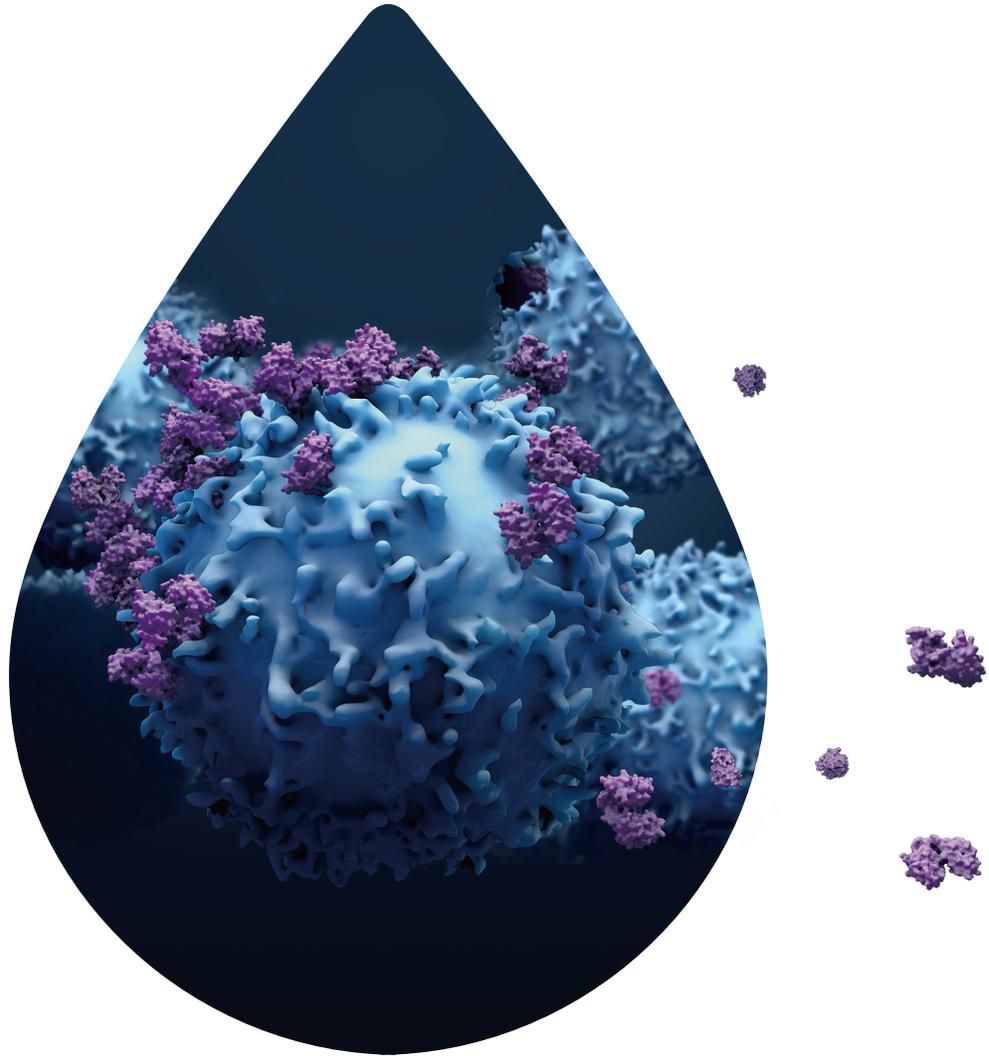


CytoSinct™

Human T-cell Isolation and Activation



- ◎ Highly efficient
- ◎ Sterile reagent
- ◎ Nontoxic nanobeads with biodegradable matrix
- ◎ In-house antibody and particle production

Efficient and gentle cell isolation is essential for researching specific cell populations, and for developing lifesaving cell and gene therapies products. Purity, recovery and viability are among the most important characteristics of cells after isolation.

