College of Science and Engineering

Department of Biomedical Sciences

Seminar

Autophagy in Neurodegenerative Disease

Dr. Yue Jianbo

Department of Biomedical Sciences, City University of Hong Kong

Efficient RNA Delivery Using Extracellular Vesicles

Dr. Le Minh

Department of Biomedical Sciences, City University of Hong Kong

Date: 11 January 2017 (Thursday)

Time: 12:00 nn – 1:30 pm (Reception with light sandwiches at 11:45am, talks start at 12nn. To facilitate the order of sandwiches, please register through email chchung33@cityu.edu.hk.)

Venue: G4302, Yeung Kin Man Academic Building, City University of Hong Kong

Two Presentations of 30 min each, followed by a 30 min discussion on collaboration activities

Cell Biology and Novel Technology

1. Autophagy in Neurodegenerative Disease

Autophagy is an evolutionarily conserved lysosomal degradation process, and plays an important role in wide variety of physiological processes, e.g. development, differentiation, immune defense, etc. Autophagy starts when misfolded proteins or damaged organelles are encircled by a double membrane structure, called autophagasome, and autophagosome then fuse with lysosome to form autolysosome, inside which the contents are digested by acidic enzymes and recycled back to cytosol for energy recycle. Dysfunctional autophagy has been related to various human diseases, e.g. cancer, viral and bacterial infections, neurodegenerative diseases, etc. Pharmacologic agents targeting autophagy have shown promising effects against these diseases, yet specific and potent autophagy small chemical inducers or inducers are still missing. In this talk, I will summarize the current understanding of autophagy, introduce the efforts in the fields to develop autophagy modulators, and present our own research progress in applying the autophagy inducers to treat neurodegenerative diseases, e.g. alzheimer's disease (AD).

Biography

Dr. Yue is associate professor at City University of Hong Kong. He received his PhD from Penn State University, and spent six years at Stanford University with Jim Ferrell as a postdoctoral fellow working on cell cycle regulation. He then returned to China as an assistant professor at Department of Physiology of University of Hong Kong. He is currently studying cell cycle regulation and calcium signaling in embryonic stem cells. He was the recipient of a Special Fellowship from The Leukemia and Lymphoma Society and a postdoctoral fellowship from American Heart Association.

Seminar

2. Efficient RNA Delivery Using Extracellular Vesicles

Gene therapy using siRNAs, antisense oligonucleotides (ASOs) and CRISPR Cas9 are promising therapeutic modalities. However, delivery of therapeutic RNAs in vivo is challenging due to the instability and the immunogenic nature of RNAs. Although many forms of chemical modifications and synthetic nanoparticles are now available for RNA delivery, the biocompatibility of these artificial materials are still limited. Recently, cellular derived extracellular vesicles (EVs) including exosomes have emerged as a new platform for RNA delivery due to their natural biocompatibility that bypasses the toxicity and immunogenicity roadblocks. We have developed a robust method to purify EVs from the blood and electroporated the EVs with either small or large RNAs for gene therapies against cancer. The delivery was very efficient both in vitro and in cancer xenografted mouse models, leading to functional effects without any sign of toxicity. This platform is also applicable to other diseases.

Biography

Dr Le graduated from the National University of Singapore in 2005 with a Bachelor degree in Life Sciences. She further received a Ph.D. degree in Computational and Systems Biology from the Singapore-Massachusetts Institute of Technology (MIT) Alliance under the guidance of Prof. Bing Lim at the Genome Institute of Singapore and Prof. Harvey Lodish at the Whitehead Institute for Biomedical Research. From 2010 to 2015, she worked as a postdoctoral fellow with Prof. Judy Lieberman at Boston Children's Hospital and Harvard Medical School in the USA. She joined the Department of Biomedical Sciences at City University of Hong Kong (CityU) as a tenure-track Assistant Professor in August 2015.

Dr Le is well recognised for her contributions to the field of microRNAs (miRNAs) and cancer biology. She was the first to identify a miRNA that regulates p53, an important tumor suppressor gene. This miRNA, miR-125b, was subsequently found to be a potent oncogenic miRNA in leukemia and many solid tumors. Dr Le characterised the anti-apoptotic functions of miR-125b in zebrafish embryos and mammalian cells.

**** All ARE WELCOME ****

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