



## 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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