

# SEMINAR

**Wed, 16 Sept 2020 | 3 pm | Online Zoom Session**

Hosted by Prof Jayaraman Sivaraman



## Structure and function of membrane proteins involved in signal transduction

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Signal transduction involves a series of molecular events during which extracellular signals received by the cell surface receptors are conveyed across the biological membrane to the effector proteins, producing intracellular biochemical reactions and modulating cellular homeostasis. Membrane adenylyl cyclases (ACs) are the key enzymes in mammalian signal transduction. The ACs convert ATP to cyclic adenosine monophosphate (cAMP), thus regulating a plethora of cellular responses to a variety of extra- and intra-cellular stimuli, such as hormones, drugs, changes in intracellular Ca<sup>2+</sup>, etc. I will present the work of my group on the structure and function of the membrane ACs, including the X-ray crystallographic and cryo-EM studies of the *Mycobacterium tuberculosis* Rv1625c (the putative evolutionary ancestor of the mammalian membrane ACs), and the cryo-EM-based investigations of the bovine AC9. These recent studies from my group, including some of our yet unpublished results, provide important insights into the structure, function and regulation of the membrane ACs and open new areas of exploration in the field of signal transduction.