



## Life Sciences Seminar

# The role of the microtubule-severing enzyme katanin in development, memory formation and consolidation

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Microtubules (MTs) are involved in a variety of cellular functions throughout the entire neuron lifespan, such as cell division and intracellular cargo-transport. Katanin is composed by the regulatory subunit p80 and the catalytic subunit p60. It is an enzyme that forms a hexameric ring and severs MTs via the hydrolysis of ATP, and although previous data indicate that katanin plays a role in cell division and brain cortex formation, little is known about the function of this enzyme during brain development in vivo and in adult neurons. In our study, we generated a constitutive knockout mouse for *Katna1*, which encodes the catalytic subunit of katanin and investigated its role in brain development using a combination of immunohistochemical, biochemical and in vivo techniques. On top, we made use of an ATPase-deficient p60 construct (p60-DEID) in order to dissect its role in adult neurons in vitro. On the one hand, our results indicate that *Katna1* homozygous knockout mice do not survive, in agreement with a role of p60 katanin in cell division. In addition, we observed defects during embryonic and adult dentate gyrus (DG) neurogenesis in *Katna1* heterozygous mice, and these defects did not impair hippocampal plasticity or learning and memory in behavioral tasks. On the other hand, our unpublished data suggest that p60 katanin is involved in synaptic plasticity in adult hippocampal neurons. Altogether, we provide evidence that MT-severing by katanin plays a major role during development as well as in the adult brain.

**Monday, February 3, 2020 10:00am - 11:00am**

Mondi Seminar Room 3, Central Building



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