

A scanning electron micrograph (SEM) showing a large, spherical cluster of human primary cells with a highly textured, irregular surface. Two smaller, similar cell clusters are visible in the background, one in the upper left and one in the lower left. The background is dark and out of focus.

# HUMAN PRIMARY CELLS



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# Human Primary Cells

## It All Starts with the Right Cells

Human primary cells are cells 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 including in vitro cell-based assays or the creation of xenograft 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 HLA type and 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.

A reliable source of human primary cells ensures continuity in your research and allows you to start experiments according to your schedule, without being restricted by the availability of tissue. In addition, donor screening and enrollment in an Institutional Review Board (IRB)-approved collection study makes cell sourcing an efficient process.

Choose ready-to-use fresh or cryopreserved cells including mononuclear cells (MNCs), purified immune cells or stem cells isolated from blood or bone marrow\*.

\*Certain fresh and cryopreserved products are only available in select territories. Please contact your local Sales representative or Product and Scientific Support ([techsupport@stemcell.com](mailto:techsupport@stemcell.com)) for further information.

# A Critical First Step in Your Research

## Expertise in Every Vial

With over 20 years of expertise in the development of cell isolation and cell culture reagents, STEMCELL Technologies supports every stage of your research workflow. The latest technologies developed by STEMCELL are used to isolate, culture, and cryopreserve your cells, enabling you to start your research with the right cells.

## Commitment to Quality

Most purified cells are isolated using column-free cell isolation technology and cryopreserved in defined, serum-free media. State-of-the-art equipment including automated cryogenic storage systems and cryogenic sample carriers ensure cold chain custody management and high sample integrity. Cryopreserved cells are shipped on your choice of dry ice or liquid nitrogen, while fresh cells are delivered within 24 hours of collection (see page 6 for more details on delivery options).

Cells are shipped with a Certificate of Analysis indicating guaranteed Quality Control testing results including cell count, viability, and purity. STEMCELL's Quality Management System is certified to ISO 13485, Medical Devices.

## Your Trusted Partner

All human primary cell products are ethically sourced using informed consent forms (ICFs) and protocols approved by either the Food and Drug Administration (FDA) or an Institutional Review Board (IRB), 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 (see Donor Viral Screening Policy on page 19 for more information). 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, including supplier approval for ease of procurement.



## Not All Cells Are Created Equal

When working with human biological material, variability between donors or sample collections is expected. Reduce the amount of time and effort associated with pre-screening cells from different lots at the start of each experiment by reserving entire lots of cryopreserved cells while you test them in your assays. This policy ensures that your preferred cells are ready for your next experiment, without the need to pre-screen again.

## Ready When You Are

Reduce the lead time for upcoming studies that may require specific donors or large quantities of cells by working closely with your local Sales representative. STEMCELL can start the collection and manufacturing process in advance of large projects, ensuring that your cells are ready when you are.

# Your Cells, Your Way

## Characterization Services

Save time by letting STEMCELL characterize your cells. Reserve multiple lots before selecting your lot of interest based on the test results. Characterization services include:

- High-resolution HLA typing (Class I and II)
- CMV status
- EBV status
- Vaccination status

## Customized for Your Needs

Custom products are available upon request for non-standard cell types or collections with specific requirements. Additional customization includes different formats, volumes, or sizes. Custom products include:

- Rare or difficult-to-isolate cell types
- Specific donor recruitment criteria
- Collection in alternative anticoagulants
- Donor-matched collections for fresh and/or cryopreserved cells



## Flexible Delivery Options

Flexible delivery options allow you to start experiments according to your schedule. Schedule your collection and delivery of fresh cells\* at your convenience with our Customer Service representatives ([orders@stemcell.com](mailto:orders@stemcell.com)). Early morning delivery is available for customers based in the United States, and same day delivery is available in select regions. Please consult your local Sales representative for delivery options available in your region.

## Shipping Options

Fresh cells are shipped at room temperature using standard boxes. Alternatively, certified temperature boxes are available upon request. Cryopreserved cells are shipped using dry ice. Liquid nitrogen dry vapor shippers are available upon request.



\*Certain fresh products are currently available in the United States and Canada (excluding Quebec).

# Peripheral Blood Cells

Peripheral blood is an abundant source of immune cells, including granulocytes, monocytes, and lymphocytes. Fresh collections including Leuko Paks and whole peripheral blood are ideal starting materials for performing cell isolation using EasySep™ or RosetteSep™ reagents. Alternatively, cryopreserved purified peripheral blood cells are ready-to-use and eliminate the need for cell isolation.

## Whole Peripheral Blood

Choose from a range of volumes and anticoagulants of whole peripheral blood. Small volumes (< 100 mL) are collected and supplied in 10 mL Vacutainer® tubes using your choice of acid citrate dextrose solution A (ACDA), ethylenediaminetetraacetic acid (EDTA), or sodium heparin (Na heparin) as an anticoagulant. Larger volumes (≥ 450 mL) are collected and supplied in collection bags using ACDA or citrate-phosphate-double-dextrose (CP2D) as an anticoagulant. High-resolution HLA typing is available upon request.

