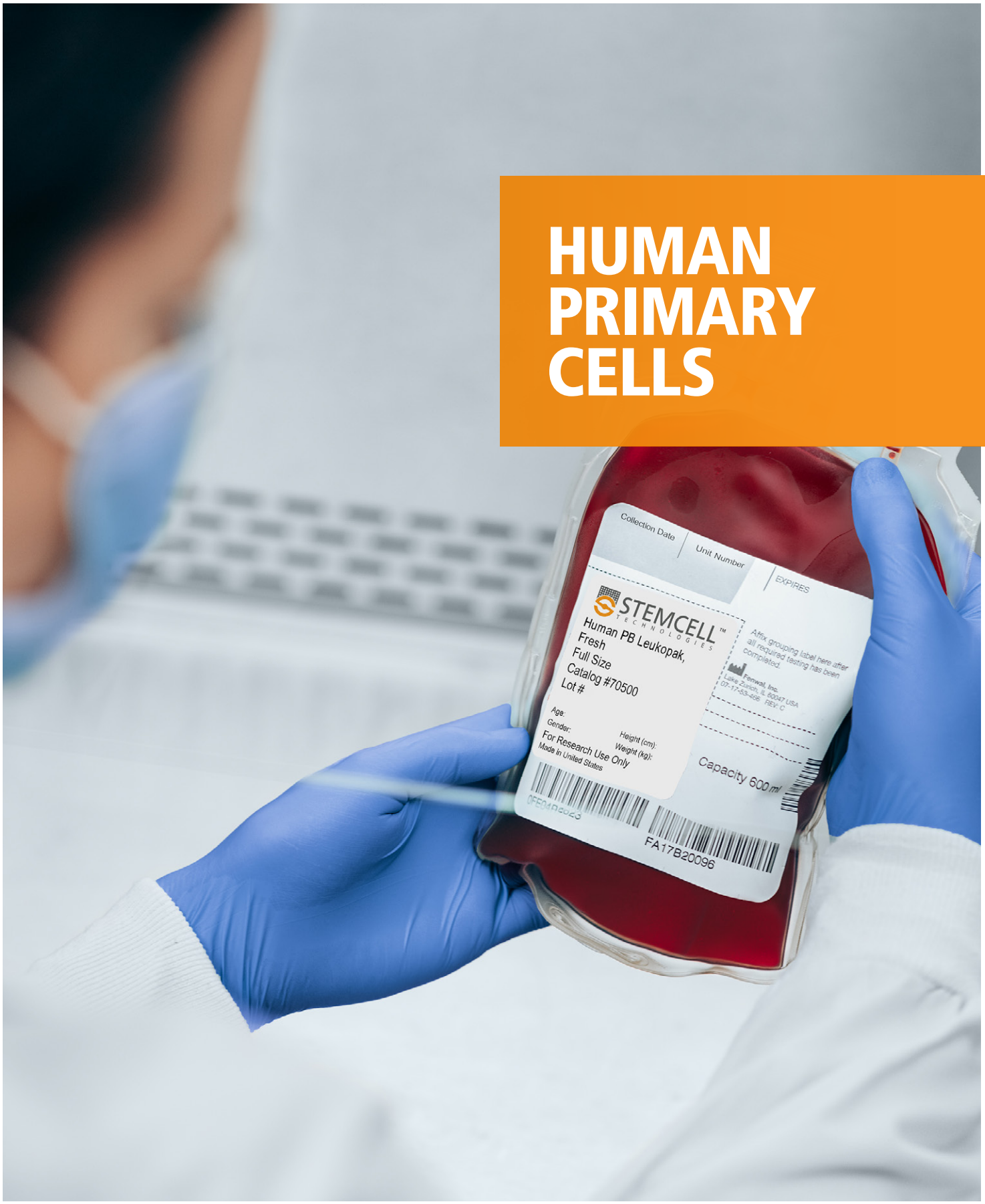
HUMAN PRIMARY CELLS



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Human Primary Cells

To Streamline Your Cell-Based Assays

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 such as in vitro cell-based assays, xenograft creation, and humanized mouse models.

Human primary cells retain key aspects of their tissue of origin and, compared to cell lines, more accurately reflect donor variability such as human leukocyte antigen (HLA) type and cytomegalovirus (CM) status. The use of human primary cells increases the physiological relevance of cell culture systems, enabling you to generate meaningful data that is 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 make cell sourcing an efficient process.

Explore your options for ready-to-use fresh or cryopreserved cells from STEMCELL Technologies, including mononuclear cells (MNCs), purified immune cells, or stem cells isolated from blood or bone marrow*.

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.

