



IAFP 2020

A VIRTUAL ANNUAL MEETING

OCTOBER 26-28



IAFP 2020 PROGRAM BOOK

FOODPROTECTION.ORG



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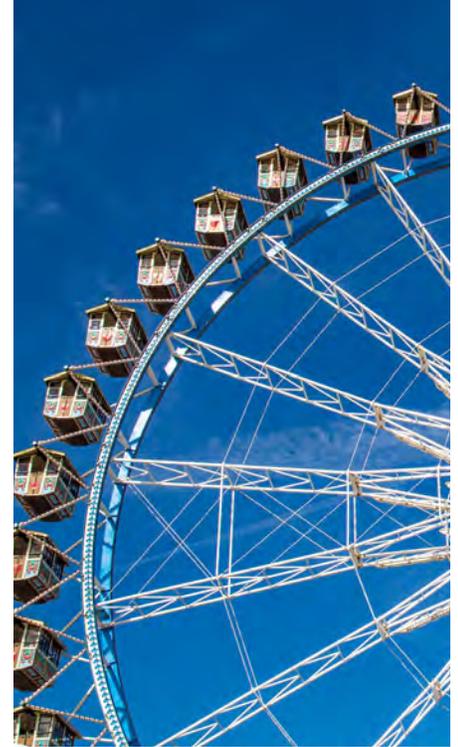
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IAFP'S EUROPEAN SYMPOSIUM ON FOOD SAFETY

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 2021 Symposium includes a vast array of diverse topics and speakers for those working in industry, government and academia. Join us in Munich!



MORE INFORMATION AVAILABLE AT
www.foodprotection.org

WELCOME FROM THE EXECUTIVE BOARD



PRESIDENT
Kalmia Kniel
University of Delaware

On behalf of the Executive Board, it is my pleasure to welcome you to IAFP 2020, A Virtual Annual Meeting. This year's conference is a first in the Association's 109-year history. Due to the ongoing coronavirus outbreak, the decision to go virtual in 2020 was one that was necessary to protect the health and safety of our Members and attendees – our highest priority. This option proved best in our commitment to go forth with holding an Annual Meeting on a different platform and continue providing the latest in food safety information and timely topics for our Members and attendees – despite a pandemic of epic proportion!

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

The Executive Board offers a special thank you to Manpreet Singh, Program Committee Chair, and the entire Program Committee for organizing another exceptional lineup of symposia, roundtables, technical presentations, and posters – especially having to realign the program to best fit this year's virtual platform! The added value with 2020's virtual meeting is that registered attendees can take part in every recorded session, presentation, and lecture up to six months after the conclusion of the meeting. You won't have to miss any part of this year's event!

We extend our sincere gratitude to our valued exhibitors, sponsors, and long-time attendees who continue to help us spread the food safety message, especially during this year of upheaval, with your ongoing and dedicated support.

Whether you are a new Member, long-time Member, student Member, or even a prospective Member, the Board eagerly welcomes you and encourages you to actively participate in IAFP 2020, A Virtual Annual Meeting.

Together, we will continue to Advance Food Safety Worldwide – safely and remotely in 2020!

Kali Kniel
IAFP President



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Contributions at the Annual Meeting are crucial to the programs supported by the IAFP Foundation. During IAFP 2020, be sure to make a contribution to the IAFP Foundation. Donate \$50.00 or more and you'll receive the latest in a series of IAFP commemorative coins! Know that your contributions go toward valuable programs such as (in part):

- Student Travel Scholarships and Student Competitions;
- Travel Awards;
- Travel Support for IAFP Conference Speakers and other support in helping to advance food safety worldwide



IAFP 2021 CALL FOR SUBMISSIONS

SUBMISSION DEADLINES

November 10, 2020 – Symposium, Roundtable and Workshop Submissions

January 19, 2021 – Technical and Poster Abstract Submissions

Questions regarding submissions can be directed to Tamara Ford

Phone: +1 515.276.3344

Email: tford@foodprotection.org

SCHEDULE

All times U.S. Eastern time

MONDAY, OCTOBER 26

General Session • Ivan Parkin Lecture • 9:00 a.m. – 10:00 a.m.
Symposia & Technical Sessions • 10:00 a.m. – 4:00 p.m.
Poster Sessions • 24-hour access
Exhibit Hours • 24-hour access + 11:30 a.m. – 1:00 p.m. & 4:00 p.m. – 5:00 p.m.
Rock & Roll Hall of Fame Tour and Trivia – 5:00 p.m. – 6:00 p.m.



TUESDAY, OCTOBER 27

General Session • U.S. Regulatory Update on Food Safety • 9:00 a.m. – 10:00 a.m.
Symposia & Technical Sessions • 10:00 a.m. – 4:00 p.m.
Poster Sessions • 24-hour access
Business Meeting • 11:45 a.m. – 12:30 p.m.
Exhibit Hours • 24-hour access + 11:30 a.m. – 1:00 p.m. & 4:00 p.m. – 5:00 p.m.
Cocktail Creation with Stan Bailey and Networking – 5:00 p.m. – 6:00 p.m.



WEDNESDAY, OCTOBER 28

General Session • John H. Sillker Lecture • 9:00 a.m. – 10:00 a.m.
Symposia & Technical Sessions • 10:00 a.m. – 4:00 p.m.
Poster Sessions • 24-hour access
Exhibit Hours • 24-hour access + 11:30 a.m. – 1:00 p.m. & 4:00 p.m. – 5:00 p.m.
Passing of the Gavel • 5:00 p.m. – 5:15 p.m.



PROGRAM COMMITTEE

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Manpreet Singh, University of Georgia

Vice Chairperson

Martin Duplessis, Food Directorate, Health Canada

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Doris D'Souza, University of Tennessee-Knoxville
Heidy Den Besten, Wageningen University
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Laurie Post, Deibel Laboratories
Carrie Rigdon, Minnesota Department of Agriculture
Manan Sharma, USDA/ARS
Gregory Siragusa, SCOUT Microbiology
Tori Stivers, University of Georgia

Jarret Stopforth, Atomo Coffee
Benjamin Warren, Land O' Lakes
Pamela Wilger, Cargill, Inc.
Christina Wilson, Columbus Public Health

Board Liasons

Kali Kniel, University of Delaware
Roger Cook, New Zealand Food Safety

SCHEDULE-AT-A-GLANCE

MONDAY, OCTOBER 26							
Monday 9:00 a.m. – 10:00 a.m.	Opening General Session – Ivan Parkin Lecture Audacious Innovation: Critical Tools for the 21st Century – Caroline Smith DeWaal, Global Alliance for Improved Nutrition						
Monday 10:00 a.m. – 11:30 a.m.	S1 – Food Omics: Is Food Safety Missing out?	S2 – Food Safety Challenges and Benefits of Capturing and Reusing Water in Food Processing Facilities	S3 – Frozen Food Fallout: Food Safety Challenges Faced by Manufacturers in the Frozen Food Arena	S4 – Recent Advancements in Beverage Processing: Considerations and Outcomes	S5 – Complementary Approaches to Quantitative Microbial Risk Assessment: Emerging Computational and Modeling Approaches for Risk Analysis	S6 – Safe (Smart Affordable Fresh Efficient) Farming Version 2.0	S7 – Who Will Win the Race to Zero? Analytical Challenges in the Food Industry
Monday 11:30 a.m. – 1:00 p.m.	Exhibit Hours – set meetings with exhibitors						
Monday 1:00 p.m. – 2:30 p.m.	S9 – 2019 State and Local Outbreak Investigations	S10 – Emerging Biological and Computational Methods for Rapid, High-throughput Monitoring of Food and Water Safety: Role of DARPA-funded Research	S11 – May the Force(meat) be with You, but without Pathogens	S12 – An Update on the Integration of “Omics” into Risk Assessment	S13 – One Health: Its Implication in Food Safety	S14 – Simulating Leafy Green Production to Improve Food Safety System Performance	S15 – A Highwire Act: Balancing Sustainable Agricultural Irrigation Approaches with Food Safety Priorities in the Face of Water Shortages
Monday 2:30 p.m. – 4:00 p.m.			S17 – Perspectives on the Current State of Food Fraud Prevention: Regulatory Investigations, Harmonization of Standards, and Supply Chain Management	S18 – Microbiomes and Plastispheres – Effects of Plastic Pollution on Food Safety	S19 – Effective Approaches to Measure Food Safety Behavior Change	S20 – Quantitative Microbiological Risk Management for Safe Water Re-use in Food Processing	S21 – How Do We Measure the Effectiveness of Food Safety Systems?
Monday 4:00 p.m. – 5:00 p.m.	Exhibit Hour						
Monday 5:00 p.m. – 6:00 p.m.	Networking Event						
TUESDAY, OCTOBER 27							
Tuesday 9:00 a.m. – 10:00 a.m.	General Session – U.S Regulatory Update Frank Yiannas, U.S. Food & Drug Administration (FDA) and Mindy Brashears, U.S. Department of Agriculture (USDA)						
Tuesday 10:00 a.m. – 11:30 a.m.	S23 – How to Talk to People That Don't Know What You are Talking About: Effectively Communicating Food Safety Information	S24 – Passport to Food Safety in Low- and Middle-income Countries: Rationale and Reflections for Recent Research Initiatives	S25 – Best Practices to Manage Produce Risks from Farm to Retail	S26 – Food Safety Risk from <i>Clostridium perfringens</i> , <i>Clostridium botulinum</i> , and <i>Bacillus cereus</i> in Cooked Meat and Poultry Products	S27 – What Should I Eat? Integrating Food Safety Risks and Nutritional Health Outcomes in Multi-risk and Risk-benefit Assessment Frameworks	S28 – Validation of New and Emerging Molecular Technologies for Pathogen Characterization	S29 – Current Best Practices for Extrusion Cooking Processes: A Holistic Approach to Controlling Pathogens in Low Water Activity Foods
Tuesday 11:30 a.m. – 1:00 p.m.	Exhibit Hours – set meetings with exhibitors						
Tuesday 11:45 a.m. – 12:30 p.m.	IAFP Business Meeting						
Tuesday 1:00 p.m. – 2:30 p.m.	S31 – Help! I Have a Presumptive Pathogen Detection. What are My Options?	S32 – Foodborne Disease Outbreak Update	S33 – The Future of the Poultry Gut Health Nexus: Improving Food Safety	S34 – From Policy to Practices, Developing Environmental Monitoring Programs for Raw Agricultural Commodity (RAC) Packinghouses	S35 – Navigating the Benefits and Barriers of Whole Genome Sequencing (WGS) for the Food Industry from the Food Industry	S36 – Confirmatory Tests for Non-culturable Foodborne Pathogens in Produce for Regulatory Testing Purposes: Recent Advances and Challenges Ahead	S37 – I Will Survive! Molecular Basis of Pathogen Survival in Low-moisture Foods
Tuesday 2:30 p.m. – 4:00 p.m.			S39 – Whole Microbial Community and Metagenomics Applications to Characterize Water Used in Food Production	S40 – Consumer Animal Welfare Demands and Their Impact to Food Safety	S41 – Jumping into the Deep End: Lessons Learned from Water Treatment Implementation under New LGMA Metrics	S42 – Identifying Tools to Predict Food Safety Failures and Financial Costs	S43 – Microfluidic-based Sensing for Rapid Food and Water Safety
Tuesday 4:00 p.m. – 5:00 p.m.	Exhibit Hour						
Tuesday 5:00 p.m. – 6:00 p.m.	Networking Event						
WEDNESDAY, OCTOBER 28							
Wednesday 9:00 a.m. – 10:00 a.m.	General Session – John H. Silliker Lecture – An Interview with Peter Ben Embarek, World Health Organization						
Wednesday 10:00 a.m. – 12:00 p.m.	S44 – CDC/USDA Session – Multidisciplinary Perspectives on <i>Salmonella</i> Reading Illnesses Linked to Turkey	S45 – What is Ready-to-Eat and How Safe is My Smoothie?	S46 – Spoiler Alert! Food Spoilage is Eating Our Lunch!	S47 – They Get by with a Little Help from Their Friends	S48 – How to Protect Foods Delivered to Your Consumers' Doorstep	S49 – Novel Technologies for Extended Shelf Life	S50 – Creating Meaningful Quantitative Microbial Risk Assessments Using Imperfect Data
Wednesday 12:00 p.m. – 1:00 p.m.	Exhibit Hours – set meetings with exhibitors						
Wednesday 1:00 p.m. – 2:30 p.m.	SS1 – COVID Session	S53 – Communicating with Consumers about Outbreaks and Food Safety: Research-based Approaches	S54 – How to Meet the Food Safety Concerns Surrounding Meat-Alternatives	S55 – Foodborne Parasites of Emerging Importance	S56 – Breeding Crops for Enhanced Food Safety	S57 – A Global Perspective on New Generation of Food Processing/Preservation Techniques for Food Safety: Riding the Tides of Clean Labels	S58 – <i>Salmonella</i> and Ground Beef – Persistent, Recurring, or Emerging Risk?
Wednesday 2:30 p.m. – 4:00 p.m.		S62 – Alternative Protein Sources for Future Foods: Food Safety Challenges	S63 – Climate Change: Impacts on Food Safety and What Food Safety Professionals Can Do to Prepare and Respond	S64 – Process Validation – Challenges and Best Practices	S65 – Vive La Résistance: Biocide Resistance Strategies Among Foodborne Pathogens	S66 – Stay out of the Weeds: Three Simpler Things That Accomplish Produce Safety	S67 – Deep Sequencing and Deep Learning: What Can Combining High-throughput Sequencing and Machine Learning Offer the Food Industry?
Wednesday 4:00 p.m. – 5:00 p.m.	Exhibit Hour						

SCHEDULE-AT-A-GLANCE

MONDAY, OCTOBER 26								
Opening General Session – Ivan Parkin Lecture Audacious Innovation: Critical Tools for the 21st Century – Caroline Smith DeWaal, Global Alliance for Improved Nutrition								
Monday 10:00 a.m. – 11:30 a.m.	S8 – Challenges in Developing Alternative Pre- and Post-harvest Water Treatments Used in Fruit and Vegetable Production	RT1 – Dirt on Our Boots: What We've Learned after More Than a Season of Produce Safety Rule Inspections	RT2 – It's Complicated, Multi-year and Multi-pathogen Outbreaks in the Era of Whole Genome Sequencing and Culture-independent Diagnostic Tests (CIDTs)	Technical Session 1 – Food Processing Technologies and Laboratory and Detection Methods	Technical Session 2 – Sanitation and Hygiene		Poster Session 1 – Beverages and Acid/Acidified Foods, Food Chemical Hazards and Food Allergens, Food Toxicology, Laboratory and Detection Methods, Meat, Poultry and Eggs, Packaging, Retail and Food Service Safety, Seafood, Water	
Exhibit Hours – set meetings with exhibitors								
Monday 1:00 p.m. – 2:30 p.m.	S16 – Impact of U.S. Food Safety Regulations on Compliance of Manufacturing Facilities in India	RT3 – Pre-harvest Food Safety Challenges and Research in Developing Economies		Technical Session 3 – Produce	Technical Session 4 – Developing Scientist Competition Finalists (Part 1)			
Monday 2:30 p.m. – 4:00 p.m.	S22 – Safety Considerations for Hemp-derived CBD	RT4 – Creating Awareness within IAFP Regarding Food Safety in Africa	Technical Session 5 – Developing Scientist Competition Finalists (Part 2)	Technical Session 6 – Food Safety Systems and Modeling and Risk Assessment	Technical Session 7 – Antimicrobials			
Exhibit Hour								
Networking Event								
TUESDAY, OCTOBER 27								
General Session – U.S Regulatory Update Frank Yiannas, U.S. Food & Drug Administration (FDA) and Mindy Brashears, U.S. Department of Agriculture (USDA)								
Tuesday 10:00 a.m. – 11:30 a.m.	S30 – Allergen Control – Challenges, Perspectives and Solutions	RT5 – A Balancing Act: Minimizing Food Waste While Striving to Maximize Food Safety	RT6 – A Practical and Science-based Performance Standard as an Alternative to Zero Tolerance	Technical Session 8 – Molecular Analytics, Genomics and Microbiome	Technical Session 9 – Pre-harvest Food Safety		Poster Session 2 – Communication Outreach and Education, Epidemiology, Food Defense, Food Law and Regulation, Food Processing Technologies, Food Safety Systems, General Microbiology, Low-water Activity Foods, Modeling and Risk Assessment, Molecular Analytics, Genomics and Microbiome	
Exhibit Hours – set meetings with exhibitors								
Tuesday 11:45 a.m. – 12:30 p.m.	IAFP Business Meeting							
Tuesday 1:00 p.m. – 2:30 p.m.	S38 – Forecasting Hot Topics: Strategies That Signal the Occurrence of Emerging Chemical Threats	RT7 – What Don't We Know? Cultured Meat vs. Traditional Meat and Fish Food Safety Concerns	RT8 – New Insights on Bridging Risk Assessment and Hazard Analysis – How Can We Really Do Both?	Technical Session 10 – Antimicrobials	Technical Session 11 – Pre-harvest Food Safety			
Tuesday 2:30 p.m. – 4:00 p.m.	RT9 – Interpreting Results from Enteric Virus Testing: Can Evidence of Viral Nucleic Acid Serve as an Indicator of Human Fecal Contamination or Defined Public Health Risk?	RT10 – Synthesizing Food Defense Programs for FSMA and Third Party Audits	Technical Session 12 – Antimicrobials	Technical Session 13 – Communication, Outreach and Education	Technical Session 14 – General Microbiology			
Exhibit Hour								
Networking Event								
WEDNESDAY, OCTOBER 28								
General Session – John H. Silliker Lecture – An Interview with Peter Ben Embarek, World Health Organization								
Wednesday 10:00 a.m. – 12:00 p.m.	S51 – Inspire Future Consumers through Formal and Informal Food Safety Education	S52 – "One Health" Syst-Omics Approach to Combat Campylobacter in Agri-Food Chain	RT11 – This is How We Do It: Challenges and Strategies for Implementing Water Treatment in the Field	Technical Session 15 – Meat, Poultry, Eggs and Dairy	Technical Session 16 – Produce and Epidemiology		Poster Session 3 – Antimicrobials, Dairy, Microbial Food Spoilage, Pre-harvest Food Safety, Produce, Sanitation and Hygiene, Viruses and Parasites Microbial Food Spoilage, Packaging, Seafood, Water	
Exhibit Hours – set meetings with exhibitors								
Wednesday 1:00 p.m. – 2:30 p.m.	S59 – Microbial Warfare: The Effect of Native Microbial Communities on the Survival, Growth, and Persistence of Foodborne Pathogens Along the Food Processing Continuum	S60 – Linking Predictive Analytics with Artificial Intelligence, Machine Learning, and Other Innovative Technologies to Enhance Risk-based Food Safety Approaches	S61 – Regulatory Testing for Viruses and Parasites: The Crossroads between Public Health and Industry	RT12 – NGS Identification as an Alternative for Classic Microbiological Subtyping Techniques: What Do We Need to Make This Happen?	Technical Session 17 – Laboratory and Detection Methods	Technical Session 18 – Communication, Outreach and Education		
Wednesday 2:30 p.m. – 4:00 p.m.	S68 – Pesticides in Food – The Big Picture: Registration, Monitoring, Enforcement	RT13 – Beyond the Lab, What Does Culture-independent Diagnostic Tests (CIDTs) Mean for Industry and Public Health Officials?	RT14 – Mutual Reliance – FDA's Vision for an Integrated Food Safety System	Technical Session 20 – Low-water Activity Foods				
Exhibit Hour								

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GENERAL SESSIONS

MONDAY, OCTOBER 26

9:00 A.M. – 10:00 A.M.

IVAN PARKIN LECTURE

AUDACIOUS INNOVATION: CRITICAL TOOLS FOR THE 21ST CENTURY



CAROLINE SMITH DEWAAL

Deputy Director, EatSafe
Global Alliance for Improved Nutrition
Washington, D.C.

TUESDAY, OCTOBER 27

9:00 A.M. – 10:00 A.M.

U.S. REGULATORY UPDATE ON FOOD SAFETY



FRANK YIANNAS, MPH

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



MINDY BRASHEARS, PH.D.

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

WEDNESDAY, OCTOBER 28

9:00 A.M. – 10:00 A.M.

JOHN H. SILLIKER LECTURE

AN INTERVIEW WITH PETER BEN EMBAREK



PETER K. BEN EMBAREK, PH.D.

International Food Safety Authorities Network
(INFOSAN) Management
Department of Nutrition and Food Safety
World Health Organization (WHO)
Geneva, Switzerland

IAFP 2020

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IAFP extends its sincere appreciation for all you do toward keeping the global food supply safe.

THANK YOU!

EXHIBIT HALL INFORMATION

EXHIBIT HOURS

24-hour access available

MONDAY, OCTOBER 26

11:30 a.m. – 1:00 p.m.

4:00 p.m. – 5:00 p.m.

TUESDAY, OCTOBER 27

11:30 a.m. – 1:00 p.m.

4:00 p.m. – 5:00 p.m.

WEDNESDAY, OCTOBER 28

11:30 a.m. – 1:00 p.m.

4:00 p.m. – 5:00 p.m.



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International Dairy Foods Association
www.idfa.org

The Kroger Co.
www.kroger.com

Mastronardi Produce Limited
www.mastronardiproduce.com

Matrix Sciences
www.matrixsciences.com

METER Group, Inc.
www.metergroup.com

Michelson Laboratories, Inc.
www.michelsonlab.com

Michigan State University Online
Food Safety Programs
www.foodsafety.msu.edu

MicroEssential Laboratory, Inc.
www.microessentiallab.com

Micro-Smedt
www.micro-smedt.be

Microbac Laboratories, Inc.
www.microbac.com

Microbiologics, Inc.
www.microbiologics.com

Midland Scientific, Inc.
www.midlandsci.com

Mondelez International
www.mondelez.com

Nasco Whirl-Pak Division
www.whirl-pak.com

NatureSweet
www.naturesweet.com

Nelson-Jameson, Inc.
www.nelsonjameson.com

NSF International
www.nsf.org

NSI Lab Solutions
www.nsilabsolutions.com

Orkin Commercial Services
www.orkincommercial.com

Post Consumer Brands
www.postconsumerbrands.com

Preferred Freezer Services
www.preferredfreezer.com

The Procter & Gamble Company
www.pgpro.com

Publix Super Markets, Inc.
www.publix.com

Puremed Canada Inc.
www.puremed.ca

QLaboratories, Inc.
www.qlaboratories.com

Quaker Maid Meats
www.quakermaidmeats.com

QualiTru Sampling Systems
www.qualitru.com

QUANTEM Food Safety Laboratories, LLC
www.quantemfood.com

R & F Products
www.rf-products.net

Reading Thermal
www.readingthermal.com

Recall InfoLink
www.recallinfolink.com

Rentokil Steritech
www.rentokil-steritech.com

Restaurant Brands International
www.rbi.com

Retail Business Services, an Ahold
Delhaize USA Company
www.retailbusinessservices.com

Rochester Midland Corporation
www.rochestermidland.com

Romer Labs, Inc.
www.romerlabs.com

Sensitech Inc.
www.sensitech.com

Seward Laboratory Systems Inc.
www.seward.co.uk

Steamericas, Inc.
www.steamericas.com

Steritech
www.steritech.com

TEGAM, Inc.
www.tegam.com

Testo Solutions USA, Inc.
www.testo.com/solutions

Texas Roadhouse, Inc.
www.texasroadhouse.com

Truly Nolen International for Pest Control K.S.A.
www.trulynolen.com

United Fresh Produce Association
www.unitedfresh.org

Vikan A/S
www.vikan.com

Vitsab International AB
www.vitsab.com

Wegmans Food Markets, Inc.
www.wegmans.com



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COVID-19 & Food: Navigating the Road Ahead

Food Safety Communications: What if Science is not Enough?

Food Integrity & Authenticity: Global Cooperation and Response to Food Integrity and China's Leadership

Advances in Rapid Microbial Testing Methods & Technologies for Safeguarding Food

Food Allergens: Prevention, Detection and Management

New Directions in Food Safety Risk Communications

Systemic Management of Health Risks in Wholesale & Wet Markets

Changes in International Regulations - Harmonization/Equivalence of International Food Methods

Research-Based Approaches to Consumer Communication and Education

Hot Topics: What's New in Food Safety?

Latest Developments in Chemical Analysis Methods and Technologies

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IVAN PARKIN LECTURE

AUDACIOUS INNOVATION: CRITICAL TOOLS FOR THE 21ST CENTURY

MONDAY, OCTOBER 26

9:00 A.M. – 10:00 A.M.



CAROLINE SMITH DEWAAL

Deputy Director of EatSafe
Global Alliance for Improved
Nutrition (GAIN)
Washington, D.C.

Ms. Caroline Smith DeWaal recently joined the Global Alliance for Improved Nutrition (GAIN) in Washington, D.C. as Deputy Director of EatSafe (Evidence and Action Towards Safe, Nutritious Food). GAIN is a Swiss-based foundation launched at the United Nations in 2002 to tackle the human suffering caused by malnutrition and aims to transform food systems to help deliver more nutritious food for all consumers, especially those most vulnerable. The USAID-funded EatSafe generates evidence and knowledge of the potential of increased consumer demand for safe food to substantially improve the safety of nutritious foods in informal market settings in low- and middle-class income countries (LMICs).

Ms. DeWaal was formerly an international food safety policy manager at the U.S. Food and Drug Administration (U.S. FDA) in College Park, Maryland. She began her career in food safety in the early 1990s when *E. coli* O157:H7 was initially being recognized as a major public health threat. On behalf of the Center for Science in the Public Interest, she worked with government, industry and consumer organizations on the development of HACCP (Hazard Analysis Critical Control Points) for both the meat and seafood industries. She recognized early on the need for real-world data to allow the industries to manage their responsibilities under HACCP, thus developing the first food-attribution database.

Ms. DeWaal was one of the first to recognize the hidden problem of food pathogens on fresh vegetables, becoming a leading media spokesperson on all types of food hazards, from *Listeria* in luncheon meat to *E. coli* on spinach; from BSE “Mad Cow Disease” to radiation concerns relating to food following the Fukushima Nuclear Power Plant disaster in Japan.

A lawyer by training, Ms. DeWaal played a pivotal role in the development of the Food Safety Modernization Act (FSMA), which was signed into law in 2011. She worked closely with members of Congress to develop the concepts for modernizing the Federal Food, Drug and Cosmetic Act to better address modern food safety risks.

Ms. DeWaal has greatly benefited from experts in the food industry, learning the fundamentals of food pathogens and viruses. She joined IAFP in 1999 and is a member of many Professional Development Groups (PDGs). She has also served on several IAFP committees, including the Travel Awards Selection Committee and the Annual Meeting Program Committee. Ms. DeWaal attended the University of Vermont and Antioch School of Law.

IVAN PARKIN LECTURE ABSTRACT

AUDACIOUS INNOVATION: CRITICAL TOOLS FOR THE 21ST CENTURY

CAROLINE SMITH DEWAAL

Deputy Director of EatSafe
Global Alliance for Improved Nutrition (GAIN)
Washington, D.C.

The future is upon us. While Al Gore warned us of a future shaped by emerging climate change and crisis, he may have overestimated the time we have to respond. The evidence of a changing world is all around us, from extreme weather to collapsing glaciers to uncontrolled forest fires. We need scientific out-of-the-box thinking now, as well as personal behavior changes, to address these challenges.

But do we have the tools? In the last 20 years, we have completed the mapping of the human genome, and built computers that fit in our pocket. In the food safety area, we have made great strides, but with each repeated outbreak, evidence is mounting that we are not changing fast enough.

Audacious Innovation is a critical tool for the 21st century. While innovation is a natural part of the scientific process, we need to push it further and faster. Although good scientific practice will be essential to our success in addressing these challenges, we need to set goals that are audacious to stimulate innovation, and set the stage through effective communication and advocacy to meet those goals.

Audacious Innovation takes both the ability to see around corners and to manage difficult conversations. In my professional life, I developed the first comprehensive food-attribution outbreak database which started with fewer than 500 outbreaks. Working with the government on the development of HACCP, I couldn't fathom how the food industry would conduct an accurate Hazard Analysis without using real-world outbreak data. This led to CSPI's first efforts to gather data from the CDC. The objective: Using real-world data, CSPI would develop a comprehensive source for identifying food/hazard combinations to assist the development of more accurate hazard analysis.

Using real-world evidence was touted by the FDA Commissioner in a recent speech about the need to unleash the power of data. But in 1998, before the era of big data, aggregating data collected from public health departments in 50 states was not done, especially by those outside of the Centers for Disease Control and Prevention. Pushing the envelope is part of the process of Audacious Innovation.

One Health calls on scientists to work across disciplines, with the understanding that public health encompasses environmental health and diseases both in wildlife and domesticated animals. The repeated outbreaks linked to leafy greens illustrates a One Health problem requiring an interdisciplinary solution.

One Health also illustrates Audacious Innovation. Last fall, at a Salzburg Global Seminar in Salzburg, Austria, surveillance experts from all over the world elaborated the concept of integrated surveillance, encompassing environmental health, zoonotic diseases and human health, to track, predict and prevent emerging disease outbreaks.

There are many examples of Audacious Innovation in the food industry as well. Walmart has developed a traceability system to track certain produce from the store to the farm in seconds rather than days or weeks. And Perdue spent a decade developing a system for raising chickens without the use of antibiotics.

While examples of Audacious Innovation abound, it is important for young professionals to understand and embrace their role to push boundaries in order to tackle the challenges ahead. It takes the willingness to ask hard questions, seek solutions that may not be apparent and push ideas that may not be popular with others, including those with more experience.

One final example is the United Nations' Agenda for Sustainable Development calling for eliminating poverty and hunger by 2030. Those are audacious goals! And they will require innovation to match. So let's think big when it comes to tackling the challenges of the 21st century.

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IAFP PROGRAM

MONDAY, OCTOBER 26

9:00 A.M.

General Session – Ivan Parkin Lecture

Welcome to IAFP 2020

Kali Kniel, IAFP President

IAFP Foundation

Gary Acuff, IAFP Foundation Chairperson

Ivan Parkin Lecture

Audacious Innovation: Critical Tools for the 21st Century

Introduction—Roger Cook, IAFP President-Elect

Lecture—Caroline Smith DeWaal, Global Alliance for Improved Nutrition (GAIN)

Closing Remarks

Kali Kniel, IAFP President

10:00 A.M. – 11:30 A.M.

S1 Food Omics: Is Food Safety Missing out? Organizers and Convenors: Pushpinder Kaur Litt, Kalmia Kniel

Advanced Molecular Analytics
Applied Laboratory Methods

10:00 Application of Metagenomics to Define Microbiomes and Resistomes in Food Production Facilities and Seafood
BRANDON KOCUREK, U.S. Food and Drug Administration, Jamaica, NY, USA

10:30 Application of Metabolomics and Metagenomics in Food Safety and Traceability
FARHANA PINU, Plant and Food Research, Auckland, New Zealand

S2 Food Safety Challenges and Benefits of Capturing and Reusing Water in Food Processing Facilities

Organizer and Convenor: Omar Oyarzabal

Food Hygiene and Sanitation
Food Safety Assessment, Audit and Inspection
Dairy Quality and Safety

10:00 Regulatory Perspective for Water Reuse in Animal Processing Facilities
MELANIE ABLEY, U.S. Department of Agriculture—FSIS, Springfield, VA, USA

10:30 Water Reuse in the Food Industry: Treatment Options for “Fit for Purpose”
YULIE MENESES, University of Nebraska-Lincoln, Lincoln, NE, USA

11:00 Practical and Effective Food Processing Water Reconditioning Technologies and Case Studies
RICK MOLONGOSKI, CDM Smith, Inc., Latham, NY, USA

S3 Frozen Food Fallout: Food Safety Challenges Faced by Manufacturers in the Frozen Food Arena

Organizers: Chris Bernstein, Margaret Kirchner, Ellen Shumaker

Convenors: Sheryl Cates, Benjamin Chapman, Ellen Shumaker

Communication, Outreach and Education
Food Law
Retail and Foodservice

10:00 Production Challenges Associated with Frozen Foods
SEAN LEIGHTON, Cargill, Inc., Wayzata, MN, USA

10:30 Industry-wide Safety Concerns and Issues with Frozen Foods
DONNA GARREN, American Frozen Food Institute, Arlington, VA, USA

11:00 Frozen Food Handling in Consumer Kitchens
TBD

S4 Recent Advancements in Beverage Processing: Considerations and Outcomes

Organizers: Doris D’Souza, Ankit Patras, S. Balamurugan

Convenor: Ankit Patras

Beverages and Acid/Acidified Foods

10:00 Regulatory Requirements and Overview of Non-thermal Technologies
NATHAN ANDERSON, U.S. Food and Drug Administration, Bedford Park, IL, USA

10:30 Implementation of Ultraviolet Technology (UV-C) in the Treatment of Beverages: Safety and Quality Evaluation
ANKIT PATRAS, Tennessee State University, Nashville, TN, USA

11:00 Application of High Pressure-based Technologies for Beverages: Effect on Spores and Vegetative Cells
BALA BALASUBRAMANIAM, The Ohio State University, Columbus, OH, USA

S5 Complementary Approaches to Quantitative Microbial Risk Assessment: Emerging Computational and Modeling Approaches for Risk Analysis

Organizers: Ashraf Rahman, Daniel Munther, Matthew J. Stasiewicz

Convenors: Daniel Munther, Matthew J. Stasiewicz

Meat and Poultry
Produce
Risk Assessment

10:00 Mechanistic Models for the Produce Wash Process: Insights for Sanitizer and Cross-contamination Control
DANIEL MUNTHER, Cleveland State University, Cleveland, OH, USA

10:30 An Agent-based Simulator for Gastric Flow and Survival of *L. monocytogenes*
ASHRAF RAHMAN, Western University, London, ON, Canada

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

11:00 Individual Poultry Carcass Models for Quantifying Cross-contamination during Industrial Scald and Chilling Processes
ZACHARY MCCARTHY, York University, Toronto, ON, Canada

S6 Safe (Smart Affordable Fresh Efficient) Farming Version 2.0
Organizers and Convenors: Pushpinder Kaur Litt, Kalmia Kniel, Joyjit Saha
Pre-hrvest Food Safety
Fruit and Vegetable Safety and Quality

10:00 Traditional Farming and Food Safety Risks
MANAN SHARMA, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA

10:30 New Age Farming Practices and Potential Food Safety Risks
ANGELA MARIE C. FERELLI, University of Maryland, College Park, MD, USA

11:00 Role of Policy and Education in Managing Food Safety Risks in Both Systems
MICHELLE DANYLUK, University of Florida CREC, Lake Alfred, FL, USA

S7 Who Will Win the Race to Zero? Analytical Challenges in the Food Industry
Organizers: Alexandria Lau, Angela Anandappa, Paul Hanlon
Convenor: Paul Hanlon
Applied Laboratory Methods
Food Toxicology
Risk Assessment

10:00 Zero Isn't Always the Hero: Risk-based Approaches for Microbiological Hazards
JENNIFER MCENTIRE, United Fresh Produce Association, Washington, D.C., USA

10:30 The Future of Allergen Testing and Alignment with the Development of Thresholds
MELANIE DOWNS, University of Nebraska-Lincoln, Lincoln, NE, USA

11:00 Novel Approaches for Risk Analysis of Chemical Contaminants
ANDREW PEARSON, Ministry for Primary Industries, Wellington, New Zealand

S8 Challenges in Developing Alternative Pre- and Post-harvest Water Treatments Used in Fruit and Vegetable Production
Organizers: Donna Clements, Diane Ducharme, Don Stoeckel, Daniel Weller
Convenors: Donna Clements, Angelic Rael, Daniel Weller

Fruit and Vegetable Safety and Quality
Water Safety and Quality

10:00 What's in a Label? EPA Registration of Sanitizers Used for Treating Agricultural Water
DONNA BISHEL, Biosafe Systems, East Hartford, CT, USA

10:30 The Next Generation of Non-thermal Technologies and Their Impact on Water Usage
ALISON LACOMBE, USDA, ARS, Western Regional Research Center, Albany, CA, USA

11:00 Beyond Chlorine, Approaches for Treating Agricultural Water
FAITH CRITZER, Washington State University, School of Food Science, Pullman, WA, USA

RT1 Dirt on Our Boots: What We've Learned after More Than a Season of Produce Safety Rule Inspections
Organizers: Travis Chapin, Michelle Danyluk, Phillip Tocco, Faith Critzer
Convenor: Travis Chapin

Communication Outreach and Education
Produce

10:00 Panelists:
DONNA LYNN BROWNE, Naturipe Farms LLC, Salinas, CA
SURESH DECOSTA, Director of Food Safety, Lipman Family Farms, Chicago, IL, USA
WESLEY KLINE, Rutgers Cooperative Extension, Millville, NJ, USA
ANITA MACMULLAN, North Carolina Department of Agriculture and Consumer Services, Raleigh, NC, USA
DAIN SATTERWHITE, Kentucky Department of Agriculture, Frankfort, KY, USA
BYRON BEERBOWER, U.S. Food and Drug Administration, Silver Spring, MD, USA
BOB EHART, National Association of State Departments of Agriculture, Arlington, VA, USA

RT2 It's Complicated, Multi-year and Multi-pathogen Outbreaks in the Era of Whole Genome Sequencing and Culture-independent Diagnostic Tests (CIDTs)
Organizers: Michael Batz, Michael Bazaco, Sherri McGarry
Convenor: Sherri McGarry

Epidemiology
General Microbiology
Novel Laboratory Methods

10:00 Panelists:
LAURA GIERALTOWSKI, Centers for Disease Control and Prevention, Atlanta, GA, USA
SCOTT HOOD, Consultants Shoreview, Golden Valley, MN, USA
KARI IRVIN, U.S. Food and Drug Administration, College Park, MD, USA

T1 Technical Session 1 – Food Processing Technologies and Laboratory and Detection Methods

10:00 **T1-01** Genetic Characterization of Multidrug-resistant *S.Typhimurium* Harboring IncHI2-Class 1 Integron-IS26
DAIQI SHANG, Chujun Ou, Hang Zhao, Jiang Chang, Chunlei Shi, Shanghai Jiao Tong University, Shanghai, China

10:15 **T1-02** Influence of Acid Adaptation, Cold Adaptation on Barotolerance on Survival of *E. coli* O157:H7, *L. monocytogenes*, and *Salmonella* spp. during HPP Treatment of Apple Juice
CATHERINE ROLFE, Alvin Lee, Nathan Anderson, Glenn Black, Institute for Food Safety and Health, Chicago, IL, USA

10:30 **T1-03** Construction of a Surface-scanning Detection System for the Direct and Automatic Detection of *Salmonella* Typhimurium on Fresh Produce
IN YOUNG CHOI, Su-Hyeon Joung, Jaein Choe, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea

10:45 **T1-04** Rapid Detection of Pathogenic Bacteria Using Engineered Bacteriophage
NICHAREE WISUTHIPAET, Xu Yang, Glenn Young, Nitin Nitin, University of California, Davis, Davis, CA, USA

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11:00 Evaluation of the Neogen Soleris® *Enterobacteriaceae*
T1-05 for Rapid Detection of Enterobacteriaceae in Dairy Products
 SUZANNE JORDAN, Frederic Martinez, Brooke Roman, Campden BRI, Chipping Campden, United Kingdom

T2 Technical Session 2 – Sanitation and Hygiene

10:00 Mold Remediation in Cannabis for the Food
T2-01 and Beverage Industry
 KEVIN LORCHEIM, Erika Stampoulos, ClorDiSys Solutions, Inc., Lebanon, NJ, USA

10:15 Application of Eugenol Nanoemulsion for Control-
T2-02 ing *Listeria monocytogenes* Biofilms in Food Processing Environment
 BRINDHALAKSHMI BALASUBRAMANIAN, Jingyi Xue, Yangchao Luo, Abhinav Upadhyay, Department of Animal Science, University of Connecticut, Storrs, CT, USA

10:30 Efficacy of Sodium Hypochlorite against Quaternary
T2-03 Ammonium Compound (QAC)-tolerant *Pseudomonas aeruginosa* and *Listeria monocytogenes* Co-culture Biofilms
 ERIC MOORMAN, Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA

10:45 Efficacy of Nanobubbles in Removing Biofilms Formed
T2-04 by *Escherichia coli* O157:H7, *Vibrio parahaemolyticus*, and *Listeria innocua*
 Setareh Shiroodi, Shamil Rafeeq, Nitin Nitin, REZA OVISSIPOUR, Virginia Polytechnic Institute and State University, Hampton, VA, USA

11:00 Formulation Matters – Efficacy of Hand Sanitizers
T2-05 against Human Norovirus is Highly Variable
 LEE-ANN JAYKUS, Blanca Escudero-Abarca, Rebecca Goulter, Rachel Leslie, Kristen Green, James Arbogast, North Carolina State University, Raleigh, NC, USA

11:15 Tracing Back Food Spoiling Bacteria during Enzymatic
T2-06 Cleaning with 16S rDNA Metagenetic
 LAURENT DELHALLE, Bernard Taminiau, Papa Abdoulaye Fall, Sophie Burteau, Sebastien Fastrez, Marina Ballesteros, Georges Daube, University of Liège, Liège, Belgium

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MONDAY AFTERNOON

1:00 P.M. – 4:00 P.M.

S9 2019 State and Local Outbreak Investigations

Organizer and Convenor: Steven Mandernach

Sponsored by Association of Food and Drug Officials (AFDO)

Epidemiology

Viral and Parasitic Foodborne Disease

- 1:00 Elevated Lead Investigation from Cake Icing and Decorations
MARK BUXTON, Missouri Department of Health and Senior Services, Jefferson City, MO, USA
- 1:30 2019 Retail Food Establishment Outbreak of *Salmonella Uganda* in Tennessee
DANNY RIPLEY, Tennessee Department of Health, Nashville, TN, USA
- 2:00 The Super Bowl – Defense Wins Championships... and Deters Food Contamination
COLBY BROWN, Georgia Department of Agriculture, Atlanta, GA, USA
- 2:30 *C. perfringens* and Indiana Wedding – A Tale of Two Outbreaks
LAURIE KIDWELL, Indiana State Department of Health, Indianapolis, IN, USA
- 3:00 Post-pasteurization *Yersinia* Ice Cream Outbreak
SHERI MORRIS, Pennsylvania Department of Agriculture, Harrisburg, PA, USA
- 3:30 Multi-State Outbreak and Regulatory Collaboration for a Funeral Caterer
D'ANN WILLIAMS, Maryland Department of Health, Baltimore, MD, USA

S10 Emerging Biological and Computational Methods for Rapid, High-throughput Monitoring of Food and Water Safety: Role of DARPA-funded Research

Organizer: Isabel Walls

Convenors: J. Emilio Esteban, Paul Sheehan

Applied Laboratory Methods

Novel Laboratory Methods

- 1:00 Overview of DARPA-funded Projects
PAUL SHEEHAN, DARPA, Arlington, VA, USA
- 1:30 Novel Single Cell Analysis to Determine Pathogenicity of Bacteria in Environmental Samples
MICHAEL SPRINGER, Harvard University, Cambridge, MA, USA
- 2:00 Hide-En-Seq: Hybridization-enhanced Identification and Enrichment of Engineered Sequences
KIRSTY MCFARLAND, Draper Laboratories, Cambridge, MA, USA
- 2:30 Human Organ Chips for Modeling Effects of Pathogens, Toxins, and Complex Microbiome
GIRIYL GOYAL, Wyss Institute, Cambridge, MA, USA

- 3:00 Development and Characterization of Low-cost, Disposable Electrochemical Test Systems for Pathogen Detection in Water and Foodstuffs
MIKE FERRY, Quantitative BioSciences, Inc., San Diego, CA, USA
- 3:30 Identification of Pathogenic Microbes with High Throughput Technologies
JIM SAMUEL, Texas A&M University, College Station, TX, USA

1:00 P.M. – 2:30 P.M.

S11 May the Force(meat) be with You, but without Pathogens

Organizers: Bridget Sweet, Anna Porto-Fett, Ted McCall, Benjamin Chapman

Convenor: John Luchansky

Communication Outreach and Education

Pathogens

Meat and Poultry

- 1:00 A Chef's Culinary Perspective—What is the Process of Making Pâtés, Terrines, Roulades, and Galantines in a Restaurant Setting?
TED MCCALL, Johnston and Wales, Providence, RI, USA
- 1:30 Regulatory Approach to Reduce the Risk of Pathogens Associated with Garde Manger and Specialty Meat Products
WILLIAM SHAW, U.S. Department of Agriculture-FSIS-OPPD, Washington, D.C., USA
- 2:00 Recovery Rate, Types and Control of Pathogens in Garde Manger and Specialty Meat Products
ANNA PORTO-FETT, U.S. Department of Agriculture-ARS, Wyndmoor, PA, USA

S12 An Update on the Integration of “Omics” into Risk Assessment

Organizers: Heidy den Besten, Kalliopi Rantsiou

Convenor: Heidy den Besten

Advanced Molecular Analytics

Microbial Modelling and Risk Analysis

- 1:00 Application of Genomics Toward the Identification of High-risk *Campylobacter* Subtypes Along the Poultry Supply Chain – Benefits for Hazard Identification and Hazard Characterization
EDUARDO TABOADA, National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, MB, Canada
- 1:30 Phenotype-Genotype Associations and Their Contribution in Exposure Assessment for *Bacillus cereus*
MARIEM ELLOUZE, Nestlé Research Centre, Lausanne, Switzerland
- 2:00 *Listeria monocytogenes* Behavior Explored by Transcriptomics—Relevance to Exposure Assessment
KALLIOPI RANTSIOU, University of Torino-DISAF, Grugliasco, Italy

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

- S13 One Health: Its Implication in Food Safety**
Organizers: Pratik Banerjee, Kalmia Kniel, Siddhartha Thakur
Convenor: Pratik Banerjee
 Communication Outreach and Education
 Epidemiology
 Pathogens
- 1:00 One Health – Bringing Together Public Health, Environmental Health, and Food Safety
 PRATIK BANERJEE, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- 1:30 Applications of One Health in Addressing Issues of Food Security within a Complex Food Safety System
 KALMIA KNIEL, University of Delaware, Newark, DE, USA
- 2:00 One Health in the Understanding of Global Spread of Antimicrobial-resistant Foodborne Pathogens
 SIDDHARTHA THAKUR, Department of Population Health and Pathobiology, CVM, NCSU, Raleigh, NC, USA
- S14 Simulating Leafy Green Production to Improve Food Safety System Performance**
Organizers and Convenors: Daniel Munther, Matthew J. Stasiewicz
 Fruit and Vegetable Safety and Quality
 Microbial Modelling and Risk Analysis
 Pre-harvest Food Safety
- 1:00 Simulating Sampling In-field Produce to Determine Statistically Powerful Risk-based Sampling Schemes
 MATTHEW J. STASIEWICZ, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- 1:30 Simulating Packing and Processing Facility Environments to Mitigate and Manage Contamination Niches
 CLAIRE ZOELLNER, iFoodDecisionSciences, Inc., Seattle, WA, USA
- 2:00 Using Simple Models to Direct Mitigation Choices in Leafy Green Production
 ERIC WILHELMTSEN, FREMONTA, Fremont, CA, USA
- S15 A Highwire Act: Balancing Sustainable Agricultural Irrigation Approaches with Food Safety Priorities in the Face of Water Shortages**
Organizers and Convenors: Dima Faour-Klingbeil, Manan Sharma, Ewen Todd
 International Food Protection Issues
 Pre Harvest Food Safety
 Water Safety and Quality
- 1:00 Reuse of Wastewater and Impacts of Emerging Contaminants on Agricultural Environments
 OLFA MAHJOUB, National Research Institute for Rural Engineering, Water, and Forestry (INRGREF), Tunis, Tunisia

- 1:30 What's in Your Water: Presence of Bacterial Pathogens in Untreated and Reclaimed Water and Cost-effective Solutions
 MANAN SHARMA, U.S. Department of Agriculture – ARS, Environmental Microbial and Food Safety Laboratory, Beltsville, MD, USA
- 2:00 The Growing Trend of Sustainable Wastewater Treatment in the Arab Region: An Unexploited Opportunity for Agricultural Use
 DIMA FAOUR-KLINGBEIL, School of Biological and Marine Sciences, University of Plymouth, Devon, United Kingdom

S16 Impact of U.S. Food Safety Regulations on Compliance of Manufacturing Facilities in India
Organizers and Convenors: Jitu Patel, Purnendu Vasavada

- Communication Outreach and Education
 Non-Microbial Food Safety
- 1:00 GMP and Preventive Controls for Human Food – Requirements for Facilities in India
 JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA
- 1:30 Capacity-building Activities in India for Food Safety Compliance
 SATYA NARAYANA KANDUKURI, Sathguru Management Consultants, Hyderabad, India
- 2:00 Changing Face of Manufacturing Attitudes in India: Toward FSMA Compliance
 MANPREET SINGH, University of Georgia, Athens, GA, USA

RT3 Pre-harvest Food Safety Challenges and Research in Developing Economies

- Organizers: Bassam Annous, Issmat Kassem, Rodrigo Santibanez**
Convenor: Issmat Kassem
 Food Safety Culture
 Pre-harvest Food Safety
- 1:00 Panelists:
 BASSAM A. ANNOUS, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA
 NATALIE DYENSON, Dole, Charlotte, NC, USA
 SANTOS GARCIA, Universidad Autónoma de Nuevo León, Facultad de Ciencias Biológicas, Departamento de Microbiología e Inmunología, San Nicolás de los Garza, NL, Mexico
 ISSMAT KASSEM, American University of Beirut, Beirut, Lebanon
 EWEN TODD, Ewen Todd Consulting, Okemos, MI, USA

T3 Technical Session 3 – Produce

- 1:00 **T3-01** Temporal Distribution and Characterization of *Listeria monocytogenes* and *Listeria* species in a Produce Packinghouse
 CAMERON BARDSLEY, Joyce Zuchel, Genevieve Sullivan, Alexandra Belias, Martin Wiedmann, Laura K. Strawn, Virginia Tech – Eastern Shore AREC, Painter, VA, USA

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

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

1:15 **T3-02** Genetic Diversity of *Listeria monocytogenes* Isolated from Three Commercial Tree Fruit Packinghouses and Evidence of Persistent and Transient Contamination
YI CHEN, Tobin Simonetti, Qing Jin, Kari Peter, Luke LaBorde, Eric Brown, Dumitru Macarisin, U.S. Food and Drug Administration–Center for Food Safety and Applied Nutrition, College Park, MD, USA

1:30 **T3-03** Survival and Growth of *Listeria monocytogenes* on Whole Cucumbers under Dynamic and Static Temperatures during Industrial Post-harvest Handling Conditions in Australia
INGRID ZAMORA, Hayriye Bozkurt, Floris Van Ogtrop, The University of Sydney, Sydney, NSW, Australia

1:45 **T3-04** Risk Factors Associated with Prevalence of Foodborne Pathogens in Manured Soils from USDA-NOP-certified Organic Farms in Four Regions of USA
ALDA PIRES, Thais Ramos, Patricia Millner, James Stover, Paulo Pagliari, Mark Hutchinson, Jason Liley, Nicholas Rowley, Peiman Aminabadi, Jerome Baron, Annette Kenney, Fawzy Hashem, Michele Jay-Russell, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California-Davis, Davis, CA, USA

2:00 **T3-05** Assessing Microbial Quality of Agricultural Water Used for Irrigation of Produce on Small Alabama Farms and Alabama Agricultural Experiment Stations
ZOILA CHEVEZ, Janet Gradi, Emeffa Monu, Auburn University, Auburn, AL, USA

T4 Technical Session 4 – Developing Scientist Student Competition Finalists

1:00 **T4-01** Validation of a Simple Technique to Predict Cooling Rates of Cooked Foods in Retail Establishments
MATTHEW IGO, Nicole Hedeem, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

1:15 **T4-02** Heterogeneous *Bacillus* Spore Germination and Superdormancy under High Pressure
ALESSIA I. DELBRÜCK, Yifan Zhang, Vera Hug, Cosima L. Off, Stephan Benke, Alexander Mathys, ETH Zurich, Zurich, Switzerland

1:30 **T4-03** Characterizing the Gut Microbiome of Commercial Broilers Raised with and without Antibiotics
ESTEFANÍA NOVOA RAMA, Matthew Bailey, Sanjay Kumar, Hendrik Den-Bakker, Harshavardhan Thippareddi, Manpreet Singh, University of Georgia, Athens, GA, USA

1:45 **T4-04** Analysis of *Listeria monocytogenes* Strains Isolated from Food and Clinical Sources Uncovers Naturally Occurring Mutations Responsible for Tolerance and Sensitivity to Nisin
JOSEPH WAMBUI, Patrick Murigu Kamau Njage, Marc J.A. Stevens, Taurai Tasara, Institute for Food Safety and Hygiene, Vetsuisse Faculty University of Zurich, Zurich, Switzerland

2:00 **T4-05** Fabrication of Biomimetic Spinach Leaves and the Role of Surface Microstructure on Decontamination Efficacy during the Washing Process
JIYOUN YI, Kang Huang, Nitin Nitin, University of California, Davis, Davis, CA, USA

2:15 **T4-06** Risk Factors for *Salmonella* Contamination in Poultry Products Following Changes in U.S. Oversight Programs
AARON BECZKIEWICZ, Barbara Kowalczyk, The Ohio State University, Columbus, OH, USA

2:30 P.M. – 4:00 P.M.

