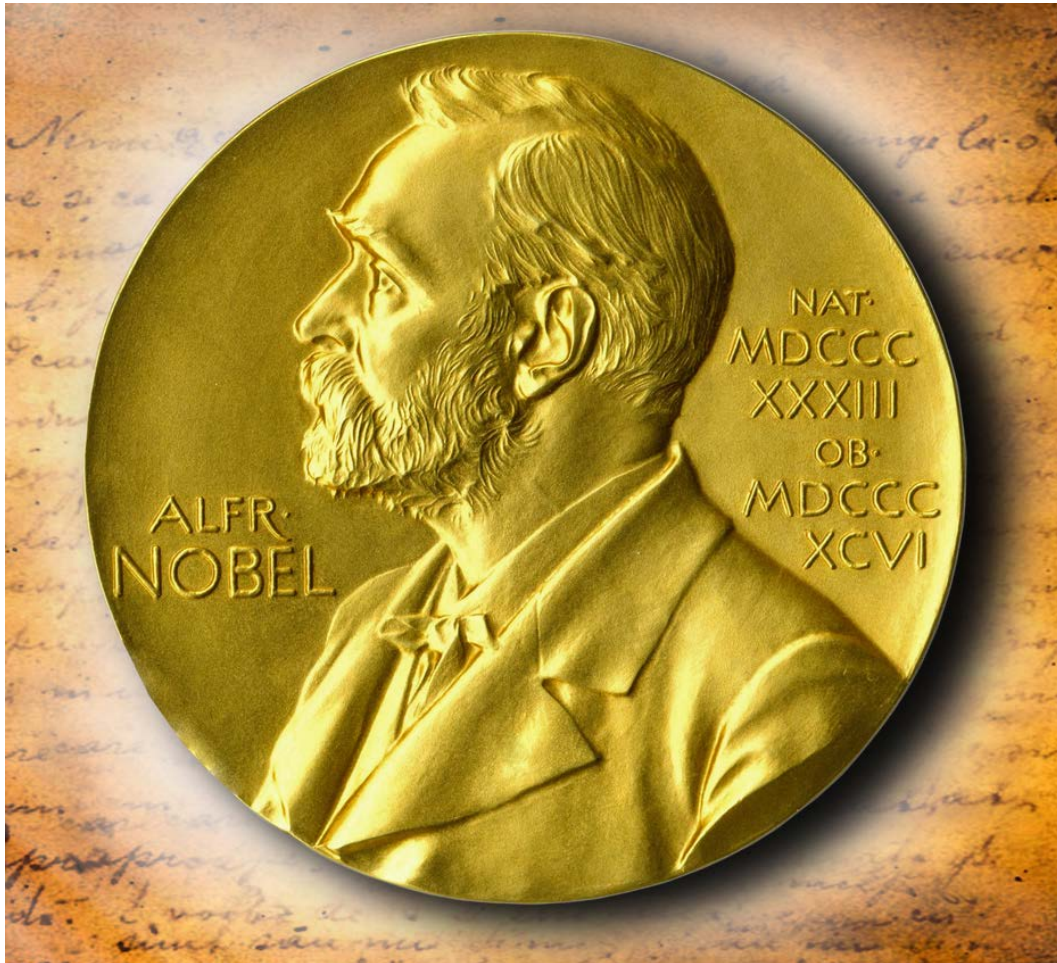


## Nobel Prize in Physics, Chemistry & Medicine




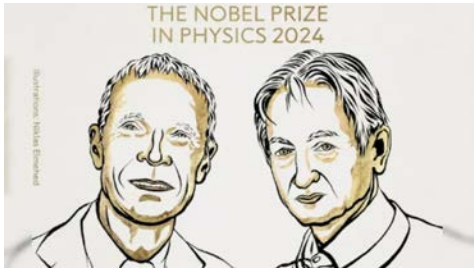
### Context:

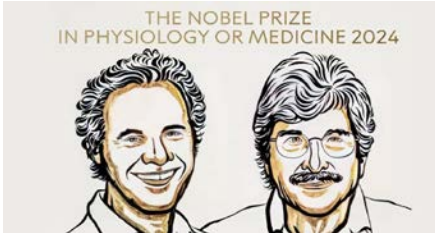
- The Nobel Assembly at Karolinska Institutet in Stockholm, Sweden has recently announced the 2024 Nobel Prize in Physiology or Medicine to Victor Ambros and Gary Ruvkun, in **Physics to John J. Hopfield and Geoffrey E. Hinton** and in **Chemistry to David Baker, Demis Hassabis, and John Jumper**.

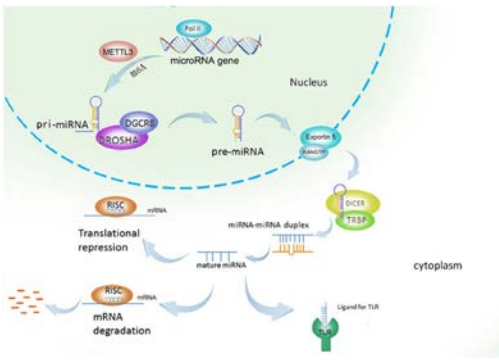

**1. Enlist Nobel prize winners for 2024 in Physics, Chemistry & Medicine?**

- The **Nobel Prize 2024 announcements** are being made from **October 7 to 14**, celebrating exceptional achievements across various fields.

