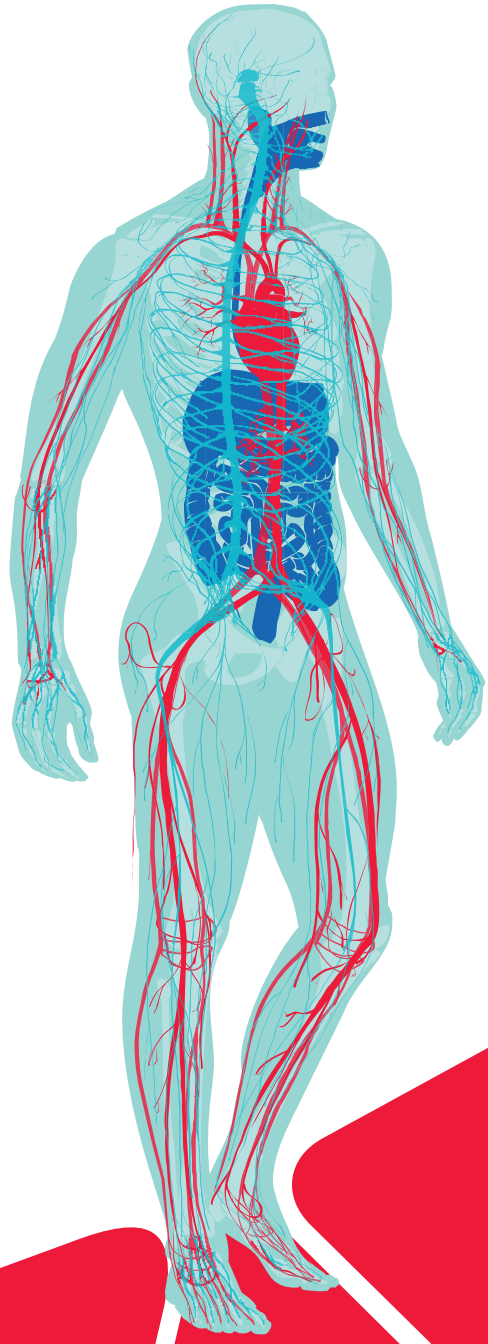
MilliporeSigma

More physiologically relevant models using

HUMAN primary cells

PromoCell



The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Sigma-Aldrich®

Lab & Production Materials

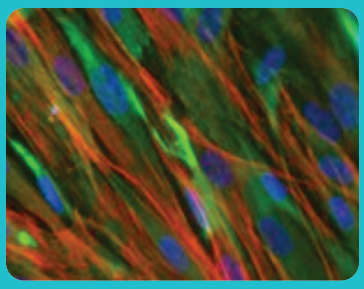
Expect more meaningful results from your cell models.

Relevant physiology. Ethical sourcing. Donor-specific documentation.

Despite their immortality and widespread availability, biomedical scientists have long recognized that cancer cell lines may not be optimal for modeling non-cancer tissues and systems. Primary cells are more biologically relevant for many studies, but have been less accessible to scientists working outside clinical research environments.

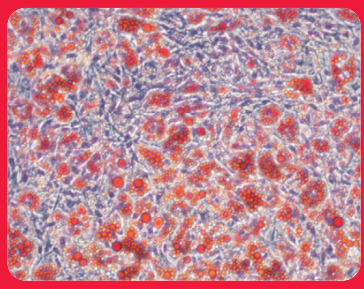
Through our partnership with PromoCell®, we are able to offer the predictive biology of primary cells with the convenience of ready availability, optimized media, and expert protocols for working with human cells. These primary cells are meticulously confirmed to express cell type-specific markers, and for cell morphology, population doubling time, and proliferation capacity. Every lot of cells is tested to confirm the absence of HIV-1, HIV-2, HBV, HCV, fungi, mycoplasma, and other bacteria. These primary cells are never obtained from tissue banks, but are instead collected with patient consent and traceable provenance from approved medical centers.

Primary cell culture



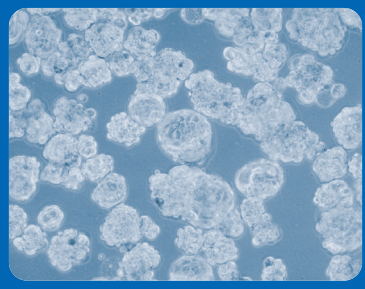
Primary cells are scrupulously validated for cell type specific markers, cell morphology, population doubling time, and proliferation capacity.

Blood and stem cell culture



Our expanded primary cell portfolio includes a collection of adult stem cells from normal human bone marrow, as well as cells from umbilical cord tissue, placenta, adipose tissue, peripheral blood, and cord blood.

Cancer cell culture



We provide a complete cell culture media system for isolating and culturing malignant human cells from primary tumor samples or patient-derived xenografts.

Table of Contents

All cell products are available in three formats:

- Cryopreserved
- Pelleted*
- Proliferating

*Cell Pellets are stored in RNAlater®, an aqueous protection solution that rapidly permeates the cells and stabilizes cellular DNA, RNA, and proteins to protect them from degradation, optimizing the pellet for molecular studies.

When you need the most relevant physiology from *in vitro* models

PromoCell® Human Primary Cells provide:

Individual donor characteristics - Donor demographic information enables modeling of diverse genders, ages, and ethnicities.

Verified cell identity and function - Stringent quality control ensures correct cellular identity, growth and differentiation performance.

Assay-readiness - Ready-to-use cells plus growth and differentiation media—together with detailed cell culture protocols and application notes—conserve your most valuable asset: time. Less time cultivating a robust and/or differentiated culture means more results, sooner.

