136 (v) Differential Ability of Various Conventional and Heirloom Tomato Fruit to Support *Salmonella* Association — WESLEY DEEVER, Yue Li, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- P2-137 (v) Survival of Inoculated Generic *Escherichia coli* on Walnuts at Different Phases of Fruit Maturity — CHRIS THEOFEL, Vanessa Lieberman, Erika Estrada, Linda J. Harris, University of California-Davis, Davis, CA, USA
- P2-138 The Effect of Inoculation Method on Growth of *Listeria monocytogenes* on the Surface of Ten Different Types of Whole Uncut Fresh Produce — Marina Girbal, Laura Strawn, Claire Murphy, Cameron Bardsley, JOYCE ZUCHEL, Donald W. Schaffner, Virginia Tech – Eastern Shore AREC, Painter, VA, USA
- P2-139 (v) Lauric Arginate Enhancing the Efficacy of Peroxyacetic Acid Against *Listeria* on Fresh Apples — XIAOYE SHEN, Jian Cong, Joshua Mugendi, Ines Hanrahan, Meijun Zhu, Washington State University, Pullman, WA, USA
- P2-140 (v) Low-Dose Continuous Gaseous Ozone in Controlling *Listeria innocua* on Red Delicious Apples during Commercial Cold Storage — XIAOYE SHEN, Yuan Su, Zi Hua, Lina Sheng, Manoella Mendoza, Yang He, Tonia Green, Ines Hanrahan, Meijun Zhu, Washington State University, Pullman, WA, USA
- P2-141 Evaluation of an Enzymatic Treatment to Control Listerial Biofilm on Produce — ANAHITA GHORBANI TAJANI, Joanna Carr, Ahmed Elbakush, Bledar Bisha, Mark Gomelsky, University of Wyoming, Laramie, WY, USA
- P2-142 (v) Autoaggregation and Biofilm Formation of *Listeria monocytogenes* in Cantaloupe Juice Extract and on Food Contact Surfaces with Cantaloupe Juice — MARINA LICHTENWALD, Ganyu Gu, Yaguang Luo, Shirley A. Micallef, Xiangwu Nou, ORISE, Beltsville, MD, USA
- P2-143 (v) Efficacy of the Overhead Washing and Waxing System in Improving the Microbiological Quality of Fresh Peaches — PEIEN WANG, Katie B. Pitts, Joe Mowery, Jinru Chen, Department of Food Science and Technology, The University of Georgia, Griffin, GA, USA
- P2-144 (v) Effect of Oregano Oil Nano-Emulsion in Inhibiting *Salmonella* spp. on Mungbean Seeds and Sprouts — Anam Fatima, Roshaniben Choudhari, KANIKA BHARGAVA, Hari Kotturi, University of Central Oklahoma, Edmond, OK, USA
- P2-145 Effectiveness of Chlorine and Chlorine Dioxide Against *Listeria monocytogenes* in Lettuce Seeds Used for Hydroponic System — Janny Mendoza, ACHYUT ADHIKARI, Louisiana State University AgCenter, Baton Rouge, LA, USA
- P2-146 (v) Biocontrol of *Salmonella* on Alfalfa Seeds and Sprouts Using a Multi-Hurdle Approach — SI LU, Mairui Gao, Deepa Ashwarya Kuttappan, Mary Anne Amalaradjou, Department of Animal Science, University of Connecticut, Storrs, CT, USA
- P2-147 (v) Evaluating the Potential of 25 PPM Sodium Hypochlorite in Preventing Cross-Contamination of Tomatoes in a Laboratory Model Flume — BRUNA BERTOLDI, Christopher Pabst, Christopher (Adam) Baker, Alan Gutierrez, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- P2-148 (v) Evaluate the Efficacy of a Mixture of Peroxyacetic Acid and H₂O₂ Against the Survival and Cross-Contamination of the *Salmonella* Surrogate *Enterococcus faecium* on Tomatoes during Triple Wash — COREY COE, Rebecca Stearns, Lisa Jones, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P2-149 Evaluation of Temperature, Concentration, and Contact Time on Bacterial Reduction in Surface Waters by Peroxyacetic Acid (PAA) — LORETTA FRIEDRICH, Michelle Danyluk, University of Florida, Lake Alfred, FL, USA
- P2-150 Sanitizer Selection is Critical for the Mitigation of Foodborne Pathogen Cross Transfer during Hydrocooling — GOVINDARAJ DEV KUMAR, Laurel Dunn, Abhinav Mishra, Dumitru Macarisin, University of Georgia Center for Food Safety, Griffin, GA, USA
- P2-151 (v) Effect of Ultraviolet Light on Microbial Reduction and Antioxidants of Fresh Strawberries during Storage — Maadh F Al-Ani, PRACHI PAHARIYA, Prabesh Joshi, Derek J. Fisher, Ruplal Choudhary, School of Agricultural Sciences, Southern Illinois University Carbondale, Carbondale, IL, USA
- P2-152 (v) Prevalence of Colistin-Resistant Gram-Negative Bacteria in Fresh Vegetables — XIN LUO, Karl Matthews, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

- P2-153 Initial Microbial Evaluation of a Commercial Coupled Aquaponics Farm — JENNIFER DORICK, Govindaraj Dev Kumar, Laurel Dunn, University of Georgia, Athens, GA, USA
- P2-154 Microbial Hazards Associated with Fresh Produce Distribution Centers — ANNA TOWNSEND, Laura Strawn, Benjamin Chapman, Mary Yavelak, Claire Murphy, Laurel Dunn, University of Georgia, Athens, GA, USA
- P2-155 (v) Isolation of *Salmonella* spp. from Fresh Produce Sold at Farmers' Market and Urban Gardens — SUMIT PAUDEL, Nirosha Ruwani Amarasekara, Amrita Subramanya Swamy, Mohamad Alasadi, Ka Wang Li, Wentao Jiang, Cangliang Shen, Yifan Zhang, Wayne State University, Detroit, MI, USA
- P2-156 (v) On-Farm Environmental Assessment of Very Small to Small-sized Strawberry Farms in the Southeastern United States — DILHANI JAYAWARDHANA, Thomas Yeargin, Kristen Gibson, Angela Fraser, Clemson University, Clemson, SC, USA
- P2-157 Implementation of the Produce Safety Rule – Identifying Supplemental Training Methods to Expand the Reach Across the Global Supply Chain — SERGIO NIETO-MONTENEGRO, America Chavez-Martinez, Ivette Ramirez-Rivas, Rocio Ortega-Bañuelos, Judith Candia-Sanchez, Ana Luisa Renteria-Monterrubio, Food Safety Consulting & Training Solutions, LLC, El Paso, TX, USA
- P2-158 Microbiological Quality of Fresh Produce from PSR-exempt Farms and Their Connection to Food Safety Environment and Handling Practices — ZOILA CHEVEZ, Shijie Qin, Michelle Hayden, Emefa Monu, Auburn University, Auburn, AL, USA
- P2-159 (v) Detection of *Salmonella* from Whole Fresh Peaches Using the Hygiena™ BAX® System — VICTORIA KUHNEL, Julie Weller, Anastasia Likanchuk, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- Sanitation and Hygiene**
- P2-160 Comparison of Ultraviolet Light (254 nm and 279 nm) Systems for the Inactivation of Feline Calicivirus in Buffer and Inactivation on Formica Coupons by 279 nm UV — EMILY CAMFIELD, Brahmaiah Pendyala, Ankit Patras, Doris D'Souza, University of Tennessee, Knoxville, TN, USA
- P2-161 (v) The Prevalence of Quaternary Ammonium Compound (QAC) Resistance in *Listeria monocytogenes* Isolated from South African Food Factories — KYLE CORBETT, Diane Rip, Pieter Gouws, Centre for Food Safety, Department of Food Science, Stellenbosch University, Stellenbosch, South Africa
- P2-162 (v) Anti-Noroviral Efficacy of Hypochlorite-based Surface Sanitizers Designed for Food Industry Applications — JASON FRYE, Rebecca M. Goulter, Katelyn Hammond, William King, Jason Sun, Lee-Ann Jaykus, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA
- P2-163 Withdrawn
- P2-164 (v) Inactivation of *Listeria* Biofilm on Food-Contact Surfaces by Saturated Steam Treatment — ZI HUA, Frank Younce, Juming Tang, Dojin Ryu, Barbara Rasco, Meijun Zhu, Washington State University, Pullman, WA, USA
- P2-165 (v) Industrial Processes Inoculation with Surrogate Microorganisms Via Food Matrix for Cleaning and Sanitation Validation Trials — Priscilla Piller, Virginie Pignard, Pierre-Olivier Beal, Moussa Ndiaye, PIERRE-ALEXANDRE JUAN, NOVOLYZE, Daix, France
- P2-166 (v) Antimicrobial Activity of ClO₂ Gas Against *Salmonella* Enteritidis on Almonds — Jihwan Lim, HOIKYUNG KIM, Wonkwang University, Iksan, South Korea
- P2-167 Evaluation of Human Specific crAssphage as a Novel Hygiene Indicator in South Korea — SUJIN NAM, Wensi Hu, Ok Kyung Koo, Gyeongsang National University, Jinju, Gyeongsangnam-do, South Korea
- P2-168 Quantitation of *Listeria* spp. from Surfaces Using New Rapid Bioluminescent Detection Swab and Ensure Touch Luminometer from Hygiena — Paul Meighan, DELARAM NIKOOEI, Hygiena, Camarillo, CA, USA
- P2-169 (v) Does Prior Exposure to Sanitizers Affect *Listeria monocytogenes* Ability to Form Biofilms and Intestinal Cell Interaction? — Md. Asfakur Rahman, Harpreet Kaur, NIRAKAR SAHOO, Veerachandra Yemmireddy, University of Texas Rio Grande Valley, Edinburg, TX, USA
- P2-170 (v) AMP, ADP, and ATP Concentrations Differentially Affected by Fermentation Process — NICHOLAS SMITH, Scott A. Rankin, Jeffrey Sindelar, University of Wisconsin-Madison, Department of Food Science, Madison, WI, USA
- P2-171 (v) Ultraviolet Light (UV-C) for the Inactivation of *Cronobacter sakazakii* Suspensions in Buffer and 2% Fat Milk — SARAH WARNER, Ankit Patras, Brahmaiah Pendyala, Doris D'Souza, University of Tennessee, Knoxville, TN, USA
- P2-172 (v) *In Vitro* Assessment of Co- and Cross-resistance Development in *Listeria monocytogenes* to Different Sanitizer Treatments — Md. Asfakur Rahman, VEERACHANDRA YEMMIREDDY, University of Texas Rio Grande Valley, Edinburg, TX, USA
- Viruses and Parasites**
- P2-173 (v) Confirmation of the Presence of *C. cayetanensis* and *C. parvum* from Environmental Water Samples — ALYSSA KELLY, Shani Craighead, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P2-174 (v) *Cyclospora cayetanensis* Detection from Soil Samples — SONIA ALMERIA, Alicia Shipley, Chiun-Kang Hsu, U.S. Food and Drug Administration, CFSA, Office of Applied Research and Safety Assessment, Laurel, MD, USA
- P2-175 Concentration and Detection of Human Noroviruses from Food and Environmental Samples Using Engineered Norovirus Binding Bacteria — ANAND SOORNEEDI, Matthew D. Moore, University of Massachusetts Amherst, Amherst, MA, USA
- P2-176 Evaluation of Vacuum Evaporation as Method for the Concentration of Biological Analytes from Large Volumes of Water and Artificial Saliva — DANIEL DEMARCO, Ben Edinger, Erica Miller, Alex Angel, William Gregory Book, Zachary Davidson Graves, Adrian Bartholomew Cook, J. David Legan, Douglas Marshall, Eurofins Microbiological Laboratories, Louisville, KY, USA
- P2-177 (v) Capture Efficiency and Detection of Hepatitis A Virus on Strawberry Using Apolipoprotein H Coated Magnetic Beads — Anthony Lévesque, Éric Jubinville, JULIE JEAN, Institut sur la nutrition et les aliments fonctionnels, Université Laval, Québec, QC, Canada
- P2-178 (v) Copper Inactivation of Viruses Affected by Food Solids, pH, and Other Virus Surrounding Environments — Juan Camacho, Y. CAROL SHIEH, U.S. Food and Drug Administration-ORISE, Chicago, IL, USA
- P2-179 (v) Use of *In Vivo* Fingerprint Methods to Evaluate the Removal and Inactivation Efficacy of Human Norovirus in Hand Washing/Sanitizing Regimens — BLANCA ESCUDERO-ABARCA, Rebecca M. Goulter, Clyde Manuel, Rachel

Leslie, James Arbogast, Lee-Ann Jaykus, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA

- P2-180 (v) Microbial Risk Assessment for Hepatitis A Virus Foodborne Illness by Oyster Consumption in Korea — EUNYOUNG PARK, Yoonjeong Yoo, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-181 (v) Quantitative Microbial Risk Assessment for Foodborne Viruses by Water Consumption — YOONJEONG YOO, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-182 (v) Quantitative Microbial Risk Assessment for Norovirus Foodborne Illness by Cucumber Consumption — YEWON LEE, Yoonjeong Yoo, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-183 (v) Persistence of Phi 6 Bacteriophage on Human Fingerpad — CHRISTOPHER (ADAM) BAKER, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P2-184 (v) Evaluation of the Thermo Fisher Scientific Real-Time SARS-CoV-2 PCR to Detect Surface Contamination of SARS-CoV-2 — SUZANNE JORDAN, Alice Foxall, David Crabtree, Campden BRI, Chipping Campden, United Kingdom

Water

- P2-185 Scale of Analysis Drives the Observed Ratio of Spatial to Non-Spatial Variance in Fecal Indicator Bacteria Levels in Upstate New York Surface Water: Insights from Two Decades of Citizen Science Data — Daniel Weller, Donald E. Weller, LAURA STRAWN, Tanzy Love, Virginia Tech, Blacksburg, VA, USA
- P2-186 Fecal Contamination of Northeastern Streams That Span an Urban-Rural Gradient is Associated with Land Use and Physicochemical Water Quality — Claire Murphy, Stephanie Johnson, Hyatt Green, Edward Michalenko, Tanzy Love, Laura Strawn, DANIEL WELLER, State University of New York College of Environmental Science and Forestry, Department of Environmental and Forest Biology, Syracuse, NY, USA

- P2-187 (v) Risk-based Evaluation of Treatments for Water Used at a Pre-Harvest Stage to Mitigate *E. coli* on Fresh Raspberry in Chile — CONSTANZA AVELLO, Yulie Meneses, Faith Critzer, Xu Li, Bing Wang, University of Nebraska-Lincoln, Lincoln, NE, USA
- P2-188 Withdrawn
- P2-189 (v) Comparison of Culture and PCR-based Methods for the Detection of *Salmonella* spp. and *Listeria monocytogenes* in Nontraditional Irrigation Water on Maryland's Eastern Shore: A Conserve Study — CHANELLE ACHEAMFOUR, Megan Gerdes, Fawzy Hashem, Salina Parveen, Eric May, Joseph Haymaker, Rico Duncan, Koriante Rogers, Derek Foust, Maryam Taabodi, Eric T. Handy, Cheryl East, Manan Sharma, Rachel Rosenberg Goldstein, Mary Theresa Callahan, Sarah Allard, Shirley A. Micallef, Kalmia Kniel, Amy R. Sapkota, University of Maryland Eastern Shore, Princess Anne, MD, USA
- P2-190 (v) Recovery of *Salmonella enterica* and *Listeria monocytogenes* in Surface Waters by Rapid and Culture-based Methods: A Conserve Study — Eric T. Handy, Seongyun Kim, Sara Behal, Donghyun Kim, CHERYL EAST, Mary Theresa Callahan, Sarah Allard, Shani Craighead, Brienna Anderson-Coughlin, Samantha Gartley, Kalmia Kniel, Joseph Haymaker, Chanelle Acheamfour, Fawzy Hashem, Salina Parveen, Eric May, Rianna Murray, Amy R. Sapkota, Shirley A. Micallef, Manan Sharma, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA
- P2-191 Withdrawn

WEDNESDAY POSTERS

8:30 A.M. – 3:30 P.M.

P3 POSTER SESSION 3

Communication Outreach and Education

Epidemiology

Food Defense

Food Law and Regulation

Food Processing Technologies

Food Safety Systems

Laboratory and Detection Methods

Modeling and Risk Assessment

Packaging

Retail and Food Service Safety

P3-01 through P3-96 – Authors present 9:00 a.m. – 11:00 a.m.

P3-97 through P3-187 – Authors present 1:00 p.m. – 3:00 p.m.

Communication Outreach and Education

P3-01 **Analysis of FSMA Produce Safety and Preventive Controls for Human Food Trainings in the Western Region of the United States** — STEPHANIE ALVARADO, Stephanie Brown, Joy Waite-Cusic, Jovana Kovacevic, Oregon State University, Portland, OR, USA

P3-02 **Improving Access and Motivation for Small and Medium Processors in the Northeast to Comply with FSMA's Preventive Controls Rule** — Amanda Kinchla, CHRISTINA WORMALD, Jill Fitzsimmons, University of Massachusetts, Amherst, Amherst, MA, USA

P3-03 **Evaluation of the Southern Center for FSMA Training** — KATELYNN STULL, Keith Schneider, Renee Goodrich, Amy Harder, Matthew Krug, Armitra Jackson-Davis, Lamin Kassama, Duncan Chembezi, Elizabeth Myles, Amanda Philyaw Perez, Kristin Woods, Chad Carter, Julie Northcutt, Kimberly Baker, Keawin Sarjant, Ramkrishnan Balasubramanian, Laurel Dunn, Paul Priyesh Vijayakumar, Melissa Newman, Achyut Adhikari, Kathryn Fontenot, Juan Silva, Joy Anderson, Christopher Gunter, Elena Rogers, Otto D. Simmons III, Roland McReynolds, Ravirajsinh Jadeja, Divya Jaroni, Lynette Orellana-Feliciano, Maria Plaza, Annette Wszelaki, Mark Morgan, Aliyar Fouladkhah, Thomas Taylor, Alejandro Castillo, Joseph Masabni, Barrett Vaughan, Fatemeh Malekian, Laura Strawn, Amber Vallotton, Robert K Williams, Michelle Danyluk, University of Florida CREC, Lake Alfred, FL, USA

P3-04 **(v) A New Communication Tool across Agencies** — LINDSAY WALTERSTEIN, U.S. Food and Drug Administration, College Park, MD, USA

P3-05 **(v) Evaluation of the Online Produce Safety Alliance Grower Training Course** — CONNIE FISK, Donna Clements, Laura Acuna-Maldonado, Davis Blasini, Ricardo Orellana, Thomas Saunders, Don Stoeckel, Gretchen Wall, Elizabeth Bihn, Cornell University, Geneva, NY, USA

P3-06 **Use of In-Depth Interviews to Identify Barriers to Consumers Adopting a Recommended Food-Handling Practice** — Abby Gilman, CHRISTOPHER VATRAL, Jennifer Quinlan, Drexel University, Philadelphia, PA, USA

P3-07 **(v) Assessment of the Effectiveness of a Piloted Online Delivery of Personal Health and Hygiene Program for Small Food Processor in Iowa** — Bridget Perry, Kiara Roberts, Javier Elias, Kimberly Anderson, Kathrine Gilbert, Melissa Cater, SHANNON COLEMAN, Iowa State University, Ames, IA, USA

P3-08 **South Eastern United States Hydroponic Grower Food Safety Needs Assessment** — ISABELLA RASCHKE, Isabelle do Prado Artiz, Zahra Mohammad, Sujata Sirsat, University of Houston, Houston, TX, USA

P3-09 **(v) Food Safety Smart Tools: Big Data, from Hazard Analysis to Weather Forecasting for a Revolutionary Future Smart Food Safety Management** — CLAUDIO GALLOTTINI, Fabio Mannarino, Franco Rapetti, Noemi Trombetti, ITA Corporation, Miami, FL, USA

P3-10 **Improving Preventive Controls Prerequisite Education Programs to Address Food Safety Knowledge Gaps for Small- and Medium-sized Food Processors** — CHRISTINA WORMALD, Jill Fitzsimmons, Matthew D. Moore, Amanda Kinchla, University of Massachusetts Amherst, Amherst, MA, USA

P3-11 **(v) Evaluation of a Virtual Food Safety Hands-on Program for the Future Food Industry Workforce: A Pilot Test of the Sanitation Module** — JUAN ARCHILA GODINEZ, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA

P3-12 **(v) A Year in Review: Western Regional Center to Enhance Food Safety Engagement with a Regional and Global Community through Web-based Platforms** — STEPHANIE BROWN, Stephanie Alvarado, Joy Waite-Cusic, Jovana Kovacevic, Oregon State University, Portland, OR, USA

P3-13 **Food Safety Knowledge across Generations Among Cambodian and Laotian Refugee Communities: Community Based Cross-Sectional Study** — REBECCA CATALENA, University of West Florida, Pensacola, FL, USA

P3-14 **(v) Food Safety Education Among Food Handlers in China: A Review** — HAN CHEN, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA

P3-15 **(v) Evaluation of Asian Restaurant Managers' and Chefs' Food Safety Knowledge and Practice of Handling Dried Wood Ear Mushrooms in the United States** — HAN CHEN, Gloria Cheng, Cai Chen, Ziyue Zhang, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA

P3-16 **Developing Food Safety Education Program for Low Socio-economic Families with Young Children: An Application of the Theory of Planned Behavior** — HAN CHEN, Juan Archila Godinez, Leah Klinestiver, Lia Rosa, Virgilia Zabala, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA

P3-17 **(v) Consumers' Reactions to Allergen Advisory Labeling: Results of a Qualitative Study** — JENNA BROPHY, Linda Verrill, Amy Lando, Carol D'Lima, Sheryl Cates, RTI International, Research Triangle Park, NC, USA

P3-18 **(v) Extension Food Technology is Opening the Doors to Community Food Safety Education through Online Virtual Platforms** — NANCY FLORES, Jesus Ricardo Ogaz-Parada, Karla Y. Lopez, Adetoye Abodunrin, Judah Sanchez, Martha Minor, Gabriela Reyes, New Mexico State University, Las Cruces, NM, USA

P3-19 **(v) Food Safety Management Training for Small and Emerging Food Businesses: Integrating a Food Safety Culture from Concept to Commercialization** — Christopher Von Achen, AMANDA KINCHLA, Lori Pivarnik, Nicole Richard, University of Massachusetts, Amherst, MA, USA

P3-20 **(v) Science in a Box – A Solution to Continued Food Science Outreach during the COVID-19 Pandemic** — AMANDA KINCHLA, Alyssa Francavilla, Amanda L. Chin, Maria Corradini, Iris Joye, Reihaneh Abdi, University of Massachusetts, Amherst, MA, USA

P3-21 **(v) Nationwide Survey of Women's Healthcare Providers' Role in Food Safety Guidance during Pregnancy and Postpartum Care** — Nicole Arnold, Danielle Nunnery, Lauren Sastre, HOPE LIMA, Alison Stellwag, Maura McClain, Meghan Ganio Molinari, Rebekah Culp, Mokeela Brown, Winthrop University, Rock Hill, SC, USA

P3-22 **Food Safety Knowledge and Behavior of Foodservice Staff Who Serve Immunocompromised Patients** — KATHRYN FAKIER, Wenqing (Wennie) Xu, LSU AgCenter, Baton Rouge, LA, USA

P3-23 **Use of the Health Belief Model to Identify Food Safety Risks for Older Adults** — Jennifer Quinlan, MELISSA KAVANAUGH, Drexel University, Philadelphia, PA, USA

- P3-24 [Food-Handling Practices of Active Food Delivery Service Users — Chinwendu Ozoh, ANGELA SHAW, Iowa State University, Ames, IA, USA](#)
- P3-25 (v) A Study to Determine the Barriers and Solutions to SALSA Certificated Businesses Transitioning to BRCS START Intermediate! Food Safety Scheme — ELLEN W. EVANS, Helen Taylor, UK, Cardiff, United Kingdom
- P3-26 [The Impact of COVID-19 on Farmers' Markets Nationwide — MINH DUONG, Tiffany Drape, Robert Williams, Laura Strawn, Benjamin Chapman, Renee Boyer, Virginia Tech, Blacksburg, VA, USA](#)
- P3-27 (v) Effectiveness of a Multi-State COVID-19 and Food Safety Outreach Campaign Utilizing Science-based Communication Strategies — CANDICE CHRISTIAN, Mary Yavelak, Natalie Seymour, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA
- P3-28 (v) Exploring Food Safety Messages in an Era of COVID-19: Analysis of Youtube Video Content — MERLYN THOMAS, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA
- P3-29 (v) [Food-Handling Practices in the Era of COVID-19: A Mixed-Method Longitudinal Needs Assessment of Consumers in the United States — MERLYN THOMAS, Juan Archila Godinez, Mai Nguyen, and Yaohua \(Betty\) Feng, Purdue University, West Lafayette, IN, USA; Peyton Haynes, Louisiana State University, Baton Rouge, LA, USA; Wenqing \(Wennie\) Xu, LSU Ag Center, Baton Rouge, LA](#)
- P3-30 Effect of Flour Outbreaks and Recalls on Consumer Knowledge and Behavior — ROBERT SCHARFF, Yaohua (Betty) Feng, The Ohio State University, Columbus, OH, USA

Epidemiology

- P3-31 (v) Impact of the COVID-19 Pandemic on Foodborne Disease Healthcare-Seeking Behavior and Diagnoses — JAMES BARKLEY, Vanora Davila, Kara Galvan, Chris Yao, Joan-Miquel Balada-Llasat, Robert Scharff, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA
- P3-32 (v) [Comparison of Statistical Methods for Identifying *Salmonella* Contamination Risk Factors of Whole Chicken Carcasses — AARON BECZKIEWICZ, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA](#)
- P3-33 (v) Monitoring Environmental Contaminants in Meat, Poultry, and Egg Products — ALEXANDER DOMESLE, Randolph Duverna, Cristian Ochoa, United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C., USA
- P3-34 (v) [Shiga Toxin-producing *Escherichia coli* \(STEC\) in the Raw Pork Production Chain: A Cause for Concern? — MANIRUL HAQUE, Joseph Bosilevac, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA](#)
- P3-35 (v) Overview of *Salmonella* Outbreaks Linked to Tuna Imported from Southeast Asian Countries, Existing Challenges, and Potential Prevention Efforts — CERISE HARDY, Adiam Tesfai, U.S. Food and Drug Administration – CFSAN, Coordinated Outbreak Response and Evaluation Network, College Park, MD, USA
- P3-36 (v) Developing an Expert Model for the Diagnosis of Foodborne Illness — KARA MORGAN, Vanora Davila, Joan-Miquel Balada-Llasat, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA
- P3-37 (v) Comparative Review of the Evolution of Antibiotic-Resistant *Salmonella* Surveillance in Different Countries — Gavin Fenske, MACON OVERCAST, Solenne Costard, Francisco Zagmutt, Jane Pouzou, EpiX Analytics, Fort Collins, CO, USA
- P3-38 (v) One Health Enteric Package v1.0: Expanded and Standardized Metadata for Enteric Genomic Epidemiology in the U.S. — RUTH TIMME, Maria Balkey, Christopher Grim, Michael Batz, Jessica Hicks, Kimberly Cook, Jo Ann Van Kessel, James Bono, Beth Harris, Lee S. Katz, Jennifer Adams, Steven Stroika, Lavin Joseph, Michael Feldgarden, Martin Shumway, John Anderson, Heather Tate, Karen Jinneman, Paul Morin, Jeffrey Levine, Mustafa Simmons, Cesar Morales, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, College Park, MD, USA
- P3-39 (v) Revisiting Our Knowledge on *Listeria sensu stricto* Species by Predicting Traits from Whole Genome Sequencing Data — KATLEEN VRANCKX, Kyle Kingsley, Jan Deneweth, Applied Maths NV, bioMérieux, Sint-Martens-Latem, Belgium
- P3-40 [Rapid Identification and Molecular Characterization of *Salmonella enterica* Isolates from Pecan Orchards through Whole Genome Sequencing — NICOLAS LOPEZ, Li Ma, Claudia Diaz, Guodong Zhang, Food and Drug Administration, College Park, MD, USA](#)

