

Seminar

Molecular signatures of protein-lipid interactions in G protein-coupled receptors

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G protein-coupled receptors (GPCRs) represent a diverse class of transmembrane proteins that are primarily involved in transducing signals across the plasma membrane. An emerging feature of GPCRs is the modulation of GPCR function by membrane lipids. Experimental methods, such as fluorescence-based methods, crystallography and NMR have hinted at these effects, but have been unable to resolve these interactions. In this talk, I will discuss multi-scale molecular dynamics simulation studies that probe the interaction of various membrane components with GPCRs. We show that several cholesterol interaction sites can be identified, that are highly dynamic and have a microsecond time scale of exchange with the bulk lipids. Similarly, phospholipid and sphingolipid interaction sites have been identified that are, in some cases, in direct competition with cholesterol molecules. These specific interactions, along with general membrane effects, have been observed to modulate GPCR structure and organization. Our work is an important step towards analyzing molecular level interactions in the cell membrane.

Friday, May 11th 2018

4:00 PM (Tea/Coffee at 03:30 PM)

Auditorium, TIFR-H