Media optimized for specific cell types - High-quality media are vital for successful cell culture. These specialty primary cell media are manufactured in compliance with robust quality standards using raw materials only from approved sources. Focused effort towards media optimization has resulted in the replacement of serum with defined components wherever possible. This ensures effective cell growth and averts the unpredictable effects of indeterminate compounds.

Chondrocyte cells and media

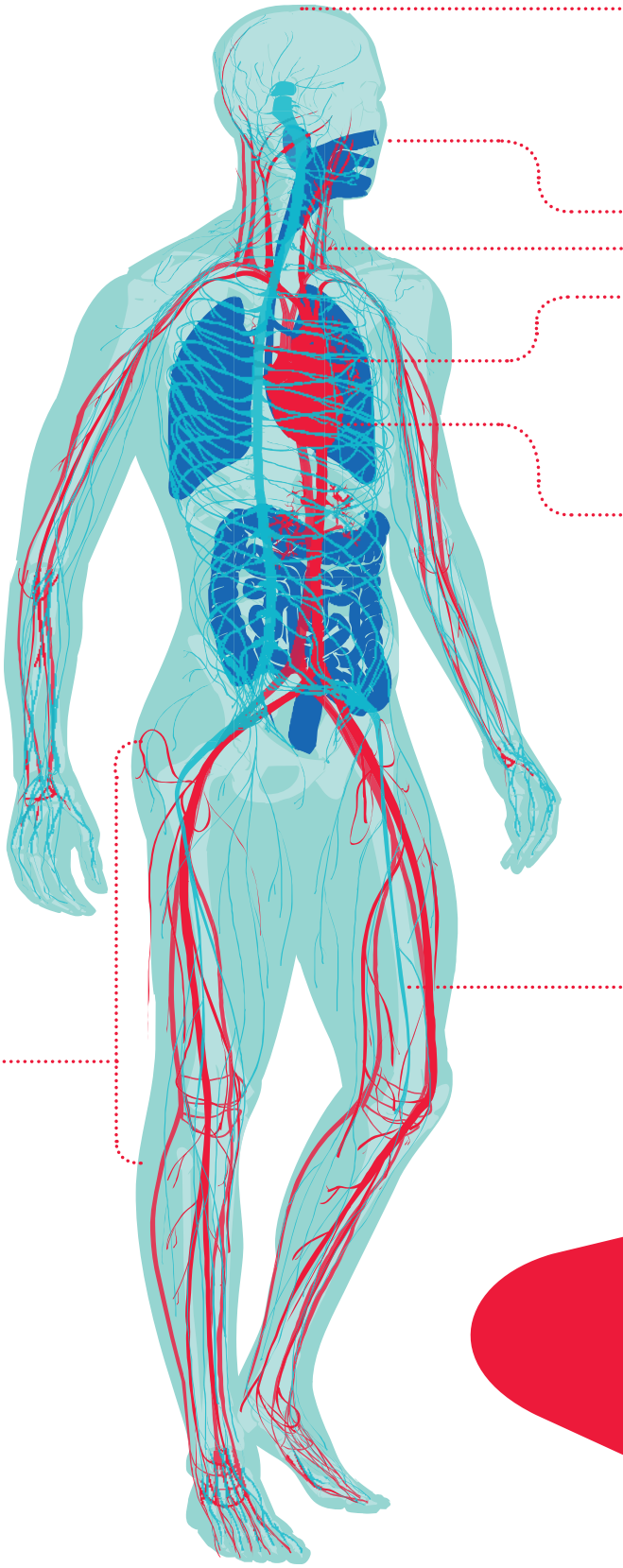
Primary human chondrocytes are isolated from normal human articular cartilage from the knee and hip joints.

Human fibroblasts and media

Choose from aortic adventitial, dermal, pulmonary, cardiac or uterine fibroblasts, supported by normal serum, low-serum, or serum-free fibroblast media.

Endothelial cell culture

Aortic Endothelial Cells (HAoEC)
Cardiac Microvascular Endothelial Cells (HCMEC)
Coronary Artery Endothelial Cells (HCAEC)
Dermal Blood Endothelial Cells (HDBEC)
Dermal Lymphatic Endothelial Cells (HDLEC)
Dermal Microvascular Endothelial Cells (HDMEC)
Pulmonary Artery Endothelial Cells (HPAEC)
Pulmonary Microvascular Endothelial Cells (HPMEC)
Saphenous Vein Endothelial Cells (HSaVEC)
Umbilical Artery Endothelial Cells (HUAEC)
Umbilical Vein Endothelial Cells (HUVEC)
Uterine Microvascular Endothelial Cells (HUtMEC)



Follicle dermal papilla cell culture

Cells isolated from human dermis of the occipital or temporal scalp, with optimized low-serum medium

Epithelial cell culture

Nasal Epithelial Cells (HNEpC)
Tracheal Epithelial Cells (HTEpC)
Bronchial Epithelial Cells (HBEpC)
Small Airway Epithelial Cells (HSAEpC)
Renal Cortical Epithelial Cells (HRCEpC)
Renal Epithelial Cells (HREpC)

Cardiac myocytes and media

Ventricular myocytes are harvested from the adult human heart, and paired with low-serum media optimized for growth of these cellular powerhouses.

Human smooth muscle cell culture

Aortic Smooth Muscle Cells (HAoSMC)
Bronchial Smooth Muscle Cells (HBSMC)
Coronary Artery Smooth Muscle Cells (HCASMC)
Pulmonary Artery Smooth Muscle Cells (HPASMC)
Tracheal Smooth Muscle Cells (HTSMC)
Umbilical Artery Smooth Muscle Cells (HUASMC)
Uterine Smooth Muscle Cells (HUtSMC)

Osteoblast culture

Cells from human femoral trabecular bone, plus optimized growth and mineralization media.

