

Graduate Student Positions Investigating Plant-Microbiome Interactions Available in the Afkhami Lab (University of Miami, Miami, FL)

Join us in the Afkhami lab (michelleafkhami.wordpress.com/) at the University of Miami, Florida. We study the ecology, evolution, genomics and conservation of microbiomes and plant-microbial interactions at scales from genes to whole communities/ecosystems. We use a wide range of approaches, including field and greenhouse experiments, surveys, modeling, bioinformatics, and laboratory-based molecular methods and genomics. While our research spans all types of interactions and we are interested in a diversity of systems, we most often study positive species associations in plant-microbial mutualisms (e.g., rhizobia, mycorrhizal fungi, and fungal endophytes) and microbiome-wide interactions. Our research is aimed at understanding the mechanisms underlying how microbiomes and mutualisms of all types affect the broader questions of ecology and evolution as well as applied goals for sustainable agriculture and conservation.

New students will be encouraged to develop their own research interests that expand upon current projects in the lab or start a new line of inquiry about microbiomes or plants-microbial interactions. Students will have access to a diverse set of model organism and natural systems, including Archbold Biological Station (an internationally-renowned field station where we are conducting NSF-funded research -- <https://www.archbold-station.org/>) and the Everglades where we collaborate with state agencies to understand microbial communities in restoration.

Some recent questions people in Afkhami lab have asked include: "How do microbial landscapes impact plant distributions?", "Can mutualism cause range expansions into new habitats?", "What are the consequences of microbial mutualisms for plant and herbivore community diversity?", "How do multispecies mutualisms affect fitness, what is the genomic basis of these effects, and what are the consequences for evolutionary trajectories?", "How can single-cell transcriptomics inform inter-microbial interaction dynamics?", "How does habitat fragmentation and edge effects impact microbial communities and their consequences for plants?", "How does environmental stress impact microbial community stability?", "What is the role of microbiomes in conservation and restoration of local imperiled habitats?", "Can phyllosphere microbiomes ameliorate the stress of sea level rise for foundation species?", and "Can we improve sustainable agriculture through use of natural species interactions?"

SUPPORT~ Students in Afkhami lab receive tuition, stipend, research, and travel support as well as university-provided health benefits (medical, dental, and optical). Financial support comes from a mix of teaching assistantships, fellowships, and departmental and university funding. I also have supplemental funding available from grants and internal funds. Further, all previous graduate students in my lab and I have worked together to successfully obtain fellowships for them (e.g., through National Science Foundation GRFP, USDA NIFA Predoctoral Fellowship Program, McKnight Scholars Program, University of Miami Presidential/Maytag Fellowships, UM-Fairchild Botanical Gardens Fellowships, etc).

HOW TO APPLY~ Interested students should learn more about our lab on our website (michelleafkhami.wordpress.com/) then contact me at michelle.afkhami@miami.edu with "Prospective Graduate Student" as the subject. The email should include the applicant's (1) CV, (2) university transcripts (unofficial is fine), and (3) a short paragraph introducing themselves, their research interests, and experiences. (4) Please also include a sample of

scientific writing if possible. (This may be a published paper, manuscript, past research proposal, undergrad thesis, class paper, etc.)

While applicants may contact me at any time prior to the Dec 1 application deadline, priority will be given to students who email by Oct 14th (and emails prior to Oct 14th are strongly encouraged). The goal is to allow time for us to discuss the program, the lab, and potential projects before applications are due. I will schedule Zoom meetings with top candidates to talk in more detail.

Afkhami lab strives to be a welcoming and inclusive community. I especially encourage candidates that identify as part of groups historically underrepresented or excluded from academia and/or STEM.