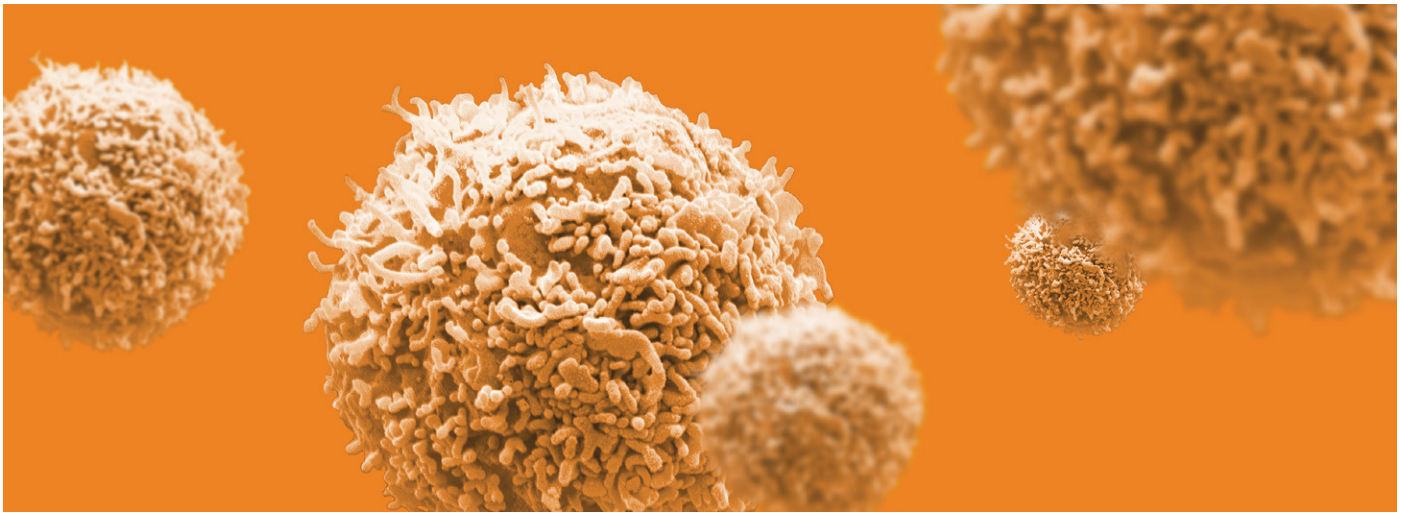
CONVENIENT. Start your experiments on your schedule without being restricted by the availability of tissue.

ACCESSIBLE. Obtain large lots of rare cell populations, including hematopoietic stem and progenitor cells.

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

FLEXIBLE. Reserve large numbers of cryopreserved cells while you test them in your specific applications.

EFFICIENT. Reduce time spent collecting and culturing primary cells.



*Certain fresh and cryopreserved products are only available in select territories.
Please contact your Sales representative or Product and Scientific Support (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 13485:2016 Medical Devices and ISO 9001:2015.

Your Trusted Partner

All human primary cell products are ethically sourced using consent forms and protocols approved by either an Institutional Review Board, the Food and Drug Administration, the U.S. Department of Health and Human Services, and/or an equivalent regulatory authority. 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 23 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.

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 Sales representative. STEMCELL can start the collection and manufacturing process in advance of large projects, ensuring that your cells are ready when you are.

RESOURCE

Human Primary Cells Overview
www.stemcell.com/primarycells

We Help You Get the Cells You Need

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:

- **Viral screening:** lymphocytic choriomeningitis virus (LCMV) status, cytomegalovirus (CMV) status, Epstein-Barr virus (EBV) status, vaccination status, and others may be requested
- **High-resolution human leukocyte antigen (HLA) typing:** Class I and II
- **Blood type:** ABO/Rh factor
- **Genotyping:** CD16, CD32, Killer Ig-Like Receptors (KIR)
- **Phenotyping**
- **FACS analysis**

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 hematopoietic cell types (normal and diseased, including cells from patients with autoimmune diseases, diabetes, asthma, cancer, etc.)
- Cells that meet specific donor recruitment criteria
- Collections obtained using alternative anticoagulants
- Products in alternative size formats, e.g. bags, vial sizes, requested cell counts, etc.
- Donor-matched collections for fresh and/or cryopreserved cells, e.g. whole blood, leukopaks, isolated cells, plasma, serum, etc. from the same donor

RESOURCE

Frequently Asked Questions on Primary Cells
www.stemcell.com/primarycellsfaqs

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.

Flexible Delivery Options

Start experiments according to your schedule by choosing from our flexible delivery options. Schedule your collection and delivery of fresh cells* at your convenience with our customer service representatives (freshcellorders@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 sales representative for delivery options available in your region.

*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 leukopaks, LRS cones, and whole blood, are ideal starting materials for performing cell isolation using manual or automated immunomagnetic and column-free EasySep™ cell isolation kits. Alternatively, cryopreserved, purified peripheral blood cells are ready to use—ensuring you save time and can begin experiments when you are ready.

Whole Peripheral Blood

Choose from a range of volumes and anticoagulants of whole peripheral blood. Small volumes (< 100 mL) and large volumes (≥ 450 mL) are collected and supplied in 10 mL Vacutainer® tubes and collection bags, respectively, using acid citrate dextrose solution A (ACDA), ethylenediaminetetraacetic acid (EDTA), or sodium heparin (Na heparin) as an anticoagulant. High-resolution HLA typing is available upon request. To isolate your cell subset of interest from whole blood, choose from a wide range of RosetteSep™ cell isolation kits to obtain untouched cells directly from whole blood.