Melanocyte culture

Isolated using either serum-free PMA-containing or serum-free PMA-free growth media.

Normal human epidermal keratinocytes and media

Among the most vital cultures in cell research, keratinocytes from juvenile or adult skin are critical for studies of psoriasis, skin cancer, wound healing and toxicity.

Pericytes

Pericytes are critical multitaskers lining microcirculatory vessels that help to maintain hemostasis. Ours are isolated from human placenta, and pericyte growth medium is optimized for their culture.

Adipocytes

Adipogenesis has long been a fundamental process for studying differentiation. Our preadipocyte culture system includes human white preadipocyte cells and media for optimal growth, differentiation, and maintenance.

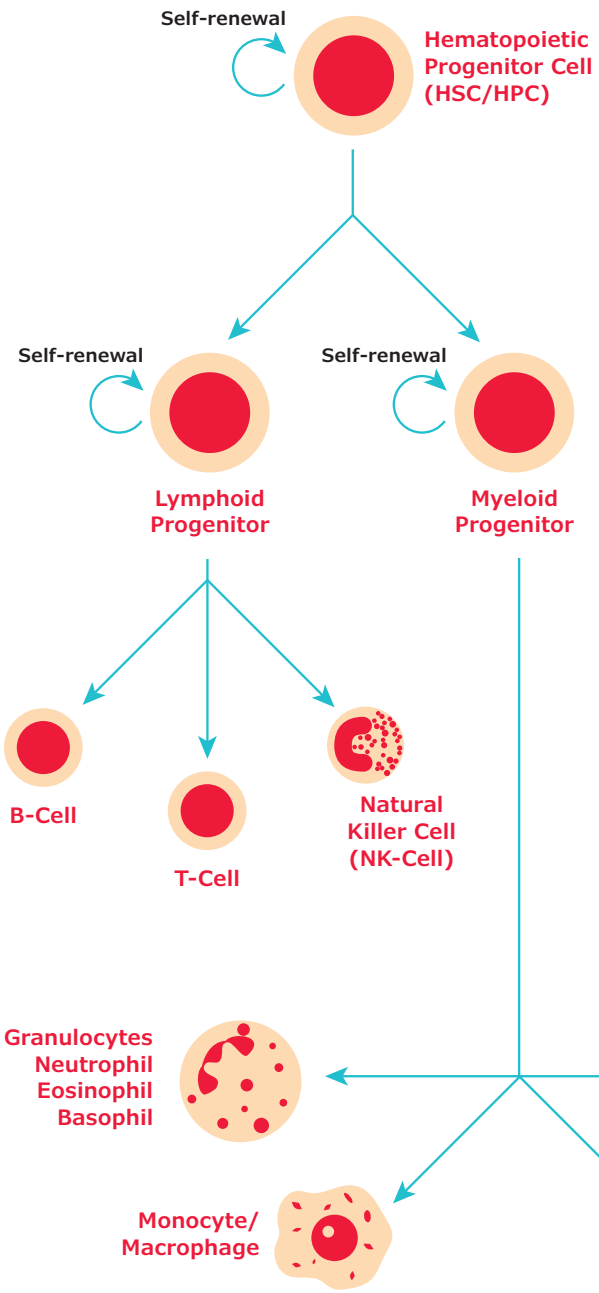
Application Spotlight

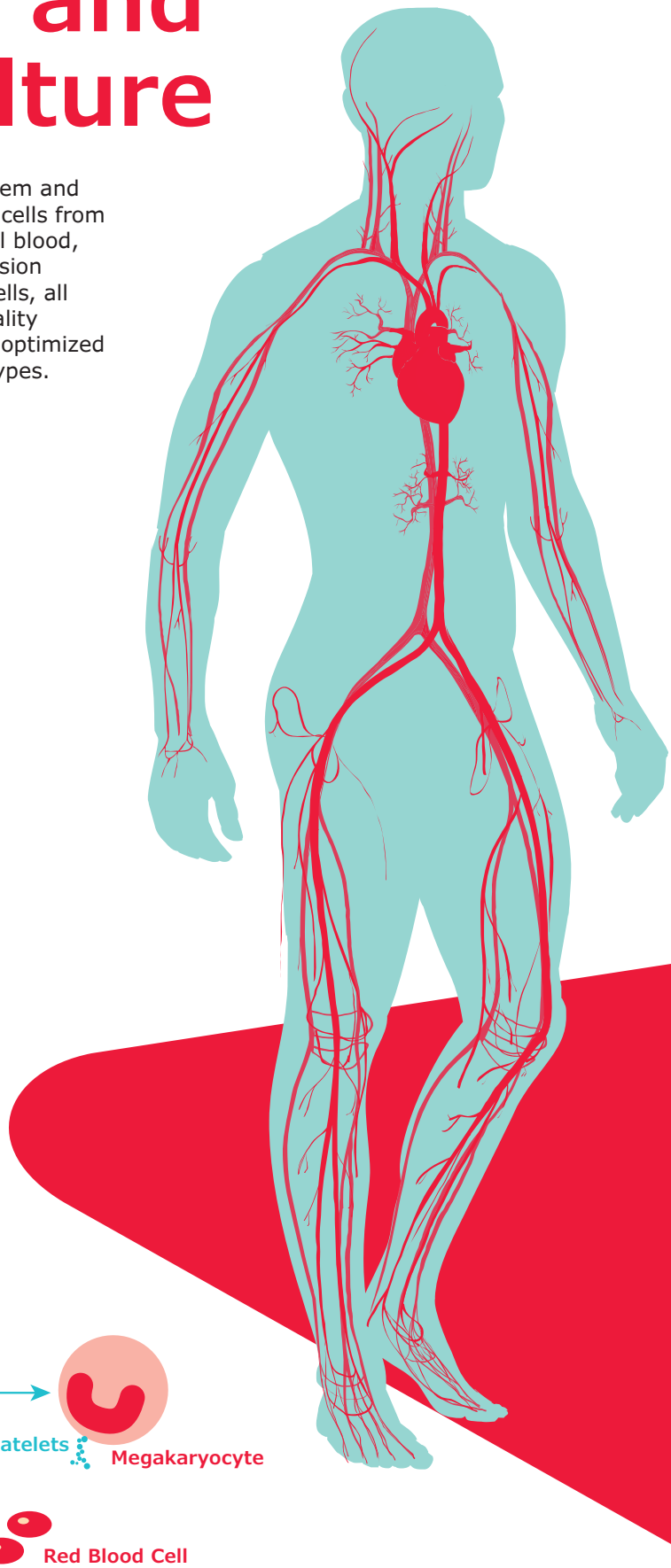
Primary Cell Organotypic 3D skin cultures

