NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

Seminar Announcement

FK506 Binding Proteins, Immunophilins with Functional Versatility

Date: 02 Sep 2016 Friday

Time: 4pm

Venue: Classroom 1, SBS

Speaker: Prof. Joe Ho Sup Yoon
School of Biological Sciences, NTU

Abstract

Immunophilins consist of a family of highly conserved proteins binding with immunosuppressive drugs such as FK506, Rapamycin and Cyclosporin A. Canonical immunophilins such as FKBPs and cyclophilins show peptidylprolyl *cis/trans* isomerase (PPIase) activity, where the catalytic activity is modulated by cognate ligands. Small-size immunophilins contain only ligand-binding domains, whereas immunophilins with large molecular weights possess extra domains such as tetratricopeptide repeat domain for protein-protein interaction, calmodulin binding domain for sensing calcium and transmembrane domain for anchoring at biological membranes. While the immunosuppressive roles of immunophilin-ligand binary/ternary complexes in the T-cell activation pathways have been extensively studied, their involvements in other biochemical processes including protein folding, receptor signaling, protein trafficking, apoptosis, autophagy, and transcription currently remain poorly understood. To this end, we have been studying the high resolution structural portraits and underlying molecular basis of several canonical and noncanonical FKBPs involved in apoptosis, conformational disorders, malaria, and nucleic acid recognition. The structural information not only provides insights into molecular mechanisms of the emerging FKBP family members in such cellular processes but also aids in designing novel and selective non-immunosuppressive immunophilin ligands with pharmacological efficacies. In this talk, structures, mechanisms of the multi-domain FKBP family members, design strategy of new immunophilin ligands, and opportunity of their therapeutic potentials will be discussed.