Institute of Medical Biology
A*STAR

Seminar Announcement

- All Are Welcome -



Speaker : **Dr Teresa Ho**
Center for Protein Research, University of Copenhagen

Title : ***"Unravelling Roma: a new player in cell cycle regulation and genomic stability"***

Date : **12 April 2016 (Tuesday)**
Time : **2:00pm – 3:00pm**
Venue : **Breakthrough Theatre, Matrix Level 4**
Host : **Prof Birgit Lane**

Abstract:
Regulation of DNA replication and cell division is essential for tissue growth and homeostasis and the maintenance of genomic integrity. This is particularly important in rapidly expanding tissues such as the mammary gland during pregnancy when epithelial cells proliferate to form the milk-producing alveolar structures in preparation for lactation. Similarly, the proper transition of epithelial cells from proliferation to terminal differentiation is critical for mammary development and prevention of tumourigenesis. However, our understanding of the complex network of transcription factors and signalling molecules governing these processes is far from complete.

We have identified a KRAB-domain zinc finger transcription factor, Roma, as a master regulator of the important process of alveolar lineage commitment in mammary gland. As such, ablation of Roma results in precocious alveologenesis during pregnancy and unscheduled proliferation during lactation. This was characterised by disruption of replication licensing, re-replication, DNA damage and chromosomal aberrations. Analysis of Roma-deficient mouse embryonic fibroblasts revealed an acceleration of replication fork velocities accompanied by a high rate of mitotic errors and polyploidy. Strikingly, levels of the cell cycle inhibitor $p21^{Cip1}$ and the replication licensing inhibitor geminin were downregulated in the absence of Roma, both *in vivo* and *in vitro*.

These results highlight the importance of Roma in the developmental transition of the proliferating mammary epithelium into quiescence. It also pinpoints Roma as a previously unidentified player in cell cycle regulation, particularly, in replication control, with significant implications for tumourigenesis.

About the Speaker:
Teresa Ho received her PhD from the University of Cambridge where she worked on cell cycle regulation and the DNA damage response in mammary gland in the lab of Prof. Christine Watson. Teresa is also a recipient of the A*STAR National Science Scholarship (NSS, PhD). She is currently a postdoctoral researcher in the lab of Prof. Niels Mailand at the University of Copenhagen, Centre for Protein Research and is working on cellular responses to replication stress and DNA damage signalling.