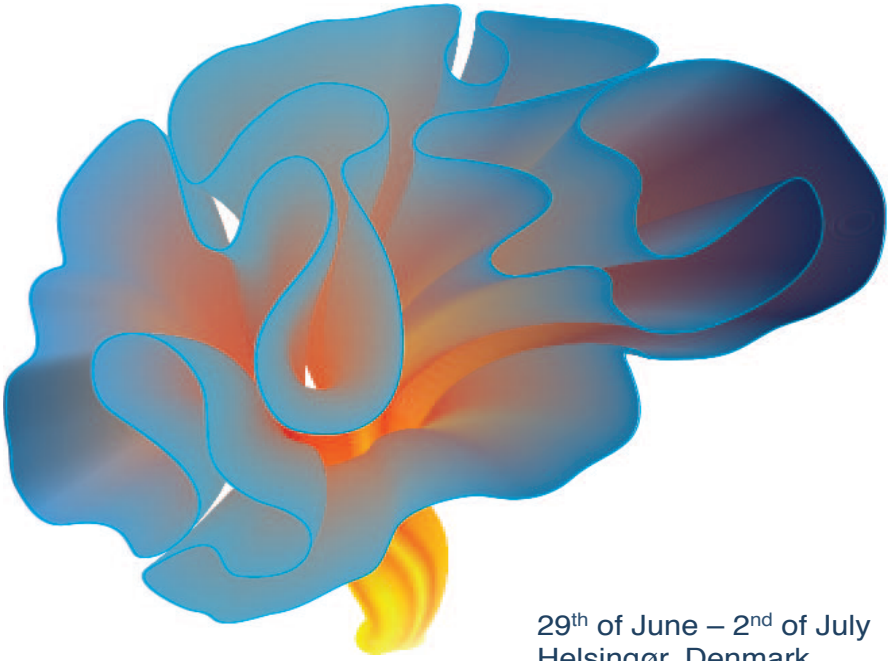
ENCODS 2016



29th of June – 2nd of July
Helsingør, Denmark

European Neuroscience Conference for Doctoral Students

POSTER

Brain clocks: the circadian timing of the lateral habenula

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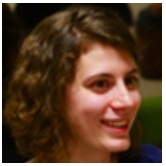

Behavioral and physiological functions of organisms are periodic. Cycles near of 24h are termed circadian (circa: close to; dien: day) rhythms such as the sleep-wake cycle. These rhythms are the result of a molecular clock composed by positive and negative loops of the expression of clock genes in different tissues. The master pacemaker, which coordinates and synchronizes other body clocks to the environment, is localized in the brain specifically in the hypothalamic suprachiasmatic nucleus (SCN). The lateral habenula (LHb), a small brain structure emerging as key nucleus in dopamine and serotonin control, show also circadian clock properties: firing rate and clock genes expression oscillate in a 24h range, the LHb can be affected by photic stimulation, and have connections with the SCN clock. However, little is known about the clock work functioning of the LHb. Hence, the aim of this study is to decipher whether the habenula is a self-sustained circadian clock independent of the SCN. Secondly, we studied whether different lighting conditions affect the LHb clockwork. We use transgenic mice expressing a luciferase reporter to investigate the endogenous circadian rhythms of clock protein PER2 in the habenula explants of animals carrying a bilateral SCN lesion or placed in different lighting conditions (light-dark cycle, constant light or darkness).
Supported by: ANR-14-CE13-0002-01 ADDiCLOCK JCJC grant.

POSTER

The effects of acoustic white noise on the rat central auditory system during the fetal and critical neonatal periods: a stereological study

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Objective: to evaluate the effects of long term, moderate level noise exposure during crucial periods of rat infants on stereological parameters of medial geniculate body (MGB) and auditory cortex. Background: It is entirely accepted that acoustic noise exposure with enough intensity and duration could affect various auditory centers. Nonetheless, whole aspects of its impact is not clear.
Methods: Twenty four male offspring of 12 pregnant rats was divided into four groups: fetal to critical period group, which were exposed to noise from the last 10 days of fetal life till postnatal day 29; fetal period group, that exposed to noise during the last 10 days of fetal life; critical period group, exposed to noise from postnatal day 15 till 29, and control group. Here, white noise at 90 dB for 2 hours per day was used. The volume was estimated using the Cavalieri's principle and numerical density was estimated using the optical disector technique.
Results: Numerical density of neurons in MGB of fetal to critical period group was lower than control group. Similar results were seen in numerical density of neurons in layers IV and VI of auditory cortex. Furthermore, no significant difference was observed in the volume of auditory cortex between groups and only MGB volume in fetal to critical period group was higher than other groups. Estimated total number of neurons in MGB was not significantly different between groups.Conclusion: It seems necessary to prevent long term moderate level noise exposure during fetal to critical neonatal period.