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Cai et al. Two freshwater *Frontonia* species

Morphology and systematics of two freshwater *Frontonia* species (Ciliophora, Peniculida) from northeastern China, with comparisons among the freshwater *Frontonia* spp.

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Abstract

The morphology and infraciliature of two *Frontonia* species, *F. shii* spec. nov. and *F. paramagna* Chen et al., 2014, isolated from a freshwater pond in northeastern China, were investigated using living observation and silver staining methods. *Frontonia shii* spec. nov. is recognized by the combination of the following characters: freshwater *Frontonia*, size in vivo about 220–350 × 130–250 μm, elliptical in outline; 128 to 142 somatic kineties; three or four vestibular kineties, six or seven postoral kineties; peniculi 1–3 each with four kineties; single contractile vacuole with about 10 collecting canals. The improved diagnosis for *F. paramagna* is based on the current and previous reports. Comparisons among freshwater *Frontonia* are also provided. The small subunit ribosomal rRNA gene (SSU rDNA) sequences of the two species are characterized and phylogenetic analyses based on these sequences show that both species fall into the core clade of the genus *Frontonia*, and this genus is not monophyletic.

***Keywords*:** Freshwater; *Frontonia*; *Frontonia shii* spec. nov.; phylogeny; SSU rDNA

Introduction