S17 Perspectives on the Current State of Food Fraud Prevention: Regulatory Investigations, Harmonization of Standards, and Supply Chain Management
Organizer and Convenor: Karen Everstine
Communication Outreach and Education
Non-Microbial Food Safety
Risk Assessment

2:30 Uncovering Food Fraud in Brazil Using Forensic Analysis
FERNANDO ANTUNES LOPES, Ministry of Agriculture, Livestock, and Food Supply – Brazil, Brazil

3:00 Harmonization of Food Standards – Challenging but Important
GINA CLAPPER, USP, Rockville, MD, USA

3:30 Assuring Integrity in the Herb and Spice Value Chain – An Industry Leading Perspective
CLARE MENEZES, McCormick & Company, Haddenham, United Kingdom

S18 Microbiomes and Plasticspheres – Effects of Plastic Pollution on Food Safety

Organizers: Sarah Allard, Angela Anandappa, Tori Stivers

Convenors: Angela Anandappa, Angela Marie C. Ferelli, Tori Stivers

Food Toxicology
Pathogens
Seafood

2:30 Plasticspheres and Pathogen Transport in Marine Environments
LINDA AMARAL-ZETTLER, NIOZ Royal, The Netherlands Institute for Sea Research and The Department of Freshwater and Marine Ecology, Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, t'Horntje, The Netherlands

3:00 Biodegradable Plastics in Soils: Implications for *Aspergillus* and Food Safety
MARION BRODHAGEN, Western Washington University, Bellingham, WA, USA

3:30 Microplastics: An Indigestible Meal for the Immune System
GIULIO GIUSTARINI, Center for Translational Immunology, University Medical Center Utrecht, Utrecht, The Netherlands

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- S19 Effective Approaches to Measure Food Safety Behavior Change**
Organizers: Brita Ball, Carol Wallace
Convenors: Stephanie Maggio, Carol Wallace
 Communication, Outreach and Education
 Food Safety Culture
 Food Safety Education
- 2:30 Numbers Don't Lie...or Do They? Considerations for Effective Surveys
 SHARON JONES, One Harvest Australia, Brisbane, Australia
- 3:00 Creating Quality Qualitative Research: Designing for Trust
 BRITA BALL, Brita Ball & Associates, Guelph, ON, Canada
- 3:30 Cool Tech Tools That Enhance Researcher Abilities and Food Safety Outcomes
 BENJAMIN CHAPMAN, North Carolina State University, Raleigh, NC, USA
- S20 Quantitative Microbiological Risk Management for Safe Water Re-use in Food Processing**
Organizer: Leon Gorris
Convenors: Elisabetta Lambertini, Kang Zhou
Sponsored by International Commission on Microbiological Specifications for Foods (ICMSF)
 Food Safety Assessment, Audit and Inspection
 International Food Protection Issues
 Water Safety and Quality
- 2:30 Diversity of Re-use Water Sources in Food Processing Operations and Efforts to Develop Quantitative Micro Standards
 LEON GORRIS, Food Safety Expert, Nijmegen, The Netherlands
- 3:00 Operationalizing Quantitative Micro Standards for Water Re-use in Food Processing
 SUCHART CHAVEN, PepsiCo, New York, NY, USA
- 3:30 Statistical Aspects of Microbiological Sampling Plans for Industrial Water Re-use
 MARCEL ZWIETERING, Wageningen University, Wageningen, The Netherlands
- S21 How Do We Measure the Effectiveness of Food Safety Systems?**
Organizers: Caroline Smith DeWaal, Tanya Roberts
Convenor: Tanya Roberts
 Epidemiology
 Food Safety Assessment, Audit and Inspection
 International Food Protection Issues
- 2:30 Defining Effective National Food Safety Systems and Evaluating Their Performance
 CAROLINE SMITH DEWAAL, Global Alliance for Improved Nutrition, College Park, MD, USA
- 3:00 The Rapid Alert System for Food and Feed in Europe
 JAN BAELE, Directorate-General Health & Food Safety, European Commission, European Union, Brussels, Belgium
- 3:30 Metrics for Recalls and Outbreaks in U.S.
 SHERRI MCGARRY, Centers for Disease Control and Prevention, Washington, D.C., USA
- S22 Safety Considerations for Hemp-derived CBD**
Organizer: Imad Saab
Convenor: Brent Kobiellush
 Food Chemical Hazards and Food Allergy
 Food Safety Assessment, Audit and Inspection
- 2:30 How Does CBD Exert Its Biological Activity; Is It Anti-Inflammatory and What are the Current Data Gaps on Safety?
 NORBERT KAMINSKI, Michigan State University, East Lansing, MI, USA
- 3:00 Analytical Approaches for Standardizing, Detecting and Validating Contaminants in Hemp-derived CBD
 SCOTT COATES, Association of Official Analytical Chemists Research Institute, Rockville, MD, USA
- 3:30 Development of Evidence-based Information on the Health and Safety Risks of CBD Use
 MARTIN HAHN, Hogan Lovells, Washington, D.C., USA
- RT4 Creating Awareness within IAFP Regarding Food Safety in Africa**
Organizer and Convenor: Leon Gorris
 Epidemiology
 Meat and Poultry
 Pathogens
- 2:30 Panelists:
 KEBEDE AMENU, Addis Ababa University, Bishoftu, Ethiopia
 LUCIA ANELICH, Anelich Consulting, Pretoria, South Africa
 MOSES GATHURA GICHIA, State Department of Livestock of Kenya, Nairobi, Kenya
 ABDOLIE JALLOW, Food Safety & Quality Authority of the Gambia, Serre Kunda, KMC, Gambia
 ADEWALE OLUSEGUN OBADINA, Federal University of Agriculture Abeokuta, Abeokuta, Nigeria
- T5 Technical Session 5 – Developing Scientist Competition Finalists**
- 2:30 **T5-01** Phenotypic Testing and Comparative Genomics of Antibiotic and Heavy Metal Resistance of *Salmonella enterica* and *Escherichia coli* isolates from U.S. Swine Feed Mills
 GABRIELA MAGOSSI, Raghavendra Amachawadi, T G Nagaraja, Shenia Young, Kelly Domesle, Chih-Hao Hsu, Cong Li, Errol Strain, Beilei Ge, Valentina Trinetta, Kansas State University, Food Science Institute, Manhattan, KS, USA
- 2:45 **T5-02** Rapid Luminescent Detection of *E. coli* in Drinking Water Using Click-conjugated Bacteriophage-based Magnetic Nanoprobes
 HANNAH ZURIER, Julie Goddard, Sam Nugen, Cornell University, Ithaca, NY, USA

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- 3:00 **T5-03** Evaluation of Zero-valent Iron Filtration in the Removal and Persistence of *Escherichia coli* in Non-traditional Irrigation Water Sources: A Conserve Study
BRIENNA ANDERSON-COUGHLIN, Shani Craighead, Pushpinder Kaur Litt, Seongyun Kim, Alyssa Kelly, Pei Chiu, Manan Sharma, Kalmia Kniel, University of Delaware, Newark, DE, USA
- 3:15 **T5-04** Prevalence of Ciprofloxacin-resistant Genes in *Campylobacter* Isolated from Poultry Breeder Farms and Processing Plants
JASMINE KATARIA, Maia Metreveli, Cortney Leone, Matthew Bailey, Harshavardhan Thippareddi, Henk den Bakker, Manpreet Singh, University of Georgia, Athens, GA, USA
- 3:30 **T5-05** *Listeria monocytogenes* Comes in Different Shades: Clinical and Food Associated Strains Vary in Virulence, Stress Resistance, and Carbon Source Metabolism
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
- 3:45 **T5-06** Radio Frequency (RF) Pasteurization and Drying of Fresh Inshell Hazelnuts Inoculated with *Salmonella*
LONG CHEN, Soon Kiat Lau, Jeyam Subbiah, Byron Chaves, David Jones, Yanyun Zhao, Jooyeoun Jung, University of Nebraska-Lincoln, Lincoln, NE, USA
- T6** **Technical Session 6 – Food Safety Systems and Modeling and Risk Assessment**
- 2:30 **T6-01** Heat Resistance in *Escherichia coli* from Cattle and Beef Packing Plants in Canada
PEIPEI ZHANG, Frances Tran, Tim Reuter, Kim Stanford, Xianqin Yang, Agriculture and Agri-Food Canada, Lacombe, AB, Canada
- 2:45 **T6-02** Promoting Food Safety Training in a Multicultural Workforce: Concept, Methodologies, and Approach
ADENIYI ADEDAYO ODUGBEMI, Archer Daniels Midland Company, Decatur, IL, USA
- 3:00 **T6-03** Strategic Allocation of Sampling Resources at the United States Department of Agriculture's Food Safety and Inspection Service
Joanna Zablotsky Kufel, REBECCA FIELDS, Jackson Crockett, Matthew Gonzales, Michelle Catlin, Justin Ronca, Philip Derfler, U.S. Department of Agriculture, Food Safety and Inspection Service, Athens, GA, USA

- 3:15 **T6-04** Validation of Innovative Tools to Assess and to Improve Microbiological Safety in the Food Chain (VITAL)
LUCA COCOLIN, Amparo Roca, Gianpaolo Rando, Kalliopi Rantsiou, Trevor Phister, University of Torino-DISAFA, Grugliasco, Italy
- 3:30 **T6-05** Bayesian Statistical Modeling for Describing Uncertainty of Bacterial Spore Inactivation Behavior
SHINYA DOTO, Hiroki Abe, Wataru Ishida, Kento Koyama, Shigenobu Koseki, Hokkaido University, Sapporo, Japan
- 3:45 **T6-06** Risk Ranking of Food Categories Associated with *Salmonella*
ANGÉLICA GODÍNEZ-OVIEDO, Francisco Garcés-Vega, Fernando Sampedro, Montserrat Hernandez-Iturriaga, Universidad Autónoma de Querétaro, Querétaro, Mexico
- T7** **Technical Session 7 – Antimicrobials**
- 2:30 **T7-01** Mature Biofilms of *Listeria monocytogenes* Isolated from Vermont Dairy Production Environments are Resistant to QACs in Nutrient Rich Media
EMILY FORAUER, Lara Cushman, Aislinn Gilmour, Andrea Etter, The University of Vermont, Burlington, VT, USA
- 2:45 **T7-02** Effects of Commercially Available Antimicrobials on the Inhibition and Inactivation of *Listeria monocytogenes* Biofilms
STEPHANIE BROWN, Catherine Gensler, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- 3:00 **T7-03** Development of a Dry Surface Biofilms Rapid Model for Disinfectant Testing
CARINE NKEMNGONG, Maxwell Voorn, Peter Teska, Xiaobao Li, Haley Oliver, Purdue University, West Lafayette, IN, USA
- 3:15 **T7-04** Meta-regression Models Describing the Effects of Essential Oils and Added Lactic Acid Bacteria on *Staphylococcus aureus* Inactivation in Cheese
BEATRIZ NUNES SILVA, Vasco A. P. Cadavez, José A. Teixeira, Ursula Gonzales-Barron, CEB – Centre of Biological Engineering, University of Minho, Braga, Portugal

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- – Topic Areas



GENERAL SESSION

U.S. REGULATORY UPDATE ON FOOD SAFETY

TUESDAY, OCTOBER 27

9:00 A.M. – 10:00 A.M.



FRANK YIANNAS, MPH

Deputy Commissioner for
Food Policy and Response
U.S. Food & Drug Admin-
istration (FDA)
Silver Spring, MD

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.



MINDY BRASHEARS, PH.D.

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

Mindy Brashears, Ph.D., serves as Under Secretary for the USDA's Office for Food Safety. In this position since March 2020, Dr. Brashears oversees development, implementation, and enforcement of all of the Food Safety and Inspection Service's (FSIS') regulations, policies, and programs. Prior to this position, Dr. Brashears was Professor of Food Safety and Public Health and the Director of the International Center for Food Industry Excellence at Texas Tech University.

TUESDAY, OCTOBER 27

9:00 A.M.

General Session – U.S. Regulatory Update on Food Safety

Welcome and Introduction of Session

Kali Kniel, IAFP President

Update from U.S. Department of Agriculture*Introduction*–Kali Kniel, IAFP President

Mindy Brashears, Under Secretary for Food Safety

Update from U.S. Food and Drug Administration*Introduction*–Roger Cook, IAFP President-Elect

Frank Yiannas, Deputy Commissioner for Food Policy and Response

Question & Answer Period

Moderated by Kali Kniel, IAFP President and Roger Cook, IAFP President-Elect

Closing Remarks

Kali Kniel, IAFP President

10:00 A.M. – 11:30 A.M.

S23 How to Talk to People That Don't Know What You are Talking About: Effectively Communicating Food Safety Information**Organizers:** Brita Ball, Christopher (Adam) Baker**Convenors:** Shannon Coleman, Sergio Nieto-MontenegroFood Safety Culture
Food Safety Education
Retail and Foodservice10:00 Success Stories on Effectively Communicating Food Safety: An Industry Experience
SERGIO NIETO-MONTENEGRO, Food Safety Consulting & Training Solutions, LLC, El Paso, TX, USA10:30 Food Safety Bites: Scaffolding in Food Safety Education
WENQING (WENNIE) XU, Louisiana State University AgCenter, Baton Rouge, LA, USA11:00 Two Hats: Scientist/Communicator Success Stories
SHELLEY FEIST, Partnership for Food Safety Education, Arlington, VA, USA**S24 Passport to Food Safety in Low- and Middle-income Countries: Rationale and Reflections for Recent Research Initiatives****Organizers:** Barbara Kowalczyk, Haley Oliver, Jessie Vipham**Convenors:** Aaron Beczkiewicz, Barbara Kowalczyk, Jessie ViphamEpidemiology
Pathogens
Risk Assessment10:00 Investing in Food Safety in Low- and Middle-income Countries: What are the Drivers?
KRISTEN MACNAUGHTAN, Bill and Melinda Gates Foundation, Seattle, WA, USA10:30 USAID Feed the Future Food Safety Innovation Lab Research and Development Trajectory
HALEY OLIVER, Purdue University, West Lafayette, IN, USA11:00 Ensure: Improving Food Safety through Capacity Building of the Value Chain Actors and Government Stakeholders
ASHAGRIE ZEWDU, Addis Ababa University, Addis Ababa, Ethiopia**S25 Best Practices to Manage Produce Risks from Farm to Retail****Organizer and Convenor:** Anna StarobinAntimicrobials
Produce10:00 CFP Guide for Washing and Crisping Whole, Raw Fruits and Vegetables at Retail Food Establishments
ANNA STAROBIN, Ecolab Inc., Greensboro, NC, USA10:30 Produce Crisping Risks and Risk Mitigations
JENNIFER MCENTIRE, United Fresh Produce Association, Washington, D.C., USA11:00 Retail Perspective on Produce Washing
SHARON WOOD, H-E-B, San Antonio, TX, USA
Live only, not recorded**S26 Food Safety Risk from *Clostridium perfringens*, *Clostridium botulinum*, and *Bacillus cereus* in Cooked Meat and Poultry Products****Organizer:** Subash Shrestha**Convenors:** Max Golden, Dennis Seman, Thomas TaylorMeat and Poultry Safety and Quality
Microbial Modelling and Risk Analysis10:00 Growth (and/or Toxin Formation) Potential of *C. botulinum*, *C. perfringens*, and *B. cereus* in Cooked Meat and Poultry Products during Cooling (Deviations) and Refrigerated Storage and Distribution
KATHLEEN GLASS, University of Wisconsin-Madison, Madison, WI, USA10:30 Quantitative Microbial Risk Assessment for Cooling Deviations and Refrigerated Distribution of Cooked Meat and Poultry Products
ABANI PRADHAN, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA11:00 Regulatory Updates on the Proposed Appendix B (2017)
SCOTT UPDIKE, U.S. Department of Agriculture (USDA)-FSIS, Washington, D.C., USA**S27 What Should I Eat? Integrating Food Safety Risks and Nutritional Health Outcomes in Multi-risk and Risk-benefit Assessment Frameworks****Organizers:** Heidi den Besten, Sofia Santillana Farakos**Convenor:** Heidi den BestenRisk Assessment
Food Toxicology10:00 Food Safety Risk–Risk Assessments: Evaluating the Potential Health Impact of Dietary Shifts through Case Studies
SOFIA SANTILLANA FARAKOS, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA

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- 10:30 Combining Food Safety and Nutrition to Assess the Health Impact of Dietary Changes: Examples of Risk-Benefit Assessments from Denmark
MAARTEN NAUTA, National Food Institute, Technical University of Denmark, Kgs. Lyngby, Denmark
- 11:00 Ranking New Consumer Dietary Practices in Terms of Food Safety
JEANNE-MARIE MEMBRÉ, Secalim, INRAE, Oniris, Nantes, France
- S28 Validation of New and Emerging Molecular Technologies for Pathogen Characterization**
Organizers and Convenors: Megan S. Brown, J. David Legan, Stephanie Pollard
Applied Laboratory Methods
Advanced Molecular Analytics
- 10:00 Validation and Verification of a “Pattern Tracking” Platform
MORGAN WALLACE, Rheonix, Ithaca, NY, USA
- 10:30 Validation and Verification of Whole Genome Sequencing Technologies for Use in Outbreak Investigations
RUTH TIMME, U.S. Food and Administration–CFSSAN, College Park, MD, USA
- 11:00 Validation and Verification of Databases Underpinning Strain Identification and Outbreak Tracking
NUR HASAN, EzBiome, Rockville, MD, USA
- S29 Current Best Practices for Extrusion Cooking Processes: A Holistic Approach to Controlling Pathogens in Low Water Activity Foods**
Organizers and Convenors: Nathan Anderson, Elizabeth Grasso-Kelley
Food Safety Culture
Low-water Activity Foods
Sanitary Equipment and Facility Design
- 10:00 Applying Hygienic Design Principles to the Building, Zoning, and Equipment Design: Greenfield vs. Legacy Systems
TIM HARTTER, Wenger Corporate Project Services, Sabetha, KS, USA
- 10:30 Critical Points to Primary Processing and Validation: Case Studies for Snack Foods
LISA LUCORE, Shearer’s Foods, Massillon, OH, USA
- 11:00 Critical Points to Secondary Processing and Process Control: Case Studies for Pet Foods
PABLO CARRION, Nestle Purina, St. Louis, MO, USA
- S30 Allergen Control – Challenges, Perspectives and Solutions**
Organizer and Convenor: Deb Smith
Food Chemical Hazards and Food Allergy
Food Law
Food Hygiene and Sanitation
- 10:00 The Perspectives: Allergen Control through Recalls – A Critique
STEVE L. TAYLOR, University of Nebraska-Lincoln, Lincoln, NE, USA
- 10:30 Effective Strategies for Minimizing Allergen Cross-Contact
DEB SMITH, Vikan (UK) Ltd., Swindon, United Kingdom
- 11:00 Allergen Removal, Validation, Monitoring and Verification
JOHN HOLAHA, Holchem Laboratories, Cardiff Metropolitan University and EHEDG, Bury, United Kingdom
- RT5 A Balancing Act: Minimizing Food Waste While Striving to Maximize Food Safety**
Live only, not recorded
Organizers: Jenna Brophy, Ellen Shumaker, Sheryl Cates
Convenor: Jenna Brophy
Communication, Outreach and Education
Food Safety Education
- 10:00 Panelists:
BENJAMIN CHAPMAN, North Carolina State University, Raleigh, NC, USA
ANDY HARIG, FMI, Washington, D.C., USA
MICHAEL ROBERSON, Publix Super Markets, Inc., Lakeland, FL, USA
BRIAN ROE, The Ohio State University, Columbus, OH, USA
ANGIE SIEMENS, Cargill, Towanda, KS, USA
KEVIN SMITH, U.S. Food and Drug Administration, College Park, MD, USA
- RT6 A Practical and Science-based Performance Standard as an Alternative to Zero Tolerance**
Live only, not recorded
Organizer and Convenor: Donna Garren
Pathogens
Risk Assessment
- 10:00 Panelists:
DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
CATHERINE DONNELLY, University of Vermont, Burlington, VT, USA
JEFFERY FARBER, University of Guelph, Guelph, ON, Canada
STEVEN MUSSER, CFSAN-FDA, College Park, MD, USA
DONALD W. SCHAFFNER, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA
- T8 Technical Session 8 – Molecular Analytics, Genomics and Microbiome**
- 10:00 **T8-01** GenomeTRAKR Best Practices for Uploading Sequence Data to NCBI: Assuring Good Sequence Quality and Proper Data Curation
RUTH TIMME, Errol Strain, Maria Balkey, Sai Gubbala, Robyn Randolph, Marc Allard, William Wolfgang, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

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

- 10:15 **T8-02** Two-year Monitoring of Environmental Microbial Communities in Three Apple Packing Facilities and Their Association with the Presence of *Listeria monocytogenes*
MARIA ROLON, Xiaoqing Tan, Taejung Chung, Narjol Gonzalez-Escalona, Yi Chen, Dimitru Macarasin, Luke LaBorde, Jasna Kovac, The Pennsylvania State University, University Park, PA, USA
- 10:30 **T8-03** Inferred *Salmonella enterica* Serotype from Whole Genome Sequencing Data Using SeqSero2
MUSTAFA SIMMONS, Jamie Wasilenko, Marie Maier, Aphrodite Douris, Jessica Battles, Joseph Minicozzi, Cesar Morales, Michael Myers, Labeed Ben-Ghaly, Glenn Tillman, U.S. Department of Agriculture – FSIS, Athens, GA, USA
- 10:45 **T8-04** Getting a Handle on *Listeria* in New Zealand – Developing a Shared Whole Genome Sequence Database for Food Safety Applications
LUCIA RIVAS, Rob Lake, Pierre Y Dupont, Brent Gilpin, Patrick J. Biggs, Ahmed Fayaz, Graham C. Fletcher, Mark Bradbury, Arnoud van Vliet, Nigel French, Institute of Environmental Science and Research, Christchurch, New Zealand
- 11:00 **T8-05** Community of Fermenting Microorganisms during Spontaneous and Kefir Fermentation of Soy Milk
AJIBOLA OYEDEJI, Marcel Hougbedji, Basheer Aideh, Rasmus Jakobsen, Witold Kot, John Mellem, Dennis Sandris Nielsen, Oluwatosin Ademola Ijabadeniyi, Durban University of Technology, Durban, South Africa
- 11:15 **T8-06** Keeping up with the *Bacillus cereus* Group: Leveraging Genomic Data to Counter Bacterial Taxonomic Ambiguity from Farm to Clinic
LAURA CARROLL, Martin Wiedmann, Jasna Kovac, European Molecular Biology Laboratory, Heidelberg, Germany
- T9 Technical Session 9 – Pre-harvest Food Safety**
- 10:00 **T9-01** Role of Edaphic Soil Factors and Climatic Conditions in Pathogen Survival on the Farm
PUSHPINDER KAUR LITT, Alyssa Kelly, Alexis Omar, Kyle McCaughan, Gordon Johnson, Manan Sharma, Kalmia Kniel, University of Delaware, Newark, DE, USA
- 10:15 **T9-02** Influence of Soil Microbiota on *Escherichia coli* O157
CHRISTOPHER (ADAM) BAKER, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- 10:30 **T9-03** Survival of *Salmonella enterica* subsp. Javiana and *Listeria monocytogenes* is Dependent on Type of Soil-free Hydroponic Growing Medium
Gina Riggio, KRISTEN GIBSON, University of Arkansas, Fayetteville, AR, USA
- 10:45 **T9-04** Drought Stress Affects Kale Leaf Phytochemical Profiles and *Salmonella enterica* Leaf Association
XINGCHEN LIU, Yue Li, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- 11:00 **T9-05** Evaluation of a Commercially Available Irrigation Water Chlorination System for Leafy Green Production in the Everglades Agricultural Area (EAA)
Joyjit Saha, German Sandoya Miranda, Haimanote Bayabil, Sandra Guzman, Loretta Friedrich, Katelynn Stull, MICHELLE DANYLUK, Travis Chapin, University of Florida CREC, Lake Alfred, FL, USA
- 11:15 **T9-06** The Effectiveness of Vegetative Buffer Zones to Reduce the Risk of *Salmonella* and STEC Transmission from Animal Operations to Fresh Produce
AYANNA GLAIZE, Morgan Young, Christopher Gunter, Eduardo Gutierrez-Rodriguez, Siddhartha Thakur, North Carolina State University, Raleigh, NC, USA
- 11:45 a.m. – 12:30 p.m.**
IAFP Business Meeting

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TUESDAY AFTERNOON

1:00 P.M. – 4:00 P.M.

S31 Help! I Have a Presumptive Pathogen Detection. What are My Options?

Organizers: J. David Legan, Jean Schoeni, Edward Sliwinski

Convenors: Megan S. Brown, Larry Cohen, J. David Legan

Advanced Molecular Analytics
Applied Laboratory Methods
Dairy Quality and Safety

- 1:00 Guilty Until Proven Innocent? The Presumption of Positivity and the Issue of Non Confirming Presumptives in Food Pathogen Diagnostics
DANIEL DEMARCO, Eurofins, Louisville, KY, USA
- 1:30 How Can I Minimize Non-confirming Presumptives but Find Pathogens if They're Truly Present?
PATRICK BIRD, PMB BioTek Consulting, West Chester, OH, USA
- 2:00 I Have a Presumptive Detection – Now What?
VICKIE LEWANDOWSKI, Saputo Cheese, USA, Lincolnshire, IL, USA
- 2:30 The Confirmation Process – What Must be Involved?
THOMAS HAMMACK, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- 3:00 “Heroic” Measures in Cultural Confirmation: Are They Ever Justified?
CATHARINE CARLIN, Cornell University, Ithaca, NY, USA
- 3:30 Confirmation Using a Rapid Platform
ROGER HOOL, DFA Dairy Brands, Dallas, TX, USA

S32 Foodborne Disease Outbreak Update

Organizers and Convenors: Laura Gieraltowski, Katherine Vierk, Ewen Todd

Epidemiology
Fruit and Vegetable Safety and Quality
International Food Protection Issues

- 1:00 How Canadian Investigators Use WGS to Solve Foodborne Illness Outbreaks with *E. coli* O121 Clusters in Flour as an Example
CATHERINE CARILLO, CFIA, Ottawa, ON, Canada
- 1:30 FSIS Investigation of an Outbreak of *Salmonella* Infantis in Poultry
GAMOLA FORTENBERRY, U.S. Department of Agriculture-FSIS, Washington, D.C., USA
- 2:00 On Multi-country Outbreak of *Salmonella* Poona Infections Linked to Consumption of Infant Formula
PETER BEN EMBAREK, World Health Organization, Geneva, Switzerland
- 2:30 This Smells Fishy: A Look at a 2019 Scombrotoxin Outbreak Linked to Tuna
ELISA ELLIOT, U.S. Food and Drug Administration, College Park, MD, USA
- 3:00 What a Decade of Leafy Green Outbreaks Has Taught Us
TYANN BLESSINGTON, U.S. Food and Drug Administration, College Park, MD, USA

- 3:30 Proposed Rule: Requirements for Additional Traceability Records for Certain Foods (FSMA Section 204)
KATHERINE VIERK, U.S. Food and Drug Administration, College Park, MD, USA

1:00 P.M. – 2:30 P.M.

S33 The Future of the Poultry Gut Health Nexus: Improving Food Safety

Organizer: Kristina Feye

Convenor: Anita Menconi

Applied Laboratory Methods
Pathogens
Risk Assessment

- 1:00 Probiotics and the Microbiota
NADIA YACOUBI, Evonik Operations GmbH, Frankfurt, Germany
- 1:30 Defining a Healthy Microbiota
KRISTINA FEYE, University of Arkansas, Fayetteville, AR, USA
- 2:00 Metabolism of the Microbiome
STEVEN RICKE, University of Arkansas, Fayetteville, AR, USA

S34 From Policy to Practices, Developing Environmental Monitoring Programs for Raw Agricultural Commodity (RAC) Packinghouses

Organizers: Alexis M. Hamilton, Laura K. Strawn, Faith Critzer

Convenors: Alexis M. Hamilton, Faith Critzer, Laura K. Strawn

Fruit and Vegetable Safety and Quality
Sanitary Equipment and Facility Design

- 1:00 Walking the EMP Tightrope with Fresh Produce
JENNIFER MCENTIRE, United Fresh Produce Association, Washington, D.C., USA
- 1:30 Observations from the Field, Environmental Sources of *Listeria* in Packinghouses
LAURA K. STRAWN, Virginia Tech – Eastern Shore AREC, Painter, VA, USA
- 2:00 Developing Data-driven Programs to Successfully Monitor the Packing Environment
SURESH DECOSTA, Lipman Family Farms, Immokalee, FL, USA

S35 Navigating the Benefits and Barriers of Whole Genome Sequencing (WGS) for the Food Industry from the Food Industry

Organizers and Convenors: Bala Jagadeesan, Pamela Wilger

Applied Laboratory Methods
Novel Laboratory Methods
Pathogens

- 1:00 Survey and Workshop Outcomes
ADRIANNE KLIJN, Société des Produits Nestlé SA, Lausanne, Switzerland
- 1:30 Testimony of Use of WGS from a Member of the Industry
PIERRE VENTER, Fonterra, Palmerston North, New Zealand

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2:00 Traceability, Adaptive Change, and the Sleuthing of *Salmonella* Back to Source: How Whole Genome Sequencing Greatly Augments Food Safety for Industry, Government, and Public Health
ERIC BROWN, U.S. Food and Drug Administration-Center for Food Safety and Applied Nutrition, College Park, MD, USA

S36 Confirmatory Tests for Non-culturable Foodborne Pathogens in Produce for Regulatory Testing Purposes: Recent Advances and Challenges Ahead

Organizers and Convenors: Alexandre DaSilva, Marianne Solomotis

Applied Laboratory Methods
Pathogens
Produce

1:00 Introduction/Purpose of Confirmatory Tests
LEE-ANN JAYKUS, North Carolina State University, Raleigh, NC, USA

1:30 Confirmation of Virus PCR-positive Samples Using WGS of Viral Genome
HAIFENG CHEN, FDA/CFSAN, Laurel, MD, USA

2:00 Confirmation of *C. cayetanensis* PCR-positive Samples Using WGS of Mitochondrial DNA
HEDIYE NESE CINAR, U.S. Food and Drug Administration – CFSAN, OARSA, Laurel, MD, USA

S37 I Will Survive! Molecular Basis of Pathogen Survival in Low-moisture Foods

Organizer: Brienna Larrick

Convenors: Julie Ann Kase, Laurie Post

Sponsored by ILSI North America Food Microbiology Committee

Advanced Molecular Analytics
Low-water Activity Foods

1:00 Genetic Determinants Required for Survival of *Salmonella* in Low-moisture Environments
VICTOR JAYEOLA, North Carolina State University, Raleigh, NC, USA

1:30 Molecular Basis for *Listeria* Survival in Low-moisture Foods
SOPHIA KATHARIOU, North Carolina State University, Raleigh, NC, USA

2:00 Mechanisms of Survival and Genetic Response of Pathogenic *E. coli* in Low-moisture Environments
YUAN FANG, University of Alberta, Edmonton, AB, Canada

S38 Forecasting Hot Topics: Strategies That Signal the Occurrence of Emerging Chemical Threats

Organizers: Paul Hanlon, Alexandria Lau, Anthony Flood

Convenors: Anthony Flood, Alexandria Lau

Communication Outreach and Education
Food Toxicology
Risk Assessment

1:00 Translating Data into Tools That Signal Potential Threats
RON STAKLAND, FoodChain ID Group, Fairfield, IA, USA

1:30 Acrylamide: A Model to Forecast Future Chemical Risks
MARTIN SLAYNE, Slayne Consulting LLC, New York, NY, USA

2:00 Using Social Media to Identify Emerging Trends and Issues
TAMIKA SIMS, IFIC, Washington, D.C., USA

RT7 What Don't We Know? Cultured Meat vs. Traditional Meat and Fish Food Safety Concerns

Organizers: Christina Wilson, Gloria Swick-Brown
Convenor: Christina Wilson

Meat and Poultry
Seafood

1:00 Panelists:
LOU COOPERHOUSE, BlueNalu, Inc., San Diego, CA, USA

ISHA DATAR, New Harvest, New York, NY, USA

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

MATHEW MICHAEL, USDA FSIS, College Park, MD, USA

RT8 New Insights on Bridging Risk Assessment and Hazard Analysis – How Can We Really Do Both?

Organizers: Robert Brackett, Yuhuan Chen, Balasubrahmanyam Kottapalli

Convenor: Yuhuan Chen

Non-Microbial Food Safety
Pathogens
Risk Assessment

1:00 Panelists:

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

STEVEN HERMANOSKY, Conagra Brands, Chicago, IL, USA

DONALD W. SCHAFFNER, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA

WILLIAM WEISSINGER, FDA ORA, Chicago, IL, USA

MARCEL ZWIETERING, Wageningen University, Wageningen, The Netherlands

T10 Technical Session 10 – Antimicrobials

1:00 Can Bacteriophages Contribute Massively to the Food Safety Future? Bacteriophages as a Biosensor Tool for the Detection of Foodborne Pathogens with Emphasis on Immobilization of Bacteriophage for the Detection of Non O157:H7 Shiga Toxin-producing *E. coli*
NADA ALASIRI, Mansel Griffiths, Andrew Kropinski, Hany Anany, Luba Brovko, Balamurali Kannan, University of Guelph, Food Science Department, Guelph, ON, Canada

1:15 Conjugated Linoleic Acid Over-producing *Lactobacillus casei* Reduced Colonization of *Campylobacter jejuni* in Chicken
ZAJEBA TABASHSUM, Mengfei Peng, Zabdriel Alvarado-Martinez, Arpita Aditya, Jacob Bhatti, Paulina De Bravo, Alana Young, Debabrata Biswas, University of Maryland, College Park, MD, USA

1:30 Antimicrobial Efficacy of Probiotic *Lactobacillus rhamnosus* GG in *Salmonella*-infected Chickens
GARY CLOSS, JR., The Ohio State University, Columbus, OH, USA

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- 1:45 Phenotypic and Genotypic Characterization of Extended-spectrum Beta-lactamase (ESBL)-producing *Escherichia coli* from Sheep and the Abattoir Environment in North Carolina: A Serial Cross-sectional Study
T10-04 NIGATU ATLAU, Shivaramu Keelara, Suwendu Behera, Valeriia Yustnyniuk, Siddhartha Thakur, Paula J. Fedorka-Cray, Department of Population Health and Pathobiology, CVM, NCSU, Raleigh, NC, USA
- 2:00 Quantification of Antimicrobial Resistance in Locally-grown Fresh Produce
T10-05 NIROSHA RUWANI AMARASEKARA, Abdullah Ibn Mafiz, Liyanage Nirasha Perera, Vidhya Bai Krishnoji Rao, Yifan Zhang, Wayne State University, Detroit, MI, USA
- 2:15 Antimicrobial Efficacy of Pecan Shell Extracts Incorporated in Pullulan Film against Bacterial Pathogens and Molds
T10-06 KARUNA KHAREL, Małgorzata Gniewosz, Karolina Kraśniewska, Achyut Adhikari, Louisiana State University AgCenter, Baton Rouge, LA, USA
- T11 Technical Session 11 – Pre-harvest Food Safety**
- 1:00 Evaluating the Effectiveness of Vegetative Buffer Zones at Reducing Transmission of *Salmonella* and STEC: Challenge Study
T11-01 AYANNA GLAIZE, Morgan Young, Christopher Gunter, Eduardo Gutierrez-Rodriguez, Siddhartha Thakur, North Carolina State University, Raleigh, NC, USA
- 1:15 Detection of Norovirus, Hepatitis A and Rotavirus in Vegetables and Their Correlation with the Presence of Somatic Coliphages as Viral Contamination Indicators
T11-02 AXEL OSSIO, Norma Heredia, Santos Garcia, Jose Angel Merino-Mascorro, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, NL, Mexico
- 1:30 Determination of the Levels and Population Composition of Microorganisms on Baby Spinach from Harvest through the End of Shelf Life
T11-03 SRIYA SUNIL, Sarah Murphy, Mary Godec, Renata Ivanek, Martin Wiedmann, Cornell University, Ithaca, NY, USA
- 1:45 Extracellular Antibiotic-resistance Genes in the Cantaloupe Farm Environment
T11-04 ANDREA HUERTA-ESCOBEDO, Santos Garcia, Eduardo Franco, Juan S. Leon, Lee-Ann Jaykus, Janeth Pérez-Garza, Norma Heredia, Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, NL, Mexico
- 2:00 Subtyping of Presumptive *Bacillus cereus* to Distinguish and Trace the Strain Used in SCUTELLO Biopesticide from Field to Fork
T11-05 FLORENCE POSTOLLEC, Emeline Cozien, Pierre Gehannin, Melanie Streit, Marie-Laure Divanac'h, Sebastien Louarn, Rodolphe Vidal, Anne-Gabrielle Mathot, ADRIA Food Technology Institute – UMT ACTIA 19.03 ALTER'IX, France, Quimper, France
- 2:15 Development, Validation and Comparison of 24 Machine-learning Models That Predict the Presence of Foodborne Pathogens in New York Streams Used to Source Water for Produce Production
T11-06 DANIEL WELLER, Alexandra Belias, Tanzy Love, Martin Wiedmann, State University of New York College of Environmental Science and Forestry, Department of Environmental and Forest Biology, Syracuse, NY, USA

2:30 P.M. – 4:00 P.M.

- S39 Whole Microbial Community and Metagenomics Applications to Characterize Water Used in Food Production**
Organizers: Xiangyu Deng, Karen Jarvis, Elisabetta Lambertini
Convenors: Xiangyu Deng, Elisabetta Lambertini
Beverages and Water
General Microbiology
Novel Laboratory Methods
- 2:30 Diversity of Microbial Communities and Their Co-occurrence with Foodborne Pathogens in Surface Waters
JASNA KOVAC, The Pennsylvania State University, University Park, PA, USA
- 3:00 Investigating Microbial Communities in the Water, Soil, and Vegetable Crop Nexus
SHIRLEY A. MICALLEF, University of Maryland, College Park, MD, USA
- 3:30 *Salmonella* Abundance and Serovar Diversity in Freshwater
NIKKI SHARIAT, University of Georgia, Athens, GA, USA
- S40 Consumer Animal Welfare Demands and Their Impact to Food Safety**
Organizers: Savana Everhart, Jessica Meisinger, Rodrigo Santibanez
Convenor: Rodrigo Santibanez
Communication Outreach and Education
Risk Assessment
- 2:30 Animal Welfare Trends in Poultry Production
PRAFULLA REGMI, North Carolina State University, Raleigh, NC, USA
- 3:00 Food Safety Issues That Need to be Addressed When Changing Farm Practices
LUIZ DEMATTÉ, Korin, Ipeúna, Brazil
- 3:30 Successful Examples of Farm Practices That Address Consumer Animal Welfare Perception Issues While Maintaining Food Safety
ANGIE SIEMENS, Cargill, Inc., Wichita, KS, USA
- S41 Jumping into the Deep End: Lessons Learned from Water Treatment Implementation under New LGMA Metrics**
Organizers: Faith Critzer, Michelle Danyluk, Channah Rock
Convenors: Faith Critzer, Michelle Danyluk
Fruit and Vegetable Safety and Quality
Pre-harvest Food Safety
- 2:30 Insights to Development and Implementation of LGMA Metrics in Arizona
TERESSA LOPEZ, Arizona LGMA, Phoenix, AZ, USA
- 3:00 Chemigation Strategies for Field Applications, Considerations and Limitations
JAY SUGHROUE, BioSafe Systems, La Quinta, CA, USA

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- 3:30 Connecting the Dots between Policy and Practice
CHANNAH ROCK, University of Arizona, Maricopa, AZ, USA
- S42 Identifying Tools to Predict Food Safety Failures and Financial Costs**
Organizer and Convenor: Allen Saylor
Food Safety Assessment, Audit and Inspection
Food Safety Culture
- 2:30 Learning from Adjacent Industries: The Case for Digitizing Food Safety, Quality and Sanitation Data
DAVID HATCH, Corvium, Reston, VA, USA
- 3:00 FDA's Approach to Cost-Benefit Analysis to Justify the Implementation of New Food Safety Regulations
ANGELA LASHER, U.S. Food and Drug Administration, Silver Spring, MD, USA
- 3:30 Utilizing "Big Food Safety Data" to Predict Food Safety Shortcoming for Food Processors
MEHRDAD TAJKARIMI, EAS Consulting Group, Los Angeles, CA, USA
- S43 Microfluidic-based Sensing for Rapid Food and Water Safety**
Organizer: Shannon McGraw
Convenor: Genevieve Flock
Advanced Molecular Analytics
Food Defense
Water Safety and Quality
- 2:30 Enzyme-based Paper Sensors for Foodborne Pathogen Detection
CHUCK HENRY, Colorado State, Fort Collins, CO, USA
- 3:00 A Portable Bacteriophage-based Electrochemical Biosensor for Direct and Rapid Detection of Shiga Toxin-producing *Escherichia coli* (STEC)
IRWIN QUINELA, U.S. Department of Agriculture-ARS, Western Regional Research Center, Albany, CA, USA
- 3:30 CRISPR/CAS-based Paper Diagnostics for Food and Waterborne Pathogen Detection
SHANNON MCGRAW, U.S. Army Combat Capabilities Development Command – Soldier Center, Natick, MA, USA
- RT9 Interpreting Results from Enteric Virus Testing: Can Evidence of Viral Nucleic Acid Serve as an Indicator of Human Fecal Contamination or Defined Public Health Risk?**
Organizer and Convenor: Sanjay Gummalla
Applied Laboratory Methods
Fruit and Vegetable Safety and Quality
Viral and Parasitic Foodborne Disease
- 2:30 Panelists:
PAM COLEMAN, Merieux NutriSciences, Chicago, IL, USA
NIGEL COOK, The Food and Environment Research Agency, York, United Kingdom
TIMOTHY JACKSON, Driscoll's of the Americas, Watsonville, CA, USA
LEE-ANN JAYKUS, North Carolina State University, Raleigh, NC, USA
MARION KOOPMANS, Erasmus University Medical Center, Rotterdam, The Netherlands

- RT10 Synthesizing Food Defense Programs for FSMA and Third Party Audits**
Organizer and Convenor: Neal Fredrickson
Food Defense
International Food Protection Issues
- 2:30 Panelists:
KARLEIGH BACON, Kraft Heinz Company, Glenview, IL, USA
JASON BASHURA, PepsiCo, Purchase, NY, USA
JOEL MARTIN, Cargill, Wayzata, MN, USA
RAQUEL MAYMIR, General Mills, Minneapolis, MN, USA
RYAN NEWKIRK, U.S. Food and Drug Administration, College Park, MD, USA
JENNIFER VAN DE LIGT, Food Protection and Defense Institute, Saint Paul, MN, USA
- T12 Technical Session 12 – Antimicrobials**
- 2:30 Pre-growth Conditions and Genetic Variation Affect
T12-01 Nisin Treatment against *Listeria monocytogenes* on Cold Smoked Salmon
RUIXI CHEN, Jordan Skeens, Renato Orsi, Martin Wiedmann, Veronica Guariglia-Oropeza, Cornell University, Ithaca, NY, USA
- 2:45 Prevalence, Antibiotic Resistance and Genetic Diversity of *Salmonella* Recovered from Imported and Domestic Seafood, **Live only, not recorded**
T12-02 SALINA PARVEEN, Salah Elbashir, John Bowers, Tom Rippen, Jurgen Schwarz, Michael Jahncke, Angelo DePaola, University of Maryland Eastern Shore, Princess Anne, MD, USA
- 3:00 Antimicrobial Effects of Nisin and Grape Seed Extract on *Listeria monocytogenes* on Cooked Shrimp (*Litopenaeus vannamei*) by Metabolomics
T12-03 HONGSHUN YANG, Xue Zhao, National University of Singapore, Singapore
- 3:15 Frontiers in Pressure-based Pasteurization: Cost Optimization by Synergism with Natural Bactericidal and Bacteriocin Compounds
T12-04 ALIYAR FOULADKHAH, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- 3:30 Antimicrobial Activity of Hydrogen Peroxide, with and without Neutralization, against *Listeria monocytogenes* on the Surface of High-moisture Cheese
T12-05 BENJAMIN ROBINSON, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- T13 Technical Session 13 – Communication Outreach and Education**
- 2:30 U.S. Consumers' Flour Handling and Recall Knowledge
T13-01 YAOHUA FENG, Juan Archila, Purdue University, West Lafayette, IN, USA

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- 2:45 The Role of Hands in the Cross-Contamination of
T13-02 Kitchen Surfaces When Preparing a Meal in a Consumer-style Kitchen
 MARGARET KIRCHNER, Donald W. Schaffner, Sheryl Cates, Chris Bernstein, Benjamin Chapman, Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA
- 3:00 Determinants of Food Thermometer Use and Poultry
T13-03 Washing among Canadian Consumers
 IAN YOUNG, Fatih Sekercioglu, Richard Meldrum, Ryerson University, Toronto, ON, Canada
- 3:15 Consumer Preparation and Thermometer Use for Cooking Not-Ready-to-Eat Frozen, Breaded Poultry Products and Vegetables: Findings from an Observational Study
T13-04 CHRIS BERNSTEIN, Ellen Shumaker, Sheryl Cates, Lisa Shelley, Rebecca Goul 2020 Program Book Covers 10.22 v1 ter, Lydia Goodson, Margaret Kirchner, Catherine Sander, Lee-Ann Jaykus, Benjamin Chapman, U.S. Department of Agriculture – FSIS, Washington, D.C., USA
- 3:30 Content Analysis of Online Flour-based Recipes: Cookies,
T13-05 Cookie Dough, and Egg Noodles
 Tressie Barrett, Juan Archila, YAOHUA FENG, Purdue University, West Lafayette, IN, USA
- 3:45 Value of Interactivity in Online Training: Assessment of
T13-06 Interactivity Level in an Online Training Program
 STEPHANIE MAGGIO, North Carolina State University, Raleigh, NC, USA

T14 Technical Session 14 – General Microbiology

- 2:30 The Impact of Different Osmotic Stresses on the
T14-01 Survival, Growth and Detection of *Aeromonas hydrophila*
 Luxin Wang, WENBIN WANG, University of California, Davis and Jiangsu Ocean University, Davis, CA, USA
- 2:45 Heavy Metal Tolerance of *Salmonella* Typhimurium
T14-02 Strains with *Salmonella* Genomic Island 3
 CARMEN CANO, Joao Carlos Gomes-Neto, Andrew Benson, Byron Chaves, University of Nebraska-Lincoln, Lincoln, NE, USA
- 3:00 Application of the Human Intestinal Enteroid System for
T14-03 Culturing Infectious Norovirus Recovered from Surface Swabs
 KATIE OVERBEY, Kellogg Schwab, Johns Hopkins University, Baltimore, MD, USA
- 3:15 *Lactobacillus casei* expressing Internalins AB Genes
T14-04 of *Listeria monocytogenes* Protects Caco-2 Cells from Listeriosis-associated Damages under Simulated Intestinal Conditions
 MOLOKO MATHIPA, Mapitsi Thantsha, University of Pretoria, Pretoria, South Africa
- 3:45 Two Multiplex Real-time PCR Assays for the Detection
T14-05 of > 30 Beverage-relevant Beer Spoilage Bacteria
 Astrid Groenewald, Cordt Groenewald, STEVEN WAGNER, Benjamin Junge, Kornelia Berghof-Jaeger, BIOTECON Diagnostics, Potsdam, Germany

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GENERAL SESSION

JOHN H. SILLIKER LECTURE

AN INTERVIEW WITH PETER BEN EMBAREK

PETER K. BEN EMBAREK, PH.D.

WEDNESDAY, OCTOBER 28



International Food Safety Authorities
Network (INFOSAN) Management
Department of Nutrition and Food
Safety
World Health Organization (WHO)
Geneva, Switzerland

Join Dr. Peter K. Ben Embarek in an in-depth discussion and question-and-answer session, moderated by Dr. Leon Gorris, Food Safety Expert in Nijmegen, The Netherlands.

Dr. Ben Embarek will provide updates and information on how the World Health Organization (WHO), together with partners, is responding to the COVID-19 pandemic, providing nutrition and food safety guidance and advice for governments, food businesses, health workers, and the general public, to maintain good health and prevent malnutrition in all its forms.

Dr. Peter K. Ben Embarek currently works with the World Health Organization (WHO) at its Geneva, Switzerland headquarters, where he manages WHO's International Food Safety Authorities Network (INFOSAN), covering food-related issues as part of the WHO assessment and response efforts to new and emerging public health issues, such as COVID-19, MERS-CoV, Avian Influenza, and SARS. Dr. Ben Embarek is also head of the unit covering the monitoring of nutrition and food safety events in the Department of Nutrition and Food Safety.

Dr. Ben Embarek was previously with WHO's China Office, where he provided policy and technical advice to the government of China on food safety and nutrition issues. In 2001, he joined WHO headquarters in Switzerland, where he worked in lending support to Member States on how to develop and strengthen integrated and multisectoral national food safety strategies and policies. He was also responsible for the microbiological aspects of food safety matters in the work of WHO, including the development of microbiological risk assessment work at the international level. From 2014–2017, he managed the WHO MERS-CoV Virus Task Force and coordinated the investigations into the animal source of the disease.

Dr. Ben Embarek received his M.Sc. in Food Science and Technology and his Ph.D. in Food Safety, both from the Royal Agricultural and Veterinary University of Copenhagen, Denmark.

WEDNESDAY MORNING, OCTOBER 28

9:00 A.M.

General Session – John H. Silliker Lecture

Welcome and Introduction of Session

Kali Kniel, IAFP President

An Interview with Peter Ben Embarek

Interviewer—Leon Gorris, Food Safety Expert

Lecture—Peter Ben Embarek, World Health Organization

Closing Remarks

Kali Kniel, IAFP President

10:00 A.M. – 12:00 P.M.

S44 Multidisciplinary Perspectives on *Salmonella* Reading Illnesses Linked to Turkey**Organizers and Convenors: Alida Sorenson, Matthew Wise**

Epidemiology

Meat and Poultry Safety and Quality

10:00 *Salmonella* Reading Infections Associated with Raw Turkey Pet Food, Minnesota, 2018

SEAN BUUCK, Minnesota Department of Health, St. Paul, MN, USA

10:25 Multistate Outbreak of *Salmonella* Reading Infections Linked to Raw Turkey Products, 2018–2019

COLIN BASLER, Centers for Disease Control and Prevention, Atlanta, GA, USA

10:50 *Salmonella* Reading Outbreak: the FSIS Perspective
DOUG NOVEROSKE, U.S. Department of Agriculture-FSIS, Washington, D.C., USA11:15 Outbreak of *Salmonella* Reading Infections Linked to a Community Dinner
OLUWAKEMI ONI, Iowa Department of Public Health, Des Moines, IA, USA11:40 *Salmonella* Reading Outbreak: Industry Perspective
MICHELLE KROMM, Jennie-O, Willmar, MN, USA**S45 What is Ready-to-Eat and How Safe is My Smoothie?****Organizers and Convenors: Michael Bazaco, Sherri McGarry**

Produce

General Microbiology

Risk Assessment

10:00 Outbreaks Linked to Healthy Foods
LAURA GIERALTOWSKI, Centers for Disease Control and Prevention, Atlanta, GA, USA10:30 What is Ready-to-Eat?
JENNY SCOTT, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA**S46 Spoiler Alert! Food Spoilage is Eating Our Lunch!****Organizer: Brienna Larrick****Convenor: Pamela Wilger**

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Food Hygiene and Sanitation

International Food Protection Issues

10:00 The Role of Food Spoilage in the Global Food Insecurity Challenge

ROSA ROLLE, Food and Agriculture Organization, Rome, Italy

10:30 Food Ecology: The Unrecognized Role of Food Spoilage Microorganisms in Challenge Studies

KATHLEEN GLASS, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA

11:00 Food Spoilage Mycology: Detection and Identification of Yeasts and Molds

EMILIA RICO-MUNOZ, BCN Research Laboratories, Rockford, TN, USA

11:30 Case Studies Highlighting Best Practices for Limiting and Preventing Food Spoilage

NICOLE MARTIN, Cornell University, Ithaca, NY, USA

S47 They Get by with a Little Help from Their Friends**Organizers: Elaine Black, Shira Kramer, Ruth Petran****Convenor: Clyde Manuel**

Food Hygiene and Sanitation

Sanitary Equipment and Facility Design

10:00 Biofilm Controls and What Gaps Exist in Our Knowledge?
DEB SMITH, Vikan (UK) Ltd., Swindon, United Kingdom

10:30 Laboratory-grown Multispecies Biofilms and Disinfectant Efficacy Testing

DIANE WALKER, MSU Center for Biofilm Engineering, Bozeman, MT, USA

11:00 Biofilm Communities: New Evidence Linking Foodborne Pathogenic Bacteria to Built Environment Microbiota

HENDRIK DEN-BAKKER, University of Georgia, Center for Food Safety, Griffin, GA, USA

11:30 Regulatory Update on Biofilm Control
KRISTIN WILLIS, EPA, Washington, D.C., USA**S48 How to Protect Foods Delivered to Your Consumers' Doorstep****Organizer and Convenor: Fatemeh Ataei**

Risk Assessment

Microbial Food Spoilage

10:00 How to Maintain Cold Chain to Deliver Safe Food to Consumers

TIA GLAVE, Milk Bar, New York, NY, USA

10:30 Legal/Food Safety Issues in the Meal Delivery Space
BRIAN EYINK, Hogan Lovells U.S. LLP, Washington, D.C., USA11:00 Regulatory Perspective on Meal Kit Delivery
GLENDA LEWIS, U.S. Food and Drug Administration, Washington, D.C., USA

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S49 Novel Technologies for Extended Shelf Life**Organizer: Genevieve Flock****Convenor: Shannon McGraw**Food Packaging
Low Water Activity Foods10:00 Extending Shelf Life with a Protein Derived from Natural Silk
SEZIN YIGIT, Mori, Somerville, MA, USA10:30 Stabilized Foods for Use in Extended Space Flight: Preservation of Shelf Life, Nutrient Content and Acceptability
BARRETT ANN, U.S. Army CCDC – Soldier Center, Natick, MA, USA11:00 Investigation of Microbial Response to Vacuum Microwave Drying Processed Ration Components
DOMINIQUE PACITTO, U.S. Army CCDC – Soldier Center, Natick, MA, USA11:30 Ethylene Co-Vinyl Alcohol (EVOH) as a Functional Barrier against Organic Compounds
DAVID HAGEN, Kuraray America, Inc., Pasadena, TX, USA**S50 Creating Meaningful Quantitative Microbial Risk Assessments Using Imperfect Data****Organizers and Convenors: Joyjit Saha, Kaitlyn E. Casulli, Dennis Seman**Meat and Poultry
Produce
Risk Assessment10:00 From Imperfect Data to Uncertainty Analysis: An Example for *Campylobacter* Risk Assessment in Europe
MAARTEN NAUTA, National Food Institute, Technical University of Denmark, Kgs. Lyngby, Denmark10:30 Case Studies for Using Imperfect Data in Fresh Produce Quantitative Microbial Risk Assessments
DONALD W. SCHAFFNER, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA11:00 Risk Assessment of *Clostridium perfringens* in Cornish Pasties in the United Kingdom
LEON GORRIS, Food Safety Expert, Nijmegen, The Netherlands11:30 Risk Assessment in the Era of Rapid and Digital Food Safety
CLAIRE ZOELLNER, iFoodDecisionSciences, Inc., Seattle, WA, USA**S51 Inspire Future Consumers through Formal and Informal Food Safety Education****Organizers and Convenors: Yaohua (Betty) Feng, Vijay Juneja**Communication Outreach and Education
General Microbiology10:00 Mixed Method to Evaluate Food Safety High School Curricula with Both Surveys and Observation
YAOHUA (BETTY) FENG, Purdue University, West Lafayette, IN, USA10:30 Development of a Curriculum That Integrated Food Safety with Environmental Sciences
KALMIA KNIEL, University of Delaware, Newark, DE, USA11:00 Reaching Youth Audiences through Digital Media and Games: Challenges and Personal Experience
BARBARA CHAMBERLIN, New Mexico State University, Las Cruces, NM, USA11:30 Teacher Motivation to Delivering Food Safety Curricula to Students: Specific Barriers
GREG MCCURDY, Salem Community Schools, Salem, IN, USA**S52 “One Health” Syst-Omics Approach to Combat *Campylobacter* in Agri-Food Chain****Organizer and Convenor: Xiaonan Lu***Sponsored by Genome Canada, Genome BC, Investment of Agriculture Foundation BC*General Microbiology
Meat and Poultry
Pathogens10:00 *Campylobacter* Whole Genome Sequencing: What We Can Learn from These “Big Data”?
EDUARDO TABOADA, National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, MB, Canada10:30 *Campylobacter* Biofilm and Dormancy
XIAONAN LU, Department of Food Science and Agricultural Chemistry, McGill University, Sainte-Anne-de-Bellevue, QC, Canada11:00 *Campylobacter* Antimicrobial Resistance and Its Control in the Agri-Food Chain
QIJING ZHANG, Iowa State University, Ames, IA, USA11:30 Novel Vaccination Approaches to Reduce *Campylobacter* in Poultry
MICHAEL KONKEL, Washington State University, Pullman, WA, USA**RT11 This is How We Do It: Challenges and Strategies for Implementing Water Treatment in the Field****Organizers: Michelle Danyluk, Channah Rock, Faith Critzer****Convenor: Faith Critzer**Fruit and Vegetable Safety and Quality
Pre-harvest Food Safety10:00 Panelists:
FAITH CRITZER, Washington State University, School of Food Science, Pullman, WA, USA
CHELSEA DAVIDSON, U.S. Food and Drug Administration, College Park, MD, USA
TIMOTHY JACKSON, Driscoll's of the Americas, Watsonville, CA, USA
PAUL MONDRAGON, Ag Partners Southwest, Yuma, AZ, USA
VICKI-LYNNE SCOTT, Amigo Farms, Inc., Yuma, AZ, USA
JAY SUGHROUE, BioSafe Systems, Los Angeles, CA, USA

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

- T15 Technical Session 15 – Meat, Poultry, Eggs and Dairy**
- 10:00 Environmental Sources of Lymph Node Infections with Non-typhoidal *Salmonella* in Calves
T15-01 SAMANTHA LOCKE, Nicole Aulik, Donald Sockett, The Ohio State University, Columbus, OH, USA
- 10:15 Prevalence of *Salmonella enterica* in Backyard Chickens in Vermont and Survey of Owners' *Salmonella* Knowledge and Biosecurity Practices
T15-02 MELISSA DECICCO, Andrea Etter, The University of Vermont, Burlington, VT, USA
- 10:30 Withdrawn
T15-03
- 10:45 *Nigella sativa* and Kefir as Antibiotic Alternatives to Promote Growth and Enhance Broiler Health
T15-04 VISHAL MANJUNATHA, Julian Nixon, Greg Mathis, Brett Lumpkins, Zeynep Banu Seydim, Atif Can Seydim, Annel K. Greene, Xiuping Jiang, Clemson University, Clemson, SC, USA
- 11:00 Foodborne Pathogen Surrogates Reduction Using Antimicrobial Interventions Capable of Reduced Water Use Demand during Beef Harvest
T15-05 KOURTNEY DANIELS, Katherine Modrow, Welsey Osburn, Thomas Taylor, Texas A&M University, College Station, TX, USA
- 11:15 Virulence Attenuation Effect of Medium- and Long-chain Fatty Acids on *Listeria monocytogenes*
T15-06 Yuan Yao Chen, Arun Kommadath, Mike Dugan, XIANQIN YANG, Agriculture and Agri-Food Canada, Lacombe, AB, Canada
- 11:30 Protective Cultures Inhibit *Staphylococcus aureus* Growth and Enterotoxin Production
T15-07 SULAIMAN ALJASIR, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- 11:45 *Listeria monocytogenes* in Cheese – A Model to Determine the Concentrations of Undissociated Lactic Acid in Cheese and to Predict Complete Growth Inhibition
T15-08 Ellen Wemmenhove, MARJON WELLS-BENNIK, Marcel Zwietering, NIZO, Ede, The Netherlands
- T16 Technical Session 16 – Produce and Epidemiology**
- 10:00 Role of Plant Type in the Colonization of Mature Fruit by *Salmonella*
T16-01 KELLIE BURRIS, Otto Simmons, Robin Moore, Hannah M. Webb, Lauren Deese, Lee-Ann Jaykus, 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
- 10:15 Chlorine Resistance and Sub-lethal Injury of Long-term Survival Phase *Escherichia coli* in In-Vitro Planktonic Cells and Cells Attached to Romaine Lettuce
T16-02 MANREET BHULLAR, Angela Shaw, Aubrey Mendonca, Ana Monge, Lillian Nabwiire, Kansas State University, Olathe, KS, USA
- 10:30 The Use of International Genomic Data to Complement Traditional Hypothesis-generation Methods during a Multi-provincial *Salmonella* Enteritidis Outbreak Investigation (Canada, 2019)
T16-03 ANNA MANORE, April Hexemer, Rachel McCormick, Marsha Taylor, Eleni Galanis, Victor Mah, Bijay Adhikari, Joy Wei, Yvonne Whitfield, Danielle Reimer, Colette Gaulin, Lorelee Tschetter, Meghan Griffin, Outbreak Management Division, Centre for Food-Borne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Guelph, ON, Canada
- 10:45 Use of Molecular Typing in the Investigation of Cases of Cyclosporiasis, 2019
T16-04 JOEL BARRATT, Katelyn Houghton, Travis Richins, Jana Manning, Carlyne Bennett, Shannon Casillas, Anne Straily, Michael Arrowood, Yvonne Qvarnstrom, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA
- 11:00 Investigating a *Salmonella* Outbreak: How North Carolina Public Health, Environmental Health and Department of Agriculture Collaborated to Find a Source
T16-05 VERONICA BRYANT, Tammra Morrison, Nicole Lee, Temecia Scott, Daniel Gaines, Anita MacMullan, NC Department of Health & Human Services, Raleigh, NC, USA
- 11:15 Retrospective Foodborne Illness Cluster Evaluation, Outbreak Investigation, and Interagency Collaboration
T16-06 Allison Wellman, TYANN BLESSINGTON, Michael Bazaco, Stelios Viazis, Jennifer Beal, U.S. Food and Drug Administration, College Park, MD, USA

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

WEDNESDAY AFTERNOON

1:00 P.M. – 4:00 P.M.

