

## Changes in cell wall properties of symbiotic *Chlorella* during symbiosis in *Paramecium bursaria*

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### SUMMARY

Morphological and chemical properties of the cell wall of the symbiotic *Chlorella* strain PB-SW1C1 were examined in either free-living cells or those re-infected into apo-symbiotic host cells of *Paramecium bursaria* PB-SW1. The cell wall of free-living *Chlorella* stained with Calcofluor white M2R, which is a fluorescent dye that stains  $\beta$ -D-glucopyranose polysaccharides. Cell walls of symbiotic *Chlorella* that had just been isolated by mechanically disrupting both the *P. bursaria* plasma membrane and the perialgal membrane with a microneedle, did not stain with Calcofluor. Thickness of the cell wall was the same whether the *Chlorella* was free-living or symbiotic, and was about 20 nm. The outer surface of the cell wall of the symbiotic *Chlorella* had a fluffy appearance, while that of the free-living *Chlorella* was smooth. These results indicate that the cell wall of *Chlorella* changes in both structure and chemical properties with the establishment of the *Chlorella-Paramecium* symbiosis.