Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Understanding the mechanism of regulation of a small Ras-like GTPase, MglA, driving Myxococcus Xanthus motility

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Polarity reversal in the soil bacterium Myxococcus Xanthus is regulated by a cascade of proteins depending on extracellular signals. MglA, a prokaryotic small Ras-like GTPase, is the master regulator of this motility behaviour. My research is focused on unravelling the regulatory landscape of MglA, elucidating how it modulates cell polarity reversals through its localisation and function. Specifically, I succeeded in dissecting the dual functionality of MglB as both a GTPase activating protein (GAP) and Guanine nucleotide Exchange Factor (GEF) revealing unique mechanisms of MglA activation. Additionally, we characterise a newly identified GEF module, the RomR-RomX complex and its interaction with the co-GAP RomY, along with the involvement of MglC as a polar recruiter. Fitting all these pieces into the puzzle, I propose an updated model of the mechanism underlying the maintenance and reversal of cell polarity, thereby advancing our understanding of Myxococcus Xanthus motility.

Tuesday, May 28th 2024

14:30 Hrs