**SEMINAR/DISCUSSION SESSION AT UNIVERSITY OF SCIENCE HCMC**

Time: 9:30 ~ 11:30 – May 11, 2017 (Thursday)

Venue: Room F102, University of Science (227 Nguyen Van Cu, Dist. 5, HCMC)

Lecturer: Associate Professor, Dr. Kiong Ho

Faculty of Medicine, University of Tsukuba

**TOPIC**

**Development of Scientific Leadership in Biomedical Science**

**Topics in Eukaryotic RNA Modification and Gene Expression**

The 5′ end of eukaryotic mRNA is capped to protect mRNA and enhance protein synthesis. However, the cap can be removed from mRNA to promote degradation and regulate the amount of steady state level of mRNA. Recent identification of mRNA re-capping enzyme in *Trypanosoma brucei* suggests that decapped transcripts can reacquire a 5’-cap in the cytoplasm and regenerate translatable mRNA. The recapping activity is stimulated by hypermethylation found on the mRNA, implies that methylation status on the mRNA could regulate the target selection. The cytoplasmic re-capping pathway may represent a novel mRNA inactivation-reactivation mechanism to alter the protein synthesis of selective genes in response to stress or sudden environmental changes. In this course, we will discuss our recent findings and design future research plans to further extend our understanding on how mRNA modification can alter the gene expression in eukaryotic cells.

Reading Assignments:

(1) Ignatochkina AV, Takagi Y, Liu Y, Nagata K & Ho CK (2015) The messenger RNA decapping and recapping pathway in Trypanosoma. Proc Natl Acad Sci USA 112: 6967–6972

(2) Takagi Y, Sindkar S, Ekonomidis D, Hall MP & Ho CK (2007) Trypanosoma brucei encodes a bifunctional capping enzyme essential for cap 4 formation on the spliced leader RNA. J Biol Chem 282: 15995–16005