GenScript has renowned expertise in developing magnetic beads products for bio separation of various types of biomolecules. CytoSinct™ magnetic beads are powered by immunomagnetic cell separation technology to isolate desired cell populations, by combining the specificity and selectivity of antibody based purification with gentleness of nanoparticles.

The CytoSinct™ cell separation manual kit is composed of antigen-specific paramagnetic nanobeads, column and magnetic separator. The CytoSinct™ beads are nanometer-sized, coated with biodegradable matrix, nontoxic, easy to use, and enable highly efficient cell isolation. The CytoSinct™ columns amplify the magnetic field and enable efficient separation with minimum labeling. The separated cells are compatible with most downstream applications including cell culture, activation, expansion, flow cytometry analysis, and translational research.

Armed with the flexibility and specificity of the CytoSinct™ T cell separation kit, you can use variety of starting materials including PBMC or Leukapheresis, for T cell isolation and deletion. For every experimental application, the CytoSinct™ cell separation technology can provide you with the separation results you require. **GenScript's CytoSinct™ beads and columns are also compatible with other platforms.**

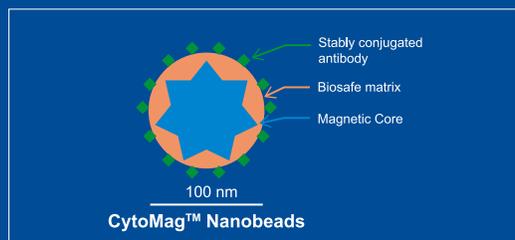


Figure 1 : Schematic diagram showing the structure and size of CytoSinct™ Nanobeads



Figure 2 : CytoSinct™ cell separation manual kit including nanobeads, column and magnetic separator

Product Highlights



Highly efficient



Biodegradable matrix



Nontoxic



Compatible



Easy to use



Sterilized



Paramagnetic

Product Advantage

	GenScript	Competitor M	Competitor D	Competitor S
Advanced Performance	✓	✓	✓	✗
Translational Research Compatibility	✓	✓	✓	✗
No Residual Beads on Cell Surface	✓	✓	✓	✗
No Bead-removal Step	✓	✓	✗	✗
Cost Efficiency	✓	✗	✗	✓

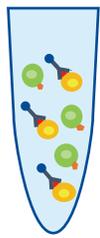
Workflow

GenScript's **CytoSinct™ Nanobeads** purify cells using column based cell isolation.



1

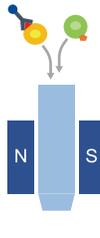
Incubate the starting material with CytoSinct™ Nanobeads for 15 minutes at 4°C.



2

Wash and resuspend the cells in the Isolation Buffer.

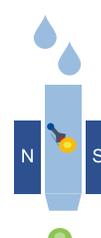
Only the cells expressing the targeted surface marker will bind with the CytoSinct™ Nanobeads.



3

Assemble column onto magnet. Load cell suspension containing both positive and negative population onto the column.

Only the cells bound to the CytoSinct™ Nanobeads will be captured by the magnet.



4

Add Isolation Buffer onto column to wash out negative cells.



5

Remove magnet from column. Add Isolation Buffer and harvest positive cells.

Learn more at <https://www.genscript.com/cell-separation.html>

For more information contact products@genscript.com

Comparison of Cell Isolation from PBMCs

Purity, recovery and viability are among the most important characters of cells post-isolation. CytoSinct™ Nanobeads are nanometer-sized and can isolate your target cells gently and efficiently, which makes your postisolation cells suitable for variety of down-stream applications.

