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Effects of protein synthesis inhibitors on infection by symbiotic *Chlorella* in the host *Paramecium bursaria*

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Chlorella-free cells of *Paramecium bursaria* can be reinfected with algae isolated from *Chlorella*-bearing cells by ingesting them into the digestive vacuole (DV). In a previous study, we showed that an alga can successfully escape from the host's DV and establish endosymbiosis after acidosomes and lysosomes have fused with the vacuole. When boiled or fixed algae were added to algae-free paramecia, all algae were digested. Therefore, algal resistance to the lysosomal enzymes is a property of living algae. To examine the effects of protein synthesis inhibitors on infection by symbiotic *Chlorella* of the host *P. bursaria*, isolated symbiotic algae were pretreated with cycloheximide, or algae-free hosts were pretreated with puromycin. The algae and the algae-free *P. bursaria* cells were then mixed, and the fate of the algae in the host DVs was observed. Infection of the host by *Chlorella* was not inhibited by host pretreatment with puromycin. However, algae treated with cycloheximide were not maintained in the host cytoplasm, although they could escape from the host's DV. These results suggest that algal protein synthesis plays an important role in establishing the *P. bursaria–Chlorella* endosymbiosis.