

Paper Number: 744

## ***Eopriapulites sphinx* from the Early Cambrian of South China**

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The largest group of the animal — Ecdysozoa, are most have been identified in the Chengjiang fossil Lagerstätte of Early Cambrian. Arthropoda, Lobopodia, and scalidophoran is the three major categories of Cambrian Ecdysozoa, and Arthropoda is the largest class of them (The fossils account for about 80% of all the animals). Among them, Trilobitomorpha, Chelicerata and Crustacea were found in the Cambrian, especially the trilobites. As a kind of extinct species, the Lobopodia has 18 genera and 20 species in the world, and the research progress of its morphology, ecology and evolution are rapid.

Priapulid has survived for more than 50Ma years, is a real "living fossil". Priapulid belongs to scalidophoran and is located in the Cycloneuralia branch of the Ecdysozoa. Priapulid is extremely prosperous in the Cambrian period, the body is in a cylindrical shape, at least can differentiate into the pharynx, the introvert, the trunk and the tail. There are pharyngeal teeth on the pharynx, which could completely or partially valgus and located at the front of the body. The introvert has column scalids and could invert. The surface of the trunk has rings, but not segmented. Priapulid is a small phylum in the modern ocean, only 18 current types are described. But in the Cambrian life, priapulid is one of the most important living organisms in the sea of Cambrian. The abundance of priapulid is generally much higher than that of other animals, or only after the arthropod, and its differentiation is only after the arthropod and the porous sponge. The priapulid of the Early Cambrian in Chengjiang fossil Lagerstätte has found 16 basic groups of 7 genera. Fossil priapulid monographic study has made a series of important results, greatly improve the understanding of the origin and early evolution about the priapulid.

Although the study of the Cambrian priapulid has made a series of important achievements, the research on the origin of priapulid has little progress. In theory, it should appear in the Cambrian explosion or even earlier, but currently there is no reliable fossil record to prove that. Fortunately, in Sichuan Shaanxi Meishucun stage Kuanchuanpu Formation we recently found the exquisite preservation of the world's oldest priapulid-like scalidophoran animal — *Eopriapulites sphinx* Liu & Xiao 2014. It is likely to be one of the most ancient ecdysozoa and scalidophoran animal. The body of *Eopriapulites sphinx* is of cylindrical shape and can differentiate into introvert, collar, trunk and tail. The introvert could invert and shrink into the front of the trunk. The proboscis is located in the top center of introvert with scalids which arranged in 18 longitudinal rows. After the introvert and collar is the trunk, with many rings on it but not segmented. The scalids of *Eopriapulites sphinx* show the particular hexaradially symmetrical bodyplan, but priapulids in present and even in Chengjiang biota generally have 20-25 rows

of scalids on the introvert, presents pentaradial symmetry. The significance and value of the study is far more than that, many problems need to be further studied.

#### *Acknowledgements*

Supported by the National Natural Science Foundation of China (**No. 41572009**) and College Students' innovative training program of Chang'an University (**No. 201510710060, 201510710056, 201510710179**).

