

Characterization of a novel, ubiquitous fungal endophyte from the rhizosphere and root endosphere of *Populus* trees



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Funding Source: DOE Office of Biological and Environmental Research, Genomic Sciences Program

Background

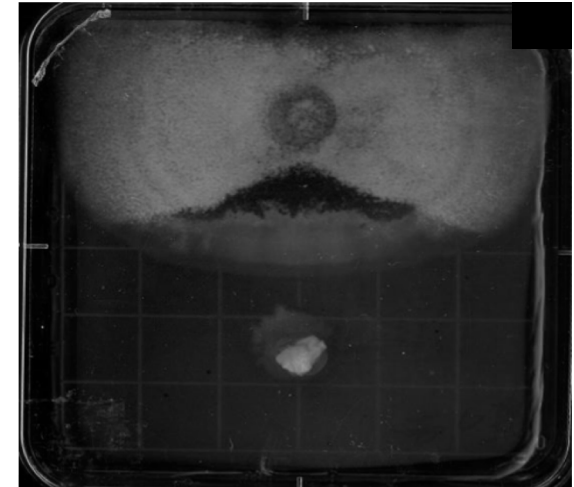
- Recent studies have identified unknown *Atractiella* sp. prominently enriched within the root endosphere of *Populus* and other woody species but little is known about their ecology.
- Limited available evidence suggests that they have variable life history strategies: from a saprophytic life-strategy in some plants to a potential mycorrhizal-like role in others.

Science

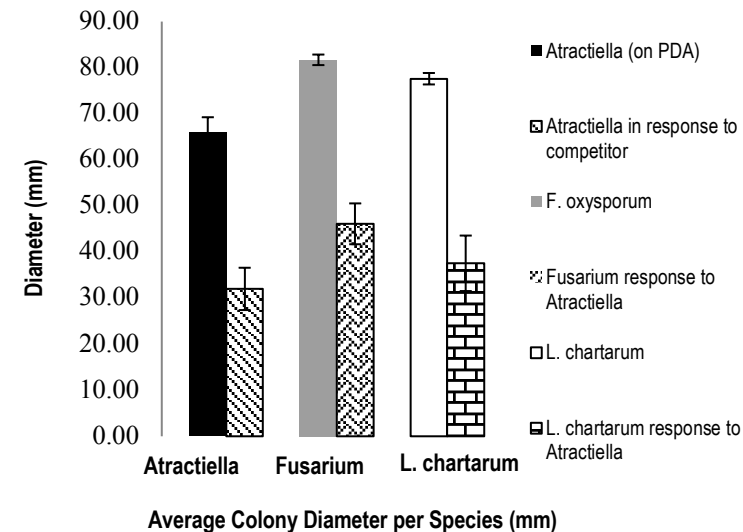
- We examined variation in growth rate, patterns of nitrogen utilization, and competitive interactions of multiple newly described *Atractiella rhizophila* isolates from the roots of *Populus* hosts to determine it's role in the *Populus* microbiome.
- Atractiella* grows best in nitrate-rich environments. This suggests that *Atractiella* is a poor competitor with other fungi, however it's high abundance in the plant host rhizosphere may indicate other unknown resource partitioning mechanisms are at play.
- Atractiella*, as well as other fungal genera when grown together, showed arrested development, and the competitor fungi adjusted morphologically by creating zones of inhibition.
- Metabolite profiling of *Atractiella* grown with other fungal genera indicated increased levels of glycosides, which is involved in plant-pathogen interactions.

Significance

- This study elaborated on the ecology of *Atractiella* and increased our understanding on how a poor competitor in a diverse microbiome remains viable and abundant.



Atractiella growth inhibition (top) after addition of *Leptosphaerulina chartarum* (bottom).



Total colony diameter with the focal fungus indicated underneath each grouping.