NANYANG TECHNOLOGICAL UNIVERSITY

CBC SEMINAR ANNOUNCEMENT

Professor Hiroshi Ueda
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How can we transform mono-functional proteins to biosensors?

In nature, there are numerous receptor proteins that convert the ligand-binding signal to other signals such as ion torrent and enzyme activity. Here I will introduce our novel approaches to engineer natural mono-functional proteins e.g. binding proteins such as antibody, or bioluminescent protein such as luciferase into biosensors.

The first example is Quenchbody, which is a reagentless fluorescent biosensor based on the principle of antigen-dependent removal of a quenching effect on a fluorophore attached to antibody domains[1]. This was discovered while analyzing the antibody single chain variable region (scFv) fluorolabeled at the N-terminal region, but later higher response was attained with multi-labeled Fab fragments, probably due to enhanced quenching[2].

The second example is FlimPIA (firefly luminescent intermediate-based protein-protein interaction assay), which utilizes the functional complementation of two mutant firefly luciferases[3]. If time allows, results of fluorescent protein-based[4] and other enzyme-based immunosensors will be shown.

References
1) R. Abe et al., J. Am. Chem. Soc. 133, 17386-17394 (2011).
2) R. Abe et al. Sci. Rep. 4, 4640 (2014).
3) Y. Ohmuro-Matsuyama et al. Anal. Chem. 85, 7935-7940 (2013); ibid. 86, 2013-2018 (2014).
4) C.I. Chung et al., Anal. Chem. 87, 3513-3519 (2015).

Date:	**13th March 2017 (Monday)**
Time:	**2:00pm – 3:30pm**
Venue:	**SPMS Research & Graduate Studies Office Conference Room**
Host:	**Assoc Professor Xing Bengang**