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Direct measurement of the forces generated by an undulatory microswimmer RAFAEL SCHULMAN, MATILDA BACKHOLM, McMaster University, WILLIAM RYU, University of Toronto, KARI DALNOKI-VERESS, McMaster University — *C. elegans* is a millimeter-sized nematode which has served as a model organism in biology for several decades, primarily due to its simple anatomy. Employing an undulatory form of locomotion, this worm is capable of propelling itself through various media. Using a micropipette deflection technique, in conjunction with high speed imaging, we directly measure the time-varying forces generated by *C. elegans*. We observe excellent agreement between our measured forces and the predictions of resistive force theory, through which we determine the drag coefficients of the worm. We also perform the direct force measurements at controlled distances from a single solid boundary as well as between two solid boundaries. We extract the drag coefficients of the worm to quantify the influence of the boundary on the swimming and the hydrodynamic forces involved.

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