

The 2017 Nobel Prize

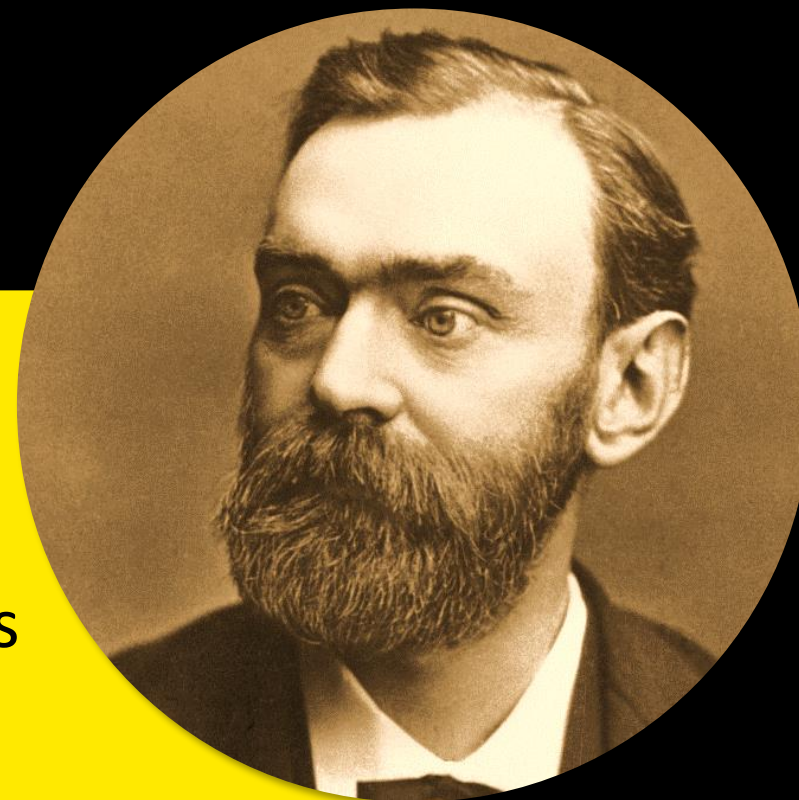


Alfred Nobel

(1833–1896)



As a child, Alfred dreamed of becoming a writer, but his father had other expectations of him and his brothers.



Dynamite

1867



Alfred Nobel invented dynamite, and during his life he managed to earn a lot of money from this invention.

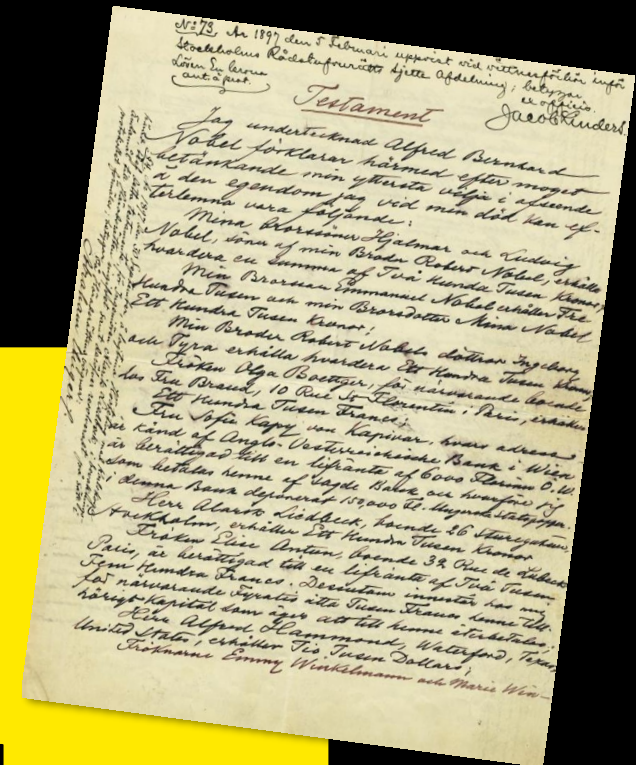


The will

Alfred Nobel died on December 10, 1896



According to the will of Alfred Nobel, a yearly Prize should be awarded in five categories: physiology or medicine, physics, chemistry, literature and peace. And it should reward those who “shall have conferred the greatest benefit to mankind.”

