NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

# Seminar Announcement

## Histone 4 lysine 8 acetylation (H4K8ac); the centerpiece of the human malaria parasite epigenome.

Date: 30 Sep 2016 Friday

Time: 4pm

Venue: Classroom 1, SBS

**Speaker: Prof. Zbynek Bozdech**
School of Biological Sciences, NTU

## Abstract

The lifecycle of the human malaria parasites, *Plasmodium falciparum*, involves broad and rapid morphological and biochemical changes of the parasite cell, which gives the pathogen the ability to adapt to its host. These changes are underlined by broad transcriptional regulation that affects essentially all genes in the *P. falciparum* genome. This unprecedented transcriptional dynamic is liked with rapid changes in the distribution of histone modifications along the genome suggesting an important role of epigenetics in *P. falciparum* gene regulation. Out of all epigenetic marks studied so far, histone 4 lysine 8 acetylation (H4K8ac) showed the closest links with transcription. H4K8ac is distributed mainly in the promoter regions and its dynamics follows tightly the transcriptional regulation during the life cycle. Recently we demonstrated that H4K8ac functions as the rate-limiting, step regulating the overall function of the "H4-tail". In this context, H4K8ac functions within the euchromatin where it stimulates transcription by shifting its occupancy from the 5' upstream intergenic regions into the protein coding regions. However, H4K8ac is also active in heterochromatin where it facilitates mutual exclusive expression of the main antigenic gene family (*var*). Here we provide the evidence that H4K8ac acts as a regulatory lever that facilities an inverse relationship between proliferation and host-parasite interaction. This give the malaria pathogen the ability to choose between a fast growth or immune evasion modes depending on the host conditions.