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Motility modes of the parasite *Trypanosoma brucei*[1] FATMA ZEYNEP TEMEL, ZIJIE QU, MICHAEL MCALLASTER, CHRISTOPHER DE GRAFFENRIED, KENNETH BREUER, Brown University — The parasitic single-celled protozoan *Trypanosoma brucei* causes African Sleeping Sickness, which is a fatal disease in humans and animals that threatens more than 60 million people in 36 African countries. Cell motility plays a critical role in the developmental phases and dissemination of the parasite. Unlike many other motile cells such as bacteria *Escherichia coli* or *Caulobacter crescentus*, the flagellum of *T. brucei* is attached along the length of its awl-like body, producing a unique mode of motility that is not fully understood or characterized. Here, we report on the motility of *T. brucei*, which swims using its single flagellum employing both rotating and undulating propulsion modes. We tracked cells in real-time in three dimensions using fluorescent microscopy. Data obtained from experiments using both short-term tracking within the field of view and long-term tracking using a tracking microscope were analyzed. Motility modes and swimming speed were analyzed as functions of cell size, rotation rate and undulation pattern.

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