NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

SBS Seminar Announcement

Designed DNA Nano-Switches for Molecular Sensing

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Abstract
Functional nucleic acid receptors (aptamers) have emerged as effective and robust recognition elements for use in molecular biosensors. Analytical readouts from aptamer-based biosensors (whether optical, electrochemical, or otherwise) derive primarily from global-scale conformational changes induced in the aptamer domain by analyte binding. For certain classes of biosensors that offer electrochemical readout, analyte-induced conformational change in an electrode-bound aptamer alters the distance between the electrode surface and a redox label appended to the aptamer; as a result, the rate of electron transfer between the electrode and redox label is responsive to analyte binding. Herein, we describe a unique biosensor design principle that represents a distinct alternative to this paradigm. We demonstrate the ready applicability of this design principle in the *de novo* creation of electrochemical sensors for a clinical analyte of current interest. The function of the class of biosensors we describe, termed "DNA nano-switches", is designed to depend on the integrity of duplex DNA-mediated charge transfer between an electrode and a redox label.

Wednesday, 21 Aug 2013 3.30pm to 4.30pm SBS Classroom 7 (SBS-B1n-17)

Host: Associate Professor Mu Yuguang

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