

Anatomy And Physiology Of Synapse

Teaching Seminar

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10AM - 11AM

MD10 LEVEL 2
SEMINAR ROOM
DEPT OF ANATOMY

The neurons of our nervous system communicate through synapses. The synapses not only transfer information from one neuron to another, they also process that information, and thus constitute the building blocks of structural and functional connectivity in a neural network. Synapses differ dramatically in the brain, they are plastic. However, the majority of synapses are governed by the same fundamental principle, i.e. they convert chemical information into electrical signals. In order to achieve this remarkable functional specialty, synapses express a special set of proteins that help establish their functional properties. These synaptic proteins can be categorized into two major subtypes, i.e. pre- and postsynaptic proteins. The synaptic terminals of a neuron transmitting an information express presynaptic proteins, which in turn play a major role in the vesicular release of chemicals, also known as neurotransmitters. Whereas, the neurons receiving that chemical signal express postsynaptic proteins, which organize into neurotransmitter reception complex, and cause ionic flux in or out of the cell. Thus, the pre- and postsynaptic proteins functionally coordinate to faithfully translate a synaptic information into neuronal excitation or inhibition. My talk will elaborate on the mechanistic significance of different synaptic proteins in defining various synaptic properties.

About the Speaker

Dr Soham Chanda is a postdoctoral fellow jointly working with Drs. Thomas C. Südhof and Marius Wernig, at Stanford University. His research objectives fall in the intersection of basic and translational neuroscience focusing on understanding several aspects of synapse development and dysfunction, e.g. cellular mechanisms that regulate synaptic transmission, molecular contributions that determine synapse specifications, and pathogenic effects of disease-associated genetic mutations that impair synapse properties.

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