EpiGRO™, EndoGRO™ and FibroGRO™ Reagents

for Advanced Epithelial, Endothelial and Fibroblast Cell Culture



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QUICKLY LINK OUT to associated products.

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EpiGRO™ Reagents for Advanced Epithelial Cell Culture

The successful, reliable culture of epithelial cells is critical for many areas of research, including dermatology, respiratory research, and cancer research. Because the breakdown of control mechanisms in epithelial cells is a frequent contributor to cancer progression and metastasis, epithelial cell culture is particularly important for cancer research.

EpiGRO™ primary epithelial cells and specially formulated media improve epithelial cell culture for multiple cell types:

- Epidermal keratinocytes
- Small airway epithelial cells
- Corneal cells
- Prostate epithelial cells

EpiGRO™ media formulations are optimized to provide better viability, proliferation rates, morphology and culture stability than other commercially available options.

The media are provided in unique, light-blocking, temperature-monitored packaging to ensure stability and protect the media from damage by light, contamination, and excessive heat. The media do not require or contain any antimicrobials or phenol red. These components can cause cell stress and influence experimental results by masking the true performance or health of the cell culture. Phenol red acts like an estrogen and may stimulate growth independently of experimental variables.

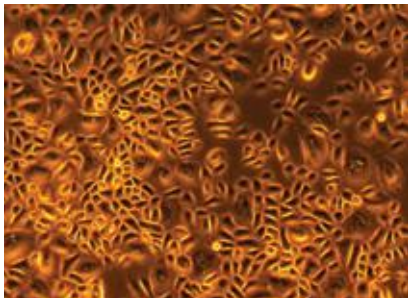
Using the media along with Merck Millipore's EpiGRO™ cell lines, you can experience more convenient, reliable, and consistent culture of your epithelial cells.

Advantages of EpiGRO™ cells and media:

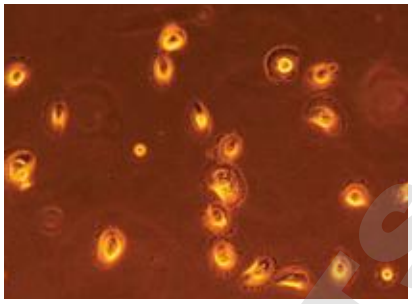
- Dramatically improved proliferation rates with excellent cell morphology
- Increased cell culture longevity
- Serum-free or low-serum formulations
- No phenol red or antimicrobials, which can cause cell stress and masking effects
- Extensive QC and exacting standards to ensure lot-to-lot consistency
- UV-resistant packaging to prevent light damage
- Built-in temperature gauges to assist in contamination-free media warming



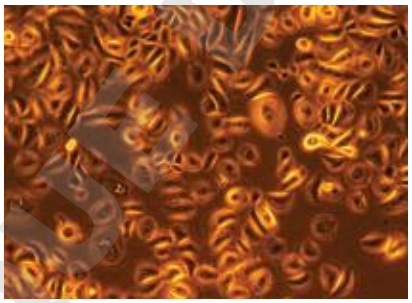
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EpiGRO™ keratinocytes cultured in EpiGRO™ Human Keratinocyte Complete Medium (Catalogue No. SCMK001).



EpiGRO™ keratinocytes cultured in Competitor C medium.



EpiGRO™ keratinocytes cultured in Competitor LG medium.

Rigorous QC testing for guaranteed reproducibility and consistency

All EpiGRO™ products are manufactured with the highest quality raw materials and undergo stringent quality control procedures. Exacting standards and production procedures ensure lot-to-lot consistency for reproducible, high quality and reliable results.

Parameters tested:

- Sterility testing: negative for bacteria and fungal growth
- pH variance: 7.5 +/- 0.2
- Rate of proliferation
- Morphology
- Osmolality 315 +/- 10 mOsm
- Endotoxin levels: < 0.5 EU/mL

EpiGRO™ media outperform traditional epithelial cell media

Each EpiGRO™ medium is uniquely formulated to provide an optimized environment for its corresponding EpiGRO™ cell type. Consequently, cells proliferate faster, exhibit improved morphology, and show better longevity than epithelial cells cultured in traditional media formulations.

