MILLIPORE™

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STEM CELL AND SPECIALTY CELL CULTURE

Product Guide

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THE EXPERTISE OF UPSTATE® AND CHEMICON®
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ADVANCING LIFE SCIENCE TOGETHER™
Research. Development. Production.

Branching Out in Stem Cell Research

Millipore is committed to providing the tools you need to advance stem cell research. This guide outlines our comprehensive selection of stem cells, media, supplements, growth factors, cultureware, and tools for characterization. These proven solutions cover a broad spectrum of stem cell and specialty cell culture areas, and are backed by knowledgeable technical support.

Stem Cells and Primary Cells

Millipore offers an extensive range of embryonic, neural, and mesenchymal stem cells for both human and rodent studies. This includes novel human neural stem cells, human embryonic stem cells, and a complete line of mouse embryonic stem cells. Endothelial and epithelial progenitor cells from multiple species are also available.

Cell Culture Media and Reagents

Millipore provides media designed for virtually all types of stem cells, including embryonic, mesenchymal, and neural, and for both human and rodent cells. Many of these optimized media are available as serum-free, feeder-free formulations, validated specifically for stem cells. Supporting the full range of expansion and differentiation media are feeder cells, supplements, passaging and cryopreservation reagents.

Antibodies and Characterization Kits

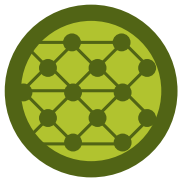
Millipore's extensive portfolio of antibodies for stem cell research includes widely published stem cell targets as well as recently discovered, innovative markers. Characterization kits are also available with panels of antibodies to comprehensively characterize multiple differentiation pathways. Millipore's antibodies are fully validated and published in multiple applications.

Flow Cytometry Assays and Systems

Flow cytometry has become an essential tool for in-depth cell analysis. Guava® flow cytometers leverage unique microcapillary technology that translates into smaller samples, less reagents, and minimal waste. Our FlowCellect™ kits for stem cell research, optimized for Guava systems, help you characterize your cells by analyzing stem cell phenotypes and tracking differentiation down various lineages.

Growth Factors

The addition of specific growth factors is a critical element in maintaining many stem cell populations in their undifferentiated state, and some are indicated in directing differentiation of particular stem cells down specific lineages. Millipore offers a complete range of recombinant growth factors and is the official supplier of ESGRO® mLIF supplement for the maintenance of undifferentiated mouse ES cells.



Extracellular Matrices

ECM proteins are complex structural entities that are the key building blocks of the normal 3D cellular environment. These proteins regulate a diverse range of cellular functions and are critical for *in vivo* and *in vitro* culture of a variety of cell types. Millipore offers a broad array of high quality purified and recombinant ECM proteins, as well as ECM selection tools to optimize the expansion and differentiation of stem cells.

Cell Culture Supplies and Reagents

Millipore's innovative cultureware and sterile filtration devices help optimize your cell growth and maintenance. Designed for fast flow and maximum flexibility, our sterile filtration devices have many membrane options. Also available are the Millicell® membrane-based cell culture inserts and multiwell plates that provide a more *in vivo*-like environment and co-culture options.

Table of Contents

Legends

Abbreviations used throughout the handbook

TESTED SPECIES REACTIVITY

Abbr.	Description	Abbr.	Description	Abbr.	Description
A	All Species	Gt	Goat	RMk	Rhesus Monkey
Ahm	Armenian Hamster	H	Human	Rp	Reptilian
Am	Amphibian	Ht	Hamster	Sal	Salamander
As	*Aspergillus*	In	Insect	Sh	Sheep
At	*Arabidopsis thaliana* (higher plant)	Inv	Invertebrates	Shk	Shark
Av	Avian	Kn	Kangaroo	SHm	Syrian Hamster
B	Bovine	LB	Lima Bean	Shp	Shrimp
Bab	Baboon	Lg	Ligia	Sj	*Schistosoma japonicum*
Bact	Bacterial	Lob	Lobster	SMk	Squirrel Monkey
Ca	Canine (Dog)	Lz	Lizard	Sn	Snail
Ch	Chicken	M	Mouse	Snk	Snake
Chp	Chimpanzee	Ma	Mammals	Soy	Soybean Plant
Crb	Crab	Md	Mule Deer	Spd	Spider
Crf	Crawfish	Mi	Mink	Sqd	Squid
Di	*Dictyostelium*	Mk	Monkey	Su	Sea Urchin
Dky	Donkey	Ml	Mollusk	T	*Tetrahymena*
Dr	*Drosophila*	Nem	Nematode	Ts	*Tetraodontidae Sp.* (Puffer Fish)
Ec	*E. coli* Bacteria	Nr	*Neurospora crassa*	UC	Uncharacterized
Ech	Echinoderms	Op	Opposum	Vo	Vole
Ecl	*Enterobacter cloacae*	Pl	Green Plants	Vrt	Vertebrates
Eq	Equine (Horse)	Pm	Primate	Web*	Important additional product reactivity information available on datasheet
Eu	Eukaryote	Pn	*Penicillium*		
F	Fish	Po	Porcine (Pig)		
Fe	Feline (Cat)	Qu	Quail	WR	Most common vertebrate species tested
Fg	Frog	R	Rat		
Ft	Ferret	Rb	Rabbit	Xn	*Xenopus*
Gp	Guinea Pig	Rc	Raccoon	Y	Yeast (*S. cerevisiae*)
Gr	Gerbil	Rd	Rodent	Zf	Zebra Fish
Gs	Ground Squirrel	rH	Recombinant Human Protein		

TESTED APPLICATIONS

Abbr.	Description	Abbr.	Description
ABA	Affinity Binding Assay	IF	Immunofluorescence
ABLK	Antibody Blocking	IFIX	Immunofixation
ACT	Activity Assay	IH	Immunohistochemistry (Tissue)
ADH	Stimulates ECM Adhesion	IH(P)	Immunohistochemistry (Paraffin)
AI	Agonist or Inhibitor	IND	Induces Function
AMP	DNA Amplification	INHIB	Inhibits Activity/Function
APA	Affinity Precipitation Assay	IP	Immunoprecipitation
APT	Apoptosis Assay	IPK	IP-Kinase Assay
BA	Biological Activity	IPX	Immunoperoxidase Staining
CA	Caspase Assay	IRMA	Immuno Radio-Metric Assay
CC	Culture Confirmation	IL	Immunolesioning
ChIP	Chromatin Immunoprecipitation	IT	Immunotoxin
CULT	Cell Culture	KA	Kinase Assay
DB	Dot Blot	LFA	Lateral Flow Assay
ELISA	Enzyme-linked Immunosorbent Assay	LUMX	Luminex® Assay
		NB	Northern Blot
EM	Electron Microscopy	NEUT	Neutralizing
EMSA	Electrophoretic Mobility Shift Assay	NT	Nitration
		NUEX	Nuclear Extraction
FC	Flow Cytometry (FACS)	PA	Phosphatase Assay
FP	Fluorescence Polarization	PC	Positive Control
FUNC	Affects Function	PCU	Protein Clean-up
GPA	G-Protein Assay	PD	Protein Determination
HA	Hemagluttination	PIA	Peptide Inhibition Assay
HAT	Histone Acetyltransferase Assay	RIA	Radioimmunoassay
HDAC	Histone Deacetylase Assay	RPA	Ribonuclease Protection Assay
HI	Hemagglutination Inhibition	RT-PCR	Reverse Transcriptase Polymerase Chain Reaction
HMT	Histone Methyltransferase Assay		
IAP	Immunoaffinity Purification	SW	Software Needed
IC	Immunocytochemistry (Cells)	TFX	Transfection
ID	Immunodiffusion	WB	Immunoblotting (Western)
IEP	Immunoelectrophoresis		

ANTIBODY FORMAT

Abbr.	Description
APur	Affinity Purified
A488	Alexa Fluor® 488
A555	Alexa Fluor 555
ALP	Alkaline Phosphatase
Asc	Ascites
ATT	ATT-550
Biot	Biotin
CL	Cell Line
Dig	Digoxigenin
DLay	Double Layer
Lyop	Freeze Dried (Lyophilized)
Gel	Gel Immobilized
IHor	Iodinated Hormones
Memb	Membranes
NSer	Normal Whole Sera (Neat)
PE	Phycoerythrin
PCy5	Phycoerythrin-Cy5
Pur	Purified
PSup	Purified Supernatant
Rhod	Rhodamine
TRTC	Rhodamine (TRITC)
Sap	Saporin
SPur	Semi-purified
Sera	Serum
SLay	Single Layer
Sup	Supernatant
TLay	Triple Layer
Unco	Unconjugated

Pluripotent Stem Cells

Pluripotent Stem Cells

Pluripotent stem cells, including embryonic germ (EG), embryonal carcinoma (EC), embryonic stem (ES) cells, and induced pluripotent stem (iPS) cells, have the capacity to give rise to differentiated progeny representative of all three germ layers (ectoderm, endoderm, and mesoderm). The ability to expand pluripotent cells *in vitro* and direct differentiation to produce specific cell types is crucial to the development of cell-based therapies to replace or restore tissue that has been damaged by disease or injury. Millipore offers a range of tools for human and mouse pluripotent stem cell research, including ES cell lines, iPS cells, cell culture reagents, characterization kits, and novel antibodies.

Induced Pluripotent Stem Cells

Recent advances have highlighted the ability to reprogram both mouse and human somatic cells back to an early embryonic state by the introduction of specific factors. These induced pluripotent stem (iPS) cells have similar characteristics to embryonic stem cells and hold great promise in various aspects of research, from the establishment of patient-specific stem cell populations to disease models. Millipore provides a wide range of tools to help researchers culture and characterize iPS cells, including growth factors, antibodies, and characterization kits.

Xeno-Free Human Fibroblasts for Generating iPS Cells

Coming Soon! Anticipated release date: October 09. Please see www.millipore.com/stemcells for availability.

These human foreskin fibroblasts are derived in xeno-free conditions to eliminate animal-component contamination during reprogramming.

Description	Catalogue No.
Xeno-Free Human Fibroblasts for iPS ***Coming Soon!*** Please see website for availability	SCC058
Xeno-Free Fibroblast Expansion Medium ***Coming Soon!*** Please see website for availability	SCM037

Media

Millipore's embryonic stem cell media can also be used to culture iPS cells.

HEScGRO™ medium is the first ready-to-use, serum- and animal component-free medium. Developed by Stem Cell Sciences and commercially available through Millipore, HEScGRO medium is designed to support the undifferentiated growth and expansion of human embryonic stem (hES) cells on mitotically-inactivated human fibroblast feeder cells. The HEScGRO basal medium is an FGF-free formulation of the regular HEScGRO medium.

ESGRO Complete™ PLUS is a defined, complete serum-free medium containing LIF and BMP4 provided with a selective GSK3β inhibitor to enhance viability and pluripotency of mouse ES cells.

Description	Qty/Pk	Catalogue No.
HEScGRO Medium for Human ES Cell Culture	5 x 100 mL	SCM020
HEScGRO Basal Medium for Human ES Cell Culture	5 x 100 mL	SCM021
ESGRO Complete PLUS Clonal Grade Medium	100 mL	SF001-100P
ESGRO Complete PLUS Clonal Grade Medium	500 mL	SF001-500P
Xeno-Free Fibroblast Expansion Medium ***Coming Soon!*** Please see website for availability	500 mL	SCM037

Viral Purification Products

Millipore's Fast-Trap® kits provide a fast, safe, and easy alternative for viral purification. The kits contain the necessary components to accommodate the entire virus purification workflow. The purification results in high recovery of viable viral particles from cellular contaminants and the expressed recombinant transgene. It yields concentrated virus in the exchange buffer of choice, suitable for *in vitro* and animal studies.

Description	Qty/Pk	Catalogue No.
Fast-Trap Lentivirus Purification & Concentration Kit	1 kit (3 purifications)	FTLV00003
Fast-Trap Adenovirus Purification & Concentration Kit	1 kit (3 purifications)	FTAV00003
Fast-Trap Adeno Associated Virus (AAV) Purification & Concentration Kit	1 kit (3 purifications)	FTAAV0003

Growth Factors

Growth factors are essential for culturing your iPS cells. Millipore's growth factor selection features high quality, purified proteins to suit your research needs.

Description	Qty/Pk	Catalogue No.
Fibroblast Growth Factor basic, recombinant human	25 µg	01-106
Fibroblast Growth Factor basic, carrier-free	25 µg	01-114
Fibroblast Growth Factor basic, recombinant human	50 µg	GF003
Fibroblast Growth Factor basic, animal-free, recombinant human	50 µg	GF003AF-100UG
Fibroblast Growth Factor basic, animal-free, recombinant human	1 mg	GF003AF-MG
Leukemia Inhibitory Factor, recombinant mouse	5 µg	LIF2005
Leukemia Inhibitory Factor, recombinant mouse	10 µg	LIF2010
ESGRO mLIF medium supplement	10^6 units	ESG1106
ESGRO mLIF medium supplement	10^7 units	ESG1107

iPS Cell Characterization Kits

iPS cells can be characterized using many of the same methods used to characterize regular stem cells. For example, undifferentiated stem cells are known to express high levels of alkaline phosphatase. Likewise, iPS cells, when assessed by Millipore's alkaline phosphatase detection kit, also demonstrate high levels of alkaline phosphatase expression. Other kits are available to characterize a variety of different lineages.

Description	Qty/Pk	Catalogue No.
Alkaline Phosphatase Detection Kit	1 kit (100 tests)	SCR004
ES Cell Characterization Kit	1 kit (100 tests)	SCR001
Human Embryonic Germ Layer Characterization Kit	1 kit	SCR030
Quantitative Alkaline Phosphatase ES Characterization Kit	100 assays	SCR066

iPS Selection Kits

Coming Soon! **Anticipated release date: October 09 – please see www.millipore.com/stemcells for information on availability**

Millipore iPS cell selection kits for mouse and human iPS cells contain a blend of two directly conjugated primary antibodies that have been optimized to stain live cell colonies. iPS cell selection kits allow researchers to quickly identify live cell colonies that have been successfully reprogrammed. Stained live colonies can be quickly isolated and successfully passaged for expansion. The mouse iPS cell selection kit contains optimized blends of SSEA-1-PE and Thy-1-FITC conjugated antibodies. The human iPS cell selection kit contains optimized blends of SSEA-4-PE and Tra 1-60-FITC conjugated antibodies.

Description	Catalogue No.
Human iPS Selection Kit ***Coming Soon!*** Please see website for availability	SCR502
Mouse iPS Selection Kit ***Coming Soon!*** Please see website for availability	SCR501

Antibodies

Millipore offers a wide selection of validated antibodies for the characterization of iPS cells.

iPS cell clones derived from human somatic cells can be further characterized using the human embryonic stem cell specific markers SSEA-3, SSEA-4, TRA-1-60, and TRA-1-81. TRA-1-81 in particular is often used to assist in the selection of successfully reprogrammed human cells. This antibody labels unfixed, potentially reprogrammed colonies. The TRA-1-81-positive colonies can be further expanded for characterization (Lowry, W.E., *et al.* (2008). Generation of human induced pluripotent stem cells from dermal fibroblasts. PNAS 104:2883-2888).

Like embryonic stem cells, correctly reprogrammed iPS cells should be able to differentiate *in vitro* and *in vivo* towards the three primary germ layers. Antibodies to βIII-tubulin and tyrosine hydroxylase, among others, have been used to characterize these *in vitro* differentiated cells.

Description	Qty/Pk	Catalogue No.
Tra-1-81, clone TRA-1-81	100 µg	MAB4381
Tra-1-60, clone TRA-1-60	100 µg	MAB4360
SSEA-3, clone MC-631	100 µg	MAB4303
SSEA-4, clone MC-813-70	100 µg	MAB4304
OCT-4, clone 10H11.2	100 µg	MAB4401
βIII-Tubulin, c-terminus, clone TU-20	100 µg	CBL412
Tyrosine Hydroxylase	100 µg	AB152

For a complete listing of stem cell antibodies, please see page 120.

Telomerase Activity

Somatic cells that have been reprogrammed to create iPS cells have high telomerase activity. The TRAPeze®-RT telomerase detection kit is a convenient tool for monitoring this activity, and has been proven to work with iPS cells.

Description	Qty/Pk	Catalogue No.
TRAPeze-RT Telomerase Detection Kit	1 kit (224 reactions)	S7710

DNA Modification

Reprogramming cells also changes the DNA methylation status of their pluripotent gene promoters. Millipore's CpGenome™ kit has been used to examine this process in iPS cells with its bisulfite genomic sequencing approach.

Description	Qty/Pk	Catalogue No.
CpGenome™ Universal DNA Modification Kit	1 kit (100 reactions)	S7820

EPIGENETIC PROFILING

Millipore offers a broad range of tools for epigenetics research including chromatin immunoprecipitation (ChIP) kits, ChIPAb+ antibody/primer sets, modified histone antibodies, DNA modification kits, and telomerase detection kits. For a more comprehensive listing, please see antibodies starting on page 120 and epigenetics kits on pages 133-135.

Human Embryonic Stem Cells

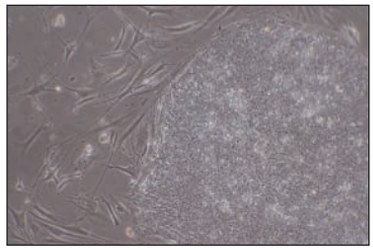
In 1998, the first population of human embryonic stem cells was successfully isolated and grown in culture. Following this phenomenal discovery, evidence has emerged that these unique stem cells have the capability of generating almost any cell in the body, and therefore hold the promise of being able to repair or replace cells that are damaged by many devastating diseases and disabilities.

Millipore is committed to advancing research in this exciting area. We developed the first commercially available, defined, animal-component-free medium for hES cells. In addition, our integrated solutions for stem cell researchers include a unique range of optimized hES media, hES cell lines, characterization kits and novel, proprietary markers.

CELLS

MEL-1 and MEL-2 Human Embryonic Stem Cells

MEL-1 and MEL-2 human embryonic stem cell lines have been approved for stem cell derivation by the Australian National Health and Medical Research Council (License #309709). The cells are provided at passage 10-12, which is ideal for maximizing the stable lifespan of the cell line. The early passage MEL lines provide extended research time in a stable, pluripotent state. MEL cell lines grow as well defined colonies, with compact cells displaying high nuclear-to-cytoplasmic ratios and prominent nucleoli. They have been extensively tested with HEScGRO animal-component-free medium from Millipore, and have been shown to maintain complete pluripotency over extended passaging. MEL-1 has a stable XY karyotype, and MEL-2 has a stable XX karyotype. Both cell lines are provided with a vial of 500,000 active primary mouse embryonic fibroblasts.



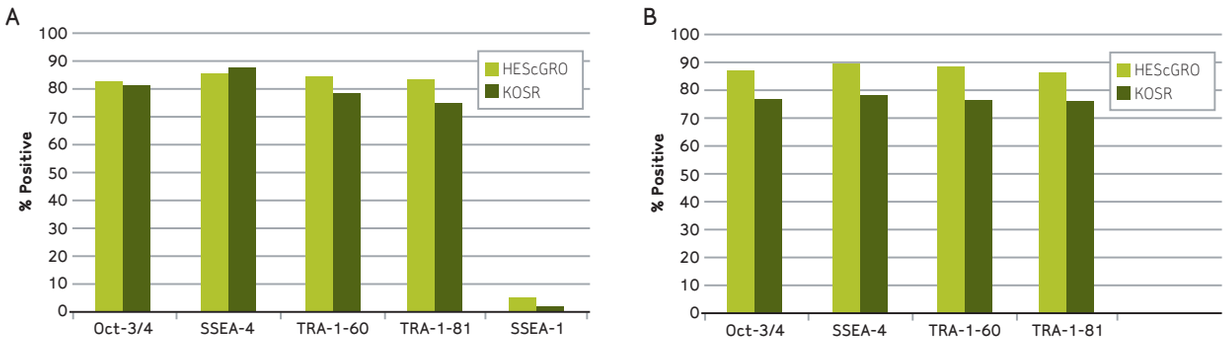
MEL-1 p22 cells cultured in KOSR media for 11 passages.

Description	Qty/Pk	Catalogue No.
MEL-1 Human Embryonic Stem Cell Line	Two straws containing 12-14 colonies, plus 1 vial of PMEF cells	SCC020
MEL-2 Human Embryonic Stem Cell Line	Two straws containing 12-14 colonies, plus 1 vial of PMEF cells	SCC021

HEScGRO Medium for Human ES Cell Culture

HEScGRO hES cell medium is the first animal-component-free medium that is specially formulated to meet the unique requirements of human embryonic stem cell culture. HEScGRO has been extensively tested and proven to maintain the pluripotent nature of several hES cell lines, including MEL-1, MEL-2, H1, H7, and H9. This medium is fully defined, serum-free, animal-component-free, and does not require additional supplementation to maintain cells in their pluripotent state. Mitotically inactive feeder cell layers are commonly used to support hES cell growth.

PLEASE NOTE: Human feeder cells are required for successful hES cell culture with HEScGRO medium. Mouse feeder cells are not recommended with this medium.



hES Cells Grown in HEScGRO Medium Express Pluripotency Markers. Flow cytometry analysis of cells cultured with both HEScGRO and KnockOut™ Serum Replacement (KOSR) medium show that marker expression patterns are stable for pluripotency under both conditions after 5 passages. hES cells grown in HEScGRO medium continue to express the same levels of pluripotency markers even after 20 passages (data not shown).

Passage 5 H9 hES cells grown in HEScGRO medium and enzymatically passaged (Figure A). Manually passaged cells (Figure B) express comparable levels of pluripotency markers to cells grown in 20 % KOSR media, as determined by flow cytometry.

Description	Qty/Pk	Catalogue No.
HEScGRO Medium for Human ES Cell Culture	5 x 100 mL	SCM020
HEScGRO Medium for Human ES Cell Culture	100 mL	SCM020-100

HEScGRO Basal Medium for Human ES Cell Culture & EB Formation

HEScGRO basal medium is a growth factor-free formulation of HEScGRO hES medium (SCM020), which has been extensively tested and proven to maintain the pluripotent nature of several hES cell lines, including MEL-1, MEL-2 and H1. This medium is fully defined, serum-free, and animal-component-free. As a basal formulation, it will require supplementation with bFGF or other growth factors to maintain cells in their pluripotent state. This media can also be used as a serum-free medium to form embryoid bodies for hESC differentation.

PLEASE NOTE: Human feeder cells are required for successful hES cell culture with HEScGRO basal medium. Mouse feeder cells are not recommended with this medium.

Description	Qty/Pk	Catalogue No.
HEScGRO Basal Medium for Human ES Cell Culture	5 x 100 mL	SCM021
Fibroblast Growth Factor, animal-free, recombinant human	50 µg	GF003-AF

Xeno-FREEze™ Human Embryonic Stem Cell Freezing Medium

Xeno-FREEze human embryonic stem (hES) cell freezing medium is an animal-free formulation that is designed for the cryopreservation of hES cells grown in Millipore's HEScGRO™ medium, as well as in KnockOut Serum Replacement (KOSR) conditions. It has been qualified for the cryopreservation of multiple hES cell lines (MEL-1, H7, and H9). This optimized formulation allows for consistent cryopreservation and high viability upon thawing and plating.

Description	Qty/Pk	Catalogue No.
Xeno-FREEze Human Embryonic (hES) Stem Cell Freezing Medium	50 mL	SCM032

Human Embryonic Stem (ES) Cell Embryoid Body Formation Medium

Millipore's human ES cell embryoid body formation medium (SCM026) has been optimized and qualified to support the formation of embryoid bodies. The medium can be used to form embryoid bodies in suspension culture on low adhesion plates. Embryoid bodies formed using SCM026 have been shown to facilitate the differentiation of human ES cells into neural, endodermal, and cardiac cell lineages.

Description	Qty/Pk	Catalogue No.
Human Embryonic Stem (ES) Cell Embryoid Body Formation Medium	5 x 100 mL	SCM026

Xeno-Free Human Feeder Cells

Coming Soon! **Anticipated release date: September 09 – please visit www.millipore.com/stemcells for information on availability.**

Primary Mouse Embryo Fibroblasts

The EmbryoMax range of PMEF cells provides researchers with a convenient solution for ES cell culture by eliminating the need for time-consuming feeder cell isolation and preparation.

Description	Qty/Pk	Catalogue No.
EmbryoMax Primary Mouse Embryo Fibroblasts, not mytomycin C treated, strain CF1, passage 3	5 vials, 5-6 x 10^6 ea	PMEF-CFL
EmbryoMax Primary Mouse Embryo Fibroblasts, strain CF1, passage 3	5 vials, 5-6 x 10^6 ea	PMEF-CF

For an entire listing of primary mouse embryo fibroblasts, see page 22.

Cell Culture Reagents

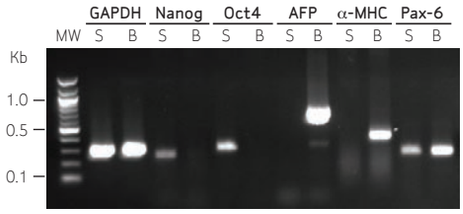
Collagenase Type I

Collagenase type I (from *Clostridium histolyticum*) is a crude collagenase preparation that can be used for the isolation of primary cells or for tissue dissociation by enzymatic means. This preparation also may contain caseinase, clostripain, and tryptic activities. Collagenase I can be used to dissociate cells in culture; it has been successfully used to passage human embryonic stem cells cultured with Millipore's HEScGRO medium.

Description	Qty/Pk	Catalogue No.
Collagenase Type I	250 mg	SCR103

Human ESC Germ Layer PCR Kit

Millipore's human ESC germ layer PCR kit enables researchers to quantitatively monitor the health of undifferentiated human ES cells populations and to analyze the capacity of human ES cells to differentiate into cell derivatives of the three germ layers. The kit provides optimized and validated primer sets for pluripotency markers; endoderm, ectoderm and mesoderm markers. Control cDNAs from undifferentiated human ES cells and from human ES cells that have been differentiated as embryoid bodies (EB) are also provided. The two cDNA controls are useful bench-marks that can be used to measure the relative health and undifferentiated status of human ES cells (ES cell cDNA control) and their capacity to give rise to cell derivatives of the three embryonic germ layers (EB cDNA control). PCR conditions have been optimized and are provided. Millipore's human ESC germ layer PCR kit is compatible for use with cDNAs that have been generated from commercially available kits for RNA isolation and reverse transcription.



H9 human ES cells cultured in HEScGRO basal medium (SCM021); ES (S) and 30-day differentiated EB (B) cells.

RT-PCR analyses display relative expression levels of gene transcripts that are commonly associated with pluripotent (Nanog and Oct-4) and differentiated states (AFP, α-MHC and Pax-6) of human ES cells. cDNAs were generated from undifferentiated H9 human ES cells cultured in Millipore's HEScGRO medium or in KOSR medium.

DNA primers have been validated to be specific to human ES cells. They do not recognize or amplify nucleic acids from murine sources, and can therefore be used on cDNAs generated from human ES cells that have been cultured on murine embryonic fibroblasts (MEF).

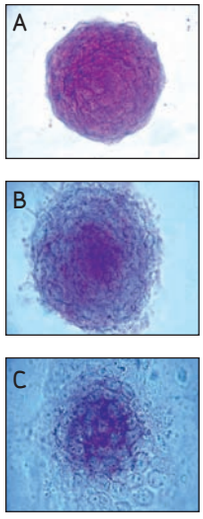
Kit Components: Primer sets for GAPDH, Nanog, Oct-4, AFP, α-MHC and Pax-6. Human embryonic stem cell cDNA control from total RNA, human ES cDNA control, embryoid body cDNA control, sterile distilled water, 5X loading dye

Description	Qty/Pk	Catalogue No.
Human ESC Germ Layer PCR Kit	1 kit	SCR063

ES Cell Characterization Kit

The ES cell characterization kit is a specific and sensitive tool for the phenotypic assessment of the differentiation status of human and mouse ES cells. The kit measures alkaline phosphatase activity, as well as expression of SSEA-1, SSEA-4, TRA-1-60, and TRA-1-81 antigens. The kit consists of two components used for alkaline phosphatase activity determination as well as four ES cell-specific antibodies required to perform 100 tests (including controls). A combinatorial analysis of marker expression using this kit allows a more accurate assessment of stem cell phenotype, compared to assessment based solely on single stem cell markers.

Kit Components: Fast Red Violet solution, napthol AS-BI phosphate solution, antibodies: SSEA-1, SSEA-4, TRA-1-60, TRA-1-81



Alkaline phosphatase staining of ES cells. High magnification of undifferentiated (A) and differentiated murine ES cells (B & C) following alkaline phosphatase (AP) staining using the ES cell characterization kit (Cat.No. SCR001) Results show diminished AP expression by differentiated cells, as indicated by a decrease in staining intensity, following ES cell differentiation.

Description	Qty/Pk	Catalogue No.
ES Cell Characterization Kit	1 kit/100 reactions	SCR001

ES Cell Marker Sample Kit

This kit permits the phenotypic analysis of the differentiation status of ES cells by determining stem cell marker expression. It contains monoclonal antibodies for the detection of three cell-surface stage-specific embryonic antigens (SSEA-1, SSEA-3, and SSEA-4), as well as TRA-1-60, TRA-1-81, and Oct-4.

Description	Qty/Pk	Catalogue No.
ES Cell Marker Sample Kit	1 kit	SCR002

ES Cell 3D Culture Kit

This kit assists in the investigation of ES cell differentiation by allowing the formation of tissue-like structures in a three-dimensional environment. This kit contains the reagents necessary for collagen matrix formation and for the monitoring of ES cell differentiation with antibodies to SSEA-1, SSEA-4, and alkaline phosphatase.

Description	Qty/Pk	Catalogue No.
ES Cell 3D Culture Kit	1 kit	SCR003

Human Embryonic Stem Cell Neurogenesis Characterization Kit

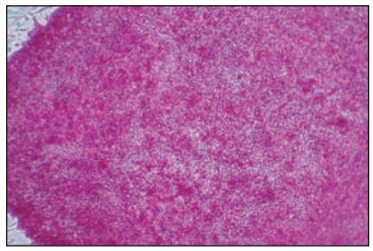
Millipore's human embryonic stem cell neurogenesis characterization kit contains a complete panel of validated antibodies that allow researchers to identify and quantify the extent of differentiation to specific neuronal subtypes from a starting culture of human embryonic stem cells. Pluripotent markers (Oct-4, SSEA-4, and Sox-2) are provided in the kit to aid in the characterization of the starting human embryonic stem cell culture. To characterize the transition of human ES cells from a pluripotent to a multipotent state, Nestin and Sox-2 antibodies are provided. A βIII-tubulin antibody is provided to mark all neuronal cells, while GAD67, ChAT, and TH antibodies are provided to specifically identify GABAergic, cholinergic, and dopaminergic neurons, respectively.

Description	Qty/Pk	Catalogue No.
Human Embryonic Stem Cell Neurogenesis Characterization Kit	1 kit	SCR065

Alkaline Phosphatase Detection Kit

Millipore's alkaline phosphatase detection kit is a specific and sensitive tool for the phenotypic assessment of ES cell differentiation by the determination of AP activity. Endogeneous AP expression in undifferentiated ES cells can be readily detected by intense staining following the recommended staining procedure. Sufficient reagents are provided for 100 tests.

Kit Components: Fast Red Violet solution, Napthol AS-BI phosphate solution



Alkaline phosphatase staining of H9 cells cultured in HEScGRO medium, using the Millipore alkaline phosphatase detection kit (Catalogue No. SCR004).

Description	Qty/Pk	Catalogue No.
Alkaline Phosphatase Detection Kit	1 kit (100 tests)	SCR004

Quantitative Alkaline Phosphatase ES Characterization Kit

This kit offers a specific, sensitive, and quantitative method for detecting alkaline phosphatase levels during ES cell differentiation. Under alkaline conditions (pH>10), alkaline phosphatase (AP) can catalyze the hydrolysis of p-nitrophenylphosphate (p-NPP) into phosphate and p-nitrophenol, a yellow colored by-product of the catalytic reaction. The amount of p-nitrophenol produced is proportional to the amount of alkaline phosphatase present within the reaction. The amount of AP can thus be reliably quantified by reading the amount of p-nitrophenol generated after the catalytic reaction by measuring absorbance at 405 nm on a spectrophotometer.

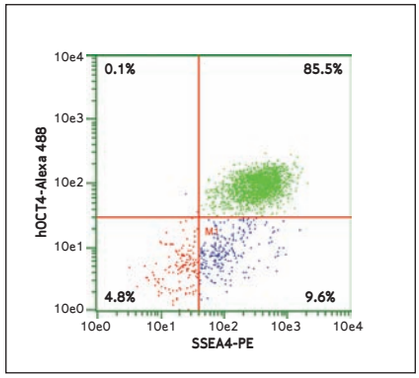
Kit Components: p-NPP substrate concentrate (50X), p-NPP buffer, reaction stop solution, 1X wash solution, recombinant alkaline phosphatase standard

Description	Qty/Pk	Catalogue No.
Quantitative Alkaline Phosphatase ES Characterization Kit	100 assays	SCR066

FlowCellect™ Human Embryonic Stem Cell Characterization Kits

Flow cytometry is a powerful tool for measuring multiple parameters in cell-based research. Millipore has developed a range of kits for the characterization and phenotypic monitoring of stem cells. These FlowCellect embryonic stem cell characterization kits are designed to provide rapid, sensitive assessments of embryonic and neural stem cell phenotypes at various stages of differentiation.

These kits can be used with human or mouse cells and use the positive nuclear marker Oct-4 or surface markers TRA-1-60 and HESCA-1 to indicate conservation of pluripotency. To indicate that stem cells have lost puripotency and have differentiated, the negative markers SSEA-4 (mouse kit) or SSEA-1 (human kits) are multiplexed with the positive markers. These kits enable stem cell researchers to leverage the analytical power of flow cytometry with low cell numbers and small sample volumes when samples are analyzed on the Guava EasyCyte™ flow cytometry platform.



Oct-4 and SSEA-4 are both expressed on undifferentiated human embryonic stem cells (H1 cell line). In this test, H1 human embryonic cells are labeled as expected: positive for SSEA-4 and Oct-4, and negative for SSEA-1.

FlowCellect kit components include:

- Three stem cell specific fluorophore conjugated primary antibodies with isotype controls - validated and optimized for use with multiplex flow cytometry analysis
- Complete set of prediluted and optimized reagents - no need for assay development
- Step-by-step user guide - optimized protocol to minimize cell loss and improve efficiency

Description	Qty/Pk	Catalogue No.
FlowCellect Human Embryonic Stem Cell TRA-1-60 Surface Marker Characterization Kit	1 kit	FCHEC25106
FlowCellect Human Embryonic Stem Cell HESCA-1 Surface Marker Characterization Kit	1 kit	FCHEC25104
FlowCellect Human Embryonic Stem Cell Characterization Kit	1 kit	FCHEC25102
FlowCellect Mouse Embryonic Stem Cell Characterization Kit	1 kit	FCMEC25110

For more information about Millipore's flow cytometry systems and assays, please visit **www.millipore.com/flowcytometry**.

GROWTH FACTORS FOR HUMAN ES CELL CULTURE

Growth factors elicit biological responses leading to cell proliferation and/or differentiation. Many growth factors are quite versatile, stimulating cellular division in numerous different cell types, while others are specific to a particular cell type. Millipore offers a comprehensive range of growth factors for cell culture. Every lot produced is thoroughly tested for bioactivity, purity, and endotoxin levels. Whether your project is big or small, we offer high quality recombinant proteins to meet your needs.

Description	Species	Qty/Pk	Catalogue No.
BAFF, recombinant human	H	20 µg	GF136
Epidermal Growth Factor, recombinant human	H	500 µg	GF144
FGF-2 / basic FGF, recombinant human	H	25 µg	01-106
Fibroblast Growth Factor basic, recombinant human	H	50 µg	GF003
Fibroblast Growth Factor basic, animal-free, recombinant human	H	50 µg	GF003-AF
Fibroblast Growth Factor basic, animal-free, recombinant human	H	100 µg	GF003AF-100UG
Fibroblast Growth Factor basic, recombinant human (mg qty.)	H	1 mg	GF003AF-MG
Insulin (Arg-Insulin)	H	10 mg	01-207
Insulin-like Growth Factor-I, recombinant human	H	100 µg	GF138
Interleukin-3, recombinant human	H	10 µg	IL003
HCX™ Leukemia Inhibitory Factor, glycosylated human	H	10 µg	LIF1100
Leukemia Inhibitory Factor, recombinant human	H	5 µg	LIF1005
Leukemia Inhibitory Factor, recombinant human	H	10 µg	LIF1010
PDGF-AA, human	H	10 µg	01-309
PDGF-AA, human	H	10 µg	GF142
PDGF-BB, recombinant human	H	10 µg	GF149
Stem Cell Factor, recombinant human	H	10 µg	GF021
Transforming Growth Factor-β1, recombinant human	H	5 µg	GF111
Transforming Growth Factor-β2, recombinant human	H	5 µg	GF113
Vascular Endothelial Growth Factor, recombinant human, 165 aa isoform	H	10 µg	GF094
Wnt-3a, recombinant mouse	M	5 µg	GF160
Wnt-5a, recombinant mouse	M	100 µL	GF146

For a complete listing of growth factors, please see page 101.

EXTRACELLULAR MATRICES FOR HUMAN ES CELL CULTURE

Extracellular matrix (ECM) proteins are produced intracellularly and are subsequently secreted into the surrounding cellular medium, actively regulating a diverse range of cell functions. ECM proteins are critical for *in vivo* and *in vitro* culture of a variety of cell types and are key building blocks of the normal 3D cellular environment. A primary utility of ECMs in *in vitro* culture is to promote cellular adhesion while maintaining cell viability and maximizing cell proliferation for downstream cell-based applications. Studies show that anchorage-dependent cells growing on ECMs undergo more efficient plating, have a higher proliferation rate, reach a higher density, and require lower serum and growth factor concentrations, demonstrating enhanced differentiation potential. Millipore offers a wide variety of ECM proteins to meet the individual needs of your cell line.

Description	Qty/Pk	Catalogue No.
Human Collagen Type I	100 µg	CC050
Human Collagen Type IV	100 µg	CC076
Human Vitronectin, purified protein	100 µg	CC080
Human Vitronectin, recombinant	500 µg	08-126
Human Laminin (pepsinized), purified protein	100 µg	AG56P
Human Fibronectin, cellular	1 mg	08-102
Human Plasma Fibronectin, purified protein	100 mg	FC010
Human Plasma Fibronectin, purified protein	5 mg	FC010-5MG
Human Plasma Fibronectin, purified protein	10 mg	FC010-10MG
Human Plasma Fibronectin, purified protein	100 mg	FC010-100MG
ECL Cell Attachment Matrix (EHS Mouse Tumor)	5 mg	08-110

For a complete listing of extracellular matrix proteins, please see pages 98-100.

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially-available tool of its kind to enable researchers to quickly identify the best ECM protein and concentration for their cell culture environment, to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 kit	ECM542

Millicoat™ Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Collagen I Coating	5 plates	PICL06P05
Millicoat 6-well Plate with Fibronectin Coating	5 plates	PIFB06P05

FEATURED ANTIBODIES FOR HUMAN ES CELLS

GCTM-5 Antibody, clone GCTM-5

The GCTM-5 monoclonal antibody reacts with a minority sub-population of cells in spontaneously differentiating cultures of pluripotent human embryonic stem cells and embryonal carcinoma. The epitope recognized by GCTM-5 is found on a 50 kDa protein present on the surface of these cells. Previous studies suggest that GCTM-5 may also prove to be a useful tool for defining cell lineage relationships between putative progenitor populations in embryonic liver and biliary epithelium during tissue repair (Pera M, *et al,* 2005).

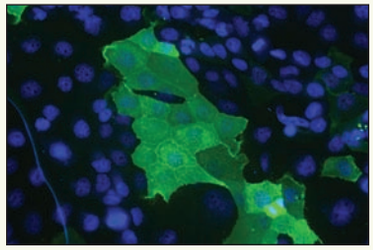


Photo (right): CFPAC1 cells labeled with GCTM-5 antibody (green); cells are also labeled with DAPI (blue) to visualize all nuclei.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
GCTM-5 Antibody, clone GCTM-5	H	IC, IH, WB	100 µg	MAB4365

HESCA-2, clone 060818-7A6

Anti-HESCA-2, developed in collaboration with Abeome Corporation, recognizes a newly discovered 200 kDa cell surface marker that is expressed on pluripotent human embryonic stem cells (hESC), and may serve as a useful tool in the identification, characterization, and isolation of undifferentiated hES cells from differentiating hESC and feeder cell types.

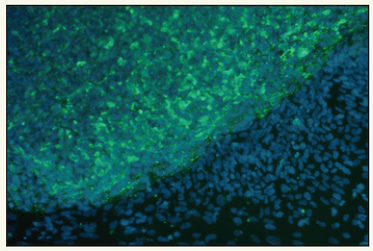


Photo (right): H9 (WA09) human ES cells labeled with the HESCA-2 antibody and DAPI. Only pluripotent human ES cells are labeled by HESCA-2; note that the antibody does not recognize the cells differentiating from the human ES cell colony.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
HESCA-2 (Human Embryonic Stem Cell Antigen-2), clone 060818-7A6	H	IC, IP, WB	100 µg	MAB4406

ShSCP-5, clone 8H9.3

Developed in collaboration with Axordia Ltd./University of Sheffield, anti-ShSCP-5 is a novel stem cell antibody. It recognizes a potentially unique 50 kDa cell surface protein which has been found to be specifically expressed on undifferentiated human embryonic stem cells and embryonal carcinomas.

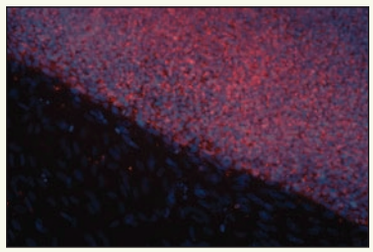


Photo (right): MEL-1 human ES cells labeled with the ShSCP-5 antibody and DAPI. Only pluripotent human ES cells are labeled by anti-ShSCP-5; note that the antibody does not recognize the scattered cells making up the human fibroblast feeder layer visible to the left of the human ES cell colony. Labeling was done via indirect fluorescence using a rhodamine-conjugated goat anti-mouse IgG secondary antibody (Catalog No. AP124R).

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
ShSCP-5, clone 8H9.3	H	IC, WB	100 µg	MAB4408

FEATURED ANTIBODIES FOR HUMAN ES CELLS

hPlurES-1 Antibody, clone 1H3

The novel hPlurES-1 antibody identifies a 65 kDa antigen that is expressed on the cell surface of human embryonic stem cells. This monoclonal antibody recognizes a protein epitope that appears to be expressed within a subset of Oct-4-positive human embryonic stem cell populations, as indicated by double-staining analysis using flow cytometry and immunocytochemistry.

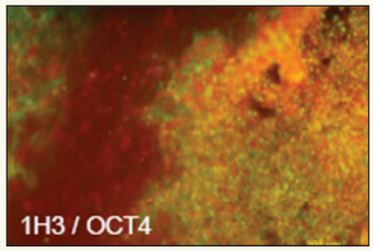


Photo (right): Human ES cells labeled with both hPlurES-1 (green) and Oct-4 (red) antibodies.The hPlurES-1 antibody recognizes a subset of the Oct-4 expressing pluripotent hESC population. (Image courtesy of the Australian Stem Cell Centre).

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
hPlurES-1 Antibody, clone 1H3	H	IC, FC, WB	100 µg	MAB4395

Oct-4 (Octamer-4, POUF51), clone 10H11.2

Octamer-4 (Oct-4), a member of the POU family of transcription factors, has been demonstrated to be vital for the formation of self-renewing pluripotent stem cells. During embryogenesis, expression of Oct-4 is limited to pluripotent cells of the inner cell mass (ICM) that contribute to the formation of all fetal cell types. This relationship between Oct-4 and pluripotency makes this transcription factor one of the most reliable markers of pluripotent stem cells.

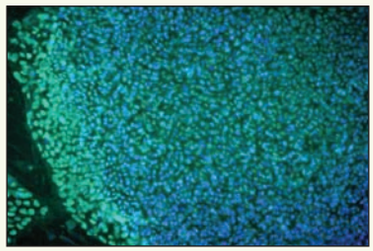


Photo (right): Labeling of H9 human embryonic stem cells with the human Oct-4 (MAB4401) shows its specificity for undifferentiated ES cells through indirect immunofluorescence of the culture on a mouse embryonic fibroblast feeder (MEF) layer. The human Oct-4 antibody (green) labels ES cells in the rounded cluster, but not the MEF cells, which appear in the DAPI (blue) labeling of the same culture.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
Oct-4 (Octamer-4, POUF51), clone 10H11.2	H	IC, FC, WB, ELISA	100 µg	MAB4401

TG343 Antibody, clone TG343

The novel TG343 antibody has been shown to be a reliable cell surface marker for the detection and characterization of pluripotent human embryonic stem cells (Adewumi *et al.*, 2007). This antibody reacts with a distinct epitope on the protein core of a high molecular weight pericellular matrix proteoglycan (Cooper *et al.*, 2002). When used in conjunction with the TG30 antibody (Catalogue No. MAB4427), TG343 has been successfully shown (through flow cytometric assays) to be a robust and rapid tool for the purification and selection of live Oct-4-positive human embryonic stem cells from a mixed population of differentiated cell types.

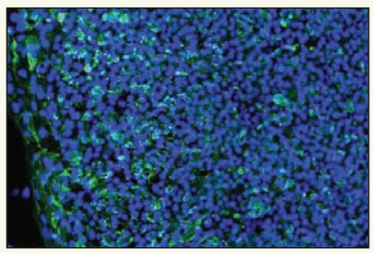


Photo (right): MEL-1 human ES cells labeled with the TG343 antibody (green) and overlayed with DAPI (blue). Only pluripotent human ES cells are labeled by the TG343 antibody; note that the antibody does not recognize the scattered cells making up the feeder layer surrounding the human ES cell colony.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
TG343 Antibody, clone TG343	H	IC, FC, IF, WB	100 µg	MAB4346

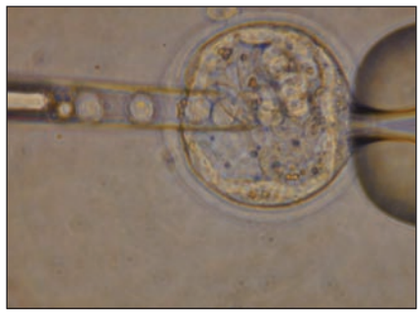
Mouse Embryo Culture

Transgenic and gene knockout technologies are powerful tools for studying gene function. A commonly used method for creating transgenic and knockout mice involves the introduction of genetically modified ES cells into early-stage mouse embryos by either blastocyst injection or aggregation techniques. These methods result in the generation of chimeric offspring; the genetic modification may be transmitted to successive generations if the ES cells contribute to the germline.

MEDIA

EmbryoMax® Mouse Embryo Media – Liquid Kits

To enable embryo collection, manipulation, and transfer techniques, Millipore offers a wide selection of mouse embryo media and reagents, including M-2, modified M16, and proprietary KSOM media formulations. Our media are tested on mouse embryos and manufactured using the highest quality raw materials available.



Injection of mouse embryonic stem cells into a blastocyst stage embryo.

Description	Qty/Pk	Catalogue No.
Acidic Tyrode's Solution, for removal of zonae	50 mL	MR-004-D
CZB Medium with phenol red	50 mL	MR-019-D
FHM HEPES Buffered Medium (1X), liquid, with phenol red	50 mL	MR-024-D
FHM HEPES Buffered Medium (1X), liquid, without phenol red	50 mL	MR-025-D
FHM HEPES Buffered Medium with phenol red & hyaluronidase	10 mL	MR-056-F
FHM HEPES Buffered Medium without phenol red & BSA	50 mL	MR-122-D
Human Tubal Fluid (HTF) (1X), liquid, for mouse IVF	50 mL	MR-070-D
Injection Buffer	10 x 10 mL	MR-095-10F
KSOM, with 1/2 amino acids, glucose, and phenol red	50 mL	MR-121-D
KSOM, with 1/2 amino acids and glucose	50 mL	MR-106-D
KSOM, with 1/2 amino acids and glucose, without BSA	50 mL	MR-107-D
M2 Medium (1X), liquid, with phenol red	50 mL	MR-015-D
M2 Medium (1X), liquid, with phenol red and hyaluronidase	10 mL	MR-051-F
Modified Dulbecco's Phosphate Buffered Saline, with BSA and phenol red	100 mL	MR-006-C
Modified M16 Medium (1X), without phenol red	50 mL	MR-010-D
Modified M16 Medium (1X), liquid, without phenol red	50 mL	MR-016-D
Mouse Embryo Cryopreservation Media, with DMSO (14%), without phenol red	50 mL	MR-007-D

EmbryoMax Mouse Embryo Media – Powder Kits

In addition to liquid formats, our most popular embryo culture media are also available in a dry powder format. Each has been formulated for optimal, consistent performance. The dry powdered format offers greatly increased shelf-life, easy and quick preparation, and the freshest nutrients to support the development of your embryos in culture. Just add the sterile diluent (included in the kit) to the powder, mix gently, and filter to prepare fresh medium with the correct pH and osmolarity.