Stream	Winner	Contribution
<p><b>Chemistry</b></p>	<ul style="list-style-type: none"> <li>• <i>David Baker, Demis Hassabis, and John Jumper.</i></li> </ul>  <p>THE NOBEL PRIZE IN CHEMISTRY 2024</p> <ul style="list-style-type: none"> <li>• <b>David Baker</b> is an <b>American biochemist and computational biologist</b> who has pioneered methods to design proteins and predict their <b>three-dimensional structures</b>.</li> <li>• <b>Sir Demis Hassabis</b> is a <b>British computer scientist, artificial intelligence researcher and entrepreneur, Nobel laureate and chess player.</b></li> <li>• In his early career, he was a <b>video game AI programmer</b> and designer, and an expert board games player.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Baker</b> was recognized for his work in <b>computational protein design</b>, while <b>Hassabis and Jumper</b> were honored for <b>protein structure prediction</b>.</li> <li>• <b>Protein structure prediction</b> is the <b>inference of the three-dimensional structure of a protein</b> from its amino acid sequence, i.e., the prediction of <b>its secondary and tertiary structure</b> from <b>primary structure</b>.</li> <li>• Structure prediction is <b>different from the inverse problem</b> of protein design.</li> <li>• It is one of the most important goals pursued by <b>computational biology</b>.</li> <li>• It is important in medicine (for example, in <b>drug design</b>) and biotechnology (for example, in <b>novel enzyme design</b>).</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>John Michael Jumper is an American chemist</b> and computer scientist.</li> <li>• He currently serves as <b>director at DeepMind Technologies.</b></li> <li>• Jumper and his colleagues <b>created AlphaFold, an artificial intelligence</b> model to predict protein structures from their <b>amino acid sequence with high accuracy</b></li> </ul>	
<p><b>Physics</b></p>	<ul style="list-style-type: none"> <li>• <i><b>John J. Hopfield and Geoffrey E. Hinton</b></i></li> </ul>  <p>THE NOBEL PRIZE IN PHYSICS 2024</p> <ul style="list-style-type: none"> <li>• <b>John Joseph Hopfield is an American physicist</b> and emeritus professor of Princeton University, most widely known for his <b>study of associative neural networks in 1982.</b></li> <li>• He is known for the development of the <b>Hopfield network.</b></li> <li>• <b>Geoffrey Everest Hinton is a British-Canadian</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Foundational discoveries and inventions that enable machine learning with artificial neural networks.</b></li> <li>• Their foundational discoveries have not only transformed the <b>landscape of artificial intelligence</b> but also <b>opened new avenues for research</b> and applications across various <b>scientific disciplines.</b></li> <li>• A <b>computer system that mimics the information processing</b> of the human brain is called an <b>artificial neural network, or ANN.</b></li> <li>• ANNs are composed of <b>artificial neurons</b> arranged in <b>input, hidden, and</b></li> </ul>

	<p>computer scientist, <b>cognitive scientist, cognitive psychologist,</b> known for his work on <b>artificial neural networks</b> which earned him the title as the "<b>Godfather of AI</b>".</p>	<p><b>output layers</b>, employing a connectionist approach to <b>computation</b>.</p> <ul style="list-style-type: none"> <li>• <b>Neural networks can solve complex problems by finding relationships between inputs and outputs.</b></li> <li>• They are suitable for a range of applications like <b>weather prediction, pattern recognition, and recommendation systems.</b></li> </ul>
<p><b>Physiology/Medicine</b></p>	<ul style="list-style-type: none"> <li>• <i>Victor Ambros and Gary Ruvkun.</i></li> </ul>  <p>THE NOBEL PRIZE IN PHYSIOLOGY OR MEDICINE 2024</p> <ul style="list-style-type: none"> <li>• <b>Victor R. Ambros is an American developmental biologist and Nobel Laureate who discovered the first known microRNA.</b></li> <li>• He is a professor at the <b>University of Massachusetts Medical School.</b></li> <li>• <b>Gary Bruce Ruvkun is an American molecular biologist and Nobel laureate at Massachusetts</b></li> </ul>	<ul style="list-style-type: none"> <li>• Discovery of <b>microRNA</b> and its role in <b>post-transcriptional gene regulation.</b></li> <li>• <b>MicroRNAs, or miRNAs, are small, non-coding molecules of RNA.</b></li> <li>• These <b>microRNAs act as molecular switches, fine-tuning</b> the expression of genes in different <b>cell types</b> and under varying conditions.</li> <li>• Their <b>work continues to influence</b> research in <b>genetics and therapeutic strategies today.</b></li> <li>• It is <b>now known</b> that the <b>human genome codes</b> for over one <b>thousand microRNAs.</b></li> </ul>

	<p><b>General Hospital</b> and professor of genetics at <b>Harvard Medical School</b> in <b>Boston</b>.</p>	<ul style="list-style-type: none"> <li>The <b>discovery of microRNAs</b> has provided scientists with <b>new tools to investigate gene regulation</b> and has significantly <b>expanded our understanding of how genetic information</b> is processed and utilized in <b>living organisms</b>.</li> </ul> 
<p><b>Literature</b></p>	<ul style="list-style-type: none"> <li><i>Author Han Kang</i></li> </ul> 	<ul style="list-style-type: none"> <li>The Nobel prize in literature has been awarded to 53-year-old <b>South Korean novelist Han Kang</b> for her “<b>intense poetic prose that confronts historical traumas and exposes the fragility of human life</b>”</li> </ul>

- The Nobel prize for **Peace and Economics** will be announced later on **11th and 14th October** respectively.