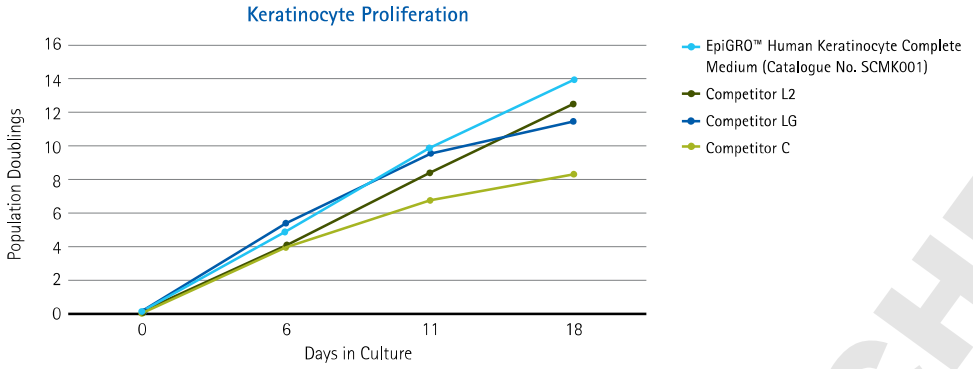
Improved viability and morphology

Epithelial cells cultured in EpiGRO™ media demonstrate a more consistent cobblestone morphology than in other media formulations. The images to the left compare epidermal keratinocytes cultured in EpiGRO™ and in comparable media from two other leading suppliers.

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Faster proliferation rates

Epithelial cells cultured in EpiGRO™ media demonstrate faster expansion times than in other media. The data below compares the proliferation rate of human epidermal keratinocytes cultured in EpiGRO™ medium with expansion of the same cells in media supplied by two leading suppliers of epidermal keratinocyte media formulations. The data were generated by measuring Alamar Blue metabolism with respect to time.



The trends seen in the graph above are consistent with results seen in multiple experiments.

Key Products

EpiGRO™ Epithelial Cells and Complete Media Kits

Description	Catalogue No.
Human Epidermal Keratinocytes, neonatal	SCCE020
EpiGRO™ Human Epidermal Keratinocyte Complete Medium Kit	SCMK001
Human Corneal Epithelial Cells	SCCE016
EpiGRO™ Human Ocular Epithelia Complete Medium Kit	SCMC001
Human Prostate Epithelial Cells, adult	SCCE019
EpiGRO™ Human Prostate Epithelia Complete Medium Kit	SCMP001
Human Small Airway Epithelial Cells	SCCE009
EpiGRO™ Human Small Airway Epithelia Complete Medium Kit	SCML002

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Epithelial Cell-Based Assays



Epithelial cell migration is regulated by interaction of cells with the extracellular matrix (ECM), neighboring cells, or chemoattractants. Epithelial cell migration is important in morphogenic processes, wound healing and tumor metastasis. Cell-based assays, such as QCM™ Boyden chamber assays, enable researchers to simulate the barriers invaded by and conditions encountered by normal and metastatic cells *in vivo*.

Our ever-evolving portfolio of migration and invasion assay solutions is also moving beyond the Boyden chamber technique to analyzing the dynamics of cell migration, extracellular matrix degradation and wound healing, using the Millicell® µ-Migration Assay Kit.

Description	Catalogue No.
Millicell® µ-Migration Assay Kit	MMA205
Cell Comb™ Scratch Assay	17-10191
QCM™ Chemotaxis Cell Migration Assay, 24-well (8 µm)	ECM508, ECM509
QCM™ Chemotaxis Cell Migration Assay, 24-well (5 µm)	ECM506, ECM507
QCM™ Chemotaxis Cell Migration Assay, 24-well (3 µm)	ECM504, ECM505
QCM™ Chemotaxis Cell Migration Assay, 96-well (8 µm)	ECM510
QCM™ Chemotaxis Cell Migration Assay, 96-well (5 µm)	ECM512
QCM™ Chemotaxis Cell Migration Assay, 96-well (3 µm)	ECM515