Description	Qty/Pk	Catalogue No.
KSOM Embryo Culture Powder (1X), without phenol red	5 x 50 mL	MR-020P-5D
KSOM Embryo Culture Powder (1X), without phenol red	5 x 10 mL	MR-020P-5F
KSOM Embryo Culture Powder (1X), without phenol red	1 x 50 mL	MR-020P-D
M2 Medium (1X), powdered, with phenol red	5 x 50 mL	MR-015P-5D
M2 Medium (1X), powdered, with phenol red	5 x 10 mL	MR-015P-5F
M2 Medium (1X), powdered, with phenol red	1 x 50 mL	MR-015P-D
Modified M16 Medium (1X), powdered, without phenol red	5 x 50 mL	MR-010P-5D
Modified M16 Medium (1X), powdered, without phenol red	5 x 10 mL	MR-010P-5F
Modified M16 Medium (1X), powdered, without phenol red	1 x 50 mL	MR-010P-D

EmbryoMax Rat Embryo Media

Description	Qty/Pk	Catalogue No.
m-RECM Rat 1-cell Embryo Culture Medium, with HEPES, without PVA	50 mL	MR-169-D
m-RECM Rat 1-cell Embryo Culture Medium, without PVA	50 mL	MR-168-D
m-RECM Rat 2-cell Embryo Culture Medium, with PVA	50 mL	MR-166-D
m-RECM Rat 2-cell Embryo Culture Medium, with PVA & HEPES	50 mL	MR-167-D

CELLS

Cryopreserved Mouse Embryos

The cryopreserved one-cell/pronuclear and eight-cell mouse embryos are capable of supporting transgenic procedures. Typical *in vivo* survival closely resembles that of freshly collected embryos. Using cryopreserved embryos greatly reduces the costs and concerns associated with live animals. In addition, cryopreserved embryos are always available and are not subject to seasonal variations in embryo yield. When ordering, simply specify the mouse strain, stage of embryo, and the delivery schedule. Cryopreserved embryos are packaged with 25 embryos per straw and shipped in dry nitrogen containers. The cryopreserved embryos are generated from animals housed in a specific pathogen free facility.

Description	Qty/Pk	Catalogue No.
EmbryoMax Cryopreserved Mouse Embryos	1 straw	CRY-BL6-8

Mouse Embryonic Stem Cells

The development of transgenic and gene knockout technology has provided an effective tool for the analysis of gene function. These targeting experiments commonly use murine embryonic stem (ES) cells, cultured *in vitro*. As a result, efficient procedures for the *in vitro* culture and maintenance of pluripotent ES cells have been vital to the success of this research. Millipore's range of ES cell qualified products provides researchers with convenient and cost effective solutions for the reliable culture of ES cells.

Millipore provides the largest and most comprehensive range of products for your mouse ES cell culture needs. Highlights include unique mLIF formulations such as ESGRO®, a medium supplement for the maintenance of pluripotent mouse ES cells; ESGRO Complete PLUS, a serum-free media for the maintenance and derivation of mouse ES cell lines in the absence of FBS and feeder cells; and RESGRO™, a culture medium for the rescue of partially differentiated ES cell lines and improved ES cell derivation.

CELLS

Mouse Embryonic Stem Cells

Millipore offers a wide selection of mouse ES cells derived from mice of different genetic backgrounds. The PluriStem® range of cells were derived from inbred strains of mice and are useful for modeling genetic diversity in directed differentiation studies and drug screening bioassays. Additionally, Millipore provides EmbryoMax® mouse ES cells, established lines for gene targeting experiments. These lines have high targeting efficiencies and have achieved germline transmission through multiple experiments. Our B6-White™ murine ES cell line is a C57BL/6 tyr^{c-2J} albino line that allows for rapid coat-color determination of successful chimerism in the C57BL/6 mouse strain. These cells allow for the efficient generation of gene-targeted mice in a pure B6 genetic background, thus providing more experimental flexibility.

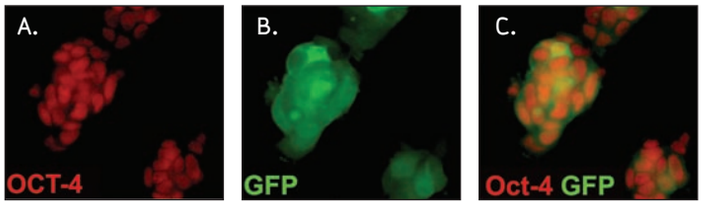
Two week old chimeric mice (left) generated from targeted PluriStem B6-White ES cells injected into host C57BL/6 blastocysts. Germline transmission from the first litter was obtained.

ES Stem Cell Lines

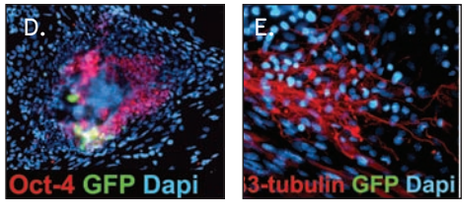
Description	Qty/Pk	Catalogue No.
B6-White (C57BL/6 tyr^{c-2J}) Mouse ES Cell Line	2 vials, 2.5 x 10^6 cells ea.	SCR011
EmbryoMax Embryonic Stem Cell Line – strain 129/SVEV, passage 11	2 vials, 2.5 x 10^6 cells ea.	CMTI-1
EmbryoMax Embryonic Stem Cell Line – strain C57BL/6, passage 11	2 vials, 2.5 x 10^6 cells ea.	CMTI-2
EmbryoMax Embryonic Stem Cell Line – strain DBA-1, passage 11	2 vials, 2.5 x 10^6 cells ea.	CMTI-3
PluriStem 129S6/SvEv Mouse ES Cell Line	2 vials, 2.5 x 10^6 cells ea.	SCR012
PluriStem C57BL/6N Mouse ES Cell Line, passage 9	2 vials, 2.5 x 10^6 cells ea.	SCC050
PluriStem NZW Mouse ES Cell Line	2 vials, 2.5 x 10^6 cells ea.	SCC013
PluriStem BALB/c Mouse ES Cell Line, passage 9	2 vials, 2.5 x 10^6 cells ea.	SCC052
PluriStem FVB/N Mouse ES Cell Line, passage 9	2 vials, 2.5 x 10^6 cells ea.	SCC053
PluriStem DBA/2 Mouse ES Cell Line, passage 9	2 vials, 2.5 x 10^6 cells ea.	SCC054
PluriStem C3H Mouse ES Cell Line, passage 9	2 vials, 2.5 x 10^6 cells ea.	SCC055

MilliTrace™ Nanog GFP Reporter Mouse Embryonic Stem Cell Kit

The MilliTrace Nanog GFP reporter mouse embryonic stem cells express green fluorescent protein (GFP) under the control of the mouse Nanog promoter. These cells provide a quick, non-invasive method by which to monitor the expression of Nanog in pluripotent embryonic stem cells. The cells can be used to identify factors involved in embryonic stem cell differentiation and to facilitate studies elucidating the role of Nanog and other factors in the maintenance and self-renewal of embryonic stem cells. The MilliTrace reporter cell lines are provided in kits containing 10^6 viable cells and 500 mL optimized expansion medium to help maintain expression of the transgene. Cells are adapted for feeder-free culture on gelatin coated plasticware.



MilliTrace Nanog reporter mouse embryonic stem cells express GFP (B) and the pluripotency marker OCT-4 (A, red). Merged image of GFP expression driven by the Nanog transcription factor with OCT-4 marker (C).

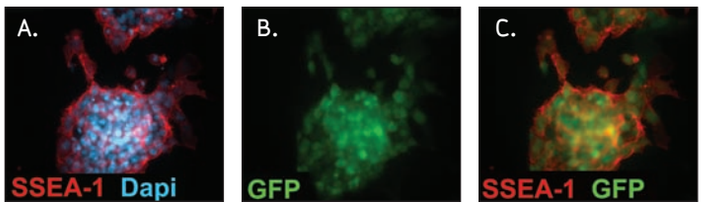


Downregulation of Nanog-GFP expression after 8 days (D) and 16 days (E) of neuronal differentiation. Expression of the pluripotency marker OCT-4 is also downregulated (D, red) after 8 days of differentiation. After 16 days of differentiation, Nanog-GFP expression is completely absent and there is a concomitant increase in neuronal expression (βIII-tubulin, red, E).

Description	Qty/Pk	Catalogue No.
MilliTrace Nanog GFP Reporter Mouse Embryonic Stem Cell Kit	1 kit	SCR089
MilliTrace Mouse Embryonic Stem Cell Expansion Medium	1 kit	SCM042

MilliTrace Constitutive GFP Reporter Mouse Embryonic Stem Cell Kit

The MilliTrace constitutive GFP reporter mouse embryonic stem cell kit provides ready-to-use mouse embryonic stem cells that are constitutively labeled with green fluorescent protein (GFP), along with expansion medium to help maintain expression of the transgene. The cells were generated by transfection of C57BL/6 mouse embryonic stem cells with a proprietary bicistronic plasmid construct containing GFP under the control of a constitutive chicken actin promoter. GFP expression in these stem cells allows researchers to easily visualize the behavior of specific populations of cells as they proliferate, migrate, and differentiate into various cell lineages, depending on developmental context. Cells are adapted for feeder-free culture on gelatin-coated plasticware.



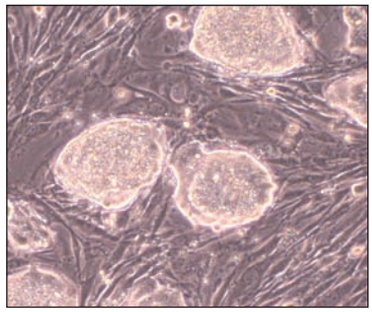
MilliTrace constitutive GFP reporter mouse embryonic stem cells express the pluripotent ESC marker SSEA-1 (A). Nuclei of the cells were visualized with DAPI (A). Majority of cells are GFP-positive (B, C).

Description	Qty/Pk	Catalogue No.
MilliTrace Constitutive GFP Reporter Mouse Embryonic Stem Cell Kit	1 kit	SCR082
MilliTrace Mouse Embryonic Stem Cell Expansion Medium	1 kit	SCM042

Primary Mouse Embryo Fibroblasts

Many embryonic stem cell culture protocols necessitate the use of primary mouse embryo fibroblast (PMEF) cells. In these protocols, ES cells are typically cultured on a monolayer of PMEF feeder cells. Feeder cells perform two important roles in stem cell culture: they secrete several important growth factors into the medium, which help maintain pluripotency, and they provide a cellular matrix to support ES cell growth.

The EmbryoMax range of PMEF cells provides researchers with a convenient solution for ES cell culture by eliminating the need for time-consuming feeder cell isolation and preparation. Derived from day 13 embryos, these cells are supplied frozen at passage three (2 populations doublings per passage) in five-vial packs. Each vial contains approximately 5-6 x 10^6 fibroblasts. Several varieties are available, including actively dividing, growth-arrested (mytomycin-C treated), and drug-resistant feeder cells.



EmbryoMax C57BL/6 mouse ES cells (CMTI-2) cultured on a PMEF feeder layer (PMEF-NL).

Description	Qty/Pk	Catalogue No.
EmbryoMax Primary Mouse Embryo Fibroblasts, neo resistant, not mytomycin-C treated, strain FVB, passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-NL
EmbryoMax Primary Mouse Embryo Fibroblasts, neo resistant, strain FVB, passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-N
EmbryoMax Primary Mouse Embryo Fibroblasts, not mytomycin-C treated, strain CF1, passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-CFL
EmbryoMax Primary Mouse Embryo Fibroblasts, strain CF1, mytomycin-C treated, passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-CF
EmbryoMax Primary Mouse Embryo Fibroblasts, hygro resistant, not mytomycin-C treated, strain C57BL/6, passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-HL
EmbryoMax Primary Mouse Embryo Fibroblasts, hygro resistant, strain C57BL/6 passage 3	5 vials, 5-6 x 10^6 cells ea.	PMEF-H

Leukemia Inhibitory Factor (LIF): An Essential Pluripotent Stem Cell Factor

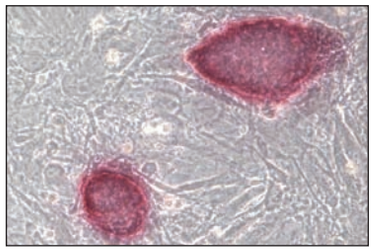
LIF is a critical growth factor that controls self-renewal and pluripotency in mouse ES cells. LIF functions via the LIF receptor (LIFR) by activating signaling through the JAK/STAT signaling pathway. LIF signaling activates STAT3, a transcription factor that dimerizes and translocates into the nucleus where it activates specific genes that promote self-renewal and the maintenance of pluripotency. The use of LIF for the *in vitro* maintenance of undifferentiated mouse ES cells has been crucial to the success of gene targeting experiments.

Description	Qty/Pk	Catalogue No.
Leukemia Inhibitory Factor (LIF), recombinant human	5 µg	LIF1005
Leukemia Inhibitory Factor (LIF), recombinant human	10 µg	LIF1010
Leukemia Inhibitory Factor (LIF), recombinant mouse	5 µg	LIF2005
Leukemia Inhibitory Factor (LIF), recombinant mouse	10 µg	LIF2010
Leukemia Inhibitory Factor (LIF), recombinant rat	5 µg	LIF3005
Leukemia Inhibitory Factor (LIF), recombinant rat	10 µg	LIF3010
EmbryoMax Complete ES Cell Medium with 15% FBS serum and mouse LIF	500 mL	ES-101-B

ESGRO mLIF Medium Supplement

ESGRO supplement is a special formulation of mouse LIF protein. Unlike regular LIF, which is sold by weight, each lot of ESGRO supplement is sold based on its biological activity for reproducible results. The benefits of using ESGRO mLIF medium supplement include:

- **Consistent inhibition of ES cell differentiation**
  Feeder cells and conditioned media are inherently variable, but you can achieve consistent results by adding ESGRO supplement to your media.
- **No batch-to-batch variation**
  Stringent quality control standards, including purity and biological activity tests, ensure that every lot of ESGRO supplement performs equivalently.
- **Feeder-free cell culture**
  For certain cell lines, the use of ESGRO supplement allows feeder-free cell culture, saving time and giving you more control over your cells.



Alkaline phosphatase staining of mouse embryonic stem cells cultured in medium supplemented with ESGRO mLIF supplement (Catalogue No. ESG1107).

Description	Qty/Pk	Catalogue No.
ESGRO mLIF Medium Supplement	10^6 units	ESG1106
ESGRO mLIF Medium Supplement	10^7 units	ESG1107
Rat ESGRO (rat LIF) Medium Supplement	10^6 units	ESG2206
Rat ESGRO (rat LIF) Medium Supplement	10^7 units	ESG2207

ESGRO Complete Serum-Free Cell Culture System

The ESGRO Complete system is the first to offer a complete medium for the serum-free and feeder-free culture of mouse ES cells. The cornerstone of this system is the ESGRO Complete clonal grade medium, which supports the self-renewal of mouse ES cells by providing the basic nutrients normally supplied by serum and feeders in the traditional culturing method. These nutrients include hormones and vitamins, as well as the growth factors mLIF and BMP4. It has been shown that the use of BMP4 in conjunction with LIF replaces the need for serum and feeder cells for ES cell self-renewal and preserves multilineage differentiation, chimera colonization, and germline transmission properties (Ying *et al.*, 2003).

Millipore has recently made advancements to serum-free and feeder-free mouse ES cell culture by introducing the ESGRO Complete PLUS kit, which contains the original ESGRO Complete clonal grade medium and a selective GSK3β inhibitor supplement. Cells cultured in the supplemented medium consistently displayed better growth characteristics, cell morphology, viability, and proliferation rates, when compared to cells cultured in the original clonal grade medium alone.

Advantages

- Eliminates the need for feeder cells or serum
- Enables *in vitro* differentiation studies in controlled conditions
- Germline transmission is comparable to serum-supplemented medium
- ES cells propagate at clonal density while maintaining pluripotency

Figure 1.

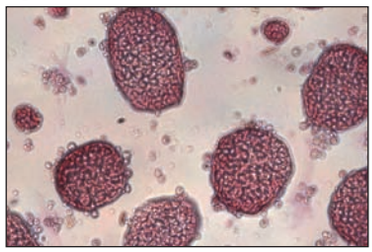
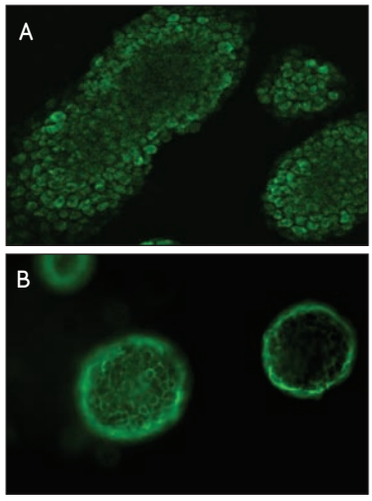


Figure 2.



To confirm pluripotency of ES cells after many passages in ESGRO Complete clonal grade medium supplemented with GSK3β inhibitor, cells were stained for alkaline phosphatase (Figure 1) and immunostained for Oct-4 (Figure 2A) and SSEA-1 (Figure 2B).

Description	Qty/Pk	Catalogue No.
ESGRO Complete PLUS Clonal Grade Medium	100 mL	SF001-100P
ESGRO Complete PLUS Clonal Grade Medium	500 mL	SF001-500P
ESGRO Complete Basal Medium	100 mL	SF002-100
ESGRO Complete Basal Medium	500 mL	SF002-500
ESGRO Complete Derivation Kit	1 kit	SF003
ESGRO Complete Switch Kit	1 kit	SF004
ESGRO Complete Accutase™ Dissociation Solution	100 mL	SF006
ESGRO Complete Enzyme-Free Dissociation Solution	100 mL	SF009
ESGRO Complete Trypsin	100 mL	SF007
ESGRO Complete Serum-Free Freezing Medium	50 mL	SF005
ESGRO Complete Gelatin	500 mL	SF008

Reference: Ying QL, Nichols J, Chambers I, Smith A. (2003). BMP induction of Id proteins suppresses differentiation and sustains embryonic stem cell self-renewal in collaboration with STAT3. *Cell* **115**: 281-92.

RESGRO Cell Culture Medium

Millipore's RESGRO culture medium is a complete medium that can be used to complement traditional murine ES cell culture methods. In contrast to routine ES cell culture, RESGRO culture medium is recommended for a number of specialized applications.

Murine ES Cell Derivation

RESGRO culture medium enables the efficient derivation and maintenance of ES cell lines from several inbred mouse strains, including certain strains that were previously considered to be non-permissive for ES cell derivation. A recent study demonstrated that RESGRO medium allowed the derivation of ES cell lines from inbred strains other than 129. These strains include FVB, a strain previously considered to be non-permissive for ES cell derivation, as well as C57BL/6N, BALB/c, 129/SvEv, and DBA/2N.

Rescue of Established ES Cell Lines

RESGRO culture medium has the capacity to rescue traditional ES cell lines that have started drifting and either generate low percentage chimeras or have lost germline transmission capability. Differentiation, which is present in the ES cells but not visible with traditional medium, will become recognizable when using RESGRO culture medium. After two passages, a clear difference is seen between differentiated and undifferentiated ES cells, at which time the undifferentiated cells can be removed by sub-cloning.

Table 1. Improved efficiency of murine ES cell lines using RESGRO Culture Medium

ES Cell Line	Medium* & Method used	Number of Embryos Transferred	Number of Pups Born	Number of Chimeras Born	Percentage Chimerism
C57BL/6 Knockout clone	Traditional medium Blastocyte injection	50	8	0	0
C57BL/6 Knockout clone	RESGRO medium Blastocyte injection	96	38	19	2 died
					2% - 1
					5% - 3
					10% - 4
					20% - 1
					30% - 2
					60% - 1
					70% - 3
					80% - 2

Table 2. Efficiency of ES cell derivation and germline competence with RESGRO Culture Medium

Mouse Strain	Blastocysts Cultured (n)	Established ES Cell Lines		No. Germline Competent ES Cell Lines/ No. ES Cell Lines Cultured
		(n)	(%)	
C57BL/6N	35	18	51	10/11
FVB/N	20	8	40	6/9
BALB/c	34	15	44	7/7
129SvEv	10	6	60	4/4
DBA-2/N	34	13	38	3/3

Description	Qty/Pk	Catalogue No.
RESGRO Culture Medium	250 mL	SCM001
RESGRO Culture Medium	500 mL	SCM002

*Traditional medium: basal medium supplemented with FBS and LIF.

EmbryoMax ES Cell Qualified Cell Culture Media & Reagents

Millipore offers a broad range of cell culture media and reagents for the mouse ES cell culture workflow. Our EmbryoMax line of ES cell-qualified reagents provides researchers with convenient and cost-effective solutions for the reliable culture of ES cells. These products negate the need for researchers to screen lots of media, reagents, and serum, thus delivering significant cost and time savings.

ES Cell Qualified Fetal Bovine Serum

Description	Qty/Pk	Catalogue No.
EmbryoMax ES Cell Qualified Fetal Bovine Serum, US* origin	500 mL	ES-009-B
EmbryoMax ES Cell Qualified Fetal Bovine Serum, US* origin	100 mL	ES-009-C
EmbryoMax ES Cell Qualified Fetal Bovine Serum, NZ** origin	500 mL	ES-011-B
EmbryoMax ES Cell Qualified Fetal Bovine Serum, NZ** origin	100 mL	ES-011-C

*US=United States **NZ=New Zealand

Basal Media

Description	Qty/Pk	Catalogue No.
EmbryoMax DMEM (1X), low bicarbonate formulation, with 4,500 mg/L glucose, 2.25g/L sodium bicarbonate & L-glutamine, without sodium pyruvate	500 mL	SLM-120-B
EmbryoMax DMEM (1X), liquid, with 4,500 mg/L glucose, without L-glutamine & sodium pyruvate	1 L	SLM-021-A
EmbryoMax DMEM (1X), liquid, with 4,500 mg/L glucose, without L-glutamine & sodium pyruvate	500 mL	SLM-021-B
EmbryoMax DMEM (1X), liquid, low bicarbonate formulation, with 4,500 mg/L glucose, 2.25 g/L sodium bicarbonate, without L-glutamine & sodium pyruvate	500 mL	SLM-220-B
EmbryoMax DMEM (1X), liquid, low bicarbonate formulation, with 4,500 mg/L glucose, 2.25 g/L sodium bicarbonate, without L-glutamine & sodium pyruvate	400 mL	SLM-220-M

Reagents & Media Supplements

Description	Qty/Pk	Catalogue No.
EmbryoMax 0.1% Gelatin Solution	500 mL	ES-006-B
EmbryoMax 2-Mercaptoethanol (100X)	20 mL	ES-007-E
EmbryoMax Electroporation Buffer	50 mL	ES-003-D
EmbryoMax Filtered Light Mineral Oil	100 mL	ES-005-C
EmbryoMax Filtered Silicon Oil	100 mL	ES-004-C
EmbryoMax L-Glutamine Solution (100X), 200 mM	100 mL	TMS-002-C
EmbryoMax 1M HEPES Buffer Solution, Liquid	100 mL	TMS-003-C
EmbryoMax MEM, Non-Essential Amino Acids (100X)	100 mL	TMS-001-C
EmbryoMax Nucleosides (100X)	50 mL	ES-008-D
EmbryoMax Penicillin-Streptomycin Solution	100 mL	TMS-AB2-C
EmbryoMax DPBS (1X)	1 L	BSS-1005-A
EmbryoMax DPBS (1X)	500 mL	BSS-1005-B
EmbryoMax DPBS (1X), without Ca^{2+} or Mg^{2+}	1 L	BSS-1006-A
EmbryoMax DPBS (1X), without Ca^{2+} or Mg^{2+}	500 mL	BSS-1006-B
EmbryoMax DPBS (10X), without Ca^{2+} or Mg^{2+}	500 mL	BSS-2010-B
EmbryoMax DPBS (10X), with Ca^{2+} and Mg^{2+}	500 mL	BSS-6010-B
EmbryoMax Ultra Pure Water, sterile	1 L	TMS-006-A
EmbryoMax Ultra Pure Water, sterile	500 mL	TMS-006-B
EmbryoMax Ultra Pure Water, sterile	100 mL	TMS-006-C

EmbryoMax ES Cell Qualified Preservation Media

Millipore's ES cell qualified freezing media is specially formulated for the consistent cryopreservation of mouse embryonic stem cells. Formulated with DMSO and FBS, these ready-to-use products take all of the guesswork out of in-house preparations and result in high cell viability upon thawing and plating.

Description	Qty/Pk	Catalogue No.
EmbryoMax Cell Culture Freezing Medium (1X), DMEM, 10% DMSO, calf & fetal bovine serum	10 x 10 mL	S-002-10F
EmbryoMax Cell Culture Freezing Medium (1X), DMEM, 10% DMSO, calf & fetal bovine serum	5 x 10 mL	S-002-5F
EmbryoMax Cell Culture Freezing Medium (1X), DMEM, 10% DMSO, calf & fetal bovine serum	50 mL	S-002-D
EmbryoMax Cell Culture Freezing Medium (2X), 20% DMSO & fetal bovine serum	10 x 10 mL	ES-002-10F
EmbryoMax Cell Culture Freezing Medium (2X), 20% DMSO & fetal bovine serum	5 x 10 mL	ES-002-5F
EmbryoMax Cell Culture Freezing Medium (2X), 20% DMSO & fetal bovine serum	50 mL	ES-002-D

GENE TARGETING

Knock-Out Kit

The EmbryoMax knock-out kit contains reagents for producing and culturing gene targeted embryonic stem cells.

Description		Qty/Pk	Catalogue No.
EmbryoMax Knock-Out Kit		1 kit	ES-100
Each kit contains:	Fetal bovine serum (500 mL)	1	ES-009-B
	DMEM, low bicarbonate (500 mL)	7	SLM-220-B
	PBS w/o calcium & magnesium	1	BSS-1006-B
	H_2O w/ 0.1% gelatin (500 mL)	1	ES-006-B
	Trypsin (100 mL)	1	SM-2003-C
	100X nucleosides (50 mL)	1	ES-008-D
	Non-essential amino acids (100 mL)	1	TMS-001-C
	β-mercaptoethanol (20 mL)	2	ES-007-E
	100X L-glutamine (100 mL)	1	TMS-002-C
	100X penicillin/streptomycin (100 mL)	1	TMS-AB2-C
	2X freezing media (50 mL)	1	S-002-D
	Electroporation media (50 mL)	1	ES-003-D
Plus, your choice of PMEF cells	Neo-resistant, mitomycin-C treated PMEF cells	10 vials	PMEF-N
(2 packs at 5 vials per pack):	Hygromycin-resistant, mitomycin-C treated PMEF cells	10 vials	PMEF-H

Cosmid Genomic Libraries

Genomic DNA libraries from various mouse strains cloned into cosmid vectors containing inserts that range in size from 30-40 kb. An average of 4-5 x 10^6 primary clones are generated. Libraries have been amplified 1X in soft agar and are supplied as 1.0 mL aliquots of glycerol stock. Typical titers are 10^4 to 10^5 clones/µL.

Description	Qty/Pk	Catalogue No.
EmbryoMax Cosmid Genomic Library, strain DBA-1	1 mL	CGL-DBA
EmbryoMax Cosmid Genomic Library, strain FVB	1 mL	CGL-FVB
EmbryoMax Cosmid Genomic Library, strain NOD	1 mL	CGL-NOD
EmbryoMax Cosmid Genomic Library, strain PLJ	1 mL	CGL-PLJ

EmbryoMax Targeting Vectors

Description	Qty/Pk	Catalogue No.
EmbryoMax Targeting Vector, G418 (Neo) resistant	1 vial	ESTV-NEO
EmbryoMax Targeting Vector, hygromycin resistant	1 vial	ESTV-HYGRO

β-Galactosidase Expression Reagents

Millipore's β-Gal products are useful for visualizing the expression of the LacZ reporter gene in cell culture. The β-Gal fixative is used to fix cells which have been transfected with a β-galactosidase expression vector. The β-Gal stain base solution is a histochemical stain used to detect the presence of β-Galactosidase after the cells have been fixed. The β-Gal holding solution is used to preserve the cells for future observation. The X-Gal is used to detect the presence of β-Galactosidase. It produces a blue precipitate upon hydrolysis, making it suitable for use in immunoblotting and immunocytochemical assays. The intensity of the blue color correlates with the level of expression.

Description	Qty/Pk	Catalogue No.
β-Galactosidase Cell Fixative Solution, prepared in DPBS, ready to use	100 mL	BG-1-C
β-Galactosidase Holding Solution, used to hold cells for further observation	100 mL	BG-4-C
β-Galactosidase Stain Base Solution, prepared in DPBS, ready to use	100 mL	BG-2-C
β-Galactosidase Tissue Fixative Solution, prepared in ultrapure H_2O	100 mL	BG-5-C
β-Galactosidase Tissue Rinse Solution A	500 mL	BG-6-B
β-Galactosidase Tissue Rinse Solution B	500 mL	BG-7-B
β-Galactosidase Tissue Stain Base Solution	100 mL	BG-8-C
X-Gal Stock Solution	1 mL	BG-3-G

Mammalian Cell Transfection Kit

The mammalian cell transfection kit is an optimized system suitable for the introduction of DNA into mammalian cells. DNA is introduced to the cells as a calcium phosphate precipitate. Transfected cells integrate and express the exogenous DNA at a higher efficiency, producing stable clones of the specifically altered genotype and phenotype. This system has been used to introduce various plasmids into a broad range of cell lines.

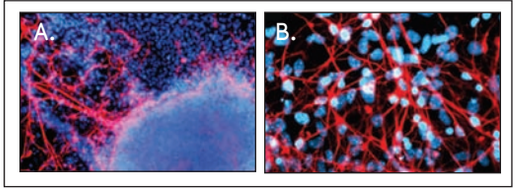
Description	Qty/Pk	Catalogue No.
Mammalian Cell Transfection Kit	1 kit	S-001

DNA & Transfection Reagents

Description	Qty/Pk	Catalogue No.
Carrier Salmon Sperm DNA, 1 mg/mL	1 mL	S-005-G
Carrier Salmon Sperm DNA, 10 mg/mL	1 mL	S-015-G
Dexamethasone Induction Reagent	1 mL	TR-1002-G
EmbryoMax ES Cell Qualified Electroporation Buffer	50 mL	ES-003-D
GPT Selection Kit, containing 500X mycophenolic acid and 100X aminopterin	1 kit	TR-1001
GS System™ 100 mM L-methionine sulfoximine, working range 25 µM to 1 mM	10 mL	GSS-1015-F
GS System GS media supplement (50X)	100 mL	GSS-1016-C
Polybrene Infection/Transfection Reagent	1 mL	TR-1003-G
siIMPORTER™ Transfection Reagent Sample Pack	75 µL	64-101SP
siIMPORTER Transfection Reagent	0.75 mL	64-101
Sodium Butyrate Solution	1 mL	TR-1008-G

Mouse ES Cell Neurogenesis Kit

The mouse embryonic stem cell neurogenesis kit provides a system designed for the neural differentiation of mouse ES cells. The kit contains all the reagents necessary to fully differentiate mouse ES cells into βIII-tubulin positive neurons *in vitro*, including embryoid body (EB) formation medium, differentiation inducers, laminin, poly-L-ornithine, Accutase™ solution, and antibodies for cell lineage detection. We also offer the EB formation medium separately for researchers interested in exploring different protocols.



Differentiated neurons emanating from the EB demonstrate complex networks and high levels of branching (A). Differentiation of mouse ES cells to βIII-tubulin positive neurons (40X magnification) (B). Red: neurons labeled with βIII-tubulin antibody. Blue: cell nuclei labeled with DAPI.

Description	Qty/Pk	Catalogue No.
Mouse ES Cell Neurogenesis Kit	1 kit	SCR101
Embryoid Body Formation Medium	100 mL	SCM018

Mouse Embryonic Stem Cell Adipogenesis Kit

Embryonic stem cells are an attractive model for studying the earliest stages of adipocyte development *in vitro*. The mouse ES cell adipogenesis kit provides a system designed for the differentiation of mouse embryonic stem cells to adipocytes via embryoid body formation and treatment with adipogenic inducers. In addition to the optimized embryoid body formation medium, the kit contains all reagents necessary to differentiate mouse ES cells into adipocytes *in vitro*.

Figure 1.

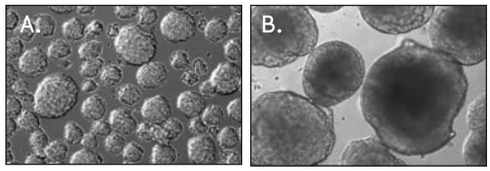


Figure 2.

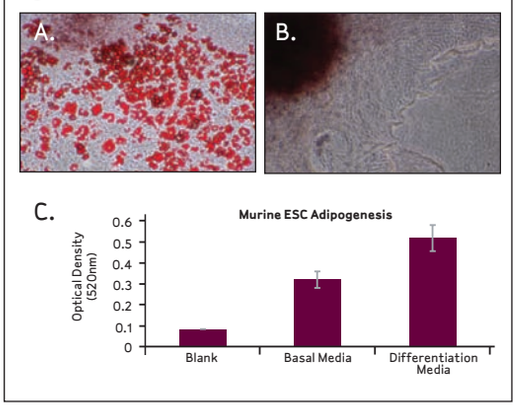


Figure 1. Embryoid bodies (EB) formed after the culture of dissociated mouse ES cells (SCR012) in EB formation medium for 2 days (A). Morphology of EBs after treatment with retinoic acid for three days (B). 10X magnification.

Figure 2. Murine ESCs cultured with EB formation medium and exposed to T3/insulin display high levels of adipocytes. Oil Red O staining shows lipid droplets after 21 days of differentiation (A). Spontaneously differentiated murine ES cells show an absence of Oil Red O staining, indicating a lack of adipocyte formation after 21 days of differentiation (B). Differentiation media containing T3 and insulin generates twice as many adipocytes than spontaneous differentiation when quantified by Oil Red O staining (C).

Description	Qty/Pk	Catalogue No.
Mouse ES Cell Adipogenesis Kit	1 kit	SCR100
Embryoid Body Formation Medium	100 mL	SCM018

FlowCellect Mouse ESC Nuclear Characterization Kit

Flow cytometry is a powerful tool for measuring multiple parameters within stem cell research. Millipore has developed a range of kits for the characterization and phenotypic monitoring of stem cells. These FlowCellect stem cell characterization kits are designed to provide rapid, sensitive assessments of embryonic stem cell phenotypes at various stages of differentiation.

The FlowCellect embryonic stem cell kits use the positive nuclear marker Oct-4 or surface marker SSEA-1 to indicate conservation of pluripotency. To indicate that stem cells have lost pluripotency and have differentiated, the negative marker SSEA-4 is multiplexed with the positive markers. These kits enable stem cell researchers to leverage the analytical power of flow cytometry with low cell numbers and small sample volume when samples are analyzed on the EasyCyte Plus flow cytometer.

FlowCellect kit components include:

- 3 stem cell specific, fluorophore conjugated primary antibodies with isotype controls - validated and optimized for use within multiplex flow cytometry analysis
- Complete set of prediluted and optimized reagents - no need for assay development
- Step by step user guide - optimized protocol to minimize cell loss

Description	Qty/Pk	Catalogue No.
FlowCellect Mouse Embryonic Stem Cell Nuclear Marker Characterization Kit	1 kit	FCMEC25110

For more information about Millipore's flow cytometry systems and assays, please visit **www.millipore.com/flowcytometry**.

Alkaline Phosphatase Detection Kit

Millipore's alkaline phosphatase detection kit is a specific and sensitive tool for the phenotypic assessment of ES cell differentiation. Endogeneous AP expression in undifferentiated ES cells can be readily detected by intense staining following the recommended staining procedure. Sufficient reagents are provided for 100 tests.

Kit Components: Fast Red Violet solution, napthol AS-BI phosphate solution

Description	Qty/Pk	Catalogue No.
Alkaline Phosphatase Detection Kit	1 kit (100 tests)	SCR004

Quantitative Alkaline Phosphatase ES Characterization Kit

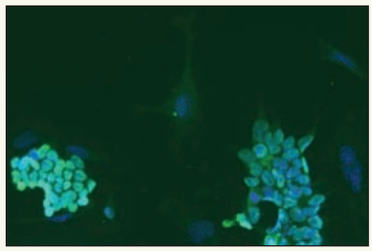
This kit offers a specific, sensitive, and quantitative method for detecting alkaline phosphatase levels during ES cell differentiation. Under alkaline conditions (pH>10), alkaline phosphatase (AP) can catalyze the hydrolysis of p-nitrophenylphosphate (p-NPP) into phosphate and p-nitrophenol, a yellow-colored by-product. The amount of p-nitrophenol produced is proportional to the amount of alkaline phosphatase present within the reaction. The amount of AP can thus be reliably quantified by reading the amount of p-nitrophenol generated after the catalytic reaction at 405 nm on a spectrophotometer.

Kit Components: p-NPP substrate concentrate (50X), p-NPP buffer, reaction stop solution, 1X wash solution, recombinant alkaline phosphatase standard

Description	Qty/Pk	Catalogue No.
Quantitative Alkaline Phosphatase ES Characterization Kit	100 assays	SCR066

FEATURED ANTIBODIES FOR MOUSE ES CELLS

Oct-4 (Octamer-4, POUF51), clone 7F9.2

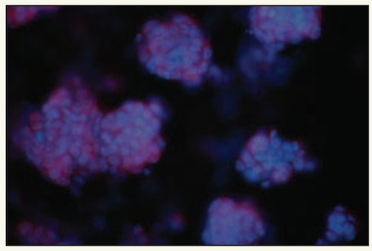


Octamer-4 (Oct-4), a member of the POU family of transcription factors, has been demonstrated to be vital for the formation of self-renewing pluripotent stem cells. During embryogenesis, expression of Oct-4 is limited to pluripotent cells of the inner cell mass (ICM) that contribute to the formation of all fetal cell types. This relationship between Oct-4 and pluripotency makes this transcription factor one of the most reliable markers of pluripotent stem cells.

Photo (right): Labeling of C57/BL6 mouse embryonic stem cells with Oct-4 (green) and DAPI (blue) to visualize all nuclei.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
Oct-4 (Octamer-4, POUF51), clone 7F9.2	M	IC, FC, WB	100 µg	MAB4419

Rex-1, clone 5B4.2

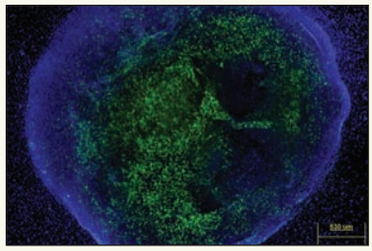


The Rex-1 (Zfp-42) gene, which encodes an acidic zinc finger protein, is expressed at high levels in embryonic stem (ES) and F9 teratocarcinoma cells. The Rex-1 promoter is regulated by specific octamer family members in early embryonic cells, and is involved in retinoic acid (RA)-associated reduction in expression.

Photo (right): Labeling of E14-Tg2a murine embryonic stem cells lines at passage 33 with Rex-1 antibody (red) and DAPI (blue) to visualize cell nuclei.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
Rex-1, clone 5B4.2	H, M, R	IC, EIA	100 µg	MAB4316

Stage-Specific Embryonic Antigen 1 (SSEA-1), clone MC-480



SSEA-1 is expressed on the surface of early mouse embryos, murine embryonal carcinoma cells (EC), murine embryonic stem cells (ES), and murine & human germ cells (EG). No immunoreactivity is evident with undifferentiated human EC and ES cells. Expression of SSEA-1 is down regulated following differentiation of murine EC and ES cells. In contrast, the differentiation of human EC and ES cells is characterized by an increase in SSEA-1 expression.

Photo (right): Immunofluorescence staining of human ES cell colony (hES-4) cultured on murine feeder cells with the SSEA-1 monoclonal antibody (green). The majority of cells within the hES cell colony are negative for SSEA-1 expression. DAPI staining (blue) shows the nuclei of hES cells, which are surrounded by larger nuclei of murine feeder cells. (Photographs courtesy of Dr. Jeremy M. Crook, ES Cell International Pte Ltd, Melbourne, Australia.)

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
Stage-Specific Embryonic Antigen 1 (SSEA-1), clone MC-480	H, M, R	IF, IP, IH, FC	100 µg	MAB4301

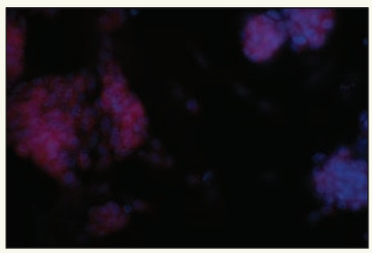
FEATURED ANTIBODIES FOR MOUSE ES CELLS

Stella (DPPA-3), clone 3H5.2

Stella is specifically expressed by oocytes, pluripotent cells and primordial germ cells at the time of their emergence in gastrulating embryos, and is an important maternal factor in the cleavage stages of mouse embryos (Bortvin, 2004). The requirement for Stella in germ cell specification remains controversial, however. Most embryos from Stella-deficient mice fail to develop normally and rarely reach the blastocyst stage (Bortvin, 2004; Payer, 2003).

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
Stella [DPPA-3], clone 3H5.2	H, M	ELISA, IC	100 µg	MAB4388

UTF-1, clone 5G10.2

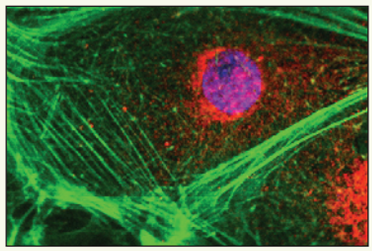


UTF1 is a transcription factor that was originally identified due to its expression in embryonic stem (ES) cells, embryonic carcinoma (EC) cells, and germ line tissues. Expression was not found in adult tissues. It was thought at the time that UTF1 might play an important role in early molecular events of embryogenesis. Subsequent studies have shown that UTF1 is a target of the Oct-4 / Sox-2 complex, a key determinant of pluripotency in stem cells.

Photo (right): E14-Tg2a murine embryonic stem cells at passage 33 are labeled with the UTF-1 antibody (red) and DAPI (blue) to visualize cell nuclei.

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
UTF-1, clone 5G10.2	H, M	IC, WB, EIA	100 µg	MAB4337

SOX17, polyclonal



The SOX17 protein is a member of the SOX (SRY-related HMG-box) family of transcription factors involved in the regulation of embryonic development and in the determination of cell fate. While SOX17 has been known to be involved in the regulation of the formation of cells that go on to develop into endodermal tissues like pancreatic and liver cells, recent studies have also shown that this transcription factor plays a critical role in the regulation of oligodendrocyte progenitor cells, the maintenance of fetal hematopoeitic stem cells, and the mediation of cardiac muscle cell formation.

Photo (right): Confocal IF analysis of human embryoid bodies at day 11 using anti-SOX17 rabbit polyclonal antibody (Red). Actin filaments have been labeled with Alexa Fluor® 488-phalloidin (green) and cell nuclei have been stained with DAPI (blue).

Description	Species Reactivity	Known Applications	Qty/Pk	Catalogue No.
SOX17, polyclonal	H, M	IC, WB	100 µL	09-038

Embryonic Stem Cell Antibodies

Cell Surface Markers

In addition to morphological differences, human and murine pluripotent stem cells differ in their expression of a number of cell surface antigens (stem cell markers). The immunological detection of these antigens using monoclonal antibodies has been widely used to characterize pluripotent stem cells including human, murine, and rat embryonic stem (ES) cells, embryonal carcinoma (EC) cells, and embryonic germ (EG) cells. Commonly analyzed cell surface markers include the glycolipid surface stage specific embryonic antigens (SSEA-1, SSEA-3, SSEA-4) and the keratan sulfate-related antigens TRA-1-60 and TRA-1-81.

continued on next page

Marker	Localization	Murine ES	Murine EC	Murine EG	Human ES	Human EC	Human EG
Alkaline Phosphatase	Surface	✓	✓	✓	✓	✓	✓
TG30 (CD9)	Surface	✓	?	?	✓	✓	?
CD30	Surface	?	?	?	✓	?	?
CRTR-1	Intracellular	✓	?	?	?	?	?
E-cadherin	Surface	?	?	?	✓	?	?
EHOX	Intracellular	X	?	?	?	?	?
GCNF	Intracellular	?	X	?	?	?	?
Genesis (FoxD3)	Intracellular	✓	✓	?	✓	✓	?
HESCA-1	Surface	N/A	N/A	N/A	✓	?	?
HESCA-2	Surface	N/A	N/A	N/A	✓	?	?
HLA-ABC	Surface	?	?	?	✓	✓	?
Hsp27	Intracellular	X	?	?	?	?	?
hPlurES-1	Surface	N/A	N/A	N/A	✓	✓	?
hUTF1	Intracellular	✓	✓	✓	✓	✓	✓
Dppa-1	Intracellular	✓	?	?	?	?	?
Dppa-3	Intracellular	✓	?	?	?	?	?
Dppa-5	Intracellular	✓	?	?	?	?	?
Nanog	Intracellular	✓	✓	✓	✓	✓	✓
Nucleostemin	Intracellular	✓	?	?	?	?	?
Oct-4	Intracellular	✓	✓	✓	✓	✓	?
Podocalyxin	Surface	?	?	?	✓	✓	?
Pramel-4	Intracellular	✓	?	?	?	?	?
Pramel-5	Intracellular	✓	?	?	?	?	?
Rex-1	Intracellular	✓	✓	?	✓	?	?
Sox-2	Intracellular	✓	✓	?	✓	?	?
ShSCP-5	Surface	N/A	N/A	N/A	✓	✓	?
SSEA-1	Surface	✓	✓	✓	X	X	X
SSEA-3	Surface	X	X	X	✓	✓	✓
SSEA-4	Surface	X	X	X	✓	✓	✓
Telomerase	Intracellular	✓	✓	?	✓	✓	?
TG343	Surface	N/A	N/A	N/A	✓	?	?
Thy-1	Surface	X	X	X	✓	✓	?
TRA-1-60	Surface	N/A	N/A	N/A	✓	✓	✓
TRA-1-81	Surface	N/A	N/A	N/A	✓	✓	✓
TRA-2-49	Surface	N/A	N/A	N/A	✓	✓	✓
TRA-2-54	Surface	N/A	N/A	N/A	✓	✓	✓

Table 1. Expression Profile of Pluripotent Stem Cell Markers

Legend: ✓ Marker expressed by undifferentiated cells, decreases following differentiation
? Marker expression not known
X Marker not expressed by undifferentiated cell, increases following differentiation
N/A Antibody does not exhibit reactivity to species

There are a number of other differentially expressed cell surface markers that have been used to characterize ES cells, in addition to the SSEA and TRA antigens. Studies have shown that undifferentiated human ES and EC cells express Thy-1, while undifferentiated murine and human ES and EC cells are negative for Thy-1 expression. Additionally, immunohistochemical analysis of murine ES cells has shown that CD9 expression is high on undifferentiated cells and decreases following differentiation. An additional characteristic of undifferentiated ES cells is the expression of high levels of alkaline phosphatase (AP) on their cell surface. Since this expression decreases following stem cell differentiation, the assessment of AP expression serves as a method for analyzing stem cell differentiation status. For a quantitative assessment of AP expression, the TRA-2-49 and TRA-2-54 monoclonal antibodies permit AP expression to be monitored by the use of flow cytometry.

However, none of these traditional markers are entirely specific to hES cells (Laslett et al., 2003). Therefore, there is a continuous quest to identify new pluripotency markers to better characterize the human embryonic stem cell populations of interest. Millipore is proud to be the exclusive provider of a growing portfolio of novel human stem cell antibodies, including HESCA-1, HESCA-2, ShSCP-5, GCTM-5, TG30, TG34, and hPlurES-1.

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
CD30 (Ki-1), clone HRS-4	H, Mky	IH, IP, FC	Pur	M IgG_1	100 µg	CBL529
CD9 (MRP-1, DRAP-27), clone MM2/57	H, M, Rb	WB, IH, IP, FC	Pur	M IgG_{2b}	100 µg	CBL162
E-Cadherin, azide-free, clone 67A4	H	IF, BLK, FC	Pur	M IgG_1	100 µg	MAB3199Z
GCTM-5 Antibody, clone GCTM-5	H	IC, IH, WB	Pur	M IgG_1	100 µg	MAB4365
HESCA-1 (Human Embryonic Stem Cell Antigen-1), clone 051007-4A5	H	IC, IH, IF, FC	Pur	M IgM_κ	100 µg	MAB4407
HESCA-2 (Human Embryonic Stem Cell Antigen-2), clone 060818-7A6	H	IC, IP, WB	Pur	M IgM_κ	100 µg	MAB4406
hPlurES-1 Antibody, clone 1H3	H	IC, FC, WB	Pur	M IgG_1	100 µg	MAB4395
Podocalyxin (Epithelium/Endothelial Cells, PCX), clone 18.29	H	IH, IH(P)	Pur	M IgG_1	500 µL	MAB430
ShSCP-5, clone 8H9.3	H	IC, WB	Pur	M IgG_1	100 µg	MAB4408
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC-480	H, M, R	IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4301
Stage-Specific Embryonic Antigen-3 (SSEA-3), clone MC-631	H, M	IH, IF, EIA, FC	Pur	R IgM	100 µg	MAB4303
Stage-Specific Embryonic Antigen-4 (SSEA-4), clone MC-813-70	H, M	IH, IF, EIA, FC	Pur	M IgG_3	100 µg	MAB4304
TG30 Antibody, clone TG30	H	IC, FC, IF	Pur	M IgG_2	100 µg	MAB4427
TG343 Antibody, clone TG343	H	IC, FC, IF, WB	Pur	M IgM	100 µg	MAB4346
Thy-1 (CD90), clone F15-42-1	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL415
TRA-1-60, clone TRA-1-60	H	WB, IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4360
TRA-1-81, clone TRA-1-81	H	WB, IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4381
TRA-1-85, blood group antigen Ok(a), clone TRA-1-85	H	WB, IP, FC	Pur	M IgG_1	100 µg	MAB4385
TRA-2-49, Liver/Bone/Kidney Alkaline Phosphatase, clone TRA-2-49/6E	H, Pm, Fe, Po, Rb, Not B, Ca, Gt, Gp, Ht, M, Rt, Sh	IP, IF, FC	Pur	M IgG_1	100 µg	MAB4349
TRA-2-54, Liver/Bone/Kidney Alkaline Phosphatase, clone TRA-2-54/2J	H, Pm, Po, Fe, Rb, Not Rt, M, Gp	IP, IF, FC	Pur	M IgG_1	100 µg	MAB4354

Intracellular Markers

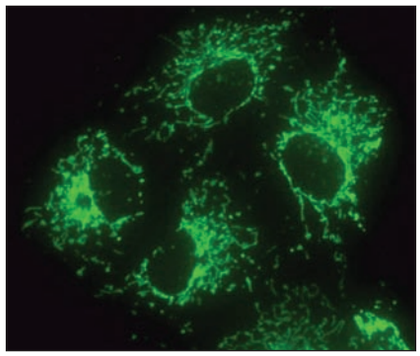
During embryogenesis, the expression levels of a number of proteins within the cell change. In particular, several transcription factors have been shown to be expressed only in pluripotent cells within the inner cell mass and, consequently, contribute to fetal development (Pesce, *et al.*, 1998, *BioEssays* 20:722). In one such case, a study showed that a critical amount of the transcription factor Octamer-4 (Oct-4) was required to sustain stem cell self-renewal, and that an increase or decrease in expression induces divergent development programs (Niwa, *et al.*, 2000, *Nature Genetics* 24:372). These findings established the identity of Oct-4 as a master regulator of pluripotency that controls lineage commitment. Millipore offers an evergrowing array of intracellular markers for pluripotent cells.

