# Nobel Prize in Chemistry awarded for groundbreaking work in protein structure prediction



In a significant breakthrough for the scientific community, the 2024 Nobel Prize in Chemistry has been awarded to three distinguished researchers for their pioneering work in computational protein structure prediction. The recipients of this prestigious accolade are Demis Hassabis, John Jumper, and David Baker. This announcement was made by the Royal Swedish Academy of Sciences on Wednesday during a ceremony held in the elegant Session Hall in Stockholm.

Demis Hassabis and John Jumper, both prominent figures at Google's DeepMind, have been recognised for their development of AlphaFold, an artificial intelligence model capable of predicting the structures of proteins with unprecedented accuracy. Alongside them, David Baker of the University of Washington was honoured for his achievements in designing entirely new proteins. The collective efforts of these scientists have already significantly advanced the understanding of proteins, which are fundamental to all biological organisms.

Proteins, often referred to as the building blocks of life, are intricate molecules composed of long chains of amino acids that fold into complex three-dimensional shapes. This structural configuration is essential for their function. For over five decades, researchers have been striving to predict these structures from amino acid sequences, a challenge that has, until now, been notoriously difficult to overcome.

The work of Hassabis and Jumper through AlphaFold represents a remarkable leap forward in this area of study. Their AI model can predict the structure of virtually all 200 million known proteins, transforming a field that has long relied on laborious and costly traditional methods. Since its introduction in 2020, AlphaFold has been utilised by millions of researchers from 190 countries, highlighting its global impact.

David Baker's contributions to protein design have been equally noteworthy. By manipulating the basic components of life, Baker's team at the University of Washington has successfully engineered new proteins that have practical applications in the development of pharmaceuticals, vaccines, and nano-materials.

The significance of these findings is underscored by Johan Aqvist, a member of the Nobel Committee for Chemistry, who described the impact of the laureates' work as "truly huge." Heiner Linke, the chair of the committee, echoed this sentiment by noting that the discoveries "open up vast possibilities," especially in the way proteins can be studied and utilised in various scientific and medical fields.

Demis Hassabis, born in London in 1976, boasts a diverse background that includes a PhD from University College London and a previous role in video game artificial intelligence programming. His contributions to AI research are well documented, and his latest success with AlphaFold exemplifies the potential of AI in solving complex scientific problems.

The prize, which includes a gold medal, a diploma, and a significant cash award of 11 million Swedish kronor (approximately £820,000 or $990,000), recognises the extraordinary advancements made by this trio. The 2024 accolade marks the second consecutive year in which a Nobel Prize has been awarded for achievements related to artificial intelligence, indicating the growing influence of AI technologies in modern scientific discovery.

Beyond the award ceremony, the laureates' work is anticipated to drive forward various sectors, particularly in biomedicine and pharmacology, where an understanding of protein structures is crucial to the development of effective treatments for diseases such as cancer and COVID-19.

As the scientific community absorbs this groundbreaking news, the doors are now open for new explorations into how these computational tools can further expand the understanding and manipulation of the molecular machinery within living organisms.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://www.nobelprize.org/prizes/chemistry/2024/popular-information/> - Corroborates the awarding of the 2024 Nobel Prize in Chemistry to Demis Hassabis, John Jumper, and David Baker for their work in protein structure prediction and design.
* <https://www.nature.com/articles/d41586-024-03214-7> - Details the development and impact of AlphaFold by Hassabis and Jumper, and Baker's contributions to computational protein design.
* <https://www.embl.org/news/science-technology/alphafold-wins-nobel-prize-chemistry-2024/> - Explains the significance of AlphaFold and its database, as well as the contributions of David Baker in computational protein design.
* <https://www.acs.org/pressroom/headline-science/chemistry-nobel-2024.html> - Provides information on the Nobel Prize award to Hassabis, Jumper, and Baker for their work in computational protein structure prediction and design.
* <https://www.sciencenews.org/article/nobel-prize-chemistry-2024-proteins> - Confirms the Nobel Prize award and highlights the achievements of the laureates in protein structure prediction and design.
* <https://www.nobelprize.org/prizes/chemistry/2024/popular-information/> - Describes the challenge of predicting protein structures from amino acid sequences and how AlphaFold addressed this issue.
* <https://www.nature.com/articles/d41586-024-03214-7> - Mentions the global impact of AlphaFold, its use by millions of researchers, and its transformative effect on the field.
* <https://www.embl.org/news/science-technology/alphafold-wins-nobel-prize-chemistry-2024/> - Discusses the significance of protein structures and how knowing them offers clues about their roles and functions.
* <https://www.acs.org/pressroom/headline-science/chemistry-nobel-2024.html> - Details David Baker's contributions to designing new proteins with practical applications in various fields.
* <https://www.sciencenews.org/article/nobel-prize-chemistry-2024-proteins> - Quotes from the Nobel Committee members highlighting the huge impact and vast possibilities opened up by the laureates' work.
* <https://www.nature.com/articles/d41586-024-03214-7> - Mentions the prize details, including the cash award and the recognition of AI's growing influence in scientific discovery.
* <https://www.nytimes.com/2024/10/09/science/nobel-prize-chemistry.html> - Please view link - unable to able to access data
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