

Abstract Submitted  
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**Determining the benefits of *Vorticella* cell body motion.** MATTY C. SPECHT, RACHEL E. PEPPER, University of Puget Sound — Microscopic sessile suspension feeders are single-celled organisms found in aquatic ecosystems. They live attached to underwater surfaces and create a fluid flow in order to feed on bacteria and debris. They participate in the natural degradation of contaminants in water. Understanding the fluid flow they create enhances our knowledge of their environmental impact. One type of suspension feeder, *Vorticella*, have been observed to vary their cell body orientation with respect to their surface, but the benefits of this motion are still unknown. We use simulations to investigate the effect of *Vorticella* body motion on the feeding current and the nutrient flux to the cell body to determine whether or not the motion increases nutrient consumption. We determine the nutrient flux using COMSOL Multiphysics software to solve the advection-diffusion equation with the flow given by a stokeslet model. We use a range of motions similar and dissimilar to that of live *Vorticella*. We find that most patterns of motion do not increase the nutrient flux, since the *Vorticella* feed from regions where they already have depleted the water of nutrients. However, it is possible that their motion could help the *Vorticella* find nutrients that are inhomogenously distributed in water.

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