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TEMASEK LIFESCIENCES LABORATORY

23 July 2018 (Monday), 4pm
The Auditorium (Level 1)

Hosted by: Dr Yu Fengwei

The assembly of the cytoophidium



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Subcellular sequestration of proteins within membrane bound compartments is widely acknowledged to be an important mode of enzymatic regulation. Recently a novel paradigm for metabolic enzyme compartmentation has become apparent with the identification of several proteins which are able to form filamentous structures in vivo. Multiple studies independently identified the essential *de novo* pyrimidine biosynthesis enzyme CTP synthase as a major constituent of a novel filamentous structure which has been termed “the cytoophidium”. Cytoophidia have been observed to form in multiple organisms including bacteria, budding yeast and fruit fly as well as in human cultured cells. We have performed a high throughput genome-scale RNA interference (RNAi) screen in *Drosophila* cells to identify factors involved in cytoophidium biogenesis. Our study provides an important resource for an integrative understanding of the biogenesis of this novel organelle.

Professor Ji-Long Liu set up his laboratory at the University of Oxford in 2007 and joined ShanghaiTech University in 2016. In 2010, Professor Liu discovered that CTP synthase is compartmentalised into the cytoophidium (cell snake), a novel membraneless organelle. Studying multiple organisms including fruit flies, yeast and mammals, the Liu lab is keen to learn everything about the cytoophidium.

Recent Publications:

1. **Liu JL.** (2016). The cytoophidium and its kind: Filamentation and compartmentation of metabolic enzymes. *Annual Review of Cell and Developmental Biology* 32:349-72
2. Aughey GN, Grice SJ and **Liu JL.** (2016). The interplay between MYC and CTP synthase in *Drosophila. PLOS Genetics* 12(2):e1005867.
3. Ghosh S, Tibbit C and **Liu JL.** (2016). Effective knockdown of *Drosophila* long non-coding RNAs by CRISPR interference. *Nucleic Acids Research* 44(9):e84