## Leuko Paks

Leuko Paks are highly concentrated, low-volume apheresis collections which primarily contain peripheral blood mononuclear cells (PBMCs). Leuko Paks are an ideal starting material for downstream cell isolation when large numbers of cells are required, reducing the time and reagents required to process cells of interest. Leuko Paks are usually collected using the Spectra Optia® Apheresis system with one full Leuko Pak collection equivalent to approximately three blood volumes. A full-size Leuko Pak typically contains  $> 1 \times 10^{10}$  cells in an average volume of 120 mL. Leuko Paks are available in full, half, and quarter Paks. High-resolution HLA typing is available upon request.



**Figure 1. Fresh Whole Peripheral Blood Collected with Na Heparin**

Whole Peripheral Blood (Catalog #70504) is available in 10 mL Vacutainer® tubes using ACDA, EDTA, or Na heparin as the anticoagulant.



**Figure 2. Fresh Full-Size Leuko Pak**

Leuko Pak (Catalog #70500) collected using the Spectra Optia® Apheresis system.

## Peripheral Blood Mononuclear Cells

PBMCs include lymphocytes, monocytes, dendritic cells, and hematopoietic progenitors and can be used in a variety of cell-based assays. Large lots of cryopreserved PBMCs and purified cells are produced by processing entire full-size Leuko Paks. PBMC lot sizes are typically greater than 50 vials of  $1 \times 10^8$  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 cryopreserved cells.

### Diseased State PBMCs

Access cryopreserved PBMCs isolated from donors with:

- **Autoimmune and Inflammatory Disorders:** Celiac Disease, Crohn's Disease, Lupus (SLE), Osteoarthritis, Psoriasis, Rheumatoid Arthritis, and Ulcerative Colitis
- **Cancer:** Chronic Lymphocytic Leukemia (CLL)
- **Diabetes:** Type I and Type II
- **Lung Disorders:** Asthma and Chronic Obstructive Pulmonary Disease (COPD)



## Purified Immune Cells

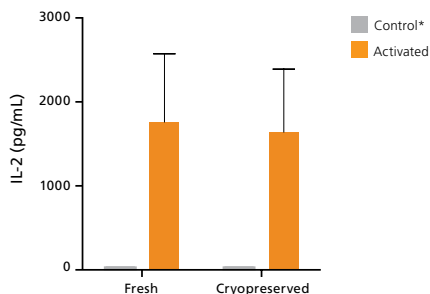
Cryopreserved purified immune cells are isolated from peripheral blood using EasySep™ cell isolation kits with guaranteed viability and purity verified in the lot-specific Certificate of Analysis. Cells are immediately ready for use, eliminating the need to perform downstream cell isolation. Choose from a wide range of cell types and subsets including T cells, B cells, monocytes, dendritic cells (DCs), and natural killer (NK) cells. High-resolution HLA typing is available upon request.

### Natural Killer Cells

NK cells are a subset of innate immune cells with high cytolytic activity, releasing cytotoxic granules to target infected or cancerous cells for elimination. NK cells also produce immunoregulatory cytokines that modulate the adaptive immune response, and are therefore of high interest in cancer and viral immunotherapy research.

### T Cells

T cells are lymphocytes that originate in the bone marrow and migrate to the thymus to undergo maturation. T cells are essential in the adaptive immune response and there is particular interest in genetically engineering these cells for therapy against cancer and other diseases. There are several subsets of T cells, including naïve and memory helper T cells, cytotoxic T cells, and regulatory T cells. Choose from a range of cryopreserved T cells and subsets including pan-T cells, CD4<sup>+</sup> T cells, CD8<sup>+</sup> T cells, CD4<sup>+</sup>CD25<sup>+</sup> T cells, CD4<sup>+</sup>CD45RA<sup>+</sup> T cells, and CD8<sup>+</sup>CD45RA<sup>+</sup> T cells.



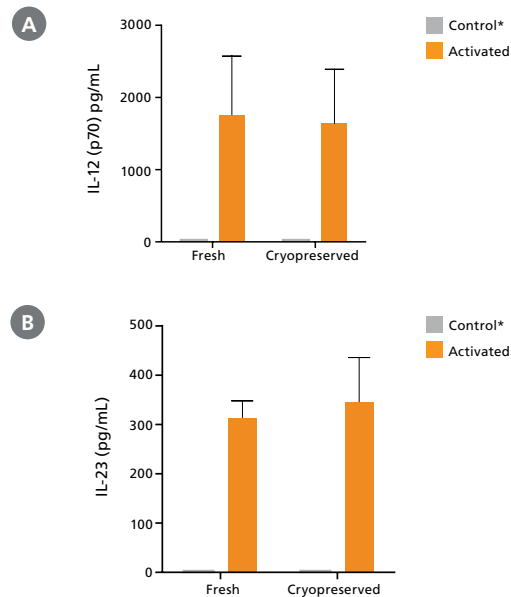
**Figure 3. Cryopreserved Pan-T Cells Secrete IL-2 Upon Activation**

T cells freshly isolated from a Leuko Pak (Catalog #70500) using EasySep™ Human T Cell Isolation Kit (Catalog #17951) or cryopreserved Pan-T Cells (Catalog #70024) were cultured in ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981) and incubated for 48 hours with or without ImmunoCult™ Human CD3/CD28 T Cell Activator (Catalog #10971). Freshly isolated and cryopreserved purified T cells secrete similar levels of IL-2 upon activation as measured using the Human IL-2 ELISA Kit (Catalog #02006).

\*IL-2 concentration of control in culture was lower than the limit of detection.

### Monocytes

Monocytes are precursors of macrophages and DCs that originate in the bone marrow and are released into the peripheral blood. Monocytes play an important role in immune surveillance, host defence, tissue remodeling, and repair, and have also been implicated in many inflammatory diseases.



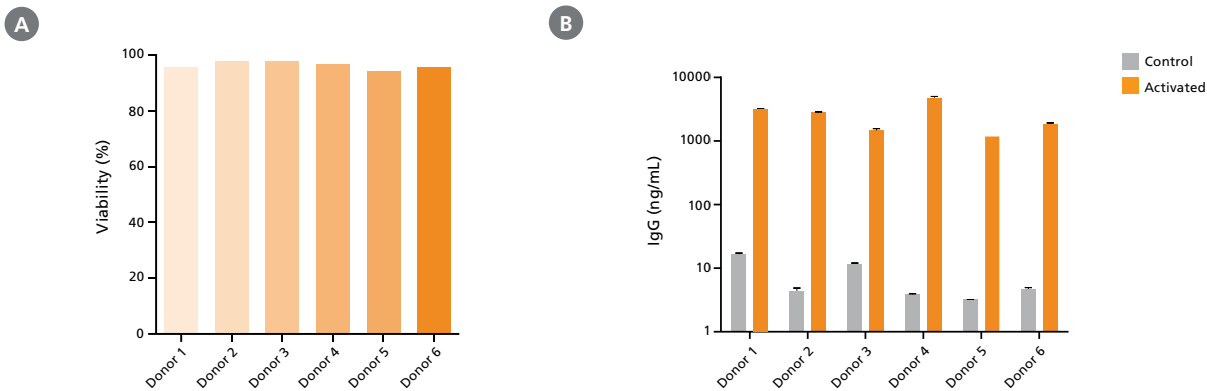
**Figure 4. Cryopreserved Monocytes Differentiate into Dendritic Cells and Secrete IL-12 (p70) and IL-23 Upon Activation**

Monocytes freshly isolated from a Leuko Pak (Catalog #70500) using EasySep™ Human Monocyte Isolation Kit (Catalog #19359) or cryopreserved Monocytes (Catalog #70034) were cultured for 6 days in RPMI 1640 Medium (Catalog #36750) with 10% FBS, 0.1 mM MEM Non-Essential Amino Acid Solution (100X, Catalog #07600), 2mM L-Glutamine (Catalog #07100), 1mM Sodium Pyruvate (Catalog #07000), and 50μM β-mercaptoethanol. Human Recombinant IL-4 (Catalog #78045) and Human Recombinant GM-CSF (Catalog #78015) were added on days 1, 3, and 6 to differentiate monocytes into DCs. Cells were either left unstimulated (control) or stimulated with LPS and Human Recombinant IFN-γ (Catalog #78020) (activated). Activation led to secretion of (A) IL-12 (p70) and (B) IL-23, which were not detectable in unstimulated controls as measured using the Human IL-12 (p70) ELISA Kit (Catalog #02014) and the Human IL-23 ELISA Kit (Catalog #02016), respectively.

\*Cytokine concentration of control in culture was lower than the limit of detection.

## B Cells

B cells express cell surface immunoglobulin receptors that recognize specific antigenic epitopes, and are an integral component in the humoral response of the adaptive immune system. B cells mediate many processes necessary for immune homeostasis, including antibody production, antigen presentation, cytokine secretion, T cell co-stimulation, and tumor immunity. Conversely, their dysregulation is the basis of several immune pathologies including autoimmunity, leukemia/lymphoma, and multiple myeloma.



