Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

Colloquium

A theoretical (bio) physicist looks at cancer metastasis

Mohit Kumar Jolly

Gulf Coast Consortia, Houston

Metastasis – the spread of cancer cells from one organ to another – causes above 90% of all cancer-related deaths. Despite extensive ongoing efforts in cancer genomics, no unique genetic or mutational signature has emerged for metastasis. However, a hallmark that has been observed in metastasis is adaptability or phenotypic plasticity – the ability of a cell to reversibly switch among different phenotypes in response to various internal or external stimuli. This talk will describe how the concepts of nonlinear dynamics can help (a) identify how cancer cells can leverage this plasticity to drive cancer metastasis, (b) interpret existing clinical data, (c) guide the next set of crucial *in vitro* and *in vivo* experiments, and (d) elucidate the role of non-mutational mechanisms in cancer biology. Collectively, my work highlights how an iterative crosstalk between mathematical modeling and experiments can both generate novel insights into the dynamics of cellular plasticity and uncover previously unknown accelerators of metastasis.

Thursday, Nov 23rd 2017

04:00 PM (Tea/Coffee at 03:30 PM)

Auditorium, TIFR-H