**2. What is the history of the Nobel prize?**

- The Nobel Prize was set up **when businessman and entrepreneur Alfred Nobel died** and left the majority of his fortune to the

establishment of **prizes in physics, chemistry, physiology or medicine, literature and peace.**

- **Alfred Nobel was an inventor, entrepreneur, scientist and businessman** who also wrote poetry and drama.
- His varied interests are reflected in the Nobel Prizes which he laid the foundation for in **1895 in his last will and testament.**
- **His will** stated that the **prizes should be awarded to “those who, during the preceding year, shall have conferred the greatest benefit to humankind.”**
- The **first Nobel Prizes were awarded in 1901** and they have been awarded annually since then.
- There have been years in that time when the Nobel Prizes have not been awarded - mostly during **World War I (1914–1918) and II (1939–1945).**

### 3. What are the Nobel Prize categories?

Nobel Prize / Categories



- The **Nobel Prize** is awarded for **outstanding efforts** in the fields of **Physics, Chemistry, Physiology or Medicine, Literature, Economics, and Peace.**
- As per the **will of Alfred Nobel** the Nobel Prize categories are **physics, chemistry, physiology or medicine, literature and peace.**
- In **1968, Sveriges Riksbank** (Sweden’s central bank) **established** the Sveriges Riksbank Prize in **Economic Sciences in Memory of Alfred Nobel.**

- The **Swedish Academy** gives the prize for literature, the **Karolinska Institute for Physiology or Medicine**, and the **Royal Swedish Academy of Sciences** for Physics, Chemistry, and Economics.
- The **Nobel Peace Prize** has been given out by the **Oslo-based Norwegian Nobel Committee**.
- The **prize money** for the awards comes from a **will made by Alfred Nobel**, a Swedish scientist who founded the award.

#### **4. How many people can share the same Nobel Prize?**

- A **Nobel Prize** can be shared by **up to three individuals**, or in the case of the **peace prize**, it can also be awarded to an organization.
- The rule that a prize can only be awarded to three people comes from the **statutes of the Nobel Foundation**, which is **responsible for fulfilling the intentions of Nobel's will**.
- It specifically states that in **no case may a prize amount be divided between more than three persons**.

#### **5. Can a Nobel prize be awarded posthumously?**

- **No, a Nobel Prize cannot be awarded posthumously.**
- However, since **1974**, if the recipient dies after the prize has been announced they can still be awarded it.
- Previously, a **person could be awarded a prize posthumously** if they had already been **nominated before 1 February of the same year**.
- Following the **2011 announcement** of the **Nobel Prize in Physiology or Medicine**, it was discovered that one of the medicine laureates, **Ralph Steinman**, had passed away **three days earlier**.
- The **Board of the Nobel Foundation** examined the statutes, and came to the conclusion that **Ralph Steinman should continue to remain a Nobel Prize laureate**, as the **Nobel Assembly at Karolinska Institutet had announced the 2011 Nobel Prize laureates in physiology or medicine without knowing of his death**.

## 6. Who selects the Nobel Prize laureates?

- In his **last will and testament**, **Alfred Nobel** specifically **designated the institutions** responsible for the prizes he wished to be established.
- The **Royal Swedish Academy of Sciences** is responsible for the **Nobel Prize in Physics and Chemistry**
- **Karolinska Institutet** (now The Nobel Assembly at Karolinska Institutet) is responsible for the **Nobel Prize in Physiology or Medicine**.
- The **Swedish Academy** is responsible for the **Nobel Prize in Literature**
- A **committee of five persons** to be elected by the **Norwegian Parliament (Storting)** for selecting the candidate for the **Nobel Peace Prize**.
- The **Sveriges Riksbank Prize in Economic Sciences** in Memory of Alfred Nobel was instituted in 1968, **on the tercentenary** of the bank and the **Royal Swedish Academy of Sciences** was given the **task of selecting the economic sciences laureates**.





## 7. What does the Nobel Prize consist of?

- The awardee of the Nobel Prize is conferred with **three things-** a medal, a diploma and award money.
- The Nobel Prize insignia are made of **24 karat gold plated with green gold.**
- They are about **65 millimeters in diameter and weigh about 175 grams.**
- The medals are awarded to the laureates at a ceremony in **Stockholm, Sweden, on December 10, the anniversary of Alfred Nobel's death.**
- The first Nobel Prizes were awarded in **1901** and carried a cash award of **SEK 150,782**, equivalent to **SEK 8.8 million in 2022**, which was **roughly \$900,000**. The **2023 Nobel Prizes** were worth **SEK 11 million**, which is about the same amount as **1901, adjusted for inflation.**





## 8. Enlist the first Nobel prize winners?

**10 DECEMBER, 1901**

### FIRST NOBEL PRIZE CEREMONY

In 1901, at the first Nobel Prize Award Ceremony, the king of Sweden distributed the first Nobel Prizes, in accordance with the will of inventor Alfred Nobel. The day was the fifth anniversary of Alfred Nobel's death.

