

David A. Estell began his biotechnology career in 1980 as employee number 61 at Genentech. There, he developed purification procedures and production processes for interferons and a hepatitis B vaccine. He played a key role in initiating cGMP pharmaceutical manufacturing of interferon and contributed to two IND filings, including the first approved use of CHO cells for cGMP protein production.

Estell led the first successful metabolic pathway engineering project, introducing a novel, designed pathway into a microorganism. He is a co-inventor on the first metabolic pathway engineering patent (U.S. Patent 4,757,012). He also supported Genentech's business development efforts, helping initiate strategic partnerships and joint ventures with G.D. Searle, Lubrizol, Monsanto, Hewlett-Packard, Baxter Travenol, and Corning. The collaboration with Corning led to the founding of Genencor in 1982, which he co-founded.

At Genencor, Estell launched the company's protein engineering program and is a co-inventor on the first protein engineering patent (U.S. Patent 4,760,025). He led the development of a series of engineered protease products that became major revenue drivers. Through protein engineering, his team successfully modified enzyme specificity, stability, pH profiles, and catalytic efficiency. As a research fellow, he oversaw technology development and managed several strategic partnerships, resulting in over $100 million in R&D funding and milestone payments, and more than $3 billion in cumulative product revenues for Genencor and its successors.

In 1993, Estell co-founded Khepri Pharmaceuticals and served as Vice President of R&D. Khepri developed a protease drug discovery platform that enabled the design of novel small-molecule protease inhibitors with oral efficacy in animal models. After Khepri's acquisition by Arris Pharmaceutical Corp. in 1995, Estell was retained as Vice President, where he led the transfer and implementation of Khepri's technology.

In 1996, Estell returned to Genencor as Research Fellow and Vice President of Innovation. He led new technology development and all protein engineering programs, continuing through Genencor's acquisition by DuPont and later integration into IFF. His innovations included the first predictive assay for immunogenicity (U.S. Patent

6,596,525), the first patent for Stable Isotope Labeled Cell Culture (SILAC) for complex protein mixture analysis (U.S. Patent 7,396,688), selective targeting technologies (U.S. Patent 8,779,091), and the integration of protein and metabolic pathway engineering. He also invented a proprietary protein engineering technology capable of producing novel products in under six months (U.S. Patent 8,648,015), which was implemented across DuPont and IFF.

Currently at IFF, Estell is responsible for identifying and implementing new product opportunities projected to generate over $1 billion in additional revenue over the next decade. He holds more than 140 issued U.S. patents and is a member of the National Academy of Engineering.