



Tuesday, April 13, 11:00 am – 1:00 pm US Eastern Time
Session 2 – The Microbiome beyond the Gut

Session Co-Chair: **Christian Hoffmann**, PhD, University of São Paulo, Brasil

Bio: **Dr. Hoffmann** focuses his research on the interplay between the gut microbiome, diet, and immune modulation, how it changes as we shift our lifestyles, and how to make use of this relationship to promote human health. His laboratory employs a multidisciplinary approach to address these questions, using both population surveys and human clinical studies. One of the ongoing study models uses unavailable carbohydrates to try to reveal how diet elements modulate the intestinal microbiome, directly as energy sources, and through their influence on the immune system.



1. Soil Microbiomes and Crop Health: Are soil microbiomes the key to sustainable cropping?

Linda Kinkel, PhD, University of Minnesota, United States

Abstract: Soil microbiomes play central roles in mediating plant health and productivity and are highly responsive to plants and to human activities (e.g., plowing, as well as anthropogenic nutrient inputs). Active management of soil microbiomes offers significant potential, yet gaps remain in our understanding of 'best practices' for supporting healthy crops and ecosystems. Global efforts to develop comprehensive, publicly accessible databases will advance prospects for effective sustainable management.

Biography: **Linda Kinkel** is a Professor of Plant Pathology at the University of Minnesota. She completed graduate studies at the UW-Madison (M.S. and Ph.D. in Plant Pathology, M.S. in Biometry), and Post-doctoral research at the University of California-Berkeley. Dr. Kinkel's research focuses on the ecology and evolutionary biology of plant-associated microbes in native and agricultural habitats. She is especially interested in managing beneficial soil bacteria to enhance plant health and productivity. Her current work integrates culture-based and 'omics analyses of soil and endophytic microbial populations in relation to antibiotic production, disease suppression, and soil carbon.





2. **Microbiomes, Ecosystem Functions and Sustainable Agriculture**, **Brajesh Singh**, PhD, Global Centre for Land-Based Innovation, Australia

Abstract: Recent studies provide evidence for strong relationships between soil microbial diversity and ecosystem functions (microbial BEF). However, there is a critical lack of knowledge regarding scale and shape of microbial BEF and the relative contribution of below- vs. aboveground communities in multiple ecosystem multifunctionality. In addition, plant-associated microbiomes play critical role in plant health and productivity and there is growing interests to harness soil and plant microbiomes to sustainably increase farm productivity and food quality, however, a lack of fundamental knowledge on factors that shape plant-microbiome interactions, constraints our ability to develop effective plant microbiome tools.

This presentation will provide overview of microbial BEF and how this is influenced by scale (from micro- to global scales) and will discuss new approaches to harness plant microbiomes for sustainable increase in farm productivity and food security.

Biography: **Prof Brajesh Singh** is a soil ecologist at Hawkesbury Institute for the Environment and Western Sydney University. Through his fundamental research, he identifies the quantitative relationships between microbial diversity and ecosystem functions and how natural/anthropogenic pressures such as global change affect this. His applied research harnesses the knowledge gained in fundamental research to achieve agriculture productivity, and environmental sustainability. Outcomes from his research have informed multiple policy decisions at national and international levels. For details- please see weblink hereafter: <http://www.westernsydney.edu.au/hie>



3. **The Oral Microbiome, Oral Health Resilience and Systemic Health**, **Egija Zaura**, PhD, Academic Centre for Dentistry Amsterdam, University of Amsterdam, The Netherlands

Abstract: Oral microbial community at health contains hundreds of microbial species, including bacteria, Archaea, viruses, protozoa and fungi. Compared to other niches in the human body, oral microbiome, once established, remains remarkably stable. In this presentation the role of the host and the environment will be discussed in relation to the oral microbiome with oral and general health.

Biography: **sketch of prof. dr. Egija Zaura**, Department of Preventive Dentistry, Academic Centre for Dentistry Amsterdam (ACTA), Vrije Universiteit Amsterdam & University of Amsterdam, the Netherlands: Egija Zaura is University Research Chair Professor in Oral Microbial Ecology at the Vrije Universiteit Amsterdam and the head of the Departments of Preventive Dentistry, Cariology and Pediatric Dentistry at Academic Centre for Dentistry Amsterdam (ACTA). She obtained her Dental degree in 1995 at Karolinska Institute, Sweden and her MSc degree in General Dentistry at Riga Stradins University, Latvia, in 1997. In 2002 she acquired a PhD in Preventive Dentistry, Cum





Laude, at ACTA. Her current principal interests lay on oral microbial ecology at health and disease and translating this fundamental knowledge to the clinical practice. (*Photo courtesy of Dirk Gillisen*)

4. **Prebiotic and Probiotic Modulation of Cognition and Emotion, Philip Burnet**, PhD, University of Oxford, United Kingdom

Abstract. Our research has shown that the daily intake of a galacto-oligosaccharide prebiotic had a procognitive effect in rodents and people with psychosis, whereas a multispecies probiotic, had an anxiolytic effect in mice and reduced depression in people with low mood. These studies suggest that prebiotics and probiotics have distinct actions on brain function and may assist in the treatment of specific psychiatric disorders.

Biography. Philip Burnet received a PhD in Biochemistry from Imperial College, London, in 1989 and went on to be a post-doctoral Fogarty Visiting Fellow at the NIMH, USA. In 1992, he received an MRC Training Fellowship at the University Department of Psychiatry, Oxford, and is currently an Associate Professor. Prof Burnet's research explores novel molecular and nutritional interventions to assist in the treatment of psychiatric disorders.

