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Early ontogeny of Jurassic bakevelliids and their bearing on bivalve evolution

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Larval and earliest postlarval shells of Jurassic Bakevelliidae are described for the first time and some complementary data are given concerning larval shells of oysters and pinnids. Two new larval shell characters, a posterodorsal outlet and shell septum are described. The outlet is homologous to the posterodorsal notch of oysters and posterodorsal ridge of arcoids. It probably reflects the presence of the soft anatomical character post-anal tuft, which, among Pteriomorphia, was only known from oysters. A shell septum was so far only known from Cassianellidae, Lithiotidae, and the bakevelliid *Kobayashites*. A review of early ontogenetic shell characters strongly suggests a basal dichotomy within the Pteriomorphia separating taxa with opisthogyrate larval shells, such as most (or all?) Praecardioida, Pinnoida, Pterioida (Bakevelliidae, Cassianellidae, all living Pterioidea), and Ostreoida from all other groups. The Pinnidae appear to be closely related to the Pterioida, and the Bakevelliidae belong to the stem line of the Cassianellidae, Lithiotidae, Pterioidea, and Ostreoidea. The latter two superfamilies comprise a well constrained clade. These interpretations are consistent with recent phylogenetic hypotheses based on palaeontological and genetic (18S and 28S mtDNA) data. A more detailed phylogeny is hampered by the fact that many larval shell characters are rather ancient plesiomorphies.

Key words: Bivalvia, Pteriomorphia, Bakevelliidae, larval shell, ontogeny, phylogeny.

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