City University of Hong Kong
Department of Biomedical Sciences
presents a seminar

"TRACKING PROTEINS INSIDE LIVE CELLS USING COORDINATION-BASED FLUORESCENCE APPROACH."

by

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Date: 28 April 2016
Time: 11.00am to 12.30noon
Venue: Meeting room 2-130, 1/F, Block 2, To Yuen Building, CityU

Abstract

We utilized two fluorescence-based approaches to track intracellular tagged proteins and monitor metal-protein interactions. We have developed coumarin-based fluorescent probe Ni-*NTA-AC*, which enters cells and traces intracellular His-tagged proteins in minutes, without perturbing the functions of target proteins. Significant fluorescence enhancement (~13-fold) was observed upon binding of Ni-*NTA-AC* to its protein of interest and formation of covalent linkage through acylazide photoactivation. Ni-*NTA-AC* is readily applicable to successfully visualize the subcellular localization of His-tagged proteins in various types of cells, including bacterial and mammalian cells and even the plant tissues. The probe could also be used in metalloproteomics. A series of probes with different fluorophores are under development in this laboratory. Ni-NTA system has revolutionized protein purification and immobilized metal affinity-chromatography subsequently has widely been used in proteomics for identification of protein phosphorylation. The new fluorescent probe represents another breakthrough of Ni-NTA system to visualize proteins directly in cells.

We also constructed two fluorescent sensors *CY*Hpnl and *CY*Hpnl_1-48 (with C-terminus glutamine-rich sequence deleted) to elucidate the role of Hpn-like by FRET. Our FRET analysis confirmed the role of Hpnl for Ni(II) storage and revealed the potential association of Hpnl with Bi-based antiulcer drugs in cells. The potential of coordination-inspired fluorescence technique in biology and medicine will be discussed.

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All are welcome