

2023 Food Microbiology Conference

Speaker Profiles

Michelle Danyluk, University of Florida – Professor

Food safety trends

Dr. Michelle Danyluk is a Professor and Extension Specialist of Food Safety and Microbiology in the Department of Food Science and Human Nutrition at the University of Florida (UF). Michelle's current research and extension interests include microbial food safety and quality, emphasizing the microbiology of fresh fruits, vegetables, nuts and juices. Her primary research focuses on bacterial pathogens in produce, including production, packing and processing environments, its movement and mitigation within these environments, and the subsequent implications for public health. Michelle's extension program includes teaching programs related to FSMA, HACCP, GAPs and other specialized food safety programs. Michelle was elected a member of the International Commission on Microbiological Specifications for Food (ICMSF) in 2016 and to the International Association for Food Protection (IAFP) Executive Board in 2019, where she currently serves as President.



Anett Winkler, Cargill - EMEA Microbiologist

Food poisoning and low moisture foods

In the last decades low moisture foods ($aw < 0.85$) have been involved in partially large food-borne outbreaks, last big one occurring 2022 in chocolate. The presentation will highlight the specifics of pathogen behaviors in low moisture foods, that contribute to such outbreaks, as well as outline prevention measures. Learnings from past outbreaks will also be shared.

Anett Winkler joined Kraft Jacobs Suchard in December 1998 to head up the research microbiology laboratory in Munich. Later on Anett concentrated on chocolate, biscuits and other low moisture foods including supplier developments and approvals. She also consolidated the scientific basis for microbiological process controls in low moisture foods by performing validation studies for nut & cocoa processing. Following a regional role for Microbiology in the Eastern European, Middle East & African Region she was globally designing food safety programs, rolling out training modules related to food safety and further supporting supplier development. Anett was also the global expert for thermal processing within Mondelez International.



In October 2017 Anett moved to a new position as “EMEA Regional Food Microbiologist Lead” at Cargill, where she is supporting all Cargill businesses in that region (Europe / Middle East / Africa) for microbiological / food safety related topics. Anett is also active in ILSI Europe (Chair of Microbiology Food Safety TF), and a consultant to ICMSF since 2022. Within Germany she is also co-editor of the Handbook on Food Hygiene.

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Claudia Vickers, Eden Brew - Chief Scientific Officer

New tricks for an old yeast: sustainable dairy milk made in Pichia with precision fermentation

Eden Brew is an animal free dairy company making sustainable milk using precision fermentation. This presentation will introduce you to Eden Brew's mission and the science of making alternative proteins using food-grade microbes.

Claudia Vickers is Chief Scientific Officer of Eden brew. She has over 25 years' experience in academia, government, and industry R&D. She is also an Adjunct Professor at Queensland University of Technology and Griffith University.



Angus McLure, Australian National University – Research Fellow

Costing Foodborne Gastroenteritis in Australia

This talk will present the outcomes of a project, commissioned by FSANZ and the Commonwealth Department of Health, to estimate the cost of all foodborne gastroenteritis, and foodborne disease due to ten priority pathogens and four sequel illnesses. We estimate that circa 2019, foodborne disease had a total annual cost of AUD 2.44 billion. The pathogens with the highest annual costs were *Campylobacter* (AUD 365 million), non-typhoidal *Salmonella* (AUD 140 million), non-STEC pathogenic *E. coli* (AUD 133 million), and *norovirus* (AUD 128 million). Sequel illnesses were estimated to have an annual cost of AUD 240 million, mostly following *campylobacteriosis* (AUD 186 million). We have also developed a tool that allows others to use our methodology to cost outbreaks of foodborne disease.

Dr McLure is a mathematical modeller of infectious diseases. His current research includes modelling the transmission and elimination of lymphatic filariasis; the design and analysis of molecular xenomonitoring surveys (catching disease vectors such as mosquitoes to detect the presence of a disease); and source attribution modelling of foodborne disease. Angus has worked on projects across a wide range of diseases and pathogens including, lymphatic filariasis, *C. difficile*, Dengue, *Campylobacter*, *Salmonella*, and many other foodborne diseases. Angus McLure has an interest in developing software and interactive tools to support the analysis of health data and support decision makers working in public health.



Jess Gray, CSIRO – Postdoctoral Fellow

Presentation details not provided

Dr Jessica Gray is a post-doctoral fellow within the Microbiome for One System Health Future Science Platform at CSIRO within the Food Microbiology group. Jess's research focuses on understanding the various microbiomes across the farm to fork continuum.



