



Biological Clocks - Nobel Prize for Medicine

Why in news?

\n\n

\n

- Jeffrey C. Hall, Michael Rosbash & Michael W. Young are to be jointly awarded the 2017 “Nobel Prize for Medicine”.

\n

- The award is for their work in discovering the mechanisms controlling the internal clocks in living organisms.

\n

\n\n

What is their research about?

\n\n

\n

- The trio’s work was in ‘Chrono Biology’ – A science that examines periodic phenomena in living organisms in relation to nature.

\n

\n\n

\n

- They made significant contributions in unravelling the genetic coding and protein pathways that regulate the circadian rhythm.

\n

- This rhythm is what tells us when it is time to eat, sleep or wake up - even when we have no bedside alarm.

\n

\n\n

What were the achievements of the trio?

\n\n

\n

- Isolation of a gene called '**Period**' in fruit-flies that disrupted its circadian clock was the most important achievement.
\n
- **PER** - A protein named 'PER' that serves as a functional communicator for the 'Period Gene' was discovered.
\n
- PER was found to accumulate at night & diminish during the day.
\n
- **Timeless** - A second gene called 'Timeless' that acts through its 'TIM protein' in conjunction with 'PER' was also identified.
\n
- This was found to cause the seesawing of cellular protein levels.
\n
- **Doubletime** - A third gene called 'Doubletime' was discovered to be the regulator of the frequency of the oscillations.
\n

\n\n

What are the implications?

\n\n

- The current research has added significantly to the science that studies the linkages between sleep & metabolic activity.
\n
- The impact of smartphone & other gadgets in disrupting circadian rhythms is already being studied extensively.
\n
- There is more clarity now, in the link between peak physical performance in sport and the time of the day.
\n
- Circadian rhythm may well hold the key to future breakthroughs in the modulation and treatment of various diseases.
\n

\n\n

\n\n

Source: The Hindu

\n



IAS PARLIAMENT

Information is Empowering

A Shankar IAS Academy Initiative