



BIOLOGY COLLOQUIUM

Friday, 29 March 2019 | 4pm | DBS Conference Room 1

Hosted by Prof Gong Zhiyuan

The role of nucleolar factors in liver development



By Peng Jinrong

Professor, College of Animal Sciences, Zhejiang University, China

During last 18 years, we have been focusing on studying liver development in zebrafish via genetic and genomic approaches. We identified five nucleolar factors including Def/Utp25, Sas10/Utp3, Mpp10, Bms1l and Rcl1 which are essential for the development of digestive organs. Mechanism studies have allowed us to reveal that Def recruits the cysteine protease Calpain3 to the nucleolus to form a previously unidentified nucleolus-localized Def-Capn3 protein degradation complex. The Def-Capn3 complex controls cell cycle progression by targeting key cell cycle controllers such as p53. We have proposed that the Def-CAPN3 pathway serves as a nucleolar checkpoint of cell proliferation by selective inactivation of cell cycle-related substrates during organogenesis. In addition, we also found that Mpp10 is a target of the Def-Capn3 pathway. Sas10 binds to Mpp10 to cover the Capn3 recognition site so that to prevent Mpp10 from being targeted by Capn3. Sas10 also delivers Mpp10 to the nucleolus for assembling the ribosomal small subunit (SSU) processome. Our work has revealed the novel biological functions of the nucleolus during organogenesis.

About the Speaker

Jinrong Peng got his BSc in Sichuan University in 1984 and MSc in Shanghai Institute of Biochemistry in 1987. He then was appointed as an assistant lecturer at Fudan University. He received his PhD from John Innes Centre, a prestigious institute famous on plant molecular genetics, in 1993, and did his post-doc research in John Innes Centre from 1993-1999. He was appointed as a senior scientist by Institute of Molecular Agrobiolgy in 1999 and by IMCB in 2002. From 2008, he was appointed as a full professor by Zhejiang University. His lab mainly focuses on studying liver development and regeneration in zebrafish, has published a series of high impact papers in top notch journals.