

PeproTech Cell Culture Media

PeproGrow[™]

Redefining Media Quality

Utilizing PeproTech Cytokine Products



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PeproTech Cell Culture Media Products

Redefining Media Quality Utilizing PeproTech Cytokine Products

PeproTech is a privately owned biotechnology company focused on the development and manufacturing of high quality cytokine products for the life science and cell therapy markets. As a leading researcher and manufacturer of cytokine products, PeproTech is pleased to offer media that contain our recombinant proteins and/or growth factors. These media formulations have been engineered by PeproTech's scientists and collaborators to provide the basic nutrients to grow and support several specific cell types.



The following Cell Culture Media Product information is available on our website at www.peprotech.com:

- Complete List of Cell Culture Media Products*
- Affordable and Competitive Product Prices
- Certificates of Analysis
- Instruction Manuals
- Frequently Asked Questions (FAQs)

*Some media kit components are also available for individual purchase.

PeproGrow™ hMSC Medium

Maintenance Medium for Human Mesenchymal Stem Cells



- Complete Media
- Superior growth rates
- Xeno-free, phenol red-free
- Phenotypic integrity
- Maintained multipotency
- Affordable and competitive pricing
- Works well with adipose tissue-derived, bone marrow-derived, umbilical cord-derived, placental-derived, and urine-derived MSCs
- Developed in collaboration with American CryoStem Corporation

PeproGrow™ hMSC (Mesenchymal Stem Cell) Medium is a xeno-free, human serum-containing, phenol red-free complete media formulation originally designed for the *in vitro* expansion of adipose-derived human mesenchymal stem cells (ADMSCs) in the multipotent state. This media formulation has been shown to be suitable for the sustained growth of adipose tissue-derived, bone marrow-derived, umbilical cord-derived, placental-derived, and urine-derived MSCs in both adherent and suspension culture. For optimal results, culturing should be conducted on a surface coated with PeproTech’s Animal-Free Human Vitronectin Matrix as a surface-coating reagent; however, other suitable extracellular matrix (ECM) proteins, such as fibronectin or vitronectin, can be used. PeproGrow™ hMSC Medium was designed and developed by PeproTech in collaboration with American CryoStem Corporation, and is supplied as a 500mL bottle of PeproGrow™ hMSC Basal Medium (Catalog# BM-XF-HMSC-500) containing a human serum component, and a separate, lyophilized vial of animal-free PeproGrow™ hMSC Growth Factor Supplement (Catalog# GF-XF-HMSC-500). The addition of the separate, lyophilized growth factor supplement to the basal medium results in a complete medium containing all growth factors and supplements necessary for optimal expansion of human mesenchymal stem cells in culture.



PeproGrow™ hMSC Medium 500mL Kit		
Catalog #XF-HMSC-500		
Basal Medium	BM-XF-HMSC-500	500mL
Growth Factor Component	GF-XF-HMSC-500	

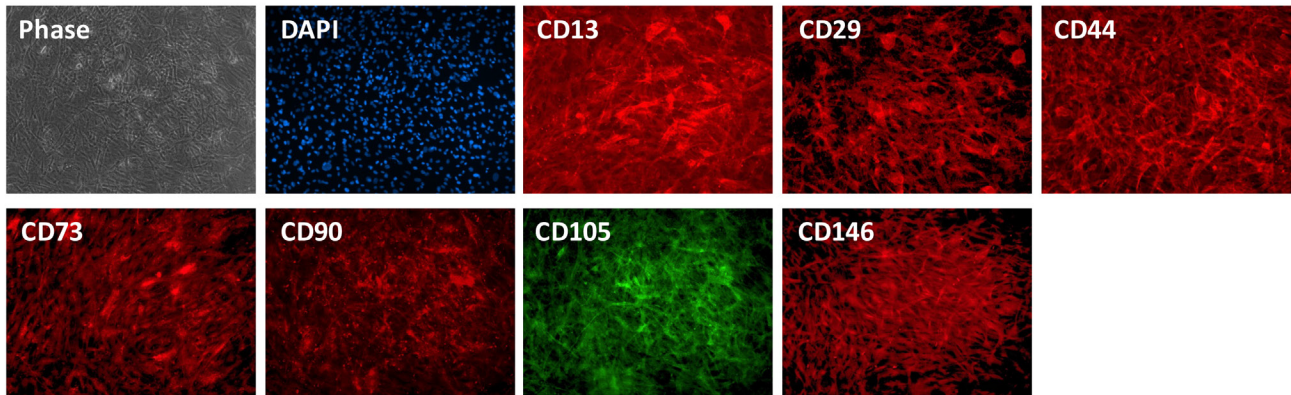
PeperoGrow™ hMSC Medium

(continued)

PeperoGrow™ hMSC Medium Figures and Descriptions

Figure 1

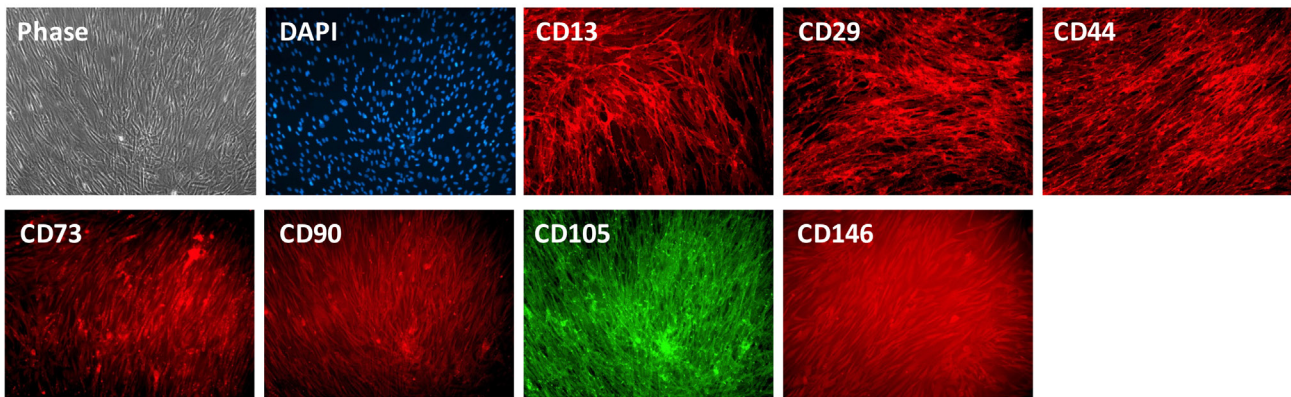
Fluorescent immunostaining of adipose tissue-derived mesenchymal stem cells (ADMSCs) grown in PeperoGrow™ hMSC Medium.



