

# Is being a Morning or a Night Person Determined by your DNA?



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what researchers referred to as “social jetlag”, which is the discrepancy between normal people social time and their preferred active time. Continuous attempts to adapt to a social rhythm that is contrary to their biological rhythm might lead to ego depletion. However, they tend to be more creative and known to be risk takers.

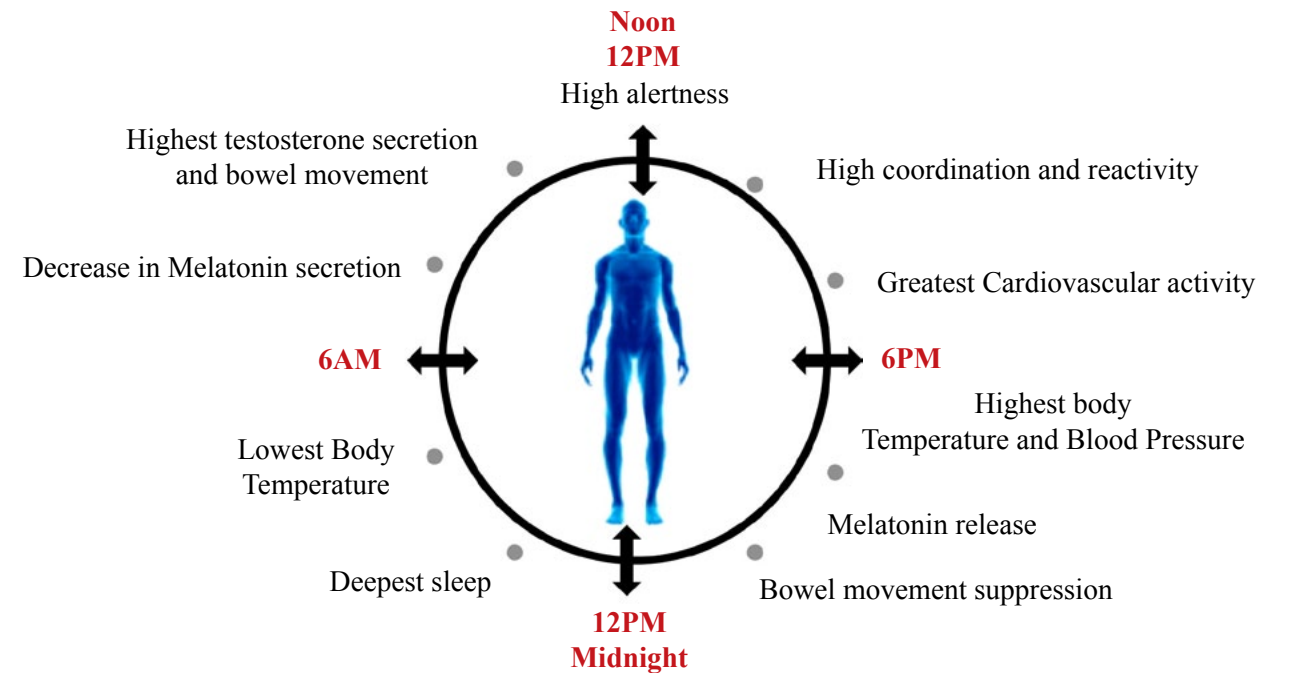
Humans, like other inhabitants of the earth, have an inner biological clock that keeps the body in sync with the day/night pattern. This clock is called circadian rhythm which is roughly a day (24hr clock). Our biological clock is dictated to a group of nerve cells that resides in the brain and is called the suprachiasmatic nucleus (SCN). This tiny region is connected to the optic chiasm allowing this SCN cells to respond to the appearance or disappearance of natural light. There are nearly 5000 blue light sensors in our eye that sense blue light in our surroundings and send the message to our brain.

This master circadian oscillator has profound effect on our health and physiology. **Up to 15% of our genome may be**

Are you a morning person who prefers to wake up early in the morning or a night owl who rises up late in the morning and gets all the hard tasks accomplished during night? Sleep patterns and their chronology are greatly related to many environmental and physiological parameters as well as genetic factors and this has an insightful effect on our personality aspects and cognitive abilities.

**Several studies indicated that being a morning person is positively correlated to persistence, endurance and self-control, while being an evening person is more associated with emotional reactivity and impulsivity.**

It has been suggested that a more adaptable central nervous system might be responsible for the higher regulatory capacity found in morning people. In addition, early risers have higher heart rate variability than evening people, which indicates higher regulatory abilities regarding physiological, affective and cognitive processes. Evening-types suffer from



**regulated by the core clock which directly or indirectly controls the cycling of hundreds to thousands of genes.** Thus, It is said to be found in most of our tissues and not only the brain including the liver, kidneys skin, heart, etc. where they assign specific biological functions at optimal times of the day and govern the coherence of the internal processes in our body.

**Why is this timing principle important to human health?** In humans, circadian rhythm regulates most of our physiological functions starting with testosterone secretion to bowel movement suppressions. In the morning, when our optic nerves sense light, the SCN sends signals to raise our temperature, heart rate and blood pressure, decrease the release of the hormones like Melatonin, enhance stress hormones secretion as Cortisol and all other hormones that are involved in digestion. Although there is some variation depending on individual’s chronotype whether you are morning person or evening person, strongest sleep occur between 10 p.m. and 2 a.m. in adults at which the brain reduces its metabolism by 44% and accumulates ATP by 30% which is main energy source in our bodies. A surge of research indicates that disruption our natural rhythm may lead to several health issues such as obesity, diabetes, depression and dementia. For instance, shift workers show enhanced frequency of illnesses like metabolic

syndrome and they have more potential to develop cancer, cardiovascular and mental disorders. Perhaps one of the major causes is the irregular eating habits during night time.

**What is the machine that keeps time?** In 1990, Michael Rosbash and his colleagues were the first to discover the function of the period proteins (per) as a major timing controls and proposed the transcription translation feedback loop (TTFL) model as basis of circadian clock that comprised of a core set of clock genes. Studies have shown that the down regulation of per1 expression induced cancer growth. Researchers found 15 different spots in the genetic script that were likely to vary between morning people and evening people. Seven of these genetic changes occurred near genes involved in regulating the circadian rhythm.

In conclusion, whether you are a morning or night person, just keep in mind that “Too much sleep or too little sleep has short life span” and people who sleep up to 7-8 hr statistically live longer.