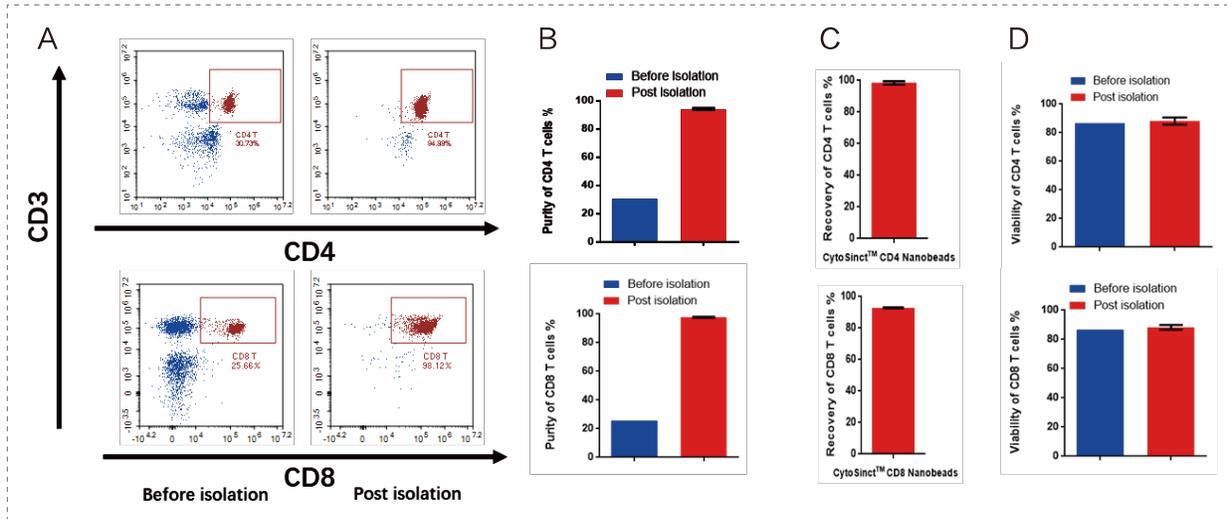


Figure 3. PBMCs were isolated using CytoSinct™ CD4 Nanobeads, human (RUO) (Cat# L00863) and CytoSinct™ CD8 Nanobeads, human (RUO) (Cat# L00864), the results shows high purity(A,B), high recovery(C) and high viability(D).

Cell isolation performance of GenScript's CytoSinct™ NanoBeads is comparable with the similar products from the competitor, either in the purity or the recovery rate of the target cells.

