Agency for Science, Technology and Research
SINGAPORE

p53 Laboratory Seminar Announcement

- All Are Welcome -



Speaker: **Prof Andreas Strasser**
Head, Molecular Genetics of Cancer Division
The Walter and Eliza Hall Institute (WEHI)
Melbourne, Australia

Title : **The role of programmed cell death in embryonic development – surprising new insights**

Date : **24 May 2018 (Thursday)**

Time : **11am – 12noon**

Venue : **Breakthrough Theatrette, Matrix Level 4, Biopolis**

Host : **Prof Sir David Lane**
Chief Scientist, A*STAR & Director, p53Lab

Abstract:

Francine F. S. Ke, Hannah K. Vanyai, Angus Cowan,[1] Alex R. D. Delbridge, Lachlan Whitehead, Stephanie Grabow, Peter Czabotar, Anne K. Voss, Andreas Strasser

Intrinsic apoptosis, reliant on BAX and BAK, has been postulated to be fundamental for morphogenesis, but its precise contribution to this process has not been fully explored in mammals. Our structural analysis of BOK suggests close resemblance to BAX and BAK structures. Notably, Bok-/-Bax-/-Bak-/- animals exhibited more severe defects and died earlier than Bax-/-Bak-/- mice, implying that BOK has overlapping roles with BAX and BAK during developmental cell death. By analyzing Bok-/-Bax-/-Bak-/- triple knock-out mice whose cells are incapable of undergoing intrinsic apoptosis, we identified tissues that formed well without this process. We provide evidence that necroptosis, pyroptosis or autophagy do not substantially substitute for the loss of apoptosis. Albeit very rare, unexpected attainment of adult Bok-/-Bax-/-Bak-/- mice suggests that morphogenesis can proceed entirely without apoptosis mediated by these proteins, and possibly without cell death in general.

About the Speaker:

Prof. Strasser is the head of the Molecular Genetics of Cancer Division at The Walter and Eliza Hall Institute (WEHI) in Melbourne, Australia. He completed his Master of Science and Ph.D. at the Basel Institute for Immunology and University of Basel in Switzerland before joining WEHI as a postdoctoral fellow in 1989. He studies programmed cell death and how defects in apoptosis cause cancer or autoimmune disease and impair the response of tumor cells to anti-cancer therapy. Prof. Strasser and his colleagues were the first to discover that abnormalities in cell death can cause cancer and autoimmune disease, including the discovery that BCL-2 collaborates with the *MYC* oncogene in tumorigenesis. Their studies have determined which pro-survival BCL-2 family member are essential for the sustained growth of which cancers. They also found that BCL-2 and death receptors regulate distinct pathways to apoptosis and have studied how the individual and overlapping roles of these two apoptotic pathways function in the immune system. Prof. Strasser discovered BIM and BMF, and was the first to show that BH3-only proteins are essential for the initiation of programmed cell death and stress-induced apoptosis. Based on this work, a collaboration between WEHI (including the Strasser group), Genentech, and AbbVie led to the development of the BCL-2 inhibitor Venetoclax/ABT-199, which is approved for treatment of refractory chronic lymphocytic leukemia, while a similar collaboration with Servier yielded the first potent and selective inhibitor of the cell death inhibitor MCL-1, currently in clinical trials.