

Molecular Mechanisms of Biological Clocks in the Skin

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Most organisms living on earth have an internal clock and thus circadian rhythm represent a basic feature of life. In mammals, as in other many organisms, cellular circadian core oscillator is thought to be composed of an autoregulatory transcription-(post)translation-based feedback loop involving a set of clock genes. Although master clock of the body was localized in the suprachiasmatic nucleus of the brain, the molecular core clock oscillatory loop is known to exist in most of the cells in the body including skin. Here we investigated the expression of mPer1 and mPer2 genes in the skin, and found that skin keratinocytes and fibroblasts rhythmically expressed mPer1 and mPer2 genes. Clock signals were transmitted from the SCN to peripheral tissues through oscillation conducting systems, in which corticosterone and adrenergic signals may play the important part. Arrived clock signals entrain the cell-clock in the skin, and the intracellular oscillating loop coordinates the timing of the expression of a variety of genes with specific cellular function.