Human Extracellular Matrix Proteins

Description	Catalogue No.
Human Collagen Type I	CC050
Human Collagen Type II	CC052
Human Collagen Type III	CC054
Human Collagen Type IV	CC076
Human Collagen Type V	CC077
Human Plasma Fibronectin Purified Protein	FC010
Fibronectin 40 kDa α Chymotryptic Fragment (Heparin-binding region), Human purified	F1903
Fibronectin 120 kDa α Chymotryptic Fragment (Cell Attachment region), Human purified	F1904
Human Laminin (pepsinized) Purified Protein	AG56P
Human Merosin	CC085
Vitronectin, Human Purified Protein	CC080
Vitronectin, human recombinant	08-126
Human Tenascin-C Purified Protein	CC065
ECL Cell Attachment Matrix	08-110

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EndoGRO™ Reagents for Advanced Endothelial Cell Culture

EndoGRO™ Human Umbilical Vein Endothelial Cells (HUVEC) are a commonly studied human endothelial cell type extracted from human neonatal umbilical cords. They are relatively easy to culture, and provide a valuable cell model for many vascular biology research applications, including inflammation, angiogenesis, atherosclerosis, blood clotting, vasoconstriction, and vasodilation.

EndoGRO™ primary endothelial cells and specially formulated media improve endothelial cell culture

EndoGRO™ HUVEC cells are provided at passage 1 and have been quality tested in low-serum medium without exposure to phenol red.

EndoGRO™ media formulations are optimized to provide better viability, proliferation rates, morphology and culture stability than other commercially available options for human large vessel and microvascular endothelial cells. The media is provided in unique, light-blocking, temperature-monitored packaging to ensure stability and protect the media from damage by light, contamination, and excessive heat. The media does not require or contain any antimicrobials or phenol red. These components can cause cell stress and influence experimental results by masking the true performance or health of the cell culture. Phenol red acts like an estrogen and may stimulate growth independently of experimental variables.

Using the media along with Merck Millipore's EndoGRO™ cell lines, you can experience more convenient, reliable, and consistent culture of your endothelial cells.

Advantages of EndoGRO™ cells and media:

- Low passage primary HUVEC cells
- Lower serum concentrations than standard endothelial cell culture media
- Dramatically improved proliferation rates with excellent cell morphology
- No phenol red or antimicrobials, which can cause cell stress and masking effects
- Extensive QC and exacting standards to ensure lot-to-lot consistency
- UV-resistant packaging to prevent light damage
- Built-in temperature gauges to assist in contamination-free media warming

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EndoGRO™ Media Formulation Options

EndoGRO™ media provides an optimal cell culture environment for many types of endothelial cells, including HUVEC, aortic endothelial cells, and other human large vessel and microvascular endothelial cells. Choose from four uniquely optimized media formulations to match your research application:

Medium Type	Description
EndoGRO™-LS	Low serum culture medium for human endothelial cells, HUVEC, aortic endothelial cells, and other large vessel endothelial cells
EndoGRO™-VEGF	Low serum, VEGF-supplemented medium for the rapid proliferation of human endothelial cells, HUVEC, aortic endothelial cells and other large vessel endothelial cells
EndoGRO™-MV	Low serum culture medium for human microvascular endothelial cells
EndoGRO™-MV-VEGF	Low serum, VEGF-supplemented medium for the rapid proliferation of human microvascular endothelial cells

Rigorous QC testing for guaranteed reproducibility and consistency

All EndoGRO™ products are manufactured with the highest quality raw materials and undergo stringent quality control procedures. Exacting standards and production procedures ensure lot-to-lot consistency for reproducible, high quality and reliable results.