The first Nobel Prizes were awarded at two places, namely, Stockholm (Sweden) & Oslo (Norway). The Nobel Prizes in the fields of Physics, Chemistry, Medicine and Literature were given at Stockholm. Whereas the first Nobel Peace Prize was awarded at Oslo.

<b>First Nobel Prize in Physics</b> <b>Wilhelm Röntgen (Germany)</b> For his discovery of X-rays		<b>First Nobel Prize in Chemistry</b> <b>Jacobus Henricus van 't Hoff (Netherlands)</b> For his work on rates of reaction, equilibrium and osmotic pressure	
<b>First Nobel Prize in Physiology or Medicine</b> <b>Emil Adolf von Behring (Poland)</b> For his discovery of a diphtheria antitoxin		<b>First Nobel Prize in Literature</b> <b>Sully Prudhomme (France)</b> For his rare combination of the qualities of both heart and intellect	
<b>First Nobel Prize in Peace</b> <b>Henry Dunant (Geneva)</b> For his role in founding the International Red Cross Movement <b>Frédéric Passy (France)</b>		<b>The Nobel Memorial Prize in Economic Sciences</b> was established in 1968 by the Sveriges Riksbank, the Central Bank of Sweden, for contributions to the field of economics.	

**9. How are Nobel Laureates selected?**



- **A nomination for the Nobel Prize may be submitted by any person who meets the nominating criteria.**
- **The nominees' names and other information about the nominations cannot be revealed until 50 years later.**

Procedure	Analysis
<p><b>Who can nominate?</b></p>	<ul style="list-style-type: none"> <li>• <b>Nominations to most of the Nobel prizes are by invitation only.</b></li> <li>• <b>However, anyone who meets the nominating criteria can nominate the candidate.</b></li> <li>• <b>Each year, thousands of University professors, members of academies, and previous Nobel Laureates, and members of parliamentary assemblies are asked to submit candidates for the Nobel Prize for the coming year.</b></li> </ul>

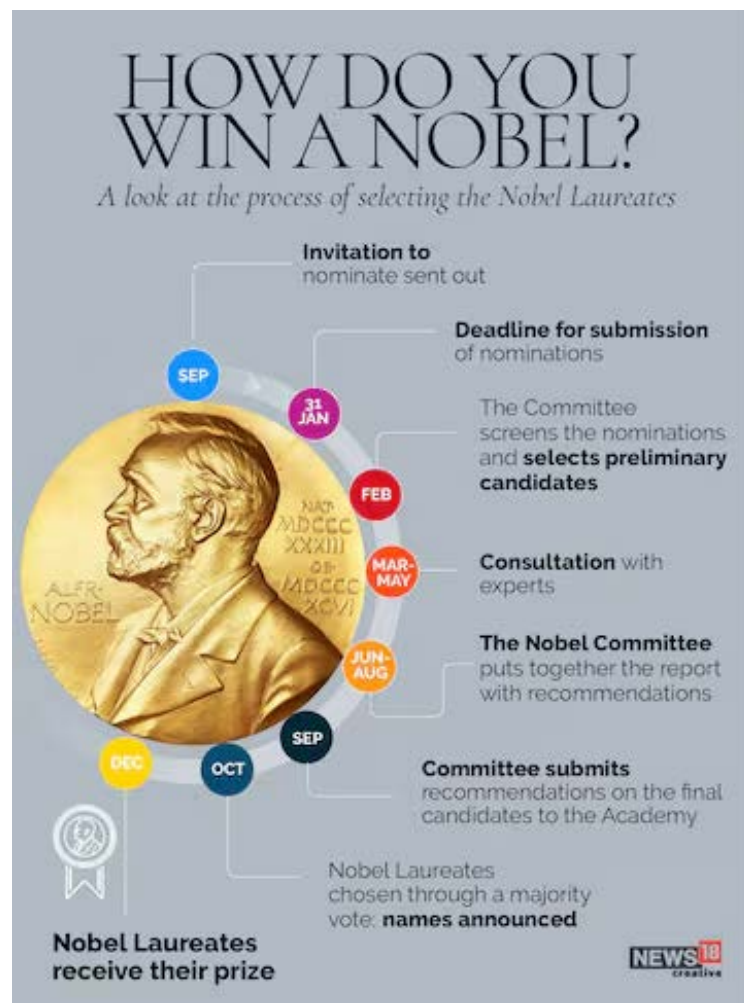
- After receiving the nominations, respective institutions of different fields are responsible for the selection of candidates.



**Process of selection**

- **September:** The Nobel committee invites qualified personnel to nominate extraordinary work.
- **January:** January 31 is the deadline for submitting nominations
- **February:** The Nobel committee screens the nominations and selects preliminary candidates.
- **March-May:** In spring, the committee meets and consults with experts.
- **June-August:** The Nobel committee puts together the report with the expert recommendations.

- **September:** The Nobel committee submits the **final recommendation report** to the respective academies.
- **October:** The Nobel Laureates are chosen through a majority of votes.
- The decision is final and without appeal.
- The names of the Nobel Peace Prize Laureates are then announced.
- **December:** The Nobel Laureates receive their prizes.