**Figure 5. Cryopreserved B Cells Show High Viability and Produce IgG Antibodies Upon Stimulation**

(A) B Cells (Catalog #70023) cryopreserved in CryoStor® CS10 (Catalog #07930) show high viability upon thawing (average =  $96.3 \pm 0.6\%$ ,  $n = 6$ ). (B) B cells were cultured for 1 week in RPMI 1640 Medium (Catalog #36750) with 10% FBS, 2mM L-Glutamine (Catalog #07100), 10mM HEPES (Catalog #07200), and 55  $\mu$ M  $\beta$ -mercaptoethanol and either left unstimulated (control) or stimulated with CD40 in the presence of IL-21 (activated). Activated B cells produce significantly more IgG antibodies compared to unstimulated controls as measured by ELISA.

## Cord Blood Cells

Cord blood is a rich source of hematopoietic stem and progenitor cells (HSPCs) and is collected using citrate-phosphate-dextrose (CPD) as the anticoagulant. Large numbers of mononuclear cells (MNCs), HSPCs, and immune cells are isolated from entire umbilical cords. High-resolution HLA typing is available upon request.

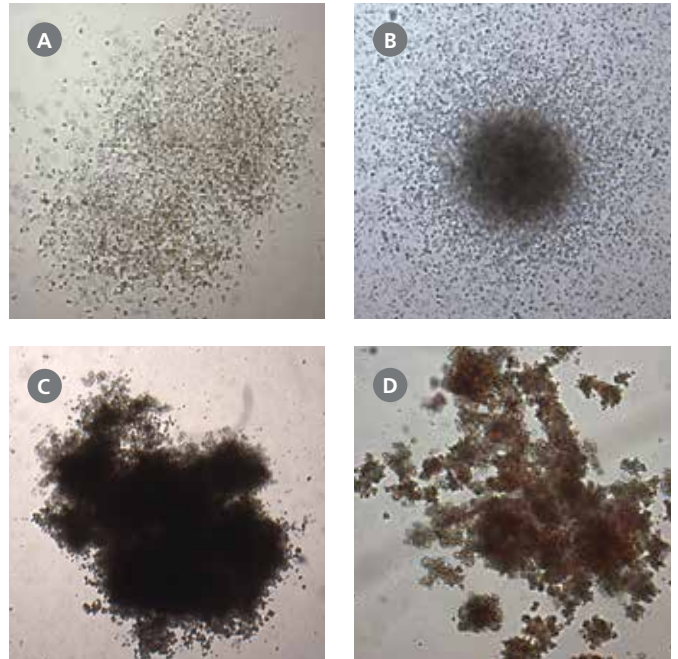
### Mononuclear Cells

MNCs are obtained by density gradient centrifugation of whole cord blood. Specific cell types are subsequently purified using STEMCELL's cell isolation reagents. Cryopreserved MNCs can be used in a variety of downstream applications, including the enumeration of multipotential and lineage-committed hematopoietic progenitor cells (HPCs) in the colony-forming unit (CFU) assay with MethoCult™ methylcellulose-based medium, or expansion and/or differentiation with StemSpan™ media and supplements (Figure 6).

### Hematopoietic Stem and Progenitor Cells

HSPCs are a heterogeneous population of cells which include multipotent stem cells as well as lineage-committed progenitor cells of all mature blood cells. HSPCs are characterized in part by the expression of cell surface protein CD34. Cord blood CD34<sup>+</sup> cells are isolated from MNCs and cryopreserved using StemSpan™ Serum-Free Expansion Medium (SFEM) (Catalog #09650) with 10% DMSO.

Choose cord blood CD34<sup>+</sup> cells derived from a single cord blood unit or access large lots of cord blood CD34<sup>+</sup> cells derived from multiple cord blood units.



**Figure 6.** Cryopreserved Cord Blood MNCs Generate Hematopoietic Colonies in CFU Assays

Cord Blood MNCs (Catalog #70007) were cultured in MethoCult™ H4034 Optimum Medium (Catalog #04034) for 14 days. Hematopoietic progenitor cells within the MNC population generated multiple colonies derived from (A, B) colony-forming unit - granulocyte/macrophage (CFU-GM) and (C, D) burst-forming unit - erythroid (BFU-E). Colonies shown here were imaged on day 14 using an inverted microscope and at 4x objective.

## Bone Marrow Cells

A wide range of cell types, including hematopoietic and mesenchymal cells, can be isolated from bone marrow. Bone marrow is collected from adult donors using heparin as the anticoagulant. Bone marrow donors may be available for subsequent collections, ensuring consistency across multiple experiments.

Large numbers of cryopreserved MNCs and HSPCs are isolated from full bone marrow collections of approximately 100 mL. High-resolution HLA typing is available upon request.