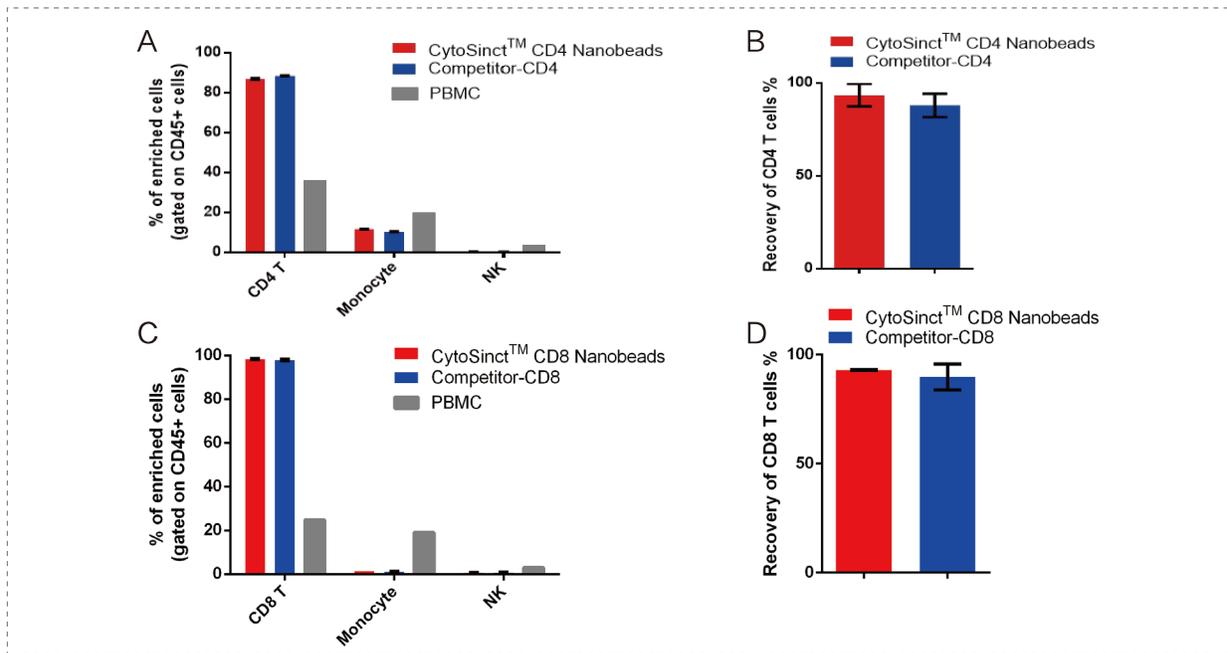


Figure 4. Subpopulation phenotype of post-isolation cells is important for functional and phenotypic studies. Non-T subpopulations like monocyte and NK cells could impact the efficacy of T-cells or therapeutic CAR-T and TCR-T generated from the enrichment. GenScript CytoSinct™ NanoBeads for CD4 and CD8 T-cell isolation efficiently minimize non-T composition in the enrichment population.

Comparison of Cell Isolation from Apheresis

Composition of cell subpopulations after CD4+ or CD8+ or CD3+ separation from a leukopheresis sample using GenScript's CytoSinct™ Nanobeads or Competitor's products. Higher percentage of T cells and lower percentage of other cell types were observed when isolation was conducted using GenScript's CytoSinct™ Nanobeads.

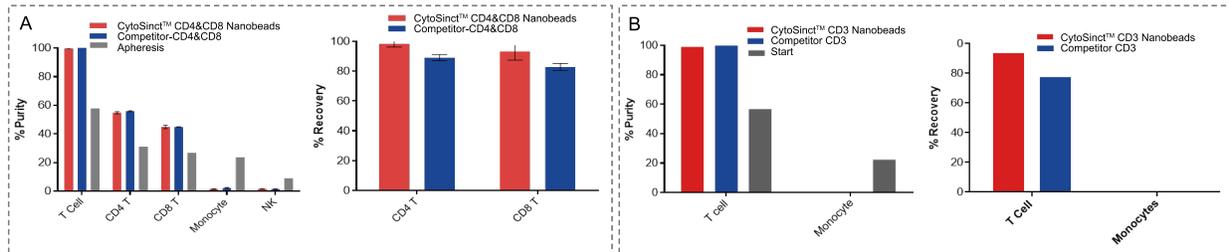


Figure 6. Representative data comparing T cells isolation from leukopheresis samples using GenScript CytoSinct™ Nanobeads and competitor products. **A.** Shows comparison of pre and post isolation data, purity, recovery, and viability for co-isolation of CD4 and CD8 T cell from apheresis using CytoSinct™ CD4 + CytoSinct™ CD8 and competitor reagent. **B.** Shows comparison of pre and post isolation data, purity, recovery, and viability. CD3 T cell from apheresis using CytoSinct™ CD3 and competitor reagent.