Food Defense

- P3-41 (v) Whole Genome Sequencing-based Characterization of *Cronobacter sakazakii* Strain Isolated from Tilapia — IRSHAD SULAIMAN, Nancy Miranda, Steven Simpson, U.S. Food and Drug Administration, Atlanta, GA, USA

Food Law and Regulation

- P3-42 Scope and Challenges of Louisiana Retail-Foodservice Businesses That Perform Specialized Processing — Wenqing (Wennie) Xu, Evelyn Watts, MELISSA CATER, Carolyn Bombet, Louisiana State University AgCenter, Department of Agricultural and Extension Education & Evaluation, Baton Rouge, LA, USA
- P3-43 (v) Transfer of Indicator *Escherichia coli* to Romaine Lettuce Grown in Organic and Conventional Fields Amended with Animal-based Soil Fertilizers in the Southwestern Desert, 2019–2020 — PEIMAN AMINABADI, Jairo N Diaz-Ramirez, Juan Buenrostro, Gilberto Magallon, Michele Jay-Russell, Western Center for Food Safety, School of Veterinary Medicine, University of California-Davis, Davis, CA, USA
- P3-44 (v) FSIS *Siluriformes* Sampling at Five Years — Wayne Schlosser, Gurinder Saini, Randolph Duverna, Erika Stapp-Kamotani, STEPHANIE DESPERO, USDA-FSIS, Washington, D.C., USA
- P3-45 (v) Noteworthy Updates and Expansion of the USDA's Food Safety and Inspection Services Accredited Laboratory Program — SARAH R. EDWARDS, Louis H. Bluhm, Jenny L. Scifres, United States Department of Agriculture, Food Safety and Inspection Service, Athens, GA, USA
- P3-46 (v) Shiga Toxin-producing *Escherichia coli* (STEC) Recovered from Verification Sampling of Raw Beef Products Collected by the United States Department of Agriculture Food Safety and Inspection Service — STEPHEN W. MAMBER, Maria Scott, Susan Hammons, U.S. Department of Agriculture (USDA) – FSIS, Washington, D.C., USA
- P3-47 (v) Analysis of Methodology Used to Classify Produce Commodities as Rarely Consumed Raw — ALLISON HOWELL, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA
- P3-48 (v) Annual Sampling Plan and Sampling Summary Reporting at the United States Department of Agriculture's Food Safety and Inspection Service — Rebecca Fields, SELENA KREMER-CALDWELL, United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C., USA

- P3-49 (v) Evaluation of Decreased Recalls Recommended by the USDA Food Safety and Inspection Service (FSIS) in Calendar Year (CY) 2020 — Barry Rhodes, Rochelle Kopicki, Janice Walton, Monique Wiggins, BUCKLEY MCKAY, Sheryl Shaw, JenAlyse Arena, Mathew Michael, USDA Food Safety and Inspection Service, Washington, D.C., USA
- P3-50 (v) *Salmonella* Isolates and Antimicrobial-resistance Trends in FSIS Sampling for the National Antimicrobial-resistance Monitoring System (NARMS), 2014–2019 — CATHERINE ROCKWELL, Uday Dessai, Sheryl Shaw, Gamola Fortenberry, Kysha Hendricks, Adrienne Dunham, Rachel Whitaker, Tameru Berhanu, Labeed Ben-Ghaly, Tonya Taylor, Jovita Haro, Spencer Pretectrum, USDA Food Safety & Inspection Service, Washington, D.C., USA
- P3-51 (v) ARS Studies Addressing FSIS Research Needs — Meryl Silverman, ISABEL WALLS, Udit Minocha, USDA Food Safety and Inspection Service, Washington, D.C., USA

Food Processing Technologies

- P3-52 (v) UV-C Treatment of Papaya Epicarp to Inactivate *Salmonella* spp., and the Effect of Fruit Ripeness and Storage Conditions — Amandeep Singh, VEERACHANDRA YEMMIREDDY, University of Texas Rio Grande Valley, Edinburg, TX, USA
- P3-53 Evaluation of Ultraviolet (UV-C) Technology for the Reduction of Aflatoxin B₁ in Almond Milk — ANJALI H KURUP, Brahmaiah Pendyala, Ankit Patras, Tennessee State University, NASHVILLE, TN, USA
- P3-54 Microbial Safety and Quality Assessment of Whole Milk Processed Using a Pilot-Scale Dean Flow UV System — PRANAV VASHISHT, Brahmaiah Pendyala, Ankit Patras, Vybhav Vipul Sudhir Gopisetty, Tennessee State University, Nashville, TN, USA
- P3-55 Wavelength Specific Inactivation of Vegetative Bacteria and Endospores by Germicidal UV-C Light in Liquid Suspensions — BRAHMAIAH PENDYALA, Ankit Patras, Pranav Vashisht, Tennessee State University, Nashville, TN, USA
- P3-56 Microbial Validation of Radio Frequency-Assisted Pasteurization of Whole Milk Powder — DAMLA DAG, Rakesh K. Singh, Fanbin Kong, University of Georgia, Athens, GA, USA
- P3-57 (v) Developing a Practical Phantom Dosimeter for Ensuring the Safety and Quality of the X-Ray Irradiated Blueberries — QUINCY SUEHR, Rufus Isaacs, Sanghyup Jeong, Michigan State University, East Lansing, MI, USA
- P3-58 (v) Effects of Ohmic Heating on Microorganisms Elimination and Foaming Ability of Liquid Whole Egg — ZHUO-EN TSAI, Hsin-Yun Hsu, Tunghai University, Taichung, Taiwan
- P3-59 (v) Removal of Bacterial Cells, Biofilms and Catfish Processing Residue on Food Contact Surface by Pneumatic Driven Swipe of Steam and Steam-Jetted Hot Water — YUWEI WU, Sam Chang, Experimental Seafood Processing Laboratory, Coastal Research & Extension Center, Mississippi State University, Pascagoula, MS, USA
- P3-60 (v) Inactivation of *Geobacillus stearothermophilus* Spore in Flour on Different Food Processing Surfaces during Superheated Steam Treatment: Influence of Heat and Moisture Transfer — HYEON WOO PARK, V. M. Balasubramaniam, Abigail B. Snyder, The Ohio State University, Columbus, OH, USA
- P3-61 Inactivation of *Salmonella* on Mung Bean Sprouting Seeds Using Dry Heat Treatment — SHUNYANG YAO, Haiqiang Chen, University of Delaware, Newark, DE, USA

- P3-62 (v) Effects of *Debaryomyces hansenii* Isolates on Microbial Flora in Dry-Aged Beef during Dry-Aging — YOONJEONG YOO, Hyemin Oh, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-63 (v) Microbial Validation of Biltong Processing to Achieve 5-Log Reduction of *L. monocytogenes* and *E. coli* O157:H7 — Peter Muriana, KAVYA GAVAI, Oklahoma State University, Stillwater, OK, USA
- P3-64 Effectiveness of Elevated Hydrostatic Pressure and Mild Heat Against Pressure-Stressed, Habituated, and Wild-Type *Listeria monocytogenes*, *Listeria innocua*, and *Staphylococcus aureus* — Niamul Kabir, Sadiye Aras, Shahid Chowdhury, ALIYAR FOULADKHAH, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P3-65 (v) Survival of Acid-adapted, Pressure-resistant *E. coli* O157:H7, *Salmonella* spp., and *L. monocytogenes* during Cold Storage in HPP-treated Juices — CATHERINE ROLFE, Alvin Lee, Nathan Anderson, Glenn Black, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P3-66 (v) Comparison of Inactivation of *Salmonella* spp. by High-Pressure Processing in Ground Chicken Meat Sources Used in Raw Pet Foods — XINYAO WEI, Franklin Sumargo, Mary-Grace Danao, University of Nebraska-Lincoln, Lincoln, NE, USA
- P3-67 (v) Recovery of Sub-Lethally Injured *Salmonella* spp. in Ground Chicken Breast by High-Pressure Processing on Different Plating Media — FRANKLIN SUMARGO, Mary-Grace Danao, University of Nebraska-Lincoln, Lincoln, NE, USA
- P3-68 (v) Long-Term Survival Phase Cells of *Escherichia coli* O121 and *Salmonella* Typhimurium Exhibit Increased Tolerance to Atmospheric Cold Plasma on Artificially Inoculated Wheat Grains — EMALIE THOMAS-POPO, Aubrey Mendonca, Allison Little, Verilyn Hartanto, Paulo Fortes-Da-Silva, Angela Shaw, James Dickson, Byron Brehm-Stecher, Kevin Keener, Iowa State University, Ames, IA, USA
- P3-69 (v) Optimization of Nonthermal Plasma-Activated Water Processing Conditions for Inactivation of *Salmonella* Typhimurium — URVI SHAH, Qingyang Wang, Sophia Kathariou, Deepti Salvi, North Carolina State University, Raleigh, NC, USA

Food Safety Systems

- P3-70 Evaluation of Food Safety Interventions in Low- and Middle-Income Countries (LMICs) — ROBERT SCHARFF, The Ohio State University, Columbus, OH, USA
- P3-71 Factors Affecting the Cross-Contamination of *Listeria monocytogenes* and *Salmonella enterica* on Bell Pepper during Chlorine Washing — Jyoti Aryal, Julysa Benitez, ACHYUT ADHIKARI, Louisiana State University AgCenter, Baton Rouge, LA, USA
- P3-72 Withdrawn
- P3-73 Withdrawn
- P3-74 The Last Mile, Temperature Monitoring Solutions for Direct Perishable Shipments — JEFFREY DESROSIERS, VITSAB International AB, Linhamn, Sweden
- P3-75 (v) Efficacy of Dry Heat on the Inactivation of *Salmonella enterica* on Stainless Steel — HARLEEN KAUR DHALIWAL, Michael Gänzle, M. S. Roopesh, University of Alberta, Edmonton, AB, Canada
- P3-76 Cyclic Temperature Abuse of Raw Poultry during Supply Chain Can Impact Food Safety and Shelf Life — CHARLES HERRON, Amit Morey, Aftab Siddique, Auburn University, Auburn, AL, USA

- P3-77 (v) Development of Bespoke Food Safety Culture Measurement Tool for a Low-Risk Food and Drink Manufacturer — LAURA HEWITT, Elizabeth C. Redmond, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Northallerton, United Kingdom
- P3-78 [Effect of Desiccation Stress on the Cross-Contamination of *Escherichia coli* O157:H7 from Food-Contact Surface to Food](#) — RYOMA HONDA, Akihiro Ando, Kento Koyama, Shigenobu Koseki, Hokkaido University, Sapporo, Japan
- P3-79 (v) Online Media Attention Devoted to Flour and Flour-related Food Safety in 2017–2020 — JINHO JUNG, Nicole Widmar, Sangavi Subramani, Yaohua (Betty) Feng, Korea Rural Economic Institute, Naju, South Korea
- P3-80 [Withdrawn](#)
- P3-81 (v) Contamination of *Escherichia fergusonii* and *E. coli* Strains Isolated from Fresh Leafy Vegetables Sold in Retail Market in Korea — BO-EUN KIM, Dawoon Kim, Kwang Kyo Oh, Jieun Jung, Seung-Mi Seo, Jae-Gee Ryu, Rural Development Administration, Wanju-gun, South Korea
- P3-82 (v) IoT-Blockchain Enabled Food Safety Decision Support System for the Manufacturers and the Regulatory Authorities in the Dairy Sector in Sri Lanka — Udiitha Karunathilaka, CHATHUDINA J. LIYANAGE, Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka
- P3-83 Efficacy of Invisishield™ Modified Atmosphere Technology on the Viability of Microsporidia and *Salmonella* Newport — COURTNEY LOWE, Michael Aaron, Seth Herndon, Michael Johnston, Angela Richard, Ynes Ortega, University of Georgia, Griffin, GA, USA
- P3-84 [\(v\) Quantitative and Qualitative Assessments on *Enterobacteriaceae*, Coliforms and Generic *Escherichia coli* on Fresh Vegetables Sold in Cambodian Fresh Produce Distribution Centers](#) — APRIL MOLITOR, Carla L. Schwan, Lyda Hok, Paul Ebner, Valentina Trinetta, Jessie Vipham, Kansas State, Manhattan, KS, USA
- P3-85 (v) Nutritional, Physical-Chemical and Microbiological Characteristics of “Covilhete” – *Pastelaria Típica Portuguesa* — JOANA MOURA, Maria Fontes, José Silva, Cristina Saraiva, University of Trás-os-Montes and Alto Douro, Vila Real, Portugal
- P3-86 Isolation and Characterization of an Enteropathogen Growth Stimulating Factor from Bovine Tissues — ALAN OLSTEIN, Mick Bosilevac, Andrew Richardson, Paradigm Diagnostics, Inc., St. Paul, MN, USA
- P3-87 (v) Surrogates for *Listeria monocytogenes* for High-Pressure Processing Validation Studies — ANNA ROSE PILAPIL, Jayne Stratton, Andreia Bianchini, Bing Wang, Emily Robinson, University of Nebraska-Lincoln, Lincoln, NE, USA
- P3-88 (v) Effects of Hydrodynamic Shear Stress and Equipment Surface on *Escherichia coli* O157:H7 Single- and Multi-Species Biofilm Formation — GRISHMA PRABHUKHOT, Hsin-Bai Yin, Charles D. Eggleton, Jitendra Patel, University of Maryland, Baltimore County, Baltimore, MD, USA
- P3-89 (v) Predicting the Survival of *Listeria monocytogenes* on Apples and Detection Using Ultraviolet Spectroscopy — OURANIA RAFTOPOULOU, Michael Kudenov, Elliot Ryser, Randy Beaudry, Sophia Kathariou, North Carolina State University, Raleigh, NC, USA
- P3-90 (v) Exploring Food Handler Perceptions and Attitudes Toward Hand Hygiene Before and During Production — EMMA J. SAMUEL, Ellen W. Evans, Elizabeth C. Redmond, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, Wales, United Kingdom
- P3-91 Great Challenges Ahead for Global Food Safety Community: Practices in a Developing Country after Legislation — MOHAMMAD AHMAD AMJAD, Muhammad Shahbaz, Abdul Moiz, Muhammad Bilal, Shuguffa Mohammad Zubair, Akhlaq Ahmad, QSI Certifications, Riyadh, Saudi Arabia
- P3-92 Thermal Inactivation Validation for *Salmonella enterica* in Chicken Feathers during Simulated Commercial Rendering — THOMAS TAYLOR, Caleb Wong de la Rosa, Rosana Moreira, Christopher Kerth, Texas A&M University, College Station, TX, USA
- P3-93 (v) Food Safety Knowledge, Training and Practice Among Ohio Food Pantry Volunteers — Barbara Kowalczyk, NASANDRA WRIGHT, Kara Morgan, Brian Landers, The Ohio State University, Columbus, OH, USA
- P3-94 (v) Prompting Food Safety Culture Weekly Improvement in UK Food Manufacturing Companies Using Triangulation and Real-Time Technology — SOPHIE TONGYU WU, Lone Jespersen, Carol Anne Wallace, University of Central Lancashire, Preston, United Kingdom
- P3-95 [Knowledge and Current Practices Related to Agricultural Water Microbial Quality Among Kansas and Missouri Produce Growers](#) — YEQI ZHAO, Londa Nwadike, Don Stoeckel, Manreet Bhullar, Kansas State University, Lenexa, KS, USA
- P3-96 Validation of a PCR Workflow for the Detection of *Campylobacter jejuni*, *C. coli* and *C. lari* in Raw and Ready-to-Cook Poultry Products — Annette Hughes, David Crabtree, Nikki Faulds, MATTHEW HAHS, Daniele Sohier, Benjamin Bastin, Wesley Thompson, Erin Crowley, Thermo Fisher Scientific, Lenexa, KS, USA

Laboratory and Detection Methods

- P3-97 Suretect *Salmonella* Species PCR Assay *Official Methods of Analysis*™ — Ana-Maria Leonte, Evangelos J. Vandroos, David Crabtree, MATTHEW HAHS, Katharine Evans, Daniele Sohier, Benjamin Bastin, Wesley Thompson, Erin Crowley, Thermo Fisher Scientific, Lenexa, KS, USA
- P3-98 Compatibility Evaluation of a Residual DNA Removal Protocol with a Real-Time PCR Assay for the Detection of *Salmonella*, *Listeria*, *L. monocytogenes*, and *Cronobacter* in Various Food Matrices — Deborah Briese, Louisiane Giovannetti, John Mills, J. Stan Bailey, VIKRANT DUTTA, bioMérieux, Inc., Hazelwood, MO, USA
- P3-99 Performance Evaluation of Fluorescence Resonance Energy Transfer-based Real-Time PCR for Detection of *Campylobacter* spp. in Poultry Rinsates — Deborah Briese, Louisiane Giovannetti, Marie Bugarel, J. Stan Bailey, VIKRANT DUTTA, bioMérieux, Inc., Hazelwood, MO, USA
- P3-100 Performance Evaluation of a Residual DNA Removal Protocol with a Real-Time PCR Assay for Food Pathogen Detection in Diverse Food Matrices — Louisiane Giovannetti, Deborah Briese, J. STAN BAILEY, Vikrant Dutta, bioMérieux, Inc., Athens, GA, USA
- P3-101 (v) Rapid Detection of *E. coli* O157:H7 in Poultry Matrices Using Shiga Toxin Gene Screen Loop-Mediated Isothermal Amplification (LAMP)-Bioluminescent Assay — Jessie Goseland, Kong Thao, Jerri Lynn Pickett, CHRISTINA BARNES, Raj Rajagopal, 3M, St. Paul, MN, USA
- P3-102 [Comparison of Viability qPCR and Culture-based Quantification in Challenge Studies](#) — CHARLES CONNOLLY, Jasna Kovac, Catherine Cutter, The Pennsylvania State University, University Park, PA, USA
- P3-103 (v) AOAC Validation of RapidChek® Select™ *Salmonella* Test Method for the Detection of *Salmonella* Species in Raw Ground Pork — LOIS FLECK, Meredith Sutzko, Romer Labs, Newark, DE, USA

- P3-104 (v) AOAC Validation of RapidChek® Select™ *Salmonella* Test Method for the Detection of *Salmonella* Species in Raw Pork Trim — LOIS FLECK, Meredith Sutzko, Romer Labs, Newark, DE, USA
- P3-105 Colorimetric Sensing Arrays for Identification of *Salmonella* Viability in Foods — GENEVIEVE FLOCK, Charles Davidson, Shannon McGraw, Michael Wiederoder, Andre Senecal, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- P3-106 (v) How to Use Next Generation Sequencing for Food Authenticity: A Ring Trial-based Evaluation — MARIO GADANHO, Tiina Karla, Milja Tikkanen, Nicole Prentice, Amanda Manolis, Thermo Fisher Scientific, Lisbon, Portugal
- P3-107 Microbial Type, Environmental Conditions, and Exposure Time Impact the Recovery of Microorganisms during Environmental Monitoring — Sarah Jones, KRISTEN GIBSON, University of Arkansas, Fayetteville, AR, USA
- P3-108 (v) Detection of *Listeria monocytogenes* in 125-g Chocolate Liquor Samples Using the bioMérieux VIDAS® LIS, VIDAS® UP *Listeria*, GENE-UP® *Listeria* spp., GENE-UP® *Listeria monocytogenes* Assays and FDA BAM Methods — Ryan Zimmerman, LEANNE HAHN, Laurie Post, Sue Kelly, Brian Farina, Charles Deibel, Deibel Laboratories, Inc., Madison, WI, USA
- P3-109 A Method Comparison Study to Evaluate Recovery of *Bifidobacterium longum* from Pet Food Products — Gabriel Sanglay, Brian Schaefer, RYAN HARTPENGE, Kadiatou Sow, Benjamin Diep, Lisa Conboy-Schmidt, Michele Manuzon, Nestle Quality Assurance Center, Dublin, OH, USA
- P3-110 Performance Evaluation Real-Time PCR Assay for Detection of SARS-CoV-2 on Stainless Steel — ADAM JOELSSON, Shannon Green, Nicholas Siciliano, Benjamin Pascal, Ron Johnson, Vikrant Dutta, Invisible Sentinel, Philadelphia, PA, USA
- P3-111 Changing the Paradigm of Bacterial Identification through Genome-based Identification System — NUR HASAN, Sunhee Hong, Jongsik Chun, EzBiome, Gaithersburg, MD, USA
- P3-112 Rapid Detection of *Salmonella enterica* in Fresh Produce by a Novel Microarray-based PathogenDx System — Hsin-Bai Yin, Chi-Hung Chen, Ashley Boomer, Cory Newland, Melissa May, BENJAMIN KATCHMAN, Jitendra Patel, PathogenDx, Tucson, AZ, USA
- P3-113 (v) Performance Evaluation of Loop-Mediated Isothermal Amplification (LAMP) – Bioluminescent Assay for *E. coli* O157 (including H7) Detection in Chicken Products, Environmental and Primary Production Samples — WIPA KONGSAKUL, Wanida Mukkana, Saengrawee Jongvanich, Yodlak Saengprao, Scott Egan, Panida Pisaisawat, Atthaphon Phukhao, Manita Motham, Sudaporn Pituktanon, Yuwalak Detwathanachaigul, Sasima Bucha, Nattarat Maktong, Pareploy Wongsurin, Sommai Torkaew, 3M Thailand Limited, Bangkok, Thailand
- P3-114 Evaluation of the bioMérieux GENE-UP® *Listeria monocytogenes* (LMO 2) Real-Time PCR Assay for the Detection of *Listeria monocytogenes* in a Variety of Foods — CARLOS LEON-VELARDE, Saleema Saleh-Lakha, Nathan Larson, Ryan Lee, Zheng Wu, Sophie Canobio, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P3-115 Evaluation of a Loop-Mediated Isothermal Amplification (LAMP)-Bioluminescent Assay for Rapid Detection of *Cronobacter* in Chinese Powder Infant Formula (PIF) as Compared to the GB Method — Yan Huang, Raj Rajagopal, GABRIELA LOPEZ VELASCO, 3M, St. Paul, MN, USA
- P3-116 (v) Sensitivity of BAM *Salmonella* Culture Method for the Recovery of *Salmonella* from Red, Yellow, White, and Sweet Onions — ANNA MAOUNOUNEN-LAASRI, Hua Wang, Andrew Jacobson, Thomas Hammack, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA
- P3-117 Evaluation of the GENE-UP® SLM (*Salmonella*) Assay: A Collaborative Study, OMA First Action 2020.02— Nikki Taylor, Samoa Asigau, JOHN MILLS, Patricia Rule, Deborah Briese, Michelle Keener, Vikrant Dutta, Louisiane Giovanetti, Fabienne Hamon, Patrick Bird, Ron Johnson, J. Stan Bailey, bioMérieux, Inc., Hazelwood, MO, USA
- P3-118 A Multiplex High-Resolution Melt Curve Real-Time PCR Assay for the Detection of ESBL-producing *E. coli* O157:H7 in Foods — RAJIV DHITAL, Azlin Mustapha, University of Missouri, Columbia, MO, USA
- P3-119 (v) Selectivity of Culture Media for Lactic Acid Bacteria and Staphylococci Enumeration in Raw Milk Cheeses — Milimani Andretta, Thaiza Teixeira de Almeida, Leticia Rocha Ferreira, Antonio Fernandes de Carvalho, LUÍS AUGUSTO NERO, University of Viçosa, Vicosa, Minas Gerais, Brazil
- P3-120 Improvement of Automated VIDAS® L M X Assay for “Next Day” Detection of *Listeria monocytogenes* in Foods and Environmental Samples — Peggy Nomade, Damien Côte, Guillaume Mesnard, François Le Nestour, JOHN MILLS, Ron Johnson, Deborah Briese, Florence Gorse, bioMérieux, Inc., Hazelwood, MO, USA
- P3-121 (v) Development of a Recombinase Polymerase Amplification Combined with Lateral Flow Dipstick Assay for Equipment-Free Detection of *Vibrio vulnificus* in Oysters — SEONGBIN PARK, Sam Chang, Mississippi State University, Pascagoula, MS, USA
- P3-122 AOAC PTM-Certified 112001 Solus One *E. coli* O157 ELISA Immunoassay as a Competitive Alternative to Molecular Platforms in the Detection of *Escherichia coli* O157:H7 in the Raw Beef Supply Chain — NEVIN PERERA, Simon Illingworth, Solus Scientific Solutions Ltd., Mansfield, United Kingdom
- P3-123 (v) The Use of Specific Swine Detection Methods to Ensure Halal Authenticity — Jennifer Valero-Garcia, Greta Carmona-Antonanzas, Yolanda Perez-Estrelles, Marta Izquierdo-Garcia, Merche Bermejo-Villodre, Carlos Ruiz-Lafora, NICOLE PRENTICE, Thermo Fisher Scientific, Basingstoke, United Kingdom
- P3-124 (v) The Use of Specific Animal DNA Detection Methods to Ensure Vegan Authenticity — Jennifer Valero-Garcia, Greta Carmona-Antonanzas, Yolanda Perez-Estrelles, Marta Izquierdo-Garcia, Merche Bermejo-Villodre, Carlos Ruiz-Lafora, NICOLE PRENTICE, Thermo Fisher Scientific, Basingstoke, United Kingdom
- P3-125 (v) One Year of Next Generation Sequencing (NGS) Data Collection for Food Analysis: Overview of Meat- and Fish-based Samples — Cristina Barbosa, Franck Pandiani, Mario Gadanho, Amanda Manolis, NICOLE PRENTICE, Ines Santos, Thermo Fisher Scientific, Basingstoke, United Kingdom
- P3-126 (v) Evaluation of the bioMérieux GENE-up® *Salmonella* 2 (SLM 2) Real-Time PCR Assay for *Salmonella* in a Variety of Foods — SALEEMA SALEH-LAKHA, Carlos Leon-Velarde, Nathan Larson, Ryan Lee, Zheng Wu, Sophie Canobio, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P3-127 (v) Evaluation of the bioMérieux VIDAS® *Listeria monocytogenes* (LMX) Enzyme-based Immunoassay for the Detection of *Listeria monocytogenes* in a Variety of Foods — SALEEMA SALEH-LAKHA, Carlos Leon-Velarde, Nathan Larson, Ryan Lee, Jennifer Fischer-Jenssen, Sophie Canobio, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada

- P3-128 (v) Comparison between Standard Plate Count Agar and a Ready-to-Use Aerobic Count Method Using Laboratory Pasteurized Count of Raw Milk Samples — ROBERT S. SALTER, Denisse Martinez, Gregory W. Durbin, Charm Sciences, Inc., Lawrence, MA, USA
- P3-129 (v) Development of a Pretreatment Method to Improve the Detection Efficiency of Real-Time PCR for *Listeria monocytogenes* in Meat and Processed Meat — YEONGEUN SEO, Yujin Lee, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-130 Hygiene BAX® System Salquant™ (SalQuant) AOAC Validation for Comminuted Chicken and Turkey — TYLER STEPHENS, April Englishbey, Nisha Corrigan, Savannah Applegate, Benjamin Bastin, Kateland Koch, Corey Brann, Marcos Sanchez-Plata, Hygiene, Marion, TX, USA
- P3-131 **Understanding Conditions That Affect Recovery of Non-Enveloped Virus from Aqueous Solution Using Magnetic Ionic Liquids** — SLOANE STOUFER, Obed Varona Ortiz, Jared Anderson, Byron Brehm-Stecher, Matthew D. Moore, University of Massachusetts, Amherst, Amherst, MA, USA
- P3-132 A Productivity Analysis of the 3M™ Petrifilm™ Plate Reader Advanced — ALEC TEAGARDEN, Elliott Zell, April Schumacher, Haley Sadoris, 3M Food Safety, Maplewood, MN, USA
- P3-133 (v) Evaluation of Automated Plate Reading as Compared to Human Interpretation for *Enterobacteriaceae*, Coliform, *E. coli* and Yeast and Molds in Food Matrices — VANESSA TSUHAKO, Beatriz Rosa, Georgia Barros, 3M, Sumaré/SP, Brazil
- P3-134 (v) Rapid Detection of *Salmonella* spp. and *Listeria monocytogenes* in Food Dressings with Loop-Mediated Isothermal Amplification (LAMP)-Bioluminescent Assays — VANESSA TSUHAKO, Thiago Santos, 3M, Sumaré/SP, Brazil
- P3-135 Detection of *Listeria* in Sprout Irrigation Water and Environmental Surface Samples Using the *Listeria* Canary® Zephyr Assay — Samantha Wright, Nick Davey, J. J. Lehett, YANGYANG WANG, Andrew Flannery, Smiths Detection, Baltimore, MD, USA
- P3-136 (v) Magnetic Separation and Luminescence-based Detection of Bacteria in Agricultural Samples Using Engineered Bacteriophage — Hannah Zurier, Emma Farquharson, Rachel Carson, MICHAEL WIEDERODER, Shannon McGraw, Julie Goddard, Sam Nugen, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- P3-137 (v) Universal Sample Preparation and Cell-Free Paper Sensor for Detection of Foodborne Pathogens in Food Matrices — Helena de Puig Guixe, MICHAEL WIEDERODER, Shannon McGraw, James J. Collins, Devora Najjar, U.S. Army DEVCOM Soldier Center, Natick, MA, USA
- P3-138 (v) Comparison of Selected Preenrichment Media and Rapid Screening Methods in Detection of *Salmonella* in Spent Sprout Irrigation Water Samples — Elizabeth Reed, Hua Wang, Anna Maounounen-Laasri, Jacob Marogi, Laila Ali, Xiaohong Deng, Christina M. Ferreira, Rebecca L. Bell, Eric Brown, Thomas Hammack, JIE ZHENG, Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, MD, USA
- P3-139 (v) Method Comparison of Clear Safety™ (CS) *Listeria* 3-in-1 Assay, Multiplex PCR and Whole-Genome Sequencing for Performing Speciation/Subtyping Analysis of *Listeria* Species — BRADLEY ZIEBELL, Balasubrahmanyam Kottapalli, Deann Akins-Lewenthal, Conagra Brands, Omaha, NE, USA
- P3-140 (v) Detection of *Listeria monocytogenes* in Mixed Environmental Sponge Swab Enrichment Cultures Using Hygiene™ BAX® PCR and Real-Time PCR Assays versus USDA MLG and FDA BAM Reference Methods — RYAN ZIMMERMAN, LeAnne Hahn, Laurie Post, Sue Kelly, Brian Farina, Charles Deibel, Deibel Laboratories, Inc., Madison, WI, USA
- P3-141 Evaluation of a STEC Detection Real-Time PCR Method Workflow vs. the ISO/TS 13136:2012 Reference Method — Muriel Bernard, Cécile Bernez, Ana-Maria Leonte, Christophe Quere, Maryse Rannou, Daniele Sohier, Evangelos J. Vandoros, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P3-142 Validation of a PCR Workflow for the Detection and Confirmation of *Escherichia coli* O157:H7 and the *E. coli* STEC Serotypes O26, O45, O103, O111, O121 and O145 from Fresh Raw Spinach, Fresh Baby Leaves, Fresh-Cut Tomatoes, Frozen Raw Beef, Raw Beef Trim and Beef Carcass Sponges — Benjamin Bastin, Joe Benzinger, Katherine Church, David Crabtree, Katharine Evans, Nikki Faulds, MATTHEW HAHS, Kateland Koch, Dean Leak, Ana-Maria Leonte, Craig Manthe, Daniele Sohier, Jessica Williams, Thermo Fisher Scientific, Lenexa, KS, USA

Modeling and Risk Assessment

- P3-143 (v) Crowdsourcing and Machine Learning Approaches for Extracting Information Indicating Potential Foodborne Outbreak from Social Media — DANDAN TAO, Dongyu Zhang, Ruofan Hu, Elke Rundensteiner, Hao Feng, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- P3-144 (v) Text Mining of Social Media Posts for Identifying Potential Food Safety Issues on Farmers' Markets in Illinois — DANDAN TAO, Hao Feng, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- P3-145 (v) Foodborne Illness of Hepatitis A Virus by Lettuce Consumption — EUNYOUNG PARK, Yoonjeong Yoo, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-146 (v) **Risk Assessment of Hepatitis A Virus Foodborne Illness by Fermented Shellfish Consumption** — Hyemin Oh, YOON-JEONG YOO, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-147 (v) Quantitative Microbial Risk Assessment for Norovirus Foodborne Illness by Kimchi Consumption — YOONJEONG YOO, Miseon Sung, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-148 (v) Risk of Norovirus Foodborne Illness by Raw Radish (*Raphanus sativus*) Consumption in Korea — MISEON SUNG, Yoonjeong Yoo, Changsun Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-149 (v) Evaluation of Microbial Quality and Safety of Sushi Sold in Ontario Using Combined Culture and Molecular Methods — Carlos Leon-Velarde, Jeanine Boulter-Bitzer, Susan Lee, Nicola Linton, Kelly Shannon, Anli Gao, Jiping Li, Saleema Saleh-Lakha, SHU CHEN, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P3-150 (v) **Quantitative Risk of *Staphylococcus aureus* Foodborne Illness by Home Meal Replacement (HMR) Foods** — YEOWON LEE, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P3-151 **Risk Model of Hand-to-Food Norovirus Transmission in School Cafeterias: Evaluating the Impact of Share Tables and Intervention Strategies on Student Exposure and Dose Response** — GUSTAVO A REYES, Jessica Zagorski, Melissa Pflug Prescott, Matthew J. Stasiewicz, University of Illinois Urbana-Champaign, Champaign, IL, USA
- P3-152 (v) **Development of a Novel Dose-Response Modeling Approach to Incorporate *Salmonella enterica* Heterogeneity Based on Gene Expression Data** — SHRADDHA KARANTH, Abani Pradhan, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

(v) Virtual

- P3-153 (v) Application of Advanced Data Analytics to Analyze Effects of *Salmonella* Gene Expression on Changes in Stress Response — SHRADDHA KARANATH, Abani Pradhan, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA
- P3-154 Withdrawn
- P3-155 Quantitative Transfer of *E. coli* (Non-Pathogenic) from Wheat into Milling Fractions and Equipment during Lab Scale Milling — JARED RIVERA, Manoj Kumar Pulivarthi, Janak Dhakal, Charles. G. Aldrich, Randall Phebus, Kaliramesh Siliveru, Kansas State University, Manhattan, KS, USA
- P3-156 Development of Risk Assessment Model to Predict the Occurrence of Late Blowing Defect in Gouda Cheese and Evaluate the Intervention Strategies — CHENHAO QIAN, Aljosa Trmcic, Martin Wiedmann, Cornell University, Ithaca, NY, USA
- P3-157 Identifying the Genotypic and Phenotypic Intra Species Variability of *S. enterica* Isolated from Food and Human Cases in Central Region of Mexico — ANGÉLICA GODÍNEZ-OVIEDO, Olga B. Pérez-Covarrubias, Sofia Arvizu-Medrano, Elisa Cabrera-Díaz, John P. Bowman, Montserrat Hernandez-Iturriaga, Universidad Autonoma de Queretaro, Queretaro, QA, Mexico
- P3-158 Modeling Growth of *Bacillus cereus* from Spores during Cooling of a Beef/Rice Combination Product — Vijay Juneja, Marangeli Osoria, Xinran Xu, Anuj Purohit, ABHINAV MISHRA, University of Georgia, Athens, GA, USA
- P3-159 (v) Predictive Modeling for Food Source Attribution of *Listeria monocytogenes* in Fresh Fruits and Vegetables — COLLINS TANUI, Shraddha Karanth, Edmund Benefo, Abani Pradhan, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA
- P3-160 (v) Hydroponic/Aquaaponic Farming Food Safety Risk Identification by Food Safety Practice Survey and NGS Microbial Community Analysis — MENGYI DONG, Hao Feng, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- P3-161 Withdrawn
- P3-162 (v) Dynamics of *Listeria monocytogenes* Low Population in Fresh-Cut Papaya during Storage at Different Temperatures — Winnie A. Luciano, Sholeem Griffin, Geany Targino de Souza Pedrosa, Vasilis P. Valdramidis, MARCIANE MAGNANI, Federal University of Paraiba, Joao Pessoa, Paraiba, Brazil
- P3-163 Efficacy of Celery Powder as an Antimicrobial Against *Listeria monocytogenes* in Prepacked Deli-Style Turkey Breast Under Refrigeration and Temperature Abuse Conditions — GURPREET KAUR CHAGGAR, Haley Oliver, Purdue University, West Lafayette, IN, USA
- P3-164 (v) Modelling the Inactivation and Determination of Fluence (UV-C Dose) Required for Incremental Inactivation of Several Strains of *Cronobacter* spp. Suspensions in Phosphate Buffered Saline — Mubashira Zaidi, Brahmaiah Pendyala, Laura Arvaj, Jeffrey Farber, Michael Sasges, Michelle Gabriel, Ankit Patras, SAMPATHKUMAR BALAMURUGAN, Agriculture and Agri-Food Canada, Guelph, ON, Canada
- P3-165 Improved Risk Assessment Model for Determining Robust Sanitation Programs and Other Preventive Controls — AMIT M. KHERADIA, Remco: A Vikan Company, Zionsville, IN, USA
- P3-166 (v) Assessing the Growth of *Listeria monocytogenes* in Salmon with or without the Competition of Background Microflora – A One-Step Kinetic Analysis — ZHEN JIA, University of Massachusetts, Lowell, MA, USA
- P3-167 (v) Kill Step Management Combining Real-Time Data Collection and Cloud-based Analytical Services — Virginie Pignard, Julien Platret, Pierre-Olivier Beal, Pierre-Alexandre Juan, Jérôme Defillon, LAURE PUJOL, NOVOLYZE, Daix, France
- P3-168 Application of a Monte Carlo Simulation Model to Evaluate the Effectiveness of Different Interventions in Reducing the Spoilage of Pasteurized Fluid Milk Due to Post-Pasteurization Contamination — SAMANTHA LAU, Sarah I. Murphy, Michael Phillips, Nicole Martin, Aljosa Trmcic, Martin Wiedmann, Cornell University, Ithaca, NY, USA
- P3-169 (v) Meta-Analysis of Almond Pasteurization Validations — IAN HILDEBRANDT, Judy Scott-McKay, Tim Birmingham, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P3-170 (v) Mechanistic Dose-Response Model for *Campylobacter jejuni* Infection Probability — HIROKI ABE, Kento Koyama, Shigenobu Koseki, Hokkaido University, Sapporo, Japan
- P3-171 Growth of Shiga Toxin-producing *E. coli* (STEC) and Generic *E. coli* in Ground Pork at 10°C, 25°C, and 40°C — MANIRUL HAQUE, Soon Kiat Lau, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA

Packaging

- P3-172 (v) Evaluation of Invisishield™ Technology to Reduce Human Norovirus and Hepatitis A Virus on Tomatoes Using the Antimicrobial Chlorine Dioxide — JASON FRYE, Rebecca M. Goulter, Angela Richard, Michael Johnston, Lee-Ann Jaykus, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA
- P3-173 (v) Development of TiO₂-Containing Antimicrobial Packaging Triggered by Pulsed Light to Reduce Microbial Contaminants — TONY JIN, USDA-ARS-Eastern Regional Research Center, Wyndmoor, PA, USA

Retail and Food Service Safety

- P3-174 (v) Insights into Hand Hygiene Practices of Food Handlers in Convenience Stores – A Video Camera-based Observation Study — LILY YANG, Auja Bywater, Rolando Gonzalez, James Arbogast, Clyde Manuel, GOJO Industries, Inc., Akron, OH, USA
- P3-175 (v) Automated Hand Hygiene Monitoring Systems Reveal Insights into Behaviors of Food Handlers in Two Restaurant Types — CLYDE MANUEL, Greg Robbins, Jason Slater, Diane Walker, Albert Parker, James Arbogast, GOJO Industries, Inc., Akron, OH, USA
- P3-176 Street Foods in Southwest Nigeria: FOOD Safety, Culture, Health, and Governance — ADEJARE ADEGBUYI, Federal University of Technology, Akure, Nigeria
- P3-177 Microbiological Survey of Cantaloupe Contact Surfaces in the Retail Environment — CAMERON BARDSLEY, Christopher Rupert, Loretta Friedrich, Laura Strawn, Michelle Danyluk, Benjamin Chapman, Virginia Tech, Blacksburg, VA, USA
- P3-178 (v) Employees' Knowledge Associated with Food Allergy Management for Independent Ethnic Restaurants — JIHEE CHOI, Queens College, City University of New York (CUNY), Flushing, NY, USA

- P3-179 (v) Cross-Contamination of Kitchen Surfaces, Utensils, and Hands of Volunteers Following Meal Preparation Lacking a Hand Hygiene Intervention — REBECCA M. GOULTER, Jason Frye, Emily Kingston, Esa Puntch, Catherine Sander, Brian Chesanek, Nadia Harvilla, Lisa Shelley, Blanca Escudero-Abarca, Lydia Goodson, James Arbogast, Clyde Manuel, Lee-Ann Jaykus, Benjamin Chapman, North Carolina State University, Department of Food, Bioprocessing and Nutrition Sciences, Raleigh, NC, USA
- P3-180 Masks as a Potential Source of Cross-Contamination during Food Preparation — ERIKA KADAS, Peter Rubinelli, Jennifer Acuff, University of Arkansas, Fayetteville, AR, USA
- P3-181 (v) An Empirically Derived Measure of Food Safety Culture Among Restaurant Food Workers — ADAM KRAMER, Rick Hoover, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA
- P3-182 (v) Menu Selection on Food Safety Among Young Adult Consumers: Situational Factors and Beyond — MEGAN MEI YEE LOW, Yaohua (Betty) Feng, Purdue University, West Lafayette, IN, USA
- P3-183 (v) Isolation and Characterization of the Foodborne Pathogen *Vibrio parahaemolyticus* Variants Protected from Laboratory and Cooking Protocols from Retail Seafood Sources — ELIZABETH SCRUGGS, Guadalupe Meza, AhKayla Walker, Hung King Tiong, University of West Alabama, Livingston, AL, USA
- P3-184 (v) Food Safety Best Practices at Food Service and Retail Sector in the Face of COVID-19 — MUHAMMAD SHAHBAZ, Abdul Moiz, Shuguftha Mohammad Zubair, Mohammad Ahmad Amjad, Mawarid Food Company – KSA (Pizza Hut, Taco Bell), Riyadh, Saudi Arabia
- P3-185 (v) SARS-CoV-2 on High Touch Surfaces at Food Retailers — Maria Corradini, Steve Newmaster, Robert Hanner, Lawrence Goodridge, Reihaneh Abdi, Louis Colaruotolo, Katherine Petker, Alyssa Francavilla, Azin Sadat, MALEEKA SINGH, Pedram Nasr, Maryam Moraveji, Sujani Rathnayake, Deleo de Leonardis, University of Guelph, Guelph, ON, Canada
- P3-186 (v) Focus Group Studies on *Listeria* Control at Retail – Outcomes and Next Steps — KRISTINA BARLOW, Erika Stapp-Kamotani, United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C., USA
- P3-187 (v) Antimicrobial-resistant Non-Typhoidal *Salmonella* in Various Foods at Retail in the United States: A Rapid Systematic Review and Meta-Analysis — YIFAN WU, Bing Wang, John Schmidt, Terrance Arthur, Graduated Student, Lincoln, NE, USA

Blue Text – Developing Scientist Competitor

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Jianghong Meng
College Park, Maryland

Dr. Jianghong Meng is the recipient of the 2021 IAFP Fellow Award. Dr. Meng is the Director of the Joint Institute for Food Safety and Applied Nutrition (JIFSAN) and the Center for Food Safety and Security Systems, and a Professor in the Department of Nutrition and Food Science at the University of Maryland in College Park. As the Director, he has built strong collaborative partnerships in expanding JIFSAN's food safety capacity building programs, both locally and globally.

Dr. Meng has extensive experience in food safety research and education. His scientific research interests include the development of identification and characterization methods for foodborne pathogens, and the use of whole genome sequencing to answer pressing epidemiologic issues related to the source and risk factors contributing to foodborne illness.

Dr. Meng has served on numerous national and international advisory committees including the National Academy of Science's Committees on Food Safety; the National Advisory Committee on Microbiological Criteria for Foods; and the Asia-Pacific Economic Corporation's Food Safety Partnership Training Institute Network. He chairs the International Scientific Committee of China's National Center for Food Safety Risk Assessment. Dr. Meng is also a Fellow of the American Academy of Microbiology.

An active IAFP Member since 1991, Dr. Meng helped establish the Capital Area Food Protection Association (CAFPA), the Washington, D.C. area Affiliate of IAFP, and served as its President from 2002–2004. He also served on the Editorial Board for the *Journal of Food Protection* in 1998–2000 and 2013–2016.

Dr. Meng received his DVM from Sichuan Agricultural University in China, and his Master of Preventive Veterinary Medicine and Ph.D. in Comparative Pathology, both from the University of California – Davis. He conducted his post-doctoral training in Food Safety Microbiology at the University of Georgia.

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Bethesda, Maryland

Mr. Carl Custer is the recipient of the 2021 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 achievements in food protection.

Mr. Custer served as a food microbiologist with more than five decades of experience in dairy, seafood, and meat microbiology in addition to regulatory and educational programs. After receiving his B.S. and M.S. from Texas A&M, he joined the U.S. Department of Agriculture's Regulatory Agency in 1972 at the Beltsville laboratories. In 1980, he moved to the Agency's Food Safety and Inspection Service's (FSIS) headquarters in Washington, D.C. to develop the scientific background for regulatory programs. His experience at FSIS included developing regulations, writing directives, troubleshooting plant processes, and training federal and retail inspectors. Since his retirement in 2007, Mr. Custer has done consulting, inspector training, and motorcycle touring.

Mr. Custer joined IAFP (then IAMFES) in 1980 and served as an active member on numerous committees and Professional Development Groups (PDGs), including as Chair of the Meat and Poultry Safety and Quality PDG. He has also given numerous IAFP presentations and organized symposia and roundtables. He was a co-founder of IAFP's Affiliate, the Capital Area Food Protection Association, serving as its Delegate and later as Affiliate Council Chair. In 2007, Mr. Custer presented the Ivan Parkin Lecture, received the Harry Haverland Citation Award, and became a member of the "Brat Hat Pack." In 2009, Mr. Custer was honored with the IAFP Honorary Life Membership Award, and in 2011, he received the President's Recognition Award for his service on the IAFP 100-Year Planning Committee.

Mr. Custer is a member of local and national boards, and volunteers for local projects and teaching STEM. In addition to volunteering, his current interests are entertaining his wife, kids, and grandchildren, reading, writing, rye whiskey, and craft beers.

HONORARY LIFE MEMBERSHIP AWARD



Kenneth Anderson
Arlington Heights, Illinois

Mr. Kenneth Anderson is a recipient of the 2021 Honorary Life Membership Award. Mr. Anderson became President of Harold Wainess & Associates in 2003 upon Mr. Wainess' retirement. Founded in 1952, the company is one of only two firms authorized by the U.S. FDA to certify foreign dairy processors to the Grade-A Pasteurized Milk Ordinance (PMO). The company's motto is "The Public's Health is Our Business," and they strive to live by that every day. Mr. Anderson travels the world to certify foreign manufacturers of dairy products and dairy packaging materials in more than 30 countries under the FDA/IMS Dairy Program.

Prior to joining Harold Wainess & Associates, Mr. Anderson worked for the Illinois Department of Public Health, Division of Food, Drugs and Dairies, where he inspected dairy farms and processing plants in Northern Illinois. As an FDA-certified Rating Officer, he also conducted surveys for the Interstate Milk Shippers Program.

Mr. Anderson joined IAFP (then IAMFES) in 1975 and has attended many Annual Meetings, giving presentations on HACCP, GMPs, and other dairy-related subjects. As a supporter and Past President of the IAFP Affiliate, the Associated Illinois Milk, Food and Environmental Sanitarians, Mr. Anderson played an active role in hosting two IAFP Annual Meetings in Illinois. He served as Chair of the Dairy Quality & Safety PDG from 2005–2007 and received the Harold Barnum Industry Award in 2000.

Mr. Anderson is a member of the Executive Board of the National Conference of Interstate Milk Shipments and serves on the Board of Directors of 3-A Sanitary Standards, Inc. He is a Certified Conformance Evaluator under the 3-A Third Party Verification Program.



Judy Greig
Guelph, Ontario, Canada

Ms. Judy Greig is a recipient of the 2021 IAFP Honorary Life Membership Award. Ms. Greig retired in 2019 as an Epidemiologist with the Public Health Agency of Canada, National Microbiology Laboratory in Guelph, Ontario. Her projects included attribution of foodborne disease, systematic and scoping reviews of public health issues, and knowledge translation.

Since joining IAFP in 2000, Ms. Greig served on the Black Pearl Selection Committee; both the *Food Protection Trends* and the *Journal of Food Protection* Management Committees; the Foundation Committee, and the *FPT* Editorial Board. She joined the Committee on the Control of Foodborne Illness in 2000, and served as Vice-Chair from 2007–2020. During that time, the Committee authored eleven papers describing the role of the infected food handler; updated the *Procedures to Investigate Foodborne Illness* and *Procedures to Investigate Waterborne Illness* manuals; and organized multiple symposia. Ms. Greig received the IAFP Affiliate Certificate of Merit in 2005, the Harry Haverland Award in 2012, and the IAFP Fellow Award in 2017.

As a member of the IAFP Affiliate, the Ontario Food Protection Association (OFPA), from 2000–2011 Ms. Greig served on the Student Awards Committee; as Co-Editor of the OFPA award-winning newsletter (2001–2006); organized numerous technical sessions; and as Affiliate President in 2010. She received the OFPA Award of Merit in 2002.

Ms. Greig has given more than 70 oral or poster presentations and authored numerous peer-reviewed publications. She guest lectured at the University of Guelph in its Master's in Food Safety and Quality Assurance Program and at Ryerson University in its School of Occupational and Public Health in Toronto. Ms. Greig is a registered nurse and practiced in three Canadian provinces for more than 19 years. She received her B.Sc., specializing in Microbiology, from the University of Waterloo in Ontario, and her M.Sc. in Epidemiology from the University of Guelph.

HONORARY LIFE MEMBERSHIP AWARD



Mickey Parish
University Park, Maryland

Dr. Mickey Parish is a recipient of the 2021 IAFP Honorary Life Membership Award. Dr. Parish served as the Senior Science Advisor at the U.S. Food and Drug Administration's Center for Food Safety and Applied Nutrition (CFSAN) in College Park, Maryland until his retirement in 2020. In this role, he provided oversight of the CFSAN research portfolio including issues related to science and research policy. Prior to joining the FDA, Dr. Parish was Chair of the Department of Nutrition and Food Science at the University of Maryland, College Park (2005–2010) and was on the faculty at the University of Florida's Citrus Research and Education Center as a food microbiologist (1986–2005). At UFL, he developed an internationally known research program on juice and beverage microbiology with notable accomplishments in juice processing technology.

Dr. Parish joined IAFP in 1984 and served as President in 2018. Throughout his Membership, he has served on numerous committees, including the European Symposium Organizing Committee, the Nominating Committee, the Developing Scientist Competition Committee, and numerous Award Selection Committees. He has served on the Editorial Board for the *Journal of Food Protection* since 2003 and received the IAFP Fellow Award in 2020.

Dr. Parish is a Fellow of the Institute of Food Technologists and received the 2015 IFT Myron Solberg Award for leadership in developing industry/government/academic cooperative organizations. He received a Ph.D. in Food Science from North Carolina State University, a Master's in Food Science from the University of Florida, and B.S. in Biology from Florida State University.



F. Tracy Schonrock
Fairfax Station, Virginia

Mr. F. Tracy Schonrock is a recipient of the 2021 IAFP Honorary Life Membership Award. Mr. Schonrock is President and sole employee of Schonrock Consulting in Fairfax Station, Virginia. He graduated from the University of Connecticut in 1964 with a B.S. in Dairy Manufacturing. Following graduation, he worked several years for the Milk Division of Safeway Foods, Inc., in Landover, Maryland.

In 1967, Mr. Schonrock joined the U.S. Department of Agriculture with the Agricultural Marketing Service, Dairy Division, and spent the next 34+ years performing a wide variety of duties. These included as resident inspector at a dairy in central Wisconsin producing dry milk products and butter; a commodity fee grader; a supervisory grader; the Assistant Regional Director for the Dairy Grading Branch Chicago Region; the Assistant Branch Chief of the Dairy Standardization Branch; the National Program Coordinator for plant inspections and sanitary equipment design evaluations; and as the Branch Chief of the Dairy Grading Branch from 1987–2001. In conjunction with his duties with the USDA, Mr. Schonrock was actively involved with the 3-A Sanitary Standards Committees from 1978 until after his retirement in June 2001. He held the Chair of the 3-A Standards Third Party Evaluation Coordinating Committee from its inception until 2019, was a member of multiple 3-A Sanitary Standards Working Groups, and served as a member of the Board of Directors of 3-A Sanitary Standards Inc.

From 2001–2015, Mr. Schonrock served on the NSF International, Inc. Council of Public Health Consultants. In association with NSF International, he is also the Chair of the Task Committees for developing and maintaining three standards: Meat and Poultry Processing Equipment; Hand-Held Tools Used in the Meat and Poultry Processing Industry; and Mechanical Conveyors Used in the Meat and Poultry Processing Industry. In 2009, Mr. Schonrock became a member of the European Hygienic Engineering and Design Group (EHEDG) Executive Committee and currently serves as the Vice Chair of the Products Portfolio Sub-Committee. Based in The Netherlands with global recognition, EHEDG is a group similar to the 3-A Sanitary Standards, Inc. which develops guidelines for the food industry, provides extensive training courses and materials, and certifies equipment.

HONORARY LIFE MEMBERSHIP AWARD



Edward Wellmeyer
Yorba Linda, California

Mr. Edward Wellmeyer is a recipient of the 2021 Honorary Life Membership Award. Mr. Wellmeyer spent his 50-year career in dairy, edible oils, dressings, and sauces as senior management in Food Safety, Technical Services, and Quality Assurance. Throughout his career, he developed, implemented, and evaluated food safety programs and microbial assessment of food programs. He has also conducted educational seminars, audits (SQF), and consulted on food spoilage and pathogens contamination.

Mr. Wellmeyer's services included positions as Technical Chairperson for the National Margarine Association; as a member of the Executive Technical Board for Association of Dressing and Sauces; and serving on the NSF Certification Advisory Council (ISO, GFSI). In addition, he spent 26 years as Vice President of Food Safety and Quality and as the Food Safety Officer of Ventura Foods before his retirement.

Mr. Wellmeyer has been a member of food safety committees for FPA, IFT, and the Food Industry Microbiological Roundtable. While better known for his dairy, dressing, sauces, and margarine technologies, Mr. Wellmeyer's expertise excels in troubleshooting root cause analysis in food spoilage contamination, from heterophilic lactobacilli to osmotic fermentation yeasts.

Since joining IAFP (then IAMFES) in 1976, Mr. Wellmeyer also directed dairy food safety and quality programs in a multi-state cheese company. Throughout his membership, he served on the Membership Committee, the *Food Protection Trends* Management Committee, and participated in technical committees and PDG meetings.

HARRY HAVERLAND CITATION AWARD



Dale Grinstead
Highlands, North Carolina

Dr. Dale Grinstead is this year's recipient of the Harry Haverland Citation Award. This award honors Dr. Grinstead for his many years of dedication and devotion to the Association's ideals and objectives. He is a Senior Technology Fellow in the Diversey Research & Development (R&D) group where he provides technical input and guidance on Diversey's food safety programs, serves on the Diversey R&D leadership team, leads the Diversey Technology Council, and participates in new product development projects.

A Food Microbiologist (who usually just introduces himself as a "Food Safety Nerd") with 26 years of industrial R&D experience, Dr. Grinstead joined Unilever Research in 1994, where he led the group doing clinical testing for antimicrobial hand washes. While there, he also worked extensively with the U.S. FDA's Center for Drug Evaluation and Research (CDER) on the monograph to regulate antimicrobial personal care products. In 1998, Dr. Grinstead joined Diversey R&D, developing hygiene products and systems for food processing facilities. In 2005, he began working on hygiene and food safety systems focused on the food service and food retail industries.

Dr. Grinstead has been an active Member of IAFP for more than 20 years. Throughout his Membership, he has served as Chair of the Hygiene and Sanitation PDG; was a member of the Nominating Committee and various Award Committees; and a member of the Program Committee from 2014–2017. He currently serves on the Editorial Board for *Food Protection Trends*. He was inducted as an IAFP Fellow in 2017. Dr. Grinstead is also active in the Conference for Food Protection, where he has served on Council III several times and as a committee member or co-chair continuously since 2008.