Leukopaks

Leukopaks are highly concentrated, low-volume apheresis collections that primarily contain peripheral blood mononuclear cells (PBMCs). Leukopaks are an ideal starting material for downstream isolation of large numbers of cells, reducing the time and reagents needed to process cells of interest. Leukopaks are collected using the Spectra Optia® Apheresis system, with one full leukopak collection being equivalent to approximately three blood volumes. A full-size leukopak typically contains > 1 x 10^{10} cells in an average volume of 120 mL. Fresh and frozen leukopaks are available in full, half, and quarter sizes. Fresh leukopaks are available in full, half, quarter, and tenth sizes.

LRS Cones or LRS Chambers

Leukocyte Reduction System (LRS) cones, also known as LRS chambers, are used during the collection of apheresis products to reduce the leukocyte count from human blood collections (e.g. platelet collections). The LRS cone is the chamber that collects the leukocytes—providing a small-volume, granulocyte-reduced, concentrated source of primary human leukocytes. LRS cones can then be further processed using cell separation, such as with EasySep™ Cell Isolation Kits, to purify cell populations for study.

Figure 1. Fresh Whole Peripheral Blood Collected with ACDA

Fresh Whole Peripheral Blood (Catalog #70504) is available in collection bags using ACDA, EDTA, or Na heparin as the anticoagulant.

Figure 2. Fresh and Frozen Human Peripheral Blood Leukopak - Full-Size

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

Figure 3. LRS Cone

LRS Cone (Catalog #200-0093) containing primary human leukocytes.

PRODUCT

Easy 250 EasySep™ Magnet

www.stemcell.com/easy-250-easysep-magnet.html

WEBINAR

Leukopak Processing: Tips & Tricks for Streamlined Cell Isolation

www.stemcell.com/leukopak-processing-webinar

Peripheral Blood Mononuclear Cells

PBMCs include lymphocytes, monocytes, dendritic cells, and hematopoietic progenitors. Large lots of fresh and 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 and ensure consistency across multiple experiments.

Figure 4. Human Peripheral Blood Mononuclear Cells, Frozen

Primary human mononuclear cells (MNCs) (Catalog #70025) are isolated from peripheral blood (PB) leukapheresis samples using density gradient separation and/or red blood cell lysis.

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
- **Cancers:** hematopoietic malignancies, including 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), and solid tumors, including 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)

VIDEO

How to Thaw Frozen Human Primary Cells

www.stemcell.com/how-to-thaw-frozen-human-primary-cells.html

Normal PBMCs

Obtain PBMCs from a large donor pool in convenient sizes, with high-resolution HLA typing (A, B, C, DRB1, DRB3/4/5, and DQB1) and CMV status available upon request.

Figure 5. Diseased Human Peripheral Blood Products

Diseased human PBMCs from donors diagnosed with cancer, such as lung cancer, may be obtained in various formats, including (A) PBMCs, Frozen (Catalog # 200-0214), (B) Peripheral Blood Leukopak Collection, Fresh (Catalog #200-0300), and (C) Whole Peripheral Blood Collection, Heparin, Fresh (Catalog #200-0270). Collections are obtained using Institutional Review Board (IRB)-approved consent forms and protocols.

Peripheral Blood Products

Plasma

Human plasma is the liquid component of blood and contains water, salts, lipids, hormones, proteins (including albumin), immunoglobulins, clotting factors, and fibrinogen. Our isolated plasma does not contain the cellular components of blood—i.e. erythrocytes and the buffy coat that is composed of leukocytes and platelets. Obtain fresh or frozen primary human plasma isolated from peripheral blood using centrifugation. Peripheral blood is collected using acid-citrate-dextrose solution A (ACDA) as an anticoagulant.

Serum

Human serum is the fluid portion of blood that is left after coagulation has removed clotting factors/fibrinogen and cellular components. Serum contains water, proteins, electrolytes, antibodies, antigens, hormones, and other substances. Fresh or frozen primary human serum is isolated from normal donor peripheral blood after coagulation and removal of the fibrin clot and blood cells.

Human Platelet Lysate, Fibrinogen-Depleted, GMP-Compliant

Start experiments confidently with a reliable supply of ethically sourced, GMP-compliant, fibrinogen-depleted human platelet lysate (hPL) for the expansion of cells in vitro. An alternative to fetal bovine serum (FBS), this growth factor-rich cell culture supplement is derived from healthy donor human platelets. We have also recently launched our Human Platelet Lysate, Fibrinogen-Depleted, XF a completely xeno-free, fibrinogen-depleted hPL to improve cell culture performance. Heparin is not added during the manufacturing process and is not required for use of the xeno-free and GMP-compliant hPL products. Refer to page 19 for a list of all types of hPL products provided by STEMCELL.