### Whole Bone Marrow

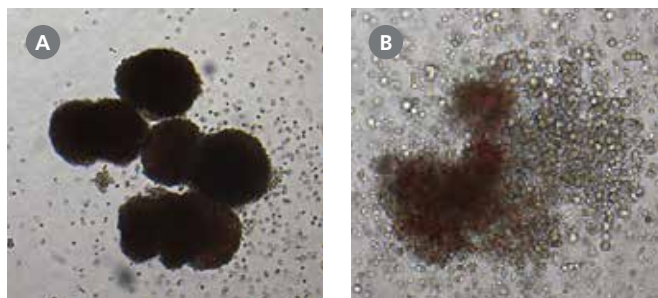
Fresh whole bone marrow is available in volumes of 25 mL, 50 mL, and 100 mL. Each size is supplied in a 100 mL bottle for convenient downstream processing.

### Mononuclear Cells

Bone marrow MNCs are obtained by density gradient centrifugation of whole bone marrow and cryopreserved in Cryostor® CS10. MNCs can be used for the enumeration of multipotential and lineage-committed HPCs in the CFU assay (Figure 7).

### Hematopoietic Stem and Progenitor Cells

Bone marrow CD34<sup>+</sup> cells are isolated from MNCs and cryopreserved using StemSpan™ Serum-Free Expansion Medium (SFEM) (Catalog #09650) with 10% DMSO. Bone marrow CD34<sup>+</sup> cells are ideal for use in the CFU assay, which may be used to identify potential hematotoxicity of drug candidates in vitro.



**Figure 7. Cryopreserved Bone Marrow MNCs Generate Hematopoietic Colonies in CFU Assays**

Bone Marrow MNCs (Catalog #70001) were cultured in MethoCult™ H4034 Optimum Medium (Catalog #04034) for 14 days. Hematopoietic progenitor cells within the MNC population generated multiple colonies derived from colony-forming unit - granulocyte, erythroid, macrophage, megakaryocyte (CFU-GEMM). Colonies shown here were imaged on day 14 at (A) 4x objective and (B) 10x objective, respectively.



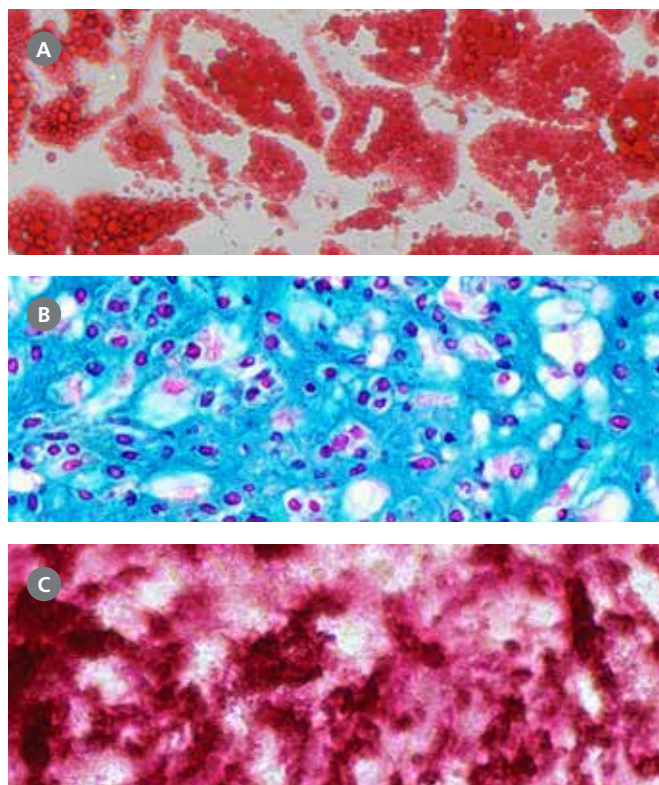
**Figure 8. Fresh Whole Bone Marrow**

Whole Bone Marrow (Catalog #70502) is collected using heparin as the anticoagulant and supplied in a 100 mL bottle.

## Stromal Cells (MSCs)

Bone marrow stromal cells, also termed mesenchymal stem cells (MSCs), are fibroblast-like cells isolated from bone marrow MNCs. MSCs can also be isolated from other sources including adipose, dental pulp, and umbilical cord tissues. MSCs are characterized by their ability to differentiate into adipocytes, chondrocytes, and osteoblasts in vitro.

Obtain MSCs derived from bone marrow MNCs, expanded for one passage using the MesenCult™-ACF Culture Kit and cryopreserved in CryoStor® CS10 (Catalog #07930) without the use of serum-containing reagents, in a complete animal component-free (ACF) culture condition. MSCs derived from bone marrow in ACF culture medium show greater expansion capacities while maintaining robust multi-lineage differentiation potential in vitro compared to MSCs derived in fetal bovine serum (FBS)-containing culture medium. As many as 100 vials of  $7.5 \times 10^5$  cells per vial are available per lot, making it possible to reserve large numbers of cells while you evaluate in your specific applications, thereby reducing the need for repeated lot screening. Alternatively, researchers can also obtain MSCs derived under serum-containing culture conditions using the FBS-containing MesenCult™ Proliferation Kit.



