

Seminar

Different modes of fluidization in solid-like tissues

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Epithelial tissues appear solid-like under homeostatic conditions, but can develop migratory behavior during embryonic development, wound-healing, inflammation and cancer metastasis. Recent suggestions¹ are that these tissues are close to glass or jamming transition, and hence can accommodate such transformations as required. I will describe our ongoing efforts to develop a general theoretical framework² to understand the different modes of fluidization observed in a solid-like epithelial monolayer. Our theoretical predictions nicely describe the experimental observations made by our collaborators, associated with the canonical epithelial-mesenchymal transition, and a newly discovered, compression driven unjamming transition in a mature monolayer of human lung epithelial cells². I will also discuss the broad implications of our results in the context of collective epithelial cell migration in general.

Reference:

1. D. Bi et al, Motility-Driven Glass and Jamming Transitions in Biological Tissues. *Phys. Rev. X* 6, 021011 (2016).
2. J. Mitchel, A. Das et al, The unjamming transition is distinct from the epithelial-to-mesenchymal transition. *bioRxiv*, 665018 (2019).

Monday, Nov 11th 2019

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H