Institute of Molecular and Cell Biology
A*STAR

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Prof. Vinay Tergaonkar:

Date: 25 June 2019, Tuesday
Time: 11:00AM – 12:00PM
Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Speaker: Professor Xingzhi (Xavier) Xu, Vice Dean, School of Medicine, Shenzhen University, China

Title: UFMylation in the DNA damage response

Abstract:
A proper DNA damage response (DDR) is essential to maintain genome integrity and prevent tumorigenesis. DNA double-strand breaks (DSBs) are the most toxic DNA lesion and their repair is orchestrated by the ATM kinase. ATM is activated via the MRE11-RAD50-NBS1 (MRN) complex along with its autophosphorylation at S1981 and acetylation at K3106. Activated ATM rapidly phosphorylates a vast number of substrates in local chromatin, providing a scaffold for the assembly of higher-order complexes that can repair damaged DNA. While reversible ubiquitination has an important role in the DSB response, modification of the newly identified ubiquitin-like protein ubiquitin-fold modifier 1 (UFM1) and the function of UFM1 modification (UFMylation) in the DDR is largely unknown. We found that MRE11 is UFMylated on K282 and this UFMylation is required for the MRN complex formation under unperturbed conditions and DSB-induced optimal ATM activation, homologous recombination-mediated repair and genome integrity. A pathogenic mutation MRE11(G285C) identified in uterine endometrioid carcinoma exhibited a similar cellular phenotype as the UFMylation-defective mutant MRE11(K282R). Taken together, MRE11 UFMylation promotes ATM activation, DSB repair and genome stability, and potentially serves as a therapeutic target.

Biography:
Xingzhi Xu, Ph.D., has been a professor and the Vice Dean of the Shenzhen University School of Medicine since 2016. Prof. Xu also serves as the Deputy Director of Guangdong Key Laboratory of Genome Stability and Human Disease Prevention, the Deputy Editor-in-Chief of Genome Instability & Disease, an editorial board member of DNA Repair, Scientific Reports, and several others, and the Vice Director of the Signal Transduction Committee of the Chinese Society for Cell Biology. Prof. Xu was the founding director of the Beijing Key Laboratory of DNA Damage Response. His research focuses on how DNA damage response maintains genome integrity and prevents carcinogenesis. He has published more than 80 peer-reviewed publications. He has been serving on the study sessions for the National Science Foundation of China since 2009. Following his graduation from Shanghai Medical University in 1992, he became a general

surgeon in Shanghai from 1992-1994. He obtained his MSc degree and PhD degree from National University of Singapore in 1996 and University of South Carolina in 1999, respectively, and completed a post-doctoral fellowship at Yale Medical School and a Beckman Fellowship at the City of Hope National Medical Center before he joined the faculty at Capital Normal University in 2006. Prof. Xu is the founder and key organizer of the annual meeting series of international symposium of DNA Damage Response & Human Disease (isDDRHD) since 2010.

ALL ARE WELCOME *(No registration required)*

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