

Suppression of aneuploidy by caspase-2

Abstract:

Caspase-2, the most evolutionarily conserved member of the caspase family, has redundant function in cell death during development. Our recent work suggests that caspase-2 is tumour suppressor as caspase-2 deficiency enhances tumourigenesis in several mouse models. Interestingly caspase-2-deficient tumours always show enhanced chromosomal instability (CIN) and aneuploidy. Increased CIN and aneuploidy are also characteristics of caspase-2-deficient mouse embryonic fibroblasts in culture as well as human tumour cells with *CASP2* gene knockout. We further found that caspase-2 is required for apoptotic deletion of cells carrying mitotic defects. Thus apoptotic activity of caspase-2 is necessary for deleting cells with CIN to limit aneuploidy and we propose that this is linked to the tumour suppressor function of caspase-2. Other recent studies have suggested that in response of cytokinesis failure caspase-2 mediates cleavage of Mdm2 that results in p53 stabilization and cell cycle arrest, thus preventing polyploidy. It is therefore possible that caspase-2 is involved in two checkpoints, one leading to apoptosis of cells with CIN and the other, cell cycle arrest following cytokinesis failure. We are now investigating how caspase-2 senses mitotic errors and becomes activated and how is such activation regulated.



Speaker:

Sharad Kumar AM **MSc, PhD, FAA, FAHMS.**

Professor
Co-Director, Centre for Cancer Biology
University of South Australia and SA Pathology
NHMRC Senior Principal Research Fellow
Chair of Cancer Biology & Research Professor
of Cell Biology
University of South Australia

Prof. Sharad Kumar is a Senior Principal Research Fellow of the NHMRC Australia, a Co-Founder and Co-Director of the Centre for Cancer Biology, a Professor of Cell Biology and the Chair of Cancer Biology at the University of South Australia and an Affiliate Professor of University of Adelaide. His laboratory has made a number of discoveries in cell death and ubiquitination fields relevant to multiple diseases. He is a Fellow of the Australian Academy of Science (FAA) and the Australian Academy of Health and Medical Sciences (FAHMS). He has been recognised through several awards including the ASBMB Lemberg Medal, the FAOBMB Research Excellence Award, the ANZSCDB President's Medal and appointment to the Order of Australia. He has published 255 articles with >31,000 citations and H index of 86.

Date:

5 July 2019
(Friday)

Venue:

Conference Room 7C,
Level 7

Duke-NUS Medical School
8, College Road,
Singapore 169857

Time:

12:00 - 1:00 p.m.

Host:

Kanaga Sabapathy

Professor
Cancer & Stem Cell Biology
Duke-NUS Medical School
Head and Principal Investigator
Division of Cellular & Molecular
Research
National Cancer Centre
Singapore

**No registration is
required.**

All are welcome.

Any enquiries, please contact:
Jamie Liew (+65 6516 6954)