

Report on the fifth edition of the Theodor Escherich symposium held in Graz, Austria, on 8 and 9 November 2018.

The TE symposium included sessions on human and plant microbiomes. A specific session on human pathogens in the plant microbiome, held on 9 November, was dedicated to COST Action 16110 (HUPLANTcontrol). For this session, four speakers were invited, Prof Lise Korsten, department of microbiology and plant pathology of the university of Pretoria (SA), Prof Michael Schloter, Helmholtz Centre Munich (Ge), Dr Dror Minz of the Department of Soil, Water, and Environmental Sciences, Agricultural Research Organization, Volcani Centre (Is) and Dr Leo van Overbeek, chair of the action.

One of the main messages was that many parallels exist between human and plant microbiome research in terms of the type of research questions, experimental design and data interpretation. Experts from the medical field (Dr Paul O'Toole) as well as experts from the plant microbiome field (Prof Dror Minz) presented new approaches to identify microbial signatures for health and disease. Moreover, both showed innovative approaches to detect such signatures in tissues/compartments that are not directly affected by a disease. The TE symposium provided a unique opportunity to combine presentations related to research in human medical and plant (production of food and feed) sciences. In fact, a consistent line in microbiome research exist from basic agricultural food production, food processing and human health and this symposium will contribute to further integration of these disciplines into one single holistic approach. In key note lectures, microbial communities were described as key drivers in the support of human and plant health. Modifications in microbiome composition can lead to improved resilience of eukaryote hosts towards biotic and abiotic stresses. Many of the lectures and pitches held by early career scientists were based on experimental research to describe mechanistic aspects in host-microbiome interactions. For example faecal transplantations are successfully applied to alleviate disease symptoms related to *Clostridium difficile* infections, irritable bowel disease and other chronic disorders in human gut systems. Similar mechanisms apply to microbiome transmission via seeds that are supportive for new generations of plants grown under different production circumstances. As a result from collective insights provided by microbiome research in general, the definition of 'pathogen' is currently under revision. Further, both fields appeared to suffer from constrains in registration of health supportive products and procedures forthcoming from microbiome research which might become an important constrain in dissemination of new products derived from this highly innovative type of research. The integration of other sciences, such as social and economic sciences, in microbiome research is highly appreciated among participants of this symposium.