

Research Statement

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My desire is gaining insights into major trends in plant evolution studies such as the use of genetic information as powerful approach of providing answers to many evolutionary questions. The genetic data facilitates examine the molecular evolution of genes underlying traits that have been selected upon during domestication, and the evolution of crop wild relatives. Therefore, I would like the use of field experiments, genome sequence data and computer programming to investigate the evolutionary history and mechanism of generation of diversity of crops. From that I am eager to understand the genetic basis of the evolution of diverse forms and functions of a crop plant group and to develop mechanisms to improve economically important traits.

The beginning

My research career spans more than four years, which is a productive and effective one as far as the outcome is concerned. *Rhinacanthus* (Acanthaceae) which contained a morphologically variant plant than the existing species was my choice for the undergraduate research. I contributed it by field research, herbarium work, Geo Informatics System application, data analysis and peer reviewed publications. Later on my MS research provided me an opportunity to enrich my experience by molecular techniques of plants by studying *Plectranthus* (Lamiaceae) to develop DNA barcodes and chemical profiles.

Current research

Now I am a PhD candidate in the Dr. Nico Cellinese lab in the Florida Museum of Natural History, University of Florida. I am broadly interested in systematics, biogeography and evolutionary biology of plants. The research work that I am currently conducting towards my PhD gives me the perfect opportunity to combine all of my main research interests into one project. Currently, I study systematics, niche and biogeography of a paleotropical *Memecylon* (Melastomataceae). A large part of my research is focused on *Memecylon* that exists in Sri Lanka, India, South Africa and Papua New Guinea.

In the current research project, we focus on the molecular phylogeny of *Memecylon* in a genus-wide context. In addition, we aim to investigate morphology, anatomy and niche in *Memecylon* and reconstruct morphological, geographic and niche evolution. We also intend to explore the drivers of diversification of *Memecylon* in different floristic regions.

Over the long term, my goal is to focus on new roles of genetic data of plants in evolutionary perspectives, and application of systematics and evolution in plants of economic significance. Further, I look forward to better optimizing current techniques that improve the resolution of plant life and addressing the problems in understanding the creation and maintenance of the diversity of crops, their species-specific adaptations and their changes in the face of climate

changes. Such findings will be constructive to crop improvement contributing to the solution of the world hunger. Therefore, I intend to produce important research findings collaborating systematics and evolution in plants of economical interest for their development considering both the local and global requirement.