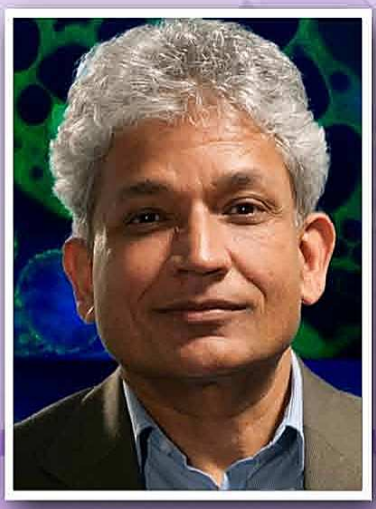
IMCB Invited Speaker



Speaker : **Prof. Sharad Kumar**
Co-Director, Centre for Cancer Biology, Department of Haematology, SA Pathology, Australia

Date : 8 November 2012 (Thursday)

Time : 3:00PM - 4:00PM

Venue : IMCB Seminar Room 3-46, Level 3, Proteos, Biopolis

Host : Prof. Wanjin Hong

Seminar :

The Nedd4 family of ubiquitin ligases in cellular physiology and disease

Ubiquitination is critical for the regulation of protein stability, localization and degradation. The ubiquitination of a protein requires a cascade of enzymes including a ubiquitin activating enzyme (E1), ubiquitin conjugating enzymes (E2s) and ubiquitin protein ligases (E3s). The E3s belong to two main classes: RING and HECT. HECT ligases are single chain enzymes that first accept ubiquitin and then transfer it to specific protein targets (1). The Nedd4 family, distinguished by a unique modular domain structure consisting of a C2 domain, 2-4 WW domains and a C-terminal HECT domain, is a highly conserved group of HECT E3s (1). In this seminar I willsummarize our studies with some of the Nedd4 family members, with a specialfocus on their in vivo function, their regulation by a group of adaptor proteins and their potential roles in disease.

(1) Rotin D, Kumar S (2009) Nature Rev Mol Cell Biol. 10: 398-409.

About the Speaker :

Sharad Kumar is a NHMRC Senior Principal Research Fellow, a co-Director of the Centre for Cancer Biology at SA Pathology, and an affiliate Professor at the University of Adelaide. He obtained his PhD in Biochemistry from the University of Adelaide (Waite Institute) and worked as a postdoctoral fellow in Brisbane with Martin Lavin. He then moved to the CSIRO Animal Health Laboratory as research scientist before receiving a Japanese Government Science and Technology Fellowship to spend two years as a visiting fellow at RIKEN in Tsukuba, Japan. Following this he took up a position as an Associate Member at the Cancer Institute (Tokyo, Japan), before returning to Adelaide in mid-1994.

His laboratory discovered, named and characterised a number of key regulatory genes, including the developmentally regulated Nedd genes, such as Nedd1- a key centrosomal protein required for γ-tubulin recruitment, Nedd2 (caspase-2)- the first known apoptotic mammalian caspase, Nedd4- the first WW-HECT type of ubiquitin-protein ligase, Nedd5 (Sept2)- the first characterised mammalian septin, and Nedd8- a ubiquitin-like protein involved in a protein modification pathway, now widely known as neddylation. The laboratory also discovered a large part of the Drosophila cell death machinery and a number of proteins that regulate the function of Nedd4 ubiquitin ligases. His group now studies caspase biology and functions in cancer, mechansims of developmentally programmed cell death, and the physiological functions and regulation of the Nedd4 family members.

He has published over 190 papers, with >11,500 citations and an h index of 60. He was a Wellcome Trust Senior Fellow prior to his NHMRC fellowship. He was awarded the 2003 ASBMB Amersham Bioscience Award for distinguished achievements in biochemistry and molecular biology research in Australia and recently received the Ranbaxy International Research Award for "Seminal contributions to the understanding of programmed cell death and the regulation of the protein function by ubiquitination."

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