

MONDAY

# COLLOQUIUM

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## Hidden Architects of Collective Cell Dynamics: Unveiling the Surprising Roles of Cellular Organelles

Tamal Das (TIFR, Hyderabad)

25 Aug 2025 (Monday) | 16:00 Hrs (Tea / Coffee 17:15 Hrs) | Venue: TIFRH Auditorium

How do cells manage to move together in such a coordinated way to build, repair, or sometimes disrupt tissues? While much research has focused on chemical and physical signals from the outside milieu, we're now discovering that the inner parts of the cell - its organelles - play a surprisingly active role in guiding this teamwork. In this talk, I'll show how lysosomes, tiny compartments involved in recycling, help choose and guide "leader" cells during migration by influencing the activity of molecules that control movement. I'll also explore how the endoplasmic reticulum (ER), a sprawling network inside cells, senses the shape of tissue edges and adjusts how cells stick and move accordingly. Finally, I'll describe how the cell's nucleus acts like a mechanical sensor with its softness or stiffness can determine whether a damaged or abnormal cell gets pushed out of the tissue. These hidden mechanisms reveal how the inner life of cells helps them work together as a collective.