

3D Interactive Microanatomy of *Omalogyra atomus* (Philippi, 1841) (Gastropoda, Heterobranchia, Omalogyridae)

NATALIE BAEUMLER, GERHARD HASZPRUNAR & BERNHARD RUTHENSTEINER

Abstract

Omalogyridae are minute gastropods with a shell diameter usually less than one millimeter and have a worldwide distribution. A reinvestigation of the type species, *Omalogyra atomus* (Philippi, 1841), should help to unravel the systematic affinities of this family. Furthermore, direct comparisons of previous and the present results enable the evaluation of the advantages of the innovative methods applied – “semithin” serial sectioning and computer-aided 3D reconstruction. Our data provide substantial new information and show that the resolution of methods used for previous studies was insufficient. The methods applied herein provide more detailed and accurate results and in combination with interactive 3D illustrations in the electronic publication version offer many novel options for exploration of the results by the reader.

The highly glandular nature of the foot and the mantle cavity, the complete lack of a gill being functionally replaced by prominent, dorsal and ventral ciliary tracts on the right side of the mantle cavity, the relative simplicity of the gut and the high complexity of the hermaphrodite reproductive system adapted for internal fertilization but lacking a copulatory verge are the most outstanding features of the snail’s anatomy.

Most characteristics reflect affinities with basal heterobranchs, such as Rissoellidae and Pyramidellidae, of *O. atomus* and thus of Omalogyridae, while a closer relationship with Architectonicoidea appears less likely. Only a few features, *e.g.*, the lack of any respiratory structure, can be ascribed functionally to the extreme smallness of the animals. Some characters, such as the modification of the cephalic tentacles into small lobes, remain to be understood.

Key words: *Omalogyra*, 3D interactive microanatomy, phylogeny