Cells were grown for 4 days on Animal-Free Human Vitronectin Matrix-coated chamber slides at 37°C in an atmosphere of 5% O₂ and 5% CO₂. Following growth, the cells were rinsed once with PBS to remove debris and dead cells, then fixed for 20 minutes at RT with freshly-prepared 4% paraformaldehyde in PBS/HEPES, pH 7.4. Following fixation, cells were rinsed 3 times with PBS, blocked/permeabilized with 1x PERM/WASH (BD), and subjected to primary antibody staining (BioGems) at recommended concentrations overnight at 4°C. The following day, samples were washed 3 times with PBS, and incubated with secondary antibodies (ThermoFisher/Molecular Probes) diluted in 1:4 PERM/Wash:PBS as follows: all goat anti-rabbit antibodies were used at 1:1000, whereas goat anti-mouse isotypes were used at 1:500 dilutions. The samples were then washed 1 time with PBS containing 500 ng/ml DAPI, twice more in PBS, alone, and once in DI water to remove salts prior to mounting/cover-slipping in Aqua-Poly Mount (Polysciences) with 12 mm glass coverslips. The slides were allowed to dry overnight at RT prior to imaging using an Olympus IX71 Inverted microscope equipped with an inverted cooled CCD camera. Images were captured using iVision software (12 bit), pseudo-colored (DAPI = blue, AF488 = green, AF594 = red), and then exported to 8-bit format. In order to ensure specificity, all image capture times were adjusted to, or below, that of the isotype controls that revealed minimal background staining levels. As shown, PDMSCs grown in PeperoGrow™ hMSC Medium were strongly positive for CD13, CD29, CD44, CD73, CD90, CD105, and CD146.

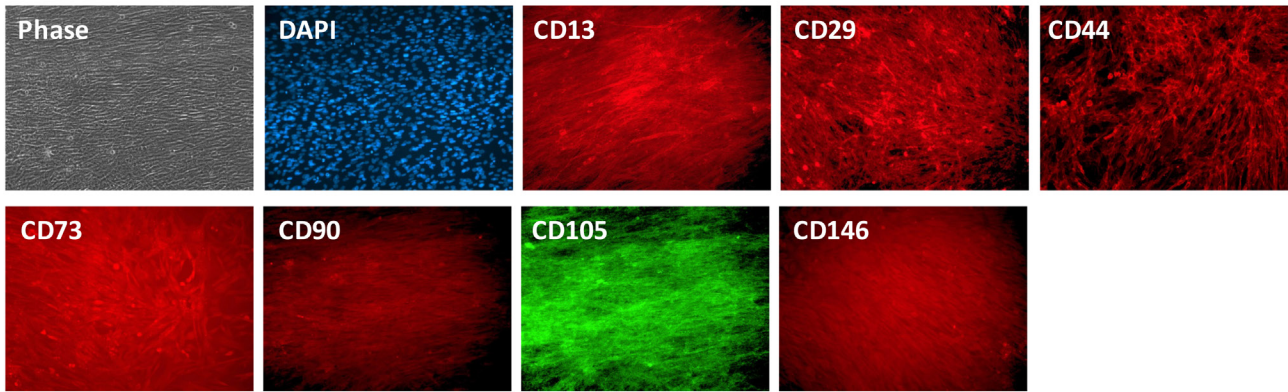
Figure 2

Fluorescent immunostaining of bone marrow-derived mesenchymal stem cells (BDMSCs) grown in PeperoGrow™ hMSC Medium.



Cells were grown for 4 days on Animal-Free Human Vitronectin Matrix-coated chamber slides at 37°C in an atmosphere of 5% O₂ and 5% CO₂. Following growth, the cells were rinsed once with PBS to remove debris and dead cells, then fixed for 20 minutes at RT with freshly-prepared 4% paraformaldehyde in PBS/HEPES, pH 7.4. Following fixation, cells were rinsed 3 times with PBS, blocked/permeabilized with 1x PERM/WASH (BD), and subjected to primary antibody staining (BioGems) at recommended concentrations overnight at 4°C. The following day, samples were washed 3 times with PBS, and incubated with secondary antibodies (ThermoFisher/Molecular Probes) diluted in 1:4 PERM/Wash:PBS as follows: all goat anti-rabbit antibodies were used at 1:1000, whereas goat anti-mouse isotypes were used at 1:500 dilutions. The samples were then washed 1 time with PBS containing 500 ng/ml DAPI, twice more in PBS, alone, and once in DI water to remove salts prior to mounting/cover-slipping in Aqua-Poly Mount (Polysciences) with 12 mm glass coverslips. The slides were allowed to dry overnight at RT prior to imaging using an Olympus IX71 Inverted microscope equipped with an inverted cooled CCD camera. Images were captured using iVision software (12 bit), pseudo-colored (DAPI = blue, AF488 = green, AF594 = red), and then exported to 8-bit format. In order to ensure specificity, all image capture times were adjusted to, or below, that of the isotype controls that revealed minimal background staining levels. As shown, PDMSCs grown in PeproGrow™ hMSC Medium were strongly positive for CD13, CD29, CD44, CD73, CD90, CD105, and CD146.