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
BCRP, clone BXP-21	H	WB, IC, IH, IH (P)	Sup	M IgG_{2a}	100 µg	MAB4146
BCRP1 (ABCG2), clone 5D3	H	IC, FC, INHIB	Pur	M IgG_{2b}	100 µg	MAB4155
Dppa1, clone 4D10.2	M	WB	Pur	M IgG	100 µg	MAB4355
Dppa-5, clone 8H3.2	H, M	WB, IC	Pur	M IgG_{a}	100 µg	MAB4320
Genesis (FoxD3)	H, M	WB	APur	Rabbit	100 µg	AB5687
Heat Shock Protein 27 (Hsp27), clone G3.1	H, M, Mk	EIA, WB, IF, IH, IH(P)	Pur	M IgG_{1a}	50 µg	MAB88051
ID2, clone 10C5.2	H	IH, Lumx	Pur	M $IgG_{3κ}$	100 µg	MAB4358
Id3, clone 3F2	M	ELISA, IC	Pur	M IgG_{1}	100 µg	MAB4353
Id4, clone 10C6.2	H	ELISA, IC	Pur	M IgG_{2a}	100 µg	MAB4393
Nanog	H, M	WB, FC, ICC	Sera	Rabbit	100 µL	AB9220
Nanog, N-terminus	M	WB	APur	Rabbit	100 µg	AB5731
Nucleostemin	H	WB	Sera	Rabbit	50 µL	AB5689
Nucleostemin	M	WB	Sera	Rabbit	50 µL	AB5691
Oct-4 (Octamer-4, POUF51), clone 10H11.2	H	IC, FC, WB, ELISA	Pur	M IgG_{1}	100 µg	MAB4401
Oct-4 (Octamer-4, POUF51)	H, M	IC, WB, FC	Pur	M IgG_{1}	100 µg	MAB4419
Pan Id (Anti Id-1, 2, 3, 4), clone 9H7.2	M	ELISA	Pur	M IgG_{2a}	100 µg	MAB4394
Pramel-4	H, M	WB, IC	APur	Rabbit	100 µg	AB4304
Pramel-5	H, M	WB, IC	APur	Rabbit	100 µg	AB4305
Rex-1, clone 5B4.2	H, M, Rt	IC, EIA	Pur	Mouse	100 µg	MAB4316
SOX17 Polyclonal Antibody	H, M	IC, WB	Sera	Rabbit	100 µL	09-038
SOX-2 Monoclonal Antibody	H, M	WB, IC	Pur	M IgG_{2b}	100 µg	MAB4343
Stella (DPPA-3), clone 3H5.2	H, M	ELISA, IC	Pur	M IgG_{1}	100 µg	MAB4388
UTF1, clone 5G10.2	H, M	WB, IC, EIA	Pur	M $IgG_{1κ}$	100 µg	MAB4337

For a complete listing of stem cell antibodies, please see page 120.

Engraftment

To determine the utility of pluripotent stem cells for cell transplantation, it is critical to detect stem cell engraftment and to track their differentiation into specialized cells. The ability to genetically manipulate stem cells to express the reporter gene green fluorescent protein (GFP), coupled with immunological detection of GFP, permits such analysis. Additionally, engrafted neurons derived from human NSCs can be discriminated from host tissue using human-specific antibodies to human N-CAM (Catalogue No. MAB2120Z), human mitochondria (Catalogue No. MAB1273) or human nuclei (Catalogue No. MAB1281). Detection of the antigen Ki-67, a nuclear protein expressed by cells in all phases of the active cycle and absent in the resting phase, allows for the determination of proliferating cells of human origin. The detection of implanted, pre-differentiated cells can be accomplished by pre-labeling proliferating and differentiating cells with bromodeoxyuridine (BrdU) prior to implantation. Resulting neurons and glia can be detected using an anti-BrdU antibody. Millipore's products provide researchers with a range of options for the detection of engrafted stem cells.



Mouse anti-mitochondria (Catalogue No. MAB1273. Localization of mitochondria in COS7 cells.

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Bromodeoxyuridine (BrdU), clone BMC9318	All	IH, FC	Pur	M IgG_1	50 µg	MAB3424
Bromodeoxyuridine (BrdU), clone BU-1	All	IC, IH, FC,Web*	Sup	M IgG_{2a}	100 µL	MAB3510
Golgi Zone, clone 371-4	H	IH	Pur	M IgG_1	100 µL	MAB1271
Green Fluorescent Protein (GFP, eGFP)	All	WB, IC, IH, EIA	Pur	M IgG_1	100 µL	MAB3580
Ki-67	H, R	WB, IH(P)	Apur	Rabbit	500 µL	AB9260
Ki-67, clone Ki-S5	H	WB, IC, IH, IH(P), FC	Pur	M IgG_1	100 µg	MAB4190
Mitochondria, clone 113-1	H	IH, IH(P), IP,Web*	PSup	M IgG_1	100 µL	MAB1273
Neural Cell Adhesion Molecule (NCAM, CD56), extracellular, clone ERIC-1, azide free	H	IH, WB, EIA, Not FC	Pur	M IgG_1	100 µg	MAB2120Z
Neural Cell Adhesion Molecule (NCAM, CD56)	H, M, R, Ch	WB, IH, IF, EIA, INHIB	APur	Rabbit	50 µg	AB5032
Nuclear Riboprotein (RNP), clone 58-15	H, R, Not M	IH, IH(P), IF,Web*	PSup	M IgG_1	100 µL	MAB1287
Nuclei, clone 235-1	H	IH, IP	Sup	M IgG_1	100 µL	MAB1281

For a complete listing of stem cell antibodies, please see page 120.

Multipotent Stem Cells

Multipotent Stem Cells

Multipotent stem cells are capable of differentiating into a variety of cellular subtypes and, as such, are highly useful in studies of stem cell differentiation. Millipore offers a wide selection of progenitor cell lines, differentiation kits, media, antibodies, and reagents to enhance your research. These products fall into three main categories: neural, hematopoietic, and mesenchymal stem cells. Popular items include our ReNcell® and ENStem™-A human neural progenitors, MilliTrace constitutive GFP reporter cells, hundreds of antibodies, and more.

Neural Stem Cells

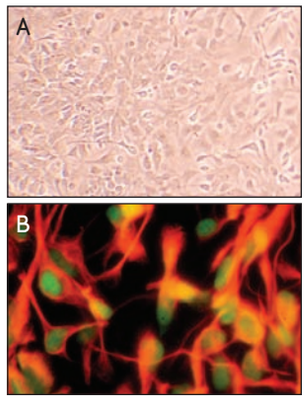
Breakthrough studies have recently rejected the long-standing belief that neuronal tissue is incapable of regeneration. The discovery that neurons, astrocytes, and oligodendrocytes arise from neural stem cells (NSCs) located in specific regions of the brain has important clinical applications for the treatment of central nervous system diseases like Parkinson's disease. Successful engraftment of NSCs following implantation into the brain of rodent models has demonstrated the potential of this cell type in the development of regenerative therapeutic strategies. Millipore offers a comprehensive range of tools for both human and rodent neural stem cell research, including novel human neural progenitor cell systems, serum-free cell culture media, and kits for differentiation and characterization.

HUMAN NEURAL STEM CELLS

ReNcell CX Human Neural Progenitors

ReNcell CX is an immortalized human neural progenitor cell line with the ability to readily differentiate into neurons and glial cells. ReNcell CX was derived from the cortical region of human fetal brain tissue. Immortalized by retroviral transduction with the c-myc oncogene, this cell line grows rapidly as a monolayer on laminin with a doubling time of 20-30 hours. Karyotype analyses indicate that the ReNcell CX retains a normal diploid karyotype in culture even after prolonged passage (>45 passages). ReNcell CX was developed by the ReNeuron Group plc, a biotech company that specializes in using human somatic stem cells for therapeutics. ReNcell CX may be used for a variety of research applications such as studies of neurotoxicity, neurogenesis, electrophysiology, neurotransmitter, and receptor functions. ReNcell CX cells have been obtained in a legal and ethical manner, compliant with current local informed consent procedures.

The ReNcell CX human neural progenitor cells and media kit contains human neural progenitor cells (Catalogue No. SCC007), ReNcell maintenance media (Catalogue No. SCM005) and ReNCell freezing media (Catalogue No. SCM007), creating a complete system for the culture of human neural stem cells. The ReNcell NSC maintenance medium is a defined, serum-free, growth factor-free medium that has been optimized for the growth and *in vitro* differentiation of ReNcell immortalized human neural progenitor cells. When used in conjunction with fibroblast growth factor (FGF) and epidermal growth factor (EGF), the maintenance medium will allow the proliferation of ReNcell immortalized neural stem cells. Withdrawal of the growth factors from the maintenance medium will result in spontaneous differentiation into a predominantly neuronal population.



ReNcell CX cells (Catalogue No. SCC007) are grown as monolayers (A) and express NSC markers, Nestin (B, red) and Sox-2 (B, green).

Description	Qty/Pk	Catalogue No.
ReNcell CX Human Neural Progenitor Cell Line & Media Kit	1 vial of cells, 500 mL of expansion media (SCM005), & 50 mL of freezing medium (SCM007)	SCC009
ReNcell Human NSC Maintenance Media	500 mL	SCM005
ReNcell Human NSC Freezing Media	50 mL	SCM007

ReNcell VM Human Neural Progenitors

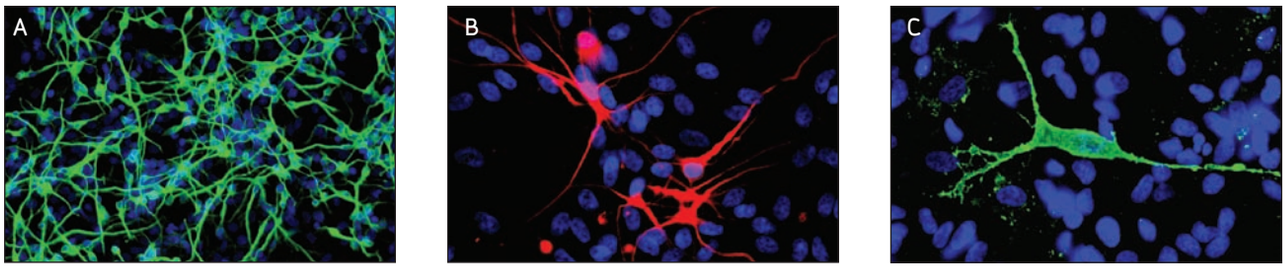
ReNcell VM is an immortalized human neural progenitor cell line with the ability to readily differentiate into neurons and glial cells. The ReNcell VM cell line was derived from the ventral mesencephalon region of human fetal brain tissue. Immortalized by retroviral transduction with the v-myc oncogene, this cell line grows rapidly as a monolayer on laminin with a doubling time of 20-30 hours. Karyotype analyses indicate that the ReNcell VM retains a normal diploid karyotype in culture even after prolonged passage (>45 passages). The ReNcell VM cell line was developed by the ReNeuron Group plc, a biotech company that specializes in using human somatic stem cells for therapeutics. In experiments performed by the ReNeuron Group plc, ReNcell VM cells can be differentiated *in vitro* to a high level of human dopaminergic neurons. Neurons differentiated from ReNcell VM cellshave furthermore been shown to be electophysiologically active. ReNcell VM cellsmay be used for a variety of research applications such as studies of neurotoxicity, neurogenesis, electrophysiology, neurotransmitter, and receptor functions. ReNcell VM cells have been obtained in a legal and ethical manner, compliant with current local informed consent procedures.

The ReNcell VM human neural progenitor cells and media kit contains human neural progenitor cells (SCC008), ReNcell maintenance media (SCM005) and ReNCell freezing media (SCM007), creating a complete system for the culture of human neural stem cells. The maintenance medium is a defined, serum-free, growth factor-free medium that has been optimized for the growth and *in vitro* differentiation of ReNcell cells immortalized human neural progenitor cells. When used in conjunction with FGF and EGF, the maintenance medium will allow for the proliferation of ReNcell VM immortalized neural progenitors. Withdrawal of the growth factors from the maintenance medium will result in spontaneous differentiation into a predominantly neuronal population.

Description	Qty/Pk	Catalogue No.
ReNcell VM Human Neural Progenitor Kit	1 vial of cells, 500 mL of expansion media (SCM005), & 50 mL of freezing medium (SCM007)	SCC010

Related Products

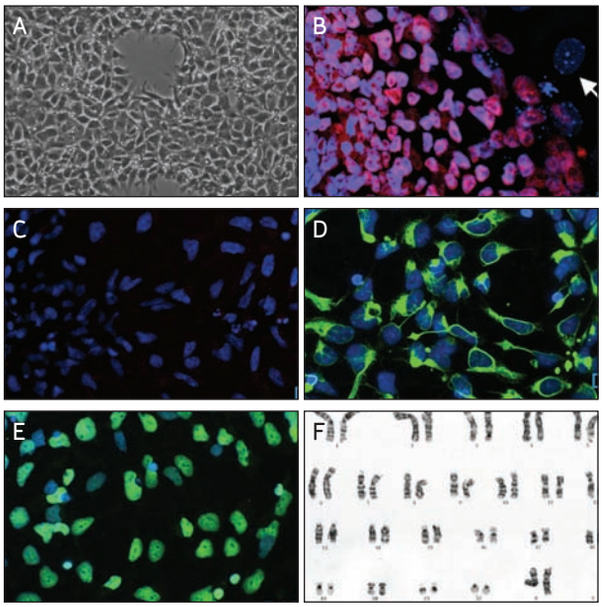
Description	Qty/Pk	Catalogue No.
ReNcell Human NSC Maintenance Media	500 mL	SCM005
ReNcell Human NSC Freezing Media	50 mL	SCM007



Multipotentiality of ReNcell cells. Both ReNcell CX and ReNcell VM cell lines are readily differentiated into all three neuronal phenoytpes: neurons (βIII-tubulin, green, 20X, A); astrocytes (GFAP, red, 40X, B) and oligodendrocytes (Gal C, green, 60X, C); all counterstained with Hoechst nuclear stain (blue).

ENStem-A Human Neural Progenitor Expansion Kit

The ENStem-A human neural progenitor expansion kit contains ENStem-A human neural progenitors and optimized ENStem-A expansion medium (SCM004). ENStem-A human neural progenitor cells are derived from WA09 (H9) human embryonic stem cells (hESCs). Using a proprietary method developed by Aruna Biomedical, these hESC-derived neural progenitors proliferate as an adherent cell monolayer and can readily differentiate into different neuronal subtypes. Detailed spectral analyses indicate that ENStem-A cells retain a normal diploid karyotype in culture after ten passages. ENStem-A human neural progenitor cells may be used for a variety of research applications such as studies of neurotoxicity, neurogenesis, electrophysiology, neurotransmitter, and receptor functions. ENStem-A neural expansion medium is a defined, serum-free formulation that has been optimized for the culture and expansion of ENStem-A human neural progenitors. When used in conjunction with FGF-2 (provided in the kit), the expansion medium will allow the maintenance and proliferation of ENStem-A human neural progenitor cells.



ENStem-A cells demonstrate the expected immunoreactivity and chromosome number. (A) Adherent ENStem-A cells at 95 % confluency. (B) WA09 human ESC are Oct-4 positive, while mouse feeder cells are negative (arrow). (C) ENStem-A cell line are Oct-4-negative. (D) ENStem-A cell line labeled for Nestin immunoreactivity. (E) ENStem-A cell line labeled for Sox2 immunoreactivity. (F) Karyotype from ENStem-A cell line.

Description	Qty/Pk	Catalogue No.
ENStem-A Human Neural Progenitor Expansion Kit	1 vial of cells & 500 mL of media	SCR055
ENStem-A Expansion Medium	500 mL	SCM004
ENStem-A Neuronal Differentiation Medium	100 mL	SCM017

MilliTrace CX Constitutive GFP Reporter Human Neural Stem Cell Kit

The MilliTrace CX constitutive GFP reporter human neural stem cell kit provides ready-to use ReNcell CX human neural stem cells that are constitutively labeled with the humanized mulleri green fluorescent protein (hmGFP), along with expansion medium to help maintain expression of the transgene. The parental cell line, ReNcell CX, is an immortalized human neural progenitor cell line with the ability to readily differentiate into neurons and glial cells. The ReNcell CX line was derived from the cortex region of human fetal tissue. Immortalized by retroviral transduction with the c-myc oncogene, this cell line grows rapidly as a monolayer on laminin with a doubling time of 20-30 hours. MilliTrace CX constitutive GFP reporter human neural stem cells were generated by electroporating the ReNcell CX line with a proprietary bicistronic plasmid construct containing hmGFP under the control of a constitutive chicken actin promoter. FACS analyses of stable transfectants indicate that greater than 95% of the cells express GFP at high levels even after 10 passages. MilliTrace CX constitutive GFP reporter human neural stem cells display the immunochemical staining properties of neural stem cells; they are positive for Nestin and Sox-2 expression. The cells are multipotent and are able to differentiate into neurons and astrocytes. Cells have been confirmed to be mycoplasma-free and demonstrate an apparently normal karyotype (46, XY) as assessed by standard G-banding analysis performed on 20 metaphase cells.

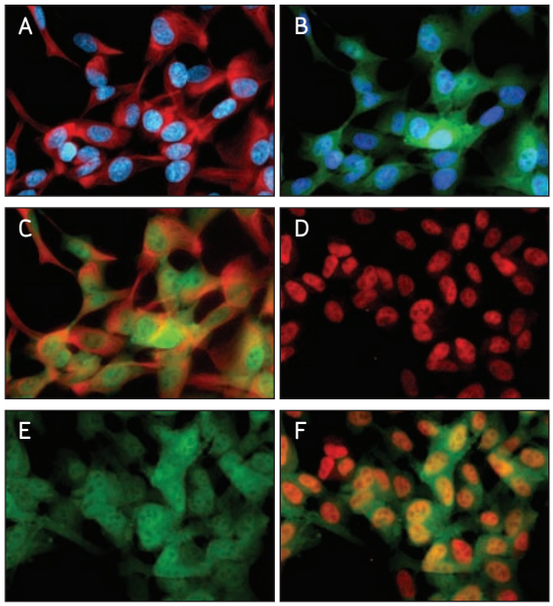
Description	Qty/Pk	Catalogue No.
MilliTrace CX Constitutive GFP Reporter Human Neural Stem Cell Kit	10^6 viable cells & 500 mL of expansion media	SCR095
MilliTrace ReNcell Neural Stem Cell Expansion Media Kit	1 kit (500 mL)	SCM043

MilliTrace VM Constitutive GFP Reporter Human Neural Stem Cell Kit

MilliTrace VM constitutive GFP reporter human neural stem cell kit provides ready-to use ReNcell VM human neural stem cells that are constitutively labeled with the humanized mulleri green fluorescent protein (hmGFP), along with expansion medium to help maintain expression of the transgene.

The parental cell line, ReNcell VM, is an immortalized human neural progenitor cell line with the ability to readily differentiate into neurons and glial cells. The ReNcell VM line was derived from the ventral mesencephalon region of human fetal tissue. Immortalized by retroviral transduction with the v-myc oncogene, this cell line grows rapidly as a monolayer on laminin with a doubling time of 20-30 hours. ReNcell VM cells can be differentiated *in vitro* to human dopaminergic neurons. Neurons differentiated from ReNcell VM cells have been shown to be electrophysiologically active.

MilliTrace VM constitutive GFP reporter human neural stem cells were generated by electroporating the ReNcell VM line with a proprietary bicistronic plasmid construct containing hmGFP under the control of a constitutive chicken actin promoter. FACS analyses of stable transfectants indicate that greater than 95% of the cells express GFP at high levels even after 10 passages. MilliTrace VM constitutive GFP reporter human neural stem cells display the immunochemical staining properties of neural stem cells; they are positive for Nestin and Sox-2 expression. The cells are multipotent and are able to differentiate into neurons and astrocytes. Cells have been confirmed to be mycoplasma-free and demonstrate an apparently normal karyotype (46, XY) as assessed by standard G-banding analysis performed on 20 metaphase cells.

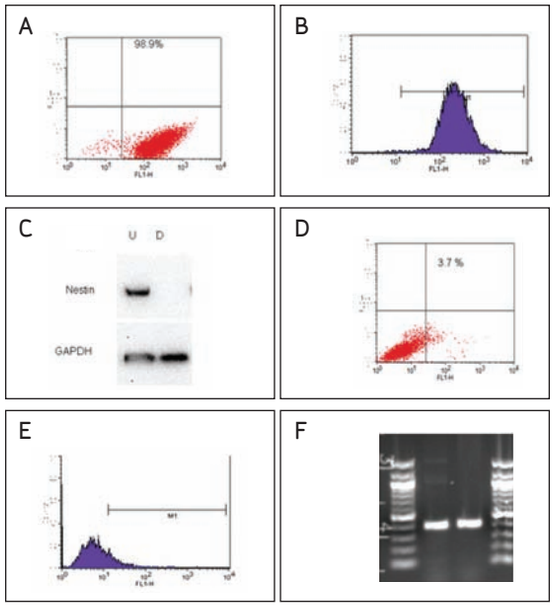


MilliTrace VM constitutive GFP reporter human neural stem cells (Catalog No. SCC092) constitutively express GFP (B, C, E, F) along with NSC markers, Nestin (A, C, red) and Sox-2 (D, F, red). Nuclei of the cells were visualized with DAPI (A, B, blue). The Sox-2 transcription factor is co-localized with the GFP staining in the nucleus (D, F). Majority of cells are GFP-positive (B, C, E, F).

Description	Qty/Pk	Catalogue No.
MilliTrace VM Constitutive GFP Reporter Human Neural Stem Cell Kit	10^6 viable cells & 500 mL of expansion media	SCR092
MilliTrace ReNcell Neural Stem Cell Expansion Media Kit	1 kit (500 mL)	SCM043

MilliTrace CX Nestin GFP Reporter Human Neural Stem Cell Kit

The MilliTrace CX Nestin GFP reporter human neural stem cell kit provides a convenient way to study the differentiation of human neural stem cells. The kit provides ready-to-use human neural stem cells that are labeled with the humanized mulleri green fluorescent protein (hmGFP) under the regulation of the Nestin promoter. Expression of Nestin is commonly associated with undifferentiated neural stem and early progenitor cells. Upon differentiation, Nestin is down-regulated. Since hmGFP is under the regulation of the Nestin promoter, GFP expression correspondingly declines upon further differentiation. The parental cell line, ReNcell CX, is an immortalized human neural progenitor cell line derived from the cortical region with the ability to readily differentiate into neurons and glial cells. MilliTrace CX Nestin GFP reporter human neural stem cells display the immunochemical staining properties of neural stem cells: they are positive for Nestin and Sox-2 expression. The cells are multipotent and are able to differentiate into neurons and astrocytes. The cells are provided with expansion medium to help maintain expression of the transgene.



Photos (top right): Characterization of GFP expression levels driven from Nestin promoter in MilliTrace CX Nestin GFP reporter human neural stem cells. Flow cytometry analysis on the number of GFP expressing cells in undifferentiated (A) and after 17 days of spontaneous differentiation (B) of MilliTrace CX Nestin GFP reporter human NSCs. The total number of cells analyzed was 10,000 cells. Number of GFP expressed cells significantly decreased from 98.9% to 3.7% after 2 weeks differentiation.

Western blot analysis of Nestin protein expression (C). Nestin is expressed in undifferentiated cells and is downregulated upon differentiation. Housekeeping gene, GAPDH was used as a loading control. Nestin was detected with anti-Nestin, clone 10C2 (Catalogue No. MAB5326) and the loading control GAPDH was detected with anti-GAPDH, clone 6C5 (Catalogue No. MAB374). U: undifferentiated cell lysate; D: differentiated cell lysate.

Description	Qty/Pk	Catalogue No.
MilliTrace CX Nestin GFP Reporter Human Neural Stem Cell Kit	5 x 10^5 viable cells & 500 mL of MilliTrace expansion media kit (SCM043)	SCR096
MilliTrace ReNcell Neural Stem Cell Expansion Media Kit	1 kit (500 mL)	SCM043

Arctic Ground Squirrel Neural Stem Cells

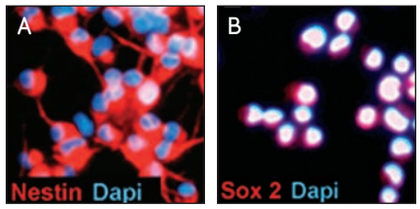
Arctic Ground Squirrel Neural Stem Cells (AGS-NSC) are isolated from the hippocampus of adult Arctic Ground Squirrels following hibernation. Both the isolated cells and the whole animals are tolerant of ischemic insult and reperfusion. Using these cells, researchers can identify potentially novel proteins and genes key to neuronal tolerance, neuroprotection and neurogenesis. Millipore's AGS-NSC can be used to screen drugs, genes and proteins for protective changes caused by oxygen and/or glucose deprivation. These cells can potentially identify future targets for novel stroke therapeutics. As stem cells, these cells can be used in transplantation studies using rodent stroke models to investigate tolerance to ischemic injury. AGS-NSC can be expanded with the AGS-NSC Expansion Media Kit, and then differentiated into neurons using the AGS-NSC Differentiation Media Kit.

Description	Qty/Pk	Catalogue No.
Adult Hippocampal Arctic Ground Squirrel Neural Stem Cells	400,000 cells	SCCE002
AGS-NSC Expansion Media Kit	500 mL	SCMA002
AGS-NSC Differentiation Media Kit	500mL	SCMA003

RODENT NEURAL STEM CELLS

Rodent Neural Stem Cells

Ready-to-use rat primary neural stem cells isolated from the hippocampus of adult Fisher 344 rats, and mouse neural stem cells isolated from the cortices and spinal cord of embryonic day 15-18 (E15-E18) C57/BL6 mice are available from Millipore. Each lot of primary cells is validated for high expression of the appropriate NSC markers, and, with respect to adult rat NSC, for their self-renewal and multilineage differentiation capacities.

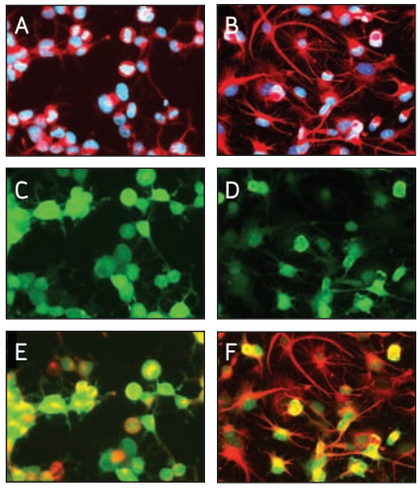


Photos (right): Cultured adult rat hippocampus derived neural stem cells (Catalogue No. SCR022) stained for (A) Nestin and (B) Sox-2. The Sox-2 transcription factor is colocalized with the DAPI (blue) staining in the nucleus.

Description	Qty/Pk	Catalogue No.
Adult Rat Hippocampal Neural Stem Cells	1 x 10^6 viable cells	SCR022
Cryopreserved Mouse Cortical Neural Stem Cells	1 x 10^6 viable cells	SCR029
Cryopreserved Mouse Spinal Cord Neural Stem Cells	1 x 10^6 viable cells	SCR031
Rat Neural Stem Cell Expansion Medium	500 mL	SCM009
Mouse Neural Stem Cell Expansion Medium	500 mL	SCM008
Neural Stem Cell Basal Medium	500 mL	SCM003

MilliTrace GFP Reporter Rodent Neural Stem Cells

MilliTrace GFP reporter neural stem cells express green fluorescent protein (GFP) constitutively. GFP expression in these stem cells is under the control of the constitutive chicken actin promoter and allows researchers to easily monitor the behavior of specific populations of cells as they proliferate, migrate, and differentiate into various cell lineages, depending on developmental context. These multipotent self-renewing neural stem cells have the capacity to differentiate in neurons, oligodendrocytes, and astrocytes. The MilliTrace reporter cell lines are provided in kits containing 10^6 viable cells and 500 mL optimized expansion medium.



Photos (right): MilliTrace constitutive GFP reporter adult rat hippocampal NSCs express the NSC markers Nestin (A, E) and Sox-2 (data not shown). Nuclei of the cells were visualized with DAPI (blue). These cells are multipotent. Using the rodent astrocyte differentiation medium, they differentiate into astrocytes (GFAP, B, F). Majority of cells are GFP-positive (C, D).

Description	Qty/Pk	Catalogue No.
MilliTrace Constitutive GFP Reporter Adult Rat Hippocampal Neural Stem Cell Kit	1 kit	SCR080
MilliTrace Constitutive GFP Reporter Mouse Cortical Neural Stem Cell Kit	1 kit	SCR081
MilliTrace Rat Neural Stem Cell Expansion Medium	500 mL	SCM040
MilliTrace Mouse Neural Stem Cell Expansion Medium	500 mL	SCM041
MilliTrace Rodent Neural Stem Cell Basal Medium	500 mL	SCM060

MEDIA FOR CULTURE OF HUMAN NEURAL STEM CELLS

ReNcell Human NSC Maintenance Media

ReNcell NSC maintenance medium is a defined, serum-free, growth factor-free medium that has been optimized for the growth and *in vitro* differentiation of ReNcell immortalized human neural progenitor cells (See pages 39-40). When used in conjunction with FGF and EGF, the maintenance medium will allow for the proliferation of ReNcell VM and CX immortalized neural stem cells. Withdrawal of the growth factors from ReNcell NSC maintenance medium will result in the spontaneous differentiation of ReNcell immortalized neural progenitors into primarily neuronal populations.

Description	Qty/Pk	Catalogue No.
ReNcell NSC Maintenance Media	500 mL	SCM005

ReNcell Human Neural Stem Cell Freezing Medium

ReNcell NSC freezing medium is validated for use with the ReNcell immortalized human neural progenitor cell lines, ReNcell CX and ReNcell VM, cultured in serum-free conditions with ReNcell NSC maintenance medium (Catalogue No. SCM005). The optimized formulation allows for consistent cryopreservation and high viability upon thawing and plating.

Description	Qty/Pk	Catalogue No.
ReNcell Neural Stem Cell Freezing Medium	50 mL	SCM007

ENStem-A Human Neural Progenitor Expansion Media

ENStem-A neural expansion medium is a defined, serum-free formulation that has been optimized for the culture and expansion of ENStem-A human neural progenitor cells. When used in conjunction with L-glutamine (not provided) and FGF-2 (provided), the expansion medium will allow for the maintenance and proliferation of ENStem-A human neural progenitor cells.

Description	Qty/Pk	Catalogue No.
ENStem-A Human Neural Progenitor Expansion Media	500 mL	SCM004

ENStem-A Human Neuronal Differentiation Medium

ENStem-A neuronal differentiation medium is a specially formulated medium optimized for the preferential differentiation of ENStem-A human neural progenitor cells to a neuronal lineage. The medium has been extensively validated on ENStem-A human neural progenitor cells. Relatively pure populations of neuronal cells (>90% βIII-tubulin-positive) are obtained with the differentiation medium, and very low levels of astrocytes (<0.5% GFAP-positive) are detected. Sufficient medium is supplied to provide for 100 separate reactions at 1 mL volume or 10 reactions at 10 mL volume.

Description	Qty/Pk	Catalogue No.
ENStem-A Human Neuronal Differentiation Medium	100 mL	SCM017

ENStem-A Human Neural Freezing Medium

ENStem-A neural freezing medium is qualified for use with ENStem-A human neural progenitor cells (Catalogue No. SCR005) cultured in defined, serum-free conditions with ENStem-A neural expansion medium (Catalogue No. SCM004). The optimized formulation allows for consistent cryopreservation and high viability upon thawing and plating.

Description	Qty/Pk	Catalogue No.
ENStem-A Human Neural Freezing Medium (1X)	50 mL	SCM011

MilliTrace ReNcell Neural Stem Cell Maintenance Medium

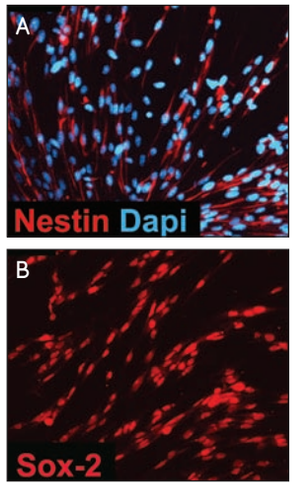
MilliTrace ReNcell neural stem cell maintenance medium is a defined, serum-free, growth factor-free medium that has been optimized for the growth and *in vitro* differentiation of the MilliTrace ReNcell GFP reporter human neural stem cell lines. When in used in conjunction with FGF and EGF, the maintenance medium will allow for the proliferation of the MilliTrace ReNcell GFP reporter human neural stem cell lines. Withdrawal of the growth factors from the medium will result in the spontaneous differentiation of the cells. Puromycin solution is provided to help maintain the expression of the green fluorescent protein (GFP) labeled transgene.

Description	Qty/Pk	Catalogue No.
MilliTrace ReNcell Human Neural Stem Cell Maintenance Medium	500 mL	SCM043

MEDIA FOR CULTURE OF RODENT NEURAL STEM CELLS

Rodent Neural Stem Cell Expansion Media

Neural stem cell basal medium (Catalogue No. SCM003) is a defined, serum free, growth factor-free medium that has been optimized for the growth of rodent neural stem cells. When used in conjunction with bFGF (rat), or bFGF, EGF, and heparin (mouse), the basal medium allows for the proliferation of rat or mouse neural stem cells. Withdrawal of the growth factors from the basal medium results in spontaneous differentiation. The mouse neural stem cell expansion medium (Catalogue No. SCM008) and rat neural stem cell expansion medium (Catalogue No. SCM009) are provided as two-component systems that are convenient and easy to use. These expansion kits include the neural stem cell basal medium and the necessary supplements to provide for the growth and proliferation of mouse or rat neural stem cells.



Photos (right): Mouse cortical neural stem cells cultured in the mouse neural stem cell expansion medium (SCM008) express NSC markers Nestin (A) and Sox2 (B) and are multipotent.

Description	Qty/Pk	Catalogue No.
Neural Stem Cell Basal Medium	500 mL	SCM003
Mouse Neural Stem Cell Expansion Medium	1 kit	SCM008
Rat Neural Stem Cell Expansion Medium	1 kit	SCM009

Astrocyte Differentiation Medium

The astrocyte differentiation medium is a specially formulated medium optimized for the preferential differentiation of rodent neural stem cells to an astrocyte lineage. The medium has been extensively validated on mouse cortical and spinal cord neural stem cells and on rat hippocampal neural stem cells. Using the astrocyte differentiation medium, relatively pure populations of astrocytes (>80-90% GFAP-positive) are obtained. Very low levels of neurons (<1% MAP2AB-positive) or oligodendrocytes (<5% O1-positive) are detected.

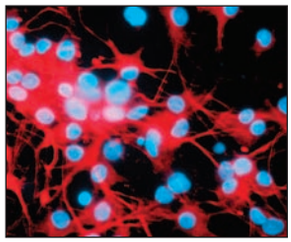


Photo (right): Adult rat hippocampal neural stem cells (Cat. No. SCR022) differentiated for 6-9 days in astrocyte differentiation medium (Cat.No. SCM010) are GFAP-positive.

Description	Qty/Pk	Catalogue No.
Astrocyte Differentiation Medium	1 kit	SCM010

MilliTrace Rodent Reporter Neural Stem Cell Expansion Media

MilliTrace rodent neural stem cell expansion media are provided as multi-component systems that have been optimized for the expansion of MilliTrace GFP reporter rodent neural stem cells. MilliTrace neural stem cell basal medium is a defined serum-free medium that has been optimized for the growth of neural stem cells derived from rodents. When used in conjunction with bFGF (rat), or bFGF, EGF, and heparin (mouse), the basal medium will allow for the proliferation of rat or mouse neural stem cells. Puromycin solution is provided separately to help maintain the expression of the GFP labeled transgene.

Description	Qty/Pk	Catalogue No.
MilliTrace Mouse Neural Stem Cell Expansion Medium	1 kit	SCM041
MilliTrace Rat Neural Stem Cell Expansion Medium	1 kit	SCM040
MilliTrace Rodent Neural Stem Cell Basal Medium	500 mL	SCM060

NDiff Neuro-2 Medium Supplement

NDiff™ Neuro-2 medium supplement is a serum-free, N2-like supplement for the *in vitro* differentiation of murine ES cells into post-mitotic neurons, particularly via monolayer differentiation. This product may also be used in the derivation, propagation, and maintenance of mouse NS cells.

Description	Qty/Pk	Catalogue No.
NDiff Neuro-2 Medium Supplement (200X)	5 mL	SCM012

NDiff Neuro-27 Medium Supplement

NDiff Neuro-27 medium supplement is a serum-free, B27-like supplement containing antioxidants and other factors that has been specifically developed for the *in vitro* propagation and maintenance of undifferentiated murine ES cells in serum free medium. This product can also be used to differentiate murine ES cells into post-mitotic neurons, particularly via monolayer differentiation.

Description	Qty/Pk	Catalogue No.
NDiff Neuro-27 Medium Supplement (100X)	10 mL	SCM013

NEURAL STEM CELL KITS

Human Neural Stem Cell Characterization Kit

The human neural stem cell characterization kit contains three antibodies (Nestin, Sox-2, and Musashi) to identify neural stem/progenitor cells, along with more differentiated lineage markers including βIII-tubulin for neurons, GFAP for astrocytes, and O1 for oligodendrocytes. Mouse and rabbit Ig controls for the assessment of background staining are also included. All of the antibodies provided in the kit have been tested and optimized for use in immunocytochemistry on human neural stem cells. We recommend that the kit be used in conjunction with differentiation assays that demonstrate the multipotentiality of the starting cell population.

Description	Qty/Pk	Catalogue No.
Human Neural Stem Cell Characterization Kit	1 kit	SCR060

Human Embryonic Stem Cell Neurogenesis Characterization Kit

Millipore's human embryonic stem cell neurogenesis characterization kit contains a complete panel of validated antibodies that allows researchers to identify and quantify the extent of differentiation to specific neuronal subtypes from a starting culture of human embryonic stem cells. Pluripotent markers (OCT-4, SSEA-4 and Sox-2) are provided in the kit to aid in the characterization of the starting human embryonic stem cell culture. To characterize the transition of human ES cells from pluripotent to multipotent state, with the potentiality restricted to cells of the neural lineage, antibodies to Nestin and Sox-2 are provided. A βIII-tubulin antibody is provided to mark all neuronal cells while GAD67, ChAT, and TH antibodies are provided to identify GABAergic, cholinergic, and dopaminergic neurons, respectively.

Description	Qty/Pk	Catalogue No.
Human Embryonic Stem Cell Neurogenesis Characterization Kit	1 kit	SCR065

Neural Stem Cell Marker Characterization Kit

The neural stem cell marker characterization kit provides researchers with a convenient means to phenotype neural stem cells using a panel of antibodies. This kit contains antibodies to the NSC markers Nestin and Sox-2, and also to markers of mature neural cells including neurons (MAP2a/b), astrocytes (GFAP) and oligodendrocytes (O1). Also included are mouse and rabbit Ig controls for the assessment of background staining.

Description	Qty/Pk	Catalogue No.
Neural Stem Cell Marker Characterization Kit	1 kit	SCR019

Adult Rat Hippocampal Neural Stem Cell Kit

The rat hippocampal neural stem cell kit provides ready-to-use primary neural stem cells isolated from the hippocampus of adult Fisher 344 rats and antibodies for immunocytochemical staining. The antibodies include markers for neural stem/progenitor cells (Nestin and Sox-2) as well as differentiated neural cells (MAP-2 for neurons and GFAP for astrocytes). The viable, cryopreserved rat hippocampal neural stem cells are also available separately (SCR022).

Description	Qty/Pk	Catalogue No.
Adult Rat Hippocampal Neural Stem Cell Kit	1 kit	SCR021

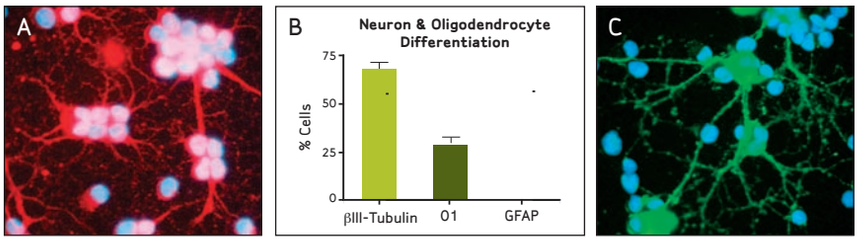
Rodent Neural Stem Cell Expansion Kits

The neural stem cell expansion kits provide a multi-component system for the culture and analysis of rodent neural stem cells and their differentiated progenies. These systems include primary neural stem cells, neural stem cell expansion medium, and a panel of antibodies for immunocytochemical staining of neural stem/progenitor cells (nestin and Sox-2) and differentiated neural phenotypes (MAP2a/b for neurons, GFAP for astrocytes, and O1 for oligodendrocytes). The mouse cortical neural stem cell expansion kit (Catalogue No. SCR032) includes mouse cortical neural stem cells isolated from the cortices of embryonic day 15-18 (E15-E18) C57/BL6 mice, the mouse spinal cord neural stem cell expansion kit (Catalogue No. SCR033) includes primary neural stem cells isolated from the spinal cord of embryonic day 15-18 (E15-E18) C57/BL6 mice, and the adult rat neural stem cell expansion kit (Catalogue No. SCR034) includes primary neural stem cells isolated from the hippocampus of adult Fisher 344 rats.

Description	Qty/Pk	Catalogue No.
Mouse Cortical Neural Stem Cell Expansion Kit	1 kit	SCR032
Mouse Spinal Cord Neural Stem Cell Expansion Kit	1 kit	SCR033
Adult Rat Neural Stem Cell Expansion Kit	1 kit	SCR034

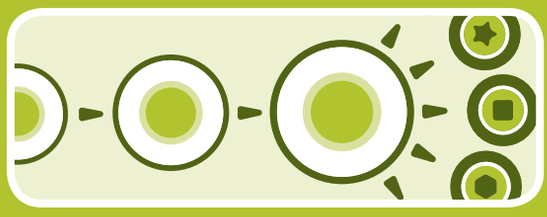
Rodent Neuron Differentiation Kit

The neuron differentiation kit provides two neuronal inducers that, when added to the serum-free medium, allow for the preferential differentiation of rodent neural stem cells to a neuronal lineage. The kit also includes antibodies for the immunocytochemical characterization of the resulting neuron population. It has been extensively validated on mouse cortical and spinal cord neural stem cells and on rat hippocampal neural stem cells. Using the neuron differentiation kit, relatively pure populations of neurons (~70% βIII-tubulin-positive) are obtained. Very low levels of astroglial cells (<0.5%) are detected.



Adult rat hippocampal neural stem cells (Cat. No. SCR022) differentiated predominantly into βIII-tubulin positive neurons. Using the rodent neuron differentiation kit (Cat. No. SCR035), over 70% βIII-tubulin-positive neurons (A) and 30% O1-positive oligodendrocytes (C) were detected after four days of differentiation. GFAP-positive astrocytes were not observed in this culture condition. Nuclei of the cells were visualized with DAPI (blue).

Description	Qty/Pk	Catalogue No.
Rodent Neuron Differentiation Kit	1 kit	SCR035



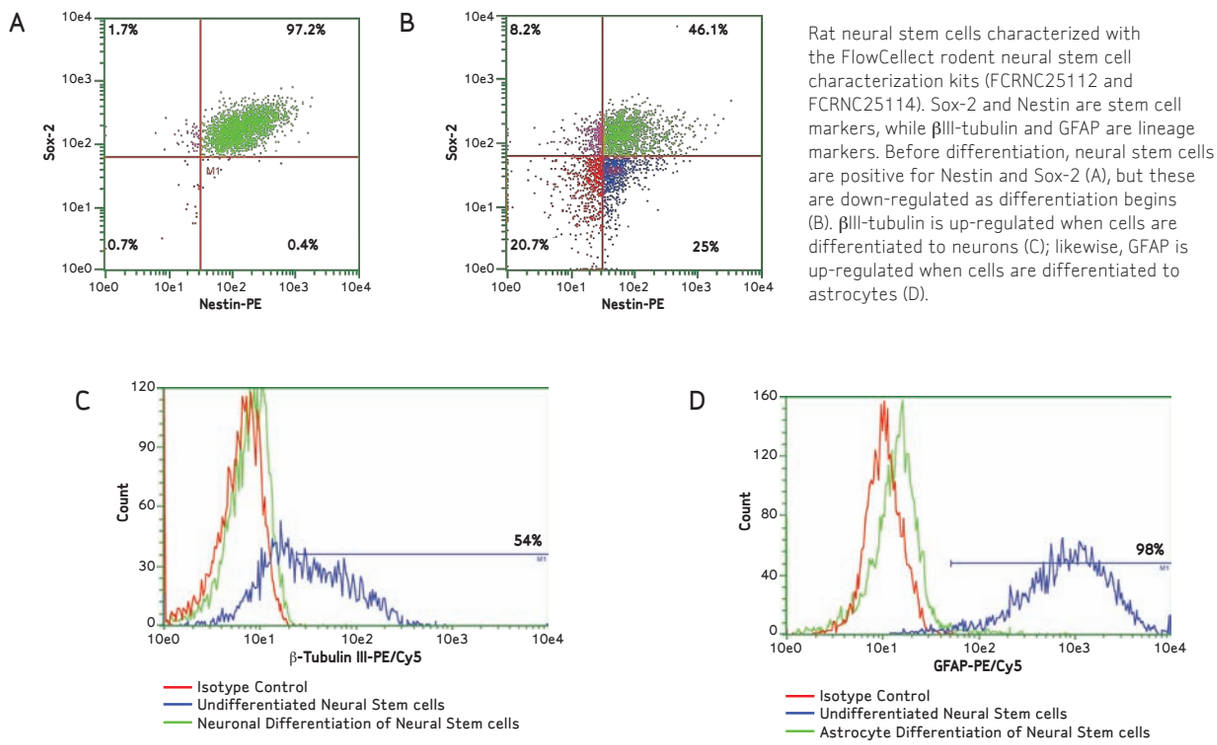
FlowCellect – For Flow Cytometric Characterization of Neural Stem Cells

Flow cytometry is a powerful tool for measuring multiple parameters within stem cell research. Millipore has developed a range of kits for the characterization and phenotypic monitoring of stem cells. These FlowCellect stem cell characterization kits are designed to provide rapid, sensitive assessments of embryonic and neural stem cell phenotypes at various stages of differentiation.

The FlowCellect neural stem cell characterization kits utilize neural stem cell markers SOX-2 and Nestin to characterize neural stem cells in conjunction with lineage markers βIII-tubulin or GFAP to identify cell populations which have differentiated into neurons or astrocytes, respectively. These kits enable stem cell researchers to leverage the analytical power of flow cytometry with low cell numbers and small sample volume when samples are analysed on the EasyCyte Plus flow cytometer.

FlowCellect kit components include:

- 3 stem-cell-specific, fluorophore conjugated primary antibodies with isotype controls - validated and optimized for use within multiplex flow cytometry analysis
- Complete set of prediluted and optimized reagents - no need for assay development
- Step-by-step user guide - optimized protocol to minimize cell loss



Rat neural stem cells characterized with the FlowCellect rodent neural stem cell characterization kits (FCRNC25112 and FCRNC25114). Sox-2 and Nestin are stem cell markers, while βIII-tubulin and GFAP are lineage markers. Before differentiation, neural stem cells are positive for Nestin and Sox-2 (A), but these are down-regulated as differentiation begins (B). βIII-tubulin is up-regulated when cells are differentiated to neurons (C); likewise, GFAP is up-regulated when cells are differentiated to astrocytes (D).

Description	Qty/Pk	Catalogue No.
FlowCellect Rodent NSC Characterization Kit (Neural)	25 tests	FCRNC25112
FlowCellect Rodent NSC Characterization Kit (Astrocyte)	25 tests	FCRNC25114

For more information on Millipore's flow cytometry systems and assays, please visit **www.millipore.com/flowcytometry**.

