

# 64<sup>th</sup> WPI IIS Seminar

## “ Roles of basal ganglia and sleep-wake regulation with focus on adenosine A<sub>1</sub>/A<sub>2A</sub> and dopamine D<sub>1</sub>/D<sub>2</sub> receptors ”

The basal ganglia (BG) are the largest structures in the forebrain and consist of four major nuclei, the striatum, globus pallidus, subthalamic nucleus, and substantia nigra. The BG has been demonstrated to act as a cohesive functional unit that regulates motor function, habit formation, and reward/addictive behaviors, but the debate has only recently started on how the BG regulate sleep-wake behavior to achieve all these fundamental functions of the BG. It is well known that adenosine A<sub>1</sub> and A<sub>2A</sub> receptors, and dopamine D<sub>1</sub> and D<sub>2</sub> receptors are densely expressed in the BG. My presentation will summarize our current progress in understanding how adenosine A<sub>1</sub>/A<sub>2A</sub> and dopamine D<sub>1</sub>/D<sub>2</sub> receptors in the BG regulate sleep-wake cycle, by means of optogenetic and the DREADD (designer receptors exclusively activated by designer drugs) systems to specifically manipulate neuron activities, and adeno-associated virus encoding hrGFP as a tracer to reveal neuronal circuits.



### Speaker: **Dr. Zhi-Li Huang**

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**Date: Thursday, September 10, 2015**

**Time: 15:00-16:00**

**Venue: 1F Auditorium, IIS Building**



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