36th Stem Cell Club Meeting

(Organised by the Stem Cells Research Singapore Website Committee http://www.stemcell.edu.sg)

Date: June, 26th, 2008 (**Thursday**)
Time: 6:00 pm
Venue: Breakthrough, Level 4, Matrix

Host: David Virshup, Duke-NUS GMS

Time	Title	Speaker
6:00-7:00	**Brain tumor suppressors, asymmetric divisions and neural stem cell self-renewal in *Drosophila***	***Wang Hongyan*** *Duke-NUS GMS, Singapore*
7:00 -	**Wine and Cheese (at Invitrogen facilities, 4th floor Chromos)**	

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Brain tumor suppressors, asymmetric divisions and neural stem cell self-renewal in *Drosophila*

Hongyan Wang, Duke-NUS GMS

Self-renewal and differentiation are cardinal features of stem cells. *Drosophila* neural stem cell, larval brain neuroblast, has recently emerged as a model for the study of stem cell self-renewal and tumor formation. Neuroblasts divide asymmetrically to produce a larger neuroblast daughter that is capable of self-renewal, and a smaller Ganglion Mother cell (GMC) that is committed to differentiation to generate neurons and glia. The proper balance between self-renewal and differentiation is achieved by asymmetric cell division of neural stem cells. Disruption of this balance can lead to hyperproliferation of neural stem cells and brain tumor formation. We have identified Aurora-A and Polo kinases as two novel tumor suppressors in *Drosophila* larval brains. Supernumerary neuroblasts are generated at the expense of neurons in *aurora-A* or *polo* loss-of-function mutants, suggesting that both kinases inhibit neural stem cell self-renewal and promote neuronal differentiation. Both mutants are also defective in asymmetric localization of Numb, an antagonist of Notch signaling. We show that Numb inhibits neuroblast proliferation while Notch promotes it. Both Aurora-A and Polo kinases inhibit neural stem cells self-renewal primarily by regulating asymmetric localization of Numb during neuroblast divisions.