

**МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РФ  
ТОМСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ  
БИОЛОГИЧЕСКИЙ ИНСТИТУТ**

# **СТАРТ В НАУКУ**

**МАТЕРИАЛЫ**

**LXX научной студенческой конференции  
Биологического института**

*Томск, 26–30 апреля 2021 г.*

**Томск  
2021**

## **THE SECRETS OF BODY'S INTERNAL ALARM CLOCK**

A.V. Zhurkina  
mssova692@gmail.com

Circadian rhythms are cyclical fluctuations in intensity different biological processes accepted with the change of day and night. One of the most significant and well-known circadian rhythms is the sleep-wake cycle. The normal circadian cycle is about 24 hours.

Circadian rhythms work by helping to make sure that the body's processes are optimized at various points during a 24-hour period. They exist in all types of organisms. For example, they help flowers open and close at the right time and keep nocturnal animals from leaving their shelter during the daytime when they would be exposed to more predators. In people, circadian rhythms coordinate mental and physical systems throughout the body.

How does our body clock know what time of day it is? The circadian biological clock is controlled by a part of the brain called the suprachiasmatic nucleus, a group of cells in the hypothalamus that respond to light and dark signals. When our eyes perceive light, our retinas send a signal to our suprachiasmatic nucleus. The suprachiasmatic nucleus sets off a chain reaction of hormone production and suppression that affects the body temperature, appetite, sleep drive, and more.

People may want to change their circadian rhythms and sleep-wake cycles for different reasons. Some need adjustments after starting a job that requires them to work late at night or early in the morning. Others find that "early riser" or "night owl" schedules do not provide enough sleep each day, and would like to adopt a healthier sleep routine. People can do this by using some things like bright light therapy, waking up every day at the same time, melatonin supplements, and exercise.

Circadian rhythms are important for our body. When properly aligned, a circadian rhythm can promote consistent and restorative sleep. But when this circadian rhythm is thrown off, it can create significant sleeping problems, including insomnia. Research also revealed that circadian rhythms play an integral role in diverse aspects of physical and mental health.

Academic advisor – senior lecturer E.A. Melnikova