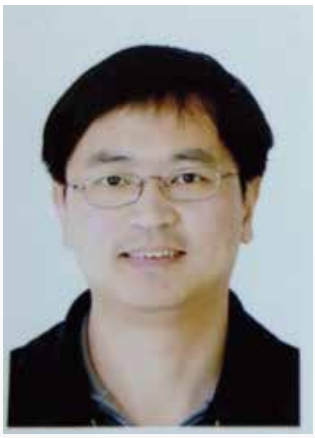
ITbM Seminar



Prof. Eric E. Zhang

Assistant Investigator
National Institute of Biological Sciences
CHINA

Small Molecules Probe Regulations of Clock Phase

Date: Monday, July 23
Time: 13:00~14:30
Venue: Lecture room, ITbM
Language: English

Abstract

In humans, the circadian clock regulates daily physiology and behavior. Transcriptional regulation lies at the core of clock oscillation, but it is not well understood how clock-associated transcription factors precisely engaged with the general transcription machinery. Here, we show in both human cells and live mice that the key transcriptional elongation component CDK9 and its associated R2 helicase each interact with other known clock proteins on chromatin and function to control the circadian phase. Both pharmacological and genetic perturbation of CDK9 or R2 results in rapid clock phase shifts at the cell, tissue, and animal levels. Mechanistically, we show that such perturbation causes the dissociation of CRY proteins from a clock super-complex that normally resides at E-box chromatin loci, resulting in the de-repression of E-box clock gene transcription and in rapid advancement of clock entrainment in a rodent jet-lag model, thereby deepening our understanding of the clock phase considerably.

Contact:
Prof. Tsuyoshi Hirota <thirota@itbm.nagoya-u.ac.jp>