Dr. Grinstead received his B.S. in Microbiology and M.S. in Food Science from Iowa State University and his Ph.D. in Food Technology from Clemson University. He also conducted a post-doctoral study at the University of Tennessee in Knoxville.

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FOOD SAFETY INNOVATION AWARD



Hygiena
Camarillo, CA

a true farm-to-fork “One Health” organization that provides tools for regulatory agencies and broader food and beverage industries globally. Hygiena is honored and excited to receive this award for its efforts in innovation with SalQuant™ and is positioned to continue developing innovative solutions.

Hygiena is the recipient of the 2021 IAFP Food Safety Innovation Award for its development of the BAX® System SalQuant™, the first AOAC-RI approved method for enumeration of *Salmonella* in comminuted chicken and turkey. Hygiena continues to innovate in the area of *Salmonella* Quantification (SalQuant™) by developing protocols for relevant pre- and post-harvest matrices not only in the poultry industry, but beef and pork industries as well.

Other innovative tools that Hygiena has recently developed are the BAX® System Real-time PCR assay for *E. coli* O157:H7 Exact (single target assay with increased accuracy and shortened enrichment times); BAX® Prep Xpress (automated lysis prep); SureTrend™ Cloud (online data collection and analysis tools); EnSURE™ Touch (next-generation quality monitoring system); BAX® System SalLimits™ (detection of *Salmonella* spp. at a specific level, i.e., ≥ 10 CFU/g); and more.

Recently acquired by EW GROUP, Hygiena has joined forces with BioCheck Inc. and BIOTECON Diagnostics (subsidiaries of EW GROUP), which has expanded the company’s global footprint and portfolio to position Hygiena as

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INTERNATIONAL LEADERSHIP AWARD



Terence Lok-Ting Lau
Hong Kong

The 2021 International Leadership Award goes to Dr. Terence Lok-Ting Lau for his dedication to the high ideals and objective of IAFP and his promotion of the mission of the Association in countries outside the U.S. and Canada. Dr. Lau is the Convenor of the IAFP Affiliate, the Food Safety Consortium (FSC) in Hong Kong. He has dedicated more than 20 years to technology ventures. Dr. Lau started his career in a renowned Swiss-based multinational food company before becoming involved in setting up biotechnology companies offering innovative products and services for clinical, food, and veterinary applications. He established the first accredited quantitative genetically modified food testing laboratory in Asia in the early 2000s, and has developed more than 100 products available globally, including the first molecular avian influenza test kits that received official regulatory approval from Japan.

Dr. Lau established the FSC in 2015 with the aim to facilitate collaboration on food safety and, under his leadership, the Affiliate has become the first FAO/WHO CODEX non-governmental organization (NGO) observer from China. He was previously the Interim Associate Vice President (Innovation and Technology Development) at The Hong Kong Polytechnic University, and is the founding Chairman of the DISH Global Centre for Food Safety and Quality in collaboration with three other European universities. Dr. Lau also serves as the Senior Advisor to the President and Adjunct Professor at the Hong Kong Baptist University, and serves actively as advisors to the government and industry locally and internationally, on food safety and related matters. He hosts numerous food

conferences, including the most recent Asia-Pacific Symposium on Food Safety held earlier in 2021 in Hong Kong, to facilitate exchange and collaboration. He is still active in research, developing innovative technologies to advance food safety through multi-disciplinary collaboration, in particular with the areas of AI, big data, and IoT.

Dr. Lau received his B.Sc. (Hons) in Animal and Plant Biotechnology from The University of Hong Kong, M.Phil. from the Hong Kong University of Science and Technology, and Ph.D. from Peking University in China. He also received his pre-doctoral training from Indiana University (Bloomington) and Stanford University School of Medicine.

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FOOD SAFETY AWARD



The Center for Produce Safety
Woodland, California

The recipient of the 2021 Food Safety Award is The Center for Produce Safety (CPS) in Woodland, California. Established in 2007, the CPS brings together leaders from industry, government, and the scientific and academic communities to work together toward the common goals of identifying the most pressing research needs, funding the most promising investigations, and advancing real-world solutions.

CPS has awarded more than \$33 million and funded 187 one- to two-year research projects at 44 research institutions. In addition to the annual call for research proposals, CPS addresses immediate industry needs with Rapid Response projects and Innovation Challenge Grants. CPS then transfers that knowledge and tools to industry and other stakeholders through its annual Research Symposium, website, webinars, guest columns in key trade press outlets, and other outreach.

CPS has an extensive matrix of volunteers who provide countless hours to ensure that CPS stays true to its mission, “Fund the Science, Find Solutions and Fuel the Change.” CPS is governed by a 28-member Board of Directors representing the produce supply and distribution chain, state and federal regulatory agencies, and academia. The Technical Committee of 48 members provides the necessary scrutiny and tight controls to ensure funded research projects are practical, measurable, and translatable.



FROZEN FOOD FOUNDATION FREEZING RESEARCH AWARD



Shyam Sablani
Pullman, Washington

Dr. Shyam Sablani is the recipient of the 2021 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. Sablani is a Professor of Food Engineering at Washington State University in Pullman. His current research interests include applications of materials science principles for understanding physical and chemical changes in frozen and reduced water foods, and design of high barrier polymeric packaging for improved food safety and shelf life.

Dr. Sablani has made substantial contributions to the science and technologies related to frozen and refrigerated foods. His research exhibits that ultra violet light C can adequately penetrate clear ice and inactivate foodborne pathogens to improve the safety of frozen food. He has investigated the role of unfreezable water and state/phase transition-induced ice recrystallization on the physical and chemical quality of frozen foods. His research investigated the sensitivity of starch-, protein-, and sugar-rich frozen products to temperature fluctuations in the cold chain. His findings have provided insights for improved packaging design, storage, and transportation strategies to minimize quality changes in frozen foods.

Dr. Sablani has organized a series of workshops and training programs for industry professionals from developing economies and emerging markets, including the Philippines, Pakistan, Bolivia, Costa Rica, Peru, Nigeria, and China in the area of cold chain technologies and management practices. These trainings were sponsored by the USDA Foreign Agricultural Services through the Cochran Fellowship program.

Dr. Sablani joined IAFP in 2015. He is a recipient of 2016 Institute of Food Technologists Marcel Loncin Research Prize and currently serves as Scientific Editor of the *Journal of Food Engineering*. He received his B.E. from the National Institute of Technology in Raipur, and his M.S. in Mechanical Engineering from the Indian Institute of Technology in Madras. Dr. Sablani earned a Ph.D. in Food Engineering from McGill University in Montreal.



INSTITUT MÉRIEUX YOUNG INVESTIGATOR AWARD IN ANTIMICROBIAL RESISTANCE



Laura Carroll
Heidelberg, Germany

Dr. Laura Carroll is the recipient of the 2021 Institut Mérieux Young Investigator Award in Antimicrobial Resistance. The award recognizes an active IAFP Member who has shown outstanding ability and professional promise as a researcher in food microbiology/food safety, focusing on antimicrobial resistance.

Dr. Carroll is a Postdoctoral Fellow in the Structural and Computational Biology Unit of the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany. As a computational microbiologist and bioinformatician, her research has focused on developing bioinformatic approaches to rapidly characterize microbes *in silico* using next-generation sequencing (NGS) data, and using those approaches to analyze large genomic data sets derived from bacterial isolates and microbial communities. Dr. Carroll is particularly interested in developing and deploying phylogenomic and comparative genomic methods, which can leverage NGS data to improve the monitoring of foodborne pathogens and their associated antimicrobial resistance (AMR)- and virulence-conferring determinants from farm to fork. Notably, her research in this area led to the discovery of a novel plasmid-mediated AMR gene, which confers resistance to colistin, a critically important, last-resort antibiotic.

In addition to her research, Dr. Carroll is passionate about making basic bioinformatics skills accessible to all. She has led numerous NGS data analysis courses for food, veterinary, and industrial microbiologists around the world, and she continues to collaborate with experimental biologists and clinicians, providing computational and statistical support for their projects.

Dr. Carroll joined IAFP in 2013 and received first place in the Undergraduate Student Award Competition that year. She received a B.S. in Genomics and Molecular Genetics and a B.A. in History from Michigan State University and a Ph.D. in Food Science and Technology from Cornell University. She was a recipient of a National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) award, as well as an NSF Graduate Research Opportunities Worldwide (GROW) award in collaboration with ETH Zurich and the University of Zurich in Switzerland.

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MAURICE WEBER LABORATORIAN AWARD



Panagiotis N. Skandamis
Athens, Greece

Dr. Panagiotis N. Skandamis is the recipient of the 2021 Maurice Weber Laborarian 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. Skandamis is Professor of Food Microbiology and Food Hygiene at the Agricultural University of Athens (AUA) in Greece and a member of the BIOHAZ panel of the European Food Safety Authority (EFSA). His research interests include predictive microbiology and quantitative microbial risk assessment; active antimicrobial and intelligent packaging of foods; control and adaptive responses of bacteria to food-related stresses; antimicrobial interventions; detection and subtyping of foodborne pathogens; and ecology of mycotoxin-producing fungi.

Dr. Skandamis has authored 190 papers in SCI journals, 30 book chapters, and co-edited one book, with 7,249 citations (*h-index*=38). He has secured more than 3.0 million Euros from competitive grants of the 5th–7th EU Framework Programs, HORIZON 2020, Greek Research and Technology Funding Agencies, and direct contracts with the Food Industry.

Dr. Skandamis has been Associate Editor of *Food Research International* (2012–2016) and served on IAFP's *Journal of Food Protection* Editorial Board from 2009–2016. Since 2017, he has served as scientific co-editor of the *Journal of Food Protection* and is a member of the Editorial Board of *Applied and Environmental Microbiology* and *International Journal of Food Microbiology*.

An IAFP Member since 2003, Dr. Skandamis has been involved in the scientific committee of the International Conference on Predictive Microbiology in Foods since 2008; the IAFP European Symposium on Food Safety Organizing Committee since 2015; and several student award selection committees. He helped co-host IAFP's European Symposium on Food Safety in 2017; is Co-President of FoodMicro 2022 Conference (Athens); and Chair of IAFP's Microbial Modelling and Risk Assessment PDG. He developed the predictive modelling software *GroPIN* and is coordinator of the WG "Food Safety" of the *National Technological Platform "Food for Life."*

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LARRY BEUCHAT YOUNG RESEARCHER AWARD



Laura K. Strawn
Blacksburg, Virginia

Dr. Laura K. Strawn is the recipient of the 2021 Larry Beuchat Young Researcher Award, which recognizes a young researcher who has shown outstanding ability and professional promise in their career.

Dr. Strawn is an Associate Professor and Extension Specialist of Produce Safety in the Department of Food Science and Technology at Virginia Tech in Blacksburg.

Dr. Strawn's research program focuses on the microbial safety of fresh fruits and vegetables, specifically, the ecology, evolution, and transmission of foodborne pathogens in the produce field-to-fork continuum. Additionally, Dr. Strawn works directly with produce stakeholders on various produce safety issues and teaches a cadre of food safety courses. She leads Virginia Cooperative Extension's educational efforts on the Food Safety Modernization Act's Produce Safety Rule, including teaching Produce Safety Alliance Grower Trainings and performing On-Farm Readiness Reviews.

Dr. Strawn is also the Lead of Applied Research for Virginia's Fresh Produce Food Safety Team, Extension Team Leader for the Virginia Tech Food Science and Technology Department, and invited-member of the Radiation Advisory Board for the Commonwealth of Virginia. Professional service includes involvement in Phi Tau Sigma (Board of Directors), International Association for Food Protection, Institute of Food Technologists, serving as a member of the Delmarva Food Safety Task Force, and as a member of the Science and Prevention working group for the Romaine Food Safety Task Force. Dr. Strawn joined IAFP in 2007 and was a member of the IAFP's Student Professional Development Group from 2009–2016. She received first place in the 2009 Developing Scientist Poster Competition, the 2011 President's Recognition Award, and the 2012 Student Travel Scholarship. She currently serves on the Editorial Board for the *Journal of Food Protection*.

Dr. Strawn holds three degrees in Food Science with food microbiology emphases, as well as minors in Epidemiology and Molecular Microbiology; a Ph.D. from Cornell University; an M.S. from the University of Florida; and a B.S. from the University of California, Davis.

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JAMES M. JAY DIVERSITY IN FOOD SAFETY AWARD



Armitra Jackson-Davis
Huntsville, Alabama

Dr. Armitra Jackson-Davis is the recipient of the inaugural 2021 James M. Jay Diversity in Food Safety Award. This award recognizes an individual who has made exceptional contributions to enhancing equity, diversity, and inclusion in the field of food safety.

Dr. Jackson-Davis is an Associate Professor in the Department of Food and Animal Sciences at Alabama A&M University in Huntsville where she oversees the research activities of several graduate and undergraduate students. At Alabama A&M University, she has served on many committees including as Chair of the Institutional Biosafety Committee; and Co-Advisor to the Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS) Student Organization. She has authored journal articles and book chapters in the area of food safety. Dr. Jackson-Davis has trained 16 graduate students in the area of food safety and has mentored more than 20 high school and undergraduate students.

Dr. Jackson-Davis has been awarded funding for the training of underrepresented and underserved populations in food safety. Through this, she has prepared more than 60 students from underserved communities for careers in food safety. Dr. Jackson-Davis is a Produce Safety Rule (PSR) Trainer and a member of the Southern Center for Food Safety Training, Outreach and Technical Assistance where she is involved with training students, farmers, and regulators on the Produce Safety Rule.

An IAFP Member for 12 years, Dr. Jackson-Davis currently serves on the Editorial Board of the *Journal of Food Protection*; has presented her research results frequently at IAFP meetings in North America and globally; and has developed several symposia and roundtables for meetings in North America and worldwide. She led the effort to organize IAFP symposia/roundtable and panels for the Southern Center related to diversity in food safety. Dr. Jackson-Davis received her Ph.D. in Animal Science with an emphasis in the microbiological safety of foods of animal origin from Iowa State University.

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EWEN C.D. TODD CONTROL OF FOODBORNE ILLNESS AWARD



Craig W. Hedberg
Minneapolis, Minnesota

Dr. Craig Hedberg is the recipient of the 2021 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.

Dr. Hedberg is an Epidemiologist, Professor and Interim Head of the Division of Environmental Health Sciences at the University of Minnesota, School of Public Health (SPH) in Minneapolis. He serves as the Co-Director for the MN Integrated Food Safety Center of Excellence. He promotes public health surveillance as a prerequisite for effective food control. Prior to joining the SPH faculty in 1999, Dr. Hedberg had 15 years of applied experience conducting surveillance for foodborne, vectorborne, and zoonotic diseases at the Minnesota Department of Health, where he developed several innovative approaches to improving foodborne illness surveillance and outbreak investigation.

Dr. Hedberg's most important contributions have been to advance methods for collaboration between public health and regulatory agencies, academic researchers, and industry to improve foodborne illness surveillance and outbreak investigations. Improving the efficiency and effectiveness of investigations enhances response activities. Better investigations produce more effective prevention measures.

Dr. Hedberg has proudly served on the Editorial Board of the *Journal of Food Protection (JFP)* since 2002 and has published more than 100 peer-reviewed scientific articles, including 28 in *JFP*.

Many of Dr. Hedberg's publications featured his students as first author. These students have gone on to leadership positions in public health and regulatory agencies and industry.

Dr. Hedberg has been a member of IAFP since 2014. In addition to his service to *JFP*, he has served for many years on the Selection Committee for the Travel Award for Health or Agricultural Department Employees in North America.

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SANITARIAN AWARD



Richard Brouillette
South Burlington, Vermont

The 2021 Sanitarian Award goes to Mr. Richard Brouillette. The Sanitarian Award honors an IAFP Member for dedicated and exceptional service to the profession of the sanitarian serving the public and the food industry. Mr. Brouillette is Food Safety Director at Commercial Food Sanitation (CFS), an Intralox company, where he leads a team of consultants, as well as consulting for several clients.

Mr. Brouillette worked at Kraft Foods where he was responsible for developing Sanitation and Food Safety programs, procedures, and training, working with internal manufacturing locations, along with external manufacturers and suppliers. Before joining CFS, he headed an international team of corporate microbiologists at Mondelez International. There, his responsibilities included risk assessments for new products and processes to ensure there would be no food safety issues; developing global food safety policies/programs; and ensuring implementation at manufacturing locations.

Mr. Brouillette has collaborated on various industry teams, including facilitating the Grocery Manufacturers Association team that developed the "*Listeria monocytogenes* Guidance on Environmental Monitoring," and led a team of experts working with the Dairy Innovation Center to develop and teach Dairy Plant Food Safety Workshops, including all dry focused sessions.

An IAFP Member since 2010, Mr. Brouillette has convened many symposia, workshops, and presented numerous times at IAFP conferences, and the IAFP European Symposium on Food Safety. He is a member of the Sanitary Equipment and Facility Design PDG and has written Sanitation and Hygiene related articles for *Food Safety Magazine*, *Baking & Snack Magazine*, and *EHEDG Connects*.

Mr. Brouillette received his B.Sc. in Microbiology and Immunology from McGill University in Montreal, Canada. While he has attended a number of education courses, he always looks forward to attending the Technical Sessions at IAFP's Annual Meeting to grow his knowledge on food safety.

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ELMER MARTH EDUCATOR AWARD



Elizabeth A. Bihn
Geneva, New York

Dr. Elizabeth A. Bihn is the recipient of the 2021 IAFP Elmer Marth Educator Award, which recognizes an IAFP Member for dedicated and exceptional contributions to the profession of education. Dr. Bihn is the Director of the Produce Safety Alliance and the National Good Agricultural Practices Program, and the Executive Director of the Institute for Food Safety at Cornell University in Ithaca, New York, in her position as a Senior Extension Associate at Cornell University.

Dr. Bihn received her B.S. in Zoology from The Ohio State University, an M.S. in Horticulture from the University of Florida, and a Ph.D. in Food Science from Cornell University. Her career started in plant molecular biology research with enriching experiences in neurobiology, fisheries, horticulture, and space biology research on her journey into food safety. Dr. Bihn's diverse educational background and professional experiences allow her to engage with stakeholders, no matter their backgrounds. She facilitates focus groups and national discussions to gather stakeholder input to effectively build education and outreach programs to meet their needs.

Dr. Bihn has devoted the past 22 years to promoting public health by working with the growers, farm workers, packers, and processors to implement food safety practices that reduce microbial risks and help ensure the economic viability of farms and food businesses by meeting market and regulatory expectations. She also trains extension educators, regulatory personnel, and others to expand food safety expertise throughout the food industry and has authored several award-winning publications. Her research focuses on assessing the management and quality of surface water used during fruit and vegetable production, as well as evaluating the effectiveness of extension training programs.

Dr. Bihn joined IAFP in 2002 and has participated in the Fruit and Vegetable Safety and Quality PDG and the Water Safety and Quality PDG. She received the William V. Hickey Award (2015) and served as President of IAFP's Affiliate, the New York State Association for Food Protection, from 2019–2020. In 2018, Dr. Bihn and her co-authors were awarded the Most Cited Peer-Reviewed *Food Protection Trends* Publication Award.

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HAROLD BARNUM INDUSTRY AWARD



Melanie J. Neumann
Chicago, Illinois

As the recipient of the 2021 Harold Barnum Industry Award, Ms. Melanie Neumann, J.D., M.S., is being honored for her dedication and exceptional service to IAFP, the public, and the food industry.

Ms. Neumann is Executive Vice President and General Counsel of Matrix Sciences International, Inc. in Chicago, Illinois. She has invested her 25-year career in providing the food and beverage industry with actionable and practical solutions on a variety of topics impacting the industry – from legal and regulatory compliance to operational and brand reputation risk management solutions. Among others, she has held food safety-related positions with Hormel Foods, the Schwan Food Company, RQA, Price-Waterhouse Coopers, Leavitt Partners, and the Acheson Group before joining Matrix Sciences International.

Ms. Neumann interacts with various stakeholders including regulators in response to inspection findings, enforcement actions, outbreaks, recalls, and alleged illness claims on behalf of her clients to help resolve issues, identify appropriate corrective actions, and implement other risk mitigations. She is a sought-after speaker and thought leader in areas including legal and regulatory compliance, food safety culture, and integrating food safety into corporate enterprise risk management programs.

Ms. Neumann joined IAFP in 2013, during which time she has served as Vice Chair and Chair of the IAFP Constitution and Bylaws Committee. In addition, she is a member of the Food Safety Culture, Food Law, and Food Fraud PDGs. She is also active in GFSI, playing leadership roles in various GFSI Technical Working Groups.

Ms. Neumann holds a Juris Doctorate degree from Mitchell-Hamline Law School in St. Paul, Minneapolis and a Master's in Food Safety from Michigan State University. In her spare time, she is a competitive triathlete competing in IRONMAN® long-distance triathlons.

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TRAVEL AWARD FOR A FOOD SAFETY PROFESSIONAL IN A COUNTRY WITH A DEVELOPING ECONOMY



Kubir Nath Bhattarai
Bhutan

Mr. Kubir Nath Bhattarai is a recipient of the 2021 Travel Award. Mr. Bhattarai is Deputy Chief Food Safety Officer in the Food Safety and Quality Division of the Bhutan Agriculture and Food Regulatory Authority (BAFRA), a competent food safety authority of the Royal Government of Bhutan.

Mr. Bhattarai previously served as Officer-In-Charge at BAFRA District Offices and Plant and Animal Quarantine Offices and led the team of officials in implementing several district level programs on food safety and biosecurity as a risk manager and in quarantine services, respectively. He also worked as a Food Safety Officer and implemented food safety management systems.

Currently, Mr. Bhattarai is involved in identification, formulation, and implementation of national capacity building for food safety, quality, and standards, as well as resource mobilization where he was also involved in developing training tools and materials; conducting training to disseminate his knowledge and experiences with his subordinates and superiors; and conducting follow-up workshops/seminars, meetings, consultations, and conferences. He is also responsible for preparation and management of several small projects on strengthening capacity on plant and animal biosecurity and food safety in Bhutan.

As a focal officer for Codex (Bhutan), Mr. Bhattarai is involved in the formulation of national positions in Codex meetings and preparing responses to surveys and questionnaires related to Codex and food safety; preparing project proposals; and the coordination of Codex activities at the national level under the supervision of the National Codex Contact Point of Bhutan. He has also developed curriculum for the Bachelor of Food Science and Technology program at the College of Natural Resources, Royal University of Bhutan, and is a visiting lecturer at the university.

Mr. Bhattarai holds a master's of Food Science from the University of Leeds in the United Kingdom and a bachelor's of Food Technology from Marathwada Agricultural University in India.



Titilayo D.O. Falade
Ibadan, Nigeria

Dr. Titilayo D.O. Falade is a recipient of the 2021 Travel Award. Dr. Falade is an Associate Scientist at the International Institute of Tropical Agriculture in Ibadan, Nigeria, where she works on food safety-related research in collaboration with researchers in multiple institutions. She is a member of the team responsible for the development of the pan-African biocontrol product, Aflasafe, used for pre-harvest control of aflatoxins. Her current research interests are in aflatoxin biocontrol, decontamination of aflatoxins using probiotic bacteria, and rapid detection of food adulterants using near infrared spectroscopy.

Dr. Falade is currently conducting research for the development of aflatoxin biocontrol in countries within the Sahel region, gendered studies on aflatoxin management in Nigeria, and is mentoring graduate students in mycotoxin and food adulteration research. She received merit scholarship awards from Shell Petroleum Development Company, and the Nigerian and Australian governments for her bachelor's, master's, and doctorate degrees, respectively. She has been a recipient of other awards including the African Biosciences Challenge Fund Award (2015), Queensland Alliance for Agriculture and Food Innovation Travel Award (2016), Lynsey Welsh Award (2016), and Bursary Award for International Congress on Plant Pathology (2018).

Dr. Falade holds a B.S. from the University of Ibadan, Nigeria; an M.S. from Imperial College London, United Kingdom; and a Doctor of Philosophy from the University of Queensland in Australia.

She also has certifications from the UN Women Training Center on gender concepts, and certification from CITI Program as a member of an Internal Review Board for research ethics. Dr. Falade is a member of several national and international professional organizations.

TRAVEL AWARD FOR A FOOD SAFETY PROFESSIONAL IN A COUNTRY WITH A DEVELOPING ECONOMY



Amin N. Olaimat
Zarqa, Jordan

Dr. Amin N. Olaimat is a recipient of the 2021 Travel Award. Dr. Olaimat is an Associate Professor of Food Safety and Hygiene at The Hashemite University in Jordan, where he serves as Chair of the Department of Clinical Nutrition and Dietetics at the Faculty of Applied Medical Sciences.

Dr. Olaimat has published more than 65 peer-reviewed papers addressing many aspects of food safety and microbiology and has published in the most renowned international journals of food microbiology and safety. He has also participated in 23 conferences and published two book chapters. His publications have been cited more than 1,900 times with an H-index of 20 and i10-index of 36 (according to *Google Scholar*). Dr. Olaimat's research focuses on food safety issues of traditional foods common in the Mediterranean area, and he has utilized medicinal plants and natural preservatives to control foodborne pathogens and bacterial antibiotic resistance. In addition, he is actively involved in conducting research with investigators in Jordan, United Arab Emirates, Pakistan, Canada, the United States, and several other countries.

Among the awards and scholarships Dr. Olaimat has received are The Hashemite University Fellowship for his Ph.D. program; the University of Manitoba Graduate Fellowship; James W. Barlow Graduate Fellowship from the University of Manitoba, and the Percy Gitelman Memorial Scholarship (2014) from the Canadian Meat Science Association. He has also received several travel awards from The Hashemite University and the University of Manitoba.

Dr. Olaimat has served as Assistant Dean at The Hashemite University and is currently serving as Head or Member of several academic and national committees. He also serves as an Editorial Board Member for *Frontiers in Microbiology*, *Frontiers in Public Health*, and *Frontiers in Nutrition*.

Dr. Olaimat earned his Ph.D. in Food Science from the University of Manitoba and obtained both his B.Sc. and M.Sc. from the Jordan University of Science and Technology.

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TRAVEL AWARD FOR HEALTH OR AGRICULTURAL DEPARTMENT EMPLOYEES IN NORTH AMERICA



Jennifer Eberly
Augusta, Maine

Dr. Jennifer Eberly is a recipient of the 2021 Travel Award. Dr. Eberly works for the State of Maine's Agriculture, Conservation and Forestry Department in Augusta as the State Director of Maine's Meat and Poultry Inspection (MPI) program and oversees regulation of both state-inspected facilities and facilities operating under the Cooperative Interstate Shipment (CIS) program. She was instrumental in bringing the CIS program to Maine in 2018 and more recently, for the expansion of the Maine MPI program to meet increased demand for local meat and poultry during the COVID-19 pandemic.

Dr. Eberly is a member of the National Advisory Committee on Meat and Poultry Inspection. She is a graduate of the Virginia-Maryland Regional College of Veterinary Medicine, holds a Master's in Public Health from the University of Minnesota School of Public Health, and completed a residency in Veterinary Anatomic Pathology at the University of Illinois Urbana – Campaign College of Veterinary Medicine.

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STUDENT TRAVEL SCHOLARSHIP



Jessica Brown
University of Florida
Gainesville, Florida

Jessica Brown recently graduated from the University of Florida in Gainesville with an M.S. in Animal Sciences, with a concentration in Meat Science and Food Safety, under the direction of Dr. Jason Scheffler. Ms. Brown earned her B.S. in Animal Sciences from the University of Florida in 2019 and plans to begin her Ph.D. in the fall of 2021 at the University of Wisconsin – Madison, under the direction of Dr. Steven Ricke.

Ms. Brown's thesis predominantly focused on the microbial validation of a restructured beef jerky product that could be produced under the constraints of an Ethiopian butcher shop. This project consisted of a product development component, along with a series of microbial validation studies to evaluate the reduction of *Salmonella enterica*, *E. coli* O157:H7, and *Campylobacter jejuni* during drying. The goal of this research was to develop a process that could be utilized by Ethiopian producers to generate a safe, protein rich, and shelf-stable product using starting material that might otherwise be less desirable. The development of predictive models for pathogen lethality will hopefully enable producers in both Ethiopia and the U.S. to better evaluate the microbial risk associated with their product. Ultimately, this research aims to make an impact on the availability and safety of meat in Ethiopia, as well as contribute additional information related to pathogen lethality in low-water activity foods.

