

## Technical Data Sheet

## Human Lineage Cell Depletion Set - DM

## Product Information

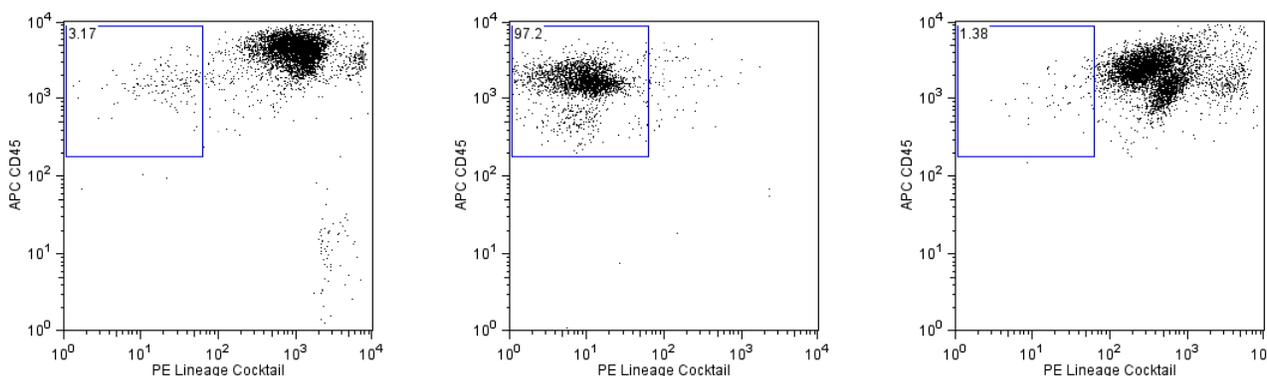
<b>Material Number:</b>	<b>560030</b>
<b>Component:</b>	<b>51-9003746</b>
<b>Description:</b>	Streptavidin Particles Plus – DM
<b>Size:</b>	7.5 mL (1 ea)
<b>Storage Buffer:</b>	Aqueous buffered solution containing BSA and $\leq 0.09\%$ sodium azide.
<b>Component:</b>	<b>51-9005225</b>
<b>Description:</b>	Human Lineage Cell Depletion Cocktail
<b>Size:</b>	5 mL (1 ea)
<b>Storage Buffer:</b>	Aqueous buffered solution containing BSA, protein stabilizer, and $\leq 0.09\%$ sodium azide.

## Description

The BD IMag™ Human Lineage Cell Depletion Set - DM is used for the depletion of mature hematopoietic cells such as T cells, B cells, NK cells, platelets, monocytes, granulocytes, and erythroid cells from peripheral blood mononuclear cells (PBMC), bone marrow and cord blood samples. This allows for rare cell populations such as stem cell, progenitor cells and dendritic cells to be enriched. The Human Lineage Cell Depletion Cocktail contains biotinylated monoclonal antibodies that recognize antigens expressed on T cells, B cells, NK cells, monocytes, granulocytes, platelets, and erythroid cells. The BD IMag™ Streptavidin Particles Plus - DM are magnetic nanoparticles that have streptavidin covalently conjugated to their surfaces. With these two components, the BD IMag™ Human Lineage Cell Depletion Set - DM can be used as a primary enrichment tool or a pre-flow sorting tool for your rare cell population enrichment. As a pre-flow cytometric sorting tool, it can reduce sorting time dramatically in addition to increasing the recovery of the cells of interest. This Human Lineage Cell Depletion Set has been optimized for use with the BD IMag™ Cell Separation Magnet, and it contains sufficient reagents to label  $1 \times 10^9$  peripheral blood mononuclear cells (PBMC).

The Human Lineage Depletion Cocktail is comprised of the following biotinylated monoclonal antibodies:

Biotin Mouse Anti-human CD3, clone UCHT1  
 Biotin Mouse Anti-human CD14, clone M5E2  
 Biotin Mouse Anti-human CD16, clone 3G8  
 Biotin Mouse Anti-human CD19, clone HIB19  
 Biotin Mouse Anti-human CD41a, clone HIP8  
 Biotin Mouse Anti-human CD56, clone B159  
 Biotin Mouse Anti-human Glycophorin A, clone GA-R2



**Depletion of lineage cells from human peripheral blood.** PBMC were labeled with the BD IMag™ Human Lineage Cell Depletion Set - DM (Cat. No. 560030) and separated on the BD IMag™ Cell Separation Magnet (Cat. No. 552311) according to the accompanying protocol. To demonstrate the efficiency of the enrichment, cells were stained with a human lineage cocktail consisting of PE Mouse Anti-Human CD3 (Cat. No. 555333), CD14 (Cat. No. 555398), CD16 (Cat. No. 555407), CD19 (Cat. No. 555413), CD56 (Cat. No. 555516), CD235a (Cat. No. 555570) to detect lineage cells, and an APC Mouse Anti-Human CD45 (Cat. No. 555483) to detect non-lineage cells. Dead cells were excluded by staining with 7-Amino-actinomycin D (7-AAD) (Cat. No. 559925). Flow cytometry was performed on a BD FACSCalibur™ flow cytometry system.

