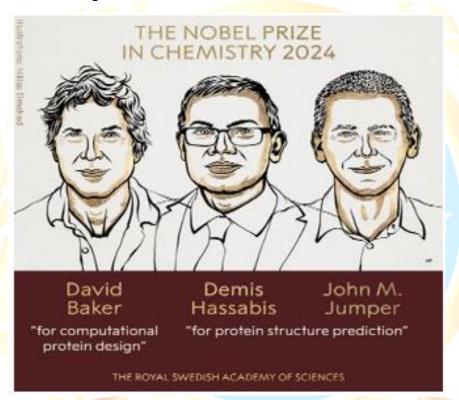


NOBEL PRIZE FOR CHEMISTRY - AWARDS

NEWS: The Royal Swedish Academy of Sciences has announced **David Baker, Demis Hassabis** and **John Jumper** as the winners of the Nobel Prize in Chemistry for 2024.

WHAT'S IN THE NEWS:

- The one half of the Prize has been awarded to **David Baker** for his pioneering work in "computational protein design".
- The other half of the Prize has been jointly awarded to **Demis Hassabis** and **John M. Jumper** for their revolutionary contributions to "protein structure prediction" using artificial intelligence.



Cracking the Protein Code:

- The latest achievements in protein science mark a significant milestone for both healthcare and biotechnology.
- The winners have unlocked new possibilities for designing proteins that could lead to breakthroughs in medicine, agriculture, and beyond.

David Baker's Innovations:

• David Baker succeeded with the almost impossible feat of building entirely new kinds of proteins, transforming our understanding of **protein functionality** and creating potential applications for disease treatment and prevention.



- In 2003, Baker was able to use amino acids, often described as life's building blocks, to design a new protein **using bespoke software methods** that was unlike any existing one.
- That opened the door to the rapid creation of different proteins for uses in areas such as pharmaceuticals, vaccines, nanomaterials and even tiny sensors.

AI Advancements by Hassabis and Jumper:

- Demis Hassabis and John M. Jumper have utilized cutting-edge artificial intelligence to solve the long-standing challenge of predicting proteins' complex structures, thus streamlining the research process and enhancing scientific accuracy.
- In 2020, Hassabis and Jumper presented an AI model called AlphaFold2. With its help, they have been able to predict the structure of virtually all the 200 million proteins that researchers have identified.

Important Fact Related to Nobel Prizes in Chemistry

- The Nobel Prize in Chemistry has been awarded 116 times to 197 Nobel Prize laureates between 1901 and 2024.
- Frederick Sanger and Barry Sharpless have both been awarded the Nobel Prize in Chemistry twice.
- The inaugural Nobel Prize in Chemistry was awarded to Jacobus H. van 't

 Hoff in 1901 for his pioneering work on the laws of chemical dynamics and osmotic

 pressure.
- Marie Curie was the first woman to win a Nobel Prize in chemistry in 1911 for her discovery of radium and polonium, and her isolation of radium.
- Venkatraman Ramakrishnan (citizen of Indian Origin) was awarded the 2009 Nobel Prize in Chemistry for his groundbreaking research on the structure and function of ribosomes.

Source: https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-nobel-prize-in-chemistry-and-physics-2024-upsc-9612452/#:~:text=Why%20in%20news%3F-,The%20Nobel%20Prize%20in%20Chemistry%202024%20has%20been%20awarded%20to,for%20%E2%80%9Cprotein%20structure%20prediction%E2%80%9D.

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