SS1 Food Safety Considerations Relating to COVID-19 Organizers and Convenor: Martin Duplessis

Epidemiology
International Food Protection Issues

- 1:00 COVID-19 Pandemic Impact on Food Safety System
MOEZ SANAA, Department of Risk Assessment, French Agency for Food, Environmental and Occupational Health and Safety (ANSES), Maisons-Alfort, France
- 1:30 Additional Measures for High-touch Surfaces against SARS-CoV-2
LEEN BAERT, Nestle, Vers-ches-les Blanc, Switzerland
- 2:00 Indirect Contact Transmission of Viruses in Retail Foodservice Operations: Critical Gaps in Prevention and Control
KRISTEN GIBSON, University of Arkansas, Fayetteville, AR, USA
- 2:30 SARS-CoV-2 Message in Wastewater
ALBERT BOSCH, University of Barcelona, Barcelona, Spain

1:00 P.M. – 2:30 P.M.

S53 Communicating with Consumers about Outbreaks and Food Safety: Research-based Approaches

Organizers: Sheryl Cates, Aaron Lavallee
Convenor: Chris Bernstein

Communication, Outreach and Education
Epidemiology
Food Safety Education

- 1:00 Changing the Face of Federal Outbreak Communications through Consumer Research
AARON LAVALLEE, USDA Food Safety and Inspection Service, Washington, D.C., USA
- 1:30 Enhancing FDA Messaging through Consumer Research: A Qualitative Study on Safety Alert and Outbreak Advisory
FANFAN WU, Food and Drug Administration, Washington, D.C., USA
- 2:00 Consumer Understanding of CDC Outbreak Communications: The Applications of Qualitative Research
MISHA ROBYN, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA

S54 How to Meet the Food Safety Concerns Surrounding Meat Alternatives

Organizers: Margaret Kirchner, Lily Yang, Stephanie Brown, Nicole Arnold
Convenors: Minh Duong, Stephanie Brown, Margaret Kirchner

Dairy and Other Food Commodities
Food Toxicology
Meat and Poultry

- 1:00 Concerns of Chemical Contaminants Associated with Alternative Meat Products
ANTHONY FLOOD, IFIC, Washington, D.C., USA
- 1:30 Food Safety and Quality Considerations in Production of Alternative Meat Products
STEPHEN GROVE, Nestlé Development Centre – Solon, Solon, OH, USA

- 2:00 Allergen Risks and the Potential for New Allergen Creation in Alternative Meat Products
JOSEPH BAUMERT, University of Nebraska-Lincoln, Lincoln, NE, USA

S55 Foodborne Parasites of Emerging Importance Organizers and Convenors: Sonia Almeria, Alexandre da Silva

Food Defense
Fruit and Vegetable Safety and Quality
Viral and Parasitic Foodborne Disease

- 1:00 Emerging Cases of *Cyclospora cayatanensis* and *Angiostrongylus cantonensis* in the U.S.
BLAINE MATHISON, ARUP Laboratories, Salt Lake City, UT, USA
- 1:30 Importance of Molecular Characterization to Unravel Transmission of Water and Foodborne Parasite *Cryptosporidium*
MONICA SANTIN-DURAN, USDA, ARS, Environmental Microbial and Food Safety Lab, Beltsville, MD, USA
- 2:00 *Trypanosoma cruzi* and Chagas Disease as an Example of a Re-emerging Parasite – Foodborne Transmission
RENATA TROTTA, Instituto Nacional de Controle de Qualidade em Saúde, Fundação Oswaldo, Rio de Janeiro, Brazil

S56 Breeding Crops for Enhanced Food Safety

Organizers: Isabel Walls, Jodi Williams, Paul Zankowski
Convenor: Isabel Walls

Fruit and Vegetable Safety and Quality
Pre-harvest Food Safety

- 1:00 Breeding Crops for Enhanced Food Safety
MAELI MELOTTO, University of California, Davis, CA, USA
- 1:30 Exploring Plant Metabolite Traits That Restrict Enteric Pathogens in Fruit and Vegetables
SHIRLEY A. MICALLEF, University of Maryland, College Park, MD, USA
- 2:00 Genome Sequencing to Assist Maize Breeding for Aflatoxin Reduction
XUEYAN SHAN, Mississippi State University, Mississippi State, MS, USA

S57 A Global Perspective on New Generation of Food Processing/Preservation Techniques for Food Safety: Riding the Tides of Clean Labels

Organizers and Convenors: Yaohua (Betty) Feng, Vijay Juneja

Meat and Poultry
Pathogens

- 1:00 Recent Trends/Advances in Processing/Preservation Techniques and the Applicable Regulations for Food Safety and Quality
JEYAM SUBBIAH, University of Arkansas, Fayetteville, AR, USA
- 1:30 Plant-derived Extracts for Pathogen Control in Foods: Opportunities for Clean Labeling – An Asian Perspective
NEETU TANEJA, National Institute of Food Technology Entrepreneurship and Management, Kundli, India
- 2:00 Adoption of Emerging Technologies by the Food Industry Worldwide: Issues and Challenges
SADHANA RAVISHANKAR, University of Arizona, Tucson, AZ, USA

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S58 Salmonella and Ground Beef – Persistent, Recurring, or Emerging Risk?

Organizers: Laura Gieraltowski, Doug Noveroske, Katherine Marshall, Misha Robyn

Convenors: Katherine Marshall, Misha Robyn

Epidemiology
Meat and Poultry Safety and Quality
Pre Harvest Food Safety

1:00 Burden of *Salmonella* Outbreaks Linked to Ground Beef and Epidemiologic Investigation Challenges
LAURA GIERALTOWSKI, Centers for Disease Control and Prevention, Atlanta, GA, USA

1:30 *Salmonella* Outbreaks Linked to Ground Beef: Industry Perspective on Outbreaks and Prevention
ANGIE SIEMENS, Cargill, Inc., Wichita, KS, USA

2:00 Latest Science on Pre-harvest Interventions to Reduce *Salmonella* in Cattle
KERI NORMAN, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX, USA

S59 Microbial Warfare: The Effect of Native Microbial Communities on the Survival, Growth, and Persistence of Foodborne Pathogens Along the Food Processing Continuum

Organizers: Alexis M. Hamilton, Sarita Raengpradub Wheeler, Hongye Wang, Justin Falardeau

Convenors: Justin Falardeau, Christopher (Adam) Baker, Daniel Weller

Advanced Molecular Analytics
Microbial Modelling and Risk Analysis

1:00 Milk Microbiomes throughout the Dairy Value Chain: Implications on Food Safety
ERIKA GANDA, The Pennsylvania State University, University Park, PA, USA

1:30 Pathogens in the Phyllosphere: A Regulatory Perspective on How Changes in the Microbiome May Affect Food Safety
ANDREA OTTESEN, U.S. Food and Drug Administration, CVM, Laurel, MD, USA

2:00 Microbiota of Built Tree Fruit Processing Environments: Their Potential Role in *Listeria monocytogenes* Persistence
JASNA KOVAC, The Pennsylvania State University, University Park, PA, USA

S60 Linking Predictive Analytics with Artificial Intelligence, Machine Learning, and Other Innovative Technologies to Enhance Risk-based Food Safety Approaches

Organizers and Convenors: Hao Pang, Elizabeth Noelia Williams

Fruit and Vegetable Safety and Quality
Meat and Poultry Safety and Quality
Microbial Modelling and Risk Analysis

1:00 Can New Machine Learning Modeling Tools Improve Quantitative Microbiological Risk Assessments?
HAO PANG, U.S. Food and Drug Administration, College Park, MD, USA

1:30 Machine Learning and Advanced Data Analytics for Food Safety Risk Assessment – Case Study for *Salmonella* in Chicken
MARC ALLARD, U.S. Food and Drug Administration – CFSAN, College Park, MD, USA

2:00 Paper Chromogenic Array Empowered by Machine Learning – A Promising Toolkit for Surveillance and Monitoring of Viable Pathogens in Food
BOCE ZHANG, University of Massachusetts, Lowell, MA, USA

S61 Regulatory Testing for Viruses and Parasites: The Crossroads between Public Health and Industry

Organizers and Convenors: Alexandre da Silva, Ken Yoshitomi

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

1:00 Application of Regulatory Methods to Estimate the Prevalence of Foodborne Viruses and Parasites in Produce
WILLIAM BURKHARDT, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, Mobile, AL, USA

1:30 Hurdles and Rewards When Developing ISO Standard for Detection of Parasites
RACHEL CHALMERS, Public Health Wales, Swansea, United Kingdom

2:00 Viral Evolution and Its Impact on Diagnostic Methods for the Detection of Foodborne Viruses
JAN VINJÉ, Centers for Disease Control and Prevention, Atlanta, GA, USA

RT12 NGS Identification as an Alternative for Classic Microbiological Subtyping Techniques: What Do We Need to Make This Happen?

Live only, not recorded

Organizer and Convenor: Ma. Rocelle Clavero

Applied Laboratory Methods
Food Safety Assessment, Audit and Inspection
HACCP Utilization and Food Safety Systems

1:00 Panelists:

DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
SASAN AMINI, Clear Labs Inc., Menlo Park, CA, USA
GITANJALI ARYA, Public Health Agency of Canada, Ottawa, ON, Canada
CHRISTOPHE DUFOUR, Mérieux NutriSciences, Cergy Pontoise Cedex, France
THOMAS HAMMACK, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA

T17 Technical Session 17 – Laboratory and Detection Methods

1:00 **T17-01** Addition of Potassium Sulfite Improves Recovery and Detection of *Listeria monocytogenes* from Garlic Powder
JIAOJIE ZHENG, Sarita Raengpradub Wheeler, Andrea Cipriani, Timothy Freier, Wendy McMahon, Mérieux NutriSciences, Crete, IL, USA

1:15 **T17-02** Automated Surface-scanning Detection of *Salmonella* Typhimurium on Chili Pepper
HWA-EUN LEE, In Young Choi, Vijayalakshmi Selvakumar, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea

1:30 **T17-03** Multiple Detection of Murine Norovirus, *Salmonella* spp., *Shigella* spp., and Shiga Toxin-producing *Escherichia coli* from the Same Fresh Produce Portion
OMAR HERNANDEZ, Sofia Arvizu-Medrano, Montserrat Hernandez Iturriaga, Juan Ramiro Pacheco Aguilar, Ana Lorena Gutierrez Escolano, Cleotilde Cancio Lonches, Rocio Morales-Rayas, University of Queretaro, Queretaro, QA, Mexico

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- 1:45 Application of Magnetic Nanoparticles for the Detection of Pathogenic Microorganisms
T17-04 YAN CUI, Yalong Bai, Xianming Shi, Shanghai Jiao Tong University, Shanghai, China
- 2:00 Evaluation of Real-time Nanopore Sequencing for *Salmonella* Serotype Prediction
T17-05 Feng Xu, CHONGTAO GE, Hao Luo, Shaoting Li, Martin Wiedmann, Xiangyu Deng, Guangtao Zhang, Abigail Stevenson, Robert Baker, Silin Tang, Mars Global Food Safety Center, Beijing, China
- 2:15 Single Lab Validation Study for Simultaneous Isolation of Norovirus and Hepatitis A Virus from High Fat Dairy Products
T17-06 EFSTATHIA PAPAFRAGKOU, Diana Ngo, U.S. Food and Drug Administration, Laurel, MD, USA
- T18 Technical Session 18 – Communication, Outreach and Education**
- 1:00 Web-based Game Engages Post-secondary Students in Food Safety and Shifts Perceptions
T18-01 ADRIENNE SHEARER, Dallas Hoover, Jeanne Gleason, Barbara Chamberlin, David Abraham, Pamela Martinez, Jeffrey Klein, Sue Snider, Kalmia Kniel, University of Delaware, Newark, DE, USA
- 1:30 Competing Interests of Food Safety and Food Waste Reduction – What is the Role of Food Date Labels?
T18-02 MELISSA KAVANAUGH, Jennifer Quinlan, Drexel University, Cherry Hill, NJ, USA
- 1:30 Evaluation of the Produce Safety Alliance Grower Training Course: Two Years of Outcomes and Impacts for Small Farms
T18-03 GRETCHEN WALL, Laura Acuña-Maldonado, Elizabeth Bihn, Donna Clements, Connie Fisk, Don Stoeckel, Kristin Woods, Cornell University, Geneva, NY, USA
- 1:45 Empowering Small Manufacturers to Obtain Food Safety Certification by Identifying and Overcoming the Barriers
T18-04 HELEN TAYLOR, Jessica Lacey, Ellen W. Evans, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- 2:00 Food Safety Listening Sessions with Local Food Producers
T18-05 Elizabeth Bihn, LAURA PINEDA-BERMUDEZ, Lindsay Springer, Chelsea Matzen, Cornell University, Geneva, NY, USA
- 2:30 Using the Triple Helix Mechanism to Support Food Safety Development and Its Impact on Food Safety Systems and Commercial Performance.
T18-06 DAVID LLOYD, Cardiff Metropolitan University, Cardiff, South Wales, United Kingdom
- 2:30 P.M. – 4:00 P.M.**
- S62 Alternative Protein Sources for Future Foods: Food Safety Challenges**
Organizer: Brienna Larrick
Convenor: Deann Akins-Lewenthal
Sponsored by ILSI North America Food Microbiology Committee
Food Chemical Hazards and Food Allergy
Food Safety Assessment, Audit and Inspection
- 2:30 Food Safety Considerations for Alternative Protein Sources
CARRIE MCMAHON, U.S. Food and Drug Administration, Office of Food Additive Safety, College Park, MD, USA
- 3:00 Considerations Regarding the Safety of in vitro Cultivated Meat and Fish
PAUL MOZDZIAK, North Carolina State University, Raleigh, NC, USA
- 3:30 Simple Critical Steps for Evaluating Potential Risks of Food Allergy or Celiac Disease from Alternative Protein Sources
RICHARD GOODMAN, University of Nebraska, Lincoln, NE, USA
- S63 Climate Change: Impacts on Food Safety and What Food Safety Professionals Can Do to Prepare and Respond**
Organizers and Convenors: Michael Bazaco, Ewen Todd
Communication, Outreach and Education
Food Safety Culture
International Food Protection Issues
- 2:30 The WHO/FAO Approach to Climate Change and Its Impact on the Safety of the Global Food Supply
PETER BEN EMBAREK, World Health Organization, Geneva, Switzerland
- 3:00 The Impact of Climate Change on Agriculture and Fisheries
EWEN TODD, Ewen Todd Consulting, Okemos, MI, USA
- 3:30 Protecting the Future of Food: Taking Action on Climate Change to Address the Impact on Food Safety
ERIKA AUSTHOF, University of Arizona, Tucson, AZ, USA
- S64 Process Validation – Challenges and Best Practices**
Organizer: Anett Winkler
Convenor: Pablo Alvarez
Food Safety Assessment, Audit and Inspection
HACCP Utilization and Food Safety Systems
Microbial Modelling and Risk Analysis
- 2:30 (How) Could Products for Process Validations be Grouped?
ROY BETTS, Campden BRI, Chipping Campden, United Kingdom
- 3:00 How Many Log Reductions Would be Needed to Achieve a Safe Product?
MARCEL ZWIETERING, Wageningen University, Wageningen, The Netherlands
- 3:30 Does That Work in Practice? A Case Study
ANETT WINKLER, Cargill, Inc., Munich, Germany
- S65 Vive La Résistance: Biocide Resistance Strategies among Foodborne Pathogens**
Organizers: Govindaraj Dev Kumar, Dumitru Macarisin, Divya Jaroni
Convenors: Brenda Kroft, Ikechukwu Oguadinma, Kaylan Hayman
Applied Laboratory Methods
Food Hygiene and Sanitation
Meat and Poultry Safety and Quality
- 2:30 The Genetics of Biocide Resistance and Tolerance among Foodborne Pathogens
MARIA HOFFMANN, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- 3:00 The Long and Short of Bacterial Filaments
BYRON BREHM-STECHER, Iowa State University, Ames, IA, USA
- 3:30 VBNC – No Growth on Plate after Sanitizer Treatment Safe
YEN-CON HUNG, University of Georgia, Griffin, GA, USA

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- S66 Stay out of the Weeds: Three Simpler Things That Accomplish Produce Safety**
Organizers: Michelle Smith, Don Stoeckel
Convenor: Audrey Draper
 Fruit and Vegetable Safety and Quality
 Microbial Modelling and Risk Analysis
 Pre-harvest Food Safety
- 2:30 Let the Sick Worker Rest: The Real Costs and Benefits of Harvest Worker Health and Hygiene Policies
 CRISTINA MCLAUGHLIN, FDA, College Park, MD, USA
- 3:00 Where's Waldo (and his siblings pathogenic *E. coli* or *Cyclospora*): Observational Approaches to Characterize Risks to Water Quality
 DON STOECKEL, Cornell University, Geneva, NY, USA
- 3:30 Kissing Dogs and Other Risks Associated with Animals and Animal Inputs on the Farm
 JEFFREY LEJEUNE, The Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

- S67 Deep Sequencing and Deep Learning: What Can Combining High-throughput Sequencing and Machine Learning Offer the Food Industry?**
Organizers: Sarita Raengpradub Wheeler, Jiaojie Zheng
Convenors: Joelle K. Salazar, Jiaojie Zheng
 Advanced Molecular Analytics
 Microbial Modelling and Risk Analysis
- 2:30 Can We Predict the Future? Introduction to Machine Learning and Its Application to Metagenomics and Whole Genome Sequencing
 XUWEN WIENEKE, Mérieux NutriSciences, Crete, IL, USA
- 3:00 Emerging Applications of Machine Learning in Food Safety: Potentials and Pitfalls with Genomic Data
 XIANGYU DENG, University of Georgia, Center for Food Safety, Griffin, GA, USA
- 3:30 Machine Learning: To Reveal Potential Pathogen Indicators When Other Approaches Cannot
 JASNA KOVAC, The Pennsylvania State University, University Park, PA, USA

- S68 Pesticides in Food – The Big Picture: Registration, Monitoring, Enforcement**
Organizers: Randolph Duverna, John Johnston, Shanker Reddy
Convenors: Charlotte Liang, Shanker Reddy
 Applied Laboratory Methods
 Food Chemical Hazards and Food Allergy
 Food Safety Assessment, Audit and Inspection
- 2:30 Pesticide Residues in Foods: An Overview of Registration and Tolerance Setting at the U.S. EPA
 DAVID HRDY, U.S. EPA, Washington, D.C., USA
- 3:00 U.S. National Residue Program
 JOHN JOHNSTON, U.S. Department of Agriculture – FSIS, Fort Collins, CO, USA
- 3:30 Industry Perspective on Federal Pesticide Registration, Monitoring and Enforcement
 CHERYL CLEVELAND, BASF, Research Triangle Park, NC, USA

- RT13 Beyond the Lab, What Does Culture-independent Diagnostic Tests (CIDTs) Mean for Industry and Public Health Officials?**
Organizers and Convenors: Sherri McGarry, Michael Roberson
 Epidemiology
 Novel Laboratory Methods
 Pathogens
- 2:30 Panelists:
 STEVEN HERMANSTY, Conagra Brands, Chicago, IL, USA
 MAILE HERMIDA, Hogan Lovells U.S. LLP, Washington, D.C., USA
 CARRIE RIGDON, Minnesota Department of Agriculture, Saint Paul, MN, USA
 ROBERT TAUXE, Centers for Disease Control and Prevention, Atlanta, GA, USA

- RT14 Mutual Reliance – FDA's Vision for an Integrated Food Safety System**
Organizers: Joseph Corby, Steven Mandernach
Convenor: Steven Mandernach
 Sponsored by Association of Food & Drug Officials (AFDO)
 Food Safety Assessment, Audit and Inspection
 Viral and Parasitic Foodborne Disease
- 2:30 Panelists:
 JOSEPH CORBY, Association of Food and Drug Officials, New York, NY, USA
 FRANK GREENE, CT Dept. of Consumer Protection, Hartford, CT, USA
 ERIK METTLER, FDA/ORA, Rockville, MD, USA
 PAMELA MILES, Virginia Department of Agriculture and Consumer Services, Richmond, VA, USA
 MARK SESTAK, Alabama Dept. of Public Health, Montgomery, AL, USA

- T19 Technical Session 19 – Low-water Activity Foods**
- 2:30 Modeling *Salmonella* Inactivation in Flour under Dynamic Heating Conditions
T19-01 KAITLYN CASULLI, Jiin Jung, Kirk Dolan, Donald W. Schaffner, Michigan State University, East Lansing, MI, USA
- 2:45 Inactivation Kinetics of *Salmonella* spp., Shiga Toxin-producing *Escherichia coli* (STEC), *Listeria monocytogenes*, and a Surrogate (*Pediococcus acidilactici*) on Macadamia Nuts, Dried Apricots, and Raisins Following Treatment of Low-temperature, Vacuum-assisted Steam
T19-02 JENNIFER ACUFF, Claire Marik, Kim Waterman, Jian Wu, Daniel Gallagher, Monica Ponder, Virginia Tech, Blacksburg, VA, USA
- 3:00 Thermal Death Kinetics of *Salmonella* Enteritidis in Peanut Butter and the Effect of Water Activity
T19-03 REN YANG, Lina Wei, Jianwu Dai, Juming Tang, Washington State University, Pullman, WA, USA
- 3:15 Predicting Pathogen Survival in Soy Sauce-based Acidified Foods by Using Real Food-matrix Data: An Academia-industry Collaboration
T19-04 ONAY BURAK DOGAN, Jayne Stratton, Jennifer Clarke, Bing Wang, University of Nebraska-Lincoln, Lincoln, NE, USA
- 3:30 Development of a Monte Carlo Simulation Model to Predict Pasteurized Fluid Milk Spoilage Due to Post-pasteurization Contamination
T19-05 SAMANTHA LAU, Sarah Murphy, Michael Phillips, Nicole Martin, Martin Wiedmann, Cornell University, Ithaca, NY, USA

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POSTERS

MONDAY POSTERS

P1 Poster Session 1 – Beverages and Acid/Acidified Foods, Food Chemical Hazards and Food Allergens, Food Toxicology, Laboratory and Detection Methods, Meat, Poultry and Eggs, Packaging, Retail and Food Service Safety, Seafood, Water

Beverages and Acid/Acidified Foods

- P1-01 Multi-stress Adaptation of *Lactobacillus plantarum* Enhances Its Survival in Different Food Matrices and in Simulated Gastrointestinal Fluids — Thobeka Dlangalala, Moloko Mathipa, MAPITSI THANTSHA, University of Pretoria, Pretoria, South Africa
- P1-02 Synergistic Antimicrobial Activities of Essential Oils Against Lactic Acid Bacteria in Organic Hallabong Tangor (*Citrus kiyomi* × *Citrus ponkan*) Juice — JIWON KIM, Jiwon Oh, Jee-Hoon Ryu, Korea university, Seoul, South Korea
- P1-03 Evaluation of Foodborne Pathogens Die-off in Back-sweetened Wine and Hard Cider Models — ZIRUI RAY XIONG, Anqi Chen, Glycine Zhujun Jiang, Alisha Lewis, Christine Sislak, Patrick Gibney, Randy Worobo, Cornell University, Ithaca, NY, USA
- P1-04 Effect of Heat and Acidic pH on *Salmonella* Resistance in Tomato and Mango Extracts — JESÚS ANDRÉS TORRES-VELEZ, Montserrat Hernandez-Iturriaga, Universidad Autónoma de Querétaro, Querétaro, QA, Mexico

Food Chemical Hazards and Food Allergens

- P1-05 Effect of Storage Time and Temperature on the Recovery of Milk and Peanut Residue from Environmental Swabs — JESSICA HUMPHREY, Shyamali Jayasena, Steve L. Taylor, Joseph Baumert, University of Nebraska-Lincoln, Lincoln, NE, USA
- P1-06 Airline Food Allergy Risk Communication — Ayman Safi Abdelhakim, ELIZABETH C. REDMOND, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P1-07 Determination of Aflatoxin B1 in Oil Seeds Using Immunomagnetic Solid Phase Extraction — Xi Yu, HONGSHUN YANG, National University of Singapore, Singapore
- P1-08 Droplet Digital PCR for Detection of Allergenic Peanut — ANNE EISCHEID, U.S. Food and Drug Administration, College Park, MD, USA
- P1-09 Incompatibility Group FIB Plasmid-positive *Salmonella enterica* Serovar Typhimurium Isolates from Food Animal Sources — NESREEN ALJAHDALI, Kennedi Weston, Joanna Deck, Bijay Khajanchi, Yasser Sanad, Jing Han, Rajesh Nayak, Steven Foley, FDA National Center for Toxicological Research, USA and King Abdul-Aziz University, KSA, Jefferson, AR, USA
- P1-10 Estimation of Variance Associated with Measuring Gluten Content in an Oat Flour Sample — GIRDHARI SHARMA, Marion Pereira, Binaifer Bedford, Shizhen Wang, Paul Wehling, Mark Arlinghaus, Josh Warren, Thomas Whitaker, Lauren Jackson, Stuart Chirtel, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-11 Effects of Emulsifiers on Intestinal Barrier Integrity and Exposure to Food Allergens — SEFAT KHUDA, Ann Nguyen, Girdhari Sharma, Andrew Do, Mohammad Alam, Kristina Williams, Kannan Balan, Marion Pereira, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA

- P1-12 Withdrawn
- P1-13 Detection of Single Kernel Aflatoxin and Fumonisin Contamination Using Visual Factors Associated with Mycotoxin Contamination through Reflectance Spectroscopy — RUBEN CHAVEZ, Matthew J. Stasiewicz, University of Illinois, Champaign, IL, USA
- P1-14 Development and Validation of Aflatoxin M1— ELISA Assay for Milk Products — BYUNGCHUL KIM, Thu Huynh, Wonda Wonde-Mariam, Martin Easter, Hygiene, Santa Ana, CA, USA
- P1-15 Withdrawn
- P1-16 Withdrawn
- P1-17 Monitoring and Evaluation of 18 Different Metals in U.S. Meat and Poultry — ALEXANDER DOMESLE, Oliver Ou, John Johnston, Eric Flynn, Patrick Sisco, Randolph Duverna, U.S. Department of Agriculture – FSIS, Washington, D.C., USA
- P1-18 Withdrawn
- P1-19 Hazard Ranking in Smoke-cured Fish in Ghana — KENNEDY BOMFEH, Liesbeth Jacxsens, Wisdom Kofi Amoia Awua, Bruno De Meulenaer, Ghent University, Ghent, Belgium
- P1-20 Removal of Heavy Metal Contaminants from Skin Using Commercially Available Soaps — MICHAEL MACINGA, Chip Manuel, Chris Fricker, David Macinga, GOJO Industries, Akron, OH, USA
- P1-21 Validating and Verifying Allergen Cleaning: A Case Study on Traces of Milk, Soy and Egg Allergens in a Processed Poultry Manufacturing Facility — Chitsiri Rachtanapun, Juthamas Tantala, Panida Pisaisawat, Wanida Mukkana, SAENGRAWEE JONGVANICH, Yodlak Saengprao, Wipa Kongsakul, Athaphon Phukhao, Scott Egan, 3M Thailand Limited, Bangkok, Thailand
- P1-22 Detection and Monitoring of 16 PFAS in Beef — Alexander Domesle, J. Emilio Esteban, IVAN LENOV, U.S. Department of Agriculture – FSIS, St. Louis, MO, USA
- P1-23 Withdrawn
- P1-24 Performance Verification of an ELISA-based Assay and a Rapid Lateral Flow Immunoassay for Specific Quantification and Detection of Egg White Protein in Food Matrices, Clean-in-Place (CIP) Rinse Water and Environmental Samples — GABRIELA LOPEZ VELASCO, Patrick Mach, Sarah Sykora, 3M, St. Paul, MN, USA
- P1-25 Verification Study to Assess the Detection of Food Allergens in Swabs and Clean-in-Place (CIP) Rinse Water Utilizing Rapid Lateral Flow Immunoassays in the Presence of Commercial Sanitizers — GABRIELA LOPEZ VELASCO, Patrick Mach, Sarah Sykora, 3M, St. Paul, MN, USA
- P1-26 Temporal Co-occurrence of Antimicrobial Class Residue in Tissue and Antimicrobial Sensitivity Profile from Cecal Content Strains — Gamola Fortenberry, Uday Dessai, Berhanu Tameru, Sheryl Shaw, EMILIO ESTEBAN, USDA Food Safety & Inspection Service, Washington, D.C., USA
- P1-27 Extraction Efficacy of Three Different Extraction Buffers in Solubilizing Proteins from Nine Commercially Important Fish Species — TENGFEI LI, Justin Marsh, Shyamali Jayasena, Philip Johnson, Joseph Baumert, University of Nebraska-Lincoln, Lincoln, NE, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

- P1-28 Detection of Food Adulterants Using Multi-spectral Imaging — BRADY CARTER, Bradley Taylor, Neutec Group, Farmingdale, NY, USA
- P1-29 Development of a Microfluidic Paper-based Analytical Device to Detect Allergens in Food Samples — MARTI HUA, Xiaonan Lu, Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada

Food Toxicology

- P1-30 Withdrawn
- P1-31 Effect of Probiotic Bacteria on Fungal Growth and Mycotoxin Production by *Aspergillus* spp. — CHIH-HSUAN CHANG, Yung-Chen Hsu, Dawit Gizachew, W. T. Evert Ting, Purdue University Northwest, Hammond, IN, USA
- P1-32 Withdrawn
- P1-33 Evaluation of *Listeria monocytogenes* Composite Enrichment with and without Food Matrix — CHRISTINE ECKERT, Joelle K. Salazar, Diana Stewart, Kristin Pfeiffer, Megan Fay, Vanessa Cranford, Mary Lou Tortorello, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

Laboratory and Detection Methods

- P1-34 Comparative Study between 3M™ Petrifilm™ Aerobic Count Plate and Conventional Agar Method for Setting Expiration Date of Ready-to-Eat Food Sold by Japan's Convenience Store — TAKAYUKI SUDA, Yuji Kanai, Satoshi Fujii, Tetsuya Mori, 3M Japan Limited, Kanagawa, Japan
- P1-35 A Novel Chromogenic Detection System for the Isolation of *Arcobacter butzleri*, *Arcobacter cryaerophilus*, and *Arcobacter skirrowii* — PAUL T. NGUYEN, Linda M. Wind, John E. Grosse, Lawrence Restaino, R & F Products, Inc., Downers Grove, IL, USA
- P1-36 Comparisons of Diluting Solvents to Enhance the Vaporization of Essential Oils — JIWON OH, Jiwon Kim, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P1-37 Mammalian Cell-based Immunoassay for Detection of Viable *Salmonella enterica* Serovar Enteritidis from Poultry Products — LUPING XU, Xingjian Bai, Arun Bhunia, Department of Food Science, Purdue University, West Lafayette, IN, USA
- P1-38 Assessing the Ability of Acid Treatment and Plating on Selective and Non-selective Differential Agar Plates to Improve the Recovery of *Shigella* and Enteroinvasive *Escherichia coli* (EIEC) Post Enrichment — OLUWASEUN AGBAJE, Jina Kim, Robert Duvall, Rachel Binet, U.S. Food and Drug Administration, College Park, MD, USA
- P1-39 Analysis of Five Methods for the Concentration of Genetic Material from the Apple Peel — ALEXIS HAMILTON, Faith Critzer, Washington State University, School of Food Science, Pullman, WA, USA
- P1-40 Process Validation of Hepatitis A Virus Inactivation in Spinach Using *Staphylococcus carnosus* CS 300 Grown with 20% Glycerol at 42°C — Alexander Bowman, DORIS D'SOUZA, University of Tennessee, Knoxville, TN, USA
- P1-41 Immunodetection of Meat Adulterants — XINGYI JIANG, Qinchun Rao, Florida State University, Tallahassee, FL, USA

- P1-42 Evaluation of a Microbial ATP Bioluminescence-based Method as a Rapid Detection System for Testing Commercial Sterility in Ultra High Temperature (UHT) Pasteurized Milk — KAYLEEN WAN WAN, Yajuan Gong, Subiao Lu, Hongkun Wang, Gabriela Lopez Velasco, 3M China, Shanghai, China
- P1-43 Impact of Gas Nanobubbles on the Efficacy of Commonly Used Antimicrobials in the Food Industry — ARSHDEEP SINGH, Amninder Singh Sekhon, Phoebe Unger, Monipel Ansong, Minto Michael, Washington State University, Pullman, WA, USA
- P1-44 Detection of *Listeria monocytogenes* in Mixed Environmental Sponge Swab Enrichment Cultures Using the bioMérieux VIDAS® Lis Assay or USDA and FDA Reference Methods — Ryan Zimmerman, LEANNE HAHN, Sue Kelly, Laurie Post, Brian Farina, Charles Deibel, Deibel Laboratories, Inc., Madison, WI, USA
- P1-45 Independent Evaluation of the Real-time BAX® PCR Assay for *Listeria monocytogenes* in Food Samples for Health Canada Compendium Inclusion — NISHA CORRIGAN, Carlos Leon Verlarde, Saleema Saleh-Lakha, Kathy Wilson, Shannon Bullard, Qualicon Diagnostics, LLC, New Castle, DE, USA
- P1-46 A Novel Optical Biosensor Based on Target-induced Immunomagnetic Beads Aggregation for Label-free and Portable Detection of Enrofloxacin — YAFANG SHEN, Fei Jia, Aoming Liang, Huang Dai, Yaping Peng, Yingchun Fu, Yanbin Li, College of Biosystems Engineering and Food Science, Zhejiang University, Hangzhou, China
- P1-47 Withdrawn
- P1-48 BAX® System SalQuant from Farm to Final Product: What's Your Number? — APRIL ENGLISHBEY, Savannah Forgey, Marcos X. Sanchez-Plata, Tyler Stephens, Hygiene, Magnolia, TX, USA
- P1-49 Evaluation of a Loop-mediated Isothermal Amplification (LAMP) – Bioluminescent Assay for *Salmonella* Detection in Boot Swabs from Brazilian Poultry Industry — VANESSA TSUHAKO, Daiane Martini, Jaqueline Hanauer, 3M, Sumaré/SP, Brazil
- P1-50 Evaluation of a Loop-mediated Isothermal Amplification (LAMP) – Bioluminescent Assay for *Campylobacter* Detection in Cooked Breast Chicken from the Brazilian Poultry Industry — VANESSA TSUHAKO, Felipe Zattar, Cristiano Magalhães, 3M, Sumaré/SP, Brazil
- P1-51 Performance of Rapid Enumeration Methods for Indicators in Brazilian Concentrated Juices — VANESSA TSUHAKO, Fernanda Campos, Amanda Geraldi, Juliana Contiero, 3M, Sumaré/SP, Brazil
- P1-52 MALDI-TOF MS Analysis for Simultaneous Discrimination of Cereulide-producing *Bacillus cereus* and Psychrotolerant *Bacillus cereus* Group from Other *B. cereus* Group — NAOMI TAKAHASHI, Satomi Nagai, Akane Fujita, Yousuke Ido, Kenji Kato, Ayumi Saito, Yuka Moriya, Yumiko Tomimatsu, Naoko Kaneta, Yoshinori Tsujimoto, Hiroto Tamura, Meiji Co., Ltd., Tokyo, Japan
- P1-53 Evaluation of Rapid *Cronobacter* and *Salmonella* Detection in Powder Infant Formula and Related Matrices Using Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assay Compared with the GB Methods — Chenyan Niu, Jichao Liu, Feng Liu, Yong Jiang, Xuena Lv, Xiqing Wang, Zhiyong Dai, Can Yi, Jun Zhou, Qing Tao, Yan Huang, Jianwei Huo, Yajuan Gong, Subiao Lu, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-54 Evaluation of a Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assay for *Salmonella* Detection in Yogurt and Yogurt-based Drinks as Compared to the GB Method — Jianwei Huo, Yan Huang, Subiao Lu, Wei Zhang, Jingqiu Lan, Yanmei Song, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA

- P1-55 Rapid Detection of STEC and *Salmonella* in Beef and Poultry Matrices Using Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assays — Jesse Goseland, Kong Thao, Christina Barnes, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-56 Comparative Evaluation of the 3M™ Molecular Detection Assay 2 – STEC Gene Screen for the Detection of STEC in a Variety of Matrices — Leslie Thompson-Strehlow, Kateland Koch, Benjamin Bastin, Joe Benzinger, Erin Crowley, James Agin, Micki Rosauer, Christina Barnes, Lisa Monteroso, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-57 Automated System for Pathogen Detection Using Loop-mediated Isothermal Amplification (LAMP)–Bioluminescence Detection — Gregory Sitton, Ryan Ghan, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-58 Evaluation of a Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assay for *Salmonella* Detection in Ice Cream as Compared to the GB Method — Jianwei Huo, Subiao Lu, Yunxia Wang, Dongmei Wang, Yang Liu, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-59 Evaluation of Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assays for Pathogen Detection in Food Matrices from Mexican Super Market — Rolando Hernández-Espinoza, Javier Hernández, Berenice Castañeda, Sandra Conde, César Rivas, Gustavo González-González, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P1-60 Development of a Test Method to Evaluate the Inhibitory Properties of Swabbing Materials — Guy Joseph Ejenguele, Martha Ntsame Ondo, Alina Ciobanu, Benoit Brouillette, MARIE-HELENE DUFRESNE, Labplas Inc., Ste-Julie, QC, Canada
- P1-61 Comparison of Sampling Devices for Detection of *Listeria monocytogenes* from Stainless Steel and Plastic Surfaces — DIANA STEWART, Arlette Shazer, Joelle K. Salazar, Mary Lou Tortorello, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P1-62 Performance Evaluation of a Loop-mediated Isothermal Amplification (LAMP)–Bioluminescent Assay for Rapid Detection of *Salmonella* spp. in Boot Swabs, Feces and Visceral Flour from Brazilian Poultry Industry — DAIANE MARTINI, Vanessa Tshako, Sylnei Santos, Camila Plieski, 3M, Chapecó, Brazil
- P1-63 Acid Treatments for Improved Detection and Isolation of *E. coli* O157:H7 from Mung Bean Sprout Irrigation Water — WILLIS FEDIO, Ruben Zapata, Lyssa White, Yatziri Preciado, Brian Lorber, Ken Yoshitomi, Karen Jinneman, Steve Weagant, New Mexico State University, Las Cruces, NM, USA
- P1-64 Improved Detection Efficiency with Modified Enrichment Broth and qPCR with *lap* Primer and Tm Value for *Listeria monocytogenes* in Golden Needle Mushroom — YEONGEUN SEO, Jihye Ryu, Kyoung-Hee Choi, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P1-65 Withdrawn
- P1-66 The Use of a Novel Selective Supplement in the Rapid Recovery and Detection of Pathogenic Gram-negative Organisms from Challenging Food Matrices — SIMON ILLINGWORTH, Nevin Perera, Solus Scientific Solutions Ltd., Mansfield, United Kingdom
- P1-67 Application of a High-throughput Targeted Amplicon Sequencing Approach for Detection of Foodborne Pathogens from Produce Samples — ISHA PATEL, Mark Mammel, Zhihui Yang, Michael Kulka, Jayanthi Gangiredla, Efsthathia Papafragkou, U.S. Food and Drug Administration, Laurel, MD, USA
- P1-68 Withdrawn
- P1-69 Evaluations of Lactose Broth and Three Buffered Pre-enrichment Broths for Use in the Bacteriological Analytical Manual *Salmonella* Culture Method for the Analysis of Low Microbial Load/Low-moisture Foods — ANDREW JACOBSON, Hua Wang, Anna Maounounen-Laasri, Lanlan Yin, Thomas Hammack, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-70 Detection of *Campylobacter jejuni* in Water Using Dead-end Ultrafiltration and Its Application for Field Testing — LISA HARRISON, Kannan Balan, Mauricio Durigan, Kelli Hielt, Uma Babu, U.S. Food and Drug Administration – CFSAN, Laurel, MD, USA
- P1-71 Environmental Indicators for Norovirus and Hepatitis A in the Agricultural Environment: A Systematic Review — Courtney Victor, Karen Ellis, Frederica Lamar, JUAN S. LEON, Emory University, Atlanta, GA, USA
- P1-72 ISO 16140-2 (2016) Performance Assessment of a New Protocol for Iq-Check® *Cronobacter* spp. and RAPID' Sakazakii for the Detection of *Cronobacter* spp. in 375 g Samples of Infant Formula, Infant Cereals with and without Probiotics — Lizaig Gouguet, Gaëtan Plouzennec, Rebecca Dievert, Emilie Chauveau, Christophe Quiring, Gulustan Kuccuk, Yannick Bichot, Jean-Philippe Tourniaire, Nicholas Nguyen Van Long, FLORENCE POSTOLLEC, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France
- P1-73 Assessment of a Real-time PCR Method for the Detection of Shiga Toxin-producing *Escherichia coli* — Muriel Bernard, Cécile Bernez, Christophe Quere, David Crabtree, Dean Leak, Ana-Maria Leonte, Nicholas Nguyen Van Long, FLORENCE POSTOLLEC, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France
- P1-74 ISO 16140-2 (2016) Performance Assessment of a Shorter Protocol for Iq-Check® Solutions for the Detection of *Listeria* spp. and *L. monocytogenes* in Production Environmental Samples — Sarah Peron, Gaëtan Plouzennec, Emilie Chauveau, Laurent Jain, Christophe Quiring, Sophie Pierre, Jean-Philippe Tourniaire, Mike Clark, Nicholas Nguyen Van Long, FLORENCE POSTOLLEC, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France
- P1-75 ISO 16140-2 (2016) Method Comparison and Interlaboratory Study of GENE-up® EHEC Method for the Detection of Shiga Toxin-producing *Escherichia coli* (STEC) and STEC from O26, O103, O111, O145 and O157 Serogroups in Raw Meat, Raw Milk and Raw Milk Cheeses — Justine Baguet, Cécile Bernez, Christophe Quere, Nicholas Nguyen Van Long, FLORENCE POSTOLLEC, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France
- P1-76 ISO 16140-2 (2016) Method Comparison of TEMPO® CAM Method for the Enumeration of Thermotolerant *Campylobacter* spp. in Raw Poultry and Ready-to-Cook Poultry Products — Sarah Peron, Gaëtan Plouzennec, Nicholas Nguyen Van Long, FLORENCE POSTOLLEC, Maryse Rannou, ADRIA Food Technology Institute, Quimper, France

- P1-77 **Direct Metatranscriptome RNA-Seq and Multiplex RT-PCR Amplicon Sequencing on Nanopore MinION – Promising Strategies for Multiplex Identification of Viable Pathogens in Food** — MANYUN YANG, Mingqun Xu, Boce Zhang, UMass Lowell, Lowell, MA, USA
- P1-78 Validation of the 3M™ Petrifilm™ Rapid *E. coli*/Coliform Count Plate for the Enumeration of Coliform in a Variety of Foods Against the Canadian Reference Method (MFHPB-31) — SALEEMA SALEH-LAKHA, Carlos Leon-Velarde, Jennifer Fischer-Jenssen, Emily Wilson, Anli Gao, Shu Chen, Ana Lozano, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-79 Evaluation of the BAX® System Real-time PCR Assays for the Detection of *E. coli* O157:H7 and STEC O121 from Stainless Steel Surfaces — JULIE WELLER, Anastasia Likanchuk, Victoria Kuhnel, Qualicon Diagnostics LLC, A Hygiene Company, New Castle, DE, USA
- P1-80 Flow Cytometry Detection Studies with Plant-based and Alternative Beverage Drinks — PATRICIA RULE, Michelle Keener, Ary Wellborn, J. Stan Bailey, bioMérieux Inc., Hazelwood, MO, USA
- P1-81 The Evaluation of the Application of a Smartphone with Colony Distinguishing and Counting AI — KIYOKO TOMATSU, Shingo Mizuochi, Shin'ichiro Terada, Manabu Yamabuki, Kouji Nishida, Harumi Higashi, Victoria Davis, Suzanne Jordan, Gail Betts, Nissui Pharmaceutical Co., Ltd., Tokyo, Japan
- P1-82 Use of Proficiency Test Data to Evaluate Method Performance for Sulfite Analysis in Dried Fruits — YANG CHEN, Salvador Lopez, Ravinder Reddy, Douglas T. Heitkemper, FDA, Bedford Park, IL, USA
- P1-83 Improvement of *Cronobacter sakazakii* and *Salmonella* spp. Detection in Powdered Infant Formula — REBECCA DIEVART, Antoine Riviere, Gulustan Kuccuk, Jean-Philippe Tourniaire, Yannick Bichot, Christophe Quiring, Sophie Pierre, Bio-Rad, Marnes-la-Coquette, France
- P1-84 Validation of the Enviro^x Assay for the Detection of *Listeria*, *Listeria monocytogenes* and *Salmonella* in Environmental Surface Samples — BENJAMIN KATCHMAN, Michael Hogan, PathogenDx, Tucson, AZ, USA
- P1-85 Validation of the 3M™ Petrifilm™ Rapid *E. coli*/Coliform Count Plate for the Enumeration of *Escherichia coli* in a Variety of Foods Against the Canadian Reference Method (MFHPB-27) — SALEEMA SALEH-LAKHA, Carlos Leon-Velarde, Jennifer Fischer-Jenssen, Emily Wilson, Anli Gao, Shu Chen, Ana Lozano, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-86 Evaluation of 3M Rapid Yeast & Mold (RYM) Petrifilm Testing Method for Yeast in Salad Dressings and Acid-Formulated Sauces — MAY YEOW, Judy Chen, Joseph Higgs, Rob Beauseau, Ventura Foods, Brea, CA, USA
- P1-87 Withdrawn
- P1-88 **Characterization of *Campylobacter* Flagellin Protein Specific Monoclonal Antibodies and Evaluation of Their Binding Affinities Using Surface Plasmon Resonance** — SHREYA SINGH HAMAL, Tennessee State University, Nashville, TN, USA
- P1-89 Assurance® GDS PCR Testing Approach: A Comprehensive Portfolio for STEC Testing in Beef — CONG JU, Markus Jucker, Khyati Shah, Khanh Soliven, Shuqiao Shen, Andrew Lienau, Lisa John, MilliporeSigma, Bellevue, WA, USA
- P1-90 Application of bioMérieux D-COUNT® as the Rapid Solution for Commercial Sterility Test in Coconut Products — QIONGQIONG YAN, Phunnathorn Phuchivatanapong, Krongkaew Ramwong, Melvin Sumpio, Arpri Setiyawan, Johnny Queck, bioMérieux Singapore, Singapore
- P1-91 Impact of the Quality of Buffered Peptone Water on the Detection of *Salmonella* spp. in Food — ANTOINE RIVIERE, Yannick Bichot, Gulustan Kuccuk, Rebecca Dievart, Christophe Quiring, Sophie Pierre, Bio-Rad, Marnes-la-Coquette, France
- P1-92 Evaluation of STEC Detection from 25 g and 375 g Beef Samples with a PCR Method Workflow vs. ISO and USDA Reference Methods — David Crabtree, Dean Leak, Jessica Williams, Ana-Maria Leonte, Laura Vaahtoranta, Hanna Lehmusto, Nina Wickstrand, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P1-93 A Comparison of Two Commercially Available PCR Detection Assays for *Vibrio* from Seafood Samples — Annette Hughes, David Crabtree, Laura Vaahtoranta, Hanna Lehmusto, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P1-94 Performance Comparison of the Two Multiplex PCR Assays for Detection of *Campylobacter* from Poultry Samples — Patrick Stephenson, David Crabtree, Laura Vaahtoranta, Jukka-Pekka Palomäki, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P1-95 Testing the Inclusivity and Exclusivity of Two PCR Assays for the Detection of *Vibrio* Species — Annette Hughes, David Crabtree, Laura Vaahtoranta, Hanna Lehmusto, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P1-96 Evaluation of STEC Isolation from Food Samples Using Chromogenic Coliform Agar — David Crabtree, Dean Leak, MATTHEW HAHS, Thermo Fisher Scientific, Lenexa, KS, USA
- P1-97 Withdrawn
- P1-98 Evaluation of the Post-enrichment Process Times for Commercial *E. coli* O157:H7 Molecular Detection Systems — JOSEPH BOSILEVAC, Mohammed Ahmed, Vikrant Dutta, USDA/ARS, Clay Center, NE, USA
- P1-99 AOAC PTM Certification of the BACGene *E. coli* STEC Solution in Two Modular Workflows — LAURA BLEICHNER, Christoph Bahrtdt, Felix Haesler, Nadine Goehring, Jana Kizina, Eurofins GeneScan Technologies GmbH, Freiburg, Germany
- P1-100 Validation Studies for the BACGene Kits, Including Preraser Free DNA Removal Treatment and Fastfinder Evaluation, as Alternative Methods — LAURA BLEICHNER, Christoph Bahrtdt, Felix Haesler, Nadine Goehring, Jana Kizina, Eurofins GeneScan Technologies GmbH, Freiburg, Germany
- P1-101 Combined Nonthermal Processing and Antimicrobial Packaging for Juice Pasteurization — TONY JIN, Ramadan Aboelhaggag, USDA-ARS-Eastern Regional Research Center, Wyndmoor, PA, USA

Laboratory and Detection Methods

- P1-102 Evaluation of Improved Automated Rapid Microbiological Assay System — Tina Caskey, James Hlawnceu, Carolyn Montei, Mike Killingsworth, Jason Kircos, Lei Zhang, Robert Donofrio, PREETHA BISWAS, Neogen Corporation, Lansing, MI, USA
- P1-103 Performance Evaluation of Real-time PCR for *Salmonella* Detection in Nutraceutical and Dietary Supplements — Deborah Briese, JOY DELLARINGA, Vikrant Dutta, bioMérieux, Inc., Hazelwood, MO, USA

Blue Text - Developing Scientist Competitor

Green Text - Undergraduate Student Competitor

- P1-104 **Effect of DNA Extraction Method on qPCR Efficiency for Pathogens in Ground Beef** — CHARLES CONNOLLY, Jasna Kovac, Catherine Cutter, Penn State, State College, PA, USA
- P1-105 **Evaluation of a Free DNA Removal Protocol with Real-time PCR Assay for the Detection of *Cronobacter* in Dairy Matrices** — Justine Carret, Louisiane Giovannetti, Fabienne Hamon, Patrice Chablain, VIKRANT DUTTA, bioMérieux, Inc., Hazelwood, MO, USA
- P1-106 **Development and Validation of a qPCR-based Colony Identification Assay for *Yersinia enterocolitica*** — ALEX MONTGOMERY, Matthew Thomas, Chelsea Leung, Rick Heffernan, Mandy Saroay, Ian Brown, Katie Eloranta, Jennifer Liu, Science Branch, Canadian Food Inspection Agency, Burnaby, BC, Canada
- P1-107 **Development of an Ultrafiltration Method for Virus Concentration in Fresh Produce** — MATHILDE TRUDEL-FERLAND, Éric Jubinville, Fabienne Hamon, Julie Jean, Institut sur la nutrition et les aliments fonctionnels, Université Laval, Québec, QC, Canada
- P1-108 **Plant Taxon Screening for the Detection of Soya, Maize, and Rapeseed in Food and Feed Samples in Parallel to GMO Screening** — Hans-Henno Doerries, Ivonne Remus-Doerries, Ivo Meier-Wiedenbach, Olaf Degen, Cordt Groenewald, Kornelia Berghof-Jaeger, BENJAMIN JUNGE, BIOTECON Diagnostics, Potsdam, Germany
- P1-109 **Detection of *Listeria* spp. from Environmental Surfaces Using CANARY® Technology** — ANDREW FLANNERY, Riffat Rana, Louison Kougang, PathSensors, Inc., Baltimore, MD, USA
- P1-110 **Assessment of *Salmonella* Precise Method According to the ISO 16140-Part 2 (2016) Standard** — François Le Nestour, Guillaume Mesnard, Aurore Bellier, DANIELE SOHIER, David Crabtree, Ana-Maria Leonte, Thermo Fisher Scientific, Basingstoke, United Kingdom
- P1-111 **Broad Detection of Norovirus GII Using Recombinase Polymerase Amplification and Applications Using Inter-calating Dyes** — CASSANDRA SUTHER, Sloane Stoufer, Matthew D. Moore, University of Massachusetts, Amherst, Amherst, MA, USA
- P1-112 **Detection of Virulence and ESBL Genes in *Salmonella* by Multiplex High Resolution Melt-curve Real-time PCR Assay** — RAJIV DHITAL, Azlin Mustapha, Miki Hodel, University of Missouri, Columbia, MO, USA
- P1-113 **Detection of Norovirus Capsid Protein Using an Outer Membrane Protein G** — MINJI KIM, Bach Pham, Min Chen, Matthew Moore, University of Massachusetts Amherst, Amherst, MA, USA
- P1-114 **Recovery of Human Norovirus Surrogate 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
- P1-115 **Application of Polydopamine Molecular Imprinted Polymer on a Localized Surface Plasmon Resonance Sensor for Detection of Multi-antibiotics in Chicken Meat** — WENQIAN WANG, Michael Kidd, Yanbin Li, Center of Excellence for Poultry Science, University of Arkansas, Fayetteville, AR, USA
- P1-116 **Rapid Detection of Mold Contaminated Beverages Using the Bioluminescent Innovate System** — Brandon Katz, DELARAM NIKOOEI, Rafael Barajas, Hygiene, Camarillo, CA, USA
- P1-117 **Colorimetric Detection of *Listeria monocytogenes* on Food Contact and Non-food Contact Surfaces Using Paper-based Microfluidics** — CODI JO BROTEN, John B. Wydallis, Thomas Reilly, III, Bledar Bisha, University of Wyoming, Laramie, WY, USA
- P1-118 **Development of Detection Method with Monoclonal Antibody and Nitrogen-doped Carbon Nanodots for *Campylobacter jejuni*** — Jimyeong Ha, Won Bo Shim, Jin-Ho Park, Kyoung-Hee Choi, YOCHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P1-119 **Enhancing Immobilization of Phage on Magnetoelastic Sensor via Chemisorption for Improving Detection of *Bacillus cereus*** — IN YOUNG CHOI, Su-Hyeon Kim, Damilare Adeyemi, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- P1-120 **Utilizing Next-generation Sequencing and Machine Learning for Semi-quantification of *Salmonella*** — HANNAH BOLINGER, David Tran, Anay Campos, Andrew Lin, Ramin Khaksar, Clear Labs, San Carlos, CA, USA
- P1-121 **Evaluation of the GENE-up® *Salmonella* 2 Real-time PCR Assay for the Detection of *Salmonella* Species in a Variety of Environmental Surfaces** — CARLOS LEON-VELARDE, Saleema Saleh-Lakha, Nathan Larson, Zheng Wu, Ryan Lee, Erik Glemser, Sophie Canobio, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-122 **Evaluation of the 3M™ Molecular Detection Assay 2 for the Detection of *Escherichia coli* O157 (including H7) in a Variety of Foods** — CARLOS LEON-VELARDE, Saleema Saleh-Lakha, Nathan Larson, Erik Glemser, Zheng Wu, Ryan Lee, Christian Blyth, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-123 **Molecular Characterization of *Riemerella anatipestifer* Isolated from Outbreaks in Egypt** — HEBA DEIF, University of Louisville, Louisville, KY, USA
- P1-124 **Neutralization of Inhibitory Substances in Oregano, Cinnamon, and Cloves for the Recovery of *Salmonella* Typhimurium and *Salmonella* Abony** — CAROL SIVEY, David Tomas, Alison Finnarn, Kadiatou Sow, Nestle Quality Assurance Center, Dublin, OH, USA

Meat, Poultry and Eggs

- P1-125 **Prevalence of *Salmonella* and Indicators in Australian Manufacturing Beef Trim** — IAN JENSON, Long Huynh, Joe Liu, Peter Horchner, Meat & Livestock Australia, North Sydney, Australia
- P1-126 **Microbial Risk Assessment of *Salmonella* by Duck Consumption in Korea** — HYEMIN OH, Jang Won Yoon, Se-Wook Oh, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P1-127 **Withdrawn**
- P1-128 **Frequency of *Salmonella* and *Escherichia coli* O157 in Ground Beef from Butcher Shops in Jalisco State, Mexico** — Andrea I. Ascencio-Anguiano, Carlos A. Sánchez-Tovar, Olga B. Pérez-Covarrubias, Delia G. González-Aguilar, Luis E. Segura-García, GUSTAVO GONZÁLEZ-GONZÁLEZ, Elisa Cabrera-Díaz, 3M Food Safety México, Guadalajara, Mexico
- P1-129 ***Salmonella* Survivability in Rendered Fats Challenged with Different Levels of Moisture and Temperature** — APRIL MOLITOR, Umut Yuçel, Jessie Vipham, Cassandra Jones, Valentina Trinetta, K-State, Manhattan, KS, USA
- P1-130 **Augmenting the Efficacy of Pressure-based Pasteurization of *Escherichia coli* O157:H7 Using Thymol and Mild Heat in Meat Homogenate** — SADIYE ARAS, Shahid Chowdhury, Niamul Kabir, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA

- P1-131 Reduction of Shiga Toxin-producing *Escherichia coli* (STEC) and *Salmonella* on Beef Tissues Subjected to Far-UV Sterilray™ Technology — BROCK BRETTHOUR, Joshua Maher, Daniel Vega, Katia Pozuelo, Jessie Vipham, Valentina Trinetta, Randall Phebus, Sara Gragg, Kansas State University, Manhattan, KS, USA
- P1-132 *Salmonella* Concentrations, Prevalence, Serovars Distribution and Antimicrobial Resistance Associated with Informal Raw Poultry Processing in Accra, Ghana — ANGELA P.H. KUNADU, Richard Otwey, Lydia Mosi, University of Ghana, Department of Nutrition and Food Science, Accra, Ghana
- P1-133 *Salmonella* and *Campylobacter* in Chicken Necks, Hearts, Gizzards, and Livers — ERIKA STAPP-KAMOTANI, Neal Golden, J. Mark Carter, William Lanier, Nelson Clinch, Yoel Izsak, U.S. Department of Agriculture – FSIS, Washington, D.C., USA
- P1-134 Prevalence and Antimicrobial Resistance of *Salmonella* from Poultry Processing Operations — COURTNEY LEONE, Matthew Bailey, Estefanía Novoa Rama, Harshavardhan Thippareddi, Manpreet Singh, University of Georgia, Athens, GA, USA
- P1-135 Comparison in the Recovery of *Campylobacter* from Poultry Establishments Using Direct Plating Versus Enrichment Methodologies: Amplified Population or Expanded Population? — STEVIE HRETZ, U.S. Department of Agriculture – FSIS, Washington, D.C., USA
- P1-136 Improving Microbiological Quality and Safety of Chicken Breast Fillets from Salvage Line during Poultry Processing — SASIKALA VADDU, Avani Gouru, Rob Larose, Jeff Madewell, Vijay K. Choppakatla, Manpreet Singh, Harshavardhan Thippareddi, University of Georgia, Athens, GA, USA
- P1-137 A Reduced Head-space Enrichment for BAX® System Detection of *Campylobacter* from Poultry Parts Incubated Under Aerobic Conditions — JULIE WELLER, Anastasia Likanchuk, Victoria Kuhnel, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P1-138 A Simultaneous Enrichment for *E. coli* O157:H7 and *Salmonella* from Microtally™ Swabs Using the BAX® System — JULIE WELLER, Anastasia Likanchuk, Victoria Kuhnel, Qualicon Diagnostics LLC, A Hygiena Company, New Castle, DE, USA
- P1-139 Co-evolved Wide Host Range Phage Demonstrated Better Lytic Capacity in a *Felixnavirus* Phage-*Salmonella* Infantis Model on Chicken Meat — DACIL RIVERA, Lauren Hudson, Thomas Denes, Andrea Moreno-Switt, School of Veterinary Medicine, Faculty of Life Sciences, Universidad Andres Bello, Santiago, Chile
- P1-140 Inactivation of *Salmonella* in Ground Chicken Meat by High-pressure, Allyl Isothiocyanate, and Acetic Acid — Hui-Erh Chai, SHIOWSHUH SHEEN, Cheng-An Hwang, USDA/ARS/ERRC, Wyndmoor, PA, USA
- P1-141 Shelf-life Extension of Raw Chicken Breasts and Drumsticks by Dip Application of a Novel, Vinegar-based Antimicrobial Solution — Sara LaSuer, Robert Ames, Garrett McCoy, Saurabh Kumar, DANIEL UNRUH, Corbion, Lenexa, KS, USA
- P1-142 Shelf-life Extension of Water-chilled Whole Chickens without Giblets (WOGs) by Vinegar Powder Addition — DANIEL UNRUH, Sara LaSuer, Saurabh Kumar, Garrett McCoy, Corbion, Lenexa, KS, USA
- P1-143 Thermal Lethality to *Salmonella* and the *Salmonella* Surrogate *Enterococcus faecium* on Black Soldier Fly Larvae Meal — KOURTNEY DANIELS, Thomas Taylor, Texas A&M University, College Station, TX, USA
- P1-144 Use of Sous Vide to Cook Chicken Liver Pâté: Thermal Inactivation of *Salmonella* spp. — JOHN LUCHANSKY, Laura Shane, Manuela Osoria, Bradley Shoyer, Benjamin Chapman, Anna Porto-Fett, U.S. Department of Agriculture-ARS, Wyndmoor, PA, USA
- P1-145 Peracetic Acid and Cetylpyridinium Chloride to Lessen *Campylobacter* Contamination on Chicken Liver — MARK BERRANG, Gary Gamble, Richard Meinersmann, Nelson Cox, Steven Knapp, USDA-Agricultural Research Service, U.S. National Poultry Research Center, Athens, GA, USA
- P1-146 Microbial Shifts in Raw Chicken Marinated with Natural Preservatives — MATT HUNDT, Shelly Gebert, Jack Mouradian, Third Wave Bioactives, Wauwatosa, WI, USA
- P1-147 Effects of Photosensitizer Curcumin on the Inactivation of Foodborne Pathogens and Physicochemical Properties of Chicken — JINGWEN GAO, Karl Matthews, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P1-148 Thermal Inactivation of *Campylobacter jejuni* in Moisture Enhanced Non-intact Chicken Patties by Double Pan-broiling as Affected by Pump Rates and Cooking Temperatures — WENTAO JIANG, Ka Wang Li, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P1-149 VNIR Hyperspectral Imagery and Machine Learning-based Processing for Temperature Dependent Meat Characterization — Nicholas Scott, SARAH JENSEN, Savor Safe Food, Columbus, OH, USA
- P1-150 Validation of Commercial Antimicrobial Intervention Technologies to Control *Salmonella* on Pre-rigor, Skin-on Market Hog Carcasses and Chilled Pork Wholesale Cuts — KATIA POZUELO, Daniel Vega, Joshua Maher, Valentina Trinetta, Travis O'Quinn, Sara Gragg, Randall Phebus, Kansas State University, Manhattan, KS, USA
- P1-151 Evaluating a *Salmonella* Lethality Prediction Tool for the Surface of Cooked Meat and Poultry Products — IAN KLUG, Ian Hildebrandt, Michael James, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P1-152 Safety of Shell Eggs as Affected by Rate of Heating during Pasteurization to Inactivate *Salmonella* Enteritidis — YUMIN XU, Ahmed Abdelhamid, Ahmed Yousef, The Ohio State University, Columbus, OH, USA
- P1-153 Quantitative Risk Assessment of *Salmonella* Foodborne Illness through Egg Consumption — Yukyung Choi, Hyemin Oh, Se-Wook Oh, Jang Won Yoon, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P1-154 Effects of Temperature on the Efficacy of Peroxyacetic Acid and Citric Lactic Blend Spray for Beef Carcasses — Xianqin Yang, HUI WANG, Madhu Badoni, Agriculture and Agri-Food Canada, Lacombe, AB, Canada
- P1-155 Impact of Supplemental Critical Controls on *Salmonella* Reductions in Ready-to-Eat Beef Products — IAN HILDEBRANDT, Nicole Hall, Michael James, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P1-156 Inhibition of *Clostridium perfringens* in Uncured Turkey Products with Clean-label Antimicrobials during Extended Phase 1 Cooling — MCKENNA MAHNKE, Max Golden, Andrew Milkowski, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- P1-157 Identification of *Salmonella* spp. and Differentiation between Enteritidis and Typhimurium in One Real-time PCR Test — Anne Rölting, BENJAMIN JUNGE, Cordt Grönwald, Olaf Degen, Kornelia Berghof-Jäger, BIOTECON Diagnostics, Potsdam, Germany

Blue Text - Developing Scientist Competitor

Green Text - Undergraduate Student Competitor

- P1-158 A Multiplex Real-time PCR Kit for the Detection of Food-relevant *Listeria* Species and Identification of *L. monocytogenes* in a Single Reaction — Astrid Groenewald, BENJAMIN JUNGE, Olaf Degen, Kornelia Berghof-Jaeger, BIOTECON Diagnostics, Potsdam, Germany
- P1-159 Identification of *Sus scrofa* (porcine), *Bos taurus*, *Bos indicus* (bovine) and *Equidae* (horse, donkey, zebra) in Raw Material and Processed Foods Via Real-time PCR — Anne Rölfing, Maren Brose, Ivo Meier-Wiedenbach, Olaf Degen, Cordt Grönewald, Kornelia Berghof-Jäger, BENJAMIN JUNGE, BIOTECON Diagnostics, Potsdam, Germany
- P1-160 Potential of Edible Gelatin Composite Films Enriched with Clove Oil Nanoemulsions as Chicken Meat Packaging Material — Muhammad Rehan Khan, ZAFFAR MEHMOOD, Muhammad Bilal Sadiq, Forman Christian College, Lahore, Pakistan
- P1-161 Withdrawn
- P1-162 A Survey of Pathogens on Lamb Carcasses from Portuguese Local Breeds — VASCO A. P. CADAVEZ, Sara Coelho-Fernandes, Diogo Félix-Oliveira, Gisela Rodrigues, Ursula Gonzales-Barron, Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Bragança, Portugal
- P1-163 Comparing the Reductions of *Salmonella* and *Listeria monocytogenes* in Different Diameter Salami during Fermentation and Drying — Joy Waite-Cusic, SAMANTHA BURROUGHS, Alex Emch, Oregon State University, Corvallis, OR, USA
- P1-164 New GeneDisc® Method for *Campylobacter* Quantification in Poultry Plants — Sarah Jemmal, Christelle Nahuet, Valérie van Wilder, Stéphane Bonilla, SYLVIE HALLIER-SOULIER, Pall GeneDisc Technologies, Bruz, France
- P1-165 New Genedisc® Method for the Combo Detection of *Campylobacter* and *Salmonella* in Poultry Plants — Christelle Nahuet, Sarah Jemmal, Valérie van Wilder, Stéphane Bonilla, SYLVIE HALLIER-SOULIER, Pall GeneDisc Technologies, Bruz, France
- P1-166 Evaluation of the TEMPO® CAM (*Campylobacter*) Assay for the Detection of *Campylobacter* from Poultry Samples — NIKKI TAYLOR, John Mills, Ron Johnson, J. Stan Bailey, bioMérieux Inc., Hazelwood, MO, USA
- P1-167 *Salmonella* Lethality in Fully-cooked Bacon and Evaluation of a Non-pathogenic Surrogate *Enterococcus faecium* for Validation Purposes — NARINDRA RANDRIAMIARINTSOA, Ian Hildebrandt, Michael James, Nicole Hall, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P1-168 Prevalence and Antibiotic Resistance of *Salmonella* and *Campylobacter* on Raw Retail Chicken Breasts — SANA MUJAHID, Michael Hansen, Robyn Miranda, Keith Newsom-Stewart, James Rogers, Consumer Reports, Yonkers, NY, USA
- P1-169 Beef Microbiomes and Biofilm Formation by Bacteria Transferred to Food Contact Surfaces — GISELLE KRISTI P GURON, Jennifer M Cassidy, George Paoli, USDA-ARS-ERRC, Wyndmoor, PA, USA
- P1-170 Control of *Bacillus weihenstephanensis* in Pasteurized Liquid Whole Eggs Formulated with Nisin — Subash Shrestha, UPASANA HARIRAM, Christy Trigg, Dawn Jensen, Cody McCullough, Cargill, Inc., Wichita, KS, USA
- P1-171 Microbial Survey during the Shelf-Life of Retail Non-meat Based Foods — SYDNEY STAFI, Matt Hundt, Shelly Gebert, Third Wave Bioactives, Wauwatosa, WI, USA
- P1-172 Isolation and Identification of Molds on Secondary Quality Pickling Cucumbers — Robert Price, Abigail Snyder, FRED BREIDT, USDA/ARS, Raleigh, NC, USA
- P1-173 Application of Functional Ice to Improve Microbiological Quality of Tilapia during Storage and Transportation — BET WU, Mayra Marquez, Amit Morey, Zamorano University, Zamorano, Honduras
- P1-174 Bacterial Communities Associated with Shrimp Decomposition during Storage at 0°C and 36°C — MARLEE HAYES, Keri A. Lydon, Sarah May, Madison D. McGough, Ronald A. Benner, Jr., Kristin Bjornsdottir-Butler, Oak Ridge Institute of Science and Education, Oak Ridge, TN, USA
- P1-175 Microscopic Studies on *Aspergillus flavus* Infection in Bambara Groundnut (*Vigna subterranea* (L.) Verdc) — OMOTOLA OLAGUNJU, Oluwatosin Ademola Ijabad-eniyi, Durban University of Technology, Durban, South Africa
- P1-176 The Mystery of Exploding Wine Bottles — RAVIRAJ SINH JADEJA, Christina Thomas, Oklahoma State University, Stillwater, OK, USA
- P1-177 Visible Light Illumination by 405 NM LEDs Can Prevent Mold Spoilage of Strawberries and Tomatoes — Isabelle Yew, VINAYAK GHATE, Weibiao Zhou, Hyun-Gyun Yuk, National University of Singapore, Singapore
- P1-178 An Intervention Applied to Meat Trimmings before Grinding Addressed a Recurring Spoilage and Shelf-life Problem in a Commercial Setting — JOSEPH BOSILEVAC, Jason Feinberg, Roger Maehler, Yemi Ogunrinola, USDA/ARS, Clay Center, NE, USA
- P1-179 Combined Effect of Natural Polysaccharide and Citrus Oil Marinade to Extend the Shelf Life of Ready-to-Eat Deli Chicken — JESSA GOODEAUX, Katie Evans, Dianna Wilson, Jailyn Smith, Shecoya White, Mississippi State University, Starkville, MS, USA

Packaging

- P1-180 Withdrawn
- P1-181 Pine Needle (*Pinus densiflora*) Extract-mediated Synthesis of Zinc Oxide Nanoparticles and Comparative Antimicrobial and Antioxidant Activity of Agar/ZnONP-KOH with Agar/ZnONP-PN — Yeon Ho Kim, Yeong-Ju Bang, HA YEON JO, Ki Sun Yoon, Jong-whan Rhim, Kyung Hee University, Seoul, South Korea
- P1-182 Synthesis of Silver Nanoparticles-mediated Pine Needle (*Pinus densiflora*) Extract and Its Application for the Preparation of Carrageenan-based Antioxidant and Antimicrobial Films — Yeon Ho Kim, Yeong-Ju Bang, GEUN HYANG KIM, Ki Sun Yoon, Jong-whan Rhim, Kyung Hee University, Seoul, South Korea
- P1-183 Potential of Curcumin Nanoemulsion-based Coatings for Post-harvest Preservation of Fresh Grapes — Muhammad Rehan Khan, ZAFFAR MEHMOOD, Forman Christian College, Lahore, Pakistan
- P1-184 Incorporation of Antimicrobial Bio-based Carriers onto Plastic Surface for Enhanced Antimicrobial Activity — KANG HUANG, Xu Yang, Yue Ma, Gang Sun, Nitin Nitin, The University of Auckland, Auckland, New Zealand
- P1-185 Evaluation of InvisiShield Antimicrobial Packaging to Reduce *Escherichia coli*, *Salmonella*, *Listeria monocytogenes* and Human Norovirus Using the Antimicrobial Chlorine Dioxide — JASON FRYE, Jeremy Faircloth, Rebecca Goulter, Angela Morgan, Michael Johnston, Lee-Ann Jaykus, Department of Food, Bioprocessing, and Nutrition Sciences, North Carolina State University, Raleigh, NC, USA
- P1-186 Withdrawn

Retail and Food Service Safety

- P1-187 Refining a *Listeria monocytogenes* Predictive Risk Tool for Retail Deli Departments — BRIANNA BRITTON, Sophie Tongyu Wu, Haley Oliver, Purdue University, West Lafayette, IN, USA
- P1-188 A Survey of the Prevalence of Foodborne Pathogens on Selected Local Food Products Procured from Farmers' Markets in Central Virginia — CHYER KIM, Abeer Fatani, Rehab Almuqati, Paul Kaseloo, Crystal Wynn, Theresa Nartea, Virginia State University, Petersburg, VA, USA
- P1-189 Withdrawn
- P1-190 Cross-contamination is a Continuous Challenge to *Listeria monocytogenes* Control in Retail Grocery Produce Environments — SOPHIE TONGYU WU, John Burnett, Jingjin Wang, Susan Hammons, Deklin Veenhuizen, Manpreet Singh, Haley Oliver, Purdue University, West Lafayette, IN, USA
- P1-191 Introduction of Hygiene InSITE *Salmonella* as a Rapid Method for Surface Surveillance of Stressed *Salmonella* — PAUL MEIGHAN, Hygiene, Guildford, United Kingdom
- P1-192 Ability of No Rinse Food Contact Sanitizers to Impart Undesirable Flavors to Food Via Cutting Boards — AMBER EISCHEN, Chip Manuel, Todd Cartner, GOJO Industries, Akron, OH, USA
- P1-193 Characterizing Microbial Cross-Contamination on Full-sized Surfaces Using a Traditional 'Cloth and Bucket' Disinfection Method — ROBIN GRANT MOORE, Rebecca Goulter, James Clayton, Jason Frye, Esa Puntch, Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA
- P1-194 Evaluating the Performance of an Ethanol-based Sanitizing Surface Wipe Using a Newly Developed Quantitative Carrier Test Method — CHIP MANUEL, Bahram Zargar, Rachel Leslie, James Arbogast, Syed Sattar, GOJO Industries, Akron, OH, USA
- P1-195 Survey of Microbial Contamination of Touch Screens Used by the Public in Retail Food Establishments — JAMES ARBOGAST, Luisa Ikner, Chip Manuel, Jason Torrey, Walter Betancourt, Charles Gerba, GOJO Industries, Akron, OH, USA
- P1-196 Microbiological Survey of Sushi Sold in Ontario — Carlos Leon-Velarde, Jeanine Boulter-Bitzer, Susan Lee, Nicola Linton, Kelly Shannon, Jiping Li, Saleema Saleh-Lakha, SHU CHEN, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-197 Assessing Brazilian Food Establishments' Hygienic Handling of Leafy Vegetables and Their Microbiological Quality — Marina R. Ferreira, THIAGO S. SANTOS, Daniele F. Maffei, University of São Paulo, Piracicaba, Brazil
- P1-198 Understanding Supply-chain Food Safety Vulnerability of Foods in Model Meal Kit Delivery Boxes — CHARLES HERRON, Amit Morey, Auburn University, Auburn, AL, USA
- P1-199 Survey of Locally Small Produce Growers' Perception of Antibiotic-resistance Issues at Farmers' Markets — WENTAO JIANG, Ka Wang Li, Sumit Paudel, Nirosha Ruwani Amarasekara, Lisa Jones, Yifan Zhang, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P1-200 Comparison of Sanitary Management Status in Community Child Centers with or without Sanitary Guidance Visits by Dietitians — HYE-KYUNG MOON, Mi-Suk Lee, Changwon National University, Changwon, South Korea
- P1-201 Effects of Disinfection on Raw Vegetables and Fruits Not Heated in Children's Foodservices — HYE-KYUNG MOON, Jae-hee Park, Seo-jin Kim, HeeJin Park, Changwon National University, Changwon, South Korea

- P1-202 Good Manufacturing Practices and Microbiological Quality in Cafeterias of the School Meal Program in Santiago, Chile — Claudia Lataste, Natalia Rossi, Angelica Reyes-Jara, Nelly Bustos, Lydia Lera, MAGALY TORO, INTA, Universidad de Chile, Santiago, Chile
- P1-203 Safety and Regulatory Implications of Clean Label: Stats, Trends, Challenges and Lessons Learned — KANTHA SHELKE, Corvus Blue LLC/Johns Hopkins University, Chicago, IL, USA

Seafood

- P1-204 A Study of the Freshness of Scallops — Ayari Yui, Tomomi Konda, Misaki Kikuchi, HIROKO SEKI, Tamagawa University, Department of Advanced Food Sciences, College of Agriculture, Tokyo, Japan
- P1-205 Effect of Soy Sauce Pickling on Taste Components of Tuna — Tomomi Konda, Misaki Kikuchi, Ayari Yui, HIROKO SEKI, Tamagawa University, Department of Advanced Food Sciences, College of Agriculture, Tokyo, Japan
- P1-206 Effect of Slurry Ice and Flake Ice Preservation Techniques on the Microbial and Physicochemical Properties of Black Drum (*Pogonias cromis*) — HOPE ESEOSE, Katheryn Parraga, Hunter Songy, Maggie Morris, Evelyn Watts, LSU AgCenter, Baton Rouge, LA, USA
- P1-207 Reduction of Fecal Coliforms and Male-specific Coliphage after Chlorine and Ultraviolet Disinfection during Wastewater Treatment — JESSICA NASH, Kevin Calci, U.S. Food and Drug Administration, Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA
- P1-208 Withdrawn
- P1-209 Withdrawn
- P1-210 Quantitative Microbial Risk Assessment for Highly Pathogenic *Vibrio* spp. in Sea Squirt in Korea — Jimyeong Ha, Il-Shik Shin, Young-Mog Kim, Kwon-Sam Park, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P1-211 Risk Assessment of Highly Pathogenic *Vibrio* spp. (*Vibrio vulnificus* and *Vibrio cholerae*) in Gizzard Shad — Jeeyeon Lee, Il-Shik Shin, Young-Mog Kim, Kwon-Sam Park, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P1-212 Quantitative Microbial Risk Assessment for Highly Pathogenic *Vibrio* spp. (*Vibrio cholerae* and *Vibrio vulnificus*) in Ganjang-gejang, Soy Sauce-marinated Raw Blue Crab — YUJIN KIM, Jimyeong Ha, Jeeyeon Lee, Sejeong Kim, Il-Shik Shin, Young-Mog Kim, Kwon-Sam Park, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P1-213 Withdrawn
- P1-214 Study of the Survival of *Vibrio parahaemolyticus* in the Stomach Compartment in a Simulator of the Human Intestinal Microbial Ecosystem (SHIME), in Presence of Food — VIRGINIA F. ALVES, Valeria R. Parreira, Jeffrey Farber, Universidade Federal De Goiás, Goiânia, Brazil
- P1-215 Evaluation of the BAX® System Real-time PCR Assay for *Vibrio* for the Detection of *Vibrio cholerae*, *Vibrio vulnificus*, and *Vibrio parahaemolyticus* in Raw Seafood Products — CARLOS LEON-VELARDE, Mohamed Mohamed, Divyang Bhatt, Saleema Saleh-Lakha, Kathy Wilson, Agriculture and Food Laboratory (AFL), University of Guelph, Guelph, ON, Canada
- P1-216 Detection of Human Norovirus and Other Human Enteric Viruses in Sanaga Clams, Cameroon — PATRICE BONNY, Julien Schaeffer, Marion Desdoutis, Pascal Garry, Jean Justin Essia Ngang, Soizick Le Guyader, Ifremer, Laboratoire de Microbiologie, Nantes, France

- P1-217 Microbiological Quality and *Salmonella* Prevalence in Catfish from Small Louisiana Wild-caught Catfish Processors — KATHERYN PARRAGA, Evelyn Watts, Cesar Escalante, Louisiana State University AgCenter, Baton Rouge, LA
- P1-218 Influence of Surface Material, Sanitizer Concentration, Shear Stress, Contact Time, and Water Temperature on Surface-adhered Fungal Spoilage and Bacterial Pathogen Control — SHIYU CAI, David Phinney, Dennis Heldman, Abigail Snyder, Cornell University, Ithaca, NY, USA
- P1-219 Quantitative Risk Assessment of *Bacillus cereus* in Salted and Fermented Squid (Squid *Jeotgal*) — YEWON LEE, Doyeon Kim, Min Suk Rhee, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P1-220 Histamine and Proteolytic Bacteria Levels in the Fermentation of *Carcinus maenas* — DELANEY GREINER, Denise Skonberg, Jennifer Perry, University of Maine, Orono, ME, USA
- P1-221 Multidetermination of Nitrofurans and Chloramphenicol in Aquaculture Products by Enzyme-linked Immunosorbent Assay — HWEE CHEN MABEL NG, Markus Kainz, Yong Wee Liau, Karen Ong, Belvick Lee, Romer Labs Singapore Pte. Ltd., Singapore
- P1-222 Withdrawn
- P1-223 Withdrawn
- Water**
- P1-224 Source Tracking Metabolically-active Bacterial Communities from Rooftop Harvested Rainwater to Irrigated Soil and Produce — LEENA MALAYIL, Suhana Chattopadhyay, Lauren Hittle, Emmanuel Mongodin, Sarah Allard, Rachel Rosenberg Goldstein, Amy Sapkota, Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health, College Park, MD, USA
- P1-225 Coupled DNA-labeling and Sequencing Approach Enables the Detection of Viable But Non-culturable *Vibrio* spp. in Irrigation Water Sources in the Chesapeake Bay Watershed — SUHANA CHATTOPADHYAY, Leena Malayil, Lauren Hittle, Emmanuel Mongodin, Amy Sapkota, Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health, College Park, MD, USA
- P1-226 Quantification of *Salmonella enterica* in Maryland Irrigation Ponds — SHIRLEY A. MICALLEF, Mary Callahan, Nikki Shariat, Xingchen Liu, Yisrael Katz, University of Maryland, College Park, MD, USA
- P1-227 Effect of Source Water Type and Quality on *E. coli* Removal by Zero-valent Iron Sand Filtration: A Conserve Study — SEONGYUN KIM, Katherine Eckart, Annalise Lower, Eric Handy, Cheryl East, Pei Chiu, Amy Sapkota, Kalmia Kniel, Manan Sharma, Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health, College Park, MD, USA
- P1-228 Identification of an In-line Agricultural Water Treatment Method Based on Microbiological and Chemical Characterization — ANJALI KRISHNAN, Robyn Zaches, Faith Critzer, Washington State University-IAREC, Prosser, WA, USA
- P1-229 Genomic and Phylogenetic Characterization of *Salmonella* Newport from East Coast by Using WGS Data — GUOJIE CAO, Yan Luo, James Pettengill, Christina Ferreira, Elizabeth Reed, Marc Allard, Eric Brown, Jie Zheng, Rebecca Bell, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P1-230 Foodborne Pathogens in Surface Water from the Maule Region, Chile — MAGALY TORO, Leonela Diaz, Francisca Obreque, Felipe Oyarce, Paloma Roberts, Aiko Adell, Andrea Moreno Switt, Arturo Levican, Angelica Reyes-Jara, Jianghong Meng, INTA, Universidad de Chile, Santiago, Chile
- P1-231 Fate and Biofilm Formation of Wild-type and Pressure-stressed Foodborne Pathogens of Public Health Concern in Surface Water — NIAMUL KABIR, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P1-232 Antimicrobial Resistant Bacteria in Superficial Water in Central Chile — Jorge Olivares-Pacheco, Anibal Araya, CONSTANZA DIEZ, Carla Barria, Lina Rivas, Jose Munita, Aiko Adell, Genetics and Immunology Laboratory, Biology Institute, Pontifical Catholic University of Valparaiso, Valparaiso, Chile
- P1-233 Antimicrobial Resistance of *Enterococci* in Surface and Recycled Water: A Conserve Study — SULTANA SOLAIMAN, Rebecca Patterson, Kaitlyn Davey, Yisrael Katz, Devon Payne-Sturges, Amy R. Sapkota, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- P1-234 Diversity and Resistance to Extended Spectrum β -Lactams in *E. coli* from Multiple Irrigation Water Sources: A Conserve Study — SULTANA SOLAIMAN, Eric Handy, Cheryl East, Mary Callahan, Kasey Goon, Taylor Brinks, Amy Sapkota, Manan Sharma, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- P1-235 Prevalence of Foodborne Pathogenic Bacteria and Shiga-toxigenic *Escherichia coli* Virulence Genes in Conococheague Creek, Pennsylvania — Chi-Hung Chen, HSIN-BAI YIN, Suyeun Byun, Jitu Patel, University of Maryland, College Park, MD, USA
- P1-236 Evaluation of *Escherichia coli* and Coliforms in Water Used in a Decoupled Aquaponics System — JENNIFER DORICK, Tung-Shi Huang, Daniel Wells, Michelle Hayden, Auburn University, Auburn, AL, USA
- P1-237 Comparison of Multiple Test Methods for the Assessment of Retort Cooling Water — STEPHANIE NGUYEN, Kelly Dawson, Nancy Dobmeier, Balasubrahmanyam Kottapalli, Conagra Brands, Omaha, NE, USA
- P1-238 Simultaneous Enumeration of Total Coliform and *Escherichia coli* in Drinking Water Using Colitag™ MPN-Plate and MPN-Tray — LEI ZHANG, Daniel Barket, Lin Walker, Andrew Laseck, Debra Foti, Benjamin Bastin, Robert Donofrio, Dr. Preetha Biswas, Neogen Corporation, Lansing, MI, USA

TUESDAY POSTERS

- P2** **Poster Session 2 – Communication Outreach and Education, Epidemiology, Food Defense, Food Law and Regulation, Food Processing Technologies, Food Safety Systems, General Microbiology, Low-water Activity Foods, Modeling and Risk Assessment, Molecular Analytics, Genomics and Microbiome Communication Outreach and Education**
- P2-01 Research Priorities Identified by the United States Department of Agriculture Food Safety and Inspection Service — ISABEL WALLS, John Johnston, USDA Food Safety and Inspection Service, Washington, D.C., USA
- P2-02 *Salmonella* Transmission Associated with Live Poultry in Tennessee: The Need for a One Health Approach — SAMIR HANNA, Allison Foster, Katie Garman, John Dunn, Tennessee Department of Health, Nashville, TN, USA
- P2-03 **Application of “Hypocrisy” Strategy in Food Safety Practices** — YIDAN HUANG, Pei Liu, University of Missouri, Columbia, MO, USA
- P2-04 Exploring Food Safety Training as a Potential Risk Mitigation Activity: A Pilot Case Study with 4-H Volunteers and Extension Agents in Florida — AMY SIMONNE, Kendra Zamojski, Gabriela Murza, Dale Pracht, Virgilia Zabala, Amy Mullins, Nancy Gal, Jennifer Hagen, Ada Medina-Solorzano, Wendy Lynch, Margaret McAlpine, Laurie Osgood, Katherine Allen, Jill Breslawski, Maria Rometo, Brenda Marty-Jimenez, University of Florida, Gainesville, FL, USA
- P2-05 **Empowering the U.S. Virgin Islands’ Food Industry through Food Safety Education** — LILLIAN NABWIIRE, Angela Shaw, Gail Nonnecke, David Minner, Joey Talbert, Louis Petersen, Ellen Johnsen, Iowa State University, Ames, IA, USA
- P2-06 Experiences and Needs of Virginia Cooperative Extension Educators When Supporting Food Recovery Organizations — LESTER SCHÖNBERGER, Lily Yang, Renee Boyer, Melissa Chase, Tiffany Drape, Sarah Misyak, Virginia Tech, Blacksburg, VA, USA
- P2-07 Implementation of New Instructor Training Approach to Equip Food Safety Educators to Deliver Food Protection Manager Certification Courses — NATALIE SEYMOUR, Mary Yavelak, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA
- P2-08 Safe Produce for Food Pantries: Regional Impact in Food Safety Education — BRIDGET PERRY, Shannon Coleman, Barbara Ingham, Julie Garden-Robinson, Jeannie Nichols, Iowa State University, Ames, IA, USA
- P2-09 Why People are Risky: Qualitative Analysis of Food Handling Practices — LISA SHELLEY, Catherine Sander, Chris Bernstein, Ellen Shumaker, Sheryl Cates, Benjamin Chapman, North Carolina State University, Raleigh, NC, USA
- P2-10 Call to Action: What Information Do U.S. Consumers Need to Respond to Food Recall Notices and Public Health Alerts? — JENNA BROPHY, Sheri Cates, Ellen Shumaker, Benjamin Chapman, Chris Bernstein, RTI International, Research Triangle Park, NC, USA
- P2-11 Withdrawn
- P2-12 Raw Milk Legalization – What Do Consumers Think? Willingness of Purchasing or Consuming Raw Milk Products among Consumers in Louisiana — Wenqing (Wennie) Xu, MELISSA CATER, Louisiana State University AgCenter, Department of Agricultural and Extension Education & Evaluation, Baton Rouge, LA, USA
- P2-13 Enhancement of PSA Grower Training Curriculum through Activities That Increase Participant Engagement — REBECCA BLAND, Joy Waite-Cusic, Jovana Kovacevic, Oregon State University, Corvallis, OR, USA
- P2-14 **A Review of Food Safety Education Programs for Produce Growers** — HAN CHEN, Yaohua (Betty) Feng, Angela Shaw, Amanda Kinchla, Nicole Richard, Purdue University, West Lafayette, IN, USA
- P2-15 How Oregon and the Western Region are Using the Food Safety Resource Clearinghouse — JOVANA KOVACEVIC, Joy Waite-Cusic, Elizabeth Newbold, Christopher Callahan, Oregon State University, Portland, OR, USA
- P2-16 Preparing Oregon Produce Farms for Produce Safety Rule — JOVANA KOVACEVIC, Joy Waite-Cusic, Sue Davis, Sara Runkel, Stuart Reitz, Luisa Santamaria, Susanna Pearlstein, Oregon State University, Portland, OR, USA
- P2-17 Impacts of Food Safety Education and Outreach on Florida Growers’ Knowledge and Preparedness for PSR Inspections — TAYLOR LANGFORD, Joyjit Saha, Travis Chapin, Matthew Krug, Meredith Melendez, Colby Silvert, Amy Harder, Leah Tapley, Michelle Danyluk, Renee Goodrich, University of Florida IFAS, Newberry, FL, USA
- P2-18 **Compliance of Farmers Market Vendors with the Produce Safety and Preventive Controls Rules** — MINH DUONG, Winny Zhang, Tiffany Drape, Robert Williams, Laura K. Strawn, Benjamin Chapman, Renee Boyer, Virginia Tech, Blacksburg, VA, USA
- P2-19 Evaluation of the Southern Regional Center for FSMA Training, Outreach and Technical Assistance Training Efforts —KATELYNN STULL, Keith Schneider, Renee Goodrich, Travis Chapin, Amy Harder, Colby Silvert, Matthew Krug, Armitra Jackson-Davis, Lamin Kassama, Duncan Chembezi, Elizabeth Myles, Amanda Philyaw Perez, Kristin Woods, Chad Carter, Julie Northcutt, Kimberly Baker, Keawin Sarjeant, Ramkrishnan Balasubramanian, Laurel Dunn, Paul Priyesh Vijayakumar, Melissa Newman, Achyut Adhikari, Kathryn Fontenot, Juan Silva, Joy Anderson, Christopher Gunter, Benjamin Chapman, Elena Rogers, Otto D. Simmons, III, Roland McReynolds, Ravirajsinh Jadeja, Divya Jaroni, Lynette Orellana-Feliciano, Maria Plaza, Annette Wszelaki, Mark Morgan, Aliyar Fouladkhan, Thomas Taylor, Alejandro Castillo, Joseph Masabni, Barrett Vaughan, Fatemeh Malekian, Laura K. Strawn, Amber Vallotton, Robert Williams, Thomas Saunders, Michelle Danyluk, University of Florida CREC, Lake Alfred, FL, USA
- P2-20 Comprehensive Agricultural Water Testing Laboratory Database for Texas Growers — ZAHRA MOHAMMAD, Rene Nieto, Richard Santos, Sujata A. Sirsat, University of Houston, Houston, TX, USA
- P2-21 **Evaluate Food Safety Practices at Louisiana Summer Feeding Sites** — PEYTON HAYNES, Wenqing (Wennie) Xu, Louisiana State University, Baton Rouge, LA, USA
- P2-22 A Pilot Evaluation of Two Water Safety Videos for Stakeholders by Individuals Familiar with Food Safety Modernization Act — Niamul Kabir, Manreet Bhullar, ALIYAR FOULADKHAH, Shannon Coleman, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P2-23 Evaluation of Pet Owners’ Knowledge and Practice of Handling Pet Food — YAOHUA (BETTY) FENG, Merlyn Thomas, Ziyue Zhang, Purdue University, West Lafayette, IN, USA

Blue Text – Developing Scientist Competitor

Green Text – Undergraduate Student Competitor

- P2-24 Exploring the Food Safety Perceptions and Practices of Pet Owners and Provision of Hygiene Information Regarding Raw Meat-based Pet Diets — Veronika Bulochova, ELLEN W. EVANS, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P2-25 A Content Analysis of Professional Food Handler Cognitive and Behavioral Food Safety Research Data — Lauren Wallis, ELLEN W. EVANS, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P2-26 Could Educational Actions be a Starting Point to the Transition of Food Safety Culture? — LAÍS MARIANO ZANIN, Pieternel Arianne Luning, Elke Stedefeldt, Federal University of São Paulo, São Paulo, Brazil
- P2-27 War on Biofilms – A Joint Task Force Approach — DEB SMITH, Vikan (UK) Ltd., Swindon, United Kingdom
- P2-28 Smart Food Safety: Remote Audit Using Smart Glass in EU Food Industries – Results, Limitations and Opportunities — CLAUDIO GALLOTTINI, Chiara Pellicciari, Ferruccio Marellò, Franco Rapetti, Andrea Gentili, Giovanni La Rosa, Enrica Alberti, ITA Corporation, Miami, FL, USA
- P2-29 Food Safety 2020: New Trend, New Fashion. Smarter is Better! — NOEMI TROMBETTI, Franco Rapetti, Andrea Gentili, Claudio Gallottini, ITA Group UK Ltd., London, United Kingdom
- P2-30 Evaluation of Dietetic Students' Food Safety Knowledge and Attitudes: A Multistate Study — Tressie Barrett, YAOHUA (BETTY) FENG, Ellen W. Evans, Vicky Gould, Elizabeth C. Redmond, Seunghye Wie, Sanja Ilic, Purdue University, West Lafayette, IN, USA

Epidemiology

- P2-31 Withdrawn
- P2-32 Effects of Climate Variables on the Outbreaks of Pathogenic *Escherichia coli* Food Poisoning in Korea — JONG-GYU KIM, Joong-Soon Kim, Jeong-Gyoo Kim, Keimyung University, Daegu, Daegu, South Korea
- P2-33 *Salmonella*, *Enterococcus* and Pathotypes of *Escherichia coli* from Irrigation Water on Farms in Mexico. — Zaira Castro-Delgado, Jose Merino-Mascorro, Santos Garcia, Jorge Dávila-Aviña, Norma Heredia, Juan S. Leon, Lee-Ann Jaykus, Raul Avila-Sosa, LUISA SOLÍS-SOTO, Universidad Autónoma de Nuevo León, Facultad de Ciencias Biológicas, Departamento de Microbiología e Inmunología, San Nicolás de los Garza, NL, Mexico
- P2-34 Withdrawn
- P2-35 Withdrawn
- P2-36 From Feed to Fork: Characterization of *Salmonella* spp. and *Escherichia coli* from Selected Swine Feed Mills and Their Relatedness to Historic Isolates from the Pork Production Chain — GABRIELA MAGOSSI, Kelly Domesle, Shenja Young, Chih-Hao Hsu, Cong Li, Errol Strain, Beilei Ge, Cassandra Jones, Valentina Trinetta, Kansas State University, Food Science Institute, Manhattan, KS, USA

Food Defense

- P2-37 Food Defense – It is Time for Consensus — Adeniyi Adedayo Odugbemi, CLINT FAIROW, Lehman Waisvisz, ADM, Decatur, IL, USA
- P2-38 Food Authenticity: The Use of RT-PCR to Detect Contamination in Halal Meat — Jennifer Valero-Garcia, Greta Carmona-Antonanzas, Mario Gadanho, AMANDA MANOLIS, Nicole Prentice, Laura Lopez-Rengel, Marta Izquierdo-Garcia, Yolanda Perez-Estarellas, Merche Bermejo-Villodre, Carlos Ruiz-Lafora, Thermo Fisher Scientific, Austin, TX, USA

- P2-39 Validation of a Lateral Flow Device for the Detection of Abrin in Foods — AMIE MINOR, Brenda Keavey, Zachary Kuhl, Megan Young, West Virginia Department of Agriculture, Charleston, WV, USA
- P2-40 Luminescence-based Detection of Pathogenic Bacteria Using Engineered Bacteriophage — MICHAEL WIEDERODER, Shannon McGraw, Sarah Gruszka, Jason Holder, U.S. Army Combat Capabilities Development Command – Soldier Center, Natick, MA, USA
- P2-41 Withdrawn
- P2-42 *Antiviral Activity of Chitosan Microparticles Against Bacteriophage MS2, a Human Norovirus Surrogate* — CANDACE BARNES, Rebecca Barber, Anita Wright, Melissa Jones, Naim Montazeri, Food Science & Human Nutrition Department, University of Florida, Gainesville, FL, USA

Food Law and Regulation

- P2-43 *Regulatory Frameworks and the Role of Land Grant Institutions in the Legalized Cannabis Edibles Market* — ABIGAIL WIEGAND, Jennifer Perry, University of Maine, Orono, ME, USA
- P2-44 Supporting FSMA Compliance for California's Regional Food Hubs through Training and Technical Assistance — Alda Pires, Gail Feenstra, Gwenael Engelskirchen, ERIN DICAPRIO, Department of Food Science and Technology, University of California-Davis, Davis, CA, USA
- P2-45 *Contamination Concerns Drive Local Illinois Health Inspectors Interpretation of the Food Code as It Relates to Share Table Food Recovery* — JESSICA KASSUELKE, Gustavo A Reyes, Matthew J. Stasiewicz, Melissa Pflug Prescott, University of Illinois Urbana-Champaign, Champaign, IL, USA

Food Processing Technologies

- P2-46 Inactivation of Shiga Toxin-producing *Escherichia coli* and *Listeria monocytogenes* within Plant Versus Beef Burgers Using High-pressure Processing — ANNA PORTO-FETT, Laura Shane, Bradley Shoyer, Manuela Osoria, Yang Jin Jung, John Luchansky, U.S. Department of Agriculture-ARS, Wyndmoor, PA, USA
- P2-47 *Impact of Fat Content on Resistance of Escherichia coli* to High-pressure Processing of Beef and Yogurt — CHANDRE VAN DE MERWE, Michael Gänzle, Lynn McMullen, University of Alberta, Edmonton, AB, Canada
- P2-48 High-pressure Thawing (HPT) and Inactivation of *Salmonella* spp. in Raw Ground Chicken — PATRICIA REYES, Mary-Grace Danao, Byron Chaves, Gary Sullivan, University of Nebraska – Lincoln, Lincoln, NE, USA
- P2-49 Thermal, Pressure and Shear on the Inactivation of *Lactobacillus brevis* and *Bacillus cereus* — JIE XU, Jerish Joyner Janahar, VM Balasubramaniam, Ahmed Yousef, Edmund Ting, The Ohio State University, Columbus, OH, USA
- P2-50 Sensitivity of *Staphylococcus aureus* to Mild Elevated Hydrostatic Pressure and Nisin in HEPES Buffer — JYOTHI GEORGE, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P2-51 *Novel Processing of Dried Beef Products (Biltong) without Antimicrobial Intervention to Achieve USDA-FSIS Validation of Salmonella (5-log Reduction)* — CAITLIN KAROLENKO, Arjun Bhusal, Kavya Gavai, Peter Muriana, Oklahoma State University, Stillwater, OK, USA

- P2-52 Efficacy of Liquid Smoke Fractions to Control Infestation of the Ham Mite, *Tyrophagus putrescentiae* (Schrank), in Semi-moist Pet Food — AISWARIYA DELIEPHAN, Charles. G. Aldrich, Thomas. W. Phillips, Kansas State University, Manhattan, KS, USA
- P2-53 Plasma-activated Water as a Novel Disinfectant: Effectiveness Against Selected Bacteria and Application to Produce and Egg Washing — Qingyang Wang, Sophia Kathariou, DEEPTI SALVI, North Carolina State University, Raleigh, NC, USA
- P2-54 Blend Uniformity and Vitamin Stability in Dairy-based Foods Fortified with Lipid-encapsulated Ferrous Sulfate — BRADLEY TAYLOR, Garth Lee, Ruo Fen Liao, Oscar Pike, Michael Dunn, Dennis Eggett, Reuben Domike, Brigham Young University, Provo, UT, USA
- P2-55 Evaluate the Stability of Water Droplets in Margarines and Spreads — May Yeow, LUIS ESPINOZA, Joseph Higgs, Rob Beauseau, Ventura Foods, Brea, CA, USA
- P2-56 Performance of a UV-A LED System for Degradation of Aflatoxins B₁ and M₁ in Pure Water and Whole Milk: Kinetics and Cytotoxicity Study — Ankit Patras, JUDY STANLEY, Brahmaiah Pendyala, Rishipal Bansode, Matthew Vergne, Tennessee State University, Nashville, TN, USA
- P2-57 Efficacy of Ozone Against *Salmonella* Newport in Recycled and Non-recycled Spinach Wash Water — VIMARYS OLIVERAS MIRANDA, Sadhana Ravishankar, Richard Park, University of Arizona, Tucson, AZ, USA
- P2-58 Withdrawn
- P2-59 Investigation of the Ability of Butyl-Parahydroxybenzoate in Selected Dry Food Matrices to Enhance Thermal Inactivation of *Cronobacter sakazakii* — ZHUJUN GAO, Chongtao Ge, Robert Baker, Rohan Tikekar, Robert Buchanan, University of Maryland-College Park, College Park, MD, USA
- P2-60 Evaluation of Synergistic Effect of Butyl-Parahydroxybenzoate on the Thermal Inactivation of *Cronobacter sakazakii* in Apple Juice as a Function of pH — ZHUJUN GAO, Chongtao Ge, Robert Baker, Rohan Tikekar, Robert Buchanan, University of Maryland-College Park, College Park, MD, USA
- P2-61 Efficacy of Residual Ozone on Surrogate Microorganisms for Waterborne Pathogens in Bottled Water — RYAN SCHWANER, Sanjay Kumar, Harshavardhan Thippareddi, Niagara Bottling, Anaheim, CA, USA
- P2-62 Use of Surrogate Bacteria for Validation and Verification of High-pressure Processes (HPP) — Priscilla Piller, Virginie Pignard, Pierre-Olivier Beal, Pablo Alvarez-Martin, PIERRE-ALEXANDRE JUAN, NOVOLYZE, Daix, France
- P2-63 Use of Surrogate Bacteria for Validation and Verification of Thermal Treatments of Fruits and Vegetables — Virginie Pignard, Priscilla Piller, Pierre-Olivier Beal, Pablo Alvarez-Martin, PIERRE-ALEXANDRE JUAN, NOVOLYZE, Daix, France
- P2-64 Compatibility of Plastics and Elastomers Typically Used in Food Equipment with Chlorine Dioxide Gas — MARIO E. BERMUDEZ, Mark Morgan, University of Tennessee, Department of Food Science, Knoxville, TN, USA
- Food Safety Systems**
- P2-65 Examination of the Use of Failure Mode and Effects Analysis (FMEA) to Improve the Risk Assessment of Biological Hazards of a Fresh-cut Produce Processing Plant — REBECCA ROBERTSON, Richard Vurdela, David D. Kitts, Food Science, Faculty of Land and Food Systems, University of British Columbia, Vancouver, BC, Canada
- P2-66 Evaluation of Innovative Food Safety and Technical Support Delivered to Welsh Food Sector SMEs through Project Helix 2016–2019 — ELIZABETH C. REDMOND, Sharon Mayho, David Lloyd, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P2-67 Identification of a Large-scale Inoculation Method for On-site Validations of Wheat Milling Facilities with a Surrogate for STEC and *Enterococcus faecium* NRRL B-2354 — Fadi Dagher, Fatemeh Rahmany, Pooneh Peyvandi, Goze Demircioglu, Jay Pandya, Rebecca Karen Hylton, Chafik Baghdadi, AMIR HAMIDI, Agri-Neo Inc., Toronto, ON, Canada
- P2-68 Survival Abilities of *Lactobacillus* Strains in Fermented Milk Product Co-cultured with Selected Foodborne Pathogens — KOLAWOLE BANWO, AanuOluwapo Ogungbe, Abiodun Sanni, University of Ibadan, Oyo State, Ibadan, Nigeria
- P2-69 Withdrawn
- P2-70 Evaluation of GENE-UP® New Markers EHEC for Detection of Shiga Toxin-producing *Escherichia coli* in MicroTally Sheets Collected from Beef Carcasses — TIANQING LIU, Joseph Bosilevac, Tommy Wheeler, Terrance Arthur, Mo Jia, Ifigenia Geornaras, Vikrant Dutta, Keith Belk, Hua Yang, Colorado State University, Department of Animal Sciences, Fort Collins, CO, USA
- P2-71 Survival of *Cronobacter sakazakii* in Powdered Infant Formula in a Dynamic *In Vitro* Newborn Gastric Model — DEVITA KIREINA, Valeria R. Parreira, Jeffrey Farber, Canadian Research Institute for Food Safety (CRIFS), Department of Food Science, University of Guelph, Guelph, ON, Canada
- P2-72 A Rapid Response to Seek and Destroy *Listeria monocytogenes* in a Ready-to-Eat Manufacturer Supplying the UK Retail Sector — HELEN TAYLOR, Ellen W. Evans, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P2-73 The Formation of *Listeria monocytogenes* Persister Cells in Fresh Produce Processing Environment — LUXIN WANG, Xavier F Hospital, University of California, Davis, Davis, CA, USA
- P2-74 Antilisterial Activity of Microencapsulated *Lactobacillus paraplantarum* FT-259 in a Brazilian Fresh Cheese Model — Layena Lindsay Souza Martins Ribeiro, Gustavo P. Araujo, Elaine Cristina Pereira De Martinis, Ricardo Neves Marreto, VIRGINIA FARIAS ALVES, Universidade Federal de Goiás, Goiânia, Brazil
- P2-75 Withdrawn
- P2-76 Withdrawn
- P2-77 Survival of Foodborne Pathogens in Citrus Storage and Finishing Waxes — LINA SHENG, Linda J. Harris, Luxin Wang, University of California-Davis, Davis, CA, USA
- P2-78 Developing and Maintaining Food Safety Culture through Implementation of GFSI Benchmarked Standards: A Success Story — MUHAMMAD SHAHBAZ, Muhammad Bilal, Abdul Moiz, Mawarid Food Company – KSA (Pizzahut, Taco Bell), Riyadh, Saudi Arabia
- P2-79 From Top Floor to Shop Floor: Exploring the Food Safety Culture Communication Concept — Emma J. Samuel, ELLEN W. EVANS, Elizabeth C. Redmond, ZERO2FIVE Food Industry Centre, Cardiff Metropolitan University, Cardiff, United Kingdom
- P2-80 Gender Analysis of Food Safety Practices in the Dairy and Meat Value Chains in Two Locations of Ethiopia — Kathleen Colverson, Alganesh Gemechu, Dinalol Belina, ARIEL GARSOW, Ashagrie Zewdu, Tesfaye Gobena, The Ohio State University, Columbus, OH, USA

- P2-81 Lethality of Ultraviolet-C Irradiation Against Foodborne Pathogens as Affected by Types of Abiotic Surfaces — XI LI, Joon-Young Yoon, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P2-82 Cross-border Safety and Regulatory Implications of Clean Label: Stats, Trends, Challenges and Lessons Learned — KANTHA SHELKE, Corvus Blue LLC/Johns Hopkins University, Chicago, IL, USA

