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Investigation of ciliary propulsion of *Tetrahymena Pyriformis* in viscous solution ILYONG JUNG, EVA LYUBICH, JAMES VALLES, Brown University — Recent experiments by our group showed that the ciliated protist *Paramecium Caudatum* swims with a constant propulsive force in solutions with viscosities $1 < \eta / \eta_w < 7$ where η_w is the viscosity of water. Measurements of the geometry of its helical swimming trajectory combined with high speed video of the ciliary motion provided insight into this behavior. Using a phenomenological model we found that the body cilia beating frequency decreases while the beating angle remains roughly constant to produce the constant propulsive force dependence on viscosity. In this talk, we present studies of another ciliated protozoa, *Tetrahymena Pyriformis* to determine whether the behavior of *Paramecium* is general. Preliminary results indicate that *Tetrahymena Pyriformis* also swims with a nearly constant propulsive force with increasing viscosity. Investigations similar to those performed on *Paramecium* are underway and the latest results will be presented. This work was supported by NSF PHY0750360 and at the NHMFL by NSF DMR-0084173

Ilyong Jung
Brown University

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