

Seminar

Biogenesis of secretory vesicles determines the properties of regulated release

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Neurons encode information through the timing and frequency of action potentials, and the properties of neurotransmitter release determine which of these features are transmitted to the postsynaptic neuron. Distinct modes of neurotransmitter release allow synapses to process information in diverse ways; however, the mechanisms that regulate properties of release, their influence on synaptic transmission, and their contribution to behaviour remain poorly understood. Previous studies on neurotransmitter release have primarily focused on the roles of individual proteins, with limited insight into how these proteins work together to enable distinct modes of release.

In my research on the adaptor protein AP-3, I discovered that the biogenesis of neurosecretory vesicles—synaptic vesicles and dense core vesicles—profoundly influences release properties, neurotransmission, and behaviour. While earlier work on adaptor proteins has emphasized their role in vesicle recycling, my findings reveal that AP-3 also governs the mode of release by orchestrating the assembly of proteins essential for regulated exocytosis. This highlights biogenesis as a critical and underexplored factor in understanding the mechanisms of neurotransmission and their implications for behaviour.

Tuesday, Feb 11th 2025

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFRH