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

# Colloquium

## Multiscale Modeling to unravel cellular and subcellular process in biological systems

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Early works both theoretically (Gourishankar, K. et al., Cell 2012) and experimentally (Goswami, D. et al, Cell 2008) show that the outer leaflet GPI-anchored proteins (GPI-APs) of the cell surface are organized as monomers and cholesterol sensitive nanocluters, which are regulated by the active remodeling of the underlying cortical actin and myosin. Since, GPI-APs are lipid tethered proteins which reside on the outer leaflet of the plasma membrane, the natural question is how the outer-leaflet GPI-APs couple to the cortical actin that abuts the inner leaflet of the cell membrane. As a variety of high resolution experiments on live cells using FRET found no direct linkage between the GPI-APs and cortical actin (CA), there must be an indirect coupling between the outer leaflet GPI-APs and CA or its immediate interacting partners. We address these important issues using atomistic molecular dynamics (MD) simulations on multicomponent model membrane. We find that long saturated acyl-chains are required for forming GPI-anchor nanoclusters. Simultaneously, at the inner leaflet, long acyl-chain containing phosphatidylserine (PS) is necessary for transbilayer coupling.

***Tuesday, Jan 8th 2019***

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

***Auditorium, TIFR-H***