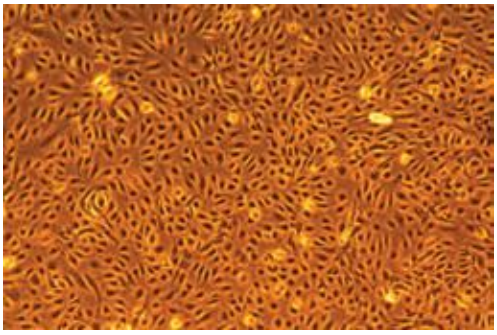
Parameters tested:

- Sterility testing: negative for bacterial and fungal growth
- pH variance: 7.8 +/- 0.3
- Rate of proliferation
- Morphology
- Osmolality 270 +/- 10 mOsm
- Endotoxin levels: < 0.5 EU/mL

EndoGRO™ media outperform traditional endothelial media

Improved viability and morphology

Human Umbilical Vein Endothelial cells (HUVECs, Catalogue No. SCCE001) cultured in EndoGRO™-LS Medium at passage 2, 4 days after inoculation with 2,000 cells/cm2 (100X). Cells display normal cobblestone morphology in culture.

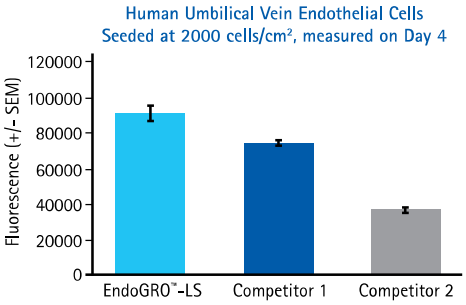


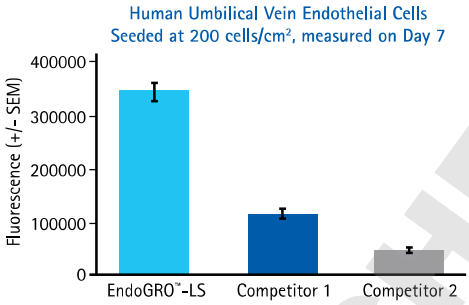
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Faster proliferation rates

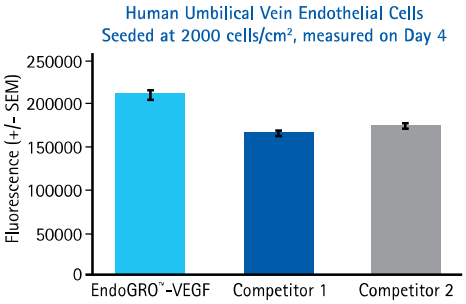
HUVEC and Microvascular endothelial cells cultured in all EndoGRO™ media expand faster than in competitor media. HUVEC or Microvascular Endothelial cells were seeded at low density in 24-well plates in EndoGRO™ media. Proliferation was measured on the days indicated. Higher fluorescence represents a greater number of cells per well and therefore better proliferation.

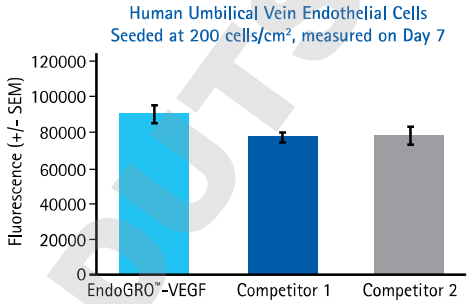
EndoGRO™-LS Endothelial Cell Proliferation



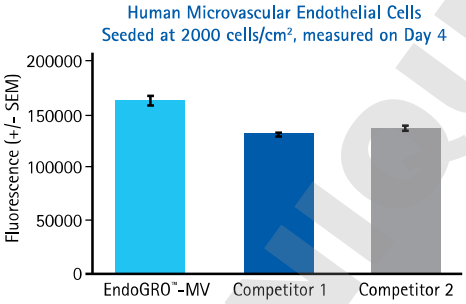


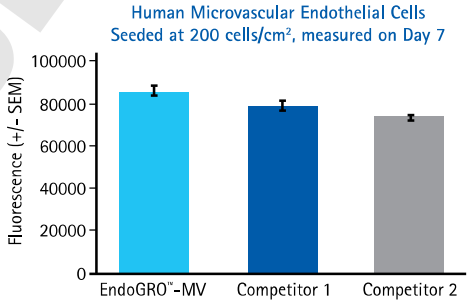
EndoGRO™-VEGF Endothelial Cell Proliferation