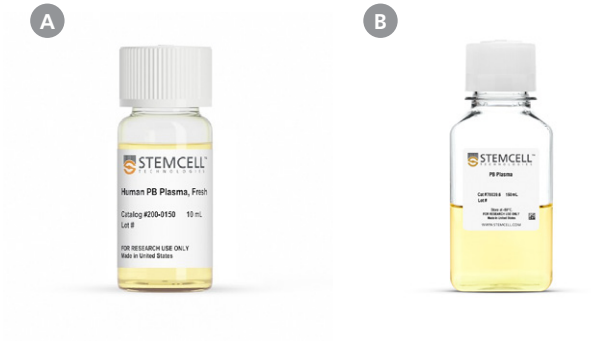


Figure 6. Fresh and Frozen Human Peripheral Blood Plasma

(A) Fresh human plasma (Catalog # 200-0150) and (B) frozen human plasma (Catalog # 70039) isolated from peripheral blood using centrifugation.

Figure 7. Frozen Human Platelet Lysate, Fibrinogen-Depleted, GMP-Compliant

Human Platelet Lysate, Fibrinogen-Depleted, GMP-Compliant (Catalog # 200-0322) is a growth factor-rich cell culture supplement derived from healthy donor human platelets.

E-BOOK
Cell Separation Techniques
www.stemcell.com/cell-separation

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

For a complete listing of peripheral blood primary cell products, please visit www.stemcell.com/cells-peripheral-blood.

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, including T cells, B cells, monocytes, dendritic cells (DCs), natural killer (NK) cells, and more. 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, naïve pan-T cells, Th17 T cells, $CD4^+$ T cells, $CD8^+$ T cells, $CD8^+$ Memory T cells, $CD4^+CD25^-$ T cells, $CD4^+CD45RA^+$ T cells, $CD4^+CD45RO^+$ T cells, $CD4^+CD25^+CD127^{low}$ T cells, $CD4^+CD25^+CD127^{low}FOXP3^+$ T cells, and $CD8^+CD45RA^+$ T cells.

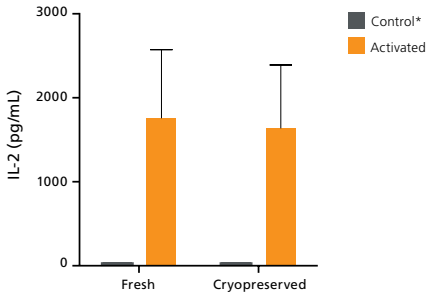


Figure 8. Cryopreserved Pan-T Cells Secrete IL-2 Upon Activation

T cells freshly isolated from a leukopak (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.

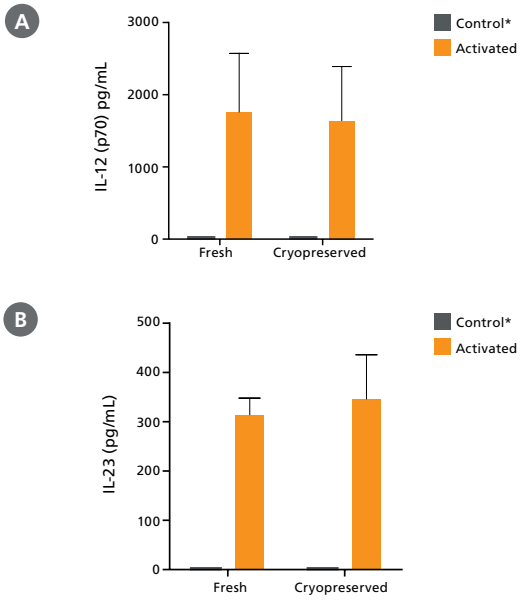


Figure 9. Cryopreserved Monocytes Differentiate into Dendritic Cells and Secrete IL-12 (p70) and IL-23 Upon Activation

Monocytes freshly isolated from a leukopak (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), 2 mM L-Glutamine (Catalog #07100), 1 mM Sodium Pyruvate, and 50 µM 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.

WALLCHART

Frequencies of Human Cell Types in Blood-Related Sources

www.stemcell.com/wallchart-human-cellfrequency

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.

