

2017 NOBEL PRIZE IN PHYSIOLOGY OR MEDICINE



The Nobel Prize in Physiology or Medicine 2017 was awarded to **Jeffrey C. Hall**, **Michael Rosbash**, and **Michael W. Young** for discovering the molecular mechanisms behind circadian rhythms.

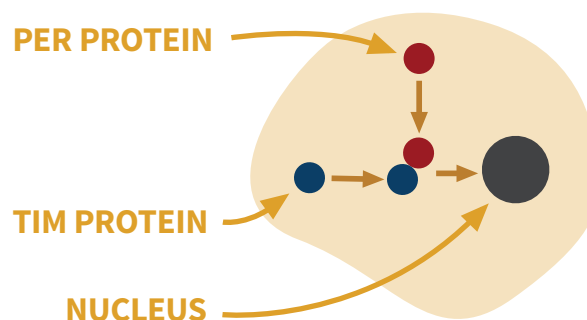


Living organisms have an internal biological clock, known as a circadian rhythm, which adapts our physiology to different times of the day. Behaviour, body temperature, hormone levels, sleep, and metabolism are all affected by our circadian rhythm.



PER PROTEIN

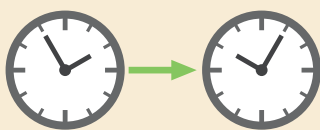
A gene called the 'period' gene is involved in circadian rhythms. It produces a protein called PER. This protein builds up during the night and breaks down during the day.



PER builds up in cell nuclei. It binds to a protein called TIM, produced by the 'timeless' gene, so they can both enter the nucleus where genetic material is located.



In the nucleus PER blocks period gene activity, stopping its own synthesis. The 'doubletime' gene codes for the DBT protein that delays PER build-up, adjusting it to a 24 hour cycle.



WHY DOES THIS RESEARCH MATTER?

Our internal clock is involved in many of our body's functions. By understanding its molecular basis, we can better understand what happens when it is disrupted, for example in the case of jet lag. It may also help in understanding disease risk and treatment.

Nobel Prize in Medicine or Physiology Press release: https://www.nobelprize.org/nobel_prizes/medicine/laureates/2017/press.html