

## The Natural Sleep-Wake Cycle

The circadian and homeostatic sleep drives work together to regulate the natural sleep-wake cycle. A good comparison can be a car and its keys. The circadian sleep drive, with its melatonin hormone, is the car of rejuvenating sleep. The homeostatic drive with its adenosine is the key that starts the engine.



The first and foremost function of the circadian brain clock is to keep the body awake during the daylight hours. Morning wake up occurs when melatonin release in the brain stops by 6-7 AM (see the natural circadian cycle picture below).

During the daylight hours, the homeostatic sleep drive of adenosine keeps building with each waking hour. When the dark of the night approaches, the awake signals from the brain stop. The built-up of the adenosine from the day activity kick starts the engine of sleep. The melatonin secretion begins at 9 PM and peaks at 2 AM. Most deep rejuvenating sleep happens under the influence of melatonin in the first half of the natural sleep night. The natural sleep night is 7-8 hours extending between the hours of 9 PM to 7 AM. Two hours before the morning wake up time of 6-7 AM, the melatonin release from the brain decreases when melatonin release stops mind and body are fully awake.

The melatonin synthesis in the pineal gland of the brain restarts in the morning on exposure to sunlight or daylight, and the 24-hour sleep-wake cycle repeats itself.



***Natural Circadian Cycle-Melatonin release starts at 9 PM and stops at 7 PM***

***The ideal sleep time is between 10 PM to 6 AM***