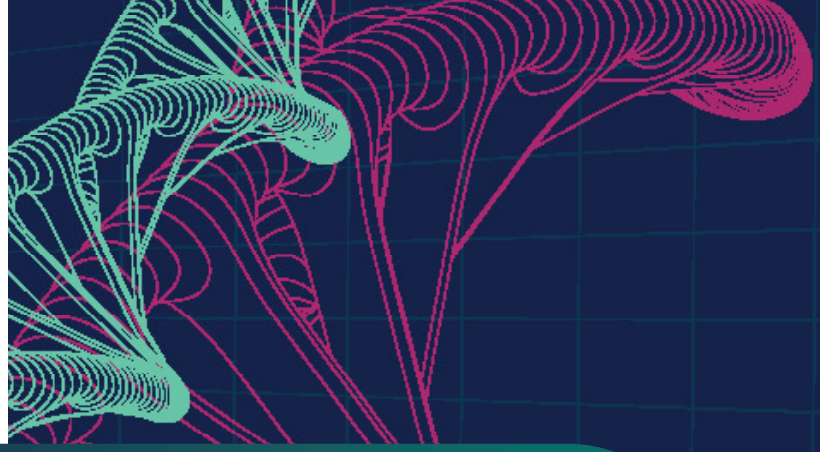


Applied StemCell

PRODUCT DATA SHEET

TARGATT™ GMP hiPSC Knock-in Kit

Catalog No. AST-9480 cGMP • Rev. 1 I August 2026

Product Overview

The TARGATT™ GMP hiPSC Knock-in Kit is designed for fast, site-specific knock-in of large DNA payloads into a cGMP-manufactured, U.S.-manufactured clinical-grade human iPSC line. The master cell line contains a TARGATT™ "att" integrase landing pad engineered into the H11 safe harbor locus. The kit also contains a cloning plasmid carrying the corresponding "att" sequence, into which any gene of interest (up to 20 kb, more with nested reactions) can be cloned under control of the CAG promoter. Expression of the integrase, provided as an integrase plasmid, mediates stable, single-copy integration of the transgene at H11 without random double-strand breaks.

The TARGATT™ GMP hiPSC line was engineered from the karyotype-normal ActiCells™ GMP hiPSC Line (ASE-9280), reprogrammed with episomal factors from CD34+ umbilical cord blood cells of a consented male donor. The line is manufactured under cGMP and is backed by a U.S. FDA Drug Master File (DMF). It is isogenic with the research-use TARGATT™ hiPSC line (AST-9450), which streamlines early development, and the parental line has been differentiated to cardiomyocytes, NK cells, T cells, monocytes/macrophages, and endothelial cells.

Key Features & Benefits

Feature	Benefit
Site-specific, single-copy knock-in	Reduces variability in gene expression and avoids the risks of random integration across edited clones.
H11 safe harbor integration	Supports stable, uniform expression from an active, intergenic locus without disrupting endogenous genes.
Large payload capacity (up to 20 kb; more with nested reactions)	Engineer and evaluate large therapeutic payloads, synthetic circuits, or immune-modifying elements.
cGMP manufacture; U.S. FDA Drug Master File	Provides a regulatory foundation for cell therapy development, including IND-enabling studies.
Isogenic with the RUO line AST-9450	Streamlines early development and the transition from research use to GMP.
Clear freedom-to-operate	Straightforward licensing supports commercialization.

Applications

- Development of iPSC-derived cell therapy products, including T, NK, and hematopoietic cell products

Applications

- Regenerative medicine programs (for example cardiac, neural, and ocular lineages)
- Large therapeutic payloads, synthetic gene circuits, and immune-modifying elements
- IND-enabling studies

Product Specifications

Product Grade	cGMP; manufactured in the U.S.
Cell Type	TARGATT™ GMP hiPSC master cell line (AST-9480-C)
Parental Line / Background	ActiCells™ GMP hiPSC Line ASE-9280; CD34+ umbilical cord blood cells; male donor; karyotype normal
Reprogramming Method	Episomal (footprint-free)
Integration Locus	H11 safe harbor (intergenic)
Integration Mechanism	Serine integrase; site-specific, single copy
Maximum Insert Size	Up to 20 kb (CAG promoter); more with nested reactions
Integration Efficiency	99.4% RFP knock-in after drug selection (Figure 2)
Regulatory Support	Backed by a U.S. FDA Drug Master File (DMF)
Format / Quantity	Cryopreserved cells, 1 × 10^6 cells/vial; kit provides sufficient material for 3 transfections
Quality Control	Certificate of Analysis with detailed QC information for the cell line and kit components provided with each shipment
Storage	Ships on dry ice. Master cell line: liquid nitrogen vapor phase immediately upon receipt. Plasmids: −20°C; avoid repeated freeze-thaw
Shelf Life	At least 6 months from date of receipt when stored as directed

