

**Title:**

## “Regulation of protein phosphatases for cell division.”

**Date:**

**23 January 2014  
(Thursday)**

**Time:**

**12:00 PM - 1:00 PM**

**Venue:**

**Amphitheatre, Level 2  
Duke-NUS Grad Med School  
8 College Road, S169857**

(Opposite Singapore General Hospital, Block 6/7)

**Speaker:**



**Satoru Mochida, Ph.D.**

Assistant Professor  
Kumamoto University  
Japan

**Abstract:**

Proper control of the cell cycle is prerequisite for faithful chromosome segregation and cell division. Progression into cell division phase (M phase/mitosis) accompanies dynamic changes of the cellular structures, such as chromosome condensation, nuclear membrane breakdown, and re-organization of microtubule, that all require phosphorylations of hundreds of cyclin-dependent kinase 1 (Cdk1) substrates. To properly phosphorylate Cdk1 substrates, an inhibition of PP2A complex containing a regulatory B55 subunit (PP2A<sup>B55</sup>), one of major phosphatases for Cdk1 substrates, is essential as well as the activation of Cdk1. We have found that αληα-Endosulfine (ENSA) binds and inhibits PP2A<sup>B55</sup> when ENSA is phosphorylated at a conserved residue, Ser67, by Greatwall kinase. As Greatwall is activated by Cdk1, Cdk1 thus inhibits the antagonizing phosphatase, making it easier to quantitatively phosphorylate Cdk1 substrates. Recent analyses showed that ENSA has several phosphorylation sites (Thr28 and Ser109) in addition to Ser67. When assayed *in vitro*, these phosphorylations showed qualitatively and/or quantitatively different effects on ENSA's potential for PP2A<sup>B55</sup> inhibition, suggesting that ENSA could receive multiple cellular signals, and translate them into several discrete levels of PP2A<sup>B55</sup> activity. Greatwall-ENSA-PP2A<sup>B55</sup> pathway was recently reported to be important for other biological processes such as neurite growth in brain and starvation response in yeast. We are interested in how regulations of phosphatases are achieved (or no regulation at all for some phosphatases?), and how it can contribute to the biological systems.

**Host:**

**SangHyun Lee, Ph.D.**

Assistant Professor  
Program in Cancer & Stem Cell Biology  
Duke-NUS Graduate medical School Singapore

**No registration is required. All are welcome**

Any enquiry, please contact: Jamie Liew (Tel: 6516 6954)