**Figure 9. Cryopreserved Bone Marrow Stromal Cells Cultured in MesenCult™-ACF Medium Maintain Robust Multi-Lineage Potential**

Human Bone Marrow Stromal Cells Derived in ACF Medium (Catalog #70071) using the MesenCult™-ACF Culture Kit differentiate to (A) adipocytes (Oil Red O staining), (B) chondrocytes (Alcian Blue and Nuclear Fast Red staining), and (C) osteoblasts (Alizarin Red S staining) using the appropriate MesenCult™ differentiation kits.

## Mobilized Peripheral Blood Cells

Mobilized peripheral blood can be used to obtain large numbers of HSPCs from a single collection, ensuring consistency across multiple experiments or large-scale studies. Mobilization with granulocyte colony-stimulating factor (G-CSF), Plerixafor (Mozobil®), or a combination of both G-CSF and Plerixafor induces HSPCs to migrate out of the bone marrow and into the peripheral blood.

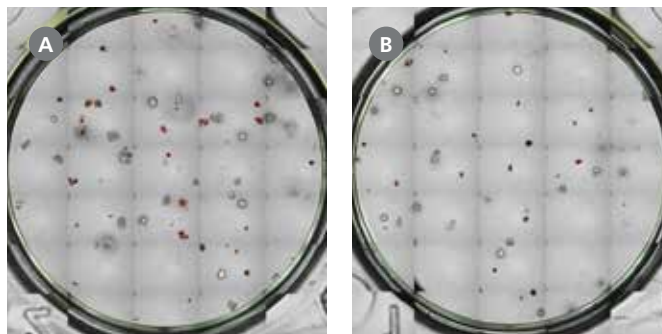
Normal adult donors are mobilized with G-CSF for 3 - 5 days prior to collection of G-CSF-mobilized cells. Alternatively, donors are mobilized with Plerixafor for 1 day prior to collection of Plerixafor-mobilized cells. For G-CSF- and Plerixafor-mobilized cells, donors are mobilized with G-CSF for 3 - 5 days prior to collection and Plerixafor for 1 day prior to collection. Cells are collected using the Spectra Optia® Apheresis system with ACDA as the anticoagulant. High-resolution HLA typing is available upon request.

### Mononuclear Cells

MNCs are isolated using density gradient centrifugation or red blood cell lysis and cryopreserved in CryoStor® CS10. Over 300 vials of  $1 \times 10^9$  MNCs can be produced and cryopreserved from a single Leuko Pak, ensuring consistency across multiple experiments.

### Hematopoietic Stem and Progenitor Cells

CD34<sup>+</sup> cells are isolated using immunomagnetic positive selection and cryopreserved in serum-free cryopreservation medium containing 10% DMSO. Typical lot sizes of 100 - 200 vials of  $1 \times 10^6$  CD34<sup>+</sup> cells are cryopreserved from a single Leuko Pak, ideal for large-scale studies.



**Figure 10. Cryopreserved Mobilized Peripheral Blood Mononuclear Cells and CD34<sup>+</sup> Cells Generate Hematopoietic Colonies in CFU Assays**

(A) Cryopreserved mobilized peripheral blood mononuclear cells (Catalog #70049) or (B) CD34<sup>+</sup> cells (Catalog #70060) were thawed and plated at a concentration of  $1 \times 10^4$  or  $5 \times 10^2$  viable cells/dish, respectively. Cells were cultured in MethoCult™ Optimum Medium (Catalog #04034) for 14 days to allow colony formation by individual progenitors. Colonies produced by hematopoietic progenitor cells within each sample were imaged and quantified with STEMvision™.



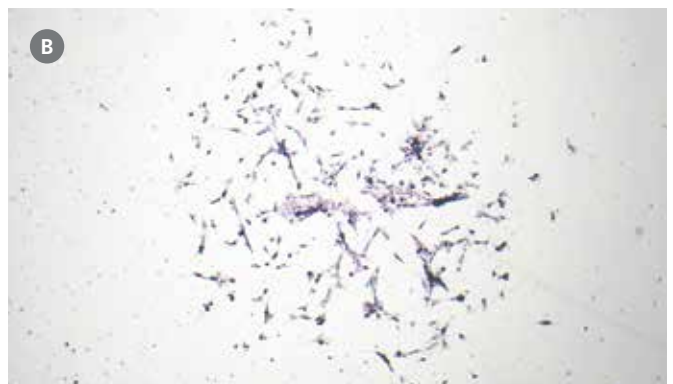
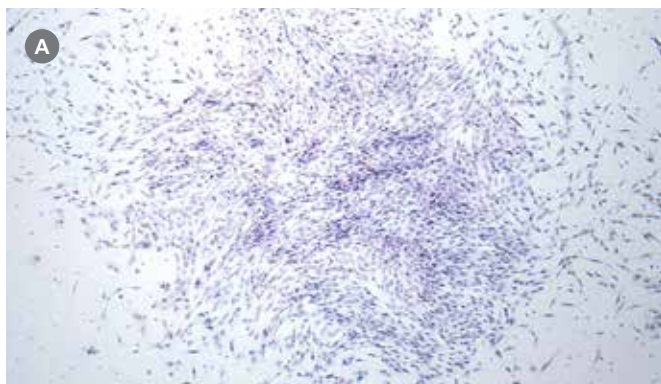
# Primary Cell-Based Assay Services

