Characterizing the Swimming Gait of a Bacterium

A new technique could allow researchers to distinguish the swimming motion of a species of microorganisms without the need to track individuals within a population.

By Katherine Wright

Intensity changes between images reveal statistical information about the concentration of the bacterial population over time.

Kurzthaler, Zhao, and their colleagues realized that the technique could also be used to learn about the statistics of the locomotion phases of *E. coli*—“runs,” where bacteria move in a fixed direction, and “tumbles,” where they stay in one place while reorienting themselves. Extracting this information involved developing a fitting procedure for the experimental data using parameters derived from a theory of *E. coli* dynamics. With this fitting procedure the team derived short- and long-timescale motility parameters of three-dimensional samples without having to track each bacterium separately—a requirement of other techniques. Kurzthaler notes another advantage of their method that she says could aid in its uptake: it requires only a microscope, a standard piece of lab equipment, rather than specialized paraphernalia.

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REFERENCES
