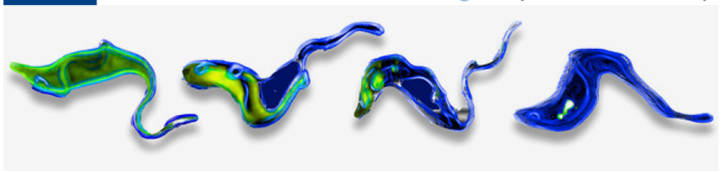

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Characterising the motility of the novel SS-5 strain of Magnetotactic bacteria

Magnetotactic bacteria (MTB) have garnered significant interest due to their unique ability to align with magnetic fields and respond to environmental stimuli. Currently, the well-studied species of MTBs exhibit complex cell morphologies and propulsion mechanisms, making them poorly suitable for physics modelling. In this project, we study the aerotaxis and magnetic alignment of the novel SS-5 strain of MTB, which features a simple rod shape similar to E.coli and performs run-reverse motion using a single flagellum. To achieve this, we have developed a custom experimental setup enabling precise tuning of both oxygen concentration and magnetic field within a microfluidic device. Our initial results provide an insightful understanding of the magnetic response of the SS-5 bacteria, indicating a strong ability to align with magnetic fields. Ongoing research focuses on how the SS-5 strain reacts to oxygen gradients, with preliminary results showing a significant aerotactic response to very low oxygen concentrations. These results lead towards a comprehensive modelling of MTB motion, with potential applications in employing their motility responses as navigation tools through complex and confined environments.

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