

The genus *Tolypella* is considered the basal-most characean genus according to modern molecular phylogenies. Its fossil record, however, provides contradictory evidence since fossil *Tolypella* section *Tolypella* has its first fossil occurrence in the Late Cretaceous, about the same time as the first occurrences of other genera of living characeans, i.e. *Chara*, *Lamprothamnium*, *Nitellopsis* and *Lychnothamnus* which are considered more derived. In this study, the first occurrence of *Tolypella* sp. aff. *T. grambastii* subsp. *arctica* (*Tolypella* section *Tolypella*) is now documented from a lacustrine bed, in the Lower Cretaceous of the Garraf Massif (Catalonia, Spain), ca. 125.0 Ma old. This indicates that *Tolypella* s.s. is indeed a very old genus and that its first fossil record should be extended back at least 55 million years. The first appearance of living Characeae in the fossil record correlates well with the topology of molecular phylogenies. The basal genera *Tolypella*, *Nitella* and the ancestors of the extant Chareae represent the first radiation of the characeans during Late Jurassic–Early Cretaceous. The oldest representative of the clade of *Tolypella* in the fossil record, belonging to *Tolypella* section *Rothia*, suggests that the divergence of *Tolypella* is at least of Kimmeridgian age (157.3–152.1 Ma). The splitting of *Nitella* and the Chareae is dated as Oxfordian in age (163.5–157.3 Ma). The extant representatives of the crown group (*Chara*, *Lamprothamnium*, *Nitellopsis* and *Lychnothamnus*) thus represent the remnants of the second radiation of the Characeae during the Upper Cretaceous, at least 83.6–72.1 Ma ago.