Figure 3
Fluorescent immunostaining of placental-derived mesenchymal stem cells (PDMSCs) grown in PeproGrow™ hMSC Medium.



Cells were grown for 4 days on Animal-Free Human Vitronectin Matrix-coated chamber slides at 37°C in an atmosphere of 5% O₂ and 5% CO₂. Following growth, the cells were rinsed once with PBS to remove debris and dead cells, then fixed for 20 minutes at RT with freshly-prepared 4% paraformaldehyde in PBS/HEPES, pH 7.4. Following fixation, cells were rinsed 3 times with PBS, blocked/permeabilized with 1x PERM/WASH (BD), and subjected to primary antibody staining (BioGems) at recommended concentrations overnight at 4°C. The following day, samples were washed 3 times with PBS, and incubated with secondary antibodies (ThermoFisher/Molecular Probes) diluted in 1:4 PERM/Wash:PBS as follows: all goat anti-rabbit antibodies were used at 1:1000, whereas goat anti-mouse isotypes were used at 1:500 dilutions. The samples were then washed 1 time with PBS containing 500 ng/ml DAPI, twice more in PBS, alone, and once in DI water to remove salts prior to mounting/cover-slipping in Aqua-Poly Mount (Polysciences) with 12 mm glass coverslips. The slides were allowed to dry overnight at RT prior to imaging using an Olympus IX71 Inverted microscope equipped with an inverted cooled CCD camera. Images were captured using iVision software (12 bit), pseudo-colored (DAPI = blue, AF488 = green, AF594 = red), and then exported to 8-bit format. In order to ensure specificity, all image capture times were adjusted to, or below, that of the isotype controls that revealed minimal background staining levels. As shown, PDMSCs grown in PeproGrow™ hMSC Medium were strongly positive for CD13, CD29, CD44, CD73, CD90, CD105, and CD146.

PeproGrow™ hESC Medium

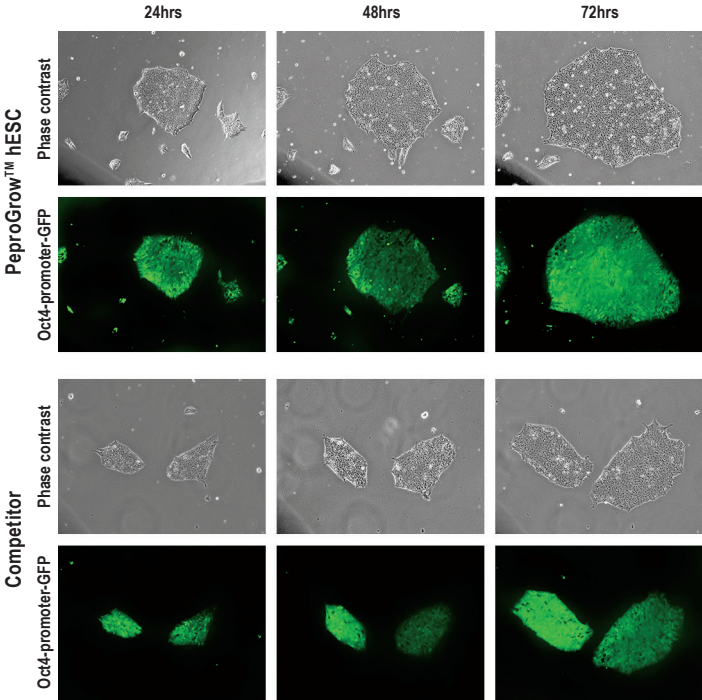
Maintenance Medium for hESCs and hiPSCs



- Phenol red-free and insulin-free
- Complete and chemically-defined
- High plating efficiency
- High quality recombinant growth factors from the leading manufacturer
- Developed in collaboration with and used in the Rutgers Stem Cell Training Course

PeproGrow™ hESC Medium is a serum- and phenol red-free medium of a complete, chemically-defined formulation designed for feeder-free maintenance and expansion of both human embryonic stem cells (hESCs) and induced pluripotent stem cells (iPSCs) using Corning Matrigel® as a surface-coating matrix. This medium is intended for the culturing of hESCs and iPSCs in the undifferentiated, pluripotent state (SSEA4+/Oct4+), and demonstrates less than 15% spontaneous differentiation as indicated by flow cytometry. The proprietary formulation of the medium includes relevant growth factors, such as FGF2 (FGF-basic), but does not contain the insulin found in the majority of other hESC/iPSC media currently available on the market. PeproGrow™ hESC Medium, which was designed and developed by PeproTech in collaboration with the Stem Cell Training Course at Rutgers University, is supplied as a 100mL, or 500mL, bottle of basal medium and a separate, lyophilized growth factor component.

Figure 4



The growth of H1 hESCs expressing turboGFP-NEO under the control of the Oct4 promoter.

H1 hESCs modified by lentivirus to contain the Oct4 promoter driving turboGFP, were cultured in PeproGrow™ hESC Medium, were passaged using dispase and plated in PeproGrow™ hESC Medium containing 2 µM Y-27632 onto Corning Matrigel® coated 6-well dishes. Cultures were fed daily and photographed 24, 48, and 72 hours post split. Green fluorescence represents maintenance of pluripotency as indicated by Oct4 promoter activity. PeproGrow™ hESC Medium maintains cells in the pluripotent state like the competitor media and allows the cells to plate out better (faster confluency).

