

Nobel Prize 2024 Winners List, Name, Achievements, Fields

July 10, 2026 • vajiramandravi.com



The Nobel Prizes 2024 were awarded to John J. Hopfield and Geoffrey E. Hinton in Physics; Victor Ambros and Gary Ruvkun in Medicine; David Baker, Demis Hassabis, and John M. Jumper in Chemistry; **Han Kang** in Literature; Japanese organization **Nihon Hidankyo** for Peace; and Daron Acemoglu, Simon Johnson, and James A. Robinson in Economics for their outstanding contributions in their respective fields.

Nobel Prize

The **Nobel Prize**, established by Alfred Nobel's will in 1895, is one of the world's most prestigious awards, recognizing outstanding contributions in six categories: Physics, Chemistry, Physiology or Medicine, Literature, Peace, and Economic Sciences. These awards are presented annually by:

- The Royal Swedish Academy of Sciences (**Physics, Chemistry, Economics**)
- The Nobel Assembly at the Karolinska Institute (**Medicine**)
- The Swedish Academy (**Literature**)

- The Norwegian Nobel Committee (**Peace**)

The prizes are awarded on **December 10**, the anniversary of Nobel's death, with ceremonies in Stockholm and Oslo. Winners receive a medal, diploma, and cash prize.

Read About: [Nobel Prize Winners 2025](#)

Nobel Prize 2024 List

The 2024 Nobel Prizes have been awarded across various fields, recognizing exceptional contributions to humanity in the areas of Physiology or Medicine, Chemistry, Physics, Literature, Peace, and Economics. The following table provides the winners and their groundbreaking work:

Field	Nobel Prize Winners	Awarded For
Physiology/Medicine	Victor Ambros (USA), Gary Ruvkun (USA)	Discovery of microRNAs
Physics	John J. Hopfield (USA), Geoffrey E. Hinton (British-Canadian)	Development of artificial neural networks using statistical physics concepts
Chemistry	David Baker (USA), Demis Hassabis (British), John M. Jumper (USA)	Computational protein design (Baker), Protein structure prediction (Hassabis & Jumper)
Literature	Han Kang (South Korean)	Poetic prose confronting historical traumas and the fragility of human life
Peace	Nihon Hidankyo (Japanese organization)	Efforts to eliminate nuclear weapons through witness testimony
Economics	Daron Acemoglu, Simon Johnson, and James A. Robinson (USA)	Studies on the formation of institutions and their impact on prosperity

Nobel Prize 2024 Physiology or Medicine

The 2024 [Nobel Prize](#) in Physiology or Medicine was awarded jointly to Victor Ambros and Gary Ruvkun for their discovery of **microRNA** and its role in **post-transcriptional gene regulation**.



Major Discoveries-

- **Victor Ambros:** In 1993, Ambros identified a small **RNA** molecule in *Caenorhabditis elegans* that regulates gene expression, marking the discovery of microRNA.
- **Gary Ruvkun:** Ruvkun's research further elucidated the function of microRNAs in gene regulation, demonstrating their conservation across species.

Significance-

- **Gene Regulation:** MicroRNAs are small RNA molecules that play a crucial role in regulating gene expression by binding to messenger RNAs, preventing their translation into proteins.
- **Medical Implications:** Understanding microRNA function has significant implications for medical research, including potential applications in cancer therapy and other diseases.

Global Impact-

- **Advancements in Medicine:** The discovery of microRNAs has opened new avenues for therapeutic interventions targeting gene regulation mechanisms.
- **Ongoing Research:** The work of Ambros and Ruvkun continues to inspire research into the roles of microRNAs in various biological processes and diseases.

Nobel Prize 2024 Physics

The 2024 Nobel Prize in Physics was awarded jointly to **John J. Hopfield** and **Geoffrey E. Hinton** for their foundational discoveries and inventions that enable machine learning with artificial neural networks.



Major Discoveries-

- **John J. Hopfield:** Developed an associative memory model capable of storing and reconstructing data patterns, laying the groundwork for neural network architectures.
- **Geoffrey E. Hinton:** Pioneered algorithms that allow machines to autonomously identify specific elements in images, significantly advancing image recognition technologies.

