Metamorphosis of the apostome ciliate *Vampyrophrya pelagica* with dynamic changes of cytoplasmic organelles during host infection

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Vampyrophrya pelagica is a polymorphic symbiont of planktonic copepods. Excystment of phoronts is triggered by predation of invertebrate predators on infected copepods, while encystment of tomites occurs on a new host. The tomite and phoront (cyst) stages of *V. pelagica* were examined by electron microscopy. During infection, the ciliate undergoes dynamic structural changes, including formation of the cyst wall and an anchoring stalk attaching to a host copepod. Within the cytoplasm, the following membranous organelles showed characteristic changes when the tomite settled on a new host: 1) contents of the food plaquettes became concentrated in tomites and early-phoront cells, 2) during encystment, small membrane-bound vesicles became associated with the inner surface of the cell cortex, which might be involved in the cyst wall formation, 3) numerous membrane-bound vesicles with highly electron-dense materials were accumulated around invaginations of the cell membrane, through which the encysting cells secreted materials for stalk formation, 4) oil droplets appeared at the early-phoront stage, which were closely associated with surrounding multilamellar membrane structures. From these observations, dynamic transformation of these membranous organelles was discussed in conjunction with different biological functions performed in each life-cycle stage.