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A mathematical approach to bacterial infections: models for bacterial exploration and infection

Gastrointestinal infections occur by both, motile and non-motile pathogenic bacteria. Whether there exists a correlation between bacterial motility and bacterial virulence remains a key open question. Combining mathematical models and in vitro bacterial experiments, we will analyze how pathogenic bacteria explore the bottom surface of a cell chamber and infect the human colonic epithelial cells sitting on it. The study quantifies and explains the role of bacterial motility in the infection process.

References: Perez-Ipiña et al., Nature Physics 15, 610-615 (2019), and Otte et al., to appear (2020)