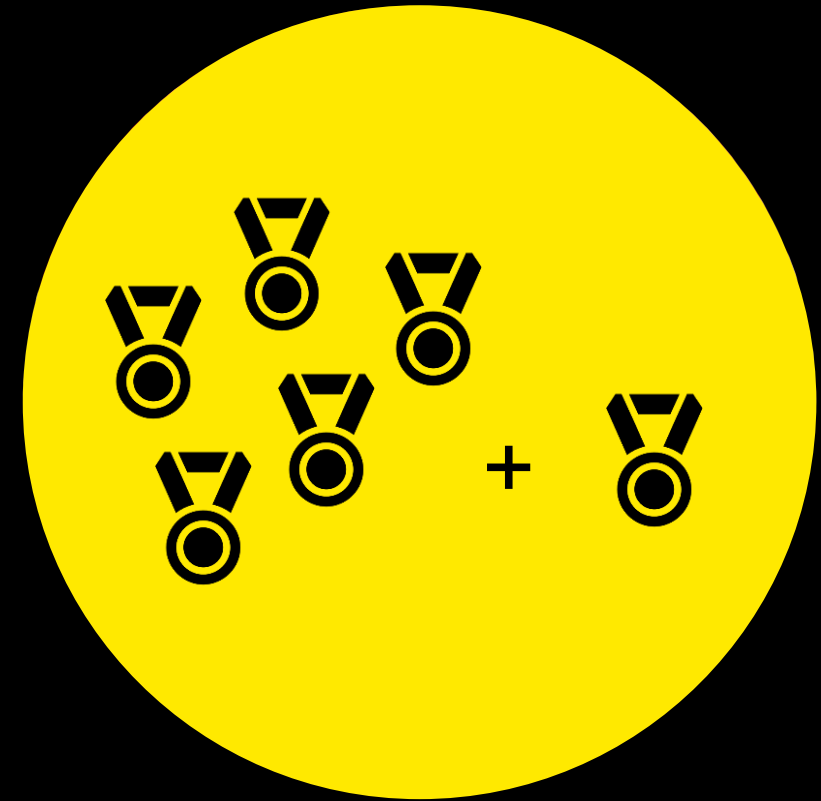


Five Nobel Prizes

And an extra one in memory of Alfred Nobel

- Medicine
- Chemistry
- Physics
- Literature
- Peace
- Economics *

*The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel



Prize Award Ceremony

Nobel Day, December 10 each year



The Prize consists of a medal, a diploma and a sum of money. Sweden's King Carl XVI Gustaf presents the medal and diploma to each Laureate at Stockholm Concert Hall. The Peace Prize is presented at a separate ceremony in Oslo, the capital of Norway.



The Nobel Prize in Physiology or Medicine



This Prize is a reward for discoveries that help us to understand how organisms work, or that lead to important cures for a disease.



