

Nobel Prize Lessons

Student worksheet – The 2018 Chemistry Prize

Hi! Below you will find information and some questions about the 2018 Nobel Prize in Chemistry.

Vocabulary list

Catalyst A substance that speeds up a chemical reaction without itself undergoing permanent change.

Enzymes Proteins that function as nature's own catalysts.

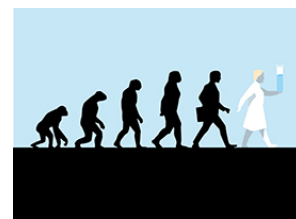
Gene Part of a DNA molecule that usually codes for a protein.

Antibodies Proteins produced by the immune system to identify foreign substances.

The 2018 Chemistry Prize

Frances H. Arnold is being rewarded “for the directed evolution of enzymes”, and George P. Smith and Sir Gregory P. Winter “for the phage display of peptides and antibodies”.

Life on earth arose several billion years ago, and plants, animals and humans have spread thanks to evolution. This year's Chemistry Prize is all about imitating the techniques of evolution and developing proteins in laboratories to solve chemical problems. A lot of chemists focus on improving chemical reactions, for example by making them faster. Chemistry often uses solvents, heavy metals and other hazardous substances. Frances H. Arnold's dream was instead to use nature's own catalysts – enzymes. By imitating natural evolution, she developed enzymes that can produce renewable fuels and pharmaceuticals in a better and more environmentally friendly way. George P. Smith developed a smart method based on using phages – a kind of viruses – to connect an unknown gene with the protein that it codes for. Sir Gregory P. Winter further refined this idea and combined it with so-called directed evolution. He devised a method for making new antibodies, which are an important part of the immune system. Thanks to this method, today we have created new pharmaceuticals to combat rheumatoid arthritis and other diseases.



Discussion questions

- Imagine that you are asked to explain the work of the Laureates to a friend.
 - Why did they receive the Nobel Prize for their work?
 - What do you think was the most interesting thing about the 2018 Nobel Prize in Chemistry?



- Alfred Nobel wanted the work of the Nobel Laureates to have "conferred the greatest benefit to humankind".
 - What do you believe the Laureates' contributions can lead to?
 - Can their contributions help other people in any way?