Neural Stem Cell Growth Factors

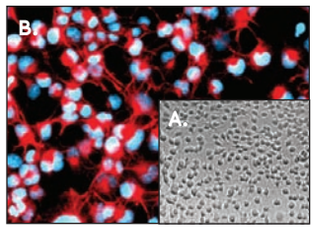
Millipore's comprehensive range of cytokines and growth factors will facilitate the investigation of culture conditions for NSC expansion and factors influencing differentiation.

Description	Species	Qty/Pk	Catalogue No.
Brain Derived Neurotrophic Factor (BDNF), recombinant	H	10 µg	GF029
Ciliary Neurotrophic Factor (CNTF), recombinant	H	20 µg	GF109
Ciliary Neurotrophic Factor (CNTF), recombinant	R	25 µg	GF035
Epidermal Growth Factor, recombinant human	H	500 µg	GF144
EGF, recombinant human	H	500 µg	01-407
EGF, recombinant human	H	100 µg	01-107
EGF, culture grade	M	100 µg	01-101
EGF, receptor grade	M	100 µg	01-102
Epidermal Growth Factor, mouse tissue culture grade	M	100 µg	EA140
Epidermal Growth Factor, recombinant mouse	M	500 µg	GF155
FGF-1/acidic FGF, recombinant human	H	25 µg	01-116
Fibroblast Growth Factor acidic, recombinant human	H	50 µg	GF002
FGF-2/basic FGF, recombinant human	H	25 µg	01-106
Fibroblast Growth Factor basic, peptide, synthetic, brain derived (1-24)	H, B	1 mg	FA011
Fibroblast Growth Factor basic, recombinant human	H	50 µg	GF003
Fibroblast Growth Factor basic, animal-free, recombinant human	H	50 µg	GF003-AF
Fibroblast Growth Factor basic, animal-free, recombinant human	H	100 µg	GF003AF-100UG
Fibroblast Growth Factor basic, animal-free, recombinant human	H	1 mg	GF003AF-MG
Fibroblast Growth Factor-4, recombinant human	H	25 µg	GF098
FGF-7/KGF, recombinant human	H	10 µg	01-118
Fibroblast Growth Factor-8, recombinant human	H	25 µg	GF110
Hepatocyte Growth Factor, recombinant human	H	10 µg	GF116
Insulin-like Growth Factor-I, recombinant human	H	100 µg	GF138
Insulin-like Growth Factor-I	H	25 µg	01-208
Insulin-like Growth Factor-I (resistant to IGFBPs)	H	25 µg	01-189
Insulin-like Growth Factor-I, biotin conjugate	H	2 µg	01-212
Insulin-like Growth Factor-I, recombinant mouse	M	50 µg	GF121
Insulin-like Growth Factor-II	H	25 µg	01-142
Insulin-like Growth Factor-II, recombinant human	H	50 µg	GF007

Description	Species	Qty/Pk	Catalogue No.
Leukemia Inhibitory Factor, recombinant human	H	5 µg	LIF1005
Leukemia Inhibitory Factor, recombinant human	H	10 µg	LIF1010
Leukemia Inhibitory Factor, glycosylated human	H	10 µg	LIF1100
Leukemia Inhibitory Factor, recombinant mouse	M	5 µg	LIF2005
Leukemia Inhibitory Factor, recombinant mouse	M	10 µg	LIF2010
Leukemia Inhibitory Factor, recombinant rat	R	5 µg	LIF3005
Leukemia Inhibitory Factor, recombinant rat	R	10 µg	LIF3010
Nerve Growth Factor 2.5S, mouse submaxillary glands	M	100 µg	01-125
Nerve Growth Factor 2.5S, mouse submaxillary glands	M	50 µg	NC011
Nerve Growth Factor 7.0S, mouse submaxillary glands	M	100 µg	NC010
Nerve Growth Factor 7.0S, mouse submaxillary glands	M	100 µg	01-170
Nerve Growth Factor-β, recombinant	H	20 µg	GF038
Neurotrophin 3 (NT-3), recombinant	H	10 µg	GF031
Neurotrophin 4/5 (NT-4/5), recombinant	H	10 µg	GF032
Platelet Derived Growth Factor-AA, recombinant human	H	10 µg	GF142
Platelet Derived Growth Factor-AB, recombinant human	H	10 µg	GF106
Platelet Derived Growth Factor-BB, recombinant human	H	10 µg	GF149
Transforming Growth Factor-β1	H	1 µg	01-209
Transforming Growth Factor-β1	H	5 µg	GF111
Transforming Growth Factor-β2	H	5 µg	GF113
Transforming Growth Factor-α, recombinant human	H	100 µg	GF022
Vascular Endothelial Growth Factor 165, recombinant mouse	M	10 µg	GF140
Vascular Endothelial Growth Factor, recombinant human, 165aa isoform	H	10 µg	GF094
VEGF, recombinant human	H	10 µg	01-185
Wnt-3a, recombinant mouse	M	5 µg	GF160
Wnt-5a, recombinant mouse	M	10 µg	GF146

Synthetic Laminin Peptide

Millipore's synthetic laminin peptide is a defined ECM substrate that has been specifically optimized to support the cell adhesion, proliferation, and multi-lineage differentiation of rat neural stem cells (NSCs) *in vitro*. Rat neural stem cells grown on tissue culture plates coated with this synthetic laminin peptide (A) display the characteristic neural stem cell markers, Nestin (B) and Sox-2, and furthermore possess the capacity to preferentially differentiate down both glial and neural lineages.



Description	Qty/Pk	Catalogue No.
Synthetic Laminin Peptide for Rat Neural Stem Cells	5 x 3 mg	SCR127

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially available tool of its kind to enable researchers to not only quickly identify the best ECM protein for their cell culture environment, but also determine the concentration needed to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 kit	ECM542

ECMs & Attachment Factors

Extracellular matrix (ECM) proteins are produced intracellularly and are subsequently secreted into the surrounding cellular medium, actively regulating a diverse range of cell functions including cell adhesion, differentiation, proliferation, migration, invasion, and survival.

Description	Qty/Pk	Catalogue No.
Human Collagen Type I	100 µg	CC050
Human Laminin (pepsinized), purified protein	100 µg	AG56P
Mouse Laminin, purified	1 mg	CC095
Mouse Laminin, purified	2 mg	08-125
Human Fibronectin, cellular	1 mg	08-102
Human Plasma Fibronectin, purified protein	1 mg	FC010
Human Plasma Fibronectin, purified protein	5 mg	FC010-5MG
Human Plasma Fibronectin, purified protein	10 mg	FC010-10MG
Human Plasma Fibronectin, purified protein	100 mg	FC010-100MG
Human Tenascin-C, purified	100 µg	CC065
ECL Cell Attachment Matrix (EHS mouse tumor)	5 mg	08-110
Poly-D-Lysine Solution, 1.0 mg/mL	20 mL	A-003-E

For a complete listing of extracellular matrix proteins, please see pages 98-100.

ANTIBODIES

Undifferentiated neural stem cells (NSCs) have been classically defined by the expression of the intermediate filament protein, Nestin, and do not typically express markers of mature neural cells. However, in addition to the Nestin marker, there are a number of other antigens that have been used to characterize and isolate NSCs. Millipore offers one of the largest lines of neural markers available. A complete list of neural stem cell and neuronal markers can be found at **www.millipore.com**.

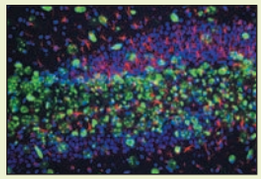
Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
BCRP, clone BXP-21	H	WB, IC, IH, IH(P)	Sup	M IgG_{2a}	100 µg	MAB4146
BCRP, clone BXP-34	H	IC, IH	Sup	M IgG_1	100 µg	MAB4145
BCRP1 (ABCG2), clone 5D3	H, M, R	FC, IC	Pur	M $IgG_{2b\kappa}$	100 µg	MAB4155
BCRP1 (ABCG2), clone 5D3, FITC conjugated	H, M, R	FC, IC	FITC	M $IgG_{2b\kappa}$	100 tests	MAB4155F
BCRP1 (ABCG2), clone 5D3, phycoerythrin conjugated	H, M, R	FC, IC	PE	M $IgG_{2b\kappa}$	100 tests	MAB4155P
CD24 (Heat Stable Antigen), clone 30-F1	M	IH, IP, FC	Pur	R $IgG_{2c\kappa}$	500 µg	CBL1315
CD24 (Heat Stable Antigen), clone SN3	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL561
CD34 Class I, clone B1-3C5	H	IF, FC	Pur	M IgG_1	100 µg	MAB4211
CD34 Class II, clone QBEND/10	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL496
CD34 Class III, clone 581	H	FC, IH(P)	Pur	M IgG_1	100 µg	CBL555
CD44s (pgp-1, Homing Receptor, HCAM)	H, B, Ca, M, Po, Rb, R	EIA, FC, WB, IC, IH, Web*	Pur	R IgG_{2b}	100 µg	MAB2137
CD45 (LCA), clone F10-89-4	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL124
CD45 (LCA), clone F10-89-4, FITC conjugated	H	IH, FC	FITC	M IgG_{2a}	100 tests	CBL124F
CD81 (TAPA-1), clone 1.3.3.22	H	FC, IP, INHIB	Pur	M IgG_1	100 µg	CBL579
CD90 (Thy-1), clone F15-42-1	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL415
CD90 (Thy-1), clone F15-42-1	H	FC	PE	M IgG_1	100 tests	CBL415P
CD133 (Prominin-1), clone 13A4	M	EM, FC, IP, WB, IH	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
CD133 (Prominin-1), clone 13A4, Alexa Fluor 488 conjugated	M	FC	A488	R $IgG_{1\kappa}$	100 µg	MAB4310X
CD184 (C-X-C Chemokine Receptor 4), extracellular loop	H	WB	Pur	Rabbit	100 µg	AB1847
CD184 (C-X-C Chemokine Receptor 4), N-terminus	H	WB, IC, IP	Pur	Rabbit	100 µg	AB1846
Dishevelled-1	H	WB	APur	Rabbit	50 µL	AB5970
Dishevelled-2	H, M	WB, IH	Pur	Rabbit	50 µL	AB5972
Dishevelled-3	H, M	WB	Pur	Rabbit	50 µL	AB5974
EMX1, polyclonal	H	WB	APur	Rabbit	100 µg	AB15067
EVX1, polyclonal	H	WB	APur	Rabbit	100 µg	AB10203
EVX2, polyclonal	M, R	WB	Pur	Rabbit	100 µg	AB10201
Golgi Zone, clone 371-4	H	IH	Pur	M IgG_1	100 µL	MAB1271
ID2, clone 10C5.2	H	IH, BD	Pur	M $IgG_{3\kappa}$	100 µg	MAB4358
ID3, clone 3F2	M	ELISA, IC	Pur	M IgG_1	100 µg	MAB4353
ID4, clone 10C6.2	H	ELISA, IC	Pur	M IgG_{2a}	100 µg	MAB4393
LEF-1, β catenin binding domain, clone REMB1	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3751

ANTIBODIES

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
LEF-1/TCG, HMG binding domain, clone REMB6	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3752
MELK, clone 6C1.3	H	WB	Pur	M $IgG_{2\kappa}$	100 µg	MAB4331
mGCM1, polyclonal	H	WB	APur	Rabbit	100 µg	AB3749
Mitochondria	H, Mk	WB, IC	Sera	Rabbit	100 µL	AB3598
Mitochondria, surface of intact mitochondria, clone 113-1	H	IP, IH, IH(P)	Pur	M IgG_1	100 µL	MAB1273
MSX2, polyclonal	H, M, R	WB	Pur	Rabbit	100 µg	AB10211
Nestin, clone rat-401	M, R, Not H	IC, WB, IH(P), IH	Asc	M IgG_1	100 µg	MAB353
Nestin, polyclonal	H, Not M or R	WB, IC, IH, IH(P)	Sera	Rabbit	50 µL	AB5922
Nestin, clone 10C2	H, Not M or R	WB, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB5326
Nestin, prediluted, clone rat-401	M, R	IH(P)	Pur	M IgG_1	6 mL	IHCR1006-6
NLK, polyclonal	H, M, R, Ch, Ca, Xn	WB	Pur	Rabbit	100 µg	AB10206
Nucleostemin	H	WB	Sera	Rabbit	50 µL	AB5689
Nucleostemin	M	WB	Sera	Rabbit	50 µL	AB5691
Nucleostemin, clone 9D5.3	H	IC	Pur	M $IgG_{2b\kappa}$	100 µg	MAB4311
Nuclear Ribonucleoprotein, clone 58-15	H, R	IF, IH, IH(P)	Pur	M IgM	100 µL	MAB1287
Nuclei, clone 235-1	H Only	IP, IH(P)	Pur	M IgG_1	100 µL	MAB1281
Nuclei, clone 3E1.3	H	FC, IC, IH	Pur	M IgG_1	100 µg	MAB4383
Polysialic Acid-NCAM (PSA-NCAM), clone 2-2B	M	WB, IC, IH, RIA	Asc	M IgM	50 µL	MAB5324
REN-1, clone 2G6.2	M, R	ELISA, WB, IC	Pur	M $IgG_{2b\kappa}$	100 µg	MAB4339
SDNSF (Neural Stem Cell Derived Neuronal Survival Protein), clone 2C4.2	M, H	WB, IC	Pur	M $IgG_{1\kappa}$	100 µg	MAB4324
Sox-2	H, M	WB	APur	Rabbit	100 µg	AB5603
Sox-2, clone 6F1.2	H, M	WB, FC	Pur	M IgG_{2b}	100 µg	MAB4343
SOX17, polyclonal	H, M	IC, WB	Sera	Rabbit	100 µL	09-038
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC-480	H, M	IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4301
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC-480, conjugated	H, M, R	IF, FC	A488	M IgM	100 µg	MAB4301X
VIN-2PB-22, clone VIN-2PB-22	Mam	FC, IC, IH	Pur	M IgM	100 µg	MAB4309
VIN-IS-56, clone VIN-IS-56	Mam	FC, IC, IH	Pur	M IgM	100 µg	MAB4308
ZIPRO1, polyclonal	M	WB	APur	Rabbit	100 µL	AB3733

Nestin, clone rat-401

Nestin, a large intermediate filament protein (class Type VI), is expressed during development and in myotendinous and neuromuscular junctions. However, Nestin expression is restricted, typically disappearing by E18. While Nestin is thought to be a reasonable neuronal marker, recent studies have found Nestin expression in other cell types such as endothelial cells (Mokry and Nemecek, 1998). Nestin identifies the most primitive neuroepithelium but also identifies many other embryonic tissues, so it is not specific for CNS. Nestin expression is seen in almost all GBMs (glioblastoma multiformes) and many melanomas (both primary and metastatic) but not in any metastatic carcinomas.



For a complete listing of antibodies, see pages 120-132.

Mesenchymal Stem Cells

In addition to hematopoietic stem cells, bone marrow contains progenitor/stem cells that not only play an important role in hematopoiesis, but also have the capacity to differentiate into osteoblasts, adipocytes, and chondroblasts. These cells, termed mesenchymal stem cells (MSCs), were first identified as adherent fibroblast-like cells when bone marrow was plated in medium containing fetal calf serum. Originally examined for their critical role in the formation of the hematopoietic microenvironment, MSCs have received additional attention due to their ability to form multiple cell types following differentiation. Until recently, it was believed that adult-derived stem cells, including MSCs, are restricted in their differentiation potential to lineages of their tissue of origin. However, recent evidence suggests that the bone marrow may contain progenitor cells, denoted multipotent adult progenitor cells (MAPCs). MAPCs, which co-purify with MSCs, have been shown to differentiate into neural cells, skeletal cells, cardiomyocytes, endothelial cells, and smooth muscle cells.

Millipore offers systems for culturing both human and rodent mesenchymal stem cells, serum-free media, unique osteogenesis and adipogenesis differentiation kits, characterization kits, and a full panel of mesenchymal stem cell markers.

CELLS

Human Mesenchymal Stem Cells (derived from bone marrow)

Coming Soon! Anticipated release date: October 09 – please see website for information on availability

Millipore's human mesenchymal stem cells are derived from human bone marrow. The cells stain positive for the MSC markers CD90, CD105, CD106, and STRO-1 and have been shown to differentiate efficiently into osteocytes and adipocytes. Adipocyte and osteocyte populations can be achieved using Millipore's mesenchymal stem cell adipocyte differentiation kit (Catalogue No. SCR020) and mesenchymal stem cell osteogenesis differentiation kit (Catalogue No. SCR028). Included in the kit are one vial of frozen cells along with 500 mL of mesenchymal expansion medium.

Description	Qty/Pk	Catalogue No.
Human Mesenchymal Stem Cells (derived from bone marrow)	***Coming Soon!*** Anticipated release date: October 09 – please see website for information on availability	SCR108
Mesenchymal Stem Cell Expansion Medium	500 mL	SCM015

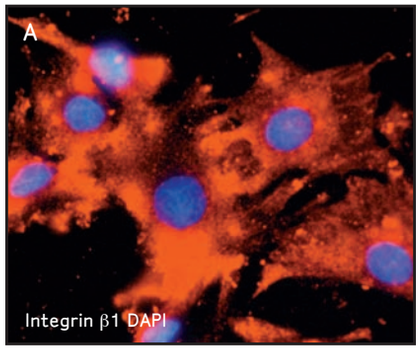
Human Neonatal Liver Cell Suspensions

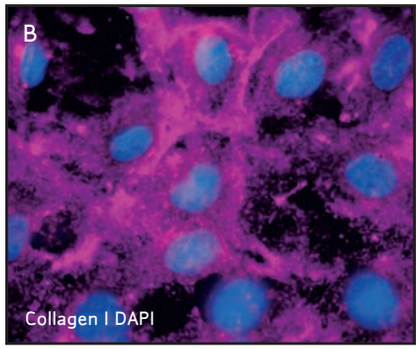
This cryopreserved human neonatal liver cell suspension is intended for use in the isolation of human liver progenitor cells. Neonate donors are an ideal source of human progenitor cells. While tissues procured from adult donors are more plentiful, the cell populations from adult donors produce fewer stem cells per gram of tissue than younger donors, and adult cells are capable of significantly fewer population doublings. In addition to progenitor cells, however, this neonate liver cell preparation contains a variety of differentiated cell types such as hepatocytes, hepatoblasts, endothelial cells, and cholangiocytes that must first be separated from the progenitor cell population. Because differentiated cells tend to be larger than progenitor cells, the progenitor cell population may be isolated manually using differential centrifugation. Alternatively, the selective expression of specific surface markers by the differentiated cell population may be used to sort this population by FACS.

Description	Qty/Pk	Catalogue No.
Human Neonatal Liver Cell Suspensions	> 2 x 10^6 cells	SCC001

Rat Mesenchymal Stem Cells

Millipore provides ready-to-use primary rat mesenchymal stem cells isolated from the bone marrow of adult Fisher 344 rats. Each lot of primary rat mesenchymal stem cells has been validated for high level of expression of two MSC markers (integrin β1 and CD54) and for their self-renewal and multilineage differentiation capacities as demonstrated by their ability to differentiate down adipocyte and osteocyte lineages.





Photos (right): Anti-integrin β 1 (A) and anti-collagen type I (B) staining of rat mesenchymal stem cells (Catalogue No. SCR027). Nuclei of the cells were visualized with DAPI (blue).

Description	Qty/Pk	Catalogue No.
Cryopreserved Rat Mesenchymal Stem Cells	> 1 x 10^6 cells	SCR027

MEDIA

Mesenchymal Stem Cell Expansion Medium

The mesenchymal stem cell expansion medium has been optimized and qualified for the maintenance and expansion of mesenchymal stem cells derived from human and rodent origins. Cells cultured in the mesenchymal stem cell expansion medium express the correct mesenchymal stem cell markers and are capable of differentiating into adipocytes and osteocytes.

Description	Qty/Pk	Catalogue No.
Mesenchymal Stem Cell Expansion Medium (1X)	500 mL	SCM015

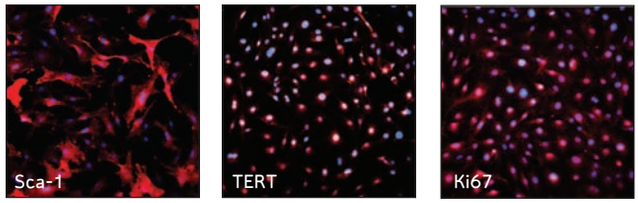
Mesenchymal Stem Cell Freezing Medium

The mesenchymal stem cell freezing medium has been qualified for use with mesenchymal stem cells of human and rodent origins that are cultured with Millipore's mesenchymal stem cell expansion medium (Catalogue No. SCM015). The optimized formulation allows for consistent cryopreservation and high viability upon thawing and plating.

Description	Qty/Pk	Catalogue No.
Mesenchymal Stem Cell Freezing Medium (1X)	50 mL	SCM016

Cardiac Stem Cell Maintenance Medium

The cardiac stem cell (CSC) maintenance medium has been optimized and qualified for the growth and expansion of cardiac stem cells isolated from rodents. Cells expanded in cardiac stem cell maintenance medium express the correct cardiac stem cell markers and have the capacity to differentiate into cardiomyocytes.

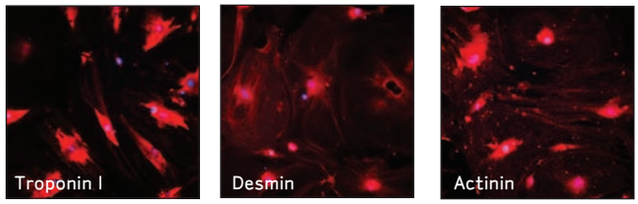


Cultured CSCs retain their stem cell characteristics. One-week cultures of purified CSCs ubiquitously express stem cell markers Sca-1 and telomerase, while remaining in a proliferative state as determined by Ki67 immunoreactivity.

Description	Qty/Pk	Catalogue No.
Cardiac Stem Cell Maintenance Medium	500 mL	SCM101

Cardiomyocyte Differentiation Medium

The cardiomyocyte differentiation medium has been optimized and qualified for the preferential differentiation of freshly isolated rodent cardiac stem cells to cardiomyocytes. Cardiac stem cells maintained in cardiomyocyte differentiation medium for 12-15 days differentiate into cardiomyocytes and express troponin I, desmin, and actinin.

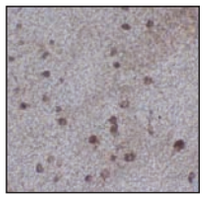


Cultured CSCs efficiently differentiate into cardiomyocytes. Differentiated CSCs express mature markers for cardiomyocytes (troponin I, desmin, and actinin).

Description	Qty/Pk	Catalogue No.
Cardiomyocyte Differentiation Medium	500 mL	SCM102

Pancreatic Cell DTZ Detection Assay

The pancreatic cell DTZ detection assay provides a simple and quick method to identify insulin-producing beta cells from a mixed cell culture preparation or from pancreatic tissues. The kit contains pre-mixed dithizone stain, a rinsing solution, and filters for fast preparation and optimized results. The assay takes advantage of the high zinc content of pancreatic beta cells and the zinc-chelating action of dithizone to provide a quick and simple enzymatic reaction. Along with selectively staining live pancreatic beta-islet cells crimson red, the enzymatic reaction has the advantage of being completely reversible. Sufficient reagents are supplied to provide for 10 enzymatic reactions at 10 mL volume.

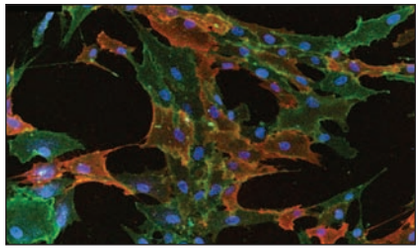


Selective DTZ staining of murine ES cells after 28 days of differentiation from EB outgrowths.

Description	Qty/Pk	Catalogue No.
Pancreatic Cell DTZ Detection Assay	I kit	SCR047

Human MSC Characterization Kit

Millipore's human mesenchymal stem cell characterization kit contains a panel of positive and negative selection markers for the characterization of the mesenchymal stem cell population in human samples. Positive markers include antibodies to cell-surface molecules present on mesenchymal stem cells: CD44, CD90, STRO-1, and CD146. In addition, two specific hematopoietic cell surface markers are provided as negative markers: CD14 (present on leukocytes) and CD19 (present on B-lymphocytes). The kit provides a convenient solution to fully and definitively characterize human mesenchymal stem cell populations.

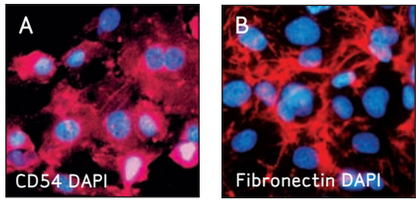


Immunocytochemical staining of cultured human bone marrow-derived mesenchymal stem cells stained with STRO-1 and CD90 antibodies provided in the kit. Nuclei of the cells were visualized with DAPI (blue).

Description	Qty/Pk	Catalogue No.
Human Mesenchymal Stem Cell Characterization Kit	1 kit	SCR067

Rat Mesenchymal Stem Cell Characterization Kit

The rat mesenchymal stem cell characterization kit contains a panel of positive and negative selection markers for the characterization of the mesenchymal stem cell population in rat samples. Positive cell markers include antibodies directed against cell-surface molecules (integrin β1 and CD54) present on mesenchymal stem cells, along with two extracellular matrix molecules (fibronectin and collagen type I) that are synthesized by cultured mesenchymal stem cells. Along with the positive selection markers, two specific hematopoietic cell surface markers (CD45, present on leukocytes, and CD14, present on monocytes, and macrophages) are provided as controls. Mouse and rabbit immunoglobulins for the assessment of background staining are also included.



Rat mesenchymal stem cells express mesenchymal stem cell markers: CD54 (A), and fibronectin (B). Nuclei of the cells were visualized with DAPI (blue).

Description	Qty/Pk	Catalogue No.
Rat Mesenchymal Stem Cell Characterization Kit	1 kit	SCR018

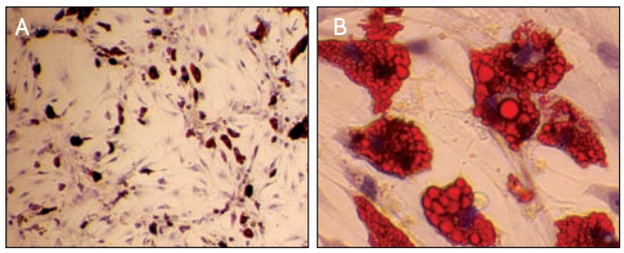
Rat Mesenchymal Stem Cell Kit

The rat mesenchymal stem cell kit provides ready-to-use primary mesenchymal stem cells isolated from the bone marrow of adult Fisher 344 rats, along with a panel of positive and negative selection markers for the characterization of the mesenchymal stem cell population. Positive cell markers include antibodies directed against two mesenchymal stem cell surface molecules (integrin β1 and CD54). Negative markers include antibodies directed against two specific hematopoietic cell surface markers (CD45, present on leukocytes, and CD14, present on monocytes and macrophages) that are not expressed by mesenchymal stem cells. Mouse and rabbit immunoglobulins for the assessment of background staining are also included. All of the antibodies provided in the kit have been tested and optimized for use in immunocytochemistry on rat mesenchymal stem cells.

Description	Qty/Pk	Catalogue No.
Rat Mesenchymal Stem Cell Kit	1 kit	SCR026

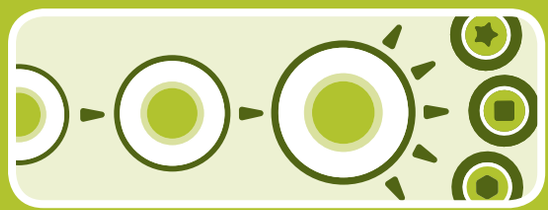
Mesenchymal Stem Cell Adipogenesis Kit

Millipore's mesenchymal stem cell adipogenesis kit contains reagents that readily differentiate mesenchymal stem cells to an adipogenic lineage as assessed with Oil Red O staining of lipid vacuoles in mature adipocytes. These factors include dexamethasone, IBMX, insulin and indomethacin. Along with Oil Red O staining solution, a hematoxylin solution is provided to counterstain the cell nucleus. Using this kit, we typically obtain >30% mature adipocytes from the rat bone marrow-derived mesenchymal stem cells (Catalogue No. SCR027). Efficiency may vary depending upon the quality of the mesenchymal stem cells and variations to the protocol. This kit has been shown to differentiate both rodent and human mesenchymal stem cells into adipocytes.



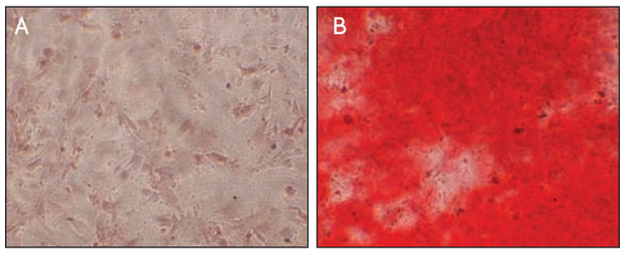
Using the mesenchymal stem cell adipogenesis kit, rat mesenchymal stem cells differentiated after 21 days to mature adipocytes as indicated by the accumulation of lipid vacuoles that stain with Oil Red O (A, 10x magnification; B, 40x magnification). Cell nuclei (purple) were stained with hematoxylin solution. Control rat skin fibroblast cells did not contain any lipid droplets (data not shown).

Description	Qty/Pk	Catalogue No.
Mesenchymal Stem Cell Adipogenesis Kit	1 kit	SCR020



Mesenchymal Stem Cell Osteogenesis Kit

The mesenchymal stem cell osteogenesis kit contains all the reagents and optimized protocols necessary to differentiate mesenchymal stem cells to an osteogenic lineage as assessed by Alizarin Red staining. Reagents in the kit include two ECM coating molecules (collagen type I and vitronectin) that have been shown to promote osteogenic differentiation of mesenchymal stem cells, along with inducing reagents (dexamethasone, ascorbic acid 2-phosphate, and β-glycerophosphate). Also included is Alizarin Red solution, a staining solution that is used to detect the presence of calcium in bone. Using this kit, we typically obtain >50% mature osteocytes from rat bone marrow derived mesenchymal stem cells. Efficiency may vary depending upon the quality of the mesenchymal stem cells and variations to the protocol. This kit has been shown to differentiate both rodent and human mesenchymal stem cells into osteocytes.

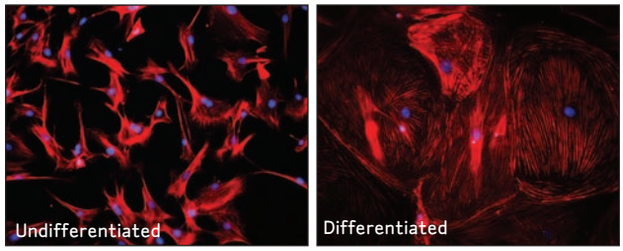


Using the mesenchymal stem cell osteogenesis kit, rat mesenchymal stem cells readily differentiated to an osteocyte lineage as indicated by Alizarin Red S (ARS) staining (B). ARS staining was not observed in control rat skin fibroblasts that were treated in the same manner (A). Alizarin red S staining demonstrates mineral deposition throughout the culture.

Description	Qty/Pk	Catalogue No.
Mesenchymal Stem Cell Osteogenesis Kit	1 kit	SCR028

Cardiac Stem Cell Isolation Kit

The cardiac stem cell isolation kit is an easy-to-use cell isolation kit that is capable of obtaining high-yield, pure population cardiac stem cells (CSCs). Included in the kit are ready-to-use isolation and dissociation buffers, five individually packaged Steriflip® filtration devices for the efficient and sterile separation of dissociated cells from ventricular tissues, two differential gradient solutions for the rapid purification of Sca-1 positive CSCs, a 500 mL bottle of cardiac stem cell maintenance medium for the expansion of acutely isolated CSCs, and a 500 mL bottle of cardiomyocyte differentiation medium for the preferential differentiation of isolated CSCs to cardiomyocytes.



Cardiac stem cells can be cultured *in vitro* and differentiated through selected use of defined growth or differentiation media. Fluorescent microscopy images of cultured CSCs and differentiated cardiomyocytes stained for F-actin. Note the presence of striated myofibrils present in the differentiated cells.

Description	Qty/Pk	Catalogue No.
Cardiac Stem Cell Isolation Kit	5 isolations/kit	SCR061

Mesenchymal Stem Cell Growth Factors

To expand MSCs *in vitro*, a combination of mitogenic factors including platelet derived growth factor (PDGF), epidermal growth factor (EGF), basic fibroblast growth factor (bFGF), transforming growth factor-β (TGFβ) and insulin like growth factor (IGF) have been indicated in the successful cell culture of MSCs. Millipore offers many recombinant proteins and growth factors suitable for the *in vitro* culture of MSCs. For a complete listing see page 101.

Description	Species	Qty/Pk	Catalogue No.
EGF, recombinant human	H	500 µg	01-407
EGF, culture grade	M	100 µg	01-101
EGF, recombinant human	H	100 µg	01-107
EGF, receptor grade	M	100 µg	01-102
Epidermal Growth Factor, recombinant human	H	500 µg	GF144
Epidermal Growth Factor, mouse tissue culture grade	M	100 µg	EA140
Epidermal Growth Factor, recombinant mouse	M	500 µg	GF155
FGF-1/acidic FGF, recombinant human	H	25 µg	01-116
Fibroblast Growth Factor acidic, recombinant human	H	50 µg	GF002
FGF-2/basic FGF, recombinant human	H	25 µg	01-106
Fibroblast Growth Factor basic peptide, synthetic, brain derived (1-24)	H, B	1 mg	FA011
Fibroblast Growth Factor basic, recombinant human	H	50 µg	GF003
Fibroblast Growth Factor basic, animal-free, recombinant human	H	50 µg	GF003-AF
Fibroblast Growth Factor basic, recombinant human	H	100 µg	GF003AF-100UG
Fibroblast Growth Factor basic, recombinant human	H	1 mg	GF003AF-MG
Fibroblast Growth Factor-4, recombinant human	H	25 µg	GF098
FGF-7/KGF, recombinant human	H	10 µg	01-118
Fibroblast Growth Factor-8, recombinant human	H	25 µg	GF110
Hepatocyte Growth Factor, recombinant human	H	10 µg	GF116
Heregulin-β3, EGF domain	–	100 µg	01-201
Insulin (Arg-Insulin)	H	10 mg	01-207
Insulin-like Growth Factor-I	H	25 µg	01-208
Insulin-like Growth Factor-I (resistant to IGFBPs)	H	25 µg	01-189
Insulin-like Growth Factor-I, biotin conjugate	H	2 µg	01-212

See page 2 for a list of abbreviations.

Description	Species	Qty/Pk	Catalogue No.
Insulin-like Growth Factor-I, recombinant human	H	100 µg	GF138
Insulin-like Growth Factor-I, recombinant mouse	M	50 µg	GF121
Insulin-like Growth Factor-II, recombinant human	H	50 µg	GF007
Insulin-like Growth Factor-II	H	25 µg	01-142
Interferon-γ, recombinant human	H	100 µg	IF002
Interferon-γ	H	50 µg	01-172
Interferon-γ, recombinant mouse	M	100 µg	IF005
Interferon-γ, recombinant rat	R	100 µg	IF006
Leptin, mouse	M	1 mg	GF050
Leukemia Inhibitory Factor, recombinant human	H	5 µg	LIF1005
Leukemia Inhibitory Factor, recombinant human	H	10 µg	LIF1010
Leukemia Inhibitory Factor, glycosylated human	H	10 µg	LIF1100
Leukemia Inhibitory Factor, recombinant mouse	M	5 µg	LIF2005
Leukemia Inhibitory Factor, recombinant mouse	M	10 µg	LIF2010
Leukemia Inhibitory Factor, recombinant rat	R	5 µg	LIF3005
Leukemia Inhibitory Factor, recombinant rat	R	10 µg	LIF3010
Osteoprotegerin, recombinant human	H	50 µg	GF120
PDGF-AA, recombinant human	H	10 µg	01-309
PDGF-AB, recombinant human	H	10 µg	01-310
PDGF-BB, recombinant human	H	10 µg	GF149
PDGF-BB, human	H	10 µg	01-305
Soluble RANK Ligand (sRANKL), recombinant human	H	10 µg	GF091
Transforming Growth Factor-β1, recombinant human	H	5 µg	GF111
Transforming Growth Factor-β2, recombinant human	H	5 µg	GF113
TWEAK, human	H	25 µg	GF102
Vascular Endothelial Growth Factor 165, recombinant mouse	M	10 µg	GF140
Vascular Endothelial Growth Factor, recombinant human, 165aa isoform	H	10 µg	GF094
VEGF, recombinant human	H	10 µg	01-185
Wnt-3a, recombinant mouse	M	5 µg	GF160
Wnt-5a, recombinant mouse	M	10 µg	GF146

See page 2 for a list of abbreviations.

EXTRACELLULAR MATRICES

ECMs & Attachment Factors

Extracellular matrix (ECM) proteins are produced intracellularly and are subsequently secreted into the surrounding cellular medium, actively regulating a diverse range of cell functions including cell adhesion, differentiation, proliferation, migration, invasion, and survival.

Description	Qty/Pk	Catalogue No.
Human Collagen Type I	100 µg	CC050
Human Fibronectin, cellular	1 mg	08-102
Human Plasma Fibronectin, purified protein	1 mg	FC010
Human Plasma Fibronectin, purified protein	5 mg	FC010-5MG
Human Plasma Fibronectin, purified protein	10 mg	FC010-10MG
Human Plasma Fibronectin, purified protein	100 mg	FC010-100MG
Human Vitronectin, purified protein	100 µg	CC080
Human Vitronectin, recombinant	500 µg	08-126
Human Tenascin-C, purified	100 µg	CC065
ECL Cell Attachment Matrix (EHS mouse tumor)	5 mg	08-110

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially available tool of its kind to enable researchers to not only quickly identify the best ECM protein for their cell culture environment, but also determine the concentration needed to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 Kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 Kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 Kit	ECM542

Millicoat Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

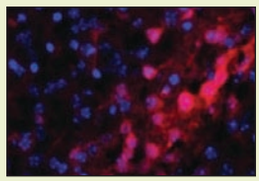
Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Collagen I Coating	5 plates	PICL06P05
Millicoat 24-well Plate with Collagen I Coating	5 plates	PICL24P05
Millicoat 6-well with Fibronectin Plate Coating	5 plates	PIFB06P05
Millicoat 24-well with Fibronectin Plate Coating	5 plates	PIFB24P05

For a complete listing of extracellular matrix proteins, please see pages 98-100.

ANTIBODIES

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Bone Morphogenetic Protein 1, CUB-2 domain	H	WB	APur	Rabbit	100 µg	AB81031
Bone Morphogenetic Protein 1, N-terminus	H	WB	APur	Rabbit	100 µg	AB81032
Bone Morphogenetic Protein 4, clone 3H2	H, M, R	ELISA, WB, IC, IH, IH(P)	Pur	M IgG_{2b}	100 µg	MAB1049
Bone Morphogenetic Protein 6, clone Morph-6.1	H, R	IH(P)	Pur	M IgG_1	100 µg	MAB1048
Brachyury, clone 3E4.2	H	WB	Pur	M $IgG_{1\kappa}$	100 µg	04-135
CD31 (PECAM-1), clone 390	M	IH, IP, FC	Pur	R IgG_{2a}	500 µg	CBL1337
CD31 (PECAM-1), clone HC1/6	H	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL468
CD34 Class I, clone B1-3C5	H	IF, FC	Pur	M IgG_1	100 µg	MAB4211
CD34 Class II, clone QBEND/10	H, Mky	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL496
CD34 Class III, clone 581	H	FC	Pur	M IgG_1	100 µg	CBL555
CD44 (HCAM), Pan, clone SFF-2	H	FC, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB4065
CD45 (LCA), clone 135-4C5, FITC conjugated	H	FC, IH	FITC	M IgG_{2b}	100 assays	CBL124F
CD45 (LCA), clone F10-89-4	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL124
CD45 (LCA), clone MEM 28	M	FC, WB, IH	Pur	R IgG	500 µg	CBL1326
CD54 (ICAM-1), clone 84H10	H, Not Ca	ABLK, FC, IH, IP	Pur	M IgG_1	100 µg	MAB1379
CD54 (ICAM-1), clone W-CAM-1	H	FC, IH(P)	Asc	M IgG_1	100 µL	MAB2130
CD71 (Transferrin Receptor)	H	EIA	Pur	Rabbit	100 µg	CBL47
CD90 (Thy-1), clone F15-42-1	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL415
CD90 (Thy-1.1), clone OX-7	R	FC, IH, IC	Pur	M IgG_1	100 µg	MAB1406
CD106 (VCAM-1), clone 1.G11B1	H, Po	EIA, FC, WB, IH	Pur	M IgG_1	100 µg	CBL206
CD106 (VCAM-1), clone MK-2	M	ABLK, FC, IH, IP	Pur	R IgG_1	500 µg	CBL1300
CD116 (GM-CSF-α Receptor), neutralizing, clone K21B7.17A	H	WB, IP, FC, NEUT	Pur	M IgG_{2a}	100 µg	MAB1037
CD133 (Prominin-1), clone 13A4	M	EM, FC, IP, WB, IH	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
CD133 (Prominin-1), clone 13A4, Alexa Fluor 488 conjugated	M	FC	A488	R $IgG_{1\kappa}$	100 µg	MAB4310X
c-Kit, clone YB5.B8	H	FC, IP, IH	Pur	M IgG_1	100 µg	MAB1162
c-Kit, clone YB5.B8, FITC conjugated	H	FC	FITC	M IgG_2	100 assays	MAB1162F

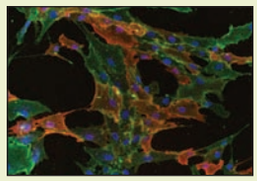
Bone morphogenetic protein 4 (BMP4) is a polypeptide belonging to the TGF-β superfamily of proteins. BMP4, like other bone morphogenetic proteins, is involved in bone and cartilage development, specifically tooth and limb development and fracture repair. Recent studies have also shown BMP-4 to be involved in muscle development, bone mineralization, and uteric bud development. In human embryonic development, BMP4 is a critical signalling molecule required for the early differentiation of the embryo and establishing of a dorsal-ventral axis.



See page 2 for a list of abbreviations.

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
c-Kit, clone YB5.B8, phycoerythrin conjugated	H	FC	PE	M IgG_3	100 assays	MAB1162H
Collagen I	M	IH	Pur	Rabbit	100 µg	AB765P
Collagen I, clone C11	H	EIA, IH	Pur	M IgG_1	100 µg	MAB1340
EVX2, polyclonal	M, R	WB	Pur	Rabbit	100 µg	AB10201
Fibronectin	M	EIA, IH, RIA	APur	Rabbit	100 µg	AB2033
Fibronectin, cellular, clone DH1	H, R, Rb	WB, IH	Pur	M IgG_1	100 µg	MAB1940
Fibronectin, clone P1H11	H	EIA, IC, IH, IP	Pur	M IgG_1	100 µg	MAB1926
Flk-1 (VEGFR-2, KDR), clone 4H3B6H9	M	EIA, FC, WB, IP	Pur	R IgG_{2a}	100 µg	MAB1147
Flk-1 (VEGFR-2, KDR)	H, M, Po	IP, WB, IC	Sera	Rabbit	100 µL	07-716
LEO1, polyclonal	H	WB	Sera	Rabbit	100 µL	AB10190
MEOX1, polyclonal	M, H, R	WB	Pur	Rabbit	100 µL	AB10202
MSX2, polyclonal	H, M, R	WB	Pur	Rabbit	100 µg	AB10211
Nucleostemin, polyclonal	H	WB	Sera	Rabbit	50 µL	AB5689
Nucleostemin, polyclonal	M	WB	Sera	Rabbit	50 µL	AB5691
OSTERIX, polyclonal	H	WB	APur	Rabbit	100 µg	AB3743
PTF1A, polyclonal	M	WB	APur	Rabbit	100 µL	AB3725
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC 480	H, M, R	IH, IP, IF, FC	Pur	M IgMs	100 µg	MAB4301
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC 480, conjugated	H, M, R	IF, FC	A488	M IgMs	100 µg	MAB4301X
STRO-1, clone STRO-1	H, Pm	FC, IF, IC			100 µL	MAB4315

STRO-1 is a cell surface protein expressed by bone marrow stromal cells and erythroid precursors. The subset of marrow cells that express the STRO-1 antigen are capable of differentiating into multiple mesenchymal lineages including hematopoiesis-supportive stromal cells with a vascular smooth muscle-like phenotype, as well as adipocytes, osteoblasts, and chondrocytes.



See page 2 for a list of abbreviations.
For a complete listing of antibodies, see pages 120-132.

Hematopoietic Stem Cells

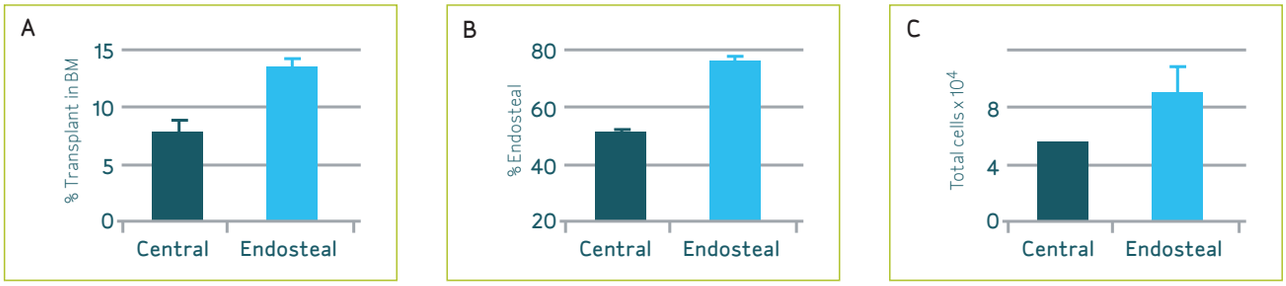
Hematopoietic stem cells (HSCs) generate every lineage found in the hematopoietic system, including erythroid cells, megakarocytes and a variety of lymphoid and myeloid cells. Research in this field has led to many scientific advances, and now hematopoietic stem cell transplants are being commonly used for the treatment of hematological malignancies and cancers, as well as in gene therapy studies. To assist with overcoming the numerous technical barriers associated with the manipulation of HSCs in the laboratory, Millipore is committed to providing you with a broad range of solutions for the purification, expansion, and characterization of your hematopoietic stem cells.

KITS

Bone Marrow Harvesting and Hematopoietic Stem Cell Isolation Kit

The vast majority of studies involving HSC isolation and subsetting have been performed using mouse bone marrow obtained by flushing the marrow from bones using a needle and syringe. Although this methodology is widely used, there can be considerable variation in the recovery of total cells and HSCs, which is attributed to the gauge of the needle and the amount of force and volume of phosphate buffered saline (PBS) used for flushing. In fact, often the exact details of marrow harvesting by the flushing method are frequently not given in the published scientific literature.

The bone marrow harvesting and hematopoietic stem cell isolation kit allows the optimal recovery of total cells and HSCs from mouse bones. It also uniquely permits the isolation of HSCs specifically from the endosteal region by using a combination of mechanical fragmentation by grinding of bones and enzymatic digestion. Using this method, HSCs isolated specifically from the endosteum have been demonstrated to have a greater hematopoietic potential than HSCs isolated from the central marrow core. Cells isolated with this kit demonstrate a 1.8-fold greater proliferative potential, an almost 2-fold greater ability to home to the bone marrow following tail vein injection, and a significantly greater long-term hematopoietic reconstitution potential (Haylock, D. *et al*. Stem Cells, 2007). Additionally, this method has been shown to produce a 6-fold greater recovery of primitive HSCs (lineage$^-$, Sca-1$^+$, and c-Kit$^+$) than traditional flushing methods.



HSCs within the endosteal region have significantly increased homing efficiency to the bone marrow (A) and increased ability to lodge within the endosteal region (B). HSCs within the endosteal region have significantly increased proliferative potential *in vitro* (C).

Description	Qty/Pk	Catalogue No.
Bone Marrow Harvesting and Hematopoietic Stem Cell Isolation Kit	10 isolations/kit	SCR051

Hematopoietic Stem Cell Growth Factors

HSC expansion represents an important challenge for stem cell biology. The development of efficient expansion methods would reduce the burden of operative bone marrow transplants for therapeutic applications of this cell type. Additionally, the ability to maintain proliferating HSCs *in vitro* is critical for gene therapy protocols. Combinations of growth factors trialed for *ex vivo* expansion include TPO, IL-6 & IL-11, IL-3, SCF and Flt-3 ligand, G-CSF and MGDF. Recent studies suggest that LIF plays an important role in the development of *ex vivo* expansion systems for murine and human HSCs. Millipore's range of cytokines and growth factors provides researchers with a choice of high quality growth factors for the *ex vivo* expansion of HSCs.