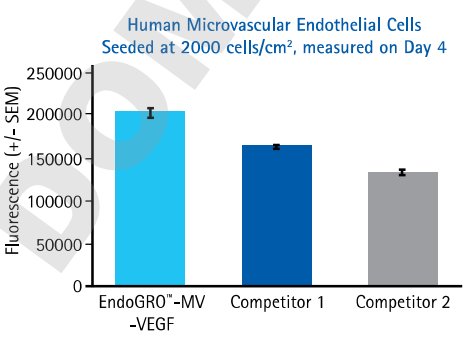


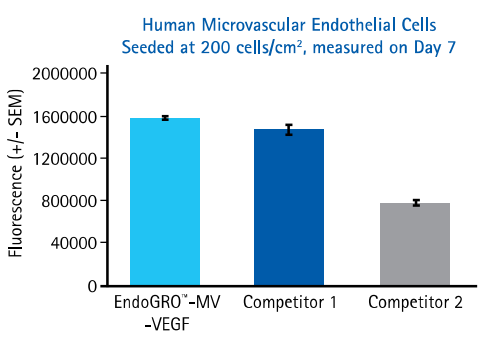
EndoGRO™-MV Endothelial Cell Proliferation





EndoGRO™-MV-VEGF Endothelial Cell Proliferation





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Key Products

EndoGRO™ Endothelial Cells and Complete Media Kits

Description	Catalogue No.
EndoGRO™ Human Umbilical Vein Endothelial Cells (HUVEC)	SCCE001
EndoGRO™-LS Complete Media Kit	SCME001
EndoGRO™-VEGF Complete Media Kit	SCME002
EndoGRO™-MV-VEGF Complete Media Kit	SCME003
EndoGRO™-MV Complete Media Kit	SCME004

Endothelial Cell-based Assays for Studying Angiogenesis

Studying how compounds affect the ability of endothelial cells to promote or inhibit new capillary tube formation can lead to therapies affecting wound healing, tissue regeneration, cardiovascular disease, stroke, tumor progression, and more.

The Millicell® µ-Angiogenesis activation and inhibition kits provide a powerful, quantitative platform for real-time monitoring of changes in tubule formation with unprecedented optical resolution.



Description	Catalogue No.
Millicell® µ-Angiogenesis Activation Assay Kit	MMA130
Millicell® µ-Angiogenesis Inhibition Assay Kit	MMA125
In Vitro Angiogenesis Assay Kit	ECM625
Fibrin *In Vitro* Angiogenesis Assay	ECM630
Blood Vessel Staining Kit	ECM590
Endothelial Cell Characterization Kit	SCR023

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Other Endothelial Cell-Based Assays

Description	Catalogue No.
QCM™ Endothelial Cell Invasion Assay 24 well	ECM210, ECM211
QCM™ 3 µm Endothelial Cell Migration Assay Fibronectin	ECM200, ECM201
QCM™ Tumor Cell Transendothelial Migration Assay	ECM558, ECM560
QCM™ Leukocyte Transendothelial Migration Assay	ECM557, ECM559
Endothelial Cell Adhesion Assay Kit	ECM645
In Vitro Vascular Permeability Assay (96-well)	ECM642
In Vitro Vascular Permeability Assay (24-well)	ECM644

Human Recombinant Growth Factors

Description	Catalogue No.
Vascular Endothelial Growth Factor, recombinant human, 165aa isoform	GF094
VEGF, Human recombinant	01-185
VEGF165, Human Recombinant Animal Free	GF315
Flt-1, Human Recombinant	14-562
ANG-1, Human Recombinant	GF164
ANG-2, Human Recombinant	GF165
EGF, human recombinant	GF144
EGF, Human Recombinant Animal Free	GF316
FGF basic, human recombinant	GF003
FGF basic, human recombinant Animal Free	GF003-AF
Endostatin, Human Recombinant	GF171
Tie2, Human Recombinant	14-540

Endothelial Cell Growth Supplements

Description	Catalogue No.
Endothelial Cell Growth Supplement, Lyophilized	02-101*, 02-102*
Bovine Pituitary Extract (BPE), Lyophilized	02-103*, 02-104*

* Product not for sale in Japan

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FibroGRO™ Reagents for Advanced Fibroblast Cell Culture

Fibroblast cells are stromal cells that synthesize the extracellular matrix for a tissue, providing the structural framework for an organism. Fibroblasts also play critical roles in wound healing and repair. Fibroblasts are the most common cells of connective tissue in animals. Recently, fibroblasts have been the main somatic cell type used for cellular reprogramming studies and used to support human embryonic stem cells in feeder-dependent cultures.

