IMMUNOLOGY

Source, Isolate, Culture, and Analyze Immune Cells

STEMCELL™ TECHNOLOGIES

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PDF

NOTES

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Tools for Your Immunology Research

Product Listing

Tools for Your Immunology Research

From primary human cells to cell isolation kits, culture media, supplements, and antibodies, STEMCELL Technologies provides the tools you need for every step of your immunology research.

STEMCELL Products for Every Step of Your Immune Cell-Based Research

Source	Isolate	Activate, Edit, Expand, & Differentiate	Analyze
• Fresh human cells • Cryopreserved human cells • ThawSTAR®	• EasySep™ • RoboSep™ • RosetteSep™ • SepMate™ • Lymphoprep™	• ImmunoCult™ • Cytokines • CryoStor® • ArciTect™ • StemSpan™ • STEMdiff™ • Viral peptide pools	• Antibodies • ELISA kits • GloCell™ fixable viability dyes

Primary Cells

It All Starts with the Right Cells

Source | Isolate | Activate, Edit, Expand, & Differentiate | Analyze

Human primary cells are isolated directly from tissues, including blood and bone marrow. These cells are increasingly recognized for their importance in the study of biological processes, disease progression, and drug development, and for applications such as in vitro cell-based assays or the creation of xenografts or humanized mouse models.

Human primary cells retain key aspects of the tissue of origin and more accurately reflect the inherent variability between donors as compared to cell lines, including human leukocyte antigen (HLA) type and cytomegalovirus (CMV) status. The use of human primary cells increases the physiological relevance of cell culture systems, enabling you to generate meaningful data more predictive of in vivo outcomes. This approach reduces the need for extensive in vivo validation and helps to facilitate the translation of basic research into preclinical or clinical applications.

Using the right primary cells as the foundation for your experiments is the first step toward success in your research. Choose from a wide range of fresh or cryopreserved human primary cells isolated from peripheral blood, cord blood, bone marrow, and mobilized peripheral blood.[1,2]

Cryopreserved immune and progenitor cells isolated from full-size leukopaks (leukapheresis preparations) or entire umbilical cords are ready to use upon receipt. For users requiring fresh, unprocessed tissue samples, whole peripheral blood, whole bone marrow, leukocyte reduction system (LRS) cones, and leukopaks are also available.[3]

Why Use STEMCELL's Human Primary Cells?

PHYSIOLOGICALLY RELEVANT. Choose cells that are more physiologically representative of cells in vivo.

ETHICALLY SOURCED. Access donor samples collected using regulatory authority-approved consent forms and protocols.

CUSTOMIZABLE. Request custom products for non-standard cell types or collections with specific requirements.

FLEXIBLE. Reserve large numbers of cryopreserved cells and start experiments on your schedule with cells you've already tested.

EFFICIENT. Reduce time spent collecting and culturing primary cells.

VIDEO
Leukopak Processing Video
www.stemcell.com/how-to-process-a-leukopak

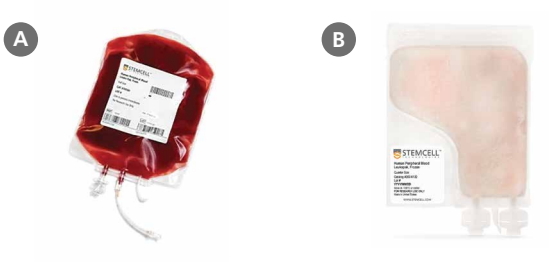


Figure 1. (A) Fresh and (B) Frozen Human Peripheral Blood Leukopak - Full-Size

Fresh Leukopak (Catalog #70500) and Frozen Leukopak (Catalog #200-0130) from a normal donor containing peripheral blood mononuclear cells (PBMCs) enriched using the Spectra Optia® Apheresis System.

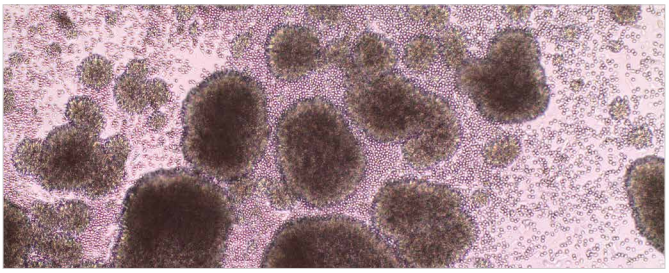


Figure 2. Human T Cells Isolated from a Leukopak

T cells isolated using the EasySep™ Human T Cell Isolation Kit (Catalog #17951), stimulated with ImmunoCult™ Human CD3/CD28 T Cell Activator (Catalog #10971), and cultured in ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981).

1. *Certain cryopreserved products are only available in select territories. Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*
2. *Fresh products currently available in the United States and Canada (excluding Quebec). Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*
3. *LRS cone, leukopak (LP), whole blood (WB), and bone marrow (BM) donors are screened for HIV-1, HIV-2, hepatitis B, and hepatitis C. Cryopreserved LP, WB, and BM: If the donor has tested negative within 90 days prior to donation, the product will be shipped with the negative test result and date of most recent viral testing on the CoA. Fresh LRS cone, LP, WB, and BM:* ***If the donor has been screened*** *within 90 days prior to donation and the results are negative, the product will be shipped with the negative test result and date of most recent viral testing on the Certificate of Analysis (CoA).* ***If the donor has not been screened*** *within 90 days prior to collection, a test sample will be taken at the time of collection and the product will be shipped before the screening results are available. In the event that a test result is positive, the customer will be contacted as soon as possible (usually within 2 - 4 business days from the time of shipment, and within 4 - 7 business days in the case of fresh LRS Cones). Cord blood (CB) donor screening: Maternal blood samples and/or samples of the donated cord blood are tested for HIV-1, HIV-2, hepatitis B, and hepatitis C. Cryopreserved CB: Products with negative test results are shipped with the CoA.*

All human primary cell products are ethically sourced using consent forms and protocols approved by either an Institutional Review Board (IRB), the Food and Drug Administration (FDA), the U.S. Department of Health and Human Services, and/or an equivalent regulatory authority, ensuring the protection of personal information and donor anonymity. Donations are performed in the United States in compliance with applicable federal, state, and local laws, regulations, and guidance. Donors are pre-screened for general health and viral status, including HIV-1, HIV-2, hepatitis B, and hepatitis C.[1] Additional screening or analysis is available upon request. Our Quality Assurance, Quality Control, and Regulatory Affairs departments are ready to assist you with any necessary documentation to meet specific institutional requirements.

Peripheral Blood Mononuclear Cells

PBMCs include lymphocytes, monocytes, dendritic cells, and hematopoietic progenitors and can be used in a variety of cell-based assays.[2,3] Large lots of cryopreserved PBMCs and purified cells are produced by processing entire full-size leukopaks. PBMC lot sizes are typically greater than 50 vials of 1 x 10^8 cells per vial, making it possible to reserve large numbers of vials from the same lot, thereby ensuring consistency across multiple experiments.

Normal PBMCs

Obtain cryopreserved PBMCs from a large donor pool with high-resolution HLA typing (A, B, C, DRB1, DRB3/4/5, and DQB1) and CMV status available upon request. Characterization criteria, including cell count, viability, and donor virus testing are included for all primary cell products.

Diseased State PBMCs

Access cryopreserved PBMCs isolated from donors with[4]:

- **Autoimmune and inflammatory disorders**: celiac disease, Crohn's disease, lupus (SLE), osteoarthritis, psoriasis, rheumatoid arthritis, and ulcerative colitis
- **Cancer**: acute myeloid leukemia (AML), myelofibrosis (MF), diffuse large B cell lymphoma (DLBCL), follicular lymphoma (FL), multiple myeloma (MM), chronic myelogenous leukemia (CML), acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), and mantle cell lymphoma (MCL), as well as liver, lung, breast, cervical, melanoma, ovarian, bladder, prostate, esophageal, colorectal, head & neck, gastric, kidney, pancreatic, and endometrial cancers
- **Diabetes**: Type I and Type II
- **Lung disorders**: asthma and chronic obstructive pulmonary disease (COPD)

Figure 3. Human Peripheral Blood Mononuclear Cells, Frozen (Catalog #70025)

Primary human mononuclear cells (MNCs) isolated from peripheral blood (PB) leukapheresis samples using density gradient separation and/or red blood cell lysis.

Figure 4. Diseased Human Peripheral Blood Products, Lung Cancer (A) PBMCs, Frozen (Catalog #200-0444), (B) Peripheral Blood Leukopak Collection, Fresh (Catalog #200-0300), and (C) Whole Peripheral Blood Collection, Heparin[5], Fresh (Catalog #200-0270)

Diseased human PB products are obtained from donors diagnosed with cancer using Institutional Review Board (IRB)-approved consent forms and protocols.

See pages 24 - 26 for a complete listing of mononuclear cells, isolated subsets, plasma, serum, and unprocessed tissues from normal and diseased donors, or visit **www.stemcell.com/primarycells**.

1. *Fresh Products: Donors are screened for HIV-1, HIV-2, hepatitis B, and hepatitis C. If the donor has been screened within 90 days prior to donation and the results are negative, the product will be shipped with the negative test result and date of most recent viral testing on the Certificate of Analysis (CoA). If the donor has not been screened within 90 days prior to collection, a test sample will be taken at the time of collection and the product will be shipped before the screening results are available. In the event that a test result is positive, the customer will be contacted as soon as possible (usually within 2 - 4 business days from the time of shipment, and within 4 - 7 business days in the case of fresh LRS Cones). Cryopreserved Products: Donors are screened for HIV-1, HIV-2, hepatitis B, and hepatitis C. If the donor has tested negative within 90 days prior to donation, the product will be shipped with the negative test result and date of most recent viral testing on the CoA. Cancer Blood Products - Fresh and Cryopreserved: Cancer patient donors are screened once initially for HIV-1, HIV-2, hepatitis B, and hepatitis C, with the test date and result recorded on the CoA. Only products with negative test results are shipped. Cord Blood Products - Cryopreserved: Testing for HIV-1, HIV-2, hepatitis B, and hepatitis C is performed on a sample of maternal blood and/or donated cord blood. Products with negative test results from the donor screening are shipped with the CoA.*
2. *Certain cryopreserved products are only available in select territories. Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*
3. *High-resolution HLA typing and CMV status are available upon request.*
4. *Diseased states indicate PBMCs obtained from donors diagnosed with given condition.*
5. *Heparin - sodium heparin.*

Cell Isolation

Highly Purified Cells for Any Downstream Application

Source | **Isolate** | Activate, Edit, Expand, & Differentiate | Analyze

Ensure your isolated cells are viable and suitable for downstream functional and biological studies using STEMCELL Technologies' fast, easy, and column-free cell separation technologies. Isolate highly purified cells from virtually any sample source, including peripheral blood mononuclear cells, spleen, whole blood, bone marrow, and leukopaks.

EasySep™

Fast and Easy Immunomagnetic Cell Isolation

EasySep™ isolates cells quickly and easily without the use of columns in as little as 8 minutes. With a simple pour, isolated cells are immediately ready for downstream use.

RoboSep™

Fully Automated Immunomagnetic Cell Isolation

RoboSep™-S and RoboSep™-16 fully automate all cell labeling and separation steps of the EasySep™ procedure, minimizing sample handling and freeing up technician time.

SepMate™

Hassle-Free PBMC Isolation

SepMate™ simplifies mononuclear cell isolation during density gradient centrifugation by eliminating the need to carefully layer samples or pipette off isolated cells. SepMate™ is suitable for in vitro diagnostic (IVD) applications.[1]

RosetteSep™

Unique Immunodensity Cell Isolation

RosetteSep™ isolates highly purified cells directly from human whole blood during density gradient centrifugation, reducing your cell isolation workflow to a single step.

1. *SepMate™ IVD is registered as an in vitro diagnostic (IVD) device intended for the isolation of mononuclear cells from human whole blood or cord blood by density gradient centrifugation in specific regions including Canada, the United States, Europe, Australia, Brazil, and Malaysia. In all other regions, SepMate™ RUO is available for research use only.* *Refer to page 17 for more information.*

EasySep™

Fast and Easy Immunomagnetic Cell Isolation

EasySep™ is a powerful immunomagnetic cell isolation platform that combines the specificity of monoclonal antibodies with the simplicity of a column-free magnetic system for fast and easy isolation of highly purified cell populations that are immediately ready for downstream applications.

Cells are targeted for either depletion (negative selection) or selection (positive selection) using antibody complexes directed to specific cell surface antigens. The antibody complexes link targeted cells to magnetic particles. Labeled cells are pulled to the sides of the tube when the sample is placed in an EasySep™ magnet. Magnetically labeled cells will remain in the tube while the unlabeled cells can be simply poured or pipetted off into a new tube.

Why Use EasySep™?

FAST AND EASY. Isolate cells from virtually any sample source in as little as 8 minutes without columns or washes.

GENTLE. Obtain viable and functional cells that are immediately ready for downstream applications.

HIGH PURITY. Achieve up to 99% cell purity with high recovery.

VIDEO
Fast and Easy Cell Isolation with EasySep™
www.stemcell.com/EasySepVideo

EasySep™ Magnets

	EasySep™ Magnet[1]	"The Big Easy" EasySep™ Magnet[2]	Easy 50 EasySep™ Magnet	Easy 250 EasySep™ Magnet	EasyEights™ EasySep™ Magnet	EasyPlate™ EasySep™ Magnet
						
Catalog #	18000	18001	18002	100-0821	18103	18102
Number of Samples	1	1	1	1	8 on each side = 16 total	96
Start Sample Cell Number Range[3]	0.1 - 2.5 x 10^8 cells per 5 mL tube	0.2 - 10 x 10^8 cells per 14 mL tube	0.5 - 20 x 10^8 cells per 50 mL tube	2.00 - 12.5 x 10^9 cells	0.125 - 2.0 x 10^8 cells per 5 mL tube 0.25 - 8.0 x 10^8 cells per 14 mL tube	0.025 - 0.2 x 10^8 cells per well
Collection Method	Pour off	Pour off	Pipette off	Pipette off	Pipette off	Pipette off

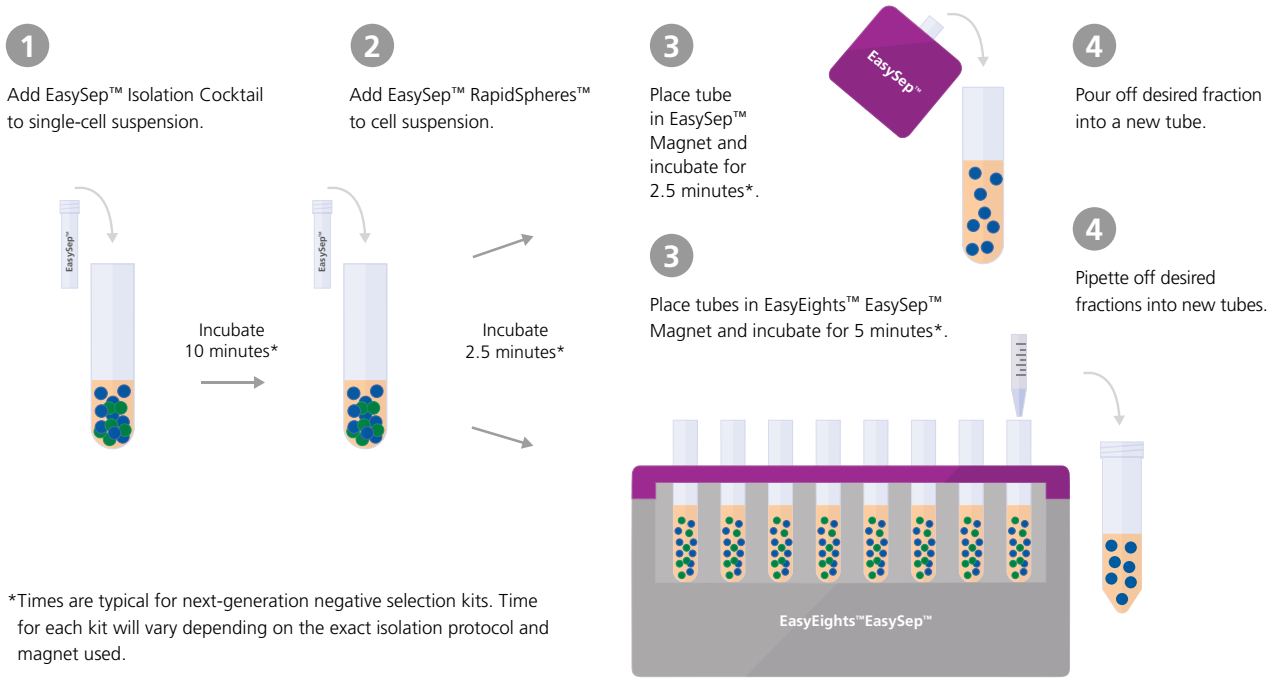
1. *Multiple EasySep™ magnets can be used together with the EasySep™ Multistand (Catalog #18010) for processing up to 4 samples simultaneously or with up to 6 EasySep™ EasyStands™ (Catalog #18130) for processing up to 6 samples (see page 46).*
2. *Multiple "The Big Easy" EasySep™ magnets can be used together with the EasySep™ Multistand (Catalog #18010) for processing up to 4 samples simultaneously (see page 46).*
3. *Minimum and maximum cell number range and volumes depend on the cell isolation kit, sample source, cell type being isolated, and flasks used during isolation.*

EasySep™ for Mouse Cells

Immunomagnetic Cell Isolation in as Little as 15 Minutes

EasySep™ kits are available for the isolation of mouse cells in as little as 15 minutes from a variety of sample sources, including spleen, bone marrow, lymph nodes, and whole blood. Our EasySep™ negative selection kits use biotinylated antibodies to target unwanted cells, while positive selection kits use an antibody complex to select cells of interest.

Typical EasySep™ Mouse Cell Isolation Protocol (Negative Selection)



*Times are typical for next-generation negative selection kits. Time for each kit will vary depending on the exact isolation protocol and magnet used.

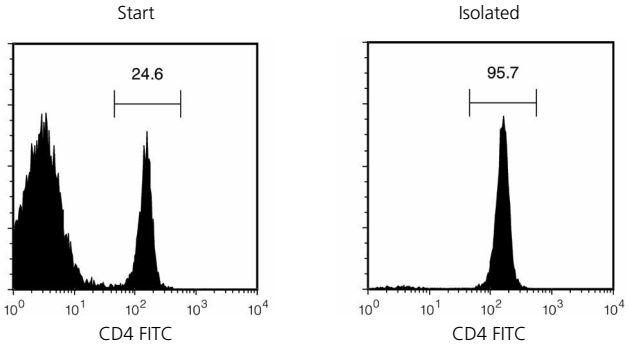


Figure 5. EasySep™ Mouse CD4⁺ T Cell Isolation Kit (Catalog #19852)

Starting with mouse splenocytes, the CD4⁺ T cell content of the isolated fraction typically ranges from 89 - 96% (gated on viable singlet cells). In the example above, the purities of the start and isolated fractions are 24.6% and 95.7%, respectively.

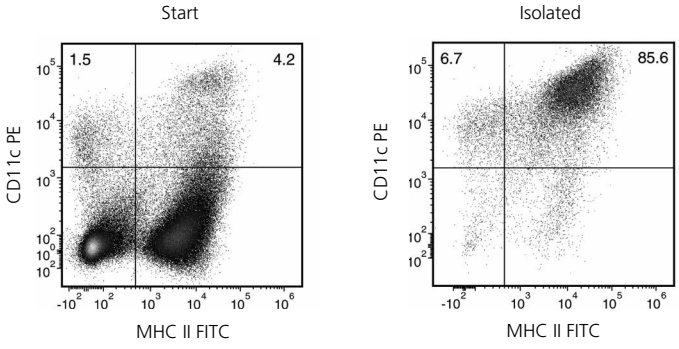


Figure 6. EasySep™ Mouse CD11c Positive Selection Kit II (Catalog #18780)

Starting with mouse splenocytes, the CD11c⁺ cell content of the isolated fraction typically ranges from 86.8 ± 9.7% (gated on viable singlet cells). In the example above, the purities of the start and isolated fractions are 5.7% and 92.3%, respectively.

EasySep™ for Human Cells

Immunomagnetic Cell Isolation in as Little as 8 Minutes

EasySep™ kits are available for the isolation of human cells from a variety of sample sources, including peripheral blood mononuclear cells (PBMCs), whole blood, leukopaks, bone marrow, and cord blood. Cells of interest are targeted with antibody complexes and magnetic particles for negative or positive selection.

Isolate highly purified, untouched, functional human immune cells in as little as 8 minutes with our next-generation EasySep™ cell isolation kits.

