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**Feeding, Swimming and Navigation of Colonial Microorganisms** JULIUS KIRKEGAARD, AMBRE BOUILLANT, ALAN MARRON, KYRIACOS LEPTOS, RAYMOND GOLDSTEIN, Univ of Cambridge — Animals are multicellular in nature, but evolved from unicellular organisms. In the closest relatives of animals, the choanoflagellates, the unicellular species *Salpincgoeca rosetta* has the ability to form colonies, resembling true multicellularity. In this work we use a combination of experiments, theory, and simulations to understand the physical differences that arise from feeding, swimming and navigating as colonies instead of as single cells. We show that the feeding efficiency decreases with colony size for distinct reasons in the small and large Péclet number limits, and we find that swimming as a colony changes the conventional active random walks of microorganism to stochastic helices, but that this does not hinder effective navigation towards chemoattractants.

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