

## Biochemical studies of ADF/cofilin-like protein Adf73p in *Tetrahymena thermophila*

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### SUMMARY

ADF/cofilin-family proteins induce reorganization of the actin cytoskeleton through severing and depolymerizing filamentous actin (F-actin). Recently, the unique mechanism of actin reorganization in protists has become a focus of study because actin rapidly polymerizes and easily disassembles in Apicomplexa species, such as *Toxoplasma gondii* and *Plasmodium falciparum*. It has been reported that actin in the ciliate *Tetrahymena thermophila* also has unusual biochemical properties. Therefore, we studied the role of ADF/cofilin-like protein Adf73p in actin reorganization in *T. thermophila*. First, we investigated the biochemical action of Adf73p on muscle actin. It was found that Adf73p severed and depolymerized F-actin, although depolymerized G-actin repolymerized in the absence of the actin-capping protein, gelsolin. It is possible that Adf73p might be unable to suppress repolymerization of actin, because it accelerated nucleotide exchange of muscle actin to ATP form. Immunofluorescence microscopy on *T. thermophila* revealed that Adf73p is localized to the deep fiber, nascent phagosomes, and phagosomes near the cytoproct. This suggests that Adf73p might be required for controlling the actin cytoskeleton involved in membrane dynamics of phagosomes in *T. thermophila*.