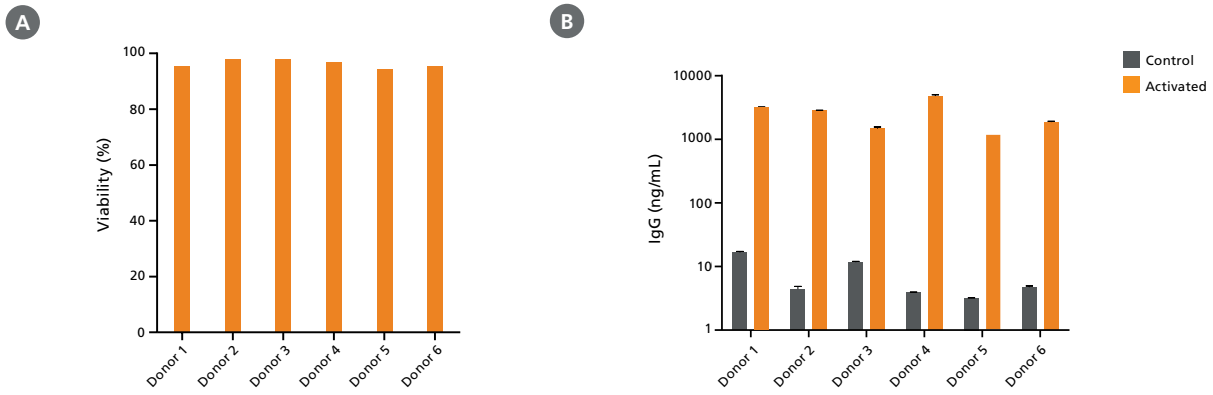


Figure 10. Cryopreserved B Cells Show High Viability and Produce IgG Antibodies Upon Stimulation

(A) B Cells (Catalog #70023) cryopreserved in CryoStor® CS10 (Catalog #07930) show high viability upon thawing (average = 96.3 ± 0.6%, n = 6). (B) B cells were cultured for 1 week in RPMI 1640 Medium (Catalog #36750) with 10% FBS, 2 mM L-Glutamine (Catalog #07100), 10 mM HEPES (Catalog #07200), and 55 µM β-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.

Other Subsets

Our portfolio is continually expanding with many newly launched immune cell subsets and now also includes macrophages, neutrophils and eosinophils. For a complete listing of peripheral blood-sourced immune cells, please visit: www.stemcell.com/pb-immuncells.

VIDEO

Large-Volume Cell Isolation from Whole Blood and Leukopaks

www.stemcell.com/large-volume-cell-isolation

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, immune cells, and blood plasma are isolated from entire umbilical cords. High-resolution HLA typing is available upon request.

Mononuclear Cells

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 enumeration of multipotentent 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 11).

Plasma

Frozen human plasma is isolated using centrifugation from umbilical cord blood (CB) collected using citrate-phosphate-dextrose (CPD) as an anticoagulant. Plasma contains a variety of cytokines, chemokines, and growth factors required for cell maintenance during hematopoiesis, and can be applied in a wide variety of therapeutic uses.

Hematopoietic Stem and Progenitor Cells

HSPCs are a heterogeneous population of cells that 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 the cell surface protein CD34. Cord blood $CD34^+$ cells are isolated from MNCs and cryopreserved using StemSpan™ Serum-Free Expansion Medium (SFEM) (Catalog #09650) with 10% DMSO. Choose cord blood $CD34^+$ cells derived from a single cord blood unit or access large lots of cord blood $CD34^+$ cells derived from multiple cord blood units.

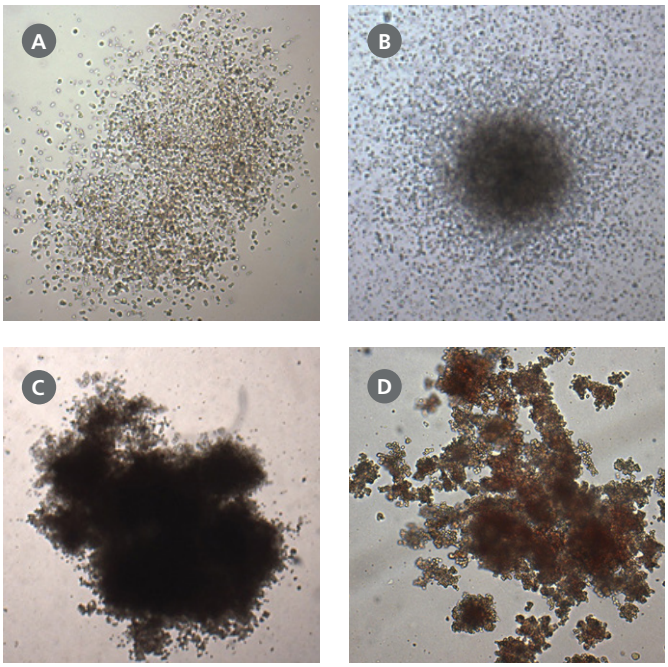


Figure 11. Cryopreserved Cord Blood MNCs Generate Hematopoietic Colonies in CFU Assays

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.

For a complete listing of cord blood primary cell products, please visit www.stemcell.com/cells-cord-blood.

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 (Figure 12).

Figure 12. Fresh Whole Bone Marrow

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

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 13).

Hematopoietic Stem and Progenitor Cells

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

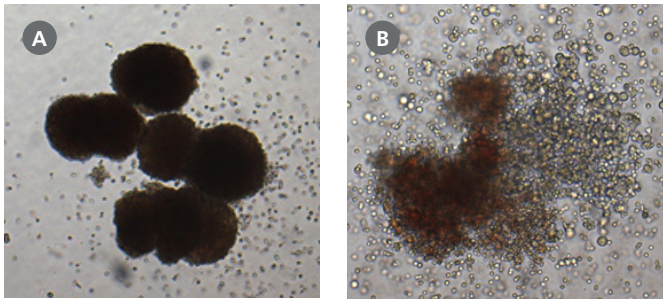


Figure 13. Cryopreserved Bone Marrow MNCs Generate Hematopoietic Colonies in CFU Assays

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 units—granulocyte, erythroid, macrophage, megakaryocyte (CFUGEMM). Colonies shown here were imaged on day 14 at (A) 4x objective and (B) 10x objective, respectively.