Ms. Brown is extremely honored to be receiving one of the IAFP Student Travel Scholarships and to take part in IAFP 2021. She hopes that her attendance at this conference will broaden her network of food safety professionals, expose her to cutting-edge research, and inspire her to contribute to the advancement of worldwide food safety.



Shiyu Cai
Cornell University
Ithaca, New York

Shiyu Cai is a Ph.D. candidate in the Department of Food Science at Cornell University in Ithaca, New York. Ms. Cai earned her B.S. from Purdue University where she gained a passion for food microbiology research. She holds an M.S. from Cornell University, where she investigated the food safety risk factors associated with fresh produce waste reduction.

Ms. Cai's current dissertation work tackles the problem of black yeast spoilage in the beverage industry using tools from applied food processing and fungal genomics. The goal of this research is to understand the intraspecific and interspecific differences in stress resistance within the black yeast functional group, characterize spoilage risk under different processing and formulation controls, and evaluate tolerance to the physical and chemical aspects of environmental sanitation. During her time in graduate school, Ms. Cai presented numerous food safety courses to bring food safety awareness to students, food processors, and entrepreneurs at different local and regional training workshops.

Since joining IAFP in 2016, Ms. Cai has presented her research at IAFP's Annual Meetings each year. She is honored to receive the Student Travel Scholarship to take part in IAFP 2021 and intends to utilize this opportunity to expand her professional network. She looks forward to sharing her research projects and personal experiences at IAFP 2021.

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STUDENT TRAVEL SCHOLARSHIP

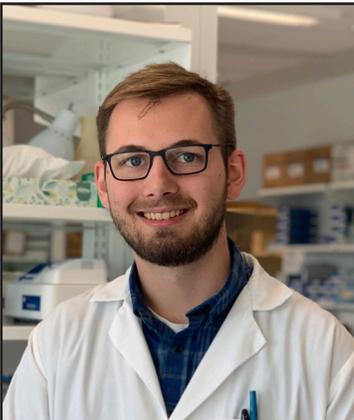


Bienvenido W. Cortes
Iowa State University
Ames, Iowa

Bienvenido “Ben” W. Cortes is a Ph.D. candidate in the Interdepartmental Microbiology Graduate Program at Iowa State University in Ames working under the direction of his major professor, Dr. Stephan Schmitz-Esser. Mr. Cortes earned his B.A. at Benedictine College in Atchison, Kansas. As an undergraduate, he conducted a variety of projects researching developmental biology, trophic ecology, and bacterial genetics before beginning his research on the foodborne pathogen *Listeria monocytogenes* as a graduate student.

Mr. Cortes’ doctoral research focuses on the response of *L. monocytogenes* to stressors commonly encountered in food production environments. Upon joining Dr. Schmitz-Esser’s lab, he designed an experiment to analyze the transcriptomic patterns of *L. monocytogenes* following exposure to either 1% lactic acid or 0.01% hydrogen peroxide. This research demonstrated that the *L. monocytogenes* response to lactic acid involves dramatic and complex changes in gene expression, whereas the response to hydrogen peroxide is far less pronounced. Following this study, Mr. Cortes has utilized a variety of molecular techniques to enable the functional characterization of two genes which were highly upregulated following lactic acid stress. His work seeks to elucidate the genetic and molecular mechanisms underlying *L. monocytogenes* stress survival with the purpose of providing foundational knowledge for applied food safety research.

Mr. Cortes is excited to attend IAFP 2021 and learn the newest discoveries in the field of food safety. Additionally, he is looking forward to learning from fellow researchers from around the world and sharing his perspectives and knowledge with them. He is incredibly honored and extremely grateful to have been chosen for the 2021 Student Travel Scholarship.



Devin Daeschel
Cornell University
Ithaca, New York

Devin Daeschel is a Ph.D. student in Food Science with a concentration in Food Microbiology in the Department of Food Science and Technology at Cornell University in Ithaca, New York, under the direction of his advisor, Dr. Abigail B. Snyder. Mr. Daeschel earned his B.S. in Microbiology from Oregon State University where he had the chance to work in food science labs and develop a passion for the field.

Mr. Daeschel is currently working on multiple projects, all of which have pushed him to develop a diverse technical skillset and become more knowledgeable about various aspects of food safety. In his primary project, he is developing a standardized vocabulary for describing environmental swab locations in food processing plants. The goal is to convert existing swab site data into a machine-readable form such that machine learning models can be used to help predict harborage sites of *Listeria monocytogenes* in food processing plants. He is also working on analyzing existing swab data from food processors to look for genetic determinants of persistent *L. monocytogenes* in food processing plants. Additional research focuses on evaluating the accuracy of visual tests used to determine whether food processing equipment has been adequately cleaned. Toward this end, he is coordinating a sensory experiment that tests the ability of panelists to visually detect food-soiled surfaces, which will help identify a threshold at which these types of test lose their efficacy.

Mr. Daeschel is honored to accept this year’s IAFP Student Travel Scholarship and is looking forward to attending IAFP 2021. He hopes to make the most of the experience by meeting others with similar research interests and expanding his network. Above all, he is excited to see the projects his peers are working on and draw inspiration from their work.

STUDENT TRAVEL SCHOLARSHIP



Adwoa Dankwa
*University of Maine
Orono, Maine*

Adwoa Dankwa is a Ph.D. candidate in the Department of Food Science and Human Nutrition at the University of Maine in Orono, under the mentorship of Dr. Jennifer J. Perry. Ms. Dankwa obtained her B.Sc. in Agriculture (Plant Protection) in 2015 at the Kwame Nkrumah University of Science and Technology in Ghana and M.S. in Plant, Soil, and Environmental Sciences in 2019 at the University of Maine.

Ms. Dankwa is currently working to optimize and standardize the microbial and chemical compositions of fermented beverages using kombucha and water kefir as test models. Her study aims to stabilize and reproduce the chemical and microbial compositions of fermented products by standardizing the production cycles and preserving their quality to maximize their health benefits. This study will potentially garner more research interest in understanding the microbial and metabolite changes of fermented beverages and open a new area of research geared towards maintaining the quality of fermented products.

Ms. Dankwa's goal is to lead food safety and quality assurance research programs at an academic institution and to contribute to the body of science by improving global food safety through research, education, communication, and extension programs. She equally looks forward to inspiring generations of students who will take up this same path. Internationally, she aims to contribute to food policy formulation in developing countries to help fight foodborne diseases and food insecurity.

Ms. Dankwa is extremely honored to be awarded the IAFP Student Travel Scholarship and participate in this year's Annual Meeting. She intends to use this great opportunity to increase her knowledge base in food quality and safety by learning new methodologies and skills, networking to provide opportunities relevant to her future career objectives, and staying current on research studies and innovations.



Minh Duong
*Virginia Tech
Blacksburg, Virginia*

Minh Duong is a Ph.D. candidate in the Department of Food Science and Technology at Virginia Tech in Blacksburg, under the direction of Dr. Renee Boyer, as well as Drs. Robert Williams, Ben Chapman, Laura Strawn, and Tiffany Drape. Mr. Duong earned his B.S. from Virginia Tech in Biological Sciences in 2016 and his M.S. from North Carolina State University under the direction of Dr. Chapman in 2018.

Mr. Duong's research is about evaluating the accuracy, accessibility, and literacy of existing produce food safety resources for farms and farmworkers. The goal of this research is to inform the development of new educational materials that are specifically tailored for small farmers and underserved farm workers. These groups may require educational materials in different languages and literacy levels as well as the time, money, and material resources they have available. Mr. Duong plans to use his research experience to impact food safety educational efforts nationally and worldwide. His goal is to develop resources that are accessible from a literacy and cultural relevancy standpoint to historically and traditionally underserved populations in agriculture.

An IAFP Member since 2015, Mr. Duong has presented his research, co-organized symposia and roundtables, and been an active member of the Student Professional Development Group (SPDG) where he currently serves as Chair. This year, he hopes to continue to co-organize symposia and roundtable and SPDG Programs where students can create meaningful relationships with each other and with food safety professionals.

Mr. Duong is extremely honored to be selected as a recipient of the 2021 Student Travel Scholarship, where he will present findings from a recent study that assessed the impact of the COVID-19 pandemic on farmers' markets. He is excited for this opportunity to share his research, as well as to connect and learn from professionals in the field.

STUDENT TRAVEL SCHOLARSHIP



Marina Girbal
Rutgers, The State University
of New Jersey
New Brunswick, New Jersey

Marina Girbal is an M.S. candidate in the Department of Food Science at Rutgers, The State University of New Jersey in New Brunswick. Ms. Girbal earned a B.S. in Chemical Engineering at Polytechnical University in Catalonia, Spain. It was during an internship in a soya-processing company and working in their quality control laboratory where she discovered her passion for food safety, realizing the critical impact cross-contamination can have in all steps of the food chain.

Ms. Girbal soon decided to pursue her graduate studies where she had the chance to work in Dr. Donald Schaffner's laboratory. Her current research focuses on the effect of significant factors, i.e., temperature or mode of inoculation, on *Listeria monocytogenes* growth on fresh, uncut produce, a relevant topic due to multiple recent outbreaks. Her graduate assistantship has allowed her to participate in various other food safety-related projects, including the supervision of Rutgers' dining halls, which entails auditing, testing, and coordinating a team of undergraduate students. During her current studies, she has received a scholarship and poster presentation award from the NYIFT and a scholarship from the IAFP Affiliate, the New Jersey Association for Food Protection, as well as publishing a research paper in the *Journal of Food Protection*.

Although this is only her second year as an IAFP Member, Ms. Girbal participated as a poster presenter during IAFP 2020 and will also be presenting her updated research in this year's conference. She is very grateful for the opportunity to attend IAFP 2021, where she is looking forward to learning about the latest research and trends in food safety, as well as the opportunity to network with other like-minded students and frontline researchers in the field.



Sarah L. Jones
University of Arkansas
Fayetteville, Arkansas

Sarah L. Jones is a Ph.D. candidate in the Department of Food Science at the University of Arkansas in Fayetteville, under the direction of Dr. Kristen E. Gibson. Ms. Jones earned her B.S. in Food Science and Industry from Kansas State University in 2017, where she developed an interest in food safety.

Ms. Jones is currently focused on enhancing pathogen environmental monitoring programs in the food industry. Her research involves the characterization of the environmental sampling tools, surfaces, and environmental conditions found in the food processing environments. In this research, microorganisms of interest include *Listeria monocytogenes*, non-typhoidal *Salmonella*, and Tulane virus, a human norovirus surrogate. Ms. Jones hopes her research will lead to better pathogen detection on environmental surfaces in the food industry. Outside of her dissertation research, she is the co-instructor for the undergraduate course *Introduction to Food Law* and a teaching assistant for several food safety-related courses at the University of Arkansas.

Since joining IAFP in 2016, Ms. Jones has been involved in numerous PDGs and has presented her research at several IAFP Annual Meetings. She is currently serving as the 2020–2021 Student PDG Networking Coordinator. Ms. Jones is honored to receive the IAFP Student Travel Scholarship to attend IAFP 2021. This prestigious award will enable her to connect with current colleagues and future collaborators, spanning from academic researchers to food industry leaders and regulators. In short, she is excited to enhance her development as an independent food safety researcher through the ample opportunities that this year's Annual Meeting has to offer and looks forward to presenting her research.

STUDENT TRAVEL SCHOLARSHIP



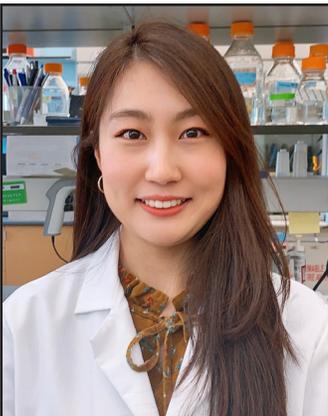
Karuna Kharel
*Louisiana State University
Baton Rouge, Louisiana*

Karuna Kharel is a Ph.D. candidate in the School of Nutrition and Food Sciences at Louisiana State University (LSU) in Baton Rouge, under the supervision of Dr. Achyut Adhikari. Ms. Kharel also attended Warsaw University of Life Sciences in Poland in 2019, to conduct a part of her Ph.D. research as part of a Doctoral Student Exchange award. She developed a deep interest in the area of food safety during her studies for her B.Tech (Food) in her home country of Nepal, where food safety is critical, yet a severely lagging area.

To further strengthen her knowledge base, Ms. Kharel decided to pursue her graduate studies in the U.S. in 2016 with a research focus on ensuring microbiological safety and enhancing eating quality of nuts and fresh produce. During her master's thesis project at LSU, she developed cost-effective and easily adaptable thermal intervention treatment using hot water to mitigate the risk of microbial contamination of pecans. Recently, the outcomes of the work have been adopted by a pecan shelling company in Mexico. Ms. Kharel's current research is on developing an edible antimicrobial coating with bioactive from pecans shells to inactivate pathogens on fresh produce without affecting the quality.

Ms. Kharel has a passion for food safety extension works and works alongside her advisor as a trainer in food safety trainings, helps in Good Agricultural Practices (GAP) mock audits, and develops food safety plans for growers/processors in Louisiana. She has also worked in a USAID-funded project to assist Guyana's National Agriculture Research and Extension Institute (NAREI) staffs with internal capacity building in GAP. Her ultimate career goal is to become an extension faculty and researcher and work in strengthening food safety in developing countries.

Ms. Kharel is extremely honored to be awarded one of this year's IAFP Student Travel Scholarships and is excited to network with food safety professionals, share her research projects, and learn about other research and upcoming challenges in the world of food safety at IAFP 2021.



Minji Kim
*University of Massachusetts
– Amherst
Amherst, Massachusetts*

Minji Kim is a doctoral candidate in the Department of Food Science at the University of Massachusetts – Amherst, under the direction of Dr. Matthew Moore. Born and raised in South Korea, Ms. Kim earned her B.S. and M.S in Food Science and Nutrition at Pusan National University.

Ms. Kim's research focuses on the development of nanopore-based sensing technology for in-field detection of foodborne and agricultural pathogens. Currently, she is working on the human norovirus, a foodborne pathogen, as a proof-of-concept. If proven to be clinically successful, this device can be applied for agricultural purposes. Her project truly embodies the interdisciplinary nature of food science and food safety, joining clinical chemistry to an agricultural science. It is believed that this nanopore sensing method will contribute greatly to reducing economic loss and enhancing the safety of the food industry. She looks forward to presenting this research at IAFP 2021.

Ms. Kim plans to enter academia after graduation, committing herself to studies that reduce food-borne illness. In addition, she wants to serve as a consultant who can advise food companies that lack necessary technology and skills

Ms. Kim is honored to be awarded the 2021 Student Travel Scholarship. Since joining IAFP in 2018, she has been an active Member, presenting posters and participating in PDG meetings. As a graduate student working in the field of food quality and safety, Ms. Kim has a passion for advancing her knowledge in food safety by attending meetings, expanding her professional network, and networking with colleagues.

STUDENT TRAVEL SCHOLARSHIP



Brenda Kimang'a
*University of Nairobi
Nairobi, Kenya*

Brenda Kimang'a is currently a master's student in the Department of Food Science, Nutrition and Technology at the University of Nairobi in Kenya, under the direction of Dr. Catherine Kunyanga and Professor John Kimenju. Ms. Kimang'a earned her undergraduate degree from the university in 2018, where she developed a keen interest in food safety and research towards enhancing sustainable food systems.

Ms. Kimang'a is passionate about the safety of fresh produce, especially fruits and vegetables, along the value chain. Her current research focuses on the antimicrobial effect of botanical coatings on the post-harvest shelf life and quality of tomatoes as a preservation technology since much of it is lost through poor post-harvest handling in Kenya. The tomato is a widely-consumed fruit in Kenya, although it is prone to risks through microbial attacks and chemical contaminants due to inadequate implementation of Good Agricultural Practices. Her research aims to develop affordable interventions for the small-scale farmers, who are the key players in Kenya's agriculture, to help reduce food safety risks along the tomato value chain. This will ensure consumer safety, reduce post-harvest losses, and eventually lead to exploitation of the fruit's potential value.

Ms. Kimang'a is honored to receive this year's Student Travel Scholarship and looks forward to taking part in IAFP 2021 to build upon her knowledge of food safety through interactions with the global community and emerging leaders in food safety. This will also be a great opportunity to expand her professional network and share experiences with the wide network of attendants from academia, industry, and research.



Xingchen Liu
*University of Maryland –
College Park
College Park, Maryland*

Xingchen Liu is a Ph.D. candidate in the Department of Plant Science and Landscape Architecture at the University of Maryland – College Park, under the direction of Dr. Shirley Micallef. Ms. Liu earned her B.E. in Viticulture and Enology Engineering and an M.E. in Food Engineering from China Agricultural University.

Ms. Liu's dissertation focuses on the mechanisms of interactions between human pathogens and leafy greens under abiotic stresses. Her current research project, funded by a SARE Student Grant, aims to figure out the impact of plant growth-promoting rhizobacteria (PGPR) on produce yield and microbial safety. The ultimate goal is to create a helpful avenue for growers to cope with climate change and ensure the produce supply and safety in a more practical and sustainable manner.

During her current studies, Ms. Liu is passionate about translating bench science to real-world applications and communicating science to broader audiences. She has attended and presented her research to the public and science community at local, national, and international food and agricultural conferences. Ms. Liu completed internships at Mars Global Food Safety Center and Bayer Crop Science and found it extremely rewarding to practice her knowledge to tackle real-life issues. Following her graduation, she aims to explore more possibilities in the food industry.

As she approaches the final stages of her doctoral program, Ms. Liu is highly honored to receive the IAFP Student Travel Scholarship; she believes this award could not have come at a better moment! She looks forward to presenting her research, keeping up with cutting-edge scientific findings, and being well prepared for her future career.



STUDENT TRAVEL SCHOLARSHIP



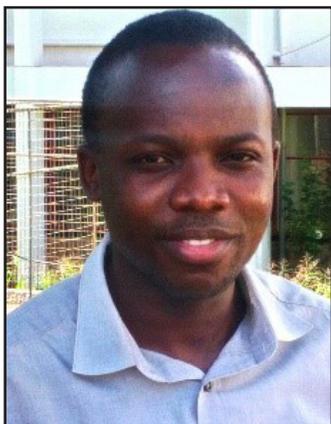
Ajay Mittal
Prince of Songkla University
Hat Yai, Songkhla, Thailand

Ajay Mittal is a master's candidate in Food Science and Technology in the International Centre of Excellence in Seafood Science and Innovation, Faculty of Agro-Industry at Prince of Songkla University, Hat Yai, Songkhla, Thailand, under the esteemed supervision of Professor Soottawat Benjakul. Mr. Mittal was born and raised in Jalandhar, a town in North India, and obtained his B.F.Sc. (Bachelor of Fisheries Science) in 2019 from Guru Angad Dev Veterinary and Animal Sciences University in Ludhiana, India, where he gained knowledge on seafood culture and processing along with food safety research. During his undergraduate studies, he competently learned to perform many diverse procedures related to *in vitro* testing of compounds against a wide range of spoilage and pathogenic bacteria and acquired knowledge, skills, and hands-on training on non-thermal preservation techniques.

Mr. Mittal's career goals include becoming a potential researcher, where he can collaborate with other scientists across the globe in the field of food safety to address and improve food safety issues in developing and underdeveloped nations. He's currently exploring bioactive compounds from seafood waste, especially from shrimp processing industries, and its potential application in seafood safety and functional food development. During this time, Mr. Mittal optimized conditions for chitosan extraction from shrimp shells and, in addition, prepared its water-soluble derivative, i.e., chitosan-epigallocatechin gallate conjugate. He successfully prepared bioactive composite film from the aforementioned native and derivative biopolymer. The chitosan derivative and prepared film possessed antioxidant activity and was able to inhibit foodborne pathogens and spoilage bacteria. Both could

be implemented in fish processing industries for assuring safety and extending the shelf life of fish and fish products.

Mr. Mittal is holding publications in the peer-reviewed *Institute for Scientific Information (ISI)* indexed journals and has presented his work at international conferences. He is extremely honored to receive this year's Student Travel Scholarship. During IAFP 2021, he will present his recent research results. He looks forward to meeting professionals from different fields of food safety and interacting with participants from diverse sources to gain knowledge and possible collaborations for future research endeavors.



Ombaka Joshua Owade
University of Nairobi
Nairobi, Kenya

Ombaka Joshua Owade is a doctoral candidate in the Department of Food Science, Nutrition and Technology at the University in Nairobi, Kenya. Mr. Owade also holds an M.Sc. in Food Safety and Quality and a B.Sc. in Food Science and Nutrition from the same institution. His doctoral research focuses on the utilization of the lactic acid bacteria in the enhancement of value addition and quality amelioration of processed cowpea leaves under the lead supervision of Dr. George Abong.

During his M.Sc. studies, Mr. Owade worked on incorporating orange-fleshed sweet potato for enhancement and nutritional quality in bread. Other projects he has jointly pursued include risk assessment studies in the informal vending sector of meat and fresh produce and the assessment of the impact of dairy interventions on milk quality and safety. Professionally, Mr. Owade serves on four technical committees in the national standardization body in Kenya, Kenya Bureau of Standards. He is the current Assistant Organizing Secretary of the Food Safety and Technology Platform of Kenya (FoSTeP-K), the food science and safety professional body in Kenya.

Mr. Owade's research interests are in the areas of risk assessment, value addition of orphaned crops, and food policy research as the key areas. He expresses his gratitude to IAFP for awarding him the 2021 Student Travel Scholarship and hopes that attending IAFP 2021 will provide him with the platform for networking and future collaborations to aid in his professional development in the areas of food safety and science. He looks forward to utilizing the current and future opportunities presented by IAFP in positioning himself among global research team involved in improving food safety.



STUDENT TRAVEL SCHOLARSHIP



Solomon Rajkumar Racharla
Kerala Veterinary and Animal
Sciences University
Kerala, India

Solomon Rajkumar Racharla is a doctoral candidate in the Department of Livestock Products Technology in the College of Veterinary and Animal Sciences at Kerala Veterinary and Animal Sciences University in Kerala, India, under the direction of his advisor, Dr. Renuka Nayar.

Dr. Racharla earned his bachelor's in Veterinary and Animal Sciences (equivalent to a DVM) from Rajiv Gandhi Institute of Veterinary Education and Research in Puducherry, India, and his master's in Veterinary Sciences from ICAR-Indian Veterinary Research Institute in Izatnagar, India. His master's research predominantly focused on molecular characterization of *Campylobacter* spp. in poultry carcasses and decontaminating using organic antimicrobials.

Dr. Racharla's current area of research is in the quality and safety of ethnic meat products. More specifically, his dissertation is focused on "Production, quality attributes and consumption patterns of ethnic Goan pork sausages." The study is significant as Goan pork sausages are prestigious and highly valued products among consumers at the household level in Goa, a coastal state of India. His present study is designed to scientifically document all the attributes essential for enhancing the quality and safety of the product. It is also focused on molecular characterization of the microbial diversity of the product which would impart data on the predominant bacteria responsible for the fermentation.

Dr. Racharla is honored to receive the IAFP Student Travel Scholarship. He intends to use this opportunity for the exchange of ideas on food safety and quality to seed the links for future collaborations to accomplish the nutritional security and food safety goals of his country.



Keshnee Reega
University of Mauritius
Arsenal, Pamplemousses,
Mauritius

Keshnee Reega is an M.Phil./Ph.D. candidate in the Department of Agricultural and Food Science at the University of Mauritius (UoM) in Arsenal, Pamplemousses, Mauritius. Soon after obtaining her B.Sc. in Microbiology at UoM, Ms. Reega embarked as a Research Assistant in the field of food microbiology for a project funded by the Mauritius Research and Innovation Council to study the impact of climate change and climate variability on the microbiological safety of Mauritian seafood. The study had underscored the need for concerted efforts to ensure the safety of local seafood, especially during summer.

Ms. Reega's current doctoral thesis is in the field of predictive food microbiology, for which she received the Mauritian Higher Education Commission full-time M.Phil./Ph.D. scholarship. Her dissertation, supervised by Dr. Huda Neetoo, Professor Elna Buys, and Mrs. Anandavallee Soobhooroyen, is aimed at developing microbial growth models that will help ascertain the safety of tuna and its by-products for human consumption and potential cosmetic application. Ms. Reega is particularly looking forward to donating microbial growth data emanating from her study to an online repository to increase the existing database and facilitate future research. Ultimately, the goal of this project is to help expedite the exposure assessment phase of microbial risk evaluation in the tuna industry to allow for faster decision-making with respect to the release of consignments of cooked tuna products and the overall acceptance of the tuna lots at the clients' end.

Ms. Reega is honored to receive the 2021 Student Travel Scholarship Award, providing her with a unique opportunity to share her work and exchange with other students and professionals having similar research interests while keeping abreast of current information. The meeting is an esteemed platform for networking and obtaining valuable feedback about her current research from those at the forefront of food science.

STUDENT TRAVEL SCHOLARSHIP



Anna Townsend
University of Georgia
Athens, Georgia

Anna Townsend is a Ph.D. student in the Department of Food Science and Technology at the University of Georgia (UGA). Ms. Townsend is earning her degree under the direction of her advisor, Dr. Laurel Dunn, and her committee members, Drs. Hendrik den Bakker, Jinru Chen, and Mark Berrang. She received a B.A. in Biology from the University of Kentucky in 2017 and an M.S. in Food Science from UGA in 2019, the latter degree under Dr. Xiangyu Deng with research on concerted detection of *Salmonella enterica* and *E. coli* O157:H7 in romaine lettuce using quasimetagenomic sequencing.

After completing her M.S., Ms. Townsend decided to take a step back on the food safety continuum by increasing her knowledge in preventive food safety. Her doctoral research assesses *Listeria* prevalence within grocery distribution centers to address microbial risk to fresh produce. Her research will also determine if there are relationships between *Listeria* prevalence and factors such as facility cleaning and sanitizing operations, and environmental characteristics of distribution centers. With this research, she hopes to develop a comprehensive guide to address the need for environmental monitoring programs within distribution centers handling fresh produce.

Ms. Townsend's career goals after graduation include serving as an officer in the Centers for Disease Control and Prevention's Epidemic Intelligence Service and ultimately working as a food safety professional in the fresh produce industry. She has been an active IAFF Member since 2018 and is the Student Liaison for IAFF's Affiliate, the Georgia Association for Food Protection. She is honored to receive the 2021 Student Travel Scholarship, which will provide opportunities to increase her professional network, showcase her research, and connect her with other students pursuing careers in food safety.



Joseph Wambui
University of Zurich
Zurich, Switzerland

Joseph Wambui is a Ph.D. candidate at the Institute for Food Safety and Hygiene at the University of Zurich in Switzerland. Mr. Wambui has a background in Food Science and Technology, which complements his current research topic and career aspirations which are focused on bacteriocins production and their application in foods as bio-preservatives. He holds an M.Sc. in Food Safety and Quality and a B.Sc. in Food Science and Technology, both from the University of Nairobi in Kenya.

Mr. Wambui is currently working on two research projects. One is novel bacteriocin biosynthetic gene clusters identified through genome sequence analysis of psychrophilic and psychrotrophic spore formers that are being functionally characterized. New bacteriocins uncovered through this project might provide potential alternatives to currently existing chemical preservatives. In particular, SMEs in MLIC can benefit from these biopreservatives to inhibit growth of both pathogenic and spoilage bacteria, hence enhancing food safety and the quality of their food products.

In his second project, Mr. Wambui is working on the identification and characterization of naturally occurring genetic variations contributing to intrinsic nisin resistance in the foodborne pathogen *Listeria monocytogenes*. Through his research, Mr. Wambui hopes to contribute new knowledge to enhance efficacy of bacteriocin applications in food safety. Some of his work has recently been published in *Frontiers in Microbiology*.

Mr. Wambui is a member of the Australia-African University Network, where he is engaged in research to improve food safety management systems in SMEs along African poultry and fish value chains through collaborations with researchers from Australia and Africa.