The 2017 Nobel Prize in Physiology or Medicine

Jeffrey C. Hall, Michael Rosbash and Michael W. Young

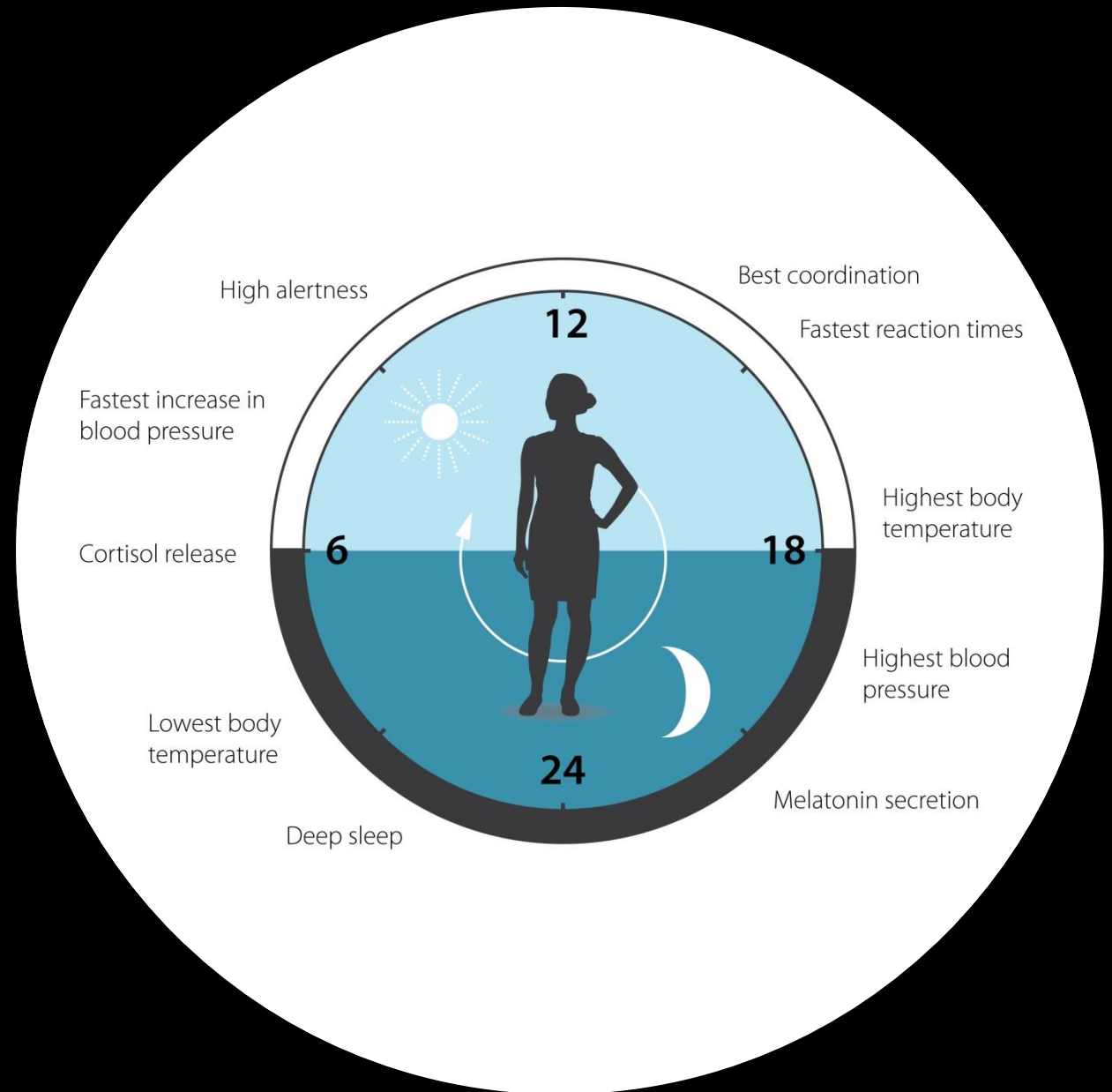
For their discoveries of molecular mechanisms controlling the circadian rhythm



The regular rhythm of the day

Laureates Hall, Rosbash and Young studied the genes that control our internal clock and explained how it works.

An internal clock exists in all living organisms.



The discoveries

In order to understand how our internal clock operates, the three researchers used fruit flies as an experimental tool in order to search for new genes.

Our internal clock.

The benefits

An imbalance in our internal clock may increase the risk of diseases. The Laureates' discoveries create new opportunities to influence the biological clock and any problems that it may cause.

**Knowledge
leads to new
advances.**

The Nobel Prize in Chemistry



This Prize rewards important discoveries or improvements that provide new knowledge about the composition of materials, how they are created and how they change due to chemical reactions.