Significance-

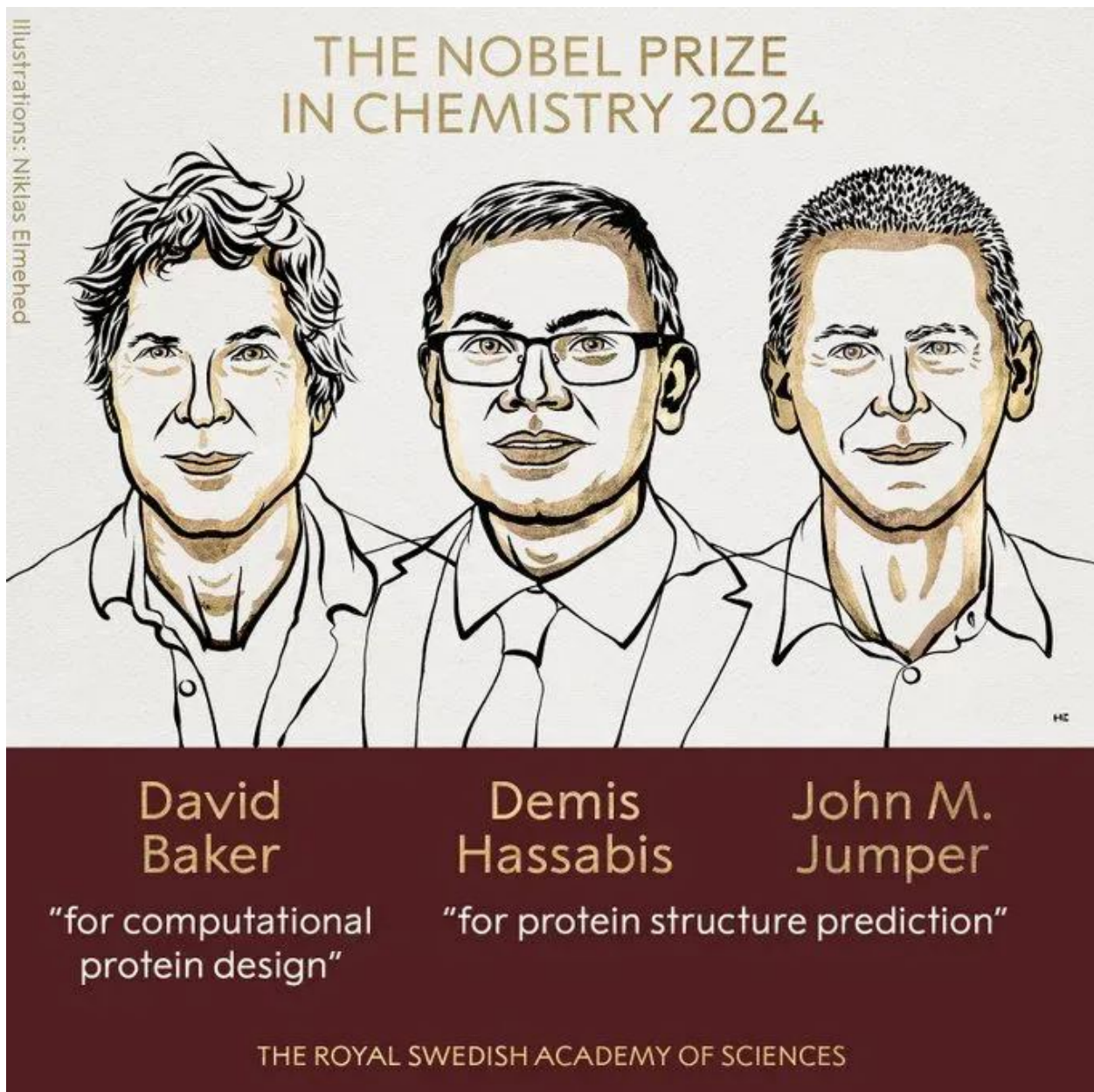
- **Advancement in Machine Learning:** Their work has been instrumental in the development of artificial neural networks, a cornerstone of modern machine learning and artificial intelligence.
- **Impact on AI Applications:** These innovations have enabled machines to learn from data, leading to advancements in various fields, including healthcare, finance, and autonomous systems.

Global Impact-

- **Ethical Considerations:** Both laureates have expressed concerns about the potential risks of AI surpassing human intelligence, emphasizing the importance of ethical considerations in AI development.
- **Ongoing Research:** Their foundational work continues to inspire and guide current research in artificial intelligence and machine learning.

Nobel Prize 2024 Chemistry

The 2024 Nobel Prize in Chemistry was awarded to David Baker, Demis Hassabis, and John Jumper for their transformative work in protein science. Half of the prize recognizes David Baker for his achievements in computational protein design, while the other half is awarded jointly to Demis Hassabis and John Jumper for their development of AlphaFold2, an AI model for protein structure prediction.



- **Major Discoveries:** Baker has designed entirely new proteins with applications in pharmaceuticals, vaccines, and sensors. Hassabis and Jumper's AlphaFold2 can predict the 3-D structures of nearly all known proteins, solving a 50-year-old challenge.
- **Significance:** Baker's proteins have practical uses in various fields, while AlphaFold2 has been a groundbreaking tool for scientists addressing global issues like antibiotic resistance and plastic degradation.
- **Global Impact:** AlphaFold2 has been widely adopted by researchers worldwide, accelerating discoveries and facilitating new therapeutic strategies.