STUDENT TRAVEL SCHOLARSHIP



Christina Wormald
*University of Massachusetts
Amherst
Amherst, Massachusetts*

Christina Wormald is an M.Sc. candidate in Food Science at the University of Massachusetts Amherst in Amherst under the direction of Dr. Matthew Moore and Amanda Kinchla, M.S. Ms. Wormald earned her B.S. in Food Science and Microbiology from the university in 2020 and began pursuing her master's upon graduation.

Ms. Wormald is currently managing two very diverse projects which have allowed her to develop a plethora of skills regarding overall safety of practices in the food industry. Her primary thesis project works with small- and medium-sized food processors to improve their adoption of food safety plans and raise food safety awareness through extension-based virtual programming initiatives. This project works with food safety experts and resource economists to analyze the overall social and economic effect of implementing food safety practices as a small processor. The overall goal of this project is to provide motivating, accessible materials to support small- and medium-sized processors while they develop and implement food safety initiatives in their facilities that pertain to the Preventive Controls for Human Food Rule under the Food Safety Modernization Act (FSMA).

Supplementally, Ms. Wormald's other research focus is geared toward developing and analyzing effective novel products for cleaning and disinfecting virus-containing food contact surfaces in the food industry. This approach will study common virus models such as human norovirus and SARS-229E to test for efficacy of natural and engineered disinfectants on metal surfaces. This work will eventually be used to develop validated challenge studies for food processors to use in their facilities to validate if their disinfection methods are indeed working as intended to stop the spread of viruses on food surfaces.

Ms. Wormald is honored to receive the Student Travel Scholarship to take part in IAFP 2021. During this experience, she intends to expand her network of government, regulatory, industry, and academic personnel, and strengthen her knowledge of food safety and defense.



Jiyoon Yi
*University of California – Davis
Davis, California*

Jiyoon Yi is a Ph.D. candidate in Food Science at the University of California – Davis, under the direction of Dr. Nitin Nitin. Ms. Yi earned a B.S. in Food Science and Engineering, a B.S. in Mathematics, and an M.S. in Food Science & Technology, all at Ewha Womans University in South Korea. Her research focuses on food engineering using experimental and computational approaches to enhance food safety and quality.

Ms. Yi is currently working on research projects to reduce microbial contamination of fresh produce by improving postharvest processing technologies. Her experimental research involves process design/control, microbial cross-contamination, and antimicrobial development for surface disinfection. For computational studies, she is looking into bio-based antimicrobial delivery models, heat/mass transfer in microbial inactivation, and deep learning-based foodborne pathogen detection. In addition to her research projects, Ms. Yi is developing virtual reality (VR)-based learning modules to boost the understanding of food processing or biosystems engineering in broader groups, including students, industry, and the public.

Ms. Yi is a 2020–2021 Professor for the Future Fellow of the Graduate Studies at UC Davis and a co-founder of the Society of Food Engineering Student Division. For the next steps, she plans to remain in academia and disseminate research findings to benefit society.

Since joining IAFP in 2019, Ms. Yi has presented her research at IAFP Annual Meetings and was selected as a finalist twice for the J. Mac Goepfert Developing Scientists Competition for her technical presentations. She is currently serving as the 2020–2021 International and Affiliate Board Representative of the IAFP Student Professional Development PDG and the Affiliate Council's Student Liaison. Ms. Yi is honored to receive this year's Student Travel Scholarship and hopes to continue a lifelong relationship with the IAFP community.

PEANUT PROUD STUDENT SCHOLARSHIP

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.



Daniel Vega
*Kansas State University
Manhattan, Kansas*

Daniel Vega is a Ph.D. candidate in the Food Safety and Defense Lab at Kansas State University in Manhattan, under the direction of Dr. Randall Phebus. During this time, Mr. Vega has collaborated and led several bakery product thermal validation studies. For these projects, he has worked closely with the baking industry and the U.S. FDA. In his research, different commercial bakery product processes are mimicked using pathogen-inoculated ingredients to ensure the final product has a reduced risk of being contaminated with foodborne pathogens like *Salmonella*, *E. coli*, and *Listeria* spp. This research allows bakers to confirm their proprietary baking parameters and formulae comply with the Food Safety Modernization Act (FSMA) regulations and the consumer goods are safe for human consumption.

Mr. Vega has also worked in antimicrobial interventions in beef, poultry, and hog carcass and subprimals studies. His professional interests have always been related to ensuring food safety in different areas of food production. He graduated with a B.S. in Human Nutrition and Dietetics from the University of Costa Rica before pursuing his postgraduate studies in the United States.

Mr. Vega is extremely honored of being awarded this year's Peanut Proud Student Scholarship and is looking forward to attending IAFP 2021 in Phoenix, Arizona, providing a great opportunity to share his research efforts to keep improving food safety of peanuts and peanut butter products.



EXHIBITOR SHOWCASE

SCHEDULE OF PRESENTATIONS

MONDAY, JULY 19

10:15 a.m. ACO, Inc.

11:30 a.m. bioMérieux, Inc.

12:00 p.m. Satorius

12:30 p.m. INFICON Inc.

3:00 p.m. 3M Food Safety

4:30 p.m. Hamilton Company

TUESDAY, JULY 20

11:30 a.m. Bayer

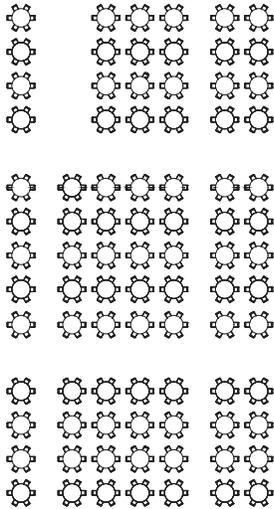
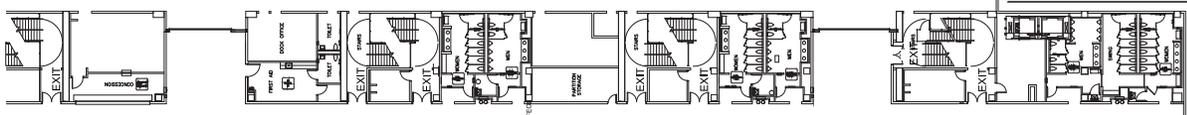
12:30 p.m. Mérieux NutriScience

3:00 p.m. 3M Food Safety

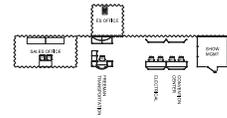
The exhibitor showcase is located in the Exhibit Hall.

IAFP 2021 EXHIBIT HALL

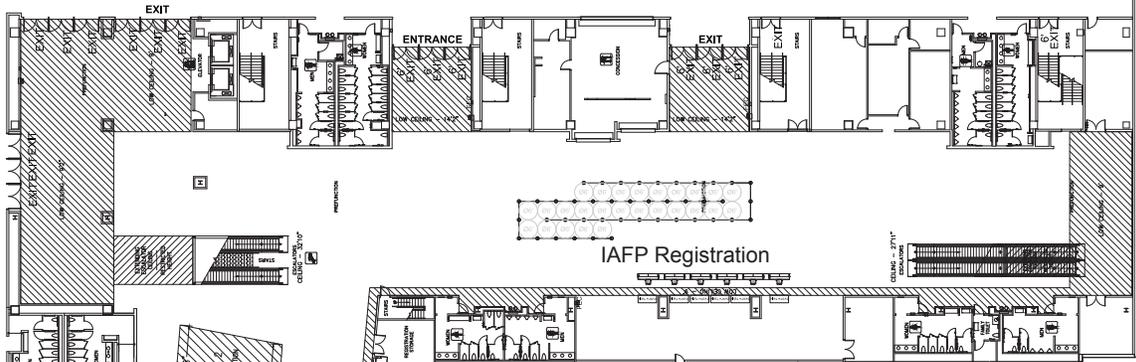
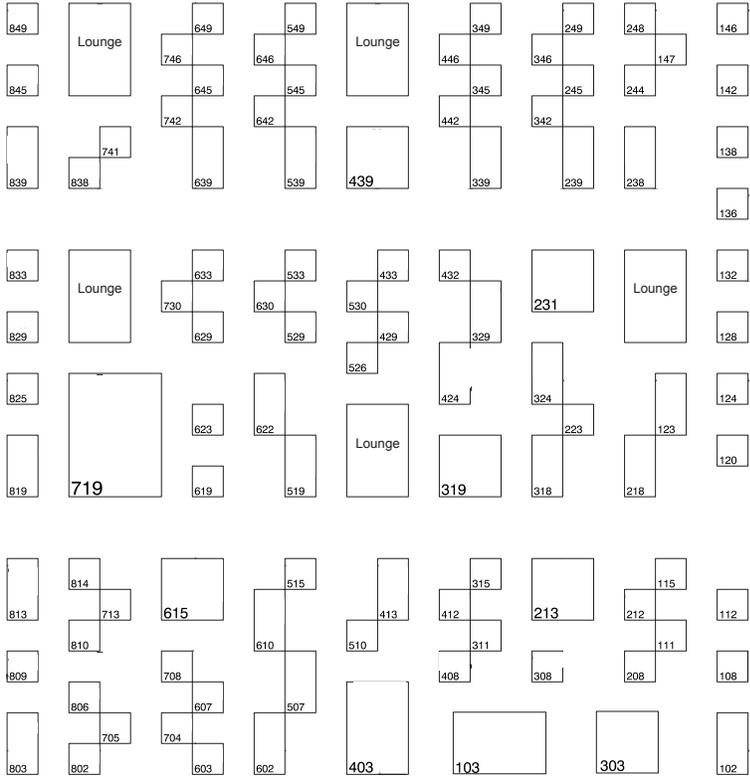
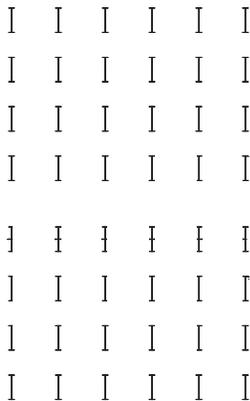
IAFP 2021 Exhibit Hall Phoenix Convention Center Phoenix, Arizona



Exhibitor Showcase



Posters



EXHIBITORS – ALPHABETICAL LISTING

3-A Sanitary Standards, Inc.	412	FDA/Center for Food Safety and Applied Nutrition	Virtual	Nelson-Jameson, Inc.	324
3M Food Safety	403	FlexXray, LLC	208	NEOGEN	439
ACO, Inc.	424	Fluxergy Inc.	649/Virtual	Neutec Group, Inc.	342
AEMTEK Laboratories	825	Food Microbiological Laboratories, Inc.	833	NOVOLYZE	128/Virtual
AOAC International	849/Virtual	Food Quality & Safety	Virtual	NSI Lab Solutions	408
Applied Food Diagnostics	802/Virtual	Food Safety Magazine	Virtual	Pall Corporation	Virtual
Aptar Food + Beverage – Food Protection	549	Food Safety Net Services	319	Partnership for Food Safety Education	Virtual
Arizona/California Leafy Greens Marketing Agreement	630	Food Safety News	249	PathogenDx	339
Art's Way Scientific	809	Food Safety Summit	Virtual	Polyskope Labs	545
ASI Food Safety	346	FoodChain ID	212	Procter and Gamble Professional	108
Association of Food and Drug Officials	845	FoodChek Systems Inc.	132	PureLine	533
Autoscribe Informatics, Inc.	124	FREMONTA Corp.	819	Q Laboratories	446
Bayer	705	Goodway Technologies	308	QSI	623
BCN Research Laboratories Inc.	814	Hamilton Company	741	Quality Assurance & Food Safety Magazine	112
Bia Diagnostics	526	Hardy Diagnostics	529	Remco Products	413
BioFront Technologies	829	Hydrite Chemical Co.	432	Rheonix, Inc.	622
BIOLYPH	138	Hygiena	303	Rochester Midland Corporation– Food Safety Division	442
bioMérieux, Inc.	719	IEH Laboratories & Consulting Group	810	Romer Labs	Virtual
Bio-Rad Laboratories, Inc.	318	IFC	704	Sartorius	530
BIOTECON Diagnostics	115	INFICON	510	Seward Laboratory Systems Inc.	646
Bioscience International	713	InnovaPrep	223	SGS	515/Virtual
BootieButler®	111	International Association for Food Protection–Student PDG	103	Shoe Cover Magic	629
Certified Laboratories	642	International Food & Meat Topics	Virtual	Smart Food Safe	Virtual
Charm Sciences, Inc.	519	Interscience Laboratories, Inc.	610/Virtual	SnapDNA	429
Chihon Biotechnology	Virtual	Intertek Alchemy	607	Springer Nature	Virtual
ClorDiSys Solutions, Inc.	813	MadgeTech	806	Sterilex	239
Copan Newlab	238	Matrix Sciences	345	Stop Foodborne Illness	Virtual
Corning Incorporated	123	Mérieux NutriSciences	615/Virtual	Tentamus NA	839
Crystal Diagnostics	603	Michelson Laboratories, Inc.	142	Thermo Fisher Scientific	231
CultureMediaConcepts®	838	Michigan State University Online Food Safety Program	633	USDA-NAL, Food Safety Research Office (FSRIO)	Virtual
Decon7 Systems, Inc.	213/Virtual	Microbiologics	120	Vitsab International AB	218/Virtual
Deibel Laboratories	602	Midland Scientific	645	Whirl-Pak®	349
Detectamet Detectable Products	329	MilliporeSigma	Virtual	World Bioproducts	539
Eagle Protect PBC	742	National Environmental Health Association	315	Zee Company	619
Ecolab	5078			Zymo Research Corp.	433
Eurofins	803				
Extreme Microbial Technologies	102				

EXHIBITORS BY BOOTH NUMBER

International Association for Food Protection-Student PDG	103	ACO, Inc.	424	Eagle Protect PBC	742
Extreme Microbial Technologies	102	SnapDNA	429	Applied Food Diagnostics	802/Virtual
Procter and Gamble Professional	108	Hydrite Chemical Co.	432	Eurofins	803
BootieButler®	111	Zymo Research Corp.	433	MadgeTech	806
Quality Assurance & Food Safety Magazine	112	NEOGEN	439	Art's Way Scientific	809
BIOTECON Diagnostics	115	Rochester Midland Corporation– Food Safety Division	442	IEH Laboratories & Consulting Group	810
Microbiologics	120	Q Laboratories	446	ClorDiSys Solutions, Inc.	813
Corning Incorporated	123	Ecolab	507	BCN Research Laboratories Inc.	814
Autoscribe Informatics, Inc.	124	INFICON	510	FREMONTA Corp.	819
NOVOLYZE	128/Virtual	SGS	515/Virtual	AEMTEK Laboratories	825
FoodChek Systems Inc.	132	Charm Sciences, Inc.	519	BioFront Technologies	829
BIOLYPH	138	Bia Diagnostics	526	Food Microbiological Laboratories, Inc.	833
Michelson Laboratories, Inc.	142	Hardy Diagnostics	529	CultureMediaConcepts®	838
FlexXray, LLC	208	Sartorius	530	Tentamus NA	839
FoodChain ID	212	PureLine	533	Association of Food and Drug Officials	845
Decon7 Systems, Inc.	213/Virtual	World Bioproducts	539	AOAC International	849/Virtual
Vitsab International AB	218/Virtual	Polyskope Labs	545		
InnovaPrep	223	Aptar Food + Beverage – Food Protection	549		
Thermo Fisher Scientific	231	Deibel Laboratories	602		
Copan Newlab	238	Crystal Diagnostics	603		
Sterilex	239	Intertek Alchemy	607		
Food Safety News	249	Interscience Laboratories, Inc.	610/Virtual		
Hygiena	303	Mérieux NutriSciences	615/Virtual		
Goodway Technologies	308	Zee Company	619		
National Environmental Health Association	315	Rheonix, Inc.	622		
Bio-Rad Laboratories, Inc.	318	QSI	623		
Food Safety Net Services	319	Shoe Cover Magic	629		
Nelson-Jameson, Inc.	324	Arizona/California Leafy Greens Marketing Agreement	630		
Detectamet Detectable Products	329	Michigan State University Online Food Safety Program	633		
PathogenDx	339	Certified Laboratories	642		
Neutec Group, Inc.	342	Midland Scientific	645		
Matrix Sciences	345	Seward Laboratory Systems Inc.	646		
ASI Food Safety	346	Fluxergy Inc.	649/Virtual		
Whirl-Pak®	349	IFC	704		
3M Food Safety	403	Bayer	705		
NSI Lab Solutions	408	Bioscience International, Inc.	713		
3-A Sanitary Standards, Inc.	412	bioMérieux, Inc.	719		
Remco Products	413	Hamilton Company	741		

VIRTUAL ONLY BOOTHS

Chihon Biotechnology	Virtual
FDA/Center for Food Safety and Applied Nutrition	Virtual
Food Quality & Safety	Virtual
Food Safety Magazine	Virtual
Food Safety Summit	Virtual
International Food & Meat Topics	Virtual
MilliporeSigma	Virtual
Pall Corporation	Virtual
Partnership for Food Safety Education	Virtual
Romer Labs	Virtual
Smart Food Safe	Virtual
Springer Nature	Virtual
Stop Foodborne Illness	Virtual
USDA-NAL, Food Safety Research Office (FSRIO)	Virtual

EXHIBITORS

3-A Sanitary Standards, Inc.
6888 Elm St., Suite 2D
McLean, VA 22101-3829, USA
Phone: +1 703.790.0295
www.3-a.org

412

3-A SSI is dedicated to "Promoting Food Safety Through Hygienic Design." 3-A SSI has a long and respected record of developing criteria for the design of equipment and systems used to produce, process and package milk and dairy products, other foods, and beverages. 3-A SSI also oversees the 3-A Symbol authorization program to help identify equipment built in conformance to 3-A design criteria and evaluated through a rigorous Third-Party Verification inspection program. Today's 3-A SSI offers comprehensive free e-learning resources on hygienic design and is a trusted worldwide partner in helping to assure food safety through hygienic design.

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3M brings food safety innovation and expertise to food and beverage processors around the world. Our trusted solutions, backed by global validations, include a full line of sample collection and preparation products, quality indicator tests, pathogen tests, hygiene monitoring solutions, and allergen tests — all designed to work together to help mitigate risk, enhance productivity, and improve operations. It's about protecting our customers' brand, as well as their bottom line, to keep their business moving forward. Learn more: www.3m.com/foodsafety.

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424

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825

AEMTEK, Inc. is an accredited laboratory that provides microbiological testing, research, training, and consulting services for the food, water, supplement, and pharmaceutical industries. We deliver science-based and practical solutions for clients in areas including food safety, product quality, shelf-life determination, process validation, and environmental monitoring. Please reach out to see how we can meet your analytical needs!

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849/Virtual

AOAC International provides a forum for finding appropriate science-based solutions through the development of microbiological and chemical standards. AOAC Official Methods of Analysis are used by food scientists around the world to facilitate public health and safety and to promote trade. AOAC Performance Tested MethodsSM (PTM) is a globally recognized validation program for the certification of proprietary test kit methods and application notes. The AOAC International offers resources in education through its training courses and seminars offered on-line and in person.

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18 Industrial Dr.
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www.appliedfooddiagnostics.com

802/Virtual

Applied Food Diagnostics develops and manufactures assays for the rapid detection of a multitude of pathogens and bacteria. Our no enrichment assays detect *Salmonella* species or *Listeria* species and provide results in less than 90 minutes. Additional assays for detecting *Listeria* species and *monocytogenes*, *Salmonella* species or the Top 7 Shiga-toxin producing *E. coli* were developed to be simultaneously tested in one PCR run. All assays listed are validated through the AOAC Performance Tested Methods ProgramTM. Along with these rapid detection assays, our product portfolio includes microbiological media, laboratory consumables and sample collection supplies for food science applications.

Aptar Food + Beverage – Food Protection
125 Westlake Pkwy., Suite 100
Atlanta, GA 30336, USA
Phone: +1 404.344.0796
www.aptarfoodprotection.com

549

Aptar Food + Beverage – Food Protection leverages material science, active packaging, and equipment and processing expertise to develop advanced systems that help extend freshness and enhance safety for produce and seafood. The company's innovative InvisiShieldTM antimicrobial delivery system integrates into sealed packages to protect food products from bacteria, fungi, and viruses to mitigate risk of foodborne illness. In addition to its packaging agnostic solutions for food safety, Aptar also offers a range of trays, pouches, retail and mini containers, slicing equipment, lidding film, and tray-sealing technology.

Arizona and California Leafy Greens Marketing Agreement
1688 W Adams St.
Phoenix, AZ 85007, USA
Phone: +1 602.542.0945
www.lgma.org

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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 these

unprecedented programs and are working to provide products that are healthy and safe. Both Arizona and California LGMA program standards were recognized by the FDA in 2017 for their alignment to the Produce Safety Rule.

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Art's Way Scientific is a leading producer of technical turnkey research, vivarium, and diagnostic laboratories. Art's Way designs, develops, manufactures, and installs a complete custom-engineered building for biocontainment, public health, laboratory animal research, food safety, and general laboratory space requirements. www.buildingsforscience.com.

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www.asifood.com

ASI is a global food safety company offering Farm-to-Fork solutions for the entire food industry. Our mission is to provide innovative, reliable and trusted food safety and quality solutions to help our customers minimize risk, reduce recalls, eliminate foodborne illness, and protect their brand and the health and well-being of their customers. ASI offers accredited and non-accredited audits, training, consulting services, and everything in between with a global team of highly trained and experienced auditors and consultants. We are your one-stop shop for all things food safety!

Association of Food and Drug Officials 845
155 W Market St., 3rd Floor
York, PA 17401, USA
Phone: +1 717.757.2888
www.afdo.org

The Association of Food and Drug Officials (AFDO) promotes the uniform adoption and enforcement of food, drug, medical devices, cosmetics and product safety laws, rules, and regulations. Founded in 1896, AFDO is an international, non-profit professional organization consisting of state, federal and local regulatory officials as members. Industry representatives are welcomed as associate members. AFDO is a mechanism for advancing regulatory program standards that will help to advance an integrated food safety system. The organization also provides training and continuing education as well as networking opportunities that foster understanding and collaboration among all members and an appreciation for each role in the food and medical device safety system.

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Autoscribe Informatics provides quality management and LIMS solutions for food protection. Our solutions are used to track food samples and manage associated data. Our software ensures your testing is fully traceable from raw ingredients to final product and ensures quality control across your food production.

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BCN Research Laboratories Inc. 814
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www.bcnlabs.com

BCN Labs is a full-service microbiological and mycological laboratory. BCN Labs offers an extensive selection of microbiological and mycological tests, training courses, and auditing programs. BCN Labs is Internationally recognized as one of the leaders in food and beverage spoilage prevention and investigation including heat-resistant molds (HRM), preservative-resistant yeast and molds, and *Alicyclobacillus guaiacol* positive (ACB). It is also recognized by its expertise in pathogen contamination assessment, prevention, and elimination. BCN Labs offers other services that include challenge studies, preservative studies, shelf-life studies, and other customized studies for our customers. BCN Labs staff is proficient in bacteria, yeast and mold identifications using DNA sequencing and confirmation of the results by traditional identification techniques. BCN Labs is ISO 17025 accredited and is a WBENC certified women-owned company.

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www.biadiagnostics.com

Bia Diagnostics is a global-leading ISO 17025-accredited food and nutraceutical testing laboratory located in beautiful Colchester, Vermont. With over 40 years of diagnostics' experience, we specialize in Food Allergen, GMO, Food Authenticity, and Cannabis/Hemp testing. Focusing on these four critical sectors, our expert scientists are dedicated to working with you to ensure the most accurate and timely results, providing same day analysis for most testing needs at no additional cost!

BioFront Technologies 829
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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® ELISAs and AllerTrace® lateral flow assays represent a comprehensive line of monoclonal antibody-based tests that accurately detect trace amounts of food allergens on surfaces, rinse waters and complex matrices. The MonoTrace Gluten ELISA utilizes a novel non-toxic extraction for faster quantification of gluten within processed and unprocessed foods. BioFront offers over 30 unique ELISA and lateral flow assays targeting peanut, tree nuts, milk, egg, soy, lupine, sesame, mustard, buckwheat, shellfish, fish, and gluten.

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BIOLYPH's Lyophilization Services maximize the quality and value of your Food Safety assay kits by providing years of room temperature stability and minimizing user steps and sources of error. We transform your liquid reagents into LyoSpheres™, precise lyophilized aliquots, and package them inside virtually any device, including tube strips, plates, and custom devices. All components needed for the reaction can be in a single LyoSphere™, and rehydration is instantaneous and complete. Assays produced as LyoSpheres™ include *Salmonella*, *Listeria*, *Campylobacter*, *E. coli*, STEC, *Vibrio*, *Shigella*, and more. Please visit our booth to explore how BIOLYPH can add value to your products.

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Phone: +1 224.213.1756
www.biomerieux-usa.com

With more than 55 years of pioneering diagnostics and unrelenting commitment to improve public health worldwide, bioMérieux understands the challenges you face when it comes to ensuring food safety and quality. To help you meet your demands, bioMérieux offers core lab and at-line microbiology tools that deliver rapid results for pathogen detection, quality indicator enumeration, organism identification and cost-effective, automated solutions with LEAN approaches to streamline your laboratory. bioMérieux's state-of-the-art Predictive Diagnostics Innovation Center utilizes data science and sequencing applications, helping customers recognize insights in their operation to move from detecting and responding to events, to predicting and preventing them.

Bio-Rad Laboratories, Inc. 318
2000 Alfred Nobel Dr.
Hercules, CA 94547, USA
Phone: +1 510.741.4486
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.

Bioscience International, Inc. 713
11333 Woodglen Drive
Rockville, MD 20852, USA
Phone: +1 301.231.7400
www.biosci-intl.com

Our viable air samplers and compressed gas test units raise your Environmental Monitoring Program to a higher level of dependability, and conformance with regulatory guidance. Settle plates are no longer ample for reliable monitoring. Used by NASA, NIH, FDA and major universities, the SAS air samplers are the industry leader in accuracy and dependability, backed by two-day service. Our Pinocchio compressed gas testing system is an all-in-one unit – all you need is the gas and a petri plate to perform sampling.

BIOTECON Diagnostics 115
Hermannswerder 17
Potsdam, Brandenburg 14473, Germany
Phone: +49.331.2300.200
www.bc-diagnostics.com

For more than 20 years, we have imagined a world where no one gets sick from the food or drink they consume. As pioneers since 1998, we have constantly strived to put an end to foodborne diseases by providing the food and beverage industry with the very best in food safety solutions. Today, we have become a market leader in food and beverage safety excellence. Our comprehensive portfolio, consisting of the the foodproof® and microproof® product lines, offers first-in-class, robust and reliable molecular solutions for DNA/RNA extraction and rapid detection systems for pathogens, spoilage organisms, GMOs and allergens based on real-time PCR. Join the leading food-producing companies, government and private laboratories all over the world who trust and rely on our high-quality food safety testing solutions.

Since joining forces with Hygiena in March 2021, a leader in food safety and environmental testing solutions, we have been even better able to serve our customers. With an extended portfolio of high-quality products and a larger global technical team, we are in an advantageous position to offer greater support than before.

BootieButler® 111
13720 Rider Trail North
St. Louis, MO 63045, USA
Phone: +1 800.710.9863
www.bootiebutler.com

BootieButler® Shoe Cover Systems are the faster, cleaner, and safer way to utilize shoe covers in your business. There is simply no better system for high volume applications. With our shoe cover systems and PPE, you can rest assured that your workers' safety compliance, as well as client compliance with cleanliness regulations, will be improved. Picking the perfect system for your company's unique needs is easy with our wide range of booties and applicators. Stop by our booth for a demonstration and visit www.bootiebutler.com to learn more.

Certified Laboratories 642
65 Marcus Drive
Melville, NY 11747, USA
Phone: +1 516.576.1400
www.certified-laboratories.com

There has never been a better time to visit Certified Laboratories than now! Approaching 100 years with a heritage of bridging science with service, Certified Laboratories, and the Certified Group of companies offer a total solution for the food, supplement, and cosmetic industries. With a more comprehensive breadth of analysis, as well as consulting through our sister company EAS Consulting, we can provide support from the routine environmental testing, through to your most complicated projects or regulatory hurdles. Certified Laboratories can provide the testing you need with the expertise and responsiveness you deserve.

