98th WPI IIIS Seminar

Using a hierarchical video-based screen to discover new mouse sleep mutants

We have been developing new high-throughput assays that are amenable for use in forward genetics screens in mice. To look at parameters that might be indicative of disturbed sleep, we adopted a high-throughput approach that assesses sleep by monitoring immobility with infrared cameras and video-based computer analysis*. Using this approach, measuring periods of immobility in mice that are greater than a criterion of 40 sec can provide a reliable estimate of sleep patterns with ≥90% accuracy. Following baseline analysis in inbred strains, we have conducted screens for dominant and recessive traits in G1 progeny and G3 pedigrees of ENU-mutagenized males. We have confirmed robust inheritance of sleep-related traits in four lines. One of these lines, SLEEPY6, a recessive mutation showing a reduction in sleep throughout light and dark phases, has been selected for EEG-validation. Telemetric chip-based recordings of homozygous SLEEPY6 animals reveal a dramatic reduction in REM sleep in these animals. Further behavioural analysis of these mice indicates that they have associated cognitive and social behavioural deficits. Results will be discussed.

*Reference: Fisher *et al*, *J Biol Rhythms*, 2012

Speaker:

Dr. Patrick Nolan

Neurobehavioural Genetics, MRC Harwell

Date: **Tuesday, December 13, 2016**
Time: **13:00 - 13:30**
Venue: **1F Auditorium, IIIS Building**
   University of Tsukuba

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