ProBioGen
Intelligent Biopharmaceutical Solutions

DirectedLuck Transposase

Efficient Gene Delivery for Superior Protein Titers and Cell Line Development

Epigenetic-targeted integration of transgenes into active genomic regions for superior protein titers.

Typical, gene delivery technologies for e.g. cell line development rely on the integration of transgenes in a random fashion at spontaneous breaks. Best integration events occur as a matter of luck and best clones are identified through extensive screens.
Transposases engineered for higher activity mediate the integration of transgenes at multiple open genome loci and are known to facilitate cell line generation in many ways.

ProBioGen's transposase builds on this principle but, in addition, is uniquely developed to read specific chromatin marks signaling highest transcriptional activity. Transgenes are directed to such highly active sites where they still insert randomly, resulting in optimal transcript levels of the protein to be expressed. The outcome is an unparalleled consistency of clone pools with highest productivity that translates into superior producer clones with exceptional expression stability. As clone pools are highly representative for the clone to be selected later on, they can be used to manufacture early material for formulation and formal toxicity studies, reducing overall timelines to the clinic. Increased productivity and reduced timelines have an impact on cost of goods.

How does the DirectedLuck transposase work?
It is equipped with a specific histone reader domain that identifies transcriptionally active sites in the specific host genome. As the histone code itself is universal, the DirectedLuck transposase can be applied to a broad variety of host cells from different species and tissue origin.
Once associated with an active locus, the transposase precisely integrates a single copy of the expression unit flanked by transposon ITRs, leaving the unwanted plasmid backbone behind. As a result, the cell line carries multiple transgene copies, each positioned at a preferred locus.

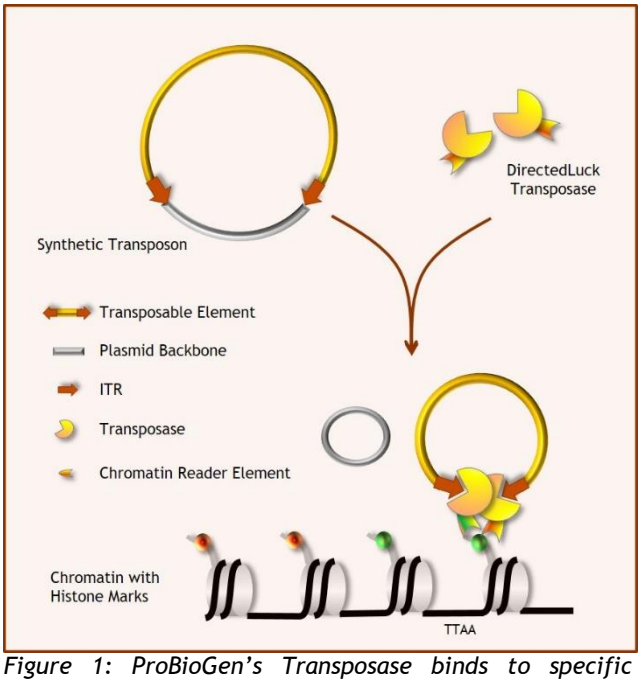

Figure 1: ProBioGen's Transposase binds to specific epigenetic histone marks characteristics for highly transcriptional active genome regions.

Advantages DirectedLuck Transposase

- Highest expression levels and exceptional stability
- Pools are highly representative of later clones
- Speeds up time to clinic
- Easy application in your lab, regardless of your host cell line
- Superior heterodimer rates for bi-specific mAbs
- Royalty & milestone-free for clients' projects

The DirectedLuck technology is universally applicable, particularly suited for simultaneous insertion of multiple gene cassettes, easy to handle and robust. Transposon-mediated gene transfer may also serve as an alternative to viral vectors.
The DirectedLuck technology is applied in service projects at ProBioGen and is also available under a license.

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