General Microbiology

- P2-83 Validation of the Baking Process as a Kill-Step for Controlling *Salmonella* in Brownies — PHOEBE UNGER, Arshdeep Singh, Amninder Singh Sekhon, Monipel Ansong, Lakshmikantha Channaiah, Minto Michael, Washington State University, Pullman, WA, USA
- P2-84 Comparison of Thermal Resistances of Nonproteolytic *Clostridium botulinum* Types B and F and Psychrotrophic *Bacillus cereus* — TRAVIS MORRISSEY, Viviana Aguilar, N. Rukma Reddy, Guy Skinner, Kristin M. Schill, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P2-85 Thermal Inactivation of *Escherichia coli*, *Listeria monocytogenes*, *Salmonella* and *Enterococcus faecium* in Grains — ABDULLATIF TAY, Rico Suhaim, Nicole Cuthbert, Erdogan Ceylan, PepsiCo, Barrington, IL, USA
- P2-86 Sampling and Analysis of Food Industry Biofilms — ZOE LAMBERT, Rob Limburn, Phil Wells, Peter Goode, Madalina Smadoiu, Campden BRI, Chipping Campden, United Kingdom
- P2-87 Rate of Inactivation Affects the Enumeration and Culturability of Shiga Toxin-producing *E. coli* Persists Exposed to Ciprofloxacin — ANDREW GREEN, Marc Habash, Rod Merrill, Keith Warriner, University of Guelph, Guelph, ON, Canada
- P2-88 Sensitivity of Non-pathogenic LT2 and Pathogenic *Salmonella enterica* Serovars to Elevated Hydrostatic Pressure and Citricidal Under Controlled Temperature — ANIKA CHOWDHURY, Shahid Chowdhury, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P2-89 Reduction of *Enterococcus faecium* and *Salmonella* in Fried Potato-based Snacks at Various Moisture Levels — RICO SUHALIM, Abdullatif Tay, Nicole Cuthbert, Erdogan Ceylan, PepsiCo, Plano, TX, USA
- P2-90 Thermal Assisted High-pressure Processing of Three Microbial Spores in Presence of Nisin, Lysozyme, Lactic Acid, and Citricidal in Deionized Water and a Food Vehicle — SADIYE ARAS, Niamul Kabir, Jyothi George, Shahid Chowdhury, Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, TN, USA
- P2-91 Withdrawn
- P2-92 Attachment of GFP-producing *Escherichia coli* O103 on Beef Tissues over Time — BROCK BRETTHOUR, Joseph Bosilevac, Joshua Maher, Katelynn Stull, Sara Gragg, Kansas State University, Manhattan, KS, USA
- P2-93 Selenite Cystine Agar as a Selective Enumeration Media for *Salmonella* Serovars Used in Antimicrobial Intervention Studies Incurring Conditions of Metabolic Stress — CAITLIN KAROLENKO, Arjun Bhusal, Peter Muriana, Oklahoma State University, Stillwater, OK, USA
- P2-94 Evaluation of the Impact of Different Monosaccharides on *Listeria monocytogenes* and Potential Competitors Growth in a Chemically Defined Medium — LAUREL BURALL, Atin Datta, U.S. Food and Drug Administration — CFSAN, Laurel, MD, USA

- P2-95 Homologous Stress Adaptive Response in Eight Strains of *Listeria monocytogenes* after Gradual Exposure to Increasing Sublethal 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
- P2-96 Changes in Susceptibility to Trimethoprim in *Listeria monocytogenes* Strains after Exposure to Gradually Increasing Sublethal Concentrations 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
- P2-97 Withdrawn
- P2-98 Comparison of Aqueous Chlorine Dioxide Generated with Different Acids on Reducing Foodborne Pathogenic Bacteria — LIANGER DONG, Yong Li, University of Hawaii at Manoa, Honolulu, HI, USA
- P2-99 High Prevalence of Extremely Heat-resistant *Escherichia coli* in Finished Beef Products — MANITA GURAGAIN, John Schmidt, Joseph Bosilevac, USMARC-USDA/ARS, Hastings, NE, USA
- P2-100 Withdrawn
- P2-101 Effect of Goat Diet on the Prevalence of *E. coli*, Total Coliforms and Bacterial Pathogens on the Rumen Fluid and Feces — JUAN MOREIRA, Achyut Adhikari, Prakash Dangal, Louisiana State University, Baton Rouge, LA, USA
- P2-102 *Staphylococcus aureus* Survival in Color and Sweetener Solutions — JENNIFER TODD-SEARLE, Sarah Pappas, Kelly Poltrok-Germain, Nancy Bontempo, Mondelez International, East Hanover, NJ, USA
- P2-103 Isolation, Characterization, and HPLC Quantitation: Nitrate Reducing Bacteria and Their Fermentation of Nitrate to Natural Vegetable Nitrite — ARJUN BHUSAL, Peter Muriana, Oklahoma State University, Stillwater, OK, USA
- P2-104 Optimizing Growth Conditions for Carotenoids-producing Yeasts — LIHUA FAN, Craig Doucette, Sherry Fillmore, Agriculture and Agri-Food Canada, Kentville, NS, Canada
- P2-105 Enhancing the Growth and Survival of Probiotic *Saccharomyces boulardii* by Prebiotic Supplements — BEVERLY YUEN, Chin Nyeen Lee, Yong Li, University of Hawaii at Manoa, Honolulu, HI, USA
- P2-106 Antimicrobial Resistance of *Pseudomonas* spp., *Stenotrophomonas* spp., and *Burkholderia* spp., Isolated from Agricultural Farms in Mexico — Norma Heredia, Santos Garcia, HERLINDA FABIOLA VENEGAS, Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, NL, Mexico
- P2-107 Influence of Hippophae Rhamnoides L. Polysaccharides on the Human Gut Microbiota in Vitro — XIN SHAO, Xiyang Wu, Chunbo Chen, Karl Matthews, Qi Shao, South China University of Technology, Guang Zhou, China
- P2-108 Determination of Thermal Inactivation Kinetics of *Salmonella* in Brownie Batter — MONIPEL ANSONG, Phoebe Unger, Arshdeep Singh, Amninder Singh Sekhon, Lakshmikantha Channaiah, Minto Michael, Yaeseol Yang, Washington State University, Pullman, WA, USA
- P2-109 Heat Resistance of Foodborne Pathogens and Surrogates of Interest in Raw Wheat Flour — Bradley Taylor, ADAM QUINN, Ruo Fen Liao, Kristi Gowans, Thomas Smith, Frost Steele, Brigham Young University, Provo, UT, USA

- P2-110 Comparison of Thermal Resistance of *Salmonella* in Wheat Flour Inoculated Via Glass Bead Transfer and Liquid Inoculation — LINDSAY HALIK, Nathan Anderson, Elizabeth Grasso-Kelley, Illinois Institute of Technology, Institute of Food Safety and Health, Bedford Park, IL, USA
- P2-111 Evaluation of Drying Conditions to Inactivate *Salmonella* in Minimally Processed Apple Products — Xiyang Liu, Becky Douglas, Lindsay Halik, Jieyu Zhang, Anisha Rajesh Mayekar, ELIZABETH GRASSO-KELLEY, Illinois Institute of Technology, Department of Food Science and Nutrition / Institute for Food Safety and Health, Bedford Park, IL, USA
- P2-112 Detection of *Salmonella* in 25-g Samples of All-purpose Flour Using the BAX® System — ANASTASIA LIKANCHUK, Julie Weller, Victoria Kuhnel, Qualicon Diagnostics LLC, A Hygiene Company, New Castle, DE, USA
- P2-113 The Natural Antimicrobial Carvacrol and Thymol Disrupt Desiccation Resistance in *Salmonella enterica* Serovar Tennessee: Advancing Safety of Low-moisture Foods — AHMED ABDELHAMID, Ahmed Yousef, The Ohio State University, Columbus, OH, USA
- P2-114 Survival of *Salmonella* and Shiga Toxin-producing *Escherichia coli* during Tempering of Wheat Berries — JIIN JUNG, Linda J. Harris, University of California-Davis, Department of Food Science and Technology, Davis, CA, USA
- P2-115 Desiccation and Acid Tolerance of Shiga Toxin-producing *Escherichia coli* Associated with Low-moisture Foods — JIIN JUNG, Linda J. Harris, University of California-Davis, Department of Food Science and Technology, Davis, CA, USA
- P2-116 Effect of Water Activity on Thermal Inactivation of *Salmonella* spp. and *Enterococcus faecium* NRRL B-2354 in Basil Leaves — TUSHAR VERMA, Soon Kiat Lau, Terry Howell Jr., Jeyam Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA
- P2-117 Fate of Foodborne Pathogens in Commercial Ready-to-Eat (RTE) Chocolate Chip Cookie Dough Held at 4, 10, 15, and 23°C — LORETTA FRIEDRICH, Pardeepinder Brar, Michelle Danyluk, University of Florida, Lake Alfred, FL, USA
- P2-118 Quantifying the Survival of *Salmonella* during the Long-term Storage of Multiple Sugar Products — ANDREW KEARNEY, Ian Hildebrandt, Michael James, Nicole Hall, Bradley Marks, Michigan State University, East Lansing, MI, USA
- P2-119 Surface Decontamination of Wheat Grain during Simulated Tempering — MEGHAN DEN BAKKER, Francisco Diez, Govindaraj Dev Kumar, Fereidoun Forghani, University of Georgia Center for Food Safety, Griffin, GA, USA
- P2-120 Intracellular Moisture Retention of Desiccated *Salmonella* in Low-water Activity Environments — PHILIP STEINBRUNNER, Xiang Yan, Elizabeth Grasso-Kelley, Susanne Keller, Nathan Anderson, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P2-121 Determination of Thermal Inactivation Parameters of *Salmonella* in Non-fat Dry Milk Powder and Hydrated Non-fat Milk — AMNINDER SINGH SEKHON, Arshdeep Singh, Phoebe Unger, Monipal Ansong, Minto Michael, Washington State University, Pullman, WA, USA
- P2-122 Influence of Water Activity at Elevated Temperature on Thermal Resistance of Freeze-dried *Salmonella* Enteritidis PT30 — YUCEN XIE, Jie Xu, Ren Yang, Juming Tang, Washington State University, Pullman, WA, USA
- P2-123 Cell Concentration Dependency of Survival on Drying in *Salmonella* Species — RACHEL STREUFERT, Joelle K. Salazar, Susanne Keller, U.S. Food and Drug Administration, Bedford Park, IL, USA
- P2-124 Thermal Inactivation of *Salmonella* on Cocoa Beans during Dry-heat Roasting — GABRIELLA PINTO, Runan Yan, Caitlin Luyster, Aimee Koestler, Elizabeth Yeung, Taejung Chung, Helene Hopfer, Gregory Ziegler, Rebecca Taylor-Roseman, Karen Murphy, Greg D'Alesandre, Jasna Kovac, The Pennsylvania State University, University Park, PA, USA
- P2-125 Growth Kinetics of *Salmonella enterica* during Rehydration and Subsequent Storage of Dehydrated Carrots — YUYING REN, Joelle K. Salazar, Zihui Wu, Megan Fay, Girvin Liggans, Mary Lou Tortorello, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA

Low-water Activity Foods

- P2-126 Impact of Air Velocity on *Enterococcus faecium* Inactivation during Dry Roasting of Peanuts — KAITLYN CASULLI, Matthew Igo, Donald W. Schaffner, Kirk Dolan, Michigan State University, East Lansing, MI, USA
- P2-127 Effect of Sugar Composition on Resuscitation of *Salmonella* and *Enterococcus faecium* NRRL B-2354 Survivors in Heat-treated Skim Milk Powder and Lactose-Free Skim Milk Powder — NURUL HAWA AHMAD, Bradley Marks, Elliot Ryser, Michigan State University, East Lansing, MI, USA
- P2-128 The Effect of Superheated Steam on the Inactivation Kinetics of *Enterococcus faecium* Inoculated in Peanut Butter at Different Water Activities — HYEON WOO PARK, Abigail B. Snyder, V. M. Balasubramaniam, The Ohio State University, Columbus OH, USA
- P2-129 Understanding the Impact of Inoculation Methods on Thermal Inactivation Rates of Edible Insect Powder Using *Enterococcus faecium* — CHRISTINA ABEL, Quincy Suehr, Sanghyup Jeong, Michigan State University, East Lansing, MI, USA
- P2-130 Effect of UV-C Light and Hot Air on Quality and Microbiological Safety of Chia, Amaranth and Sesame Seeds — CRISTIAN JUÁREZ-ARANA, Eduardo Morales-Sánchez, Marcela Gaytan-Martínez, Montserrat Hernandez-Iturriaga, Universidad Autónoma De Querétaro, Querétaro, Mexico
- P2-131 Thermal Resistance of *Salmonella* spp. and *Enterococcus faecium* NRRL-B2354 in Whole Chia Seeds — Soon Kiat Lau, Rajendra Panth, Byron Chaves, JEYAM SUBBIAH, University of Arkansas, Fayetteville, AR, USA
- P2-132 Effect of Inoculated Ingredient on the Isothermal Inactivation of *Enterococcus faecium* NRRL B-2354 in a Multicomponent Cookie Dough — XIYANG LIU, Nathan Anderson, Philip Steinbrunner, Elizabeth Grasso-Kelley, Illinois Institute of Technology, Institute of Food Safety and Health, Bedford Park, IL, USA
- P2-133 Validation of Simulated Commercial Baking of Peanut Butter Cereal Bars to Control *Salmonella*, Shiga Toxin-producing *Escherichia coli* and *Listeria monocytogenes* — DANIEL VEGA, Nicholas Severt, Katia Pozuelo, Lakshmi Kantha Channaiah, Harshavardhan Thippareddi, Randall Phebus, Kansas State University, Manhattan, KS, USA

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- P2-134 Heat Resistance of *Salmonella*, Shiga Toxin-producing *Escherichia coli* and *Listeria monocytogenes* in Peanut Butter Cereal Bar Dough with Lowered Water Activity — DANIEL VEGA, Nicholas Severt, Katia Pozuelo, Lakshmikantha Channaiah, Harshavardhan Thippareddi, Randall Phebus, Kansas State University, Manhattan, KS, USA
- P2-135 Validation of a Low-moisture Viscous Cookie Baking Process — BUFFY MONTGOMERY, Kelly Dawson, Balasubrahmanyam Kottapalli, Conagra Brands, Omaha, NE, USA
- P2-136 Efficacy of Automatic Dishwashing in Reducing Microbial Load of Porous and Non-porous Surfaces Soiled with Cake Batter — KAYLAN HAYMAN, Govindaraj Kumar, Abhinav Mishra, University of Georgia, Griffin, GA, USA
- P2-137 Modeling the Effect of Temperature and Water Activity on the Survival of *Escherichia coli* during Dehydration of Plant-based Food Products — YADWINDER SINGH RANA, Quincy Suehr, Ian Hildebrandt, Bradley Marks, Abigail B. Snyder, Cornell University, Ithaca, NY, USA
- P2-138 Patented Organic Peracetic Acid and Hydrogen Peroxide-based Sanitizing Solution Achieves > 4 Log CFU/g Reduction in *Salmonella*, *Listeria monocytogenes*, STEC and *Enterococcus faecium* NRRL B-2354 on Almonds While Maintaining Nutrition and Shelf Life — Pooneh Peyvandi, Goze Demircioglu, Rebecca Karen Hylton, Fatemeh Rahmany, Jay Pandya, Fadi Dagher, AMIR HAMIDI, Agri-Neo Inc., Toronto, ON, Canada
- P2-139 Patented Organic Peracetic Acid and Hydrogen Peroxide-based Sanitizing Solution Achieves > 5-Log CFU/g Reduction in *Salmonella* Surrogate *Enterococcus faecium* NRRL B-2354 on Cashews While Maintaining Shelf Life and Nutrition — Rebecca Karen Hylton, Jay Pandya, Pooneh Peyvandi, Goze Demircioglu, Fatemeh Rahmany, Fadi Dagher, AMIR HAMIDI, Agri-Neo Inc., Toronto, ON, Canada
- P2-140 Population Dynamics of *Listeria monocytogenes* in Nut and Seed Butters — XINYUAN ZHANG, Joelle K. Salazar, Megan Fay, Kristin Pfeiffer, Diana Stewart, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA
- P2-141 *Listeria monocytogenes* Growth Kinetics during Rehydration and Storage of Dehydrated Potatoes — ZIHUI WU, Joelle K. Salazar, Yuying Ren, Megan Fay, Girvin Liggans, Mary Lou Tortorello, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA
- Modeling and Risk Assessment**
- P2-142 Quantitative Microbial Risk Assessment to Evaluate the Public Health Risk of Avian Influenza H7N9 in Chicken from Live Poultry Markets — SHRADDHA KARANATH, Weixin Jia, Abani Pradhan, University of Maryland, College Park, MD, USA
- P2-143 Assessing the Risk of Salmonellosis from Consumption of Conventionally and Alternatively Produced Broiler Meat in the United States — CHASE GOLDEN, Abhinav Mishra, University of Georgia, Athens, GA, USA
- P2-144 The Public Health Outcome of the Continued Removal of Specified Risk Materials (SRMs) from Regulated Beef Products in Domestic Production — BERHANU TAMERU, Gurinder Saini, Eric Ebel, Michael Williams, Michelle Catlin, Joanna Zablotzky Kufel, USDA Food Safety & Inspection Service, Washington, D.C., USA
- P2-145 Quantitative Microbial Risk Assessment of Diarrhea *Bacillus cereus* in the Ready-to-eat Lunch Box and Dried Mango — JEONG YEON LEE, Su Jin Kim, Min Suk Rhee, Ki Sun Yoon, Kyung Hee University, Seoul, South Korea
- P2-146 Quantitative Microbial Risk Assessment of *Listeria monocytogenes* in Raw Julienned Beef Purchased from On and Off Line Markets — HA YEON JO, Jeong Yeon Lee, Kun-Ho Seo, Ki Sun Yoon, Kyung Hee University, Seoul, South Korea
- P2-147 Microbial Risk Assessment of Highly Pathogenic *Vibrio* spp. by Raw Oyster Consumption — Jeeyeon Lee, Sejeong Kim, Il-Shik Shin, Young-Mog Kim, Kwon-Sam Park, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P2-148 Quantitative Microbial Risk Assessment of Highly Pathogenic *Vibrio* spp. in Whiparm Octopus in Korea — Jimyeong Ha, Il-Shik Shin, Young-Mog Kim, Kwon-Sam Park, YOHAN YOON, Sookmyung Women's University, Seoul, South Korea
- P2-149 Modeling the Invasion of *Campylobacter jejuni* into Small Intestinal Cells for the Key Events Dose-response Framework — HIROKI ABE, Kento Koyama, Shigenobu Koseki, Hokkaido University, Sapporo, Japan
- P2-150 Quantitative Microbial Risk Assessment for *Salmonella* Foodborne Illness by Chicken Nugget Consumption — EUNYOUNG PARK, Hyemin Oh, Se-Wook Oh, Jang Won Yoon, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-151 Estimation for Probability of *Staphylococcus aureus* Foodborne Illness from Ready-to-Eat Salad Consumption — YEWON LEE, Doyeon Kim, Sang-Do Ha, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-152 Estimated Risk of *Bacillus cereus* Foodborne Illness by Perilla Leaf Pickle Consumption in Korea — YEWON LEE, Doyeon Kim, Min Suk Rhee, Yohan Yoon, Sookmyung Women's University, Seoul, South Korea
- P2-153 Modeling the Risk of Salmonellosis/Listeriosis from the Consumption of Frozen Food Products under Alternative Consumer Handling Scenarios — KELLY DAWSON, Brian Hawkins, Kevin Wegman, Balasubrahmanyam Kottapalli, Conagra Brands, Omaha, NE, USA
- P2-154 Assessing Foodborne Risk of Metal Exposure Associated with Produce Crops Irrigated with Oilfield Produced Water — Jennifer Redmon, ELISABETTA LAMBERTINI, Donna Womack, Ted Lillys, A. J. Kondash, Luis Cabrales Arriaga, Laura Feinstein, GAIN – Global Alliance for Improved Nutrition, Rockville, MD, USA
- P2-155 Organophosphate Pesticides Exposure and Risk Assessment from the Consumption of Vegetables in Thailand — Weeraya Karnpanit, YAOHUA (BETTY) FENG, Elizabeth Jara Torres, Ishani Roychowdhury, Wischada Jongmevasna, Kanokporn Atisook, Purdue University, West Lafayette, IN, USA
- P2-156 Integration of Pathogen Reduction Models within Computational Fluid Dynamics Simulations of the Spray Drying Process — QUINCY SUEHR, Bradley Marks, Sanghyup Jeong, Michigan State University, East Lansing, MI, USA
- P2-157 Shelf-life Estimation of Pacific White-leg Shrimps Using Micro Isothermal Calorimetric (MIC) Data at Accelerated Storage Temperature – A Machine Learning Approach — IMRAN AHMAD, Michael Cheng, Florida International University, North Miami, FL, USA

- P2-158 Pork “Gyros”: Assessment of Microbial Safety Under Commercially Occurring Roasting Scenarios — ANASTASIA KAPETANAKOU, Konstantina Athanaseli, Maria Kolostoumpi, Panagiotis Skandamis, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University of Athens, Athens, Greece
- P2-159 Simulating Shelled-corn Sampling to Improve Sampling Plans for Mycotoxin Detection — XIANBIN CHENG, Matthew J. Stasiewicz, University of Illinois — Urbana-Champaign, Urbana, IL, USA
- P2-160 Hazard Identification and Characterization for the Development of a Share Table Quantitative Microbial Risk Assessment — GUSTAVO A. REYES, Jessica Kassuelke, Melissa P. Prescott, Matthew J. Stasiewicz, University of Illinois Urbana-Champaign, Champaign, IL, USA
- P2-161 Effect of Type of Staphylococcal Enterotoxins on the Risk of Ready-to-eat (RTE) Triangle-Sushi at Retail Market — CHAE LIM LEE, Yeon Ho Kim, Sang-Do Ha, Min Suk Rhee, Ki Sun Yoon, Kyung Hee University, Seoul, South Korea
- P2-162 A Meta-analysis of Worldwide Mycotoxin Prevalence in Beers — Danieli C. Schabo, DONALD W. SCHAFFNER, Marciane Magnani, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P2-163 A Meta-regression Model Describing the Effects of Essential Oils on *Escherichia coli* Inactivation in Cheese — BEATRIZ NUNES SILVA, Vasco A. P. Cadavez, José A. Teixeira, Ursula Gonzales-Barron, CEB – Centre of Biological Engineering, University of Minho, Braga, Portugal
- P2-164 Inactivation of Antimicrobial-resistant Bacteria during Manure Storage as Static Stockpiles — ENAKSHY DUTTA, Ece Bulut, Xu Li, Amy Schmidt, Galen Erickson, Jennifer Clarke, Bing Wang, University of Nebraska – Lincoln, Lincoln, NE, USA
- P2-165 Survival of *Listeria monocytogenes* in Cow Milk through a Dynamic Human Stomach Model — LINKANG ZHANG, Valeria R. Parreira, Jeffrey Farber, University of Guelph, Canadian Research Institute in Food Safety (CRIFS), Guelph, ON, Canada
- P2-166 Effect of Relative Humidity on Survival of *Salmonella enterica* in Raw Cut Peppers Stored at Distinct Temperatures — Ítalo Henrique Rodrigues Marques Ferreira, Donald W. Schaffner, JIIN JUNG, Marciane Magnani, Department of Food Science and Technology, Robert Mondavi Institute, Davis, CA, USA
- P2-167 Validation of Existing CombBase Models for Suitability in Ten Different Types of Whole Uncut Fresh Produce — MARINA GIRBAL, Laura K. Strawn, Claire Marik, Cameron Bardsley, Joyce Zuchel, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P2-168 Predictive Model for Growth of *Clostridium perfringens* during Cooling of Cooked Pork Supplemented with Sodium Chloride and Sodium Pyrophosphate — VIJAY JUNEJA, Marangeli Osoria, Sudarsan Mukhopadhyay, Anuj Purohit, Chase Golden, Udit Minocha, Govindaraj Devkumar, Harshavardhan Thippareddi, Abhinav Mishra, U.S. Department of Agriculture-ARS-ERRC, Wyndmoor, PA, USA
- P2-169 Growth Kinetics of *Salmonella*, *Escherichia coli* O157:H7, and *Listeria monocytogenes* on the Surface of Whole Cantaloupes and Watermelons during Storage — JOYJIT SAHA, Loretta Friedrich, Lawrence Goodridge, Michelle Danyluk, University of Florida CREC, Lake Alfred, FL, USA
- P2-170 Withdrawn
- P2-171 Withdrawn
- P2-172 Withdrawn
- P2-173 Models for Growth of *Listeria monocytogenes* on Whole Intact Fresh Produce from Literature Data — MATTHEW IGO, Laura K. Strawn, Claire Marik, Cameron Bardsley, Joyce Zuchel, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P2-174 Quantification of the Influence of Strain Type and Inoculum Preparation on the Survival of *Salmonella* in Whole Milk Powder — MATTHEW IGO, Donald W. Schaffner, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P2-175 Withdrawn
- P2-176 Source Attribution at the Fish Sub-product Level for 11 Foodborne Pathogens of Importance in Fish for the Development of a Risk Assessment Model — Suzanne Savoie, Elisabeth Mantil, Manon Racicot, Alexandre Leroux, Anna Mackay, Julie Arsenault, Mansel Griffiths, Jeffrey Farber, Richard Holley, Tom Gill, Sylvain Charlebois, Aamir Fazil, Sylvain Quessy, ROMINA ZANABRIA, Canadian Food Inspection Agency, Ottawa, ON, Canada
- P2-177 Assessing the Relative Risk of Feed Safety Criteria Included in the Canadian Food Inspection Agency Risk Assessment Model for Feed Mills through an Expert Elicitation — Virginie Lachapelle, Manon Racicot, Genevieve Comeau, Alexandre Leroux, Mohamed Rhouma, France Provost, ROMINA ZANABRIA, Ornella Wafo Noubisissie, Richard Holley, John Smillie, My-Lien Bosch, Andre Dumas, Sylvain Quessy, Canadian Food Inspection Agency, Ottawa, ON, Canada
- P2-178 Predicting the Growth of *Listeria monocytogenes* in a Deli-style, Uncured Turkey Meat Product Formulated with Vinegar Powder as a Function of Product pH, Moisture, and Salt — SUBASH SHRESTHA, Daniel Unruh, Gijs Lommerse, Karin Beekmann, Thanh Tran, Saurabh Kumar, Cargill, Inc., Wichita, KS, USA
- Molecular Analytics, Genomics and Microbiome**
- P2-179 Progress Toward Standardizing Metagenomics: Application of Metagenomic Reference Materials to Develop a Reproducible Microbial Lysis Methodology with Minimum Bias — MICHAEL WEINSTEIN, David Danko, Elaine Wolfe, Shuiquan Tang, Karen Jarvis, Christopher Grim, Venu Lagishetty, Jonathan Jacobs, Jason Arnold, Ryan Kemp, Christopher Mason, Zymo Research, Irvine, CA, USA
- P2-180 Development of a Bacterial Metabarcoding Analysis Pipeline — XUWEN WIENEKE, Damien Chauveau, Younous Adrouji, Yao Amouzou, Erwann Scaon, Sarita Raengpradub Wheeler, Sebastien Leuillet, Mérieux NutriSciences, Crete, IL, USA
- P2-181 Serotype Characterization of *Salmonella* Isolates from Traditional Wet Markets from Cambodia through Whole-genome Sequencing — CARLA SCHWAN, Sara Lomonaco, Valentina Trinetta, Sara Gragg, Randall Phebus, Justin Kastner, Jessie Vipham, Peter W. Cook, Kansas State University, Manhattan, KS, USA
- P2-182 Withdrawn
- P2-183 Genometrakr Database and Network: Lessons on What Can be Done with a Quarter Million *Salmonella* Genomes — Marc Allard, Ruth Timme, MARIA BALKEY, Eric Stevens, Maria Hoffmann, George Kastanis, Guojie Cao, Tim Muruvanda, Sara Lomonaco, Justin Payne, Arthur Pightling, Hugh Rand, James Pettengill, Yan Luo, Narjol Gonzalez-Escalona, David Melka, Phillip Curry, Sabrina Lindley, Jacob Marogi, Karina Reyes-Gordillo, Yi Chen, Sandra Tallent, Eric Brown, U.S. Food and Drug Administration – CFSAN, Silver Spring, MD, USA

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- P2-184 *Campylobacter jejuni* Clonal Complex 45 Isolates Harboring Multiple Resistance Determinants are Largely Restricted to Sequence Type 2109 — JESSICA CHEN, Lavin Joseph, Kaitlin Tagg, Justin Kim, Charlotte Lane, Lee Katz, Lousie Francois Watkins, Christy Bennett, Janet Pruckler, Hattie Webb, Rachael Aubert, Jason Folster, Centers for Disease Control and Prevention, Atlanta, GA, USA
- P2-185 Genomic Characterization and Growth Rates of *B. cereus* Group Isolates from Diverse Sources — TAEJUNG CHUNG, Cassidy Prince, Naomi Niyah, Sophia Johler, Jasna Kovac, The Pennsylvania State University, University Park, PA, USA
- P2-186 Withdrawn
- P2-187 Genomic Characterization of Prophage Encoding Regions in *Cronobacter sakazakii* — LEAH WEINSTEIN, Hyein Jang, Gopal Gopinath, Flavia Negrete, Jayanthi Gangiredla, Isha Patel, Ben Tall, U.S. Food and Drug Administration, Laurel, MD, USA
- P2-188 Evaluation and Comparison of *Salmonella* Genome-based Serotyping Methods with Bead-based Molecular Serotyping and Traditional Methods for *Salmonella* Isolated from Food and Environmental Samples — Kayleigh McMaster, Shauna Madson, Melissa Nucci, Karen Jinneman, MICHELLE MOORE, Food and Drug Administration, Office of Regulatory Affairs, Office of Regulatory Science, Bothell, WA, USA
- P2-189 Identification of Mobile Genetic Elements and Evolutionary Analysis Based on Long-read Sequencing of *Listeria monocytogenes* in the Food Processing Environment — HEE JIN KWON, Zhao Chen, Jianghong Meng, Peter Evans, University of Maryland, College Park, MD, USA
- P2-190 Withdrawn
- P2-191 Whole Genome Sequence Analysis of *Campylobacter jejuni* and *coli* from Ovine Carcasses in New Zealand — LUCIA RIVAS, Pierre Y. Dupont, Brent Gilpin, Helen Withers, Institute of Environmental Science and Research, Christchurch, New Zealand
- P2-192 Whole Genome Sequencing-based Analyses of *Campylobacter* Isolates from Clinical Samples and Retail Poultry Meats — RUNAN YAN, Emma Mills, Lauren Hudson, Nkuchia M. M'ikanatha, Irving Nachamkin, Thomas G. Denes, Jasna Kovac, The Pennsylvania State University, University Park, PA, USA
- P2-193 Whole Genome Sequencing Analysis of Non-top 7 STEC Serogroups Suggests Novel Serotypes and Relatedness to Human Clinical Isolates — XINYANG HUANG, Xiaorong Shi, T. G. Nagaraja, Jianghong Meng, University of Maryland, College Park, MD, USA
- P2-194 Evolutionary Relationship, Virulence and Stress Response Genes in a Persister *S. Typhimurium* PT4 Strain Involved in Foodborne Outbreaks in Brazil — Adma Nadja Ferreira de Melo, Geany Targino de Souza Pedrosa, GUOJIE CAO, Dumitru Macarisin, Marciane Magnani, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P2-195 AMR Determinants and Virulence Factors in *Salmonella* Typhimurium Isolated from Outbreak Patients and Implicated Foods — Adma Nadja Ferreira de Melo, Daniel Monte, GUOJIE CAO, Dumitru Macarisin, Marciane Magnani, U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition, College Park, MD, USA
- P2-196 Application of Metagenomics to Define Microbiomes and Resistomes in Food Manufacturing Facilities and Seafood — BRANDON KOCUREK, Karen Jarvis, Christopher Grim, Paul Morin, Laura Howard, Andrea Ottesen, Ruth Timme, Padmini Ramachandran, Susan Leonard, Hugh Rand, Errol Strain, James Pettengill, David Lacher, Mark Mammel, Daniel Tadesse, Oak Ridge Institute for Science and Education, Oak Ridge, TN, USA
- P2-197 Microbiome-informed Food Safety and Quality: A Longitudinal and Cross-sectional Survey of Retail Chicken Microbiomes — SHAOTING LI, David A. Mann, Xiangyu Deng, University of Georgia, Center for Food Safety, Griffin, GA, USA
- P2-198 Changes in a Closed Feedlot *Escherchia coli* O157:H7 Population Over 22 Years — MARGARET WERINROTH, Michael Clawson, Terrance Arthur, James Wells, Dayna Harhay, James Bono, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, USA
- P2-199 High Prevalence and Genomic Characteristics of Multi-drug Resistant Extended-spectrum β -Lactamase-producing *Escherichia coli* in Feral Swine — TING LIU, Shinyoung Lee, Raoul Boughton, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA
- P2-200 Gut Microbiota in Beef Cattle and Its Association with Antimicrobial Resistance — PEIXIN FAN, Lin Teng, Zhengxin Ma, Shinyoung Lee, Corwin Nelson, Joseph Driver, Mauricio Elzo, KwangCheol Casey Jeong, University of Florida, Gainesville, FL, USA
- P2-201 Genomic Characterization of a Subset of *Listeria monocytogenes* Isolates from Fresh Produce Packing Facilities in California — Mariya Skots, Janneth Pinzon, TREVOR SUSLOW, University of California, Davis, Davis, CA, USA
- P2-202 Withdrawn
- P2-203 Phylogenomic Characterization of *Cronobacter* Species Isolated from Fresh Produce, Frozen Vegetables, and Farm Environments in the Czech Republic — HYEIN JANG, Leah Weinstein, Gopal Gopinath, Flavia Negrete, Jayanthi Gangiredla, Ben Tall, Monika Moravkova, U.S. Food and Drug Administration, Laurel, MD, USA
- P2-204 *Salmonella* Survival and Transcriptomic Response on Cantaloupe Flesh With and Without Organic Acid Pretreatment — XINYI ZHOU, Joelle K. Salazar, Yingshu He, Megan Fay, Wei Zhang, Illinois Institute of Technology, Institute for Food Safety and Health, Bedford Park, IL, USA
- P2-205 The Effect of Sequential Antimicrobial Treatments on *Listeria* Biofilm-forming Ability and Survival — ELLEN MENDEZ, Jie Zheng, Valentina Trinetta, KSU Food Science Institute, Manhattan, KS, USA
- P2-206 Metagenomic Analysis of Refrigerated Products Treated with High-pressure Process and Natural Antimicrobials — Davide Quaranta, Bradley Ziebell, Jairus David, DEANN AKINS-LEWENTHAL, Conagra Brands, Omaha, NE, USA
- P2-207 Organic Amendments Alter Soil Microbiome: Implications for Produce Microbial Safety — JAVAD BAROUEI, Mahta Moussavi, Tesfamichael Kebrom, Kimani Bradley, Ellen-Ashley Williams, Dalais Bailey, Haimanote Bayabil, Almoutaz El-Hassan, Ripendra Awal, Deland Myers, Ali Fares, Prairie View A&M University, Prairie View, TX, USA

- P2-208 Biomarker Identification from Next-generation Sequencing Data Using Bioinformatics Analysis — WEN ZOU, Huyen Le, Weizhong Zhao, National Center for Toxicological Research, USFDA, Jefferson, AR, USA
- P2-209 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 Leonard, Mark Mammel, David Lacher, New Mexico State University, Las Cruces, NM, USA
- P2-210 Current Processing Practices are Ineffective for Removing Residual Silver Nanoparticles from Contaminated Fresh Produce — GAYATHRI GUNATHILAKA, Jianzhou He, Hui Li, Wei Zhang, Elliot Ryser, Michigan State University, East Lansing, MI, USA
- P2-211 The Molecular Mechanisms of Nonthermal Plasma (NTP) Induced Viable but Nonculturable (VBNC) *Staphylococcus aureus* — XINYU LIAO, Tian Ding, Zhejiang University, Hangzhou, China
- P2-212 Deactivation of *Aspergillus flavus* Spores and the Fungal Toxin Deoxynivalenol Using High Voltage Atmospheric Cold Plasma — LOGAN OTT, Holly Appleton, Hu Shi, Kevin Keener, Melha Mellata, Department of Food Science and Human Nutrition, Iowa State University, Ames, IA, USA
- P2-213 Microbial Load Reduction in Chia (*Salvia hispanica* L.) Seeds with High Intensity Light Pulses and Lemongrass (*Cymbopogon citratus*) Essential Oil in Vapor Phase — Alejandro Miguel Guzmán-Flores, RAUL AVILA SOSA, Fatima Reyes Jurado, Enrique Palou, Aurelio Lopez-Malo, Carlos Enrique Ochoa-Velasco, Paola Hernández-Carranza, Teresa Soledad Cid-Pérez, Benemérita Universidad Autónoma de Puebla, Puebla, PU, Mexico

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WEDNESDAY POSTERS

P3 Poster Session 3 – Antimicrobials, Dairy, Microbial Food Spoilage, Pre-harvest Food Safety, Produce, Sanitation and Hygiene, Viruses and Parasites

Antimicrobials

- P3-01 Withdrawn
- P3-02 Reduction of *Escherichia coli* O157:H7 Contamination of Romaine Lettuce by Switchgrass Extractives — EMILY CAMFIELD, Alexander Bowman, Joseph Choi, Kalavathy Rajan, Nicole Labbe, Kimberly Gwinn, Bonnie Ownley, Naima Moustaid-Moussa, Doris D'Souza, University of Tennessee, Knoxville, TN, USA
- P3-03 Hemp Extractives to Control *Escherichia coli* O157:H7 and *Salmonella* Typhimurium Populations on Formica Coupons — RITI KRISHNA, Joseph Choi, Kalavathy Rajan, Nicole Labbe, Kimberly Gwinn, Bonnie Ownley, Doris D'Souza, Hillsborough High School, Hillsborough, NJ, USA
- P3-04 Reduction of Aichi Virus in Ozonated Water — JACKSON CRAIG, Doris D'Souza, University of Tennessee, Knoxville, TN, USA
- P3-05 Withdrawn
- P3-06 Substantial Thermal Stability of *Escherichia* phage OSYSP and Potential Use in Combined Phage-thermal Treatment Against Shiga Toxin-producing *Escherichia coli* — MUSTAFA YESIL, En Huang, Ahmed Yousef, The Ohio State University, Columbus, OH, USA
- P3-07 Molecular Mechanism of Metabolites Produced by *Lactobacillus casei* on Lysis of Enterohemorrhagic *E. coli* — ARPITA ADITYA, Mengfei Peng, Debabrata Biswas, University of Maryland, College Park, MD, USA
- P3-08 *Salmonella* Control in Raw Minced Meat by Vinegar-derived Clean Label Ingredients — EELCO HEINTZ, Kathleen Glass, Max Golden, Leonardo Vega, Niacet Corp., Tiel, The Netherlands
- P3-09 Disinfectant Wipes Transfer *Clostridioides difficile* Spores across Hard, Non-porous Surfaces — CARINE NKEMNGONG, Peter Teska, Xiaobao Li, Haley Oliver, Purdue University, West Lafayette, IN, USA
- P3-10 Strain-specific Response of *Escherichia coli* Biofilms to Chlorine Dioxide — ALISON LACOMBE, Vivian Chi-Hua Wu, David F. Bridges, USDA, ARS, Western Regional Research Center, Albany, CA, USA
- P3-11 Modeling the Efficacy of Gaseous Chlorine Dioxide against *Listeria* on Apple Surfaces — JIEWEN GUAN, Alison Lacombe, Juming Tang, David F. Bridges, Bhargavi Rane, Shyam Sablani, Vivian Chi-Hua Wu, Washington State University, Pullman, WA, USA
- P3-12 Characterization of Three Lytic Bacteriophages as an Antimicrobial Agent for Biocontrol of Shiga Toxin-producing *Escherichia coli* O145 — VALENZUELA JOSE, Yen-Te Liao, Vivian Chi-Hua Wu, Western Regional Research Center, Agricultural Research Service, USDA, Albany, CA, USA
- P3-13 Efficacy of Bacteriophage and Its Depolymerase Enzyme against *Escherichia coli* O45 Biofilms on Food Contact Surfaces — PABASARA WEERARATHNE, Tony Kountoupis, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA
- P3-14 Formation of Filamentous Morphotypes of Shiga-toxic *Escherichia coli* in Response to Antimicrobial Stressors — PABASARA WEERARATHNE, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA
- P3-15 Application of Chemical and Biological Methods to Prevent Formation of Shiga-toxic *Escherichia coli* Biofilms on Poly-vinyl Chloride Surfaces — PABASARA WEERARATHNE, Allison Fredman, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA
- P3-16 Withdrawn
- P3-17 The Effect of a *Carnobacterium maltaromaticum* Strain on Quality of and Inhibition of Pathogenic Bacteria on Vacuum-packaged Beef — PEIPEI ZHANG, Devin B. Holman, Xianqin Yang, Agriculture and Agri-Food Canada, Lacombe, AB, Canada
- P3-18 Combinations of Phenolic Compounds and Cold Shock Alters *Escherichia coli* Pathotypes Survival and Genetic Expression of Virulence Factors — ANA RIOS-LÓPEZ, Luisa Solís-Soto, Jose Angel Merino-Mascorro, Norma Heredia, Santos Garcia, Jorge Dávila-Aviña, Universidad Autónoma de Nuevo León, Mexico, San Nicolás de los Garza, NL, Mexico
- P3-19 Antibiotic Resistance Influences the Growth and Biofilm Formation in *E. coli* O157:H7 — IKECHUKWU OGUADINMA, Abhinav Mishra, Govindaraj Dev Kumar, The University of Georgia, Griffin, GA, USA
- P3-20 Emerging and Multidrug Resistance of *Listeria* spp. Recovered from Produce Processing Environments — REBECCA BLAND, Joy Waite-Cusic, John Jorgensen, Jovana Kovacevic, Oregon State University, Corvallis, OR, USA
- P3-21 Decontamination of *Escherichia coli* O157:H7 from Watermelon Seeds by Combined Treatments of Gaseous Chlorine Dioxide and Mild-Wet Heat — MINYOUNG CHUNG, Woorim Yeom, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P3-22 Inactivation Kinetics and Metabolic Responses of *Escherichia coli* in Organic Broccoli Sprouts by the Combination Treatment of Lactic Acid and Mild Heat — LIN CHEN, Hongshun Yang, National University of Singapore, Singapore
- P3-23 Metabolic Characterization of Eight *Escherichia coli* Strains Including “Big Six” and Acidic Responses of Selected Strains Revealed by NMR Spectroscopy — LIN CHEN, Hongshun Yang, National University of Singapore, Singapore
- P3-24 Withdrawn
- P3-25 Identification of Antimicrobial-resistance Genes in Whole-Genome Sequences of Canadian *Campylobacter* spp. Isolates Recovered from Poultry or Clinical Sources — LISA HODGES, Adam Koziol, Steven Mutschall, David Haldane, Dillon Barker, Eduardo Taboada, Catherine Carrillo, Canadian Food Inspection Agency, Dartmouth, NS, Canada
- P3-26 Population Dynamics and Resistance of *Salmonella* Enteritidis to a Lytic Phage — Luana Reichert, Dacil Rivera, Roberto Riquelme-Neira, Rodrigo Garcia, Roberto Bastias, ANDREA MORENO SWITT, School of Veterinary Medicine, Faculty of Life Sciences, Universidad Andres Bello, Santiago, Chile
- P3-27 The Effect of Natural Antimicrobials on *Clostridium perfringens* Endospores and Vegetative Cells — Clayton Smith, FRANCISCO DIEZ-GONZALEZ, University of Georgia Center for Food Safety, Griffin, GA, USA
- P3-28 Withdrawn
- P3-29 Differential Inhibitory Potential of Prebiotics Alone and in Combination with Antibiotics on Strains of *Salmonella* — COLLINS TANUI, Cristina L. Moscoso, Shradha Karanth, Zabdiel Alvarado, Debabrata Biswas, Abani Pradhan, University of Maryland, Department of Nutrition and Food Science, College Park, MD, USA

- P3-30 Effects of Phenolic Acids on Outer Membrane Integrity and Functionality of *Salmonella* Typhimurium — ZABDIEL ALVARADO-MARTINEZ, Debabrata Biswas, University of Maryland, College Park, MD, USA
- P3-31 Efficacy of Natural and Synthetic Antimicrobials to Inhibit Adhesion of EHEC, EAEC and Serotype O104:H4 to HEp-2 Cells — YARAIMY ORTIZ, Alam Garcia-Heredia, Angel Merino-Mascorro, Santos Garcia, Norma Heredia, Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, NL, Mexico
- P3-32 Prevalence of Triazole-resistance *Aspergillus fumigatus* Isolated from a Tomato Production Environment — ALEJANDRA M. JIMENEZ MADRID, Sally A. Miller, Melanie L. Lewis Ivey, The Ohio State University, Wooster, OH, USA
- P3-33 Withdrawn
- P3-34 All Surfaces are Not Created Equal: Inactivation of RNase a on Food-contact Surfaces Using Hi-intensity 278 Nm UV LED — THERESA THOMPSON, Kayla Taggard, Phoseon Technology, Hillsboro, OR, USA
- P3-35 Antilisterial Efficacy of Cranberry Extract in Produce Wash Treatments — CHAYAPA TECHATHUVANAN, Beining Ouyang, Christopher McNamara, Margarita Gomez, Ocean Spray Cranberries, Inc., Lakeville-Middleboro, MA, USA
- P3-36 Plant-based Antimicrobials Inactivate *Salmonella enterica* and *Listeria monocytogenes* on Melon Rinds — Libin Zhu, Qi Wei, Paul Brierley, Martin Porchas, Bhimanagouda Patil, SADHANA RAVISHANKAR, University of Arizona, Tucson, AZ, USA
- P3-37 Green Sanitizers: Improved Safety and Shelf Life of Iceberg Lettuce Washed with Plant-based Antimicrobial Microemulsions — STEPHANIE ARELLANO, Sadhana Ravishankar, Bibiana Law, University of Arizona, Tucson, AZ, USA
- P3-38 Inhibition of Surface Spoilage Bacteria on Refrigerated Catfish Fillets by Various Chitosan Applications — TAYLOR LADNER, Katie Evans, Dianna Wilson, Jessa Goodeaux, Emily Sherman, Derris Burnett, Shecoya White, Mississippi State University, Starkville, MS, USA
- P3-39 Inhibition of *Listeria* Biofilms by Cranberry Extract — CHRISTOPHER MCNAMARA, Adam Leff, Laura Leff, Chayapa Techathuvanana, Margarita Gomez, Ocean Spray Cranberries, Inc., Lakeville-Middleboro, MA, USA
- P3-40 Assessing the Efficacy of Addition of Sodium Bisulfate (SBS) in Stored Wheat Grains to Control *Aspergillus flavus* (ATCC 15548) — JANAK DHAKAL, Charles Aldrich, Kansas State University, Manhattan, KS, USA
- P3-41 Effect of Sub-inhibitory Concentrations of Antimicrobials on *Listeria monocytogenes* Motility and Its Ability to Adhere to and Invade Caco-2 Cells — STEPHANIE BROWN, Catherine Gensler, Dennis D'Amico, University of Connecticut, Storrs, CT, USA
- P3-42 Inactivation of Biofilms of Multiple Foodborne Pathogens Using Antimicrobial Nanoconjugates — XINGJIAN BAI, Luping Xu, Xiaolin Qiu, Mai Liu, Atul Singh, Arun Bhunia, Department of Food Science, Purdue University, West Lafayette, IN, USA
- P3-43 Microbial Diversity, Antimicrobial Resistance and Virulence Genes in Small-scale Poultry and Cattle Farms — Agnes Kilonzo-Nthenge, Siqin Liu, Samuel Nahashon, NUR HASAN, EzBiome, Rockville, MD, USA
- P3-44 Withdrawn
- P3-45 Lytic Bacteriophage Help to Reduce *Salmonella* Typhimurium from Raw Chicken Breast — SHERITA LI, Hannah Strauss, Nicole Walker, Siroj Pokharel, Cal Poly State University, San Luis Obispo, CA, USA
- P3-46 Inactivation of *Campylobacter jejuni* on Artificially Inoculated Chicken Skin by Organic Acids Alone or Combined with *Yucca* Extract — ARMITRA JACKSON-DAVIS, Aubrey Mendonca, Shecoya White, Emalie Thomas-Popo, Alabama A&M University, Madison, AL, USA
- P3-47 Efficacy of Sodium Bisulfate (SBS) in Reducing the Shiga Toxin-producing *E. coli* STEC (O121) Load of Wheat During Tempering — JARED RIVERA, Janak Dhakal, Charles. G. Aldrich, Kaliramesh Siliveru, Kansas State University, Manhattan, KS, USA
- P3-48 Antimicrobial Properties of Proanthocyanidins in *Ohelo* Berry (*Vaccinium calycinum*) against *Escherichia coli* O157:H7 — BIYU WU, Stuart Nakamoto, Yong Li, University of Hawaii At Manoa, Honolulu, HI, USA
- P3-49 Effect of Neem Oil Nanoparticles on the Growth Inhibition of Peanut Mold, *Aspergillus flavus* — YAGMUR YEGIN, Jun Kyun Oh, Alejandro Castillo, Mustafa Akbulut, Texas A&M University, College Station, TX, USA
- P3-50 Antimicrobial, Physical and Mechanical Properties of Polyvinyl Alcohol Films Incorporated with Modified Bacterial Nanocellulose — KAI WEN CHOO, Liang Mao, Azlin Mustapha, University of Missouri-Columbia, Columbia, MO, USA
- P3-51 Evaluation of Natural Chelating Compounds for Use as Enhancers of Quaternary Ammonium Compound Efficacy — Allison Brost, Aubrey Mendonca, BYRON BREHM-STECHER, Iowa State University, Ames, IA, USA
- P3-52 Isoeugenol Prevents Yeast Spoilage of Refrigerated Raw Pineapple Juice Containing an Extract of *Quillaja saponaria* or *Yucca schidigera*. — EMALIE THOMAS-POPO, Aubrey Mendonca, Jessica Aguilar, Ali El-sadiq, Shannon Coleman, Iowa State University, Ames, IA, USA

Dairy

- P3-53 Withdrawn
- P3-54 Inactivation of *Listeria monocytogenes* in Cheese Brines Treated with Hydrogen Peroxide — QUINN HUIBREGTSE, Jieyin Lim, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- P3-55 Inhibition of *Listeria monocytogenes* by Bacterial Species Isolated from Wooden Boards Used for Aging Semi-soft Cheese — Kirty Wadhawan, Scott A. Rankin, Garret Suen, CHARLES CZUPRYNSKI, University of Wisconsin-Madison, Food Research Institute, Madison, WI, USA
- P3-56 Growth Potential of *Listeria monocytogenes* in Soft Ripened Cheeses — JUSTIN FALARDEAU, Erkan Yildiz, Siyun Wang, Food, Nutrition and Health, University of British Columbia, Vancouver, BC, Canada
- P3-57 Effect of pH, Salt, Temperature, and Hydrogen Peroxide on the Survival of *Listeria monocytogenes* in Model Cheese Brines — JIEYIN LIM, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- P3-58 The Effect of pH and Cultured Sugar-Vinegar on the Growth of *Listeria monocytogenes* in a Model High-moisture Cheese — KORY ANDERSON, Sarah Engstrom, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA
- P3-59 Control of *Listeria monocytogenes* in High-moisture Mexican Queso Fresco Style Cheese — Upasana Hariram, SHUOPENG YANG, Wendy McMahon, Kraft Heinz Company, Glenview, IL, USA

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- P3-60 Rapid Detection of Microbial Contaminants in UHT Milk and Other Aseptic Dairy Products by an Application of the Bact/Alert 3D System for Industrial Sterility Testing — MARIA DANIELA ESPAÑA GUTIERREZ, Maria Cristina Brinez Espinel, Bernadette Francisca Klotz Ceberio, Juan Manuel Henriquez, Alpina, Cundinamarca, Colombia
- P3-61 Evaluation of a Rapid Technology to Detect UHT Microbial Contamination in Milk and Dairy Products — Angélica De La Torre, Erandy Cabello, Gustavo González-González, Anibal Ancona, Elena López, Gabriela Ávila, RAJ RAJAGOPAL, 3M, St. Paul, MN, USA
- P3-62 Microbial Community Shift during Cheddar Cheese Making Process — Jungmin Choi, Robin Frojen, Lisbeth Goddik, Sang-Do Ha, SI HONG PARK, Oregon State University, Corvallis, OR, USA
- P3-63 Microbial and Chemical Properties of Fructooligosaccharides (FOS) or Inulin Supplemented Cheddar Cheese — JUNGMIN CHOI, Melanie Hanlon, Robin Frojen, Sang-Do Ha, Si Hong Park, Oregon State University, Corvallis, OR, USA
- P3-64 Effect of Water Activity on Thermal Resistance of *Salmonella* in Dairy Powders — XINYAO WEI, Soon Kiat Lau, Byron Chaves, Mary-Grace Danao, Shantanu Agarwal, Jeyam Subbiah, University of Nebraska-Lincoln, Lincoln, NE, USA
- P3-65 Withdrawn
- P3-66 Thermal Lethality of *Listeria monocytogenes* to Improve the Safety of Cheeses Made with Unpasteurized Cheese-Milk — SARAH ENGSTROM, Kathleen Glass, Food Research Institute, University of Wisconsin-Madison, Madison, WI, USA

Microbial Food Spoilage

- P3-67 Withdrawn
- P3-68 Qualitative and Quantitative Effect of Growth Conditions and Sourdough Bread Making on *Wickerhamomyces anomalus* Antifungal Activity — MARIA K. SYROKOU, Sofia Tziompra, Spiros Paramithiotis, Marios Mataragas, Panagiotis Skandamis, Eleftherios Drosinos, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University of Athens, Athens, Greece
- P3-69 Metagenomic Study of the Impact of Novel Packaging Types on Meat Microflora — GREG JONES, Julia Hewerdine, Sam Watts, Amanda Manolis, Campden BRI, Chipping Campden, United Kingdom
- P3-70 Advanced Microbial Profiling – Helping Determine Safe Shelf Life for Cold Smoked Salmon — Jani Holopainen, Tiina Karla, Greg Jones, SAM WATTS, Amanda Manolis, Thermo Fisher Scientific, Vantaa, Finland
- P3-71 Effect of Salinity, Alcohol and Heat Treatment on the Fate of *Bacillus cereus* Spores in Soybean Paste during Aging — Gyuri Lim, Hayoung Kim, HYOJIN KWON, Gyaie Yun, Ki-Hwan Park, Chung-Ang University, Anseong, South Korea
- P3-72 Estimation of *Alicyclobacillus* spp. Spoilage Potential in Plant-based Dairy Products — ANASTASIA KAPETANAKOU, Konstantina Passiou, Kalliopi Chalkou, Panagiotis Skandamis, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University of Athens, Athens, Greece

