

# US biochemist wins award for rewriting DNA to mimic evolution

May 24 2016

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US biochemical engineer Frances Arnold (R) receives her Millennium Technology Prize 2016 from Finnish President Sauli Niinisto in Helsinki, on May 24, 2016

US biochemical engineer Frances Arnold on Tuesday won a million-euro technology prize in Finland for her work on "directed evolution", a method of rewriting DNA to improve medicines and develop green fuels.

"Frances Arnold receives the 2016 Millennium Technology Prize in recognition of her discoveries that launched the field of 'directed evolution', which mimics natural evolution to create new and better proteins in the laboratory," the Technology Academy Finland, which awards the prize at two-year intervals, said in a statement.

Arnold, 59, who is a professor of chemical engineering at California Institute of Technology, said her work made it possible to "solve human problems", such as replacing toxic chemicals like fossil fuels.

Her method of creating new proteins with desired properties is being used to convert renewable resources like sugar cane into biofuels and to improve everyday products such as laundry and dishwashing detergents to enhance their performance in cold temperatures.

"The microbes convert plants to fuels so the sugar that's in the plant is the feedstock. Instead of pumping oil out of the ground for making gasoline, now we can use sunlight stored in plants," she explained to AFP ahead of the ceremony.

Other practical applications include creams, fragrances and industrial solvents or improving the drug industry's previously wasteful chemical processes to make medication such as Januvia, used by millions of people to treat diabetes.

The prize—worth one million euros (\$1.12 million)—was handed to Arnold by Finnish President Sauli Niinisto at the University of Helsinki.

"This is a fabulous recognition and I'm very grateful for it," she said.

Arnold, who has survived breast cancer and is also a single mother to three sons, said she would spend part of the prize money on her kids' university education.

Arnold is the first woman to win the prize, which was founded in 2004. It aims to be a technology equivalent of the Nobel Prizes for the sciences, which have been criticised by some for focusing too much on traditional, decades-old scientific research.

In 2012, US President Barack Obama awarded Arnold the National Medal of Technology and Innovation, established by the US Congress in 1980.

The Finnish Millennium Technology Prize singles out innovations that have practical applications and which "enhance the quality of people's lives."

Previous laureates include the creator of the World Wide Web, Sir Tim Berners-Lee, Linux open source operating system creator Linus Torvalds and ethical stem cell pioneer Shinya Yamanaka.

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Citation: US biochemist wins award for rewriting DNA to mimic evolution (2016, May 24)  
retrieved 25 April 2024 from  
<https://phys.org/news/2016-05-biochemist-award-rewriting-dna-mimic.html>

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