For a complete listing of bone marrow primary cell products, please visit www.stemcell.com/cells-bone-marrow.

Mesenchymal Stromal Cells (MSCs)

Mesenchymal stromal cells (MSCs), also termed bone marrow stromal cells, 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 Plus 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 x 10^5 cells per vial are available per lot, making it possible to reserve large numbers of cells while you evaluate them 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.

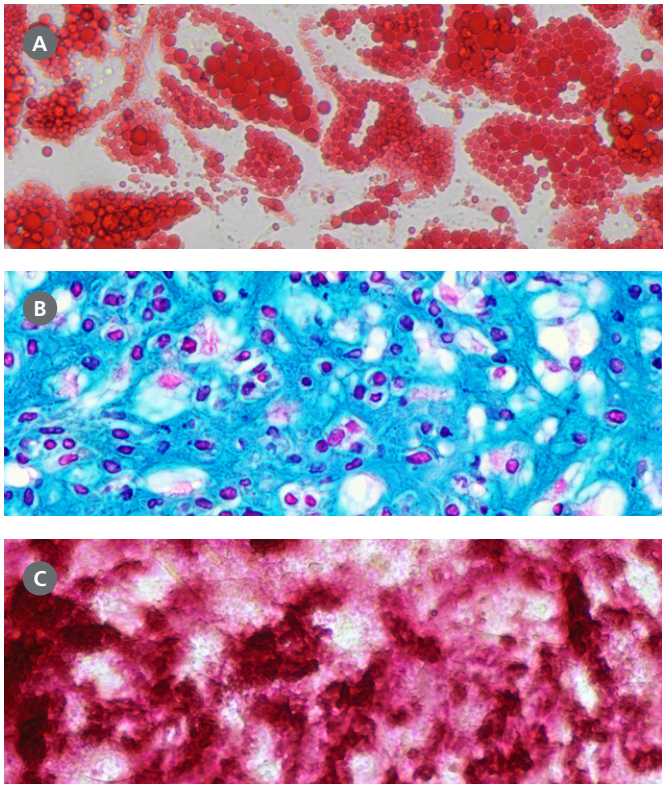


Figure 14. Cryopreserved Bone Marrow Stromal Cells Cultured in MesenCult™-ACF Plus Medium Kit Maintain Robust Multi-Lineage Potential

Human bone marrow stromal cells derived in MesenCult™-ACF Plus Medium Kit using the MesenCult™-ACF Plus Culture Kit (Catalog #05448) 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. 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 x 10^9 MNCs can be produced and cryopreserved from a single leukopak, ensuring consistency across multiple experiments.

Hematopoietic Stem and Progenitor Cells

$CD34^+$ 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 x 10^6 $CD34^+$ cells are cryopreserved from a single leukopak, ideal for large-scale studies.

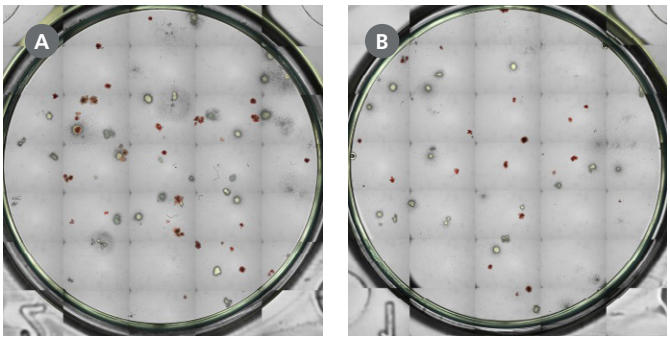


Figure 15. Cryopreserved Mobilized Peripheral Blood Mononuclear Cells and $CD34^+$ Cells Generate Hematopoietic Colonies in CFU Assays

(A) Cryopreserved mobilized peripheral blood mononuclear cells (Catalog #70049) or (B) $CD34^+$ cells (Catalog #70060) were thawed and plated at a concentration of 1 x 10^4 or 5 x 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™.

INSTRUMENT

STEMvision™ Hematopoietic Colony Counter
www.stemcell.com/stemvision.html

Standardize Your Cell Thawing Process

Cryopreservation and thawing are useful techniques performed by researchers routinely handling cells and tissues. Conventional methods for thawing frozen primary cells can present challenges such as inconsistent cell recovery. By using a standardized cell thawing process, researchers can minimize variability in sample handling and get a consistent thawing performance, which is critical for successful downstream applications.

ThawSTAR® CFT2 Automated Thawing System

Standardize your thawing process using the ThawSTAR® CFT2 Automated Thawing System (Catalog #100-0650)—a sensor-based, water-free instrument that delivers cell thawing profiles similar to that of a water bath. Conveniently thaw your cells in the biosafety cabinet, in ~2.5 minutes, while you prepare for the next step in your experiment.