Nobel Prize 2024 Literature

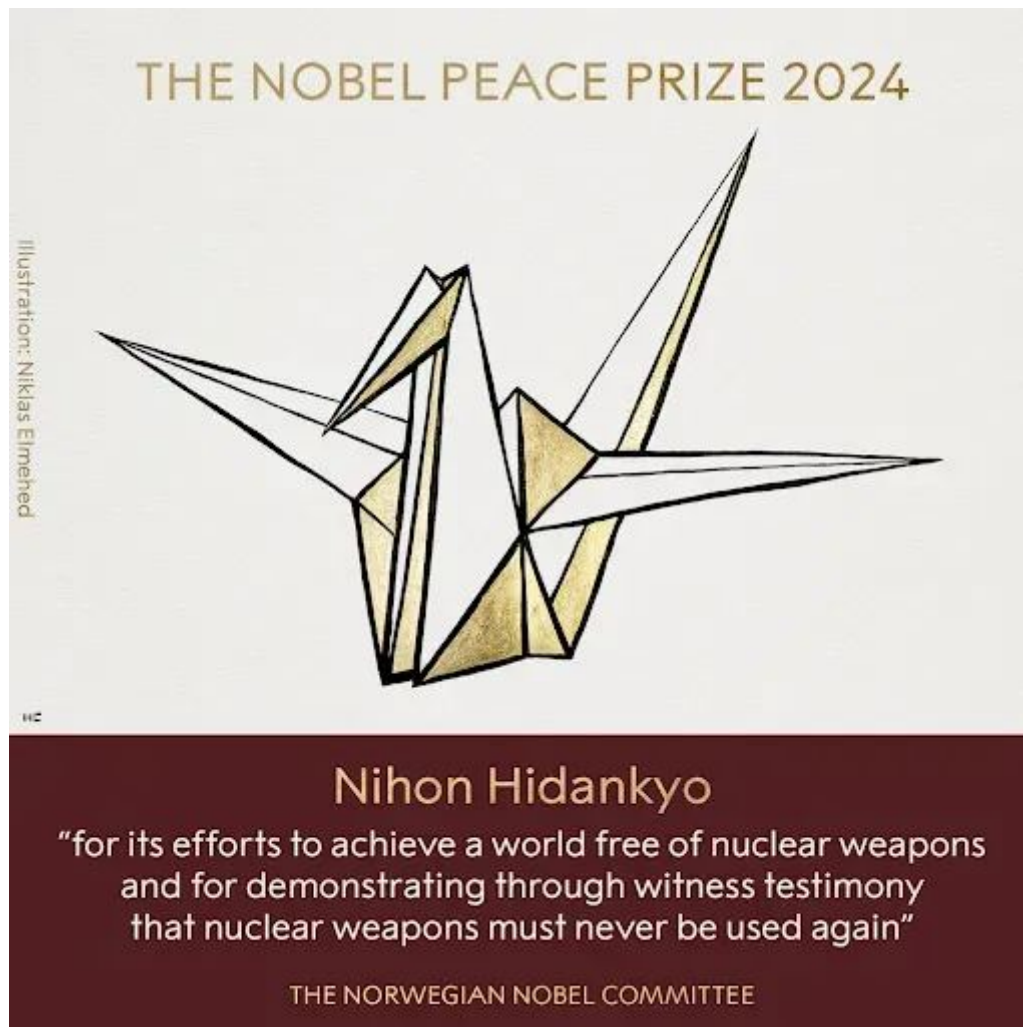
The 2024 Nobel Prize in Literature was awarded to South Korean author Han Kang for her intense poetic prose that confronts historical traumas and exposes the fragility of human life.



- **Significance:** Han Kang's recognition marks her as the first South Korean and the first Asian woman to receive the Nobel Prize in Literature, highlighting her profound impact on global literature.
- **Literary Style and Themes:** Her works are characterized by poetic and experimental prose that delves into themes such as grief, violence, sexuality, and mental health, often confronting historical traumas and the fragility of human existence.
- **Notable Works:** Han Kang's notable works include:
 - ***The Vegetarian* (2007):** A novel that explores the violent consequences of a woman's decision to stop eating meat.
 - ***Human Acts* (2016):** A narrative that examines the 1980 Gwangju Uprising and its aftermath.
 - ***We Do Not Part* (2024):** Her latest work, continuing her exploration of human suffering and resilience.

Nobel Prize 2024 Peace

The 2024 Nobel Peace Prize was awarded to Nihon Hidankyo, a Japanese organization that represents survivors of the Hiroshima and Nagasaki atomic bombings, known as Hibakusha. The organization has been a key advocate for the abolition of nuclear weapons, raising awareness about the devastating effects of nuclear warfare.

