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Approach to finite-size prey by the choanoflagellate Salpingoeca rosetta KIARASH SAMSAMI, HENRY FU, University of Utah — The choanoflagellate *S. rosetta* is a unicellular eukaryote with a single flagellum and a collar of microvilli. It feeds on bacteria by utilizing the fluid currents generated by the beating of its flagellum that bring its prey to the surface of the collar and ingesting the bacterium. *S. rosetta* is observed as a single thecate cell, a single swimming cell, a rosette shaped colony with flagella pointing outwards, and a chain shaped colony with each cell attached laterally to two neighboring cells. As a close relative of animals, this ability to form colonies and the possible resulting survival advantages could provide insight on origins of multicellularity. Prior works have studied fluid uptake and flow fields for *S. rosetta* single cells and colonies as a measure of feeding performance. However the bacterial prey is comparable in size to the *S. rosetta* cell and hence may have a considerable effect on the flow in near field. Here we study the hydrodynamics of a single cell or a colony approaching a finite size prey, simulating actual geometries of both. We study the approach time and velocities of single cells and colonies for different prey sizes and initial positions to compare their feeding performance.

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