TIFR Centre for Interdisciplinary Sciences, Narsingi, Hyderabad 500075

Seminar

Patterning heterogeneities and transitions in cell behavior

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The sculpting and healing of tissues that make up our bodies rely on dynamic and heterogeneous cell behaviours. How these heterogeneities originate and how they are coordinated to result in nearly stereotypical tissue dynamics is poorly understood. In my talk, I will discuss our efforts to understand this using a morphogenetic('form generating') movement that occurs during the course of development of the fruitfly (Drosophila), and a combination of approaches including targeted (single cell) genetic and biophysical (nanoscale laser) perturbations, cell biology, 4D live confocal microscopy and quantitative morphometric analysis. I will discuss our results that reveal that transitions in cell behavior result from a tilt in the force balance at cellular interfaces. This altered force balance stems from the emergent polarization of the actin and microtubule cytoskeleton that is influenced by cell geometry, cell adhesion, signals and mechanical stresses, that can act both autonomously or non-autonomously. Our findings provide insights into the control of cell behavior and their influence on the spatial patterning of tissues.

Thursday, Oct 10th 2013

11:30 AM (Tea/Coffee at 11:15 PM)

Seminar Hall, TCIS