






High Purity of Rare Cells
Advantages Efficient Flexible
 Rapid and Simple Superior Immunomagnetic Cell Labeling



A high performance system in which cells are immunomagnetically labeled & bound to a magnetic column

 all species

 all cell types

 positive or negative selection

Immunomagnetic Negative or Positive Cell Selection

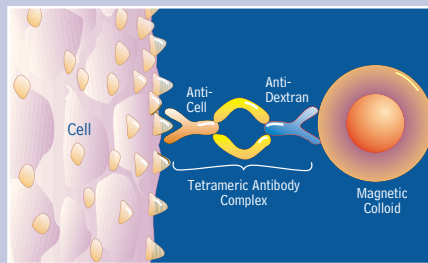
ALL SPECIES ALL CELL TYPES



HUMAN, RAT, OR NON-HUMAN PRIMATE

Human, rat or non-human primate cells are crosslinked to magnetic dextran iron particles using TAC (Tetrameric Antibody Complexes; Figure 1). TAC are comprised of two mouse IgG₁ monoclonal antibodies (shown in red & blue in Figure 1), held in tetrameric array by two rat anti-mouse IgG₁ monoclonal antibody molecules (shown in yellow in Figure 1). One mouse antibody molecule recognizes the cell surface antigen and the other recognizes the dextran on the magnetic colloid/nanoparticle. The cell suspension is then passed through a high-gradient column of stainless steel mesh which is placed in a magnet.

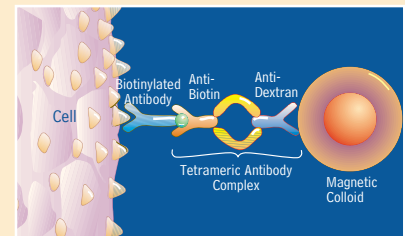
Figure 1. Schematic drawing of StemSep™ TAC magnetic labeling of human, rat or non-human primate cells



MOUSE

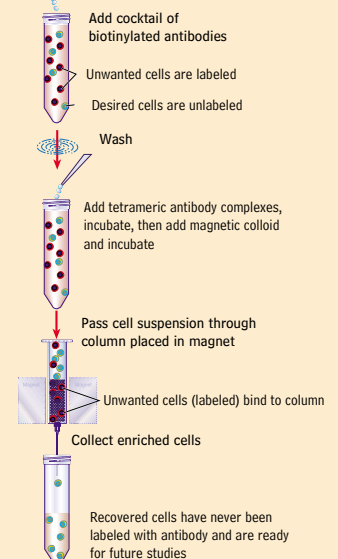
Mouse cells are magnetically labeled indirectly using a cocktail of biotinylated antibodies directed against cell surface markers on the unwanted cells (Figure 4). Cells are then crosslinked to magnetic dextran iron particles using TAC (Tetrameric Antibody Complexes). TAC are comprised of two mouse IgG₁ monoclonal antibodies held in tetrameric array by two rat anti-mouse IgG₁ monoclonal antibody molecules. One mouse antibody molecule recognizes biotin and the other recognizes dextran on the magnetic nanoparticle. The cell suspension is then passed through a high-gradient column of stainless steel mesh (Figure 5). The magnetically labeled unwanted cells bind to the column while the unlabeled enriched cells pass through.

Figure 4. Schematic drawing of StemSep™ TAC magnetic labeling of mouse cells



NEGATIVE SELECTION

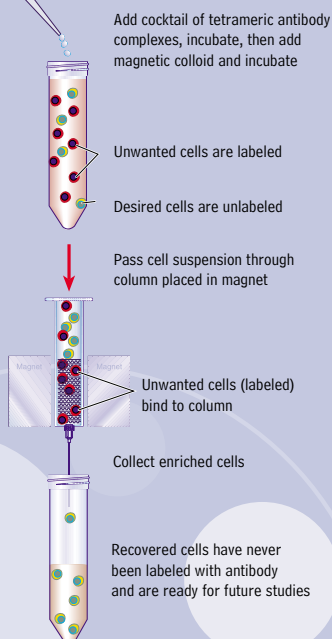
Figure 5. StemSep™ method for Negative Selection of mouse cells



NEGATIVE SELECTION

The magnetically labeled unwanted cells bind to the column while the unlabeled enriched cells pass through untouched leaving them ready for further study.

