Dr. Pamela Menegazzi
LS Neurobiolgie und Genetik
Biozentrum, Universität Würzburg
Germany
pamela.menegazzi@uni-wuerzburg.de

Bachelor and/or Master Thesis Projects available to study the neural correlates of behavioral adaptability.

We do not need alarm clocks to tell us it is time to eat or take a nap. Indeed, we sense time through a genetically determined biological clock that ticks in our brain and most cells of our body with a rhythm of about 24 hours (i.e. circadian rhythm). Circadian clocks perceive time cues from the environment (e.g. day-night and temperature cycles, food availability, mechanical stimuli, social interactions) and translate this information into rhythmic outputs at the level of behavior, physiology, and cognition.

Despite the neuronal and molecular mechanisms underlying circadian behavior are highly conserved across the animal kingdom, different animals have to cope with different sets of environmental conditions and rely on different time cues depending on their diurnal preference and seasonal behavior. Additionally, annual light and temperature patterns vary with latitude and altitude and animals experience specific selective pressures depending on their habitat (**Figure 1**).

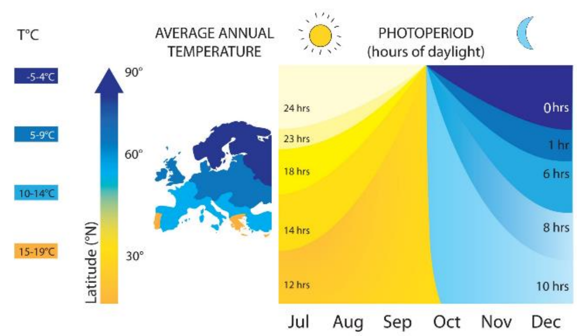
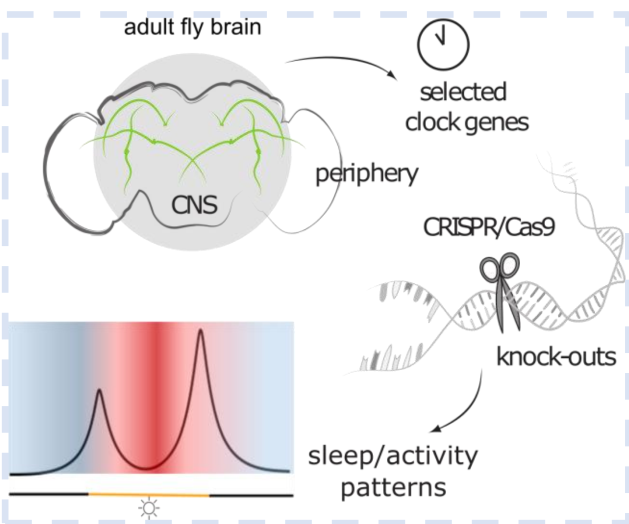


Figure 1: Graphical representation of average annual temperature and day length recorded in summer and winter across a latitudinal cline in Europe. At high latitudes, animals experience more extreme photoperiods, with up to 24 hours of light in summer and 24 hour of darkness in winter, and relatively cooler temperatures than animals at low latitudes.



Rest-activity rhythms are one of the most studied clock modulated behaviors and it is becoming increasingly evident that both the master pacemaker and peripheral oscillators (e.g. eye or glia) are involved in its modulation. **We will use RNAi interference or CRISPR-Cas9 based tools to generate fly strains that lack key clock molecules in certain cells/tissues and investigate the effects on locomotor activity and sleep**.

Interested? Then JOIN US!

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