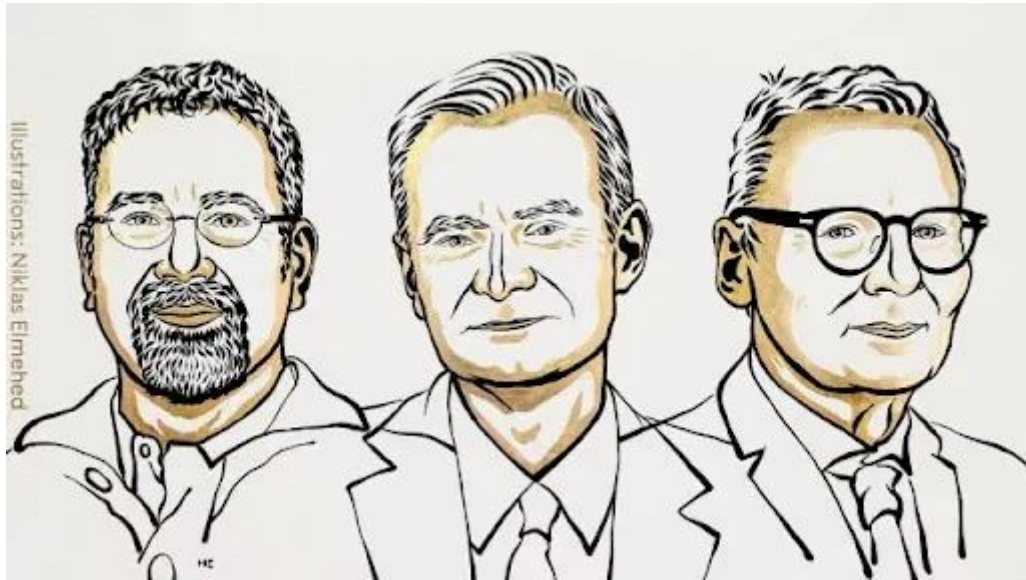


- **Significance:** Nihon Hidankyo's decades-long efforts have contributed to global efforts to prevent nuclear warfare and proliferation. The organization's work emphasizes the humanitarian impact of nuclear weapons and the need for a world free of nuclear arms.
- **Role of Hibakusha:** The survivors of the atomic bombings, who share firsthand accounts of their suffering, have been central to the organization's mission. Their testimonies have helped humanize the issue and foster widespread condemnation of nuclear weapons.
- **Global Advocacy:** Nihon Hidankyo's campaigns have played a vital role in stigmatizing nuclear weapons globally. Their advocacy for nuclear disarmament has included lobbying for policy changes and international treaties aimed at eliminating nuclear arsenals.

This award underscores their continued commitment to ensuring that future generations do not experience the horrors of nuclear warfare.

Nobel Prize 2024 Economy Economic Sciences

The 2024 Nobel Prize in Economic Sciences was awarded to Daron Acemoglu, Simon Johnson, and James A. Robinson for their research on the aftermath of colonization and its role in perpetuating global inequality, particularly in nations plagued by corruption and dictatorship. The laureates explored the crucial impact of societal institutions on a nation's prosperity.



- **Importance of Societal Institutions:** The awardees emphasize how a poor rule of law and exploitative institutions hinder growth, while strong, inclusive institutions contribute to prosperity.
- **Model for Political Transformation:** Their research introduces a model with three key components:
 - **Conflict Over Resource Allocation:** Power struggles between elites and the masses.
 - **Mass Mobilization as a Threat:** The potential for the masses to challenge elites.
 - **Commitment Problem:** The need for elites to cede power to the masses for stability and progress.
- **Persistent Disparities in Prosperity:** Their work sheds light on the persistent disparities in prosperity among nations, mainly due to the type of societal institutions in place.
- **European Colonization and Institutional Legacy:** By examining the impact of colonial-era institutions, they illustrate how the legacy of European colonization still shapes modern economic systems.

Nobel Prize 2024 UPSC PYQs

Question 1: 'RNA interference (RNAi)' technology has gained popularity in the last few years. Why?

1. It is used in developing gene-silencing therapies.
2. It can be used in developing therapies for the treatment of cancer.
3. It can be used to develop hormone replacement therapies.
4. It can be used to produce crop plants that are resistant to viral pathogens.

Select the correct answer using the code given below. **(UPSC Prelims 2019)**

- (a) 1, 2 and 4
- (b) 2 and 3
- (c) 1 and 3

Answer: (a)

Question 2: The Nobel Prize in Physics of 2014 was jointly awarded to Akasaki, Amano, and Nakamura for the invention of Blue LEDs in the 1990s. How has this invention impacted the everyday life of human beings? **(UPSC Mains 2021)**

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