

Abstract Submitted  
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**Teamwork in the viscous oceanic microscale** EVA KANSO, Univ of Southern California, RUBENS M. LOPES, University of So Paulo, Instituto Oceanografico, J. RUDI STRICKLER, University of Wisconsin Madison, JOHN O. DABIRI, Caltech, JOHN H. COSTELLO, Providence College — Nutrient acquisition is crucial for oceanic microbes and competitive solutions to solve this challenge have evolved among a range of unicellular protists. However, solitary solutions are not the only approach found in natural populations. A diverse array of oceanic protists form temporary or even long-lasting attachments to other protists and marine aggregates. Do these planktonic consortia provide benefits to their members? Here we use empirical and modeling approaches to evaluate whether the relationship between a large centric diatom, *Coscinodiscus wailesii*, and a ciliate epibiont, *Pseudovorticella coscinodisci*, provides nutrient flux benefits to its members. We find that fluid flows generated by ciliary beating can increase nutrient flux to a diatom cell surface by 500% compared to a still cell without ciliate epibionts. This cosmopolitan species of diatom does not form consortia in all environments but frequently joins such consortia in nutrient depleted waters. Our results demonstrate that symbiotic consortia provide a cooperative alternative to unicellular solutions for nutrient acquisition in challenging environments.

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