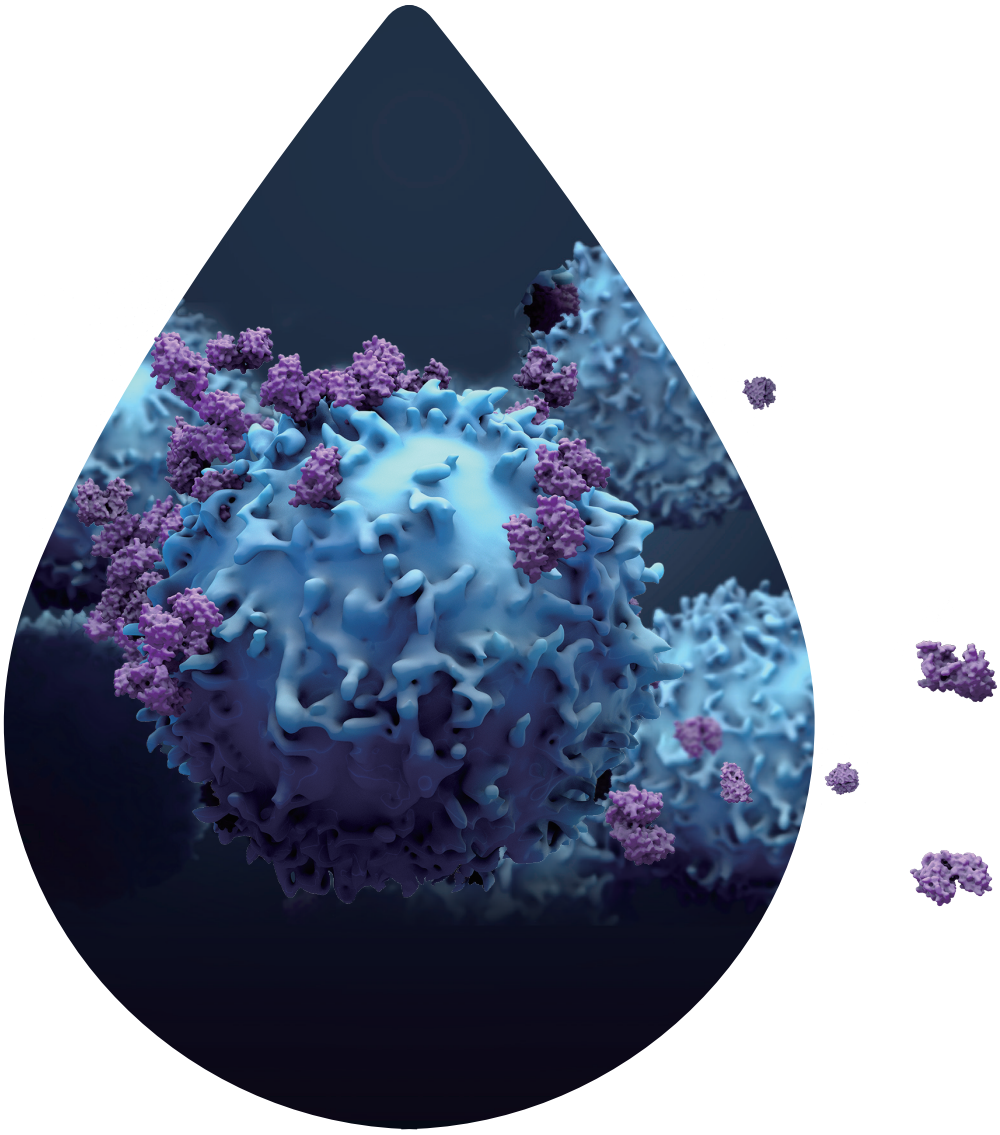
CytoSinct™

Human T-cell Separation



- Highly efficient
- Biodegradable
- Easy-to-use
- Compatible

GenScript
Make Research Easy

Introduction

Efficient and gentle cell separation based on surface markers is essential for researching specific cell populations, and for developing life-saving cell and gene therapies.