Activation and Expansion of Isolated CD4+CD8+T Cells

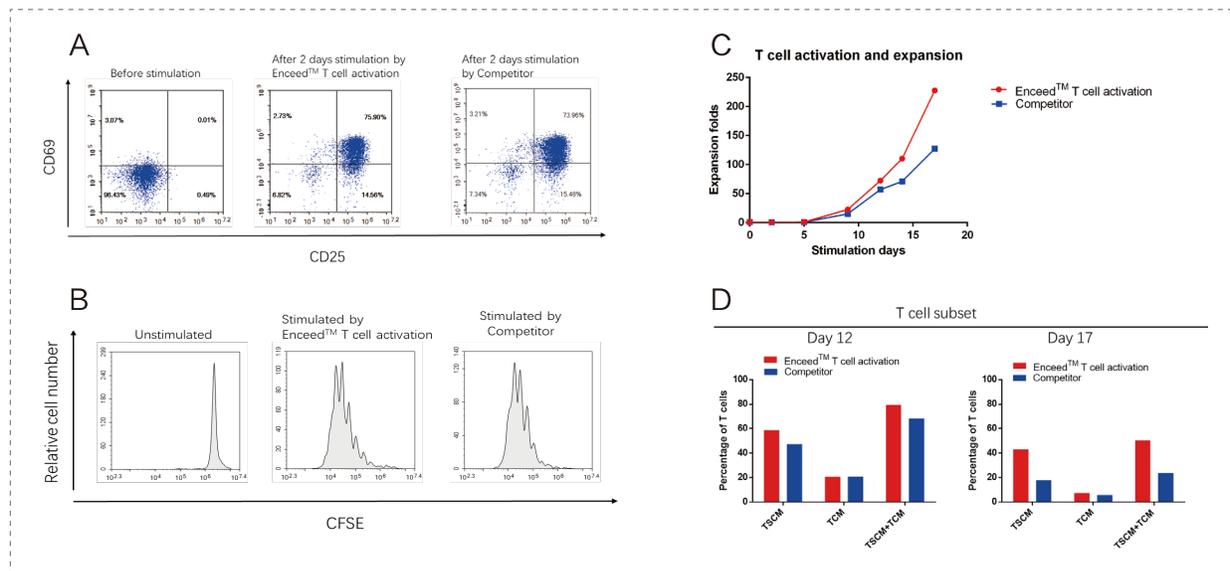
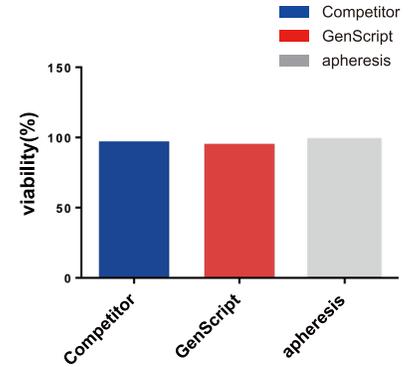
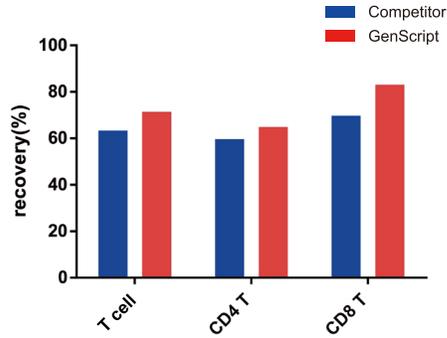
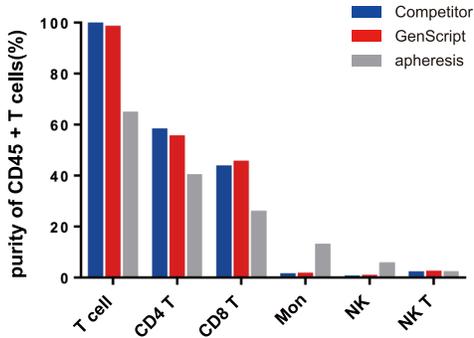


Figure 5. (A) Isolated CD4+CD8+T cells were activated using the Enceed™ T cell activation reagent from GenScript, comparing with the similar activation product from the competitor. After the activation, the cell samples were cultured and expanded for 48 hours, and the CD25+ & CD69+ expression were detected by flowcytometry and shown. (B) To show the expansion status after the activation, isolated T cells were stained with CFSE before and 7 days after the activation. (C) The expansion folds of the activated T cells were shown along the course of 17 days with the comparison of the activated T cells using competitor's product. (D) The memorial phenotypes of the activated T cells were monitored and shown on Day 12 and Day 17 after the activation.

CytoSinct™ 1000 Automated Cell Isolation Instrument

Representative data of Cell Isolation with CytoSinct™ 1000 system

Group	CytoSinct™ Nanobeads	Positive cell%	Instrument	Tubing Set type
Competitor	CytoSinct™ CD4&CD8	64.40%	Competitor Instrument	Competitor Tubing Set
GenScript	CytoSinct™ CD4&CD8	64.40%	GenScript CytoSinct™ 1000	GenScript CytoSinct™ 1000 Tubing Set



- GenScript Group has a similar cell recovery (%) and cell viability of enriched T cells with the Competitor Group.
- In some cases, higher cell recovery (%) was seen due to higher elution efficiency of positive cells in CytoSinct™ 1000 Cell viability and status are not affected after cell sorting.
- CytoSinct™ 1000 can achieve excellent results for CD4 & CD8 enrichment of apheresis samples.