Pre-harvest Food Safety

- P3-73 Influence of Using Biological Soil Amendments of Animal Origin (Dairy and Poultry Manure) on the Prevalence of *Campylobacter*, *E. coli* O157, *Listeria monocytogenes* and *Salmonella* on Fresh Produce — MICHAEL KAUFFMAN, Jen Schrock, Nick Anderson, Sochina Ranjit, Gireesh Rajashekara, The Ohio State University, Wooster, OH, USA
- P3-74 Precipitation and Soil Moisture Effects on Survival and Transfer of *Escherichia coli* to Fresh Produce in Manure-amended Certified Organic — ANNETTE KENNEY, Fawzy Hashem, Alda Pires, Michele Jay-Russell, Patricia Millner, Amy Collick, University of Maryland Eastern Shore, Princess Anne, MD, USA
- P3-75 Inactivation of *Salmonella* Typhimurium in Urea and Ammonia Solutions — ALAN GUTIERREZ, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- P3-76 Application of Competitive Exclusion Microorganisms to Inhibit the Growth of *Listeria monocytogenes* in Compost Extract — HONGYE WANG, Xiuping Jiang, Clemson University, Clemson, SC, USA
- P3-77 Inactivation of *E. coli* O157:H7 in Fresh Dairy Manure Compost by Addition of Slow-pyrolysis Walnut Biochar — JOSHUA GURTLER, Akwasi Boateng, Charles Mullen, U.S. Department of Agriculture-ARS, Eastern Regional Research Center, Wyndmoor, PA, USA
- P3-78 *Escherichia coli* O157 Survival in Liquid Culture and Artificial Soil Microcosms with Different pH, Humic Acid, and Clay Levels — CHRISTOPHER (ADAM) BAKER, Jaysankar De, Keith Schneider, University of Florida, Gainesville, FL, USA
- P3-79 Effect of Anaerobic Soil Disinfestation on *Salmonella* Populations — CLAIRE MARIK, Cameron Bardsley, Joyce Zuchel, Jill R. Pollok, Steve Rideout, Mark S. Reiter, Joseph Eifert, Monica Ponder, Laura K. Strawn, Virginia Tech – Eastern Shore AREC, Painter, VA, USA
- P3-80 The Prevalence and Persistence of *Listeria monocytogenes* in the Leafy Green Produce Production Chain — GABBY BUI, Valeria R. Parreira, Keith Warriner, Lawrence Goodridge, Jeffrey Farber, Canadian Research Institute for Food Safety (CRIFS), Department of Food Science, University of Guelph, Guelph, ON, Canada
- P3-81 Pre-harvest Biocontrol of *Listeria* on Spinach by Lactic Acid Bacteria — HSIN-BAI YIN, Chi-Hung Chen, Ashley Boomer, Jitu Patel, Oak Ridge Institute for Science and Education, Oak Ridge, TN, USA
- P3-82 Determination of *Salmonella* Javiana and *Listeria monocytogenes* Transfer to Sunflower Microgreens Cultivated in Soil-free Growing Media — Gina Riggio, KRISTEN GIBSON, University of Arkansas, Fayetteville, AR, USA
- P3-83 Understanding the Cross-contamination of Melons via Environmental Matrices Under Field Conditions and Prevalence of Foodborne Pathogens — RICHARD PARK, David Rowlands, Martin Porchas, Paul Brierley, Bhimanagouda Patil, Sadhana Ravishankar, University of Arizona, Tucson, AZ, USA
- P3-84 Effect of Fumigants and Bactericides on *Salmonella* during Tomato Production — Ganyu Gu, LAURA K. STRAWN, Joshua Freeman, Steve Rideout, Virginia Tech – Eastern Shore AREC, Painter, VA, USA
- P3-85 White-rot Fungi Species Used as a Biocontrol Method in Bioreactors to Inhibit *Escherichia coli* for Pre-harvest Food Safety — ALEXIS OMAR, Sivaranjani Palani, Pushpinder Kaur Litt, Kyle McCaughan, Anastasia E. M. Chirnside, Kalmia Kniel, University of Delaware, Newark, DE, USA

- P3-86 Prevalence of *Arcobacter* Species in Irrigation Water from the Midwestern United States — UMA BABU, Lisa Harrison, Jayanthi Gangiredla, Chiun-Kang Hsu, Kelli Hielt, Michael Kauffman, Gireesh Rajashekara, Kannan Balan, FDA, Laurel, MD, USA
- P3-87 Factors Associated with the Implementation and Documentation of Risk Management Practices on Strawberry Farms in the Southeastern United States — THOMAS YEARGIN, Angela Fraser, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P3-88 Validation of an In-Field Produce Sampling Simulation Using Experimental Field Data — JORGE QUINTANILLA PORTILLO, Alexandra Belias, Xianbin Cheng, Daniel Weller, Martin Wiedmann, Matthew J. Stasiewicz, University of Illinois at Urbana-Champaign, Urbana, IL, USA
- P3-89 Reduction of *Escherichia coli* O157:H7 in Finishing Cattle-fed Enogen Feed Corn — Joshua Maher, James Drouillard, Adrian Baker, Vanessa Veloso, Qing Kang, SARA GRAGG, Kansas State University, Manhattan, KS, USA
- P3-90 Evaluation of Bacteriophages to Prevent Attachment of *Escherichia coli* O157:H7 to Intestinal Cell Lines — EMMA TURNER, Pabasara Weerathne, Divya Jaroni, Oklahoma State University, Stillwater, OK, USA
- P3-91 Comparative Analysis of Miniaturized Most Probable Number and BAX® System SalQuant to Quantify *Salmonella enterica* in Chicken Ceca — REMIO MOREIRA, Evan Chaney, Savannah Forgey, Tyler Stephens, April Englishbey, Qualicon Diagnostics, A Hygiene Company, Lubbock, TX, USA
- P3-92 Drought Stress Shifts the Exometabolome Profile of Leaves in Juvenile Kale and Affects *Salmonella enterica* Growth in Leaf Exudates — XINGCHEN LIU, Yue Li, Shirley A. Micallef, University of Maryland, College Park, MD, USA
- P3-93 Inactivation of *Escherichia coli* O157:H7, *Salmonella*, and *Listeria monocytogenes* in Soil by Glucosinolate Hydrolysis Products in Mustard Seed Meal — MYKAYLA LATRONICA, Amanda Lathrop, Chris Lu, California Polytechnic State University, San Luis Obispo, CA, USA
- Produce**
- P3-94 Isolation of *Salmonella* spp. from Fresh Produce Sold at Farmers' Markets 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
- P3-95 Oklahoma Weather Effects on *E. coli* in Surface Water and Produce Safety — JUSTIN MCCONAGHY, Oklahoma Department of Agriculture, Food and Forestry, Oklahoma City, OK, USA
- P3-96 A Simulation Model of Fresh Spinach Microbial Spoilage Along a Chinese Supply Chain from Harvest to Consumption — SARAH MURPHY, Ruixi Chen, Alexandra Belias, Martin Wiedmann, Renata Ivanek, Cornell University, Ithaca, NY, USA
- P3-97 Application of Sonodynamic Therapy for Foodborne Pathogens Disinfection — CUONG NGUYEN, Nitin Nitin, University of California, Davis, Davis, CA, USA
- P3-98 Biofilm Formation Ability of *Escherichia coli* O157:H7 and *Listeria monocytogenes* — Ashley Boomer, HSIN-BAI YIN, Chi-Hung Chen, Nicole Irizarry, Jitu Patel, Oak Ridge Institute for Science and Education, Oak Ridge, TN, USA
- P3-99 Detection of *Salmonella* Enteritidis on Fresh Produces Having Different Surface Properties Using Phage-based Surface-scanning System — JAEIN CHOE, Hwa-Eun Lee, Gi Yeon Song, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- P3-100 Utility of Rapid Tests to Assess Populations of Indicator Organisms (Aerobic Plate Count, *Enterobacteriaceae*, Coliforms, *Escherichia coli*) and Detection of *Listeria* spp. in Apple Packinghouses — BLANCA RUIZ-LLACSAHUANGA, Alexis M. Hamilton, Robyn Zaches, Faith Critzer, Washington State University, School of Food Science, Pullman, WA, USA
- P3-101 Impact of the Colonization of *Lactobacillus curvatus* on the Formation of *Listeria monocytogenes* Biofilm on Stainless Steel — CHAO LIAO, Alejandro Tomas-Callejas, Kalpana Kushwaha, De Ann Davis, Besnik Hidri, Veronique Zuliani, Luxin Wang, University of California, Davis, Davis, CA, USA
- P3-102 Identification of the Genes of *Salmonella enterica* Serotype Tennessee Involved in Biofilm Formation — SEULGI LEE, Jinru Chen, Department of Food Science and Technology, The University of Georgia, Griffin, GA, USA
- P3-103 Withdrawn
- P3-104 Characterization of the Relationship between Post-harvest Fungal Rot and Indicator Organism Die-off Rates on Gala Apples during Three Months of Storage — ALEXIS HAMILTON, Blanca Ruiz-Llacsahuanga, Robyn Zaches, Manoella Mendoza, Ines Hanrahan, Faith Critzer, Washington State University, School of Food Science, Pullman, WA, USA
- P3-105 Bio-control of *Listeria monocytogenes* on the Surface of Fresh Produce — TONG ZHAO, Govindaraj Kumar, University of Georgia, Griffin, GA, USA
- P3-106 Antimicrobial Evaluation of an In-Situ UV Treatment Unit for Fresh Produce Decontamination — SHIYUN YAO, Haiqiang Chen, University of Delaware, Newark, DE, USA
- P3-107 Wax On! Pathogen Off! — GOVINDARAJ DEV KUMAR, Dumitru Macarisin, Francisco Diez-Gonzalez, Abhinav Mishra, University of Georgia Center for Food Safety, Griffin, GA, USA
- P3-108 Use of Combined Ultraviolet Light, Ultra-Sonation, and Agitation Treatments to Enhance Fresh Produce Decontamination Efficacy — SHIYUN YAO, Haiqiang Chen, University of Delaware, Newark, DE, USA
- P3-109 Withdrawn
- P3-110 Microbial Quality Assessment of Fresh Produce Sold in Food Desert Areas in Central Virginia — CHYER KIM, Sakinah Albukhaytan, Brian Goodwyn, Theresa Nartea, Eunice Ndegwa, Paul Kaseloo, Virginia State University, Petersburg, VA, USA
- P3-111 Validation of Triple-wash Procedures with Sodium Hypochlorite, Lactic-Citric Acid Blend, and Mixer of Peroxy-acetic Acid-hydrogen Peroxide to Inactivate *Salmonella*, *Listeria monocytogenes*, and Surrogate *Enterococcus faecium* on Cucumbers and Tomatoes — KA WANG LI, Wentao Jiang, Lisa Jones, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P3-112 Withdrawn
- P3-113 Examining the Distribution of *Listeria monocytogenes* in a Hydroponic System from Contaminated Seeds — JANNY MENDOZA, Achyut Adhikari, Louisiana State University, Baton Rouge, LA, USA
- P3-114 Development of Rapid Molecular Detection Methods for Foodborne Pathogens in Fresh Produce — IAN MOPPERT, Si Hong Park, Oregon State University, Corvallis, OR, USA
- P3-115 Evaluation of Produce Safety Training Delivery Methods Using Quantitative On-farm Assessments — LONDA NWADIKE, Joshua Maher, Cal Jamerson, Cary Rivard, Sara Gragg, Kansas State University/University of Missouri, Olathe, KS, USA

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- P3-116 Impact of Organic and Conventional Practices in the Microbiological Quality of Fresh Leafy Vegetables Produced in Piracicaba, SP – Brazil — THIAGO S. SANTOS, Nicolle F. A. Padovani, Priscila Almeida, Meriellen Dias, Maria Anita Mendes, Daniele F Maffei, University of São Paulo, Piracicaba, Brazil
- P3-117 Detection of Culturable Bacteria in Greenhouse-grown Romaine Lettuce Using the Light Scattering Technology (BEAM) — HANSEL A. MINA, Robert E. Pruitt, Amanda J. Deering, Purdue University, West Lafayette, IN, USA
- P3-118 Modeling Cross-contamination and Inactivation Dynamics of *Escherichia coli* O157:H7 in Chlorine Wash of Fresh-cut Iceberg Lettuce — MOHAMMADREZA ABNAVI, Chandra Kothapalli, Daniel Munther, Parthasarathy Srinivasan, Cleveland State University, Cleveland, OH, USA
- P3-119 A Pilot-scale Study of Cold Plasma-activated Hydrogen Peroxide Technology: Effect on Populations of *Salmonella* Typhimurium and *Listeria innocua* and Quality Changes of Apple, Tomato and Cantaloupe During Storage — Yuanyuan Song, Bassam Annous, XUETONG FAN, USDA, ARS, Eastern Regional Research Center, Wyndmoor, PA, USA
- P3-120 Sensitivity of Foodborne Pathogens to Chlorine and Peracetic Acid in Sterile Water and Rinse Water of Spinach and Lettuce — GANYU GU, Andrea Ottesen, Samantha Bolten, Joseph Mowery, Yaguang Luo, Xiangwu Nou, EMFSL, USDA-ARS, Beltsville, MD, USA
- P3-121 Effect of Lettuce Cultivar and Irrigation Water Source on the Dynamics of Innate Microbiota and Survival of Pathogenic *E. coli* and *Salmonella* spp. on Lettuce — GANYU GU, Hsin-Bai Yin, Andrea Ottesen, Samantha Bolten, Jitu Patel, Yaguang Luo, Xiangwu Nou, EMFSL, USDA-ARS, Beltsville, MD, USA
- P3-122 Survival of Planktonic- and Biofilm-grown *Listeria monocytogenes* on Apples as Affected by Apple Variety, Grower Region, and Storage Conditions — NATASHA SLONIKER, Ourania Raftopoulou, Sophia Kathariou, Elliot Ryser, Michigan State University, East Lansing, MI, USA
- P3-123 Learning from the On-Farm Readiness Review: Farm Preparedness and Educational Needs of New Jersey Farms for FSMA PSR Compliance — MEREDITH MELENDEZ, Wesley Kline, Rutgers NJAES Cooperative Extension, Trenton, NJ, USA
- P3-124 Food Safety Needs Assessment for Produce Gleaning Organizations in California — Alda Pires, Xi Wu, ERIN DICAPRIO, Department of Food Science and Technology, University of California-Davis, Davis, CA, USA
- P3-125 Withdrawn
- P3-126 Survival of Inoculated Generic *Escherichia coli* on Almonds at Different Phases of Maturity — CHRIS THEOFEL, Vanessa Lieberman, Linda J. Harris, University of California-Davis, Davis, CA, USA
- P3-127 Withdrawn
- P3-128 Withdrawn
- P3-129 Withdrawn
- P3-130 Survival of *Listeria monocytogenes* on McIntosh, Fuji, and Honeycrisp Apples Stored at 22°C — JEANNA LABARBARA, Anna Loyd, Ka Wang Li, Wentao Jiang, Cangliang Shen, West Virginia University, Morgantown, WV, USA
- P3-131 Survey of Agricultural Water Microbial Quality in Kansas and Missouri — Joshua Maher, Londa Nwadike, Sara Gragg, MANREET BHULLAR, Kansas State University, Manhattan, KS, USA
- P3-132 Trace Back SCUTELLO *Bacillus thuringiensis* Strain Used for Crop Protection from Field to Fork — FLORENCE POSTOLLEC, Emeline Cozien, Pierre Gehannin, Melanie Streit, Marie-Laure Divanac'h, Sebastien Louarn, Rodolphe Vidal, Anne-Gabrielle Mathot, ADRIA Food Technology Institute – UMT ACTIA 19.03 ALTER'IX, France, Quimper, France
- P3-133 Evaluate the Effectiveness of Air Bubbles during Washing to Dislodge Microorganisms from Cucumber and Bell Peppers — JULYSA BENITEZ, Achyut Adhikari, LSU, Baton Rouge, LA, USA
- P3-134 Prevalence and Concentration of *Listeria* Species and *Listeria monocytogenes* for Raw Produce Arriving into Frozen Food Manufacturing Facilities — BRITTANY MAGDOVITZ, Sanjay Gummalla, Harshavardhan Thippareddi, Mark Harrison, University of Georgia, Athens, GA, USA
- P3-135 Effect of the Attachment Level of *Listeria monocytogenes* on the Efficacy of Chlorine Treatment on Bell Pepper Surfaces — JYOTI ARYAL, Vijay Chhetri, Achyut Adhikari, Louisiana State University, Baton Rouge, LA, USA
- P3-136 Role of Biological Soil Amendments in Pathogen Persistence and Transfer to Foliar and Root Crop in a Pre-harvest Environment — PUSHINDER KAUR LITT, Alyssa Kelly, Alexis Omar, Kyle McCaughan, Micah Greenzweig, Gordon Johnson, Manan Sharma, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P3-137 Withdrawn
- P3-138 Kitchen-scale Treatments for Reduction of *Listeria monocytogenes* in Prepared Produce for Immunocompromised Populations — CARLY GOMEZ, Bradley Marks, Elliot Ryser, MSU, Troy, MI, USA
- P3-139 A Pilot-Plant Study Evaluating a New Technology to Accelerate *Escherichia coli* Die-Off on Fresh-Cut Lettuce during Cold Storage — GABRIELLA MENDES CANDIDO DE OLIVEIRA, Bin Zhou, Daniel Pearlstein, Samantha Bolten, Ganyu Gu, Eunhee Park, Zi Teng, Ellen Turner, Patricia Millner, Xiangwu Nou, Yaguang Luo, EMFSL, USDA-ARS, Beltsville, MD, USA
- P3-140 Use of Lactic Acid Bacteria to Control *Listeria monocytogenes* on Apples during Simulated Storage Conditions — DEEPA ASHWARYA KUTTAPPAN, Mairui Gao, Mary Anne Amalaradjou, University of Connecticut, Storrs, CT, USA
- P3-141 Growth of *Listeria innocua* on Broccoli Stalk, Beet Greens, Brussels Sprouts, and Kale under Simulated Storage and Distribution Conditions — EMMA SANDQUIST, Jay Singh, Koushik Saha, Andrew Schaffner, Amanda Lathrop, California Polytechnic State University, San Luis Obispo, CA, USA
- P3-142 Ethanol Vapor to Control *Salmonella* on Fresh Produce — Michael Wesolowski, ROBERT WILLIAMS, Renee Boyer, Haibo Huang, Virginia Tech, Blacksburg, VA, USA
- P3-143 Survival of *Salmonella* Typhimurium in Hydroponic Lettuce Systems — MARGARET MOODISPAW, Melanie L. Lewis Ivey, Sanja Ilic, The Ohio State University, Wooster, OH, USA
- P3-144 Withdrawn
- P3-145 Risk Factors Associated with *Escherichia coli* Persistence in Soils Amended with Raw Manure in Certified Organic Farming Systems in Four Regions of USA — ALDA PIRES, Thais Ramos, Patricia Millner, James Stover, Paulo Pagliari, Mark Hutchinson, Jason Liley, Nicholas Rowley, Peiman Aminabadi, Jerome Baron, Annette Kenney, Fawzy Hashem, Michele Jay-Russell, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California-Davis, Davis, CA, USA

- P3-146 Evaluating the Efficacy of Peroxyacetic Acid at Lower Than Recommended Levels as a Sanitizer for Tomato Fluming Operations — CHRISTOPHER PABST, Jaysankar De, Alisa Smovzhenko, Keith Schneider, University of Florida, Gainesville, FL, USA
- P3-147 Validation of the BAX® System Real-time PCR Assays for *Salmonella*, *E. coli* O157:H7 and Non-O157 STEC in Cruciferous Vegetables — ANASTASIA LIKANCHUK, Victoria Kuhnel, Julie Weller, Qualicon Diagnostics LLC, A Hygiene Company, New Castle, DE, USA
- P3-148 Establishing a Scientific Basis for Buffer Zones Following Animal Intrusion in Florida Tomato Fields — MATTHEW KRUG, Eugene McAvoy, Travis Chapin, Loretta Friedrich, Min Li, Arie Havelaar, Michelle Danyluk, University of Florida, Immokalee, FL, USA
- P3-149 Withdrawn
- P3-150 Transfer of Indicator *Escherichia coli* to Spinach, Carrots and Tomatoes Grown in Organic Soil Amended with Raw Animal Manure in California, 2018–2019 — PEIMAN AMINABADI, Alda Pires, Anna Zwieniecka, Thais Ramos, Michele Jay-Russell, Western Center for Food Safety, University of California-Davis, Davis, CA, USA
- P3-151 Determination of the Presence of Foodborne Pathogens, Total Coliforms, and *Escherichia coli* in Ready-to-Eat Leafy Greens Sold at Retail — SANA MUJAHID, Robyn Miranda, Tunde Akinleye, Andrew Cohen, Keith Newsom-Stewart, Winnie Mukuna, James Rogers, Consumer Reports, Yonkers, NY, USA
- P3-152 Leafy Greens as Source of Ceftazidime- and/or Ciprofloxacin-resistant *Enterobacteriaceae* — CARLA BARRIA, Aiko Adell, Lina Rivas, Jose Munita, Constanza Díaz, Tamara Gonzalez, Andrea Moreno-Switt, Millennium Nucleus for Collaborative Research on Bacterial Resistance (MICROB-R), Santiago, Chile
- P3-153 Whole-Genome Analysis of Shiga Toxin-producing *Escherichia coli* and *Salmonella* spp. Isolates from Untreated Cattle and Poultry Manures in California and Arizona — ZHAO CHEN, Peiman Aminabadi, Paula Rivadeneira, Jianghong Meng, Michele Jay-Russell, University of Maryland, College Park, MD, USA
- P3-154 Experimental Field Trial to Assess *Escherichia coli* Presence and Concentration in Organic Soil and Tomatoes Following Sheep Rotational Grazing on Cover Crop — MICHELE JAY-RUSSELL, Laura Patterson, Kyuyoung Lee, Anna Zwieniecka, Peiman Aminabadi, Alda Pires, Western Center for Food Safety, University of California-Davis, Davis, CA, USA

Sanitation and Hygiene

- P3-155 Environmental Screening of a Cannabis Production and Processing Facility Using Multiplexed DNA Microarrays: A Method to Enhance Growth and Prevent the Spread of Contamination — BENJAMIN KATCHMAN, Chelsea Adamson, Michael Hogan, PathogenDx, Tucson, AZ, USA
- P3-156 Hygiene Status of Fresh Peach Packing Lines in Georgia — PEIEN WANG, Joycelyn Quansah, Katie B. Pitts, Jinru Chen, Department of Food Science and Technology, The University of Georgia, Griffin, GA, USA
- P3-157 Detection of *Listeria monocytogenes* from Plastic Surfaces Using the Insite *L. mono* Glo Swab with Confirmation on the BAX® System Standard and Real-time PCR Assays — ANASTASIA LIKANCHUK, Julie Weller, Victoria Kuhnel, Qualicon Diagnostics LLC, A Hygiene Company, New Castle, DE, USA
- P3-158 Withdrawn
- P3-159 Quantitative and Qualitative Comparison of Commercially Available Indicator Organism Methods — SAVANNAH FORGEY, Marcos X. Sanchez-Plata, April Englishbey, Texas Tech University, Lubbock, TX, USA
- P3-160 Novel Hygiene Assessment Technology Exhibits Higher Frequency of Soil Contamination Detection Than ATP Assessment — CASEY WHYTE, Ting Fung Ma, Jeffrey Sindelar, Scott A. Rankin, University of Wisconsin - Madison, Department of Food Science, Madison, WI, USA
- P3-161 AMP, ADP, and ATP Concentrations Differentially Affected by Common Manufacturing Steps in Meat Processing — NICHOLAS SMITH, Jeffrey Sindelar, Scott A. Rankin, University of Wisconsin-Madison, Department of Food Science, Madison, WI, USA
- P3-162 Differential Biofilm Formation of *Listeria monocytogenes* Strains Under Single- and Dual-species (with *Lactobacillus* spp.) Conditions — MAGDALENA OLSZEWSKA, Francisco Diez-Gonzalez, University of Georgia Center for Food Safety, Griffin, GA, USA
- P3-163 Tolerance of *Pseudomonas aeruginosa* and *Listeria monocytogenes* in Co-culture Biofilms after Successive Quaternary Ammonium Compound Exposure — ERIC MOORMAN, Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA
- P3-164 Development of Dual Functional Superhydrophobic Coatings with Bacterial Antimicrobial and Anticontact Characteristics — Shuhao Liu, YAGMUR YEGIN, Jun Kyun Oh, Mustafa Akbulut, Texas A&M University, College Station, TX, USA
- P3-165 A Scalable and Rechargeable Antimicrobial Coating for Food Equipment — MINGYU QIAO, Halomine, Inc., Ithaca, NY, USA
- P3-166 Combined Effects of Essential Oil Vapors in Inactivating *Shigella flexneri* and *Staphylococcus aureus* — JIWON OH, Yurim Cho, Jee-Hoon Ryu, Korea University, Seoul, South Korea
- P3-167 A Comprehensive Approach to Evaluating Product Performance of Dry Wiper Systems Used for Electronic Touch Screens — MARY CZAPLICKI, Shorook Attar, Taylor Niehaus, Chris Fricker, Gojo Industries, Akron, OH, USA
- P3-168 Performance Evaluation of Commercially Available Dry Wiper Systems Used in Foodservice and Implications for Long-term Use — MARY CZAPLICKI, Travis Neal, Jessica Williams, Chris Fricker, Gojo Industries, Akron, OH, USA
- P3-169 Validation of Sanitizer Effectiveness Against *Staphylococcus* and *Pseudomonas* Biofilms, Natural Biofilms from Worker's Boots, and Selective Correlation of Biofilm Bacteria to Sanitizer Chemistry — KUNDAN SHAH, Peter Muriana, Oklahoma State University, Stillwater, OK, USA
- P3-170 Systematic Evaluation of Commercial Disinfectants against Human Norovirus Surrogates and *Clostridium difficile* in Suspension Test — JINGE HUANG, Geun Woo Park, Walter Randazzo, Angela Fraser, Jan Vinjé, Rachael Jones, Xiuping Jiang, Clemson University, Clemson, SC, USA
- P3-171 Implementation of Targeted Cleaning and Sanitation Directed by ATP Swabbing to Improve the Quality of Finished Food Products — JONATHAN SOGIN, Mario Cobo, Burcu Yordem, John David, Cari Lingle, Randy Worobo, Cornell University, Ithaca, NY, USA

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- P3-172 Determination of the Perceived Threshold for Dirtiness of Food-soiled Surfaces by Panelist Visual Detection — DEVIN DAESCHEL, Robin Dando, Abigail Snyder, Cornell University, Ithaca, NY, USA
- P3-173 Evaluation of Food Delivery Bag/Box Cleanability — AMANI BABEKIR, Anna Starobin, Ecolab Inc., Greensboro, NC, USA
- P3-174 Microbial Contamination Levels in Disposable Tableware in Korea — JOOHYUN KANG, Miseon Sung, Minji Nam, Yohan Yoon, Sookmyung Women's University, Seoul, Korea, Republic of Korea
- P3-175 Environmental Conditions Impact the Recovery of Microorganisms from Non-porous Surfaces — SARAH JONES, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P3-176 Difficulties of Spiral Freezer Decontamination: Eradicating *Listeria* spp. Using Chlorine Dioxide Gas — Karel Demyttenaere, KEVIN LORCHEIM, ClorDiSys Solutions, Inc., Lebanon, NJ, USA

Viruses and Parasites

- P3-177 Recovery and Detection of *Cyclospora cayetanensis* from Agricultural Water: A Multi-laboratory Validation Study — MAURICIO DURIGAN, Kaiping Deng, Helen Murphy, Jodie Ulaszek, Robert Newkirk, Vishnu Patel, Matthew Kmet, Samantha Lindemann, Josh Warren, Laura Ewing, Ravinder Reddy, Alexandre da Silva, U.S. Food and Drug Administration – CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA
- P3-178 Evaluation of BAM Chapter 19b Method for Detection of *Cyclospora cayetanensis* in Mixed Bagged Pre-cut Salads — ALICIA SHIPLEY, Sonia Almeria, U.S. Food and Drug Administration, CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA
- P3-179 Assessment of Commercial DNA Clean-up Kits for Elimination of PCR Inhibitors in the Detection of *Cyclospora cayetanensis* in Cilantro — Angela Assurian, Helen Murphy, Alicia Shipley, Hediye Nese Cinar, Alexandre da Silva, M. ALMERIA, U.S. Food and Drug Administration, CFSAN, Office of Applied Research and Safety Assessment, Laurel, MD, USA
- P3-180 Independent Laboratory Validation Study of Detecting *Cyclospora cayetanensis* in Agricultural Water — KAIPING DENG, Robert Newkirk, Jodie Ulaszek, Vishnu Patel, Mauricio Durigan, Helen Murphy, Matthew Kmet, Ravinder Reddy, Alexandre da Silva, IFSH/Illinois Institute of Technology, Bedford Park, IL, USA
- P3-181 The Relationship between Season, Weather, Physicochemical Properties and the Presence of *Cryptosporidium* spp., *Toxoplasma gondii*, and *Giardia intestinalis* in Potential Alternative Sources of Agricultural Water: A Conserve Project — SHANI CRAIGHEAD, Brienna Anderson-Coughlin, Samantha Gartley, Alyssa Kelly, Alexis Omar, Adam Vanore, Chengsheng Jiang, Joseph Haymaker, Derek Foust, Rico Duncan, Chanelle White, Cheryl East, Eric Handy, Sarah Allard, Rianna Murray, Mary Theresa Callahan, Sultana Solaiman, Walter Betancourt, Charles Gerba, Salina Parveen, Fawzy Hashem, Shirley A. Micallef, Amir Sapkota, Manan Sharma, Amy Sapkota, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P3-182 Verification and Implementation of the US-FDA BAM Chapter 19b Method for Routine Detection of *Cyclospora cayetanensis* in Leafy Greens and Berries by a Canadian Food Inspection Agency Laboratory — LAURA LALONDE, Jenna Oakley, Patrick Fries, Vincent Xie, Centre for Foodborne and Animal Parasitology, Canadian Food Inspection Agency, Saskatoon, SK, Canada

- P3-183 Validation of Loop-mediated Isothermal Amplification (LAMP) Assay for Rapid and Reliable Detection of *Giardia duodenalis* Cysts in Leafy Greens — LAURA LALONDE, Jenna Oakley, Vincent Xie, Centre for Foodborne and Animal Parasitology, Canadian Food Inspection Agency, Saskatoon, SK, Canada
- P3-184 Inactivation of Encysted Muscle Larvae of *Trichinella spiralis* in Pigs after Anthelmintic Drug Treatment — JORRELL FREDERICKS, Dolores Hill, Dante Zarlenga, Valsin Fournet, Diane Hawkins-Cooper, Joseph Urban Jr., United States Department of Agriculture, Beltsville, MD, USA
- P3-185 Imported Raspberries Linked to Norovirus Cruise Ship Outbreak — JACQUELINA WOODS, Khamphet Nabe, Elizabeth Sachs, Kristopher Stanya, FDA Gulf Coast, Dauphin Island, AL, USA
- P3-186 Ultra-Low Temperature High-pressure Processing Inactivation of Foodborne Viruses — CHRISTINA DEWITT, Kevin Nelson, David Kingsley, Oregon State University, Astoria, OR, USA
- P3-187 Enhanced Inactivation of Foodborne Viruses by Cinnamaldehyde Nanoemulsions Require a Lipid Envelope — PRAGATHI KAMARASU, Matthew Moore, University of Massachusetts Amherst, Amherst, MA, USA
- P3-188 Evaluation of Non-traditional Irrigation Water Sources for Atmospheric, Physicochemical, and Viral Indicators of Viral Enteric Pathogens: A Conserve Study — BRIENNA ANDERSON-COUGHILIN, Shani Craighead, Alyssa Kelly, Samantha Gartley, Adam Vanore, Chengsheng Jiang, Joseph Haymaker, Chanelle White, Derek Foust, Rico Duncan, Cheryl East, Eric Handy, Rhodel Bradshaw, Rianna Murray, Prachi Kulkarni, Mary Theresa Callahan, Sultana Solaiman, Walter Betancourt, Charles Gerba, Sarah Allard, Salina Parveen, Fawzy Hashem, Shirley A. Micallef, Amir Sapkota, Amy R. Sapkota, Manan Sharma, Kalmia Kniel, University of Delaware, Newark, DE, USA
- P3-189 Evaluation of Concentrating Methods for Enteric Viral Detection in Water — JUSTIN TANNER, Angela Nguyen, Mérieux NutriSciences, Crete, IL, USA
- P3-190 Comparing the Efficacies of Alcohol-based Hand Sanitizers against Human Norovirus Using Two American Society for Testing and Materials (ASTM) Finger Pad Methods (E1838-10 and E1838-17) — BLANCA ESCUDERO-ABARCA, Rebecca Goulter, Rachel Leslie, Kristen Green, James Arbogast, Lee-Ann Jaykus, Department of Food, Bioprocessing, and Nutrition Sciences, North Carolina State University, Raleigh, NC, USA
- P3-191 Investigating the Role of Lettuce Leaf Surface Exudates on the Persistence of Human Norovirus Surrogates — WENJUN DENG, Kristen Gibson, University of Arkansas, Fayetteville, AR, USA
- P3-192 Effects of Pasteurization, Freezing and Preserving Agents on Survival of Bacteriophage MS2, a Norovirus Surrogate, in Acerola-Cherry Pulp — Maria Mayara de Souza Grilo, Geany Targino de Souza Pedrosa, Rutchelly Tavares, MATTHEW IGO, Donald W. Schaffner, Marciane Magnani, Rutgers, The State University of New Jersey, New Brunswick, NJ, USA
- P3-193 Investigation of Novelty and Practicability of Pathogenic *Salmonella*-specific Phage — SU-HYEON KIM, Yeon Soo Kim, Ji Min Han, Mi-Kyung Park, Kyungpook National University, Daegu, South Korea
- P3-194 Withdrawn
- P3-195 Withdrawn

- P3-196 Validation of Bench and Commercial-scale Dry Roasting Process to Reduce *Salmonella* on Hazelnuts — Joy Waite-Cusic, SAMANTHA BURROUGHS, Oregon State University, Corvallis, OR, USA
- P3-197 Impact of Air Velocity on the Reduction of *Salmonella* and *Enterococcus faecium* during the Dehydration of Sugar-infused Apples — Joy Waite-Cusic, SAMANTHA BURROUGHS, Oregon State University, Corvallis, OR, USA
- P3-198 Comparative Genomic Analysis of *Salmonella enterica* Subsp. *enterica* Serovars Montevideo and Senftenberg Isolates Associated with Pistachios — Julie Haendiges, Gordon Davidson, Tyann Blessington, Jie Zheng, Jesse Miller, MARIA HOFFMANN, U.S. Food and Drug Administration – Center for Food Safety and Applied Nutrition, College Park, MD, USA
- P3-199 The Use of a Novel Selective Supplement for the Rapid Recovery and Detection of Pathogenic Gram-Negative Organisms from Challenging Food Matrices — Simon Illingworth, NEVIN PERERA, Solus Scientific Solutions Ltd., Mansfield, United Kingdom
- P3-200 Evaluation of Oxygen Availability and Different Structured Dairy Model Systems on Growth and Inter-Strain Interactions of *L. monocytogenes* — MARIA GKEREKOU, Lamprini Adam, Georgios Papakostas, Eleftherios Drosinos, Panagiotis Skandamis, Laboratory of Food Quality Control and Hygiene, Department of Food Science and Human Nutrition, Agricultural University of Athens, Athens, Greece
- P3-201 Novel Assay for *Staphylococcus aureus* in Nutraceuticals Using Rapid Automated Detection System — Tina Caskey, James Hlawnceu, Carolyn Montei, Lei Zhang, Robert Donofrio, PREETHA BISWAS, Neogen Corporation, Lansing, MI, USA

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ABOUT THE AWARD RECIPIENTS



BLACK PEARL AWARD

AJINOMOTO FOODS NORTH AMERICA, INC.
ONTARIO, CALIFORNIA



As a leading manufacturer in the frozen food industry, Ajinomoto Foods North America is dedicated to contributing to a healthier lifestyle through nutritious and balanced foods. With a commitment to excellence and innovation, all of our products are produced with our customers in mind, providing healthy and delicious meals for the entire family.

We currently operate nine factories and one corporate office domestically in the United States. With more than 3,000 employees working with a high standard of food safety and quality, we serve as a brand leader across all categories of frozen foods.

Ajinomoto products span across the largest categories of ethnic frozen foods, ranging from Mexican to Italian to Asian across every distribution channel including foodservice, grocery, warehouse club, and custom manufacturing. Our brands include Tai Pei, Ling Ling, Ajinomoto, José Olé, Posada, and Fred's for Starters.

Our focus is on economic, cultural and educational development of each community where we do business. As members of local communities, Ajinomoto's employees are encouraged as individuals to participate in social contribution activities. Together, the company can improve the health and wellness of our customers and help create a sustainable environment so everyone can continue to "Eat Well and Live Well."

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FELLOW AWARD



Robert Buchanan
College Park, Maryland

Dr. Robert Buchanan is a recipient of the 2020 IAFP Fellow Award. Dr. Buchanan is a Professor of Nutrition and Food Science at the University of Maryland in College Park. He has 45 years of experience teaching and conducting research in food safety, starting out in academia before joining the U.S. Department of Agriculture's Agricultural Research Service (USDA ARS) and the U.S. Food and Drug Administration (FDA). He then returned to academia in 2008 to serve as Professor for Food Safety.

Dr. Buchanan served as the director of the Center for Food Safety and Security Systems from 2008–2016. His scientific interests are diverse and include extensive experience in predictive microbiology, quantitative microbial risk assessment, microbial physiology, mycotoxicology, and food safety systems. He has published extensively and given numerous invited presentations worldwide. He is also the co-developer of USDA Pathogen Modeling Program.

With an ongoing interest in science-based public health policy, Dr. Buchanan has served as the FDA's Center for Food Safety and Applied Nutrition (CFSAN) Senior Science Advisor; Director of the CFSAN Office of Science; and Deputy Administrator for Science with the USDA's Food Safety and Inspection Service (FSIS).

Dr. Buchanan has served on numerous national and international advisory bodies including as the U.S. Delegate to the Codex Alimentarius Committee on Food Hygiene and International Commission on Microbiological Specification for Foods. He has also served as a member of the National Academy of Science's Institute of Medicine Committee on Emerging Microbial Threats, the National Advisory Committee on Microbiological Criteria for Foods, and numerous international expert consultations for the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). Dr. Buchanan is also a Fellow of the American Academy for Microbiology and the Institute of Food Technologists.

A 15-year Member of IAFP, Dr. Buchanan currently serves on the Editorial Boards for both *Food Protection Trends* and the *Journal of Food Protection*. He is a member of numerous PDGs and of the IAFP Affiliate, the Capital Area Food Protection Association. He received the President's Lifetime Achievement Award in 2012 and presented the John H. Silliker Lecture at that year's Annual Meeting.

Dr. Buchanan received his B.S., M.S., Master's of Philosophy, and Ph.D. in Food Science from Rutgers University, with post-doctoral training in Mycotoxicology at the University of Georgia.



Mickey Parish
College Park, Maryland

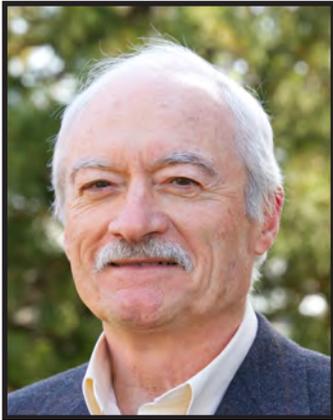
Dr. Mickey Parish is a recipient of the 2020 IAFP Fellow Award. Dr. Parish recently retired as the Senior Science Advisor at the U.S. Food and Drug Administration's (FDA's) Center for Food Safety and Applied Nutrition (CFSAN) in College Park, Maryland. In this role, he oversaw the overall CFSAN research portfolio and addresses issues related to science and research policy.

Prior to joining the FDA, Dr. Parish was a career academician. From 2005–2010, he was Chair of the Department of Nutrition and Food Science at the University of Maryland in College Park. Between 1986–2005, Dr. Parish was on the faculty at the University of Florida's (UFL) Citrus Research and Education Center as a food microbiologist with tenure in the Food Science and Human Nutrition Department. 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.

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 a B.S. in Biology from Florida State University.

PRESIDENT'S LIFETIME ACHIEVEMENT AWARD



Dallas G. Hoover
Newark, Delaware

Dr. Dallas Hoover is the recipient of the 2020 IAFP President's Lifetime Achievement Award. This award is given at the discretion of the Association's President to recognize an individual who has made a lasting impact on "Advancing Food Safety Worldwide" through a lifetime of professional achievement in food protection.

Dr. Hoover is Professor of Food Microbiology in the Department of Animal & Food Sciences at the University of Delaware in Newark, where he has served on the faculty for 36 years. His research interests in food process microbiology have involved development and implementation of high-pressure processing as an effective and approved food preservation process by the food industry, primarily focusing on the response of bacteria, fungi, and viruses to high hydrostatic pressure in various foods and beverages to evaluate food safety risks. Additional research interests have included adaptation and optimization of bifidobacteria as viable probiotic cultures in foods and more recently in the area of fermentations with efforts to establish brewing technology at the University of Delaware for both teaching and research applications. Dr. Hoover's core area of teaching has been courses and projects in food microbiology, general food science and technology, and fermentation sciences.

Dr. Hoover has been an IAFP member since 1985 and has served on the Editorial Board of the *Journal of Food Protection* since 2001. He has also served on several other journal editorial boards, and is currently an associate editor for *Innovative Food Science & Emerging Technologies*, as well as an associate editor for the *Journal of Food Science*.

Dr. Hoover obtained his B.S. in Biology from Elizabethtown College in Pennsylvania, his M.S. in Biological Sciences from the University of Delaware, and his Ph.D. in Food Science from the University of Minnesota, specializing in food microbiology. His postdoctoral work was at Drexel University and Cornell University.

HONORARY LIFE MEMBERSHIP AWARD



Patrice Arbault
Lyon, France

Dr. Patrice Arbault is a recipient (posthumously) of the 2020 IAFP Honorary Life Membership Award. Dr. Arbault, who passed away in March 2020, was President of and International Food Safety Consultant for BioAdvantage Consulting in Lyon, France.

Dr. Arbault joined IAFP in 1999 and served for several years on the European Symposium Organizing Committee, including as Chair. He was a member of several IAFP Professional Development Groups (PDGs) and attended IAFP's European Symposium on Food Safety for many consecutive years, as well as each IAFP Annual Meeting from 1999–2017, regularly presenting, organizing, and convening several symposia at both meetings.

Dr. Arbault's career from 1994–2004 included joining the Diffchamb Group in Gotthenburg, Sweden and becoming Vice President of Technical Affairs, Site Manager for Diffchamb SA in Lyon, France. In 2005, he founded BioAdvantage Consulting, a global consulting service for food and environmental diagnostic companies, including those serving the meat industry. In 2007, he founded and remained as President of Nexidia, located in Dijon, France, and since 2012, he served as an Adjunct Professor on the graduate faculty at Texas Tech University in Lubbock.

Food safety and methods validation were passions for Dr. Arbault. His notably published work was carried out on methods for the analysis of pathogenic bacteria, bacterial toxins, mycotoxins, and allergens. He was an active member of and leader on several boards and committees including AOAC INTERNATIONAL; Chair of the AOAC Research Institute Board; a member of the AOAC Microbiology

Expert Review Panel; a member of the MicroVal Technical Committee; Chair of the AFNOR Microbiology Technical Committee; and President/Consultant of Novolyze, a food safety company based in Dijon. Novolyze received the IAFP Food Safety Innovation Award in 2017.

Dr. Arbault held an Engineering degree in Biotechnologies and a Master's in Cellular and Molecular Biology from the University of Clermont-Ferrand, France, and a Ph.D. in Human Biology from Claude Bernard University in Lyon, France.



Jeffrey M. Farber
Guelph, Ontario, Canada

Dr. Jeffrey Farber is a recipient of the 2020 IAFP Honorary Life Membership Award. Dr. Farber is a Professor in the Department of Food Science at the University of Guelph in Ontario, Canada, where he oversees several graduate students, as well as M.Sc. Food Safety and Quality students. He is also the current President of a global food safety consulting company. He received his Ph.D. in Food Microbiology at McGill University in Montreal, Canada.

Dr. Farber previously worked at Health Canada as Director of the Bureau of Microbial Hazards in the Food Directorate of Health Canada, where he led a group of approximately 60 people working in various areas of microbial food safety. He has published more than 150 publications and numerous book chapters and has edited four books. He was Associate Editor of the *International Journal of Food Microbiology* for several years. Dr. Farber is also a consulting member and past Treasurer of the International Commission on Microbiological Specifications for Foods (ICMSF) and has extensive experience working at the international level with organizations such as Codex Alimentarius, the World Health Organization (WHO), and the Food and Agriculture Organization of the United Nations (FAO).

An IAFP Member since 1992, Dr. Farber served many years on the Editorial Board of the *Journal of Food Protection (JFP)*; published numerous research papers in *JFP* and *Food Protection Trends*; and has presented his research results frequently at IAFP meetings in North America and globally. He was a member of the IAFP Program Committee for six years and a founding member of both the Produce and International Professional Development Groups (PDGs). He has also served on many

Award Selection Committees and is currently the Contents Editor for *IAFP Report*. Dr. Farber served as IAFP President in 2006 and received the Association's Fellow Award in 2014, the Harry Haverland Citation Award in 2009, and the President's Recognition Award in 2009.

Dr. Farber most recently received the Prime Minister's Outstanding Achievement Award for his work as the lead scientist for Health Canada on the deli-meat listeriosis outbreak.

HONORARY LIFE MEMBERSHIP AWARD



Judy Harrison
Athens, Georgia

Dr. Judy Harrison is a recipient of the 2020 IAFP Honorary Life Membership Award. Dr. Harrison recently retired from the University of Georgia in Athens as a Professor in the Department of Foods and Nutrition and is a Walter B. Hill Distinguished Fellow in Public Service and Outreach. She has worked to protect the health of consumers and families through food safety education from farm to table. In addition, she has developed, implemented, and evaluated food safety education for child care providers; school nutrition and restaurant personnel; food business personnel; farmers, farmers' market managers; adult consumers; and youth audiences. Her educational materials have been used with audiences in eight countries, 27 states, and the District of Columbia.

Dr. Harrison has been an IAFP Member since 1992. Her service has included: Secretary for the IAFP Affiliate, the Georgia Association for Food Protection; Local Arrangements Co-Chair for IAFP 2000 in Atlanta; Chair of the IAFP Audiovisual Library Committee; member of the Food Safety Education Professional Development Group (PDG), Editorial Boards for both *Food Protection Trends* and *Journal of Food Protection*; and as a member of the Elmer Marth Educator Award Selection Committee. Dr. Harrison received the Elmer Marth Educator Award in 2017. She has also served on the Board of Directors for the Partnership for Food Safety Education, providing her with the opportunity to be involved in helping to develop food safety education initiatives for audiences nationwide.

Dr. Harrison has been recognized with awards from the media industry; three food safety awards from the National Extension Association for Family and Consumer Sciences; and the 2016 NSF International Food Safety Leadership Award for Training and Education. In 2018, she was recognized by the Association of Public and Land-grant Universities Board on Human Sciences with the Outstanding Engagement Award, recognizing faculty with exceptional creativity and scholarship in the development, application, and evaluation of outreach, extension, and public service programs.



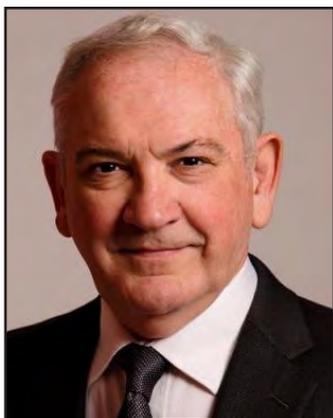
Allen R. Sayler
Alexandria, Virginia

Mr. Allen Sayler is a recipient of the 2020 Honorary Life Membership Award. Mr. Sayler has spent his entire 37-year career as a state, the U.S. Food and Drug Administration (FDA), the U.S. Department of Agriculture (USDA), and food industry regulator, industry advisor, and consultant, concentrating on improving food safety programs in the manufacturing, warehousing, and distribution sectors through training; publication of articles in food industry publications; and conducting troubleshooting, root-cause analyses inspections, audits, and assessments. While better known for his dairy background, his expertise spans food processing and engineering; food safety; hygiene and standards regulations; food additives; and food defense. He also has more than 20 years of international experience, representing the U.S. food industry at Codex Alimentarius meetings on food standards, additives, hygiene, labeling, and contaminant. While at the FDA and USDA, he received two group awards for his team contributions in the areas of dairy product safety and international relations.

Mr. Sayler has been an IAFP Member since joining IAMFES in 1984 while working for the North Dakota Department of Agriculture. Throughout his membership, he has served on several Award Selection Committees and on the IAFP Nominating Committee. He was Vice President, President, and Delegate of the Association's (then) North Dakota Affiliate. In 2007, he was elected Vice Chair of the Dairy Quality and Safety PDG, serving as Chair from 2009–2011. He received the Harold Barnum Industry Award in 2009.

Mr. Sayler has presented or organized symposia and workshops at nine national meetings involving national and international IAFP Members.

HONORARY LIFE MEMBERSHIP AWARD



Peter J. Slade
Squamish, British Columbia,
Canada

Dr. Peter Slade is a recipient of the 2020 IAFP Honorary Life Membership Award. Dr. Slade has more than 35 years' experience as a food scientist and is now enjoying an active semi-retirement. He has worked in industry, most recently with Maple Leaf Foods in Mississauga, Ontario, as Senior Director, Regulatory Affairs (Food Safety and QA), and in the U.S. in corporate roles with McDonald's Corporation and the Campbell Soup Company. Dr. Slade worked in academia for several years at the National Center for Food Safety and Technology (NCFST); now the Institute for Food Safety and Health (IFSH), part of Illinois Institute of Technology (IIT) in Chicago. He has extensive experience in Europe, the Middle East, and Southeast Asia.

Dr. Slade's expertise is in food safety, quality, and microbiology, with working knowledge of traditional and novel processing technologies and controls. Active in HACCP design and application since its early years, he holds an interest in (emerging) food safety risk assessment, and has proficient knowledge of the Global Food Safety Initiative (GFSI); is trained in FSSC 22000 and SQF; and has a strong working knowledge of BRC. Recent interests include economically motivated fraud (food fraud) and "One Health" initiatives.

An IAFP Member since 1985, Dr. Slade is a member of several Professional Development Groups (PDGs) and served on the IAFP Nominating Committee, the IAFP Program Committee, and the *Food Protection Trends* Editorial Board. He has also participated on numerous scientific and technical panels and committees, and has often presented at meetings and symposia, contributing several dozen presentations, posters, and invited talks. He is an author or co-author of dozens of peer-reviewed and non-peer-reviewed papers.

Dr. Slade has been a member of the Institute of Food Technologists (IFT) for more than 20 years. He holds a Ph.D. in Food Science from the University of Guelph and a B.Sc. in Food Science/Microbiology from the University of Leeds (UK).



Mary Lou Tortorello
Brookfield, Illinois

Dr. Mary Lou Tortorello is a recipient of the 2020 IAFP Honorary Life Membership Award. Dr. Tortorello is retired from a 38-year career in microbiology, 27 of which were in food safety research for the U.S. Food and Drug Administration (FDA). Dr. Tortorello was Supervisory Research Microbiologist and Chief of the Food Technology Branch, Division of Food Processing Science and Technology at the Moffett Center, in Bedford Park, Illinois, in collaboration between the FDA and Illinois Institute of Technology's Institute for Food Safety and Health. Her research interests included microbiological methods, particularly food sample preparation and sampling, and the behavior and control of foodborne pathogens and biothreat agents in foods and food processing environments.

An IAFP Member since 1996, Dr. Tortorello has been a member of four Professional Development Groups and served on several Award Selection Committees and the Nominating Committee. She has also served on the IAFP Program Committee, including terms as Vice Chair and Chair, as well as on the Editorial Board of the *Journal of Food Protection* from 2002–2019.

Dr. Tortorello was Chair of the Food Microbiology Division of the American Society for Microbiology, Councilor for the Illinois Society for Microbiology, and a member of expert panels for the Institute of Food Technologists. She is Co-Editor of the *Compendium of Methods for the Microbiological Examination of Foods, 5th Edition*; and of the *Encyclopedia of Food Microbiology*. She has been Chief Editor of *Food Microbiology* since 2000.

Dr. Tortorello grew up in Chicago, Illinois and received her B.S. in Biological Sciences from Northern Illinois University; her M.S. in Biological Sciences from Loyola University of Chicago; and her Ph.D. in Microbiology from Cornell University. She did post-doctoral research at the Cornell College of Veterinary Medicine, where she also maintained collaborations with the Department of Food Science. After her post-doctoral appointment and before joining the FDA, she taught General Microbiology at Cornell College and was a Product Manager in the Diagnostics Division of Abbott Laboratories.

HARRY HAVERLAND CITATION AWARD



Gary R. Acuff
College Station, Texas

Dr. Gary Acuff is this year's recipient of the Harry Haverland Citation Award. This award honors Dr. Acuff for his many years of dedication and devotion to the Association's ideals and objectives. He is the President of Acuff Consulting, LLC, founded in 2018 to provide food microbiology expertise in commercial food production systems. Previously, Dr. Acuff was a Professor of Food Microbiology at Texas A&M University in College Station and served on the faculty for 39 years. He was Director of the Texas A&M Center for Food Safety and also served as Head of the Department of Animal Science at Texas A&M.

Dr. Acuff's research has focused on improving the microbiological quality and safety of red meat and poultry in all areas of production and utilization, and most recent activities have centered on the effective use of surrogate bacteria for validation of process control in HACCP and Food Safety systems. Additional research interests have included characterizing the presence of *Campylobacter jejuni* in turkey processing and survival of pathogenic bacteria in low-moisture foods. He has authored or co-authored more than 100 peer-reviewed research publications in scientific journals and numerous chapters in various references and textbooks.

An IAFP Member since 1982, Dr. Acuff was the Association's President from 2007–2008. Throughout his Membership, he has served on numerous committees, including the Foundation Committee, the Nominating Committee, several Award Selection Committees, and on both the IAFP Program Committee and the European Symposium Organizing Committee. Dr. Acuff also served

on both the *Journal of Food Protection* Editorial Board and Management Committee and on the *Food Protection Trends* Management Committee, and is a member of several of IAFP's Professional Development Groups (PDGs). He received the IAFP Fellow Award in 2013, the President's Lifetime Achievement Award in 2019, and presented the IAFP 2018 Ivan Parkin Lecture.

Dr. Acuff is a Fellow in the American Academy of Microbiology and received his B.S. in Biology from Abilene Christian University and his M.S. and Ph.D. in Food Science and Technology, specializing in Food Microbiology, from Texas A&M University.

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FOOD SAFETY INNOVATION AWARD



Clear Labs
San Carlos, California

Clear Labs is the recipient of the 2020 Food Safety Innovation Award for its Clear Safety platform, the only automated, intelligent next-generation sequencing (NGS) platform that's purpose-built for food safety testing. The company is based in San Carlos, California.

Leveraging the latest technology in genomics testing, bioinformatics, and robotics, the AOAC-approved Clear Safety platform helps food safety professionals reduce risk with pathogen screening which integrates further characterization. *Salmonella* serotypes and *Listeria* patterns are identified faster than ever and seamlessly mapped to virtual floorplans. These real-time insights enable a more rapid response to events.

The platform utilizes targeted sequencing, which looks only at specific locations of the genome that are useful for identifying distinct pathogens. Hundreds of millions of data points per analysis are generated, which can be used to learn far more than legacy screening platforms allow, and at significantly higher accuracy. By using Clear Safety, manufacturers can find advantage through the modernization of food safety management systems.

Clear Labs was founded in 2014 to aid food brands ushering in a new era of food safety with the most accurate and advanced testing capabilities. "In its

mission to bring next-generation sequencing technology out of the clinical space and into food, Clear Labs truly represents the future of the industry," said Mike Robach (former Vice President, Corporate Food Safety, Quality and Regulatory Affairs at Cargill and former Chairman of the Board of Directors of the Global Food Safety Initiative).

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INTERNATIONAL LEADERSHIP AWARD



Dr. Norma Heredia
San Nicolas, Nuevo León,
Mexico

The 2020 International Leadership Award goes to Dr. Norma Heredia for her dedication to the high ideals and objectives of IAFP and her promotion of the mission of the Association in countries outside the U.S. and Canada. Dr. Heredia is Professor and the Chief of Laboratory at the Universidad Autónoma de Nuevo León in San Nicolas, Nuevo León, Mexico.

For the past two decades, Dr. Heredia has been one of the leaders in the advancement of Food Safety in Mexico. She is a member of the Mexican Academy of Science, where she was president of the Northeast Region. She served as President and is the current Delegate of the IAFP Affiliate, the Mexican Association for Food Protection.

More recently, Dr. Heredia has worked in the characterization of the ecology of pathogenic microorganisms associated with the fresh produce environment, producing more than 104 scientific documents, including the book, *Microbiologically Safe Foods*, published by John Wiley & Sons.

Dr. Heredia actively collaborates with the industry in training and problem-solving aspects through extension services and has also developed an extensive network of international collaborators, including with the University of Massachusetts, the U.S. Department of Agriculture (USDA), Cornell University, Emory University, North Carolina State University, North Dakota State University, the U.S. FDA, and Kagoshima University in Japan. She has also been involved in organizing many annual food safety conferences, including IAFP's Latin American Symposium on Food Safety in 2016 and other IAFP Affiliate Meetings. For more than 20 years, Dr. Heredia organized a Rapid Methods Workshop in Mexico which attracted industry representatives from numerous countries.

Dr. Heredia has promoted food safety through presentations in more than 13 countries, some of which were sponsored by scientific organizations or industry, such as the FOHIS in the U.S., Japan, China and Poland, as well as bioMérieux at the ALAM Congress in Uruguay. She has also extended her expertise in microbiology of 3M Mexico.

