

Postdoctoral scholar in plant stress response and metabolic evolution

The Yang Lab (www.yangya.org) at the University of Minnesota-Twin Cities is looking to hire a postdoctoral scholar in plant stress physiology and metabolic evolution. The NSF-funded project seeks to understand the evolution of specialized metabolites in the plant order Caryophyllales that includes cacti, pitcher plants, ice plants, and a diverse array of plants with specialized adaptations to warm, dry, high salinity, or alpine habitats. Some have also evolved specialized life forms such as succulence or plant carnivory. Many Caryophyllales species produce unusually large amounts of diverse compounds derived from the amino acid tyrosine. Due to inherent biochemical trade-offs, the production of these tyrosine-derived compounds may come at the expense of other compounds derived from the amino acid phenylalanine, such as anthocyanin (Lopez-Nieves et al., 2018 *New Phytologist* <https://nph.onlinelibrary.wiley.com/doi/full/10.1111/nph.14822>). We will study the balance of the production of these two amino acids and its effect on the production of myriad compounds important in UV shielding, pollination, and herbivore deterrence. The project is in collaboration with Hiroshi Maeda at the University of Wisconsin-Madison (metabolite and enzyme analyses), Stephen Smith at the University of Michigan (evolutionary modeling), and Samuel Brockington at the University of Cambridge, UK (reference genomes, enzyme evolution, transgenics).

We seek candidates with expertise in plant physiology and stress experiments. The postdoctoral scholar will take the lead in carrying out plant stress experiments, collecting tissue samples for RNA-seq and metabolite analyses, and infer genetic modules that underlie metabolite evolution. The Yang Lab will provide training in evolutionary analyses, transcriptomic analysis, phylogenomics, manuscript preparation; guidance in career development; and opportunities for outreach. The postdoc will also have the opportunity to visit collaborating labs in Wisconsin, Michigan, or Cambridge (UK), interact with experts in plant stress response such as Kathleen Greenham at the University of Minnesota, and a network of collaborators with organismal expertise in Caryophyllales. Funding is guaranteed for one year with renewal for a second year following satisfactory performance.

The University of Minnesota has many resources to support plant biology research including state-of-the-art plant growth facilities, the Supercomputing Institute, the University of Minnesota Genomics Center, the Biological Imaging Centers, the University of Minnesota Herbarium, and the College of Biological Sciences Conservatory and the Bell Museum that provide platforms for outreach. The campus is located in the heart of the Minneapolis-St. Paul metropolitan area, which is rich in cultural and natural attractions with extensive parks and trails systems.

Anticipated Division of Time

- % 85 Research: Stress experiments, data analysis, and manuscript preparation
- % 10 Training students and communicating with collaborators
- % 5 Outreach

Essential Qualifications

1. Ph.D. in plant physiology or stress responses.
2. First author publication(s) in peer-reviewed journals.
3. Strong communication skills, both oral and written.

Preferred Qualifications: data analysis in command line interface, gene expression analysis, biochemistry, and phylogenetic analysis.

Please contact Ya Yang yangya@umn.edu if you are interested in the position. In your initial inquiry, please include a copy of your CV, at least two names of reference, and a one-page description of your research experience, interests, and future career goals.