iFAST: The International Forum on Advanced Environmental Sciences and Technology

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8 a.m. CDT, 9 a.m. EST, Wednesday, Jan. 28, 2026
2 p.m. GMT, 10 p.m. China, Wednesday, Jan. 28, 2026

LAURENT PHILIPPOT
UNIVERSITÉ BOURGOGNE
https://umr-agroecologie.dijon.hub.inrae.fr/personnels/college-de-direction-codir/philippot-laurent

Laurent Philippot is director of research at the INRAE and vice head of the Agroecology Department in Dijon. He received a doctorate from the University Claude Bernard, Lyon, in 1997 and did a sabbatical at the Georgia University of Technology, Atlanta in 2000, as well as at the Swedish University of Agricultural Science, Uppsala, in 2009. He is a soil microbial ecologist interested in bridging microbial community ecology, microbial processes and ecosystem functioning using a trait-centered approach. He has developed this line of research with a focus on microbial guilds involved in nitrogen cycling and greenhouse gas emissions. He has been leading the cluster of excellence HARMI (Harnessing microbiomes for sustainable development) funded by the France 2030 program. He currently is an editorial board member for FEMS Microbiology Ecology as well as Applied and Environmental Microbiology, and he has served as editor for the ISME J. He is ranked among the highly cited researchers by Clarivate in the field of microbiology since 2018, and he received the breakthrough award by the INRAE in 2021 and the distinguished scientist award under the CAS President's International Fellowship Initiative in 2025.

Unraveling Microbial Interactions in Complex Soil Communities

Abstract Microbes form complex and highly diverse communities that have an essential role in ecosystem functioning. While microorganisms can interact with each other in numerous ways, only limited insights exist about the contribution of such biotic interactions to the assembly and composition of microbial communities. To date, efforts to experimentally identify biotic interactions between microorganisms have typically relied on bottom-up approaches based on synthetic-assemblage experiments conducted in vitro with culturable strains. Here, I will discuss alternative top-down approaches based on microbial community manipulation by targeted removal of various microbial groups in a native soil community and by coalescence to test the role of biotic interactions for microbial community assembly and consequences for soil functions with a focus on nitrogen cycling. Our results demonstrate that removal approaches can provide a new framework to study microbial interactions in ecosystems as well as links between microbial community composition and ecosystem function based on the analogy to gene-knockout procedures in genomics.

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INSTITUTE FOR ENVIRONMENTAL GENOMICS
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