The 2017 Nobel Prize in Chemistry

Jacques Dubochet, Joachim Frank and Richard Henderson

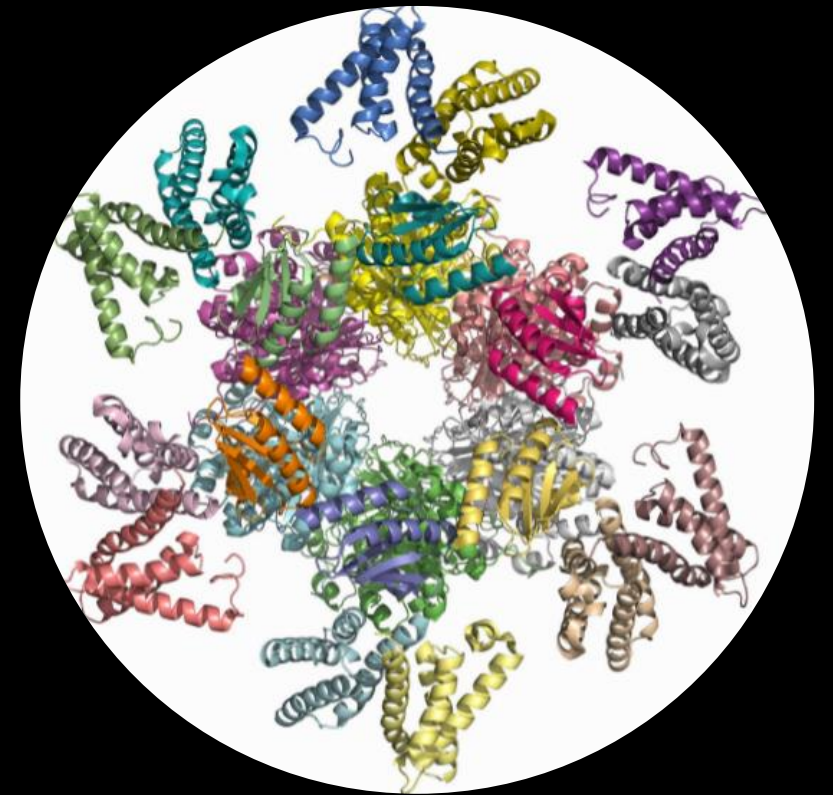
For developing cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution



Biomolecules

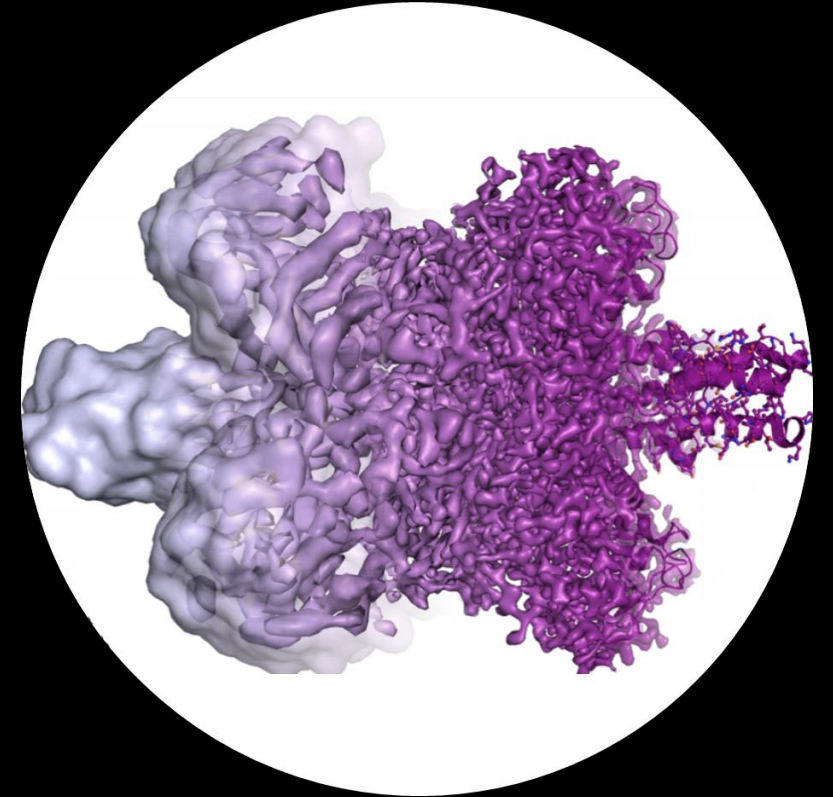
The important protein molecules in the body are very tiny and difficult to study.

Their appearance also changes if they are not in some kind of liquid.



