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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Biophysics Seminar

Title : Flows and flow transitions in an unsupported epithelium

Speaker : Chaithanya K. V. S (The School of Life Sciences, University of Dundee, UK)

Date : Thursday, 19th September 2024

Time : 3:00 PM (IST)

Abstract : Large-scale cellular flows are fundamental to various biological processes, including embryonic development and tissue morphogenesis. Remarkably, these flows can occur without the need for a substrate or external support, as is particularly evident during gastrulation in bird embryos. In this talk, I will discuss the emergence and maintenance of flows in unsupported epithelia through the lens of a 'wet' vertex model with internal viscous dissipation and dipolar active stresses. By examining the dynamics within a confined channel, I will demonstrate how the transition from substrate dissipation to internal dissipation leads to the spontaneous emergence of unidirectional flows. When coupled with contractile stresses, this model generates the coordinated flow patterns and cellular behaviours observed during gastrulation in chicken embryos. Finally, I will highlight the role of mechanochemical feedback mechanisms in generating and regulating these flows.

Venue : Chern Lecture Hall

Zoom Link: https://icts-res-in.zoom.us/j/96848864221?pwd=BjPIAsQwb9wusbGAYj4slXv8HnQTl5.1
Meeting ID: 968 4886 4221
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