

The Jurassic/Cretaceous boundary and phyletic analysis of radiolarian *Loopus-Pseudodictyomitra* lineage

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The Global Boundary Stratotype Section and Point (GSSP) of the Jurassic/ Cretaceous boundary (JKB) is the last among the GSSPs in the Phanerozoic. It is defined as the base of the Berriasian Stage. The formal definition was decided in 2016 to use the base of the *Calpionella alpina* Subzone as the primary marker by the Berriasian Working Group in the International Subcommission on Cretaceous Stratigraphy. The definition is satisfactorily applicable for shallow marine deposits within the western Tethys, north Atlantic and central-south America. Unfortunately, the primary marker taxon cannot be found in the Pacific and circum-Pacific regions since the distribution of *Calpionella* is limited to the western Tethys, north Atlantic and central-south America. To determine the base of the Berriasian outside of these regions, alternative markers are needed.

Radiolarians are good candidates for defining the JKB because they are wide spread and can be found both shallow and deep sedimentary facies. Pelagic sequences across the JKB have been reported in ODP/IODP sites not only in the western Pacific but also in land sections in Japan, the Philippines, southern Tibet, Iran and others. Evolutionary lineages of several radiolarian taxa across the JKB are reviewed and suitable bioevents, which are approximate to the JKB, are presented. These lineages include the radiolarian genera: *Archaeodictyomitra*, *Cinguloturris*, *Complexapora*, *Eucyrtidiellum*, *Hemicryptocapsa*, *Hsuum*, *Loopus*, *Mirifusus*, *Neorelumbra*, *Pantanellium*, *Podocapsa*, *Pseudodictyomitra*, *Ristola*, *Tethysetta*, *Thanarla*, and *Vallupus*.

A radiolarian zonal scheme was proposed for the entire Jurassic and lower Cretaceous in the western Pacific and Japan. In defining zones evolutionary first appearance biohorizons (EFABs) are selected as much as possible. The JKB is located within the *Pseudodictyomitra carpatica* Zone, of which base is defined by the EFAB of *Pseudodictyomitra carpatica* and of which top is defined the EFAB of *Cecrops sepiatoratus*. Our current research revealed that one of the most important lineages for defining the JKB is the *Loopus-Pseudodictyomitra* lineage. Detailed morphological analysis of *Loopus* and *Pseudodictyomitra* species is presented and the relationship between the JKB and the lineage is discussed.

Keywords: Jurassic/Cretaceous boundary, GSSP, radiolarian lineage