Figure 5

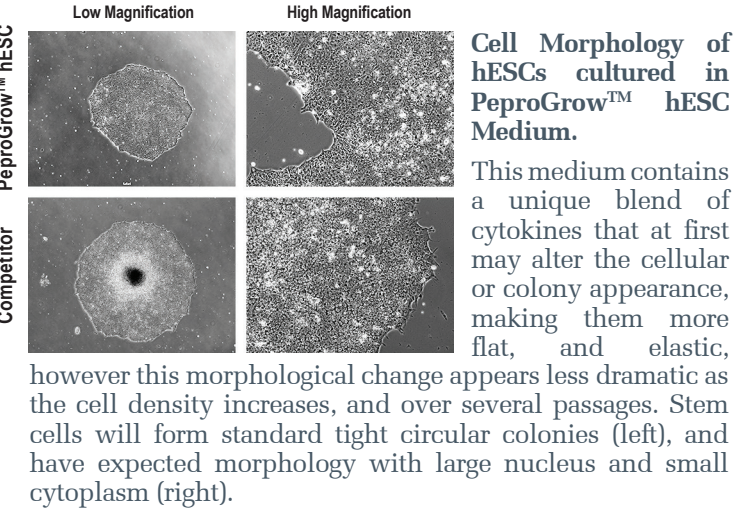
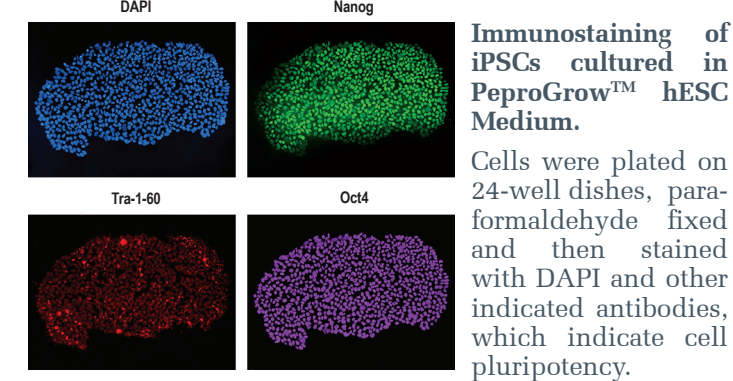


Figure 6



Specifications

Sterility	Negative
pH	7.35-7.40
Osmolality	340-350 mOsm

PeproGrow™ hESC Medium Kit

PeproGrow™ hESC Medium 500mL Kit		HESC-500	
Basal Medium		BM-HESC-500	500mL
Growth Factor Component		GF-HESC-500	Vial for 500mL Basal Medium
PeproGrow™ hESC Medium 100mL Kit		HESC-100	
Basal Medium		BM-HESC-100	100mL
Growth Factor Component		GF-HESC-100	Vial for 100mL Basal Medium

PeproGrow™ Endothelial Media

Maintenance Media for Endothelial Cells

PeproGrow™ EPC, PeproGrow™ MacroV, and PeproGrow™ MicroV



- Complete media
- Antibiotic-free, antimycotic-free, antifungal-free, and phenol red-free
- Maintain outstanding endothelial cell morphology and function
- Increased activity of endothelial nitric oxide synthase (eNOS)

PeproTech offers three separate endothelial cell culture media formulations developed for the *in vitro* cultivation of: endothelial progenitor cells (EPCs; PeproGrow™ EPC) derived from bone marrow or peripheral blood; endothelial cells from large vessels (PeproGrow™ MacroV); and endothelial cells from small vessels (PeproGrow™ MicroV). These media formulations maintain outstanding endothelial cell morphology and function, and increase the activity of endothelial nitric oxide synthase (eNOS), which account for a specific, crucial marker for endothelial cells. By doing this, the media provide an optimal cell culture environment for macrovascular and microvascular endothelial cells, as well as for EPCs; growing cells at rates that exceed commercially available media.

PeproTech’s endothelial cell culture media kit is supplied as a 500mL bottle of basal medium and a separate growth supplement bottle that contains various essential growth factors and components for endothelial cell growth. Adding the growth supplement to the basal medium results in the complete culture medium. PeproTech’s endothelial media do not contain antibiotics, antimycotics, antifungals, or phenol red, as these components can cause cell stress and masking effects that may reduce complete medium shelf life and influence experimental results.



Media Products

PeproGrow™ EPC Kit (ENDO-BM & GS-EPC)

Catalog #700-EPC

Basal Medium	ENDO-BM	500mL
Growth Supplement EPC	GS-EPC*	75mL

PeproGrow™ MacroV Kit (ENDO-BM & GS-MacroV)

Catalog #700-MacroV

Basal Medium	ENDO-BM	500mL
Growth Supplement MacroV	GS-MacroV*	25mL

PeproGrow™ MicroV Kit (ENDO-BM & GS-MicroV)

Catalog #700-MicroV

Basal Medium	ENDO-BM	500mL
Growth Supplement MicroV	GS-MicroV*	35mL

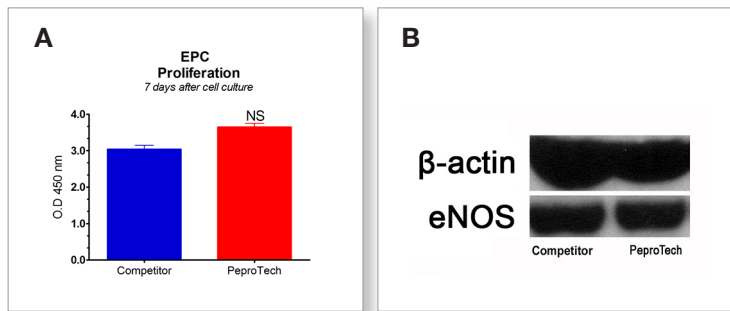
* Contains FBS

PeproGrow™ Endothelial Media

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PeproGrow™ Endothelial Media Figures and Descriptions

