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

Seminar

Connecting the dynamics of antimicrobial response across scales

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The cellular physiology of microbes can vary significantly within a population, even when they are exposed to identical external conditions. Our research focuses on understanding how this physiological heterogeneity impacts the response to antimicrobials at the cellular level and influences recurrence of infection and resistance evolution over extended periods.

To tackle this question, we have established an experimental framework to connect the single-cell level antimicrobial response of microbes with the short-term and long-term behaviours of their populations. Currently, we are employing this approach to analyse the extent of cellular heterogeneity and its role in shaping the population dynamics of microbial systems, specifically within the context of: 1) Heterogeneous response and recovery from antibiotic treatment, 2) Antibiotic persistence and perseverance, and 3) Response and tolerance towards bacteriophage treatment.

In this presentation, I will describe the background and motivation for this approach, discuss the key challenges, outline the necessary technical advancements made in our lab, and illustrate its potential with selected key findings from the three research areas mentioned above.

Wednesday, Jan 15th 2025

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFR-H