

The mammalian circadian system is composed of major circadian pacemaker located in the hypothalamic suprachiasmatic nuclei and peripheral circadian oscillators. Molecular mechanism of interlocked transcription-translation feedback loops, as a characteristic of each circadian oscillator, results in circadian rhythms. Peripheral oscillators in other brain parts and body organs are driven by the signals from the suprachiasmatic nuclei. Some structures however generate oscillations independently from the major circadian pacemaker. The best described of them resides in the mammalian retina. The retinal circadian oscillator regulates local rhythmic synthesis of melatonin, retinal pH and photoreceptors viability. Recently, some studies occur charactering the existence of such an independent circadian oscillator also in bulbus olfactorius. For example, the olfactory bulb circadian oscillator drives olfactory sensitivity during the day. Studies about development of the mamalian circadian system have shown that the olfactory bulb circadian oscillator matures earlier than the major circadian pacemaker and represents its function during early development.