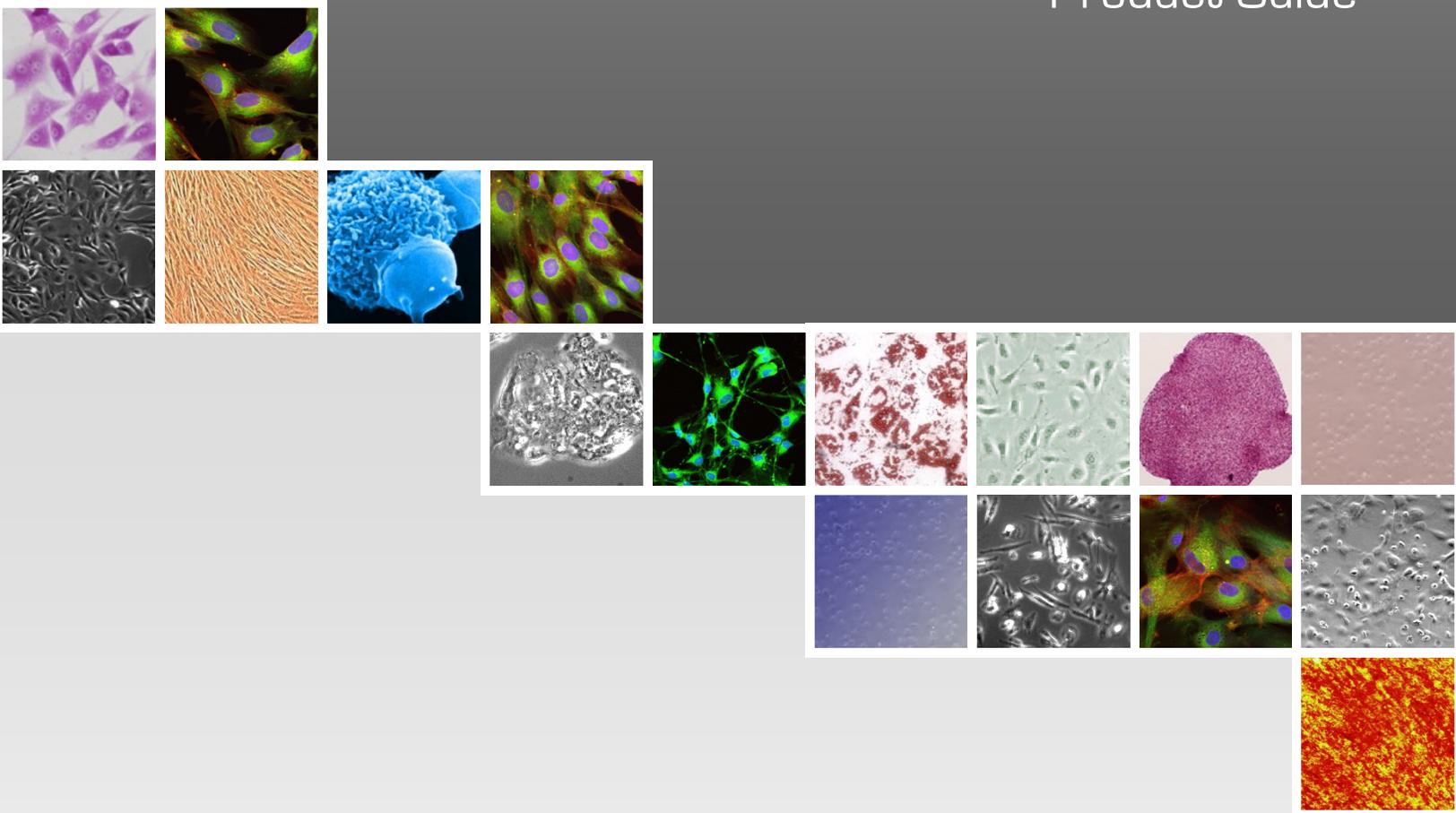
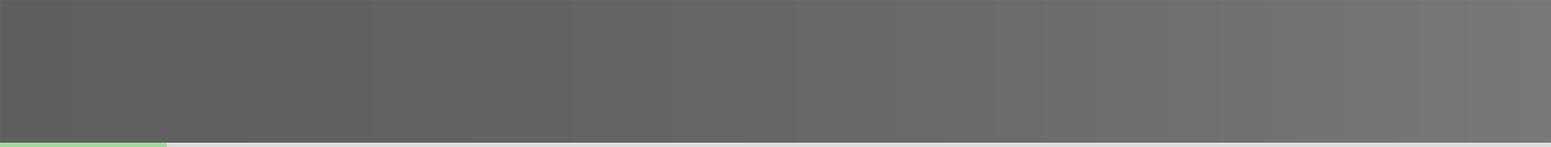


# Cellular Engineering Technologies (CET) Inc.

## Product Guide



**CET**  
celleng-tech.com



# Cellular Engineering Technologies, Inc.

## About CET

### Mission Statement

Cellular Engineering Technologies (CET) is a biotechnology company specializing in stem cell research, cancer biology and high throughput sensor fabrication. Our goal is to develop novel technologies to expedite drug discovery and screening processes. In addition, CET conducts translational research on non-embryonic stem cells with the ultimate goal of treating human disease. CET's business focuses on three major themes: (1) stem cell research, (2) cancer biology, and (3) bioassay development and drug discovery using specialized high throughput sensors.

