In January 1999, the solid academic and research relationships between Fairchild Tropical Garden (FTG) and Florida International University (FIU) took a new and exciting direction with the establishment of the joint Plant Molecular Systematics and Conservation Genetics Laboratory at the Fairchild Research Center. We are very proud of the results this venture has produced in the four years of its existence. Our priorities are plant molecular systematics, biogeography and conservation genetics. Our baseline studies focus on the extraordinary living collections of the Garden (especially the palms and cycads), species from South Florida and the Antilles, and plants restricted to isolated tropical/subtropical volcanic islands. We also work on other plant families such as Asteraceae, Mysineaceae, and Poaceae (Bambusoideae) in conservation, evolutionary and taxonomic studies.

In the last four years, two post-doctoral fellows and six graduate students have conducted research in the laboratory. Our first post-doctoral fellow, Dr. David Bogler, was funded by the Tropical Biology Program of FIU. During his two year tenure, David not only helped to set up the lab, but also conducted research on cycads and Agavaceae/Nolinaceae systematics, and the genetic variation of endangered species from South Florida and the Antilles.

Our second post-doctoral researcher, Dr. Carl E. Lewis, was funded by the Garden to carry out studies on the classification of the palm tribe Borassaeae and how to use molecular evidence to understand tribe members' origin, distribution, and diversification. Carl is now the Garden's Richard H. Simons Senior Curator, and is a key person in the lab. He is taking the lead on conservation genetics and systematic studies of palms, working with Palm Curator Katherine Maidman and Palm Biologist Scott Zona. In close collaboration with graduate and undergraduate students, Carl uses molecular markers to assess the levels of inter-specific hybridization of the living collections of palms from the Garden. This is a model project which demonstrates the usefulness of this innovative technology for everyday management of the collections.

Our students have also been very productive. Nicole Andrus, who finished her master's degree last fall, examined the origin and evolution of Darwiniothamnus, a genus of sunflowers restricted to the Galapagos Islands. Nicole is pursuing a doctoral degree at the University of New Mexico, where she plans to continue her research on the plants of the Galapagos.

Jennifer Trusty, a doctoral student supported by a STAR fellowship from the U.S. Environmental Protection Agency, is doing a Ph.D. project on the flora of the Islas del Coco in Costa Rica (see pages 6 - 7).

Hannah Thornton is the first student of the lab to be supported by a research assistantship provided by the Garden. She is doing conservation genetics and phylogenetic studies of Jacquemontia reclinata, a morning glory restricted to the sand dunes of southeastern Florida. Her master's degree project has been funded by a grant awarded to the Garden by the U.S. Fish and Wildlife Service. Hannah's results will have important consequences for the management of this endangered species. They will also identify its closest taxonomic relatives.

Julissa Roncall, a Ph.D. student working on the molecular systematics of Geonoma and its close relatives, is conducting her lab work under the supervision of Dr. Lewis. This group of palms is restricted to the Neotropics, with many species that are found only in the rain forests of South America. Her results have been of great importance, as they have demonstrated that new genes can be used to elucidate relationships within the palm family. Julissa's major advisor is Professor David Lee, Ph.D., who frequently teaches FIU courses at the Garden, and who has strong research ties with Dr. Jack B. Fisher, Senior Research Scientist at Fairchild.

Master's degree student Jimi Sadle is doing phylogenetic studies of Toluminia, an orchid genus restricted to the Caribbean.

In conjunction with the Plant Molecular Systematic Laboratory of Dr. Alan Meerow (USDA at the Chapman Field Station), Jeremy Moynihan is conducting a phylogenetic and conservation genetic study of Dioon, a cycad genus from Mexico and Honduras. Jeremy's doctoral research is also supported by a STAR fellowship from the U.S. Environmental Protection Agency. He is the most recent student to join our lab.

The plant molecular lab has been active in seeking extramural funds to conduct research and educational projects. The National Science Foundation has awarded a grant to develop a program to mentor FIU undergraduate students in the field of environmental biology (UEMB program). Andrew Davis, one of the UEMB students, is among our newest lab members. He is doing research on the conservation genetics of palms. Adrianna Muir, a member of our conservation biology team, recently started to use molecular markers to understand certain aspects of the biology of endangered species.

In addition, we have been granted extramural funds from the U.S. Fish and Wildlife Service, the U.S. National Park Service, and the Florida Department of Agriculture and Consumer Services. Funds from these agencies have supported much of our research on endangered species of South Florida.

What are the future goals of the FIU/FTG molecular laboratory? Our first mandate is to study the extraordinary plant collections of Fairchild Tropical Garden. The second is to contribute to the conservation and characterization of plant biodiversity from the Neotropical region, particularly from the Caribbean Basin. The molecular laboratory plays an advisory role to the Garden's researchers and horticulturists and to graduate and undergraduate education programs. We are developing research and educational projects with botanists from institutions located in at least seven countries in the Caribbean region. In addition, our laboratory has close ties with botanists from several national and international research and conservation institutions. We anticipate that the synergy developed by these regional, national and international collaborations will play a very important role in the directions of the molecular laboratory.

As both this collaboration and the student body grow, we have confidence that a planned expansion of the Fairchild Research Center will also mark the beginning of a new era for the molecular laboratory. A new research annex will increase our capacity to conduct additional studies and collaborations and will bring a new dimension to the type of projects that can be developed in our laboratory. We look forward to an ever-growing institutional friendship and to continued botanical collaborations between the Garden and FIU.

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