2016 DISTINGUISHED SEMINAR SERIES

DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING

INNOVATING WITH EVOLUTION: EXPANDING THE ENZYME UNIVERSE

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Not satisfied with nature's vast catalytic repertoire, we want to create new enzymes and expand the range of genetically encoded chemistry. I will describe how we can use the most powerful algorithm for biological design, evolution, to optimize existing enzymes and invent new ones. Mimicking nature's evolutionary tricks and using a little chemical intuition, we can generate whole new enzyme families that catalyze important reactions not (yet) known in nature, thereby expanding the chemistry of the biological world and the molecules and materials we can build.

Dr. Frances H. Arnold's research at the California Institute of Technology focuses on protein engineering by directed evolution, with applications in alternative energy, chemicals, and medicine. Dr. Arnold pioneered the 'directed evolution' of proteins, mimicking Darwinian evolution in the laboratory to create new biological molecules. Her laboratory has developed methods of laboratory evolution and structure-guided recombination that are used widely in industry and basic science to engineer proteins with new and interesting properties.

FRIDAY, APRIL 8 AT 4:00 p.m.

WINSTON CHUNG HALL 205/206