The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

"Super-resolution Fluorescence Microscopy of Living Cells"

Speaker: Dr Sang-Hee Shim
School of Natural Sciences
UNIST (Ulsan National Institute of Science and Technology)
Host : Dr Kang Nam-Young
Date : Wednesday, 17 June 2015
Time : 9.00am – 10.00am
Venue : SBIC Seminar Room
11 Biopolis Way
Level 2, Helios Building, Singapore 138667
(Please enter Level 1 entrance)

Abstract

Super-resolution fluorescence microscopy has overcome the diffraction limit of optical microscopes over an order of magnitude and open new windows for visualizing ultrastructural dynamics *in vivo*. One major group of such methods utilizes photoswitching probes for separating fluorophores in time, thereby localizing single molecules at high precision. This group was first introduced by the names of STORM (stochastic optical reconstruction microscopy) and PALM (photoactivated localization microscopy). The speaker will present STORM imaging methods for living cells. Proteins in live cells were imaged with photoswitchable cyanine dyes whose brightness and fast switching enabled 3D resolutions of 30-50 nm within 1-2 seconds. Membranes in live cells were stained with small-molecule probes that allowed us to resolve previously obscured details on dynamics of the plasma membrane, the endoplasmic recticulum (ER) and mitochondria.

About the Speaker

Dr Sang-Hee Shim is currently an assistant professor in the School of Life Sciences at UNIST (Ulsan National Institute of Science and Technology) in Korea. Dr Shim received her B.S. and M.S. degrees in Chemistry from Seoul National University (Korea). In 2008, she received her PhD in Chemistry from University of Wisconsin-Madison under the guidance of Dr Martin Zanni. During her post-graduate days, she developed the first mid-infrared pulse shaper, invented an automated method for two-dimensional infrared spectroscopy and applied it to study residue-specific dynamics in amyloid formation of human amylin, which is thought to be responsible for type II diabetes. After completing her PhD study, she moved to Department of Chemistry and Chemical Biology at Harvard University for her postdoctoral research

in the laboratory of Dr Xiaowei Zhuang, who invented STORM (Stochastic Optical Reconstruction Microscopy), a super-resolution fluorescence microscopy based on single-molecule localization. In Dr Zhuang's group, Dr Shim developed live-cell STORM imaging methods and studied calcium nanodomains on sperm flagella. Dr Shim published a number of papers in high-impact journals such as *Nature Methods, PNAS and Cell*. She received Nobel Laureate Signature Award for Graduate Education in Chemistry from American Chemical Society in 2010.

--- Admission is free and all are welcome ---