The discoveries

The Laureates developed a way to freeze proteins extremely fast and a method that uses a large number of two-dimensional images to create a sharp three-dimensional image with the help of computer programmes.



The benefits

Now that there are better methods for understanding how the molecules in the body function, we can also improve our knowledge of why they sometimes fail to function as they should. This will help us to develop new medicines, for example.

**Knowledge
leads to new
advances.**

The Nobel Prize in Physics



This Prize rewards important discoveries or inventions in the field of physics. The development of “wireless telegraphy” (radio) is one example. Another is discoveries about how stars behave.



The 2017 Nobel Prize in Physics

Rainer Weiss, Barry C. Barish and Kip S. Thorne

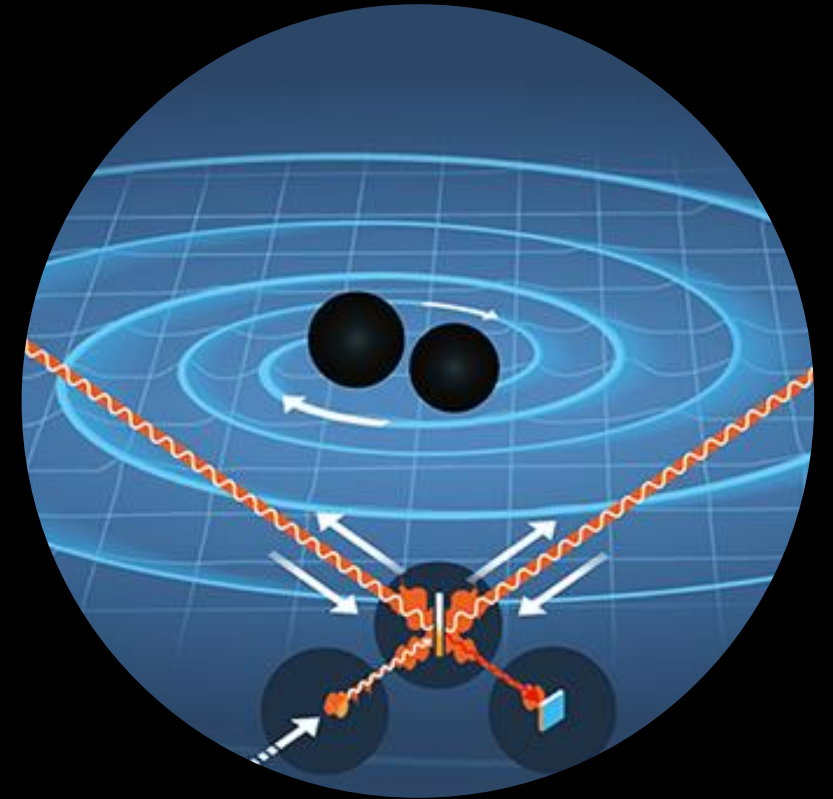
For decisive contributions to the LIGO detector and the observation of gravitational waves



Gravitational waves

Gravitational waves resemble light or sound waves, but are far weaker. It requires enormous movements to generate a measurable gravitational wave.

