NUS National University of Singapore | Department of Pharmacy, Faculty of Science

17 Nov 2017 (Fri), 11 am
S4A-L3 Room C & D

How to Battle Nutrient Excess? The molecular mechanism of energy storage

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Hosted by A/P Victor Yu

Sufficient energy storage in the form of neutral lipid TAG is important for survival during evolution. However, excess lipid storage leads to the development of metabolic diseases including obesity, diabetes and fatty liver disease. Lipid droplets (LDs) are dynamic subcellular organelles responsible for lipid storage and control intracellular lipid homeostasis. This seminar will discuss the role of CIDE family in controlling LD fusion and lipid storage. CIDE proteins consist Cidea, Cideb and Cidec (Fsp27) are LD and ER-associated proteins. CIDEs deficient animals indicate that these proteins play important roles in controlling lipid storage in adipocytes, hepatocytes, mammary epithelial cells and skin sebocytes. Further molecular and cell biological evidence suggest that CIDE family proteins are highly enriched at LD-LD contact sites (LDCS) and promote atypical form of LD fusion and growth by initiating a directional lipid transfer from smaller to larger LDs. Several regulatory proteins including Perilipin1 (Plin1) and Rab8a are shown to enhance CIDE-mediated LD fusion and growth. Detailed molecular mechanisms underlying CIDE proteins in controlling LD fusion and lipid storage will be discussed.

Professor Peng Li finished her B.Sc. at Beijing Normal University in 1987, and obtained her Ph.D. from the University of California at San Diego in 1995. She then received her postdoctoral training at IMCB, Singapore and UT Southwestern Medical Center at Dallas. She was a principal investigator at IMCB from 1997-2002 and an assistant/associate professor in Hong Kong University of Science and Technology from 2003-2005. She is currently a professor at the School of Life Sciences, Tsinghua University and director of the division of life sciences, National Natural Science Foundation of China. She was elected Academician of the Chinese Academy of Sciences in 2015 and elected Fellow of TWAS in 2016.