

## Beautiful Minds – Centennial Exhibition of the Nobel Prizes

The exhibition consists of four basic sections:

- > Alfred Nobel and His Times
- > The Nobel System
- > Individual Creativity
- > Creative Milieus [environments or surroundings]

### The Nobel Will and death mask:

A copy of the will written by Alfred Nobel that established the Nobel Prize. His death mask is also on display. Nobel's will is handwritten in Swedish with ink pen. He signed the will in Paris in 1895 and later died in 1896 at the age of 63. He never married. In his will Nobel specifically designated the institutions responsible for the prizes he wished to be established: the Royal Swedish Academy of Sciences for the prizes in physics and chemistry; the Karolinska Institute for the prize in medicine or physiology; the Swedish Academy for the prize in literature; and a committee of persons elected by the Norwegian Parliament (Storting) for the peace prize. The will does not mention a prize in economics. In 1968, the Bank of Sweden established the prize in economics in memory of Alfred Nobel. The Royal Swedish Academy of Sciences was given the task to select the economics prize winners starting in 1969.

**Ten Decades of Nobel Laureates, the Nobel Timeline 1901-2000:** This historic perspective has ten display cases making up a timeline of the 20th century. Each display case covers one decade and shows an artefact, some critical newspaper clippings, moving pictures of that era, and a diagram showing the changing prize amount.

1901–1910: 1907 Nobel Prize for Literature, Rudyard Kipling; *The Jungle Book*

1911–1920: 1917 Nobel Prize for Peace, The Red Cross (an organization); “Armband of the Red Cross”

1921–1930: 1923 Nobel Prize for Medicine, Frederick G. Banting and John Macleod (a shared prize); “Hypodermic needle and insulin”

1931–1940: 1935 Nobel Prize for Peace, Carl von Ossietzky; German magazine, *Die Weltbühne*

1941–1950: 1945 Nobel Prize for Medicine, Alexander Fleming; “Penicillin vial with its packing case”

1951–1960: 1956 Nobel Prize for Physics, William B. Shockley and John Bardeen; “Transistor radio”

1961–1970: 1963 Nobel Prize for Chemistry, Carl Ziegler and Giulio Natta; “Plastic products”



BEAUTIFUL  
MINDS.

THE  
CENTENNIAL  
EXHIBITION  
OF THE  
NOBEL PRIZES

18 APRIL - 30 JUNE  
WWW.NOBEL.UTS.EDU.AU

1971–1980: 1977 Nobel Prize for Peace, Amnesty International;  
“Amnesty International Button”

1991–2000: 2000 Nobel Prize for Physics, Zhores Alferov and Jack Kilby  
and Herbert Kroemer; “CD Player”

Post 2000, the 21 Century – our world today, how is it different from the  
time of Alfred Nobel?

### **The display of 2006 Nobel Laureates:**

The 2006 Nobel Prize winners were announced in October 2006.

Nobel Prize for Medicine: Andrew Fire and Craig Mello, for the discovery  
of how to silence malfunctioning genes by RNA interference (RNAi).

This is a fundamental mechanism for controlling the flow of genetic  
information. RNAi is already being widely used in basic science to study  
the functions of genes. It may lead to novel therapies. From the time they  
published their discovery in 1998 to winning the Nobel Prize eight years  
later is nearly a record for fast-track recognition. A Nobel Prize is  
typically awarded decades after a major discovery is made (like Barbara  
McClintock).

**Nobel Prize for Physics: John Mather and George Smoot**, for their  
work on the Big Bang theory and the origin of the universe. Both of them  
worked on the COBE (cosmic background explorer) satellite launched by  
NASA in 1989. The results provided increased support for the Big Bang  
theory, which predicts cosmic wave background radiation (intergalactic  
noise) measured by the COBE. These measurements marked the  
beginning of cosmology as a precise science.

**Nobel Prize for Chemistry: Roger Kornberg**, for his studies on the  
molecular basis of gene transcription, explaining how genetic information  
is transported in the cells of humans, animals and fungi. His father is  
Nobel Laureate Arthur Kornberg, who won the Nobel Prize for Medicine  
in 1959. They are the sixth father-and-son pair in Nobel history.