High Performance



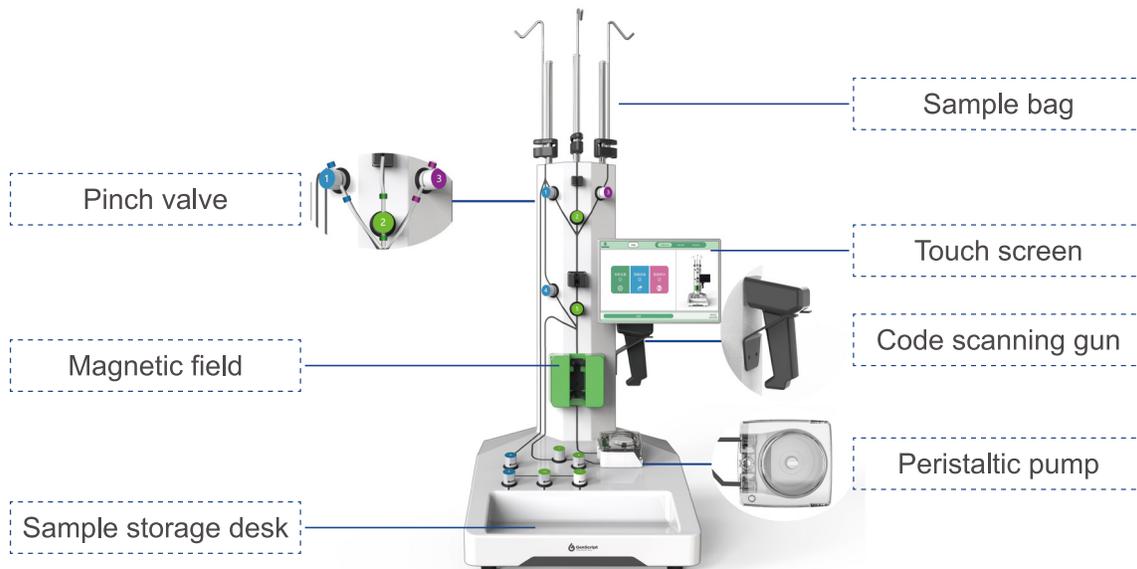
Easy to Set Up



Flexible and Friendly Software



Customized for Large Scale Solutions



Cell Therapy Product List

CytoSinct™ Isolation & Enceed™ Activation nanobeads

Field	Cat.No	Name	Size	Capability
T Cell	L00863	CytoSinct™ CD4 Nanobeads, human	1 mL/0.5 mL	Up to 1x10 ⁹ /5x10 ⁸ total MNCs
	L00864	CytoSinct™ CD8 Nanobeads, human	1 mL/0.5 mL	Up to 1x10 ⁹ /5x10 ⁸ total MNCs
	L00896	CytoSinct™ CD3 Nanobeads, human	1 mL/0.5 mL	Up to 1x10 ⁹ /5x10 ⁸ total MNCs
	L00897	CytoSinct™ TCR αβ Nanobeads, human	1 mL	Up to 1.7x10 ⁸ total MNCs
	L00899	Enceed™ T cell Activation, human	1 mL/0.5 mL	Up to 2x10 ⁸ /1x10 ⁸ T cells
NK Cell	L00903	CytoSinct™ CD56 Nanobeads, human	1 mL/0.5 mL	Up to 1x10 ⁹ /5x10 ⁸ total MNCs
Universal	L00898	CytoSinct™ Streptavidin Nanobeads	1 mL/0.5ml	Up to 2X10 ⁹ /1X10 ⁹ total MNCs

