Breakthrough Prize, 2025

Prelims – *Current events of national and international importance| General Science.*

Why in News?

Breakthrough Prize Foundation recently announced the winners for Breakthrough Prize, 2025.

- It is an ***international award*** recognizing outstanding achievements in *life sciences, fundamental physics, and mathematics.*
- It is also known as *'Oscars of Science'.*
- **Established in** – 2013.
- **Established by** - Mark Zuckerberg and his wife Priscilla Chan, Sergey Brin, Anne Wojcicki, and Yuri and Julia Milner.
- **Reward -** $3 million each in all categories.

Breakthrough Prize in Life Sciences

For Weight-loss drugs	• **Drugs -** *Ozempic and Wegovy.* • **Awarded to -** Daniel J. Drucker, Joel Habener, Jens Juul Holst, Lotte Bjerre Knudsen and Svetlana Mojsov. • Scientists discovered and characterised the ***GLP-1 hormone***, which aided the creation of drugs treating diabetes and obesity.
Multiple Sclerosis treatment	• Multiple Sclerosis is an unpredictable chronic disease caused by the immune system attacking the protective sheath that covers nerve fibres of the central nervous system. • **Awarded to -** Alberto Ascherio and Stephen L. Hauser. • They identified the role of the ***B-cells*** of the immune system in Multiple Sclerosis (MS) and devised treatments targeted at the same. • The duo also established the ***Epstein-Barr virus infection*** as the leading cause of MS.
Gene-editing technologies	• **Awarded to** - David R Liu • Developing the base editing and prime editing technologies widely used to edit the DNA of living organisms. • They can edit the DNA without cutting its ***double helix***, and rewrite entire stretches of defective DNA with a corrected version.

Breakthrough Prize in Mathematics

- **Awarded to -** Dennis Gaitsgory
- **Achievement -** Role in the proof of the geometric Langlands conjecture.

Langlands program is described as a broad research program spanning several fields of mathematics, which grew out of a series of conjectures proposing precise connections between seemingly disparate mathematical concepts.

Breakthrough Prize in Fundamental Physics

- **Awarded to -** 4 collaborations at the Large Hadron Collider (LHC) in European Organization for Nuclear Research (CERN) – ALICE, ATLAS, CMS and LHCb.
- The collaborations studied the *Higgs boson* to understand how they impart mass to fundamental particles.
- They also discovered ***new types of particles*** to understand the strong nuclear force, and tested fundamental theories by discovering new processes to understand why matter exists in the universe.

Reference

1. The Indian Express | Breakthrough Prize 2025
2. Business Standard | Breakthrough Prize

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