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The fine structure of zooidal tubes in Sabelliditida and Pogonophora with reference to their affinity

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Organic tubes of Sabelliditidae are a characteristic element of Lower Cambrian faunas. They were commonly compared with tubes of sedentary polychaetes, until Sokolov (1965) suggested their close affinity with Recent pogonophores. The aim of the present paper is to verify the latter hypothesis through a better understanding of ultrastructural features of zooidal tubes in both groups considered. The ultrastructure of the tube in Sabelliditida recognized for the first time by Urbanek, 1976 (in press), reveals that the wall of the tube is composed of two almost homogenous layers - the outer one and the inner one, and of the middle distinctly laminar layer. Characteristic wrinkles on the outer surface of the tube are made solely of the outer layer which is almost homogenous or with faint traces of some lammiation. The tubes in all Pogonophora under study display an entirely laminar structure. Wrinkles observed on certain areas of the tube are due to foldings involving numerous layers of the tube wall. Earlier biochemical and ultrastructural data and results of our ultrahistochemical observations are indicative of the presence of chitin, proteins (probably sclerotins) and mucopolysaccharides in the pogonophore tubes. The above results contribute to a better knowledge of the organic skeleton in both groups in question, but the problem of sabelliditid/pogonophore affinities remains unresolved. The degree and specificity of resemblance recognized at the submicroscopic level is not sufficient to confirm or disprove the hypothesis on close relationship between both groups considered.