

Microbiota under omics spotlights

Principal organizers

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Session description

Microbes represent the most important biomass component on Earth. They have colonized all types of environments from benign to extreme or from external to internal ones. Yet, their key roles in many environmental, ecological and evolutionary processes are just being recognized (Faure *et al* 2015). Since a decade, omics approaches allow the high-throughput analyses of molecules (DNA, RNA, proteins, metabolites) and organisms (including single cell analysis). In combination with imagery and bioinformatic tools, omics propelled microbiota studies to the front line of the fast-moving and highly-competitive researches (Joly and Faure, 2015). Different kinds of studies are particularly challenging. One concerns the characterization of microbial populations and communities at various biogeographical scales for understanding their functioning, dynamics and evolution in present and past ecosystems. The others concerns integrative studies of microbial interactions for exploring the complexity and diversity of organism relationships (including microbial sensing and signal transduction) at the level of the cell, the population, the community and the holobiont. This symposium “Microbiota under omics spotlights” exemplifies the benefits of omics for studying microbes in a large variety of environments.

D. Faure, P. Bonin, R. Duran and the Microbial Ecology EC2CO-consortium. 2015. Environmental microbiology as a mosaic of explored ecosystems and issues. *Environmental Science and Pollution Research* 22: 13577-13598.

D. Joly, D. Faure. 2015. Next-generation sequencing propels environmental genomics to the front lines of research. *Heredity* 114: 429-430.

Speakers

- [Jean-Michel Drezen](#) (CNRS), **Multiple interactions between viruses and hosts** - Viruses contribute to pest diversification, behavior and adaptation to their hosts
- [Nicolas Chemidlin](#) (INRA), **Soil bacterial microbiota** - Bacterial "social" network in french soils: a Metagenomics insight
- [Eric Pelletier](#) (CEA), **Marine planktons** - Multi-omics insight into marine plankton diversity : Tara Oceans
- [Jean-Christophe Simon](#) (INRA), **Bacteria-Insects interactions** - Omics highlight on insect microbiota
- [Purification Lopez-Garcia](#) (CNRS), **Fresh water ecosystems** - Structure and functioning of microbial communities in fresh water ecosystems
- [Denis Faure](#) (CNRS), **Bacteria-plants interactions** - Niche construction of the pathogen *Agrobacterium tumefaciens* in plant host: a functional genomics insight