

Friday, October 9, 10:55-11:45 a.m.

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Exceptions to the rule: A remarkable plant radiation and drivers of evolution in an ultra-arid desert

Wet tropical and Mediterranean climate regions generally host the highest levels of plant species diversity in the world, whereas deserts – both hot and cold – often have strikingly low diversity, particularly within genera. One extraordinary exception to this pattern is a plant lineage in the nascent stages of an evolutionary radiation (< 1 million years old) in Namibia, the driest country in the Southern Hemisphere, and adjacent Angola. This lineage, *Petalidium*, is among the most diverse and abundant constituents of the remarkable ‘Kaokoveld’ region of northern Namibia and southern Angola and serves as a major source of fodder for the herbivorous megafauna. For several years, I have been implementing a comprehensive and integrative approach to understanding diversification and adaptation of these plants in this geographically narrow and ecologically extreme environment. The workflow relies on the generation and interpretation of data from numerous sources including plant morphology, anatomy, genetics, cytology, reproductive biology, and ecogeography, to evaluate drivers of speciation (geographic isolation vs. environmental niche and/or pollination system divergence) and to build *Petalidium* as a model system for studying ecology, microevolution, macroevolution, and speciation in ultra-arid environments.