GMP Grade Nanobeads

Cat.No	Name	Size	Capability
L00932	CytoSinct™ CD4 Nanobeads, human (GMP)	2.5mL/7.5mL	Up to 1.33X10 ¹⁰ /4.00X10 ¹⁰ total MNCs
L00933	CytoSinct™ CD8 Nanobeads, human (GMP)	2.5mL/7.5mL	Up to 1.33X10 ¹⁰ /4.00X10 ¹⁰ total MNCs
L00934	CytoSinct™ CD3 Nanobeads, human (GMP)	7.5mL	Up to 4.00X10 ¹⁰ total MNCs
L00935	Enceed™ T cell Activation, human (GMP)	4mL	Up to 1.00X10 ⁸ T cells

Consumables and Instruments

Cat.No	Name	Size	Capability
D00006	CytoSinct™ gStand	1 pc	Compatible with all CytoSinct™ Magnets
D00007	CytoSinct™ gM columns	25 pc	Up to 10 ⁷ magnetically labeled cells from up to 2x10 ⁸ total cells (each column)
D00008	CytoSinct™ gL columns	25 pc	Up to 10 ⁸ magnetically labeled cells from up to 2x10 ⁹ total cells (each column)
D00009	CytoSinct™ M1 magnet	1 pc	Holds 1 CytoSinct™ gM column
D00010	CytoSinct™ M8 magnet	1 pc	Holds 8 CytoSinct™ gM columns
D00011	CytoSinct™ L1 magnet	1 pc	Holds 1 CytoSinct™ gL column
D00012	CytoSinct™ L4 magnet	1 pc	Holds 4 CytoSinct™ gL columns
D00023C	CytoSinct™ 1000	1U	
D00029	CytoSinct™ 1000 Tubing Set	1 pc	Up to 60x10 ⁹ cells
D00030	CytoSinct™ 1000 LS Tubing Set	1 pc	Up to 120x10 ⁹ cells
D00031	CytoSinct™ 1000 Depletion Tubing Set	1 pc	Up to 120x10 ⁹ cells

Cell Therapy Product List

Cas Nuclease recommendation

Applications	Recommendations	Cat. No.	Product Names
Gene KO/KI with high editing efficiency	Ultra SpCas9 (wt)	Z03621	GenCRISPR™ Ultra NLS-Cas9-Research
		Z03623	GenCRISPR™ Ultra NLS-Cas9- basic GMP
		Z03623-GMP	GenCRISPR™ Ultra NLS-Cas9-GMP
Gene KO/KI with low off-target effects	Ultra eSpCas9 (mt)	Z03622	GenCRISPR™ Ultra eSpCas9-2NLS-Research
		Z03624	GenCRISPR™ Ultra eSpCas9-2NLS-basic GMP
		Z03624-GMP	GenCRISPR™ Ultra eSpCas9-2NLS-GMP
Gene KI with high KI efficiency	SpCas9 with optimized NLS	Z03701	GenCRISPR™ Cas9 v1.1
		Z03702	GenCRISPR™ Cas9 v1.2
Gene KO/KI following with flow cytometry or other fluorescent assays	SpCas9-eGFP fusion protein	Z03393	GenCrispr NLS-Cas9-EGFP Nuclease
		Z03467	
Gene KO/KI with lower MW Cas nucleases	AsCas12a	Z03502	GenCRISPR™ Cas12a (Cpf1) Nuclease
	LaCas12a	Z03753	GenCRISPR™ LbCas12a Nuclease
	SaCas9	Z03699	GenCRISPR™ SaCas9 2NLS Nuclease
<i>in vitro</i> Diagnostics	LwaCas13a	Z03486	GenCRISPR™ Cas13a (C2c2) Nuclease
	LbuCas13a	Z03742	GenCRISPR™ LbuCas13a Nuclease
	AsCas12a	Z03502	GenCRISPR™ Cas12a (Cpf1) Nuclease
	LaCas12a	Z03753	GenCRISPR™ LbCas12a Nuclease