

Mammalian circadian cycle is generated by hierarchically organized system of internal rhythmical oscillations in clock gene expression (Clock, Bmal1, Per, Cry, Rev-Erb, etc.) which take place in nearly all living cells in our body. The master pacemaker is located in suprachiasmatic nucleus (SCN) in hypothalamus. According to its synchronization to photic and non-photic external stimuli SCN generates signal for entrainment of peripheral clock. Peripheral clock synchronization is maintained via neuronal or hormonal (glucocorticoids, melatonin) pathways, regulation of body temperature or food intake and affects various physiological processes. Desynchronization of central and peripheral clock can be the cause or the manifestation of impaired health condition.