

**Title: Ectomycorrhizal fungi: mediators of plant-microbial interactions and terrestrial biogeochemistry**

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**Project Goals: Short statement of goals. (Limit to 1000 characters)**

Interactions between plants and soil microorganisms can reshape projections of terrestrial biogeochemical cycles, yet the mechanisms by which these interactions operate are poorly understood. **The goal of this project is to determine the role of plant and soil resources in shaping interactions between coniferous plants, their major root fungal symbionts (ectomycorrhizal fungi, EMF), and free-living saprotrophic decomposers (SAPs) in soil that control forest biogeochemistry.** Our project leverages a model plant-EMF system that dominates coniferous forests in U.S. and abroad; plants in the Pinaceae and their EMF symbionts in the genus *Suillus*. We have discovered that plant-EMF-SAP interactions in this system are driven by soil carbon (C) and nitrogen availability to SAPs. Ongoing experiments now focus on how increases in plant C availability to EMF (caused by elevated CO<sub>2</sub>) affect plant-microbial interactions and biogeochemistry. Future work will integrate experimental data into a microbial-explicit biogeochemistry model, FUN-CORPSE and validate the model with data on soil microbial community and biogeochemistry from the Duke FACE experiment.

*Funding statement.* This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Biological and Environmental Research, under contract numbers JGI/EMSL FICUS 48480, 49514, and 49989; JGI CSP #503285; and Award Numbers DE-SC0012704 and DE-SC0020403.