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TEMASEK LIFESCIENCES LABORATORY

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The Auditorium (Level 1)

Hosted by: Dr Yu Fengwei

Chromatin control of signaling pathway activity in neural stem cells

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Close regulation of neuron number and diversity are required to build the nervous system, and disruption of this can cause neurodevelopmental and psychiatric disorders including intellectual disability, autism, and brain cancers. Remarkably, only a handful of signaling systems are used to regulate neuron number and diversity, and thus their final output must be strongly regulated depending upon the context in which they operate. One critical pathway is Notch signaling; this controls both stem cell self-replication and neuronal diversification. Using the mouse and fly olfactory systems as models, our recent studies reveal how members of PRDM (PRDI-BF1 and RIZ homology domain containing) proto-oncogene family direct chromatin-modifying events at specific Notch targets to tune the Notch response in both neural stem cell self-renewal and neuron diversification.

Adrian Moore graduated with a B.A. in Natural Sciences (Genetics), from the University of Cambridge, UK in 1993. During this study he developed a strong interest in using genetic approaches to understand embryonic development. To follow up that interest he then moved to the laboratory of Nick Hastie at The MRC Human Genetics Unit in Edinburgh, UK. In Professor Hastie's laboratory he studied the regulation and function of the Wilms' Tumor 1 gene. In partnership with Andreas Schedl he used YAC transgenic mice to demonstrate a new function for Wilms' Tumor 1 in regulating epicardial formation. As understanding the brain represents one of the great modern frontiers in science, he decided focus solely on the control neural formation and took a post-doctoral fellow position in the laboratory of Yuh-Nung Jan at the University of California, San Francisco, USA. In this work with Professor Jan he first learnt to use Drosophila genetics to study neuron development and function. Following this, Adrian Moore joined the RIKEN Brain Science Institute (BSI), in Wako (Tokyo Metropolitan Area), Japan. He is head of the BSI Laboratory for the Genetic Control of Neuronal Architecture.

Recent Publications:

1. Delandre C., Amikura R., **Moore AW**. "Microtubule nucleation and organization in dendrites." *Cell Cycle* 2016
2. Yalgin C., Ebrahimi S., Delandre C., Yoong LF., Akimoto S., Tran H., Amikura R., Spokony R., Torben-Nielsen B., White KP., **Moore AW**. "Centrosomin represses dendrite branching by orienting microtubule nucleation." *Nat Neurosci* 2015
3. Endo K., Karim MR., Taniguchi H., Krejci A., Kinameri E., Siebert M., Ito K., Bray S., **Moore AW**. "Chromatin modification of Notch targets in olfactory receptor neuron diversification". *Nat Neurosci* 2012