Nobel Prize for Physics

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In News

The Royal Swedish Academy of Sciences has awarded **one half of the 2020 Nobel Prize in physics to Roger Penrose and the other half jointly to Reinhard Genzel and Andrea Ghez for furthering the understanding of black holes**, the most enigmatic objects in the universe.

More About the Discovery

- Penrose has been awarded the prize for the discovery that **black hole formation is a robust prediction of the general theory of relativity**, while Genzel and Ghez have been awarded the prize for the discovery of a **supermassive compact object at the centre of our galaxy.**
- Penrose's work has shown that black holes are a **direct consequence of Albert Einstein's general theory of relativity.**
- Gravity also shapes space and influences the passage of time. It is this **gravity, which is so great inside a black hole that is able to bend space and slow down time.**
- Penrose used Einstein's general theory of relativity in order to **prove that the process of formation of black holes is a stable one.** He proved that black holes exist and described them in detail back in 1965, ten years after Einstein died.
- Genzel and Ghez, on the other hand, have **discovered that an invisible and an extremely heavy object governs the stars' orbit at the centre of the Milky Way.**
- This extremely heavy object has the mass equivalent to 4 million solar masses and is packed into an area about the size of our solar system.
- Essentially, their work tells us that at the centre of

our galaxy the Milky Way lies an invisible supermassive object, of which a **black hole provides a reasonable explanation.** Physicists have been suspecting the existence of a black hole at the centre of our galaxy for over 50 years now.

- In order to see through to the middle of the Milky Way, Genzel and Ghez **worked on developing methods and used some of the world's largest telescopes.**
- The **existence of a black hole at the centre of our galaxy** is what the physicists believe is what **pulls a jumble of stars, causing them to rush around at high speeds.**