

**Deutsche
Zoologische
Gesellschaft**



100th Annual Meeting

September 21-24, 2007



Abstracts

The Coelomic Origin and Phylogenetic Affinities of the Phoronida

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The Phoronida comprises a taxon of 11 exclusively marine species. The pelagic phoronid larva is planktotrophic and has a distinct epi- and hyposphere and numerous tentacles. In contrast to the remaining phoronids, *Phoronis ovalis* Wright, 1856 has a lecithotrophic, slug-like larva that ones hatched from the parental tube, crawls on the substrate using a distinct ventral rim surrounding the mouth pore. No tentacles or body regions are developed. In order to find shared characters of this larva and the lecithotrophic larvae of Brachiopoda, the *P. ovalis* larva was studied ultrastructurally in terms of coelomogenesis and mesoderm differentiation. Prior to gastrulation the first mesodermal cells delaminate from the vegetal ectoderm of the blastula into the blastocoelic space. After gastrulation a compact strand of mesodermal cells forms that surrounds the archenteron. Later, the strand becomes divided into two parts, an anterior and a smaller posterior one. Both compartments become double layered and the coelomic cavities are formed by fluid accumulation. According to our cladistic analyses *P. ovalis* is the sister taxon to the remaining Phoronida. Among Brachiopoda the Craniida have a lecithotrophic larva, in contrast to the larvae of the remaining articulate brachiopods. Distinct correspondences in the formation of the coelom in the craniid larva and the *P. ovalis* larva indicate that a lecithotrophic larva represents the primary type of larva in Phoronida and Brachiopoda.

Sipuncula are annelids: EST analyses strongly support an ingroup relationship

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Sipuncula are marine unsegmented worms of about 160 species with known fossilized taxa from the Cambrian. Due to their unique body plan, among other features an introvert and a trunk they are usually regarded as a phylum. Whereas their monophyly is well supported by morphological and molecular data, their phylogenetic position within Metazoa has a long and controversial debate focussing on molluscs or annelids as potential sistergroup. Molecular analyses detect Lophotrochozoa as a monophyletic group including Sipuncula. Furthermore, multi gene analyses corroborate annelid affinities (see Struck et al. 2007). However, it remained unresolved whether Sipuncula are sister to Annelida or represent an annelid subtaxon. For the molecular studies presented here, we used data extracted from 2,000 expressed sequence tags (EST) of *Sipunculus nudus* (Sipuncula), *Arenicola marina* and *Eurythoe complanata* (Annelida). These analyses, comprising 79 ribosomal proteins, reveal robust support for the annelid clade including Sipuncula, which are nested within polychaetes. Thus, it seems most likely that Sipuncula evolved from a segmented ancestor and lost segmentation secondarily.