**10. What are the criteria for becoming a nominator?**

- **Only people who fulfill the criteria set out by the prize awarding institutions are allowed to nominate candidates for the Nobel Prize.**

<b>Criteria for Nominator</b>	<b>Description</b>
<b>Physics</b>	<p><b>The right to submit proposals for the award of a Nobel Prize in Physics shall, by statute, be enjoyed by:</b></p> <ul style="list-style-type: none"> <li>• <b>Swedish and foreign members of the Royal Swedish Academy of Sciences.</b></li> <li>• <b>Members of the Nobel Committee for Physics.</b></li> <li>• <b>Nobel Prize laureates in physics.</b></li> <li>• <b>Tenured professors in the Physical sciences at the universities and institutes of technology of Sweden, Denmark, Finland, Iceland and Norway, and Karolinska Institutet, Stockholm.</b></li> <li>• <b> HOLDERS of corresponding chairs in at least six universities or university colleges (normally, hundreds of universities) selected by the Academy of Sciences with a view to ensuring the appropriate distribution over the different countries and their seats of learning.</b></li> <li>• <b>Other scientists from whom the Academy may see fit to invite proposals.</b></li> </ul>

<p><b>Chemistry</b></p>	<ul style="list-style-type: none"> <li>• The right to submit proposals for the award of a Nobel Prize in Chemistry shall, by statute, be enjoyed by:</li> <li>• <b>Swedish and foreign</b> members of the <b>Royal Swedish Academy of Sciences.</b></li> <li>• <b>Members of the Nobel Committees for Chemistry and Physics.</b></li> <li>• <b>Nobel Prize laureates in chemistry and physics.</b></li> <li>• <b>Permanent professors in the sciences of Chemistry</b> at the universities and institutes of technology of <b>Sweden, Denmark, Finland, Iceland and Norway, and Karolinska Institutet, Stockholm.</b></li> <li>• <b> Holders of corresponding chairs in at least six universities</b> or university colleges selected by the <b>Academy of Sciences</b> with a <b>view to ensuring the appropriate distribution</b> over the different countries and their centers of learning.</li> <li>• <b>Other scientists</b> from whom the Academy may see fit to invite proposals.</li> </ul>
<p><b>Medicine</b></p>	<ul style="list-style-type: none"> <li>• The right to submit proposals for the award of a Nobel Prize in Medicine shall, by statute, be enjoyed by:</li> <li>• <b>Members of the Nobel Assembly at Karolinska Institutet, Stockholm.</b></li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Swedish and foreign</b> members of the <b>Medicine and Biology</b> classes of the <b>Royal Swedish Academy of Sciences</b>.</li> <li>• <b>Nobel Prize laureates</b> in physiology or <b>medicine and chemistry</b>.</li> <li>• Holders of established posts as <b>full professors</b> at the faculties of medicine <b>in Sweden</b> and holders of similar posts at the faculties of medicine or <b>similar institutions in Denmark, Finland, Iceland and Norway</b>.</li> <li>• <b>Holders of similar posts at no fewer than six</b> other faculties of medicine at universities around the world, <b>selected by the Nobel Assembly</b>, with a view to ensuring the appropriate distribution of the task among various countries.</li> <li>• Scientists whom the <b>Nobel Assembly may otherwise see fit to approach</b>.</li> <li>• <b>No self-nominations are considered</b>.</li> </ul>
<p><b>Literature</b></p>	<ul style="list-style-type: none"> <li>• The right to submit proposals for the award of a Nobel Prize in Literature shall, by statute, be enjoyed by:</li> <li>• <b>Members of the Swedish Academy</b> and of other <b>academies, institutions and societies</b> which are similar to it</li> </ul>