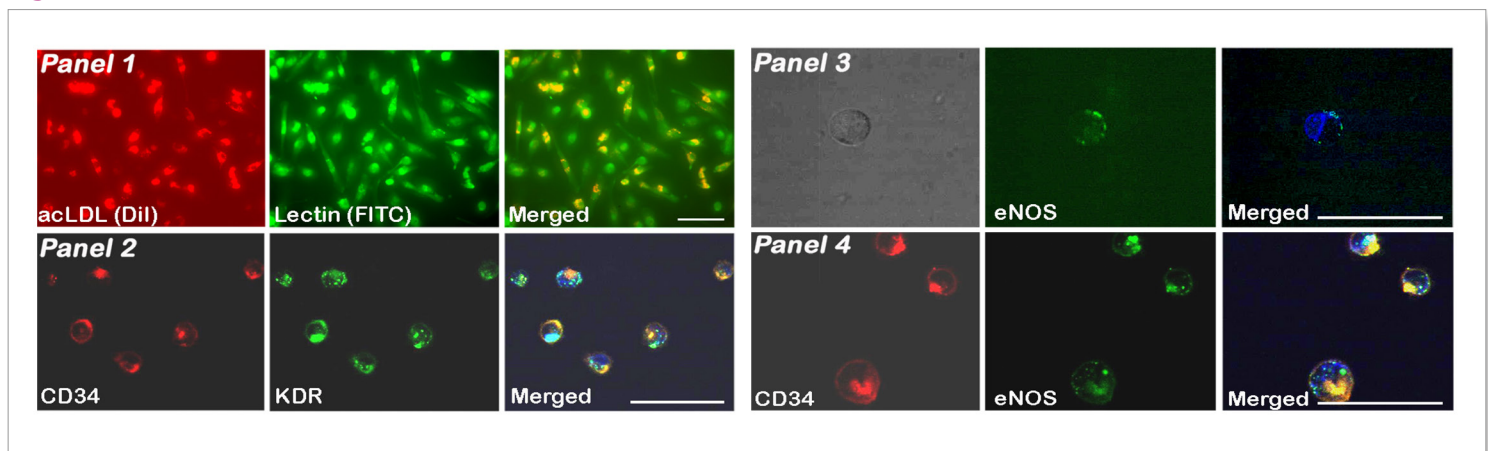
Figure 7



Endothelial Progenitor Cell, EPC Proliferation.

EPCs were seeded onto fibronectin-coated plates, and incubated for 7 days in the PeproGrow™ EPC Kit and a competitor's medium. Figure 7(A) represents the proliferative ability of EPCs assessed 7 days after cell cultivation using the XTT assay according to the manufacturer protocol. The proliferative ability of EPCs was expressed as the average optical density (O.D.) calculated using a plate reader for two independent assays run in triplicate. Figure 7(B) represents a standard Western Blot assay.

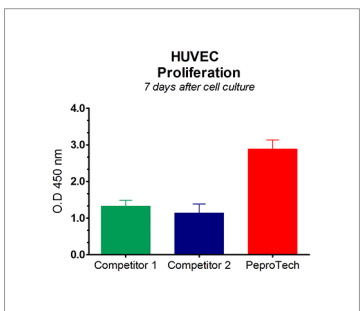
Figure 8



Endothelial Progenitor Cell, EPC Characterization.

EPCs were cultured for 7 days. Each description correlates to images from left to right: Panel 1: Acetylated LDL uptake by adherent spindle-shaped EPCs, FITC-conjugated lectin UEA-1 binding to the surface of EPCs, and positive double-stained (merged image) EPCs for acetylated LDL uptake and lectin binding. Panel 2: Immunofluorescence detection of CD34 antigen (red), KDR (green) on the surface of EPCs, and merged image. Panel 3: Immunofluorescence detection of eNOS on a single non-stained EPC (green). Panel 4: Immunofluorescence detection of CD34 antigen on the EPCs surface (red), eNOS (green), and merged image. The EPCs nuclei were stained with the blue fluorescent DNA dye DRAQ5™.

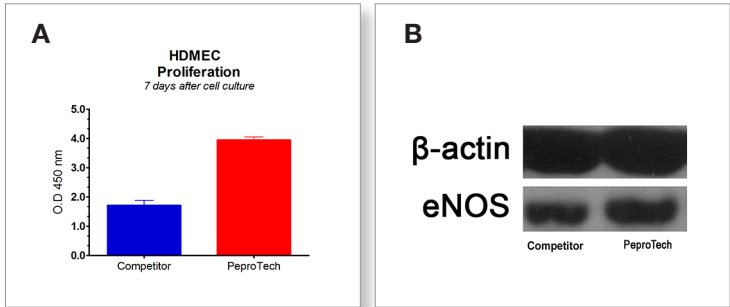
Figure 9



Macrovascular Endothelial Cell, HUVEC Proliferation.

HUVECs were seeded onto fibronectin-coated plates and incubated for 7 days in the PeproGrow™ MacroV Kit, and two competitors' media. The proliferative ability of HUVECs was assessed 7 days after cell cultivation using the XTT assay following the manufacturer's protocol. The proliferative ability of HUVECs was expressed as the average of optical intensity (O.D.) calculated using a plate reader from two independent assays run in triplicate.

Figure 10



Microvascular Endothelial Cell, HDMEC Proliferation.

HDMECs were seeded onto fibronectin-coated plates and incubated for 7 days in the PeproGrow™ MicroV Kit and a competitor's medium. Figure 10(A) represents the proliferative ability of HDMECs assessed 7 days after cell cultivation using the XTT assay following the manufacturer's protocol. The proliferative ability of HDMECs was expressed as the average of optical density (O.D.) calculated using a plate reader from two independent assays run in triplicate. Figure 10(B) represents a standard Western Blot assay.

