



Effects of bacteria on fungal competition under extreme heat

Background:

Competition is a common form of ecological interaction among soil fungi, and it has an important influence on fungal community structure and diversity. Fungal competition can alter their hyphal morphology and metabolism, especially in the interaction zone where two fungi are in direct contact with each other. The outcome of fungal competition is affected by various factors, including fungal growth rate, abiotic stress (e.g., heat stress), and other species (e.g., bacteria). However, it remains unclear how these factors individually and interactively affect fungal competition. In this project, we aim to understand if the presence of bacteria at the contact zones of fungi affect the outcomes of fungal competition particularly in stressful environments like heat extremes.

Key question:

How do bacteria affect competition between fast-growing fungi and slow-growing fungi under extreme heat?

Methodology:

We will use one fast-growing fungal strain and one slow-growing fungal strain for pair-wise fungal culture in Petri dish. Bacteria will also be inoculated into fungal culture system to investigate its effect on fungal competition. We put the plates in the incubator at 35 °C for 7 days and take pictures of the plates every day with camera in sterile hood. Fungal radial growth and fractal structure will be quantified based on the pictures. Fungal biomass and enzyme activity will be determined in the end. Besides, a modelling approach of fungal competition is also potential to be developed.

Key readings:

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