Please refer to the Enrichment Flow Chart on the next page to identify the cell populations represented in this figure. The percentage of non-lineage cells is indicated in each panel. Left panel shows the unseparated PBMC while the middle and right panels show the twice-enriched fraction after three 6-minute magnetic separations with an additional 10 minute separation (middle) and the positive fraction (right).

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## Preparation and Storage

Store undiluted at 4°C.

The monoclonal antibody was purified from tissue culture supernatant or ascites by affinity chromatography.

The antibody was conjugated with biotin under optimum conditions, and unreacted biotin was removed.

Antibody or streptavidin was conjugated to the magnetic particles under optimum conditions, and unconjugated antibody/streptavidin was removed.

## Application Notes

### Application

Cell separation

Routinely Tested

### Recommended Assay Procedure:

The detailed Magnetic Labeling and Enrichment Protocol follows. In summary, the Human Lineage Cell Depletion Cocktail simultaneously stains T-, B- and NK cells, monocytes, granulocytes, platelets, and erythroid cells. After washing away excess antibody, BD IMag™ Streptavidin Particles Plus - DM are added to the cell suspension and bind the cells bearing the biotinylated antibodies. The tube containing this labeled cell suspension is then placed within the magnetic field of the Cell Separation Magnet (Cat. No. 552311). Negative selection is then performed to enrich for the unlabeled stem and progenitor cells. Labeled cells migrate toward the magnet (positive fraction), leaving the unlabeled cells in suspension so they can be drawn off and retained (enriched fraction). The negative selection is repeated twice to increase the yield of the enriched fraction. If greater purity is required, negative selection may be performed on the enriched fraction. For clarification of the procedure, the magnetic separation steps are diagrammed in the Enrichment Flow Chart. The positive and enriched fractions can be evaluated in downstream applications such as flow cytometry and tissue culture. The biotinylated antibodies in the Human Lineage Cell Depletion Cocktail have been optimized and pre-diluted to provide maximum efficiency for the enrichment of rare population cells such as stem cells from PBMC.

### MAGNETIC LABELING AND ENRICHMENT PROTOCOL

1. Prepare 1X BD IMag™ buffer: Dilute BD IMag™ Buffer (10X) (Cat. No. 552362) 1:10 with sterile distilled water or prepare Phosphate Buffered Saline (PBS) supplemented with 0.5% BSA, 2 mM EDTA, and 0.1% sodium azide.
2. Prepare PBMC from EDTA anti-coagulated human blood, preferably by density gradient centrifugation using Ficoll-Paque™.\*
3. Count the cells, and resuspend them in 1X BD IMag™ buffer at a concentration of  $50 \times 10^6$  cells/ml.
4. Add the Human Lineage Cell Depletion Cocktail at 5  $\mu$ l per million cells, and incubate at room temperature for 15 minutes.†
5. Wash the labeled cells with a 10X excess volume of 1X BD IMag™ buffer, centrifuge at 300 x g for 10 minutes, and carefully aspirate ALL the supernatant.
6. Vortex the BD IMag™ Streptavidin Particles Plus - DM thoroughly, and resuspend the cell pellet in a concentration of 7.5  $\mu$ l of particles/ $1 \times 10^6$  cells. **Please note that this volume of IMag Streptavidin Particles is higher than that used in most BD IMag enrichment sets and that this Set contains a greater total volume of these particles to account for this difference.**
7. MIX THOROUGHLY. Incubate at room temperature for 30 minutes.†
8. Bring the labeling volume up to a concentration of 10-80  $10^6$  cells/ml with 1X BD IMag™ buffer.
9. Transfer the labeled cells to a 12 x 75 mm round-bottom test tube, maximum volume added not to exceed 1.0 ml. Place this tube on the Cell Separation Magnet (horizontal position) for 6 to 8 minutes.
  - For greater volume, divide the cells into multiple 12 X 75 mm round-bottom test tubes or transfer the cells to a 17 x 100 mm round-bottom test tube, maximum volume added not to exceed 3.0 ml. Place this tube on the Cell Separation Magnet (vertical position) for 8 minutes.
10. With the tube on the Cell Separation Magnet and using a sterile glass Pasteur pipette, carefully aspirate the supernatant (enriched fraction) and place in a new sterile tube.
11. Remove the positive-fraction tube from the Cell Separation Magnet, and add 1X BD IMag™ buffer to the same volume as in Step 8. Resuspend the positive fraction well by pipetting up and down 10 to 15 times (avoid creating bubbles), and place the tube back on the Cell Separation Magnet for 6 to 8 minutes.
  - For 17 x 100 mm tube: Place on the Cell Separation Magnet for 8 minutes.
12. Using a new sterile Pasteur pipette, carefully aspirate the supernatant and combine with the enriched fraction from Step 10 above.
13. Repeat Steps 11 and 12. The combined enriched fraction contains non-lineage cells with no bound antibodies or magnetic particles.
14. To increase the purity of the combined enriched fraction, place the tube containing the combined enriched fraction on the Cell Separation Magnet for another 3-10 minutes. Increased magnet time will increase purity but lower recovery.
  - For 17 x 100 mm tube: Place on the Cell Separation Magnet for 6-10 minutes.
15. Carefully aspirate the supernatant and place in a new sterile tube. This is the twice-enriched non-lineage fraction. The cells are ready to be processed for downstream applications.
16. The positive-fraction cells remaining in the original tube can be resuspended in an appropriate buffer or culture medium for downstream applications, including flow cytometry, if desired.
17. Samples of the total cell suspension, the positive and enriched fractions should be analyzed by flow cytometry to evaluate the efficiency of the cell-separation procedure.