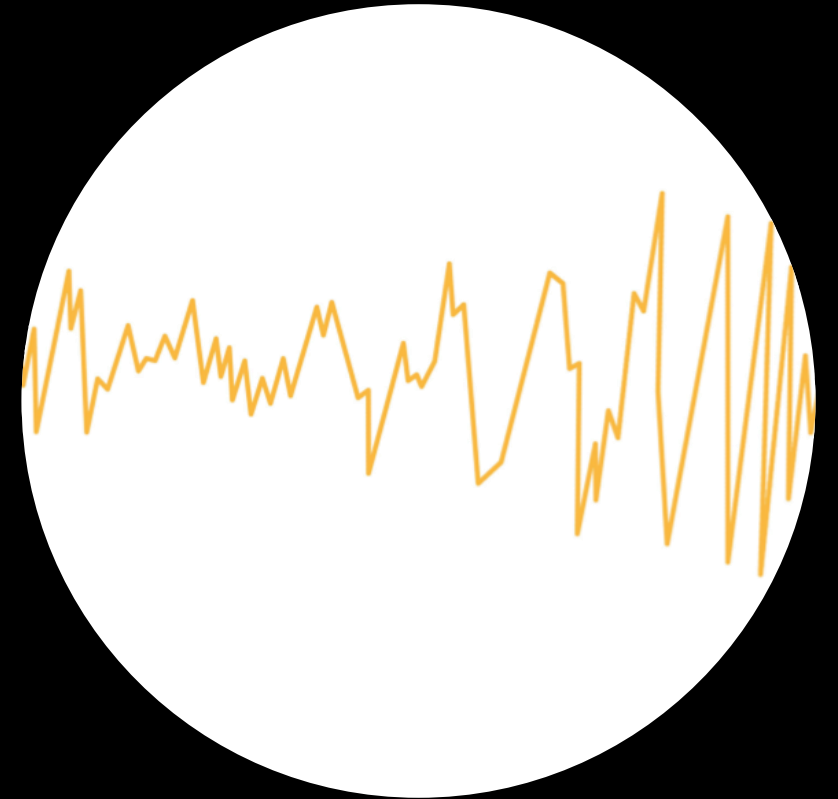
On September 14, 2015, gravitational waves that were 1.3 billion years old reached us on Earth.



The measurements

To distinguish gravitational waves from other vibrations, scientists can compare the measurement results from instruments at more than one location. A gravitational wave is the same regardless of where on the Earth it is measured.

Other, local vibrations are only noticed by one of the instruments.



The benefits

The Laureates' discoveries will give us new opportunities to learn about black holes. By making the measuring instruments even more sensitive, we will also learn more about other astronomical objects – such as pulsars and neutron stars.

**Knowledge
leads to new
advances.**

The 2017 Nobel Prize in Literature

Kazuo Ishiguro

“who, in novels of great emotional force, has uncovered the abyss beneath our illusory sense of connection with the world”.



The Laureate

Kazuo Ishiguro was born in 1954 in Nagasaki, Japan, but he grew up in the United Kingdom. Today he lives in London, where he has been working as an author ever since he published his first book.

Kazuo Ishiguro is also a musician.



His literary works

Ishiguro has mainly written novels, but also short stories as well as film and television scripts. He made his debut as a short story writer in 1981. His first book, entitled *A Pale View of Hills*, came out in 1982.

Since then, Ishiguro has published seven more books, including *The Remains of the Day*, which was also made into a film.



**A versatile
artist.**

Language and themes

Kazuo Ishiguro writes in different genres and likes to mix them. His later novels contain elements of fantasy.

There are themes that recur in many of his books: friendship and love, memory and identity, truth and lies.

**Happening
between the
lines.**

The Nobel Peace Prize



Categories that have been rewarded are disarmament, mediation and work aimed at improving the world. In recent decades, efforts to promote democracy, human rights and a better environment have also been rewarded.



The 2017 Nobel Peace Prize

ICAN – The International Campaign to Abolish Nuclear Weapons

- The goal of its campaign is a worldwide ban on nuclear weapons.
- At present, the coalition consists of 468 organisations in 101 countries.



Illustration: Niklas Elmehed
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What are nuclear weapons?

There are two main types of nuclear weapons: atom bombs and hydrogen bombs. Both are powered by nuclear reactions inside the bomb. Atom bombs have been used twice in war – when the United States dropped bombs on Hiroshima and Nagasaki in 1945.

Most nuclear weapons in existence today are hydrogen bombs.



**Catastrophic
consequences.**

Nuclear-armed states

There are five official nuclear-armed states: the United States, Russia, the United Kingdom, France and China.

According to the non-proliferation treaty which entered into force in 1970, they may not spread nuclear weapons to other countries. In spite of this, today there are about 15,000 nuclear weapons in the world.

More than 90% of these are owned by the United States and Russia.



A historic agreement

In the spring of 2017, the United Nations negotiated a treaty that bans the development, manufacture, possession and use of nuclear weapons. So far 53 countries have signed the treaty, and three countries have ratified it.

ICAN is now focusing its work on persuading more countries to sign and ratify the treaty.



