# Enabling manufacture via biosensor development

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**Abstract**: In order to optimize the production of virtually any biological commodity, from small molecules to proteins to materials, it is necessary to optimize biosynthetic pathway performance. However, it can be difficult to parameterize pathways for production, especially given the many cross-constraints on cellular growth and health. We have developed directed evolution methods for sensing individual compounds during biosynthesis that further allow sensing and optimization of pathway production, and that should further prove useful in scaling production. In this talk, the methods and outcomes of biosensor engineering will be examined, with an eye towards also understanding how to reliably move biomolecules and pathways through complex fitness landscapes for practical applications.

**Bio**: Dr. Andrew Ellington received his B.S. in Biochemistry from Michigan State University in 1981, and his Ph.D. in Biochemistry and Molecular Biology from Harvard in 1988. His post-doctoral work was with Dr. Jack Szostak at Massachusetts General Hospital, where he developed methods for the *in vitro* selection of functional nucleic acids and coined the term 'aptamer.' He originally received the Office of Naval Research Young Investigator, Cottrell, and Pew Scholar awards, and later was a Vannevar Bush Faculty Fellow of the DoD and a Howard Hughes Professor. Dr. Ellington's lab works centers on the development of nucleic acid circuitry for point-of-care diagnostics, on accelerating the evolution of proteins and cells through the introduction of novel chemistries, and using orthogonal control systems to engineer complex organisms.