Cellectra Streptavidin nBeads, Research grade (for cells)

Cat. No. MBS-S003

Product Information

Product	Size	Amount
Cellectra Streptavidin nBeads, Research grade (for cells)	1mL Reconstitution Buffer	For 10^9 total cells

Product Description

Cellectra Streptavidin nBeads are dextran-coated superparamagnetic nanoparticles conjugated with high-affinity recombinant streptavidin. They are designed for highly efficient positive or negative selection of cells using biotinylated antibodies or ligands.

The beads are manufactured under sterile ISO 5 conditions with no animal- or human-derived components. Each batch undergoes rigorous quality control, including sterility, endotoxin, and functional validation.

Product Applications

Cellectra Streptavidin nBeads enable flexible isolation of a wide range of cell types from human, mouse, rat, and non-human primate samples. They are compatible with column-based magnetic separation systems. Ideal for:

- Positive or negative selection of immune cells (T cells, B cells, monocytes, dendritic cells)
- Isolation of stem cells, rare cell populations, and circulating tumor cells
- CAR-T cell enrichment (biotinylated target proteins or biotinylated anti-G4S linker antibody)

The Product performance has been carefully validated and tested for compatibility for cell culture use or any other applications in the early preclinical stage. For use in clinical phases, we also offer a custom GMP protein service that tailors to your needs. We will work with you to customize and develop a GMP-grade product in accordance with your requests that also meets the requirements for raw and ancillary materials use in cell manufacturing of cell-based therapies.

Formulation

Lyophilized in PBS with 0.1% recombinant HSA and 0.03% Poloxamer 188, pH 7.4. Trehalose is added as protectant before lyophilization.

Reconstitution

Please see Certificate of Analysis for specific instructions.

For best performance, we strongly recommend you to follow the reconstitution protocol provided in the Certificate of Analysis.

Storage

This product is stable in storage under the following conditions:

- -20°C for 36 months in lyophilized state.
- 2-8°C for 12 months under sterile conditions after reconstitution.

Please protect from light and avoid repeated freeze-thaw cycles after reconstitution. Immediate use after reconstitution is highly recommended.

Important Note

This product is for research use only and not intended for therapeutic or in vivo diagnostic use.

General guidelines

Required Materials

- Isolation Buffer: Prepare a solution containing phosphate-buffered saline (PBS), pH 7.2, 0.5% BSA, and 2 mM EDTA and keep it cold (2−8°C).

  Note: BSA can be replaced by other proteins such as human serum albumin, human serum, or fetal bovine serum (FBS). EDTA can be replaced by sodium citrate. PBS containing Ca^{2+} or Mg^{2+} is not recommended.
- MACS Columns, Miltenyi, Cat. No. 130-042-201(Other brands of compatibility sorting columns can also be selected)
- MACS Separators, Miltenyi, Cat. No. 130-042-102 (Other brands of compatibility separators can also be selected)

Reconstitution of nBeads

1. Reconstitute Streptavidin nbeads with 1 mL sterile deionized water to the vial under ISO 5 cleanroom conditions.
2. Resuspend Streptavidin nbeads in the vial (mix by pipetting up and down).
3. For optimal cells isolation, use 10 µL Streptavidin nbeads per 1×10^7 input cells.

   Note:

   To achieve higher purity of target cells, reduce the amount of Streptavidin nbeads used;

   To improve yield for tough-to-isolate cells like CAR-T cells (sorted with biotinylated G4S antibody), consider bumping up the amount of magnetic beads used.

Sample Preparation

4. Prepare a single-cell suspension at the concentration of 1×10^8cells/mL in Isolation Buffer.

   Note: a. For anticoagulated blood: Isolate PBMCs using Ficoll-Paque™ density gradient centrifugation.

   b. For frozen PBMCs: Thaw and remove dead cells via Ficoll-Paque™ density gradient centrifugation.

   c. For CAR-T cells: Remove magnetic ubeads(CD3CD28 µBeads)(If it exists in the cell samples).

   c. Wash all cell samples to be processed with Isolation Buffer (300×g, 10 min, 15-25℃) before suspension preparation.

Biotinylated protein or antibody labeling

5. Transfer the required volume of single-cell suspension (1×10^8 cells/mL in Isolation Buffer) into a new tube.
6. Centrifuge at 300 × g for 10 minutes at room temperature. Carefully aspirate the supernatant and resuspend the cells in an equal volume of diluted biotinylated antibody or target protein with Isolation Buffer.

