163rd WPI-IIIS Seminar

Sleep: A worm's eye view

Sleep is conserved from jellyfish to humans and can thus be studied in simple model systems. Perhaps the simplest yet molecularly accessible model system that sleeps is *C. elegans*. How and why does a simple animal such as "the worm" sleep? The answers to this question can shed light on the fundamental reasons for how and why we sleep. We are applying a combination of genetics, functional imaging, optogenetics, and physiological analysis to find out how and why *C. elegans* sleeps. We showed that *C. elegans* requires a single sleep-active neuron called RIS to induce sleep. RIS is controlled by upstream circuits that measure and translate wakefulness into sleep. Cellular stress activates RIS through EGFR signaling and through the stress-sensing ALA neuron, thus increasing sleep. Without sleep, larvae show an increased progression of aging phenotypes, that decreases the rate of survival. Thus, sleep in *C. elegans* is ultimately simplified: It requires a single sleep-active neuron that is controlled by upstream circuits and responds to sleep need. Sleep appears to serve basic functions that include counteracting the progression of aging phenotypes.

Dr. Henrik Bringmann

Full Professor of Animal Physiology / Neurophysiology (W3),

University of Marburg, Germany

Date: **Wednesday, November 27, 2019**

Time: **12:00 – 13:00**

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

IIIS
INTERNATIONAL INSTITUTE FOR INTEGRATIVE SLEEP MEDICINE

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