

Comprehensive Seminar

Role of Chemical, Geometrical and Mechanical Cues in Governing Cell Extrusion in Epithelial Cells

Shreejit Saha

Epithelial tissues continuously survey their cells and eliminate aberrant ones to maintain structural integrity and function. This elimination occurs through apical extrusion, where defective cells are expelled toward the lumen, and is collectively known as Epithelial Defence Against Cancer (EDAC). However, when clusters of transformed cells arise within the epithelium, a shift emerges: after an initial phase dominated by EDAC, some mutant cells start undergoing basal extrusion into the underlying extracellular matrix, even as apical EDAC continues. These basally extruded cells may represent early precursors of tumour initiation. Over time, it has become clear that this switch in extrusion direction is controlled by a complex interplay of mechanical factors, including extracellular matrix properties, tissue-scale mechanics, and the mechanical behaviour of intracellular structures, particularly the nucleus. We are now exploring how specific physiological features, such as local tissue curvature, modulate signalling pathways and ultimately dictate whether a cell is extruded apically or basally.

Wednesday, Dec 10th 2025

11:30 Hrs (Tea / Coffee 11:15 Hrs)

Auditorium, TIFRH