GenScript has renowned expertise in developing magnetic bead products for bioseparation of various types of biomolecules. Our novel **CytoSinct™ Cell Separation Manual Kit** uses our perfected nanoparticle empowered immunomagnetic separation technology to isolate specific cell populations of interest, combining the specificity and sensitivity of antibody-based purification with the gentleness of nanoparticles and the ease and speed of magnetic separation.

The **CytoSinct™ Cell Separation Manual Kit** is composed of antigen specific paramagnetic Nanobeads, Columns, and Magnetic Separators. The **CytoSinct™ Nanobeads** are nanometer-sized, biodegradable, easy-to-use, and enable highly efficient cell isolation. **CytoSinct™ Columns** amplify the magnetic field and enable efficient separation with minimal labeling using the small beads. 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™ Cell Separation technology, you can use a variety of starting materials. Start with PBMCs or leukapheresis products. Enrich T-cells in your sample or deplete them. For every experimental application, the CytoSinct™ Cell Separation technology can provide you with the separation results you require: "Even more, CytoSinct™ NanoBeads and Columns are **compatible with other column-based cell separation platforms**." Try this great tool to advance your research by simplifying your cell separation procedure.

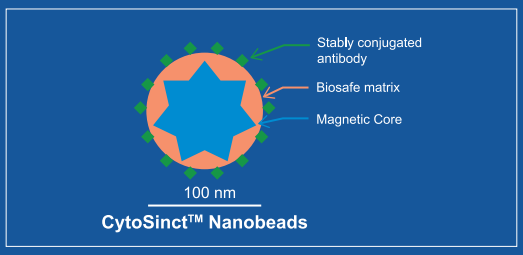


Figure 1. Schematic diagram showing the structure and size of CytoSinct™ Nanobeads.

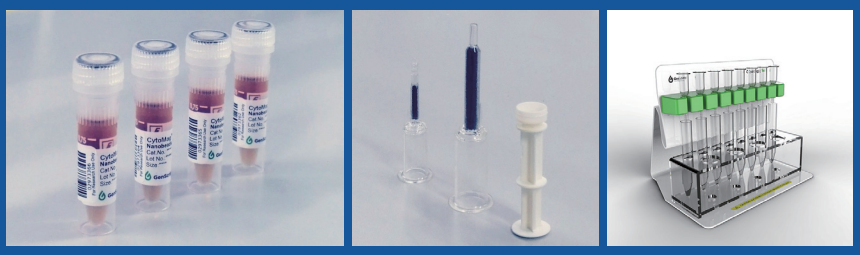


Figure 2. CytoSinct™ Cell Isolation kit including Nanobeads, Columns, and Magnetic Separator.

Product Highlights

Highly efficient | Biodegradable | Non-toxic | Compatible | Easy-to-use | Sterilized | Paramagnetic

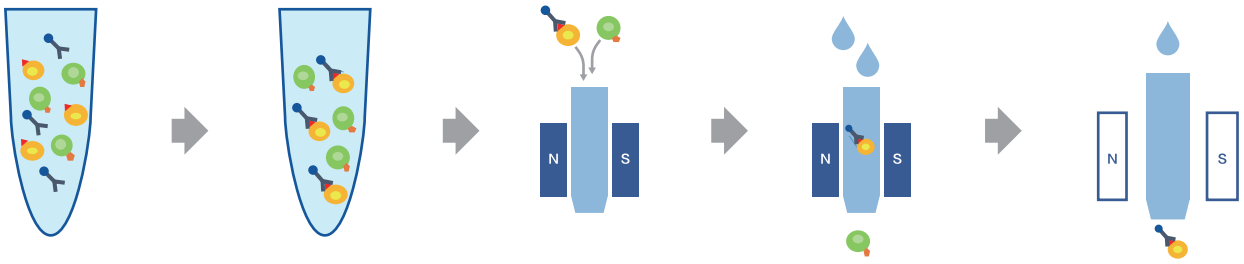
Our Advantages

	GenScript	Competitor M	Competitor D	Competitor S
Advanced Performance	√	√	√	×
Translational Research Compatibility	√	√	√	×
Biodegradable and non-toxic	√	√	×	×
No Bead-removal Step	√	√	×	√
Cost Efficiency	√	×	×	√