Supporting Data

Schematic representation of TARGATT™ knock-in strategy

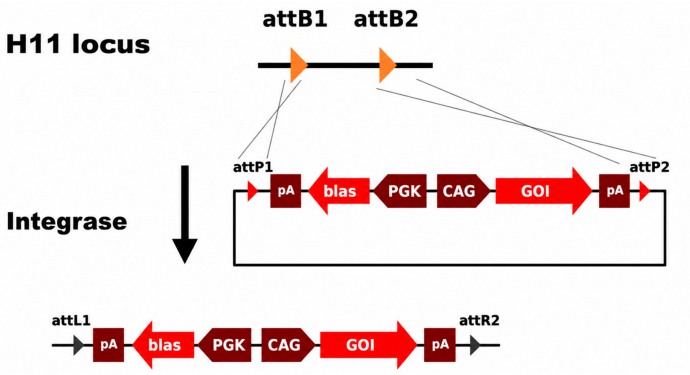


Figure 1. Schematic representation of TARGATT™ site-specific transgene integration mediated by integrase. The master cell line carries the attB landing pad at the H11 safe harbor locus. The cloning plasmid carries the corresponding attP sites, the CAG promoter, and the gene of interest (GOI). The integrase mediates stable, site-specific integration of the transgene at H11.

Site-specific integration efficiency

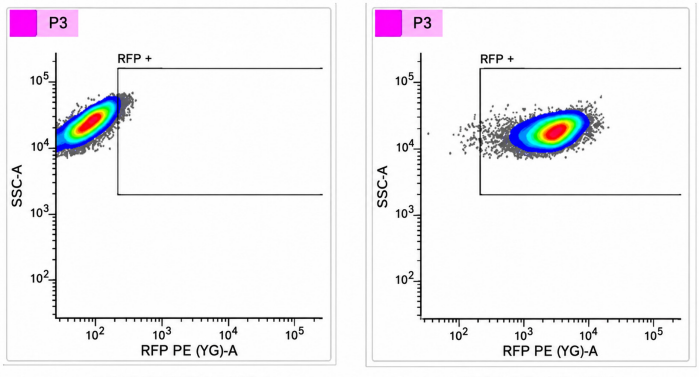


Figure 2. Red fluorescent protein (RFP) integration into the TARGATT™ hiPSC line. An RFP donor plasmid was co-transfected with the TARGATT™ integrase plasmid. Flow cytometry of parental cells (left) and targeted cells after drug selection (right) shows 99.4% RFP knock-in into the H11 landing pad. Data are representative of the isogenic TARGATT™ hiPSC line.

Supporting Data

Pluripotency marker analysis

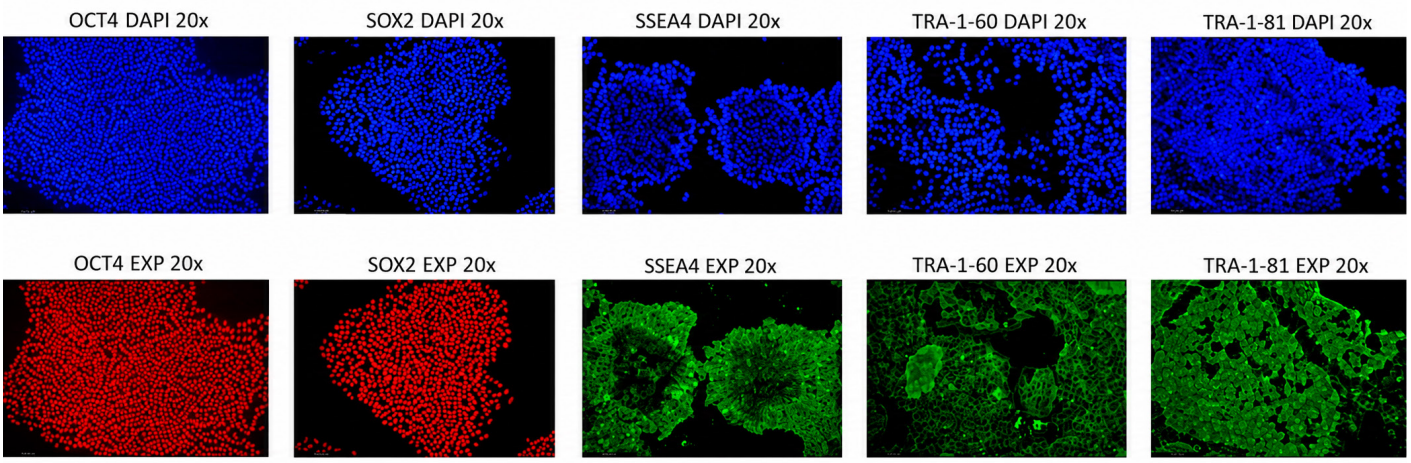


Figure 3. Expression of pluripotency markers. The TARGATT™ hiPSC line expresses common iPSC biomarkers (bottom row: OCT4, SOX2, SSEA4, TRA-1-60, and TRA-1-81). Top row: corresponding DAPI nuclear staining. Images at 20x magnification. Data are representative of the isogenic TARGATT™ hiPSC line derived from the shared ASE-9280 background; GMP lot-specific data are provided in the CoA.

