DukeNUS Medical School

CSCB Cancer and Stem Cell Biology Seminar Series

Morning larks and night owls: a structural switch in Casein Kinase 1δ controls circadian timing.

Abstract:

Daily changes in the expression of the clock protein, PERIOD2 (PER2), control the timing of a transcription-translation feedback loop that generates circadian rhythms. Mutations in PER2 or its cognate kinases, Casein Kinase 1 delta and epsilon (CK1), can alter PER2 stability to directly impact the timing, or period, of circadian rhythms. Mutations that decrease the stability of PER2 shorten circadian periods and give rise to Familial Advanced Sleep Phase Syndrome (FASPS), characterized by morning lark behavior. Here I'll discuss our recent work with the Virshup and McCammon labs that revealed a conformational switch in the kinase that regulates substrate preference on PER2. Remarkably, morning lark mutations that lead to a short period utilize changes in this intrinsic kinase switch to bias kinase activity towards PER2 degradation. This study how a dynamic conformational switch in CK1 plays a critical role in circadian rhythms.

Date:

13 Sep 2019 (Friday)

Venue:

Amphitheatre, Level 2
Duke-NUS Medical School
8, College Road,
Singapore 169857

Time:

12:00 - 1:00 p.m.



Speaker:

Dr. Carrie Partch
Associate Professor

UC Santa Cruz

Carrie Partch graduated from UNC Chapel Hill with a Ph.D. in Biochemistry and Biophysics, where she worked with Aziz Sancar to study the structure and function of cryptochromes in circadian clocks. She completed postdoctoral work with Kevin Gardner and Joe Takahashi at UT Southwestern Medical Center studying bHLH-PAS transcription factors in clocks and the hypoxia response. Her lab at UC Santa Cruz strives to understand the molecular steps that generate circadian rhythms.

Host:

David Virshup
Professor & Director
Programme in Cancer & Stem Cell Biology
Duke-NUS Medical School
Singapore

No registration is required.
All are welcome.
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