



Applied StemCell

PRODUCT DATA SHEET

TARGATT™ HEK293 Knock-in Kit High-Efficiency Sub-Line (HESL)

H11 for Library Screening (FACS)

Catalog No. AST-1308 RUO • Rev. 1 | August 2026

Product Overview

The TARGATT™ HEK293 HESL Knock-in Kit (H11) for Library Screening (FACS) is designed for fast, efficient, and site-specific integration of DNA fragments of up to 20 kb into HEK293 cells. The master cell line supplied in this kit contains the TARGATT™ landing pad with an attP site engineered into the H11 safe harbor locus, in a high-efficiency sub-line selected for superior integration performance.

The kit also contains a cloning plasmid with a corresponding attB sequence into which any gene of interest can be cloned. Expression of the integrase, provided as a plasmid, mediates stable integration of the transgene into the master cell line. TARGATT™ integrase enables highly efficient (>60% without enrichment; >90% with enrichment) and site-specific DNA integration without disruption of internal genes.

The kit includes the TARGATT™ pKHESL-mCherry-LZ (library) Cloning Plasmid, which contains the fluorescent marker mCherry2, making it ideal for fluorescence-activated cell sorting and for research applications involving gene library construction. The system enables knock-in of a single transgene per cell and uniform, stable expression of your protein.

Key Features & Benefits

Feature	Benefit
High-efficiency sub-line — >60% integration without enrichment	Screen sooner, with far less upfront enrichment work and less library bottlenecks
>90% integration efficiency with enrichment	Maximum recovery of library diversity
FACS-based screening format	Fluorescence-linked selection and quantitative sorting of expression phenotypes
Single transgene per cell at one defined locus	One variant, one cell — the prerequisite for an interpretable screen
Site-specific integration at H11 safe harbor	Uniform genomic context across every library member; no noise due to position-effects
Large cargo capacity — DNA fragments of up to 20 kb	Full-length proteins and multi-domain constructs, not just short fragments
Consistent clone-to-clone expression	Work with pools instead of clonal purification
Human mammalian cell background	Folding, glycosylation, and trafficking reflect the intended biology
Kit format precedes licensing	Evaluate before converting to a commercial license

