

MicrobiomeSupport Workshop

Metagenomics, Metaproteomics and Metabolomics: the need for data integration in microbiome research

April 13, 2021, via Webex teleconferencing, starting 1 pm CEST

During the last decades our understanding about the ecology of microbes in complex ecosystems has strongly benefited from the application of high-throughput methods, allowing the generation of massive data in a short period of time. Metagenomics is for sure the approach most often used in the past, however the use of DNA only allows the analysis of genetic potentials, but not actual activities. Thus, there is a need to complement DNA based data with data from other omics technologies including metatranscriptomics, metaproteomics and metabolomics. By combining different omics approaches we will be able for the first time to understand the interactions between microbes, with their abiotic environment, and with the eukaryotic hosts, thereby addressing the microbial complexity in a systemic way. One of the challenges we are facing, however, is the integration of different -omics data

Therefore, in the context of the MicrobiomeSupport project, we aim at gathering experts with different background and experiences, coming from the academia, industry and policy makers, to discuss together opportunities, possibilities and hurdles to overcome, to push forward innovative data integration strategies and applications.

Program of the workshop

Session 1: Set the scene

- Multi-omic approaches to understand microbiome and resistome management, Gabriele Berg, Graz University of Technology (Austria)
- Application of multi-omics to unravel flavor development in fermented sausages, Kalliopi Rantsiou, University of Torino (Italy)
- Integrating metabolomics and metagenomics data from microbiome for small molecule discovery, Hossein Mohimani, Carnegie Mellon University (USA)
- Selected flash presentations by MicrobiomeSupport partners contributing to the specific subject of the workshop

Session 2: Discussion with the participants

The discussion will be guided to address the following topics (not inclusive list):

- Significance of the different targets in omics techniques and their value
- Bioinformatic approaches to integrate the data
- How to benefit from integrated analysis: is there a plus?
- How data integration can impact microbiome research and which direction should we go?

Please register at: <https://forms.gle/7UDUZGEVB82LxnTM6>

Deadline: April 9, 2021, EOB.