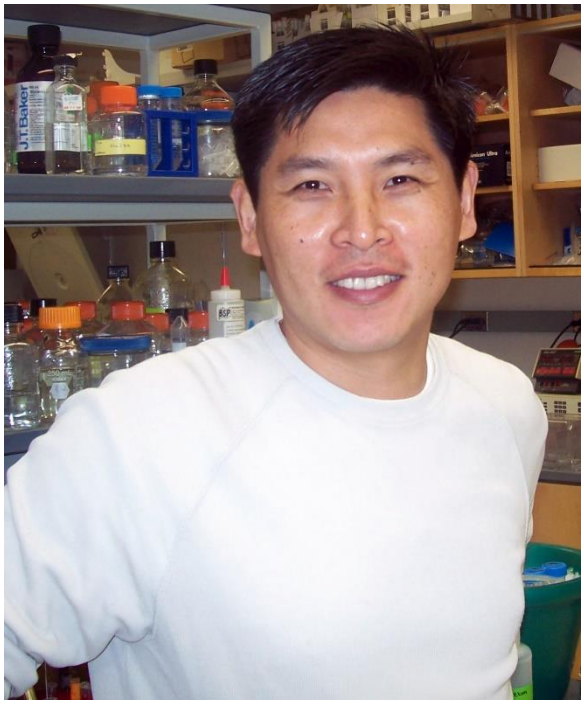
NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

SEMINAR

Friday 18 May 2018 | 4pm | DBS Conference Room 1

Hosted by A/P Cynthia He

Structural studies of a novel dimeric SET domain methyltransferase that regulates cell motility



By Gang Dong

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Lysine methyltransferases (KMTs) were initially associated with transcriptional control through their methylation of histones and other nuclear proteins, but have since been shown to regulate many other cellular activities. The apical complex lysine (K) methyltransferase (AKMT) of the human parasite *Toxoplasma gondii* has recently been shown to play a critical role in regulating cellular motility. We recently determined a 2.1-Å resolution crystal structure of the conserved and fully functional C-terminal portion (aa289-709) of *T. gondii* AKMT. The crystal structure reveals a unique homodimer mediated by the C-terminal TPR (tetratricopeptide repeat)-like domain together with a specific zinc-binding motif that is absent in all other KMTs. Disruption of the AKMT dimer impairs both its enzyme activity and egress from infected host cells *in vivo*. Overall, our findings shed light onto the molecular mechanism of the enzymatic activity of a novel dimeric KMT and may form the basis for future therapeutic interventions.

Artwork by Ann Nee, DBS, NUS