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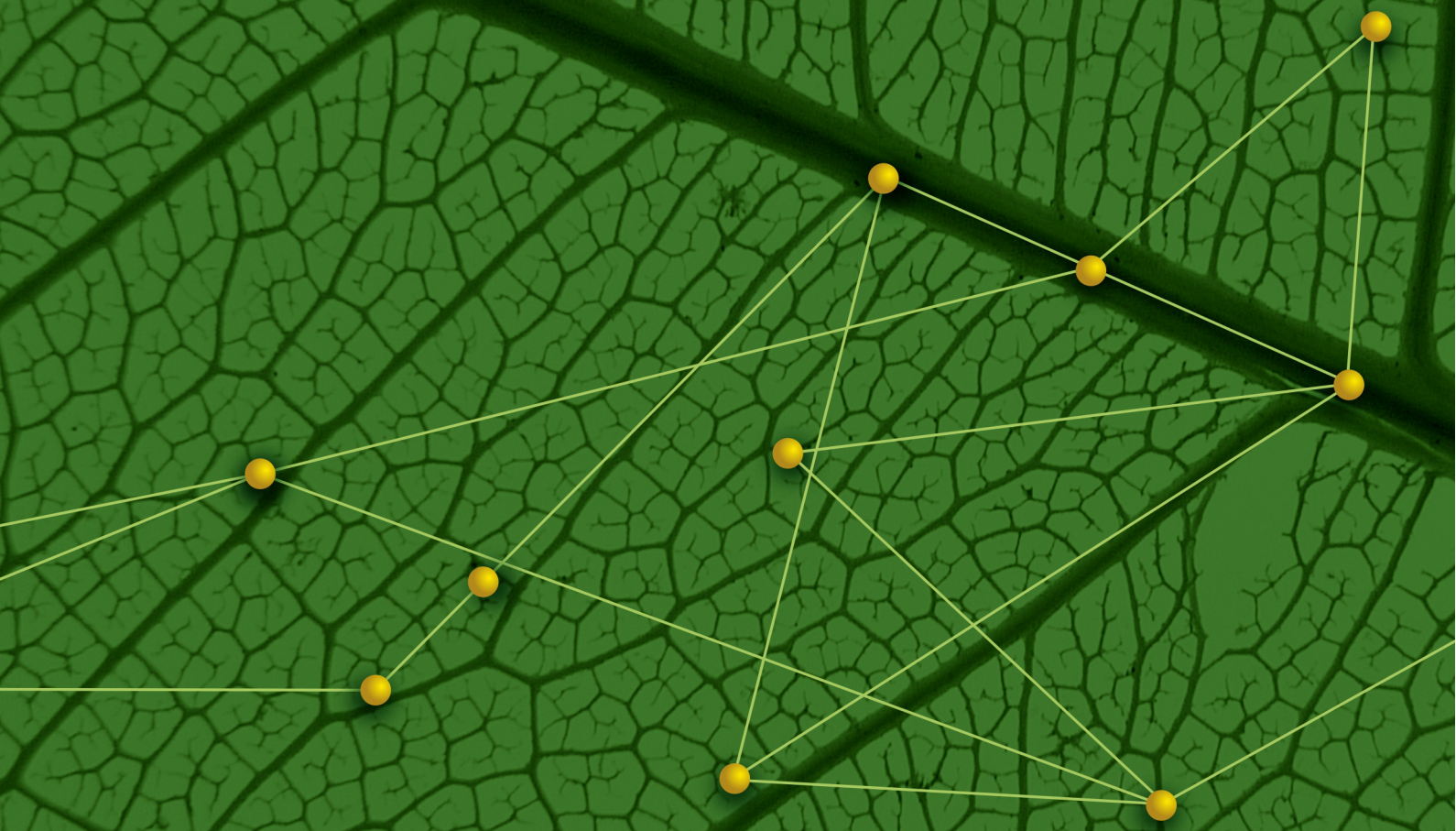
Book of Abstracts



OP 4.16 - Multi-scale connectivity of Alpine pasture microbiotas along an elevational gradient

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Alpine pastures are a complex and multidimensional habitat in which animals and plants interact with each other and with diverse soil-borne bacteria and fungi ('microbiota'), forming an ecological network that extends both above ground and within the soil. Although host-associated microorganisms are essential to plant and animal health and adaptive potential, they are overwhelmingly understudied in non-model species, and their interactions with soil remain poorly understood. In addition, the extent to which climate change will impact Alpine pasture micro-biodiversity is still entirely unknown. Here, we investigated changes in bacterial and fungal diversity using metataxonomy on more than 900 field samples of soil, rhizosphere soil, whole invertebrates and vertebrate feces along an elevational gradient spanning 1500 meters used as a proxy for climate change.

We found that soil, plant and animal microbiota were characterized by distinct but partially overlapping microbial communities, with diversity and composition shaped by both biotic and abiotic factors. Animal bacterial microbiota was markedly shaped by host-interaction dynamics, while fungal communities showed closer associations with habitat and elevation. Compositional overlaps between microbial communities were greater between soil, rhizosphere, and soil-dwelling invertebrates, compared to other invertebrates and vertebrate fecal samples, highlighting above/belowground and host/habitat-specific associations in the Alpine metacommunity.

Keywords: Alpine pasture, Global warming, Metataxonomy, Microbiota, Metacommunity

OP 4.17 - Biocultural refugia in a changing world: First ecological evidence from traditional chestnut orchards in the Italian Alps

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Traditional chestnut orchards (*Castanea sativa* Mill.) are biocultural systems in which biodiversity, cultural heritage, and long-term management practices have co-evolved over centuries.
Today, these semi-natural habitats face increasing pressures from climate change, emerging phytosanitary threats, and socio-economic transformations affecting their management and persistence. This contribution presents the first ecological results from an ongoing interdisciplinary project investigating change in traditional chestnut orchards across northern Italy (Trentino and Emilia-Romagna). The project integrates three dimensions of change: ecological and climatic dynamics, local stakeholders' perceptions, and management practices. Sixty actively managed historical orchards were selected, characterized by centennial trees and long-term continuity.