Workflow

GenScript's **CytoSinct™ Nanobeads** purify cells using a column-based separation method.

*These beads are compatible with magnetic columns for cell isolation from GenScript or another vendor.



1

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

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.

High purity, recovery and viability of post-isolation cells

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

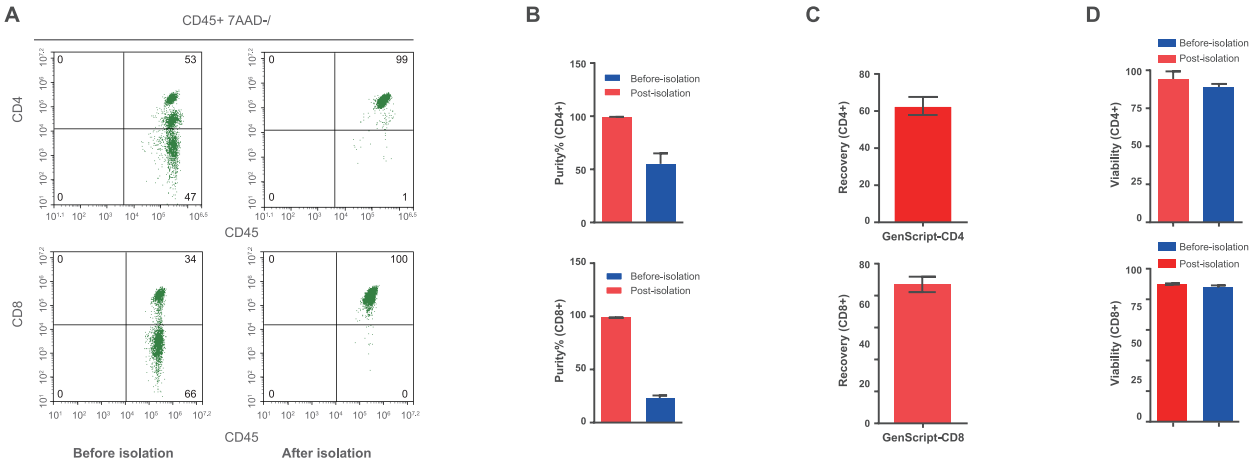


Figure 1. Purity, recovery and viability of CD4+ or CD8+ T-cells after isolation using CytoSinct™ Nanobeads. 3 different human PBMC samples were incubated with CytoSinct™ Nanobeads or a competitor product. CD4+ or CD8+ T-cells were then isolated using a column method and analyzed using flow cytometry. Pre- and post-isolation samples were stained with the cell viability dye 7-AAD and appropriate cell surface markers. CD4+ CD45+ cells or CD8+ CD45+ cells are gated from scatter/ singlets/ Live/. **(A)** Representative flow cytometry analyses. **(B)** High purity of post-isolation CD4+ or CD8+ T-cells using CytoSinct™ Nanobeads calculated as percentage of CD4+ or CD8+ T-cells in parent gating CD45+ 7AAD- from three different human PBMC samples. **(C)** High recovery of CD4+ or CD8+ T-cells using CytoSinct™ Nanobeads calculated as percentage of post-isolation CD4+ or CD8+ T-cells in total CD4+ or CD8+ T-cells in PBMC. **(D)** High viability of post-isolation CD4+ or CD8+ T-cells assessed by flow cytometry.