**Nobel Prize for Economics: Edmund S. Phelps**, for furthering the  
understanding of the trade-offs between inflation and its effects on  
unemployment. He showed how low inflation today leads to expectation  
of low inflation in the future, thereby influencing future policy making by  
corporate and government leaders.

**Nobel Prize for Literature: Orhan Pamuk**, who, in the quest for the  
melancholic soul of his native city, has discovered new symbols for the  
clash and interlacing of cultures. A Turkish novelist, he had clashed with  
his country’s government in 2005 and was taken to court for “insulting  
Tukishness.” The charges were dropped in January 2006.



BEAUTIFUL  
MINDS.

THE  
CENTENNIAL  
EXHIBITION  
OF THE  
NOBEL PRIZES

18 APRIL - 30 JUNE  
WWW.NOBEL.UTS.EDU.AU

**Noble Prize for Peace: Muhammad Yunus and the Grameen Bank,** for setting up a bank and a banking system to lend money to the poorest people in Bangladesh, his home country, enabling them to start small businesses without collateral. His idea, called “microcredit”, has been copied in more than 100 nations, from the United States to Uganda.

**Alfred Nobel and His Times:** In this exhibit there are three display cases describing the life of Alfred Nobel and different aspects of his activities: “The Idealist,” “The World Citizen”, and “The Technological Optimist.”

**The Nobel Prize:**

The prize comes with a gold medal, a certificate, and money. The money is based on the interest gained from the investment of Alfred Nobel’s fortune. In 2006 the prize winners will receive about \$1.3 million US dollars.

**Models of the Institutions that select the Nobel Prize Winners:**

The four institutes that select the Nobel Prize winners are represented with models of the buildings, where the committee members work, and the rooms where the decisions are made. The award ceremony and the banquet are represented, along with a number of medals, diplomas, and a table setting.

**The Nobel Prize in Physics:** The Royal Swedish Academy of Sciences is responsible for the Physics prize. The Academy has 350 Swedish and 164 foreign members. Membership in the Academy constitutes exclusive recognition of successful research achievement. The Academy appoints five members to the Nobel Committee, the working body, for a three-year term. They can be re-appointed only twice.

**The Nobel Prize in Chemistry:** The Royal Swedish Academy of Sciences is also responsible for the Chemistry Prize.

**The Nobel Prize in Physiology or Medicine:** The Nobel Assembly at the Karolinska Institute is responsible for the Physiology or Medicine prize. The Assembly has 50 voting members composed of professors in different medical subjects.

**The Nobel Prize in Literature:** The Swedish Academy is responsible for the Literature Prize. The Academy is composed of 18 members whose tenure is for life. Known as “De Aderton” or “The Eighteen,” current members of the Academy are distinguished Swedish writers, linguists, literary scholars, historians and a prominent jurist.



BEAUTIFUL  
MINDS.

THE  
CENTENNIAL  
EXHIBITION  
OF THE  
NOBEL PRIZES

18 APRIL - 30 JUNE  
WWW.NOBEL.UTS.EDU.AU

**The Nobel Peace Prize:** The Norwegian Nobel Committee is responsible for the Peace Prize. The Committee is composed of five members appointed by the Storting (the Norwegian Parliament). The Committee's composition reflects the relative strengths of the political parties in the Storting. The Committee is assisted by specially appointed expert advisers.

**The Nobel Prize in Economics:** The Royal Swedish Academy of Sciences is also responsible for the Economics Prize.

**The nomination process:**

Each year the respective Nobel Committees send invitations to thousands of members of academies, university professors, scientists from numerous countries, previous Nobel Prize winners, members of parliamentary assemblies and others, asking them to submit candidates for the Nobel Prizes for the coming year. These nominators are chosen in such a way that as many countries and universities as possible are represented over time.

**Prize Announcements:**

The announcement of prize-winners for the year is made on the same day the Nobel Prize-Awarding Institutions choose the winner. Immediately after they vote a press conference is held and the winners are announced.