Charm Sciences, Inc. 519
659 Andover St.
Lawrence, MA 01843, USA
Phone: +1 978.687.9200
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-X 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!

Chihon Biotechnology
2772 Golfview Road, Suite B
Naperville, IL 60563, USA
Phone: +1 630.670.5701
www.chihonbio.com

Virtual

Found in 2003, Chihon Biotechnology has grown into a well-known leading supplier of Nisin and Natamycin. Besides the regular products, our unique higher concentrated Nisin has much lower-sodium chloride and is more healthier. The ultrafine Natamycin offers better coverage. We also produce lauroyl arginine ethyl (LAE), ε-Polylysine and other preservatives. Our R&D is always willing to support our customers with their formulation issues. Our office/warehouse is in Chicago and offers excellent customer service and timely delivery.

ClorDiSys Solutions, Inc.
50 Tannery Road, Suite 1
Branchburg, NJ 08876, USA
Phone: +1 908.236.4100
www.clordisys.com

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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.

Copan Newlab
Via A. Grandi 32
25125 Brescia Italy
Phone: +0302687211
www.copangroup.com

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NewLab, established in 2012, is one of the newest Copan business units, with the mission to provide technologically advanced automated solutions for industrial microbiology. The NewLab innovative approach enables companies and laboratories to benefit from an efficient sample processing that guarantees solid quality performance.

Specifically designed in compliance with ISO standards for microbiological quality control in food, cosmetics and pharmaceutical industries, Cyclone™ is our automated walk-away system which increases results' accuracy and reproducibility while decreasing time and operational costs. PharmaLab™, our new platform capable of digital plate incubation and reading for environmental monitoring, offers reliable results through any audit trail.

We possess the broad-minded professionalism common to all the branches of Copan's group, to deal with new requests and to tailor our products to your specific needs in today's fast-paced technological scene. Considered as a strategic technological partner, Copan NewLab supports any of your complex projects.

Corning Incorporated
One Riverfront Plaza
Corning, NY 14831, USA
Phone: +1 607.974.9000
www.corning.com

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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. Corning products include consumables (such as plastic vessels, specialty surfaces, cell culture media and serum), as well as general labware and equipment, that are used for advanced cell culture research, bioprocessing, genomics, drug discovery, microbiology and chemistry.

Crystal Diagnostics
510 Compton St., Suite 106
Broomfield, CO 80020, USA
Phone: +1 720.351.4855
www.crystaldiagnostics.com

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Crystal Diagnostics is passionate about food safety. We recognize the impact food safety issues have on the health and wellness of people. We also understand the devastating impact food pathogen outbreaks and subsequent recalls can have on food producers. With these impacts in mind, Crystal Diagnostics moved to create the AutoXpress: a fully automated, high throughput testing platform designed for testing laboratories. We utilize liquid crystal technology within this advanced immunoassay to provide simple, accurate, fast, and economical food testing results. The AutoXpress is the final solution in foodborne pathogen testing.

CultureMediaConcepts®
970 E Orangethorpe Ave., Unit A
Anaheim, CA 92801, USA
Phone: +1 714.773.1726
www.culturemediaconcepts.com

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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 pre-measured prepared culture media in sterile sample bags for your specific testing application. And, our EnviroReady® sample collection device will give you leverage on environmental monitoring. Come by our booth and let's talk about your specific testing needs.

Decon7 Systems, Inc.
8541 E Anderson Dr., Suite 106
Scottsdale, AZ 85255, USA
Phone: +1 480.339.2858
www.d7food.com

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Decon7 Systems operates within the environment's most dangerous pathogenic, chemical, and energetic hazards and threats. Work is done every day to develop solutions to combat these risks.

And we believe that these innovation solutions should not be kept on laboratory shelves, but that they should be made readily available to everyone in order to keep the food supply and public and private spaces and property clean and safe.

We do this by commercializing some of the world's most innovative compounds originally engineered for use in response to terrorist attacks and the world's most dangerous toxins.

Our compounds and foams are designed and manufactured specifically for cleaning, disinfecting, deodorizing, neutralizing, decontaminating, mitigating, and suppressing threats from toxic chemicals and materials, biological hazards (e.g., SARS-CoV-2/ COVID-19), energetics, explosives, and fires. Our mission is to provide our customers with highly efficacious and versatile products that have a low environmental impact, can be used across many different industries, and are compatible with a variety of materials and equipment.

Decon7 offers the patented anti-microbial chemical D7 for cleaning, sanitizing, and disinfecting.

D7's adhesion allows for the longest contact time and was developed and formulated to be efficacious against a wide variety of organisms*.

D7 is used in a wide variety of industries, including food and biosecurity, public safety and first responders, and sanitation.

D7 is EPA registered to penetrate, kill and remove biofilms and approved for use on SARS-CoV-2/COVID-19. Experience the D7 difference.

Deibel Laboratories 602
7120 N. Ridgeway Ave.
Lincolnwood, IL 60712, USA
Phone: +1 224.465.5515
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 fifty 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 sized clientele.

Detectamet Detectable Products 329
5111 Glen Alden Dr.
Richmond, VA 23231, USA
Phone: +1 844.820.7244
www.detectamet.com

If you're in food production, talk to us about reducing your risk of food recalls due to foreign body contamination. After inspection equipment on production lines, the next step is to use metal and X-Ray detectable products in processing areas, including pens, clipboards, mixing/handling equipment, knives, temperature probes, PPE and engineering materials. Since 2003 we've collected awards for our innovative products, helping businesses like yours avoid unnecessary foreign body contamination.

Our product range is made from a unique detectable polymer, manufactured from EU & FDA food contact approved materials, and plays an important contribution to successful FSMA & BRC compliance.

Eagle Protect PBC 742
3079 Harrison Ave. #21
South Lake Tahoe, CA 96150, USA
Phone: +1 800.384.3905
www.eagleprotect.com

Eagle Protect supplies high-quality, food-safe disposable gloves and clothing. Partnering with international food safety specialist Barry Michaels, Eagle leads the industry in scientific research of disposable gloves and their cross-contamination potential.

Eagle's unique, proprietary Fingerprint glove analysis third-party tests a range of Eagle gloves for structural integrity, safe ingredients, cross-contamination potential, dermal compatibility and pathogen contamination.

At this year's IAFF, Michaels and Eagle are presenting their findings of viable pathogen contamination of glove surfaces, having analyzed 20 different brands, and the risk this poses to food safety.

Ecolab 507
1 Ecolab Place
St. Paul, MN 55102, USA
Phone: +1 800.392.3392
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. Ecolab offers innovative and customized food and beverage solutions backed by our technical experts. We partner with you to help optimize every aspect of your food and beverage operation, so you deliver measurable improvements in operational efficiency, and consistent food quality and safety. This partnership allows our customers to continue to produce profitably, responsibly and safely by targeting actions that drive the right outcomes.

Eurofins 803
2200 Rittenhouse St., Suite 175
Des Moines, IA 50321, USA
Phone: +1 515.265.1461
<https://www.eurofinsus.com/food>

Eurofins is your partner in food safety, whether you're a manufacturer, packer, supplier, retailer, distributor, or processor. And we know your bottom line depends on our top-of-the-line services. Eurofins offers innovation, agility, individualized service, and a commitment to the highest standards with a full portfolio of food microbiology and chemistry testing, consulting, and project services. With our network of local laboratories and expert consultants, Eurofins is your local partner in food safety, delivering fast, accurate, cost-efficient expertise to every region we serve.

Extreme Microbial Technologies 102
2800 E River Road, Suite A
Moraine, OH 45439, USA
Phone: +1 844.885.0088
<https://extrememicrobial.com>

Extreme Microbial Technologies has the solutions to reduce or eliminate harmful germs within all indoor environments up to 99.9% Our ACTIVE technologies continually seek out and attack existing microbes and dangerous contaminants throughout the space, and decontaminate the area.

Thoroughly tested, our ACTIVE Hydrogen Peroxide Plasma technology ensures drastic reductions of numerous viruses, mold, bacteria, mildew, and VOCs. All while being environmentally safe for humans, animals, and plants.

FDA/Center for Food Safety and Applied Nutrition Virtual
5001 Campus Dr.
College Park, MD 20740, USA
Phone: +1 240.402.1907
www.fda.gov

The U.S Food and Drug Administration's Center for Food Safety and Applied Nutrition is responsible for promoting and protecting the public's health by ensuring that the nation's food supply is safe, sanitary, wholesome, and honestly labeled, and that cosmetic products are safe and properly labeled.

FlexXray, LLC 208
3751 New York Ave., #130
Arlington, TX 76014, USA
Phone: +1 817.453.3539
www.flexxray.com

FlexXray is the North American leader in product x-ray inspection and recovery services dedicated to serving food companies. We specialize in inspecting your product at one of our four regional U.S. facilities for physical contamination; raw ingredients, shelf-stable goods, refrigerated fresh or frozen, we have a solution for you! We utilize custom developed medical grade x-ray technology running at slower speeds than tradition production speeds in order to detect items like metal, plastic, gasket material, rubber, glass, stone, and bone – which we can see down to 0.8 mm or smaller!

Currently, we partner with more than 1,100 customers to help salvage saleable product instead of throwing it away or reworking it internally. We save our customers millions of dollars each year and help eliminate over 97% of food landfill waste on product we inspect.

Fluxergy Inc.
30 Fairbanks, Suite 110
Irvine, CA 92612, USA
Phone: +1 851.818.7669
www.fluxergy.com

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Fluxergy specializes in the manufacturing of Point-of-Use Diagnostic equipment. Currently, the Fluxergy platform can detect *Salmonella* spp. on-site from environmental swabs post enrichment within 1 hour with a simple workflow. Our development pipeline includes tests for food production facilities for *Listeria* spp., a dairy PCR panel, as well as the ability to develop custom assays for contaminants and markers that suit your business needs. The platform potential includes the ability to measure proteins, cells, chemicals and contaminants on a portable and scalable platform. Veterinary and custom assay development available for streamlining testing within your facilities.

Food Microbiological Laboratories, Inc.
10653 Progress Way
Cypress, CA 90630, USA
Phone: +1 714.657.7527
www.foodmicrolabs.com

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Food testing and research services with expertise in food safety and quality. Food Microbiological Laboratories, Inc. is State of California (ELAP) and ISO 17025 accredited. Our leadership team includes Melissa Calicchia, MS, CFS, Chief Science Officer and Karilyn Gonzales, MS, CFS, Laboratory Director with over 50 years of combined experience in the industry. Our expert microbiologists specialize in provision of quality data, and technical interpretation for routine food and environmental pathogen screening, shelf life and allergen testing, making us known for exceptional client satisfaction.

Food Quality & Safety
111 River St.
Hoboken, NJ 07030, USA
Phone: +1 224.239.0617
www.foodqualityandsafety.com

Virtual

Food Quality & Safety Magazine, a Wiley publication, is the food/beverage industry's go-to resource for expert-contributed, must-read content. Its award-winning editorial covers the latest news, technologies, trends, and issues happening from farm to fork to ensure a safe food supply. For over 25 years, its print and digital content has been delivering practical information to all levels of quality and safety decision makers in food processing, agriculture, distribution, food service/retail, and regulatory and research institutions.

Food Safety Magazine
2401 W Big Beaver Road
Troy, MI 48084, USA
Phone: +1 248.283.9569
https://www.food-safety.com

Virtual

For more than 25 years, *Food Safety Magazine* has been the leading provider of content serving food safety/quality professionals worldwide. Bimonthly eMagazine features contributions from food and beverage industry leader covering: 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" offers twice monthly episodes featuring news and trends, or another surprise segments, followed by a conversation with a food safety professional sharing their experiences and insights. Visit our website www.food-safety.com to begin your free subscription and learn more about all *Food Safety Magazine* has to offer.

Food Safety Net Services
199 W Rhapsody Dr.
San Antonio, TX 78216, USA
Phone: +1 210.308.0675
www.fsns.com

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Food Safety Net Services (FSNS) is a network of 19 ISO-17025 accredited laboratories across North America, and has been a trusted partner in the food safety industry for 27 years. FSNS provides microbiological and chemical analyses of all food matrices and environmental samples, extensive research and development opportunities, and a comprehensive educational program. Additional services include NLEA labeling and an industry leading Certification and Audit program.

Food Safety News
227 W Hamilton Lane
Battle Creek, MI 49015, USA
Phone: +1 913.205.3791
www.foodsafetynews.com

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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
2401 W Big Beaver Road, Suite 700
Troy, MI 48084, USA
Phone: +1 847.405.4120
www.foodsafetysummit.com

Virtual

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. For more than 20 years, the Food Safety Summit has been the premier event, developed by the industry for the industry, where professionals learn from their peers about cutting-edge solutions to address emerging issues, become certified in the newest courses available and see the latest technological advances offered by leading vendors.

FoodChain ID
504 North 4th St.
Fairfield, IA 52556, USA
Phone: +1 641.209.4500
www.foodchainid.com

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FoodChain ID is a supplier of technology-enabled solutions to support the safety, quality, integrity, and sustainability of the global food chain. Our services include food safety certification and auditing, Horizon-Scan™ ingredient and supplier risk assessment, Food Fraud Database for intentional adulteration vulnerabilities, gComply Plus covering product-level, global contaminants analysis, FoodChain ID Academy offering on-demand and virtual training, and food and supplement subject matter experts for tailored consulting services. Certification offerings include BRCS, SQF, GLOBALG.A.P, FSSC 22000, USDA Organic, Non-GMO Project Verification, U.S. Hemp Authority®, and Vegan/Plant-Based/Vegetarian. For efficiency in audits and certification, we provide one global customer portal: TrakCert™.

FoodChek Systems, Inc. 132
1414 – 8 St. SW, Suite 450
Calgary, AB T2R 1J6, Canada
Phone: +1 403.269.9424
www.foodcheksystems.com

FoodChek Systems, Inc. specializes in developing and commercializing products to detect microbial contamination in human and pet consumables, and for pathogens within the production and manufacturing environments. Our newest product is Actero™ EZ-Media Dry Bag that significantly reduces the time to prepare enrichment media from hours to just less than 30 minutes. Additional signature product lines are: Actero™ Elite Enrichment Media with ground-breaking, patented formulations compatible with any pathogen testing system offering single-step enrichment, fastest “time-to-results” and targeted accuracy; and Actero™ Universal Enrichment Media with established ISO compliant media formulations used for standard testing protocols in today’s labs.

FREMONTA Corp. 819
466 Kato Terrace
Fremont, CA 94539, USA
Phone: +1 510.979.1979
www.fremonta.com

FREMONTA Corp. provides innovative sampling technology and is the USDA’s exclusive licensing partner in bringing to market “the new gold standard of sampling” for the detection of pathogens in beef trimmings and other protein sources. FREMONTA’s patented Continuous and Manual Sampling Devices facilitate batch sampling for microbial contaminants in foods, to improve sampling efficiency. FREMONTA’s novel and intelligent sampling instruments include the MicroTally™ Swab, mobile Continuous Sampling Device (mCSD™), and SmartSampler™. Stop by our booth #819 to see how these sampling methods can make your FSQA testing faster, easier, more cost effective, and more representative.

Goodway Technologies 308
420 West Ave.
Stamford, CT 06909, USA
Phone: +1 203.359.4708
www.goodway.com

Goodway Technologies helps our food industry customers improve their quality and food safety programs through the introduction of innovative cleaning and sanitizing equipment technologies. We specialize in dry steam cleaning products for packaging machinery, production lines, and conveyor belts that help remove soils, allergens, and more while preparing surfaces for more efficient sanitizing.

Hamilton Company 741
4970 Energy Way
Reno, NV 89502, USA
Phone: +1 775.858.3000
www.hamiltoncompany.com

Hamilton Company specializes in the development, manufacturing and customization of precision measurement devices, automated liquid handling workstations and sample management systems. Our products provide fully automated workflows that offer reliability, performance, and the flexibility to automate your assays, all with industry leading quality and service. Hamilton offers fully automated solutions for sample prep in food safety, etc. Hamilton Company has been a leading global manufacturer for more than 60 years, with headquarters in Reno, Nevada; Franklin, Massachusetts; and Bonaduz, Switzerland; and subsidiary offices throughout the world.

Hardy Diagnostics 529
1430 W McCoy Lane
Santa Maria, CA 93455, USA
Phone: +1 800.266.2222
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.

Hydrite Chemical Co. 432
300 N Patrick Blvd.
Brookfield, WI 53045, USA
Phone: +1 262.792.1450
www.hydrite.com

For 90 years, Hydrite has been providing creative solutions and creating unique formulations for the food industry. Learn how we can help improve the quality in applications including food processing aids, ingredients, foam control, sanitation, wastewater treatment, and intervention chemistry. Hydrite is a single-source provider with an extensive R&D facility, ability to bundle products for cost improvements, strong raw material purchasing power, privately-owned fleet for on-time delivery, products manufactured under cGMPs and quality management systems.

Hygiena 303
941 Avenida Acaso
Camarillo, CA 93012, USA
Phone: +1 805.738.6680
www.hygiena.com

Hygiena delivers rapid microbial detection, monitoring, and identification solutions to improve food safety and environmental monitoring worldwide.

Hygiena products provide solutions for every step in your food safety and environmental monitoring programs. From raw material to final processing and packaging or environmental testing, our products ensure you facility is clean per HACCP performance standards and compliance guidelines. We know that rapid, accurate tests results are essential to maintaining this workflow. Our goal is to support you with rapid monitoring, detection and identification solutions.

Hygiena is committed to providing customers with high-quality innovative technologies that are easy-to-use, reliable and backed by excellent customer service and support. Headquartered in Camarillo, California with offices in the UK, Canada, Mexico, Spain and China, Hygiena products are sold in more than 100 countries. To learn more, visit www.hygiena.com.

IEH Laboratories & Consulting Group 810
15300 Bothell Way NE
Lake Forest Park, WA 98155, USA
Phone: +1 206.522.5432
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 address quality and safety concerns. Our consulting team provides technical support to all sectors of the food industry, from regulatory and legal support to risk assessment, crisis management, and outbreak investigations. In addition, our team of experts can assist you with food safety, sanitation and environmental program evaluation and design.

In addition, through our family of brands; Microbiologique, ELISA Systems, Bio-Check UK, Roka Bio and Sample6, IEH provides options for pathogen testing, microbial indicators, allergens, mycotoxins, meat speciation, spoilage organisms, sampling supplies, laboratory disposables, media and laboratory instruments.

Come learn about how we assist with risk management and service clients with internationally recognized experts in food safety.

IFC **704**
13420 W 99th St.
Lenexa, KS 66215, USA
Phone: +1 913.782.7600
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.

INFICON **510**
2 Technology Place
East Syracuse, NY 13057, USA
Phone: +1 315.434.1126
<https://www.inficon.com>

INFICON, one of the world's leading innovators in leak-testing technology has leveraged their expertise to create the Contura S-series leak detector for the food and packaging industries. Contura provides non-destructive testing for large and micro leaks simply and quantitatively, facilitating advancements in MAP, compostable and flexible package testing.

InnovaPrep **223**
132 E Main St.
Drexel, MO 64701, USA
Phone: +1 816.619.3375
www.innovaprep.com

InnovaPrep provides air, surface and liquid biomonitoring tools to help dramatically improve limit of detection for contamination monitoring in food production facilities. Sample-to-answer can be achieved in a single shift when paired with rapid molecular analysis methods for a faster, easier and better monitoring program. InnovaPrep's Concentrating Pipette Select™ provides rapid concentration of pathogens, spoilage organisms, and particulate contamination from liquid food samples and beverages. Please visit our booth for a demonstration.

International Association for Food Protection
2900 100th St., Suite 309
Des Moines, IA 50322-3855, USA
Phone: +1.515.276.3344
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 website at www.foodprotection.org.

International Association for Food Protection — Student PDG 103
2900 100th St., Suite 309
Des Moines, IA 50322-3855, USA
Phone: +1.515.276.3344
www.foodprotection.org

Welcome, students, to IAFP 2021! 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.

International Food & Meat Topics **Virtual**
P.O. Box 4
Driffield, East Yorkshire YO25 9DJ, United Kingdom
Phone: +44.1377.241724
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. **610/Virtual**
32 Cummings Park
Woburn, MA 01801, USA
Phone: +1 781.937.0007
www.interscience.com

Interscience is a family-owned company with a dynamic R&D department that has more than 30 patents filed worldwide. The company has been a key player in microbiology control since 1979. Designer and manufacturer, the company equips laboratories in the food, pharmaceutical, cosmetic and research industries in more than 130 countries, to enable them to guarantee healthy products for consumers. Our product range covers equipment from sample preparation to bacterial analysis, and includes gravimetric dilutors, lab blenders, peristaltic dispensing pumps, automatic spiral platers and colony counters.

Intertek Alchemy **607**
5301 Riata Park, Building F
Austin, TX 78727, USA
Phone: +1 866.463.5117
www.alchemysystems.com

Intertek Alchemy helps companies of all sizes power their workforce. Join over 1,000 food manufacturers that leverage our industry-leading training solutions to ensure the everyday decisions made by frontline employees have a positive impact on your culture and operations. In addition, our experienced consulting team can help maximize your food safety and quality systems for GFSI, HACCP, and FSMA compliance. Learn more about how we can help you drive safety, quality, and productivity by visiting us in booth 607.

MadgeTech **806**
6 Warner Road
Warner, NH 03278, USA
Phone: +1 603.456.2011
www.madgetech.com

From cooking and cooling to shipping and storage, ensure food quality while protecting your bottom line. MadgeTech data loggers are essential to any HACCP plan — keeping auditors happy, customers healthy and business profitable. Real-time monitoring, alarms and notifications give users the power to manage critical control points before deviation occurs. Maintaining records is a breeze, MadgeTech 4 Software automatically generates reports for compliance and analysis.

Blue Text – IAFP Sustaining Member

Matrix Sciences 345
1061 Feehanville Dr.
Mount Prospect, IL 60056, USA
Phone: +1 920.634.6166
www.matrixsciences.com

Matrix Sciences delivers accurate, timely and insightful information so that customers have what they need to bring safe, quality food to market.

Matrix partners with customers offering a market-leading combination of services and technology to provide the support, expertise and resources food manufacturers need to make informed decisions with confidence.

Mérieux NutriSciences 615/Virtual
401 N Michigan Ave., Floor 14
Chicago, IL 60611, USA
Phone: +1 312.938.5151
<https://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, research services, and digital solutions 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 to have a global presence. Present in 27 countries, Mérieux NutriSciences employs over 7,500 people worldwide working in over 100 laboratories.

Michelson Laboratories, Inc. 142
6280 Chalet Dr.
Los Angeles, CA 90040, USA
Phone: +1 562.928.0553
www.michelsonlab.com

Since 1970, Michelson Laboratories, Inc. has provided complete chemical and microbiological analyses to the food industry. We are an ISO/IEC 17025 Accredited Laboratory offering rapid turnaround time, accurate, reliable results and excellent customer service. We can assist you with your environmental monitoring program and offer pathogen analysis, indicator organism testing, validation and shelf-life studies. In addition, we provide testing services for antibiotic and pesticide residues, melamine by LC/MS, heavy metals by ICP/MS, nutritional labeling and more. We are also highly experienced in sampling and analysis of products on FDA detention. Contact us to see how we can help you.

Michigan State University Online Food Safety Program 633
1129 Farm Lane, Room B51
East Lansing, MI 48824, USA
Phone: +1 517.884.2078
www.foodsafety.msu.edu

Michigan State University's Online Food Safety Program strives to educate professionals on how to make global food systems safe and supports individuals as they advance in food safety-related careers. The program consists of an online Master of Science in Food Safety degree, non-credit continuing education courses and an on-campus executive education program. Be more effective, efficient, and confident in an ever-changing workplace. Who will keep food safe? Spartans Will.

Microbiologics 120
200 Cooper Ave. N
St. Cloud, MN 56303, USA
Phone: +1 320.217.6606
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, and more. Visit booth 120 to learn how our QC microorganism products can save your laboratory time and money.

Midland Scientific 645
10651 Chandler Road, Suite 102
La Vista, NE 68128, USA
Phone: +1 800.642.5263
www.midlandsci.com

Midland Scientific is a full-line distributor of laboratory supplies including chemicals, equipment, and consumables. Our customer service and distribution centers, along with our sales force, span the entire United States to ensure timely delivery of your products. We pride ourselves in offering superior service to the customer through a helpful and friendly staff, quality products, competitive pricing, and extensive product options.

MilliporeSigma Virtual
400 Summit Dr.
Burlington, MA 01803, USA
Phone: +1 978.944.2081
www.milliporesigma.com

MilliporeSigma, the U.S. life science business of Merck KGaA, Darmstadt, Germany, partners with food safety teams to enable you to improve lab testing efficiencies with reliable products and services that meet ever changing regulations. It is through our collaborations that we can advance the safety and analysis of foods and beverages using trusted brands like Millipore® with microbiology solutions for hygiene, environmental monitoring and pathogen detection, Supelco® analytical solutions for analysis of food contamination and authenticity, Milli-Q® lab water solutions and Sigma Aldrich lab and production materials, including chemicals, inorganics and solvents throughout the supply chain, manufacturing and distribution.

National Environmental Health Association 315
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. 324
3200 S Central Ave., P.O. Box 647
Marshfield, WI 54449, USA
Phone: +1 800.826.8302
www.nelsonjameson.com

Since 1947, Nelson-Jameson has been a trusted source of food processing supplies. We represent over 850 vendors and distribute over 55,000 products in the broad categories of: Processing & Flow Control, Safety, Sanitation & Janitorial, Production & Material Handling, Building & Facility Maintenance, Laboratory & QA/QC, and Packaging & Ingredients. Our products are backed by expert staff who can provide you with the direction you need when choosing safe, quality products for your processing plant.

NEOGEN 439
620 Lesher Place
Lansing, MI 48912, USA
Phone: +1 517.372.9200
www.neogen.com

At NEOGEN, we partner with our customers to protect and enhance the world's level of food and animal safety. By offering a diverse suite of solutions for the food, beverage, animal protein and agriculture industries, NEOGEN empowers our customers to safeguard their brands and create better products.

Neutec Group, Inc. 342
1 Lenox Ave.
Farmingdale, NY 11735, USA
Phone: +1 516.870.0877
<https://neutecgroup.com>

Neutec Group is a market leader in implementation of innovative technologies for QC and R&D laboratories. At the IAFP Annual Meeting, we will highlight our equipment solutions for measuring Water Activity (a_w), Improve the work flow in the lab with technologies like sterilizers, media preparators, agar fillers, XY tube fillers, spiral platers and automated colony counters to name a few.

NOVOLYZE 128/Virtual
50 rue de Dijon
Daix, 21121, France
Phone: +33.9.83.69.42.13
www.novolize.com

NOVOLYZE offers a comprehensive, tech-enabled solution to help the food industry manufacture safer and better food, while ensuring strong compliance with international food safety and quality standards. Our innovative approach to Food Safety and Quality relies on cutting-edge microbiology solutions, combined with the latest developments in digital, IoT and machine learning, serving a vibrant community.

NSI Lab Solutions 408
7212 ACC Blvd.
Raleigh, NC 27617-7212, USA
Phone: +1 919.789.3000
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. +1 800.234.7837.

Pall Corporation Virtual
25 Harbor Park Dr.
Port Washington, NY 11050, USA
Phone: +1 866.905.7255
www.pall.com

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 Virtual
2345 Crystal Dr., Suite 800
Arlington, VA 22202, USA
Phone: +1 202.220.0651
www.fightbac.org

The Partnership for Food Safety Education is a public health non-profit that brings together the food industry, consumer groups, scientific associations and the federal agencies to raise awareness of safe food handling and hand hygiene practices among U.S. households.

PathogenDx 339
9375 E Shea Blvd., Suite 1000-N
Scottsdale, AZ 85060, USA
Phone: +1 800.641.5751
www.pathogendx.com

PathogenDx is a biotechnology company based in Arizona. As companies face an unprecedented era of threats to food, we deliver testing to identify pathogens faster and easier. PathogenDx testing can identify *Salmonella*, *Listeria* and *Listeria monocytogenes* in a single test, without the need for sample enrichment and with no loss of certainty. This provides highly reliable results to food companies in an eight-hour shift—driving greater safety and efficiencies through your operations. At PathogenDx, we deliver innovative solutions that are efficient, robust, that are cost effective and save lives, and drive us all towards the future of safe.

