Institute of Molecular and Cell Biology

A*STAR

SEMINAR ANNOUNCEMENT

DATE: 30 January 2012, Monday

TIME / VENUE: 10:30AM @ Breakthrough Theatrette, Level 4, Matrix Building, Biopolis

SPEAKER: Dr. Yannick Schwab

TITLE OF SEMINAR: **Correlative Light and Electron Microscopy: from live imaging to 3D ultrastructure**

Our work is focused on the development of new tools and protocols that enable high resolution snapshots of dynamic events in cultured cells, small animal model organisms (zebrafish embryos, C. Elegans) and tissues.

We've used high pressure freezing or chemical fixation to arrest the specimen that had been observedlive with light microscopy. To overcome the problem of region of interest (ROI) localization, we've used the precise mapping of the living specimen by light microscopy (confocal microscopy) to enable targeted ultramicrotomy of the ROI in flat embedded samples. The time lapse acquisitions and the 3D datasets obtained by confocal microscopy were then correlated with the 3D ultrastructure from serial sections or EM tomograms of the same objects. We've applied these techniques on various models in which specific GFP tagged proteins are used as anatomical markers and help to focus on objects with a subcellular precision. The simplicity and the accessibility of the techniques make this new CLEM approach a powerful tool that is now routinely used in various research fields such as developmental biology and cardiovascular research.

References:

Kolotuev I, Schwab Y and Labouesse M (2010) A precise and rapid mapping protocol for correlative light and electron microscopy of small invertebrate organisms Biol Cell.; 102(2):121-32.

Spiegelhalter et al, (2010) From dynamic live cell imaging to 3D ultrastructure: novel integrated methods for high pressure freezing and correlative light-electron microscopy. PLoS ONE 5(2): e9014.

Host: Prof. Wanjin Hong