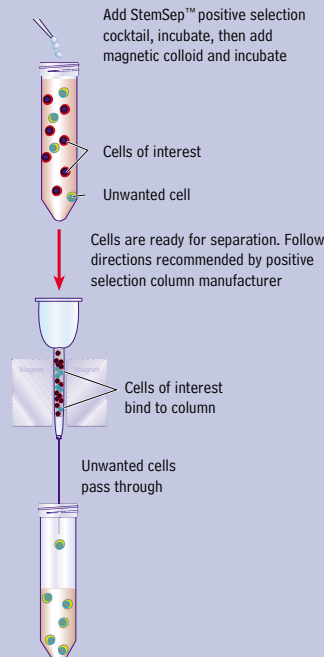
Figure 2. StemSep™ method for Negative Selection of cells



POSITIVE SELECTION

The magnetically labeled cells of interest bind to the column while the unlabeled cells pass through. Cells of interest are collected from the positive selection column according to manufacturer's instructions. The extremely tiny magnetic nanoparticles are completely FACS-compatible, and thus do not interfere with further studies

Figure 3. StemSep™ method for Positive Selection of cells



PLUS FOR ANY SPECIES: TRY A CUSTOM COCKTAIL OR USE THE STEMSEP™ PE OR BIOTIN TAC WITH YOUR OWN ANTIBODIES!

Magnets



Red Magnet with Stand

This device is designed to perform one gravity or pump feed separation with a StemSep™ 0.1" or 0.3" negative selection column. Depending on the column size, a range of 10^5 - 8×10^7 cells can be loaded per column.



Green Magnet with Stand

This device is designed to perform one gravity or pump feed separation with the following StemSep™ negative selection column sizes: 0.1", 0.3", 0.5" and 0.6". Depending on the column size, a range of 10^5 - 1.5×10^9 cells can be loaded per column.



Blue Magnet with Stand and Pump

This device is designed to perform up to four simultaneous separations with the following StemSep™ negative selection column sizes: 0.3", 0.5" and 0.6". Depending on the column size, a range of 2×10^7 - 1.5×10^9 cells can be loaded per column. This magnet and stand can accommodate only pump feed columns.



Black Magnet with Stand and Pump

This device is designed to perform a single pump feed separation with a 1.0" bulk column. Optimally, 10^{10} cells can be processed with this column. This magnet and stand can also accommodate the following pump feed columns: 0.3", 0.5", 0.6" (and 1.0") giving a range of 2×10^7 - 1.5×10^{10} cells per separation.

Negative Selection Columns



Columns are available in five sizes (optimal cell number/column*)
 0.1" diameter (10^6 cells), 0.3" diameter (5×10^7 cells), 0.5" diameter (10^8 cells), 0.6" diameter (5×10^8 cells) and 1.0" diameter (10^{10} cells)

* Optimum cell number/column can be doubled when using ficolled cells

- High-gradient magnetic columns comprised of stainless steel mesh
- High capacity columns designed for negative selection
- Pump (P) or gravity (G) feed
- Cell range from 10^5 to 1.5×10^{10} cells depending on the column
- Positive selection reagents are designed for use with commercially available magnetic positive cell selection columns

Reagents - Ultimate in Flexibility & Customization

- Positive or Negative Selection
- Human, mouse, rat, non-human primate, & more
- Compatible with other immunomagnetic column-based systems (0.5 Tesla magnet) including manual and automated systems
- Incorporate any mouse IgG₁ monoclonal antibody to create a customized TAC** cell separation reagent
- Use any biotinylated or PE-conjugated antibody with anti-biotin or anti-PE TAC**
- FACS-compatible magnetic nanoparticles
- A wide selection of antibodies are available for custom separations. Please contact us to discuss your needs

See next pages for composition of human (negative & positive selection) & mouse (negative selection) standard cocktails as well as suggested combinations of antibodies for particular cell subsets.

