Loricifera, A New Phylum of Metazoans Found in Shelly Gravel and its Unique Organelles for Metabolism

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Loricifera is a new phylum recently discovered in 1983 found in subtidal coarse sand or Shelly Gravel, which displays combinations of characters from several other phyla , capable of living in permanently anoxic (no air) environments (2). This phylum consists of a group of small multicellular invertebrate marine sediment -dwelling animals with undetermined phylogenetic relationships within Ecdysozoa (moulting protostome animals).

Embryology and larval morphology studies have concluded that the Nematomorpha, Kinorhyncha and Priapulida, which are united into the phylum Cephalorhyncha (2), are closely related to the Loriciferans and traditionally placed the organisms in the taxon Scalidophora due to common characteristics in body plans that shares such as chitinous cuticle, ring of scalids on introvert, flosculi, and two rings of introvert retracts (4)(Fig 1). Kristensen explains that the new animals found were not the worm-like Priapulids he had searched for previously, but small loricate metazoan which appeared to be some kind of ectoparasite, that he failed to recognize at first place because animals were attached other host animal and released only because of fresh water shock treatment; the larval stages were free-living (2). This provoked a delayed in the research.

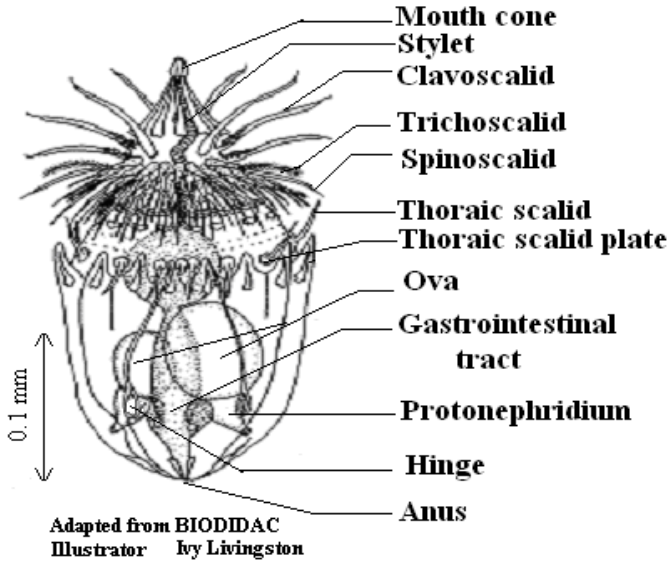

Figure 1. Body plan structure of a Loricifera organism

Loriciferans have been the only multicellular organisms known to survive in sediments at the bottom of Mediterranean Sea under anoxic conditions for their entire life cycle. Evidence demonstrates that microscopic analysis confirmed perfect integrity of Loriciferans (1) (Fig 2),

while all other taxa were largely damaged. Also, especimens of both genera *Spinoloricus* and *Rugiloricus* had large oocytes in ovaries, which showed a nucleus containing nucleolus and evidence reproduction (1) (Fig 3). Loriciferans unique feature to remain in these conditions is the ability to rely on hydrogenosomes organelles instead of mitochondria for energy and metabolic accomplishment.

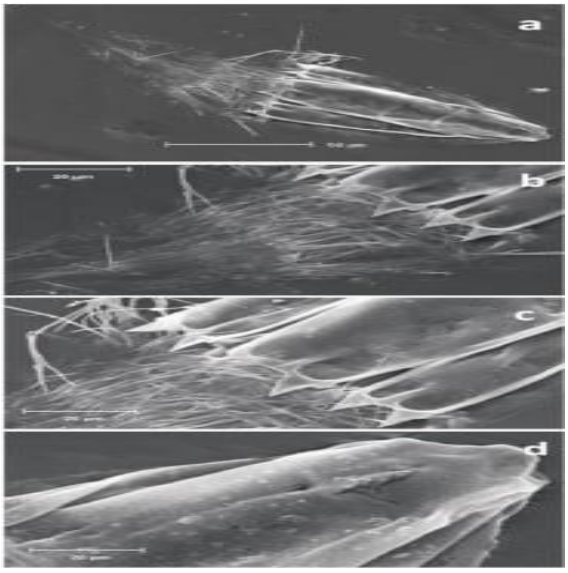

Figure 2. Morphological Details of Undescribed Species of Loricifera

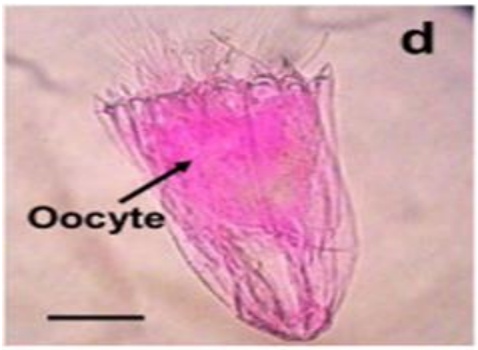

Figure 3. Metazoans retrieved from the deep hypersaline anoxic L'Atalante basin

Claims made in 2013 demonstrated a great acceptance of these evidences by supporting the presence of this phylum and the analysis made in 2010 by the three oceanographers , however it concludes by explaining that the internal anatomy of Loriciferans is yet incomplete(3).

References

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(3) Neves RC (2013) A Complete 3-Dimensional Reconstruction of the Myoanatomy of Loricifera Comparative Morphology of an Adult and a Higgins Larva Stage: 1-30.

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