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Panel 1. Plant Breeding and Genetics Panelist Biographies

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Mary Lu Arpaia joined the Dept. of Botany and Plant Sciences as an Extension Subtropical Horticulturist in 1983. She has worked on varied avocado projects since that time. She currently heads the avocado scion breeding program and also has projects dealing with avocado phenology and postharvest management strategies.

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Thomas Chao is an Assistant Subtropical Crops Extension Specialist and Assistant Horticulturist. My interests in avocado research include breeding, genetics, horticulture, host-parasite interactions, pathology, orchard management, and sustainable agriculture. My current avocado research focus is on the host-parasite interactions between avocado rootstocks and *Phytophthora* root rot.

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Robert J. Knight, Jr. worked for the Agricultural Research Service, US Dept. of Agriculture in Miami, Florida and elsewhere from April 1958 to March 1994. He currently holds the title of Courtesy Professor/Breeder at the University of Florida, Homestead. He has made plant explorations in Malaysia, Mexico, Guatemala, Thailand, Brazil, Argentina, Paraguay and Peru. He introduced 'Fwangtung' and 'Arkin' carambolas to the USA as well as a group of Thai mango cultivars new to this hemisphere. Also introduced *Torenia fournieri* germplasm that was used to develop 'Clown Mixed' (All America Selection, 1989) and other cultivars with pink shades new in this annual bedding plant. Led an expedition to Borneo in 1990 that collected 17 uncommon species of *Mangifera*, (the genus to which the common mango belongs) and also numerous other tropical fruit crops for clonal repositories in Florida, Hawaii and Puerto Rico. Discovered partial loss of self-incompatibility in *Averrhoa carambola*, which makes fruit production possible in block plantings. Selected cold-tolerant avocados with enhanced fruit quality. Developed a fertile cold tolerant passion fruit hybrid through crossing *Passiflora edulis* with *P. incarnata*, and also the ornamental hybrid *Passiflora* 'Incense' (*P. incarnata* x *P. cincinnata*). Currently works for cold tolerance, dwarfness, self-fruitfulness, fruit quality and disease resistance in passion fruit, enhanced fruit quality and resistance to packing and transport stress in carambola, and warm climate production of raspberries.

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My research interests include the use of biotechnology for improving tropical and subtropical fruit crops. Over several years, I have worked with papaya, mango, longan and lychee. For the past 6 years, the avocado has been the main focus of our activities. We are attempting to develop a new generation of avocado rootstocks that have high levels of resistance to Phytophthora root rot (PRR). We hope to achieve this through two different approaches: 1) somatic hybridization or forced hybridization between avocado and the incompatible PRR resistant *Persea* species; 2) genetic transformation of existing rootstocks with genes for pathogenesis-related proteins. In addition, we have begun to induce mutations in avocado embryogenic cultures, and will attempt to select cell lines that are resistant to the phytotoxins produced by *Phytophthora cinnamomi*. We are also attempting to control avocado fruit ripening through genetic transformation. There are 2 graduate students, 1 post-doctoral fellow and 2 visiting scientists in this avocado research program.