Recommended Cell Types

PeproGrow™ EPC is recommended for Endothelial Progenitor Cells:

Human Endothelial Progenitor Cells (hEPCs)

PeproGrow™ MacroV is recommended for Macrovascular Endothelial Cells:

Human Umbilical Vein Endothelial Cells (HUVECs)

Human Umbilical Artery Endothelial Cells (HUAECs)

Human Aortic Endothelial Cells (HAoECs)

Human Pulmonary Artery Endothelial Cells (HPAECs)

Human Saphenous Vein Endothelial Cells (HSAVECs)

PeproGrow™ MicroV is recommended for Microvascular Endothelial Cells:

Human Coronary Artery Endothelial Cells (HCAECs)

Human Pancreatic Microvascular Endothelial Cells (HPaMECs)

Human Dermal Microvascular Endothelial Cells (HDMECs)

Human Pulmonary Microvascular Endothelial Cells (HPMECs)

Human Dermal Lymphatic Endothelial Cells (HDLECs)

Human Brain Microvascular Endothelial Cells (HBMECs)

Specifications

Sterility	Absence of bacteria, mycoplasma and fungi
pH	7.4-7.8
Osmolality	260-280 mOsm
Endotoxin Testing	<0.5 EU/mL

PeproGrow™ HEK293 Medium

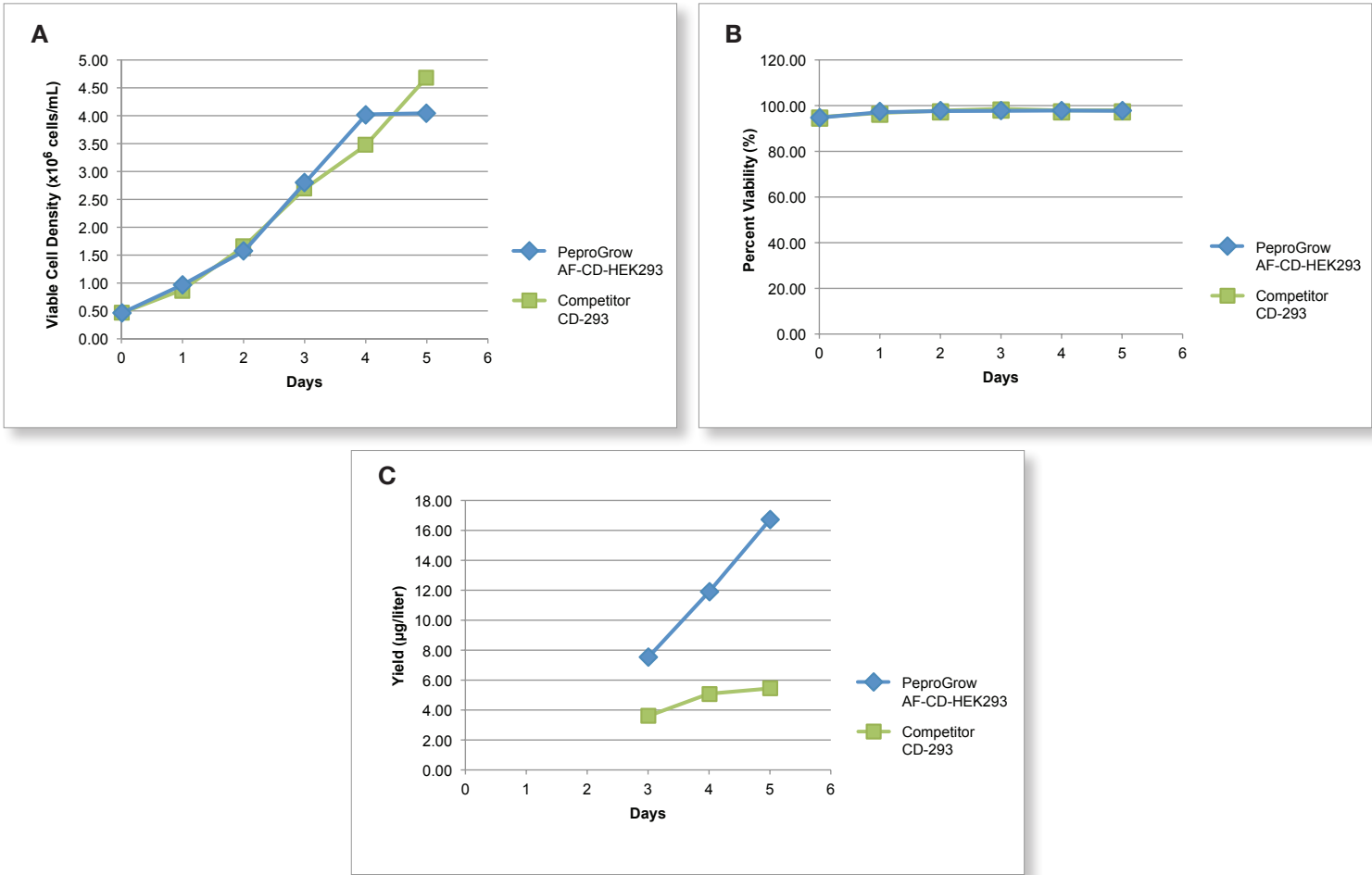
Maintenance Medium for HEK293 Cells



- Animal component-free, serum-free, protein-free, chemically-defined medium
- Complete medium containing L-alanyl-L-Glutamine for direct product use
- High recombinant protein expression

PeproGrow™ HEK293 Medium is an animal component-free, protein-free, serum-free, chemically-defined, complete medium formulation for the *in vitro* cultivation of HEK293 cells (Thermo Fisher Scientific FreeStyle™ 293-F cells, catalog number R790-07). This medium is intended for recombinant protein expression in suspension culture, which is recommended for a 5-day batch culture with a seeding density of 0.6 x10⁶ cells/mL. This ready-to-use medium contains L-alanyl-L-Glutamine, amino acids, vitamins, and salts. An adaptation process is not required for Thermo Fisher Scientific FreeStyle™ 293-F cells.

Figure 11



Figures 11 (A, B, C) illustrate HEK293 BMP-6 expression in PeproGrow™ HEK293 Medium and competitor CD-293 medium.