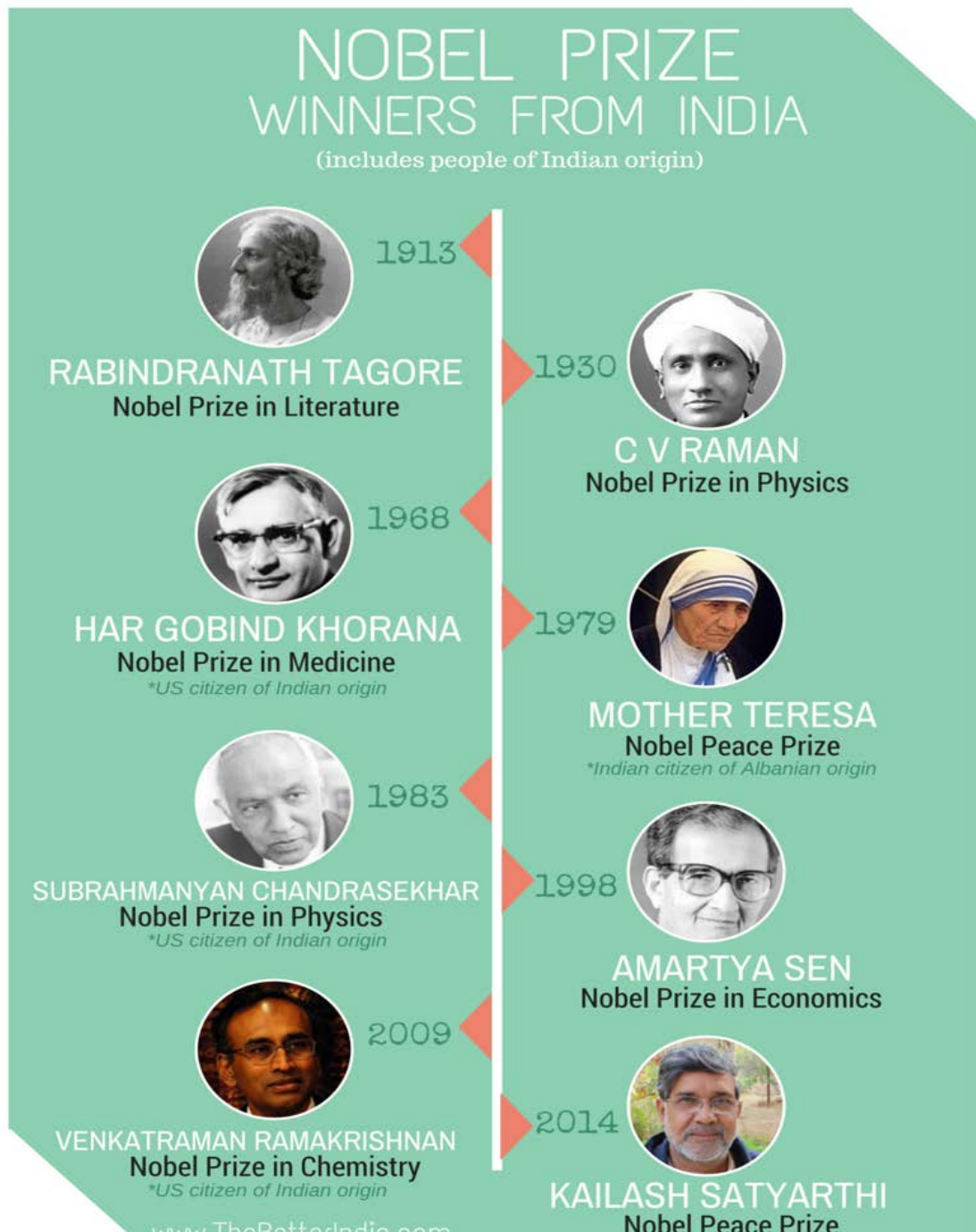
	<p>in construction and purpose.</p> <ul style="list-style-type: none"> <li>• <b>Professors of literature and of linguistics</b> at universities and university colleges.</li> <li>• <b>Previous Nobel Prize laureates in literature.</b></li> <li>• <b>Presidents of those societies of authors</b> that are representative of the literary production in their respective countries.</li> </ul>
<p><b>Peace</b></p>	<ul style="list-style-type: none"> <li>• <b>According to the statutes of the Nobel Foundation</b>, a nomination for the Nobel Peace Prize is considered valid if it is submitted by a person who falls within one of the following categories:</li> <li>• <b>Members of national assemblies and national governments</b> (cabinet members/ministers) of sovereign states as well as <b>current heads of state.</b></li> <li>• <b>Members of The International Court of Justice</b> in The Hague and <b>The Permanent Court of Arbitration</b> in The Hague.</li> <li>• <b>Members of l’Institut de Droit International.</b></li> <li>• <b>Members of the International Board of the Women’s International League for Peace</b></li> </ul>



	<p><b>and Freedom.</b></p> <ul style="list-style-type: none"> <li>• University professors, professors emeriti and <b>associate professors of history, social sciences, law, philosophy, theology, and religion;</b> university rectors and university directors (or their equivalents).</li> <li>• <b>Directors of peace research institutes</b> and foreign policy institutes.</li> <li>• <b>Persons</b> who have been <b>awarded the Nobel Peace Prize</b></li> <li>• <b>Members of the main board of directors</b> or its equivalent of organizations that have been <b>awarded the Nobel Peace Prize.</b></li> <li>• <b>Current and former members of the Norwegian Nobel Committee</b> (proposals by current members of the Committee to be submitted no later than at the first meeting of the Committee after 1 February)</li> <li>• <b>Former advisers to the Norwegian Nobel Committee.</b></li> </ul>
<p><b>Economics</b></p>	<ul style="list-style-type: none"> <li>• The right to submit proposals for the <b>award of a Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel</b> shall, by statute, be enjoyed by:</li> <li>• <b>Swedish and foreign members of</b></li> </ul>

	<p>the <b>Royal Swedish Academy of Sciences</b>.</p> <ul style="list-style-type: none"><li>• <b>Members of the Prize Committee for the Sveriges Riksbank Prize in Economic Sciences</b> in Memory of Alfred Nobel.</li><li>• <b>Persons who have been awarded the Sveriges Riksbank Prize in Economic Sciences</b> in Memory of Alfred Nobel.</li><li>• <b>Permanent professors</b> in relevant subjects at the universities and colleges in <b>Sweden, Denmark, Finland, Iceland and Norway</b>.</li><li>• <b> Holders of corresponding chairs in at least six universities or colleges</b>, selected for the relevant year by the <b>Academy of Sciences</b> with a view to ensuring the appropriate distribution between different countries and their seats of learning.</li><li>• <b>Other scientists from whom the Academy may see fit to invite proposals</b>.</li></ul>
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## 11. Enlist the Nobel prize winners from India?



