Synthetic Biology For People And Planet Health

Professor Michael Jewett
Stanford Engineering, Stanford University, CA, USA

Abstract: Synthetic biology is one of the most promising fields of research for the 21st century. It offers powerful ways to improve human health, build the global economy, and manufacture sustainable materials. However, current access to biotechnology breakthroughs is unequal, largely due to bottlenecks in infrastructure and education. Here, I describe our efforts to re-think the way we engineer biology using cell-free systems to address these bottlenecks. We show how the ability to readily store, distribute, and activate low-cost, freeze-dried cell-free systems by simply adding water has opened new opportunities for on-demand biomanufacturing of vaccines for global health, point-of-care diagnostics for environmental safety, and education for synthetic biology literacy and citizenship. We also show the ability to integrate cell-free systems and machine learning to accelerate biological design.

Bio: Dr. Michael Jewett is a Professor of Bioengineering and Chemical Engineering (by courtesy) at Stanford University. He is the recipient of the NIH Pathway to Independence Award, David and Lucile Packard Fellowship in Science and Engineering, Camille-Dreyfus Teacher-Scholar Award, a Finalist for the Blavatnik National Awards for Young Scientists, and the Acrivos Award for Professional Progress within AIChE, among others. He is a co-founder of Ridge Bio, Pearl Bio, SwiftScale Biologics, and Synolo Therapeutics. Dr. Jewett is a Fellow of AIMBE, AAAS, NAI, and AAM.