Directed differentiation to the three germ layers

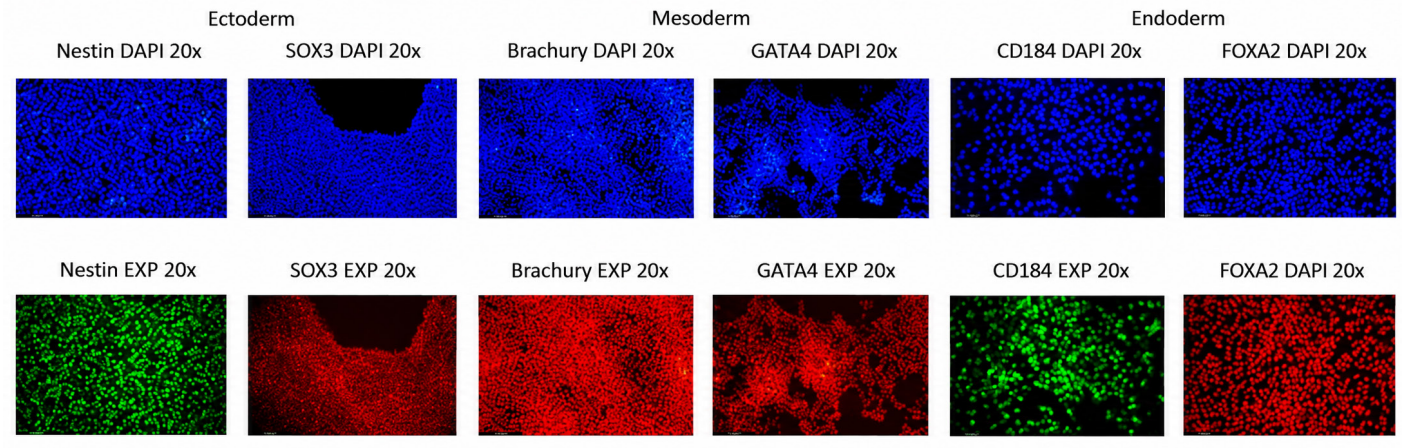
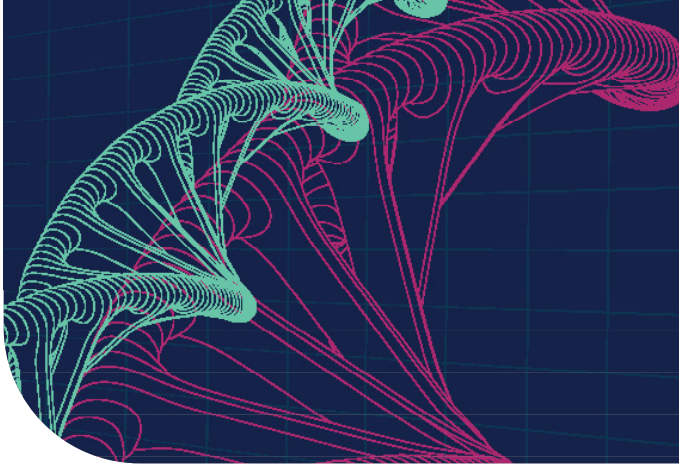


Figure 4. Directed differentiation to the three germ layers. Immunostaining for lineage markers: ectoderm (Nestin, SOX3), mesoderm (Brachyury, GATA4), and endoderm (CD184, FOXA2). Top row: corresponding DAPI nuclear staining. Images at 20x magnification. Data are representative of the isogenic TARGATT™ hiPSC line derived from the shared ASE-9280 background.



References

- 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

Use of the TARGATT™ GMP hiPSC line requires a commercial license; a materials transfer agreement (MTA) applies to academic use. 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.	AST-9480-C
Description	TARGATT™ GMP hiPSC Master Cell Line (H11 landing pad)
Format	Cells
Pack Size	≥1 × 10^6 cells/vial

Catalog No.	AST-3091
Description	TARGATT™ 46 CAG-MCS Cloning Plasmid
Format	Plasmid
Pack Size	5 µg

Catalog No.	AST-3084
Description	TARGATT™ CAG-Integrase Plasmid
Format	Plasmid
Quantity	15 µg

Ordering Information

Catalog No.	AST-9480
Description	TARGATT™ GMP hiPSC Knock-in Kit
Format	Kit
Pack Size	1 kit (3 transfections)

Related Products

- AST-9450 – TARGATT™ RUO hiPSC Knock-in Kit (isogenic RUO line)
- ASE-9280 – ActiCells™ GMP hiPSCs (CD34+ Cord Blood Cells, Normal, Male)
- ASE-9250 – ActiCells™ RUO hiPSCs (CD34+ Cord Blood Cells, Normal, Male)
- AST-9650 – TARGATT™ RUO Hypo hiPSC Knock-in Kit
- Contact Applied StemCell for compatible media and related cell models.

Applied StemCell

Let's advance your research.

Applied StemCell powers your basic, autologous, and allogeneic research and development with 15+ years of iPSC experience, proven GMP know-how, and proprietary TARGATT™ gene editing technology, which takes over where CRISPR/Cas9 ends.

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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.

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© 2026 Applied StemCell, Inc. Inserted constructs must be shown to be expressed in iPSCs or the differentiated cell type.