Isolated T-cells can be activated and expanded

T-cells need to be activated for transduction and expansion downstream. GenScript CytoSinct™ Nanobeads coated with CD4 or CD8 antibody can separate T-cells while leaving CD3 epitope untouched for downstream T-cell activation. This allows the most CD3 engagement with activation reagent and ultimate expansion result.

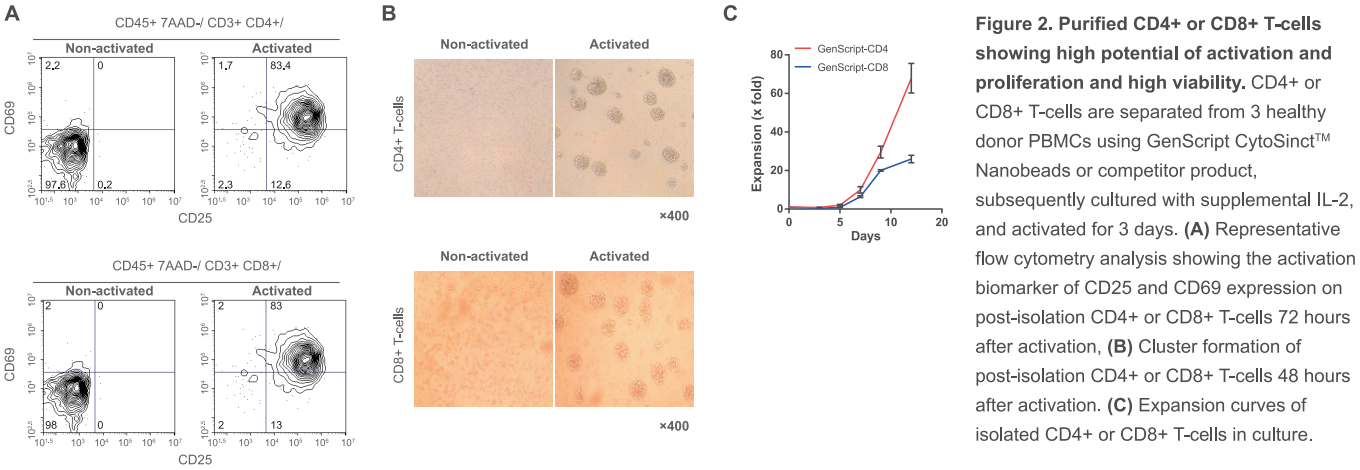


Figure 2. Purified CD4+ or CD8+ T-cells showing high potential of activation and proliferation and high viability. CD4+ or CD8+ T-cells are separated from 3 healthy donor PBMCs using GenScript CytoSinct™ Nanobeads or competitor product, subsequently cultured with supplemental IL-2, and activated for 3 days. **(A)** Representative flow cytometry analysis showing the activation biomarker of CD25 and CD69 expression on post-isolation CD4+ or CD8+ T-cells 72 hours after activation, **(B)** Cluster formation of post-isolation CD4+ or CD8+ T-cells 48 hours after activation. **(C)** Expansion curves of isolated CD4+ or CD8+ T-cells in culture.

Efficient cell isolation for translational research

Composition 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 cells generated from the enrichment. GenScript **CytoSinct™ Nanobeads** for CD4 and CD8 T cell isolation deliver high purity T cells and minimize non-T composition in the enrichment population.

