ICTS Seminar

Title : May the force be with you: Piezo modulates protrusion switching in migrating Dictyostelium cells

Speaker : Nishit Srivastava, MRC-LMB, University of Cambridge, England

Date : Tuesday, February 28, 2017

Time : 2:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Cells can adapt how they move to suit their physical environment. In tissue-like environments, mechanical resistance is greater than under buffer, and cells often move using pressure-driven projections such as blebs, rather than pseudopods. However, very little is known about the effect of purely mechanical cues in protrusion switching and the mechanosensing pathways.

In the first part of the talk, I will introduce the 'cell squasher' which was designed to apply a defined uniaxial compressive load on chemotacting cells. A pressure of only 100 Pa was sufficient to switch Dictyostelium cells from moving predominantly with pseudopods to bleb-driven migration. Next, I will describe a novel mechanosensing pathway involving Piezo stretch-operated channels. The response to the load is also accompanied by a sustained increase in cytosolic calcium and augmentation of myosin-II dependent contractility, both being dependent on Piezo.

My talk explores how mechanical resistance modulates protrusion formation in cells and underlying novel mechanosensing signalling pathway.