

Abstract Submitted
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Do choanoflagellate cells cooperate hydrodynamically to increase feeding fluxes? MARCUS ROPER, JON WILKENING, Dept. of Mathematics, UC Berkeley, M.A.R. KOEHL, Integrative Biology, UC Berkeley, RACHEL PEPPER, Dept. of Physics, CU Boulder, MARK DAYEL, NICOLE KING, Molecular and Cellular Biology, UC Berkeley — *Salpingoeca rosetta* is a choanoflagellate, a protozoan that creates water flow with a single flagellum and captures bacterial prey on a collar of microvilli around its flagellum. In response to certain environmental cues *S. rosetta* switches between unicellular and colonial forms. Analysis of this transition may provide clues about the evolutionary and physical forces that guided the first emergence of multicellular life. Our experiments and numerical models show how colonial living changes the feeding currents generated by cells within the colony. Our models also reveal the hidden potential for conflict among the cells in a colony by allowing direct calculation of the iniquitous division of cooperative benefits and costs between cells.

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