

Atractiella rhizophila - a new and widespread fungal species from the *Populus* root microbiome

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Background

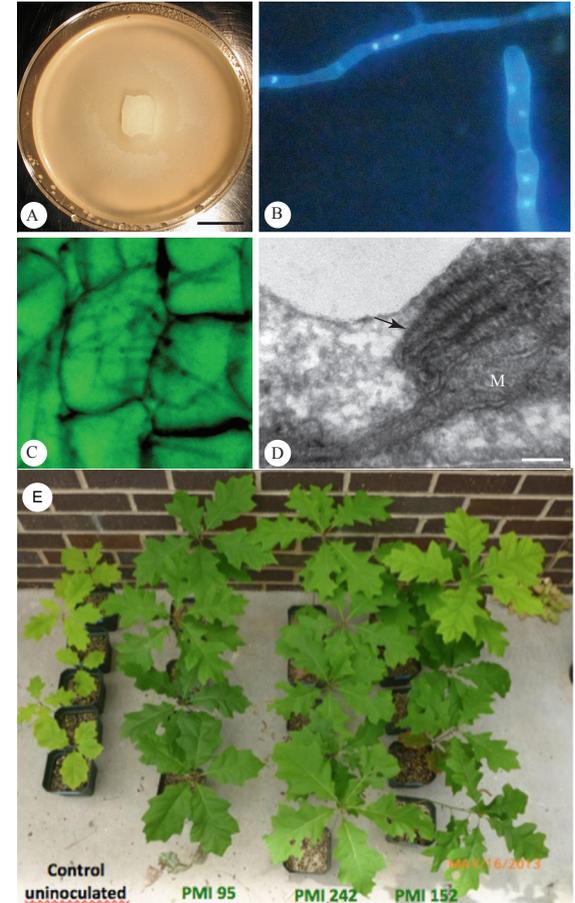
- Mycorrhizal, root endophytic and rhizosphere fungi can promote plant health and biofeedstock productivity
- Environmental DNA microbiome studies of *Populus* species have repeatedly observed novel groups of fungi associated with both wild and plantation grown trees, however isolated organisms are required for better characterization.

Science

- Over 30 isolates of a new species of the endorhizal fungus were obtained from both the Eastern US and Western US
- Phylogenetic analyses characterized this fungus as a new species – *Atractiella rhizophila* sp. nov.
- Characterized isolates were shown to form unique endorhizal structures and the fungus increased overall plant growth and photosynthetic rates in greenhouse experiments.

Significance

- Understanding and potentially harnessing the microbiome could yield crop and agroforestry production improvements, well as a better understanding of how root endophytic fungi function in natural and managed ecosystems.



A. *Atractiella rhizophila* growing in culture (Bar=20 mm). **B.** Dikaryotic mycelium of *A. rhizophila* stained with DAPI with unfused nuclei. **C.** Corn (*Zea mays*) root cells colonized by *A. rhizophila*. **D.** Transmission electron microscopy images of *A. rhizophila*. (Bar=100nm) of microscala associated with mitochondria. **E.** Increased growth of red oak (*Quercus rubra*) when inoculated with three *A. rhizophila* isolates.