FibroGRO™ primary fibroblast cells and specialty formulated media improve fibroblast cell culture

FibroGRO™ Xeno-Free Human Foreskin Fibroblasts are derived from normal human foreskin and have been isolated and manufactured under xeno-free conditions. Cells are supplied at a low passage number (p3 – p5) and proliferate rapidly when grown in FibroGRO™-LS, FibroGRO™ Complete, and FibroGRO™ Xeno-Free media. Rapid proliferation of human foreskin fibroblasts enable efficient reprogramming of the cells to induced pluripotent stem (iPS) cells. Inactivated xeno-free human foreskin fibroblasts are also available to support the xeno-free maintenance of human embryonic stem cells in feeder-dependent cultures.

FibroGRO™ media formulations are optimized to provide better viability, proliferation rates, morphology and culture stability than other commercially available options for human fibroblast cells. The media are provided in unique, light-blocking, temperature-monitored packaging to ensure stability and protect the media from damage by light, contamination, and excessive heat. The media do not require or contain any antimicrobials or phenol red. These components can cause cell stress and influence experimental results by masking the true performance or health of the cell culture. Phenol red acts like an estrogen and may stimulate growth independently of experimental variables.

Using the media along with Merck Millipore's FibroGRO™ cell lines, you can experience more convenient, reliable, and consistent culture of your fibroblast cells.

Advantages of FibroGRO™ cells and media:

- Lower serum, serum-free and xeno-free media options
- Dramatically improved proliferation rates with excellent cell morphology
- No phenol red or antimicrobials, which can cause cell stress and masking effects
- Extensive QC and exacting standards to ensure lot-to-lot consistency
- UV-resistant packaging to prevent light damage
- Built-in temperature gauges to assist in contamination-free media warming

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FibroGRO™ media formulation options

FibroGRO™ media provides an optimal cell culture environment for human fibroblast, stromal and mesenchymal cells. Choose from three uniquely optimized media formulations to match your research application:

Medium Type	Description
FibroGRO™ Complete	Serum-free culture of human fibroblasts, stromal cells, mesenchymal cells and mouse embryonic fibroblasts
FibroGRO™ -LS	Low serum culture of human fibroblasts, stromal cells, mesenchymal cells and mouse embryonic fibroblasts
FibroGRO™ Xeno-Free	Xeno-free culture of human fibroblasts, stromal cells, mesenchymal cells and mouse embryonic fibroblasts

Rigorous QC testing for guaranteed reproducibility and consistency

All FibroGRO™ products are manufactured with the highest quality raw materials and undergo stringent quality control procedures. Exacting standards and production procedures ensure lot-to-lot consistency for reproducible, high quality and reliable results.

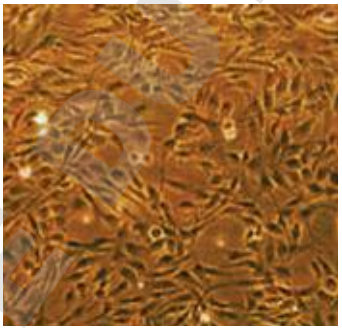
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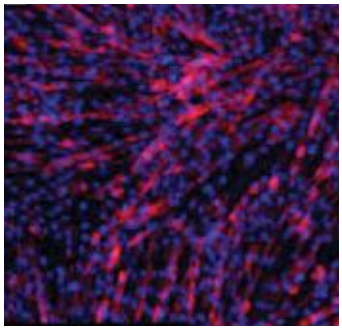
- Sterility testing: negative for bacterial and fungal growth
- pH variance: 7.4+/- 0.2
- Rate of proliferation
- Morphology
- Osmolality 270 +/- 10 mOsm
- Endotoxin levels: < 0.5 EU/mL

FibroGRO™ media outperform traditional serum-containing fibroblast media

Improved viability and morphology

FibroGRO™ Xeno-free Human Foreskin Fibroblasts (Catalogue No. SCC058) are grown as monolayers (Below, left), express the fibroblast marker, CD13 PE (Below, right, red) and are negative for pluripotent markers, SSEA-4 and TRA-1-60 (data not shown).



