

**New Roots for Restoration Biology Integration Institute  
Research Experiences for Undergraduates at Kansas University**



The University of Kansas Department of Ecology and Evolutionary Biology/Kansas Biological Survey is recruiting students to participate in Research Experiences for Undergraduates (REU) opportunity in Summer 2022. The REU opportunities are part of the [New Roots for Restoration Biology Integration Institute](#), a National Science Foundation funded initiative whose overarching focus is how plant organismal systems (plant roots and shoots) relate to one another and how those relationships influence and are influenced by plant communities and the soil ecosphere. REU participants working at the University of Kansas will conduct research (described below), participate in the broader institute through in-person and virtual meetings, and will join a near-peer mentoring scheme in which they work closely with graduate students, postdocs, and professors to achieve research, training, and diversifying goals.

**Location and time frame:** This REU opportunity takes place at the University of Kansas in Lawrence, KS and runs for 10 weeks from May 30 through August 4.

**Eligibility:** Applicants must be enrolled in an undergraduate degree program. Students who have already graduated with a four-year degree are not eligible. Applicants must be U.S. Citizens or permanent residents.

**Benefits:** REU interns receive \$6000 stipend for the program, and food and lodging if needed.

**[APPLY HERE](#)**

Submissions due February 15, 2023 and selections will be made by March 15.

## Description of mentors and projects at KU:

Mentor Dr. Maggie Wagner, Assistant Scientist, Kansas Biological Survey, Assistant Professor, Ecology and Evolutionary Biology. Research in Maggie's lab focuses on how plants' genes shape the composition and function of plant-associated microbiomes. Maggie's lab also investigates how microbial symbionts act as part of the environment to influence their plant host's phenotype, health, and fitness.

Students will conduct experiments to investigate how genetic diversity within a plant species affects the interactions with root-associated microbes. Most projects will focus on Eastern gamagrass (*Tripsacum dactyloides*), a wild perennial relative of corn. Potential projects include comparing the effects of different soil microbiomes on root and shoot characteristics; and measuring the abundance and metabolic activity of microbes colonizing the roots of diverse Eastern gamagrass genotypes.

Mentor Dr. Ben Sikes, Associate Scientist, Kansas Biological Survey, Associate Professor of Ecology and Evolutionary Biology. Research in Ben's lab focuses on fungal community structure, resilience, and function. As part of the New Roots for Restoration BII, we are particularly interested in how different fungal taxa, fungal communities, and soil microbes more generally shape the rooting traits of both perennial agricultural and native plants. In turn, root architectures provide the habitat for fungi and can strongly influence susceptibility to pathogens and potential to host beneficial fungi. Apart from this project, we also explore adaptation and fungal community structure and function under extreme environmental stresses, including fire and, more recently space-like stresses.

Mentor Dr. Jim Bever, Senior Scientist, Kansas Biological Survey, Foundation Distinguished Professor of Ecology and Evolutionary Biology. Research in Jim's lab has found that the interactions of plants and soil organisms have a strong influence on the diversity and productivity of plant communities. Students will work at the intersection of plant roots and the soil microbiome to test the potential interdependencies between plants and soil microbes in determining ecosystem functions. Students will have the option of working on a variety of projects, and we will match the research question to the interests of individual students. The potential projects include tests of the influence of mycorrhizal fungi on plant root architecture, tests of trade-offs of plant root architecture and responsiveness to mycorrhizal fungi, tests of plant soil feedback in prairie plants, and tests of plant preferential allocation to root symbionts.