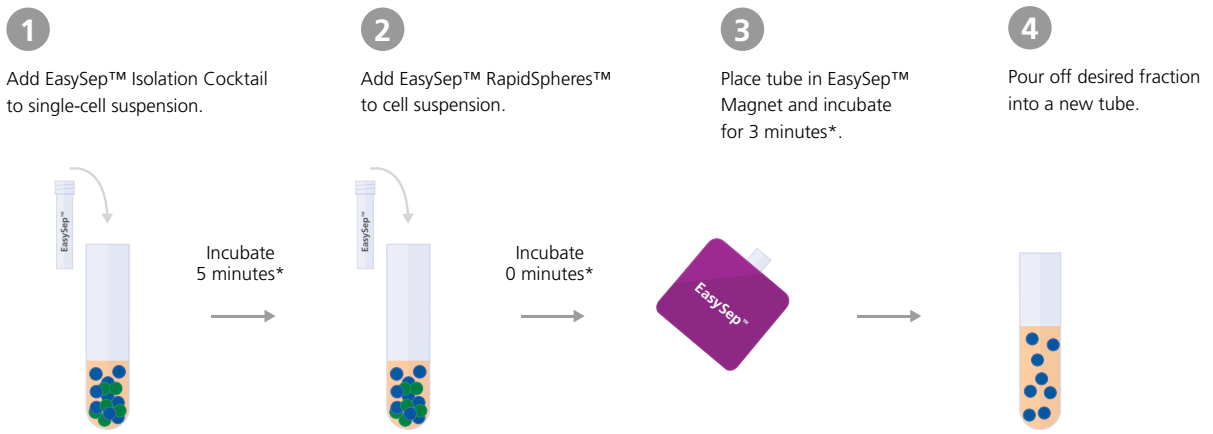
Did You Know?

There are more cell isolation options than ever with EasySep™.

EasySep™ Direct: isolate cells straight from whole blood without the need for lysis or centrifugation.

EasySep™ Release: isolate unique and rare cell types by quickly and easily removing magnetic particles from positively selected cells.

Typical EasySep™ Human Cell Isolation Protocol (Negative Selection)



*Times are typical for next-generation negative selection kits. Time for each kit will vary depending on the exact isolation protocol and magnet used. No particle incubation step is required for next-generation negative selection protocols.

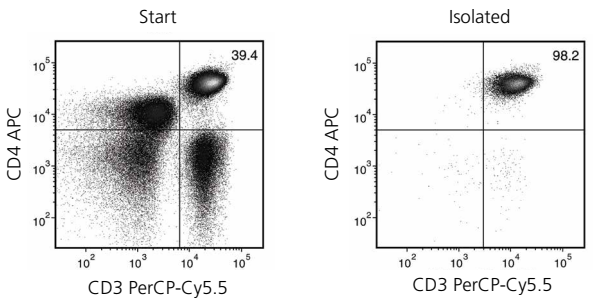


Figure 7. EasySep™ Human CD4⁺ T Cell Isolation Kit (Catalog #17952)

Starting with human peripheral blood mononuclear cells, the CD4⁺ T cell (CD3⁺CD4⁺) content of the isolated fraction is typically 94.8 ± 2.3% (mean ± SD; gated on viable singlet cells). In the example above, the purities of the start and isolated fractions are 39.4% and 98.2%, respectively.

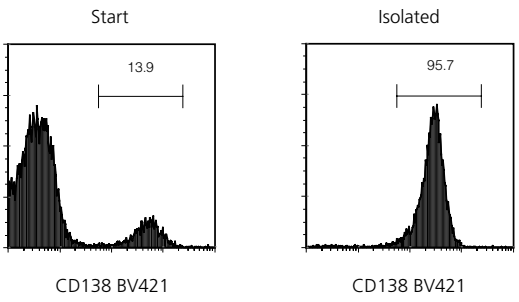


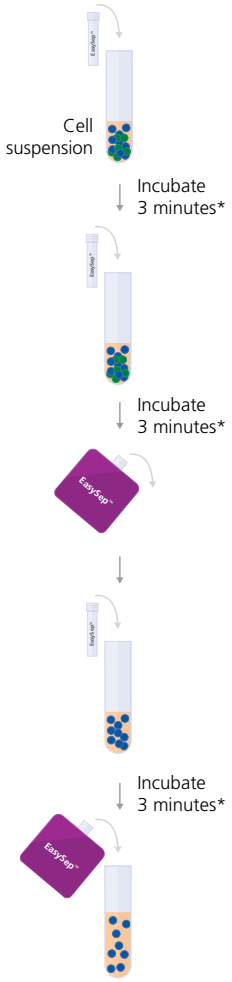
Figure 8. EasySep™ Human Whole Blood and Bone Marrow CD138 Positive Selection Kit II (Catalog #17887)

Starting with fresh whole blood spiked with a multiple myeloma cell line, U266, the CD138⁺ cell content of the selected fraction typically ranges from 83.7 - 98.3%. In the above example, the purities of the start and final isolated fractions are 13.9% and 95.7%, respectively.

EasySep™ Release

EasySep™ Release allows for the positive selection of human immune cells followed by the release of bound magnetic particles from your highly purified, isolated cells.

Typical EasySep™ Release Protocol



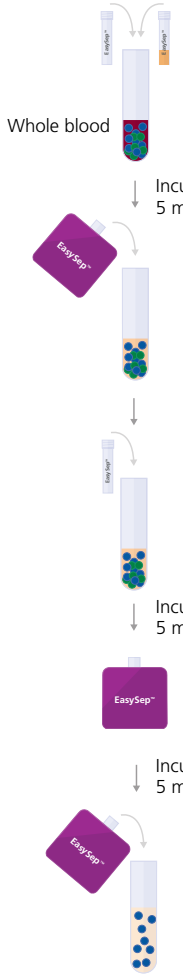
1. Add EasySep™ Release Positive Selection Cocktail.
2. Add EasySep™ Releasable RapidSpheres™.
3. Place tube in EasySep™ Magnet and incubate for 5 minutes.
   Pour off to discard supernatant.
   Resuspend cells and repeat for a total of 3 x 5-minute separations.
4. Resuspend cells in EasySep™ Release Buffer.
5. Place tube in EasySep™ Magnet and incubate for 5 minutes.
6. Pour off desired fraction into a new tube.

*Times are typical for EasySep™ Release kits. Times for each kit will vary depending on the exact isolation protocol.

EasySep™ Direct

EasySep™ Direct immunomagnetically depletes red blood cells and unwanted cells in a single step without density gradient centrifugation, sedimentation, RBC lysis, or other pre-processing steps.

Typical EasySep™ Direct Protocol



1. Add EasySep™ Direct Isolation Cocktail and EasySep™ Direct RapidSpheres™ to whole blood.
2. Place tube in EasySep™ Magnet and incubate for 5 minutes*.
   Pour off desired fraction into a new tube.
3. Add EasySep™ Direct RapidSpheres™.
4. Place tube in EasySep™ Magnet.
5. Pour off desired fraction into a new tube.

*Times are typical for EasySep™ Direct kits. Times for each kit will vary depending on the exact isolation protocol.

Why Use EasySep™ Release?

PARTICLE-FREE. Culture and analyze your positively selected cells without magnetic particles.

FLEXIBLE. Perform sequential positive selections to isolate unique and complex cell types.

FAST AND EASY. Obtain highly purified cells free of magnetic particles in under 30 minutes.

Why Use EasySep™ Direct?

GENTLE. Isolate cells directly from whole blood without the need for lysis or centrifugation.

COLUMN-FREE. Eliminate the risk of columns clogging and obtain viable, functional cells.

HIGH PURITY. Obtain highly purified cells that are immediately available for downstream applications.

Immune Cells Isolated with EasySep™

Viable and Functional Cells for Your Immunology Research

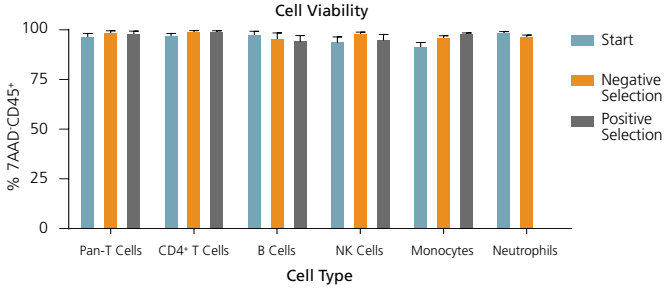


Figure 9. Cells Isolated Using EasySep™ Show Comparable Viability to Starting Samples

Immune cells were isolated from processed leukapheresis or peripheral blood samples using EasySep™ positive selection or negative selection kits. Pre- and post-isolation samples were stained with the cell viability dye 7-AAD and appropriate cell surface markers, and were assessed by flow cytometry. Cells isolated using EasySep™ showed no significant decrease in viability compared to the starting samples. Data shown as mean ± SEM; n = 3 - 7.

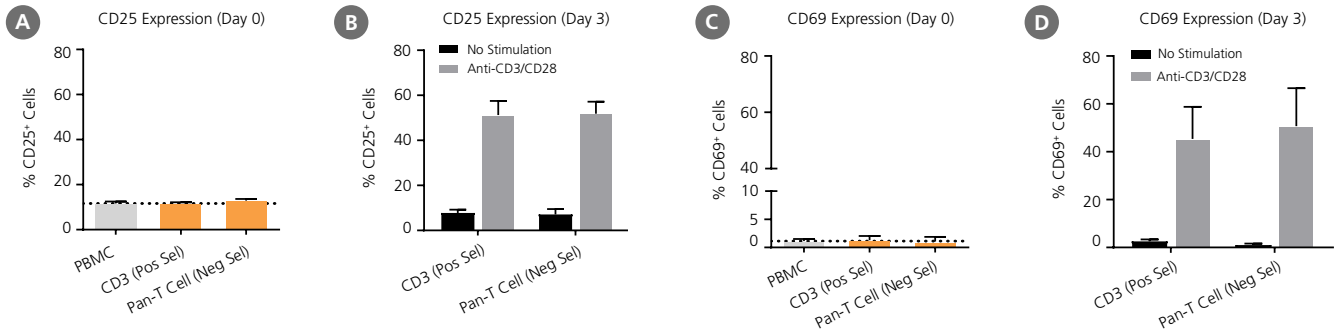


Figure 10. Human T Cells Isolated Using EasySep™ Show Appropriate Activation Status

T cells isolated from PBMCs using EasySep™ positive selection ("Pos Sel") or negative selection ("Neg Sel") kits were assessed for CD25 and CD69 expression immediately after isolation (Day 0) and after 3 days in culture with or without CD3/CD28 stimulation. (A,C) At Day 0, isolated T cells express similar levels of CD25 and CD69 compared to unmanipulated CD3⁺ PBMCs. (B,D) At Day 3, cells remain unactivated in the absence of stimulation, and upregulate activation markers CD25 and CD69 when stimulated. Data shown as mean ± SEM.

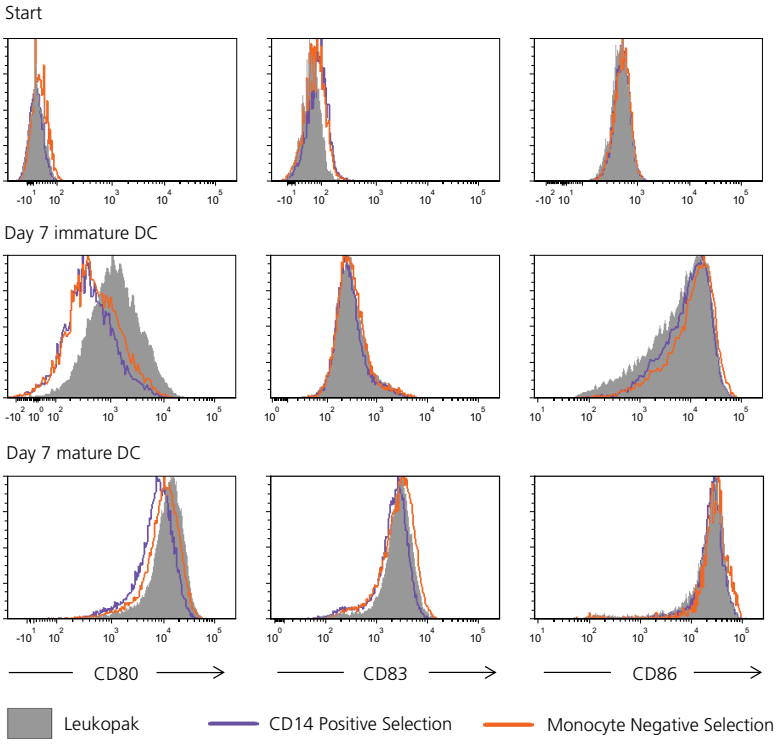


Figure 11. Human Monocytes Isolated Using EasySep™ Differentiate and Mature Appropriately upon Stimulation

Human monocytes were isolated using EasySep™ or competitor products and then cultured and differentiated into mature dendritic cells (DCs). On Day 0, cells from a leukopak were plated and monocytes were adherence selected for 2 hours. Non-adherent cells were washed away and adherent cells were cultured for 7 days. On Day 5, cells were cultured with maturation supplement for 2 days (mature DCs) or without maturation supplement (immature DCs). The expression of CD80, CD83, and CD86 in immature and mature DCs was determined by flow cytometry. At Day 7, cells expressed the mature DC markers CD80, CD83, and CD86.

Gene Expression Profiling of Immune Cells Isolated with EasySep™

Pre-enriching your samples with EasySep™ can make your next-generation sequencing workflow more efficient by improving the sequencing coverage in your cells of interest, saving you time and money.

Cells isolated using EasySep™ kits are fully compatible with next-generation sequencing workflows, including library preparation, amplification, and sequencing, resulting in high-quality reads (Table 1). Gene expression of CD4⁺ T cells isolated using EasySep™ are similar to the PBMC control (Figure 10), indicating that EasySep™ cell isolation protocols do not introduce artifacts that affect gene expression.

Table 1. Using the 10x Genomics Chromium™ Platform to Compare Single-Cell Gene Expression Profiles of EasySep™-Isolated CD4⁺ Cells to PBMC Controls

	PBMC Control	Positive Selection[a]	Negative Selection[b]	Positive Selection with Particle Release[c]
Reads Mapped to Genome (%)	88.70%	90.60%	88.40%	91.10%
Valid Barcodes (%)	96.90%	97.00%	96.90%	96.90%
Q30 Bases in Barcode (%)	96.70%	96.80%	96.70%	96.80%

Human CD4⁺ cells were isolated by negative selection or positive selection using a variety of EasySep™ kits containing different types of magnetic particles:

[a]*EasySep™ Dextran RapidSpheres™*
[b]*EasySep™ D Magnetic Particles*
[c]*EasySep™ Releasable RapidSpheres™*

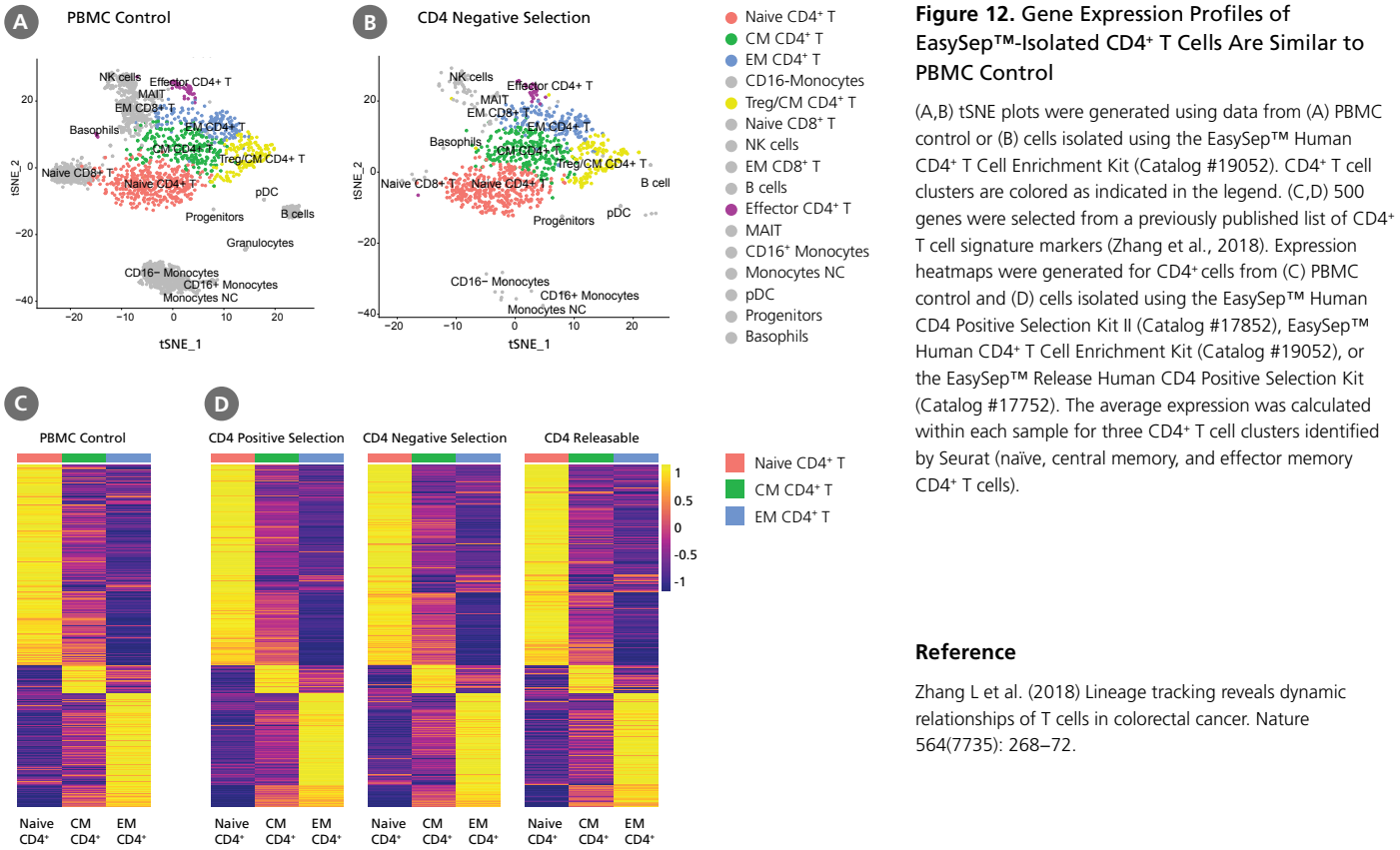


Figure 12. Gene Expression Profiles of EasySep™-Isolated CD4⁺ T Cells Are Similar to PBMC Control

(A,B) tSNE plots were generated using data from (A) PBMC control or (B) cells isolated using the EasySep™ Human CD4⁺ T Cell Enrichment Kit (Catalog #19052). CD4⁺ T cell clusters are colored as indicated in the legend. (C,D) 500 genes were selected from a previously published list of CD4⁺ T cell signature markers (Zhang et al., 2018). Expression heatmaps were generated for CD4⁺ cells from (C) PBMC control and (D) cells isolated using the EasySep™ Human CD4 Positive Selection Kit II (Catalog #17852), EasySep™ Human CD4⁺ T Cell Enrichment Kit (Catalog #19052), or the EasySep™ Release Human CD4 Positive Selection Kit (Catalog #17752). The average expression was calculated within each sample for three CD4⁺ T cell clusters identified by Seurat (naïve, central memory, and effector memory CD4⁺ T cells).

Reference

Zhang L et al. (2018) Lineage tracking reveals dynamic relationships of T cells in colorectal cancer. Nature 564(7735): 268–72.

RoboSep™

Fully Automated Immunomagnetic Cell Isolation

RoboSep™ instruments offer true walk-away automation of immunomagnetic cell separation. Using EasySep™ reagents, RoboSep™-S and RoboSep™-16 perform all cell labeling and magnetic isolation steps for up to four and sixteen samples, respectively. Sample handling is minimized and the use of disposable tips in these column-free systems ensures that isolated cells of interest are immediately available for any downstream application.

RoboSep™-S

The compact design of RoboSep™-S brings the convenience of automated cell isolation to any busy laboratory.

RoboSep™-16

The enhanced liquid-handling capabilities of RoboSep™-16 allow high-volume users to efficiently isolate desired cells with speed and confidence.

Why Use RoboSep™?

FULLY AUTOMATED. Just load reagents and samples and walk away.

SIMULTANEOUS OR SEQUENTIAL CELL ISOLATION. Perform simultaneous cell isolations for up to 4 samples using RoboSep™-S and 16 samples using RoboSep™-16, or sequentially isolate different cell types from the same sample.

NO CROSS-CONTAMINATION. Eliminate the risk of cross-contamination with a column-free system and single-use disposable tips.

VERSATILE. Isolate virtually any cell type from a wide range of sample sources and sizes using positive or negative selection protocols.

How RoboSep™ Works

RoboSep™-S and RoboSep™-16 fit easily into the workflow of any lab that needs the speed, reliability, and convenience of automated cell isolation. Start your cell isolation protocol with as little as 5 minutes of "hands-on" time with RoboSep™-S and RoboSep™-16.

Typical RoboSep™-S Protocol

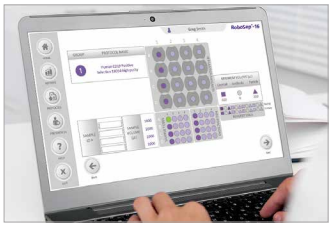
1. Select protocol. Load sample, EasySep™ reagents, buffer, and tips in carousel.

