

# Codonoblepharonteeae, a new major lineage among Orthotrichoideae (Orthotrichaceae, Bryophyta)



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Orthotrichoideae aggregates epiphytic mosses widespread throughout temperate regions and high tropical mountains of the world. Recently, important advances have been made in elucidating its phylogenetic relationships and evolutionary patterns. Fourteen genera are currently recognized within the subfamily, which are spread over two main tribes: Orthotricheae, comprising Orthotrichinae and Lewinskyinae, and Zygodonteeae. Despite the progress, some groups have received little attention, as is the case of genus *Codonoblepharon*. Recent studies have suggested that this genus may represent a separate lineage from Zygodonteeae, in which it traditionally has been considered. However, none of the studies were conclusive as they did not include a representative sampling of the *Codonoblepharon* species.



This work aims to evaluate the taxonomic position of *Codonoblepharon* and its phylogenetic relationships within Orthotrichoideae. For this purpose, we present an updated phylogenetic tree based on four different loci, one belonging to the nuclear genome (*ITS2*) and the rest to the plastid genome (*rps4*, *trnG* and *trnL-F*). The phylogenetic reconstruction recovers all samples of *Codonoblepharon* in a monophyletic group, sister to the rest of the subfamily, constituting a lineage independent of the two currently recognized tribes. For this reason, we propose the new tribe Codonoblepharonteeae to accommodate *Codonoblepharon*.