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Frances Arnold is the Linus Pauling Professor of Chemical Engineering, Bioengineering, and Biochemistry at the California Institute of Technology and the first American woman to receive the Nobel Prize in Chemistry (2018). Arnold pioneered directed enzyme evolution and has used directed evolution to optimize biocatalysts for applications in alternative energy, chemicals, and medicine. Her methods are used throughout the world to engineer enzymes and other proteins. Arnold's current efforts focus on expanding DNA-encoded chemistry by discovery and optimization of new-to-nature enzyme activities and developing methods for machine-learning-guided enzyme evolution and discovery.

Arnold has more than 60 U.S. patents and has been active in technology transfer as co-founder of Gevo (biofuels), Provivi (crop protection), and Aralez Bio (specialty chemicals). She serves on the boards of Illumina and Alphabet, as well as several privately held companies.

Her research has been recognized with numerous awards, including the Charles Stark Draper Prize of the National Academy of Engineering (2011), the National Medal of Technology and Innovation (2011), and the Millennium Technology Prize (2016). She is an elected member of the National Academies of Science, Medicine, and Engineering and was appointed to the Pontifical Academy of Sciences by Pope Francis in 2019. Arnold served as co-chair of President Biden's Council of Advisors on Science and Technology (PCAST) from 2021 to 2025. Arnold earned her BS in Mechanical and Aerospace Engineering from Princeton University and Ph.D. in Chemical Engineering from the University of California, Berkeley.