Samiullah Khan, University of Adelaide - Postdoctoral Fellow/Associate Lecturer

Salmonella as a foodborne pathogen

Pathogenic serotypes of *Salmonella* in humans are the leading causes of salmonellosis. Among these serotypes, *Salmonella Enteritidis* and *Salmonella Typhimurium* are highly associated with foodborne outbreaks of salmonellosis in humans. *Salmonella* associated gastroenteritis in humans is often traced back to the consumption of contaminated meat and egg-based poultry products. In Australia, *Salmonella Typhimurium* is frequently associated with the poultry production. To prevent *Salmonella* from transmission into human food chain, there are multiple intervention strategies available. Intervention strategies for control of *Salmonella* in foods include animal vaccination, good farm biosecurity, supplementation of feed with pre- and pro- biotics and hygiene.

Dr Samiullah Khan completed his PhD in 2017 in Molecular Biology from the University of New England, Australia. Dr Khan holds a Masters degree from the same university and a Veterinary Medicine (DVM) degree from the Sindh Agriculture University, Tandojam, Pakistan. Dr Khan worked as a Veterinarian from March 2008 to July 2010 in Pakistan. Dr Khan also worked as a Research Assistant from September 2012 to September 2013 at the University of New England under the supervision of Professor Juliet Roberts. Dr Khan holds expertise in veterinary medicine including avian microbiology and has published over 40 journal articles, conference abstracts and conference peer-reviewed full-length papers. As an expert in the field, Dr Khan serves the editorial board of BMC Microbiology as a section editor. Since 2017, Dr Khan has been working at The University of Adelaide, Roseworthy Campus and is involved both in research and teachings. As an early career researcher, Dr Khan has established collaboration with both industry leaders and academics in Australia. Dr Khan's research interests include host-pathogen interactions, gut health and food safety.



Megha Bajaj, bioMérieux – Global Solutions Manager

Minimising risk of false positives - BIOBALL® LUMINATE

Dr Megha Bajaj is Global Solutions Manager for BIOBALL in the bioMérieux Industrial Microbiology Unit in Sydney, Australia. Megha has been working with BIOBALL for more than 6 years in different capacities, initially as a technical expert and more recently in a Global Marketing role for BIOBALL with scientific marketing and portfolio management priorities. Prior to joining bioMérieux, Megha held roles with both start-ups and global organizations for a range of products and services. Megha holds a PhD in Microbiology and Biomolecular Chemistry from The University of Queensland in Brisbane, Australia.



Ben Schulz, Professor – University of Queensland

Capturing and Characterising Wild Yeast for Beer Brewing

Beer is typically made using fermentation with *Saccharomyces cerevisiae* or *Saccharomyces pastorianus*, domesticated brewing yeasts. Historically, wild, non-*Saccharomyces* yeasts have also been frequently used in mixed culture fermentations to provide interesting and unique flavours to beer. However, brewing using mixed cultures or by spontaneous fermentation makes reproducing flavours and beer styles extremely difficult. Here, we describe a pipeline from collection of native wild yeast from plant material to the characterisation and commercial scale production of beer using wild yeast. We isolated 23 wild yeast strains, performed fermentation assays and measured ethanol production. We used growth assays, proteomics, metabolomics, and genomics to understand the sugar and amino acid utilisation profiles of two candidate production strains of wild *Torulaspota* compared to commonly used craft beer brewing yeast US05, and a poorly performing wild strain of the same genus. We then investigated media composition and culture condition parameters that could affect growth, and modifications that could be made at a commercial scale to promote effective fermentation and product quality.

Ben is a Professor in Biochemistry at The University of Queensland, with research interests in molecular systems biology, protein post-translational modifications, and fermentation. He graduated with a degree in Chemical Engineering and Science from UQ, after which he joined Proteome Systems, in Sydney. Ben moved to the ETH Zurich in Switzerland for his doctoral studies, and then returned to UQ as a post-doctoral research fellow, and now teaching and research academic. Ben's research focusses on the use of systems biology and mass spectrometry to understand fundamental protein biochemistry, viral pathogenesis, and yeast fermentation in beverage production.



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Gary Dykes, University of Queensland – Honorary Professor

Listeria – what's new?

Despite decades of research *Listeria monocytogenes* remains a pathogen of significant concern to the food industry which continues to cause outbreaks and cases of sporadic disease. This is largely because of its ubiquity and lifestyle which enhances its survival in food related environments. Recent advances in genomics, detection and control have provided some novel solutions to mitigate the risks associated with it. These will be briefly summarized with some thoughts on what the future might hold.

Gary is an Honorary Professor in the School of Agriculture and Food Sciences at the University of Queensland and runs his own research-based consulting business. He holds a PhD from the University of the Witwatersrand in South Africa and has pursued a diverse international academic career spanning a number of research organizations and universities in Australia, South Africa, New Zealand, Canada and Malaysia. His research interests are in the survival, persistence, and control of foodborne pathogenic bacteria, including *Listeria monocytogenes*, *Campylobacter* and *Salmonella*, with a focus on surface attachment and biofilm formation.



Jillian Templeton, DAF Queensland – Senior Research Scientist

Campylobacter

This presentation will give an overview of the *Campylobacter* chapter revised and re-written last year for the Green Book.