Historically, animal models have been used to test the toxicity and efficacy of cosmetics and transdermal drug absorption. These can often be replaced by “cruelty-free” *in vitro* organotypic skin models that use primary human cells and cell culture inserts to recapitulate the stratified epidermal architecture. Our simple step-by-step culture protocol that can be used to generate human epidermal skin models employs primary human keratinocytes (PHK), dermal fibroblasts (primary human fibroblasts, PHF), collagen-coated MilliCell® culture inserts and the proprietary 3dGRO™ Skin Differentiation Medium which supports the robust differentiation of keratinocytes during the air:liquid interface culture steps.

Human stem and blood cell culture

Our primary cell portfolio includes a collection of adult stem and blood cells from normal human bone marrow, as well as cells from umbilical cord tissue, placenta, adipose tissue, peripheral blood, and cord blood. Specialty media also facilitate the expansion and differentiation of a wide variety of blood and stem cells, all ethically collected at approved medical centers. High-quality media that simulate the *in vivo* environment—as well as optimized differentiation media systems—are available for all cell types.





Human Mesenchymal Stem Cells and Media

Human mesenchymal stem cells (hMSC) are available from umbilical cord, bone marrow, and adipose tissue.

Stem cell growth media are available in low-serum and defined, xeno-free formulations. Differentiation reagents include media specialized for critical phenotypes:

- Osteogenic differentiation
- Neurogenic differentiation
- Chondrogenic differentiation
- Adipogenic differentiation

Hematopoietic Stem Cell Culture

Human blood progenitor cells are validated to be positive for CD34, an established marker for blood- and bone marrow-derived progenitors, and are isolated from cord blood from a single donor. The hematopoietic progenitor media portfolio includes serum-free medium for optimal *in vitro* expansion performance, plus traditional culture media suitable for CFU-based assays like long-term culture initiation (LTC-IC).

Human Blood Cell Culture and Differentiation Media

Differentiation media support the efficient generation of M1 or M2 macrophages, as well as immature and fully mature myeloid dendritic cells from peripheral blood monocytes. Also available are primary human $CD14^+$ monocytes and M1 or M2 monocyte-derived macrophages.

- Monocytes
- Macrophages
- Dendritic Cells

Human Mononuclear Cells

Choose from human mononuclear cells (hMNC), isolated from cord or peripheral blood of single donors.

Cell identity, authenticated. Every time.

Mesenchymal stem cells (MSC) have tremendous research and therapeutic potential. Like other powerful cell precursors and biological models, researchers and biotherapeutic development labs must be confident in their purity and identity in order for results and new therapies to be recognized and approved. So, before our MSC arrive in your lab, they've been validated to express CD105, CD73, and CD90, and to be free of differentiation markers. This kind of identity and function validation is characteristic of every lot of every cell type we offer, and is documented for regulatory and publication requirements.

Application Spotlight

Human Blood Cells

Successful expansion of hematopoietic progenitors requires specialized tools, and the right protocol:

- Classical or alternative activation? Regardless of which macrophage path you're on, we have media and protocols for differentiation of M1 or M2 phenotypes
- Homogeneous mature dendritic cell populations can be generated from PBMC with our media and protocols

Primary cancer culture

Tumors are three-dimensional.

3D Tumorsphere Media XF supports cancer sphere formation

This serum-free, xeno-free formulation supports the culture of the most commonly used cancer cell lines as three-dimensional mammospheres or tumorspheres.

Our comprehensive cancer culture solution has been designed for the selective culture of malignant cells derived from patient-derived xenografts or primary tumors. The Primary Cancer Culture System can be used in diverse applications that include cell line enrichment and stromal cell depletion.