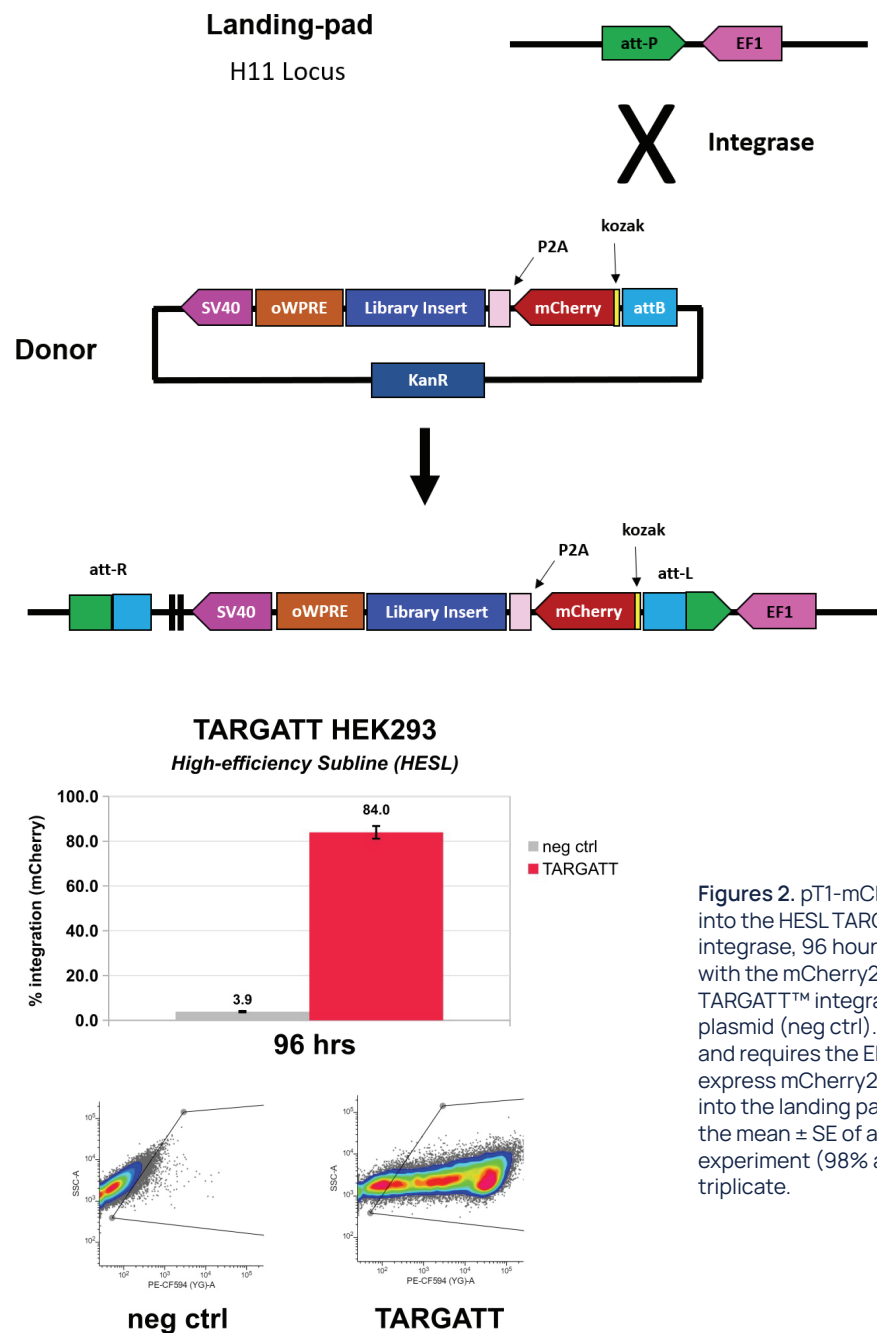
Product Specifications

Host cell line	HEK293 adherent cells, High-Efficiency Sub-Line (HESL) variant
Integration site	H11 safe harbor locus
Integration mechanism	Serine integrase; attP × attB; unidirectional and irreversible
Copy number	Single copy — one library variant per cell
Maximum insert size	Up to 20 kb
Integration efficiency	>60% without enrichment; >90% with enrichment
Screening format	FACS — mCherry2 fluorescent marker in the cloning plasmid
Transfection method	Xfect™, 3:1 donor-to-integrase mass ratio; seed 200,000 cells per 2 cm² well, transfect at 60–80% confluency
Optimal harvest window	Highest integration efficiencies observed 72–96 hours post-transfection; sort after the 72-hour incubation
Transfections per kit	27, according to the supplied protocol
Quality control	Certificate of Analysis provided with each shipment
Shipping conditions	Dry ice
Storage conditions	Master cell line: liquid nitrogen immediately upon receipt. Plasmids: -20°C in single-use aliquots; do not freeze-thaw repeatedly
Stability	At least 6 months from date of receipt when stored as directed
Product grade	Research use only — not for human or animal diagnostic or therapeutic use

Applications

- High-diversity antibody and protein library screening
- Mammalian display
- Bispecific antibody discovery pipelines
- Promoter and regulatory grammar libraries
- Deep mutational scanning

Supporting Data



Figures 1. Schematic representation of TARGATT™ site-specific transgene integration mediated by the TARGATT™ integrase. The TARGATT™ HEK HESL Master Cell Line was engineered with the attP landing pad at the H11 safe harbor locus. The TARGATT™ plasmid containing the integrase recognition site, attB, is used to clone your transgene. The integrase catalyzes an irreversible reaction between the attP site in the genome and the attB site in the donor vector, resulting in integration of your gene of interest at the H11 locus.

Figures 2. pT1-mCh2-HESL positive control plasmid integration into the HESL TARGATT™ HEK293 master cell line mediated by integrase, 96 hours post-transfection. Cells were co-transfected with the mCherry2 positive control plasmid and either the provided TARGATT™ integrase plasmid (TARGATT) or a no-integrase control plasmid (neg ctrl). The pT1-mCh2-HESL plasmid has no promoter and requires the EF1 promoter in the landing pad after integration to express mCherry2. The integration efficiency of the 4.2 kb plasmid into the landing pad was 80% without selection. Data represent the mean $\pm$ SE of a representative high-transfection-efficiency experiment (98% as judged by CMV-GFP plasmid) performed in triplicate.

References

- Segaliny AI, Jayaraman J, Chen X, et al. A high throughput bispecific antibody discovery pipeline. *Communications Biology*. 2023;6(1). doi:10.1038/s42003-023-04746-w
- Mayne J, Rodriguez ME, Burrell M, et al. Billion-Scale Deciphering of Human Gene Regulatory Grammar. *bioRxiv*. 2025. doi:10.1101/2025.11.10.687627
- Chi X, Zheng Q, Jiang R, Chen-Tsai RY, Kong LJ. A system for site-specific integration of transgenes in mammalian cells. *PLOS ONE*. 2019;14(7):e0219842.
- Zhu F, Gamboa M, Farruggio AP, et al. DICE, an efficient system for iterative genomic editing in human pluripotent stem cells. *Nucleic Acids Research*. 2014;42(5):e34.

Licensing

TARGATT™ kits are designed to enable evaluation of the technology prior to purchasing a commercial license. Academic researchers may purchase TARGATT™ technology without licensing. Contact Applied StemCell to discuss commercial licensing terms.

Related Services

If you prefer to outsource, Applied StemCell offers custom genome engineering, iPSC gene editing and differentiation, cGMP cell banking and manufacturing, and process, analytical, quality, and regulatory support. Contact us for a custom service project quote.

Kit Components

Catalog No.	Component	Format	Quantity
AST-1308-C	TARGATT™ HEK293 HESL Master Cell Line	Cells	1 × 10 ⁶ cells
AST-3101	TARGATT™ 54 attB-mCherry2-LZ Cloning Plasmid	Plasmid	15 µg
AST-3102	TARGATT™ 55 pT1-mCherry2-HESL Positive Control Plasmid	Plasmid	15 µg
AST-3201	TARGATT™ CMV-Integrase Plasmid	Plasmid	15 µg

Additional kit components are available for purchase by customers who have purchased the kit. Contact Applied StemCell for details.

Ordering Information

Catalog No.	AST-1308
Description	TARGATT HEK293 High-Efficiency Sub-Line (HESL) Knock-in Kit (H11) for Library Screening (FACS) – FACS
Format	kit
Pack Size	1 kit

Related Products

- AST-1305 – TARGATT™ HEK293 Knock-in Kit (H11); General purpose
- AST-1306 – TARGATT™ HEK293 Knock-in Kit (H11) for Library Screening (Drug Selection); FACS
- Contact Applied StemCell for compatible media and related cell models.

Contact & Ordering

 [appliedstemcell.com](https://www.appliedstemcell.com)

 info@appliedstemcell.com

 +1 866.497.4180

Ready to accelerate your genome engineering project?

Scan the QR code or visit our website to explore product details, access technical resources, discover related TARGATT™ solutions, and request a consultation with our scientific team.

