

# 218<sup>th</sup> WPI-IIIS Seminar

## Molecular mechanisms of attentional decline and resilience after sleep loss

Insufficient sleep impairs attention in our daily life. While the neural systems underlying attention have been extensively studied, the mechanisms driving attentional reduction following sleep loss remain largely unknown. In this talk, I will present our recent findings showing that sleep loss alters dopaminergic signaling in the anterior cingulate cortex to diminish attentional functions in mice, a mechanism also recruited by attention deficits observed in male mice after early life adversity. In addition, I will discuss our unpublished work demonstrating that chronically elevated nicotinic acetylcholine receptor activity provides resilience to attentional decline despite increased sleep need, potentially shedding light on the individual variability of attentional decline after sleep loss.



### Dr. Yuichi Makino

International Research Center for  
Neurointelligence (WPI-IRCN),  
The University of Tokyo

Date: **Friday, January 17, 2025**

Time: **10:00 – 11:00**

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

**\* On-site participation only**



Contact: International Institute for Integrative Sleep Medicine, University of Tsukuba  
029-853-5857 (ext.5857) | [wpi-iiis-alliance@ml.cc.tsukuba.ac.jp](mailto:wpi-iiis-alliance@ml.cc.tsukuba.ac.jp)