Synchronizing in Seattle: Entrainment of networked brain circadian clocks

Last year, we celebrated the Nobel Prize in Medicine or Physiology awarded for the discoveries of the molecular basis of daily rhythms in cells. These circadian (~24 h) rhythms are common across phyla and cell types. In vertebrates, the suprachiasmatic nucleus (SCN) synchronizes circadian rhythms in behavior and physiology to the external light cycle, but the mechanisms by which this occurs are unclear. Highlighting real-time measures of gene expression, intracellular calcium, and sleep-wake behavior, this talk will review our understanding of how SCN neurons generate and synchronize their daily rhythms. The talk will then present new data showing how identified SCN neurons mediate entrainment of the SCN and behavior to environmental light cues.