

ENGINEERED TRANSPOSON FOR IMPROVED CELL LINE DEVELOPMENT

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In an effort to provide life-saving therapeutics to patients, robust cell line development processes that deliver high producing cell lines with high product quality in the fastest time possible are critical. A Glutamine Synthetase Knock-out (GSKO) Host in combination with an engineered transposon system is a promising gene delivery strategy for large molecule cell line development. The GSKO host can deliver high producing cell lines in a short timeline while maintaining selection pressure throughout the process. Advantages of the transposon system include its large cargo capacity which enable delivery of multiple payloads, its tendency to deliver genes into “hotspots” and efficient clean integration of multiple copies with no plasmid truncations or rearrangements.

At Amgen, we have established our own in house GSKO system as well as using a novel approach to engineer a transposon amino acid sequence for better performance in our system. The engineered versions showed increased or comparable titers for multiple molecules/modalities as compared to the controls. This technology has enabled better expression in current systems as well as efforts to develop a next generation host to make highly productive Amgen molecules with superior product quality and reduced timelines.