

## Morphological and ecological characters of two cryptic genetic types in the radiolarian *Spongotrochus glacialis*.

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The discovery of cryptic species often helps in grasping the true diversity and detailed ecological preferences of pelagic planktons. Radiolarians are a good environmental proxy for paleontology because of their worldwide oceanic distribution and the good preservation of their shells. However, cryptic species have not yet been recognized in this planktonic protist group. In the present study, we focused on the morphospecies *Spongotrochus glacialis* with specimens collected from different layers in the Equatorial-Subtropical Pacific. A molecular phylogeny based on the internal transcribed spacer of rDNA (ITS-rDNA) sequences recovered two clades of cryptic species (types I and II) from this single morphospecies. These two distinct types were separately distributed, either in the oligotrophic surface water (type I) or below the chlorophyll maximum layer (type II). Moreover, the types showed morphological differences in the shells. Our morphometric analyses established lengths of spines as a morphological criterion to distinguish between the two types: type I with longer spines and type II with shorter spines. The length of spines is apparently associated with the habitat of each type. Type I with longer spines could be suitable for extending flagella and floating on the surface, whereas type II with shorter spines are appropriate to protrude only short flagella and dwell in deep water. Such morphological and ecological features at the cryptic species level of Radiolaria could provide new proxies for paleoceanographic studies.

Keywords: Radiolaria, cryptic species, ITS rDNA, morphometric