

## **Abstract**

The circadian system is a mechanism designed to generate circadian time and to synchronize it with the solar cycle. Its function is to adjust to behavioral and physiological function with the 24-hour period. The adjustment is performed using a so-called *zeitgeber* or synchronizer. The main circadian clock is in the suprachiasmatic nuclei (SCN) in the hypothalamus.

Prolonged exposure of the organism to constant light conditions results in desynchronization of the circadian clock, which can lead to many pathologies. The impact of light at night on the organism has been studied for a long time, but the question of the impact of constant light on the development of the circadian system of the organism has been less studied. My thesis deals with this issue. Using RT-qPCR I investigated how the rhythm changes in the expression of selected clock genes in selected parts of the rat's brain, which has been kept in constant light since birth. I also tested the impact of exposure to constant light on the early development of rhythm in locomotor activity later in the rat's life.

**Keywords:** circadian system, photic entrainment, desynchronization under constant light, development, rat