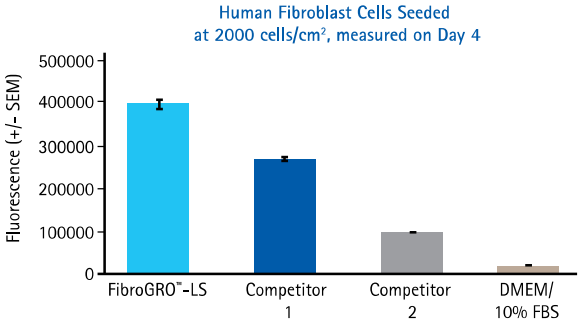


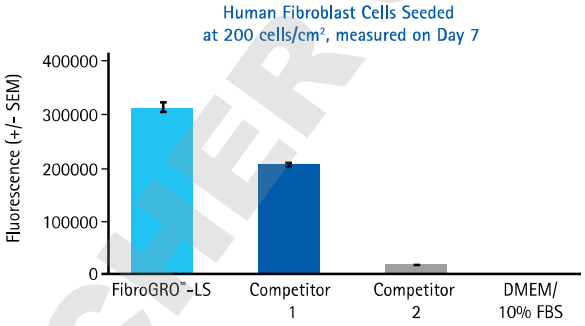
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Faster proliferation rates

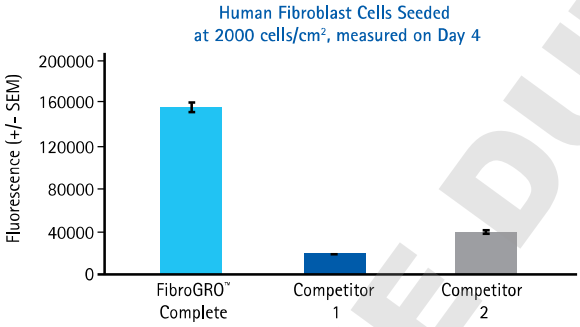
Fibroblast cells cultured in all FibroGRO™ media expand faster than in competitor media. Xeno-Free Fibroblast cells were seeded at low density in 24-well plates in FibroGRO™ media. Proliferation was measured on the days indicated. Higher fluorescence represents a greater number of cells per well and therefore better proliferation.

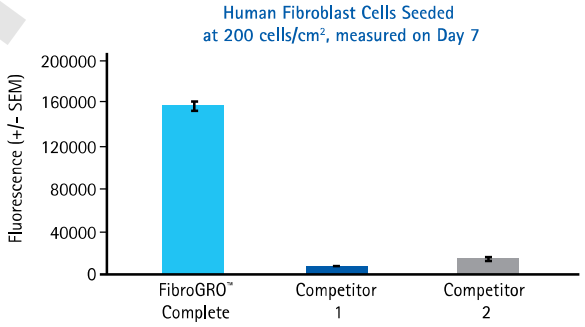
FibroGRO™-LS Fibroblast Cell



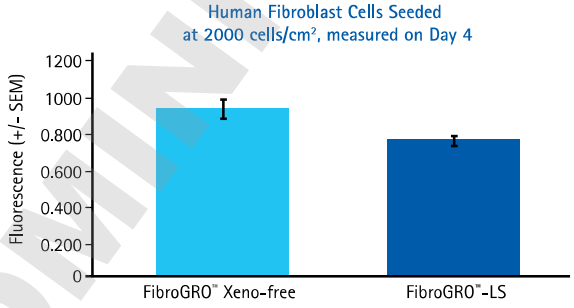


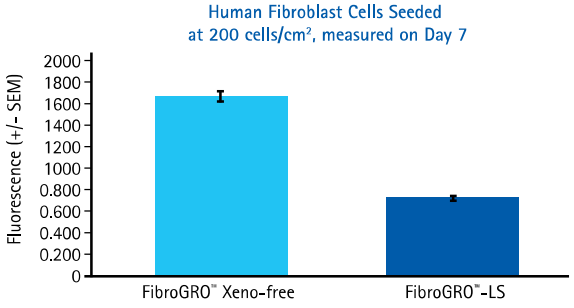
FibroGRO™ Complete Fibroblast Cell Proliferation