**A threat to
humanity.**

A 10-year struggle

ICAN is receiving the Nobel Peace Prize for having given new vitality to the struggle to achieve a world without nuclear weapons.

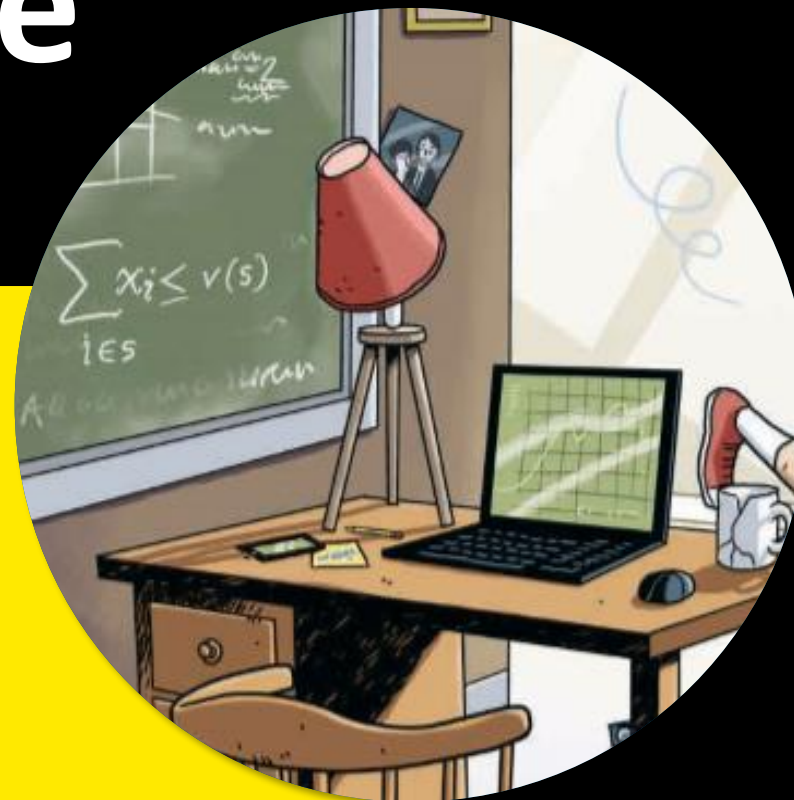
The Prize is being awarded on the basis of Alfred Nobel's will, which specifies that the Peace Prize should go to those who have worked for "...the abolition or reduction of standing armies".

**A world
free of nuclear
weapons.**

The Economics Prize



The Prize in Economic Sciences was created later – in memory of Alfred Nobel. Sveriges Riksbank, Sweden’s central bank, established the prize in 1968 with the help of a donation.



The 2017 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

Richard H. Thaler

For his contributions to behavioural economics



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What affects people's decisions?

Thaler has done many experiments where he studied how people make choices in various situations, such as what they should buy or how they should save for retirement. His findings show that we are not always rational in our choices.

Here are three examples.



**Irrational
decisions.**

Mental accounting

When we need to manage our money and our choices, we create “mental accounts”.

Those who are saving for something big are often unwilling to take money out of their savings. If an unexpected expense occurs, we prefer to use a credit card instead of our savings.

This may cause us to pay more than we need to.



Example 1

Reasonable and fair

What we perceive as fair and reasonable – socially acceptable – affects our decisions, even if we lose out because of it.

For example, we will refuse to buy an umbrella from a salesman who raises his prices sharply because it is raining – even if this means that we will get wet.

Example 2

Lack of self-control

Together with other economists, Thaler has created models showing how poor self-control affects our decisions.

When we make decisions, we often prioritise a short-term reward over a larger, more long-term one.

Example 3

The benefits

Thaler's research findings give us insights about how our society can be organised to enable us to make better long-term decisions.

**Models for
better decisions.**

Six new Prizes



Medicine

The circadian rhythm

Chemistry

Super-microscopes

Physics

Gravitational waves

Literature

Feelings, secrets and memories

Peace

The struggle against nuclear weapons

Economics

Irrational decisions



The 2017 Nobel Prize



Which of this year's six Prizes do you think is the most exciting?

What would you like to create or discover for the greatest benefit to mankind?

