

## JOB DESCRIPTION



THE  
CHAMPION  
of TREES

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**Title:** Postdoctoral Researcher, Tree and Mycorrhizal Ecology

**Division:** Science and Conservation

**Department:** Center for Tree Science

**Supervisor:** Tree Root Biologist

**Supervises:** n/a

**FLSA Salary Classification:** Full-time, Exempt, Term-limit

**Last Update of Job Description:** August 2022

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### **Position Summary:**

Implement and oversee research related to the Department of Energy grant, “Linking mycorrhizal network phenology to above- and below-ground plant phenology and environmental factors.” This project leverages observations from an ongoing multi-year project linking above- and belowground phenology among diverse temperate tree species and will incorporate novel data emphasizing mycorrhizal fungal community dynamics, resource allocation, and phenology. The postdoc will be based in the McCormack Lab in the Center for Tree Science at The Morton Arboretum, and will also work closely with the Kennedy Lab in the Plant and Microbial Biology Department at the University of Minnesota and with collaborators at the Oak Ridge National Laboratory. Funding for this position is temporary and is expected to run for 32 months.

### **Essential Functions:**

- Establish and maintain procedures for repeated fungal community sampling in diverse forestry plots at The Morton Arboretum.
- Support ongoing measurements of above- and belowground phenology in forestry plots.
- Extract DNA and characterize soil fungal communities using high-throughput sequencing technologies and bioinformatics.
- Identify changes in the growth, abundance, and composition of mycorrhizal fungal networks across the growing season and their responses to stress, ephemeral soil resources, or transient environmental factors.
- Determine the coordination of mycorrhizal network phenology with whole-plant phenology and ecophysiology.
- Communicate with partners in the Kennedy Lab and at the Oak Ridge National Lab incorporating novel belowground processes into ecosystem and earth system models.
- Assist with data curation and depositing genomic, functional, and trait data.
- Conduct literature research and other independent learning as needed in order to accomplish tasks associated with the project and keep abreast of new scientific advances.
- Prepare and submit scientific articles for publication in peer-reviewed journals, as well as other scientific analyses as required by the partnership.
- Participate in outreach and data sharing efforts to expand the impact of the project.
- Contribute to the Science and Conservation department through collaboration, providing scientific input and guidance, and engaging in departmental activities such as Monday Tree Talks and occasional discussion and planning meetings.
- Other duties as assigned.

**Qualifications:**

PhD degree required in plant or microbial biology, ecosystem ecology, soil science, or ecology with demonstrated expertise in field and lab research. A successful track record as an emerging research scientist including demonstrated communication with academic and professional audiences through publications, presentations and/or other media, and a commitment to conducting relevant and timely research is required. Field experience collecting plant tissues and/or soil samples and maintaining long-term monitoring campaigns is required. Lab experience with DNA extractions, library constructions, sequence analysis and bioinformatics along with other lab analytical skills are highly desirable. Experience in R programming and statistical analyses is beneficial.

**Success Factors:**

Strong analytical abilities. Self-motivated, with the initiative and resourcefulness to implement, evaluate, and report on research projects. Desire to conduct interdisciplinary research with other scientists. Ability to work and communicate with a dispersed team. Ability to write manuscripts for scientific peer-reviewed journals and communicate results to a broad audience. Ability to embrace and align with the organization's employee core values to be inclusive, take ownership, work together, keep learning and make the Arboretum exceptional.

**Physical Demands and Work Environment:** The physical demands and work environment characteristics described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform these essential functions.

- Physical Demands: Requires some physical activity: walking over varied terrain, bending, limited lifting and carrying (up to 30 lbs. assisted). Use of chemicals will be necessary. Ability to wear Personal Protective Equipment required. Some local and regional travel. Some travel nationally and internationally may be required, including visits with project collaborators and conference attendance.
- Work Environment: Office environment, lab environments, Arboretum grounds, and off-site locations. Work is performed indoors and outdoors, in a variety of weather conditions. This position is designated as a hybrid-eligible position, allowing for some work to be performed off premise, during regular hours of work.
- Equipment: General office equipment, field and laboratory equipment, including specialized equipment relating to particular fields of tree, root, and soil research, Arboretum pick-up truck and/or utility vehicle.
- Schedule: Work may require occasional evening and weekend hours.

**Contact:** Questions can be directed to Luke McCormack (lmccormack@mortonarb.org) using the subject line MYCOPHEN POSTDOC.

*Job descriptions are guidelines that attempt to characterize major duties and responsibilities of employees, and are subject to change as needs and programs change. At The Morton Arboretum they are considered neither inclusive nor exclusive. It is expected that up to 20% of job duties may change annually.*