

## **Colloquium**

### **Motors on Membranes: A Force at the Edge**

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How different cellular organelles communicate via membrane contact sites (MCS) is a subject of intense investigation. A fundamental physical constraint, however, is less discussed in the literature related to MCS. Most organelles are too large to diffuse around freely -- how, then, can they find their cognate MCS at distant cellular locations? Notably, the same organelles are also actively transported by the kinesin and dynein motors. We therefore wondered if motors on an organelle could get switched from Transporter to Tether when the organelle reaches a specific MCS. Such a switch would allow organelles to sample the intracellular space with intermittent “pit-stops” at MCS where they can exchange proteins/lipids for onward communication. I will discuss some evidence to support this hypothesis. This includes a newly developed assay where we deposit an endoplasmic reticulum (ER)-mimicking proteinaceous membrane on a coverslip and engineer contacts between this ER-mimic and Lipid droplets held in an Optical tweezer. I will also bring out the potential implications of these results to control of systemic lipid homeostasis by the Liver.

***Wednesday, Nov 29<sup>th</sup> 2023***

***4:00 PM (Tea / Coffee 03.45 PM)***

***Auditorium, TIFR-H***