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

Colloquium

Regulation of centrosome-cilium's Birth-to-Death

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Trillions of distinct cells build our body, and each of those cells is composed of trillions of molecules, including carbohydrates, fats and proteins. Ranging from a few to a million of molecules systematically assemble to form various nano-to-micron size sub-cellular compartments, such as ribosome, centrosome, cilium and mitochondrion. How are those compartments birth-to-death controlled? What happens to us when those compartments are altered?

For example, two compartments, centrosome (the major cytoskeleton-organising centre of our cell) and cilium (the sensing hair of our cell), are made of same nano-cylinders (~3-10x10^6 nm^3), called centrioles. These nanostructures are composed of hundreds of different proteins and are altered/deregulated in several human diseases, including cancer, microcephaly and ciliopathies (collectively affecting one in every three individuals). Strikingly, the mutations in the components of these nano-compartments, affect either all or specific tissue(s) (e.g., eye and sperm) at various ages of our life, suggesting the compartments might be distinct in different cells. In light of the knowledge mentioned above, I will talk about recently discovered novel mechanisms on how the birth, diversity and homeostasis of these nano-compartments are regulated in time and space in animal cells. Furthermore, I will highlight how those findings would immensely help us to better understand these nano-compartments' biology and evolution, and associated-human diseases.

Wednesday, Jan 30th 2019

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

Auditorium, TIFR-H