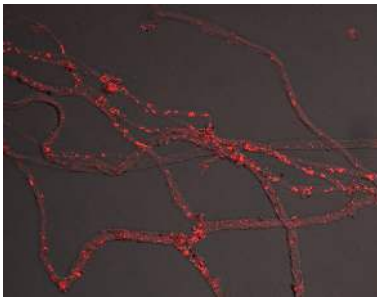
Boyce Thompson Institute, Ithaca, NY



Postdoctoral Position: Arbuscular mycorrhizal fungi – bacteria interactions

Background: Research in our group asks how, at the molecular level, plants, arbuscular mycorrhizal (AM) fungi and bacteria associate to form a nutritionally based symbiosis. AM fungi are mutualistic endosymbionts of plants; their hyphae inhabit both the root cortex and the soil, and within these widely differing environments they interact either with the plant or with complex microbial communities. Profiling studies have revealed that bacterial communities tightly associated with the extraradical hyphae (ERH) are conserved across fungal species and soils (1,2,3). This project will investigate how fungal peptides and bacterial interactions shape the composition of the ERH-associated community, and will explore community functions that impact AM fungi during symbiosis.

Requirements: Applicants must have a PhD in microbiology or fungal biochemistry, a strong publication record, and demonstrated expertise in protein biochemistry, microbial genetics or microbial metabolomics. Experience with microbial community analysis would be advantageous.

To Apply: Applicants should submit a CV, names of three references and a statement of research interests and relevant experience to Maria J. Harrison, (mjh78@cornell.edu).

Project Location: The Boyce Thompson Institute is a non-profit research institute affiliated with Cornell University and located on the Cornell University campus in Ithaca, New York, www.bti.cornell.edu. EOE M/F/D/V

Literature Cited.

(1) Emmett, B.D., Lévesque-Tremblay, V. & Harrison, M.J. Conserved and reproducible bacterial communities associate with extraradical hyphae of arbuscular mycorrhizal fungi. ISME J 15, 2276–2288 (2021). https://doi.org/10.1038/s41396-021-00920-2
(2) Kaminsky et al., in preparation (2026)
(3) Bennion et al., in preparation (2026)

Recent papers from the lab:

Ivanov, S., Müller, L.M., Lefèvre, F.M., and Harrison, M.J. (2026). Yeast two-hybrid-sequencing and bifluorescence complementation resources for assessing protein–protein interactions in arbuscular mycorrhizal roots: CKL2 as a case study. New Phytol. 249, 1592-1604.

Ivanov S, Harrison MJ. (2024). Receptor-associated kinases control the lipid provisioning program in plant-fungal symbiosis. Science 383 (6681): 443-448.

Zhang, S., Jugensen, L. and Harrison, M.J. (2024) Utilizing FRET-based biosensors to measure cellular phosphate levels in mycorrhizal roots of *Brachypodium distachyon.* Bio-protocol, *DOI:10.21769/BioProtoc.5158.*

Ivanov, S, Daniels, DA and Harrison, MJ (2023). A *Medicago truncatula* cell biology resource: Transgenic lines expressing fluorescent protein-based markers of membranes, organelles and subcellular compartments. MPMI, 36:4, 256-259.

Lindsay PL, Ivanov S, Pumplin N, Zhang X, Harrison MJ. (2022). Distinct ankyrin repeat subdomains control VAPYRIN locations and intracellular accommodation functions during arbuscular mycorrhizal symbiosis. Nature Communications 13(1): 5228. https://doi.org/10.1038/s41467-022-32124-3 (Selected for inclusion in the Editors favorites)