iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 a.m. CDT, 9 a.m. EDT, 1 p.m. GMT, 9 p.m. China
Wednesday, Sept. 24, 2025

GABRIELE BERG

GRAZ UNIVERSITY OF TECHNOLOGY

https://www.tugraz.at/institute/ubt/home

Gabriele Berg, studied biology, ecology and biotechnology at the universities in Rostock and Greifswald (Germany), and obtained her Ph.D. in 1995 in microbiology from Rostock University. In 2005 she became a full professor in environmental biotechnology at Graz University of Technology (Austria), and in 2021 an additional professorship in Potsdam together with a position at Leibniz ATB (Germany). Since 2025 she has been a Max Planck fellow at the Max Planck Institute of Colloids and Interfaces in Potsdam. Her interests are focused on microbiome research and translation of the results into new biotechnological concepts for health issues. In addition, she is one of the international drivers of the interdisciplinary field of microbiome biotechnology. She is one of the most cited researchers worldwide (highly cited researcher 2019-21, 2024) and received several high-ranking awards. She is vice president of the International Society for Microbial Ecology (ISME).

THE PLANT MICROBIOME MATTERS! – FOR ONE AND PLANETARY HEALTH

Abstract Plant microbiomes are key components for ecosystem health as well as for one health. The latter is a concept integrating the health of people, animals and plants into their environment (WHO). The plant microbiota, which consist of bacteria, archaea, protists and fungi, is vertically transmitted by seeds and replenished horizontally from soil. All plants are holobionts and form a functional unit with its microbiome. Plant diversification and co-evolution shaped the plant microbiome and designed their specific composition and functional interplay including natural biocontrol of pathogens. Human activities in the Anthropocene, and especially intense agriculture, are linked to a significant shift of diversity and evenness of the plant microbiota. This shift is characterized by a decrease of host specificity and symbionts, and an increase of r-strategic microbes, pathogens and hypermutators. Findings from plant microbiome research over the past 20 years clearly call for management of the microbiome and joint attention to the crop holobiont. Plant microbiomes can be managed either directly by applying (i) microbiome transplants, (ii) microbes with beneficial properties, or (iii) microbiota-active metabolites, or indirectly by changing environmental conditions in a way that microbiomes also shift their structure and function from dysbiosis into a healthy state. Examples for the different strategies for plant protection will be presented, and risk associated with the technology will be discussed. Plant-associated microbial communities were significantly shaped by domestication and breeding. The aim of breeding, e.g. high yield, is often reflected by the dominance of fast-growing, plant growth promoting bacteria. Targeted microbiome-assisted breeding is an important challenge for future regenerative agriculture. Beyond, the plant microbiome is connected across systems and crucial for planetary health issues as well.

DODGE FAMILY COLLEGE OF ARTS AND SCIENCES
INSTITUTE FOR ENVIRONMENTAL GENOMICS
The UNIVERSITY *of* OKLAHOMA

CENTRAL SOUTH UNIVERSITY 中南大學

Zoom webinar ID: 934 8142 2012 (zoom.us/j/93481422012)

More details and previous iFAST seminar videos are available on www.ou.edu/ieg/seminars.

Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; www.ou.edu/ieg)

Xueduan Liu, Huaqun Yin (Central South University, China)