Polyskope Labs 545
755 Research Pkwy., Suite 460
Oklahoma City, OK 73104, USA
Phone: +1 405.406.4777
www.polyskopelabs.com

Polyskope Labs was founded in 2011 by pioneers in molecular diagnostics to develop next-generation multiplex solutions for food safety testing. The Company achieved AOAC approval of the world's first comprehensive multiplex detection method for the simultaneous detection of all major bacterial pathogens in Food, Beverages, and Cannabis. This revolutionary advancement in pathogen detection provides flexibility, workflow simplification, and >60% reductions in the cost-of-analysis for food safety and cannabis labs.

Procter and Gamble Professional 108
2 P&G Plaza
Cincinnati, OH 45202, USA
Phone: +1 803.447.5616
www.pgpro.com

P&G Professional is the away-from-home division of Procter & Gamble, serving the foodservice industry, a safe, simple, and effective foodservice solution including a comprehensive portfolio of dish machine chemicals and dish machines. Offering a total food safety solution with EPA-registered sanitizers and disinfectants, from accurate chemical dispensing equipment to energy star rated dish machines, peace-of-mind nationwide service 24/7/365, and real-time data and reporting, P&G Professional has what you need to deliver a noticeable clean. Also serving building cleaning and maintenance, healthcare, hospitality, and grocery/retail industries. P&G Professional offers complete solutions utilizing its parent company's scale, with trusted brands such as Dawn® Professional, Cascade® Professional, Mr. Clean® Professional, Tide® Professional, Swiffer® Professional, Comet®, Spic and Span®, Febreze®, and P&G Pro Line®. www.pgpro.com.

PureLine 533
1241 N Ellis St.
Bensenville, IL 60106, USA
Phone: +1 847.732.7253
www.pureline.com

Need a clean break? Have you tried chlorine dioxide or been quoted a price for a treatment and thought it was too expensive? PureLine prides itself on offering a full-line of chlorine dioxide products and services at a cost-effective solution and guarantees a 6-log kill! For over 20 years PureLine has been providing both gas and liquid chlorine dioxide sanitation products and services that are customized to their customers' needs.

Q Laboratories 446
1930 Radcliff Dr.
Cincinnati, OH 45204-1823, USA
Phone: +1 513.471.1300
www qlaboratories.com

Q Laboratories has served the food and beverage industries since 1966, offering exceptional microbiology, chemistry, and research and development laboratory services. An ISO/IEC 17025 Accredited, GMP/GLP compliant laboratory, Q Laboratories can provide services to meet all 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. Q Laboratories was the first North America-based laboratory to be approved as an AOAC Independent Laboratory, an AFNOR Expert Lab, and a MicroVal Expert Laboratory.

Quality Assurance & Food Safety Magazine 112
5811 Canal Road
Valley View, OH 44125, USA
Phone: +1 216.393.0300
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.

QSI 623
412 Georgia Ave., Suite 300
Chattanooga, TN 37403, USA
Phone: +1 423.708.7417
www.vincitgroup.com

QSI is the premier contract sanitation option for food processing in America. Our Human Safety and Food Safety divisions are continually innovating, discovering new ways to sanitize our clients' facilities effectively and efficiently.

For us, Food Protection isn't of secondary concern—it's our business model. We thrive on an ethic of excellence, offering every partner the assurance that every unit is in the best it can be. With QSI, your customers and brand have never been safer.

Remco Products 413
4735 W 106th St.
Zionsville, IN 46077, USA
Phone: +1 317.876.9856
www.remcoproducts.com

The cleaning and material handling tools Remco has provided to food processors have played a critical role in food safety for over 30 years. As a part of the Vikan family, we provide hygienic, innovative, durable, and efficient tools in up to 12 colors. From shovels and squeegees to brushes and brooms, we have what food manufacturers need.

As Vikan's dedicated presence in North America, Remco delivers superior support to customers through our combined industry knowledge and dedicated customer service staff. We strive to provide lasting value for our customers while we help them improve their own food safety efforts.

Rheonix, Inc. 622
10 Brown Road, Suite 103
Ithaca, NY 14850, USA
Phone: +1 302.287.1306
https://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 enables 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.

Rochester Midland Corporation – Food Safety Division 442
155 Paragon Dr.
Rochester, NY 14624, USA
Phone: +1 800.836.1627
www.rochestermidland.com

Rochester Midland Corporation's BrandGuard® program is a HACCP and GMP-based food safety and sanitation program designed to support SQF, BRC and other GFSI standards. We partner with food and beverage manufacturers looking for a comprehensive and quality sanitation program that is focused on innovative chemical cleaning options, process improvements, training, technical support, sustainable solutions, and safety.

Romer Labs Virtual
130 Sandy Dr.
Newark, DE 19711, USA
Phone: +1 302.423.0462
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."

Sartorius 530
565 Johnson Ave.
Bohemia, NY 11716, USA
Phone: +1 631.254.4249
https://www.sartorius.com/en

Sartorius has several decades of experience in the food and beverage market and has developed a range of specific products, addressing the clarification, filtration and microbiological control steps along the differing beverage industry process chains, offering solutions from raw material to final finished product. We help you meet the industry's growing challenges with ever-increasing levels of safety, process optimization and quality control as well as legislation demands. Easy-to-use, up-to-date, ready-to-go: We keep your business flowing.

Seward Laboratory Systems Inc.
155 Keyland Court
Bohemia, NY 11716, USA
Phone: +1 631.337.1808
www.sewardusa.com

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Seward Inc. manufactures the leading range of Stomacher® paddle blenders used in sample preparation for microbiological analysis. Focusing on transparency, accuracy and traceability, the Seward range helps to produce accurate, repeatable and robust results. With continuous development of the product range, the Stomacher® remains one of the most highly referenced brand names in food safety and life science sample preparation in scientific publications.

Come and visit us on our stand to find out more about the new products we have recently developed and how they can help further streamline your laboratory processes.

SGS
201 Route 17 North
Rutherford, NJ 07070, USA
Phone: +1 201.508.3000
www.foodsafety.sgs.com

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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 89,000 employees, we operate a network of more than 2,600 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.

Shoe Cover Magic
161 Compass Point Court
St. Charles, MO 63301, USA
Phone: +1 606.393.0949
www.shoecovermagic.com

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The innovative Shoe Cover Magic 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.

Shoe Cover Magic 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.

Smart Food Safe
5055 rue Fisher
Saint Laurent, QC H4T 1J8, Canada
Phone: +1 514.446.4400
www.smartfoodsafes.com

Virtual

Smart Food Safe is a Food Safety, Regulatory and Quality Management software built with food safety functional expertise along with smart technologies. The software digitalizes the documentation and record keepings needed to manage any global food safety systems.

Our software solves the farm to fork traceability challenges, brings real time visualization of the happenings on the floor for better decision makings and saves on the cost of food safety program implementation and maintenance.

Be audit-ready with Smart Food Safe's digital food safety system and stay compliant with Food safety program, standards, and requirements.

SnapDNA
897 Independence Ave., #2C
Mountain View, CA 9404-2356, USA
Phone: +1 443.625.8166
www.snapdna.com

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SnapDNA has the fastest pathogen test in the industry. Sample-to-answer in 20 minutes, the SnapDNA system eliminates the need to culture or enrich bacteria enabling on-site or in-field analysis of environmental and food samples. Our RNA/DNA-based platform is the first True Rapid™ test to meet or exceed every critical industry metric to replace lab tests. The SnapDNA system detects and analyzes ONLY live cells, processes industry established sample sizes, and delivers quantitative results with near-zero false positive accuracy. SnapDNA is poised to deliver next-gen pathogen testing and analytical tools with tipping point technology.

Springer Nature
One New York Plaza, Suite 4600
New York, NY 10004, USA
Phone: +1 212.726.9232
https://www.springernature.com

Virtual

The largest international publisher of scientific books, Springer is co-publisher with IAFP of the revised 6th edition of *Procedures to Investigate Foodborne Illness*, the 3rd edition of *Procedures to Investigate Waterborne Illness*, and the *Food Microbiology and Food Safety* book series. Stop by our booth to meet the Food Science editor, Susan Safren and discover an authoritative range of books and our journal program in food science. All IAFP Members now receive a 25% discount on our books.

Sterilex
111 Lake Front Dr.
Hunt Valley, MD 21030, USA
Phone: +1 443.541.8800
www.sterilex.com

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Sterilex develops proprietary, sanitation technologies designed to remove biofilm and kill biofilm bacteria, 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
4809 N Ravenswood, Suite 214
Chicago, IL 60640, USA
Phone: +1 773.269.6555
www.stopfoodborneillness.org

Virtual

The mission of Stop Foodborne Illness is to support and engage people directly impacted by foodborne illness and mobilize them to help prevent illness and death by driving change through advocacy, collaboration and innovation.

Tentamus NA
860 Greenview Dr.
Grand Prairie, TX 75050, USA
Phone: +1 972.336.0336
www.tentamus.com

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The Tentamus Group serves the Food, Feed, Agriculture, Cosmetics, Hemp/CBD, Restaurant, and Dietary Supplement industries. Represented by Analytical Food Laboratories, Columbia Laboratories, Symbiotic Research and Tentamus North America Virginia, we support our customers with complete analytics and innovative solutions that meet or exceed national requirements for quality and safety control.

Combining our expertise in Microbiology, Chemistry, Regulatory Affairs and Consulting Services, Tentamus North America is your partner and one-stop-shop for standard and tailored product safety solutions. From your first conceptual product to the shelves of the largest retailers, we are there with you to support your growing business.

Thermo Fisher Scientific
12076 Santa Fe Trail Dr.
Lenexa, KS 66215, USA
Phone: +1 800.255.6730
www.thermofisher.com

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Thermo Fisher Scientific is the world leader in serving science. Our mission is to enable our customers to make the world healthier, cleaner and safer. We believe we are uniquely positioned to help the food industry effectively protect consumers, brand and reputation by delivering simpler, faster and smarter solutions. Positioned to meet your changing needs, we can help you to remain adaptive, responsive, and competitive. To find out more visit thermofisher.com/foodandbeverage or join our blog at www.thermofisher.com/examiningfood, a forum for information, discussion and analysis of some of the issues faced in the food industry today.

USDA-NAL, Food Safety Research Information Office (FSRIO) Virtual
10301 Baltimore Ave.
Beltsville, MD 20705, USA
Phone: +1 240.351.1165
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 AREERA legislation. FSRIO's mission is to provide the food safety research community with information on publicly and privately funded food safety research. The office works to assist the federal government and private entities on the assessment of research needs and priorities, and to prevent the unintended duplication of food safety research.

FSRIO's key information products include the Research Projects Database, Research Publications Feed, and the Meet the Experts web-pages.

Vitsab International AB
16 Randall Road
Winslow, ME 04901, USA
Phone: +1 207.210.1753
www.vitsab.com

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Vitsab International AB is a Swedish-based research and development company who works with global regulators, researchers, and industry to custom engineer Freshtag™ TTIs (time temperature indicators). Founded in the 1970s, a group of resourceful and committed researchers started developing Vitsab's advanced TTI technology. Today, Freshtag™ labels are calibrated to mirror bacteria growth or match user defined temperature profiles. Monitoring "The last mile" of home deliveries is their latest innovation. Using "Stoplight Technology," Freshtag™ labels stay green for most of their life, then change to yellow then red, like a stop light, if temperature abuse per formulation is detected.

Whirl-Pak®
4916 East Broadway
Madison, WI 53716, USA
Phone: +1 920.944.8618
www.whirl-pak.com

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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 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. Whirl-Pak®, results you can trust.

World Bioproducts
P.O. Box 947
Bothell, WA 98041, USA
Phone: +1 425.242.4153
www.worldbioproducts.com

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World Bioproducts provides innovative environmental sample collection devices and convenient pre-filled dilution blanks and media. The EZ Reach™ Sponge Sampler, SampleRight™ Sponge Sampler, and PUR-Blue™ Swab Sampler are designed to address the specific challenges of recovering microorganisms from the food processing environment. All are available with our proprietary HiCap™ Neutralizing Broth, proven to more effectively neutralize residual sanitizers than other collection solutions, allowing for better recovery and detection of microorganisms from surfaces.

Zee Company
412 Georgia Ave., Suite 300
Chattanooga, TN 37403, USA
Phone: +1 423.708.7417
www.vincitgroup.com

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Zee Company leads the industry in intervention chemical programs – the most important procedure for ensuring food protection. Furthermore, our entire catalog of over 1,200 unique chemical products is tailored to provide the strongest chemical food safety resource in the country.

Our products are administered by a highly trained sales team that specializes in active involvement in our partners' businesses, offering safety and process improvements on a regular basis, comprising the most effective chemical option on the market.

Zymo Research Corp.
17062 Murphy Ave.
Irvine, CA 92614, USA
Phone: +1 949.679.1190
www.zymoresearch.com

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Zymo Research is a globally established biotechnology company and industry leader in the fields of epigenetics, microbiomics, and the emerging Next-Gen Sequencing space. With international facilities and a global distribution network, Zymo Research enables researchers in academia and the biomedical field to make cutting-edge discoveries all over the world. While the company provides some of the most technologically advanced products in the industry, everything is driven by the fundamental belief that "the beauty of science is to make things simple."

IAFP's mentoring program, "Mentor Match," is officially underway,

and we invite you to participate! This valuable program was created to support our Members' professional development and help you **connect** and **share** your experiences with other IAFP Members.



Potential mentees have this great opportunity to connect with a knowledgeable mentor who can offer their insight and advice while helping you navigate the next stages of your career.



For potential mentors, this is your way to give back, become a stronger leader, and refine your personal skills and networks.

Visit the **IAFP Connect** link on our website at www.foodprotection.org to learn more and to enroll in the **Mentor/Mentee Match Program**.

R&F Products
Chromogenic media for the isolation and identification of food pathogens

The logo for R&F Products, featuring the letters "R" and "F" in a stylized, overlapping font with a microscope icon, and the word "PRODUCTS" below it.

Extensive Government Testing

Government tested plating media listed in the FDA, USDA and/or FERN manuals

Innovative & Unique

R&F® chromogenic plating media are covered by 13 US and International patents and patent applications.

Versatility & Adaptability

R&F® media have been tested and are used extensively by a large array of food and industrial industries as well as public health agencies.

Save Time, Money & Labor Costs

R&F® media enhances laboratory efficiency, accuracy, sensitivity, and specificity by greatly reducing false negative & false positive reactions with faster results.

Identify Threat of Bioterrorism

R&F® Anthracis and Yersinia pestis chromogenic plating media extensively tested and co-developed by the FDA.

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Over 26 years of experience developing a variety of chromogenic plating media for detecting food/clinical pathogens.



- Flexible shelf life
- Made to order
- Full service supply

We would love to answer any question you have!

2725 Curtiss Street | Downers Grove, IL 60515
T: (630) 969-5300 | F: (630) 969-5303
rf@rf-products.net

THE Black Pearl AWARD

RECOGNITION FOR CORPORATE EXCELLENCE IN FOOD SAFETY AND QUALITY



The Black Pearl Award is presented annually to a company for its efforts in advancing food safety and quality through consumer program, employee relations, educational activities, adherence to standards and support of the goals and objectives of the International Association for Food Protection. We invite you to nominate your company for this prestigious recognition. Contact the Association office for nomination information.

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**The International Association
for Food Protection**

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2000 Zep Manufacturing Company
Atlanta, Georgia

1999 Caravelle Foods
Brampton, Ontario, Canada

1998 Kraft Foods, Inc.
Northfield, Illinois

1997 Papetti's of Iowa Food Products, Inc.
Lenox, Iowa

1996 Silliker, Inc.
Homewood, Illinois

1995 Albertson's Inc.
Boise, Idaho

1994 H-E-B Grocery Company
San Antonio, Texas

Policy on Commercialism for Annual Meeting Presentations

I. 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 (hereafter 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.

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 fifty-seven 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.

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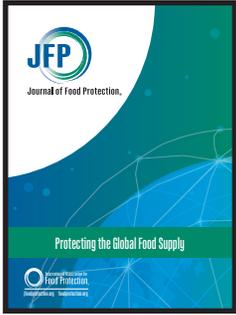
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Congratulations to the Recipients of the 2021 *Journal of Food Protection*[®] Awards

2021 John N. Sofos Most-cited *JFP* Research and Review Publication Awards

These awards were established to recognize top researchers and high-quality research publications and reviews that contribute to the impact of *JFP* and the field of food safety. The awards are based upon the number of citations of a work by others for papers published five years prior.

Most-cited Research Publication Award

1st Place

Modeling the Effect of Temperature and Water Activity on the Thermal Resistance of *Salmonella* Enteritidis PT 30 in Wheat Flour

Danielle F. Smith, Ian M. Hildebrandt, Kaitlyn E. Casulli, Kirk D. Dolan and Bradley P. Marks

Published December 2016

2nd Place

Prevalence and Characteristics of *Salmonella* Serotypes Isolated from Fresh Produce Marketed in the United States

Shanker P. Reddy, Hua Wang, Jennifer K. Adams and Peter C. H. Feng

Published January 2016

3rd Place

Antimicrobial Resistance of *Escherichia coli*, Enterococci, *Pseudomonas aeruginosa*, and *Staphylococcus aureus* from Raw Fish and Seafood Imported into Switzerland

Renate Boss, Gudrun Overesch and Andreas Baumgartner

Published July 2016

Most-cited Review Publication Award

1st Place

Fresh Produce-associated Listeriosis Outbreaks, Sources of Concern, Teachable Moments, and Insights

Danisha Garner and Sophia Kathariou

Published February 2016

2021 *Journal of Food Protection* Most-downloaded Publication Award

This award recognizes the *JFP* publication that was the most-downloaded in 2020 and published within the last 10 years based upon data from the *Journal of Food Protection* website.

1st Place

A Conceptual Framework for Developing Recommendations for No-Harvest Buffers around In-Field Feces

Daniel L. Weller, Jasna Kovac, David J. Kent, Sherry Roof, Jeffrey I. Tokman, Erika Mudrak and Martin Wiedmann

Published June 2019

Due to COVID 19 social distancing restrictions this year at IAFP 2021, the awards will be held for presentation at the IAFP 2022 Editorial Board Reception in Pittsburgh, PA.



Journal of Food Protection[®]



Congratulations to the Recipients of the 2021 *Food Protection Trends* Publication Awards

Most-cited Peer-reviewed Research Publication Award

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.

Food Allergy Risk Communication in Restaurants

Han Wen and Junehee Kwon

Published September–October 2016

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.

Microbial Contamination of Grocery Shopping Trolleys and Baskets in West Texas

Alexandra Calle, Brayan D. Montoya,
Andrea English and Mindy Brashears

Published January–February 2020

Most-viewed General Interest Publication Award

Predictive Models for Food Code Violations

Jim Hartman

Published January–February 2020

2021 *Food Protection Trends* Most-downloaded Publication Award

Developing a Citizen Science Method to Collect Whole Turkey Thermometer-Usage Behaviors

Minh Duong, John B. Luchansky, Anna C. S. Porto-Fett, Caitlin Warren and Benjamin Chapman

Published September–October 2019

Due to COVID 19 social distancing restrictions this year at IAFP 2021, the awards will be held for presentation at the IAFP 2022 Editorial Board Reception in Pittsburgh, PA.

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2017 – Linda J. Harris
2018 – Mickey E. Parish
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PAST ANNUAL MEETINGS AND LOCATIONS

1912 Milwaukee, WI	1949 Columbus, OH	1986 Minneapolis, MN
1913 Chicago, IL	1950 Atlantic City, NJ	1987 Anaheim, CA
1914 Chicago, IL	1951 Glenwood Springs, CO	1988 Tampa, FL
1915 Washington, D.C.	1952 Milwaukee, WI	1989 Kansas City, MO
1916 Springfield, MA	1953 East Lansing, MI	1990 Arlington Heights, IL
1917 Washington, D.C.	1954 Atlantic City, NJ	1991 Louisville, KY
1918 Chicago, IL	1955 Augusta, GA	1992 Toronto, Ontario
1919 New York, NY	1956 Seattle, WA	1993 Atlanta, GA
1920 Chicago, IL	1957 Louisville, KY	1994 San Antonio, TX
1921 New York, NY	1958 New York, NY	1995 Pittsburgh, PA
1922 St. Paul, MN	1959 Glenwood Springs, CO	1996 Seattle, WA
1923 Washington, D.C.	1960 Chicago, IL	1997 Orlando, FL
1924 Detroit, MI	1961 Des Moines, IA	1998 Nashville, TN
1925 Indianapolis, IN	1962 Philadelphia, PA	1999 Dearborn, MI
1926 Philadelphia, PA	1963 Toronto, Ontario	2000 Atlanta, GA
1927 Toronto, Ontario	1964 Portland, OR	2001 Minneapolis, MN
1928 Chicago, IL	1965 Hartford, CT	2002 San Diego, CA
1929 Memphis, TN	1966 Minneapolis, MN	2003 New Orleans, LA
1930 Cleveland, OH	1967 Miami Beach, FL	2004 Phoenix, AZ
1931 Montreal, Quebec	1968 St. Louis, MO	2005 Baltimore, MD
1932 Detroit, MI	1969 Louisville, KY	2006 Calgary, Alberta
1933 Indianapolis, IN	1970 Cedar Rapids, IA	2007 Lake Buena Vista, FL
1934 Boston, MA	1971 San Diego, CA	2008 Columbus, OH
1935 Milwaukee, WI	1972 Milwaukee, WI	2009 Grapevine, TX
1936 Atlantic City, NJ	1973 Rochester, NY	2010 Anaheim, CA
1937 Louisville, KY	1974 St. Petersburg, FL	2011 Milwaukee, WI
1938 Cleveland, OH	1975 Toronto, Ontario	2012 Providence, RI
1939 Jacksonville, FL	1976 Arlington Heights, IL	2013 Charlotte, NC
1940 New York, NY	1977 Sioux City, IA	2014 Indianapolis, IN
1941 Tulsa, OK	1978 Kansas City, MO	2015 Portland, OR
1942 St. Louis, MO	1979 Orlando, FL	2016 St. Louis, MO
1943 Cancelled	1980 Milwaukee, WI	2017 Tampa, FL
1944 Chicago, IL	1981 Spokane, WA	2018 Salt Lake City, UT
1945 Cancelled	1982 Louisville, KY	2019 Louisville, KY
1946 Atlantic City, NJ	1983 St. Louis, MO	2020 Virtual
1947 Milwaukee, WI	1984 Edmonton, Alberta	
1948 Philadelphia, PA	1985 Nashville, TN	

FUTURE ANNUAL MEETINGS

July 31–August 3, 2022

David L. Lawrence Convention Center
Pittsburgh, Pennsylvania

July 16–19, 2023

Metro Toronto Convention Centre
Toronto, Ontario, Canada

July 14–17, 2024

Long Beach Convention Center
Long Beach, California



IAFP 2022 *Call for Submissions*

Deadlines

October 5, 2021 – Symposium Roundtable and Workshop Submissions
January 18, 2022 – Technical and Poster Abstract Submissions

Questions regarding submissions can be directed to Tamara Ford

Phone: +1 515.276.3344

Email: tford@foodprotection.org



IAFP's European Symposium on Food Safety

October 5, 2021 – Symposium Roundtable
and Workshop Submissions

January 18, 2022 – Technical and Poster Abstract
Submissions

Questions regarding submissions can be directed to Tamara Ford

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Beijing

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Zhai, Yuting, *University of Florida* (T9-11)
Zhang, Guodong, *Food and Drug Administration* (T11-05)
Zhao, Yeqi, *Kansas State University* (P3-95)

UNDERGRADUATE STUDENT AWARD COMPETITORS

Barrón, Rocío, *Universidad de Concepción* (P2-12)
Cavallo, Ashley, *University of Florida* (P1-138)
Evans, Katie, *Mississippi State University* (P1-12)
Manville, Erin, *Kansas State University – Food Science Institute* (P2-06)
Nelson, Kasey, *Michigan State University* (P1-95)
Pegueros-Valencia, Claudia Alejandra, *Universidad Autonoma de Queretaro* (P1-119)
Raschke, Isabella, *University of Houston* (P3-08)
Rivera, Dacil, *Universidad Andres Bello* (P1-143)
Rojas-Vargas, María Daniela, *University of Costa Rica* (P1-56)
Scruggs, Elizabeth, *University of West Alabama* (P3-183)
Touza, Juan, *Louisiana State University* (P2-90)
Warner, Sarah, *University of Tennessee* (P2-171)
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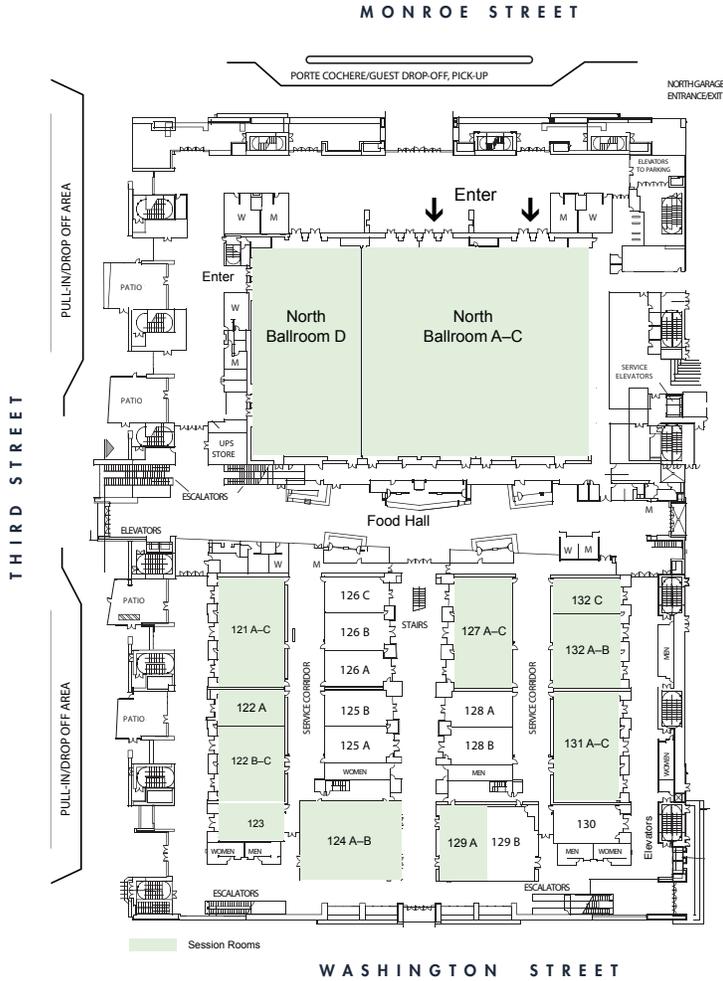
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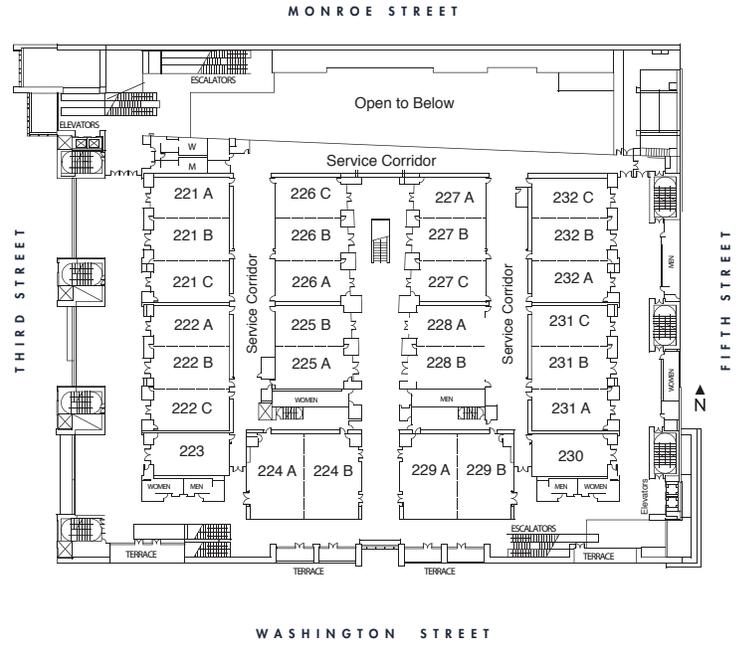
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