2. Press "Run".

3. Return in 25 to 60 minutes to collect your separated cells.

Typical RoboSep™-16 Protocol

1. Select protocol. Load sample, EasySep™ reagents, buffer, and tips.



2. Press "Run".

3. Return in 25 to 60 minutes to collect your separated cells.

PRODUCT TOUR
See RoboSep™ Instruments in Action
www.RoboSep.com

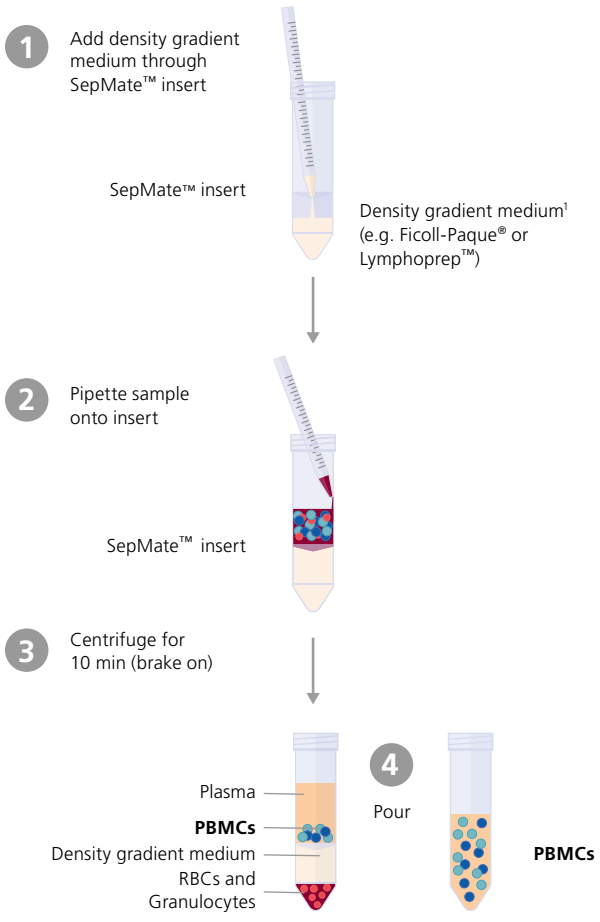
SepMate™

Hassle-Free PBMC Isolation

SepMate™ is a specialized tube for fast and easy PBMC isolation in just 15 minutes. The SepMate™ tube contains a unique insert that prevents the density gradient medium (e.g., Ficoll-Paque® or Lymphoprep™) and blood sample from mixing. The density gradient medium is pipetted through a central hole in the insert, and the sample is poured or rapidly pipetted on top of the insert. This eliminates the need to carefully layer the sample directly onto the density gradient medium, an otherwise time-consuming and highly laborious step. Only 10 minutes of centrifugation are required, and this step can be carried out with the brake on, further reducing the total time necessary for separation. After centrifugation, plasma and PBMCs are simply poured into a new tube.

SepMate™ is registered as an in vitro diagnostic (IVD) device in select regions.[1,2]

Typical SepMate™ Protocol



Why Use SepMate™?

EASY. Avoid the need for slow and laborious sample layering over the density gradient medium.

FAST. Isolate PBMCs directly from whole blood in just 15 minutes.

CONSISTENT. Eliminate errors and minimize variability between separations.

VERSATILE. Combine with RosetteSep™ to isolate purified cell subsets from whole blood in 25 minutes.[3]

REGISTERED. Use with whole blood or bone marrow samples for in vitro diagnostic (IVD) applications.[1]

VIDEO
Isolate PBMCs from Whole Blood in Just 15 Minutes
www.stemcell.com/SepMateVideo

1. *SepMate™ (IVD) is available only in Canada, the United States, Europe, Australia, Brazil, and Malaysia, where it is registered as an in vitro diagnostic (IVD) device for the isolation of mononuclear cells from human whole blood or bone marrow by density gradient centrifugation. This product is also available in China where it is considered a non-medical device by the China Food and Drug Administration (CFDA), and should therefore be used as general laboratory equipment.*
2. *SepMate™ RUO is available in regions where SepMate™ is not registered as an IVD device and is for research use only.*
3. *Select RosetteSep™ products carry the CE mark and are suitable for IVD applications in countries where the CE marking is recognized.*

Did You Know?

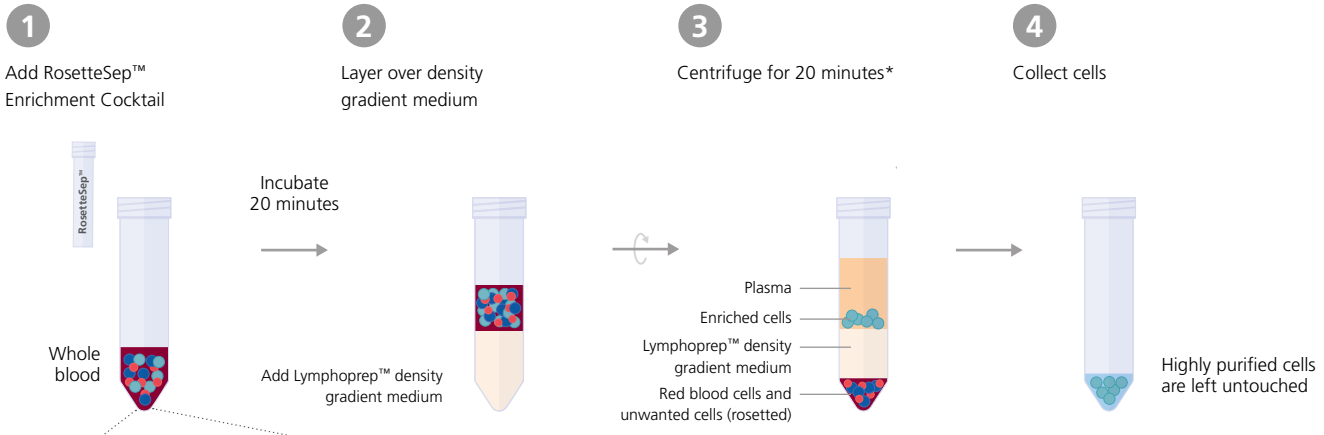
Lymphoprep™ has the same density as Ficoll-Paque®, is more cost-effective, and can be substituted for Ficoll-Paque® without any need to change your existing protocols.

RosetteSep™

Unique Immunodensity Cell Isolation

RosetteSep™ is a fast and easy immunodensity procedure for the isolation of untouched cells directly from whole blood. By crosslinking unwanted cells to red blood cells (RBCs) present in the sample, RosetteSep™ eliminates the need for a separate magnetic separation step because cells are purified during standard density gradient centrifugation. This approach significantly reduces sample handling time and maximizes convenience.

Typical RosetteSep™ Protocol



*Use SepMate™ to reduce centrifugation time to 10 minutes with brake on.

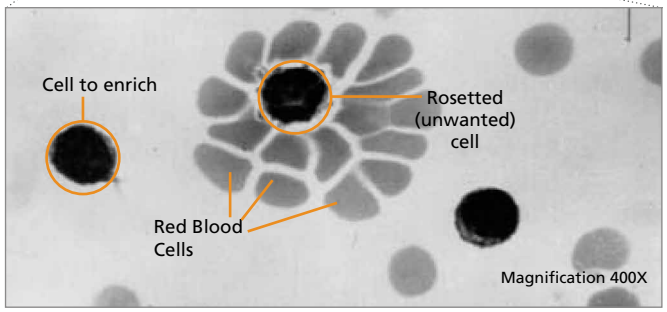


Figure 13. Micrograph of a Blood Sample After Addition of the RosetteSep™ Cocktail, and Prior to Density Gradient Centrifugation

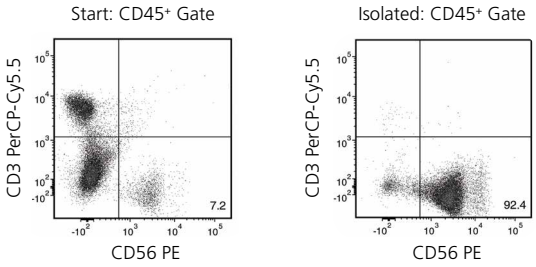


Figure 14. RosetteSep™ Human NK Cell Enrichment Cocktail (Catalog #15025)

Starting with whole peripheral blood, the NK cell content (gated on CD45+ cells) of the isolated fraction typically ranges from 80 - 98%. In the example above, the purities of the start and isolated fractions are 7.2% and 92.4%, respectively.

RosetteSep™ and SepMate™

Simplified and Standardized Cell Isolation

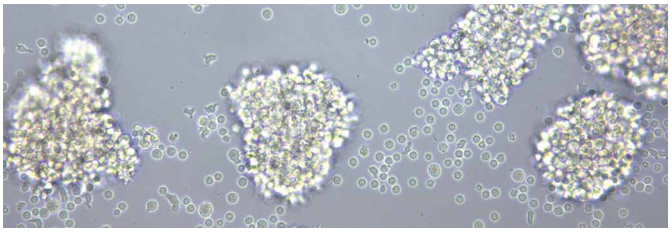
RosetteSep™ is easily combined with SepMate™ to rapidly and reproducibly isolate PBMC subsets from whole blood. By using the unique SepMate™ tube, sample throughput is increased and errors associated with improper sample layering are eliminated. This allows even users with minimal training to consistently perform cell isolation by density gradient centrifugation in a busy laboratory environment.

Specialized Cell Culture Reagents

For Cell Activation, Expansion, Differentiation, and Gene Editing

Source | Isolate | **Activate, Edit, Expand, & Differentiate** | Analyze

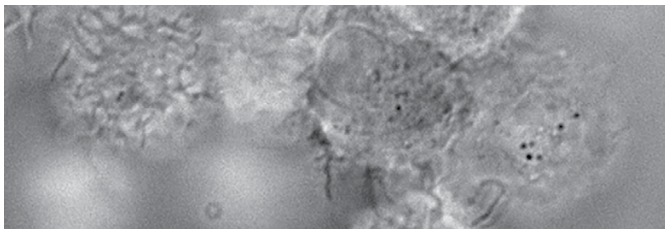
With high-quality and viable cells as the foundation for your research, integrating STEMCELL Technologies' cell culture reagents into your workflow will ensure reliable results. These specialized media, activators, supplements, and tools allow you to culture immune cells under defined stimulatory conditions to activate, edit, expand, or differentiate the cell population of interest. Refer to page 48 for more information.



ImmunoCult™ for B, NK, and T Cell Research

Advance your immunology and cell therapy research with ImmunoCult™ activators, expansion medium, and differentiation supplements.

- Activate and expand human B, NK, and T cells without the use of magnetic beads, feeder cells, serum, or antigens
- Eliminate variation by using serum- and xeno-free expansion medium.
- Generate cells immediately ready for downstream applications such as T cell and B cell engineering



ImmunoCult™ for Macrophage and Dendritic Cell Research

Streamline your research on macrophages and dendritic cells (DCs) with ImmunoCult™:

- Generate macrophages and mature, as well as immature, DCs from isolated monocytes.
- Obtain high yields of macrophages and DCs with the desired phenotype and function.

For more information, please visit **www.ImmunoCult.com**

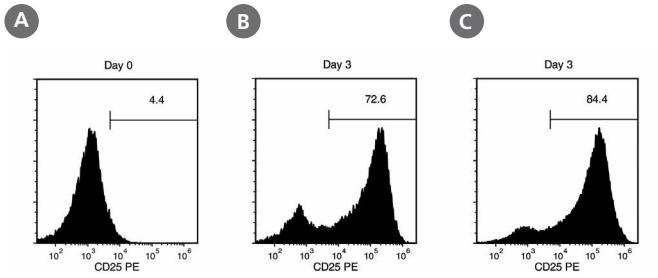


Figure 15. T Cells Are Activated When Stimulated with ImmunoCult™ Human CD3/CD28 or CD3/CD28/CD2 T Cell Activator

EasySep™-isolated T cells were cultured on day 0 with either ImmunoCult™ Human CD3/CD28 T Cell Activator (Catalog #10971) or ImmunoCult™ Human CD3/CD28/CD2 T Cell Activator (Catalog #10970) in ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981). Cells were gated on $CD4^+$ T cells and $CD8^+$ T cells and T cell activation was assessed by $CD25^+$ expression on day 0 and day 3. At the start of culture, the $CD25^+$ cell population was (A) 5.63 ± 2.4% (mean ± SD). After three days of activation, the $CD25^+$ cell population was (B) 75.4 ± 13.8% (mean ± SD) when activated with ImmunoCult™ Human CD3/CD28 T Cell Activator and (C) 88.8 ± 3.2% (mean ± SD) when activated with ImmunoCult™ Human CD3/CD28/CD2 T Cell Activator.

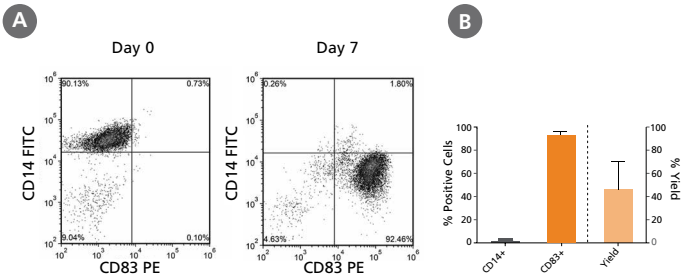


Figure 16. Mature DCs Generated with ImmunoCult™-ACF Dendritic Cell Medium and Supplements Show Desired Phenotype

EasySep™-isolated monocytes were cultured and differentiated into mature DCs following the protocol specified in the product information sheet (Catalog # 10985). (A) Representative flow cytometry plots of CD14 and CD83 expression in cells at day 0 (monocytes) and at day 7 (mature DCs). (B) The average percentage of CD14 and CD83 expression in cells at day 7 (mature DCs) was determined by flow cytometry. At day 7, a total of 93 ± 5% of the cells in culture expressed the mature DC marker CD83 and only 1 ± 1% of cells still expressed the monocyte marker CD14 (mean ± SD, n = 39). Yield of mature DCs was determined by dividing the count of total viable cells at day 7 by the count of viable monocytes used at day 0. At day 7, the yield of viable mature DCs was 45 ± 25% (mean ± SD, n = 39).

Differentiation of hPSCs to Immune Cells

The ability to differentiate human pluripotent stem cells (hPSCs) into immune cells provides a useful tool for developing adoptive immunotherapies in cancer patients as well as for research into the basic biology of these cells. STEMdiff™ immune kits facilitate the differentiation of hPSCs into T cells, natural killer (NK) cells, monocytes, or microglia—without the use of stromal cells and in serum-free culture conditions.

STEMdiff™ for T Cell or NK Cell Research

Consistently differentiate embryonic stem (ES) and induced pluripotent stem (iPS) cells into T cells or NK cells with high yield and frequency.

- Eliminate variation introduced by serum and stromal cell lines by using serum- and feeder-free conditions.
- Produce approximately 230 $CD56^+$ NK cells or 60 $CD4^+CD8^+$ double-positive (DP) T cells per input hPSC-derived $CD34^+$ cell.
- Reduce variability by producing uniform aggregates for embryoid body (EB) formation with AggreWell™.
- Avoid extra passaging steps required with stromal cell-based cultures.

For more information, please visit **www.stemcell.com/STEMdiff-T** or **www.stemcell.com/STEMdiff-NK**.

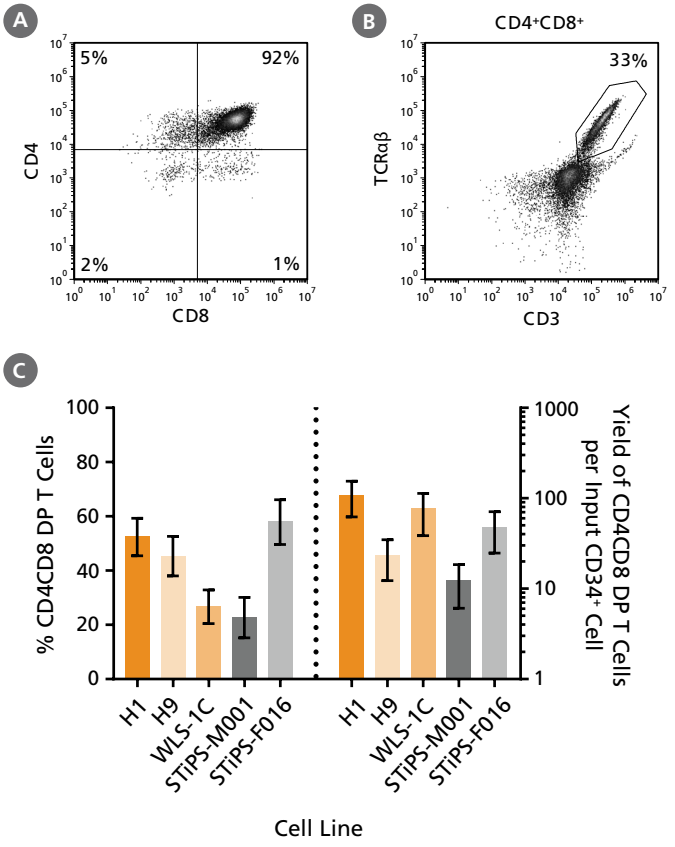


Figure 17. Generation of $CD4^+CD8^+$ DP T Cells From Human hPSCs After a Total of 40 Days of Culture Using the STEMdiff T Cell Kit

DP T cells were differentiated from hPSCs using STEMdiff™ T Cell Kit (Catalog #100-0194). Cells were harvested and analyzed for expression of CD3, CD4, CD8, and TCRαβ by flow cytometry. (A,B) Representative flow cytometry plots are shown for ES (H1)-derived cells. (C) The average frequency of viable $CD4^+CD8^+$ DP T cells on day 28 ranged between 23% and 58%, and the average yield of DP T cells produced per input hPSC-derived $CD34^+$ cell was between 12 and 108. Data are shown as mean ± SEM (n = 6 - 17).

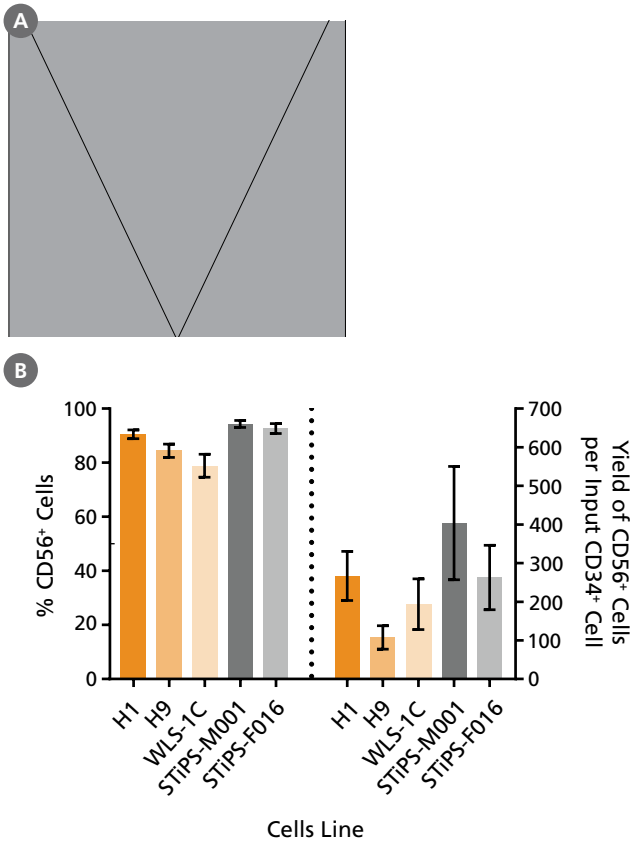


Figure 18. hPSCs Differentiate into $CD56^+$ NK Cells After 40 Days of Culture

hPSCs were cultured using STEMdiff™ NK Cell Kit (Catalog #100-0170) for a total of 40 days. Cells were harvested and analyzed for expression of CD56 and CD16 by flow cytometry. (A) Representative flow cytometry plot is shown for ES (H1)-derived cells. (B) After 40 days of culture, the average frequency of viable $CD56^+$ NK cells from hPSC-derived $CD34^+$ cells ranged between 79% and 94%. The average yield of $CD56^+$ cells produced per hPSC-derived $CD34^+$ cell was between 108 and 404. Data are shown as mean ± SEM (n = 7 - 18).

STEMdiff™ for Monocyte Research

Reliably generate millions of CD14+ monocytes from embryonic stem (ES) and induced pluripotent stem (iPS) cell lines.

- Generate up to 7 million CD14+ monocytes per plate in just 14 - 23 days.
- Eliminate variation introduced by serum and feeder cells by using serum- and feeder-free conditions.
- Produce monocytes in a simple monolayer culture for easier harvest of suspended cells.
- Achieve robust generation of monocytes across multiple ES and iPS cell lines.

The feeder-free and serum-free conditions ensure a robust differentiation of hPSC-derived monocytes that can be further differentiated to dendritic cells or macrophages using ImmunoCult™ Dendritic Cell Culture Kit or ImmunoCult™-SF Macrophage Medium, respectively (see page 19).

For more information, please visit
www.stemcell.com/STEMdiff-Monocyte.

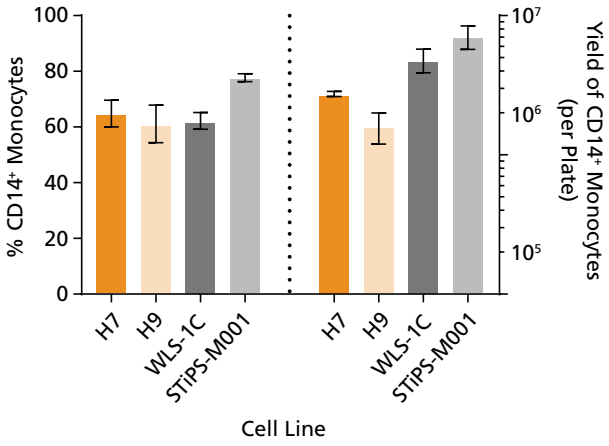


Figure 19. STEMdiff Monocyte Kit Enables Robust and Efficient Generation of CD14+ Monocytes

hPSCs were differentiated to monocytes using STEMdiff™ Monocyte Kit (Catalog #05320) and harvested every 2 - 3 days between days 17 and 23. The average frequency of viable CD14+ monocytes at the peak harvest was 61 - 78% and the average yield of CD14+ monocytes produced per 6-well plate was between 1.6 x 10^6 and 7.1 x 10^6 cells.