These innovative reagents and media

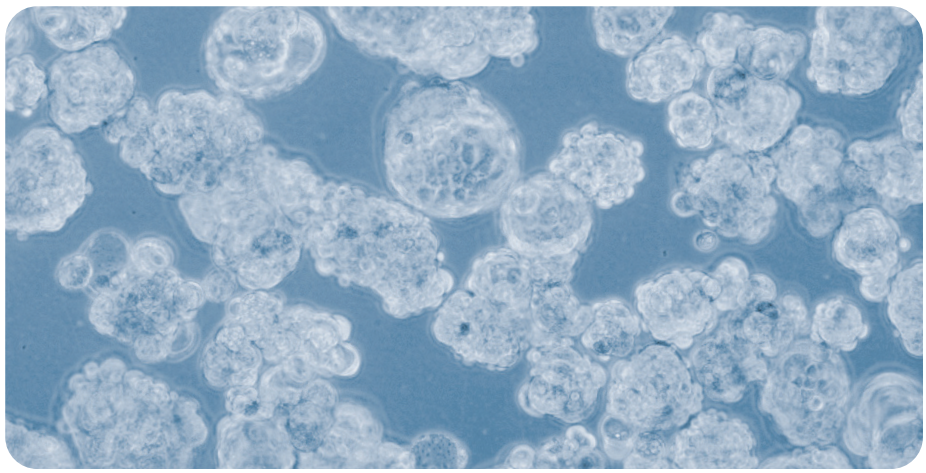
- Perform up to five primary tumor isolations with one media kit
- Prevent stromal overgrowth during isolation of fresh tumor samples
- Establish a culture of pure malignant cells within 4-6 weeks
- Enable the culture of PDX tumor models *in vitro*
- Provide options for defined and animal component-free formulation

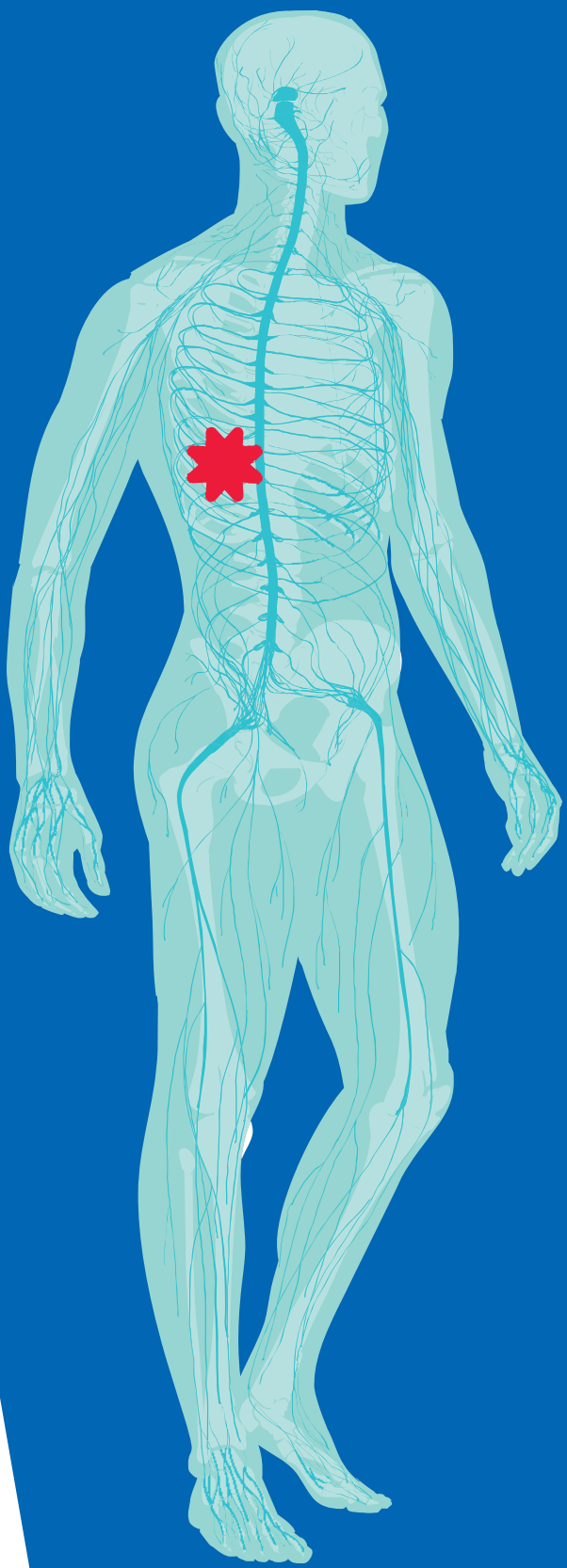
Cancer cell lines have been available for decades for use in basic and preclinical research, but do not necessarily recapitulate the behaviors of cancers in patients, due mostly to culture condition-induced changes. Xenograft models established by transplanting cell lines into immunocompromised mice may create microenvironments similar to tumor physiology, but remain vulnerable to aberrant characteristics due to the adaptations of cancer cells to *in vitro* growth.

PDX: Tools designed for better cancer models

Patient-derived xenograft (PDX) models have evolved in recent years to address these concerns around cell line-based models. Because PDX are likely to retain morphology and molecular characteristics similar to those found in patient tumors, they have compelling potential for drug screening, biomarker discovery, and the development of novel therapeutic approaches that include personalized medicine approaches to treatment.

Making PDX and other advanced cancer culture tools more reliable and available helps to fulfill our goal to partner with cancer investigators in creating meaningful research models that lead to treatments.





