



V.S. Ananthanarayanan

Professor, Department of Biochemistry, Health Sciences
Centre, McMaster University, Canada

Signal Transduction *via* Hormone Receptors and Ion Channels: The Calcium Connection

A wealth of information is now available on the downstream events following the activation of membrane-bound receptors and ion channels. However, the structural details of the initial events are still unclear. For example, what is the biologically active conformation of ligands that bind to receptors and channels? What is the nature of the conformational changes in the latter that leads to activation? In my laboratory, we have addressed these questions by invoking the involvement of metal ions like Ca^{2+} which are abundant in the extracellular fluid

We have proposed, and experimentally verified, that the ligands (agonists and antagonists) of many types of G-protein-coupled receptors (GPCRs) and Ca^{2+} channels are capable of binding to metal ions in the lipid phase where they interact with their receptor proteins to form a ternary complex. In the case of GPCRs, we have proposed a model wherein metal ions, previously bound to the receptor protein in the absence of the ligand, will get displaced by the ligand, pass through a polar groove in the receptor, break an Arg-Asp salt bridge on the cytoplasmic side of the receptor and, lead to signal activation. In the case of Ca^{2+} channels, we propose a hydrophobic gate that will be blocked by antagonist ligands but not by agonists.

The details of our computed models and experimental data may be found in our publications accessible by PubMed or via my page in the website: <http://www.fhs.mcmaster.ca/biochem/Faculty.htm>

Date: 28 February 2003, Friday

Time: 4 - 5pm

Venue: LT 20

Host: Prof Hew Choy Leong

All are welcome