Dr. Heredia has collaborated with organizations such as 3M, bioMérieux, GoJo Industries, and other international and Mexican companies in the validation, research, and innovation of various processes, with the participation of 88 undergraduate and graduate students, resulting in the joint publication of articles.

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FOOD SAFETY AWARD



Joseph Stout
Libertyville, Illinois

The recipient of the 2020 Food Safety Award (formerly the GMA Food Safety Award) is Mr. Joseph Stout. Mr. Stout began his career in 1982 with positions at Nabisco Brands in sanitation and quality. He subsequently continued working in these areas for Kraft Foods and subsidiaries until his retirement in 2010 as Global Director of Product Protection Sanitation and Hygienic Design. In this role, he was responsible for sanitation and hygienic design for approximately 250 plants worldwide.

While working in industry, Mr. Stout was actively engaged with trade organizations and served as the lead for the AMI team, which created the 10 principles of Sanitary Design. He also led the Dairy Management Inc. Food Safety Training, development, and execution. Within this process, Mr. Stout was engaged in creating the Dairy Management Inc. guidance document for control of *Listeria monocytogenes*. Created in 1999, the *Listeria* equation crystallizes core principles needed for *Listeria* control procedures in a holistic manner, is easy to understand, and was used as the backbone of the Dairy *Listeria* guidance document for training and in plant application.

Upon his retirement in 2010, Mr. Stout stayed involved with the food industry by founding and building the Commercial Food Sanitation (CFS) Company, where his extensive knowledge base could be shared. Founded in 2010, the company has 36 full-time food safety experts working with global and local companies. CFS also provides a three-day Sanitation Essentials Class and a separate Hygienic Design Class offered in the U.S., Amsterdam, and China. In 2019, CFS trained more than 700 people. Recognizing the challenges associated with cleaning

machinery used in fresh-cut produce, Mr. Stout initiated a hygienic design summit, bringing together the right blend of fresh-cut processors, equipment manufacturers, and a handful of buyers who often drove change within the industry. After organizing this successful event, his question was 'what's next and how do we maintain momentum?'

Since then, Mr. Stout has rallied fresh-cut processors, leafy greens, and other diverse commodities to begin a systematic exploration, evaluation, and partnership in continuous improvement of equipment design with manufacturers. This effort expanded to include harvest equipment. His years of expertise have brought practical experience to the food industry, and his firm is recognized globally in the field of environmental controls.

An IAFP Member since 2013, Mr. Stout received the IAFP Sanitarian Award in 2015.

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FROZEN FOOD FOUNDATION FREEZING RESEARCH AWARD



Claire Zoellner
Ithaca, New York

Dr. Claire Zoellner is the recipient of the 2020 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. Zoellner is a Food Safety Scientist at iFoodDecisionSciences, Inc. (iFoodDS), where she manages research on developing and delivering pragmatic, science-based software tools for the food industry. She also leads the iFoodDS *Listeria* services and solutions program, focused on improving environmental monitoring programs in food processing facilities. Dr. Zoellner uses her expertise in microbial contamination, simulation models, and risk assessment to generate actionable information for managing food safety risks across the supply chain.

Prior to iFoodDS, Dr. Zoellner completed a postdoctoral research appointment at Cornell University aimed at developing modeling tools to address the risk of *Listeria* contamination in frozen foods. As a postdoc, she led the creation of an interactive database of *Listeria* research and guidance documents and development of two modeling tools for industry to design risk-based environmental monitoring programs (EnABLE) and quantify the public health impact from low-level contamination in non-ready-to-eat frozen foods (FFLoRA). Through publications, industry workshops, and invited talks, as well as current commercialization efforts, she continues collaborating on the advancement of more digital and risk-based food safety programs in the frozen food sector. She was recognized as an emerging leader in food science with the Institute of Food Technologists' (IFT's) 2019 Emerging Leaders Network Award.

Dr. Zoellner received a B.S. in Food Science and Human Nutrition from the University of Illinois Urbana-Champaign and a Ph.D. in Food Science and Technology with minors in Epidemiology and Systems Engineering from Cornell University. Her foray into food safety began with a doctoral USDA National Needs Fellowship in International Food Safety, which she used to study microbial dynamics in an international supply chain of fresh tomatoes. For the impact and practicality of this research, she was awarded the Phi Tau Sigma Founders' Award.

Dr. Zoellner joined IAFP in 2016 and received the IAFP Student Travel Scholarship that year.

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INSTITUT MÉRIEUX YOUNG INVESTIGATOR AWARD



Shivaramu Keelara
Raleigh, North Carolina

Dr. Shivaramu Keelara is the recipient of the 2020 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. Keelara is a Research Assistant Professor in the Department of Population Health and Pathobiology in the College of Veterinary Medicine in North Carolina State University in Raleigh, where he has made substantial contributions to the field of food microbiology and food safety. His research specifically focuses on the study of antimicrobial resistance (AMR) of major foodborne (*Salmonella* and ESBL *E. coli*) and commensal bacteria (generic *Escherichia coli* and *Enterococcus* spp.).

Dr. Keelara uses rapid identification methods such as MALDI-TOF to identify different foodborne pathogens and commensal bacteria from food animals, humans, and the environment using a "One Health" approach. His research also explores genotyping methods such as whole genome sequencing to characterize the resistance determinants. In partnership with IBM, Dr. Keelara is using an artificial intelligence tool (IBM-WATSON) to develop an interactive, artificial intelligent enabled, user-friendly surveillance platform to analyze various factors associated with foodborne illness outbreaks and AMR burden, both retroactively and in real-time. Dr. Keelara also works extensively with the World Health Organization (WHO) as a collaborator and laboratory trainer/facilitator while implementing the Global Tricycle Project, which aims to establish global surveillance of ESBL *E. coli* in animals, humans, and the environment using a "One Health" approach in low- and middle-income countries.

Dr. Keelara's passion for research continues with a strong commitment to exploring emerging technologies to address some of the most pressing global health issues related to antimicrobial resistance and food safety. He is actively involved in establishing collaborations with national and international partners from academia and government agencies who are active in these areas of research.

Dr. Keelara received his BVSc. & AH (DVM equivalent) from Bengaluru Veterinary College and hold a Master's in Veterinary Public Health from the Indian Veterinary Research Institute (IVRI) in India. He received his Ph.D. from North Carolina State University with a focus on antimicrobial resistance of foodborne pathogens. Prior to his current position at the university, he was a research associate at the U.S. Department of Agriculture (USDA) in Beltsville, Maryland.

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MAURICE WEBER LABORATORIAN AWARD



Donald W. Schaffner
New Brunswick, New Jersey

Dr. Donald Schaffner is the recipient of the 2020 Maurice Weber Laboratorian Award. This award recognizes an IAFP Member for dedicated and exceptional contributions in the laboratory, and commitment to the development and/or application of innovative and practical analytical approaches in support of food safety.

Dr. Schaffner is Extension Specialist in Food Science and Distinguished Professor at Rutgers University, The State University of New Jersey in New Brunswick. His research interests include quantitative microbial risk assessment, predictive food microbiology, handwashing, and cross-contamination. He has educated thousands of food industry professionals through numerous short courses and workshops in the U.S. and dozens of countries around the world.

He has authored more than 180 peer-reviewed publications and numerous book chapters and abstracts, and has been the recipient of more than \$8 million in grants and contracts, largely in the form of competitive national grants.

Dr. Schaffner has served on a variety of expert committees, including service to the U.S. National Academy of Sciences; the World Health Organization (WHO); the Food and Agriculture Organization (FAO) of the United Nations; the Institute of Food Technologists (IFT); and the U.S. National Advisory Committee on Microbial Criteria for Foods (NACMCF).

An active IAFP Member since 1989, Dr. Schaffner became the Association's President in 2014. He has served on numerous IAFP committees, including several Award Selection Committees, the Nominating Committee, the European Symposium Organizing Committee, the IAFP Program Committee, and the *Journal of Food Protection* Management Committee, and is a current Editorial Board Member of both the *Journal of Food Protection* and *Food Protection Trends*. He received the Frozen Food Foundation Freezing Research Award in 2018, the IAFP Fellow Award in 2017, and the IAFP Elmer Marth Educator Award in 2009.

Dr. Schaffner was elected a Fellow of IFT in 2010 and of the American Academy for Microbiology in 2014. He holds a B.S. in Food Science from Cornell University and an M.S. and Ph.D. in Food Science and Technology from the University of Georgia. He is the co-host of the *Food Safety Talk* podcast on microbial food safety and the *Risky or Not* short podcast.

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LARRY BEUCHAT YOUNG RESEARCHER AWARD



Si Hong Park
Corvallis, Oregon

Dr. Si Hong Park is the recipient of the 2020 Larry Beuchat Young Researcher Award, which recognizes a young researcher who has shown outstanding ability and professional promise in the early years of their career.

Dr. Park joined the Department of Food Science and Technology as an Assistant Professor at Oregon State University (OSU) in Corvallis in August 2017. He received both his B.S. and M.S. in Food Science and Biotechnology at Kyung Hee University in South Korea and completed his Ph.D. in the Cellular and Molecular Biology Program and postdoctoral training in the Department of Food Science at the University of Arkansas in 2013 and 2017, respectively.

Dr. Park's research emphasis is on the food and human microbiome supplemented with food additives (prebiotics/probiotics) to understand the interaction between the host and microbes related to the food safety and quality using metagenomics and bioinformatics approaches. He integrated his wide range of research and teaching experiences to resolve fundamental questions related to the food microbiology and safety, as well as mentoring future prospective food microbiologists. To date, Dr. Park has published 75 peer-reviewed research papers, 11 review papers, nine book chapters, and two books as an editor. He is becoming a recognized food safety microbiologist nationally and internationally as evidenced by 17 invited talks since joining OSU.

Dr. Park was a recipient of the "Distinguished New Professor of the Year Award, 2019," awarded by the students of the College of Agricultural Sciences at OSU, and received the Young Investigator Grant provided by the Korean American Scientists and Engineers Association (KSEA)

in 2018. He has presented his research achievements at IAFP Annual Meetings since 2011 and served as a session organizer and convener at IAFP 2018.

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EWEN C.D. TODD CONTROL OF FOODBORNE ILLNESS AWARD



Jeffrey M. Farber
Guelph, Ontario, Canada

Dr. Jeffrey Farber is a recipient of the 2020 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. Farber is a Professor in the Department of Food Science at the University of Guelph in Ontario, Canada, where he oversees several graduate students, as well as M.Sc. Food Safety and Quality students. He is also the current President of a global food safety consulting company.

Dr. Farber previously worked at Health Canada as Director of the Bureau of Microbial Hazards in the Food Directorate of Health Canada, where he led a group of approximately 60 people working in various areas of microbial food safety. He has published more than 150 publications and numerous book chapters and has edited four books. He was Associate Editor of the *International Journal of Food Microbiology* for several years. Dr. Farber is also a consulting member and past Treasurer of the International Commission on Microbiological Specifications for Foods (ICMSF) and has extensive experience working at the international level with organizations such as Codex Alimentarius, WHO, and FAO.

An IAFP Member since 1992, Dr. Farber served many years on the Editorial Board of the *Journal for Food Protection (JFP)*; published numerous research papers in *JFP* and *Food Protection Trends*; and has presented his research results frequently at IAFP meetings in North America and globally. He was a member of the IAFP Program Committee for six years and a founding member of both the Produce and International Professional Development Groups (PDGs). He has also served on many Award

Selection Committees and is the *IAFP Report* Contents Editor. Dr. Farber served as IAFP President in 2006 and received the Association's Fellow Award in 2014, the Harry Haverland Citation Award in 2009, and the President's Recognition Award in 2009.

Dr. Farber received his Ph.D. in Food Microbiology from McGill University in Montreal, Canada.

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SANITARIAN AWARD



Rick J. Heiman
Kansas City, Kansas

The 2020 Sanitarian Award goes to Mr. Rick Heiman. 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. Heiman is Director of Corporate Hygiene for the Dairy Farmers of America in Kansas City, Kansas, where he leads a team of corporate sanitarians delivering leadership for hygienic design, hygienic practice, and food safety systems.

As a former Director of Global Hygiene, Director of Quality, and Corporate Sanitarian, Mr. Heiman has reduced food safety risk and increased the hygienic reliability of systems that are compliant with local regulations globally. He serves on committees and develops standards for GFSI, IAFP, 3-A SSI, EHEDG, IDFA, and the Innovation Center for U.S. Dairy. He is a frequent speaker on the topic of Hygienic Design for various organizations, including the University of Nebraska, FARRP, and the 3-A educational program.

Mr. Heiman earned a B.S. in Food Science and Nutrition from the University of Missouri and has completed post graduate education in low-acid canned foods, aseptic processing, and advanced statistics from North Carolina State University and the University of Arkansas. He is an American National Standards Institute Developer.

As a food manufacturing hygiene thought leader, Mr. Heiman was appointed to the GFSI hygienic design working group for global benchmarking standards; serves on the Board of Directors for 3-A Sanitary Standards, Inc. (SSI); and is an appointed liaison between 3-A SSI and the European Hygiene Engineering Design Group (EHEDG). Mr. Heiman joined IAFP in 1995.

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ELMER MARTH EDUCATOR AWARD



Lynn McMullen
Edmonton, Alberta, Canada

Dr. Lynn McMullen is the recipient of the 2020 IAFP Elmer Marth Educator Award, which recognizes an IAFP Member for dedicated and exceptional contributions to the profession of education. Dr. McMullen is a Professor at the University of Alberta in Edmonton, Alberta, Canada, where she currently instructs students in B.Sc., M.Sc., and Ph.D. programs.

After obtaining her M.Sc. in 1998, and her Ph.D. in 1994 from the University of Alberta, Dr. McMullen began her academic career at the University where she became a full professor in 2006. She teaches undergraduate and graduate courses in food microbiology, food safety, and food fermentations. She also contributes to courses on science communication and animal health. She has graduated more than 50 M.Sc. and Ph.D. students who now work in academia, government, and industry positions.

Dr. McMullen is co-founder of CanBiocin Inc., a biotechnology company that commercialized research on use of bacteriocins to control foodborne pathogens. She was also responsible for the establishment of a biosafety level 2 meat processing facility at Agri-Food Discovery Place. She conceived the idea for the Meat Safety and Processing Research Unit, and secured national and provincial government and industry funding to build and equip the facility, which allows research with foodborne pathogens in conditions that simulate industrial practice.

Dr. McMullen joined IAFP in 1992, was the Co-Chair of the IAFP 2006 Local Arrangements Committee, and chaired the Program Committee for IAFP 2003 in New Orleans. For more than 20 years, she has served as Delegate for the IAFP Affiliate, the Alberta Association for Food Protection. Dr. McMullen currently serves on the Editorial Board for *Food Protection Trends*.

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HAROLD BARNUM INDUSTRY AWARD



Andrew J. Clarke
Toronto, Canada

As the recipient of the 2020 IAFP Harold Barnum Industry Award, Andrew Clarke is being honored for his dedication and exceptional service to IAFP, the public, and the food industry.

Mr. Clarke is the Senior Director Quality Assurance at Loblaw Companies Limited in Toronto, Canada, where he heads a dedicated team responsible for managing product safety and quality and supporting a diverse global supplier network. Throughout his career, Mr. Clarke has worked in a variety of roles associated with food safety and quality management in the manufacturing, food service, and retail sectors, and in food law enforcement for the UK Food Standards Agency.

While attending his first IAFP Annual Meeting in 2010 in Anaheim, California, Mr. Clarke saw a posting for a Director of Auditing at Maple Leaf Foods (Toronto), and joined its team in early 2011. In 2016, he moved to Subway Restaurants where he managed the team responsible for the Global Supplier Approval Program before joining Loblaw Companies Limited in 2019.

A 10-year IAFP Member, Mr. Clarke is also a member of several Professional Development Groups (PDGs). He is the current Vice Chair for the Audit and Inspection PDG and has judged the Developing Scientist Competition, is a Mentor for the IAFP Student PDG, and has presented in several symposia since 2010.

A Fellow of the Institute of Food Science and Technology, Mr. Clarke has participated for many years on several GFSI technical working groups, and has been an active participant on the BRC Global Standards North America Advisory Board, receiving the BRCGS CEO's Award in 2019 for his work supporting small businesses and those in developing regions in raising food safety compliance standards.

Mr. Clarke completed his bachelor's degree in Food Technology at the University of Wales Institute (Cardiff) and his master's degree in Food Safety Management from the University of Central Lancashire.

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

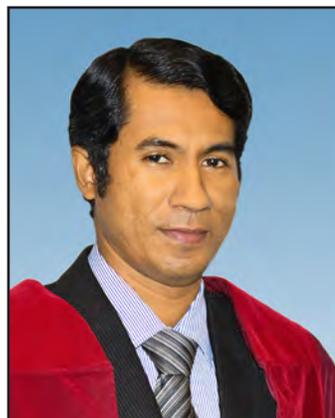


Kolawole Banwo
University of Ibadan
Oyo State, Nigeria

Dr. Kolawole Banwo is a recipient of the 2020 Travel Award. Dr. Banwo is a lecturer and researcher in the Food Microbiology, Biotechnology and Safety Unit of the Department of Microbiology at the University of Ibadan in Nigeria, where he teaches undergraduate and postgraduate courses on food microbiology, safety assessment, quality control, and usefulness of food grade microorganisms, and mentors students in the areas of food safety and quality assurance. His current area of research is on the detoxification of mycotoxin and metabolites profile from traditional fermented foods in Nigeria using lactic acid bacteria and yeasts in collaboration with the Aflasafe Unit of the International Institute of Tropical Agriculture (IITA) in Ibadan.

Dr. Banwo received the University of Ibadan's Teaching and Research Assistantship Award from 2009–2011 for his Ph.D. program, and received a postgraduate fellowship from the Institute of Microbiology at the Chinese Academy of Sciences in Beijing, China from 2008–2009 for part of his Ph.D. studies. He was awarded a travel grant from the Society for Applied Microbiology in the United Kingdom in 2018, and conducted a brief collaborative research visit in 2019 to the Department of Plant Sciences at North Dakota State University. He is a member of several microbiology professional organizations.

Dr. Banwo holds a B.Sc. and an M.Sc. in General Microbiology, and earned his Ph.D. in Food Microbiology from the University of Ibadan.



Chathudina Janitha Liyanage
Sabaragamuwa University
of Sri Lanka, Sri Lanka

Chathudina Janitha Liyanage is a recipient of the 2020 Travel Award. Mr. Liyanage is a Senior Lecturer in the Department of Food Science and Technology at Sabaragamuwa University of Sri Lanka in Sri Lanka. He served as the Department Head from 2016–2019. Mr. Liyanage's teaching focuses on food safety and risk analysis and, with more than 14 years as a lecturer, his expertise is in areas such as food process engineering and product development, dairy processing technology, process control and automation in food industry, and food quality management. His research interests cover several aspects of food technology, including valorization of food waste streams and food processing by-products; biobased polymers for food packaging; bacterial cellulose-based hydrogels and nanocomposites; bioconversion of organic wastes by black soldier fly larvae; and food safety issues of street-vendor food.

Mr. Liyanage obtained his B.Sc. with Honors in Food Science and Technology from Sabaragamuwa University of Sri Lanka and his M.Sc. in Food Technology and Nutrition from the Faculty of Engineering (LTH) at Lund University in Sweden. He also holds an M.Sc. in Entrepreneurship from the School of Economics and Management at Lund University.

Mr. Liyanage is an alumnus of the International Training Program in Food Safety, Quality Assurance and Risk Analysis at Ghent University in Belgium, for which he received a scholarship from the Flemish Interuniversity Council-University Development Cooperation (VLIR-UOS) in 2014. He is the National Representative of the ISEKI Food Association (IFA) and a member of the Global Harmonization Initiative (GHI) and of the National Codex Committee in Sri Lanka.

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



Muhammad Bilal Sadiq
*Forman Christian College
Lahore, Pakistan*

Dr. Muhammad Bilal Sadiq is a recipient of the 2020 Travel Award. Dr. Sadiq is Assistant Professor in the School of Life Sciences at Forman Christian College, a Chartered University in Lahore, Pakistan, where he teaches and supervises the research of graduate students enrolled in the food safety and quality management program. Prior to his current position, Dr. Sadiq worked as food safety consultant at NSF, Asia Pacific in Bangkok, Thailand. He also worked as a course instructor and was adjunct faculty at the Asian Institute of Technology in Thailand, where he supervised graduate students' food science research projects. His research interests are in the field of food safety and quality management, including food preservation, food processing, food microbiology, food packaging, food safety data analysis, and food formulations.

Dr. Sadiq holds an M.S. and Ph.D. in Food and Bioprocess Technology from the Asian Institute of Technology in Thailand. He has published various research articles, book chapters, and reviews in international peer-reviewed journals in the field of food safety and quality. In 2017, Dr. Sadiq was selected by the European Union Erasmus+ Program as its young scientist to train in food safety-food quality and lab analysis at Montpellier SupAgro in France and Pisa University in Italy.

TRAVEL AWARD FOR STATE OR PROVINCIAL HEALTH OR AGRICULTURAL DEPARTMENT EMPLOYEES



Dietrich Blum
*New Hanover County Health
Department
Wilmington, North Carolina*

Dietrich Blum is a recipient of the 2020 IAFP Travel Award. Mr. Blum is an Environmental Health Specialist with the New Hanover County Public Health Department in Wilmington, North Carolina, and works primarily in food protection conducting inspections of retail food establishments. He also works in several other areas of Environmental Health including Lodging and Institution Sanitation; Childhood Lead Poisoning Prevention; Child Care and School Sanitation; Public Swimming Pools; and Body Art.

Mr. Blum's career has included decades of work in food service and food production, including kitchens, bakeries, farms, and food production facilities. He is a formally trained applied mycologist. His work and research experience in fermentation science includes cultivation/production of mushrooms, fungal mycelium, tempeh, and other fermented foods. He has worked in fungal breeding, mushroom spawn production, and researched the use of secondary fungal metabolites to inhibit pathogenic organisms. His experience and interests are in reduced oxygen packaging, pasteurization, propagation and farming of non-timber forest products, and collection of foraged foods.

Mr. Blum holds a B.S. in Biology from Warren Wilson College, an M.S. in Plant, Soil, and Environmental Science from North Carolina A&T State University, and an Advanced Graduate Certificate in Waste Management from North Carolina A&T State University.



Veronica Bryant
*North Carolina Division
of Public Health
Gastonia, North Carolina*

Veronica Bryant is a recipient of the 2020 Travel Award. Ms. Bryant is the Environmental Health (EH) Preparedness and Outbreak Coordinator for the North Carolina Environmental Health Section within the NC Division of Public Health, with more than 13 years of experience in state and local public health. She holds a bachelor's degree in Chemistry from Appalachian State University. In her current role with NC Public Health, she is responsible for providing training and technical assistance for local environmental health specialists regarding special events, outbreak investigations, and emergencies.

Ms. Bryant is an active member of the North Carolina Variance Committee, the Conference for Food Protection, and the North Carolina Food Safety and Defense Task Force, where she has served as the Chair for 2019–2020. She also served as the Chair of the Product Assessment Committee for CFP from 2018–2020 and was chosen as a member of CFP Council III for the 2018 and 2020 biennial meetings. Since 2017, she has been a lead instructor for the NC State Validation and Verification of HACCP Plans at Retail.

Since receiving the 2016 Travel Award and attending her first IAFP Annual Meeting that year in St. Louis, Missouri, Ms. Bryant has been an active member of the Retail Food Safety PDG and currently serves as Vice Chair of the Webinar Committee. She also served on several panels at IAFP 2019 and has delivered four technical presentations.

TRAVEL AWARD FOR STATE OR PROVINCIAL HEALTH OR AGRICULTURAL DEPARTMENT EMPLOYEES



Leslie Cobb
Kentucky Department for
Public Health
Frankfort, Kentucky

Leslie Cobb is a recipient of the 2020 Travel Award. Ms. Cobb is an Environmental Health Program Administrator and a duly Registered Sanitarian in the Commonwealth of Kentucky at the Kentucky Department for Public Health's Food Safety Branch. She is the Coordinator of the Kentucky Rapid Response Team, the Environmental Strike Team, and the Produce Safety Cooperative Agreement Program.

Prior to her current position, Ms. Cobb served as the State Food Labeling Compliance Specialist with oversight of the Statewide Food & Cosmetic Product Labeling Compliance Review Program. In this role, she reviewed food and cosmetic product labels of products manufactured in the state for compliance with the state and federal code of regulations while coordinating the work of field staff in Food & Cosmetic Product Labeling Compliance per the Food and Drug Administration Code of Federal Regulations.

From 2007–2017, Ms. Cobb served as an Environmental Health Inspection Program Evaluator for the Kentucky Food Safety Branch's Retail Food Program and as an FDA Certified Food Program Inspection Training Officer providing food code standardizations, technical assistance, consultation, and trainings for the Kentucky Local Health Departments' Environmental

Health staff, including food safety trainings for industry and Food Core trainings for new Health Inspectors. Ms. Cobb also served as a Conference Officer conducting Administrative Conferences for local health departments for food code enforcement in Kentucky. She started her Public Health career in 2003 at the Lexington–Fayette County Health Department as an Environmental Health Specialist, a Food Manager Certification Course Instructor, and a Swimming Pool Operators Certification Course Instructor.

Ms. Cobb received her bachelor's degree from the University of Kentucky and currently resides in Frankfort, Kentucky near the beautiful State Capitol.



Taryn Hurley
Oklahoma Department of
Agriculture, Food, and Forestry
Oklahoma City, Oklahoma

Taryn Hurley is a recipient of the 2020 Travel Award. Ms. Hurley is the Laboratory Quality Manager for the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF). In 2015, shortly after graduating from the University of Central Oklahoma with her B.S. in Chemistry Health–Sciences, Ms. Hurley began her career as an Environmental/Chemical Laboratory Scientist I for ODAFF analyzing environmental water samples from around the state.

In early 2018, Ms. Hurley transitioned to the quality manager position which oversees the quality assurance program and quality systems of five different laboratories within ODAFF. Among these laboratories, there are three quality systems, two Quality Assurance Project Plans (QAPPs), two accrediting bodies, and agreements with the Environmental Protection Agency (EPA), the U.S. Food and Drug Administration (FDA), the U.S. Department of Agriculture (USDA), and other local agencies and organizations. Her duties include ensuring staff receives regular safety and ethics training as well as quality system training when needed. The experience of shifting from performing regular environmental chemical analysis to managing quality systems, internal and external audits, and required standards for chemistry, microbiology, and metrology has been a considerable and thrilling challenge. She continually seeks to grow within her position and her career to better serve her colleagues and Oklahomans as a whole.

Ms. Hurley is incredibly honored to be selected as a recipient of this year's Travel Award.

TRAVEL AWARD FOR STATE OR PROVINCIAL HEALTH OR AGRICULTURAL DEPARTMENT EMPLOYEES



Temesgen Jemaneh
*District of Columbia
Department of Health
Washington, D.C.*

Temesgen Jemaneh is a recipient of the 2020 Travel Award. Dr. Jemaneh is a Sanitarian for the Food Safety and Hygiene Inspection Services Division for the District of Columbia Department of Health in Washington, D.C., where he has been employed since 2013. He currently works as a food safety inspector and is a member of the Food Protection Task Force and FSHISD Rapid Response Team, where members play a vital role as first responders to all confirmed foodborne illness complaints.

Dr. Jemaneh has several years of experience in public health as an instructor, regulator, and consultant. His public health expertise is accurately reflected in his written reports, published research, and interaction with the public and stakeholders served by the Department of Health.

Dr. Jemaneh previously worked as an Environmental Health Specialist for Prince George's County Health Department in Maryland. He began his career as an Environmental Health Specialist in Metema Hospital and has expertise in investigating, inspecting, and monitoring environmental impacts, foodborne illnesses, and Occupational Health and Safety supervision of institutions. Dr. Jemaneh received his undergraduate degree in Environmental Health from Jimma University; his M.Sc. from the University of Salford in Occupational Health and Safety; and his doctorate in Public Health Specialization in Epidemiology from Capella University.



Kendra Kilawee
*Minnesota Department
of Agriculture
St. Paul, Minnesota*

Kendra Kilawee is a recipient of the 2020 Travel Award. Ms. Kilawee is a Bacteriologist for the Minnesota Department of Agriculture in St. Paul. After earning her undergraduate degree in Applied Science from the University of Wisconsin – Stout, she began work as a Microbiologist in a small satellite lab for the Institute for Environmental Health in South St. Paul, Minnesota. From there, Ms. Kilawee transitioned to the State of Minnesota, where she has spent the last three years in the microbiology unit testing food, feed, and dairy samples. Seven years into her microbiology career, she is near completion of her master's in Food Safety from Michigan State University, with an expected graduation date of December 2020.

Ms. Kilawee's enthusiasm in food safety is a combination of her interest in microbiology and her observations made while working in the service industry as a cook, dietary aide, and serving. Throughout the years, she witnessed patterns of ignorance and disrespect for food safety, creating an innate passion toward helping keep our food supply safe. She deeply cares about the safety and health of our communities and is constantly curious about the reasons people become sick from food and the precautions that can be taken.

As a continuous learner of food safety, Ms. Kilawee is excited to take part in her first IAFF Annual Meeting.

STUDENT TRAVEL SCHOLARSHIP



Cameron A. Bardsley
Virginia Tech
Blacksburg, Virginia

Cameron Bardsley is a Ph.D. student in the Department of Food Science and Technology at Virginia Tech in Blacksburg and at the Eastern Shore Agricultural Research and Extension Center in Painter. He is earning his degree under the direction of his advisor, Dr. Laura Strawn, and his committee members, Drs. Renee Boyer, Steven Rideout, Gregory Welbaum, and Robert Williams. He earned a B.S. in Food Science at Brigham Young University where he gained a passion for food safety research.

Mr. Bardsley's current area of research is in produce safety, more specifically his dissertation focuses on factors that influence the survival of *Salmonella* in agricultural soils and internalization in Solanaceous crops, such as tomatoes and bell peppers during preharvest production. This research is very poignant due to outbreaks of *Salmonella* linked to tomatoes on the Eastern Shore of Virginia. He hopes his research will benefit growers in order to implement practices that could prevent potential internalization events from occurring. Along with this research, Mr. Bardsley has been working with a fresh produce packinghouse identifying potential *Listeria* persistence in packinghouse environments and performing a root cause analysis to eliminate *Listeria* persistence. This research aims to assist produce packinghouses to properly identify potential *Listeria* persistence and determine mitigation strategies to evaluate the root cause of persistence. He looks forward to presenting this research at the upcoming IAFP 2020 Annual Meeting.

Since joining IAFP in 2015, Mr. Bardsley has been involved in numerous PDGs and has presented his research at several IAFP Annual Meetings. He received second place in the 2019 J. Mac Goepfert Developing Scientist Competition for his poster presentation. Mr. Bardsley is appreciative of everything IAFP has done for him and the opportunities this wonderful organization has provided him, and is honored to receive the Student Travel Scholarship to take part in this year's Annual Meeting.



Brianna C. Britton
Purdue University
West Lafayette, Indiana

Brianna Britton is a Ph.D. candidate in the Department of Food Science at Purdue University in West Lafayette, Indiana, under the direction of Dr. Haley Oliver. Ms. Britton earned her B.S. and M.S. in Animal Science from Colorado State University in 2015 and 2018, respectively. Her M.S. research predominately focused on the efficacy of various antimicrobials applied to beef and poultry products, but also included experience with many other aspects of meat safety and quality.

Ms. Britton is currently managing two very diverse projects that have allowed her to further develop her skills in molecular microbiology while gaining exposure to international food safety and security. Her primary dissertation project is aimed at developing a predictive risk model to assist retailers in identifying stores with high risk of *Listeria monocytogenes* contamination. The goal of this project is to provide retailers with a novel approach to assessing *L. monocytogenes* risk through a combination of predictive modeling and minimal in-store sampling. Ms. Britton's other research focus is assessing microbial contamination of groundnuts in Senegal, including evaluation for aflatoxins, *Enterobacteriaceae*, coliforms, and yeast and molds. This analysis will be conducted in conjunction with a large survey to understand producer knowledge of potential foodborne illness and to determine their willingness to pay for antimicrobial products to reduce this contamination. Ultimately, these data will be utilized to inform future development and capacity-building endeavors in Senegal.

Ms. Britton is honored to receive the IAFP Student Travel Scholarship to take part in IAFP 2020. She intends to utilize this experience to expand her network among academics, industry, and government personnel, while improving her knowledge base of both domestic and international food safety and security. She is excited to utilize the knowledge gained during this year's Annual Meeting in her future research endeavors.

STUDENT TRAVEL SCHOLARSHIP



Alessia Delbrück
ETH Zurich
Zurich, Switzerland

Alessia Delbrück is a doctoral candidate in the Laboratory of Sustainable Food Processing at ETH Zurich in Zurich, Switzerland. Ms. Delbrück obtained both her B.Sc. and M.Sc. in Food Science from ETH Zurich, with an exchange semester at the University of Copenhagen in Denmark. She conducted her undergraduate thesis under the supervision of Professor Martin Loessner and investigated synergistic effects of bacteriophage endolysins and other antimicrobial agents for effective control of *Listeria*.

Ms. Delbrück majored in food quality and safety and received the ETH medal for her Master's thesis on bioprotective lactic acid bacteria cultures under the supervision of Professor Leo Meile. After graduation, she worked for two years in the leading Swiss food company, Migros, before returning to ETH Zurich for her doctoral studies in the group of Professor Alexander Mathys. In her doctoral research, she investigates high-pressure super dormant bacterial spores in order to contribute to the development of a mild and effective non-thermal, pressure-based control strategy for bacterial spores.

Ms. Delbrück received the 2020 European Student Travel Scholarship and will be honored with this award at the 2021 European Symposium on Food Safety in Munich, Germany.



Erika M. Estrada
University of California – Davis
Davis, California

Erika Estrada is a Ph.D. candidate in Dr. Linda Harris' lab at the University of California – Davis. Ms. Estrada's research focuses on understanding cross-contamination routes, transfer rates, and investigating the genetic differences of foodborne pathogens causing safety problems to the tree nut industry. Her ultimate career goal is to become a researcher and extension faculty member to collaborate with other scientists in developing and implementing food safety workshops and/or educational materials to improve food safety issues in developing countries.

Born and raised in Tangancicuaro, a small town in southwest Mexico, Ms. Estrada moved to the U.S. in 2010 to pursue a college education, attending community college and, after learning English, transferring to UC-Davis. During her senior year, she had the opportunity to work for Dr. Trevor Suslow and discovered her passion for food safety. In 2017, she began her journey as a graduate student at Virginia Tech, working under the supervision of Dr. Laura Strawn. Ms. Estrada's research thesis aimed to study the prevalence, persistence, and diversity of *Listeria* in produce packing houses. During this time, she also presented numerous workshops to bring food safety awareness to consumers and stakeholders at different local and regional food and agricultural conferences.

Ms. Estrada has a passion for teaching, becoming a microbiology professor while finishing her Master's at the Virginia Eastern Shore Community College. As an instructor, she found it extremely rewarding to encourage and mentor students through their academic path.

Ms. Estrada received first place in the J. Mac Goepfert Developing Scientist Competition at IAFP 2019 for her technical presentation. She is extremely honored to be awarded one of the 2020 IAFP Student Travel Scholarships and hopes this meeting will allow her to obtain cutting-edge knowledge about food safety research, expand her professional network, and contribute to the conference by sharing her research projects and personal experiences.

STUDENT TRAVEL SCHOLARSHIP



Savana Everhart
Texas Tech University
Lubbock, Texas

Savana Everhart is a Ph.D. student in the Department of Animal & Food Sciences at Texas Tech University in Lubbock under the direction of Dr. Guy Loneragan. Ms. Everhart received a B.S. in both Food Science and Animal Science and an M.S. in Food Science from North Carolina State University. Her undergraduate research focused on mitigating food safety risks at agritourism venues, while her M.S. research focused on food safety culture surrounding the implementation of novel temperature monitoring technologies in university dining halls.

Ms. Everhart currently researches the prevalence of antimicrobial resistance as it relates to pre-harvest food safety, specifically in beef cattle. She also serves as a teaching assistant for an undergraduate food microbiology lab. She greatly enjoys introducing food microbiology and laboratory techniques to a plethora of science majors.

For the past two years, Ms. Everhart has been the Student Liaison for the Pre Harvest Food Safety Professional Development Group (PDG). She has enjoyed the connections made within this PDG and looks forward to continuing discussing new research and ideas within this field. She has also been able to present her B.S. and M.S. research at various IAFP Annual Meetings.

Ms. Everhart is very honored to have been selected as a recipient of the IAFP Student Travel Scholarship. She owes many of her professional connections to IAFP Annual Meetings and is excited to continue learning about various aspects of food safety.



Emily Forauer
University of Vermont
Burlington, Vermont

Emily Forauer is an M.S. student in the Department of Nutrition and Food Sciences at the University of Vermont in Burlington, studying under the direction of Dr. Andrea Etter. Ms. Forauer earned a B.S. in Pathobiology and Veterinary Science and a B.S. in Ecology and Evolutionary Biology, both at the University of Connecticut in 2018. During her time as an undergraduate student, she worked as a research assistant studying the control of *Listeria monocytogenes* in dairy. She was the first recipient of the *Dave Theno Food Safety Fellowship* at IAFP 2018 and worked with the consumer advocacy group, **Stop Foodborne Illness**, during the following year to help people who had suffered from foodborne illness share their personal stories.

Ms. Forauer is currently studying the resistance of mature *L. monocytogenes* biofilms to quaternary ammonium compounds, using strains isolated from Vermont dairies. Additionally, she is leading a project to determine the presence of pathogens and probiotics in microbial communities isolated from raw milk from homestead dairy producers. She is also a teaching assistant for undergraduate Food Technology and Food Microbiology courses at the University of Vermont, and enjoys introducing students to the intersection of technology, science, safety, and food.

Ms. Forauer is honored to be one of the recipients of this year's IAFP Student Travel Scholarship. She is thrilled to participate at IAFP 2020 by sharing her recent work on *L. monocytogenes* biofilm sanitizer tolerance and looks forward to learning more about food safety from top experts and participating in Professional Development Group events.

STUDENT TRAVEL SCHOLARSHIP



Ahmed A. Gomaa
Alabama A&M University
Huntsville, Alabama

Ahmed Gomaa is a Ph.D. candidate in Food Science at Alabama A&M University in Huntsville. A native of Alexandria in northern Egypt, Mr. Gomaa received his B.S. in Food Science from Alexandria University in Egypt and his M.S. in Nutrition Science from Brooklyn College in New York. His research is in food microbiology and nutritional biochemistry, with the overall goals being to assess the effects of synbiotics on inflammation and its antimicrobial effects as an alternative to antibiotics on the growth of antibiotic-resistant *Salmonella heidelberg*. Results from this research will benefit the livestock industry by inclusion of probiotics in the animal diet to reduce pathogens without using antibiotics. Furthermore, results will also emphasize the importance of synbiotics as a supportive treatment for metabolic syndrome with aims of developing functional foods that can cost less while providing the adequate number of phytochemicals, prebiotics, and probiotics.

Since childhood, Mr. Gomaa has harbored a curiosity for human bodies, food, vitamins, and everything from lunch boxes to food factories. He is a member of several professional organizations, including the Institute of Food Technologists Student Association (IFTSA), where he has served on the executive board of his local chapter's organization (AAMU Food Science Club); Minorities in Agriculture; Natural Resources and Related Science (MANRRS); and Phi Tau Sigma AAMU Chapter. In 2019, Mr. Gomaa's research abstract was selected as a finalist in the IFT Muscle Foods graduate research competition. He also presented a poster that same year in the Food Microbiology division.

Mr. Gomaa is looking forward to participating in IAFP 2020 and is extremely honored to be one of the recipients of the IAFP 2020 Student Travel Scholarship, which he believes will bring him closer to his career goals and interest working in the food safety industry.



Marti Hua
University of British Columbia
Vancouver, British Columbia,
Canada

Marti Hua began his Ph.D. in January 2020 in the Faculty of Land and Food Systems at the University of British Columbia (UBC) in Vancouver, British Columbia, Canada, where he earned both his B.S. and M.S. in Food Science. Under the supervision of Dr. Xiaonan Lu, Mr. Hua has focused on the development of novel sensors to detect chemical hazards in foods, including a pesticide sensor involving molecularly imprinted polymers coupled with surface-enhanced Raman scattering for his undergraduate degree, and a microfluidic paper-based device to detect food allergens for his Master's. His doctoral research work will touch on developing smart sensors for natural toxin analysis (e.g., mycotoxins, marine toxins) in response to the urgent needs of hazard monitoring by the regulatory agencies and the food industry.

Mr. Hua also helps instruct the Food Analysis course at UBC as a teaching assistant and manages the chemistry laboratory for the research group to which he belongs. Since joining in 2016, he volunteers and helps organize student networking and many other events for the IAFP Affiliate, the British Columbia Food Protection Association.

Mr. Hua is extremely honored to receive the Student Travel Scholarship and very grateful for IAFP's support that offers him the opportunity to present his M.S. work and to learn from great researchers and professionals from around the world.

STUDENT TRAVEL SCHOLARSHIP



Xingyi Jiang
Florida State University
Tallahassee, Florida

Xingyi Jiang is a third-year Ph.D. candidate in the Department of Nutrition, Food and Exercise Sciences at Florida State University in Tallahassee, where she also obtained her M.S. She earned a B.S. in Food Quality and Safety at Nanjing Agriculture University in China.

Ms. Jiang's research interest is utilizing immunochemical techniques to develop assays for food adulterant detection. Food adulterants may induce economic fraud, food recalls, and pose negative health impacts such as food allergy. She has identified animal meat marker proteins such as hemoglobin and skeletal troponin complex and established several immunoassays to detect them. It is expected that these assays can be utilized by the government and the food industry for surveillance in food safety. One of her current research projects focuses on the assay development for the major fish allergen.

As a teaching assistant, Ms. Jiang has taught Foods Laboratory and Food Science Laboratory. She also actively took the lead in undergraduate research projects, enjoying this experience with the undergraduates.

Ms. Jiang is extremely honored to receive the IAFP Student Travel Scholarship. She hopes to share her research findings, communicate with other students majoring in food science, and learn from other food safety professionals.



Xinyu Liao
Zhejiang University
Hangzhou, China

Xinyu Liao is a Ph.D. candidate in the College of Biosystems Engineering and Food Science of Zhejiang University in Hangzhou, China, where she also obtained her undergraduate degree in Food Safety and Nutrition in 2016. During her undergraduate studies, Ms. Liao worked on the hurdle treatment of ultrasound and slightly acidic electrolyzed water for tackling the foodborne pathogen *Staphylococcus aureus*.

Ms. Liao's current research centers on non-thermal plasma (NTP), an emerging decontamination technology to assure food safety which has gained increasingly global attention in recent years. She has completed work on the microbial inactivation mechanisms of NTP, along with the application of NTP for food decontamination and environmental hazard degradation. These works have yielded her more than ten first-authored publications in high-impact journals during the last four years. Her recent focus is on the potential risks for the induction of the microbial stress responses, especially the viable but non-culturable (VBNC) state, during NTP process.

Ms. Liao feels greatly honored to receive the IAFP Student Travel Scholarship to participate in IAFP 2020, where she has the invaluable opportunity to share her current research work about the molecular mechanisms of VBNC *S. aureus* induced during NTP treatment. She also hopes to communicate with experts in food safety and science and learn more constructive knowledge about advanced topics in the field of food safety and quality.

STUDENT TRAVEL SCHOLARSHIP



Claire Marik
Virginia Tech
Blacksburg, Virginia

Claire Marik completed her M.S. in Food Science in May 2020 from Virginia Tech in Blacksburg, Virginia under the direction of Dr. Laura Strawn. Ms. Marik also earned her B.S. in Food Science with minors in Chemistry and Public Health from the University of Delaware in 2018.

Throughout her undergraduate and graduate career, Ms. Marik's research focused on pre- and post-harvest food safety. She conducted research focused on enhancing produce safety and benefiting stakeholders by allowing industry professionals to evaluate the risk associated with different practices used throughout the produce farm-to-fork continuum. Ms. Marik's master's research focused on examining the impact and risks associated with the use of anaerobic soil disinfestation (ASD), a non-chemical soil fumigation alternative, and the soil amendments used during the ASD process on *Salmonella* soil populations and serovar specific survival.

Ms. Marik attended her first Annual Meeting in 2017 in Tampa, Florida and hasn't missed a meeting since! Since joining IAFP, she has participated in numerous PDGs and IAFP activities and presented her research at several Annual Meetings. She is extremely honored to receive the IAFP 2020 Student Travel Scholarship from such an exceptional association and is excited to share her research, connect with other students, and network with experts in the field.



Francis Muchaamba
University of Zurich
Zurich, Switzerland

Francis Muchaamba is a Ph.D. candidate at the Institute for Food Safety and Hygiene, University of Zurich in Zurich, Switzerland, under the direction of Dr. Taurai Tasara and Professor Roger Stephan. Mr. Muchaamba earned a Bachelor's of Veterinary Science at the University of Zimbabwe and a DVM at the University of Zurich. In his Ph.D. studies, he is investigating how cold-shock domain family proteins contribute to regulation of virulence and stress resistance mechanisms in the foodborne pathogen, *Listeria monocytogenes*, as well as the potential use of potassium lactate as a sodium chloride replacer to reduced salt levels used in salami production. The overall goals of his research are to improve understanding of virulence factors and molecular mechanisms underpinning the impact of foodborne pathogenic microorganisms on public health. An author/co-author of five articles to date, Mr. Muchaamba hopes the knowledge gained through his work will aid in developing strategies for enhancing food safety.

A native of Zimbabwe, Mr. Muchaamba is highly motivated by the lack of in-depth analysis of food safety hazards in his home country and believes that addressing these issues paves the way for improving food safety and the development of potential lifesaving interventions. During his studies, he intends to acquire knowledge and skills to improve global food safety. He aims to use his education in giving back to underserved populations worldwide by improving food safety through research and training of upcoming scientists in the developing world where skills are limited.

Mr. Muchaamba is greatly honored to receive the Student Travel Scholarship to participate in IAFP 2020, where he intends to share his work and network with experts in the field, possibly generating collaborations and new insights and ideas to improve his research.

STUDENT TRAVEL SCHOLARSHIP



Kizito Nishimwe
Iowa State University
Ames, Iowa

Kizito Nishimwe is a Ph.D. candidate in the Department of Food Science and Human Nutrition at Iowa State University in Ames under the supervision of Dr. Dirk E. Maier. Mr. Nishimwe received his Doctorate in Veterinary Medicine (DVM) from Inter-State School of Sciences and Veterinary Medicine (known as EISMV [Ecole Inter Etat des Sciences et Medicine Veterinaire]) in Dakar, Senegal and his M.Sc. from the University of Liege in Belgium. His Ph.D. research focuses on mitigation of aflatoxins and fungal toxin metabolites in commodities, especially exploring the potential of High Voltage Atmospheric Cold Plasma (HVACP) technology to degrade aflatoxins.

Mr. Nishimwe is extremely grateful to receive the IAFP 2020 Student Travel Scholarship and take part in IAFP 2020. This honor will not only be an excellent opportunity for building his capacity in food safety, especially in food contaminants, but also a unique occasion to establish professional networks with research partners to efficiently handle food safety concerns in his home country of Rwanda.



Duke Gekonge Omayio
University of Nairobi
Nairobi, Kenya

Duke Gekonge Omayio is currently a Ph.D. student in the Department of Food Science, Nutrition and Technology at the University of Nairobi in Kenya, where he also obtained his B.Sc. in Food Science and Technology and his M.Sc. in Food Safety and Quality.

Mr. Gekonge's current research is on natural guava processing, focusing on developing affordable fruit processing techniques that can be adopted at the household levels to produce commercially viable, safe, and nutritious biofortified natural guava nectars to tackle malnutrition, as well as improve guava farmers' households. Guavas in Kenya grow naturally and are neglected crops despite their nutritional and economic potential. Natural guava processing is non-existent, resulting in annual losses of as much as 11,000 tons.

Through his work, Mr. Gekonge has developed, patented, and market-tested nutritious and safe natural guava nectars. He intends to develop training manuals for SMEs on guava processing at the end of his study and hopes to establish processing facilities within the study areas to promote sustainable guava value chains within Kenya, his native country.

Mr. Gekonge is also involved in promoting food safety education through the Food Science and Technology Platform of Kenya (FoSTeP-K), currently serving as Director of Communications. He is privileged to be a recipient of the IAFP 2020 Student Travel Scholarship and looks forward to interacting and advancing his food science, safety and technology and professional skills with other global and emerging food science leaders.

STUDENT TRAVEL SCHOLARSHIP



Katie Overbey
Johns Hopkins University
Baltimore, Maryland

Katie Overbey is a Ph.D. candidate in Environmental Health and Engineering at Johns Hopkins University's Bloomberg School of Public Health in Baltimore, Maryland, under the direction of Dr. Kellogg Schwab. Ms. Overbey received a B.S. in Environmental Science from the University of North Carolina at Chapel Hill and an M.S. in Food Science from North Carolina State University. Her past research includes studying antimicrobial-resistant bacteria on the beaches of the Galápagos Islands, directing citizen scientists in airplane surface swabbing, and combing through Twitter to better understand food safety knowledge gaps.

Ms. Overbey's dissertation work focuses on norovirus, the leading cause of foodborne illness. Specifically, she uses the novel norovirus cell culture model, developed in 2014 at Baylor University, to grow norovirus and to improve environmental detection of the virus. Ms. Overbey is passionate about translating bench science to real world applications and communicating science to broader audiences. In addition to her bench work, she works as an assistant for the public relations team at the Center for a Livable Future and is the communications lead for the Johns Hopkins Surveillance and Outbreak Response Team.

Ms. Overbey is thrilled to receive the Student Travel Scholarship to participate in IAFP 2020, where she will present her work on applying the norovirus cell culture model to environmental swabbing. After completion of her doctorate, Ms. Overbey hopes to take a government position that will allow her to use both her love of research and communication.



Angélica Godínez Oviedo
Universidad Autónoma
de Querétaro
Querétaro, Mexico

Angélica Godínez Oviedo is currently a Ph.D. student in the Food Science Program at the Universidad Autónoma de Querétaro, and recently enrolled in a double doctoral degree program at the University of Tasmania in Hobart, Australia, under the direction of Dr. Montserrat Hernández Iturriaga and Dr. John P. Bowman, respectively. Ms. Godínez holds a B.S. in Food Chemistry from the Universidad Autónoma del Estado de Hidalgo, where her research focused on the evaluation of natural disinfectant against foodborne pathogens, resulting in an issued patent. She earned her M.S. in Food Science and Technology at the Universidad Autónoma de Querétaro, working on contamination and distribution patterns of *Listeria monocytogenes* in a food processing plant.

In 2017 and 2019, Ms. Godínez received the Research Paper Award from the International Committee on Food Microbiology and Hygiene of the International Union of Microbiological Societies at the 19th and 21st International Food Safety Conferences. Her doctoral thesis research focuses on a quantitative risk assessment of *Salmonella* on foods in the central region of Mexico. The project's aim is to investigate the genotypic and phenotypic intraspecies variability of *Salmonella* and to evaluate how they could be related to the risk of contracting a foodborne illness.

Ms. Godínez is a member of a divulgator collective with the mission to make scientific information regarding food safety and quality available for people using everyday language.

She is tremendously honored to receive the IAFP Student Travel Scholarship to take part in IAFP 2020, allowing her to share her proposed risk ranking of food items associated with *Salmonella* spp. in central Mexico, as well as to develop relationships with experts in the field and initiate new research projects. Her goal after completing her doctorate is to work in the academy as a research professor and interact with the food industry, health department, and society to develop strategies to control foodborne diseases.

STUDENT TRAVEL SCHOLARSHIP



Dácil Rivera
Universidad de Chile
Santiago, Chile

Dácil Rivera is a Ph.D. candidate in the interdepartmental of Nutrition and Food Science Program at the Universidad de Chile in Santiago under the supervision of Dr. Andrea Moreno-Switt from the Universidad Andres Bello and Dr. Paola Navarrete from the Institute of Nutrition and Food Technology (INTA). Ms. Rivera completed her M.S. in Veterinary and Animal Science at the Universidad de Chile. Her master's thesis research focused on patterns of antimicrobial resistance in *Listeria monocytogenes* obtained from food and human samples. She is currently concluding her doctoral thesis, "*Felixounavirus* phages to control *Salmonella* Infantis in chicken matrices."

Early in her professional career, Ms. Rivera completed an internship at the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana in Rome, Italy. She returned to Chile to complete her master's at the university and joined the Universidad Andres Bello academic team. Ms. Rivera has been working in food safety for more than seven years with her research focused on foodborne pathogens and using phages as biocontrol, participating in different research projects, including the FONDECYT grant 11140108 project, "Genetic Diversity of *Salmonella* Phage and CRISPR Spacer Arrays." She also participated as a co-researcher of the UNAB-regular grant, DI130016/RG: "Immobilization of *Salmonella* Enteritidis phages on chitosan film, *in vitro* and in food."

Ms. Rivera currently participates as a research assistant in the FONDECYT grant 1181167 "*Salmonella*-bacteriophage co-evolution and their genetic modifications during lifestyle cycles of *Salmonella* on non-host and host environments," as well as the FONDEF-grant-2018 "FageCapsuleS, micro-encapsulated *Salmonella* phages."



Thiago Sugizaki dos Santos
University of São Paulo
São Paulo, Brazil

Thiago Sugizaki dos Santos is completing his undergraduate degree in Food Science at the Luiz de Queiroz College of Agriculture of the University of São Paulo (Esalq/USP) in Brazil. Mr. Santos is currently developing a research project on the microbiological quality and safety of organic and conventional fresh produce. In this project, the occurrence of *Salmonella* has been investigated by using conventional and molecular (qPCR) methods, while bacteria belonging to the *Enterobacteriaceae* family have been identified by MALDI-TOF. The results will be used as input data in a risk model to be constructed, aiming to estimate the health impacts associated with the consumption of leafy vegetables produced by both farming systems. The project is supervised by Dr. Daniele Maffei, developed in the frame of the Food Research Center (FoRC), and supported by the National Council for Scientific and Technological Development (CNPq, Brazil).

Mr. Santos is very pleased to receive the Student Travel Scholarship Award. He plans to apply for a master's in Food Science in 2021, and hopes the IAFP Annual Meeting will be an excellent opportunity for him to learn from academic and industry experts, as well as contribute to this area with the presentation of his current findings.

STUDENT TRAVEL SCHOLARSHIP



Mathilde Trudel-Ferland
Laval University
Quebec City, Quebec,
Canada

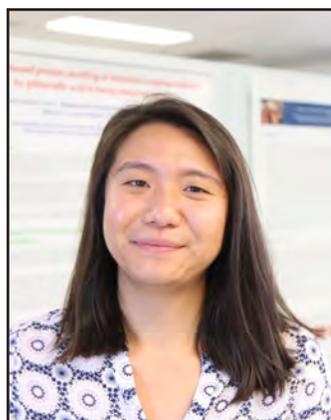
Mathilde Trudel-Ferland is a first-year Ph.D. candidate in the Department of Food Science at Laval University in Quebec City, Quebec, Canada. Her work is supervised by Professor Julie Jean and Dr. Fabienne Hamon. Ms. Trudel-Ferland obtained her B.Sc. in Food Science and Technology at Laval University and undertook an accelerated transition for her master's in Food Science toward her doctoral studies.

Ms. Trudel-Ferland's current research focuses on the development of routine concentration and detection methods to control viral foodborne illnesses. She aims to develop two new viral concentration approaches into a research project involving industrial partners, working on the steps of food sample preparation that allows the concentration and the purification of viruses for a simple and fast molecular detection.

Ms. Trudel-Ferland's thesis is in line with her well-defined career ambitions to become a research professor and to innovate in the field of diagnostics in food safety. She is dedicated to contributing to the advancement of detection methods that will facilitate the establishment of enteric virus surveillance programs and allow for better control and prevention of foodborne viral outbreaks.

As a teaching assistant, Ms. Trudel-Ferland assists undergraduate students and helps develop teaching material for Food Microbiology courses. She also participates in various student initiatives promoting food science to the general public, as she sees the popularization of science essential to the transfer of scientific knowledge.