### Our Business

Our business is designed to reduce the time and cost of preclinical research and development by applying cellular and tissue engineering technologies to our customer's research needs. We are a leading provider of non-embryonic stem and ancillary cells, cancer tissue and cell lines, and immunological cells from human donors. In addition, CET is a research and development company that combines life science expertise in cell biology and clinical medicine with disciplines in biomedical engineering. We employ life science and engineering professionals to conduct custom preclinical cell-based assay development, drug screening, drug discovery and clinical research.

## Alan Moy, MD      Chief Executive Officer and Founder



Alan Moy, M.D., a physician-scientist, was previously on faculty for 13 years at the University of Iowa Department of Internal Medicine and Biomedical Engineering. Dr. Moy founded the company in 2000. Dr. Moy received a Bachelor's degree in Biochemistry from the University of California, Davis and an M.D. from Creighton University. He received postgraduate education in Internal Medicine from St. Louis University and completed a fellowship in Pulmonary Medicine and Critical Care Medicine at the University of Iowa. Dr. Moy's research expertise is in the area of vascular biology and tissue engineering.

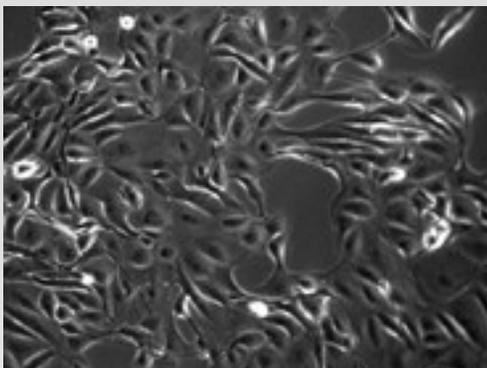


# Table of Contents

<b>Human Stem Cells</b>	
Human Amniotic Epithelial Stem Cells	6
Human Multipotent Cord Blood Unrestricted Somatic Stem Cells	6
CD34+ Hematopoietic Stem Cells	7
CD133+ or Prominin-1 Hematopoietic Stem Cells	7
Human Adipose Derived Mesenchymal Stem Cells	8
Human Amniotic Membrane Mesenchymal Stem Cells	9
Human Bone Marrow Mesenchymal Stem Cells	10
Human Wharton's Jelly Mesenchymal Stem Cells	11
<b>Stem Cell Media</b>	
Cryopreservation Media	12
Adipogenic Differentiation Media	12
Cardiomyocyte Differentiation Media	12
Chondrogenic Differentiation Media	13
Endothelial Progenitor Cell Differentiation Media	13
Hepatocyte like Cell Differentiation Media	13
Osteogenic Differentiation Media	14
Neural Differentiation Media	14
Amniotic Epithelial Stem Cell Expansion Media	14
Cord Blood Multipotent Unrestricted Somatic Stem Cell Expansion Media	15
Hematopoietic Stem Cell Expansion Media	15
Mesenchymal Stem Cell Expansion Media	15
<b>Cancer Biology-Tumor Samples and Cells</b>	
Lung Cancer Tumor Samples	16
Lung Cancer Associated Fibroblasts	16
HepG2 Human Hepatocellular Carcinoma Cells	16
<b>Cancer Biology Media</b>	
Lung Cancer Associated Fibroblast Expansion Media	17
HepG2 Hepatocellular Carcinoma Expansion Media	17
<b>Ancillary Cells</b>	
Human Umbilical Vein Endothelial Cells	18
Human Foreskin Fibroblast Cells	18
Human Immunological Cells	18
<b>Ancillary Cell Media</b>	
Human Umbilical Vein Endothelial Expansion Media	19
Human Foreskin Fibroblast Expansion Media	19

