

More on the phylogeny and evolution of *Echinopsis* s.l.

Boris O. Schlumpberger

Systematische Botanik, Universität München, Menzinger Strasse 67, D-80638 München, Germany

schlumpberger@lrz.uni-muenchen.de

As currently circumscribed, the genus *Echinopsis* is among the largest genera of Cactaceae, and is likely the genus with the highest morphological diversity in the family. A densely sampled molecular phylogeny based on chloroplast markers is presented, including all type species of genera that were merged with *Echinopsis*. Further, all genera of the tribe Trichocereae and members of the BCT clade are represented, in most cases by their type species. The data suggest that floral characters and growth forms are not associated with deep phylogenetic splits, indicating convergent evolution of several traits often used in taxonomy. Thus, *Echinopsis* as a whole is polyphyletic, as are *Echinopsis* s.str., *Trichocereus* and *Lobivia*. However, the results are supported by some previously published morphological data, such as seed structure. The presented results further give new insight in the relationships in the Trichocereae, indicating the need for restructuring certain genera.