Why Thaw Frozen Primary Cells Using ThawSTAR® CFT2?

- Reduce the risk of contamination and use as a part of a sterile process inside a biosafety cabinet
- Document instrument performance and generate an audit trail with ThawSTAR® CFT2 confirmation vials
- Easily integrate into cell thawing processes within research and clinical settings that require a higher level of compliance.

Figure 16. ThawSTAR® CFT2 Automated Thawing System

ThawSTAR® CFT2 Automate-d Thawing System (Catalog #100-0650)—automated cell thawing system for consistent thawing performance.

Specifications

Product Features	Description
Dimensions	5.7" (height)
	4.3" (base diameter)
Vial Size	1.8 - 2 mL (round, flat, skirted)
Vials Thawed	1 per cycle
Thawable Volume	0.8 - 1.4 mL
Thaw Time	~160 seconds
Final Vial Temperature	< 10°C (same as water bath)

Isolate Your Cells Efficiently

Highly Purified Cells for Any Downstream Application

Ensure that your isolated cells are viable and suitable for downstream functional and biological studies using fast, easy, and column-free cell separation.

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.

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.

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.

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 at www.contractassay.com, or contact contractassay@stemcell.com to discuss your research.

CAS Specializes in:

- Hematopoietic CFU assays
- Mesenchymal CFU-F assays
- Hematopoietic and mesenchymal stem cell characterization
- Immunomodulation assays
- PSC characterization service
- iPSC characterization and banking services

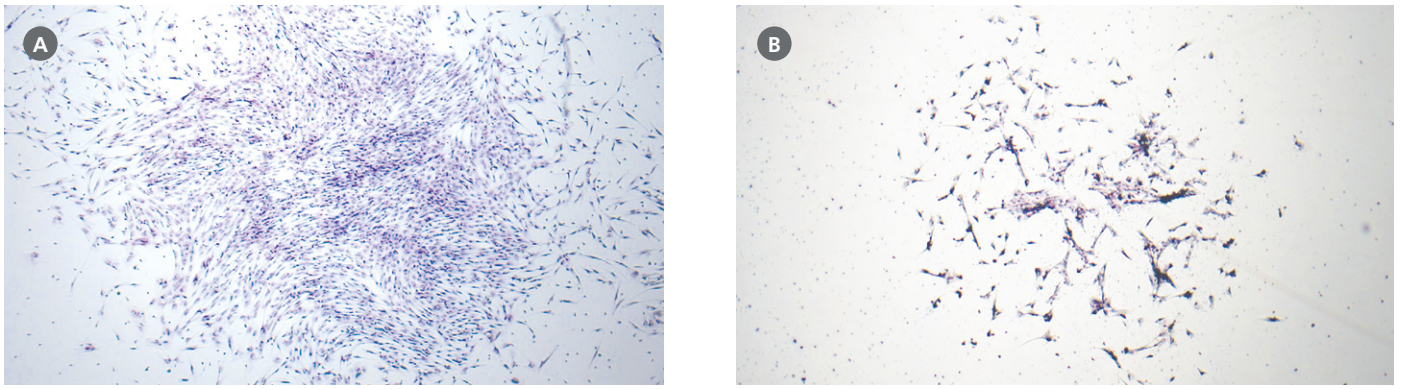


Figure 17. Example CFU-F Assay Data from CAS Showing the Effects of an Inhibitory Compound

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

Peripheral Blood[1,2]

Leukopaks[3,4]

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

LRS Cone[3]

Description	Anticoagulant	Quantity	Catalog #
Leukocyte Reduction System (LRS) Cone	ACDA[5]	1 cone	200-0093

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

Fresh Human Peripheral Blood Products[3]

Description	Anticoagulant	Quantity	Catalog #
Whole Peripheral Blood	ACDA[5]	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
Plasma	ACDA[5]	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 #
Fresh Purified Cells	Peripheral Blood Mononuclear Cells	100 million cells	200-0077
		300 million cells	200-0078
	Pan-T Cells	10 million cells	200-0046
		25 million cells	200-0047
		40 million cells	200-0048
	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

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 are currently available in the United States and Canada (excluding Quebec).*
4. *A full-size leukopak typically contains 1.1 ± 0.3 x 10^{10} cells and has a volume of approximately 120 mL.*
5. *ACDA - Acid Citrate Dextrose Solution A.*

Cryopreserved Human Peripheral Blood Cells[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
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
$CD4^+$ T Cells	15 million cells	70026
$CD4^+CD25^-$ 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
$CD4^+CD45RA^+$ T Cells	5 million cells	70029
$CD4^+CD45RO^+$ T Cells	5 million cells	70031
$CD8^+$ T Cells	10 million cells	70027
$CD8^+CD45RA^+$ T Cells	5 million cells	70030
B Cells	10 million cells	70023
	20 million cells	70023.1

