

Department of Biomedical Sciences  
Presents a seminar

# Chromophore Supply Modulates Cone Function and Survival in Retinitis Pigmentosa Mouse Models

**Prof. Yunlu Xue**  
Investigator, Group Leader  
Retina and Eye Research Group  
Lingang Laboratory Shanghai

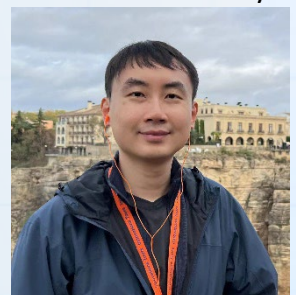
**Date: 25 March 2024 (Monday)**

**Time: 15:00 – 15:50**

**Venue : LT-3, C Y Sun Lecture Theatre, 4/ F Yeung Kin Man Academic Building, CityU**

**Abstract:** Retinitis pigmentosa (RP) is an ocular disease characterized by the loss of night vision, followed by the loss of daylight vision. Daylight vision is initiated in the retina by cone photoreceptors, which are gradually lost in RP, often as bystanders in a disease process that initiates in their neighboring rod photoreceptors. Using physiological assays, we investigated the timing of cone electroretinogram (ERG) decline in RP mouse models. A correlation between the time of loss of the cone ERG and the loss of rods was found. To investigate a potential role of the visual chromophore supply in this loss, mouse mutants with alterations in the regeneration of the retinal chromophore, 11-cis retinal, were examined. Reducing chromophore supply via mutations in Rlbp1 or Rpe65 resulted in greater cone function and survival in a RP mouse model. Conversely, overexpression of Rpe65 and Lrat, genes that can drive the regeneration of the chromophore, led to greater cone degeneration. These data suggest that abnormally high chromophore supply to cones upon the loss of rods is toxic to cones, and that a potential therapy in at least some forms of RP is to slow the turnover and/or reduce the level of visual chromophore in the retina.

**About the speaker:** Dr. Xue is an Investigator and the Group Leader of the Retina and Eye Research Group at Lingang Laboratory. He obtained BSc in Biomedical Engineering (First Class Honors) from the Hong Kong Polytechnic University in 2010. He received PhD in neuroscience from Washington University in St. Louis in 2015. From 2015 to 2022, he conducted postdoctoral research in the Department of Genetics of Harvard University with Dr. Connie Cepko, and he was also served as a visiting postdoc at the Center for Vision Science at the University of Rochester (2018-2021) with Drs. David Williams and Jennifer Hunter. He got independent at Lingang Laboratory in July 2022. He uses retina as a simple model to study the complex nervous system. His lab uses tools of molecular biology, electrophysiology, and high-resolution in vivo imaging to study the signal transduction, and to design gene therapies for the retina in healthy and diseases.



**Enquiries:**

Miss Vivian Woo (3442-4985, [vivian.woo@cityu.edu.hk](mailto:vivian.woo@cityu.edu.hk))

**ALL ARE WELCOME**