Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Students' Annual Webinar

Investigating the Role of SNAP and SNARE proteins in Store-Operated Calcium Entry

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Store-operated calcium entry (SOCE) is a major source of Ca2+ signal generation in several cell types. Orai1, the pore subunit of store-operated CRAC (Calcium Release Activated Calcium) channels along with Stim1, the ER-membrane resident calcium sensor involved in Orai1 activation form the essential elements of SOCE. To understand the mechanism of CRAC channel activation, previous studies from the lab have shown that α-SNAP (alpha-soluble NSF associated protein) directly associates with Orai1 and Stim1 and is required for the functional assembly of the CRAC channel complex. It is also shown that α-SNAP's role in SOCE is independent of its canonical function of SNARE-complex disassembly, following synaptic vesicle fusion. RNAi screens from the lab have further identified several target-SNAP receptors (t-SNAREs) and SNAP-family members in SOCE, and thus we aim to understand their collective role in CRAC channel functioning. The t-SNARE and SNAPs essentially contribute one or more α-helices to form four helix bundles that play a major role in secretory vesicle docking and fusion. We hypothesize that t-SNAREs could contribute helical domains to play modulatory roles in CRAC channel assembly and functioning. I will show my preliminary studies on potential t-SNARE proteins that are presently being worked upon and discuss my future plans regarding them.

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11:30 AM