Description	Quantity	Catalog #
$CD19^+CD27^-$ Naïve B Cells	1 million cells	70032
$CD19^+$ B Cells	10 million cells	70033
Monocytes	10 million cells	70034
$CD14^+$ Monocytes	10 million cells	70035.1
	20 million cells	70035.2
	40 million cells	70035
NK Cells	5 million cells	70036
$CD56^+$ Cells[4]	5 million cells	70037
Macrophages	1.5 million cells	70042
Immature Dendritic Cells	1.5 million cells	70041
Plasmacytoid Dendritic Cells	0.5 million cells	70046
Pan Dendritic Cells	0.5 million cells	200-0560
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[3a,5]	1.5 million cells	200-0370
PB-Derived Mature Dendritic Cells[3a]	1.5 million cells	200-0371
PB-Derived M0 Macrophages[3b]	1.5 million cells	200-0372
PB-Derived M1 Macrophages[3b]	1.5 million cells	200-0373
PB-Derived M2a Macrophages[3b]	1.5 million cells	200-0374

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. *a) ACF-cultured; b) SF-Cultured.*
4. *CD56 antigen is expressed primarily on natural killer (NK) cells, as well as NKT cells in peripheral blood.*
5. *PB = peripheral blood.*

Cryopreserved Human Peripheral Blood Products[1]

Description	Quantity	Catalog #
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
Serum	1 mL	200-0160
	5 mL	200-0161
	10 mL	200-0162

Cryopreserved 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 Diseased-State PBMCs[1,2]

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
Acute Lymphoblastic Leukemia (ALL)	Custom	200-0243
	5-19 million cells	200-0449
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
Mantle Cell Lymphoma (MCL)	Custom	200-0249
	5-19 million cells	200-0455
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
Chronic Lymphocytic Leukemia (CLL)	Custom	200-0245
	5-19 million cells	200-0451

Cell Thawing Instrument

Product	Catalog #
ThawSTAR® CFT2 Automated Thawing System[3]	100-0650
ThawSTAR® CFT2 Transporter[3]	100-0642
ThawSTAR® CFT2 Confirmation Vials[3]	100-0643
ThawSTAR® CFT2 IOPQ Kit[3]	100-0730

1. *Certain cryopreserved products are only available in select territories. Please contact Product and Scientific Support (techsupport@stemcell.com) for further information.*
2. *Diseased states indicate PBMCs obtained from donors diagnosed with a given condition.*
3. *ThawSTAR® CFT2 is not available for sale in China, Hong Kong, Taiwan, Japan, or South Korea.*

Diseased-State Human Blood Products[1,5]

Description	Format	Quantity	Catalog #
Solid Tumor Cancer	Leukopak, Fresh	1 billion cells	200-0402
	Whole Peripheral Blood, Fresh [3c,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[3c,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[3c,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[3c,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[3c,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[3c,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[3c,d]	Collection	200-0287 200-0272
	Custom, Frozen[4]	-	200-0240
Bladder Cancer	Plasma[2], Frozen	1 billion cells	200-0290
	PBMCs[2], Frozen	5-19 million cells	200-0434
	Whole Peripheral Blood, Fresh[3c,d]	Collection	200-0275 200-0260
	Custom, Frozen[4]	-	200-0228

Description	Format	Quantity	Catalog #
Prostate Cancer	Leukopak, Fresh	1 billion cells	200-0304
	PBMCs[2], Frozen	5-19 million cells	200-0448
	Whole Peripheral Blood, Fresh[3c,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[3c,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[3c,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[3c,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[3c,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[3c,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[3c,d]	Collection	200-0279 200-0264
	Custom, Frozen[4]	-	200-0232

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. *a) ACDA - Acid Citrate Dextrose Solution A; b) CP2D - Citrate-Phosphate-Double Dextrose; c) EDTA - Ethylenediaminetetraacetic Acid; d) Na Heparin - Sodium Heparin.*
4. *Custom frozen human primary biological materials include plasma and serum from donors diagnosed with the specific cancer.*
5. *Diseased states indicate PBMCs obtained from donors diagnosed with a given condition.*

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+ 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
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*	1 million cells	70019
Plasma	10 mL	70020.1
	20 mL	70020.2
	30 mL	70020.3
	40 mL	70020.4
	50 mL	70020

*CD56 antigen is expressed primarily on natural killer (NK) cells, as well as NKT cells in peripheral blood.

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+ 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[1]	1 million cells	70003
CD33+ Cells	5 million cells	70006
Stromal Cells Derived in ACF Medium[1]	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+ 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+ 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+ 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

Leukopak, Whole Blood, Purified Cells, Bone Marrow, and LRS Cones

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 the 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).

Leukopak Products, Whole Blood, Purified Cells, and Bone Marrow

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 the most recent viral testing on the CoA.

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.

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.

HUMAN PRIMARY CELLS

STEMCELL™ TECHNOLOGIES

TOLL FREE PHONE 1 800 667 0322
PHONE +1 604 877 0713
INFO@STEMCELL.COM
TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT WWW.STEMCELL.COM

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