STEMdiff™ for Microglia Research

Differentiate greater than 80% of source hematopoietic progenitor cells (HPCs) into microglia, with few contaminating macrophages or monocytes.

- Integrate seamlessly into your STEMdiff™ Hematopoietic Kit HPC workflow.
- Generate more than 4 million microglia per differentiation kit.
- Replace more complex differentiation protocols with an easy-to-use culture system.
- Produce microglia capable of phagocytosis and activation, and co-culture with various neural cell types.

For more information, please visit
www.stemcell.com/STEMdiff-Microglia.

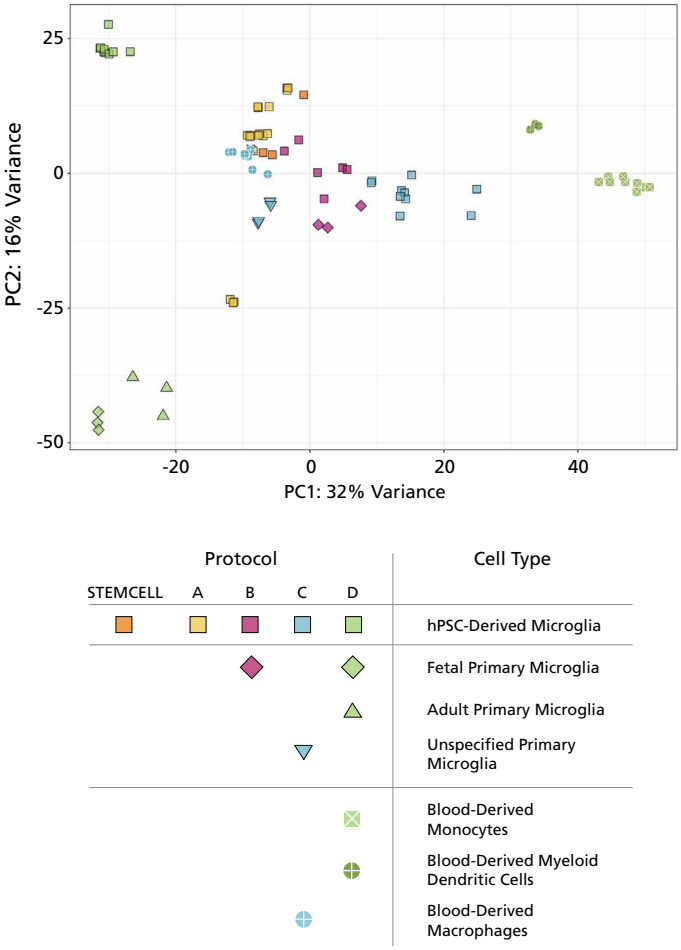
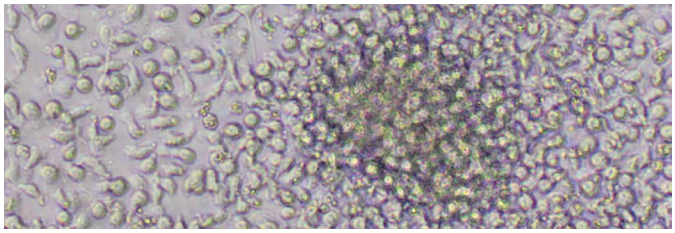


Figure 20. Microglia Generated with STEMdiff™ Microglia Culture System Are Transcriptionally Similar to Other hPSC-Derived Microglia and Distinct from Other Immune Cell Types

RNA-seq datasets were extracted from 4 different publications (protocols A - D) that generated hPSC-derived microglia and their transcriptional profiles were compared to those of blood-derived monocytes, macrophages, and dendritic cells (N = 500 genes). Principal component analysis (PCA) was performed on these data along with RNA-seq data from microglia generated with STEMdiff™ Microglia Culture System. The hPSC-derived microglia from STEMdiff™ Microglia Culture System had transcriptional profile PC scores closest to those from protocols A and B.

TECHNICAL BULLETIN
STEMdiff™ Monocyte

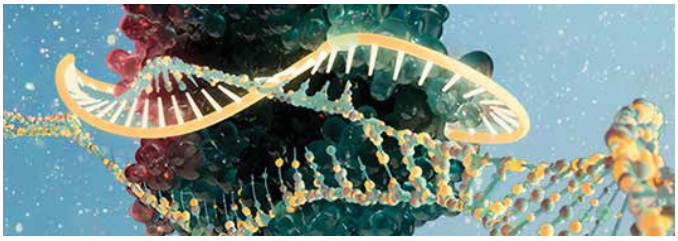


StemSpan™ for B, NK, and T Cell Research

Expand your research into the development of B, NK, and T lineage cells from hematopoietic stem and progenitor cells (HSPCs) with StemSpan™ media and supplement kits:

- Differentiate B, NK, or T cells from $CD34^+$ HSPCs without the use of stromal cells or serum.
- Obtain high yields of $CD19^+$ B cells, $CD56^+$ NK cells, or $CD4^+CD8^+$ DP T cells per input $CD34^+$ cell.

For the complete protocol, visit **www.stemcell.com/CRISPR-Tcells**.



ArciTect™ for CRISPR-Cas9 Genome Editing

Perform high-efficiency genome editing of primary human T cells using CRISPR-Cas9. ArciTect™ is a ribonucleoprotein (RNP)-based system that enables you to:

- Maximize delivery and expression in difficult-to-manipulate cell types by using RNP complexes.
- Get your results faster with ready-to-use purified Cas9 proteins and synthetic guide RNAs.
- Minimize potential off-target cutting with timely degradation of the RNP complex.

For more information, please visit **www.stemcell.com/ArciTect**.

Cytokines

Activate, expand, and differentiate your cells with the right cytokines, chemokines, and growth factors. These high-quality reagents ensure reproducibility across a variety of applications for immunology research.

To learn more, see page 48 or visit www.stemcell.com/cytokines.

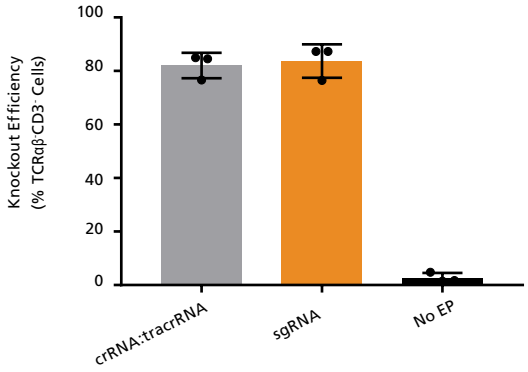


Figure 21. The ArciTect™ CRISPR-Cas9 System Enables Efficient TRAC Knockout in Human Primary T Cells

Human T cells were activated with ImmunoCult™ Human CD3/CD28 T Cell Activator (Catalog #10971) for 3 days and the cells were electroporated with ArciTect™ RNP-complexes containing either ArciTect™ crRNA:tracrRNA duplexes or sgRNA targeting the T cell receptor (TCR) alpha constant (TRAC) locus. Knockout efficiency was assessed 3 days after electroporation by flow cytometry analysis of TCRαβ and CD3 expression; n = 3 donors. Control samples were not electroporated (no EP). Error bars represent standard deviation.

Take the Guesswork Out of Cell Analysis

Ensure Consistent Downstream Cell Analyses with Compatible Products and Services for Your Workflow

Source | Isolate | Activate, Edit, Expand, & Differentiate | **Analyze**

Antibodies

Using the right antibody is an essential component for your research. Ensure that your downstream cell analysis, including phenotyping and purity assessments, work consistently by choosing from a line of high-quality primary and secondary antibodies that are verified to work with our cell isolation and cell culture reagents*.

Learn more at **www.stemcell.com/antibodies**.

*STEMCELL Technologies' antibodies are verified for use with STEMCELL's cell isolation products for select applications. Please consult the product information sheet for a complete list of verified applications.

GloCell™ Fixable Viability Dyes

Easily assess cell viability with GloCell™ fixable viability dyes. GloCell™ dyes irreversibly bind intracellular and cell surface amine groups, are resistant to washing and fixation, and are compatible with flow cytometry and intracellular staining protocols. Stained cells can also be cryopreserved without loss of fluorescence intensity.

Learn more at **www.stemcell.com/GloCell**.

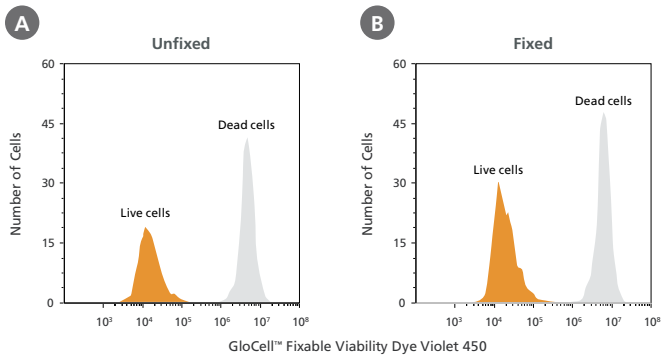


Figure 22. Fluorescence Signals in Unfixed and Fixed Cells Are Preserved when Using GloCell™ Fixable Viability Dye.

A mixture of live and dead (heat-shocked at 95°C for 30 minutes) WLS-1C human induced pluripotent stem (iPS) cells were stained with GloCell™ Fixable Viability Dye Violet 450 (Catalog #75009) with or without fixation in 4% paraformaldehyde. After staining, (A) unfixed and (B) fixed cells were immediately analyzed by flow cytometry.

Annexin V for Detecting Cell Apoptosis

Annexin V is a cell death marker that can be used to specifically detect early apoptotic mammalian cells. The Annexin V Apoptosis Detection Kit can be used for the combined detection of early-stage cell apoptosis using Annexin V, and late-stage cell apoptosis or necrosis using both Annexin V and 7-Aminoactinomycin D (7-AAD).

ELISA Kits

The enzyme-linked immunosorbent assay (ELISA) is a highly sensitive assay to detect and quantify cytokines, hematological factors, hormones, peptides, and immunoglobulins produced by cells. Use ELISA kits that are compatible with your workflow and feature low intra- and inter-assay variability for accurate, precise, and consistent analyte quantification.

Learn more at **www.stemcell.com/ELISA**.

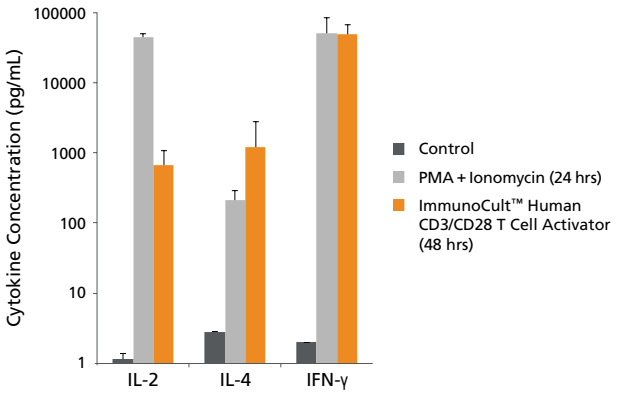


Figure 23. ELISA Kits Measure IL-2, IL-4, and IFN-γ Secreted by Activated Human T Cells

T cells were isolated from human apheresed blood using EasySep™ Human T Cell Isolation Kit and cultured in either RPMI Medium supplemented with 10% FBS, with or without 40 ng/mL PMA and 1 ug/mL Ionomycin, or ImmunoCult™-XF T Cell Expansion Medium, with or without ImmunoCult™ Human CD3/CD28 T Cell Activator. Supernatants were collected, and concentrations of secreted cytokines were determined using the Human IL-2 ELISA Kit, Human IL-4 ELISA Kit, and Human IFN-γ ELISA Kit. All three cytokines were highly expressed by the activated cells compared to unstimulated control cultures.

Contract Assay Services

Contract Assay Services (CAS) is a contract research organization (CRO) within STEMCELL Technologies. CAS combines the power of specialized STEMCELL products with the practical knowledge of our scientists to provide both standardized and customized assay services.

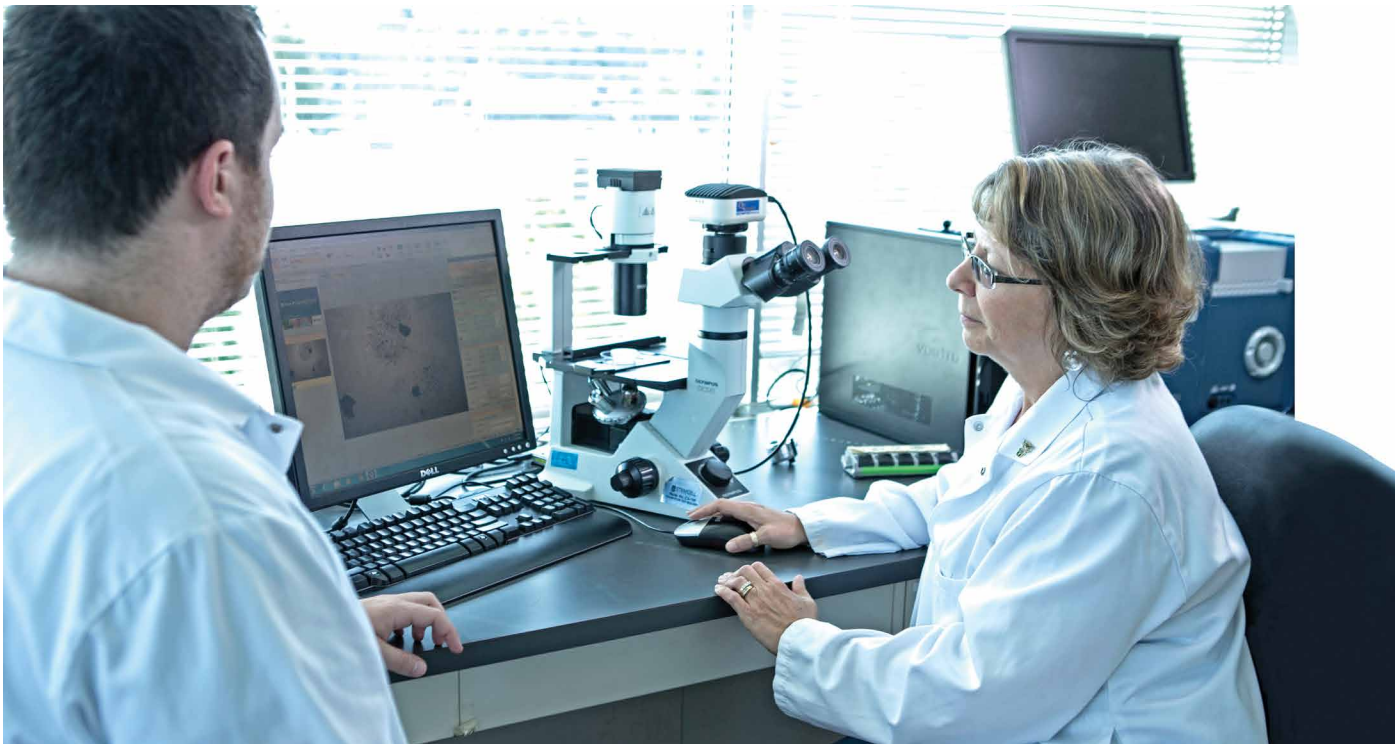
We work with you to design and execute cell-based assays to meet your needs. Our primary cell-based assays can provide clinically relevant results of the effects of small molecule compounds, including chemotherapeutic agents, or biologics on your cell type of interest. We offer standardized and customized primary cell-based assays for hematopoietic, immune, and mesenchymal cells.

Immune Toolkit for Customized Studies

CAS can assist in designing and optimizing studies to evaluate the effects of potential immunomodulatory agents on the immune system with the following tools and assay systems:

- Flow cytometric analysis (surface and intracellular)
- Quantitation of secreted proteins (ELISA, Meso Scale)
- Cell activation and suppression (PBMCs, T cells)
- Proliferation and viability assessment
- Macrophage and dendritic cell differentiation assessment
- Custom cell isolation and culture

To learn more about our contract assay services, visit **www.contractassay.com**.



Product Listing

Human Primary Cells

Cryopreserved Human Peripheral Blood Products[1]

Description	Quantity	Catalog #
Peripheral Blood Mononuclear Cells[2]	15 million cells	70025.1
	25 million cells	70025.2
	50 million cells	70025.3
	100 million cells	70025
B Cells	10 million cells	70023
	20 million cells	70023.1
Pan-T Cells	20 million cells	70024
	40 million cells	70024.1
$CD8^+$ Memory T Cells	5 million cells	200-0168
Naïve Pan T Cells	5 million cells	200-0170
Th17 Cells	5 million cells	200-0169
$CD4^+CD25^-$ T cells	10 million cells	200-0124
	20 million cells	200-0125
$CD4^+CD25^+CD127^{low}$ T cells	10 million cells	200-0122
	20 million cells	200-0123
$CD4^+CD25^+CD127^{low}FOXP3^+$ T cells (Tregs)	1 million cells	200-0120
	2 million cells	200-0121
$CD4^+$ T Cells	15 million cells	70026
	5 million cells	200-0165
$CD8^+$ T Cells	10 million cells	70027
	5 million cells	200-0164
$CD4^+CD45RA^+$ T Cells	5 million cells	70029
$CD8^+CD45RA^+$ T Cells	5 million cells	70030
$CD4^+CD45RO^+$ T Cells	5 million cells	70031
$CD19^+CD27^-$ Naïve B Cells	1 million cells	70032
$CD19^+$ B Cells	10 million cells	70033
Monocytes	10 million cells	70034
	20 million cells	200-0166
	40 million cells	200-0167
$CD14^+$ Monocytes	10 million cells	70035.1
	20 million cells	70035.2
	40 million cells	70035
NK Cells	5 million cells	70036
$CD56^+$ Cells[9]	5 million cells	70037
Immature Dendritic Cells	1.5 million cells	70041
Macrophages	1.5 million cells	70042
Plasmacytoid Dendritic Cells	0.5 million cells	70046
Pan Dendritic Cells	0.5 million cells	200-0560
Plasma*	10 mL	70039.1
	50 mL	70039.5
	100 mL	70039
Serum	1 mL	200-0160
	5 mL	200-0161
	10 mL	200-0162

**Additional sizes of 20mL, 30mL, 40mL, and 150mL for plasma are also available.*

Fresh Human Peripheral Blood Products[3]

Description	Anticoagulant	Quantity	Catalog #
Leukocyte Reduction System (LRS) Cone[5a]	ACDA[5a]	1 chamber	200-0093
Whole Peripheral Blood*	ACDA[5a]	1 x 10 mL	70504.1
		2 x 10 mL	70504.2
		4 x 10 mL	70504.4
		5 x 10 mL	70504.5
		10 x 10 mL	70504.6
		≥450 mL	70504
Plasma	ACDA[5a]	10 mL	200-0150
		20 mL	200-0151
		30 mL	200-0152
		40 mL	200-0153
		50 mL	200-0154
		100 mL	200-0155
		150 mL	200-0156
Serum	--	1 mL	200-0157
		5 mL	200-0158
		10 mL	200-0159

Description	Cell Type	Quantity	Catalog #
Purified Cells	Peripheral Blood Mononuclear Cells	100 million cells	200-0077
		300 million cells	200-0078
	Pan-T Cells	5 million cells	200-0046
		10 million cells	200-0047
		25 million cells	200-0048
		40 million cells	200-0022
	B Cells	5 million cells	200-0059
		10 million cells	200-0060
	NK Cells	5 million cells	200-0063
		10 million cells	200-0064
	Monocytes	5 million cells	200-0067
		10 million cells	200-0068

**Additional sizes of 3 x 10 mL, 6 x 10 mL, 7 x 10 mL, 8 x 10 mL, 9x10 mL, 15 x 10 mL, 20 x 10 mL, and 250 mL for whole peripheral blood are available.*

Cryopreserved Human Peripheral Blood Cells[1]

Description	Quantity	Catalog #
Central Memory $CD4^+$ T Cells	2 million cells	200-0380
Effector Memory $CD4^+$ T Cells	2 million cells	200-0381
Central Memory $CD8^+$ T Cells	2 million cells	200-0382
Effector Memory $CD8^+$ T Cells	2 million cells	200-0383
Neutrophils	10 million cells	200-0384
Eosinophils	1 million cells	200-0385
PB-Derived Immature Dendritic Cells[8a]	1.5 million cells	200-0370
PB-Derived Mature Dendritic Cells[8a]	1.5 million cells	200-0371
PB-Derived M0 Macrophages[8b]	1.5 million cells	200-0372
PB-Derived M1 Macrophages[8b]	1.5 million cells	200-0373
PB-Derived M2a Macrophages[8b]	1.5 million cells	200-0374

Leukopaks[3,4]

Description	Anticoagulant	Quantity	Catalog #
Fresh Peripheral Blood Leukopak[4]	ACDA[5a]	Tenth Size	200-0092
		Quarter Size	70500.2
		Half Size	70500.1
		Full Size	70500
Frozen Peripheral Blood Leukopak	ACDA[5a]	Tenth Size	200-0470
		Quarter Size	200-0132
		Half Size	200-0131
		Full Size	200-0130

Cryopreserved Diseased State Products[1,6]