### NOTES:

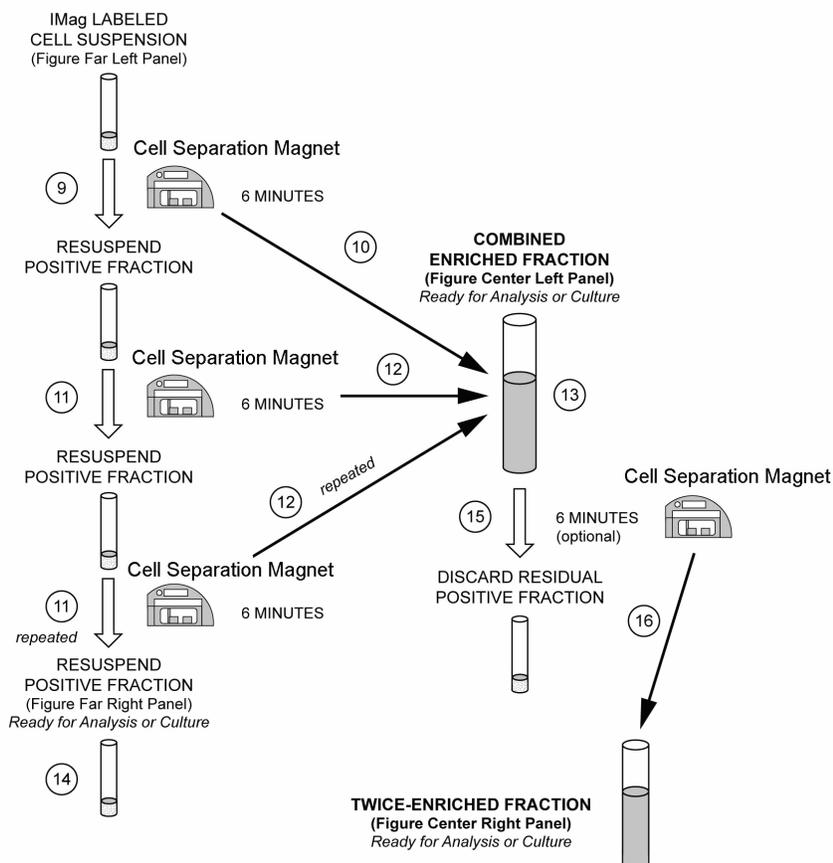
\* Hints for successful cell preparation:

- Draw the blood into a tube containing EDTA
- Remove the platelet rich plasma by centrifuging once at 220-240 x g.

- Wash 2-3 times in PBS after the density gradient separation.
  - After the final wash, resuspend the cells at a relatively high concentration in 1X BD IMag™ buffer and proceed to step 3.
- † Avoid nonspecific labeling by working quickly and adhering to recommended incubation times.

## ENRICHMENT FLOW CHART

(The circled numbers correspond to the steps of the protocol)



### Suggested Companion Products

Catalog Number	Name	Size	Clone
552362	Buffer (10X)	100 mL	(none)
552311	Cell Separation Magnet	1 Each	(none)
555333	PE Mouse Anti-Human CD3	100 Tests	UCHT1
555398	PE Mouse Anti-Human CD14	100 Tests	M5E2
555407	PE Mouse Anti-Human CD16	100 Tests	3G8
555413	PE Mouse Anti-Human CD19	100 Tests	HIB19
555516	PE Mouse Anti-Human CD56	100 Tests	B159
555570	PE Mouse Anti-Human CD235a	0.1 mg	GA-R2 (HIR2)
555483	PE Mouse Anti-Human CD45	100 Tests	HI30
559925	7-AAD	2 mL	(none)

### Product Notices

1. Source of all serum proteins is from USDA inspected abattoirs located in the United States.
2. Caution: Sodium azide yields highly toxic hydrazoic acid under acidic conditions. Dilute azide compounds in running water before discarding to avoid accumulation of potentially explosive deposits in plumbing.
3. BD IMag™ particles are prepared from carboxy-functionalized magnetic particles which are manufactured by Skold Technology and are licensed under US patent number 7,169,618.
4. Ficoll-Paque is a trademark of Amersham Biosciences Limited.
5. Please refer to [www.bdbiosciences.com/pharming/en/protocols](http://www.bdbiosciences.com/pharming/en/protocols) for technical protocols.