Jillian is a Senior Research Scientist with the Queensland Department of Agriculture and Fisheries, based at the EcoSciences Precinct, at Dutton Park in Brisbane.

Jillian is a mid-career researcher who has led projects over the past 20 years to investigate the epidemiology of *Campylobacter* on Australian meat chicken farms; the development, validation and application of genotyping methods for *Campylobacter*; the development of rapid diagnostic techniques for *Campylobacter*; and studying the seasonal variation of *Campylobacter* and *Salmonella* in the Australian chicken meat industry.



SP Singh, NSW Department of Primary Industries – Senior Research Scientist

Safer Melons with Research and Extension

Melons are a high-risk horticultural product and have been recently linked to foodborne illness outbreaks in 2016 and 2018. These outbreaks affected consumer health and caused economic losses to the healthcare and melon industry, estimated to be over \$100 million. To prepare for and reduce the occurrence of food safety risks, the NSW Department of Primary Industries is leading a national program, 'Safe Melons', to mitigate microbial contamination risks to consumers and industry. The program is recognised exemplary in developing and implementing science-based solutions and best practice to effectively manage food safety risks in the high-risk horticulture sector. The success of this project can be attributed to the collaboration and data sharing across the supply chain that allows targeted interventions and predicts patterns to reduce the likelihood of foodborne illness outbreaks occurring and re-occurring. The project is credited with the disruption of the 'outbreak cycle' of the industry and restoring the confidence of consumers, traders, and regulators in melons which are valued ~\$50 million in NSW and ~\$200 million nationally. The 'Safe Melons' program is now nationally recognised for developing and deploying an innovative food safety research, development and adoption model to mitigate food safety risks across the supply chain.

Dr Sukhvinder Pal (SP) Singh is a Senior Research Scientist and Institute Director at the NSW Department of Primary Industries. His research program is focused on developing and translating new technologies and solutions to improve food safety and traceability in the horticulture sector. As a leading expert in Australia, he champions the adoption of scientific evidence-based best practices in the industry. He provides professional services through his elected roles as the Vice-Chair of Postharvest and Quality Assurance Division at the International Society for Horticultural Science (2022-2026) and the Treasurer of the Australian Society of Horticultural Science (2018-2022). He also holds a conjoint faculty position at the University of Newcastle.



Dipon Sarkar, Vitual - Food Safety Consultant, Vitual; University of Tasmania - PhD Candidate

Mathematical Modelling of Microbial Behaviour: Applications in the food industry

Using mathematical models and statistical techniques, predictive microbiology enables the prediction of the growth or inactivation of microorganisms in different food matrices under various storage conditions. Risk analysis involves identifying hazards and assessing the risks associated with different stages of food production and consumption, helping to inform decision-making and develop effective control measures to minimize the risk of foodborne illness. Over the last 20 years, predictive microbiology and risk analysis have emerged as essential tools for ensuring the safety of food products.

But does it actually work?

In this presentation we will take a peek at some recent examples of application of predictive microbiology in the food industry.

Dipon Sarkar is a food safety professional with a PhD in Agriculture, specializing in predictive microbiology models for food safety applications. Trained as a microbiologist in India, he moved to Australia in 2018 to pursue his PhD. He has a strong commitment to advancing knowledge in his field and has contributed to numerous publications and scientific conferences. His research interest lies in developing tools that can help food industries and regulators assess microbial risks in food products.



Currently, Dipon works as a Food Safety Consultant at Vitual, where he is applying his food safety knowledge to help the risk team deliver innovative solutions for clients across the food and beverage industry. In this role, he is responsible for providing guidance on food safety and quality management, conducting risk assessments, and providing technical support to clients.

A strong advocate of research and communication, he is passionate about sharing his knowledge with others and is known for his ability to explain complex scientific concepts in a clear and concise manner. Outside work, he spends most of his time climbing rocks and hiking mountains, playing soccer, and taking care of a ridiculous amount of house plants.

Jeremy Chenu, Craveable Brands - Group Technical & Innovation Manager

Deeper dive into Cronobacter in Infant Formula

Cronobacter spp. are opportunistic pathogens that can cause life-threatening infections in infants. The organism is very robust in surviving dry conditions and can also form biofilms, which allows it to persist in dry foods and their manufacturing environments. Although found in a wide range of sources, the majority of outbreaks have been linked to contaminated powdered infant formula (PIF), leading to numerous recalls and litigation. This presentation provides a deeper dive and update on our current understanding of *Cronobacter* and its association with infant formula.

Jeremy Chenu is currently Group Technical & Innovation Manager at Craveable Brands. He has over 15 years' experience in food safety research and industry related roles. Jeremy holds a PhD in Microbiology and Immunology from The University of New South Wales, Sydney, Australia. His previous research activities focused on microbiological methods, ecology and genetic diversity of foodborne pathogens.

