

1128-92-354

Ilia Karatsoreos*, Dept. Integrative Physiology & Neuroscience, Pullman, WA 99164. *Circadian Clocks and Disease: Some Opportunities for Dialogue between Mathematics and Biology.*

Abstract: Circadian (daily) rhythms are phylogenetically ancient, and present in nearly all organisms that have a life span greater than 24h. It has been hypothesized that circadian clocks impart adaptive fitness, making them a key component of life. In mammals, the master circadian clock is located in the small hypothalamic suprachiasmatic nucleus (SCN), comprised of nearly 10,000 independent oscillators that couple together to form a cohesive network clock. Disruption of this clock, especially by mistimed light exposure, leads to significant mental and physical health problems. However, the process by which oscillators become disrupted at a cellular level remain elusive. My lab explores how intact and robust circadian timing promotes resilience at various levels of biological organization, and how disrupting these rhythms leads to negative health outcomes. I will present data highlighting what is known about the structure and function of the SCN oscillator, and how disruption of this clock by light can affect health. It is hoped that this presentation can help form a basis for future in-depth discussion and potential collaboration at the interface between math and biology in the context of circadian rhythms and health. (Received March 01, 2017)