** Tetrameric Antibody Complexes

Composition of Enrichment Cocktails*

StemSep™ Negative Selection Cocktails - target unwanted cells

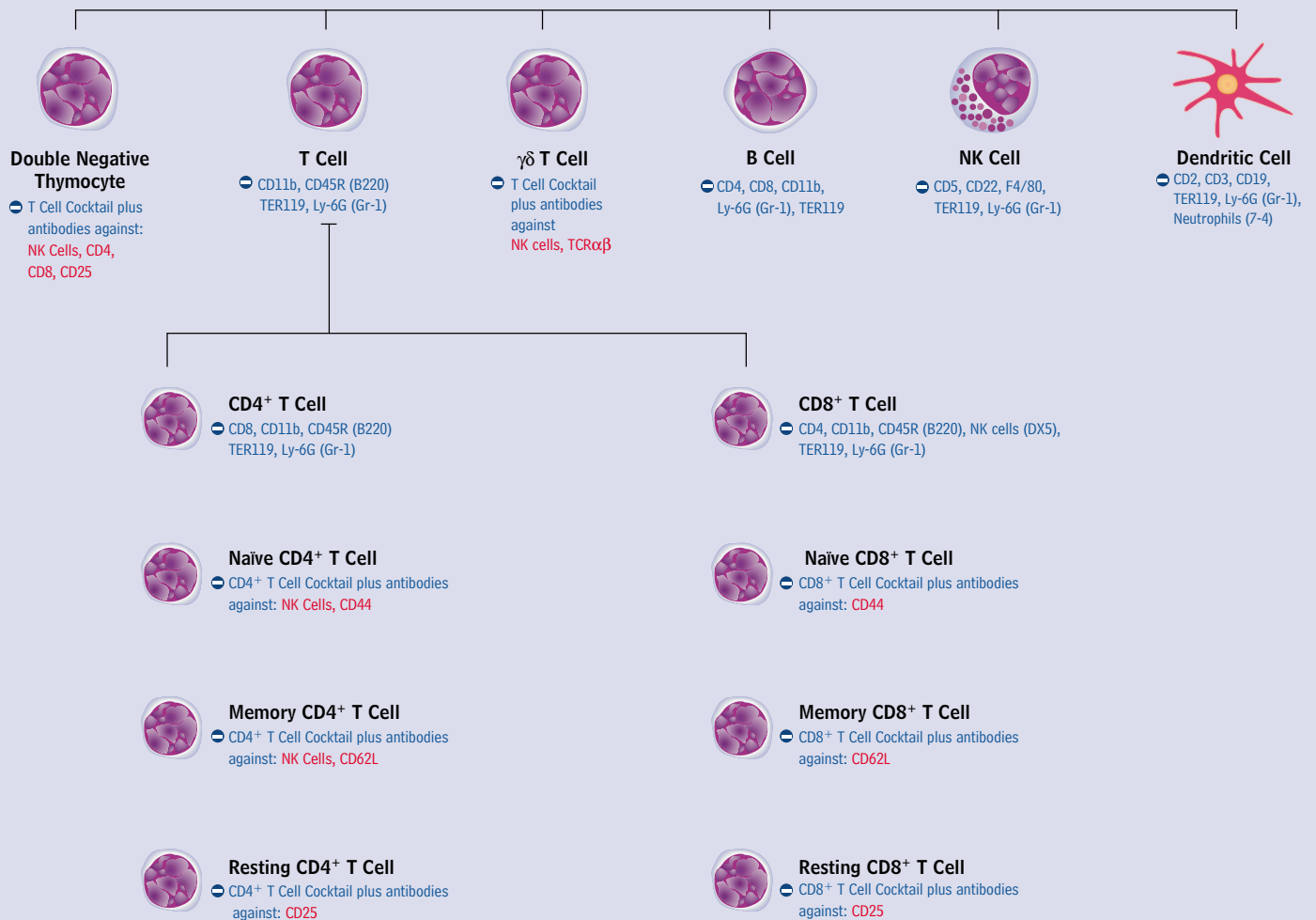


Hematopoietic Stem/Progenitor Cell



Hematopoietic Progenitor Cocktail

CD5, CD11b, CD45R (B220), TER119, Ly-6G (Gr-1), Neutrophils (7-4)



* Biotinylated antibodies in standard negative selection cocktails are shown in blue.

Biotinylated antibodies suggested for addition to a standard cocktail to enrich a particular cell subset are shown in red (custom cocktail).