PeproGrow™ HEK293 Media

PeproGrow™ HEK293 Medium	Catalog #AF-CD-HEK293	1 L
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PeproGrow™ CHO Medium

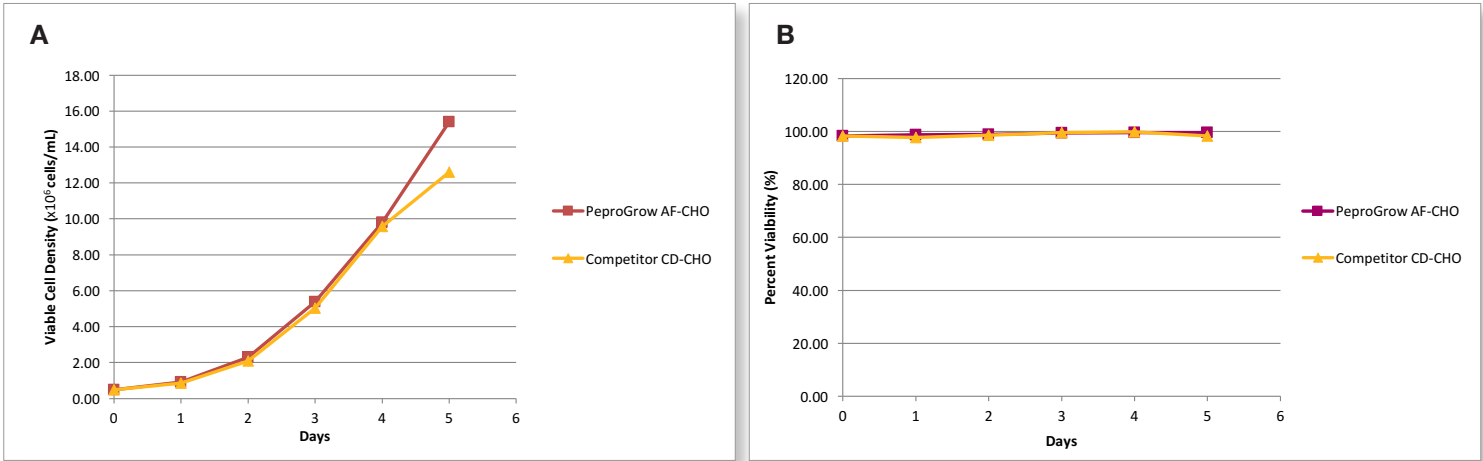
Maintenance Medium for CHO-S cell lines



- Animal component-free, serum-free, and protein-free
- Complete medium containing L-alanyl-L-Glutamine for direct product use
- High recombinant protein expression

PeproTech offers PeproGrow™ AF-CHO Medium, for the *in vitro* cultivation of Chinese Hamster Ovary-S cells (Thermo Fisher Scientific catalog numbers 11619-012, R800-07, or A11557-01). This medium is intended for recombinant protein expression in suspension culture. PeproGrow™ AF-CHO is an animal component-free, serum-free, protein-free, complete medium formulation. This ready-to-use medium contains L-alanyl-L-Glutamine, amino acids, vitamins, salts and non-animal-derived hydrolysates, which are recommended for a 5-day batch culture with a seeding density of 0.5 x10⁶ cells/mL. An adaptation process is not required for Thermo Fisher Scientific CHO-S cells.

Figure 12



Figures 12 (A, B) illustrate CHO-S cell density and percent viability of C1 Inhibitor-producing cells in PeproGrow™ AF-CHO Medium and competitor CD-CHO Medium. Cell expression varies by protein product.

Figure 13



The western blot illustrates CHO-S cell culture sample production of C1 Inhibitor post 5-day culture.

lane 1: PeproGrow™ AF-CHO
lane 2: Commercial CD-CHO

PeproGrow™ CHO Media

PeproGrow™ AF-CHO Medium	Catalog #AF-CHO	1 L
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PeproGrow-1 Serum-Free Cell Culture Supplement Kit

Serum-free cell culture supplement kit for adherent HEK293, HeLa, and A549 cells



- Serum-free, animal-free, and protein-free medium supplement
- Chemically-defined medium supplement

PeproGrow-1 (catalog number 700-C100) is a serum-free cell culture media supplement formulation designed to sustain the growth of adherent mammalian cell lines, and has been tested with HEK293, HeLa, and A549 cells. This kit may potentially improve the culturing conditions of other adherent cells, however suitability for cells other than those pre-tested is not guaranteed. PeproGrow-1 is an animal component-free, protein-free, chemically-defined formulation. This kit is intended to be used with DMEM/F12 basal media (Thermo Fisher Scientific catalog #10565, or catalog #31331 for customers located outside the USA) and contains enough material to supplement 10L of media.

Note: DMEM/F12 media can contain phenol red, or phenol red can be added at the customer’s discretion. DMEM/F12 media should not contain HEPES. Another vendor’s DMEM/F12 can be purchased, however, PeproTech only tests PeproGrow-1 (Catalog # 700-C100) using Thermo Fisher Scientific DMEM/F12.

PeproGrow-1 Serum-Free Cell Culture Supplement Kit Components:

- **Serum Replacement Solution (Catalog #SR-100):**

This 100x serum replacement solution contains non-animal-derived, chemically-defined salts, designed to replace serum in HEK293, HeLa, and A549 cell culture media.

- **Lipid Mixture Solution (Catalog #LM-200):**

This 200x lipid mixture solution contains non-animal-derived fatty acids and lipids, designed to improve cell growth in serum-free media.

Figure 14



Western blot for Human TLR-3 production using
PeproGrow-1 Serum-Free Cell Culture Supplement Kit

Western blot for Human sDLL-1 production using
PeproGrow-1 Serum-Free Cell Culture Supplement Kit

PeproGrow-1 Kit (SR-100 & LM-200)		Catalog #700-C100
Serum Replacement Solution		SR-100
Lipid Mixture Solution		LM-200

