The Afkhami lab (michelleafkhami.wordpress.com/) at the University of Miami, Florida studies the ecology, evolution, genomics and conservation of species interactions from a genetic scale to whole communities. We use a wide range of approaches, including field and greenhouse experiments, surveys, modeling, 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.

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 through genomic changes? What does that mean for evolution?”, “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?”, “Can we improve sustainable agriculture through use of natural species interactions?”, and “What is the role of microbiomes in conservation and restoration of local imperiled habitats, such as the Everglades Tree Islands?”

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 plants and microbiomes. Students will have access to a diverse set of model 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.

We study the ecology, evolution, genomics and conservation of plant microbiome interactions. Images left to right are diagram of plant-microbiome interactions (from Afkhani et al Current Opinion in Plant Biology 2020), soil crust microbiome, endangered Florida scrub plant, and prescribed fire treatment from recent experiment (Revillini et al, New Phytologist 2021).
**SUPPORT**~ Students in my lab receive tuition, stipend, research, and travel support. Support comes from a mix of teaching assistantships, fellowships, and departmental and university funding. Support for graduate students and their research at UM is excellent, and I have supplemental funding available from grants and internal funds. Further, all previous graduate students in my lab have successfully obtained fellowship support (e.g., through National Science Foundation GRFPs, McKnight Scholars Program, University of Miami Presidential/Maytag Fellowships, UM-Fairchild Botanical Gardens Fellowships, etc).

*We work in many natural systems*, including the Florida scrub (top), Everglades (bottom), Pine Rocklands, Mangrove Forests, etc.

**HOW TO APPLY**~ Interested students should learn more about our lab at ([michelleafkhami.wordpress.com/](http://michelleafkhami.wordpress.com/)) then contact me at michelle.afkhami@miami.edu with “Prospective 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, undergrad thesis, class paper.)

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 25th. 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.

University of Miami is an Equal Opportunity employer. Afkhami lab strives to be a welcoming and inclusive community. I encourage student applications from groups that have been traditionally underrepresented or excluded from academia.