

## The morphology and fine structure of the Ordovician *Cephalodiscus*-like genus *Melanostrophus*

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The holotype and a new specimen from the type locality, as well as a few new specimens of *Melanostrophus fokini* Öpik, 1930, an enigmatic invertebrate from the Ordovician of the Baltic region, have been examined using combined LM, SEM and TEM techniques. This form is reinterpreted as a ?cephalodiscid hemichordate. Its skeleton or coenecium is an encrusting assemblage of uniform zooidal tubes, forming a circular or subcircular palisade-like structure. The zooidal tubes are long (up to 50 mm) and slender, similar to zooidal tubes of the extant pterobranch hemichordate *Cephalodiscus* (*Orthoecus*). The fine structure of the skeleton wall is similar to that in graptolites and four components have been recognized within periderm: (i) thick, outer cortical layer, (ii) very thin fusellar layer, constructed of annular growth bands, with their oblique sutures arranged randomly, resembling the fusellar layer of some pterobranchs and primitive graptolites, (iii) inner cortical layer, and (iv) thin, enamel-like inner lining. The periderm is abundantly perforated by pits and holes of different diameters; some of them were probably caused by saprophytic or parasitic borers, but the largest ones (up to 100 µm) are probably primary and mark a tube bifurcation. It is concluded that cortex formation is not a synapomorphy for graptolites.

**Key words:** Hemichordata, Pterobranchia, Cephalodiscus, Melanostrophus, ultrastructure, Ordovician, Estonia, erratic boulders.

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