

## **Internal Seminar**

### **Dynamics, distribution, and function of lysosomes in collective cell migration**

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Collective cell migration, a phenomenon of coordinated movement of tens of cells is fundamental to embryo development, tissue morphogenesis, and wound healing. Polarization of cytoskeletal elements and organelles over multiple cell lengths are essential for cooperative cell movement, and force transmission by cell-cell junctions has emerged to be crucial for intracellular reorganization and directed movement. Previous studies report polarization of the cellular degradation hub, lysosomes, to be essential for single-cell adhesion and migration. However, subcellular lysosome distribution, dynamics, response to mechanical cues, and subsequent function in collective cell movement remains elusive. Our work focuses on understanding the dynamics of lysosome organization and function in collectively migrating cells. Using Madin-Darby Canine Kidney (MDCK) cells as a model system, we observe extensive polarization of lysosomes in cells at the migrating edge. We show that this polarization is microtubule-dependent and that the polarization extent of lysosomes in the margin cells increases as the cell collectives migrate. Our study indicates pH-dependent differences in lysosomal distribution and enrichment, in the leader-follower context during collective migration. This study provides critical insights into lysosome biology in collective cell migration and the probable role of pH-dependent differential lysosomal distribution in the emergence of leaders.

***Tuesday, Mar 17<sup>th</sup> 2020***

***2:30 PM (Tea/Coffee at 2:00 PM)***

***Seminar Hall, TIFR-H***