

Emergence of the ciliated protozoan *Colpoda cucullus* from a resting cyst:  
The cyst wall was ruptured by active expansion of the excystment vacuole

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**SUMMARY**

A final event in excystment is the emergence from resting cysts, which is accomplished in different ways: emergence through an emergence pore with a removable plug, or as reported in Colpodid ciliates, by rupture of the cyst wall resulting from the inner pressure generated by water uptake. In this study, we observed the emergence process of *Colpoda cucullus*, and examined whether the excystment vacuoles may have been expanded by passive water influx. The pulsation of contractile vacuoles of excysting cells was no longer observed in 146 mOsm solution, indicating a cytosolic osmolarity of 146 mOsm. The expansion of excystment vacuoles and emergence from cysts occurred under hypertonic conditions. In the presence of an ATP synthesis inhibitor under hypotonic conditions, the expansion of the vacuoles, increase in cell volume and emergence of cells were suppressed. These results suggest that the expansion of excystment vacuoles may result mainly from the active uptake of water.