

EDITORIAL

A tribute to Frances Arnold

This seventh Founders Tribute of the *AIChE Journal* recognizes Professor Frances Arnold. A native of Edgewood, Pennsylvania, Frances studied mechanical and aerospace engineering at Princeton University (B.S., 1979) and chemical engineering at the University of California at Berkeley (PhD, 1985). She subsequently conducted postdoctoral research at U.C. Berkeley and at the California Institute of Technology before becoming Visiting Associate in the Chemical Engineering Department at Caltech. Shortly thereafter she joined the faculty of the same Caltech department where she rose through the ranks to her current position as the Linus Pauling Professor of Chemical Engineering, Bioengineering, and Biochemistry.

Frances Arnold has been honored for her outstanding contributions with a number of prestigious honors and awards. Notably, she received the top honor in science, the Nobel Prize (Chemistry, 2018), the first American woman to do so. She is also the first woman to be elected to the three academies—Engineering, Science, and Medicine. She received the AIChE Professional Progress Award as one of a host of other honors. She has been mentor to nearly 50 graduate students and 140 post docs and visiting scientists, 55 of whom are faculty members.

Her seminal contributions, which intersect the fields of chemical engineering, chemistry, and biology, will have lasting fundamental and technological value. She and her students and post docs have pioneered the implementation of directed evolution, a method that converges on proteins with enhanced activity and selectivity to catalyze known chemistry or “new to nature” chemistry with unparalleled rate and specificity. The applications are expansive, such as the conversion of recalcitrant alkanes to value-added oxygenates, or the biosynthesis of new pharmacological compounds.

This tribute issue contains contributions from an invited group of Arnold's former and current colleagues, students, academic offspring, collaborators, and other distinguished faculty from throughout the world, along with a Retrospective by Drs. Patrick Cirino and Cynthia Collins, two former students of Dr. Arnold. These excellent works reflect the impact that Frances Arnold has had on the application of

biotechnology in chemical engineering, which thanks in part to Dr. Arnold is now mainstream in the Chemical Engineering profession.

We hope that you enjoy this Tribute to Professor Frances Arnold.

Yours sincerely,



Wilfred Chen¹



Cynthia Collins²



Patrick Cirino³



Michael P. Harold³

¹Department of Chemical Engineering, University of Delaware, Newark, Delaware

²Department of Chemical & Biological Engineering, Rensselaer Polytechnic Institute, Troy, New York

³Department of Chemical & Biomolecular Engineering, University of Houston, Houston, Texas