Antibody Cocktails

Cocktail to Enrich Cell Type	Human Negative Selection	Human Positive Selection	Mouse Negative Selection	Rat Negative Selection	Non-Human Primate Negative Selection
for labeling	1 x 10 ⁹ cells (2 mL) 5 x 10 ⁹ cells (10 mL)	1 x 10 ⁹ cells (1 mL) [2 x 10 ⁹ cells - 1 mL]	5 x 10 ⁸ cells (0.1 mL) 1 x 10 ⁹ cells (0.2 mL) 5 x 10 ⁹ cells (1 mL)	5 x 10 ⁸ cells (1 mL) 1 x 10 ⁹ cells (2 mL) 5 x 10 ⁹ cells (10 mL)	1 x 10 ⁹ cells (2 mL) 5 x 10 ⁹ cells (10 mL)
T cells	14051 14061	14751	13031 13051 13061	16031 16051 16061	16151 16161
CD4 ⁺ T cells	14052 14062	14752	13032 13052 13062	16032 16052 16062	16152 16162
Naive CD4 ⁺ T cells	14155 14165				
CD8 ⁺ T cells	14053 14063	14753	13033 13053 13063	16033 16053 16063	16153 16163
B cells	14054 14064	14754	13034 13054 13064		
NK cells	14055 14065	14755	13035 13055 13065		
Dendritic cells	14153 14163		13037 13057 13067		
Hematopoietic Progenitors	14056 14066	[14756]	13036 13056 13066		
Primitive Hematopoietic Progenitors	14057 14067				
Monocytes	14058 14068	14758			
Custom	14309	14709	13309	16309	16109
T Cell Depletion	14651* 14661*				16251 16261
CD4 Depletion					16123
CD8 Depletion	14652* 14662*				16122
Breast Carcinoma Cell Depletion	14653* 14663*	OPTIONS FOR ALL SPECIES ANTI-BIOTIN TETRAMERIC ANTIBODY COMPLEXES (TAC) Catalog Numbers: 13030 1 mL for labeling 5 x 10 ⁹ cells 13050 2 mL for labeling 1 x 10 ⁹ cells 13060 10 mL for labeling 5 x 10 ⁹ cells ANTI-R-PHYCOERYTHRIN (PE) TETRAMERIC ANTIBODY COMPLEXES (TAC) Catalog Numbers: 13530 1 mL for labeling 5 x 10 ⁸ cells 13550 2 mL for labeling 1 x 10 ⁹ cells 13560 10 mL for labeling 5 x 10 ⁹ cells			
CML De-Bulking	14154* 14164*				
Human Cells from Mouse/Human Chimeras	13058 13068				
Basophils	14059 14069				
Eosinophils	14156 14166				
Granulocytes	14151* 14161*				
Epithelial Tumor Cells	14152 14162				

Negative Selection Columns

(Supplied in 10 column packs with the exception of the 1.0" column which is sold individually)

Catalog Number		Column Diameter	Optimum Cell Number per Column**	Will Fit Magnet Size
Gravity	Pump			
12021	12022	0.1"	1 x 10 ⁹ cells	red, green
12031	12032	0.3"	5 x 10 ⁷ cells	all sizes
12051	12052	0.5"	1 x 10 ⁸ cells	green, blue, black
12061	12062	0.6"	5 x 10 ⁸ cells	green, blue, black
-	12470	1.0"	1 x 10 ¹⁰ cells	black

**When using Ficoll cells, optimum cell number per column can be doubled.

Note: Not to be used for positive selection.

Magnets and Other Equipment

Catalog Number	Description	Pump or Gravity Feed	Number of Simultaneous Separations	Column Size
11030	red magnet and stand	gravity or pump	1	0.1" 0.3"
11050	green magnet and stand	gravity or pump	1	0.1", 0.3" 0.5", 0.6"
11060	blue magnet and stand	pump	1 to 4	0.3", 0.5" 0.6"
11070	black magnet and stand	pump	1	0.3", 0.5" 0.6", 1.0"
11000	peristaltic pump	-	1 to 4	0.1", 0.3", 0.5", 0.6", 1.0"

For a complete list of StemSep™ support products, please see our catalog or website <www.stemcell.com>

StemSep™ Advantage: TAC⁺ Flexibility

Unlike other immunomagnetic cell separation systems, StemSep™ does not require coupling the anti-cell antibodies directly to magnetic particles. Instead, StemSep™ utilizes flexible TAC technology. The colloidal paramagnetic nanoparticles used in StemSep™ are coated with dextran, allowing them to be bound by the anti-dextran end of any StemSep™ TAC reagent. Since the anti-cell end of a bi-specific TAC reagent can be varied, TAC can be easily customized by incorporating any cell-specific mouse IgG₁, monoclonal antibody, instantly creating a novel cell separation reagent. If a mouse IgG₁ monoclonal is not available for a particular cell surface antigen, we provide anti-biotin or anti-PE TAC, allowing the use of any biotinylated or PE-conjugated cell-specific antibodies in your separations. This flexibility of StemSep™ and our custom cocktail program have allowed many researchers to perform unique cell separations that would otherwise not have been possible.

* Tetrameric Antibody Complexes

**This product is available only as a custom order. Please contact us for more information.



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