**The Nobel Festival:** The Nobel Festival developed gradually over the course of the 20th century. The basic form was already recognizable in 1901, but it was then only a local event involving a limited number of people with ties to the prize-awarding institutions. Today, the festival has developed into a magnificent ceremony, closely scrutinised by the mass media and viewed by millions of people worldwide. The 10th of December is a national holiday in Sweden and Norway. As the prestige of the Nobel Prizes has grown, this date has come to symbolise the importance of science, literature, and peace for the entire world.

**The Prize Award Ceremonies:** Nobel Prize winners take centre stage in Stockholm on December 10th each year, when they receive the medal, diploma, and document confirming the prize amount from King Carl Gustav XVI of Sweden. In Oslo, Peace Prize winners receive their prize from the Chairman of the Norwegian Nobel Committee, in the presence of King Harald V of Norway. An important part of these ceremonies is the presentation of the Nobel Lectures by the winners. In Stockholm, the lectures are presented several days before the award ceremony. In Oslo, the prize winners deliver their lectures during the award ceremony.

**The Cableway:** The cableway is a special conveyer system that circulates all 780+ Nobel Laureates. It will take more than 5 hours to see each one pass by.



**Banquet Table:** This is the layout of the banquet room and the utensils used for the Nobel Banquet. A video clip shows part of the ceremony and banquet.

**Nobel Museum website, database, and interactive computer terminals:** These are interactive terminals for anyone interested in surfing the Nobel Museum website, to check the database, or to play some computer games about the Nobel Prize.

**Female Nobel Laureates:** In more than 105 years only 33 women (about 4%) have been awarded Nobel Prizes compared to 735 men. Women have won 12 Peace prizes, 10 Literature prizes, 7 Medicine prizes, 3 Chemistry prizes, and 2 Physics prizes. So far, no female has won the Economics prize.

**Mini-theatres:** There are two mini-theatres. One demonstrates the individual creativity of Nobel Laureates. The second focuses on some of the environments in which former Noble Laureates have worked. These film clips bring out different responses from viewers, showing that creativity and how it comes about is somewhat abstract and may not be easily defined.

**Creative Milieus Films:** The goal of this exhibit is to stimulate thought about the link between individual creativity and creative environments. Do naturally creative individuals function independently from the world around them, or does their environment play a role in their creativity?

One example, is the video on CERN (Council of European Nuclear Research). Just outside Geneva lies the CERN, the centre of European particle physics. In CERN's laboratories, offices, and auditoriums hundreds of researchers from many countries work together. Their thoughts and ideas are exchanged in cafeterias, break rooms, and corridors. At CERN there are also gigantic machines. The largest machine forms a ring measuring 27 kilometres in diameter. A number of prominent physicists have worked here. Among some of the best known are Nobel Laureates Georges Charpak, Carlo Rubbia, and Simon van der Meer.

**Creative Individual Films:** There are 32 film portraits (by Anders Wahlgren) about creative individuals along with a number of artefacts connected to the Nobel Laureates portrayed in the films. Each film clip is 3-4 minutes long.

1. Wilhelm Röntgen.
2. Rickard Feynman
3. Rabindranath Tagore
4. Fridtjof Nansen
5. Marie Curie

6. Roger Sperry
7. Martin Luther King, Jr.
8. Dalai Lama
9. Isaac Bashevis Singer
10. Joseph Brodsky
11. Piotr Kapitsa Watson
12. Barbara Mc Clintock
13. Selma Lagerlöf
14. Linus Pauling (peace)
15. Nelson Mandela
16. Yasunari Kawabata
17. Alexander Fleming
18. Francis Crick and James D Watson
19. Ahmed Zewail
20. Nelly Sachs
21. Max Perutz
22. Erwin Schrödinger
23. Aung San Suu Kyi
24. Wole Soyinka
25. Charles H. Townes
26. Linus Pauling (chemistry)
27. Amartya Sen
28. Dag Hammarskjöld
29. Peyton Rous
30. Hideki Yukawa
31. August Krogh
32. Boris Pasternak

#### **Artefacts/inventions by Nobel Laureates:**

On display inside the Creative Individuals mini-theatre are some artefacts actually used by Nobel Laureates. The laureates and their associated artefacts are:

Richard Feynman (Physics, 1965): A wobbling plate from Cornell University that had an important impetus on the physical theories of Richard Feynman.