Description	Quantity	Catalog #
Rheumatoid Arthritis	10 million cells	70050
Ulcerative Colitis	10 million cells	70051
Crohn's Disease	10 million cells	70052
COPD	10 million cells	70053
Lupus (SLE)	10 million cells	70054
Osteoarthritis	10 million cells	70055
Psoriasis	10 million cells	70056
Asthma	10 million cells	70057
Celiac Disease	10 million cells	70058
Diabetes Type I	10 million cells	70061
Diabetes Type II	10 million cells	70062
Acute Myeloid Leukemia (AML)	Custom	200-0244
	5-19 million cells	200-0450
Myelofibrosis (MF)	Custom	200-0251
	5-19 million cells	200-0457
Diffuse Large B Cell Lymphoma (DLBCL)	Custom	200-0247
	5-19 million cells	200-0453
Follicular Lymphoma (FL)	Custom	200-0248
	5-19 million cells	200-0454
Multiple Myeloma (MM)	Custom	200-0250
	5-19 million cells	200-0456
Chronic Myelogenous Leukemia (CML)	Custom	200-0246
	5-19 million cells	200-0452
Acute Lymphoblastic Leukemia (ALL)	Custom	200-0243
	5-19 million cells	200-0449
Chronic Lymphocytic Leukemia (CLL)	Custom	200-0245
	5-19 million cells	200-0451
Mantle Cell Lymphoma (MCL)	Custom	200-0249
	5-19 million cells	200-0455

Diseased State Human Blood Products[1,6]

Description	Format	Quantity	Catalog #
Solid Tumor Cancer	Leukopak, Fresh	1 billion cells	200-0402
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0401 200-0400
	Custom, Frozen[4]	-	200-0403
Liver Cancer	Leukopak, Fresh	1 billion cells	200-0299
	PBMCs[2], Frozen	5-19 million cells	200-0443
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0284 200-0269
	Custom, Frozen[4]	-	200-0237
Lung Cancer	Leukopak, Fresh	1 billion cells	200-0300
	PBMCs[2], Frozen	5-19 million cells	200-0444
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0285 200-0270
	Custom, Frozen[4]	-	200-0238
Breast Cancer	Leukopak, Fresh	1 billion cells	200-0291
	PBMCs[2], Frozen	5-19 million cells	200-0435
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0276 200-0261
	Custom, Frozen[4]	-	200-0229
Cervical Cancer	Leukopak, Fresh	1 billion cells	200-0292
	PBMCs[2], Frozen	5-19 million cells	200-0436
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0277 200-0262
	Custom, Frozen[4]	-	200-0230
Melanoma	Leukopak, Fresh	1 billion cells	200-0301
	PBMCs[2], Frozen	5-19 million cells	200-0445
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0286 200-0271
	Custom, Frozen[4]	-	200-0239
Ovarian Cancer	Leukopak, Fresh	1 billion cells	200-0302
	PBMCs[2], Frozen	5-19 million cells	200-0446
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0287 200-0272
	Custom, Frozen[4]	-	200-0240
Bladder Cancer	Leukopak, Fresh	1 billion cells	200-0290
	PBMCs[2], Frozen	5-19 million cells	200-0434
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0275 200-0260
	Custom, Frozen[4]	-	200-0228
Prostate Cancer	Leukopak, Fresh	1 billion cells	200-0304
	PBMCs[2], Frozen	5-19 million cells	200-0448
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0289 200-0274
	Custom, Frozen[4]	-	200-0242
Esophageal Cancer	Leukopak, Fresh	1 billion cells	200-0295
	PBMCs[2], Frozen	5-19 million cells	200-0439
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0280 200-0265
	Custom, Frozen[4]	-	200-0233
Colorectal Cancer	Leukopak, Fresh	1 billion cells	200-0293
	PBMCs[2], Frozen	5-19 million cells	200-0437
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0278 200-0263
	Custom, Frozen[4]	-	200-0231
Head and Neck Cancer	Leukopak, Fresh	1 billion cells	200-0297
	PBMCs[2], Frozen	5-19 million cells	200-0441
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0282 200-0267
	Custom, Frozen[4]	-	200-0235
Gastric Cancer	Leukopak, Fresh	1 billion cells	200-0296
	PBMCs[2], Frozen	5-19 million cells	200-0440
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0281 200-0266
	Custom, Frozen[4]	-	200-0234
Kidney Cancer	Leukopak, Fresh	1 billion cells	200-0298
	PBMCs[2], Frozen	5-19 million cells	200-0442
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0283 200-0268
	Custom, Frozen[4]	-	200-0236
Pancreatic Cancer	Leukopak, Fresh	1 billion cells	200-0303
	PBMCs[2], Frozen	5-19 million cells	200-0447
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0287 200-0273
	Custom, Frozen[4]	-	200-0241
Endometrial Cancer	Leukopak, Fresh	1 billion cells	200-0294
	PBMCs[2], Frozen	5-19 million cells	200-0438
	Whole Peripheral Blood, Fresh[5c,d]	Collection	200-0279 200-0264
	Custom, Frozen[4]	-	200-0232

Fresh Whole Bone Marrow[3]

Description	Anticoagulant	Quantity	Catalog #
Whole Bone Marrow	Na Heparin[5d]	≥ 25 mL	70502.2
		≥ 50 mL	70502.1
		≥ 100 mL	70502

Cryopreserved Human Bone Marrow Products[1]

Description	Quantity	Catalog #
Mononuclear Cells (MNCs)	5 million cells	70001.1
	15 million cells	70001.2
	25 million cells	70001
	50 million cells	70001.3
	100 million cells	70001.4
CD34+ Cells	0.1 million cells	70002.1
	0.3 million cells	70002.2
	0.5 million cells	70002.3
	1 million cells	70002
	2 million cells	70002.4
	5 million cells	70002.5
CD36+ Cells[7]	1 million cells	70003
CD33+ Cells	5 million cells	70006
Stromal Cells in ACF Medium[7]	0.75 million cells	70071

Human Platelet Lysate

Description	Quantity	Catalog #
Human Platelet Lysate	50 mL	06960
	100 mL	06961
	500 mL	06962
Human Platelet Lysate, Fibrinogen-Depleted	50 mL	06963
	100 mL	06964
	500 mL	06965
Human Platelet Lysate, Fibrinogen-Depleted, XF	50 mL	200-0360
	100 mL	200-0361
	500 mL	200-0362
Human Platelet Lysate, Fibrinogen-Depleted GMP Compliant	50 mL	200-0322
	100 mL	200-0323
	500 mL	200-0324

Cryopreserved Human Umbilical Cord Blood Products[1]

Description	Quantity	Catalog #
Mononuclear Cells (MNCs)	15 million cells	70007.1
	50 million cells	70007.2
	150 million cells	70007
CD34+ Cells (Mixed Donor)	0.2 million cells	70008.1
	0.5 million cells	70008.3
	1 million cells	70008
CD34+ Cells (Single Donor)	0.2 million cells	70008.2
	0.5 million cells	70008.4
	0.6 million cells	200-0000
	0.7 million cells	200-0001
	0.8 million cells	200-0002
CD19+ B Cells	1 million cells	70013
	2.5 million cells	70013.1
	5 million cells	70013.2
Pan-T Cells	15 million cells	70014
CD4+ T Cells	15 million cells	70015
CD4+CD45RA+ T Cells	15 million cells	70017
CD8+ T Cells	5 million cells	70016
CD14+ Monocytes	5 million cells	70018
CD56+ Cells[9]	1 million cells	70019
Plasma	10 mL	70020.1
	20 mL	70020.2
	30 mL	70020.3
	40 mL	70020.4
	50 mL	70020

For a complete listing of primary cells products, including mobilized peripheral blood products and cultured cells, please visit **www.stemcell.com/primarycells**.

1. *Certain cryopreserved products are only available in select territories. Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*
2. *High-resolution HLA typing and CMV status are available upon request.*
3. *Fresh products (excluding bone marrow and purified cells) are currently available in the United States and Canada (excluding Quebec). Fresh bone marrow and purified cells are currently available in the United States only.*
4. *A full-size leukopak typically contains 1.1 ± 0.3 x 10^{10} cells and has a volume of approximately 120 mL.*
5. *a) ACDA - Acid Citrate Dextrose Solution A; b) CP2D - Citrate-Phosphate-Double Dextrose; c) EDTA - Ethylenediaminetetraacetic Acid; d) Na Heparin - Sodium Heparin*
6. *Diseased states indicate PBMCs obtained from donors diagnosed with given condition.*
7. *Cultured Cell Product.*
8. *a) ACF-cultured; b) SF-Cultured*
9. *CD56 antigen is expressed primarily on natural killer (NK) cells, as well as NKT cells in PB.*

Human Cell Isolation Products

Human T Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
Naïve Pan T Cells	PBMC	EasySep™ Human Naïve Pan T Cell Isolation Kit	96.1 ± 2.3%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022) CD45RO (Catalog #60097)	17961 17961RF
T Cells	PBMC	EasySep™ Human T Cell Isolation Kit	96.7 ± 1.5%	1 x 10^9 cells		17951 17951RF
	Leukopak		95.9 ± 2.8%	1 x 10^{10} cells		100-0695
	PBMC	EasySep™ HLA T Cell Enrichment Kit	95.0 ± 99.0%	1 x 10^9 cells		19051HLA 19051HLARF
	Spleen, Lymph Node, Whole Blood	EasySep Direct HLA T Cell Isolation Kit	94.9 ± 1.5%	100 mL		19671 19671RF 89671 89671RF
	Whole Blood	EasySep™ HLA Whole Blood T Cell Enrichment Kit	93.1 - 98.0%	200 mL		19951HLA 19951HLARF
		EasySep™ Direct Human T Cell Isolation Kit	95.3 ± 1.4%	100 mL		19661 19661RF
		RosetteSep™ Human T Cell Enrichment Cocktail	90.0 - 97.0%	40 mL		15021
				200 mL		15061
		RosetteSep™ HLA T Cell Enrichment Cocktail	90.0 - 97.0%	250 mL		15061HLA
				1000 mL		15081HLA
		RosetteSep™ HLA Lymphoid Cell Enrichment Kit	> 85%	200 mL		15271HLA[3]

Human T Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
$CD2^+$ Cells	PBMC	EasySep™ Human CD2 Positive Selection Kit II	93.8 ± 3.3%	1 x 10^9 cells	CD3 (Catalog #60011) CD56 (Catalog #60021)	17883 17883RF
	PBMC	EasySep™ Release Human CD3 Positive Selection Kit	98.7 ± 0.9%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022)	17751 17751RF
		EasySep™ Human CD3 Positive Selection Kit II	99.2 ± 0.2%			17851 17851RF
	Leukopak		95.9 ± 2.8%	1 x 10^{10} cells	CD3 (Catalog #100-0287) CD4 (Catalog #60016)	100-0692
	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood CD3 Positive Selection Kit	92.4 - 99.8%	60 mL	CD2 (Catalog #60007) CD5 (Catalog #60082) CD20 (Catalog #60008)	17871 17871RF
	Whole Blood	EasySep™ Serology Whole Blood CD3 Positive Selection Kit	96.7 - 99.6%			18981 18981RF

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; LRS - Leukocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*
3. *This kit is designed to enrich only $CD3^+$ lymphoid cells.*

Human CD4+ T Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD4+ T Cells	PBMC	EasySep™ Human CD4+ T Cell Isolation Kit	94.8 ± 2.3%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022) CD45 (Catalog #60018)	17952 17952RF
	Leukopak		96.5 ± 1.7%	1 x 10^{10} cells		100-0696
	Whole Blood	EasySep™ Direct Human CD4+ T Cell Isolation Kit	93.6 ± 2.5%	100 mL		19662 19662RF
		RosetteSep™ Human CD4+ T Cell Enrichment Cocktail	94.0 ± 5.0%	40 mL		15022
				200 mL		15062

Human CD4+ T Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
	PBMC	EasySep™ Release Human CD4 Positive Selection Kit	96.1 ± 4.1%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022)	17752 17752RF
		EasySep™ Human CD4 Positive Selection Kit II	90.0 ± 6.0%	1 x 10^9 cells		17852 17852RF
	Leukopak		96.4 ± 1.6%	1 x 10^{10} cells		100-0693
	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood CD4 Positive Selection Kit	97.0 ± 1.8%	60 mL		17888 17888RF

Human CD4+ T Cell Subset Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Resting CD4+ T Cells	PBMC	EasySep™ Human Resting CD4+ T Cell Isolation Kit	89.0 ± 5.3%	1 x 10^9 cells	CD3 (Catalog #60011) CD8 (Catalog #60022) CD25 (Catalog #60153)	17962 17962RF
Naïve CD4+ T Cells	PBMC	EasySep™ Human Naïve CD4+ T Cell Isolation Kit II	96.6 ± 1.5%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD45 (Catalog #60018) CD45RO (Catalog #60097)	17555 17555RF
Memory CD4+ T Cells	PBMC	EasySep™ Human Memory CD4+ T Cell Enrichment Kit	86.0 - 98.0%	1 x 10^9 cells		19157 19157RF
Regulatory T Cells	Please see page 30.					

Human CD4+ T Cell Subset Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Th17 Cells	PBMC	EasySep™ Human Th17 Cell Enrichment Kit II	96.0 - 98.0%	2 x 10^9 cells	CD4 (Catalog #60016) CD196 (Catalog #60090)	17862
Central and Effector Memory CD4+ T Cells	PBMC	EasySep™ Human Central and Effector Memory CD4+ T Cell Isolation Kit	92.3 ± 3.9% (CM)[3] 92.4 ± 4.1% (EM)[3]	1 x 10^9 cells	CD3 (Catalog #60127) CD45 (Catalog #60018) CD45RO (Catalog #60097)	17865
Regulatory T Cells	Please see page 30.					

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; LRS - Luekocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*
3. *CM - Central Memory; EM - Effector Memory*

Human CD8+ T Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD8+ Cells	PBMC	EasySep™ Human CD8+ T Cell Isolation Kit	90.6 ± 4.6%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022) CD45 (Catalog #60018)	17953 17953RF
	Leukopak		85.6 ± 4.9%	1 x 10^{10} cells	CD3 (Catalog #60011) CD8a (Catalog #600125)	100-0710
	Whole Blood	EasySep™ Direct Human CD8+ T Cell Isolation Kit	82.4 ± 4.9%	100 mL	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022) CD45 (Catalog #60018)	19663
		RosetteSep™ Human CD8+ T Cell Enrichment Cocktail	84.0 ± 9.0%	40 mL		15023
				200 mL		15063

Human CD8+ T Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD8+ Cells	PBMC	EasySep™ Human CD8 Positive Selection Kit II	96.5 ± 2.4%	1 x 10^9 cells	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022)	17853 17853RF
	Leukopak		93.9 ± 4.9%	1 x 10^{10} cells	CD8a (Catalog #60022) CD8a (Catalog #60125)	100-0699
	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood CD8 Positive Selection Kit	98.7 ± 1.1%	60 mL	CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022)	17889 17889RF

Human CD8+ T Cell Subset Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Naïve CD8+ T Cells	PBMC	EasySep™ Human Naïve CD8+ T Cell Isolation Kit II	93.7 ± 2.4%	1 x 10^9 cells	CD3 (Catalog #60011) CD8a (Catalog #60022) CD45 (Catalog #60018) CD45RO (Catalog #60097) CD56 (Catalog #60021)	17968 17968RF
Memory CD8+ T Cells	PBMC	EasySep™ Human Memory CD8+ T Cell Enrichment Kit	72.0 - 92.0%	1 x 10^9 cells	CD3 (Catalog #60011) CD8a (Catalog #60022) CD45 (Catalog #60018) CD45RO (Catalog #60097)	19159 19159RF

Human CD8+ T Cell Subset Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Central and Effector Memory CD8+ T Cells	PBMC	EasySep™ Human Central and Effector Memory CD8+ T Cell Isolation Kit	86.8 ± 8.4% (CM)[3] 88.7 ± 6.5% (EM)[3]	1 x 10^9 cells	CD3 (Catalog #60127) CD45 (Catalog #60018) CD45RO (Catalog #60097)	17869

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; LRS - Leukocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*
3. *CM - Central Memory; EM - Effector Memory*

Human Regulatory T Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
$CD4^+CD127^{low}$ T Cells	Whole Blood	RosetteSep™ Human $CD4^+CD127^{low}$ T Cell Enrichment Cocktail	--	200 mL	CD4 (Catalog #60016) CD25 (Catalog #60153)	15361
$CD4^+CD127^{low}CD49d^-$ T Cells	PBMC	EasySep™ Human $CD4^+CD127^{low}$ $CD49d^-$ Regulatory T Cell Enrichment Kit	57.4 - 87.4%[3]	2 x 10^9 cells		19232 19232RF

Human Regulatory T Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
$CD25^+$ Cells	PBMC	EasySep™ Human CD25 Positive Selection and Depletion Kit	81 - 98%	1 x 10^9 cells	CD4 (Catalog #60016) CD25 (Catalog #60153)	17861
$CD4^+CD127^{low}CD25^{high}$ T Cells	PBMC	Human $CD4^+CD127^{low}CD25^+$ Regulatory T Cell Isolation Kit	85.0 ± 4.8%[4]	1 x 10^9 cells		18063 18063RF
	Leukopak		78.4 ± 12.1%[4]	1 x 10^{10} cells		100-1136

Human Gamma/Delta T Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Gamma/Delta T Cells	PBMC	EasySep™ Human Gamma/Delta T Cell Isolation Kit	90.0 - 97.0%	1 x 10^9 cells	CD2 (Catalog #60007) CD3 (Catalog #60011) CD4 (Catalog #60016) CD8a (Catalog #60022) CD45 (Catalog #60018)	19255 19255RF

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells*
2. *Purities shown as either a range or mean ± SD.*
3. *Purity data represents the $CD3^+CD4^+CD127^{low}CD25^+FOXP3^+$ cell content of the enriched fraction.*
4. *Purity data represents the $CD4^+CD25^+FOXP3^+$ cell content of the isolated fraction.*

WALLCHART
Regulatory T Cells Wallchart
www.stemcell.com/TregWallchart

SCIENTIFIC POSTER
Column-Free Isolation of Human Gamma/Delta T Cells
www.stemcell.com/GammaDeltaTPoster

Human B Cell and Subset Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
B Cells[3]	PBMC	EasySep™ Human B Cell Isolation Kit	95.1 ± 1.4%	1 x 10^9 cells	CD3 (Catalog #60011) CD19 (Catalog #60005) CD45 (Catalog #60018)	17954 17954RF
	Leukopak		99.4 ± 0.5%	1 x 10^{10} cells		100-0971
	PBMC	EasySep™ HLA B Cell Enrichment Kit	95.0 - 99.0%	1 x 10^9 cells	CD19 (Catalog #60005) CD20 (Catalog #60008)	19054HLA 19054HLARF
	Spleen, Lymph Node, Whole Blood	EasySep Direct HLA B Cell Isolation Kit	97 ± 3%	100 mL	CD3 (Catalog #60011) CD19 (Catalog #60005) CD20 (Catalog #60008) CD45 (Catalog #60018)	19684 19684RF 89684 89684RF
	Whole Blood	EasySep™ HLA B Cell Enrichment: Complete Processing Kit for Whole Blood	81.5 - 99.7%	200 mL		19954HLA 19954HLARF
		EasySep™ Direct Human B Cell Isolation Kit	95.3 ± 2.7%	100 mL		19674 19674RF
		RosetteSep™ Human B Cell Enrichment Cocktail	81.0 - 83.0%	40 mL	CD19 (Catalog #60005) CD20 (Catalog #60008)	15024
				200 mL		15064
		RosetteSep™ HLA B Cell Enrichment Cocktail	81.0 - 83.0%	250 mL		15064HLA
				1000 mL		15084HLA
Pan-B Cells[4]	PBMC	EasySep™ Human Pan-B Cell Enrichment Kit	90 - 99%	1 x 10^9 cells	CD4 (Catalog #60016) CD8a (Catalog #60022) CD14 (Catalog #60004) CD16 (Catalog #60041) CD19 (Catalog #60005) CD43 (Catalog #60085) CD56 (Catalog #60021)	19554 19554RF
B Cells (without CD43 depletion)[5]	PBMC	EasySep™ Human B Cell Enrichment Kit II Without CD43 Depletion	84.9 - 13.9%	1 x 10^9 cells	CD19 (Catalog #60005) CD20 (Catalog #60008)	17963 17963RF
	Whole Blood	EasySep™ Direct Human B-CLL Cell Isolation Kit	87.0 ± 7.6%	100 mL		19664
Naïve B Cells	PBMC	EasySep™ Human Naïve B Cell Isolation Kit	94.9 ± 2.2%	1 x 10^9 cells	CD3 (Catalog #60011) CD19 (Catalog #60005) CD20 (Catalog #60008) CD45 (Catalog #60018)	17254 17254RF
	Whole Blood	EasySep™ Direct Human Naïve B Cell Isolation Kit	91.8 ± 3.6%	100 mL		19264
Plasma Cells	Bone Marrow	RosetteSep™ Human Multiple Myeloma Cell Enrichment Cocktail	> 95.0%	40 mL	CD45 (Catalog #60018) CD138 (Syndecan-1) (Catalog #60003)	15129
				200 mL		15169

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells*
2. *Purities shown as either a range or mean ± SD.*
3. *$CD43^-$ B cells from normal samples.*
4. *B cells including plasma cells from non-leukemia or lymphoma samples.*
5. *B cells from B cell leukemia or lymphoma samples, or other disease states in which B cells may express CD43, CD123, or CD36. Note that samples from normal healthy donors were used to obtain purity data. The purity of isolated cells is typically higher when processing samples that have an elevated frequency of B cells (e.g., CLL samples).*

