

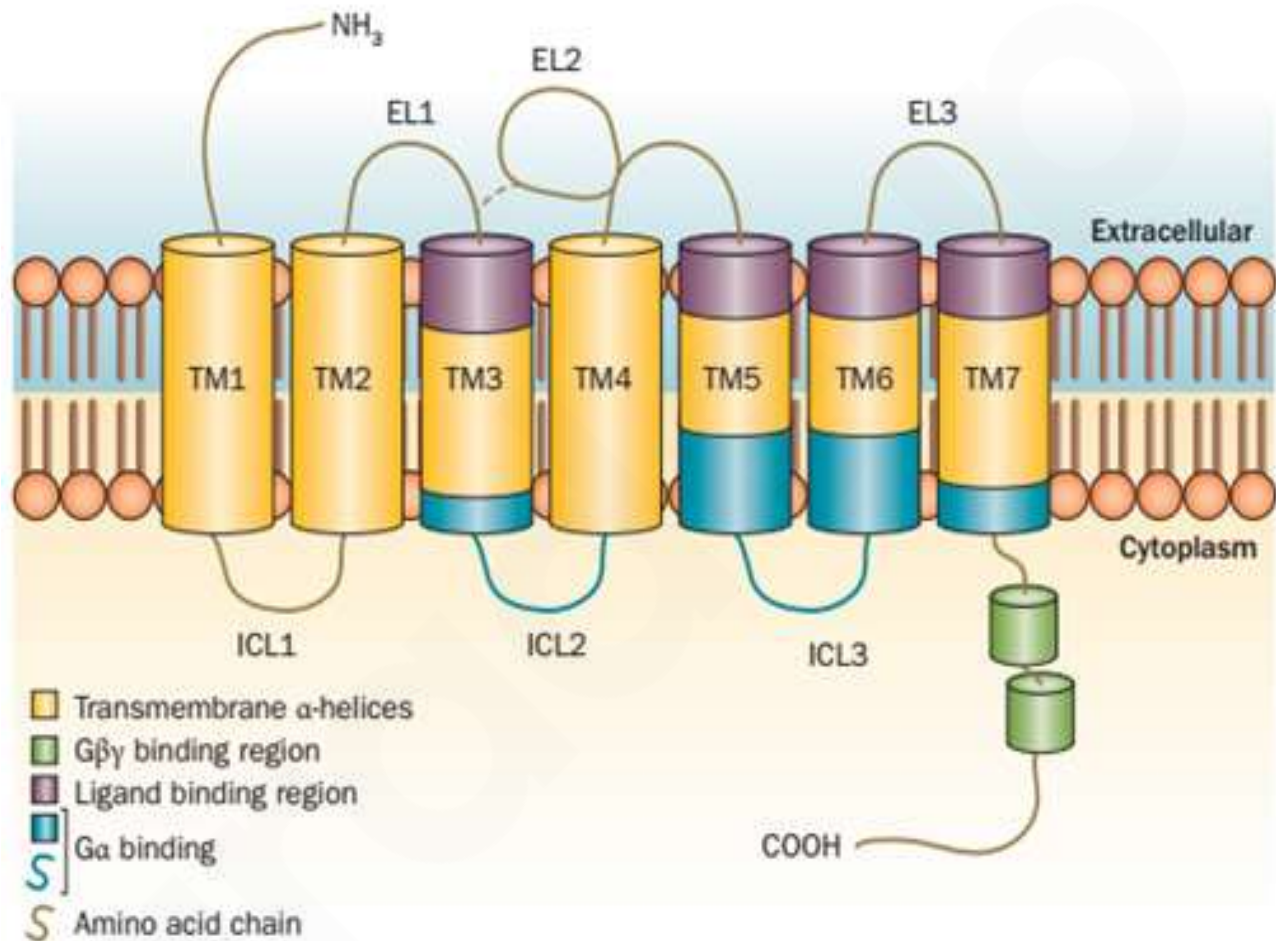
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(Short Notes on G-Protein  
Coupled Receptors (GPCR))



## GPCR

GPCR is the abbreviated form of **G-Protein Coupled Receptors**. They are also known as **7-Transmembrane receptors (7-TM receptors)**. They are an important part of a cell's plasma membrane and represent the largest of the several families of plasma membrane receptors, comprising more than a thousand genes and regulating virtually all known physiological processes in mammals. They are integral membrane proteins that contain seven membrane-spanning helices.



They are coupled to heterotrimeric (meaning they have three different subunits: an alpha subunit, a beta subunit, and a gamma subunit) G proteins on the intracellular side of the membrane. Two of the subunits — alpha and gamma — are attached to the plasma membrane by lipid anchors. Upon ligand binding, the GPCR undergoes a conformational change which is transmitted to the G protein causing activation. Further signal transduction depends on the type of G protein. GPCRs or 7-TM receptors are activated by a wide variety of ligands including light, olfactory stimulants, peptides, hormones and neurotransmitters. Binding of a signaling molecule to a GPCR results in G protein activation, which in turn triggers the production of any number of second messengers. Through this sequence of events, GPCRs help regulate an incredible range of bodily functions, from sensation to growth to hormone responses.



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