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Phylogenetic inferences using molecular and morphological characters in Mutisieae (Asteraceae).

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The Asteraceae is one of the most successful families of flowering plants, consisting of three subfamilies and 17 (20) tribes with approximately 1500 genera and 25000 species. The circumscription and relationships at the subfamilial and tribal levels have been enhanced by the recognition of several major clades (Cabrera, 1975; Jansen et al., 1990; Karis et al., 1992; Bremer, 1994; Kim and Jansen, 1995).

The monophyly of Barnadesioideae and Asteroideae was supported by recent phylogenetic studies using morphological (Bremer, 1987) and molecular (Jansen and Palmer, 1987; Kim et al., 1992, Kim and Jansen, 1995) approaches, whereas the monophyly of the Cichorioideae was questioned and retained as a provisional unit.

The tribe Mutisieae, one of basal lineages of the family, is a morphologically and biogeographically heterogeneous assemblage, consisting of approximately 84 genera and 900 species. Resolution of relationships among genera and its sister relationships with other tribes of Cichorioideae is critical for understanding the origin and early evolution of the family. A molecular marker (ndhF gene) from the chloroplast genome was utilized for 110 species across all tribes in the family to produce a phylogeny, which provided an understanding of the pattern of early diversification of the family.

Morphological studies have also been conducted, focusing on the floral characters. Based on morphological and molecular data, some taxa are repositioned, and previous hypotheses of ancestral areas (Bremer, 1993) were not supported.

These results have implications regarding; 1) the necessity of the recognition of new independent clades within Cichorioideae, 2) reconsideration of ancestral area cladograms and 3) character evolution of the Asteraceae. The presentation will discuss the circumscription and relationships of the Mutisieae and its systematic implications, geographic origin and ancestral morphology of the Asteraceae.