Human B Cell and Subset Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD19+ Cells	PBMC	EasySep™ Release Human CD19 Positive Selection Kit	97.7 ± 2.3%	1 x 10^9 cells	CD19 (Catalog #60005) CD20 (Catalog #60008)	17754
		EasySep™ Human CD19 Positive Selection Kit II	97.0 - 99.0%	1 x 10^9 cells		17854 17854RF
	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood CD19 Positive Selection Kit	94.3 - 99.6%	60 mL		17874 17874RF
	Whole Blood	EasySep™ Serology Whole Blood CD19 Positive Selection Kit	89.4 - 97.8%	60 mL	CD19 (Catalog #60005) CD45 (Catalog #60018) CD20 (Catalog #60008)	18984 18984RF
CD19+ and CD20+ Cells	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood B Cell Positive Selection Kit	92.5 ± 5.6%	60 mL	CD19 (Catalog #60005) CD22 (Catalog #60083)	17886 17886RF
CD19+CD27+ (Memory B) Cells	PBMC	EasySep™ Human Memory B Cell Isolation Kit	97 ± 2%	1 x 10^9 cells	CD19 (Catalog #60005) CD27 (Catalog #60160)	17864
CD138+ (Plasma) Cells	PBMC, Bone Marrow	EasySep™ Human CD138 Positive Selection Kit II	93.0 - 98.2%	2 x 10^9 cells	CD45 (Catalog #60018) CD138 (Syndecan-1) (Catalog #60003)	17877 17877RF
	Whole Blood, Bone Marrow	EasySep™ Human Whole Blood and Bone Marrow CD138 Positive Selection Kit II	83.7 - 98.3%	60 mL		17887 17887RF

Human NK Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
NK Cells	PBMC	EasySep™ Human NK Cell Isolation Kit	85.0 ± 8.0%	1 x 10^9 cells	CD3 (Catalog #60011) CD45 (Catalog #60018) CD56 (Catalog #60021)	17955 17955RF
	Leukopak		96.5 ± 1.7%	1 x 10^{10} cells		100-0960
	Whole Blood	EasySep™ Direct Human NK Cell Isolation Kit	80.0 - 98.0%	100 mL		19665
		RosetteSep™ Human NK Cell Enrichment Cocktail	76.8 ± 12.2%	40 mL		15025
				200 mL		15065

Human NK Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD56+ Cells	PBMC	EasySep™ Human CD56 Positive Selection Kit II	94.0 ± 3.0%	1 x 10^9 cells	CD56 (Catalog #60021)	17855 17855RF
	Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Buffy Coat CD56 Positive Selection Kit	95.8 - 99.5%	30 mL		17875 17875RF

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; LRS - Leukocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*

Human Total Lymphocyte Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Total Lymphocytes	Whole Blood	EasySep™ Direct Human Total Lymphocyte Isolation Kit	96.7 ± 1.5%	100 mL	CD2 (Catalog #60007) CD3 (Catalog #60011) CD19 (Catalog #60005) CD20 (Catalog #60008) CD45 (Catalog #60018) CD54 (NCAM) (Catalog #60021)	19655 19655RF
		EasySep™ HLA Total Lymphocyte Enrichment: Complete Processing Kit for Whole Blood	90.2 - 96.9%	200 mL		19961HLA 19961HLARF
		RosetteSep™ Human Total Lymphocyte Enrichment Cocktail	94.0 ± 2.0%	40 mL		15223
				200 mL		15263
		RosetteSep™ HLA Total Lymphocyte Enrichment Cocktail	--	250 mL		15263HLA[3]
				1000 mL		15283HLA[3]

Human Lymphoid Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Lymphoid Cells	Whole Blood, Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Whole Blood Lymphoid Positive Selection Kit	99.5 ± 0.2%	60 mL	CD2 (Catalog #60007) CD3 (Catalog #60011) CD19 (Catalog #60005) CD20 (Catalog #60008)	17873 17873RF

Human Innate Lymphoid Cell (ILC) Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Group 2 Innate Lymphoid Cells	Whole Blood	RosetteSep™ Human ILC2 Enrichment Kit	0.44 - 23% (77 - 1800 fold enrichment)	200 mL	CD3 (Catalog #60011) CD14 (Catalog #60004) CD16 (Catalog #60041) CD19 (Catalog #60005) CD34 (Catalog #60013) CD45 (Catalog #60018) CD123 (Catalog #60110)	15382
	Leukopak	EasySep™ Human ILC2 Enrichment Kit	13 - 78% (250 - 1450 fold enrichment)	1 x 10^9 cells		17972
Pan-Innate Lymphoid Cells	Leukopak	EasySep™ Human Pan-ILC Enrichment Kit	17 - 86% (198 - 1556 fold enrichment)	1 x 10^9 cells		17975[3] 17975RF[3]

Human Innate Lymphoid Cell (ILC) Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Group 2 Innate Lymphoid Cells	Leukopak	EasySep™ Human ILC2 Isolation Kit	84 - 95%	2 x 10^9 cells	CD3 (Catalog #60011) CD14 (Catalog #60004) CD16 (Catalog #60041) CD19 (Catalog #60005) CD34 (Catalog #60013) CD45 (Catalog #60018) CD123 (Catalog #60110)	17782

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *LRS - Leukocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*
3. *These kits enrich for group 1, group 2, and group 3 innate lymphoid cells (ILC1, ILC2, and ILC3).*

Human Dendritic Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Pan-Dendritic Cells	PBMC	EasySep™ Human Pan-DC Pre-Enrichment Kit	50.0 - 90.0%	1 x 10^9 cells	CD3 (Catalog #60011 and #60127) CD14 (Catalog #60004) CD16 (Catalog #60041) CD19 (Catalog #60005) CD20 (Catalog #60008) CD34 (Catalog #60013) CD56 (Catalog #60021) HLA-DR (Catalog #60164)	19251 19251RF
Myeloid Dendritic Cells	PBMC	EasySep™ Human Myeloid DC Enrichment Kit	79.0 - 94.0%	2 x 10^9 cells		19061 19061RF
Plasmacytoid Dendritic Cells	PBMC	EasySep™ Human Plasmacytoid DC Enrichment Kit	87.0 - 97.0%	2 x 10^9 cells		19062 19062RF
		EasySep™ Human Plasmacytoid DC Isolation Kit	90 ± 5.3%	2 x 10^9 cells		17977 17977RF

Human Monocyte Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Monocytes	PBMC	EasySep™ Human Monocyte Enrichment Kit without CD16 Depletion	73.0 - 81.0%	1 x 10^9 cells	CD14 (Catalog #60004) CD16 (Catalog #60041)	19058[3] 19058RF[3]
		EasySep™ Human Monocyte Isolation Kit	89.7 ± 3.4%	1 x 10^9 cells	CD14 (Catalog #60004) CD45 (Catalog #60018)	19359 19359RF
	Leukopak		88.3 ± 4.0%	1 x 10^{10} cells		100-0697
	Whole Blood	EasySep™ Direct Human Monocyte Isolation Kit	82.2 ± 8.4%	100 mL	CD14 (Catalog #60004) CD45 (Catalog #60018)	19669 19669RF
		RosetteSep™ Human Monocyte Enrichment Cocktail	72.0 - 85.0%	40 mL	CD14 (Catalog #60004 and #60124)	15028
				200 mL		15068

Human Granulocyte and Subset Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Pan-Granulocytes	PMNC	EasySep™ Human Pan-Granulocyte Isolation Kit	97.0 - 99.0%	1 x 10^9 cells	CD16 (Catalog #60041) CD66b (Catalog #60086) CD123 (Catalog #60110) CD45 (Catalog #60018)	19259 19259RF
	Whole Blood	EasySep™ Direct Human Pan-Granulocyte Isolation Kit	98.4 ± 1.5%	100 mL		19659
Basophils	PMNC	EasySep™ Human Basophil Isolation Kit	94.0 ± 2.5%	1 x 10^9 cells	CD123 (Catalog #60110)	17969 17969RF
	Whole Blood	EasySep™ Direct Human Basophil Isolation Kit	97.3 ± 1.1%	100 mL		19667
Neutrophils	PMNC	EasySep™ Human Neutrophil Isolation Kit	98.7 ± 0.9%	100 mL	CD16 (Catalog #60041) CD66b (Catalog #60086) CD45 (Catalog #60018)	17957 17957RF
	Whole Blood	EasySep™ Direct Human Neutrophil Isolation Kit	97.3 ± 1.4%	100 mL		19666 100-0404
Eosinophils	PMNC	EasySep™ Human Eosinophil Isolation Kit	96.5 ± 2.5%	1 x 10^9 cells		17956 17956RF
	Whole Blood	EasySep™ Direct Human Eosinophil Isolation Kit	95.8 ± 2.7%	100 mL		19656

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; PMNC - Polymorphonuclear Cells*
2. *Purities shown as either a range or mean ± SD.*
3. *These kits isolate $CD14^+CD16^+$ monocytes.*

Human Myeloid Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Myeloid Cells	Whole Blood	RosetteSep™ HLA Myeloid Cell Enrichment Kit	68.0 - 98.0%	200 mL	CD11b (Catalog #60040) CD33 (Catalog # 60096) CD45 (Catalog #60018) CD66b (Catalog #60086)	15272HLA

Human Myeloid Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD11b$^+$ Cells	PBMC	EasySep™ Human CD11b Positive Selection and Depletion Kit	91.9 ± 6.4%	1 x 10^9 cells	CD11b (Catalog #60040) CD45 (Catalog #60018)	100-0742
CD14$^+$ Cells	PBMC	EasySep™ Human CD14 Positive Selection Kit II	97.8 - 99.7%	1 x 10^9 cells	CD14 (Catalog #60004) CD36 (Catalog #60084)	17858 17858RF
	Leukopak		93.9 ± 4.9%	1 x 10^{10} cells	CD14 (Catalog #60004) CD14 (Catalog #60124)	100-0694
	Buffy Coat, LRS Cone	EasySep™ HLA Chimerism Buffy Coat CD14 Positive Selection Kit	93.0 ± 6.4%	30 mL	CD14 (Catalog #60004) CD36 (Catalog #60084)	17878 17878RF
CD15$^+$ Cells	PMNC	EasySep™ Human CD15 Positive Selection Kit	98.8 ± 0.8%	1 x 10^9 cells	CD45 (Catalog #60018)	18651 18651RF
	Whole Blood, Buffy Coat	EasySep™ HLA Chimerism Whole Blood CD15 Positive Selection Kit	99.2 ± 1.1%	60 mL		17881 17881RF
CD33$^+$ Cells	Lysed Whole Blood	EasySep™ Human CD33 Positive Selection Kit II	95.6 ± 1.6%	1 x 10^9 cells	CD66b (Catalog #60086) CD14 (Catalog #60004)	17876 17876RF
	Whole Blood	EasySep™ HLA Chimerism Whole Blood CD33 Positive Selection Kit	60.2 - 79.6%	60 mL		17885 17885RF
CD33$^+$CD66b$^+$ (Myeloid) Cells	Lysed Whole Blood	EasySep™ Human Myeloid Positive Selection Kit II	96.5 ± 1.3%	1 x 10^9 cells	CD66b (Catalog #60086) CD14 (Catalog #60004) CD33 (Catalog #60096)	17893 17893RF
	Whole Blood, Buffy Coat	EasySep™ HLA Chimerism Whole Blood Myeloid Positive Selection Kit	94.5 ± 4.1%	60 mL		17884 17884RF
CD66b$^+$ Cells (Granulocytes)	Whole Blood	EasySep™ HLA Chimerism Whole Blood CD66b Positive Selection Kit	98.0 ± 0.8%	60 mL	CD66b (Catalog #60086)	17882 17882RF
HLA-DR$^+$ Cells	PBMC, Leukopak	EasySep™ Human HLA-DR Positive Selection and Depletion Kit	91.9 ± 6.4%	1 x 10^9 cells	Anti-HLA-DR, clone L243	100-0980
CD271$^+$ Cells	Bone Marrow	EasySep™ Human CD271 Selection Kit II	--	2 x 10^9 cells	Dextran (Catalog #60026)	17849

Isolation of Human Extracellular Vesicles by Positive Selection

Separation Technology	Source	Product	For Processing	Compatible Staining Antibodies	Catalog #
Immunomagnetic Positive Selection	Plasma, Serum, Cell-Conditioned Medium	EasySep™ Human Pan-Extracellular Vesicle Positive Selection Kit	20 mL of biofluid	CD9 (Catalog #100-0138) CD63 (Catalog #100-0139) CD81 (Catalog #100-0209) CD9/CD63/CD81 Panel (Catalog #100-0211)	17891
		EasySep™ Human Extracellular Vesicle CD9 Positive Selection Kit			17892
		EasySep™ Human Extracellular Vesicle CD81 Positive Selection Kit			17894
		EasySep™ Human Extracellular Vesicle CD63 Positive Selection Kit			17895
	Plasma, Serum, Urine, Cell Culture Conditioned Medium	EasySep™ Extracellular Vesicle PE Positive Selection Kit	20 mL of biofluid or conditioned medium		100-0812

Isolation of Extracellular Vesicles Using Size Exclusion Chromatography

Separation Technology	Source	Product	For Processing	Compatible Staining Antibodies	Catalog #
Size Exclusion Chromatography	Plasma, Serum, Cell-Conditioned Medium	Extracellular Vesicle SEC Columns	0.5 mL	CD9 (Catalog #100-0138) CD63 (Catalog #100-0139) CD81 (Catalog #100-0209) CD9/CD63/CD81 Antibody Panel (Catalog #100-0211)	100-0414
			2 mL		100-0415
			20 mL		100-0416

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; PMNC - Polymorphonuclear Cells; LRS - Leukocyte Reduction System*
2. *Purities shown as either a range or mean ± SD.*

Human Hematopoietic Progenitor Cell Isolation by Negative Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
Hematopoietic Progenitors	PBMC, CBMC	EasySep™ Human Progenitor Enrichment Kit with Platelet Depletion	50.0 - 75.0%	1 x 10^9 cells	--	19356[3] 19356RF[3]
	Bone Marrow	RosetteSep™ Human Bone Marrow Progenitor Cell Pre-Enrichment Cocktail	25.0 ± 10.0 fold CD34+ cell enrichment	40 mL		15027
				200 mL		15067
	Cord Blood	EasySep™ Human Progenitor Cell Enrichment Kit II	77.5 ± 16.0%	1 x 10^9 cells		17936 17936RF
	Cord Blood	RosetteSep™ Human Hematopoietic Progenitor Cell Enrichment Cocktail	29.0 ± 9.0%	40 mL		15026
				200 mL		15066
		Complete RosetteSep™ Human Cord Blood Progenitor Enrichment Kit	29.0 ± 9.0%	500 mL		15276
Lineage Negative Cells	Cord Blood	RosetteSep™ Human Cord Blood Debulking Cocktail	5.0 ± 1.0% (CD34+ cells)	40 mL		15126[4]
				200 mL		15166[4]

Human CD34+ Hematopoietic Progenitor Cell Isolation by Positive Selection

Cell Type	Source[1]	Product	Purity[2]	For Processing	Compatible Staining Antibodies	Catalog #
CD34+ Cells	Mobilized PBMC, CBMC, BMMC, and hESC and hiPSC Cultures	EasySep™ Human CD34 Positive Selection Kit II	93.5 ± 1.1%	5 x 10^9 cells	CD34 (Catalog #60013)	17856[5] 17856RF[5]
	Whole Blood, Buffy Coat	EasySep™ Human Whole Blood CD34 Positive Selection Kit II	90.4 ± 7.0%	75 mL whole blood 37 mL buffy coat		17879 17879RF
	Whole Blood	Complete Kit for Human Whole Blood CD34+ Cells	95.1 ± 4.5%	120 mL		15086 15086RF
	Cord Blood	EasySep™ Human Cord Blood CD34 Positive Selection Kit II	91.0 ± 9.0%	1000 mL		17896[6,7] 17896RF[6,7]
		EasySep™ Human Cord Blood CD34 Positive Selection Kit III	87.0 ± 12%	1000 mL		17897[6,8] 17897RF[6,8]

Human Total Leukocyte Isolation by Positive Selection

Cell Type	Source	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
CD45+ Cells	Primary Human Tissues and Tumors	EasySep™ Release Human CD45 Positive Selection Kit	Varies by tissue	1 x 10^9 cells	CD45 (Catalog #60018)	100-0105 100-0108

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells; CBMC - Cord Blood Mononuclear Cells; BMMC - Bone Marrow Mononuclear Cells; hESC - Human Embryonic Stem Cell; LRS - Leukocyte Reduction System; hiPSC - Human Induced Pluripotent Stem Cell*
2. *Purities shown as either a range or mean ± SD. Purity data for 17856, 17856RF, 17879, 17879RF, and 15086 are reported relative to viable CD45+ cells.*
3. *This product is designed for use with samples that contain large numbers of platelets.*
4. *This product is recommended for debulking cord blood of lineage positive cells prior to freezing.*
5. *These kits are for use with previously frozen cord blood mononuclear cells. For isolation of CD34+ cells from fresh cord blood, please use 17896 and 17896RF.*
6. *These kits are for use with fresh cord blood. For isolation of CD34+ cells from previously frozen cord blood mononuclear cells, please use 17856 and 17856RF.*
7. *This kit contains antibodies for platelet depletion and is recommended for pre-enrichment of CD34+ cells from cord blood samples that contain large amounts of platelets. Platelets may affect the quality and purity of CD34+ cells if not depleted.*
8. *This kit does not contain antibodies for platelet depletion and is recommended for pre-enrichment of CD34+ cells from cord blood samples that contain few platelets or when platelet depletion is not desired.*

Isolation of Other Human Cell Types by Negative Selection

Cell Type	Source	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
Peripheral Blood Mononuclear Cells (PBMCs)	Whole Blood, Buffy Coat, Cord Blood, Bone Marrow, Leukopak	EasySep™ Direct Human PBMC Isolation Kit	98.3 ± 2.8%	100 mL	CD235ab (Glycophorin A/B) (Catalog #60111) CD41 (Catalog #60114) CD45 (Catalog #60018)	19654
Circulating Epithelial Tumor Cells	Whole Blood	EasySep™ Direct Human CTC Enrichment Kit	2.9 - 3.2 log depletion	100 mL	Epithelial Cell (Catalog #60147)	19657
		RosetteSep™ CTC Enrichment Cocktail Containing Anti-CD36	2.9 log depletion	40 mL	CD326 (EpCAM) (Catalog #10109) CD45 (Catalog #60018)	15127
				200 mL		15167
		RosetteSep™ CTC Enrichment Cocktail Containing Anti-CD56	3.2 - 4.4 log depletion	40 mL		15137
				200 mL		15177
Other Cell Types (Custom)	Any Source	EasySep™ Human Custom Enrichment Kit	--	As requested	--	19309[1] 19309RF[1]
	Whole Blood	RosetteSep™ Human Custom Cocktail	--	As requested	--	15309[1]

Isolation of Other Human Cell Types by Positive Selection

Cell Type	Source	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
Other Cell Types (Custom)	Any Source	EasySep™ Human Custom Positive Selection Kit	--	As requested	--	18309[2] 18309RF[2]
		EasySep™ Release Human Biotin Positive Selection Kit	--	1 x 10^9 cells	--	17653[3]
		EasySep™ Release Human PE Positive Selection Kit	--	1 x 10^9 cells	--	17654[4]
		EasySep™ Release Human APC Positive Selection Kit	--	1 x 10^9 cells	--	100-0031[7]
		EasySep™ Human PE Positive Selection Kit II	--	1 x 10^9 cells	Dextran (Catalog #60026)	17664[4] 17664RF[4]
				5 x 10^9 cells		17694[4,5]
		EasySep™ Human FITC Positive Selection Kit II	--	1 x 10^9 cells		17662[6] 17662RF[6]
		EasySep™ Human Biotin Positive Selection Kit II	--	1 x 10^9 cells		17663[3] 17663RF[3]
		EasySep™ Release Human APC Positive Selection Kit II	--	1 x 10^9 cells		100-0031[7]
		EasySep™ Human "Do-It-Yourself" Selection Kit II	--	1 x 10^9 cells		17699[8] 17699RF[8]
	Epithelial Cell Preparations	EasySep™ Human EpCAM Positive Selection Kit II	96.2 ± 3.0%	1 x 10^9 cells	Epithelial Cell (Catalog #60147) CD45 (Catalog #60018)	17846 17846RF
EGFR+ Cells	PBMC, Leukopak, Cultured Cells	EasySep™ Human EGFR Positive Selection Kit	96.0 ± 2.8%	1 x 10^9 cells		100-1131

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Isolate any human cell type by negative selection.*
2. *Isolate any human cell type by positive selection.*
3. *Use with biotinylated antibodies.*
4. *Use with PE-conjugated antibodies.*
5. *This product includes 5 x 17664.*
6. *Use with FITC-conjugated antibodies.*
7. *Use with APC-conjugated antibodies.*
8. *Use your own mouse IgG1 antibodies.*

Human Cell Depletion Products

Human T Cell and Subset Depletion

Cell Type	Source[1]	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
αβT cells	Leukopak	EasySep™ Human TCR Alpha/Beta Depletion Kit	99.9 ± 0.3%[2]	1 x 10^9 cells	--	17847
$CD3^+$ Cells	Whole Blood	RosetteSep™ Human CD3 Depletion Cocktail	Typically 3.0 log depletion	40 mL	CD3 (Catalog #60011)	15621
				200 mL		15661
$CD4^+$ Cells	Whole Blood	RosetteSep™ Human CD4 Depletion Cocktail	Typically 2.0 log depletion	40 mL	CD4 (Catalog #60016)	15622
				200 mL		15662
$CD8^+$ Cells	Whole Blood	RosetteSep™ Human CD8 Depletion Cocktail	Typically 2.0 log depletion	40 mL	CD8a (Catalog #60022)	15623
				200 mL		15663
$CD25^+$ Cells	PBMC	EasySep™ Human CD25 Positive Selection and Depletion Kit	Typically 1.3 log depletion	1 x 10^9 cells	CD25 (Catalog #60153)	17861

