

# ITbM-IGER Seminar



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### ***Why do we fall asleep when bored?***

***The control of sleep and wakefulness by mesolimbic systems***

**Date: Thursday, Aug 3, 2017, Time: 16:30~18:00**

**Lecture Room, ITbM**

**Language: English**

#### **Abstract**

Sleep is a highly conserved behavior among animals that is vital to survival. Sleep regulation is conceptualized by the popular “two-process” model that posits homeostatic and circadian drives control sleep. Sleep/wake behavior, however, is also influenced by cognitive and emotional factors. The mesolimbic dopamine pathway between the ventral tegmental area and the nucleus accumbens plays a central role in motivational behaviors. By using innovative genetically or chemically engineered systems, we have revealed prominent roles of the nucleus accumbens and ventral tegmental area in sleep/wake regulation and proposed a novel brain circuit for sleep control by motivated behavior. This brain circuit may explain the tendency to fall asleep in the absence of motivating stimuli, i.e., when bored. Moreover, I wish to discuss how the ability of the nucleus accumbens to induce sleep is mediated by the classic somnogen adenosine via A2A receptors and why allosteric modulation of A2A receptors may open safe therapeutic avenues for treating insomnia and poor-quality sleep.

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