MATILDA EFFECT

# Pionierinnen der Forschung

# Female Pioneers of Research

## Pt. 49

## Frances Arnold

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# Frances Arnold (*1956)

Biochemist & Chemical Engineer

As the daughter of a nuclear engineer, she showed an interest in science early on, while also living independently from her parents, financing her own life, and becoming active in political protests against the Vietnam War.

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After earning her bachelor's degree in Mechanical and Aerospace Engineering at *Princeton* in 1979, she completed a Ph.D. in Chemical Engineering at the *University of California, Berkeley*, and moved to *Caltech* in 1986, where she became a professor.

Her research focuses primarily on enzymes. Unlike her colleagues, she did not try to plan in advance how the enzymes might work, but instead used natural selection for optimization.


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However, her research went beyond optimization: Enzymes that do not occur naturally and the expansion of reaction possibilities through protein engineering represented important aspects.

Her methods serve green chemistry and renewable energy. For example, the enzymes are used for converting biomass into fuels or for sustainable biological pest control.

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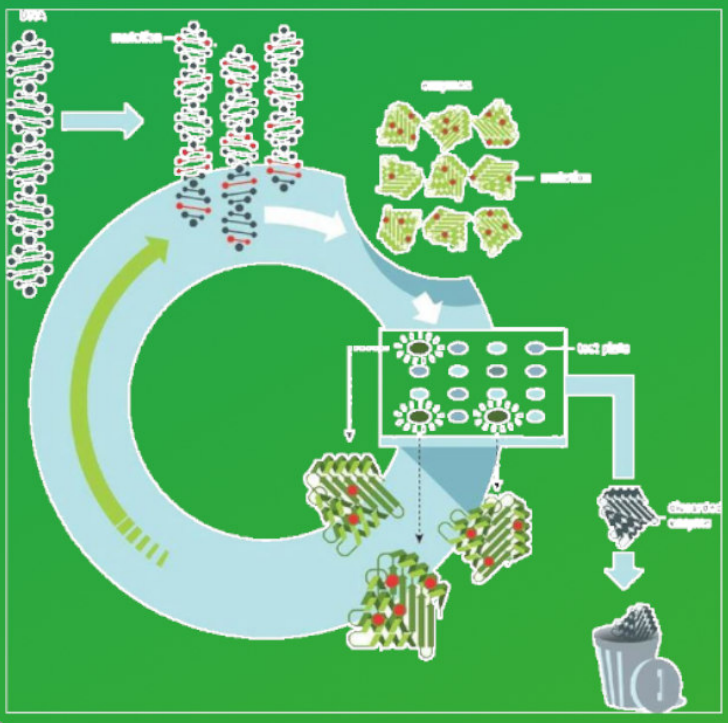
In 2018, she received the Nobel Prize in Chemistry together with two colleagues ‘for the directed evolution of enzymes.’ The method is used worldwide in research and industry, from detergent production to biofuels, without the use of toxic chemicals.



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„Wenn du die Welt verändern willst, musst du wirklich andere Dinge ausprobieren.“

“If you’re going to change the world, you’ve got to try really different things.”

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