Peyton Rous (Medicine, 1966): A laboratory flask used by Peyton Rous in the mid 1930's.

Wole Soyinka (Literature, 1986): His hat.

Selma Lagerlof (Literature, 1909): A pair of Selma Lagerlof's shoes.

Boris Pasternak (Literature, 1958): A "Samizdat" booklet with poems from *Doctor Zhivago*.

Rabindranath Tagore (Literature, 1913): A slate [for writing] from Rabindranath Tagore's Bengal.

Marie Curie (Physics, 1903 and Chemistry, 1911): An ionisation chamber. She also designed a fine balance that is damped by air, with a microscopically readable micrometer scale. Marie Curie won a Nobel Prize in Physics in 1903 with her husband Pierre Curie for discovering radium and polonium. She won a Nobel Prize in Chemistry by herself, in 1911, for isolating the element radium.



BEAUTIFUL  
MINDS.

THE  
CENTENNIAL  
EXHIBITION  
OF THE  
NOBEL PRIZES  
18 APRIL - 30 JUNE  
WWW.NOBEL.UTS.EDU.AU

Linus Pauling (Chemistry 1954): A model of molecule. By folding a piece of paper Linus Pauling was able to understand the structure of the alpha-helix molecule. He also won the Nobel Peace Prize in 1963.

Max Perutz (Chemistry, 1962): A model of the haemoglobin molecule.

Francis Crick and James Watson (Medicine, 1962): A model of the DNA molecule – the famous double helix.

Nelly Sachs (Literature, 1966): One of the things Nelly Sachs brought to Sweden when she escaped Nazi-controlled Berlin was this music box.

Fridtjof Nansen (Peace, 1922): A Nansen passport. The Nansen passports gave many refugees a possibility to leave their camps.

Willhelm Conrad Röntgen (Physics, 1901): An X-ray tube.

Joseph Brodsky (Literature, 1987): A Yiddish typewriter used by Joseph Brodsky.

Alexander Fleming (Medicine, 1945): A Petri dish with a penicillin culture of the mould which led to the development of penicillin.

Barbara McClintock (Medicine, 1983): Maize (corn cobs) ears with kernels of different colours were the beginning of Barbara McClintock's discovery of "jumping genes."

The Dalai Lama of Tibet (Peace, 1989):

Isaac Bashevis Singer (Literature, 1978): typewriter

Roger Sperry (Medicine, 1981): A monkey box and plexiglass discs.

Piotr Kapitsa (Physics, 1978): A key, cryostat, and spindle --replicas of equipment used by Piotr Kapitsa around 1940 to study super fluid helium.

C.T.R. Wilson (Physics, 1927): A cloud chamber – a replica of Wilson's cloud chamber.

August Krogh (Medicine, 1920): A Spiro meter, developed by August Krogh.

**Sound Pavilion:** In the Sound Pavilion you can put on the headphones and listen to recordings related to the Nobel Laureates.

**The Cambridge Pavilion:** A photo and partial model of an antenna system used in the discovery of pulsars. This shows part of a large antenna system used in a field in Cambridge, designed and constructed by a team lead by astrophysicist Anthony Hewish in 1960s. The antenna received signals transmitted from space to the radio astronomers in Cambridge. A source of radiation, which previously had not been registered, led to the discovery of pulsars, a new type of star. Anthony Hewish and colleague Martin Ryle were awarded the Nobel Prize in Physics in 1974. There was a controversy over whether a young graduate student, Jocelyn Bell, who was the first to observe the unusual signal should have co-shared the prize. She said she was just lucky to be there when the signal was first received. This highlights some of the issues in contemporary science – the role of chance or luck, and who should get credit when a lot of work is performed in large teams with collaborators in various positions and places.



BEAUTIFUL  
MINDS.

THE  
CENTENNIAL  
EXHIBITION  
OF THE  
NOBEL PRIZES  
18 APRIL - 30 JUNE  
WWW.NOBEL.UTS.EDU.AU