PeperoGrow™ Media Products Chart

Media	Cell Type(s)	Culture Type	Complete	Chemically-Defined
PeperoGrow-1 Kit (LM-200 & SR-100) Lipid Mixture Solution Serum Replacement Solution	HeLa, HEK293, A549	Adherent		✓
CHO Medium PeperoGrow™ AF-CHO	Thermo Fisher Scientific CHO-S cell lines (Catalog numbers 11619-012, R800-07, A11557-01)	Suspension	✓	
HEK293 Medium PeperoGrow™ HEK293	Thermo Fisher Scientific FreeStyle™ 293-F cells (Catalog number R790-07)	Suspension	✓	✓
Human ESC Media PeperoGrow™ hESC	Human ESCs and Human iPSCs	Adherent	✓	✓
Companion Products for Human ESC Media				
Animal-Free Human Vitronectin Matrix and Buffer Kit Animal-Free Human Vitronectin Matrix PBS+ Kolliphor P 188				
Cell Passaging/Non-Enzymatic Detachment Buffer PBS+HEPES+EDTA				
Human MSC Medium PeperoGrow™ hMSC	Human Mesenchymal Stem Cells	Adherent & Suspension	✓	
Companion Products for Human hMSC Media				
Animal-Free Human Vitronectin Matrix and Buffer Kit Animal-Free Human Vitronectin Matrix PBS + Kolliphor P 188				
Endothelial Media PeperoGrow™ EPC Kit (ENDO-BM & GS-EPC) Basal Medium Growth Supplement EPC	Human Endothelial Progenitor Cells	Adherent	✓	
PeperoGrow™ MacroV Kit (ENDO-BM & GS-MacroV) Basal Medium Growth Supplement MacroV	Human Macrovascular Endothelial Cells	Adherent	✓	
PeperoGrow™ MicroV Kit (ENDO-BM & GS-MicroV) Basal Medium Growth Supplement MicroV	Human Microvascular Endothelial Cells	Adherent	✓	

*Select media products have individual components available for purchase.

Animal-Free	Xeno-Free	Serum-Free	Protein-Free	Catalog Number	Size	Additional Note(s)
✓		✓	✓	700-C100* LM-200 SR-100	Kit 55mL 100mL	This product is a Serum-Free Cell Culture Supplement Kit to be used in conjunction with DMEM/F-12 basal media (Thermo Fisher Scientific Catalog #10565, or use Catalog #31331 for customers located outside the USA).
✓		✓	✓	AF-CHO	1L	Ready-to-use. Contains non-animal-derived hydrolysates.
✓		✓	✓	AF-CD-HEK293	1L	Ready-to-use.
		✓		HESC-500 HESC-100	500mL 100mL	Phenol red-free. Supplied with a lyophilized growth factor component.
				AF-VMB-220	Kit 500µg 220mL	
				CPD-125	Kit 125mL	
	✓			XF-HMSC-500	500mL	Phenol red-free. Supplied with a lyophilized growth factor component. This basal medium contains human serum. This basal medium has additional companion products available for purchase.
				AF-VMB-220	Kit 500µg 220mL	
				700-EPC* ENDO-BM GS-EPC	Kit 500mL 75mL	Growth Supplement EPC supplied as a frozen bottle.
				700-MacroV* ENDO-BM GS-MacroV	Kit 500mL 25mL	Growth Supplement MacroV supplied as a frozen bottle.
				700-MicroV* ENDO-BM GS-MicroV	Kit 500mL 35mL	Growth Supplement MicroV supplied as a frozen bottle.

Cell Culture Glossary

A

Adherent Cell Culture: Cells that form a single layer on an artificial substrate system in a medium, such as in a T-flask or a roller bottle.

Adult Stem Cell: A stem cell in the adult system that is in an undifferentiated state and maintains the ability to differentiate, generally into a cell type from its tissue of origin.

Animal-Free Medium: The medium does not contain animal-derived components.

Aseptic Technique: Procedures that are performed under sterile conditions. This prevents the introduction of fungi, bacteria, viruses, mycoplasma or other microorganisms into cell culture or other laboratory culturing conditions. These procedures may also prevent cell cross-contamination.

B

Basal Medium: An incomplete simple cell culturing medium that does not contain supplemental nutrients or growth factors.

Blastocyst: This is the early stage of an embryo composed of a fluid-filled cavity, an inner cell mass, and an outer cell mass. Embryonic stem cells are derived from the inner cell mass, while the outer cell mass forms the trophoblast.

C

Cellular Differentiation: The process that occurs when a cell becomes specialized for a particular cell type and its function(s).

Chemically-Defined Medium: The chemicals contained in the medium are known and quantifiable. This medium does not contain yeast, animal or plant protein hydrolysates.

Complete Medium: All the necessary components/nutrients for the cell type are present for culturing.

D

Defined Medium: This is also known as chemically-defined medium. All the chemicals and quantities of the medium content are known.

G **Growth Supplement:** This is an additional supplement that PeproTech supplies with some media products. The researcher adds this to the medium upon use, resulting in a complete medium, which contains growth factors/proteins necessary for the particular cell type's growth.

H **Human Embryonic Stem Cell:** A pluripotent stem cell that is derived from the inner cell mass of a blastocyst and can differentiate into different cell types.

I **Induced Pluripotent Stem Cell (iPSC):** A stem cell that has been reprogrammed from an adult cell and has the ability to differentiate into other cell types.

M **Medium/Media (plural form of medium):** The liquid solution used to grow and cultivate a particular cell type.

P **Pluripotent Stem Cell:** A stem cell that is derived from the inner cell mass of the blastocyst and can differentiate into different cell types.

Progenitor Cell: A cell that can differentiate, but cannot renew itself. Generally, a progenitor cell is at a further stage of differentiation.

Protein-Free Medium: The medium does not contain protein, such as insulin, transferrin, albumin, and other protein growth factors.

S **Serum-Free Medium:** The medium does not contain serum.

Suspension Cell Culture: Cells that are free floating in a medium, such as in a shaker flask on an orbital shaker, or a stirred tank bioreactor.

U **Undefined Medium:** The medium may contain ingredient(s), such as a yeast extract, and animal or plant protein hydrolysates, in which the mixture of the chemical reagents is in unknown proportions.

X **Xeno-Free Medium:** By some definitions xeno-free medium does not contain animal products, i.e., all the components are of non-animal origin. A xeno-free product may contain human-derived reagents.

OUR QUALITY YOUR DEDICATION



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