Tata Institute of Fundamental Research

Homi Bhabha Road, Colaba, Mumbai, INDIA, 400005

ASET Colloquium

(Part of DBS@60 Conference)

Integration of neuromodulatory inputs by cellular Ca^{2+} signaling for systemic growth and behaviour

By Prof. Gaiti Hasan (NCBS-TIFR, Bengaluru)

Behavioural plasticity is an essential requirement for organismal survival. The nervous system achieves this by altering cellular responses appropriately through neuromodulatory signals that arise upon sensing changes in extracellular conditions. We work on understanding how neuromodulators change responses of neuronal cells. Both in vertebrates and invertebrates Inositol 1,4,5-trisphosphate (IP_3) is generated as a second messenger within cells in response to neuromodulatory signals. IP_3 in turn binds to the IP_3 receptor (IP_3R) present on intracellular Ca^{2+} stores to generate cellular Ca^{2+} signals. I will discuss how IP_3 mediated cellular Ca^{2+} signals affect neuronal function, systemic physiology and behaviour in the fruit fly Drosophila melanogaster followed by the relevance of these findings to human neurological conditions. Dysregulation of endoplasmic reticulum derived calcium signals and altered calcium homeostasis occurs in a range of neurodegenerative disorders including several Ataxias, Parkinson's and Alzheimer's disease emphasizing the importance of understanding how IP_3/Ca^{2+} signals affect nervous system function.

Date & Time: Friday, 1st September 2023, 4 pm (AG-66, TIFR Mumbai)
YT Live: https://youtube.com/live/UJhI64c1diE?feature=share