STEMCELL's Contract Assay Services (CAS), established as an independent contract resource organization (CRO), specializes in primary cell-based assays. CAS has performed studies for over 120 pharmaceutical, biotechnology, government, and academic life science organizations worldwide, providing exceptional service through frequent communication, quality products, and unparalleled expertise.

The assay services offered by CAS include the CFU assay for toxicity testing as well as the development of custom assays for a variety of cell types. CAS can pre-qualify primary cells for use in specific assays. Learn more about CAS online at [www.contractassay.com](http://www.contractassay.com) or to discuss your research, contact [contractassay@stemcell.com](mailto:contractassay@stemcell.com).

## CAS Specializes in:

- Hematopoietic CFU assays
- Mesenchymal CFU-F assays
- Hematopoietic and mesenchymal stem cell characterization
- Immunomodulation assays



**Figure 11. The Presence of an Inhibitory Compound Changes the Morphology of Human Bone Marrow-Derived CFU-F Colonies**

Colonies derived from MSCs plated in the (A) absence or (B) presence of an inhibitory compound have notable differences in morphology, including fewer cells and a more scattered distribution in the culture containing the inhibitory compound in colony-forming unit - fibroblast (CFU-F) assays. Colony numbers are also reduced in the presence of an inhibitory compound (data not shown).

# Product Listing<sup>1</sup>

## Peripheral Blood

### Fresh Leuko Paks

DESCRIPTION	ANTICOAGULANT	QUANTITY	CATALOG #
Peripheral Blood Leuko Pak <sup>2</sup>	ACDA <sup>3</sup>	Quarter Size	70500.2
		Half Size	70500.1
		Full Size	70500

### Cryopreserved Normal PBMCs

DESCRIPTION	QUANTITY	CATALOG #
PBMCs <sup>4</sup>	15 million cells	70025.1
	25 million cells	70025.2
	50 million cells	70025.3
	100 million cells	70025

### Fresh Whole Peripheral Blood

DESCRIPTION	ANTICOAGULANT	QUANTITY	CATALOG #
Whole Peripheral Blood	ACDA <sup>3</sup>	1 x 10 mL	70504.1
		2 x 10 mL	70504.2
		3 x 10 mL	70504.3
		4 x 10 mL	70504.4
		5 x 10 mL	70504.5
		10 x 10 mL	70504.6
		≥450 mL	70504
	CP2D <sup>3</sup>	≥ 450 mL	70501
	EDTA <sup>3</sup>	1 x 10 mL	70508.1
		2 x 10 mL	70508.2
		3 x 10 mL	70508.3
		4 x 10 mL	70508.4
		5 x 10 mL	70508.5
		10 x 10 mL	70508.6
	Na Heparin <sup>3</sup>	1 x 10 mL	70507.1
		2 x 10 mL	70507.2
		3 x 10 mL	70507.3
		4 x 10 mL	70507.4
		5 x 10 mL	70507.5
		10 x 10 mL	70507.6

### Cryopreserved Diseased State PBMCs

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
Chronic Lymphocytic Leukemia (CLL)	10 million cells	70063

1. Certain products are only available in select territories. Please contact your local Sales representative or Product & Scientific Support at techsupport@stemcell.com for further information.
2. A full size Leuko Pak contains on average  $1.1 \pm 0.3 \times 10^{10}$  cells and has an average volume of approximately 120 mL.
3. ACDA - acid citrate dextrose solution A; CP2D - citrate-phosphate-double-dextrose; EDTA - ethylenediaminetetraacetic acid; Na heparin - sodium heparin.
4. High-resolution HLA typing and CMV status are available upon request.