Human Myeloid Cell Depletion

Cell Type	Source	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
Monocytes	Whole Blood	RosetteSep™ Human Monocyte Depletion Cocktail	Typically 2.8 log depletion	40 mL	CD14 (Catalog #60004) CD16 (Catalog #60041) CD36 (Catalog #60084) CD45 (Catalog #60018)	15628
				200 mL		15668
Myeloid Cells	Fresh lysed or washed processed Leukapheresis packs or frozen leukopaks, Cord Blood	EasySep™ Human HLA-DR Positive Selection and Depletion Kit	2.0 ± 1.8%	1 x 10^9 cells	Anti-HLA-DR, clone L243	100-0980
$CD11b^+$ Cells	PBMC	EasySep™ Human CD11b Positive Selection and Depletion Kit	1.7 ± 1.2%	1 x 10^9 cells	CD11b (Catalog #60040) CD45 (Catalog #60018)	100-0742

Human Granulocyte and Subset Depletion

Cell Type	Source	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
Granulocytes	Whole Blood	RosetteSep™ Human Granulocyte Depletion Cocktail	< 1% Granulocytes	40 mL	CD11b (Catalog #60040) CD16 (Catalog #60041) CD45 (Catalog #60018) CD66b (Catalog #60086)	15624
				200 mL		15664
		RosetteSep™ HLA Granulocyte Depletion Cocktail	< 1% Granulocytes	250 mL		15664HLA
				1000 mL		15684HLA
IgE^+ Cells	Whole Blood	RosetteSep™ Anti-Human IgE Tetramer	--	40 mL	--	15230

Depletion of Other Human Cell Types

Cell Type	Source[1]	Product	Purity	For Processing	Compatible Staining Antibodies	Catalog #
$CD45^+$ Cells	PBMC	EasySep™ Human CD45 Depletion Kit II	Typically 4.0 log depletion	2 x 10^9 cells	CD45 (Catalog #60018)	17898[3] 17898RF[3]
	Whole Blood	RosetteSep™ Human CD45 Depletion Cocktail	Typically 3.6 log depletion	40 mL		15122[3]
				200 mL		15162[3]
Red Blood Cells	Whole Blood	EasySep™ RBC Depletion Reagent	Typically <1% red blood cells	100 mL	CD45 (Catalog #60018) GlyA (Catalog #10423)	18170 18170RF
Dead Cells (Annexin V^+)	Tissue Preparations	EasySep™ Dead Cell (Annexin V^+) Removal Kit	--	1 x 10^9 cells	--	17899

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *PBMC - Peripheral Blood Mononuclear Cells*
2. *Purity data represents the $CD45^+$TCR αβ- cell content of the enriched fraction.*
3. *CD45 depletion is useful to enrich circulating non-hematopoietic tumor cells from peripheral blood.*

Mouse Cell Isolation Products

Mouse T Cell and Subset Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
T Cells	Spleen	EasySep™ Mouse T Cell Isolation Kit	92.0 - 98.0%	1 x 10^9 cells	CD3e (Catalog #60015) CD90 (Catalog #60024)	19851 19851RF
Pan-Naïve T Cells	Spleen	EasySep™ Mouse Pan-Naïve T Cell Isolation Kit	90.0 - 97.0%	1 x 10^9 cells		19848 19848RF
$CD4^+$ T Cells	Spleen	EasySep™ Mouse $CD4^+$ T Cell Isolation Kit	89.0 - 96.0%	1 x 10^9 cells	CD3e (Catalog #60015) CD4 (Catalog #60017)	19852 19852RF
Naïve $CD4^+$ T Cells	Spleen	EasySep™ Mouse Naïve $CD4^+$ T Cell Isolation Kit	90.0 - 95.0%	1 x 10^9 cells	CD4 (Catalog #60017) CD44 (Catalog #60068) CD62L (Catalog #60109)	19765 19765RF
Memory $CD4^+$ T Cells	Spleen	EasySep™ Mouse Memory $CD4^+$ T Cell Isolation Kit	78.0 - 96.0%	1 x 10^9 cells		19767 19767RF
$CD8^+$ T Cells	Spleen	EasySep™ Mouse $CD8^+$ T Cell Isolation Kit	87.0 - 95.0%	1 x 10^9 cells	CD3e (Catalog #60015) CD8a (Catalog #60023)	19853 19853RF
Naïve $CD8^+$ T Cells	Spleen	EasySep™ Mouse Naïve $CD8^+$ T Cell Isolation Kit	92.0 - 98.0%	1 x 10^9 cells	CD8a (Catalog #60023) CD44 (Catalog #60068) CD62L (Catalog #60109)	19858 19858RF

Mouse T Cell and Subset Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
$CD90.2^+$ (Thy 1.2) Cells	Spleen	EasySep™ Mouse CD90.2 Positive Selection Kit II	97.0 - 99.0%	2 x 10^9 cells	CD90.2 (Catalog #60115)	18951 18951RF
$CD90.1^+$ (Thy 1.1) Cells	Spleen, Lymph Node, Whole Blood	EasySep™ Mouse CD90.1 Positive Selection Kit	93.5 ± 3.9%	2 x 10^9 cells	CD90 (Catalog #60024)	18958 18958RF
$CD4^+$ Cells	Spleen	EasySep™ Mouse CD4 Positive Selection Kit II	98.6 ± 0.4%	2 x 10^9 cells	CD3e (Catalog #60015) CD4 (Catalog #60029)	18952 18952RF
$CD4^+CD62L^+$ Cells	Spleen	EasySep™ Mouse $CD4^+CD62L^+$ T Cell Isolation Kit	92.0 - 97.0%	1 x 10^9 cells	CD4 (Catalog #60017) CD44 (Catalog #60068)	18765 18765RF
$CD4^+CD25^+$ Cells	Spleen	EasySep™ Mouse $CD4^+CD25^+$ Regulatory T Cell Isolation Kit II	70.0 - 93.0%	1 x 10^9 cells	CD4 (Catalog #60029) CD4 (Catalog #60017)	18783
$CD25^+$ Cells	Spleen	EasySep™ Mouse CD25 Regulatory T Cell Positive Selection Kit	80.0 - 93.0%	1 x 10^9 cells	CD4 (Catalog #60017)	18782 18782RF
$CD8a^+$ Cells	Spleen	EasySep™ Mouse CD8a Positive Selection Kit II	96.3 ± 1.4%	2 x 10^9 cells	CD3e (Catalog #60015) CD8a (Catalog #60023)	18953 18953RF

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD.*

WALLCHART

Frequencies & Percentages of Mouse Immune Cell Types

www.stemcell.com/MouseCellFreq

Mouse B Cell Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
B Cells	Spleen	EasySep™ Mouse B Cell Isolation Kit	94.0 - 98.0%	1 x 10^9 cells	CD19 (Catalog #60006)	19854[2] 19854RF[2]
Pan-B Cells	Spleen	EasySep™ Mouse Pan-B Cell Isolation Kit	91.0 - 98.0%	1 x 10^9 cells	CD19 (Catalog #60006) CD138 (Catalog #60035)	19844[3] 19844RF[3]

Mouse B Cell and Subset Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
$CD19^+$ Cells	Spleen	EasySep™ Mouse CD19 Positive Selection Kit II	95.0 - 99.6%	2 x 10^9 cells	CD19 (Catalog #60006)	18954 18954RF
$CD138^+$ Cells	Spleen, Lymph Node, Bone Marrow	EasySep™ Mouse CD138 Positive Selection Kit	81.5 ± 4.9%	2 x 10^9 cells	CD138 (Catalog #60035) CD45R (Catalog #60019) CD267 (Catalog #60116)	18957 18957RF
	Bone Marrow, Spleen	EasySep™ Release Mouse CD138 Positive Selection Kit	85.5 ± 9.8% (bone marrow) 86.1 ± 7.4% (spleen)	2 x 10^9 cells		100-0601

Mouse NK Cell Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
NK Cells	Spleen	EasySep™ Mouse NK Cell Isolation Kit	67.0 - 89.0%	1 x 10^9 cells	CD3e (Catalog #60015) CD49b (Catalog #60020)	19855 19855RF

Mouse NK Cell Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
$CD49b^+$ Cells	Spleen	EasySep™ Mouse CD49b Positive Selection Kit	74.0 - 90.0%	2 x 10^9 cells	Dextran (Catalog # 60026)	18755 18755RF

Mouse Innate Lymphoid Cell (ILC) Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Group 1, 2, and 3 Innate Lymphoid Cells	Bone Marrow, Lung, Lymph Node	EasySep™ Mouse Pan-ILC Enrichment Kit	3.7 - 7.6% (lung; 10.3 ± 2.0 fold enrichment) 21.1 - 45.2% (lymph node; 60-129 fold enrichment)	1 x 10^9 cells	CD45 (Catalog #60030) CD3e (Catalog #60015) CD11b (Catalog #100-0433) CD11c (Catalog #100-0440) CD19 (Catalog #60112) Gr-1 (Catalog #60028) TER119 (Catalog #60033) TCR Gamma/Delta (Catalog #60104)	19875
Group 2 Innate Lymphoid Cells	Lung	EasySep™ Mouse ILC2 Enrichment Kit	2.2 - 7.1% (3 - 11 fold enrichment)	1 x 10^9 cells	CD45 (Catalog #60030) CD90.2 (Catalog #60115) CD3e (Catalog #60015) CD11b (Catalog #100-0433) CD11c (Catalog #100-0440) CD19 (Catalog #60112) Gr-1 (Catalog #60028) CD161 (Catalog #100-0459) TER119 (Catalog #60033) TCR Gamma/Delta (Catalog #60104)	19842

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD.*
2. *This kit is designed for the isolation of conventional (B-2) B cells only.*
3. *This kit is designed to isolate all B cells, including conventional (B-2) B cells, B-1 B cells, and plasma cells.*

Mouse Dendritic Cell Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Pan-Dendritic Cells	Spleen	EasySep™ Mouse Pan-DC Enrichment Kit	54.0 - 76.0%	2 x 10^9 cells	CD11c (Catalog #100-0440) CD3e (Catalog #60015) CD19 (Catalog #60112) F4/80 (Catalog #60027) Ly6G (Catalog #60031) TER119 (Catalog #60033) NK1.1 (Catalog #100-0459)	19763 19763RF
		EasySep™ Mouse Pan-DC Enrichment Kit II	57.3 ± 5.5%	2 x 10^9 cells	CD11c (Catalog #60002), CD3e (Catalog #60015) CD19 (Catalog #60112) Ly-6G (Catalog #60031) F4/80 (Catalog #60027) NK1.1 (Catalog #60103), TER119 (Catalog #60033)	19863
Plasmacytoid Dendritic Cells	Spleen	EasySep™ Mouse Plasmacytoid DC Isolation Kit	62.0 - 94.0%	2 x 10^9 cells	CD11c (Catalog #100-0440)	19764 19764RF

Mouse Monocyte Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Monocytes	Whole Blood, Bone Marrow	EasySep™ Mouse Monocyte Isolation Kit	94.2 ± 1.5%	1 x 10^9 cells	CD11b (Catalog #100-0433) F4/80 (Catalog #60027)	19861 19861RF

Mouse Macrophage Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Macrophages	Lung, Spleen, Peritoneal Lavage	EasySep™ Mouse F4/80 Positive Selection Kit	94.3 ± 2.8% (lung) 88.8 ± 3.4% (spleen) 94.4 ± 2.9% (peritoneal lavage)	7.5 x 10^8 (lung) 2 x 10^9 cells (spleen) 6 x 10^8 cells (peritoneal lavage)	F4/80 (Catalog #60027) CD11b (Catalog #100-0433) CD45 (Catalog #60030)	100-0659

Mouse Neutrophil Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Neutrophils	Whole Blood, Bone Marrow	EasySep™ Mouse Neutrophil Enrichment Kit	83.0 - 94.0% (whole blood) 80.0 - 90.0% (bone marrow)	1 x 10^9 cells	CD11b (Catalog #100-0433) Gr-1 (Catalog #60028) Ly6G (Catalog #60031)	19762 19762RF

Mouse Myeloid-Derived Suppressor Cell (MDSC) Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Myeloid-Derived Suppressor Cells ($CD11b^+Gr1^+$)	Bone Marrow, Whole Blood, Spleen	EasySep™ Mouse MDSC ($CD11b^+Gr1^+$) Isolation Kit	94.3 ± 2.1% (spleen; tumor-bearing BALB/c mice) 86.0 ± 4.6% (spleen; naive C57BL/6 mice)	1 x 10^9 cells	CD45 (Catalog #60030) CD11b (Catalog #100-0433) Gr1 (Catalog #60028)	19867

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD.*

Mouse Myeloid Cell Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
CD11b$^+$ Cells	Spleen, Bone Marrow, Lung, Brain	EasySep™ Mouse CD11b Positive Selection Kit II	92.6 ± 3.0% (spleen) 98.4 ± 2.3% (bone marrow) 86.9 ± 7.6% (lung) 94.2 ± 4.0% (brain)	2 x 10^9 cells	CD11b (Catalog #100-0433)	18970 18970RF
CD11c$^+$ Cells	Spleen, Cultured Bone Marrow	EasySep™ Mouse CD11c Positive Selection Kit II with Spleen Dissociation Medium	86.8 ± 9.7%	2 x 10^9 cells	CD11c (Catalog #100-0440)	18781 18781RF
		EasySep™ Mouse CD11c Positive Selection Kit II	87.0 - 98.0%	2 x 10^9 cells		18780 18780RF

Mouse Hematopoietic Progenitor Isolation by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Hematopoietic Progenitor Cells	Bone Marrow	EasySep™ Mouse Hematopoietic Progenitor Cell Isolation Kit	60.0 - 84.0%	1 x 10^9 cells	CD3 (Catalog #60015) CD11b (Catalog #100-0433) CD19 (Catalog #60006) CD45R (Catalog #60019) Gr-1 (Catalog #60028) TER119 (Catalog #60033)	19856 19856RF

Mouse Hematopoietic Progenitor Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
SCA1$^+$ Cells	Bone Marrow	EasySep™ Mouse SCA1 Positive Selection Kit	87.0 - 97.0%	2 x 10^9 cells	Sca1 (Catalog #60032)	18756 18756RF
CD117$^+$ (c-KIT) Cells	Bone Marrow	EasySep™ Mouse CD117 (cKit) Positive Selection Kit	88.0 - 95.0%	2 x 10^9 cells	Dextran (Catalog #60026)	18757 18757RF

Mouse Total Leukocyte Isolation by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
CD45$^+$ Cells	Lymphoid Organs or Non-Hematopoietic Tissue	EasySep™ Mouse CD45 Positive Selection Kit	97.1 ± 1.2%	2 x 10^9 cells	CD45.1 (Catalog #60117) CD45.2 (Catalog #60118)	18945
Tumor-Infiltrating Leukocytes	Human Tumor Xenograft	EasySep™ Release Human CD45 Positive Selection Kit for Humanized Mice	86.1 ± 8 .6%	1 x 10^9 cells	CD45 (Catalog #60118)	100-0107 100-0109
	Single-Cell Suspensions of Solid Tumors	EasySep™ Mouse TIL (CD45) Positive Selection Kit	84.6 - 95.2%	1 x 10^9 cells	CD45 (Catalog #60030), CD45.1 (Catalog #60117) CD45.2 (Catalog #60118)	100-0350

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD.*

Depletion of Mouse Cell Types

Cell Type	Source	Product	For Processing	Catalog #
Dead Cells (Annexin V+)	Tissue Preparations	EasySep™ Dead Cell (Annexin V+) Removal Kit	1 x 10^9 cells	17899

Isolation of Other Mouse Cell Types by Negative Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Human Cells from Xenograft-Recipient Mice	Bone Marrow, Spleen, Blood	EasySep™ Mouse/Human Chimera Isolation Kit	80.0 - 98.0%	1 x 10^9 cells	CD45 (Catalog #60018) CD45R (Catalog #60019) TER119 (Catalog #60033)	19849
Other Cell Types (Custom)	Any Source	EasySep™ Mouse Custom Enrichment Kit	--	As requested	--	19709[2] 19709RF[2]

Isolation of Other Mouse Cell Types by Positive Selection

Cell Type	Source	Product	Purity[1]	For Processing	Compatible Staining Antibodies	Catalog #
Other Cell Types (Custom)	Any Source	EasySep™ Release Mouse Biotin Positive Selection Kit	--	1 x 10^9 cells	--	17655[4]
		EasySep™ Release Mouse PE Positive Selection Kit	--	1 x 10^9 cells	--	17656[5]
		EasySep™ Mouse PE Positive Selection Kit II	--	1 x 10^9 cells	Dextran (Catalog #60026)	17666[5] 17666RF[5]
			--	5 x 10^9 cells		17696[5,6] 17696RF
		EasySep™ Mouse FITC Positive Selection Kit II	--	1 x 10^9 cells		17668[7] 17668RF[7]
		EasySep™ Mouse Biotin Positive Selection Kit II	--	1 x 10^9 cells		17665[4] 17665RF[4]
		EasySep™ Mouse APC Positive Selection Kit II	--	1 x 10^9 cells		17667[8] 17667RF[8]
		EasySep™ Release Mouse APC Positive Selection Kit	--	1 x 10^9 cells	--	100-0033
		EasySep™ Mouse Custom Positive Selection Kit	--	As requested	--	18709[3] 18709RF[3]

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD.*
2. *Isolate any mouse cell type by negative selection.*
3. *Isolate any mouse cell type by positive selection.*
4. *Use with biotinylated antibodies.*
5. *Use with PE-conjugated antibodies.*
6. *This product includes 5 x 17666.*
7. *Use with FITC-conjugated antibodies.*
8. *Use with APC-conjugated antibodies.*

Other Species Cell Isolation Products

Rat Cell Isolation by Negative or Positive Selection, or Depletion

Cell Type	Selection Method	Source	Product	Purity[1]	For Processing	Catalog #
T Cells	Negative	Spleen, Whole Blood, Lymph Node	EasySep™ Rat T Cell Isolation Kit	98.1 ± 1.2%	1 x 10^9 cells	19641 19641RF
CD4+ T Cells	Negative	Spleen, Whole Blood, Lymph Node	EasySep™ Rat CD4+ T Cell Isolation Kit	97.2 ± 1.2%	1 x 10^9 cells	19642 19642RF
CD8+ T Cells	Negative	Spleen, Whole Blood, Lymph Node	EasySep™ Rat CD8+ T Cell Isolation Kit	92.3 ± 3.1%	1 x 10^9 cells	19643 19643RF
B Cells	Negative	Spleen, Whole Blood, Lymph Node	EasySep™ Rat B Cell Isolation Kit	94.1 ± 3.8%	1 x 10^9 cells	19644 19644RF
IgM+ Cells	Depletion	Spleen, Whole Blood, Lymph Node	EasySep™ Rat IgM Depletion Kit	Typically 1.6 log depletion	1 x 10^9 cells	18644 18644RF
Any Cell Type (Custom)	Negative	Any Source	EasySep™ Rat Custom Enrichment Kit	--	As requested	19609[2] 19609RF[2]
	Positive	Any Source	EasySep™ Rat Custom Positive Selection Kit	--	As requested	18609[3] 18609RF[3]

Non-Human Primate Cell Isolation by Negative or Positive Selection

Cell Type	Selection Method	Product	Purity[2]	For Processing	Catalog #
T Cell	Negative	EasySep™ Non-Human Primate T Cell Isolation Kit	94.6 ± 3.4%	1x10^9 cells	19581 19581RF
CD4+ T Cell		EasySep™ Non-Human Primate CD4+ T Cell Isolation Kit	84.5 ± 3.3%	1x10^9 cells	19582 19582RF
CD8+ T Cell		EasySep™ Non-Human Primate CD8+ T Cell Isolation Kit	89.2 ± 3.5%	1x10^9 cells	19583 19583RF
B Cells	Negative	EasySep™ Non-Human Primate B Cell Isolation Kit	91.4 ± 5.2%	1x10^9 cells	100-0345 100-0347
Any Cell Type (Custom)	Negative	EasySep™ Non-Human Primate Custom Enrichment Kit	94.6 ± 3.4%	As requested	19809[4] 19809RF[4]
	Positive	EasySep™ Non-Human Primate Custom Positive Selection Kit			18809[5] 18809RF[5]

Isolation of Cells from Other Species by Positive Selection

Cell Type	Source	Product	For Processing	Catalog #
Any Cell Type	Any Source	EasySep™ PE Positive Selection Kit	1 x 10^9 cells	17684[6] 17684RF[6]
		EasySep™ FITC Positive Selection Kit	1 x 10^9 cells	17682[7] 17682RF[7]
		EasySep™ Biotin Positive Selection Kit	1 x 10^9 cells	17683[8] 17683RF[8]
		EasySep™ APC Positive Selection Kit	1 x 10^9 cells	17681[9] 17681RF[9]
		EasySep™ "Do-It-Yourself" Selection Kit	1 x 10^9 cells	17698[10] 17698RF[10]
		EasySep™ Anti-Rat IgG2a Positive Selection Kit	2 x 10^9 cells	18990[11] 18990RF[11]
		EasySep™ Anti-Rat IgG2b Positive Selection Kit	2 x 10^9 cells	18992[12] 18992RF[12]
		EasySep™ Anti-Rat IgM Positive Selection Kit	2 x 10^9 cells	18994[13] 18994RF[13]

RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.