Description	Species	Qty/Pk	Catalogue No.
Fas Ligand, membrane bound	H	500 ng	01-210
Flt-3 Ligand, recombinant human	H	10 µg	GF038
Granulocyte Colony-Stimulating Factor, recombinant human	H	10 µg	GF051
Granulocyte Colony-Stimulating Factor, recombinant mouse	M	10 µg	GF059
Granulocyte-Macrophage Colony-Stimulating Factor, recombinant human	H	10 µg	GF004
Granulocyte-Macrophage Colony-Stimulating Factor, recombinant mouse	M	10 µg	GF026
Insulin-like Growth Factor-I, recombinant human	H	100 µg	GF138
Interferon-γ	H	50 µg	01-172
Interferon-γ, recombinant human	H	100 µg	IF002
Interferon-γ, recombinant mouse	M	100 µg	IF005
Interferon-γ, recombinant rat	R	100 µg	IF006
Interleukin-1β, recombinant human	H	10 µg	IL038
Interleukin-1β, recombinant mouse	M	10 µg	IL014
Interleukin-1β, recombinant rat	R	10 µg	IL024
Interleukin-2, recombinant human	H	50 µg	IL002
Interleukin-2, recombinant mouse	M	20 µg	IL031
Interleukin-3, recombinant human	H	10 µg	IL003
Interleukin-3, recombinant mouse	M	10 µg	IL015
Interleukin-4, recombinant human	H	10 µg	IL004
Interleukin-4, recombinant mouse	M	10 µg	IL016
Interleukin-4, recombinant rat	R	10 µg	IL037
Interleukin-6, recombinant human	H	25 µg	01-156
Interleukin-6, recombinant human	H	20 µg	IL006
Interleukin-6, recombinant mouse	M	10 µg	IL017
Interleukin-6, recombinant rat	R	10 µg	IL025
Interleukin-7, recombinant human	H	10 µg	IL007
Interleukin-8, recombinant human, (72 amino acid form)	H	25 µg	IL008
Interleukin-10, recombinant human	H	10 µg	IL010

Description	Species	Qty/Pk	Catalogue No.
Interleukin-10, recombinant mouse	M	10 µg	IL020
Interleukin-10, recombinant rat	R	10 µg	IL035
Interleukin-11, recombinant	H	10 µg	IL011
Interleukin-12, recombinant human	H	10 µg	IL029
Interleukin-12, recombinant mouse	M	10 µg	IL032
Interleukin-15, recombinant human	H	10 µg	IL013
Leukemia Inhibitory Factor, recombinant human	H	5 µg	LIF1005
Leukemia Inhibitory Factor, recombinant human	H	10 µg	LIF1010
Leukemia Inhibitory Factor, glycosylated human	H	10 µg	LIF1100
Leukemia Inhibitory Factor, recombinant mouse	M	5 µg	LIF2005
Leukemia Inhibitory Factor, recombinant mouse	M	10 µg	LIF2010
Leukemia Inhibitory Factor, recombinant rat	R	5 µg	LIF3005
Leukemia Inhibitory Factor, recombinant rat	R	10 µg	LIF3010
Macrophage Inflammatory Protein-1α, recombinant human	H	20 µg	GF010
Macrophage Inflammatory Protein-1α, recombinant rat	R	20 µg	GF048
Macrophage Inflammatory Protein-3α, recombinant human	H	20 µg	GF069
Macrophage-Colony Stimulating Factor, recombinant human	H	10 µg	GF053
Monocyte Chemotactic Protein-1, recombinant human	H	20 µg	GF012
Monocyte Chemotactic Protein-1, recombinant rat	R	10 µg	GF041
PDGF-AA, recombinant human	H	10 µg	01-309
PDGF-AB, recombinant human	H	10 µg	01-310
PDGF-BB, recombinant human	H	10 µg	GF149
PDGF-BB, recombinant human	H	10 µg	01-305
SDF-1α, synthetic	H	50 µg	01-190
Soluble Tumor Necrosis Factor Receptor Type I, recombinant human	H	20 µg	GF103
Stem Cell Factor, recombinant human	H	10 µg	GF021
Stem Cell Factor, recombinant mouse	M	10 µg	GF141
Stromal Cell-Derived Factor-1α, recombinant human	H	10 µg	GF073
Stromal Cell-Derived Factor-1α, recombinant mouse	M	10 µg	GF128
Stromal Cell-Derived Factor-1β, recombinant human	H	10 µg	GF074
Thrombopoietin	H	10 µg	GF037
TRAIL, recombinant human	H	50 µg	GF092
TNFα, recombinant	H	10 µg	01-164
Tumor Necrosis Factor-α, recombinant human	H	50 µg	GF023
Tumor Necrosis Factor-α, recombinant mouse	M	20 µg	GF027
Tumor Necrosis Factor-α, recombinant rat	R	20 µg	GF046
Vascular Endothelial Growth Factor 165, recombinant mouse	M	10 µg	GF140
Vascular Endothelial Growth Factor, recombinant human, 165aa isoform	H	10 µg	GF094
VEGF, recombinant human	H	10 µg	01-185

EXTRACELLULAR MATRICES

ECMs & Attachment Factors

Extracellular matrix (ECM) proteins are produced intracellularly and are subsequently secreted into the surrounding cellular medium, actively regulating a diverse range of cell functions including cell adhesion, differentiation, proliferation, migration, invasion, and survival.

Description	Qty/Pk	Catalogue No.
Human Collagen Type III	100 µg	CC054
Bovine Collagen Type III	500 µg	CC081
Bovine Collagen Type III	10 mg	CC078
Human Collagen Type IV	100 µg	CC076
Bovine Collagen Type IV	500 µg	CC083
Human Laminin (pepsinized), purified protein	100 µg	AG56P
Mouse Laminin, purified	1 mg	CC095
Mouse Laminin, purified	2 mg	08-125
Human Fibronectin, cellular	1 mg	08-102
Human Plasma Fibronectin, purified protein	1 mg	FC010
Human Plasma Fibronectin, purified protein	5 mg	FC010-5MG
Human Plasma Fibronectin, purified protein	10 mg	FC010-10MG
Human Plasma Fibronectin, purified protein	100 mg	FC010-100MG
Bovine Fibronectin, purified	500 µg	FC014

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially available tool of its kind to enable researchers to not only quickly identify the best ECM protein for their cell culture environment, but also determine the concentration needed to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 kit	ECM542

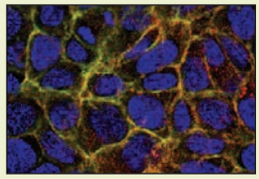
Millicoat Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Fibronectin Coating	5 plates	PIFB06P05
Millicoat 24-well Plate with Fibronectin Coating	5 plates	PIFB24P05

For a complete listing of extracellular matrix proteins, please see pages 98-100.

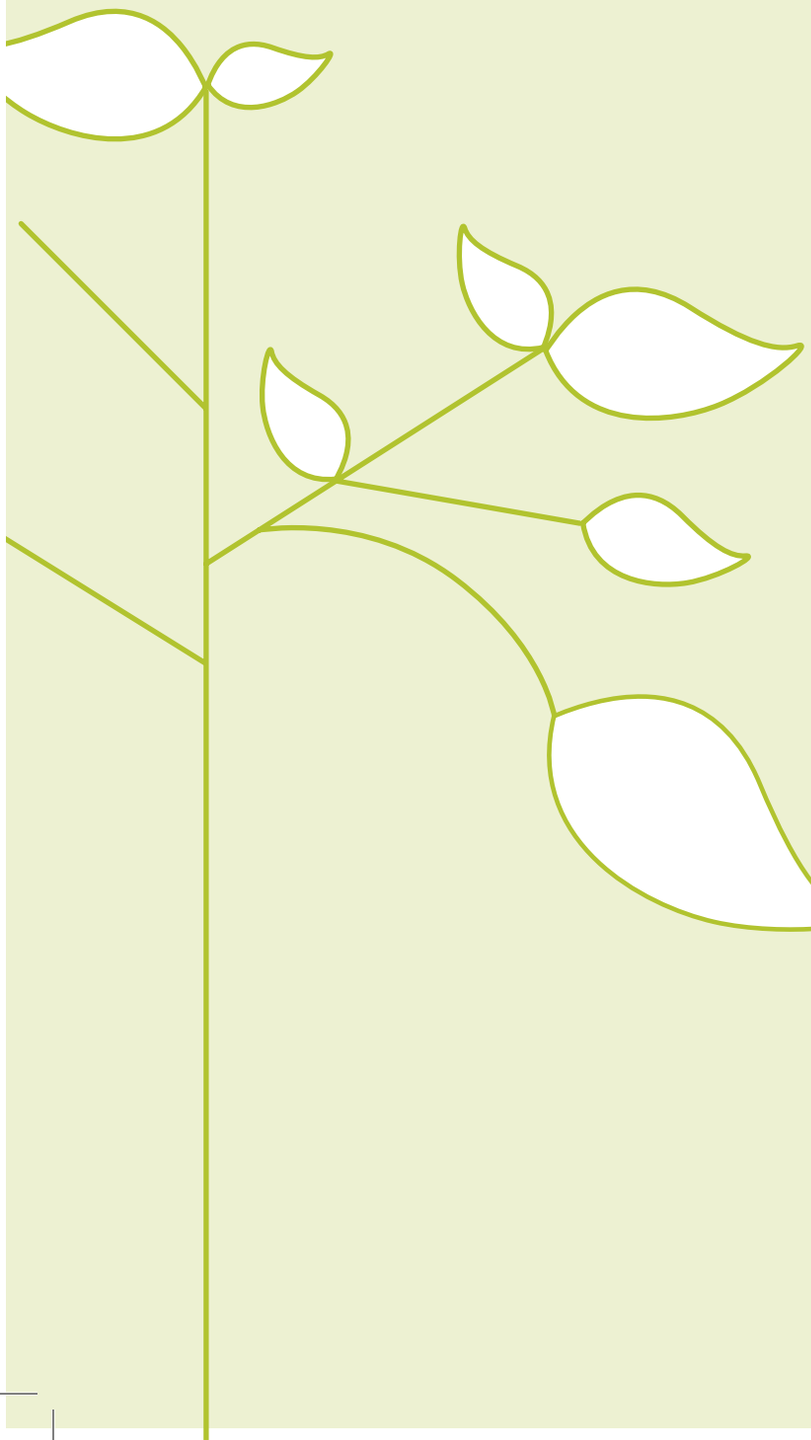
ANTIBODIES

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
BCRP (ABCG2), clone BXP-21	H	WB, IC, IH, IH(P)	Sup	M IgG_{2a}	100 µg	MAB4146
BCRP1 (ABCG2), clone 5D3	H	IC, FC, INHIB	Pur	M IgG_{2b}	100 µg	MAB4155
Breast cancer resistance protein (BCRP1), also known as placenta-specific ATP-binding cassette G-subfamily member 2 (ABCG2), is a member of the ATP-binding cassette superfamily of drug transporters thought to be involved in multi-drug resistance in human neoplastic disease. Several studies indicate that ABCG2 is expressed in stem cells of different tissues, and is thought to be responsible for the ability of a population of very primitive hematopoietic and non-hematopoietic cells, the so-called SP (side population) subset, to efflux the Hoechst 33342 fluorescent dye. 						
BCRP1 (ABCG2), clone 5D3, phycoerythrin conjugated	H	IC, FC	PE	M IgG_{2b}	100 tests	MAB4155P
BCRP1 (ABCG2), clone 5D3, FITC conjugated	H	IC, FC	FITC	M IgG_{2b}	100 tests	MAB4155F
CD3 (TCR), clone UCHT1	H, Not Mk	IH, IP, IF, FC, STIM	Pur	M IgG_{1}	100 µg	CBL150
CD4 (L3T4), clone OX-38	R	FC, IH	Pur	M IgG_{2a}	500 µg	CBL1506
CD4 (L3T4), intracellular, clone 024-10D6.B3	H	EIA, IC, FUNC	Pur	M IgG_{1}	100 µg	MAB3706
CD10 (CALLA, Neprilysin)	H, M, R	WB, IH	Ser	Rabbit	500 µL	AB5458
CD14 (LPS Receptor), clone UCHM-1	H, Mk	IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL453
CD15 (Lewis X, 3-FAL), clone ZC-18C, FITC conjugated	H	FC, IF	FITC	M IgM	50 assays	MAB1205F
CD15 (Lewis X, 3-FAL), clone DT07 and BC97, IHC Select®, prediluted	H	IH(P)	Pur	M IgM	6 mL	IHC2108-6
CD16 (FcγRIII), clone GRM1	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL541
CD19 (B4), clone HD37	H	IH, IP, FC	Pur	M IgG_{1}	100 µg	CBL582
CD20 (B1), C-terminus	H, M	IH(P), WB, IP	Pur	Rb IgG	100 µL	04-455
CD24 (Heat Stable Antigen), clone SN3	H	IH, IP, FC	Pur	M IgG_{1}	100 µg	CBL561
CD33 (gp67), clone WM53	H	WB, IH, IP, FC	Pur	M IgG_{1}	100 µg	CBL163
CD34 Class I, clone B1-3C5	H	IF, FC	Pur	M IgG_{1}	100 µg	MAB4211
CD34 Class II, clone QBEND/10	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_{1}	100 µg	CBL496
CD34 Class III, clone 581	H	FC	Pur	M IgG_{1}	100 µg	CBL555
CD36 (Platelet glycoprotein IV), clone SM-phi	H	WB, IH, FC	Pur	M IgM	100 µg	CBL168
CD45 (LCA), clone F10-89-4	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL124
CD45 (LCA), clone IBL-5/25	M	FC, WB, IH	Pur	R IgG	500 µg	CBL1326
CD45RA, clone F8-11-13	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_{1}	100 µg	CBL121
CD56 (NCAM)	H, M, Ch	WB, IH, BLK, EIA	APur	Rabbit	50 µg	AB5032
CD56 (NCAM), clone MEM 188, phycoerythrin conjugated	H, Mk	FC	PE	M IgG_{2a}	100 assays	CBL510P
CD59 (Protectin), clone MEM-43, FITC conjugated	H	FC	FITC	M IgG_{2a}	100 assays	CBL467F
CD59 (Protectin), clone MEM-43, phycoerythrin conjugated	H	FC	PE	M IgG_{2a}	100 assays	CBL467
CD90 (Thy-1), clone F15-42-1	H	IH, IP, FC	Pur	M IgG_{1}	100 µg	CBL415
CD93 (C1qRp), clone R139	H	WB, IC, IP, FC	Pur	M IgG_{2b}	100 µg	MAB4314
CD93 (C1qRp), clone R3, Alexa Fluor 488 conjugated	H	FC	A488	M IgM	100 µg	MAB4313X

ANTIBODIES

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
CD117 (c-kit, SCF Receptor), clone ACK2	M	FC	Pur	R $IgG_{2b\kappa}$	500 µg	CBL1360
CD117 (c-kit), clone YB5.B8	H	FC, IP, IH	Pur	M IgG_1	100 µg	MAB1162
CD117 (c-kit), clone YB5.B8, FITC conjugated	H	FC	FITC	M IgG_2	100 assays	MAB1162F
CD133 (Prominin-1), clone 13A4	M	EM, FC, IP, WB, IH	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
CD133 (Prominin-1), clone 13A4, Alexa Fluor 488 conjugated	M	FC	A488	R $IgG_{1\kappa}$	100 µg	MAB4310X
C-X-C Chemokine Receptor 4 (CD184, CXCR4), extracellular loop	H	WB	Pur	Rabbit	100 µg	AB1847
C-X-C Chemokine Receptor 4 (CD184, CXCR4), N-terminus	H	WB, IC, IP	Pur	Rabbit	100 µg	AB1846
Dishevelled-1	H	WB	APur	Rabbit	50 µL	AB5970
Dishevelled-2	H, M	WB, IH	Pur	Rabbit	50 µL	AB5972
Dishevelled-3	H, M	WB	Pur	Rabbit	50 µL	AB5974
Glycophorin A (CD235a), clone CMRF14	H	FC	Pur	M IgG_{2b}	100 µg	MAB3432
Human Leukemia Inhibitory Factor, clone 4F7.2	H, M	ELISA, WB	Pur	M IgG_1	100 µg	MAB4306
IHH, polyclonal	M, H, R, Ca, Eq, B	WB	Pur	Rabbit	100 µg	AB10212
Integrin $\alpha2\beta1$ (VLA-2), clone BHA2.1	H, Po	IH, IP, BLK, FC, IH(P)	Pur	M $IgG_{1\kappa}$	100 µg	MAB1998
Integrin $\alpha2\beta1$ (VLA-2), clone BMA2.1	M	IP, BLK, FC	Pur	R IgG_1	100 µg	MAB2141Z
Integrin $\alpha4$ (CD49d), clone P1H4	H, Pm	IC, IH, IP, BLK, EIA, FC	Pur	M IgG_1	100 µg	MAB16983
Integrin $\alpha4$ (VLA-4, CD49d), clone PS/2	M	IH, IP, IF, FC, INHIB	Pur	R $IgG_{2b\kappa}$	500 µg	CBL1304
Integrin $\alpha5\beta1$ (VLA-5), clone BMA5	M	IP, BLK, FC, Not WB	Asc	R $IgG_{2b\kappa}$	100 µL	MAB1984
Integrin $\alpha5\beta1$ (VLA-5), clone JBS5	H, Mk	IH, IH(P), IP, BLK	Asc	M IgG	100 µL	MAB1969
Integrin $\alpha6$ (CD49f), clone MA6	M	IH, IP, FC, notWB	Pur	R IgG_2k	100 µg	MAB1982
Integrin $\alpha6\beta1$ (VLA-6), clone 5A	R	IH, EIA	Asc	M IgG_1	100 µL	MAB1410
LEF-1, β catenin binding domain, clone REMB1	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3751
LEF-1/TCF, HMG binding domain, clone REMB6	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3752
MDR1 (p-Glycoprotein, CD243, p-170), clone UIC2	H, Pm, Not M or R	IH, IH(P), FC, IF, Blk, IP	Pur	M IgG_{2a}	100 µg	MAB4334
MDR1 (p-Glycoprotein, CD243, p-170), clone UIC2	H, Pm, Not M or R	IH, IH(P), Blk, FC, IP	Biot	M IgG_{2a}	100 µg	MAB4334B
NLK, polyclonal	H, M, R, Ch, Ca, Xn	WB	Pur	Rabbit	100 µg	AB10206
Nuclear Erythroid Cell Surface Antigen, clone HAE9	H, Not M or R	FC, IP	Pur	M IgM	100 µg	MAB2115
Prominin-1 (CD133), clone 13A4	M, Not H or R	IC, IH, WB, IP, FC	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
SOX17 Polyclonal Antibody	H, M	IC, WB	Ser	Rabbit	100 µL	09-038
Stem Cell Factor	M	ELISA, WB, NEUT	APur	Rabiit	50 µg	AB1498P
Stromal Cell-Derived Factor-1α (SDF-1α)	H	WB, EIA	APur	Rabbit	50 µg	AB1868P

Primary Cells



Primary Cells

Primary cells are isolated directly from donor tissue and are not immortalized, transformed, or cultured for many passages. As a result, they tend to offer better models of *in vivo* cell growth and development. Primary cells can be difficult to isolate and grow, so Millipore has developed a number of products for their isolation, culture, and characterization. Cryopreserved primary cells from several tissue types are also available. Popular items include endothelial and epithelial primary cells and progenitor cell targeted (PCT) culture media from CELLnTEC.

Endothelial Cells

A better understanding of endothelial cell biology is essential for the development of new methodologies to treat cancer, promote vascular healing, provide suitable coatings for vascular grafts, and deliver toxins to tumor vascular beds.

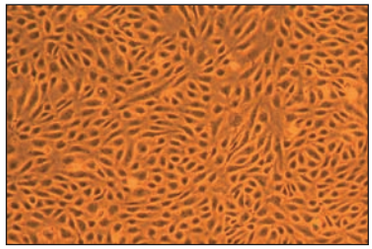
Angiogenesis, the formation of new blood vessels, occurs during embryonic development and adult life. Traditionally, it was believed that the formation of the fetal capillary network from migrating endothelial precursor cells was restricted to early embryonic development, while blood vessels in an adult organism are derived from endothelial cells located *in situ*. However, recent evidence suggests that endothelial precursor cells residing remotely from the site of neoangiogenesis may play an important physiological role in postnatal endothelialization.

Millipore offers advanced media formulations for the culture of large vessel and microvascular endothelial cells, as well as low passage human umbilical vein endothelial cells (HUVECs), cell based assays, and a wide range of markers and characterization kits to further vascular biology research.

CELLS

EndoGRO™ Human Umbilical Vein Endothelial Cells (HUVECs)

EndoGRO HUVECs are primary endothelial cells extracted from human neonatal umbilical cords. These cells are cultured for only one passage before cryopreservation to ensure the highest viability and plating efficiency. When cultured in EndoGRO low serum media formulations, EndoGRO HUVECs proliferate for at least 15 population doublings at rates equal to or greater than cells in standard serum-supplemented media. EndoGRO HUVECs have not been exposed to antimicrobials or phenol red, providing a model system with a more physiological environment.

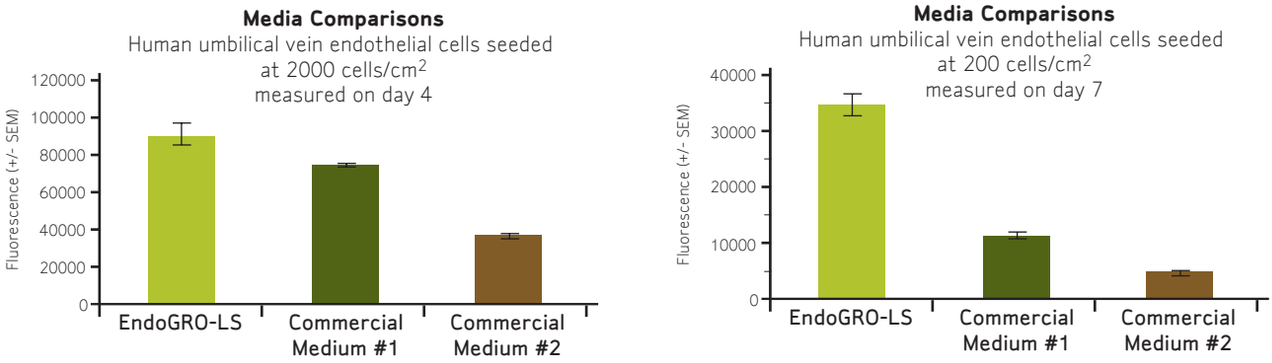


EndoGRO HUVECs, P2, 6 days after innoculation at 100x.

Description	Qty/Pk	Catalogue No.
EndoGRO Human Umbilical Vein Endothelial Cells	1 vial (5 x 10^5 cells)	SCCE001

MEDIA & SUPPLEMENTS FOR ENDOTHELIAL CELL CULTURE

EndoGRO media formulations provide an optimal cell culture environment for many types of endothelial cells, including HUVECs, aortic endothelial cells, and other human large vessel and microvascular endothelial cells. These media have been shown to grow endothelial cells at rates that meet or exceed commercially available serum containing media, while maintaining excellent cell morphology. The media are packaged in a specially designed UV protective shrinkwrap for added stability, and include a temperature gauge to help prevent contamination from repeated opening of media bottle. EndoGRO media do not contain antimicrobials or phenol red, components that can cause cell stress and masking effects that may influence experimental results. Four different media formulations are available for various applications and cell culture requirements.



A comparison of proliferation rates of HUVECs cultured in EndoGRO media and other commercially available media at two different seeding densities. EndoGRO media show superior proliferation at both seeding densities.

Media Format	Catalogue No.	Application	Notes
EndoGRO-LS	SCME001	Low serum culture of human endothelial cells, HUVECs, aortic endothelial cells, and other large vessel endothelial cells	Low serum formulation. Does not contain VEGF. Contains EndoGRO-LS growth supplement.
EndoGRO-VEGF	SCME002	Low serum formulation for rapid proliferation of human endothelial cells, HUVECs, aortic endothelial cells, and other large vessel endothelial cells	Low serum formulation. Contains VEGF. Rapid proliferation rates. Not appropriate for stimulation assays where VEGF is primary stimulator.
EndoGRO-MV-VEGF	SCME003	Low serum formulation for rapid proliferation of human microvascular endothelial cells	5% serum formulation. Contains VEGF. Not appropriate for stimulation assays where VEGF is primary stimulator.
EndoGRO-MV	SCME004	Low serum formulation for culturing human microvascular endothelial cells	5% serum formulation. Does not contain VEGF. Contains EndoGRO-LS growth supplement.

EndoGRO-LS Complete Media Kit

EndoGRO-LS is intended for low serum (2%) culture of human endothelial cells, HUVECs, aortic endothelial cells, and other large vessel endothelial cells. It does not contain VEGF.

Description	Qty/Pk	Catalogue No.
EndoGRO-LS Complete Media Kit	500 mL	SCME001

EndoGRO-VEGF Complete Media Kit

EndoGRO-VEGF is a low serum formulation that contains VEGF. It is intended for the rapid proliferation of human endothelial cells, HUVECs, aortic endothelial cells, and other large vessel endothelial cells.

Description	Qty/Pk	Catalogue No.
EndoGRO-VEGF Complete Media Kit	500 mL	SCME002

EndoGRO-MV-VEGF Complete Media Kit

EndoGRO-MV-VEGF is a low serum formulation intended for rapid proliferation of human microvascular endothelial cells.

Description	Qty/Pk	Catalogue No.
EndoGRO-MV-VEGF Complete Media Kit	500 mL	SCME003

EndoGRO-MV Complete Media Kit

EndoGRO-MV is a 5% serum formulation for culturing human microvascular endothelial cells. It does not contain VEGF.

Description	Qty/Pk	Catalogue No.
EndoGRO-MV Complete Media Kit	500 mL	SCME004

Endothelial Cell Growth Supplement

Millipore's endothelial cell growth supplement (ECGS) is mitogenic under reduced or serum-free conditions for many types of cells, such as mammalian, avian and human endothelial cells, smooth muscle cells, keratinocytes, melanocytes, and hybridomas. ECGS often fully substitutes for feeder layers in culture of fastidious cells. Millipore's ECGS is sourced from bovine hypothalamus and is routinely evaluated in a five day growth assay of fetal bovine heart endothelial cells.

Description	Qty/Pk	Catalogue No.
Endothelial Cell Growth Supplement, lyophilized	50 mg	02-101*
Endothelial Cell Growth Supplement, lyophilized	150 mg	02-102*

*Product not for sale in Japan

Bovine Pituitary Extract

Bovine pituitary extract (BPE) is broadly used to culture a variety of epithelial and endothelial cells under reduced or serum-free conditions. Millipore's BPE is routinely evaluated in a five day growth assay of fetal bovine heart endothelial cells.

Description	Qty/Pk	Catalogue No.
Bovine Pituitary Extract (BPE), lyophilized	50 mg	02-103*
Bovine Pituitary Extract (BPE), lyophilized	150 mg	02-104*

*Product not for sale in Japan

EXTRACELLULAR MATRICES

Millicoat Precoated Strips

For added convenience and flexibility in designing adhesion assays, the Millicoat cell adhesion strips are provided as 12 x 8-well removable strips in a plate frame. The wells in rows A - G have been coated with a single human ECM protein. Row H of each plate is coated with BSA, which serves as a negative assay control. The Millicoat ECM screening kit contains five individual 96-well plates—one each for fibronectin, vitronectin, laminin, collagen I, and collagen IV.

Description	Qty/Pk	Catalogue No.
Millicoat Human Fibronectin Coated Strips, 96 wells	1 plate	ECM101
Millicoat Human Vitronectin Coated Strips, 96 wells	1 plate	ECM102
Millicoat Human Laminin Coated Strips, 96 wells	1 plate	ECM103
Millicoat Human Collagen Type I Coated Strips, 96 wells	1 plate	ECM104
Millicoat Human Collagen Type IV Coated Strips, 96 wells	1 plate	ECM105
Millicoat ECM Screening Kit, 1 ea. ECM101-ECM105	1 kit	ECM205

Millicoat Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Collagen I Coating	5 plates	PICL06P05
Millicoat 24-well Plate with Collagen I Coating	5 plates	PICL24P05
Millicoat 6-well Plate with Poly-D-Lysine Coating	5 plates	PIDL06P05
Millicoat 24-well Plate with Poly-D-Lysine Coating	5 plates	PIDL24P05
Millicoat 6-well Plate with Fibronectin Coating	5 plates	PIFB06P05
Millicoat 24-well Plate with Fibronectin Coating	5 plates	PIFB24P05

ECM Cell Culture Optimization Arrays

The ECM Cell Culture Optimization Array is the first commercially available tool of its kind to enable researchers to not only quickly identify the best ECM protein for their cell culture environment, but also determine the concentration needed to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 kit	ECM542

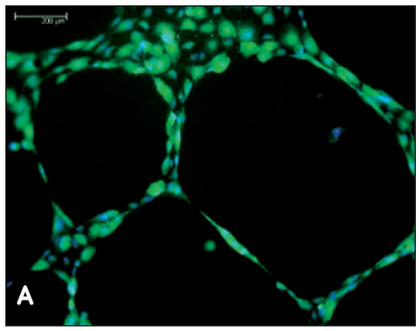
ECMs & Attachment Factors

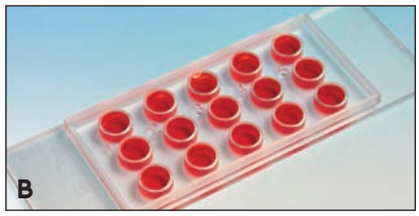
Please see pages 98-100 for a complete listing of extracellular matrix proteins.

Microscale Angiogenesis Assays

Angiogenesis is the process of forming new vessels from a pre-existing vascular network. This process is responsible for a majority of the vessel formation that occurs during embryogenesis and tissue generation, as well as in tissue repair, wound healing, and disorders such as diabetic retinopathy, rheumatoid arthritis, tumor growth, and metastasis. Compounds that contribute to angiogenic or anti-angiogenic activity are important factors in the development of effective disease treatments.

Millipore's Millicell µ-angiogenesis assays provide an efficient system for the evaluation of agents that either inhibit or activate tubular formation by endothelial cells. Each kit contains five 15-well microscale chamber slides which have been specifically designed for high-quality microscopic analysis, as well as the necessary reagents and controls to facilitate the screening of compounds that affect angiogenesis rates.



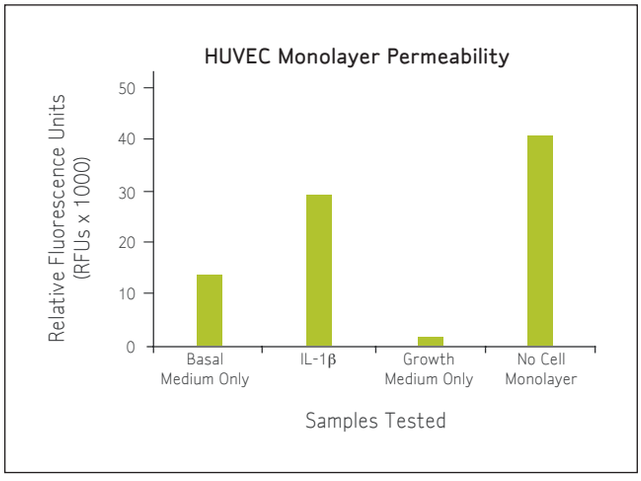


Photos (right): Fluorescent imaging of HMVEC (human microvascular endothelial cells) capillary-like tubular structures that were generated using the Millicell u-angiogenesis activation assay (A). A representative image of the 15-well microscale chamber slide is shown above (B).

Description	Qty/Pk	Catalogue No.
Millicell µ-Angiogenesis Inhibition Assay	1 kit	MMA125
Millicell µ-Angiogenesis Activation Assay	1 kit	MMA130

In Vitro Vascular Permeability Assay

In many diseases, the diffusion barriers that separate tissues and organs break down, resulting in microvascular hyperpermeability. The endothelial cell lining of blood vessels is one such semipermeable barrier, in this case, between the blood and the interstitial spaces of the body. The *in vitro* vascular permeability assay provides an efficient system for evaluating the effects of chemicals and drugs on endothelial cell adsorption, transport, and permeability.

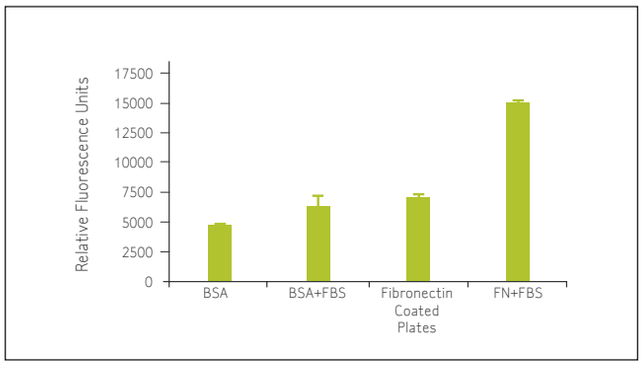


Graph (right): HUVEC cells were seeded and cultured. HUVEC monolayer permeability was tested after treatment with IL-1 in basal medium, with basal medium and growth medium only and without cell monolayer. The fluorescence of the plate well solution was determined using a standard fluorescence plate reader.

Description	Qty/Pk	Catalogue No.
In Vitro Vascular Permeability Assay	24 assays	ECM640

QCM™ Endothelial Cell Migration and Invasion Assays

The migration of endothelial cells is regulated by many angiogenic and anti-angiogenic factors. Migration and invasion assays from Millipore are specifically designed to monitor endothelial cells and/or conditions that activate them.

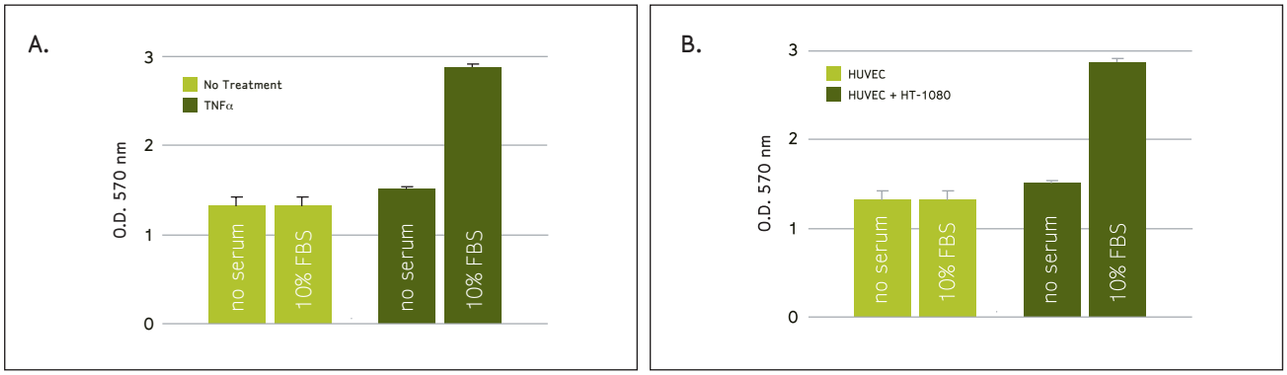


Graph (right): Endothelial migration (Catalogue No. ECM201) was conducted using the QCM endothelial cell migration assay - fluorometric (Catalogue No. ECM201). Using FBS as the chemoattractant, HUVECs were allowed to migrate for 18 hours under various control and test conditions. Migratory cells were stained and data captured as relative fluorescence units using a standard fluorescence plate reader.

Description	Qty/Pk	Catalogue No.
QCM 3 µm Endothelial Cell Migration Assay - fibronectin, colorimetric	12 assays	ECM200
QCM 3 µm Endothelial Cell Migration Assay - fibronectin, colorimetric	12 assays	ECM201
QCM Endothelial Cell Migration Assay, 96-well - fibronectin, fluorometric	96 assays	ECM202
QCM Endothelial Cell Invasion Assay, 24-well - ECMatrix™, colorimetric	24 assays	ECM210
QCM Endothelial Cell Invasion Assay, 24-well - ECMatrix, fluorometric	24 assays	ECM211

Transendothelial Migration Assay

In order for tumor cells to migrate from a primary tumor mass to distant locations, they must invade through the basal membrane and into blood vessels (intravasation), circulate in the bloodstream, survive during transport, then migrate out of a blood vessel (extravasation) to establish micrometastases. The penetration of circulating tumor cells into the endothelium is a crucial step in the process and can be effectively analyzed using Millipore's transendothelial cell migration assay. Additionally, a transendothelial system has been optimized for the migration of leukocytes into and out of the endothelium.



Transendothelial Migration of HT-1080 Tumor Cells (Catalogue No. ECM558)
A) Migration of stimulated (TNFα) and unstimulated HT-1080 cells through the endothelial layer using FBS as a chemoattractant. The data indicates that a reduced number of cancer cells are able to invade an activated endothelial cell system. Additionally, an inactive endothelial layer does not provide the appropriate signaling cascade for intravasation of tumor cells. B) HUVECs were grown to confluency on the provided cell culture inserts. HT-1080 cells were then added to the endothelial layer and left to migrate for 18 hrs. Migrated cells were stained and measured on a fluorescence microplate reader.

Description	Qty/Pk	Catalogue No.
QCM Leukocyte Transendothelial Migration Assay - colorimetric	24 assays	ECM557
QCM Tumor Cell Transendothelial Migration Assay - colorimetric	24 assays	ECM558

Epithelial Cells

The successful, reliable culture of epithelial cells is a critical element in many areas of research, including dermatology, respiratory research, and cancer research. The breakdown of control mechanisms in the epithelial cells of any given tissue is a cause for many cancers, so furthering our knowledge of epithelial cell biology is important for understanding cancer progression and metastasis.

Millipore offers a comprehensive range of media, cell systems, markers, and reagents for 2D and 3D epithelial cell culture, primary human epithelial cells and long-term animal epithelial cell cultures for high performance, reliable culture of multiple epithelial cell types.

Millipore is proud to be the worldwide distributor for the CELLnTEC range of media, cells, and reagents for epithelial cell culture. These media significantly improve isolation and growth of multiple types of epithelia, and are available in serum-free, feeder-free options for epithelial progenitor cell culture. Over 40 media formats are carefully optimized for multiple epithelia cell types, species, and applications to suit your needs perfectly. This comprehensive range of optimized media includes unique, revolutionary progenitor cell targeted (PCT) media that optimize the isolation and expansion of epithelial progenitors, and other specific optimized formulations for culture of epithelial cells.

CELLS

Primary Human Monolayer Cell Systems

CELLnTEC human cell systems are isolated in PCT media and provide cells with improved proliferation and longevity with further passage in PCT media. They retain their progenitor cell markers and ability for differentiation. Each cell system is comprised of a starter cell culture and 500 mL of the appropriate media. Cells from either a single donor or pooled donors are available.

Description	Species	Qty/Pk	Catalogue No.
Epidermal Keratinocyte Progenitors & Media Kit, pooled, human	H	> 5 x 10^5 cells + 500 mL of medium	HPEKP.05
Epidermal Keratinocyte Progenitors & Media Kit, pooled, human	H	> 1.5 x 10^6 cells + 500 mL of medium	HPEKP.15
Epidermal Keratinocyte Progenitors & Media Kit, single donor, human	H	> 5 x 10^5 cells + 500 mL of medium	HPEKS.05
Epidermal Keratinocyte Progenitors & Media Kit, single donor, human	H	> 1.5 x 10^6 cells + 500 mL of medium	HPEKS.15
Corneal Epithelium Progenitors & Media Kit, human, single donor	H	> 5 x 10^5 cells + 500 mL of medium	HCEP-05
Corneal Epithelium Progenitors & Media Kit, human, single donor	H	> 1.5 x 10^6 cells + 500 mL of medium	HCEP-15
Dermal Fibroblasts & Media Kit, human, single donor	H	> 5 x 10^5 cells + 500 mL of medium	HDFS-05
Bladder Epithelium Progenitors & Media Kit, human	H	> 5 x 10^5 cells + 500 mL of medium	HBEP-05
Bladder Epithelium Progenitors & Media Kit, human	H	> 1.5 x 10^6 cells + 500 mL of medium	HBEP-15
Gingival Epithelium Progenitors & Media Kit, human, single donor	H	> 5 x 10^5 cells + 500 mL of medium	HGEPS-05
Gingival Epithelium Progenitors & Media Kit, human, pooled donors	H	> 5 x 10^5 cells + 500 mL of medium	HGEPP-05
Gingival Epithelium Progenitors & Media Kit, human, pooled donors	H	> 1.5 x 10^6 cells + 500 mL of medium	HGEPP-15

Long-Term Animal Models

CELLnTEC's long term animal *in vitro* cell models are supplied cryopreserved at passage 25, and are guaranteed to provide an additional six months of growth (approximately 25 consecutive passages) when used with the recommended medium. They are not primary cultures, but they grow without the loss of modelling accuracy, and have the ability to differentiate fully. Each cell system is comprised of a starter cell culture and 500 mLs of the appropriate medium.

Description	Species	Qty/Pk	Catalogue No.
Dermal Fibroblasts & Media Kit, mouse (BalbC)	M	> 6 x 10^5 cells + 500 mL of medium	DF-BALBC
Epidermal Keratinocyte Progenitors & Media Kit, mouse (129)	M	> 6 x 10^5 cells + 500 mL of medium	MPEK-129
Epidermal Keratinocyte Progenitors & Media Kit, mouse (C57BL/6)	M	> 6 x 10^5 cells + 500 mL of medium	MPEK-BL6
Epidermal Keratinocyte Progenitors & Media Kit, mouse, (Rosa)	M	> 6 x 10^5 cells + 500 mL of medium	MPEK-ROSA
Dermal Fibroblasts & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	DF-R
Dermal Fibroblasts & Media Kit, rabbit	Rb	> 6.5 x 10^5 cells + 500 mL of medium	DF-B
Bladder Epithelium Progenitors & Media Kit, rat (Sprague Dawley)	R	> 6 x 10^5 cells + 500 mL of medium	RBLAK-SD
Bladder Epithelium Progenitors & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	RBLAK-WIS
Large Airway Epithelium Progenitors & Media Kit, rat (Sprague Dawley)	R	> 6 x 10^5 cells + 500 mL of medium	RLAK-SD
Large Airway Epithelium Progenitors & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	RLAK-WIS
Epidermal Keratinocyte Progenitors & Media Kit, rat (Sprague Dawley)	R	> 6 x 10^5 cells + 500 mL of medium	RPEK-SD
Epidermal Keratinocyte Progenitors & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	RPEK-WIS
Epidermal Keratinocyte Progenitors & Media Kit, dog	Ca	> 6.5 x 10^5 cells + 500 mL of medium	CPEK
Prostate Epithelium Progenitors & Media Kit, rat (Sprague Dawley)	R	> 6 x 10^5 cells + 500 mL of medium	RPROK-SD
Prostate Epithelium Progenitors & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	RPROK-WIS
Vaginal Keratinocyte Progenitors & Media Kit, rat (Wistar)	R	> 6 x 10^5 cells + 500 mL of medium	RPVAK-WIS
Small Airway Epithelium Progenitor Cells & Media Kit, rat (Sprague Dawley)	R	> 6 x 10^5 cells + 500 mL of medium	RSAK-SD
Small Airway Epithelium Progenitors & Media Kit, rat (Wistar)	R	> 6.5 x 10^5 cells + 500 mL of medium	RSAK-WIS
Vaginal Keratinocyte Progenitors & Media Kit	Rb	> 6.5 x 10^5 cells + 500 mL of medium	BPVAK

Millipore is proud to be the worldwide distributor for the CELLnTEC range of media.

Progenitor Cell Targeted (PCT) Technology Improves Isolation and Growth of Epithelial Cell Cultures

Millipore offers over 40 media formats that are carefully optimized for multiple epithelia cell types, species, and applications to suit your needs perfectly. These media significantly improve isolation and growth of multiple types of epithelia, and are available in serum-free and feeder-free options for epithelial cell culture. This comprehensive range of optimized media includes the unique, revolutionary Progenitor Cell Targeted (PCT) media. PCT media utilize a novel formulation exploiting the most recent discoveries in stem cell biology. By specifically mimicking the environment of the stem cell niche, PCT culture media maximize progenitor cell retention during isolation and establish a self renewing progenitor cell population that remains undifferentiated and enriches with subsequent passages. PCT media outperform traditional serum-containing and defined media, in isolation efficiency, growth and culture longevity, and CELLnTEC's novel low-BPE PCT media offer the highest possible isolation efficiency, growth, and longevity.

The benefits of PCT Media include

- High efficiency isolation of epithelial progenitor cells
- Reduced expansion time
- Increased *in vitro* longevity
- Serum-free, feeder free cell culture

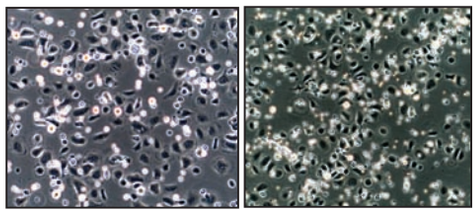
CELLnTEC Media are available in 3 formats:

- PCT Media (Defined)
  Serum-free, feeder-free media for superior isolation and growth of epithelial cells and epithelial progenitor cells.

- PCT Media (Low BPE)
  Combines the benefits of PCT technology with the growth boost of BPE for superior growth of epithelial cells and epithelial progenitor cells.

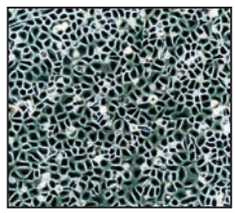
- Defined Media (Non-PCT)
  Optimized for differentiation of epithelial progenitor cells isolated and maintained in the corresponding PCT medium.

Epidermal Keratinocytes - passage 1, various culture media

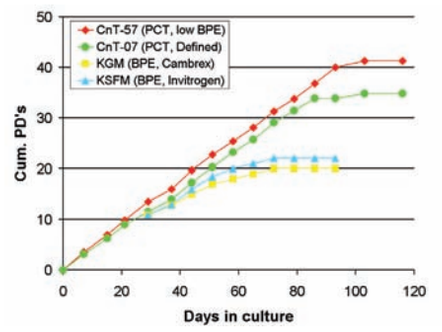


EMEM
Supplemented with serum and fibroblast conditioned medium

KGM®
A non-defined formulation containing BPE



CnT-07
Progenitor Cell Targeted, fully defined formulation



Colonies are formed from progenitor cells, thus colony forming efficiency is a key indicator of progenitor cell retention. As shown above, HPEK keratinocytes in PCT media provide significantly higher CFE than keratinocytes established in KSFM from Invitrogen® Corporation.

Please see the Media Selection Guide on page 86 to select the best media for your cell type and application.

Millipore is proud to be the worldwide distributor for the CELLnTEC range of epithelial cell culture products.

Airway

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Large Airway Epithelium Medium, defined	R	Defined, non-PCT	Differentiation/growth	500 mL	CNT-35
Small Airway Epithelium Medium, defined	R	Defined, non-PCT	Differentiation/growth	500 mL	CNT-34
Airway Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-23
PCT Airway Epithelium Medium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-17
PCT Large Airway Epithelium Medium, defined	R	PCT	Isolation/growth in defined environment	500 mL	CNT-15
PCT Small Airway Epithelium Medium, defined	R	PCT	Isolation/growth in defined environment	500 mL	CNT-14

Bladder

Description	Species	Format	Application	Qty/Pk	Catalogue No.
PCT Bladder Epithelium Medium	H	PCT	Isolation/growth in defined environment	500 mL	CNT-18
Bladder Epithelium Medium, defined	R	Defined, non-PCT	Differentiation/growth	500 mL	CNT-36
PCT Bladder Epithelium Medium, defined	R	PCT	Isolation/growth in defined environment	500 mL	CNT-16
Bladder Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-21
PCT Bladder Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient isolation/ growth, undefined conditions	500 mL	CNT-58

Cornea

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Corneal Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-30
PCT Corneal Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient Isolation/ growth, undefined conditions	500 mL	CNT-50
PCT Corneal Epithelium Medium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-20

Epidermal Keratinocyte

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Epidermal Keratinocyte Medium, defined, calcium-free	H/M	Defined, non-PCT	Differentiation/growth	500 mL	CNT-02CF
Epidermal Keratinocyte Medium, defined	H/M	Defined, non-PCT	Differentiation/growth	500 mL	CNT-02
Epidermal and Vaginal Epithelium Medium, defined	R	Defined, non-PCT	Differentiation/growth	500 mL	CNT-33
PCT Epidermal & Vaginal Epithelium Medium, defined	R	PCT	Isolation/growth in defined environment	500 mL	CNT-03
Epidermal Keratinocyte Medium, non-defined	Ca	Non-defined	Isolation/growth and differentiation	500 mL	CNT-09
PCT Epidermal Keratinocyte Medium, defined	H/M	PCT	Isolation/growth in defined environment	500 mL	CNT-07
PCT Epidermal Keratinocyte Medium, calcium-free	H/M	PCT	Isolation/growth in defined environment	500 mL	CNT-07CF
PCT Epidermal Keratinocyte Medium, low BPE	H	PCT/low BPE	Most efficient Isolation/ growth, undefined conditions	500 mL	CNT-57
PCT Epidermal Keratinocyte Medium, low BPE, calcium-free	H	PCT/low BPE	Most efficient Isolation/ growth, undefined conditions	500 mL	CNT-57CF

Fibroblast

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Dermal Fibroblast Medium, non-defined	H/M/R	Non-Defined	Growth	500 mL	CNT-05

Mammary

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Mammary Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-22
PCT Mammary Epithelium Medium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-27
PCT Mammary Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient isolation/ growth, undefined conditions	500 mL	CNT-54

Oral

Description	Species	Format	Application	Qty/Pk	Catalogue No.
Oral Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-32
PCT Oral Epithelium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-24

Prostate

Description	Species	Format	Application	Qty/Pk	Catalogue No.
PCT Prostate Epithelium Medium, defined	R	PCT	Isolation/growth in defined environment	500 mL	CNT-11
PCT Prostate Epithelium Medium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-12
PCT Prostate Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient isolation/ growth, undefined conditions	500 mL	CNT-52

Vaginal

Description	Species	Format	Application	Qty/Pk	Catalogue No.
PCT Vaginal Epithelium Medium, defined	H	PCT	Isolation/growth in defined environment	500 mL	CNT-19
Vaginal Epithelium Medium, defined	H	Defined, non-PCT	Differentiation/growth	500 mL	CNT-39
PCT Vaginal Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient Isolation/ growth, undefined conditions	500 mL	CNT-55
PCT Vaginal Epithelium Medium, low BPE	H	PCT/low BPE	Most efficient Isolation/ growth, undefined conditions	500 mL	CNT-03
Epidermal and Vaginal Epithelium Medium, defined	R	Defined, non-PCT	Differentiation/growth	500 mL	CNT-33

Epithelial Cell Culture Reagents

Description	Qty/Pk	Catalogue No.
Antibiotic/Antimycotic Solution (100X)	100 mL	CNT-ABM
Antibiotic/Antimycotic Solution, single aliquots (200X)	10 x 2.5 mL	CNT-ABM10
Antibiotic/Antimycotic Solution, single aliquots (200X)	20 x 2.5 mL	CNT-ABM20

Millipore is proud to be the worldwide distributor
for the CELLnTEC range of epithelial cell culture products.

