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The effects of fluid viscosity on undulating swimmers JOSUE SZNITMAN, XIAONING SHEN, PAULO ARRATIA, University of Pennsylvania — The swimming behavior of the nematode *C. elegans* ($L \approx 1$ mm) as a function of the surrounding fluid viscosity μ is investigated using both particle- and nematode-tracking methods. Nematode tracking data show that *C. elegans* move in a highly periodic fashion characterized by traveling waves. The nematode swimming speed U decays nonlinearly with increasing fluid viscosity such that $U \sim \mu^{-0.2}$. Velocimetry data shows flow re- circulation regions along the nematode's body. The velocity profiles measured in the direction normal to the swimming nematode show a decay that is similar for fluid viscosities ranging from from 1 cP to 20 cP. The normalized velocity decays follow a single mater curve with d/L as the independent variable, where d is the normal distance from the swimming nematode. This result suggests that *C. elegans* may be a good canditate to investigate low Re locomotion.

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