

Abstract Submitted
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The flagellar “flick”: direction randomization in single flagellated cells of *V. alginolyticus* TUBA ALTINDAL, SUDDHASHIL CHATTOPADHYAY, LI XIE, XIAO-LUN WU, University of Pittsburgh — Single flagellated bacteria such as *Vibrio alginolyticus*, which possess a single flagellum are believed to be unable to use an active mechanism for direction randomization, and thus follow a “back” and “forth” swimming pattern. Inspired by the observation that *V. alginolyticus* cells were able to rapidly accumulate around a point source of a chemoattractant, we have identified a previously unknown phenomenon in which an active movement of the flagellum is used to randomize the swimming direction. Fluorescently labelled cells clearly demonstrated that bending of the flagellum is responsible for imparting direction changes to the cell body. Clues obtained from high speed video, bright-field microscopy and fluorescent imaging suggests a series of steps involved in the flagellar “flick”. An investigation of the energetics of the proposed mechanism leads to the conclusion that the directional change may be connected to the flagellar motor, which normally propels the cell body.

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