

Abstract Submitted
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Bacterial ridesharing: swimming and rolling of a sessile-motile aggregate BIN LIU, YU ZENG, Department of Physics, University of California, Merced — While motile microorganisms disperse actively in aqueous environments by exploiting locomotory organelles, sessile cells are deficient in locomotory organelles and disperse passively through flow entrainment. Beyond these two discrete classes of motility, we explore an assembly containing both motile and sessile cells, a rosette aggregate of *Caulobacter crescentus*. Despite its predominantly sessile cells, the *C. crescentus* rosette exhibits surprisingly active motility, powered by as little as a single flagellar motor. In addition, proximity to a solid surface promotes rolling movements along the solid-liquid interface. This rolling mechanism emerges from a division of labor between sessile and motile compartments that respectively function as structural and powering modules, which can be extended to a wide range of natural and engineered microbial systems.

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