Media Selection Guide

CELLnTEC Media are available in 3 formats:

- **PCT Media (Defined) –** Serum-free, feeder-free media for superior isolation and growth of epithelial cells and epithelial progenitor cells.
- **PCT Media (Low BPE) –** Combines the benefits of PCT technology with the growth boost of BPE for superior growth of epithelial cells and epithelial progenitor cells.
- **Defined Media (Non-PCT) –** Optimized for differentiation of epithelial progenitor cells isolated and maintained in the corresponding PCT medium.

Tissue	Species	PCT Medium (Defined)	PCT Medium (Low BPE)	Non-PCT (Differentiation)
Skin	H/M	CnT-07	CnT-57	CnT-02
	R	CnT-03		CnT-33
	Ca			CnT-09*
Prostate	H	CnT-12	CnT-52	
	R	CnT-11		
Airway	H	CnT-17		CnT-23
	R	CnT-14		CnT-34
	R	CnT-15		CnT-35
Mammary	H	CnT-27	CnT-54	CnT-22
Cornea	H	CnT-20	CnT-50	CnT-30
Oral	H	CnT-24		CnT-32
Vaginal	H	CnT-19	CnT-55	CnT-39
Bladder	H	CnT-18	CnT-58	CnT-21
	R	CnT-16		CnT-36
Fibroblasts	H/M			CnT-05*

*Contains serum, not BPE, and is used also for isolation.

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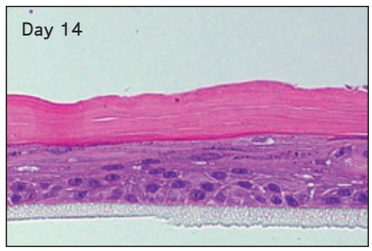
CELLnTEC Media Sampling Guide

Sample kits are available for all media types. Most kits contain a 100 mL sample of a defined PCT media, PCT/low BPE and a defined non-PCT formulation. Please contact your local sales representative to arrange a free sample.

Tissue	Species	Description	Sample kit contains 100 mL samples of the following CELLnTEC media	Catalog Code
Epidermis	H/M	Keratinocyte Media Sample Pack	CnT-07, CnT-57 & CnT-02	KMPSAMPLE
	R	Rat Epidermis Media Sample Pack	CnT-03 & CnT-33	RESPSAMPLE
	Ca	CnT-09 Medium Sample	CnT-09	CnT-09SAMPLE
Airway	H	Airway Media Sample Pack	CnT-17 & CnT-23	AMPSAMPLE
	R	Small Airway Sample Pack	CnT-14 & CnT-34	RSASPSAMPLE
	R	Large Airway Sample Pack	CnT-15 & CnT-35	RLASPSAMPLE
Bladder	R	Rat Bladder Media Sample Pack	CnT-16 & CnT-36	RBMPSAMPLE
Cornea	H	Corneal Media Sample Pack	CnT-20, CnT-50 & CnT-30	CMPSAMPLE
Dermis	H/M/R	CnT-05 Media Sample	CnT-05	CnT-05SAMPLE
Mammary	H	Mammary Media Sample Pack	CnT-27, CnT-54 & CnT-22	MMPSAMPLE
Oral	H	Oral Media Sample Pack	CnT-24 & CnT-32	OMPSAMPLE
Prostate	H	Prostate Media Sample Pack	CnT-12 & CnT-52	PMPSAMPLE
Vaginal	H	Vaginal Media Sample Pack	CnT-19, CnT-55 & CnT-39	VMPSAMPLE
	R	Rat Vaginal Media Sample Pack	CnT-03 & CnT-33	RVMPSAMPLE

3D Epidermal *In Vitro* Modelling with Epidermal Keratinocyte 3D Prime Medium

This novel 3D cell culture medium enables the easy and reliable generation of 3D epidermal models, when used with CELLnTEC human epidermal keratinocytes and Millipore's Millicell membrane inserts. Cells cultured in this medium generate an accurate 3D model of human epidermis, with all layers (stratum corneum, granulosum, spinosum, basale), within 14-18 days. The 3D medium is fully defined, serum-free, BPE-free, and specially formulated and optimized for 3D epidermal growth. Full, detailed protocols for establishment of 3D keratinocyte models and histological sectioning and staining are available.



3D Medium

Description	Qty/Pk	Catalogue No.
Epidermal Keratinocyte 3D Prime Medium, defined	100 mL	CnT-02-3DP1
Epidermal Keratinocyte 3D Prime Medium, defined	500 mL	CnT-02-3DP5

Related Products

Description	Catalogue No.
PCT Epidermal Keratinocyte Medium, low BPE (for 2D isolation and growth)	CnT-57
PCT Epidermal Keratinocyte Medium, defined (for 2D isolation and growth)	CnT-07
Human Epidermal Keratinocyte Progenitors, pooled donor, >5 x 10^5 cells	HPEKP.05
Human Epidermal Keratinocyte Progenitors, single donor, >5 x 10^5 cells	HPEKS.05
Millicell Single Well Inserts, PCF, 0.4 µm pore size, 6-well, 50/pk	PIHP03050
Millicell Single Well Inserts, PCF, 0.4 µm pore size, 24-well, 50/pk	PIHP01250

EXTRACELLULAR MATRICES

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially available tool of its kind to enable researchers to not only quickly identify the best ECM protein for their cell culture environment, but also determine the concentration needed to achieve optimal cell growth conditions.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array (colorimetric, 96 wells)	1 Kit	ECM541
ECM Cell Culture Optimization Array (fluorometric, 96 wells)	1 Kit	ECM546
ECM Cell Culture Optimization Array (colorimetric, 48 wells)	1 Kit	ECM542

Millicoat Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Collagen I Coating	5 plates	PICL06P05
Millicoat 24-well Plate with Collagen I Coating	5 plates	PICL24P05
Millicoat 6-well Plate with Poly-D-Lysine Coating	5 plates	PIDL06P05
Millicoat 24-well Plate with Poly-D-Lysine Coating	5 plates	PIDL24P05
Millicoat 6-well Plate with Fibronectin Coating	5 plates	PIFB06P05
Millicoat 24-well Plate with Fibronectin Coating	5 plates	PIFB24P05

ECMs & Attachment Factors

Please see pages 98-100 for a complete listing of extracellular matrix proteins.

ANTIBODIES FOR ENDOTHELIAL & EPITHELIAL CELLS

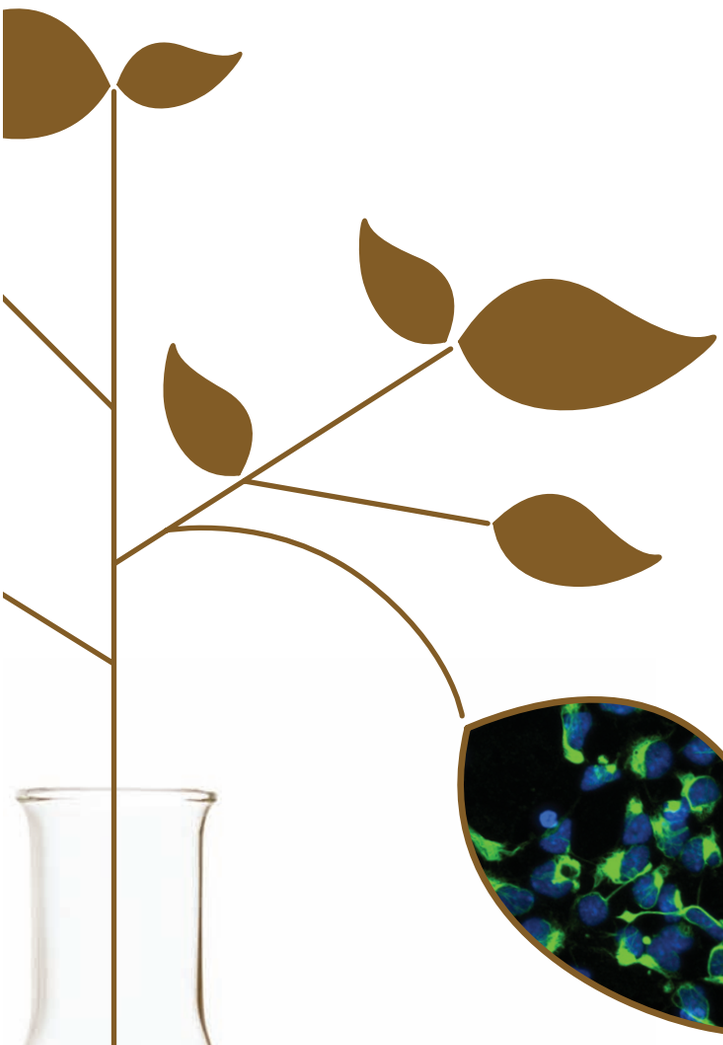
The identification and isolation of endothelial progenitor cells (EPC) is difficult due to the absence of specific endothelial markers and functional assays to distinguish migrating endothelial progenitor cells from sloughed mature EPCs. EPCs and mature vessel-wall-derived EPCs express common endothelial-specific markers including VEGFR-2 (KDR, Flk-1),Tie-2 and Tie-1, VE-cadherin, CD34, PECAM (CD31), and E-selectin. Other endothelial markers include von Willebrand factor (vWF), P1H12 (CD146), thrombomodulin, CD36, endoglin, and integrin $\alpha V\beta 3$. Identification of EPCs is further complicated by the fact that hematopoietic stem cells and their progeny (particularly monocytes) express markers similar to those expressed by endothelial cells, such as VEGFR-1 (Flt-1), CD34, PECAM, Tie-1, Tie-2, and von Willebrand factor. Millipore offers a variety of antibodies to assist with the characterization of these cells.

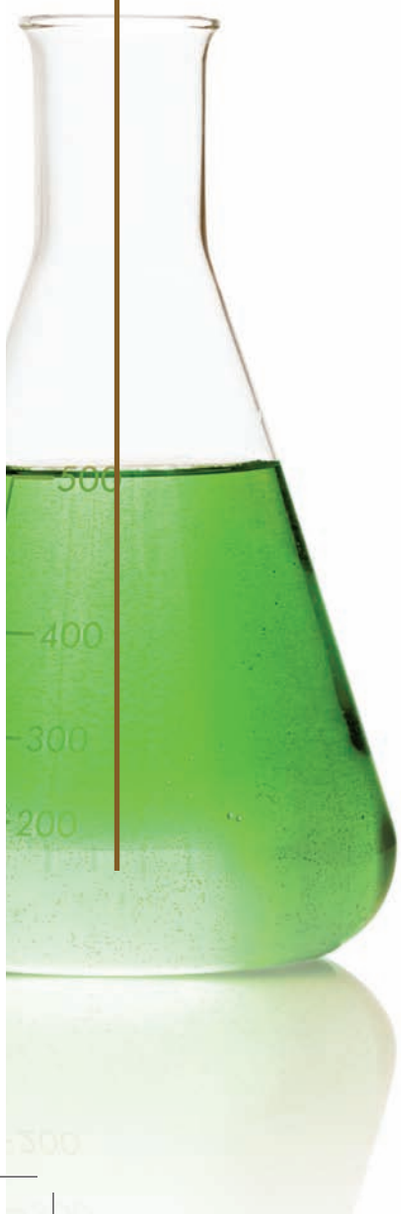
Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
CD14 (LPS Receptor), clone UCHM-1	H, Mk	IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL453
CD15 (Lewis X, 3-FAL), clone 28, FITC conjugated	H	FC, IF	FITC	M IgM	100 assays	CBL144F
CD15 (Lewis X, 3-FAL), clone DT07 and BC97, IHC Select, prediluted	H	IH(P)	Pur	M IgM	6 mL	IHC2108-6
CD15 (Lewis X, 3-FAL), clone ZC-18C, FITC conjugated	H	FC, IF	FITC	M IgM	50 assays	MAB1205F
CD31 (PECAM-1), clone 390	M	IH, IP, FC	Pur	R IgG_{2a}	500 µg	CBL1337
CD31 (PECAM-1), domains 3-6, clone HC1/6	H	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL468
CD34 Class I, clone B1-3C5	H	IF, FC	Pur	M IgG_1	100 µg	MAB4211
CD34 Class II, clone QBEND/10	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL496
CD34 Class III, clone 581	H	FC	Pur	M IgG_1	100 µg	CBL555
CD36 (Platelet Glycoprotein IV), clone SM-phi	H	IB, IH, FC	Pur	M IgM	100 µg	CBL168
CD45 (LCA), clone F10-89-4	H	IB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL124
CD45 (LCA), clone F10-89-4	H	IH, FC	FITC	M IgG_{2a}	100 tests	CBL124F
CD45 (LCA), clone HuLy-m4	H	IC, FC	Pur	M IgG_1	100 µg	MAB4205
CD45 (LCA), clone IBL-5/25	M	FC, WB, IH	Pur	R IgG	500 µg	CBL1326
CD45RA, clone F8-11-13	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL121
CD106 (VCAM-1), clone 1.G11B1	H, Po	EIA, FC, IB, IH	Pur	M IgG_1	100 µg	CBL206
CD106 (VCAM-1), clone MK-2	M	Blk, FC, IH, IP	Pur	R IgG_1	500 µg	CBL1300
CD133 (Prominin-1), clone 13A4	M	EM, FC, IP, WB, IH	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
CD133, clone 13A4, Alexa Fluor 488 conjugated	M	FC	A488	R $IgG_{1\kappa}$	100 µg	MAB4310X
CD141 (Thrombomodulin, Fetomodulin), clone B-A35, FITC conjugated	H	FC	FITC	M IgG_1	100 µg	CBL584F
CD146 (MUC18, MCAM), Endothelial Cells, clone P1H12	H, M, Ca, Rb, Not R	IC, IP, EIA, FC, IH(not P), Web*	Pur	M IgG_1	100 µg	MAB16985
C-X-C Chemokine Receptor 4 (CD184, CXCR4), extracellular loop	H	IB	Pur	Rabbit	100 µg	AB1847
C-X-C Chemokine Receptor 4 (CD184, CXCR4), N-terminus	H	IB, IC, IP	Pur	Rabbit	100 µg	AB1846
C-X-X-X-C Chemokine Receptor 1 (CX3CR1), extracellular loop	H	IB	Pur	Rabbit	100 µg	AB1891
Cytokeratin Epithelial, clone AE1	B, Ch, H, M, R, Rb	IH(P)	Pur	M IgG	500 µg	MAB1612

ANTIBODIES

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Endoglin (CD105), clone 8E11	H	IH, IH(P), FC	Pur	M IgM	100 µg	CBL418
Endoglin (CD105), clone 8E11, FITC conjugated	H	FC	FITC	M IgM	100 assays	CBL418F
Endoglin (CD105), clone MJ7/18	M	FC, IP, WB, IH	Pur	M $IgG_{2\kappa}$	500 µg	CBL1358
Endoglin (CD105), clone P3D1	H	EIA, FC, IP, WB, IC, IH	Pur	M IgG_{2a}	100 µg	MAB2152
Endoglin (CD105), clone P3D1, Alexa Fluor 488 conjugated	H	FC, IC	A488	M IgG_{2a}	100 µg	MAB2152X
Epithelial Specific Antigen, clone VU-1D9	H	ELISA, WB, IH, IH(P)	Pur	M IgG_1	100 µg	CBL251
Epithelium/Endothelial Cells, clone 18.29 (PMH-5)	H	IH, IH(P)	Pur	M IgG_1	500 µL	MAB430
E-Selectin (CD62E), clone 1.2B6	H, Po	IB, IH, IP, EIA, FC, Inhib, IH(not P)	Pur	M IgG_1	100 µg	CBL180
GCTM-5 Antibody, clone GCTM-5	H	IC, IH, WB	Pur	M IgG_1	100 µg	MAB4365
IHH	M, H, R	WB	APur	Rabbit	100 µg	AB10212
Integrin αV (CD51), clone 13C2	H	IH, FC	Pur	M IgG_1	100 µg	CBL490
Integrin αVβ3 (CD51/CD61), clone LM609	H, B, Por, Av, Ca, Ch, Mk, Rb, Not M, Not R	IP, IF, BLK, FC, IH(not P)	Pur	M IgG_1	100 µg	MAB1976
Keratin Epithelial, clone AE3	B, Ch, H, M, Mk, R, Rb	WB, IH(P)	Pur	M IgG_1	500 µg	MAB1611
MSX2	H, M, R	WB	APur	Rabbit	100 µg	AB10211
PECAM-1 (CD31), clone 390	M	IH, IP, FC	Pur	R $IgG_{2a\kappa}$	500 µg	CBL1337
PECAM-1 (CD31), clone P2B1	H	IC, IH, IP, EIA, FC, IH (not P)	Pur	M IgG_1	100 µg	MAB2148
Tie-1, C-terminus	H, M, R, B	IB, EIA	APur	Rabbit	50 µg	AB3123
Tie-2, N-terminus, extracellular	H, M, R	IB, EIA	APur	Rabbit	50 µg	AB3126
VE-Cadherin (CD144), extracellular, clone BV6	H, Not M,	IB, IH, IP, EIA, FC Not Bov	Pur	M IgG_{2a}	100 µg	MAB1989
VE-Cadherin (CD144), phospho-specific, Tyr658	H	WB	APur	Rabbit	100 µL	AB1955
VE-Cadherin (CD144), phospho-specific, Tyr731	H	WB	APur	Rabbit	100 µL	AB1956
VEGF Receptor-2 (Flk-1, KDR), clone 4H3B6H9	M	IB, IP, EIA, FC	Pur	R IgG_{2b}	100 µg	MAB1147
von Willebrand Factor (Factor VIII Related Antigen)	H, M, R	IH(P), EIA	Pur	Rabbit	100 µg	AB7356
von Willebrand Factor (Factor VIII Related Antigen), clone 21-43	H	IF, EIA	Pur	M IgG_1	500 µL	MAB3442
ZIPRO-1	M	WB	APur	Rabbit	100 µL	AB3733

General Cell Culture Media & Reagents





General Cell Culture Media & Reagents

Cell culture – especially stem cell culture – requires high quality media and reagents. To ensure reproducible results, media must be pure, free of contaminants, and consistent from lot to lot. To support your stem cell research, Millipore offers a wide range of high quality media, specialty buffers, growth factors, and other reagents. Popular items include our EmbryoMax line of media, Accutase™ and Accumax™ cell dissociation and detachment solutions, a wide range of extracellular matrix proteins and growth factors, and more.

General Media

Growing cells *in vitro* has contributed greatly to the fields of biotechnology and medical research. Millipore supports your cell culture work with a complete range of media, additives, and reagents.

Antibiotics

Description	Qty/Pk	Catalogue No.
Antibiotic/Antimycotic Solution (100X)	100 mL	CNT-ABM
Antibiotic/Antimycotic Solution, pre-aliquoted (200X)	1 ea	CNT-ABM10
Antibiotic/Antimycotic Solution, pre-aliquoted (200X)	1 ea	CNT-ABM20
Penicillin-Streptomycin Solution (100X)	100 mL	TMS-AB2-C

Balanced Salt Solutions

Description	Qty/Pk	Catalogue No.
Dulbecco's Phosphate Buffered Saline (1X), ES cell qualified	1 L	BSS-1005-A
Dulbecco's Phosphate Buffered Saline (1X), ES cell qualified	500 mL	BSS-1005-B
EmbryoMax Dulbecco's Phosphate Buffered Saline (1X), without Ca^{2+} & Mg^{2+}	1 L	BSS-1006-A
EmbryoMax Dulbecco's Phosphate Buffered Saline (1X), without Ca^{2+} & Mg^{2+}	500 mL	BSS-1006-B
EmbryoMax Dulbecco's Phosphate Buffered Saline (10X), without Ca^{2+} & Mg^{2+}	500 mL	BSS-2010-B
EmbryoMax Dulbecco's Phosphate Buffered Saline with Ca^{2+} & Mg^{2+}	500 mL	BSS-6010-B

Classical Media

Description	Qty/Pk	Catalogue No.
DMEM/F12, with HEPES, L-glutamine	500 mL	DF-041-B
DMEM/F12, with L-glutamine, without HEPES	500 mL	DF-042-B
Dulbecco's Modified Eagle's Medium (1X), liquid, with 4,500 mg/L glucose, L-glutamine, without sodium pyruvate	1 L	SLM-020-A
Dulbecco's Modified Eagle's Medium (1X), liquid, with 4,500 mg/L glucose, L-glutamine, without sodium pyruvate	500 mL	SLM-020-B
EmbryoMax ES Cell Qualified DMEM (1X), liquid, with 4,500 mg/L glucose, without L-glutamine & sodium pyruvate	1 L	SLM-021-A
EmbryoMax ES Cell Qualified DMEM (1X), liquid, with 4,500mg/L glucose, without L-glutamine & sodium pyruvate	500 mL	SLM-021-B
EmbryoMax ES Cell Qualified DMEM (1X), liquid, with 4,500 mg/L glucose, 2.25 g/L sodium bicarbonate & L-glutamine, without sodium pyruvate	500 mL	SLM-120-B
Dulbecco's Modified Eagle's Medium (1X), liquid	500 mL	SLM-022-B
Dulbecco's Modified Eagle's Medium (2X), with 4,500 mg/L glucose & L-glutamine, without sodium bicarbonate or sodium pyruvate	500 mL	SLM-202-B
EmbryoMax ES Cell Qualified DMEM (1X), liquid, with 4,500 mg/L glucose, 2.25 g/L sodium bicarbonate, without L-glutamine & sodium pyruvate	500 mL	SLM-220-B

Description	Qty/Pk	Catalogue No.
EmbryoMax DMEM, high glucose, low bicarbonate, without sodium pyruvate	400 mL	SLM-220-M
Dulbecco's Modified Eagle's Medium Labeling Kit, makes one 500 mL bottle of labeling media	1 kit	SLM-100
Iscove's Modified Dulbecco's Medium (1X), with 25 mM HEPES, 3,024 mg/L $NaHCO_3$ & L-glutamine, without alpha-thioglycerol & β-mercaptoethanol	1 L	SLM-063-A
Iscove's Modified Dulbecco's Medium (1X), with 25 mM HEPES, 3,024 mg/L $NaHCO_3$ & L-glutamine, without alpha-thioglycerol & beta-mercaptoethanol	500 mL	SLM-063-B
RPMI 1640 Medium (1X), liquid, with 25 mM HEPES & L-glutamine	500 mL	SLM-140-B
RPMI 1640 Media Labeling Kit, makes one 500 mL bottle of media	1 kit	SLM-200

Reagents & Supplements

Description	Qty/Pk	Catalogue No.
Bovine Pituitary Extract (BPE)	50 mg	02-103
Bovine Pituitary Extract (BPE), 10 x 15 mg	150 mg	02-104
EmbryoMax ES Cell Qualified Electroporation Buffer	50 mL	ES-003-D
EmbryoMax ES Cell Qualified Filtered Silicon Oil	100 mL	ES-004-C
EmbryoMax ES Cell Qualified Filtered Light Mineral Oil	100 mL	ES-005-C
EmbryoMax ES Cell Qualified 2-Mercaptoethanol (100X)	20 mL	ES-007-E
EmbryoMax ES Cell Qualified Nucleosides (100X)	50 mL	ES-008-D
EmbryoMax ES Cell Qualified MEM (100X), non-essential amino acids	100 mL	TMS-001-C
EmbryoMax ES Cell Qualified L-Glutamine Solution (100X), 200 mM	100 mL	TMS-002-C
EmbryoMax ES Cell Qualified HEPES Buffer Solution, 1 M	100 mL	TMS-003-C
EmbryoMax ES Cell Qualified Ultra Pure Water, sterile H_2O	1 L	TMS-006-A
EmbryoMax ES Cell Qualified Ultra Pure Water, sterile H_2O	500 mL	TMS-006-B
EmbryoMax ES Cell Qualified Ultra Pure Water, sterile H_2O	100 mL	TMS-006-C
Endothelial Cell Growth Supplement (ECGS)	50 mg	02-101
Endothelial Cell Growth Supplement (ECGS), 10 x 15 mg	150 mg	02-102
EX-CYTE® Growth Enhancement Media Supplement, trial size set	10 mL	81-129-S
Minimal Essential Media Sodium Pyruvate Solution 100 mM (100X), liquid	100 mL	TMS-005-C
NDiff Neuro-27 Medium Supplement (100X)	10 mL	SCM013
NDiff Neuro-2 Medium Supplement (200X)	5 mL	SCM012
Pancreatic Cell Culture Supplement	50 mL	SCR015
Sodium Bicarbonate Solution 7.5% (w/v)	100 mL	TMS-004-C

Fetal Bovine Serum

Description	Qty/Pk	Catalogue No.
EmbryoMax ES Cell Qualified Fetal Bovine Serum, US origin	500 mL	ES-009-B
EmbryoMax ES Cell Qualified Fetal Bovine Serum, US origin	100 mL	ES-009-C
EmbryoMax ES Cell Qualified Fetal Bovine Serum, New Zealand origin	500 mL	ES-011-B
EmbryoMax ES Cell Qualified Fetal Bovine Serum, New Zealand origin	100 mL	ES-011-C

Preservation Media

Millipore's unique cell culture freezing media are ideal for the cryopreservation of a broad spectrum of mammalian cells. With both DMSO and glycerol formulations, these products result in consistent cryopreservation and high cell viability upon thawing and plating. These sterile reagents are virus- and mycoplasma-free. They come with a complete protocol and have been successfully used on the following cell lines:

293	C3H10T1/2	Daudi	HT-29	NRK	Raji
129SvEv	C57/BL6	E-14	HUT78	NSO	Rat2
A10	C6	EB1	K-562	OKT4	STO
AfT-20	CCE	F9	L Cells	OKT8	THP-1
BAAL/3T3	CEM	FRTL	LLC-MK	OMK	U-937
BHK	CHO	GH3	MDCK	P-19	Vero
BHK-21	COS-7	HEL	MOLT-4	P815	WEHI
BRK	CV-1	HeLa	MRC-5	PA317	WI-38
BRL	D-17	HEP-3	NC-37	PC-12	WISH
C127I	DBA	HL-60	NIH 3T3	Psi-2	

General Cell Culture Freezing Media

Description	Qty/Pk	Catalogue No.
Cell Culture Freezing Media, with 10% DMSO, calf and fetal bovine serum	10 x 10 mL	S-002-10F
Cell Culture Freezing Media, with 10% DMSO, calf and fetal bovine serum	5 x10 mL	S-002-5F
Cell Culture Freezing Media, with 10% DMSO, calf and fetal bovine serum	50 mL	S-002-D
Cell Culture Freezing Media (1X), with 10% glycerol, calf and fetal bovine serum	10 x 10 mL	S-012-10F
Cell Culture Freezing Media (1X), with 10% glycerol, calf and fetal bovine serum	5 x 10 mL	S-012-5F
Cell Culture Freezing Media (1X), with 10% glycerol, calf and fetal bovine serum	50 mL	S-012-D

Specialty Cell Culture Freezing Media

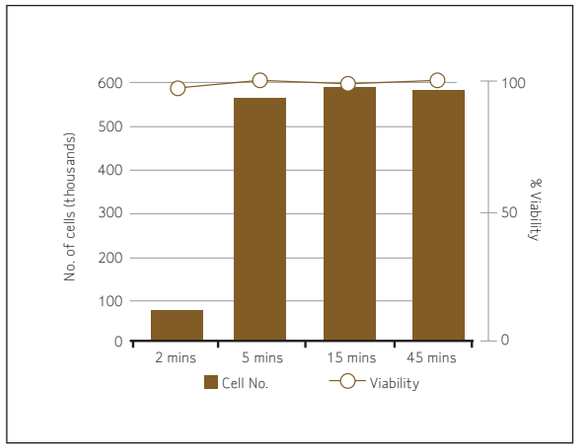
Description	Qty/Pk	Catalogue No.
EmbryoMax ES Cell Qualified Cell Culture Freezing Medium (2X), with 20% DMSO & fetal bovine serum	10 x 10 mL	ES-002-10F
EmbryoMax ES Cell Qualified Cell Culture Freezing Medium (2X), with 20% DMSO & fetal bovine serum	5 x 10 mL	ES-002-5F
EmbryoMax ES Cell Qualified Cell Culture Freezing Medium (2X), with 20% DMSO & fetal bovine serum	50 mL	ES-002-D
EmbryoMax Mouse Embryo Cryopreservation Media, with 14% DMSO, no phenol red	50 mL	MR-007-D
ENStem-A Neural Freezing Medium (1X)	50 mL	SCM011
ESGRO Complete Serum-Free Mouse ES Cell Culture Freezing Medium	50 mL	SF005
Mesenchymal Stem Cell Freezing Medium (1X)	50 mL	SCM016
Neural Stem Cell Freezing Medium (1X)	50 mL	SCM014
ReNcell Neural Stem Cell Freezing Medium	50 mL	SCM007
Pancreatic Cell Cryopreservation Medium	30 mL	SCR017
Xeno-FREEze Human Embryonic Stem (hES) Cell Freezing Medium	5 x 10 mL	SCM032

Dissociation Solutions

Accutase Cell Dissociation Solution

Accutase is a unique cell detachment solution made of proteolytic and collagenolytic enzymes. Designed for the routine detachment of cells from standard tissue culture and adhesion-coated plasticware, Accutase does not contain mammalian or bacterial derived products. It has been shown to be effective on a wide variety of cell types.

- Detaches adherent cells in minutes
- Dissociates tissues for primary cell culture
- Gentle cell detachment for maximum viability
- Highest plating efficiency



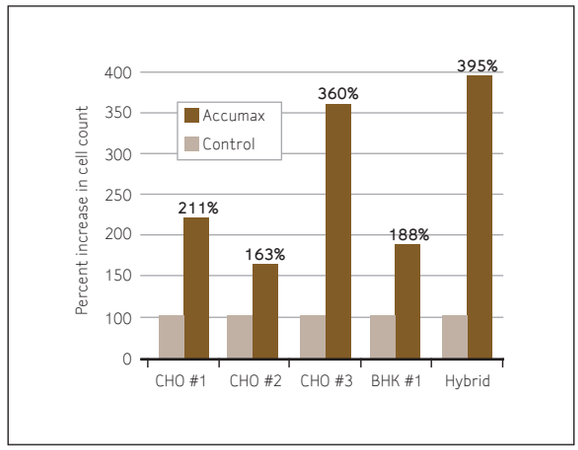
Cell detachment: Human MG63 fibrosarcoma cells cultured on tissue culture treated dishes in DMEM + 10% FBS were treated with Accutase cell dissociation solution. Treatment results in rapid cell detachment, a single cell suspension and high viability. Accutase is gentle on cells; viability was 97% ± 3% even after 45 minutes in Accutase solution.

Description	Qty/Pk	Catalogue No.
Accutase Cell Dissociation Solution	100 mL	SCR005

Accumax Cell Detachment Solution

Accumax is a proprietary cell detachment solution of proteolytic, collagenolytic, and DNase enzymes. Useful for creating single cell suspensions from clumped cell cultures for accurate cell counting, viral transfection assays, cell sorting, and flow cytometry, Accumax does not contain mammalian or bacterial derived products.

- Dissociates clumped cells in minutes
- Gentle cell disaggregation for maximum cell viability
- Results in single cell suspensions
- Yields accurate, reproducible cell counts



Various constructs of genetically engineered CHO cells, BHK cells and a hybridoma were grown in suspension in serum-free or protein-free medium. Representative cell aliquots were treated with an equal volume of PBS or Accumax cell detachment solution and incubated for 5 minutes at 37°C. Cell number was then determined with a Coulter Counter® Device.

Description	Qty/Pk	Catalogue No.
Accumax Cell Detachment Solution	100 mL	SCR006

Enzyme-Free Cell Dissociation Solutions

Our unique non-enzymatic solutions, which contain no protein or surfactants, are composed of chelating agents and other agents used to stabilize their activity on the cells. These reagents gently dislodge adherent cells from their substrates, while preserving the structural and functional integrity of cell surface proteins. There are no cytotoxic effects associated with these solutions, such as those sometimes associated with the use of 0.5 mM EDTA. They can be used to dissociate primary cells, tissues, and tumors, while allowing for increased efficiency.

Description	Qty/Pk	Catalogue No.
Enzyme-Free Cell Dissociation Solution (1X), Hank's based, liquid	500 mL	S-004-B
Enzyme-Free Cell Dissociation Solution (1X), Hank's based, liquid	100 mL	S-004-C
Enzyme-Free Cell Dissociation Solution (1X), PBS based, liquid	500 mL	S-014-B
Enzyme-Free Cell Dissociation Solution (1X), PBS based, liquid	100 mL	S-014-C

Trypsin Based Dissociation Reagents

Description	Qty/Pk	Catalogue No.
Low Trypsin-High EDTA, PBS based, 0.025% Trypsin & 0.75 mM EDTA, without Ca^{2+} & Mg^{2+}	100 mL	SM-2004-C
Low Trypsin-High ETDA, PBS based, 0.025% Trypsin & 0.75 mM EDTA, without Ca^{2+} & Mg^{2+}, containing phenol red	100 mL	SM-2005-C
Trypsin, 0.25%, in Hank's balanced salt solution, without Ca^{2+} & Mg^{2+}	100 mL	SM-2001-C
Trypsin-EDTA, in Hank's balanced salt solution, 0.05% Trypsin & 0.53 mM EDTA, without Ca^{2+} & Mg^{2+}	100 mL	SM-2002-C
Trypsin-EDTA, in Hank's balanced salt solution, 0.25% Trypsin & 1 mM EDTA, without Ca^{2+} & Mg^{2+}	100 mL	SM-2003-C

Extracellular Matrices

Extracellular matrix (ECM) proteins are produced intracellularly and are subsequently secreted into the surrounding cellular medium, actively regulating a diverse range of cell functions including cell adhesion, differentiation, proliferation, migration, invasion, and survival. ECM proteins are critical for *in vivo* and *in vitro* culture of a variety of cell types and are key building blocks of the normal 3D cellular environment. A primary utility of ECMs in *in vitro* culture is to promote cellular adhesion while maintaining cell viability and maximizing cell proliferation for downstream cell-based applications. Studies show that anchorage-dependent cells growing on ECMs undergo more efficient plating, have a higher proliferation rate, reach a higher density, and require lower serum and growth factor concentrations, demonstrating enhanced differentiation potential. Millipore offers a wide variety of ECM proteins to meet the individual needs of your cell line.

Collagen

Description	Qty/Pk	Catalogue No.
Human Collagen Type I	100 µg	CC050
Rat Tail Collagen Type I	100 mg	08-115
Human Collagen Type II	100 µg	CC052
Chicken Collagen Type II	1 mg	CC092
Human Collagen Type III	100 µg	CC054
Bovine Collagen Type III	500 µg	CC081
Bovine Collagen Type III	10 mg	CC078
Human Collagen Type IV	100 µg	CC076
Bovine Collagen Type IV	500 µg	CC083
Human Collagen Type V	100 µg	CC077
Bovine Collagen Type VI	250 µg	CC086

Fibronectin

Description	Qty/Pk	Catalogue No.
Fibronectin, human cellular	1 mg	08-102
Human Plasma Fibronectin, purified protein	1 mg	FC010
Human Plasma Fibronectin, purified protein	100 mg	FC010-100MG
Human Plasma Fibronectin, purified protein	10 mg	FC010-10MG
Human Plasma Fibronectin, purified protein	5 mg	FC010-5MG
Human Fibronectin 40 kDa α Chymotryptic Fragment (heparin-binding region), purified	500 µg	F1903
Human Fibronectin 120 kDa α Chymotryptic Fragment (cell attachment region), purified	500 µg	F1904
Bovine Fibronectin	500 µg	FC014

Laminin

Description	Qty/Pk	Catalogue No.
Human Laminin, purified protein (pepsinized)	100 µg	AG56P
Mouse Laminin, purified	1 mg	CC095
Mouse Laminin, purified	2 mg	08-125
Human Merosin (Laminin-2)	500 µg	CC085
Rat Laminin-5, purified	10 µg	CC145

Vitronectin

Description	Qty/Pk	Catalogue No.
Human Vitronectin, recombinant	500 µg	08-126
Human Vitronectin, purified protein	100 µg	CC080

Tenascin

Description	Qty/Pk	Catalogue No.
Human Tenascin-C, purified protein	100 µg	CC065
Chicken Tenascin	50 µg	CC118
Chicken Tenascin	100 µg	CC115

Other Attachment Factors

Description	Qty/Pk	Catalogue No.
ECL Cell Attachment Matrix (EHS mouse tumor)	5 mg	08-110
Chicken Extracellular Chondroitin Sulfate Proteoglycans	100 µg	CC117
Poly-D-Lysine solution, 1.0 mg/mL	20 mL	A-003-E
EmbryoMax ES Cell Qualified 0.1% Gelatin Solution	500 mL	ES-006-B
Synthetic Laminin Peptide for Rat Neural Stem Cells	5 x 3 mg	SCR127

PRECOATED ECMs

ECM Cell Culture Optimization Arrays

The ECM cell culture optimization array is the first commercially available tool capable of determining both the best ECM protein and the optimal concentration needed for your cells – all in a single assay. The foundation of our kit is a 48- or 96-well microtiter plate containing several commonly used ECM proteins. Collagen I, laminin, fibronectin, and vitronectin are arrayed in triplicate with concentrations ranging from 0.125 to 20 µg/mL. You simply culture your cells on the plate and use the included reagents to block, stain, and analyze the adhesion capacity with a plate reader. We have extensively tested and optimized this kit on a variety of cell types including cancer cells, HEK293 cells, as well as our human and rodent neural stem cells.

Description	Qty/Pk	Catalogue No.
ECM Cell Culture Optimization Array, colorimetric, 96 wells	1 kit	ECM541
ECM Cell Culture Optimization Array, colorimetric, 48 wells	1 kit	ECM542
ECM Cell Culture Optimization Array, fluorometric, 96 wells	1 kit	ECM546

Millicoat Precoated Strips

For added convenience and flexibility in designing adhesion assays, the Millicoat cell adhesion strips are provided as 12 x 8-well removable strips in a plate frame. The wells in rows A - G have been coated with a single human ECM protein. Row H of each plate is coated with BSA, which serves as a negative assay control. The Millicoat ECM screening kit contains five individual 96-well plates: one each for fibronectin, vitronectin, laminin, collagen I, and collagen IV.

Description	Qty/Pk	Catalogue No.
Millicoat Human Fibronectin Coated Strips, 96 wells	1 plate	ECM101
Millicoat Human Vitronectin Coated Strips, 96 wells	1 plate	ECM102
Millicoat Human Laminin Coated Strips, 96 wells	1 plate	ECM103
Millicoat Human Collagen Type I Coated Strips, 96 wells	1 plate	ECM104
Millicoat Human Collagen Type IV Coated Strips, 96 wells	1 plate	ECM105
Millicoat ECM Screening Kit, 1 ea. ECM101-ECM105	1 kit	ECM205

Millicoat Precoated Plates

Millipore now offers precoated multiwell plates in 6- and 24-well formats. Precoated products offer many advantages to researchers: there is no lengthy coating process, plates are coated by a consistent process, and they are always available when needed.

Description	Qty/Pk	Catalogue No.
Millicoat 6-well Plate with Collagen I Coating	5 plates	PICL06P05
Millicoat 24-well Plate with Collagen I Coating	5 plates	PICL24P05
Millicoat 6-well Plate with Poly-D-Lysine Coating	5 plates	PIDL06P05
Millicoat 24-well Plate with Poly-D-Lysine Coating	5 plates	PIDL24P05
Millicoat 6-well Plate with Fibronectin Coating	5 plates	PIFB06P05
Millicoat 24-well Plate with Fibronectin Coating	5 plates	PIFB24P05

Cytokines & Growth Factors

Growth factors and cytokines are chemical messengers that mediate intercellular communication. These proteins are secreted by a variety of cells and act through receptors on the cell surface. Growth factors elicit biological responses leading to cell proliferation and/or differentiation. Many growth factors are quite versatile, stimulating cellular division in numerous different cell types, while others are specific to a particular cell type. Cytokines are a unique family of growth factors that are secreted by, and mediate communication among, cells in the immune system. The cytokine family of signaling molecules includes several interleukins, a variety of growth and colony-stimulating factors, ciliary neurotrophic factor, interferons, and several other molecules. Through binding to specific cytokine receptors on target cells, cytokines activate other cells and coordinate and regulate biological processes including cell growth, immunity, inflammation, and tissue repair. They also have anti-proliferative properties and regulate the synthesis of acute phase proteins following tissue injury, trauma, and inflammation. Millipore offers a comprehensive range of cytokines and growth factors for cell culture. Every lot produced is thoroughly tested for bioactivity, purity, and endotoxin levels. Whether your project is big or small, we offer high quality recombinant proteins to meet your needs.

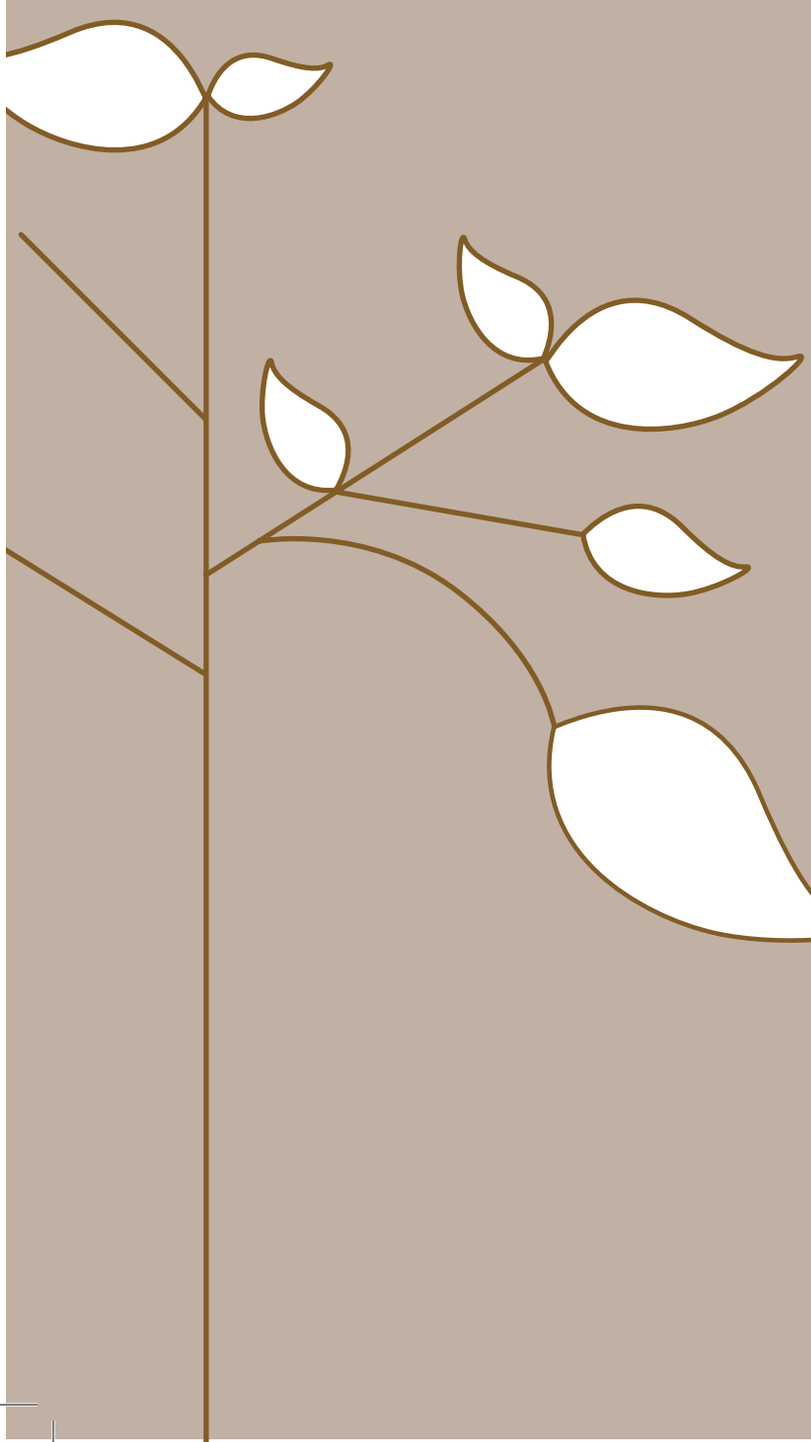
Description	Qty/Pk	Catalogue No.
BAFF, recombinant human	20 µg	GF136
Brain Derived Neurotrophic Factor, recombinant human	10 µg	GF029
CD40 Ligand/TRAP, recombinant human	10 µg	GF101
Ciliary Neurotrophic Factor, recombinant human	20 µg	GF109
Ciliary Neurotrophic Factor, recombinant rat	25 µg	GF035
CNTF, recombinant rat	25 µg	01-195
Defensin, α, recombinant human	20 µg	GF099
Defensin, β, recombinant human	20 µg	GF100
EGF, recombinant human	500 µg	01-407
EGF, recombinant human	100 µg	01-107
Epidermal Growth Factor, recombinant human	500 µg	GF144
EGF, mouse, culture grade	100 µg	01-101
EGF, mouse, receptor grade	100 µg	01-102
Epidermal Growth Factor, recombinant mouse	500 µg	GF155
Fas Ligand, membrane bound	500 ng	01-210
Fibroblast Growth Factor acidic, recombinant human	50 µg	GF002
FGF-1/acidic FGF, recombinant human	25 µg	01-116
Fibroblast Growth Factor basic, recombinant human	50 µg	GF003
Fibroblast Growth Factor basic, animal-free, recombinant human	50 µg	GF003-AF
Fibroblast Growth Factor basic, animal-free, recombinant human	100 µg	GF003AF-100UG
Fibroblast Growth Factor basic, recombinant human	1 mg	GF003AF-MG
FGF-2/basic FGF, recombinant human	25 µg	01-106
Fibroblast Growth Factor-4, recombinant human	25 µg	GF098
FGF-7/KGF, recombinant human	10 µg	01-118
Fibroblast Growth Factor-8, recombinant human	25 µg	GF110
Flt-3 Ligand, recombinant human	10 µg	GF038
Glial Derived Neurotrophic Factor, recombinant human	10 µg	GF030
Granulocyte Colony-Stimulating Factor, recombinant human	10 µg	GF051
Granulocyte Colony-Stimulating Factor, recombinant mouse	10 µg	GF059

Description	Qty/Pk	Catalogue No.
Granulocyte-Macrophage Colony-Stimulating Factor, recombinant human	10 µg	GF004
Granulocyte-Macrophage Colony-Stimulating Factor, recombinant mouse	10 µg	GF026
Hepatocyte Growth Factor, recombinant human	10 µg	GF116
Heregulin-β3, EGF domain	100 µg	01-201
Insulin-like Growth Factor-I, recombinant human	25 µg	01-208
Insulin-like Growth Factor-I (resistant to IGFBPs), recombinant human	25 µg	01-189
Insulin-like Growth Factor-I, , recombinant human, biotin conjugate	2 µg	01-212
Insulin-like Growth Factor-I, recombinant human	100 µg	GF138
Insulin-like Growth Factor-I, recombinant mouse	50 µg	GF121
Insulin-like Growth Factor-II, recombinant human	50 µg	GF007
Insulin-like Growth Factor-II, recombinant human	25 µg	01-142
Insulin (Arg-Insulin)	10 mg	01-207
Interferon-α A, recombinant human	5 x 10^6 units	IF007
Interferon-α A, recombinant mouse	10^5 units	IF009
Interferon-β, recombinant human	10^5 units	IF014
Interferon-β, recombinant mouse	10^5 units	IF011
Interferon-γ, recombinant human	100 µg	IF002
Interferon-γ, recombinant human	50 µg	01-172
Interferon-γ, recombinant mouse	100 µg	IF005
Interferon-γ, recombinant rat	100 µg	IF006
Interleukin-1α, recombinant human	10 µg	IL001
Interleukin-1β, recombinant human	10 µg	IL038
Interleukin-1β, recombinant mouse	10 µg	IL014
Interleukin-1β, recombinant rat	10 µg	IL024
Interleukin-1β, recombinant human	3 µg	01-151
Interleukin-1β, recombinant murine	5 µg	01-173
Interleukin-2, recombinant human	50 µg	IL002
Interleukin-2, recombinant mouse	20 µg	IL031
Interleukin-3, recombinant human	10 µg	IL003
Interleukin-3, recombinant mouse	10 µg	IL015
Interleukin-4, recombinant human	10 µg	IL004
Interleukin-4, recombinant mouse	10 µg	IL016
Interleukin-4, recombinant rat	10 µg	IL037
Interleukin-5, recombinant human	10 µg	IL005
Interleukin-6, recombinant human	25 µg	01-156
Interleukin-6, recombinant human	20 µg	IL006
Interleukin-6, recombinant mouse	10 µg	IL017
Interleukin-6, recombinant rat	10 µg	IL025
Interleukin-7, recombinant human	10 µg	IL007
Interleukin-8, recombinant human, (72 amino acid form)	25 µg	IL008

Description	Qty/Pk	Catalogue No.
Interleukin-10, recombinant human	10 µg	IL010
Interleukin-10, recombinant mouse	10 µg	IL020
Interleukin-10, recombinant rat	10 µg	IL035
Interleukin-11, recombinant human	10 µg	IL011
Interleukin-12, recombinant human	10 µg	IL029
Interleukin-12, recombinant mouse	10 µg	IL032
Interleukin-13, recombinant human	10 µg	IL012
Interleukin-15, recombinant human	10 µg	IL013
Keratinocyte Growth Factor, recombinant human	10 µg	GF008
Leptin, recombinant mouse	1 mg	GF050
Leukemia Inhibitory Factor, recombinant human	5 µg	LIF1005
Leukemia Inhibitory Factor, recombinant human	10 µg	LIF1010
Leukemia Inhibitory Factor, glycosylated human	10 µg	LIF1100
Leukemia Inhibitory Factor, recombinant mouse	5 µg	LIF2005
Leukemia Inhibitory Factor, recombinant mouse	10 µg	LIF2010
Leukemia Inhibitory Factor, recombinant rat	5 µg	LIF3005
Leukemia Inhibitory Factor, recombinant rat	10 µg	LIF3010
Macrophage Inflammatory Protein-1α, recombinant rat	20 µg	GF048
Macrophage Inflammatory Protein-3α, recombinant human	20 µg	GF069
Macrophage-Colony Stimulating Factor, recombinant human	10 µg	GF053
Monocyte Chemotactic Protein-1, recombinant human	20 µg	GF012
Monocyte Chemotactic Protein-1, recombinant rat	10 µg	GF041
Nerve Growth Factor-β, recombinant human	20 µg	GF028
Neurotrophin 3, recombinant human	10 µg	GF031
Neurotrophin 4/5, recombinant human	10 µg	GF032
NGF 2.5S, mouse	100 µg	01-125
NGF 7S, mouse	100 µg	01-170
Oncostatin M, recombinant human	10 µg	GF016
Osteoprotegerin, recombinant human	50 µg	GF120
PDGF-AA, recombinant human	10 µg	01-309
Platelet Derived Growth Factor-AA, recombinant human	10 µg	GF142
PDGF-AB, recombinant human	10 µg	01-310
Platelet Derived Growth Factor-AB, recombinant human	10 µg	GF106
PDGF-BB, recombinant human	10 µg	GF149
PDGF-BB, recombinant human	10 µg	01-305
Pigment Epithelium Derived Factor, recombinant human	10 µg	GF134
RANTES, recombinant human	20 µg	GF020
SDF-1α, synthetic	50 µg	01-190
Soluble RANK Ligand (sRANKL), recombinant human	10 µg	GF091
Soluble Tumor Necrosis Factor Receptor Type I, recombinant human	20 µg	GF103

Stem Cell Factor, recombinant human	10 µg	GF021
Stem Cell Factor, recombinant mouse	10 µg	GF141
Stromal Cell-Derived Factor-1α, recombinant human	10 µg	GF073
Stromal Cell-Derived Factor-1α, recombinant mouse	10 µg	GF128
Stromal Cell-Derived Factor-1β, recombinant human	10 µg	GF074
Thrombopoietin, recombinant human	10 µg	GF037
TRAIL, recombinant human	50 µg	GF092
Transforming Growth Factor-α, recombinant human	100 µg	GF022
Transforming Growth Factor-β1, recombinant human	5 µg	GF111
Transforming Growth Factor-β1, recombinant human	1 µg	01-209
Transforming Growth Factor-β2, recombinant human	5 µg	GF113
Tumor Necrosis Factor-α, recombinant human	50 µg	GF023
Tumor Necrosis Factor-α, recombinant human	10 µg	01-164
Tumor Necrosis Factor-α, recombinant mouse	20 µg	GF027
Tumor Necrosis Factor-α, recombinant rat	20 µg	GF046
TWEAK, recombinant human	25 µg	GF102
Vascular Endothelial Growth Factor 165, recombinant mouse	10 µg	GF140
Vascular Endothelial Growth Factor, recombinant human, 165aa isoform	10 µg	GF094
VEGF, recombinant human	10 µg	01-185
Wnt-3a, recombinant mouse	5 µg	GF160
Wnt-5a, recombinant mouse	100 µL	GF146

Cultureware



Cultureware

Sterile Filtration

Eliminating contaminants like bacteria from cell growth media and additives is crucial to preserving your cell cultures and ensuring accurate results. Millipore's line of sterile filtration tools includes both vacuum and pressure-driven devices with a variety of membranes to suit all your needs. With over 50 years in the sterile filtration business, we've developed the widest range of high performance devices that provide fast flow and low protein binding for volumes from 1 milliliter to 20 liters.