Ms. Trudel-Ferland is extremely honored to receive the Student Travel Scholarship award and take part in IAFP 2020, when she will present results from her recent works on the development of an ultrafiltration method for virus concentration in fresh produce. She is eager to learn about the different trends in food safety research and to discuss with experts and students from her research field.



Ingrid Zamora
The University of Sydney
New South Wales, Australia

Ingrid Zamora is a Ph.D. candidate in the Australian Research Council (ARC) Industrial Transformational Training Centre (ITTC) for Food Safety in Fresh Produce at The University of Sydney in New South Wales, Australia, under the supervision of Dr. Floris Van Ogtrop, and post-doctorates Dr. Hayriye Bozkurt and Dr. Mark Bradbury. Ms. Zamora received First Class Honors when she earned her B.S. in Agriculture from the university in 2017.

Ms. Zamora's current research investigates the risks associated with *Listeria monocytogenes* contaminating fresh produce after primary production, a rising concern to the Australian fresh produce industry. She collaborates closely with retail partners in Australia to ensure her research projects are commercially relevant. Her work aims to understand the precise behavior of *L. monocytogenes* during post-harvest storage and transport conditions to assist building models to predict *Listeria* behavior, and to develop effective risk mitigation strategies such as produce-specific QMRA suitable for use by industry in Australia.

Ms. Zamora is also a teaching demonstrator for Food Quality and Processing and Food Microbiology classes at the university. She is passionate working with undergraduate students, especially when they are in a food-grade laboratory classroom, as this reinforces students that positive food safety culture and practice is paramount in a commercial setting.

Ms. Zamora is extremely honored to receive the Student Travel Scholarship and take part in IAFP 2020. She is excited to share her research and network with other food safety professionals around the world, and to learn innovative ways at approaching fresh produce safety. After completion of her Ph.D., she hopes to have a career in managing and or implementing food safety systems and culture within the fresh produce industry.

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.



Hyeon Woo Park
*The Ohio State University
Columbus, Ohio*

Hyeon Woo Park is pursuing his doctoral studies in Food Science and Technology at The Ohio State University in Columbus, Ohio. His research interests are focused on the application of engineering principles in the development and evaluation of food processing to improve food safety and quality. Prior to his doctoral studies, Mr. Park conducted research in multiple labs, including the Residue Chemistry and Predictive Microbiology Research Lab at the USDA Eastern Regional Research Center, the Seafood Lab at Oregon State University, and the Food Process Engineering Lab at Kangwon National University in South Korea. He has 13 first-author publications in various peer-reviewed journals.

Under the guidance of Dr. V. M. Balasubramaniam, Mr. Park's current research focuses on evaluating food safety efficacy of superheated steam in dry sanitation environments by integrating process engineering and microbiological principles. He also plans to scale up the technology for food industry applications that will improve food product safety and quality by increasing sanitation efficacy and control over environmental cross-contamination.

Mr. Park is extremely honored to be the recipient of the 2020 Peanut Proud Student Scholarship Award and looks forward to sharing his efforts during IAFP 2020 to improve the safety of food including peanut butter.

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Black Pearl Recipients

2020 Ajinomoto Foods North America, Inc.
Ontario, California

2019 General Mills
Minneapolis, Minnesota

2018 Eurofins Scientific, Inc.
Des Moines, Iowa

2017 Panda Restaurant Group, Inc.
Rosemead, California

2016 Meijer
Grand Rapids, Michigan

2015 Tyson Foods, Inc.
Springdale, Arkansas

2014 Sodexo, Inc.
Gaithersburg, Maryland

2013 Publix Super Markets, Inc.
Lakeland, Florida

2012 The Kroger Co.
Cincinnati, Ohio

2011 bioMérieux, Inc.
Hazelwood, Missouri

2010 Fresh Express, Inc.
Salinas, California

2009 Schnuck Markets, Inc.
St. Louis, Missouri

2008 3M Microbiology
St. Paul, Minnesota

2007 Beef Products, Inc.
Dakota Dunes, South Dakota

2006 Ecolab Inc.
St. Paul, Minnesota

2005 DuPont
Wilmington, Delaware

2004 Jack in the Box Inc.
San Diego, California

2003 Wegmans Food Markets Inc.
Rochester, New York

2002 Darden Restaurants
Orlando, Florida

2001 Walt Disney World Company
Lake Buena Vista, Florida

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



SHINING LIGHT

ON CONVEYOR CONTAMINATION

Have you done all you can to ensure your conveyor is safe and free of microbial contamination? Sure, you conduct your daily wash-downs, but is that enough?

More and more food processors are finding that adding a XENON Pulsed Light decontamination system to the conveyor line not only increases the level of protection, but may also result in sanitization procedures being needed less frequently.

Learn more about the XENON Z-2000, the bolt-on solution for continuous conveyor belt decontamination.

Call today at 800-936-6695 or visit us online at www.xenoncorp.com



The Pulsed Light Experts

www.xenoncorp.com



Safe and Effective for Food Decontamination

Pulsed Light not only keeps food contact surfaces clean, it has been proven effective and safe* for the decontamination of food surfaces. Researchers are now finding that more and more foods, such as fresh and frozen fruits, produce, meat and poultry, can be effectively decontaminated with Pulsed Light. Because it's a non-thermal process, Pulsed Light kills microorganisms while preserving nutrients and sensory properties that can be negatively affected by other treatment options.

* 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).

EXHIBITORS – ALPHABETICAL LISTING

3-A Sanitary Standards, Inc.

3M Food Safety

AEMTEK, Inc.

AFCO

AOAC International

Aptar Food + Beverage – Food Protection

bioMérieux, Inc.

Bio-Rad Laboratories

Bioscience International, Inc.

BIOTECON Diagnostics

BluLine Solutions

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Charm Sciences Inc.

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EAS Consulting Group, LLC

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Food Safety Magazine

Food Safety Net Services

Food Safety News

Food Safety Summit

FoodLogiQ®

FSS Inc.

GFSI – The Consumer Goods Forum

Hamilton Company

Hydrite

Hygiena

IEH Laboratories & Consulting Group

IFC

INFICON

International Association for Food Protection

International Association for Food Protection–Student PDG

International Food & Meat Topics

KLEANZ Food Safety Technologies

MÉRIEUX NutriSciences

Micro Essential Laboratory

Microbiologics

MilliporeSigma

Nelson-Jameson, Inc.

NEOGEN

Novalent Biotech

NOVOLYZE

Opentrons

Pall Corporation

Partnership for Food Safety Education

PathogenDx

PerkinElmer

Perry Johnson Registrars Food Safety, Inc.

Promega Corporation

Quality Assurance & Food Safety Magazine

R-Biopharm, Inc.

Remco

Rheonix

Rochester Midland Corporation

Romer Labs®

SGS

Sterilex

Stop Foodborne Illness

Thermo Fisher Scientific

USDA-National Agricultural Library

Wiley

XENON

EXHIBITORS

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

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.

3M Food Safety
3M Center, Bldg. 275-5SW-05
St. Paul, MN 55144-1000, USA
Phone: +1 800.328.6553
www.3M.com/foodsafety

3M Food Safety is a leader in 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. Learn more at www.3M.com/foodsafety.

AEMTEK, Inc.
466 Kato Terrace
Fremont, CA 94539, USA
Phone: +1 510.979.1979
www.aemtek.com

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!

AFCO
550 Development Ave.
Chambersburg, PA 17201, USA
Phone: +1 717.264.9147
www.afcocare.com

Zep Inc., a leading producer of specialty chemical products for the industrial, institutional and consumer markets, has purchased AFCO, a leading specialty chemical provider serving the food and beverage processing industry. We focus on food safety through our local SQF & HACCP-educated Reps who provide technical service and support through our Assure™ Sanitation Program. We offer high-quality cleaners and sanitizers, antimicrobial intervention, biofilm removers, equipment systems, and more.

AOAC International
2275 Research Blvd., #300
Rockville, MD 20850, USA
Phone: +1 301.924.7077
www.aoac.org

AOAC International is a globally recognized, 501(c)(3), independent, third party, not-for-profit association and voluntary consensus standards developing organization founded in 1884. When analytical needs arise within a community or industry, AOAC

International is the forum for finding appropriate science-based solutions through the development of microbiological and chemical standards. The AOAC Official Methods of Analysis database is used by food scientists around the world to facilitate public health and safety and to promote trade.

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

Aptar Food + Beverage – Food Protection manufactures premium packaging systems and processing equipment for fresh-cut fruits, vegetables and seafood. The company develops custom packaging solutions including a range of trays, pouches, retail and mini containers, slicing equipment, lidding film, and tray-sealing technology. Aptar Food + Beverage applies its unique packaging science along with its equipment and processing expertise to develop advanced systems that help extend freshness and enhance safety for fresh-cut produce and seafood. The company recently announced the launch of InvisiShield™, a new anti-pathogenic packaging solution that integrates into sealed packages to protect fresh-cut produce from bacteria, fungi and viruses.

bioMérieux, Inc.
595 Anglum Road
Hazelwood, MO 63042, USA
Phone: +1 800.634.7656
www.biomerieux-usa.com

bioMérieux is a global leader in Food Microbiology testing, focused on rapid results for Pathogen Detection, Quality Indicator Enumeration and Sterility Testing. We also offer a full suite of LEAN approaches to increase laboratory efficiency including automated Media Preparation and Sample Preparation equipment and Identification Systems. In partnership with our Invisible Sentinel team, we are positioned to provide comprehensive solutions for all of your Microbiology needs. Offering extensive global resources and local expertise in Food Safety, driven by cutting-edge research and science to bring powerful new tools to the Food industry.

Bio-Rad Laboratories
2000 Alfred Nobel Drive
Hercules, CA 94547, USA
Phone: +1 800.4BIO.RAD
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.
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

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

BIOTECON Diagnostics focuses on the development and production of innovative, rapid detection systems for pathogens, spoilage organisms, genetically modified organisms and allergens by real-time PCR. Besides detection kits, the foodproof® and micro-proof® product lines also include kits for sample preparation.

As an international biotechnology company, BIOTECON Diagnostics markets its products worldwide. The company cooperates with sales experts from various countries, as well as an ever-growing, worldwide network of distributors and cooperation partners. Due to strong partnerships with the food manufacturing industry, BIOTECON Diagnostics is well aware of the microbial requirements of the manufacturers, and can therefore offer optimal solutions.

BluLine Solutions
700 Blaw Ave., Suite 101
Pittsburgh, PA 15237, USA
Phone: +1 800.240.7193
www.blulinesolutions.com

BluLine makes LIVE and on-demand wireless temperature and temperature/humidity monitoring, recording and reporting simple. Utilizing the innovative Blulog NFC and RF temperature data loggers, monitoring and recording systems are available for reefer transport, cold storage, restaurant/commissary operations, food safety labs, and more. Full history time and temperature data storage and reports are accessible through the complimentary, cloud-based BluConsole dashboard software that is accessible throughout your cold chain. With Blulog, there are no subscriptions, no software fees and no worries! Learn more at www.blulinesolutions.com.

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

For over 90 years, Certified Laboratories has been providing full-service quality laboratory testing services for the food industry. As a state-of-the-art ISO 17025 accredited laboratory, we're proud to offer complete microbiological and chemical testing facilities in New York, Southern California, Northern California and the Midwest. Specialty areas include spice analysis, microbiology, chemistry, nutritional analysis, vitamin assays, antibiotics, extraneous matter and environmental testing, with special attention to FDA and regulatory agency requirements and microbiological reduction validation services. We use specialized analytical equipment including LC/MS-MS, GC/MS, GC/MS-MS, AA and ICP/MS. Certified Laboratories employs only recognized methods and procedures.

Charm Sciences Inc.
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!

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

ClorDiSys Solutions, Inc. is a worldwide leader in contamination control and decontamination. ClorDiSys provides decontamination services for contamination mitigation as well as preventive control, utilizing chlorine dioxide gas to leave your facility cleaner and safer than ever before by eliminating the persistent pathogens from the hardest-to-reach areas. Portable CD gas generators are also available for the in-house decontamination of rooms, tanks, chambers, and processing areas of all sizes.

Decon7 Systems LLC
8541 E Anderson Drive, Suite 106
Scottsdale, AZ 85255, USA
Phone: +1 816.832.6349
www.decon7.com

D7 is a proprietary blend of ordinary household substances that aggressively hunts and destroys bacteria and viruses in agricultural, live harvest, and food processing facilities. Validated by multiple third-party organizations, including USDA, D7 is a proven antimicrobial disinfectant that will enhance and maximize the effectiveness of your food safety program.

D7 is a patented, EPA-registered formula for use in a multitude of applications including, but not limited to, deep cleans, drain maintenance, and entryway sanitizing for controlling cross-contamination.

Once blended, the three-part D7 solution becomes an unrivaled antimicrobial disinfectant. Our focus markets include, but are not limited to, red meat, poultry, seafood, dairy, and fruits and vegetables. Visit us at www.decon7.com and follow the "Contact Us" link to learn more about our solutions and hear from some of the most notable industry references.

Deibel Laboratories, Inc.
P.O. Box 1056
Osprey, FL 34229, 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.

Diversey, Inc.
1300 Altura Road, Suite 125
Fort Mill, SC 29708, USA
Phone: +1 803.746.2200
www.diversey.com

Diversey is a global partner for Food Safety and Hygiene Programs for retail, food service, hospitality, and manufacturing sectors. We produce high performing hygiene solutions, utilize industry leading dosing & dispensing platforms, and we offer client technical consultation services to help manage your programs, reduce cost, and improve compliance.

We utilize over one hundred years of experience with modern tools and data analytics to drive value for sanitation, auditing services, manager certification programs, hygiene management, and field support.

EAS Consulting Group, LLC
1700 Diagonal Road, Suite 750
Alexandria, VA 22314, USA
Phone: +1 571.447.5500
www.easconsultinggroup.com

EAS Consulting Group, a member of the Certified family of companies, is a global leader in regulatory solutions for industries regulated by FDA, USDA, and other federal and state agencies. Our network of over 150 independent advisors and consultants enables EAS to provide comprehensive consulting, training and auditing services, ensuring proactive regulatory compliance for all FDA regulated industries. From strategic product development, toxicology and microbiology assistance, including preparation of technical submissions such as GRAS and Food Additive Petitions to FSMA compliance, EAS offers the detailed knowledge and experience your company requires to ensure accurate and timely assistance. easconsulting-group.com.

Ecolab
1 Ecolab Place
St. Paul, MN 55102, USA
Phone: +1 800.352.5326
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 supports customers across the food and beverage supply chain, offering customized cleaning and sanitation solutions, pest elimination services, and industry leading technical support to help ensure food safety and brand consistency for foodservice and food and beverage processing facilities. We partner with you to help control costs and keep your operations running smoothly.

Emport LLC
P.O. Box 40188
Pittsburgh, PA 15201, USA
Phone: +1 412.447.1888
www.emportllc.com

More Safe Food, More Happy People: Emport LLC specializes in allergens and gluten, food safety and QA test kits since 2011. Our tests combine user-friendly design with rigorous scientific standards. Alongside the AOAC-approved GlutenTox Pro, we carry AlerTox rapid allergen test kits, FlowThrough Meat Speciation rapid kits, a variety of sampling and swabbing supplies, and sophisticated ELISA allergen kits for lab use. Through our partner labs we also offer SARS-Cov-2 surface and personnel screening, and ISO17025-certified analysis for allergens, pathogens, and more.

Eurofins
2200 Rittenhouse St., Suite 175
Des Moines, IA 50321, USA
Phone: +1 515.265.1461
<https://www.eurofinsus.com/food-testing/>

Eurofins is testing for life – the world leader in the provision of clinical diagnostics, food, environmental, forensic and pharmaceutical laboratory testing. With a portfolio of over 200,000 analytical methods, 800 laboratories operating in 47 countries, Eurofins is your local food safety, quality and innovation partner. We are dedicated to providing prestigious scientific excellence, outstanding service, and dependable quality. Learn to limit the impact of COVID-19 in your workplace with the new Eurofins SAFER@WORK™ program.

FDA/CFSAN
5001 Campus Drive
College Park, MD 20740, USA
Phone: +1 888.723.3366
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.

Food Safety Magazine
1945 W Mountain St.
Glendale, CA 91201, USA
Phone: +1 818.842.4777
www.foodsafetymagazine.com

Food Safety Magazine is a bimonthly publication serving food safety/quality professionals worldwide. Issues feature contributions from food and beverage industry leaders discussing: regulations, technologies, trends, and management strategies essential when applying science-based solutions to assure food safety and quality. Also, the popular podcast "Food Safety Matters" offering twice monthly episodes that feature news and trends, or another surprise segments, followed by a conversation with a food safety professional sharing their experiences and insights. Visit our website www.foodsafetymagazine.com to begin your free subscription and learn more about Food Safety Matters.

Food Safety Net Services
199 W Rhapsody Drive
San Antonio, TX 78216, USA
Phone: +1 888.525.9788
www.fsns.com

Food Safety Net Services (FSNS), headquartered in San Antonio, Texas, is a national network of ISO 17025 accredited testing laboratories open 24/7, 365 days a year. FSNS provides expert technical resources that assist companies with implementing food safety and quality programs that deliver critical information needed to continually improve process controls. Additional services include GFSI, SQF and PAACO, approved auditing and certification capabilities.

Food Safety News
1012 First Ave., Fifth Floor
Seattle, WA 98104-1008, USA
Phone: +1 913.205.3791
<http://www.foodsafetynews.com>

Food Safety News is the only daily publication that reports exclusively on food safety issues. We are the first to talk with the most important people behind breaking news. We bring our readers the kind of old-fashioned, in-depth journalism that many people thought didn't exist anymore.

As a result, our readers trust our reporting and actively respond to the marketing messages they see in our publication. Our advertisers tell us that we are their #1 source of solid sales leads, month after month. Talk with us now about how an ad schedule can help you increase your sales and your brand recognition.

Food Safety Summit
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Phone: 847.405.4000
www.foodsafetysummit.com

The Food Safety Summit is a solutions-based conference and expo designed to meet the educational and informational needs of the entire food industry including growers, processors, retailers, distributors, foodservice operators, regulators and academia. 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.

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FoodLogiq®
2655 Meridian Pkwy.
Durham, NC 27713, USA
Phone: +1 866.492.4468
www.foodlogiq.com

FoodLogiq® is a leading SaaS provider of food safety compliance, traceability, recall management and supply chain transparency solutions.

Our mission is to map the world's food chain, make it as safe as possible, and empower people to make informed decisions about the food they eat. We track millions of data points every day and connect thousands of food companies around the world.

Our technology enables supplier management, food safety compliance, quality incident management, recall management and whole chain traceability – all on a single platform built exclusively for the food industry.

FSS, Inc.
16950 Westfield Park Road
Westfield, IN 46074, USA
Phone: +1 317.896.9300
https://www.fumigationzone.com

FSS, Inc. is a progressive pest management company specializing in food safety pest management strategies, fumigation, decontamination and product sales. We employ the latest in remote monitoring technology and the best in class customer service and satisfaction. Our 100% digital platform exceeds expectations for quality and transparency.

FSS uses VeriCuda, a software solution that makes affordable GMP site inspections a reality. The software trends and tracks your GMP observations visually with image capture and follow up recommendations.

We are one provider with many solutions for your IPM, Fumigation and Decontamination problems. Inquire with us today!

GFSI – The Consumer Goods Forum
47-53 rue Raspail
Levallois-Perret, 92300, France
Phone: + 33.1.82.00.95.95
www.mygfsi.com

The Global Food Safety Initiative (GFSI) brings together key actors of the food ecosystem to collaboratively drive continuous improvement in food safety management systems around the world. With a vision of safe food for consumers everywhere, food industry leaders created GFSI in 2000 to reduce food safety risks and inefficiencies while building trust throughout the supply chain. The GFSI community is composed of experts from the full stakeholder spectrum, across industry and international organizations to governments and academia. GFSI is powered by The Consumer Goods Forum (CGF), a global industry network working to support Better Lives Through Better Business.

Hamilton Company
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.

Hydrite
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
941 Avenida Acaso
Camarillo, CA 93012, USA
Phone: +1 888.494.4362
www.hygiena.com

Hygiena™ provides rapid microbial detection, monitoring, and identification systems to improve food safety globally. Hygiena's EnSURE Touch™ Monitoring and SureTrend Cloud System collects, analyzes, and reports data from multiple quality indicators, including ATP, and indicator organisms including TVC, Coliform, and *E. coli*. GlutenTox® and AlerTox® products are trusted by food manufacturers and consumers to identify allergens in food products and environmental surfaces. Hygiena's BAX® System, uses PCR technology to identify pathogens in food ingredients, finished products and the environment. The Innovate System provides product quality control data for UHT processed and aseptically filled products, ensuring long shelf life. The RiboPrinter® System is an automated genetic-based system that identifies and characterizes bacteria which helps food processors monitor microbial trends in their facility and trace contamination back to its source. Hygiena is committed to the mission of 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 has products in more than 100 countries. For more information, visit hygiena.com/foodsafety.

IEH Laboratories & Consulting Group
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
13420 West 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
2 Technology Place
East Syracuse, NY 13057, USA
Phone: +1 315.434.1100
www.inficon.com

INFICON is one of the world's leading developers, producers and suppliers of instruments and devices for leak detection. With a dominate market position within the Air Conditioning, Automotive, Semiconductor and Research industries, INFICON is now taking its many years of experience in leak testing and has created the Con-tura S400 Leak Detector; providing the food and packaging industry with a unique solution for ensuring package seal and integrity by detecting leaks in MAP and other flexible packages.

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
2900 100th St., Suite 309
Des Moines, IA 50322-3855, USA
Phone: +1 515.276.3344
www.foodprotection.org

Welcome, students, to IAFP 2020, a Virtual Meeting! 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
P.O. Box 4
Driffield, East Yorkshire YO25 9DJ, United Kingdom
Phone: +44.01377.241724
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.

KLEANZ Food Safety Technologies
4305 South Lee St., Suite 100
Buford, GA 30518, USA
Phone: +1 770.831.9191
www.kleanz.com

KLEANZ Food Safety Technologies is proud to be the leader in software and services for the Food, Beverage, Packaging, and Pharma industries. For over 30 years, we have ensured that our clients' Food Safety and Sanitation Management needs are satisfied and streamlined. The KLEANZ Team is comprised of food manufacturing experts with over 300 years of combined experience in the industry. Our KLEANZ solution focuses on risk mitigation, driving

continuous improvement, and adhering to all compliance requirements while managing resources. Our clients include the largest food and beverage companies worldwide, as well as many regional operations.

MÉRIEUX NutriSciences
111 E Wacker Drive, Suite 2300
Chicago, IL 60601, USA
Phone: +1 312.938.5151
www.merieuxnutrisciences.com/us

MÉRIEUX NutriSciences is a leading global food safety and quality partner — offering chemistry and microbiology testing, labeling, auditing, consulting, sensory testing, customized training, 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 26 countries, MÉRIEUX NutriSciences employs 7,000 people worldwide working in over 100 laboratories.

Micro Essential Laboratory
4224 Ave. H
Brooklyn, NY 11210, USA
Phone: +1 718.928.2913
www.microessentiallab.com

Our company has been a market leader in pH and sanitizer testing technologies, serving the food service industry since 1934. Customer service and product quality are the company focus, and critical factors for success. Our goal is to develop lasting relationships.

Microbiologics
200 Cooper Ave. N
Saint Cloud, MN 56303, USA
Phone: +1 320.229.7057
www.microbiologics.com

Microbiologics is the leading provider of ready-to-use QC microorganisms for quality control testing in food laboratories. With over 900 strains available, we offer the largest and most diverse line of QC microorganisms including qualitative, quantitative, CRM, inactivated pathogens, synthetic molecular standards, and more. Visit our virtual booth to learn how our QC microorganism products can save your laboratory time and money.

MilliporeSigma
400 Summit Road
Burlington, MA 01803, USA
Phone: +1 800.645.5476
www.milliporesigma.com

MilliporeSigma, the U.S. life science business of Merck KGaA, Darmstadt, Germany, is here to partner with food safety teams enabling 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 & pathogen detection, Supelco® analytical solutions for analysis of food contamination and authenticity, Milli-Q® lab water solutions and Sigma Aldrich lab & production materials, including chemicals, inorganics & solvents throughout the supply chain, manufacturing and distribution.

Nelson-Jameson, Inc.
2300 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

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Control, Safety, Sanitation & Janitorial, Production & Material Handling, Building & Facility Maintenance, Laboratory & QA/QC, and Packaging & Ingredients.

Through our comprehensive product offerings, industry expertise, and expertly curated food safety programs, Nelson-Jameson can help lower your transaction costs while providing the products and services you need to produce safe, quality food.

NEOGEN
620 Leshler 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.

Novālent Biotech
2319 Joe Brown Drive
Greensboro, NC 27405, USA
Phone: +1 843.302.6168
www.novalent.com

Novālent technology is a patented, bacteriostatic, fungistatic, EPA-registered food contact surface treatment that inhibits the growth of a wide range of bacteria and fungi. It covalently bonds with almost any surface and lasts up to 90 days. Novālent bonding antimicrobial turns any surface in your facility into a no-go area for microbes. By safely inhibiting bacterial growth week after week through daily activity and cleanings, Novālent bonding antimicrobial reduces the risk of costly contamination and shutdowns. Novālent compliments normal cleaning and sanitizing regimens, blocks those typical harborage areas from microbial growth, and improves overall cleaning efficiency.

NOVOLYZE
50 rue de Dijon
Daix, 21121, France
Phone: +33.983.694.213
www.novolize.com

NOVOLYZE is a food safety company. Our mission is to develop and commercialize innovative technologies to help the food industry manufacture safer food, while ensuring strong compliance with international food safety and quality standards. Our innovative approach to Food Safety relies on the utilization of cutting-edge microbiology solutions, combined with the latest developments in digital, IoT and machine learning.

Our solutions: SurroNov®, the first range of ready-to-use surrogate organisms, used directly at the factory to test the efficacy of processing systems. FoodSafetyGuardian®, a unified platform to help quality teams streamline FSQA procedures, including product testing, environmental monitoring and process control.

Opentrons
20 Jay St., Suite 528
Brooklyn, NY 11201, USA
Phone: +1 847.772.3439
www.opentrons.com

We make robots for biologists. Automate time consuming pipetting work like NGS Library Prep, PCR/qPCR, plate filling, or anything else you can dream of with our open-source OT-2, starting at only \$5,000 (no joke!). Get more accurate results, better repeatability, and save time, plus your wrists (or your students) will thank you! Come meet your personal pipetting robot with an on-deck thermocycler today!

Pall Corporation
25 Harbor Park Drive
Port Washington, NY 11050, USA
Phone: +1 866.905.7255
www.pall.com/foodandbev

Pall Corporation is a global filtration, separation and purification leader providing solutions to meet the critical fluid management needs of customers across the broad spectrum of life sciences and

industry. We work with our customers to advance health, safety and environmentally responsible technologies.

Pall Food and Beverage provides products and services to ensure product quality and maintain process reliability in beverage and food production. Our solutions also assist in consumer protection, the reduction of operating costs and waste minimization.

Partnership for Food Safety Education
2345 Crystal Drive, Suite 800
Arlington, VA 22202, USA
Phone: +1 202.688.3260
www.fightbac.org

The non-profit Partnership for Food Safety Education works to reduce foodborne illness risk through consumer food safety education and by supporting health and food safety educators nationwide with the tools and educational programs they need to be effective at changing food handling behaviors in the home. www.fightbac.org.

PathogenDx
9375 E Shea Blvd., Suite 100
Scottsdale, AZ 85260, USA
Phone: +1 262.720.3231
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.

PerkinElmer
9 Mansfield Networkcentre, Millennium Business Park
Concorde Way
Mansfield, Nottinghamshire NG19 9JZ, United Kingdom
Phone: +44.780.019.1400
<https://www.perkinelmer.com>

PerkinElmer is a global leader committed to innovating for a healthier world. Our food diagnostic testing helps ensure the safety of food products and production environments. Our testing solutions enable huge volumes of exports and imports to be screened for pesticides, mycotoxins and adulterants. With proven immunoassay technology we can test for contaminants such as *Salmonella*, *Listeria* & *E. coli* and provide the tools to achieve accurate and rapid results within the food industry. And our data analytics provide agribusinesses and world food organizations with insights needed to develop better protocols. PerkinElmer is your partner in food.

Perry Johnson Registrars Food Safety, Inc.
755 West Big Beaver Road, Suite 1390
Troy, MI 48084, USA
Phone: +1 248.519.2523
www.pjrfsi.com

Perry Johnson Registrars Food Safety, Inc. is a Global Assurance Certification Body who provides audit, training and risk management services to virtually every industry. PJRFSI services clients around the world managing risk within their organization and that of their supply chain. We are a fully accredited body, offering services for globally recognized accredited 3rd party standards such as GFSI & ISO as well as 2nd party programs including GMP, GDP, Cannabis, Organic and Global Gap to name a few. We also offer customer specific audit programs to mitigate risk within your supply chain such as food safety, quality and brand protection. With over 11,000 clients globally across 50 countries, we are well suited to meet your needs.

Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711, USA
Phone: +1 608.298.4842
<https://www.promega.com/applications/applied-sciences/food-testing/>

As a world leader in applying molecular biology expertise to develop high value products for food testing applications, Promega Corporation understands that today's food quality, safety, GMO and authenticity testing challenges require creative solutions. We have developed systems that simplify plant and food DNA extraction and seamlessly integrate into food testing workflows. Visit our booth to learn more about successful approaches and tools for enabling GMO and food pathogen testing.

Quality Assurance & Food Safety Magazine
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.

R-Biopharm, Inc.
870 Vossbrink Drive
Washington, MO 63090, USA
Phone: +1 877.789.3033
www.r-biopharm.com

R-Biopharm is a worldwide leader in food safety and food quality test kits. We offer a variety of technologies ranging from lateral flow test strips to PCR DNA detection. Our catalog of over 400 products includes food allergens, vitamins, and mycotoxins to name a few. Our dedication to quality and customer-first approach has helped us become the premier diagnostic partner for not only the food industry but also pharmaceutical, cannabis, commercial laboratories, and regulatory agencies. We look forward to the opportunity to illustrate, firsthand, our emphasis on your business, not ours.

Remco
4735 West 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
10 Brown Road
Ithaca, NY 14850, USA
Phone: +1 302.287.1306
<https://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
155 Paragon Drive
Rochester, NY 14624, USA
Phone: +1 585.336.2200
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®
130 Sandy Drive
Newark, DE 19713, USA
Phone: +1 302.781.6400
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."

SGS
201 Route 17 North
Rutherford, NJ 07070, USA
Phone: +1 201.508.3000
www.sgs.com/usafood

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.

Sterilex
111 Lake Front Drive
Hunt Valley, MD 21030, USA
Phone: +1 443.886.0522
www.sterilex.com

Sterilex develops proprietary, sanitation technologies designed to remove biofilm, provide high level disinfection, and enhance sanitation. Sterilex award-winning products are considered a best practice for the control of harmful organisms such as *Listeria*, *E. coli* and *Salmonella* on a wide variety of food contact and environmental surfaces. Sterilex products are used in a variety of sanitation applications including foaming and soaking programs, drain treatment, spiral freezer sanitization, and microbial threat detection. Sterilex technologies have proven to eliminate environmental sanitation challenges and increase shelf life, resulting in an enhanced sanitation program. Visit us to learn more about innovative solutions for microbial control.

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Stop Foodborne Illness
4809 N Ravenswood, Suite 214
Chicago, IL 60640, USA
Phone: +1 773.269.6555
www.stopfoodborneillness.org

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.

Thermo Fisher Scientific
12150 Santa Fe Trail Drive
Lenexa, KS 66215, USA
Phone: 800.255.6730
www.thermofisher.com/microbiology

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 – National Agricultural Library
10301 Baltimore Ave.
Beltsville, MD 20705, USA
Phone: +1 240.351.1165
www.nal.usda.gov/fsrio

The USDA ARS NAL Food Safety Research Information Office (FSRIO) was established by the AREERA legislation in 1998 and was formally launched in 2001. Our mission is to provide the food safety research community and the general public with information on publicly and privately funded food safety research. FSRIIO works to assist the federal government and private research entities in the assessment of food safety research needs and priorities, and to prevent the unintended duplication of food safety research.

Wiley
111 River St.
Hoboken, NJ 07030, USA
Phone: +1 201.748.6000
www.wiley.com

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.

XENON
37 Upton Drive
Wilmington, MA 01887, USA
Phone: +1 978.661.9033
www.xenoncorp.com

XENON is the world leader in Pulsed Light technology for a wide variety of food safety and enhancement, medical, pharmaceutical, manufacturing and research applications.

With over 50 years of Pulsed Light experience, XENON's revolutionary technology has the ability to sanitize conveyors, sterilize food packaging and decontaminate foods; improving the safety of foods and even extending their shelf life. It's effective, clean, involves no chemicals, and is FDA-approved.

XENON is an active partner in the research and development of new and emerging applications of Pulsed Light in various industries and has thousands of systems operating on production lines around the world.

Blue Text – IAFF Sustaining Member

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

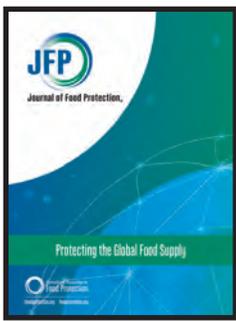
While technical reviewers, session convenors, and/or staff may all check submissions and presentations for commercialism, ultimately it is the responsibility of the Program Committee chairperson to enforce this policy through the session convenors and staff.

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.



Hygiena™ delivers rapid microbial detection, monitoring, and identification solutions to improve food safety: PCR pathogen testing (BAX®), ATP monitoring (EnSURE™ Touch) and reporting (SureTrend™ Cloud), allergen detection (AllerTox™, GlutenTox™), microorganism (InSite™) and indicator organism detection (MicroSnap™). Visit our booth or hygiena.com/foodsafety to learn more about our innovative solutions and world-class support team.



Congratulations to the Recipients of the 2020 *Journal of Food Protection*[®] Awards

2020 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

Variation in Heat and Pressure Resistance of Verotoxigenic and Nontoxigenic *Escherichia coli*
Yang Liu, Alex Gill, Lynn McMullen, and Michael G. Gänzle
Published January 2015

2nd Place

Consumer-Reported Handling of Raw Poultry Products at Home: Results from a National Survey
Katherine M. Kosa, Sheryl C. Cates, Samantha Bradley, Edgar Chambers, and Sandria Godwin
Published January 2015

3rd Place

Methicillin-Resistant *Staphylococcus aureus* in Raw Milk: Prevalence, SCCmec Typing, Enterotoxin Characterization, and Antimicrobial Resistance Patterns
Alessandra Riva, Elisa Borghi, Daniela Cirasola, Silvia Colmegna, Francesca Borgo, Ettore Amato, Mirella Maria Pontello, and Giulia Morace
Published June 2015

Most-cited Review Publication Award

1st Place

Prevalence and Risk Factors for *Toxoplasma gondii* Infection in Meat Animals and Meat Products Destined for Human Consumption
Miao Guo, Jitender P. Dubey, Dolores Hill, Robert L. Buchanan, H. Ray Gamble, Jeffrey L. Jones, and Abani K. Pradhan
Published February 2015

2020 *Journal of Food Protection* Most-downloaded Publication Award

This award recognizes the *JFP* publication that was the most-downloaded in 2019 and published within the last 10 years based upon data from the *Journal of Food Protection* website.

1st Place

Predicting and Preventing Mold Spoilage of Food Products
Jeanne-Marie Membré and Stéphane Dagnas
Published March 2013



Journal of Food Protection[®]



GLOBAL FOOD SECURITY SUMMIT

29th - 30th NOVEMBER 2020

The Organizing Committee of Dubai International Food Safety Conference is pleased to invite members of IAFP to submit abstracts for the virtual conference that will be held on the 29 and 30 of November, 2020. The highlight of this year's event will be the Global Food Security Summit that aims to address the challenges presented by COVID-19 pandemic.

Presenters of chosen abstracts can join our virtual event this year and also win a chance to travel to Dubai in 2021 for our next event. Priority will be given to topics that address food security, impact of COVID-19 on food security and safety, and recommendations to build resilient food systems.

Submit your abstracts before 30th of October through our website www.foodsafetydubai.com.





Congratulations to the Recipients of the 2020 *Food Protection Trends* 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.

Direct Observational Study of the Risk of Cross-contamination during Raw Poultry Handling: Practices in Private Homes

E. Mazengia, C. Fisk, G. Liao, H. Huang, and J. Meschke
Published January–February 2015

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.

Knowledge and Implementation of Good Agricultural Practices among Kentucky Fresh Produce Farmers

Daniel Sinkel, Hanna Khouryieh, Jerry K. Daday, Martin Stone, and Cangliang Shen
Published March–April 2018

Most-viewed General Interest Publication Award

Microbiological Detection Methods – Assuring the Right Fit

Patrick M. Bird, Megan S. Brown, Joy E. Dell’Aringa, LeeAnne A. Hahn,
J. David Legan, Ryan D. Maus, and Stephanie Pollard
Published September–October 2019

Start Where You Are!

Make a difference! Unite with other food safety professionals by joining or forming an IAFP Affiliate in your area. IAFP currently has over fifty-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.

Start now by getting involved today!



Find IAFP Affiliate opportunities and contacts at www.foodprotection.org

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INC.

Your Safe, Quality Food is Our Business.

For over 70 years, Nelson-Jameson has been a single-source food, dairy, and beverage plant supplier, with a diverse product line including:



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Ingredients



Cleaning Chemicals

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5th

Asia-Pacific Food Safety International Conference 2021



Save the dates

January 27-28, 2021 › Virtual Conference

Conference Secretariat

+852 2865 1118

info@infoexws.com

Food Safety Consortium

+852 3400 2881

foodsafety@polyu.edu.hk



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E. Jeffery Rhodehamel
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Hamsa Thota
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Ewen C. D. Todd
R. Bruce Tompkin
Erdal U. Tuncan
Purnendu C. Vasavada
Fred Weber
Irene Wesley
Terry B. Willis
Charlie Wind
Jim R. Wohlgenuth

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Bassam A. Annous
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Agustin Arino
R. Todd Bacon
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Dennis E. Burson
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David W. Caton
Yuhuan Chen
Revis A. Chmielewski

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Manuela Hernandez-Herrero
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Walter E. Hill
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Kristen B. Houck
Martha Hudak-Roos
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Nancy Labuhn
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Alison Larsson
Judy Lee
Y. Jennifer Lee
Marilyn B. Lee
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Vickie Lewandowski
Yanbin Li
Bill Lionberg
Aurelio Lopez-Malo
Frank P. Maranino
Bradley P. Marks
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James McAndrew
Jennifer C. McEntire
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Wendy McMahon
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Grant Michelson
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Yoshikazu Nishikawa
Gerald D. Noland
John S. Novak
Deog-Hwan Oh
Anita J. Okrend
Stephanie Olmsted
Ynes R. Ortega
Andres Otero
Omar A. Oyarzabal
Chong-Liang Pan
Jitu Patel
Suresh D. Pillai
Joan M. Pinkas
Helen M. Piotter
Lori F. Pivarnik
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Kathleen T. Rajkowski
Javed Rashid
David D. Rasmussen
Fred Reimers
Steven C. Ricke
Michael Roberson
Jena Roberts
Joan C. Rosen
Jean Rothmund
Dojin Ryu
Ioannis Samelis
Robert Sanderson
Brian D. Sanders
Karen Schmidt
Keith R. Schneider
William C. Schwartz
Charles Seaman
Mark Shakespeare
Manan Sharma
Joe Shebuski
John M. Sidde

Amarat H. Simonne
Steven T. Sims
Manpreet Singh
Janet Smith
Caroline Smith DeWaal
Les Smoot
Christopher H. Sommers
Jackie A. Souther
Stephanie A. Sparks
Thomas M. Starnes
Bradley A. Stawick
Michael J. Stein
Tori Stivers
Robert F. Stovicek
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Ahmad Tahajod
Atsushi Takeda
Peter J. Taormina
Hilary S. Thesmar
Harshavardhan Thippareddi
Arleen B. Tibayan
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Sharon P. Wood
Randy W. Worobo
Bob Wynne
Frank Yiannas
Ahmed E. Yousef
Kris M. Zetterlund
John S. Zimmermann
Don L. Zink

If your name is not listed under the 20-, 30-, 40-, 50-, or 60-year Member listing and it should be, please contact the IAFP office.

PAST PRESIDENTS

- 1912 – Charles J. Steffen
1913 – Charles J. Steffen
1914 – Charles J. Steffen
1915 – A. N. Henderson
1916 – Claude F. Bessio
1917 – Wm. H. Price
1918 – Alfred W. Lombard
1919 – James O. Jordan
1920 – Ernest Kelly
1921 – C. L. Roadhouse
1922 – Herbert E. Bowman
1923 – George E. Bolling
1924 – J. B. Hollingsworth
1925 – Thomas J. Strauch
1926 – George C. Supplee
1927 – W. A. Shoults
1928 – Ira V. Hiscock
1929 – Howard R. Estes
1930 – Ralph E. Irwin
1931 – A. R. B. Richmond
1932 – William B. Palmer
1933 – Horato N. Parker
1934 – Paul F. Krueger
1935 – C. K. Johns
1936 – George W. Grim
1937 – John C. Hardenbergh
1938 – Alexander R. Tolland
1939 – Victor M. Ehlers
1940 – Paul D. Brooks
1941 – Leslie C. Frank
1942 – Frederick W. Fabian
1943 – Charles A. Abele
1944 – Charles A. Abele
1945 – Russell R. Palmer
1946 – Russell R. Palmer
1947 – R. G. Ross
1948 – Walter D. Tiedeman
1949 – Abraham W. Fuchs
1950 – Milton R. Fisher
1951 – Ken G. Weckel
1952 – H. L. "Red" Thomasson
1953 – Harold J. Barnum
1954 – John D. Faulkner
1955 – Ivan E. Parkin
1956 – Harold S. Adams
1957 – Paul Corash
1958 – Harold Robinson
1959 – Franklin Barber
1960 – William V. Hickey
1961 – John Sheuring
1962 – Charles E. Walton
1963 – Ray Belknap
1964 – John H. Fritz
1965 – Wallace C. Lawton
1966 – Fred E. Uetz
1967 – Paul R. Elliker
1968 – Al N. Myhr
1969 – Samuel O. Noles
1970 – Milton E. Held
1971 – Dick B. Whitehead
1972 – Orlowe M. Osten
1973 – Walter F. Wilson
1974 – Earl O. Wright
1975 – P. J. Skulborstad
1976 – H. E. Thompson, Jr.
1977 – Henry V. Atherton
1978 – David D. Fry
1979 – Howard Hutchings
1980 – Bill Kempa
1981 – William Arledge
1982 – Harry Haverland
1983 – Robert Marshall
1984 – A. Richard Brazis
1985 – Archie Holliday
1986 – Sid Barnard
1987 – Roy Ginn
1988 – Leon Townsend
1989 – Robert Gravani
1990 – Ronald Case
1991 – Bob Sanders
1992 – Damien A. Gabis
1993 – Michael P. Doyle
1994 – Harold Bengsch
1995 – C. Dee Clingman
1996 – F. Ann Draughon
1997 – Michael H. Brodsky
1998 – Gale Prince
1999 – Robert E. Brackett
2000 – Jack Guzewich
2001 – Jenny Scott
2002 – James S. Dickson
2003 – Anna M. Lammerding
2004 – Paul A. Hall
2005 – Kathleen A. Glass
2006 – Jeffrey M. Farber
2007 – Frank Yiannas
2008 – Gary R. Acuff
2009 – J. Stan Bailey
2010 – Vickie Lewandowski
2011 – Lee-Ann Jaykus
2012 – Isabel Walls
2013 – Katherine M.J. Swanson
2014 – Donald W. Schaffner
2015 – Donald L. Zink
2016 – Alejandro Mazzotta
2017 – Linda J. Harris
2018 – Mickey E. Parish
2019 – Timothy Jackson

PAST ANNUAL MEETINGS AND LOCATIONS

1912 Milwaukee, WI	1948 Philadelphia, PA	1984 Edmonton, Alberta
1913 Chicago, IL	1949 Columbus, OH	1985 Nashville, TN
1914 Chicago, IL	1950 Atlantic City, NJ	1986 Minneapolis, MN
1915 Washington, D.C.	1951 Glenwood Springs, CO	1987 Anaheim, CA
1916 Springfield, MA	1952 Milwaukee, WI	1988 Tampa, FL
1917 Washington, D.C.	1953 East Lansing, MI	1989 Kansas City, MO
1918 Chicago, IL	1954 Atlantic City, NJ	1990 Arlington Heights, IL
1919 New York, NY	1955 Augusta, GA	1991 Louisville, KY
1920 Chicago, IL	1956 Seattle, WA	1992 Toronto, Ontario
1921 New York, NY	1957 Louisville, KY	1993 Atlanta, GA
1922 St. Paul, MN	1958 New York, NY	1994 San Antonio, TX
1923 Washington, D.C.	1959 Glenwood Springs, CO	1995 Pittsburgh, PA
1924 Detroit, MI	1960 Chicago, IL	1996 Seattle, WA
1925 Indianapolis, IN	1961 Des Moines, IA	1997 Orlando, FL
1926 Philadelphia, PA	1962 Philadelphia, PA	1998 Nashville, TN
1927 Toronto, Ontario	1963 Toronto, Ontario	1999 Dearborn, MI
1928 Chicago, IL	1964 Portland, OR	2000 Atlanta, GA
1929 Memphis, TN	1965 Hartford, CT	2001 Minneapolis, MN
1930 Cleveland, OH	1966 Minneapolis, MN	2002 San Diego, CA
1931 Montreal, Quebec	1967 Miami Beach, FL	2003 New Orleans, LA
1932 Detroit, MI	1968 St. Louis, MO	2004 Phoenix, AZ
1933 Indianapolis, IN	1969 Louisville, KY	2005 Baltimore, MD
1934 Boston, MA	1970 Cedar Rapids, IA	2006 Calgary, Alberta
1935 Milwaukee, WI	1971 San Diego, CA	2007 Lake Buena Vista, FL
1936 Atlantic City, NJ	1972 Milwaukee, WI	2008 Columbus, OH
1937 Louisville, KY	1973 Rochester, NY	2009 Grapevine, TX
1938 Cleveland, OH	1974 St. Petersburg, FL	2010 Anaheim, CA
1939 Jacksonville, FL	1975 Toronto, Ontario	2011 Milwaukee, WI
1940 New York, NY	1976 Arlington Heights, IL	2012 Providence, RI
1941 Tulsa, OK	1977 Sioux City, IA	2013 Charlotte, NC
1942 St. Louis, MO	1978 Kansas City, MO	2014 Indianapolis, IN
1943 Cancelled	1979 Orlando, FL	2015 Portland, OR
1944 Chicago, IL	1980 Milwaukee, WI	2016 St. Louis, MO
1945 Cancelled	1981 Spokane, WA	2017 Tampa, FL
1946 Atlantic City, NJ	1982 Louisville, KY	2018 Salt Lake City, UT
1947 Milwaukee, WI	1983 St. Louis, MO	2019 Louisville, KY

FUTURE ANNUAL MEETINGS

July 18–21, 2021

Phoenix Convention Center
Phoenix, Arizona

July 31–August 3, 2022

David L. Lawrence Convention Center
Pittsburgh, Pennsylvania

July 16–19, 2023

Metro Toronto Convention Centre
Toronto, Ontario, Canada

DEVELOPING SCIENTIST COMPETITORS

- Abe, Hiroki**, *Hokkaido University* (P2-149)
Acuff, Jennifer, *Virginia Tech* (T19-02)
Aditya, Arpita, *University of Maryland* (P3-07)
Ahmad, Nurul Hawa, *Michigan State University* (P2-127)
Aljasir, Sulaiman, *University of Connecticut* (T15-07)
Alvarado-Martinez, Zabdiel, *University of Maryland* (P3-30)
Amarasekara, Nirosha Ruwani, *Wayne State University* (T10-05)
Anderson, Kory, *Food Research Institute, University of Wisconsin Madison* (P3-58)
Anderson-Coughlin, Brienna, *University of Delaware* (T5-03, P3-188)
Ansong, Monipel, *Washington State University* (P2-108)
Aras, Sadiye, *Public Health Microbiology Laboratory, Tennessee State University* (P1-130, P2-90)
Arellano, Stephanie, *University of Arizona* (P3-37)
Aryal, Jyoti, *Louisiana State University* (P3-135)
Atlaw, Nigatu, *North Carolina State University* (T10-04)
Bai, Xingjian, *Department of Food Science, Purdue University* (P3-42)
Baker, Christopher (Adam), *University of Florida* (P3-78, T9-02)
Balasubramanian, Brindhalakshmi, *University of Connecticut* (T2-02)
Bardsley, Cameron, *Virginia Tech – Eastern Shore AREC* (T3-01)
Barnes, Candace, *University of Florida* (P2-42)
Beczkiwicz, Aaron, *The Ohio State University* (T4-06)
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Chen, Ruixi, *Cornell University* (T12-01)
Cheng, Xianbin, *University of Illinois at Urbana-Champaign* (P2-159)
Chevez, Zoila, *Auburn University* (T3-05)
Choe, Jaein, *Kyungpook National University* (P3-99)
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Connolly, Charles, *Penn State* (P1-104)
D'Souza, Doris, *University of Tennessee* (P1-40)
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Forauer, Emily, *The University of Vermont* (T7-01)
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Godínez-Oviedo, Angélica, *Universidad Autónoma de Querétaro* (T6-06)
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Kataria, Jasmine, *University of Georgia* (T5-04)
Kavanaugh, Melissa, *Drexel University* (T18-02)
Kharel, Karuna, *Louisiana State University AgCenter* (T10-06)
Kim, Minji, *University of Massachusetts Amherst* (P1-113)
Kim, Su-Hyeon, *Kyungpook National University* (P3-193)
Kirchner, Margaret, *North Carolina State University* (T13-02)
Kireina, Devita, *Canadian Research Institute for Food Safety (CRIFS), University of Guelph* (P2-71)
Krishnan, Anjali, *Washington State University-IAREC* (P1-228)
Latronica, Mykayla, *California Polytechnic State University* (P3-93)
Lee, Hwa-Eun, *Kyungpook National University* (T17-02)
Lee, Seulgi, *Department of Food Science and Technology, The University of Georgia* (P3-102)
Lee, Yewon, *Sookmyung Women's University* (P2-152, P2-151, P1-219)
Li, Ka Wang, *West Virginia University* (P3-111)
Li, Shaoting, *University of Georgia, Center for Food Safety* (P2-197)
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Liao, Chao, *University of California, Davis* (P3-101)
Liu, Xingchen, *University of Maryland* (P3-92)
Liu, Xiyang, *Illinois Institute of Technology, Institute of Food Safety and Health* (P2-132)
Locke, Samantha, *The Ohio State University* (T15-01)
Magdovitz, Brittany, *University of Georgia* (P3-134)
Maggio, Stephanie, *North Carolina State University* (T13-06)
Magossi, Gabriela, *Kansas State University, Food Science Institute* (P2-36, T5-01)
Malayil, Leena, *Maryland Institute for Applied Environmental Health, University of Maryland, School of Public Health* (P1-224)
Manjunatha, Vishal, *Clemson University* (T15-04)
Marik, Claire, *Virginia Tech – Eastern Shore AREC* (P3-79)
Mathipa, Moloko, *University of Pretoria* (T14-04)
Mendes Candido de Oliveira, Gabriella, *EMFSL, USDA-ARS* (P3-139)
Mendez, Ellen, *KSU Food Science Institute* (P2-205)
Mendoza, Janny, *Louisiana State University* (P3-113)
Mina, Hansel A., *Purdue University* (P3-117)
Molitor, April, *Kansas State* (P1-129)
Moodispaw, Margaret, *The Ohio State University* (P3-143)
Moorman, Eric, *North Carolina State University* (P3-163, T2-03)
Moreira, Juan, *Louisiana State University* (P2-101)
Muchaamba, Francis, *Institute for Food Safety and Hygiene, University of Zurich* (T5-05)
Murphy, Sarah, *Cornell University* (P3-96)
Nabwiire, Lillian, *Iowa State University* (P2-05)
Nguyen, Cuong, *University of California, Davis* (P3-97)
Nkemngong, Carine, *Purdue University* (T7-03, P3-09)
Novoa Rama, Estefania, *University of Georgia* (T4-03)
Nunes Silva, Beatriz, *CEB - Centre of Biological Engineering, University of Minho* (P2-163)
Oguadinma, Ikechukwu, *The University of Georgia* (P3-19)
Oh, Hyemin, *Sookmyung Women's University* (P1-126)
Omar, Alexis, *University of Delaware* (P3-85)
Ortiz, Yaraimy, *Universidad Autónoma de Nuevo León* (P3-31)
Ossio, Axel, *Universidad Autónoma de Nuevo León* (T11-02)
Overbey, Katie, *Johns Hopkins University* (T14-03)
Pabst, Christopher, *University of Florida* (P3-146)

DEVELOPING SCIENTIST COMPETITORS

Park, Hyeon Woo, *The Ohio State University* (P2-128)
Parraga, Katheryn, *LSU AgCenter* (P1-217)
Pozuelo, Katia, *Kansas State University* (P1-150)
Quintanilla Portillo, Jorge, *University of Illinois at Urbana-Champaign* (P3-88)
Rana, Yadwinder Singh, *Cornell University* (P2-137)
Ren, Yuying, *Illinois Institute of Technology, Institute for Food Safety and Health* (P2-125)
Reyes, Gustavo A., *University of Illinois Urbana-Champaign* (P2-160)
Reyes, Patricia, *University of Nebraska - Lincoln* (P2-48)
Rivera, Jared, *Kansas State University* (P3-47)
Robinson, Benjamin, *University of Connecticut* (T12-05)
Rolfe, Catherine, *Institute for Food Safety and Health* (T1-02)
Rolon, Maria, *The Pennsylvania State University* (T8-02)
Ruiz-Llacsahuanga, Blanca, *Washington State University* (P3-100)
Saha, Joyjit, *University of Florida CREC* (P2-169)
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Schwan, Carla, *Kansas State University* (P2-181)
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Shah, Kundan, *Oklahoma State University* (P3-169)
Shang, Daiqi, *Shanghai Jiao Tong University* (T1-01)
Shao, Xin, *South China University of Technology* (P2-107)
Singh Hamal, Shreya, *Tennessee State University* (P1-88)
Sloniker, Natasha, *Michigan State University* (P3-122)
Solaiman, Sultana, *University of Maryland* (P1-234)
Stoufer, Sloane, *University of Massachusetts, Amherst* (P1-114)
Suehr, Quincy, *Michigan State University* (P2-156)
Sunil, Sriya, *Cornell University* (T11-03)
Suther, Cassandra, *University of Massachusetts, Amherst* (P1-111)
Tabashsum, Zajeba, *University of Maryland* (T10-02)
Thomas-Popo, Emalie, *Iowa State University* (P3-52)
Trudel-Ferland, Mathilde, *Université Laval* (P1-107)
Unger, Phoebe, *Washington State University* (P2-83)
Van de Merwe, Chandrè, *University of Alberta* (P2-47)
Verma, Tushar, *University of Nebraska-Lincoln* (P2-116)

Wambui, Joseph, *Institute for Food Safety and Hygiene, Vetsuisse Faculty University of Zurich* (T4-04)
Wang, Peien, *The University of Georgia* (P3-156)
Wang, Wenqian, *Center of Excellence for Poultry Science, University of Arkansas* (P1-115)
Weerarathne, Pabasara, *Oklahoma State University* (P3-14, P3-13)
Wei, Xinyao, *University of Nebraska-Lincoln* (P3-64)
Wiegand, Abigail, *University of Maine* (P2-43)
Wisuthiphaet, Nicharee, *University of California, Davis* (T1-04)
Wu, Bet, *Zamorano University* (P1-173)
Wu, Biyu, *University of Hawaii at Manoa* (P3-48)
Wu, Sophie Tongyu, *Purdue University* (P1-190)
Wu, Zihui, *Illinois Institute of Technology, Institute for Food Safety and Health* (P2-141)
Xie, Yucen, *Washington State University* (P2-122)
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