

Evolution of symchlorosomes driven by the lateral transfer of zoochlorellae

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SUMMARY

The ultrastructure of various protozoans and invertebrates with intracellular symbiotic 'Chlorella' (zoochlorella) were studied by freeze-substitution technique. A zoochlorella and a surrounding peri-algal membrane formed a membrane-bound photosynthetic organelle. The organelles in all of the host species examined (belonging to different supergroups of the higher level classification of eukaryotes, including Amoebozoa, Opisthokonta and Alveolata) had specific and common ultrastructural features; thus we named these organelles the symchlorosomes ('symbiotic'+ 'zoochlorella'+ 'somes'). Interspecific transplantation of zoochlorellae between *Mayorella viridis* (Amoebozoa) and *Paramecium bursaria* (Alveolata) were carried out. The zoochlorellae showed lateral transfer among different host species, suggesting that symbiotic zoochlorellae are moving from one host species to another in natural environments.