1. *Purities shown as either a range or mean ± SD*
2. *Isolate any rat cell type by negative selection.*
3. *Isolate any rat cell type by positive selection.*
4. *Isolate any non-human primate cell type by negative selection.*
5. *Isolate any non-human primate cell type by positive selection.*
6. *Use with PE-conjugated antibodies.*
7. *Use with FITC-conjugated antibodies.*
8. *Use with biotinylated antibodies.*
9. *Use with APC-conjugated antibodies.*
10. *Use with your own mouse IgG1 antibody.*
11. *Use with your own rat IgG2a antibody.*
12. *Use with your own rat IgG2b antibody.*
13. *Use with your own rat IgM antibody.*

Cell Isolation Magnets, Instruments, and Accessories

RoboSep™ Instruments & Accessories

Product	Catalog #
For RoboSep™-S	
RoboSep™-S	21000
RoboSep™-S Double Package	21002
RoboSep™-S Triple Package	21003
RoboSep™ Service Rack	20101
RoboSep™ Buffer[1] (250 mL)	20104
RoboSep™ Buffer 5X Concentrate (250 mL)	20124
RoboSep™ Filter Tip Racks[1] (1 box of 8 racks)	20125
RoboSep™ Tip Head Polishing Compound (7 mL)	20119
For RoboSep™-16	
RoboSep™-16	23000
RoboSep™-16 Double Package	23302
RoboSep™ Buffer (250 mL)	20104
RoboSep™ Buffer 5X Concentrate (250 mL)	20124
Sterile Filtered Conductive Tips	23101
Non-Sterile Filtered Conductive Tips	23102
Waste Bags	23103

EasySep™ Magnet Stands

Product	Catalog #	Unit Size
EasySep™ EasyStand™	18130[2]	1 stand
EasySep™ EasyStand™ with EasySep™ Magnet	18131	1 stand & 1 x 18000
4 x EasySep™ EasyStand™	18134	4 stands
4 x EasySep™ EasyStand™ with EasySep™ Magnets	18135	4 stands & 4 x 18000
6 x EasySep™ EasyStand™	18136	6 stands
6 x EasySep™ EasyStand™ with EasySep™ Magnets	18137	6 stands & 6 x 18000
EasySep™ Multistand	18010[3]	1 stand
EasySep™ Multistand with EasySep™ Magnets	18004	1 stand & 4 x 18000
EasySep™ Multistand with "The Big Easy" Magnets	18100	1 stand & 4 x 18001

1. *RoboSep™-S Reagent Kits (RF) contain an EasySep™ Selection Kit with RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Tip Racks.*
2. *Each EasySep™ EasyStand™ can hold a single EasySep™ Magnet and can link up to 6 individual EasySep™ EasyStands™ together.*
3. *The EasySep™ Multistand allows the separation of up to 4 samples at one time.*
4. *ThawSTAR® CFT2 products are available in select territories. Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*

EasySep™ Magnets

Product	Catalog #
EasySep™ Magnet	18000
"The Big Easy" EasySep™ Magnet	18001
Easy 50 EasySep™ Magnet	18002
Easy 250 EasySep™ Magnet	100-0821
EasyEights™ EasySep™ Magnet	18103
EasyPlate™ EasySep™ Magnet	18102

Instrument Service Options

Product	Catalog #
For RoboSep™-S	
1-Year Warranty	21200
Preventative Maintenance Visit (for an Instrument without a Warranty)	21203
1-Year Warranty with 1 Preventative Maintenance Visit	21202
Additional Preventative Maintenance Visit (for an Instrument on an active Warranty)	21209
For RoboSep™-16	
1-Year Warranty	23200
Preventative Maintenance Visit (for an Instrument without a Warranty)	23203
1-Year Warranty with 1 Preventative Maintenance Visit	23202
Additional Preventative Maintenance Visit (for an Instrument on an active Warranty)	23209

Cell Thawing Instrument

Product	Catalog #
ThawSTAR® CFT2 Automated Thawing System[4]	100-0650
ThawSTAR® CFT2 Transporter[4]	100-0642
ThawSTAR® CFT2 Confirmation Vials[4]	100-0643

SepMate™ Products

Product	Catalog #	Blood Volume Processed	Unit Size
SepMate™-15 (IVD[1])	85415 85420	0.5 - 5 mL	100 tubes 500 tubes
SepMate™-15 (RUO[2])	86415 86420		100 tubes 500 tubes
SepMate™-50 (IVD[1])	85450 85460	4 - 17 mL	100 tubes 500 tubes
SepMate™-50 (RUO[2])	86450 86460		100 tubes 500 tubes

Plasticware

Product	Volume	Catalog #
Corning® Filtered Pipette Tips	2 µL 10 µL 30 µL 200 µL 1000 µL	38034 38035 38033 38032 38031
Falcon® Conical Tubes	15 mL 50 mL	38009 38010
Falcon® Round-Bottom Polystyrene Tubes	5 mL	38007 (500 tubes, with caps) 38025 (1000 tubes, with caps) 38055 (1000 tubes, without caps)
Falcon® Round-Bottom Polypropylene Tubes	5 mL	38057 (500 tubes, with caps) 38056 (1000 tubes, without caps)
Falcon® Round-Bottom Tubes with Cell Strainer Cap	5 mL	38030
Reversible Strainers	–	27270 (100 µm, large) 27217 (100 µm, small) 27250 (37 µm, large) 27215 (37 µm, small) 27260 (70 µm, large) 27216 (70 µm, small)

1. *SepMate™ (IVD) is available in Australia, Canada, Europe, and the United States of America, where it is registered as an in vitro diagnostic (IVD) device for the isolation of mononuclear cells from human whole blood, cord blood, and bone marrow by density gradient centrifugation. This product is also available in China where it is considered a non-medical device by the China Food and Drug Administration (CFDA), and should therefore be used as general laboratory equipment.*
2. *SepMate™ RUO is available in regions where SepMate™ is not registered as an IVD device and is for research use only.*
3. *Lymphoprep™ has the same density as Ficoll-Paque® and can be substituted for Ficoll-Paque® without any need to change your existing protocols.*
4. *This kit can be used following cell separation using EasySep™ kits.*

Density Media

Product	Catalog #	Unit Size
Lymphoprep™ [3]	07801 07851 07811 07861	250 mL 500 mL 4 x 250 mL 6 x 500 mL
OptiPrep™	07820	250 mL
HetaSep™	07806 07906	20 mL 100 mL
RosetteSep™ DM-L	15705	100 mL
RosetteSep™ DM-M	15725	100 mL
SpinSep™ Density Medium	17531	100 mL

Enzymes for Tissue Dissociation

Product	Catalog #	Unit Size
ACCUTASE™	07920	100 mL
Collagenase Type I	07902	5 mL
Collagenase Type IV	07909	100 mL
Collagenase/Hyaluronidase (10X)	07912	10 mL
Dispase (1 mg/mL)	07923	100 mL
DNase I (1 mg/mL)	07900	1 mL
Spleen Dissociation Medium	07915	10 x 4 mL
Trypsin-EDTA (0.05%)	07910	500 mL
Trypsin in Citrate Saline	07400	100 mL

Nucleic Acid Purification Kits

Product	Size	Catalog #
EasySep™ Total Nucleic Acid Extraction Kit	1 kit	100-1079
Genomic DNA Purification Kit[4]	1 kit	79020
Gel and PCR Clean-up Kit	1 kit	79030
Total RNA Purification Kit[4]	1 kit	79040

Specialized Cell Culture Media

ImmunoCult™ Products

Product	Catalog #	Size	Applications
ImmunoCult™-XF T Cell Expansion Medium	10981	500 mL	Serum- and xeno-free (XF) culture medium optimized for the consistent and reliable culture and expansion of isolated T cells.
ImmunoCult™ Human CD3/CD28/CD2 T Cell Activator	10970 10990	2 mL 10 mL	Activation supplements containing antibody complexes that target T cell receptors designed to activate and expand T cells in culture. They can be used in combination with ImmunoCult™-XF T Cell Expansion Medium or any other media for culturing human T cells.
ImmunoCult™ Human CD3/CD28 T Cell Activator	10971 10991	2 mL 10 mL	
ImmunoCult™ Human Th1 Differentiation Supplement	10973	1 mL	Serum-free culture supplements formulated to promote the robust activation, expansion, and differentiation of human peripheral blood-derived, naïve CD4+ T cells into regulatory T cells (Tregs), Th1 cells, or Th2 cells. Supplements are intended for use with ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981) and ImmunoCult™ Human CD3/CD28 T Cell Activator (Catalog #10971).
ImmunoCult™ Human Th2 Differentiation Supplement	10975	1 mL	
ImmunoCult™ Human Treg Differentiation Supplement	10977	1 mL	
ImmunoCult™ Mouse Th1 Differentiation Supplement	10953	1 mL	Culture supplements formulated to promote the robust differentiation of mouse splenocyte-derived naïve CD4+ T cells into Th1 cells, Th2 cells, or regulatory T cells (Tregs).
ImmunoCult™ Mouse Th2 Differentiation Supplement	10955	1 mL	
ImmunoCult™ Mouse Treg Differentiation Supplement	10957	1 mL	
ImmunoCult™ Human B Cell Expansion Kit	100-0645	1 kit	Serum-free and feeder-free culture medium promoting the consistent expansion of human B cells and their maturation to plasma cells.
ImmunoCult™ Mouse B Cell Expansion Kit	100-1003	1 kit	Serum-free culture kit for in vitro expansion of mouse B cells.
ImmunoCult™-SF Macrophage Medium	10961	250 mL	Serum-free culture medium formulated to support the maturation of monocytes into M1 and M2a macrophages.
ImmunoCult™ NK Cell Expansion Kit	100-0711	1 kit	Serum-free and feeder-free culture medium and supplements promoting the consistent and reliable expansion of human NK cells.
ImmunoCult™ Dendritic Cell Culture Kit	10985	1 kit	Kit designed to generate mature DCs from human monocytes in 7 days.

For more information, please visit **www.ImmunoCult.com**.

StemSpan™ Products

Product	Catalog #	Size	Applications
StemSpan™ NK Cell Generation Kit	09960	1 kit	For expansion and differentiation of human CD34+ hematopoietic progenitor cells to NK cells.
StemSpan™ T Cell Generation Kit	09940	1 kit	For expansion and differentiation of human CD34+ hematopoietic progenitor cells to T cells.
StemSpan™ B Cell Generation Kit	Coming soon	1 kit	For expansion and differentiation of human CD34+ hematopoietic progenitor cells from cord blood to B cells.
StemSpan™ Leukemic Cell Culture Kit	09720	1 kit	For culture, expansion, and drug screening of chronic and acute myeloid leukemia cells

For more information, please visit **www.StemSpan.com**.

STEMdiff™ Products

Product	Catalog #	Size	Applications
STEMdiff™ T Cell Kit	100-0194	1 kit	For expansion and differentiation of hPSCs to T cells
STEMdiff™ NK Cell Kit	100-0170	1 kit	For expansion and differentiation of hPSCs to NK cells
STEMdiff™ Monocyte Kit	05320	1 kit	For expansion and differentiation of hPSCs to monocytes
STEMdiff™ Microglia Differentiation Kit	100-0019	1 kit	For differentiation of microglia precursors from hPSC-derived hematopoietic progenitor cells
STEMdiff™ Microglia Maturation Kit	100-0020	1 kit	For maturation of microglia from hPSC-derived microglia precursors

For more information, please visit **www.STEMdiff.com**.

Recombinant Cytokines

Product	Catalog #		
Recombinant Cytokine	Human	Mouse	Rat
GM-CSF[1,2]	78015	78017	78018
G-CSF[1,2]	78012	78014	--
M-CSF[1,2]	78057	78059	78117
IFN-β	78113	--	--
IFN-γ[1]	78020	78021	78114
TNF-α[1]	78068	78069	78124
TNF-β	78125	--	--
TNF-receptor 1	78126	--	--
GRO-beta (CXCL2)	78112	--	--
MIP-3α (CCL20)	78118	--	--
TRAIL	--	78122	--
IL-1α[1]	78115	78129	--
IL-1β[1]	78034	78035	--
IL-2[1,2]	78036	78081	--
IL-3[1,2]	78040	78042	78181
IL-4[1,2]	78045	78047	--
IL-5[1]	78048	78049	--
IL-6[1]	78050	78052	--
IL-7[1]	78053	78054	--
IL-10[1,2]	78024	78079	--
IL-11[1]	78025	78026	--
IL-12	78027	78028	--
IL-13	78029	78030	--
IL-15	78031	--	--
IL-17A	78032	78033	--
IL-21	78082	78116	--
IL-22	78038	78039	--
IL-33	78043	78044	--

For more information or to view our complete listing of over 200 cytokines, please visit **www.stemcell.com/cytokines**.

Cryopreservation Media

Product	Catalog #	Size
CryoStor® CS10	07930 07931 07940 07952 07955 07959	100 mL 5 x 16 mL vials 1000 mL bag 16 x 10 mL 100 mL bag 5 x 10 mL
CryoStor® CS5	07933 07949 07953	100 mL 5 x 10 mL 100 mL bag
CryoStor® CS2	07932	100 mL
CryoStor® CSB	100-0237 100-0238 100-0239	100 mL 500 mL 1000 mL

ELISA Kits

Product	Catalog #	
ELISA Complete Kits	2-Plate Kit	10-Plate Kit
Human IFN-α ELISA Kit	02000	02001
Human IFN-γ ELISA Kit	02002	02003
Human IgE ELISA Kit	02032	02033
Human IL-1β ELISA Kit	02004	02005
Human IL-2 ELISA Kit	02006	02007
Human IL-4 ELISA Kit	02008	02009
Human IL-5 ELISA Kit	02010	02011
Human IL-10 ELISA Kit	02012	02013
Human IL-12 (p70) ELISA Kit	02014	02015
Human IL-13 ELISA Kit	02034	02035
Human IL-17A ELISA Kit	02036	02037
Human IL-23 ELISA Kit	02016	02017
Human Latent TGF-β1 ELISA Kit	02018	02019
Mouse IFN-γ ELISA Kit	02020	02021
Mouse IL-2 ELISA Kit	02022	02023
Mouse IL-4 ELISA Kit	02038	02039
Mouse IL-5 ELISA Kit	02024	02025
Mouse IL-12 (p70) ELISA Kit	02026	02027
Mouse IL-12/-23 (p40) ELISA Kit	02028	02029
Mouse TNF-α ELISA Kit	02030	02031

Product	Catalog #
ELISA Antibody Pair Kits	
Human IgE ELISA Antibody Pair Kit	01993
Human IgG ELISA Antibody Pair Kit	01994
Human IgM ELISA Antibody Pair Kit	01995
Mouse IgA ELISA Antibody Pair Kit	01996
Mouse IgE ELISA Antibody Pair Kit	01997
Mouse IgG ELISA Antibody Pair Kit	01998
Mouse IgM ELISA Antibody Pair Kit	01999

For more information or to view the complete ELISA product listing, please visit **www.stemcell.com/ELISA**.

1. *Animal Component-Free version available*
2. *International Units (IU) data is available at www.stemcell.com/IU-data.*

Genome Editing Tools

ArciTect™ Products

Product	Size	Catalog #
ArciTect™ sgRNA	4 nmol	200-0013
ArciTect™ crRNA	2 nmol 10 nmol 20 nmol	76010 76011 76012
ArciTect™ tracrRNA Kit	5 nmol kit 10 nmol kit 20 nmol kit	76016 76017 76018
ArciTect™ Cas9 Nuclease	100 µg 300 µg	76002 76004
ArciTect™ T7 Endonuclease I Kit	25 reactions 125 reactions	76021 76022
ArciTect™ High-Fidelity DNA Polymerase Kit	500 reactions	76026
ArciTect™ Human CRISPR Optimization Kit, APC	1 kit	100-0470
ArciTect™ Human CRISPR Optimization Kit, PE	1 kit	100-0471
ArciTect™ Human CRISPR Optimization Kit, FITC	1 kit	100-0472
ArciTect™ Human HPRT Positive Control Kit	1 kit	76013
ArciTect™ Annealing Buffer (5X)	1 mL	76020

Cell Dyes and Stains

Cell Counting / Viability Reagents

Product	Size	Catalog #
Trypan Blue	100 mL	07050
3% Acetic Acid with Methylene Blue	100 mL	07060
7-AAD	200 tests 500 tests	75001.1 75001
Propidium Iodide	10 mg	75002
CFDA-SE	10 mg	75003
DAPI	10 mg	75004

GloCell™ Fixable Viability Dyes

Product	Catalog #	
	100 Tests	500 Tests
GloCell™ Fixable Viability Dye Red 710	75006.1	75006
GloCell™ Fixable Viability Dye Red 780	75007.1	75007
GloCell™ Fixable Viability Dye UV 450	75008.1	75008
GloCell™ Fixable Viability Dye Violet 450	75009.1	75009
GloCell™ Fixable Viability Dye Violet 510	75010.1	75010
GloCell™ Fixable Viability Dye Violet 540	75011.1	75011

For more information, please visit **www.stemcell.com/GloCell**.

Annexin V Dyes

Product	Size	Catalog #
Annexin V	APC, 25 tests APC, 100 tests	100-0328 100-0329
	PE, 25 tests PE, 100 tests	100-0330 100-0331
	FITC, 25 tests FITC, 100 tests	100-0332 100-0333
Annexin V Binding Buffer	50 mL	100-0334
Annexin V Apoptosis Detection Kit with 7-AAD	FITC, 1 kit	100-0338
	PE, 1 kit	100-0337
	APC, 1 kit	100-0339

Tools for COVID-19 Research

Recombinant Proteins

Product	Size	Catalog #
SARS-CoV-2 Recombinant Nucleocapsid Protein, aa1-419 (E. coli-expressed)	100 µg	100-0590
	1000 µg	100-0591
SARS-CoV-2 Recombinant Nucleocapsid Protein, aa1-419 (HEK293-expressed)	100 µg	100-0592
	1000 µg	100-0593
SARS-CoV-2 Recombinant Spike Protein, aa16-685 (HEK293-expressed)	100 µg	100-0594
	1000 µg	100-0594
SARS-CoV-2 Recombinant Spike Protein, aa319-541 (Yeast-expressed)	100 µg	100-0596
	1000 µg	100-0597
Human Recombinant ACE2 Protein, aa18-740 (HEK293-expressed)	100 µg	100-0598
	500 µg	100-0599

Primary Antibodies

Product	Size	Catalog #
Anti-SARS-CoV Nucleoprotein Antibody, Clone 001 (Recombinant)	50 µL	100-0529
	100 µL	100-0580
Anti-SARS-CoV Spike Protein S1 Receptor-Binding Domain Antibody, Clone D005 (Recombinant)	50 µL	100-0581
	100 µL	100-0582
Anti-SARS-CoV-2 Spike Protein S1 Receptor-Binding Domain Antibody, Clone Covi-1 (Blocking/Recombinant)	100 µL	100-0583
Anti-SARS-CoV-2 Spike Protein S1 Receptor-Binding Domain Antibody, Clone Covi-2 (Blocking/Recombinant)	100 µL	100-0584

ELISA Kits

Product	Catalog #
Human SARS-CoV-2 Nucleoprotein IgG Antibody ELISA Kit	100-0686
Human ACE2 ELISA Kit	100-0687
Mouse ACE2 ELISA Kit	100-0688
Human CD13 (ANPEP) ELISA Kit	100-0689

1. *Human SARS-CoV-2 IgM/IgG Rapid Test Kit is for research use only and not intended for human or animal diagnostic or therapeutic use.*

Peptide Substrates for Detection of Coronavirus Proteases

Product	Size	Catalog #
CoV Protease Substrate-1 TF5	100 tests	100-0505
	1000 tests	100-0506
CoV Protease Substrate-1 EDANS	100 tests	100-0507
	1000 tests	100-0508
CoV Protease Substrate-2 EDANS	100 tests	100-0509
	1000 tests	100-0510
CoV Protease Substrate-2 IF670	100 tests	100-0511
	1000 tests	100-0512

Screening Kits

Product	Catalog #
Human SARS-CoV-2 IgM/IgG Rapid Test Kit[1]	100-0685
Human SARS-CoV-2 Spike Protein Inhibitor Screening Kit	100-0700

Viral Peptide Pools

Product	Size	Catalog #
SARS-CoV-2 (Nucleocapsid Protein) Peptide Pool	25 µg/peptide	100-0647
SARS-CoV-2 (Spike Protein) Peptide Pool	25 µg/peptide	100-0676
SARS-CoV-2 (VME1) Peptide Pool	25 µg/peptide	100-0648
Influenza (HLA Class I Control) Peptide Pool	25 µg/peptide	100-0672
RSV (HLA Class I Control) Peptide Pool	25 µg/peptide	100-0674
EBV (EBNA-1) Peptide Pool	25 µg/peptide	100-0669
EBV (BZLF1) Peptide Pool	25 µg/peptide	100-0670
EBV (LMP2) Peptide Pool	25 µg/peptide	100-0671

For more information or to view our complete listing of viral peptide pools, please visit **www.stemcell.com/viral-peptide-pools**.

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IMMUNOLOGY

Source, Isolate, Culture, and Analyze Immune Cells

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DOCUMENT #DX20366 VERSION 5.7.2 JUNE 2023