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Is swimming in a shear-thinning fluid more efficient? KYLE PIETRZYK, HERVE NGANGUIA, ON SHUN PAK, Santa Clara University — Micro-organisms expend energy moving through complex fluids that often display shear-thinning viscosity. A motility mechanism not only needs to generate the necessary propulsion speed but also be energetically efficient. Although the efficiency of swimming is well characterized in Newtonian fluids, much less is known about this biologically relevant aspect of locomotion in shear-thinning fluids. Does the shear-thinning rheology render swimming more efficient or less? How does it alter the efficiency of different types of swimmers? We will address these fundamental questions of locomotion in a shear-thinning fluid.

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