## Cryopreserved Purified Peripheral Blood Cells

DESCRIPTION	QUANTITY	CATALOG #
CD34 <sup>+</sup> Cells	0.2 million cells	70040
	0.5 million cells	70040.1
	1 million cells	70040.2
Pan-T Cells	20 million cells	70024
	40 million cells	70024.1
CD4 <sup>+</sup> T Cells	15 million cells	70026
CD4 <sup>+</sup> CD25 <sup>+</sup> T Cells	2 million cells	70028
CD4 <sup>+</sup> CD45RA <sup>+</sup> T Cells	5 million cells	70029
CD4 <sup>+</sup> CD45RO <sup>+</sup> T Cells	5 million cells	70031
CD8 <sup>+</sup> T Cells	10 million cells	70027
CD8 <sup>+</sup> CD45RA <sup>+</sup> T Cells	5 million cells	70030
B Cells	10 million cells	70023
	20 million cells	70023.1
CD19 <sup>+</sup> CD27 <sup>-</sup> Naïve B Cells	1 million cells	70032
CD19 <sup>+</sup> B Cells	10 million cells	70033
Monocytes	10 million cells	70034
CD14 <sup>+</sup> Monocytes	10 million cells	70035.1
	20 million cells	70035.2
	40 million cells	70035
NK Cells	5 million cells	70036
CD56 <sup>+</sup> NK Cells	5 million cells	70037
Macrophages	1.5 million cells	70042
BDCA4 <sup>+</sup> Cells	0.5 million cells	70038
Immature Dendritic Cells	1.5 million cells	70041
Plasmacytoid Dendritic Cells	0.5 million cells	70046
Plasma	10 mL	70039.1
	20 mL	70039.2
	30 mL	70039.3
	40 mL	70039.4
	50 mL	70039.5
	100 mL	70039
	150 mL	70039.6

## Cord Blood

### Cryopreserved Cord Blood Cells

DESCRIPTION	QUANTITY	CATALOG #
Mononuclear Cells	15 million cells	70007.1
	50 million cells	70007.2
	150 million cells	70007
CD34 <sup>+</sup> Cells (Mixed Donor)	0.2 million cells	70008.1
	0.5 million cells	70008.3
	1 million cells	70008
	5 million cells	70008.6
CD34 <sup>+</sup> Cells (Single Donor)	0.2 million cells	70008.2
	0.5 million cells	70008.4
	1 million cells	70008.5
CD36 <sup>+</sup> Cells <sup>1</sup>	1 million cells	70009
CD19 <sup>+</sup> 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 <sup>+</sup> T Cells	15 million cells	70015
CD4 <sup>+</sup> CD45RA <sup>+</sup> T Cells	15 million cells	70017
CD8 <sup>+</sup> T Cells	5 million cells	70016
CD14 <sup>+</sup> Monocytes	5 million cells	70018
CD56 <sup>+</sup> NK Cells	1 million cells	70019
Plasma	10 mL	70020.1
	20 mL	70020.2
	30 mL	70020.3
	40 mL	70020.4
	50 mL	70020

## Bone Marrow

### Fresh Whole Bone Marrow

DESCRIPTION	ANTICOAGULANT	QUANTITY	CATALOG #
Whole Bone Marrow	Heparin	≥ 25 mL	70502.2
		≥ 50 mL	70502.1
		≥ 100 mL	70502

### Cryopreserved Bone Marrow Cells

DESCRIPTION	QUANTITY	CATALOG #
Mononuclear Cells	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 <sup>+</sup> 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 <sup>+</sup> Cells <sup>1</sup>	1 million cells	70003
CD105 <sup>+</sup> Cells	0.3 million cells	70005
CD33 <sup>+</sup> Cells	5 million cells	70006
Stromal Cells <sup>1</sup>	0.75 million cells	70022
Stromal Cells Derived in ACF Medium <sup>1</sup>	0.75 million cells	70071

1. Cultured Cell Product.

## Mobilized Peripheral Blood

### Cryopreserved Mobilized Peripheral Blood Cells

DESCRIPTION	QUANTITY	CATALOG #
G-CSF Mobilized Mononuclear Cells	5 million cells	70049.4
	15 million cells	70049.2
	25 million cells	70049.3
	50 million cells	70049.1
	100 million cells	70049
G-CSF Mobilized CD34 <sup>+</sup> Cells	0.2 million cells	70060.2
	1 million cells	70060.1
	5 million cells	70060
	10 million cells	70060.3
	20 million cells	70060.4
G-CSF and Plerixafor Mobilized Mononuclear Cells	5 million cells	70072.4
	15 million cells	70072.2
	25 million cells	70072.3
	50 million cells	70072.1
	100 million cells	70072
G-CSF and Plerixafor Mobilized CD34 <sup>+</sup> Cells	0.2 million cells	70073.2
	1 million cells	70073.1
	5 million cells	70073
	10 million cells	70073.3
	20 million cells	70073.4
Plerixafor Mobilized Mononuclear Cells	5 million cells	70074.4
	15 million cells	70074.2
	25 million cells	70074.3
	50 million cells	70074.1
	100 million cells	70074
Plerixafor Mobilized CD34 <sup>+</sup> Cells	0.2 million cells	70075.2
	1 million cells	70075.1
	5 million cells	70075
	10 million cells	70075.3
	20 million cells	70075.4

## Donor Viral Screening Policy

### Leuko Pak, Whole Blood, and Bone Marrow Products

**Fresh 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 negative test results. 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).

**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 negative test results.

### Cord Blood Products

**Cryopreserved Products:** 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 are shipped with negative test results from the donor screening.

# HUMAN PRIMARY CELLS



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