FibroGRO™ Xeno-free Fibroblast Cell Proliferation





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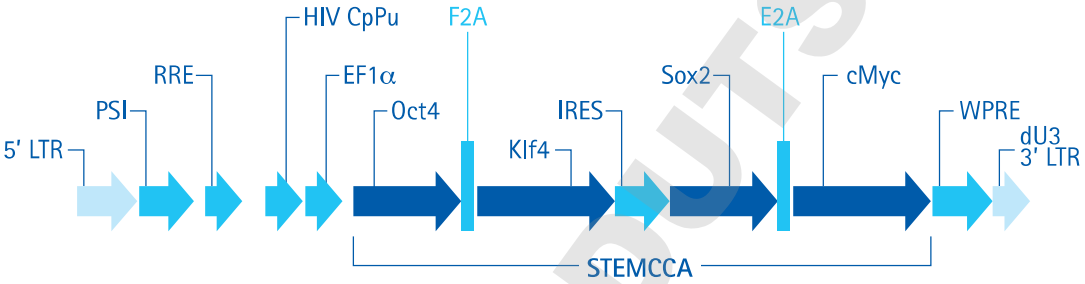
Key Products

FibroGRO™ Fibroblast Cells and Complete Media Kits

Description	Catalogue No.
FibroGRO™ Xeno-Free Human Foreskin Fibroblasts	SCC058
FibroGRO™ Inactivated Xeno-Free Human Foreskin Fibroblasts	SCC057
FibroGRO™ Complete Media Kit for Culture of Human Fibroblasts	SCMF001
FibroGRO™-LS Complete Media Kit for Culture of Human Fibroblasts	SCMF002
FibroGRO™ Xeno-Free Human Fibroblast Expansion Medium	SCM037

STEMCCA™ Cellular Reprogramming Kits

Generate induced pluripotent stem (iPS) cells from fibroblasts efficiently with a single vector. Unlike traditional iPS cell generation, which requires simultaneous co-infection by four separate expression vectors, the STEMCCA™ kits use a single polycistronic lentiviral vector to improve efficiency and reduce the number of viral integrations.



Description	Catalogue No.
Human STEMCCA™ Constitutive Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR544
Human STEMCCA™ Cre-Excisable Constitutive Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR545
Human STEMCCA™ Cre-Excisable Constitutive Polycistronic (OKS/L-Myc) Lentivirus Reprogramming Kit	SCR548
Mouse STEMCCA™ Constitutive Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR530
Mouse STEMCCA™ Cre-Excisable Constitutive Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR531
Mouse STEMCCA™ Dox-Inducible Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR512
Mouse STEMCCA™ Cre-Excisable Dox-Inducible Polycistronic (OKSM) Lentivirus Reprogramming Kit	SCR513
Mouse STEMCCA™ Cre-Excisable Constitutive Polycistronic (OKS) Lentivirus Reprogramming Kit	SCR518
Human iPS Cell Boost Supplement	SCM088
Human iPS Cell Boost Supplement II	SCM094
Mouse iPS Cell Boost Supplement	SCM087
Human, iPS Selection Kit	SCR502
ES Cell Characterization Kit	SCR001, SCR002
Alkaline Phosphatase Detection Kit	SCR004
Fluorescent Human ES/iPS Cell Characterization Kit	SCR078
Fluorescent Mouse ES/iPS Cell Characterization Kit	SCR077
Quantitative Alkaline Phosphatase ES Characterization Kit	SCR066

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Lit No. PR4558ENEU BS-GEN-12-06996 8/2012 Printed in the USA.
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