NOVEL TRANSPOSASE TOOLS FOR CELL-LINE ENGINEERING

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ATUM has discovered, characterized, engineered and patented new transposases that work comparable to, or better than previously commercialized transposases. The technology is highly valuable for protein expression and genome engineering applications. It enables a specified sequence to behave as a transposon, a mobile genetic element, which can efficiently transpose between vectors and chromosomes via a “cut & paste” mechanism. The Leap-In Transposase® catalyzes the integration of a transposon containing your gene into TTAT sites in the target genome. During transposition, the Leap-In Transposase recognizes transposon-specific inverted terminal repeat sequences (ITRs) located on both ends of the transposon vector and moves the contents from the original sites and efficiently integrates them into TTAT chromosomal sites. Similar technologies report integration of up to 20 copies of the transposon into unique locations in the genome 72 hours post transfection leading to very high expression levels of payload gene. Furthermore, transposase technologies are highly valuable because of their ability to integrate large payloads. This technology significantly accelerates stable pool and cell-line generation and can be used in conjunction with metabolic selections such as dihydrofolate reductase (DHFR) and glutamine synthetase (GS) or more generic drug selections such as puromycin and neomycin. We have designed transposon based multi-ORF vectors that allow expression of target proteins at controlled ratios. These vectors combined with two orthogonal sets of engineered hyperactive transposases allows multiple levels of genome engineering. The valuable features of the system and performance characterization will be discussed with cell line development and cell engineering case studies.