

## **Tribal conflict and consensus: using DNA data to investigate traditional classifications in the Cactaceae.**

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Members of the Tribe Cactaceae typically are globose to short columnar cacti native to North America. Taxonomic relationships within the tribe are complex and generic delimitations are not fully understood. For example, in the 2006 *New Cactus Lexicon*, Hunt lists 25 genera, but at least 40 other genera have been described. Ongoing research by Butterworth and Porter utilizes sequence data from the chloroplast rpl16 intron and trnL-F IGS for over 160 taxa, but with complete data coverage so far for 88. Initial results indicate that tuberculate stem morphology has arisen multiple times in the tribe, while the presence of dimorphic areoles occurs in two lineages – the “Mammilloid Clade” and *Ariocarpus*. A more detailed study of *Ariocarpus* using chloroplast as well as the nuclear TPI intron shows remarkably low levels of sequence divergence within the genus. Other results suggest that the splitting of the genus *Pediocactus* into multiple genera may be unwarranted. *Sclerocactus* (*sensu* Hunt, 2006) is polyphyletic due to the inclusion of *Glandulicactus* within a broadly circumscribed *Sclerocactus*. Finally, a number of reasons (morphology, neoteny, etc.) are given that may give clues regarding why the Cactaceae is taxonomically confusing.