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

Seminar

Spatiotemporal control of the number and diversity of centrosome-cilia

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Our cells are composed of non-membrane-bound compartments, e.g., ribosome and centrosome, as well as organelles, such as mitochondrion and cilium. Have you ever pondered: How are those nano-to-micro size compartments birth-diversity-homeostasis regulated? And what are the consequences of those compartments deregulation?

For instance, a centrosome, the major cytoskeleton-organising centre of a eukaryotic cell, is made of amorphous peri-centriolar matrices that encapsulate two nano-cylinders (~3-10x10^6 nm^3), called centrioles. These centrioles' numbers are tightly regulated in every cell of our body and, after cells exit cell cycle, same nano-cylinders template the cilia. The cilia are microprotrusions, which are also called sensing hairs and cells' propellers. Alteration/deregulation of these structures causes several human diseases, e.g., cancer and ciliopathies (collectively affecting 1:3 individuals), affecting either all or specific tissue(s) (e.g., eye and sperm) at various ages of our life. These indicate centrosomes-cilia could be distinct in different cells of our body. In light of this knowledge, I will talk about the newly uncovered mechanisms on how the number and diversity of centrosome-cilia are regulated in time and space in animal cells, including Drosophila.

Subsequently, I will briefly discuss my future cross-disciplinary approaches to discover novel physicochemical principles of these nano-compartments' biology as well as to understand the associated-human disorders better.

Thursday, Jan 31st 2019

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

Seminar Hall, TIFR-H