Human Primary Cells & Media

Quantity is 500,000 cells unless otherwise indicated

Type	Description	Product #	Culture Media
Cardiac Myocytes	Human Cardiac Myocytes (HCM)	C-12810	Myocyte Growth Medium (C-22070)
Chondrocytes	Human Chondrocytes (HCH), cryopreserved	C-12710	Chondrocyte Growth Medium (C-27101)
Endothelial Cells (large vessels)	Human Aortic Endothelial Cells (HAoEC), cryopreserved	C-12271	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Coronary Artery Endothelial Cells (HCAEC), cryopreserved	C-12221	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Pulmonary Artery Endothelial Cells (HPAEC), cryopreserved	C-12241	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Saphenous Vein Endothelial Cells (HSaVEC), cryopreserved	C-12231	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Artery Endothelial Cells (HUAEC), cryopreserved	C-12202	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Vein Endothelial Cells (HUVEC), pooled, cryopreserved	C-12203	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Vein Endothelial Cells (HUVEC), single donor, cryopreserved	C-12200	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Vein Endothelial Cells (HUVEC), single donor, pre-screened for VEGF response, cryopreserved	C-12205	Endothelial Cell Growth Medium (C-22010) Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Vein Endothelial Cells 2 (HUVEC 2), pooled, cryopreserved	C-12208	Endothelial Cell Growth Medium 2 (C-22011)
	Human Umbilical Vein Endothelial Cells 2 (HUVEC 2), single donor, cryopreserved	C-12206	Endothelial Cell Growth Medium 2 (C-22011)
Endothelial Cells (microvascular)	Human Cardiac Microvascular Endothelial Cells (HCMEC)	C-12285	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Dermal Blood Endothelial Cells (HDBEC), adult, cryopreserved	C-12225	Endothelial Cell Growth Medium MV (C-22020)
	Human Dermal Blood Endothelial Cells (HDBEC), juvenile foreskin, cryopreserved	C-12211	Endothelial Cell Growth Medium MV (C-22020)
	Human Dermal Lymphatic Endothelial Cells (HDLEC), adult, cryopreserved	C-12217	Endothelial Cell Growth Medium MV2 (C-22022)
	Human Dermal Lymphatic Endothelial Cells (HDLEC), juvenile foreskin, cryopreserved	C-12216	Endothelial Cell Growth Medium MV2 (C-22022)
	Human Dermal Microvascular Endothelial Cells (HDMEC), adult, cryopreserved	C-12212	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Dermal Microvascular Endothelial Cells (HDMEC), juvenile foreskin, cryopreserved	C-12210	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Dermal Microvascular Endothelial Cells (HDMEC), juvenile foreskin, pre-screened for VEGF response, cryopreserved	C-12215	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Pulmonary Microvascular Endothelial Cells (HPMEC), cryopreserved	C-12281	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
	Human Uterine Microvascular Endothelial Cells (HUtMEC), cryopreserved	C-12295	Endothelial Cell Growth Medium MV (C-22020) Endothelial Cell Growth Medium MV2 (C-22022)
Epithelial Cells	Human Bronchial Epithelial Cells (HBEpC), cryopreserved	C-12640	Airway Epithelial Cell Growth Medium (C-21060)
	Human Nasal Epithelial Cells (HNEpC), cryopreserved	C-12620	Airway Epithelial Cell Growth Medium (C-21060)
	Human Renal Cortical Epithelial Cells (HRCEpC), cryopreserved	C-12660	Renal Epithelial Cell Growth Medium 2 (C-26030)
	Human Renal Epithelial Cells (HREpC), cryopreserved	C-12665	Renal Epithelial Cell Growth Medium 2 (C-26030)
	Human Small Airway Epithelial Cells (HSAEpC), cryopreserved	C-12642	Small Airway Epithelial Cell Growth Medium (C-21070)
	Human Tracheal Epithelial Cells (HTEpC), cryopreserved	C-12644	Airway Epithelial Cell Growth Medium (C-21060)

Human Primary Cells & Media

Quantity is 500,000 cells unless otherwise indicated

Type	Description	Product #	Culture Media
Fibroblasts	Human Aortic Adventitial Fibroblasts (HAoAF), cryopreserved	C-12380	Fibroblast Growth Medium 2 (C-23020)
	Human Cardiac Fibroblasts (HCF), cryopreserved	C-12375	Fibroblast Growth Medium 3 (C-23025)
	Human Pulmonary Fibroblasts (HPF), cryopreserved	C-12360	Fibroblast Growth Medium 2 (C-23020)
	Human Uterine Fibroblasts (HUF), cryopreserved	C-12385	Fibroblast Growth Medium 2 (C-23020)
	Normal Human Dermal Fibroblasts (NHDF), juvenile foreskin, cryopreserved	C-12300	Fibroblast Growth Medium (C-23010)
	Normal Human Dermal Fibroblasts (NHDF), adult, cryopreserved	C-12302	Fibroblast Growth Medium 2 (C-23020)
Follicle Dermal Papilla Cells	Human Follicle Dermal Papilla Cells (HFDPC), cryopreserved	C-12071	Follicle Dermal Papilla Cell Growth Medium (C-26501)
Keratinocytes	Normal Human Epidermal Keratinocytes (NHEK), juvenile foreskin, single donor, cryopreserved	C-12001	Keratinocyte Growth Medium 2 (C-20011)
	Normal Human Epidermal Keratinocytes (NHEK), adult, single donor, cryopreserved	C-12003	Keratinocyte Growth Medium 2 (C-20011)
	Normal Human Epidermal Keratinocytes (NHEK), juvenile foreskin, pooled, cryopreserved	C-12005	Keratinocyte Growth Medium 2 (C-20011)
	Normal Human Epidermal Keratinocytes (NHEK), adult, pooled, cryopreserved	C-12006	Keratinocyte Growth Medium 2 (C-20011)
Melanocytes	Normal Human Epidermal Melanocytes (NHEM), juvenile foreskin, cryopreserved	C-12400	Melanocyte Growth Medium (C-24010)
	Normal Human Epidermal Melanocytes 2 (NHEM 2), juvenile foreskin, cryopreserved	C-12402	Melanocyte Growth Medium M2 (C-24300)
	Normal Human Epidermal Melanocytes 2 (NHEM 2), adult, cryopreserved	C-12403	Melanocyte Growth Medium M2 (C-24300)
Osteoblasts	Human Osteoblasts (HOB), cryopreserved	C-12720	Osteoblast Growth Medium (C-27001) Osteoblast Mineralization Medium (C-27020)
Preadipocytes	Human White Preadipocytes (HWP), subcutaneous, cryopreserved	C-12730	Preadipocyte Growth Medium (C-27410) Preadipocyte Differentiation Medium (C-27436) Adipocyte Nutrition Medium (C-27438)
	Human White Preadipocytes (HWP), visceral, cryopreserved	C-12732	Preadipocyte Growth Medium (C-27410) Preadipocyte Differentiation Medium (C-27436) Adipocyte Nutrition Medium (C-27438)
Skeletal Muscle Cells	Human Skeletal Muscle Cells (SkMC), cryopreserved	C-12530	Skeletal Muscle Cell Growth Medium (C-23060) Skeletal Muscle Differentiation Medium (C-23061)
Smooth Muscle Cells	Human Aortic Smooth Muscle Cells (HAoSMC), cryopreserved	C-12533	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Bronchial Smooth Muscle Cells (HBSMC), cryopreserved	C-12561	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Coronary Artery Smooth Muscle Cells (HCASMC), cryopreserved	C-12511	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Pulmonary Artery Smooth Muscle Cells (HPASMC), cryopreserved	C-12521	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Tracheal Smooth Muscle Cells (HTSMC), cryopreserved	C-12565	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Umbilical Artery Smooth Muscle Cells (HUASMC), cryopreserved	C-12500	Smooth Muscle Cell Growth Medium 2 (C-22062)
	Human Uterine Smooth Muscle Cells (HUtSMC), cryopreserved	C-12575	Smooth Muscle Cell Growth Medium 2 (C-22062)