Cultureware & Multiwell Plates

Choices as simple as the culture plates you use can make a big difference in your cell-based assays. Millipore's line of Millicell inserts, plates, and related multiwell products feature patent-pending design features to make your assays easier and more reproducible. Plus, membrane-based cell culture has been shown to improve cell morphology and more closely mimic *in vivo* cell growth. A multitude of plate sizes, membrane types, and coatings are available to support a wide variety of needs.

Stem Cell Tested

Millipore has initiated a rigorous testing program to ensure that our sterile filtration and cell culture devices can be used for stem cell culture. To learn more visit **www.millipore.com/stem-cell-tested**.

STEM CELL TESTED

Sterile Filtration

Stericup® and Steritop® Vacuum Filter Cups

For volumes from 150 mL to 1L

Stericup and Steritop filter units are high performance filter units ideally suited for sterile filtration of cell culture media, buffers, and reagents. These filter units are available with a selection of high performance membranes to meet specific application needs.

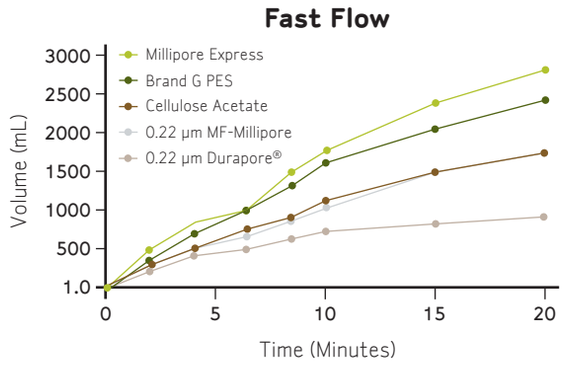
- Sterile and ready-to-use
- Fast flow
- Low protein binding

Fast Flow Membrane

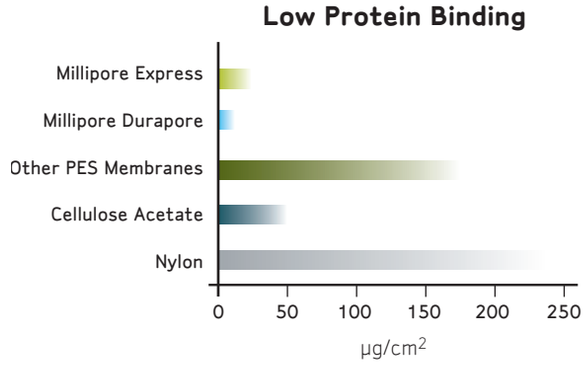
The asymmetric pore structure of the Millipore Express® PLUS membrane gives it greater throughput than other membranes. This can be especially important when filtering serum-heavy solutions while keeping your flow rates fast.

Low Protein Binding

Membranes with low protein binding ensure that key growth factors and proteins are not absorbed into the filter, keeping media formulations accurate. The Millipore Express PLUS membrane is unique in that it also provides low protein binding along with fast flow rates. For the very lowest protein binding, we recommend a device with our Millipore Durapore® (PVDF) membrane.



47 mm membrane disks with a 0.22 µm pore size were challenged with DMEM with 10% PES.



Membrane disks with a 0.22 µm pore size were offered a 1 mg/mL solution of ^{125}I labeled IgG. The chart shows protein binding after incubation (normalized to membrane surface area).

Stericup Filter Units

Stericup filter devices combine a filter unit with a receiver flask and cap for processing and storage.

Description	Membrane / Application	Pore Size (µm)	Funnel Capacity (mL)	Receiver Bottle (mL)	Qty/Pk	Catalogue No.
Stericup-GP Filter Units STEM CELL TESTED	Millipore Express PLUS (PES) / fast filtration of tissue culture media and buffers	0.22	150	150	12	SCGPU01RE
			250	250	12	SCGPU02RE
			500	500	12	SCGPU05RE
			500	1000	12	SCGPU10RE
			1000	1000	12	SCGPU11RE
Stericup-VP Filter Units	Millipore Express (PES) / removal of mycoplasma*	0.10	250	250	12	SCVPU02RE
			1000	1000	12	SCVPU11RE
Stericup-GV Filter Units	Durapore (PVDF) / filtration of high value biomolecules, lowest protein binding	0.22	150	150	12	SCGVU01RE
			250	250	12	SCGVU02RE
			500	500	12	SCGVU05RE
			500	1000	12	SCGVU10RE
			1000	1000	12	SCGVU11RE
Stericup-HV Filter Units	Durapore (PVDF) / filtration of high value biomolecules, lowest protein binding	0.45	150	150	12	SCHVU01RE
			250	250	12	SCHVU02RE
			500	500	12	SCHVU05RE
			1000	1000	12	SCHVU11RE

*0.10 µm pore size is designed to enhance maximum filtration of tissue culture media but it is not a guarantee of complete mycoplasma removal.

Steritop Filter Units

Steritop bottle-top filter units can be used on bottles with 33 mm or 45 mm openings.

Description	Membrane/ Application	Pore Size (µm)	Volume (mL)	Receiver Bottle Thread (mm)	Qty/Pk	Catalogue No.
Steritop-GP Filter Units STEM CELL TESTED	Millipore Express PLUS (PES) / filtration of high value biomolecules, lowest protein binding	0.22	150	33	12	SCGPS01RE
				45	12	SCGPT01RE
			250	33	12	SCGPS02RE
				45	12	SCGPT02RE
			500	33	12	SCGPS05RE
				45	12	SCGPT05RE
Steritop-GV Filter Units	Durapore (PVDF) / filtration of high value biomolecules, lowest protein binding	0.22	150	33	12	SCGPS01RE
				45	12	SCGPT01RE
			250	33	12	SCGPS02RE
				45	12	SCGPT02RE
			500	33	12	SCGPS05RE
				45	12	SCGPT05RE
			1000	45	12	SCGPT10RE
Receiver Bottles and Caps			250	45	12	SC00B02RE
			500	45	12	SC00B05RE
			1000	45	12	SC00B10RE

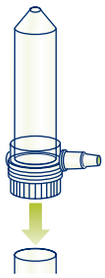
Steriflip® Filter Units

Requires no sample transfer (10 to 50 mL)

Vacuum-operated Steriflip filter units enable samples to be filtered directly from a 50 mL centrifuge tube into an attached tube without sample transfer steps. Steriflip filters are available with the Millipore Express PLUS (PES) membrane for fast flow and low protein binding, the Durapore (PVDF) membrane for ultra-low protein binding, and a new nylon net membrane for cell separation.

- Filter solutions from 50 mL centrifuge tubes
- Reduce sample handling
- Quick convenient design

Convenient Device Design



Step 1. Attach Steriflip filter to 50 mL centrifuge tube. (Compatible with 50 mL centifuge tubes with double-start thread design.)

Step 2. Flip the assembly over and vacuum filter the solution into the attached 50 mL tube.

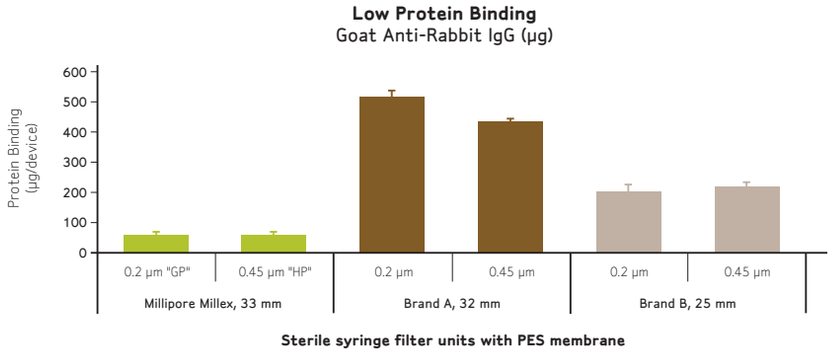
Step 3. Disconnect the vacuum source and cap the tube containing the filter sample.

Description	Membrane	Pore Size (µm)	Qty/Pk	Catalogue No.
Steriflip-GP Filter Unit	Millipore Express PLUS (PES)	0.22	25	SCGP00525
Steriflip-GV Filter Unit	Durapore (PVDF)	0.22	25	SE1M179M6
Steriflip-HV Filter Unit	Durapore (PVDF)	0.45	25	SE1M003M00
Steriflip Steri-Strainer	Nylon Net	20	25	SCNY00020
		40	25	SCNY00040
		60	25	SCNY00060
		100	25	SCNY00100

Millex® Filter Units

For volumes from 1 mL to 4 L

Millex syringe filters have set the standard for reliable small volume filtration. They are available in 4, 13, 25, 33, and 50 mm diameters with a choice of membrane types. The 33 mm diameter provides more membrane surface area for faster flow and lower operating pressure than standard 25 mm devices. Devices with the Millipore Express PLUS (PES) membrane provide both high flow and low protein binding. For ultra-low protein binding, use a device with the Durapore (PVDF) membrane. 50 mm devices are also available with a hydrophobic PTFE membrane for use in vacuum line protection, sterilizing gases, venting sterile containers, and sterilizing or clarifying organic solutions.



Graph (left): Sterile syringe filters with either a 0.22 µm or 0.45 µm with PES membrane were challenged with goat anti-rabbit IgG testing for protein binding properties.

Membrane	Pore Size (µm)	Process Volume	Hold-up Volume (after air purge)	Sterilization Method*	Qty/Pk	Catalogue No.
4 mm Diameter						
Durapore (PVDF)	0.22	1 mL	< 10 µL	EO	100	SLGV004SL
	0.45	1 mL	< 10 µL	EO	100	SLHV004SL
13 mm Diameter						
Millipore LCR (Hydrophilic PTFE)	0.2	10 mL	< 25 µL	EO	100	SLLG013SL
Durapore (PVDF)	0.22	10 mL	< 25 µL	EO	100	SLGV013SL
	0.45	10 mL	< 25 µL	EO	100	SLHV013SL
25 mm Diameter						
Durapore (PVDF)	5.0	100 mL	< 100 µL	EO	50	SLSV025LS
Millipore Express (PES) with male Luer-Lok™ outlet	0.22	100 mL	< 100 µL	EO	50	SLMPL25SS
Mixed Cellulose Esters (MCE) with male Luer-Lok outlet	0.22	100 mL	< 100 µL	EO	50	SLGL0250S
Mixed Cellulose Esters (MCE) with vented inlet	0.22	100 mL	< 100 µL	EO	50	SLGSV255F
Millipore LCR (Hydrophilic PTFE)	0.2	100 mL	< 100 µL	EO	50	SLLG025SS

*EO = ethylene oxide; RS = radiosterilized

Membrane	Pore Size (µm)	Process Volume	Hold-up Volume (after air purge)	Sterilization Method*	Qty/Pk	Catalogue No.
33 mm Diameter						
Millipore Express PLUS (PES)	0.22	200 mL	< 100 µL	RS	50	SLGP033RS
					250	SLGP033RB
	0.45	200 mL	< 100 µL	RS	50	SLHP033RS
					250	SLHP033RB
Durapore (PVDF)	0.1	100 mL	< 100 µL	RS	50	SLVV033RS
	0.22	100 mL	< 100 µL	RS	50	SLGV033RS
					250	SLGV033RB
					1000	SLGV033RK
	0.45	100 mL	< 100 µL	RS	50	SLHV033RS
					250	SLHV033RB
					1000	SLHV033RK
Mixed Cellulose Esters (MCE)	0.22	100 mL	< 100 µL	EO	50	SLGS033SS
					250	SLGS033SB
	0.45	100 mL	< 100 µL	EO	50	SLHA033SS
					250	SLHA033SB
	0.8	100 mL	< 100 µL	EO	50	SLAA033SS
					250	SLAA033SB
50 mm Diameter						
Millipore Express (PES)	0.22	4000 mL	< 1 mL	RS	10	SLGP05010
Millipore Express (PES) with filling bell	0.22	4000 mL	< 1 mL	RS	10	SLGPB5010

*EO = ethylene oxide; RS = radiosterilized

Multiwell Plates

Microporous Membrane-Based Cell Culture

Millicell products promote natural cell growth and incorporate unique design features to improve flexibility in today's laboratories. Unlike cells grown on plastic plates, membrane-supported cell cultures are able to access media from both their apical and basolateral sides, resulting in cell morphology that mimics cells grown *in vivo*. Epithelial cells grown on microporous membranes demonstrate improved growth, structure, and function. Membrane-based cell culture improves cell differentiation, increases the presence of intracellular organelles, and allows higher cell densities. Millicell inserts are available in many different plate sizes, formats, and membrane types. Please see the Multiwell Product Guide (Literature No. PB1326EN00) or visit **www.millipore.com/millicell** for complete product listings.

Membrane	Pore Size	Device Size	Qty/Pk	Catalogue No.
Millicell Single-Well Standing Inserts				
Organotypic Insert* Biopore™ (PTFE)	0.4 µm	6-well	50	PICMORG50
HA Insert MF-Millipore (Mixed cellulose esters)	0.45 µm	24-well	50	PIHA01250
		6-well	50	PIHA03050
CM Insert* Biopore (PTFE)	0.4 µm	24-well	50	PICM01250
		6-well	50	PICM03050
PCF Insert Isopore™ (Polycarbonate)	0.4 µm	24-well	50	PIHP01250
	3 µm		50	PITP01250
	8 µm		50	PI8P01250
	12 µm		50	PIXP01250
	0.4 µm	6-well	50	PIHP03050
Millicell Single-Well Hanging Inserts				
PET Insert	0.4 µm	6-well	48	PIHT30R48
	1 µm			PIRP30R48
	3 µm			PISP30R48
	5 µm			PIMP30R48
	8 µm			PIEP30R48
	0.4 µm	12-well	48	PIHT15R48
	1 µm			PIRP15R48
	3 µm			PISP15R48
	5 µm			PIMP15R48
	8 µm			PIEP15R48
	0.4 µm	24-well	48	PIHT12R48
	1 µm			PIRP12R48
	3 µm			PISP12R48
	5 µm			PIMP12R48
	8 µm			PIEP12R48

*For adherent cells, this membrane needs to be coated with an extracellular matrix.
*EO = ethylene oxide; RS = radiosterilized

continued on next page

Membrane	Membrane (Pore Size)	Device Size	Qty/Pk	Catalogue No.
Millicell Inserts Pre-loaded in Receiver Plates				
Millicell-24 Well Inserts	PET (0.4 µm)	12 hanging PET inserts, preloaded in 24-well receiver plate	1	PIHT12L04
	PET (8.0 µm)			PIEP12L04
Millicell 24-Well Cell Culture Plate Assemblies				
Millicell-24 Cell Culture Plates	PCF (0.4 µm)	24-well cell culture plate, single-well feeder tray, 24-well receiver tray and lid	1	PSHT010R1
STEM CELL TESTED	PET (1.0 µm)			PSRP010R1
	PCF (3 µm)			PSST010R1
	PCF (5 µm)			PSMT010R1
	PCF (8 µm)			PSET010R1
	PCF (3 µm)	24-well cell culture plate, 24-well receiver tray and lid	5	PSST010R5
	PCF (5 µm)			PSMT010R5
	PCF (8 µm)			PSET010R5
	PCF (0.4 µm)	24-well cell culture plate, single-well feeder tray and lid	5	PSHT010R5
STEM CELL TESTED	PET (1.0 µm)			PSRP010R5
Millicell 96-Well Cell Culture Plate Assemblies				
Millicell-96 Cell Culture Plates	PCF (0.4 µm)	96-well cell culture plate, single-well feeder tray, 96-well receiver tray and lid	1	PSHT004R1
	PET (1.0 µm)			PSRP004R1
	PCF (0.4 µm)	96-well cell culture plate, 96-well receiver tray and lid	5	PSHT004S5
	PCF (0.4 µm)	96-well cell culture plate, single-well feeder tray and lid	5	PSHT004R5
	PET (1.0 µm)			PSRP004R5

Accessories

Description	Qty/Pk	Catalogue No.
24-Well Receiver Trays with Lids	5	PSMW010R5
Single-Well Feeder Trays with Lids	5	PSSW010R5
96-Well Receiver Trays with Lids	5	MACACORS5
Millicell-ERS Volt-Ohm Meter	1	MERS00001
Replacement Electrodes	1 pair	MERSSTX01

Tissue Culture Treated Plates

Tissue culture treated plates offer a surface to which most adherent cells can attach and proliferate. The 6-, 12-, and 24-well formats provide users the flexibility to run multiple samples simultaneously. These plates can be easily prepared for SEM and TEM, and are compatible with cellular and fluorescent staining procedures. These plates can be used independently for general cell culture applications, or as receiver plates for membrane-based Millicell inserts. All plates are individually wrapped and sterilized.

Description	Qty/Pk	Catalogue No.
6-Well Cell Culture Plate, tissue culture treated, sterile	50	PIMWS0650
12-Well Cell Culture Plate, tissue culture treated, sterile	50	PIMWS1250
24-Well Cell Culture Plate, tissue culture treated, sterile	50	PIMWS2450

Millicoat ECM Precoated Receiver Plates

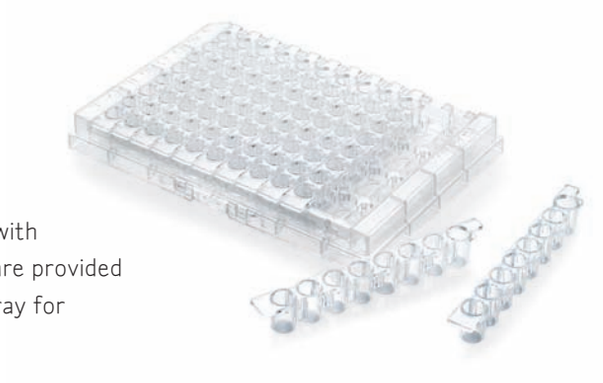
Millipore now offers precoated multiwell plates in 6- and 24-well formats. Available ECM coatings include collagen, fibronectin, and poly-D-lysine. Precoated products eliminate lengthy coating processes, improve reproducibility from well-to-well, and provide better consistency from plate to plate than manual methods.

Description	Coating	Qty/Pk	Catalogue No.
Millicoat 6-Well Plate with Collagen Coating (rat tail)	Collagen Type I	5	PICL06P05
Millicoat 24-Well Plate with Collagen Coating (rat tail)	Collagen Type I	5	PICL24P05
Millicoat 6-Well Plate with Poly-D-Lysine Coating	Poly-D-Lysine	5	PIDL06P05
Millicoat 24-Well Plate with Poly-D-Lysine Coating	Poly-D-Lysine	5	PIDL24P05
Millicoat 6-Well Plate with Fibronectin Coating (human)	Fibronectin	5	PIFB06P05
Millicoat 24-Well Plate with Fibronectin Coating (human)	Fibronectin	5	PIFB24P05

For a complete listing of ECM products, please see pages 98-100.
*Laminin coated plates coming soon. Check with Tech Service for availability.

Elispot Strips

MultiScreen®$_{HTS}$ filter plates and strips provide high protein binding capacity with low background staining and reliable sensitivity from lot to lot. Both the plates and strips are designed with a flat membrane for enhanced imaging on a range of systems including Zeiss and AID devices. Plates are available with either a removable underdrain or no underdrain, and the strips are provided without an underdrain for easy imaging and with a convenient tray for washing.



Description	Qty/Pk	Catalogue No.
MultiScreen 8-Well Strip Support, sterile	10	M8IPFRAME
MultiScreen Plate, hydrophobic PVDF, sterile, 0.45 µm pore size, 8-well strips	10	M8IPS4510
Related Reagents		
IL-2 Elispot Antibody Pair, human	Reagents for 5 plates	ELI-002-H
IL-2 Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-002-M
IL-4 Elispot Antibody Pair, human	Reagents for 5 plates	ELI-004-H
IL-4 Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-004-M
IL-5 Elispot Antibody Pair, human	Reagents for 5 plates	ELI-006-H
IL-5 Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-006-M
IL-6 Elispot Antibody Pair, human	Reagents for 5 plates	ELI-008-H
IL-6 Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-008-M
IL-10 Elispot Antibody Pair, human	Reagents for 5 plates	ELI-010-H
GM-CSF Elispot Antibody Pair, human	Reagents for 5 plates	ELI-012-H
IL-12p40 Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-014-M
IFNγ Elispot Antibody Pair, human	Reagents for 5 plates	ELI-016-H
IFNγ Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-016-M
TNFα Elispot Antibody Pair, human	Reagents for 5 plates	ELI-018-H
TNFα Elispot Antibody Pair, mouse	Reagents for 5 plates	ELI-018-M

Migration, Invasion, and Chemotaxis - Kits & Plates

The MultiScreen-MIC filter plate provides a reliable, versatile platform for a range of cell-based screening assays including migration, invasion, chemotaxis, co-culture, angiogenesis, and transmigration. Plates are available in a range of pore sizes for broad assay compatibility. The plates are also supplied sterile to support longer incubation times and allow for assay set up and analysis in the same device.

Description	Pore Size	Qty/Pk	Catalogue No.
Plates			
MultiScreen-MIC*	3 µm	10	MAMIC3S10
MultiScreen-MIC*	5 µm	10	MAMIC5S10
MultiScreen-MIC*	8 µm	10	MAMIC8S10
Accessories			
Single-Well Culture Tray		10	MAMCS0110
96-Well Receiver Plate		10	MAMCS9610

*Includes 96-well receiver plates housed in single-well trays, with lids. All components are sterilized.

QCM™ Migration Kits

We also offer preconfigured kits for even easier cell migration research. Each kit comes with the appropriate plate and insert, along with all buffers and stains required to complete the assay. Kits are available for chemotaxis, haptotaxis, and invasion assays in both colorimetric and fluorometric formats.

Description	Pore Size	Qty/Pk	Coating	Detection	24-well	96-well
Chemotaxis Cell Migration Assays	8 µm	1	N/A	Colorimetric	ECM508	—
			N/A	Fluorometric	ECM509	ECM510
	5 µm	1	N/A	Colorimetric	ECM506	—
			N/A	Fluorometric	ECM507	ECM512
	3 µm	1	N/A	Colorimetric	ECM504	—
			N/A	Fluorometric	ECM505	ECM515
Haptotaxis Cell Migration Assays	8 µm	1	Fibronectin	Colorimetric	ECM580	—
				Fluorometric	ECM562	ECM565
			Vitronectin	Colorimetric	ECM581	—
			Collagen I	Colorimetric	ECM582	—
				Fluorometric	ECM564	ECM566
Cell Invasion Assays	8 µm	1	ECMatrix	Colorimetric	ECM550	—
				Fluorometric	ECM554	ECM555
			Collagen I	Colorimetric	ECM551	—
				Fluorometric	ECM552	ECM556

MultiScreen MESH Plates

The MultiScreen-Mesh plate can be used to reduce cell aggregates prior to injection on a FACS analyzer. Cells can be strained through the mesh either by gentle centrifugation or gravity flow. Cells can then be transferred to a fresh plate for injection onto a FACS instrument or injected directly from the MultiScreen receiver plates. We have tested direct injection with BD™ Canto II and BD LSR II. Other instruments may be used but should be tested for dimensional compatibility.

Description	Pore Size	Qty/Pk	Catalogue No.
MultiScreen MESH* Plate	20 µm	10	MANMN2010
	40 µm	10	MANMN4010
	60 µm	10	MANMN6010
	100 µm	10	MANM10010

*Provided with MultiScreen transport receiver plate

Accessories

Description	Qty/Pk	Catalogue No.
MultiScreen Transport Receiver Plate	50	MATRNPS50
Single-Well Cell Culture Tray	10	MAMCS0110
96-Well Cell Culture Tray	10	MAMCS9610

Pipette Holders & Cloning Cylinders

Millipore offers a range of pipette holders designed by cell culturists to enable convenient access to pipettes. Constructed from high quality materials, our selection includes hood-mounted, bench-top and under-shelf holders. All holders feature the added convenience of multiple storage compartments.

To further facilitate cell culture, our cloning cylinders allow individual colonies of transfected cells to be isolated and picked from a plate containing many clones. Isolated clones can be dissociated and passaged free from surrounding cells, or pulsed with 50-100 µL of growth medium, which can then be analyzed for secreted products. For your convenience, cloning cylinders are supplied sterile and greased at one end to allow the cylinder to seal to the plate surface.

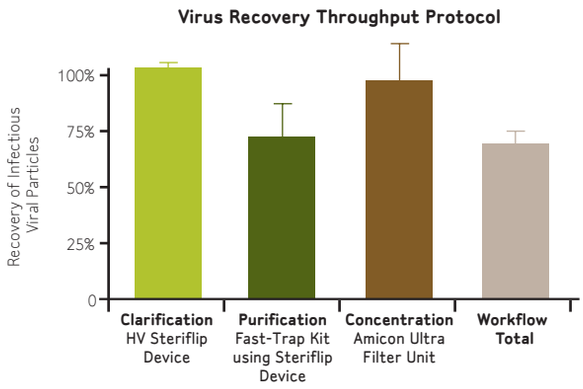
Description	Qty/Pk	Catalogue No.
Hood Mounted Pipet Holder, right side mount	1 each	LS100
Hood Mounted Pipet Holder, left side mount	1 each	LS200
Bench Top Pipet Holder	1 each	LS300
Under-Shelf Mount Pipet Holder	1 each	LS400
Cloning Cylinder, 8 mm x 8 mm diameter	15 units	TR-1004
Cloning Cylinder, 10 mm x 10 mm diameter	10 units	TR-1005

Virus Purification

Fast-Trap Purification and Concentration Kits

The Fast-Trap kits are efficient tools for virus preparation. They use Millipore's innovative, vacuum-driven Steriflip device containing a virus membrane to purify crude virus samples, followed by a concentration step using an Amicon® Ultra spin filter. Fast-Trap kits will give you high recoveries of purified virus in less time using a simple protocol!

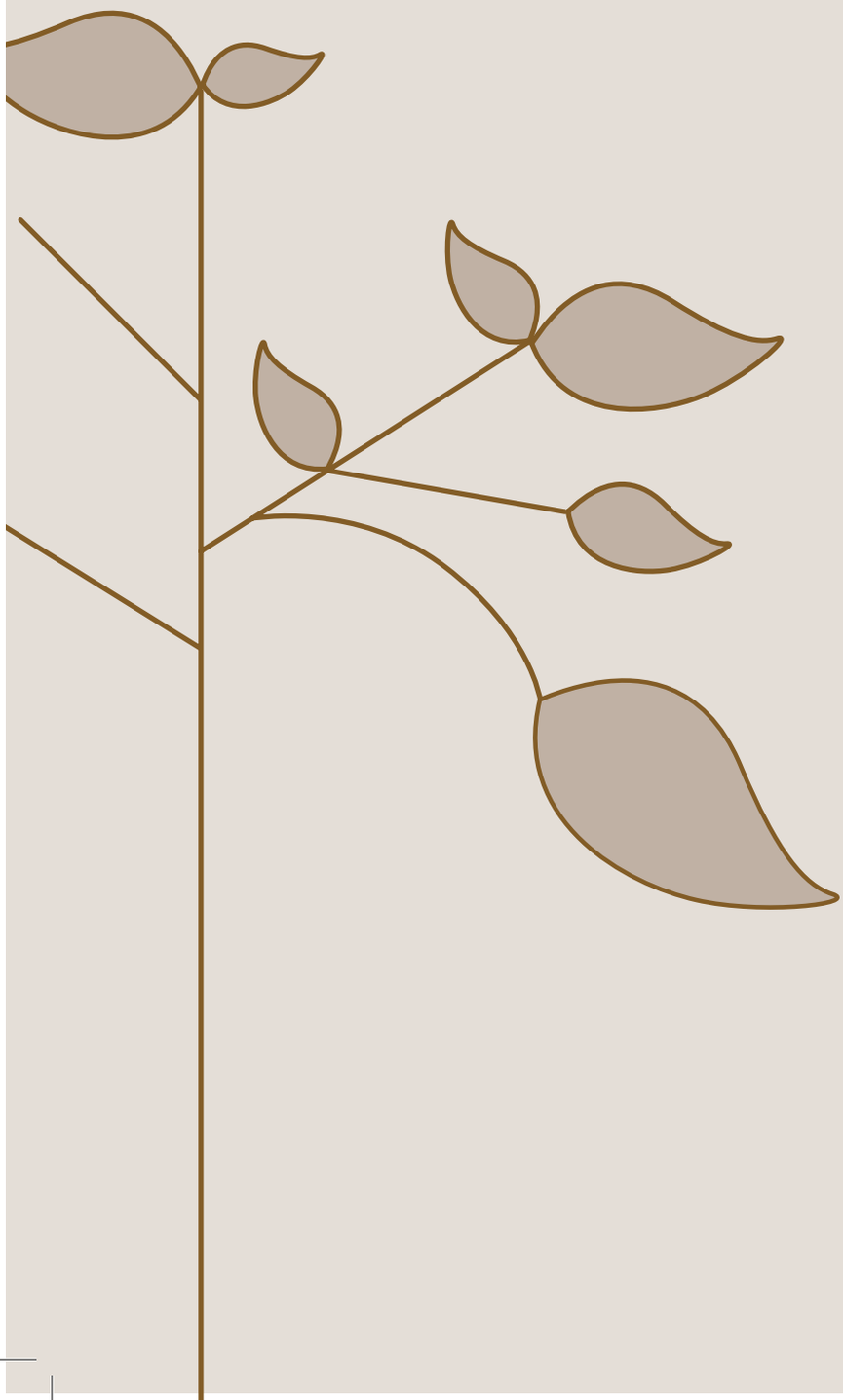
Highly purified viruses are essential for applications such as vaccine production and genetic modification of cells. Conventional virus purification methods based on sucrose or cesium chloride gradient ultracentrifugation are time-consuming, difficult, and require expensive instrumentation. Likewise, most membrane-based purification methods involve messy and potentially hazardous steps. These protocols can also be hampered by low virus recovery. In response to customer requests, Millipore has created three new Fast-Trap virus purification kits that bypass the problems of traditional methods.



Graph (left): Tests of the Fast-Trap kit on lentivirus-transfected HEK cells demonstrated high recovery at all steps of the workflow. All of the lentivirus was recovered during clarification step (input ~ 1 x 10^8 lvp). Clarified lentivirus (~ 3.9 x 10^7 lvp) was purified using the Fast-Trap purification device, and efficient recovery observed (avg. 72%). The eluted virus (~ 2 x 10^7 lvp) was concentrated/buffer exchanged and high recovery achieved (~2 x 10^7, avg. 94%). The total lentivirus recovery for this workflow was ~ 67%.

Description	Qty/Pk	Catalogue No.
Fast-Trap Adenovirus Purification and Concentration Kit	3-pack	FTAV00003
Fast-Trap Lentivirus Purification and Concentration Kit	3-pack	FTLV00003
Fast-Trap Adeno Associated Virus (AAV) Purification and Concentration Kit	3-pack	FTAA00003

Characterization Tools



Antibodies

Millipore offers a comprehensive line of antibodies to characterize pluripotent and multipotent stem cells, and their differentiated progeny. Millipore's antibodies are fully validated and published in multiple applications.

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
α1-Antitrypsin (α-1-proteinase inhibitor), clone TMF1-4B5	H	EIA	Pur	M IgG_{2a}	1 mg	MAB1261
α Tubulin, III isoform, C-terminus, clone TU-20	H, M, R, B, Po, Mk	EIA, WB, IC, IH, IH(P), IP	Pur	M IgG_1	100 µg	CBL412
α Tubulin, III isoform, C-terminus, clone TU-20	H, R, M, B, Po, Mk	WB, IC, IH, IH(P), IP, EIA	Asc	M IgG_1	100 µL	MAB1637
A2B5	Ma	IC, IH, IF	Pur	M IgM	100 µg	MAB312R
Acetyl-Histone H3	H, M, T	WB, ChIP, IP, IC	Pur	Rabbit	200 ug	06-599
Acetyl-Histone H4	H, T, Eu	WB, ChIP	Sera	Rabbit	200 µL	06-866
Actin, smooth muscle γ & α actin, clone CGA7	H, R, Ch, Mk, Rb	WB, IH, IH(P)	Asc	M IgG_2	100 µL	MAB1522
Actin, smooth muscle, clone ASM-1	H, M, R, B, Ch	WB, IH, IH(P)	Pur	M IgG_{2a}	50 µg	CBL171
Actinin, α, clone AT6/172	H	WB, IP, IF	Asc	M IgG_1	100 µL	MAB1682
Albumin	H	EIA	APur	Chicken	100 µg	AB3391
Apolipoprotein E (ApoE)	H, Pm	WB, IH	Sera	Goat	1 mL	AB947
ASH1 (MASH1)	M	WB	APur	Rabbit	100 µg	AB15582
Atrial Natriuretic Peptide, α (ANP α)	H, R, M	WB, IH	Pur	Rabbit	100 µg	AB2232
BCRP, clone BXP-21	H	WB, IC, IH, IH(P)	Sup	M IgG_{2a}	100 µg	MAB4146
BCRP, clone BXP-34	H	IC, IH	Sup	M IgG_1	100 µg	MAB4145
BCRP1 (ABCG2), clone 5D3	H, R	IC, FC, INHIB, WB	Pur	M IgG_{2b}	100 µg	MAB4155
BCRP1 (ABCG2), clone 5D3, phycoerythrin conjugated	H	IC, FC	PE	M IgG_{2b}	100 test	MAB4155P
BCRP1 (ABCG2), clone 5D3, FITC conjugated	H	FC, IC	FITC	M $IgG_{2b\kappa}$	100 test	MAB4155F
Bone Morphogenetic Protein 1, CUB-2 domain	H	WB	APur	Rabbit	100 µg	AB81031
Bone Morphogenetic Protein 1, N-terminus	H	WB	APur	Rabbit	100 µg	AB81032
Bone Morphogenetic Protein 6, clone Morph-6.1	H, R	IH(P)	Pur	M IgG_1	100 µg	MAB1048
Bone Morphogenetic Protein 4, clone 3H2	H, M, R	ELISA, WB, IC, IH, IH(P)	Pur	M IgG_{2b}	100 µg	MAB1049
Bone Morphogenetic Protein 7, clone 2A10	H, M	IH, WB	Pur	M $IgG_{1\kappa}$	100 µg	MAB4350
Bone Sialoprotein II (BSP II)	H, R	WB, IH, EIA, RIA	Pur	Rabbit	100 µL	AB1584
Bone Sialoprotein II (BSP II), clone ID1.2	H, Not R, B, Po	WB, IH(P), EIA, IRMA, RIA	Pur	M IgG_1	100 µg	MAB1061
Brachyury, clone 3E4.2	H	WB	Pur	M $IgG_{1\kappa}$	100 µg	04-135
Bromodeoxyuridine (BrdU), clone BMC9318	All	IH, FC	Pur	M IgG_1	50 µg	MAB3424
Bromodeoxyuridine (BrdU), clone BU-1	All	IC, IH, FC, Web*	Sup	M IgG_{2a}	100 µL	MAB3510
Bromodeoxyuridine (BrdU), clone IIB5	All	WB, IC, IH(P), FC	Pur	M IgG_1	100 µg	MAB3222

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Cardiotin	H, M, Po, Ca, Fe, Gt, Ht	WB, IC, IH(P)	Pur	M IgM	100 µg	MAB3240
Cartilage Proteoglycan, fetal, clone HFPG-846	H	WB, IH, EIA, RIA	Asc	M IgM	100 µL	MAB2010
CD3 (TCR), clone UCHT1	H, Not Mk	IH, IP, IF, FC, STIM	Pur	M IgG_1	100 µg	CBL150
CD4 (L3T4), clone OX-38	R	FC, IH	Pur	M IgG_{2a}	500 µg	CBL1506
CD4 (L3T4), intracellular, clone 024-10D6.B3	H	EIA, IC, FUNC	Pur	M IgG_1	100 µg	MAB3706
CD9 (MRP-1, DRAP-27), clone MM2/57	H, M, Rb	WB, IH, IP, FC	Pur	M IgG_{2b}	100 µg	CBL162
CD9 (MRP-1, DRAP-27), clone MM2/57, phycoerythrin conjugated	H, M, Rb	FC	PE	M IgG_{2b}	100 tests	CBL162P
CD10 (CALLA, Neprilysin)	H, M, R	WB, IH	Sera	Rabbit	500 µL	AB5458
CD14 (LPS Receptor), clone UCHM-1	H, Mky	IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL453
CD15 (Lewis X,3-FAL), clone 28, FITC conjugated	H	FC, IF	FITC	M IgM	100 assays	CBL144F
CD15 (Lewis X,3-FAL), clone DT07 and BC97, IHC Select, prediluted	H	IH(P)	Pur	M IgM	6 mL	IHC2108-6
CD15 (Lewis X,3-FAL), clone ZC-18C, FITC conjugated	H	FC, IF	FITC	M IgM	50 assays	MAB1205F
CD16 (FcγRIII), clone GRM1	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL541
CD19 (B4), clone FMC63	H	IF, FC	Pur	M IgG_{2a}	100 µg	MAB1794
CD19 (B4), clone HD37	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL582
CD20 (B1), C-terminus	H, M	IH(P), WB, IP	Pur	Rabbit IgG	100 µL	04-455
CD24 (Heat Stable Antigen), clone SN3	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL561
CD24 (Heat Stable Antigen), clone 30-F1	M	IH, IP, FC	Pur	R $IgG_{2c\kappa}$	500 µg	CBL1315
CD29 (Integrin β1), clone MB1.2	M	IH, FC, WB, IH	Pur	R $IgG_{2\kappa}$	100 µg	MAB1997
CD29 (Integrin β1), clone TDM29	H	Blk, FC, IF, IP	Pur	M IgG_1	100 µg	CBL481
CD30 (Ki-1), clone HRS-4	H, Mk	IH, IP, FC	Pur	M IgG_1	100 µg	CBL529
CD31 (PECAM-1), clone HC1/6	H	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL468
CD33 (gp67), clone WM53	H	WB, IH, IP, FC	Pur	M IgG_1	100 µg	CBL163
CD34 Class I, clone B1-3C5	H	IF, FC	Pur	M IgG_1	100 µg	MAB4211
CD34 Class II, clone QBEND/10	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL496
CD34 Class III, clone 581	H	FC, IH(P)	Pur	M IgG_1	100 µg	CBL555
CD36 (Platelet Glycoprotein IV), clone SM-phi	H	WB, IH, FC	Pur	M IgM	100 µg	CBL168
CD44 (HCAM), pan, clone SFF-2	H	FC, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB4065
CD44s (Pgp-1, Homing Receptor, HCAM)	H, B, Ca, M, Po, Rb, R	EIA, FC, WB, IC, IH, Web*	Pur	R IgG_{2b}	100 µg	MAB2137
CD45 (LCA), clone F10-89-4	H	WB, IH, IP, FC	Pur	M IgG_{2a}	100 µg	CBL124
CD45 (LCA), clone F10-89-4, FITC conjugated	H	IH, FC	FITC	M IgG_{2a}	100 test	CBL124F
CD45 (LCA), clone IBL-5/25	M	FC, WB, IH	Pur	R IgG	500 µg	CBL1326
CD45 (LCA), clone MEM 28	H	EIA, IH(P), FC, WB, IP	Pur	M IgG_1	100 µg	CBL464
CD45 (LCA), clone MRC OX-1	R	IH, FC	Pur	M IgG_1	500 µg	CBL1502
CD45 (LCA), clone HuLy-m4	H	IC, FC	Pur	M IgG_1	100 µg	MAB4205
CD45RA, clone F8-11-13	H, Mk	IH, IH(P), IP, FC	Pur	M IgG_1	100 µg	CBL121

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
CD54 (ICAM-1), clone 84H10	H, Not Ca	Blk, FC, IH, IP	Pur	M IgG_1	100 µg	MAB1379
CD54 (ICAM-1), clone 84H10, FITC conjugated	H, Not Ca	FC	FITC	M IgG_1	50 assays	MAB1379F
CD54 (ICAM-1), clone P2A4	H	FC, IH, IP, IC, EIA	Pur	M IgG_1	100 µg	MAB2146
CD54 (ICAM-1), clone W-CAM-1	H	FC, IH(P)	Asc	M IgG_1	100 µL	MAB2130
CD56 (NCAM)	H, M, Ch	WB, IH, BLK, EIA	APur	Rabbit	50 µg	AB5032
CD56 (NCAM), clone MEM 188, phycoerythrin conjugated	H, Mk	FC	PE	M IgG_{2a}	100 assays	CBL510P
CD59 (Protectin), clone 2/24	H	IF, FC	Pur	M IgG_1	100 µg	MAB1759
CD59 (Protectin), clone 2/24, FITC conjugated	H	IF, FC	FITC	M IgG_1	100 assays	MAB1759F
CD59 (Protectin), clone MEM-43	H	IH, IH(P), IF, FC	Pur	M IgG_{2a}	100 µg	CBL467
CD59 (Protectin), clone MEM-43, FITC conjugated	H	FC	FITC	M IgG_{2a}	100 assays	CBL467F
CD59 (Protectin), clone MEM-43, phycoerythrin conjugated	H	FC	PE	M IgG_{2a}	100 assays	CBL467P
CD71 (Transferrin Receptor)	H	EIA	Pur	Rabbit	100 µg	CBL47
CD81 (TAPA-1), clone 2F7, conjugated	M	FC	FITC	Hamster	500 µg	CBL1352F
CD90 (Thy-1), clone F15-42-1	H	IH, IP, FC	Pur	M IgG_1	100 µg	CBL415
CD90 (Thy-1), clone F15-42-1, FITC conjugated	H	FC	FITC	M IgG_1	100 assays	CBL415F
CD90 (Thy-1.1), clone OX-7	R	FC, IH, IC	Pur	M IgG_1	100 µg	MAB1406
CD93 (C1qRp), clone R139	H	WB, IC, IP, FC	Pur	M IgG_{2b}	100 µg	MAB4314
CD93 (C1qRp), clone R3	H	WB, IC, FC	Pur	M IgM	100 µg	MAB4313
CD93, clone R139, Alexa Fluor 488 conjugated	H	FC	A488	M IgG_{2b}	100 µg	MAB4314X
CD93, clone R3, Alexa Fluor 488 conjugated	H	FC	A488	M IgM	100 µg	MAB4313X
CD93, clone R3, phycoerythrin conjugated	H	FC	PE	M IgM	100 µg	MAB4313P
CD105 (Endoglin), clone P3D1	H	EIA, FC, WB, IC, IH, IP	Pur	M $IgG_{2a\kappa}$	100 µg	MAB2152
CD105 (Endoglin), clone P3D1, Alexa Fluor 488 conjugated	H	FC, IC	A488	M $IgG_{2a\kappa}$	100 µg	MAB2152X
CD106 (VCAM-1), clone 1.G11B1	H, Po	EIA, FC, WB, IH	Pur	M IgG_1	100 µg	CBL206
CD106 (VCAM-1), clone MK-2	M	Blk, FC, IH, IP	Pur	R IgG_1	500 µg	CBL1300
CD116 (GM-CSF-α Receptor), neutralizing, clone K21B7.17A	H	WB, IP, FC, Neut	Pur	M IgG_{2a}	100 µg	MAB1037
CD117 (c-kit), clone 1DC3	M	FC, IP, WB, IH	Pur	M IgG_1	100 µg	MAB1164
CD117 (c-kit), clone 2B8, FITC conjugated	M	FC	FITC	R $IgG_{2b\kappa}$	500 µg	CBL1359F
CD117 (c-kit), clone KIT4	H	FC, IF, IP	Pur	M IgG_{2a}	100 µg	MAB1163
CD117 (c-kit), clone YB5.B8	H	FC, IP, IH	Pur	M IgG_1	100 µg	MAB1162
CD117 (c-kit), clone YB5.B8, FITC conjugated	H	FC	FITC	M IgG_2	100 assays	MAB1162F
CD117 (c-kit), clone YB5.B8, phycoerythrin conjugated	H	FC	PE	M IgG_3	100 assays	MAB1162H
CD117 (c-kit, SCF Receptor), clone ACK2	M	FC	Pur	R $IgG_{2b\kappa}$	500 µg	CBL1360
CD117, clone 2B8, FITC conjugated	M	FC	FITC	R $IgG_{2b\kappa}$	500 µg	CBL1359F
CD11b, (Integrin αM, MAC1), clone M1/70.15.1	M	IF, IP, IH (notP), FC, INH, WB	Pur	R IgG_{2b}	500 µg	CBL1313

