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# Innovation by Evolution: Bringing New Chemistry to Life

Not satisfied with nature's vast catalyst repertoire, we want to create new protein catalysts and expand the space of genetically encoded enzyme functions. We use the most powerful biological design process, evolution, to optimize existing enzymes and invent new ones, thereby circumventing our profound ignorance of how sequence encodes function.



**Time & Place**  
22 May 2019  
3.00 -5.00 pm  
Building 303A,  
Auditorium 42

**Frances Arnold** is the Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry at the California Institute of Technology, where she pioneered methods of directed protein evolution used to make better proteins for applications in alternative energy, chemicals, and medicine. Arnold's research has been recognized by the Nobel Prize in Chemistry (2018), the Charles Stark Draper Prize of the National Academy of Engineering (2011), the Millennium Technology Prize (2016), and the US National Medal of Technology and Innovation (2011). She has been elected to membership in the US National Academies of Science, Medicine, and Engineering, the American Academy of Arts and Sciences, the American Philosophical Society, the National Inventors Hall of Fame and the UK Royal Academy of Engineering. Prof. Arnold chairs the Advisory Panel of the David and Lucile Packard Foundation Fellowships in Science and Engineering and is a Trustee of the Gordon Research Conferences. She is also a Director of Illumina. Co-inventor on 58 issued US patents and active in technology transfer, Dr. Arnold co-founded Gevo, Inc. in 2005 to make fuels and chemicals from renewable resources and Provivi, Inc. in 2014 to develop non-toxic modes of agricultural pest control. Dr. Arnold received her B.S. in Mechanical and Aerospace Engineering from Princeton University and her Ph.D. in Chemical Engineering from the University of California, Berkeley. She carried out postdoctoral research in biophysical chemistry at UC Berkeley.