All cell products are available in three formats:

- Cryopreserved
- Pelleted*
- Proliferating

* Cell Pellets are stored in RNAlater®, an aqueous protection solution that rapidly permeates the cells and stabilizes cellular DNA, RNA, and proteins to protect them from degradation, optimizing the pellet for molecular studies.

- Product numbers shown are for cryopreserved format.
  For other formats, visit **sigmaaldrich.com/life-science/cell-culture/promocell.html**

Human Stem & Blood Cell Culture

Quantity is 500,000 cells unless otherwise indicated

Type	Description	Product #	Quantity	Tested Markers
Mesenchymal Stem Cells	Human Mesenchymal Stem Cells (hMSC), umbilical cord matrix, cryopreserved	C-12971	500,000 cells	$CD105^+$, $CD73^+$, $CD90^+$, $CD45^-$, $CD34^-$, $CD14^-$, $CD19^-$, HLA-DR^-. Differentiation capacity to adipogenic, osteogenic and chondrogenic cells.
	Human Mesenchymal Stem Cells (hMSC), bone marrow, cryopreserved	C-12974	500,000 cells	$CD105^+$, $CD73^+$, $CD90^+$, $CD45^-$, $CD34^-$, $CD14^-$, $CD19^-$, HLA-DR^-. Differentiation capacity to adipogenic, osteogenic and chondrogenic cells.
	Human Mesenchymal Stem Cells (hMSC), adipose tissue, cryopreserved	C-12977	500,000 cells	$CD105^+$, $CD73^+$, $CD90^+$, $CD45^-$, $CD34^-$, $CD14^-$, $CD19^-$, HLA-DR^-. Differentiation capacity to adipogenic, osteogenic and chondrogenic cells.
	Mesenchymal Stem Cell Growth Medium 2	C-28009	500 ml	Growth performance tested
	Mesenchymal Stem Cell Growth Medium DXF	C-28019	500 ml	Growth performance tested
	Mesenchymal Stem Cell Adipogenic Differentiation Medium 2	C-28016	100 ml	Differentiation tested
	Mesenchymal Stem Cell Chondrogenic Differentiation Medium	C-28012	100 ml	Differentiation tested
	Mesenchymal Stem Cell Neurogenic Differentiation Medium	C-28015	100 ml	Differentiation tested
	Mesenchymal Stem Cell Osteogenic Differentiation Medium	C-28013	100 ml	Differentiation tested
Pericytes	Human Pericytes from Placenta (hPC-PL), cryopreserved	C-12980	500,000 cells	$CD146^+$, $CD105^+$, $CD31^-$, $CD34^-$
$CD34^+$ Progenitor Cells	Human $CD34^+$ Progenitor Cells ($hCD34^+$-CB)	C-12921	100,000 cells	$CD34^+$
	Hematopoietic Progenitor Expansion Medium DXF	C-28021	500 ml	Expansion tested
	Cytokine Mix E for HPC-Expansion Medium DXF	C-39890	1 Mix for 100 ml	Expansion tested
	Cytokine Mix E for HPC-Expansion Medium DXF	C-39891	1 Mix for 500 ml	Expansion tested
	Hematopoietic Progenitor Medium (Ready-to-use)	C-28020	100 ml	Expansion tested
$CD14^+$ Monocytes	Human $CD14^+$ Monocytes ($hMoCD14^+$-PB), single donor, cryopreserved	C-12909	10 million cells	
Mononuclear Cells	Human Mononuclear Cells (hMNC), peripheral blood, single donor, ultra-pure, cryopreserved	C-12907	25 million cells	$CD31^-$, $CD34^-$, $CD105^+$, $CD146^+$
	Human Mononuclear Cells (hMNC), cord blood, single donor, ultra-pure, cryopreserved	C-12901	25 million cells	$CD31^-$, $CD34^-$, $CD105^+$, $CD146^+$
	Mononuclear Cell Medium	C-28030	500 ml	
	Monocyte Attachment Medium (Ready-to-use)	C-28051	250 ml	

