

DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Next generation plant systematics: from poinsettias to cacti and carnivorous plants

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My research focuses on the patterns and drivers of plant diversity at the macroevolutionary scale. I first present my dissertation work on the systematics of *Euphorbia* subgenus *Chamaesyce*, which covers over 600 of the 2000 species in this giant genus. Using comprehensive sampling and phylogenetics, I elucidated the origin of groups like the poinsettias as well as the remarkable radiation of the C₄ Chamaesyce lineage. I then present my postdoctoral work developing transcriptome sequencing as a tool for functional phylogenomic studies in plants. I apply my newly developed methods to the Caryophyllales, which includes cacti, many of the carnivorous plants, and is particularly diverse in arid and saline habitats. Using samples collected from the field and botanical gardens, supplemented by publically available data, I assembled a data set of transcriptomes from over 200 species across the Caryophyllales, targeting key lineages and/or key adaptive transitions. Each of these transcriptomes contains ~15,000 protein coding genes. By analyzing homolog tree topologies, I found a minimum of 20 paleopolyploidy events within the Caryophyllales and have identified gene duplication events that are associated with various adaptive changes. My work combines phylogenomics, computational biology, and field- and collection-based plant systematics, and is highly collaborative and interdisciplinary in scope.

RESEARCH TALK

Thursday January 28 – 3:20 – 4:20 PM

Room 27 Alumni Memorial Bldg

