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Polymorphic transformation of helical flagella of bacteria.[1] SOOKKYUNG LIM, University of Cincinnati, HOWARD BERG COLLABORATION, WILLIAM KO COLLABORATION, YONGSAM KIM COLLABORATION, WANHO LEE COLLABORATION, CHARLES PESKIN COLLABORATION — Bacteria such as *E. coli* swim in an aqueous environment by utilizing the rotation of flagellar motors and alternate two modes of motility, *runs* and *tumbles*. Runs are steady forward swimming driven by bundles of flagellar filaments whose motors are turning CCW; tumbles involve a reorientation of the direction of swimming triggered by motor reversals. During tumbling, the helical flagellum undergoes polymorphic transformations, which is a local change in helical pitch, helical radius, and handedness. In this work, we investigate the underlying mechanism of structural conformation and how this polymorphic transition plays a role in bacterial swimming.

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Sookkyung Lim
University of Cincinnati

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