Human Stem & Blood Cell Culture

Quantity is 500,000 cells unless otherwise indicated

Type	Description	Product #	Quantity	Tested Markers
Dendritic Cells	DC Generation Medium (Ready-to-use)	C-28050	250 ml	
	DC Base Medium (supplements sold separately)	C-28053	250 ml	
	DC Generation Medium DXF (Ready-to-use)	C-28052	250 ml	
	DC Base Medium DXF (supplements sold separately)	C-28054	250 ml	
Macrophages	Human M1 Macrophages (GM-CSF) monocyte-derived, single donor, cryopreserved	C-12914	1.5 million cells	$CD80^+$, $CD68^+$
	Human M1 Macrophages (GM-CSF) monocyte-derived, single donor, cryopreserved	C-12916	5 million cells	$CD80^+$, $CD68^+$
	Human M2 Macrophages (M-CSF) monocyte-derived, single donor, cryopreserved	C-12915	1.5 million cells	$CD163^+$, $CD68^+$
	Human M2 Macrophages (M-CSF) monocyte-derived, single donor, cryopreserved	C-12917	5 million cells	$CD163^+$, $CD68^+$
	M1-Macrophage Generation Medium DXF	C-28055	250 ml	Differentiation tested
	M2-Macrophage Generation Medium DXF	C-28056	250 ml	Differentiation tested
	Macrophage Base Medium DXF	C-28057	250 ml	Differentiation tested
	Macrophage Detachment Solution DXF	C-41330	250 ml	Differentiation tested

Cancer Cell Culture Media

Quantity is 500,000 cells unless otherwise indicated

Description	Product #	Quantity
3D Tumosphere Medium XF	C-28070	250 ml
3D Tumosphere Medium XF, phenol red-free	C-28075	250 ml
Cancer Cell Line Medium XF	C-28077	250 ml
Pericyte Growth Medium 2 (Growth performance tested)	C-28041	500 ml
Primary Cancer Culture System	C-28081	250 ml
NCCD Reagent	C-43080	2 ml

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  For other formats, visit **sigmaaldrich.com/life-science/cell-culture/promocell.html**

Everything you need

for primary cell preparation, propagation, and analysis

Quality cell culture fundamentals and proven downstream analysis reagents are part of our complete portfolio for working with primary cells. Choose from our comprehensive selection of products for:

Stericup® Quick Release filters for fast flow, low protein loss filtration of sterile media and buffers

Cell culture SigmaAldrich.com/cellculture

- The Stericup® family of filter devices for media and buffer sterilization
- Rigorously sourced and tested FBS and other sera for supplementation
- Millicell® multiwell plates, slides, and hanging inserts
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- Mycoplasma and other bacterial detection and elimination reagents
- Surface disinfection sprays and wipes
- Water disinfectants/stabilizers

Cytokines and growth factors

- >700 human, mouse, and rat cytokines/growth factors
  SigmaAldrich.com/growthfactors
- High purity and confirmed biological activity
- Endotoxin-free cytokines/growth factors also available

Millicell®-24 Cell Culture Insert Plate, polyethylene terephthalate, 1.0 µm

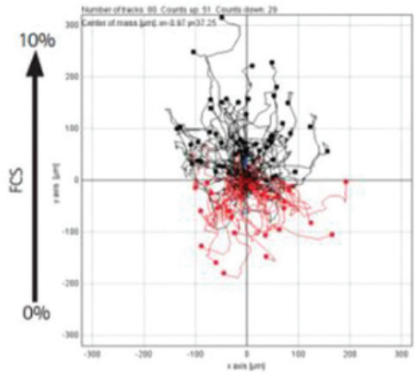
Microfluidic adherent, suspension, bacterials cell culture plates for use with the CellASIC® live cell imaging system

Cell Analysis

- Cell viability, proliferation, and cytotoxicity reagents
- Autophagy and apoptosis induction and detection
- Angiogenesis, cell migration, and invasion tools
- 3D cell culture products SigmaAldrich.com/3D
- The CellASIC® live cell imaging system and live cell dyes SigmaAldrich.com/cellasic

Cell transfection

- Reagents for gentle transfection of sensitive primary cells



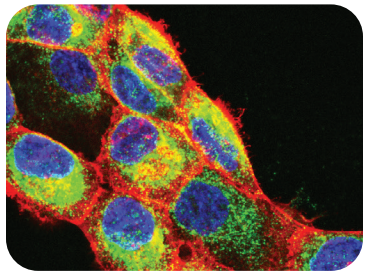
Migration of HT-1080 cells toward an increasing FBS gradient

Fluorescent Labeling and Staining

- Dyes for antibody, protein, and nucleic acid labeling
- Fluorescent cell stains and indicators

Antibodies and immunodetection tools

- > 100,000 monoclonal and polyclonal antibodies SigmaAldrich.com/antibodies
- Consistent, highly validated ZooMAb® recombinant antibodies
- ELISA reagents and kits SigmaAldrich.com/elisa
- Multiplex assay reagents and panels



Anti-Calnexin ZooMAb® Recombinant Monoclonal Antibody

Sigma-Aldrich®

Lab & Production Materials

MilliporeSigma
400 Summit Drive
Burlington, MA 01803

SigmaAldrich.com

To place an order or receive technical assistance

Order/Customer Service: **SigmaAldrich.com/order**
Technical Service: **SigmaAldrich.com/techservice**
Safety-related Information: **SigmaAldrich.com/safetycenter**

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