

Endosymbiosis of *Chlorella* species to *Paramecium bursaria* alters an arrangement of the host's trichocysts beneath the host cell surface

Yuuki KODAMA^{1,2} and Masahiro FUJISHIMA¹ (¹Dept. Env. Sci. and Engineering, Grad. School of Sci. and Engineering, Yamaguchi Univ., ²Res. Fellow of JSPS PD.)

SUMMARY

Each symbiotic *Chlorella* species of the ciliate *Paramecium bursaria* is enclosed in a perialgal vacuole membrane derived from the host digestive vacuole membrane. Algae-free paramecia and symbiotic algae can grow independently and can be reinfected experimentally by mixing them. Previously, we reported that the symbiotic algae appear to push the trichocysts aside to become fixed near the host cell surface during the algal reinfection process. Indirect immunofluorescence microscopy with a monoclonal antibody against host trichocysts demonstrated that trichocysts changed their arrangement to form a ring, surrounding the algae localized beneath the host cell surface during algal reinfection. In contrast, removal of symbiotic algae from algae-bearing cells by treatment with the protein-synthesis inhibitor cycloheximide induced recovery of both the distribution and the density of the host trichocysts. These results suggest that symbiotic algae compete with preexisting trichocysts for their attachment sites beneath the host cell surface.