### Rabindranath Tagore

- **Rabindranath Tagore** was conferred with the **Nobel Prize** in the category of **literacy in 1913** for his profoundly sensitive, **fresh and beautiful verse**.

- Often called **Bard of Bengal and Gurudev**, Tagore is one of India's most dignified figures.
- Rabindranath Tagore was the **first Indian to be awarded the Nobel Prize**.

### CV Raman

- **Sir Chandrashekhara Venkata Raman** or CV Raman is recognised for the **Nobel Prize in 1930** in the field of Physics for his **work on the scattering of light** and for the discovery of the **effect named after him**.
- His discovery is also referred to as the **“Raman Effect”**.
- **Dr. Har Govind Khurana:**
- **Dr. Har Govind Khurana** was awarded the **Nobel Prize in the field of Physiology or Medicine in 1968** along with **Marshall W. Nirenberg** and **Robert W. Holley** for their interpretation of the **genetic code** and its **function in protein synthesis**.
- His research work related to the **synthesis of functional genes outside the living organism**.

### Mother Teresa

- **Mother Teresa** was the **first Indian woman** to be conferred with the **Nobel Prize in the category of Peace in 1979**.
- She was born in the **Republic of Macedonia**.
- At the age of 19, she moved to **India** and spent the **rest of her life in India as a Roman Catholic nun** and as a missionary serving the **“poorest of the poor” in slums** in the city.
- Her humanitarian work led to the establishment of **Missionaries of Charity**.

## Subrahmanyan Chandrasekhar

- **Subrahmanyan Chandrasekhar** was awarded the **Nobel Prize in the field of Physics in 1983** for his theoretical studies of the **physical processes of importance to the structure and evolution of the stars**.
- He is an Indo-American mathematician.

## Amartya Sen

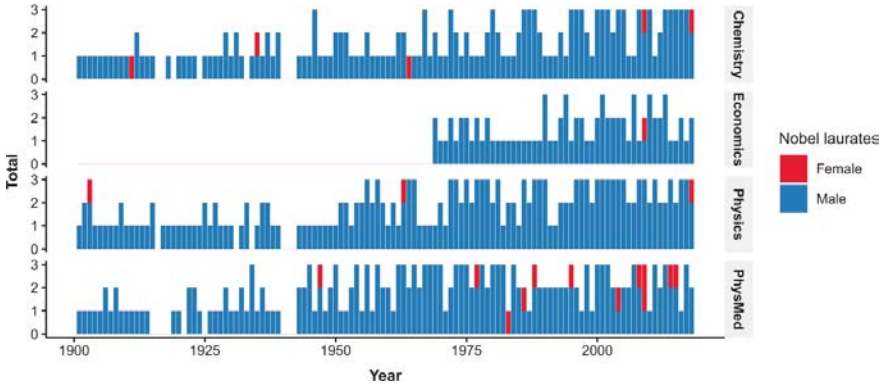
- **Amartya Sen** was awarded the **Nobel Prize in 1998** in the field of **Economic Sciences** for his contributions to **welfare economics**.
- He was born in **Manikganj (British India)**.
- He **studied economics and taught the subject** in many reputed institutions in both the **US and the United Kingdom**.
- **Venkatraman Ramakrishnan:**
- **Venkatraman Ramakrishnan** was awarded the **Nobel Prize in 2009** in the field of **Chemistry** for his work in studies of the **structure and function of the ribosome**.
- The Nobel Prize is given by the **Royal Swedish Academy of Services**.



## Kailash Satyarthi

- **Kailash Satyarthi** was born in Madhya Pradesh and was awarded the **Nobel Prize in 2014 in the field of Peace** for his **struggle against the suppression of children and young people** and for the **right of all children to education**.
- He is an activist who has dedicated his whole life to **children's rights and education**.

## 12. Enlist a few controversies surrounding the Nobel prize?


- The **Nobel Prize** has been involved in several controversies, including:

Controversies	Analysis
<p><b>Lack of diversity</b></p>	<ul style="list-style-type: none"> <li>• <b>The Nobel Prizes have been criticized for their lack of diversity, particularly among women and people from outside of Europe and the US.</b></li> <li>• For example, <b>in 2023, Carolyn Bertozzi was the only woman to win a science prize.</b></li> <li>• So far, <b>109 individuals</b> have won the peace award but <b>only 18 were women, including Mother Teresa in 1979 and Aung San Suu Kyi in 1991.</b></li> </ul> 
<p><b>Political bias</b></p>	<ul style="list-style-type: none"> <li>• <b>The peace and literature awards have been accused of being politicized, with some questioning whether winners are selected based on their work or their political views.</b></li> <li>• For example, <b>President Barack Obama won the peace prize in 2009, less than a year after taking office.</b></li> </ul>
<p><b>Premature understanding of peace</b></p>	<ul style="list-style-type: none"> <li>• <b>The award has been criticized for its premature or faulty understanding of peace or for being politically motivated. For example,</b></li> </ul>

