

# Improved culture method of *Lacrymaria* with *Paramecium bursaria*

Ikumi SHIBANO<sup>1</sup>, Masashi Mark HAYAKAWA<sup>1</sup> and Toshinobu SUZAKI<sup>1,2</sup>  
(<sup>1</sup>Dept. Biol., Fac. Sci., Kobe Univ. and <sup>2</sup>Dept. Biol., Grad. Sch. Sci., Kobe Univ.)

## SUMMARY

The ciliate *Lacrymaria olor* comprises three body parts: the oral apparatus, proboscis, and cell body. The contractile and flexible proboscis is used to seek and capture prey ciliates. To investigate the mechanism of proboscis motility of *Lacrymaria*, a stable and easy culture method has been established with *Paramecium bursaria* as prey. During this experiment, we found that the proboscis length is proportional to the swimming velocity of *Lacrymaria*, which is explainable if the proboscis is extended elastically by the driving power generated by the active ciliary beating at the oral apparatus. A dynamic model was proposed for swimming *Lacrymaria* cells, being simplified to a spherical particle (the cell body) moving in a viscous fluid under the influence of the Stokes drag, pulled through a damped spring (proboscis) by the power generated at the other end of the spring (oral apparatus). The model was validated by comparing simulations and experimental data.

