

Circadian system enables adaptation of organisms to periodic changes in environment on the Earth. In mammals, it consists of central pacemaker in the suprachiasmatic nuclei (SCN) of hypothalamus and of oscillators that reside in other brain areas as well as in the peripheral organs and tissues. Ontogenetic development of the circadian system is a gradual process and the most dramatic changes undergo during the late embryonic and early postnatal stage. For its proper function, not only the morphological development of its individual parts, but also development of their entrainment to external environment and among each other, is important. The oscillations in clock gene expressions in the SCN occur already before birth, but in view of the fact that the levels of their protein products are undetectable, at this developmental stage, the ability of SCN to generate these oscillations in vivo has been discussed. After birth, the levels of these proteins rise and the rhythms in clock genes expression achieve the adult-like level at the postnatal age, when the synaptogenesis in the SCN is completed. The presence of a functional maternal circadian system is not necessary for the endogenous development of the SCN clock in pups, because the maternal SCN only entrains the clock and the circadian oscillations thus develop even in pups of arrhythmic mothers. Other oscillators in body develop later than that in the SCN. Their ontogenesis is organ and tissue specific and so far it has not been examined in such detail as ontogenesis of the SCN.