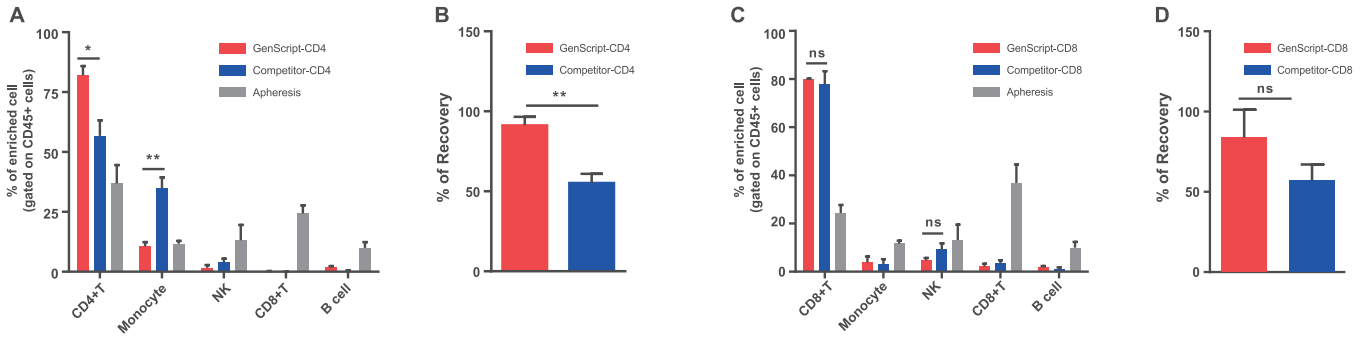


Figure 3. Composition of cell subpopulations after CD4+ or CD8+ enrichment from a leukapheresis sample with GenScript CytoSinct™ Nanobeads or Competitor's magnetic beads at 10X higher concentration. Purity and recovery are increased while percentage of non-target cells are decreased after separation with CytoSinct™ Nanobeads compared to competitor using magnetic column-based purification method (ns = non-significant).

Efficient depletion of unwanted cells

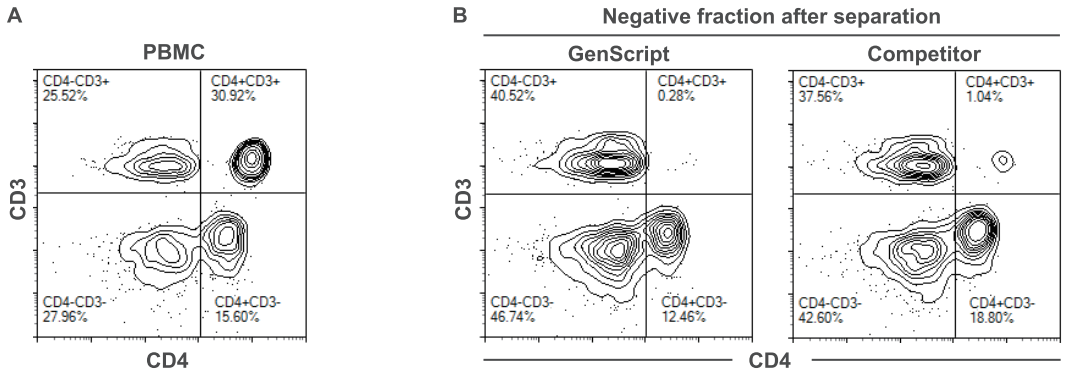


Figure 4. Flow cytometry analysis of negative fraction after CD4+ separation. 3 different human PBMC samples were processed for CD4 separation with GenScript's CytoSinct™ Nanobeads or a competitor product using a magnetic column-based purification method and analyzed using flow cytometry. Decrease in CD4+ T cell population was observed in negative fraction treated with CytoSinct™ Nanobeads compared to competitor product.

CytoSinct ™ Cell Separation Technology available in GMP grade soon!

Figure 5. GenScript's Zhenjiang Biologics Manufacturing Center. Covering an area of 100,000 square meter space, the manufacturing center is designed and constructed in total compliance with the good manufacturing practice (GMP) requirements of FDA, EMEA and cFDA, and can meet the needs for Phase I to III clinical sample production and commercial production.

www.GenScript.com
GenScript USA Inc.
860 Centennial Ave.
Piscataway, NJ 08854 USA

Toll-Free: 1-877-436-7274
Tel: 1-732-885-9188
Fax: 1-732-210-0262
Email: product@genscript.com