   Note: For optimal sorting results, it is recommended to determine the optimal titer for the biotinylated antibody.
7. Mix the cell-bead mixture by gently pipetting up and down, and incubate for 15 min at 2~8 °C.
8. Add 400 µL of Isolation Buffer, centrifuge at 300×g for 10 minutes at room temperature, and carefully aspirate the supernatant.
9. Repeat washing ***step 8***.

Magnetic labeling

10. Add 5-20 µL Nanobeads for each 100 µL cell suspension of 10^7 cells to be sorted.

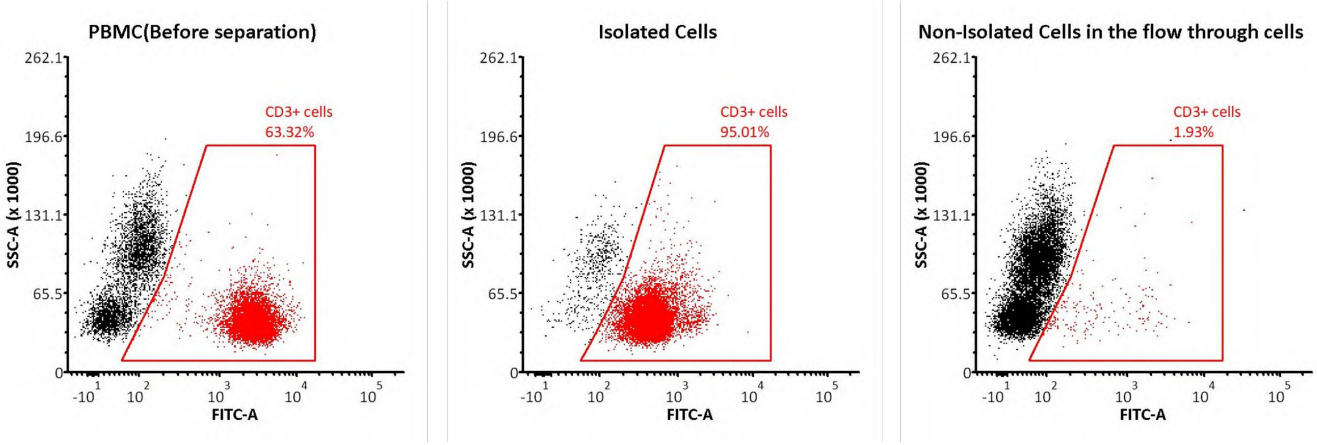
    Note: Scale Nanobead volume proportionally for higher cell counts.
11. Mix the cell-bead mixture by gently pipetting up and down, and incubate for 15 min at 2~8 °C.
12. Add 400 µL of Isolation Buffer, centrifuge at 300×g for 10 minutes at room temperature, and carefully aspirate the supernatant.
13. Repeat washing ***step 12***.
14. Resuspend cells in 500 µL Isolation Buffer per 1×10^7 cells for separation.

Magnetic separation

15. Place MS column (Cat. No. 130-042-201) in the magnetic field of a MACS Separator.
16. Prepare MS column by rinsing with 500 µL of Isolated Buffer.
17. Apply cell suspension to pre-wetted MS column, and collect flow-through containing unlabeled cells.
18. Wash MS column with 500 µL of Isolated Buffer twice and collect unlabeled cells in rinsing buffer and combine with the flow through from ***step17.***
19. Remove MS column from the separator and place it on a suitable collection tube (i.e.15mL of centrifuge tube).
20. Pipette 1 mL of Isolated Buffer onto the MS column, and immediately flush out the magnetically labeled cells by firmly pushing the plunger into the column.

    Note: To increase the purity of target cells, the eluted fraction can be enriched over a second MS Column. Repeat the magnetic separation procedure as described by using a new column.
21. Collect the eluted target cells in separate sterile tube, and analyzed to assess the purity or used in down-stream applications.

● Example of a separation



The CD3⁺ cells isolated from human PBMCs by Cellectra Streptavidin nBeads, Research grade (for cells) (Cat. No. MBS-S003). Human PBMCs were isolated with 0.1 µg Biotinylated Anti-Human CD3 Antibody, Mouse IgG2a, Avitag (Clone: OKT3), premium grade (Cat. No. CDE-BV84G0) and 10 µL Cellectra Streptavidin nBeads, Research grade (for cells) (Cat. No. MBS-S003). Both the isolated cells and non-isolated cells were stained with FITC anti-human CD3 Antibody and subsequently analyzed using FCS Express 7 software(QC tested).

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