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
CD120a (TNF Receptor), extracellular, clone H398	H	EIA, FC, WB, IP, RIA	Pur	M IgG_{2a}	200 µg	MAB3216
CD133, clone 13A4	M	FC, IP, WB, IH, EM	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
CD133, clone 13A4, Alexa Fluor 488 conjugated	M	FC	A488	R $IgG_{1\kappa}$	100 µg	MAB4310X
CD135 (Flk-2, Flt-3, Ly-72), cytoplasmic domain	H, M	IP, WB, IC	Pur	Rabbit	200 µg	06-647
CD135 (Flk-2, Flt-3, Ly-72), extracellular region	H, M	FC, IP, WB, IC	Pur	Rabbit	200 µg	06-646
CD141 (Thrombomodulin, Fetomodulin), clone B-A35, FITC conjugated	H	FC	FITC	M IgG_1	100 µg	CBL584F
CD146 (MUC18, MCAM), Endothelial Cells, clone P1H12	H, M, Can, Rb, Not R	IC, IP, EIA, FC, IH (not P), Web*	Pur	M IgG_1	100 µg	MAB16985
CD184 (C-X-C Chemokine Receptor 4), extracellular loop	H	WB	Pur	Rabbit	100 µg	AB1847
CD184 (C-X-C Chemokine Receptor4), N-terminus	H	WB, IC, IP	Pur	Rabbit	100 µg	AB1846
Choline Acetyltransferase (ChAT)	Fe, M, R, Mk	IH, IP	Sera	Rabbit	50 µL	AB143
Choline Acetyltransferase (ChAT)	H, M, R, Gp, Ch, Av, Op	WB, IC, IH	APur	Goat	500 µL	AB144P
Choline Acetyltransferase (ChAT)	R, Rb, Gp	IH, WB	Sera	Sheep	100 µL	AB1582
Choline Acetyltransferase (ChAT)	R	IH	Sera	Rabbit	100 µL	AB5042
Choline Acetyltransferase (ChAT)	R	IH, EIA	APur	Rabbit	20 µg	AB5042P
Choline Acetyltransferase (ChAT)	H	WB, IH	APur	Rabbit	100 µg	AB5964
Choline Acetyltransferase (ChAT), clone 1.B3.9B3	H, R, Po	WB, IH, IH(P), EIA	Pur	M IgG_1	100 µg	MAB5270-100UG
Choline Acetyltransferase (ChAT), clone 1E6	H, R, Mk	IH	Asc	M IgG_1	100 µL	MAB305
Choline Acetyltransferase (ChAT), clone 28C4	H, R, Mk, Gp	EIA, WB, IH	Pur	M IgG	100 µg	MAB5350
Chromogranin A (CgA, Pituitary Secretory Protein 1)	H, Mk, not R, M	WB, IH(P)	Pur	M IgG_1	100 µL	MAB319
Chromogranin A (CgA, Pituitary Secretory Protein 1)	H, Mk, Po, Not Gp, M, Rb, R, Sh	IH, IH(P)	Pur	M IgG_1	500 µg	MAB5268
Chymotrypsin, human pancreas	H	IH, EIA	Asc	M IgG_3	100 µL	MAB1476
CNPase, clone 115B	H, M, Rb, B, Ca, Po, R, Sh	WB, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB326
CNPase, clone 115B	H, M, R, B, Po, Ca, Rb, Sh	WB, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB326R
Collagen I	H	EIA, WB, IH	Pur	Rabbit	500 µL	AB745
Collagen I	R	EIA, IC, IH(P), RIA	Pur	Rabbit	100 µg	AB755P
Collagen I	H, B	EIA, IC, IH	APur	Goat	200 µg	AB758
Collagen I	M	IH	Pur	Rabbit	100 µg	AB765P
Collagen I, clone C11	H	EIA, IH	Pur	M IgG_1	100 µg	MAB1340
Collagen IV	H	EIA, IH, not WB	Pur	Rabbit	50 µg	AB748
Collagen IV	H, M, R	IH(P), not WB	Pur	Rabbit	100 µg	AB8201

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Collagen IV	H, M, B	DB, EIA, IC, IH, not WB	APur	Goat	200 µg	AB769
C-X-C Chemokine Receptor 4 (CD184, CXCR4), extracellular loop	H	WB	Pur	Rabbit	100 µg	AB1847
C-X-C Chemokine Receptor 4 (CD184, CXCR4), N-terminus	H	WB, IC, IP	Pur	Rabbit	100 µg	AB1846
C-X-X-X-C Chemokine Receptor 1 (CX3CR1), extracellular loop	H	WB	Pur	Rabbit	100 µg	AB1891
Cytokeratin Epithelial, clone AE1	B, Ch, H, M, R, Rb	IH(P)	Pur	M IgG	500 µg	MAB1612
DARPP-32	H, M, B	WB	APur	Rabbit	100 µL	AB1656
Dimethyl Histone H3 (Lys27)	H	LUMX, WB, PIA	Pur	Rabbit	200 µg	07-452
Dimethyl Histone H3 (Lys36)	Vrt	WB, ChIP	Sera	Rabbit	100 µL	07-369
Dimethyl Histone H3 (Lys4)	H, T	ChIP, DB, IF, WB, IC	Sera	Rabbit	200 µL	07-030
Dimethyl Histone H3 (Lys9)	H, M, R, Ch, Y	WB, IC, PIA, DB	Pur	Rabbit	100 µg	07-441
Dimethyl Histone H4 (Lys20)	H	WB	Pur	Rabbit	100 µg	07-1584
Dishevelled-1	H	WB	APur	Rabbit	50 µL	AB5970
Dishevelled-2	H, M	WB, IH	Pur	Rabbit	50 µL	AB5972
Dishevelled-2	H	WB	Pur	Rabbit	50 µL	AB5976
Dishevelled-3	H, M	WB	Pur	Rabbit	50 µL	AB5974
Dopa Decarboxylase	H, B, Ca, Sh	WB	APur	Sheep	100 µL	AB119
Dopa Decarboxylase	H, R, Rb, Sh, Gp, Ca	WB, IC, IH, IP	APur	Rabbit	100 µL	AB136
Dopa Decarboxylase	H, R, B, Gp, Ca, Sh	WB, IH	APur	Rabbit	100 µL	AB1569
Dopamine Transporter (DAT)	M, R	WB, IH, IP, EIA	Apur	Rabbit	50 µg	AB1591P
Dopamine Transporter (DAT), C-terminus	H, Mk, not Rd	WB, IH	Apur	Rabbit	100 µL	AB1766
Dopamine Transporter (DAT), extracellular loop 2	H, Mk	WB, IH	Apur	Rabbit	100 µL	AB5802
Dopamine Transporter (DAT), N-terminus, clone DAT-NE	H, Mk, Rd	WB, IC, IH	Sup	R IgG_{2a}	100 µL	MAB369
Dopamine β Hydroxylase (DBH)	H, R	WB, IH, INHIB, WB, RIA	Sera	Rabbit	50 µL	AB1585
Dppa1, clone 4D10.2	M	WB	Pur	M IgG	100 µg	MAB4355
Dppa-5, clone 8H3.2	H, M	WB, IC	Pur	M $IgG_{aκ}$	100 µg	MAB4320
E-Cadherin, azide-free, clone 67A4	H	IF, BLK, FC	Pur	M IgG_1	100 µg	MAB3199Z
E-Cadherin, clone 67A4	H	WB, BLK, FC	Pur	M IgG_1	100 µg	MAB3199
EMX1	H	WB	APur	Rabbit	100 µg	AB15067
En1 (Engrailed)	H, Rd	WB, IH, Web*	APur	Rabbit	100 µg	AB5732
Endoglin (CD105), clone 8E11	H	IH, IH(P), FC	Pur	M IgM	100 µg	CBL418
Endoglin (CD105), clone 8E11, FITC conjugated	H	FC	FITC	M IgM	100 assays	CBL418F

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Endoglin (CD105), clone MJ7/18	M	FC, IP, WB, IH	Pur	M $IgG_{2κ}$	500 µg	CBL1358
Endoglin (CD105), clone P3D1	H	EIA, FC, IP, WB, IC, IH	Pur	M IgG_{2a}	100 µg	MAB2152
Endoglin (CD105), clone P3D1, Alexa Fluor 488 conjugated	H	FC, IC	A488	M IgG_{2a}	100 µg	MAB2152F
Epithelial Specific Antigen, clone VU-1D9	H	ELISA, WB, IH, IH(P)	Pur	M IgG_1	100 µg	CBL251
E-selectin (CD62E), clone 1.2B6	H, Por	WB, IH, IP, EIA, FC, INHIB, WB, IH(notP)	Pur	M IgG_1	100 µg	CBL180
EVX1	H	WB	APur	Rabbit	100 µg	AB10203
EVX2	M, R	WB	Pur	Rabbit	100 µg	AB10201
Fibronectin	H	EIA	APur	Rabbit	100 µg	AB1945
Fibronectin	R	EIA, WB	Pur	Rabbit	100 µg	AB1954
Fibronectin	M	EIA, IH, RIA	APur	Rabbit	100 µg	AB2033
Fibronectin, cellular, clone DH1	H, R, Rb	WB, IH	Pur	M IgG_1	100 µg	MAB1940
Fibronectin, clone P1H11	H	EIA, IC, IH, IP	Pur	M IgG_1	100 µg	MAB1926
Flk-1 (VEGFR-2, KDR)	H, M, Po	IP, WB, IC	Sera	Rabbit	100 µL	07-716
Flk-1 (VEGFR-2, KDR), clone 89B3A5	M	FC, WB, IP	Pur	R IgG_{2a}	100 µg	MAB1669
GABA	R, M, Mk, Ch, Lz	IH, Web*	Sera	Rabbit	100 µL	AB131
GABA, clone 5A9	Ma	EIA, WB, IH	Pur	M IgG_1	50 µg	MAB316
Galactocerebroside C (GalC), clone mGalC	H, M, R, B, Rb	IC, IH, EIA, Web*	Pur	M IgG_3	50 µg	MAB342
GATA-4 (GATA Binding Factor)	H, M, R	WB, IC	APur	Rabbit	100 µg	AB4132
Gbx (Gastrulation Brain Homeobox)	H, Rd	WB, IH, Web*	APur	Rabbit	100 µg	AB5736
GCTM-5 Antibody, clone GCTM-5	H	IC, IH, WB	Pur	M IgG_1	100 µg	MAB4365
Genesis (FoxD3)	H, M	WB	APur	Rabbit	100 µg	AB5687
Glial Fibrillary Acidic Protein (GFAP)	H, R, B, Ca	IC, IH	Sera	Rabbit	50 µL	AB5804
Glial Fibrillary Acidic Protein (GFAP), clone GA5	H, M, R, B, Po, Ch, Rb	WB, IC, IH, IH(P), Web*	Pur	M IgG_1	40 µg	MAB3402
Glial Fibrillary Acidic Protein (GFAP), clone GA5	H, M, R, B, Po, Ch, Rb	WB, IC, IH, IH(P), Web*	Asc	M IgG_1	100 µL	MAB360
Glial Fibrillary Acidic Protein (GFAP), clone GA5	H, R, Po	WB, IC, IH, IH(P), Web*	Pur	M IgG_1	40 µg	MAB3402
Glucagon	R, Ca, Fe, Ox, Sh	IH(P)	Sera	Rabbit	500 µL	AB932
Glucose Transporter (GLUT-2)	H, M, R	WB, IP, EIA	Sera	Rabbit	50 µL	AB1342
Glutamate Decarboxylase (GAD65), clone GAD-6	H, R	WB, IH	Pur	M IgG_{2a}	100 µg	MAB351
Glutamate Decarboxylase 65 (GAD65)	H, M	WB, IH	Sera	Rabbit	50 µL	AB5082
Glutamate Decarboxylase 65/67 (GAD65/67)	H, M, R, Fe	WB, IH	Pur	Rabbit	50 µL	AB1511

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Glutamate Decarboxylase 67 (GAD67)	R	WB, not IH	APur	Rabbit	100 µg	AB5862P
Glutamate Decarboxylase 67 (GAD67)	H, M, R	WB, IH	Pur	M IgG_{2a}	100 µg	MAB5406
Glycophorin A (CD235a), clone CMRF14	H	FC	Pur	M IgG_{2b}	100 µg	MAB3432
Glycophorin A (CD235a), clone CMRF14, phycoerythrin conjugated	H	FC	PE	M IgG_{2b}	100 assays	MAB3432H
Golgi Zone, clone371-4	H	IH	Pur	M IgG_1	100 µL	MAB1271
Green Fluorescent Protein (GFP, eGFP)	WR	WB, IC, IP	Pur	Chicken	250 µg	AB16901
Green Fluorescent Protein (GFP, eGFP)	WR	WB, IC, IH, EIA, Web*	Pur	Rabbit	50 µg	AB3080
Green Fluorescent Protein (GFP, eGFP)	WR	WB, EIA, Web*	APur	Rabbit	50 µg	AB3080P
Green Fluorescent Protein (GFP, eGFP)	WR	WB, IC, IH, EIA	Pur	M IgG_1	100 µL	MAB3580
Green Fluorescent Protein (GFP), clone 264-449-2	WR	WB, IC, IP	Pur	M IgG_1	100 µg	MAB2510
Growth Associated Protein 43 (GAP43)	M, R	EIA, WB, IC, IH, IP	Pur	Rabbit	100 µL	AB5220
Growth Associated Protein 43 (GAP43)	H, M, R, B, Mk, Fe	WB, IC, IH, IH(P), IP	Sera	Rabbit	100 µL	AB5312
Growth Associated Protein 43 (GAP43)	R	WB	APur	Rabbit	100 µL	AB5401
Growth Associated Protein 43 (GAP43)	H, R, Fe, M	WB, IH, IP	Pur	M IgG_1	50 µg	MAB347
Heat Shock Protein 27 (Hsp27), clone G3.1	H, M, Mk	EIA, WB, IF, IH, IH(P)	Pur	M IgG_{1a}	50 µg	MAB88051
HES1 (Hairy 1)	H, Rd	WB, IH	APur	Rabbit	100 µg	AB5702
HESCA-1 (Human Embryonic Stem Cell Antigen-1), clone 051007-4A5	H	IC, IH, IF, FC	Pur	M IgM_κ	100 µg	MAB4407
HESCA-2 (Human Embryonic Stem Cell Antigen-2), clone 060818-7A6	H	IC, IP, WB	Pur	M IgM_κ	100 µg	MAB4406
hPlurES-1, clone 1H3	H	IC, FC, WB	Pur	M IgG_1	100 µg	MAB4395
HuC	H, Rd	WB, IC	APur	Rabbit	100 µg	AB5829
HuD	H, Rd	WB, IH	APur	Rabbit	100 µg	AB5971
Human Leukemia Inhibitory Factor, clone 4F7.2	H, M	ELISA, WB	Pur	M IgG_1	100 µg	MAB4306
Id, Pan (Anti Id-1, 2,3,4), clone 9H7.2	M	ELISA	Pur	M IgG_{2a}	100 µg	MAB4394
ID2, clone 10C5.2	H	IH, LUMX	Pur	M $IgG_{3\kappa}$	100 µg	MAB4358
Id3, clone 3F2	M	ELISA, IC	Pur	M IgG_1	100 µg	MAB4353
Id4, clone 10C6.2	H	ELISA, IC	Pur	M IgG_{2a}	100 µg	MAB4393
IHC Select CD30, prediluted, clone BER-H2	H	IH(P)	Pur	M $IgG_{1\kappa}$	6 mL	IHC2041-6
IHH	M, H, R	WB	APur	Rabbit	100 µg	AB10212
Insulin	H, B, Po	WB, IH	Sera	Guinea Pig	1 mL	AB3440
Integrin $\alpha 2\beta 1$ (VLA-2), clone BHA2.1	H, Po	IH, IP, BLK, FC, IH(P)	Pur	M $IgG_{1\kappa}$	100 µg	MAB1998
Integrin $\alpha 2\beta 1$ (VLA-2), clone BHA2.1	H, Po	IH, IP, BLK, FC	Pur*	M $IgG_{1\kappa}$	100 µg	MAB1998Z
Integrin $\alpha 2\beta 1$ (VLA-2), clone BMA2.1	M	IP, BLK, FC	Pur	R IgG_1	100 µg	MAB2141Z
Integrin $\alpha 4$ (CD49d), clone P1H4	H, Pm	IC, IH, IP, BLK, EIA, FC	Pur	M IgG_1	100 µg	MAB16983

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Integrin α4 (VLA-4, CD49d), clone PS/2	M	IH, IP, IF, FC, INH, WB	Pur	R $IgG_{2bκ}$	500 µg	CBL1304
Integrin α5β1 (VLA-5), clone BMA5	M	IP, BLK, FC, Not WB	Asc	R $IgG_{2bκ}$	100 µL	MAB1984
Integrin α5β1 (VLA-5), clone HA5	H, Po	IP, FC	Pur	M $IgG_{2bκ}$	100 µg	MAB1999
Integrin α5β1 (VLA-5), clone JBS5	H, Mk	IH, IH(P), IP, BLK	Asc	M IgG	100 µL	MAB1969
Integrin α6 (CD49f), clone MA6	M	IH, IP, FC, not WB	Pur	R $IgG_{2κ}$	100 µg	MAB1982
Integrin α6β1 (VLA-6), clone 5A	R	IH, EIA	Asc	M IgG_1	100 µL	MAB1410
Integrin αV (CD51), clone 13C2	H	IH, FC	Pur	M IgG_1	100 µg	CBL490
Integrin αVβ3 (CD51/CD61), clone LM609	H, B, Po, Av, Ca, Ch, Mk, Rb, Not M, Not R	IP, IF, BLK, FC, IH(not P)	Pur	M IgG_1	100 µg	MAB1976
Internexin, α	Ch, Ma	WB, IC, IH, EIA	Sera	Rabbit	50 µL	AB5354
Internexin, α, clone 3G8	R, not H, B, Po, M	WB, IC	Asc	M IgG_1	100 µL	MAB1525
Internexin, α, C-terminus	H, Ch, Ma	WB, IH(P), IP, EIA	Sup	M IgG_1	300 µL	MAB5224
Isl-1/Islet-1 (Insulin gene enhancer protein)	H, Rd	WB, IH	Pur	Rabbit	100 µg	AB4326
Keratin Epithelial, clone AE3	B, Ch, H, M, Mk, R, Rb	WB, IH(P)	Pur	M IgG_1	500 µg	MAB1611
Ki-67	H, R	WB, IH(P)	APur	Rabbit	500 µL	AB9260
Ki-67, clone Ki-S5	H	WB, IC, IH, IH(P), FC	Pur	M IgG_1	100 µg	MAB4190
LEF-1, all isoforms, clone 1C3.1D10	H	WB	Pur	M IgG_1	100 µg	MAB3750
LEF-1, transactivation domain, clone 3A12	H	WB	Pur	M IgG_1	100 µg	MAB3749
LEF-1, β catenin binding domain, clone REMB1	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3751
LEF-1/TCG, HMG binding domain, clone REMB6	H, M	IF, WB	Pur	M IgG_1	250 µg	MAB3752
LEO1	H	WB	Sera	Rabbit	100 µL	AB10190
LHX3	H, Rd	IH	APur	Rabbit	100 µg	AB5758
LIM-1	H, M, F, Fg	WB, IC, IH(P), IP	Pur	Rabbit	100 µg	AB3200
MAP 2A, 2B (Microtubule Assoc. Protein 2)	H, M, R, B, Ch	WB, IH, Web*	Pur	M IgG_1	200 µg	MAB3418
MAP 2A, 2B (Microtubule Assoc. Protein 2)	H, M, R, B, Am, Av	WB, IH	Asc	M IgG_1	100 µL	MAB378
MAP1B (MAP5)	M, R, B, Ch, Fe, Ht	WB, IH	Asc	M IgG_1	100 µL	MAB366
MAP1B (MAP5), clone3G5	H, R, B, Not Ch	WB, IF, IH, IH(P), IP	Asc	M IgG_1	100 µL	MAB376
MAP2	H, R, M	WB, IC, IH, EIA	Pur	Rabbit	100 µL	AB5622
MAP2A, 2B (Microtubule Assoc. Protein 2)	H, M, R, B, Am, Av, Xn	WB, IH	Asc	M IgG_1	100 µL	MAB378
MDR1 (p-Glycoprotein, CD243, p-170)	H, Ht	WB, IC, IH(P), FC	Sup	M IgG_1	100 µg	MAB4120
MDR1 (p-Glycoprotein, CD243, p-170), clone 5A12.2	H	IH, IH(P)	Pur	M IgG_{2b}	100 µg	MAB4336

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
MDR1 (p-Glycoprotein, CD243, p-170), clone 6C4.2	H	IH(P)	Pur	M IgG_{2a}	100 µg	MAB4338
MDR1 (p-Glycoprotein, CD243, p-170), clone UIC2	H, Pm, Not M, R	IH, IH(P), FC, IF, Blk, IP	Pur	M IgG_{2a}	100 µg	MAB4334
MDR1 (p-Glycoprotein, CD243, p-170), clone UIC2, biotinylated	H, Pm, Not M, R	IH, IH(P), Blk, FC, IP	Biot	M IgG_{2a}	100 µg	MAB4334B
MDR1 (p-Glycoprotein, CD243, p-170), clone 3C3.2	H	WB, EIA	Asc	M IgG_{2a}	100 µL	MAB448
MELK, clone 6C1.3	H	WB	Pur	M $IgG_{2\kappa}$	100 µg	MAB4331
MEOX1	M, H, R, B	WB	Pur	Rabbit	100 µl	AB10202
Mitochondria	H, Mk	WB, IC	Sera	Rabbit	100 µL	AB3598
Mitochondria, surface of intact mitochondria, clone 113-1	H	IP, IH, IH(P)	Pur	M IgG_1	100 µL	MAB1273
Monomethyl Histone H3 (Lys27)	H, Vrt	WB, IC, DB	Pur	Rabbit	200 µg	07-448
Monomethyl Histone H3 (Lys36)	Vrt	DB, IF, WB	Sera	Rabbit	100 µL	07-548
Monomethyl Histone H3 (Lys4)	H, Vrt	WB, IC, PIA, ChIP	Pur	Rabbit	200 µg	07-436
Monomethyl Histone H3 (Lys9)	H, M, Ch	WB, PIA, IC, DB	Pur	Rabbit	100 µg	07-450
Monomethyl Histone H4 (Lys20), clone NL314	H	WB	Sup	Rabbit	100 µL	04-735
Mouse Leukemia Inhibitory Factor, clone 2H2.2	M	ELISA, WB	Pur	M IgG_1	100 µg	MAB4307
MSX2	H, M, R	WB	APur	Rabbit	100 µg	AB10211
Myelin Basic Protein (MBP)	H, M	WB, IH, IH(P)	SPur	Rabbit	500 µL	AB980
Myosin, heavy chain β, clone 5B9 (aka 2C8)	H	WB, IH	Sup	M IgG_{2a}	1 mL	MAB1548
Myosin, slow muscle, clone NOQ7.5.4D	H, R, Fe	WB, IH, RIA	Asc	M IgG	100 µg	MAB1628
Nanog	H, M	WB, FC, ICC	Sera	Rabbit	100 µL	AB9220
Nanog, N-terminus	M	WB	APur	Rabbit	100 µg	AB5731
Nestin	H, Not M, Not R	WB, IC, IH, IH(P)	Sera	Rabbit	50 µL	AB5922
Nestin, clone 10C2	H, Not M, Not R	WB, IC, IH, IH(P)	Pur	M IgG_1	100 µg	MAB5326
Nestin, clone rat-401	M, R, Not H	WB, IC, IH	Pur	M IgG_1	100 µg	MAB353
Nestin, prediluted, clone rat-401	M, R	IH(P)	Pur	M IgG_1	6 mL	IHCR1006-6
Neural Cell Adhesion Molecule (NCAM, CD56)	H, M, R, Ch	WB, IH, IF, EIA, INH, WB	APur	Rabbit	50 µg	AB5032
Neural Cell Adhesion Molecule (NCAM, CD56), clone H28.123	M	WB, IH, IP	Pur	R IgG_{2a}	100 µg	MAB310
Neural Cell Adhesion Molecule (NCAM, CD56), extracellular, clone ERIC-1, azide free	H	IH, WB, EIA, Not FC	Pur	M IgG_1	100 µg	MAB2120Z
NeuroD 1	H, M, R	WB	APur	Rabbit	100 µg	AB15580
Neurofilament 200 kD, clone NE14	H, R, Po	IH	Pur	M IgG_1	40 µg	MAB5256
Neurofilament 200 kD, clone RT97	H, R	IH, WB	Pur	M IgG_1	50 µg	MAB5262
Neurofilament 70 kD, clone DA2	H, R, M, B, Po	WB, IC, IH	Sup	M IgG_1	300 µL	MAB1615

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Neurofilament 70 kD, clone DP5 2.7.3	H, B, Po	IH, IH(P)	Pur	M IgG_1	30 µL	MAB5294-30UL
Neurofilament 70 kD, clone DP5 2.7.3	H, B, Po, Not M, Not R	IH, IH(P)	Pur	M IgG_1	60 µL	MAB5294-60UL
Neuron Specific Enolase (NSE)	B, R	WB, IH, IH(P)	Sera	Rabbit	500 µL	AB951
Neuron Specific Enolase (NSE)	H, R	IC, IH	APur	Chicken	500 µL	AB9698
Neuron Specific Enolase (NSE), clone 5E2	H, Gp	EIA, WB, IC, IH(P)	Pur	M IgG_{2a}	100 µg	CBL220
Neuron Specific Enolase (NSE), clone 5E2	H	WB, IC, IH(P), EIA	Pur	M IgG_{2a}	100 µg	MAB324
Neuron Specific Enolase (NSE), clone F3-1C4	H, R, B	IC	Pur	M IgG_1	100 µg	MAB314
Neuron-Specific Nuclear Protein (NeuN), clone A60	H, R, M, Ch, Ft, Sal	WB, IC, IH, IF, IH(P)	Pur	M IgG_1	500 µg	MAB377
NG2 Chondroitin Sulfate Proteoglycan	H, M, R, Mk	WB, IC, IH, IP, EIA	Pur	Rabbit	100 µg	AB5320
NLK	H, M, R, Ch, Ca, Xn	WB	Pur	Rabbit	100 µg	AB10206
NROB1	H, M	IC, WB	Pur	Rabbit	100 µg	AB3741
Nuclear Erythroid Cell Surface Antigen, clone HAE9	H, Not M, Not R	FC, IP	Pur	M IgM	100 µg	MAB2115
Nuclear Ribonucleoprotein, clone 58-15	H, R, Not M	IF, IH, IH(P)	Pur	M IgM	100 µL	MAB1287
Nuclei, clone 235-1	H Only	IP, IH(P)	Pur	M IgG_1	100 µL	MAB1281
Nuclei, clone 3E1.3	H	FC, IC, IH	Pur	M IgG_1	100 µg	MAB4383
Nucleostemin	H	WB	Sera	Rabbit	50 µL	AB5689
Nucleostemin	M	WB	Sera	Rabbit	50 µL	AB5691
Nucleostemin	H	WB	APur	Chicken	100 µg	AB5723
Nucleostemin, clone 9D5.3	H, M	WB, IC	Pur	M $IgG_{2b\kappa}$	100 µg	MAB4311
O1, clone 59	H, M, R, Ch	IH, Web*	Pur	M IgM	50 µg	MAB344
O4 (sulfatide), clone 81	H, M, R, Ch	IC, IH, Web*	Pur	M IgM	50 µg	MAB345
Oct-4 (Octamer-4, POUF51)	H, Rd	WB	Pur	Rabbit	100 µg	AB3209
Oct-4 (Octamer-4, POUF51), clone 7F9.2	M, H	IC, WB, FC, ELISA	Pur	M $IgG_{1\kappa}$	100 µg	MAB4419
Oct-4 (Octamer-4, POUF51), clone 10H11.2	H	IC, FC, WB, ELISA	Pur	M IgG_1	100 µg	MAB4401
Oct-4 (Octamer-4, POUF51), clone 9E3.2	H, M	WB	Pur	M IgG_1	100 µg	MAB4305
Oligodendrocytes (MOSP), clone CE-1	H, M, R, Ch, Fe, Mk	IC, IH, IH(P), IP, not WB	Asc	M IgM	100 µL	MAB328
Oligodendrocytes (RIP), clone NS-1	M, R, Ht, Not H	IC, IH	Asc	M IgG	100 µL	MAB1580
OSTERIX	H	WB	APur	Rabbit	100 µg	AB3743
Pancreatic Polypeptide (Pancreatic Hormone)	H, Sh	IH(P)	Sera	Rabbit	500 µL	AB939
Pdx-1 (IDX-1, IPF1, STF-1, IUF-1, GSF)	H, M	WB, IH, IP, Web*	Sera	Rabbit	100 µL	AB3505
PECAM-1 (CD31), clone 390	M	IH, IP, FC	Pur	R $IgG_{2a\kappa}$	500 µg	CBL1337
PECAM-1 (CD31), clone P2B1	H	IC, IH, IP, EIA, FC, IH(not P)	Pur	M IgG_1	100 µg	MAB2148
Peripherin	H, M, R, B, Po	EM, WB, IH, IH(P)	Sera	Rabbit	100 µL	AB1530
Peripherin, clone 7C5	H, B, Po, R	WB, IH	Pur	M IgG_1	100 µL	MAB5380
Peripherin, clone 8G2	H, M, B, R, Po	WB, IC	Sup	M IgG	300 µL	MAB1527
PH8 (TRH,TYH, PAH), clone PH8-1	H	WB, IH, IP	Pur	M IgG_1	500 µg	MAB5278

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Podocalyxin (Epithelium/Endothelial Cells, PCX), clone 18.29	H	IH, IH(P)	Pur	M IgG_1	500 µL	MAB430
Polysialic Acid-NCAM (PSA-NCAM), clone 2-2B	M	WB, IC, IH, RIA	Asc	M IgM	50 µL	MAB5324
Pramel-4	H, M	WB, IC	APur	Rabbit	100 µg	AB4304
Pramel-5	H, M	WB, IC	APur	Rabbit	100 µg	AB4305
Pro-Insulin C Peptide, clone C-PEP-01	H	EIA	Pur	M IgG_1	1 mg	CBL94
Prominin-1 (CD133), clone 13A4	M, Not H, R	IC, IH, WB, IP, FC	Pur	R $IgG_{1\kappa}$	100 µg	MAB4310
Protein Gene Product 9.5	H, M, R	WB, IH, IH(P)	Sera	Rabbit	50 µL	AB1761
Protein Gene Product 9.5	H, M, R	IH	Sera	Guinea Pig	50 µL	AB5898
Protein Gene Product 9.5	H, M, R, Po	WB, IH	Sera	Rabbit	50 µL	AB5925
PTF1A	M	WB	APur	Rabbit	100 µg	AB3725
REN-1, clone 2G6.2	M, R	ELISA, WB, IC	Pur	M $IgG_{2b\kappa}$	100 µg	MAB4339
Rex-1, clone 5B4.2	H, M, R	IC, EIA	Pur	Mouse	100 µg	MAB4316
S-100 Protein, clone 15E2-E2-A1	H, M, R, B, Ca, Fe, Rb	IH, IH(P), IP	Pur	M $IgG_{2a\kappa}$	100 µg	MAB079-1
SDNSF (Neural Stem Cell Derived Neuronal Survival Protein), clone 2C4.2	M, H	WB, IC	Pur	M $IgG_{1\kappa}$	100 µg	MAB4324
Serotonin Transporter (SERT)	H, R, Rb	EIA, WB	APur	Rabbit	50 µg	AB1594P
Serum Response Factor (SRF), clone 1E1	H, M	WB, IC	Pur	M IgG_1	100 µg	MAB4369
ShSCP-5, clone 8H9.3	H	IC, WB	Pur	M IgG_1	100 µg	MAB4408
SNAI2 (Snail Homolog 2), clone 2B6	H	WB	Pur	M $IgG_{1\kappa}$	100 µg	MAB4371
Somatostatin	H, M, R	WB, IH, IP, RIA	APur	Rabbit	100 µg	AB5494
Somatostatin, clone YC7	H, R, Rb	IH	Sup	R IgG_{2b}	100 µL	MAB354
Sox1	M	WB, IC	APur	Chicken	100 µg	AB5934
SOX17 Polyclonal Antibody	H, M	IC, WB	Sera	Rabbit	100 µL	09-038
SOX-2 Monoclonal Antibody	H, M	WB, IC	Pur	M IgG_{2b}	100 µg	MAB4343
Sox-2 Polyclonal Antibody	H, M	WB	APur	Rabbit	100 µg	AB5603
SPARC (Osteonectin)	H	WB, IH(P), EIA	Sera	Rabbit	100 µL	AB1858
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC480	H, M, R	IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4301
Stage-Specific Embryonic Antigen-1 (SSEA-1), clone MC-480, conjugated	H, M, R	IF, FC, IC	A488	M IgM	100 µg	MAB4301X
Stage-Specific Embryonic Antigen-3 (SSEA-3), clone MC-631	H, M	IH, IF, EIA, FC	Pur	R IgM	100 µg	MAB4303
Stage-Specific Embryonic Antigen-4 (SSEA-4), clone MC-813-70	H, M	IH, IF, EIA, FC	Pur	M IgG_3	100 µg	MAB4304
Stella (DPPA-3), clone 3H5.2	H, M	ELISA, IC	Pur	M IgG_1	100 µg	MAB4388
Stem Cell Factor	M	ELISA, WB, NEUT	APur	Rabbit	50 µg	AB1498P
STRO-1, clone STRO-1	H, P	FC, IF	Pur	M IgM	100 µL	MAB4315
Stromal Cell-Derived Factor-1α (SDF-1α)	H	WB, EIA	APur	Rabbit	50 µg	AB1868P
Synapsin I	H, R, B	EIA, WB, IC, IP	Sera	Rabbit	50 µL	AB1543
Synaptophysin	H, R, Gp, Po	WB, IH(P), EIA	Asc	M IgG_1	100 µL	MAB368
Synaptophysin, clone EP10	H, Ht, Not R	WB, IH, EIA	Pur	M IgG_1	100 µg	MAB332

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Synaptophysin, clone SP15	H, R, Po, Ht	WB, IH(P), EIA	Asc	M IgM	100 µL	MAB329
Synaptophysin, clone SY38	H, M, R, B, F, Av	WB, IC, IH, IH(P), IP	Pur	M IgG_1	50 µg	MAB5258-50UG
Tau I, clone PC1C6	H, R, B	WB, IH	Pur	M IgG_{2a}	100 µg	MAB3420
Tau, aa 210-241	H, R, M, B, Sh	WB, IH	Asc	M IgG_1	100 µL	MAB361
Tau, clone Tau-2	H, B, Fe	IH	Asc	M IgG_1	100 µL	MAB375
TG30 Antibody, clone TG30	H	IC, FC, IF	Pur	M IgG_2	100 µg	MAB4427
TG343 Antibody, clone TG343	H	IC, FC, IF, WB	Pur	M IgM	100 µg	MAB4346
Thy-1 (CD90), clone F15-42-1, conjugated	H	FC	PE	M IgG_1	100 tests	CBL415P
Tie-1, C-terminus	H, M, R, B	WB, EIA	APur	Rabbit	50 µg	AB3123
Tie-2, N-terminus, extracellular	H, M, R	WB, EIA	APur	Rabbit	50 µg	AB3126
TRA-1-60, clone TRA-1-60	H	WB, IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4360
TRA-1-81, clone TRA-1-81	H	WB, IH, IP, IF, FC	Pur	M IgM	100 µg	MAB4381
TRA-1-85, blood group antigen Ok(a), clone TRA-1-85	H	WB, IP, FC	Pur	M IgG_1	100 µg	MAB4385
TRA-2-49, liver/bone/kidney alkaline Phosphatase, clone TRA-2-49/6E	H, Pm, Fe, Po, Rb, Not B, Ca, Gt, Gp, Ht, M, R, Sh	IP, IF, FC	Pur	M IgG_1	100 µg	MAB4349
TRA-2-54, liver/bone/kidney alkaline phosphatase, clone TRA-2-54/2J	H, Pm, Po, Fe, Rb, Not R, M, Gp	IP, IF, FC	Pur	M IgG_1	100 µg	MAB4354
Trimethyl Histone H3 (Lys27)	H, M	WB, IC, BD, IP, LUMX	Pur	Rabbit	200 µg	07-449
Trimethyl Histone H3 (Lys36), clone MC86	Ch, H, Vrt	DB, WB, PIA	Sup	Rabbit	100 µL	04-801
Trimethyl Histone H3 (Lys4)	H	WB, LUMX	Pur	Rb IgG	100 µL	05-745R
Trimethyl Histone H3 (Lys9), clone 6F12-H4	H, M	WB, ChIP, PIA, IF, DB	Pur	M $IgG_{1\kappa}$	200 µL	05-1242
Trimethyl Histone H4 (Lys20)	H, M, Vrt	WB, IC, PIA, ChIP	Sera	Rabbit	200 µL	07-463
TrkA	R	WB, IH, IP	Pur	Rabbit	100 µg	AB1577
Troponin I, aa 41-49, clone 284 (19C7)	H, M, R, B, Po, Ca, Fe, F, Gt, Rb	EIA	Pur	M IgG_{2b}	100 µg	MAB3150
Troponin I (cTn1), cardiac troponin I, aa 87-91 (cTn1), clone 8E10	H, B, Po, Ca, Fe, Gt, Rb, Not R	EIA	Pur	M IgG_1	100 µg	MAB3152
Troponin I, aa 87-93, clone C5	H, M, B, Ch, F, Fg, Rb	WB, EIA	Pur	M IgG_{2b}	100 µg	MAB1691
Troponin T, clone 2G3	H	WB, EIA	Pur	M IgG	100 µg	MAB1693
Tryptophan Hydroxylase	H, R	WB, IH	APur	Sheep	100 µL	AB1541
Tryptophan Hydroxylase / Tyrosine Hydroxylase / Phenylalanine Hydroxylase, clone PH8-1	H	WB, IH, IP	Pur	M IgG_1	500 µg	MAB5278
Tuc-4 Protein (TOAD/Ulip, CRMP-4)	H, M, R, Mk, Fe	IC, IH, IP	Sera	Rabbit	100 µL	AB5454

Description	Species Reactivity	Known Applications	Format	Host	Qty/Pk	Catalogue No.
Tyrosine Hydroxylase	R, M, Ft, Ml, Not H	WB, IH, IH(P), EIA, IP	APur	Rabbit	100 µL	AB152
Tyrosine Hydroxylase	Ma	WB, IH	APur	Sheep	100 µL	AB1542
Tyrosine Hydroxylase, clone 2/40/15	R, B, Ch	WB, IH	Pur	M IgG_{2a}	40 µg	MAB5280
Tyrosine Hydroxylase, clone LNC1	H, R, Mk, Ch, Fg, Vo	WB, IH, IP	Asc	M IgG_1	100 µL	MAB318
uSRF (Sera Response Factor), clone 2-313	H, M	EMSA, WB	Pur	M IgG	200 µg	05-612
UTF1, clone 5G10.2	H, M	WB, IC, EIA	Pur	M $IgG_{1\kappa}$	100 µg	MAB4337
Vanilloid Receptor-Like Protein I (VRL-1), C-terminus	R, Not H	IH	Sera	Rabbit	50 µL	AB5398
Vanilloid Receptor-Like Protein I (VRL-1), C-terminus	R, Not H	WB, IC, IH	APur	Rabbit	20 µg	AB5398P
VE-Cadherin (CD144), extracellular, clone BV6	H, Not M, Not B	WB, IH, IP, EIA, FC	Pur	M IgG_{2a}	100 µg	MAB1989
VE-Cadherin (CD144), phospho-specific, Tyr658	H	WB	APur	Rabbit	100 µL	AB1955
VE-Cadherin (CD144), phospho-specific, Tyr731	H	WB	APur	Rabbit	100 µL	AB1956
VEGF Receptor-2 (Flk-1, KDR), clone 4H3B6H9	M	WB, IP, EIA, FC	Pur	R IgG_{2b}	100 µg	MAB1147
Vesicular GABA Transporter (VGAT)	R	IH, WB	Sera	Rabbit	100 µg	AB2257
Vesicular GABA Transporter (VGAT)	R	EIA, WB	APur	Rabbit	50 µg	AB5062P
VIN-2PB-22, clone VIN-2PB-22	Ma	FC, IC, IH	Pur	M IgM	100 µg	MAB4309
VIN-IS-56, clone VIN-IS-56	Ma	FC, IC, IH	Pur	M IgM	100 µg	MAB4308
von Willebrand Factor (Factor VIII Related Antigen)	H, M, R	IH(P), EIA	Pur	Rabbit	100 µg	AB7356
von Willebrand Factor (Factor VIII Related Antigen), clone 21-43	H	IF, EIA	Pur	M IgG_1	500 µL	MAB3442
ZIPRO1	M	WB	APur	Rabbit	100 µL	AB3733

Epigenetic Profiling

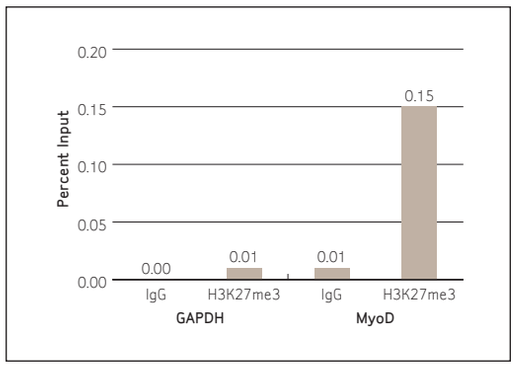
Stem cell researchers are recognizing the critical importance of epigenetics in regulating pluripotency and differentiation. Since all cells in the adult body contain the same DNA sequence, the differences among cell types are the result of the expression and repression of particular genes. Epigenetics encompasses the chemical modifications to the DNA and proteins that control gene expression.

EZ Magna ChIP™ Chromatin Immunoprecipitation Kits

Chromatin immunoprecipitation (ChIP) is a powerful technique for studying protein-DNA complexes and analyzing the histone modifications that influence gene activity in both embryonic stem cells and mature adult cells.

Magna ChIP kits make it possible to complete a ChIP experiment in a single day, from cell harvest to PCR results. Unlike conventional ChIP assays that use agarose beads, Magna ChIP kits use magnetic beads, significantly reducing handling time and mechanical stress on target immunocomplexes.

These kits are suitable for high throughput applications and available with either protein A or G beads, permitting easy optimization for any antibody. EZ-Magna ChIP kits also contain essential positive and negative controls to ensure high quality results.



Graph (right): Sonicated chromatin prepared from 2 x 10^6 HeLa cells was subjected to chromatin immunoprecipitation using 4 µg purified ChIPAb+ anti-trimethyl-histone H3 (Lys27) (Catalogue No. 17-622) or normal rabbit IgG and the Magna ChIP A kit (Catalogue No. 17-610). Because H3K27 methylation is associated with gene silencing, it was expected that the silent MyoD promoter, compared to the active GAPDH promoter, would be enriched by this immunoprecipitation. Successful enrichment of trimethyl-histone H3 (Lys27) associated DNA fragments was verified by qPCR using ChIP primers GAPDH (Catalogue No. 22-004) flanking the human GAPDH promoter and primers targeting the promoter of human MyoD.

Description	Qty/Pk	Catalogue No.
Magna ChIP A Chromatin Immunoprecipitation Kit	22 assays	17-610
Magna ChIP G Chromatin Immunoprecipitation Kit	22 assays	17-611
EZ Magna ChIP A Chromatin Immunoprecipitation Kit	22 assays	17-408
EZ Magna ChIP G Chromatin Immunoprecipitation Kit	22 assays	17-409
Magna ChIP Protein A Magnetic Beads	50 reactions	16-661
Magna ChIP Protein A Magnetic Beads – Trial Size	10 reactions	16-661X
Magna GrIP™ Rack (8-well)	1 rack	20-400
ChIP Assay Kit	22 assays	17-295
EZ ChIP Kit	22 assays	17-371
Acetyl-Histone H3 ChIP Assay Kit	22 assays	17-245
Acetyl-Histone H4 ChIP Assay Kit	22 assays	17-229
Protein A Agarose/Salmon Sperm DNA	2.5 mL packed beads	16-157
Protein G Agarose/Salmon Sperm DNA	2.5 mL packed beads	16-201
EZ-Zyme™ Chromatin Prep Kit	22 assays	17 -375

ChIPAb+ Antibody/Primer Sets

All ChIPAb+ antibodies are individually validated for chromatin precipitation—every lot, every time. Each ChIPAb+ antibody set includes control primers (tested every lot by qPCR) to biologically validate your ChIP results in a locus-specific context. The ChIPAb+ set also includes a negative control antibody to guarantee specificity of the ChIP reaction.

Description	Species Reactivity	Known Applications	Host	Qty/Pk	Catalogue No.
ChIPAb+ Acetyl-Histone H3	H, M, Ma	ChIP,WB, ICC	Rabbit	25 assays	17-615
ChIPAb+ Acetyl-Histone H3 (Lys27)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-683
ChIPAb+ Acetyl-Histone H3 (Lys9) (purified)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-658
ChIPAb+ Acetyl-Histone H4	H, Eu	ChIP,WB	Rabbit	25 assays	17-630
ChIPAb+ Dimethyl Histone H3 (Lys4)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-677
ChIPAb+ Dimethyl-Histone H3 (Lys9) (Sera)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-648
ChIPAb+ Monomethyl-Histone H3 (Lys27)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-643
ChIPAb+ Monomethyl-Histone H3 (Lys9)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-680
ChIPAb+ Trimethyl-Histone H3 (Lys27)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-622
ChIPAb+ Trimethyl-Histone H3 (Lys4)	H, M, Ma	ChIP,WB	Rabbit	25 assays	17-614
ChIPAb+ Trimethyl-Histone H3 (Lys9)	H, M, Ma	ChIP,WB,Mplex	Rabbit	25 assays	17-625

TRAPeze Telomerase Detection Kits

One of the hallmarks of embryonic stem cells is high levels of telomerase expression. Telomere shortening occurs with each cell division, but the expression of telomerase permits embryonic stem cells to escape senescence and maintain their replicative potential. Studies have shown striking differences in the average length of telomeric repeat sequences at the end of chromosomes from hematopoietic cells at different stages of development.

Millipore provides a broad range of products for assaying telomerase activity. TRAPeze telomerase detection kits are rapid, quantitative, *in vitro* assays for detecting activity. The original kit permits detection via PCR and gel electrophoresis. TRAPeze telomerase detection kits are also available in colorimetric and fluorimetric formats via the TRAPeze ELISA and TRAPeze XL incorporating biotinylated and fluorescent primers respectively.

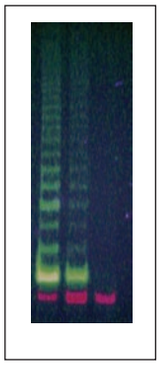


Photo (right): Image demonstrates the direct fluorescence imaging of the TRAPeze XL reaction of three specimens: telomerase positive lanes 1 and 2, and telomerase negative lane 3.

Description	Qty/Pk	Catalogue No.
TRAPeze Telomerase Detection Kit	112 assays	S7700
TRAPeze XL Telomerase Detection Kit	112 assays	S7707
TRAPeze ELISA Telomerase Detection Kit	96 assays	S7750
TRAPeze RT Telomerase Detection Kit	224 assays	S7710
TRAPeze Positive Control Cell Pellet	1 vial	S7701

DNA METHYLATION

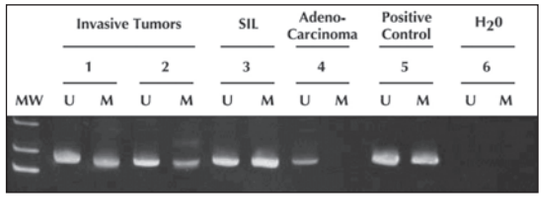
DNA methylation is involved in the regulation of many cellular processes, including chromosome stability, chromatin structure, X chromosome inactivation, embryonic development, and transcription. About 1% of the genome consists of 500-2000 bp CpG-rich areas or islands. About half of all CpG islands correspond to transcription start sites and promoters of expressed genes. Methylation of CpG islands is an important mechanism for gene silencing and inactivation of defined tumor suppressor genes in human cancers.

CpG Islands

DNA Modification Kits for Mapping Methylated DNA Sequences

Methylation-specific PCR (MSP) is an established technology for mapping and monitoring methylation patterns in the CpG islands of genomic DNA.

Millipore's CpGenome and CpG WIZ® systems allow sensitive detection of the methylation status of a gene using MSP. The method employs bisulfite sequencing and is rapid and simple to use since no restriction digests or Southern blots are required. The CpGenome DNA modification kit can easily detect changes in CpG methylation patterns of genomic DNA using as little as 1 ng DNA.



Detection of the Methylation State of the p16 Gene. Methylation specific PCR (MSP) of the p16 gene in two invasive carcinomas, a squamous intraepithelial lesion (SIL), and an adenocarcinoma of the cervix. The results indicate that both invasive carcinomas and the SIL sample are heterozygous for methylation while the adenocarcinoma sample is clearly homozygous for the unmethylated state at the p16 locus.

DNA Methylation Mapping, Even Faster and Easier

The CpGenome FAST DNA modification kit employs DNA spin columns for ease of use and faster processing of samples. Millipore also offers over 20 CpG WIZ gene-specific amplification kits, which can be accessed through **www.millipore.com/epigenetics**.

Description	Qty/Pk	Catalogue No.
CpGenome DNA Modification Kit	100 units	S7820
CpGenome Fast DNA Modification Kit	25 units	S7824
CpGenome Universal Methylated DNA	10 µg	S7821
CpGenome Universal Unmethylated DNA	10 µg	S7822

Appendix

Product Index

Catalogue No. Index

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Phone: 0820 87 44 64
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Baltic countries
Phone: +358 2 030 5645
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Belgium (Dutch speaking)
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Czech Republic
Phone: 02-2051 3841
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Denmark
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Eastern Europe, C.I.S., Africa, Middle East and Gulf
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Finland
Phone: 02 030 5645
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France
Phone: 01 30 12 70 70
Fax: 0825 045 644
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Germany
Phone: 06196 494-299
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Hungary
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Ireland
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Italy
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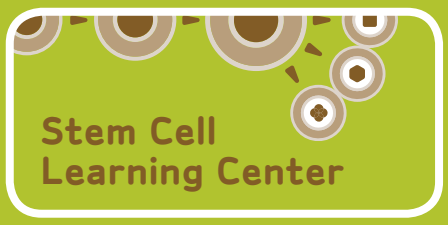

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