TIFR Centre for Interdisciplinary Sciences
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Seminar

Single cell observation and manipulation - going beyond the mean in Biology

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A lot of our knowledge of biological systems comes from important bulk biochemistry experiments. But beyond such mean responses, single-cell level imaging techniques can potentially measure the heterogeneity of cellular responses, and also identify subcellular localization and cell-by-cell correlations of gene products. And going beyond just observation, if we are to physically perturb cellular systems to draw inferences about how they work, again it is desirable to develop manipulation techniques for individual cells.

In this talk I will discuss this common thread in my doctoral and postdoctoral work - particularly discussing nuclear architecture and DNA damage responses in eukaryotic cells. However, for the purposes of this talk, I will not go into the science of these in great detail, but rather try to convey a broader view of how physical techniques and descriptions can be useful in Biology, drawing both on my work and others'. Though speculative, I will also attempt to discuss the potential significance of heterogeneous responses and my research plans investigating the connections between global genome organization and tissue-specific emergence of cancer, and the roles of DNA damage responses in processes of differentiation and development.

Wednesday, Mar 25th 2015

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS