適応放散したハワイの陸上植物の遺伝的多様性

Session 2: Biodiversity in molecular scales

Genetic biodiversity within species radiations of the terrestrial Hawaiian flora

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The Hawaiian archipelago is among the most remote in the world, and the flora of these islands the most endemic. The native fern flora (161 species) is 74% endemic and the angiosperm flora (ca. 1000 species) is 90% endemic. Although fern groups have not formed extensive species radiations, radiations in angiosperm genera are well known with eight genera having 20 or more species currently recognized. Genetic biodiversity, the level of genetic diversity within species, is not as extensive as morphological diversification would suggest nor as extensive as found in continental counterparts. However, enough variation exists with some genes to identify species relationships. The internally transcribe spacer (ITS) of the ribosomal RNA cistron has been the most commonly used gene for both determination of biogeographic relations to non-Hawaiian relatives and for examination of species relations within Hawaii. Evolutionary rates of chloroplast genes are generally not as robust for examining species relationships. A number of species from various families have also been examined for intra- and inter-population level variation. It is apparent that variation within and among populations is dependent upon 1) the breeding systems of the species involved, 2) seed dispersability, and 3) length of time since the ancestral species colonized the islands. Typically, although not always, endangered plant populations have reduced levels of variation as compared to non-endangered species.