Ecology of plant-associated microbial communities

Composante
Faculté des sciences

En bref

- Langue(s) d'enseignement: Anglais
- Méthodes d'enseignement: A distance
- Ouvert aux étudiants en échange: Oui

Présentation

Description

OVERVİEW OF THE THREE LESSONS
1. Culture-independent approaches to improve our understanding of microbial communities
This course presents culture-free approaches used to explore the diversity of microbial communities associated with plants. İt highlights metabarcoding and metagenomics techniques, which enable the taxonomic and functional composition of microbiotas to be characterised without isolating strains. The course also covers genome reconstruction, diversity indices (alpha, beta), and the ecological roles of microorganisms in plant-environment interactions.

2. Seed microbiome characterization and future applications for plant health
This course explores the seed microbiome, which remains largely unknown despite its key role in plant health and vigor. İt presents the diversity, origin, and dynamics of microbial communities associated with seeds, as well as the factors that influence their composition (production site, pollination, microbial interactions). The course also discusses the prospects for bioengineering the seed microbiome as an alternative to pesticides, through the use of beneficial strains or synthetic communities. These approaches aim to improve germination, stress tolerance, and pathogen resistance.

3. Plant microbiota : focus on the mycobiota The incredible power of fungi
This course highlights the central role of fungi in plant-associated microbial communities, from the earliest terrestrial symbioses to current interactions. İt explores how mycorrhizae function, their impact on plant nutrition and resilience, and their ability to structure the microbiome of the hyphosphere. The course also addresses more recent cases such as the mucilaginous microhabitat of aerial roots, or the role of the seed mycobiome in the intergenerational

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transmission of beneficial microorganisms. These examples illustrate the functional and evolutionary power of fungi in plant ecosystems.

4. The French Collection for Plant-associated Bacteria: strategic resources for plant health
A 20-minute video will be available for you to visit the CİRM-CFBP website.

The first three courses include a self-assessment to evaluate your knowledge and guide your revision for the final assessment.

Heures d'enseignement

CM	Cours magistral	2h
CM	Cours magistral	4h
CM	Cours magistral	4h
CM	Cours magistral	0,25h

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