	<p><b>Ethiopia's Prime Minister Abiy Ahmed</b> won the prize in <b>2019</b> for ending the <b>20-year conflict between Eritrea and Ethiopia</b> by establishing a <b>peace agreement</b>.</p> <ul style="list-style-type: none"><li>• However, a <b>conflict started in northern Ethiopia</b> in November 2020, and <b>Abiy has been criticized for human rights violations and war crimes</b> committed by his forces in the <b>Tigray region</b>.</li></ul> 
<b>Controversial winners</b>	<ul style="list-style-type: none"><li>• <b>Former US Secretary of State Henry Kissinger</b> received the <b>Nobel Peace Prize in 1973</b> for his <b>negotiations to end the Vietnam War</b>.</li><li>• But Kissinger was also <b>accused of several war crimes during the Cold War</b>, including bombings in <b>Cambodia in 1969 and 1970</b>.</li></ul> 

<p><b>Jocelyn Bell Burnell</b></p>	<ul style="list-style-type: none"> <li>• <b>Burnell discovered pulsars in 1967, but only Antony Hewish and Martin Ryle were awarded the Nobel Prize for Physics in 1974.</b></li> </ul>
<p><b>Adolph Hitler</b></p>	<ul style="list-style-type: none"> <li>• <b>Hitler barred Germans from accepting Nobel Prizes and created the German National Prize for Art and Science.</b></li> </ul> <div data-bbox="753 579 1187 905" data-label="Image"> </div>
<p><b>The European Union, Nobel Peace Prize:2012</b></p>	<ul style="list-style-type: none"> <li>• <b>The Nobel peace prize in 2012 was given to the EU for over six decades contribution to the advancement of peace and reconciliation, democracy and human rights in Europe.</b></li> <li>• <b>However many complained about the choice, as the European Union was dealing with several pressing economic problems, including the Greek debt crisis, and because several European countries make and sell weapons.</b></li> </ul> <div data-bbox="659 1482 1281 1839" data-label="Image"> </div>



<p><b>Mahatma Gandhi (by omission)</b></p>	<ul style="list-style-type: none"><li>• In 2006, the former director of the Nobel Institute, Geir Lundestad, said the greatest omission in the prize's history was never awarding the peace prize to the Indian political activist Mahatma Gandhi.</li><li>• According to Lundestad, Gandhi was shortlisted five times (twice before World War II, then in 1946, 1947 and 1948), but the committee's Euro-centric viewpoint and its failure to appreciate the struggle for freedom in colonies kept Gandhi from receiving the award.</li><li>• <i>“Gandhi could do without the Nobel Peace Prize. Whether the Nobel committee can do without Gandhi, is the question,”</i> said Lundestad.</li></ul> 
<p><b>1994 Nobel peace prize</b></p>	<ul style="list-style-type: none"><li>• Nobel peace prize in 1994 was given to Palestinian leader Yasser Arafat, Israeli Prime Minister Yitzhak Rabin and Israeli Foreign Minister Shimon Peres for their work on the Oslo Peace Accords.</li></ul>

- The decision received criticism, not only because the **awards are generally seen to have failed at ending the Israel-Palestine conflict** but because of **Arafat himself**.
- Many critics noted that while **Arafat was head of Fatah, the PLO(The Palestine Liberation Organization) group engaged in acts of terrorism.**
- A member of the committee, **Kare Kristiansen, resigned over Arafat’s nomination,** and in an article for the **Times of Israel in 2012,** American columnist Jay Nordlinger called Arafat **“the worst man ever to win the Nobel Peace Prize.”**



### **13. What is the relevance of the topic for UPSC CSE?**

- **For Prelims:** Nobel Prize, Computational Protein Design, Machine Learning with Artificial Neural Networks,
- **For Mains:** Discovery of microRNA and its role in post-transcriptional gene regulation.

**14. Some previous years prelims questions.**

1. Who among the following discovered heavy water? (2008)
  - (a) Heinrich Hertz
  - (b) H.C. Urey
  - (c) G. Mendel
  - (d) Joseph Priestley

**Answer: B**

**15. Some questions from this year and previous years interview transcripts.****Board Preeti Sudan mam:**

- A scientist of Indian origin won the Nobel prize for his work on ribosomes. Can you name him?
- Jennifer Daudna is a Nobel laureate. Can you tell me what has she worked on?
- Can you tell me how crispr-cas9 can help in the development of vaccines?

**Board Satyawati mam:**

- Why were Esther Duflo and Abhijit Banerjee awarded with the Nobel Prize?
- Is Randomised Control Trials applicable only to medical sciences and not social sciences?

**Board Smita Nagaraj mam:**

- Name of the person who got Nobel prize both in chemistry and physics.
- Board Smita Nagaraj mam:
- Why did Einstein get the Nobel prize?
- Why not for his earlier work?

**Board Satyawati mam:**

- What was John Nash famous for?
- Tell me about Nash equilibrium, game theory and the Nobel prize in economics?

**16. Some questions for QUIZ.**

Q1. Consider the following Awardees:

1. David Baker
2. John Jumper
3. Victor Ambros
4. Gary Ruvkun
5. Geoffrey E. Hinton

How many of the above scientists have been awarded the Nobel prize for medicine?

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

**Answer: A**

**17. Some questions for POLL.**

Q1. Do you think that the Nobel prize nomination process is biased?

- (a) YES
- (b) NO
- (c) Can't say.

Q2 Do you think that not awarding the Nobel prize to Gandhi was a mistake?

- (a) YES
- (b) NO
- (c) Can't say.