



## SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Dr. Ernesto Guccione:

Date: 8 August 2014, Friday

Time: 11:00AM – 12:00PM

Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

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**Speaker:** Dr. Jing Liang, NSS Scholar, University of Illinois at Urbana-Champaign, USA

**Title:** The Custom Cell: top-down approaches for controlling and studying mammalian cell functions

Nearly all cellular processes are controlled by a highly complex genetic and epigenetic network. Although much of this complexity is still unknown to us, we have nonetheless begun exploring, perturbing, and creating genetic circuits in cells. Two top-down approaches for controlling and studying cellular functions will be discussed – the use of artificial transcription factor to hijack a cell's native regulatory network, and the use of artificial nucleases (especially TALENs) to modify a cell's genome.

In the first half, I will describe the development of a gene switch that is able to regulate the endogenous VEGF-A expression in mammalian cell. The gene switch is specifically and reversibly controlled by a small molecule non-steroid synthetic ligand, which acts orthogonally in a mammalian system. The architecture can potentially be adapted to control any gene in the human genome.

In the second half, I will describe the development of a high-throughput TALE synthesis platform capable of producing TALE-nucleases, activators, and repressors at high efficiency and low cost. I will further demonstrate a few genome-scale applications of TALENs for the study of functional nucleic acid elements.

### **Biography:**

Jing Liang is a returning NSS scholar looking forward to joining IMCB in the near future. Jing received his B.S. degree in biomedical engineering from the University of Michigan at Ann Arbor. He did his Ph.D. in chemical and biomolecular engineering under Dr. Huimin Zhao at the University of Illinois at Urbana-Champaign. His Ph.D. research focused on how to control and modify eukaryotic cells with an emphasis on mammalian systems.

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**ALL ARE WELCOME** (No registration required)