Department of Biological Sciences

VISITOR'S TALK

Speaker: Professor R. Sankararamakrishnan
IIT Kanpur

Date/Time: Monday, 30th April, 2018 at 03:00 pm

Venue: AB3-401

Computational Studies on Aquaporin Channel Superfamily

Aquaporins are membrane proteins that are involved in transporting water from one side of the membrane to the other side. They belong to the superfamily called major intrinsic proteins (MIPs). Other prominent members of this family include aquaglyceroporins that transport glycerol and other neutral molecules. They are involved in many physiological processes in humans and have been implicated in many human diseases. They have the therapeutic potential for cancer, obesity, brain injury, glaucoma and several other conditions and are identified as potential drug targets. Aquaporins are directly or indirectly linked to the uptake of antiparasitic drugs. These channels are present abundantly in plants. For example, in the model tree plant Populus tricocarpa, 55 MIP members have been identified. A subgroup of MIPs in rice is also known to transport arsenic causing arsenic poisoning in parts of India and Bangladesh. Hence, understanding the mechanism of aquaporin transport and selectivity is extremely important. In this talk, I will discuss the computational studies from our lab to understand the evolution, selectivity and the transport mechanism of aquaporin and related family members. These studies have far reaching implications in the fields of basic biology as well as in wide-ranging applications in nanobiotechnology.