

The biology and evolutionary significance of Devonian volvocaceans and their Precambrian relatives.

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An account of biological and evolutionary aspects of the Devonian microfossil *Eovolvox* Kaźmierczak and the related Precambrian *Eosphaera* Barghoorn is presented. New data are included confirming the volvocacean affinity of both microorganisms along with an interpretation of reproductive cycle in the Devonian *Eovolvox*. A critical review of other volvocalean-like microfossils is also provided. Evolutionary trends in coenobial/colonial Volvocales are discussed. Comparative features of *Eovolvox* and *Eosphaera* are summarized and comments are made to the problem of the oldest eukaryotes. The significance of *Eosphaera*-like protovolvocaceans as real phyletic archetypes for early metazoans is disputed.

Key words: Volvocaceae (Phytomonadina), morphology, evolution, Devonian, Precambrian.

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