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Sorting choanoflagellates VERONICA I. MARCONI, IFEG-CONICET and FaMAF, Universidad Nacional de Cordoba, Cordoba, Argentina, GASTON L. MIÑO, Department of Civil and Environmental Engineering, Ralph M. Parsons Laboratory, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139,, JAVIER SPARACINO, IFEG-CONICET and FaMAF, Universidad Nacional de Crdoba, Crdoba, Argentina, ADOLFO J. BANCHIO, CARLOS A. CONDAT, IFEG-CONICET and FaMAF, Universidad Nacional de Cordoba, Cordoba, Argentina, MIMI A.R. KOEHL, Integrative Biology, University of California, Berkeley, California 94720, USA, NICOLE KING, Department of Molecular and Cell Biology, University of California, Berkeley, California 94720, ROMAN STOCKER, Department of Civil and Environmental Engineering, Ralph M. Parsons Laboratory, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, — In freshwater environments, as well as in oceans, environmental conditions are in constant fluctuation. Some heterotrophic plankton must adapt their swimming behavior in order to survive under these conditions. In the case of the choanoflagellate, the closest animal ancestor, the ability to forage for food is given not only by its single flagellum, but also by its differentiation between fast and slow swimmers. The understanding of how these cells with different strategies to swim search for food can give us a better insight into how eukaryotes respond to different stimuli. In this work, we have designed a microfluidic device that sorts choanoflagellates by their speed. The optimal geometry was found by a numerical model using the experimentally determined motilities of each swimmer type.

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