# Human Stem Cells

## Human Amniotic Epithelial Stem Cells

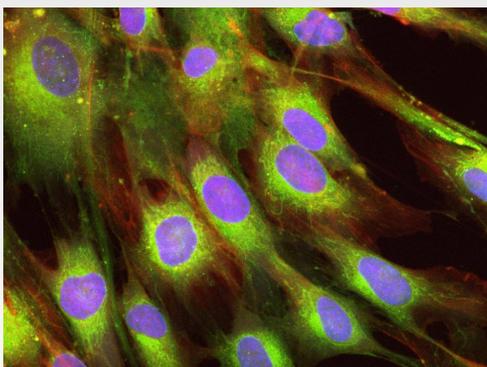


Human Amniotic Epithelial (HAE) Cells are isolated from the surface layer of the amniotic membrane of fresh placentas. HAE cells retain embryonic stem cell like characteristics and express Nanog, Oct-4 and Sox-2. These cells are useful for tissue differentiation of all three germ layers, including the ectoderm, endoderm, and the mesoderm. Some examples of tissue differentiation applications include conversion into pancreatic islet cells, hepatocyte like cells, cardiomyocytes and neuron like cells.

### Ordering Information

CET Catalog #	Quantity
HAEC-100	100,000 cells
HAEC-500	500,000 cells

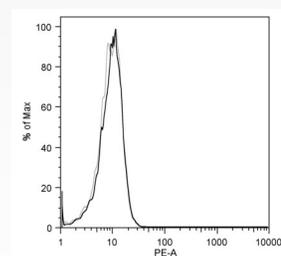
## Human Cord Blood Unrestricted Somatic Stem Cells



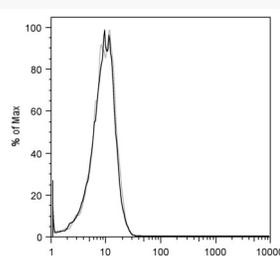
Human Multipotent Cord Blood Unrestricted Somatic Stem Cells are isolated from fresh cord blood. Unlike MSC's, HMCBUSSC are extremely rare cells that can be expanded to very high densities. These cells are versatile and useful for tissue differentiation applications including conversion into neuron like cells and osteoblasts. In addition, these cells have been used in animal models to reverse liver injury by differentiation into hepatocyte like cells.

### Ordering Information

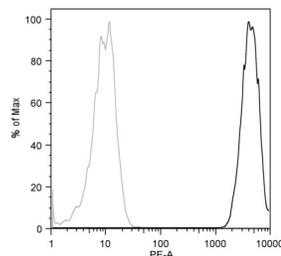
CET Catalog #	Quantity
HMpC-100	100,000 cells
HMpC-500	500,000 cells



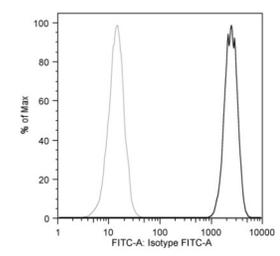
CD14-



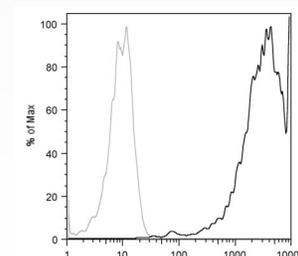
CD45-



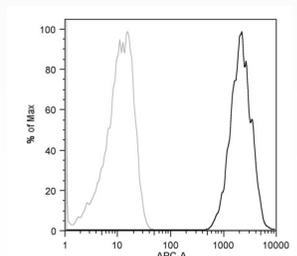
CD29+



CD44+



CD90+

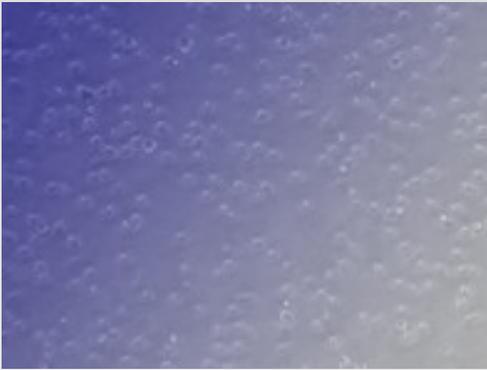


CD105+

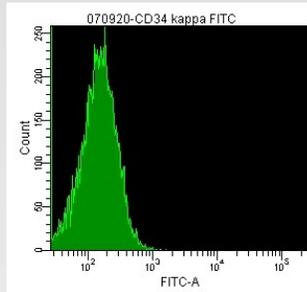
All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2, Hepatitis B and Hepatitis C.



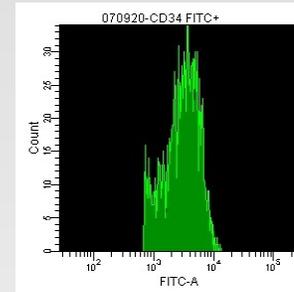
## CD34+ Hematopoietic Stem Cells



CD34+ stem cells are robotically isolated from fresh cord blood using antibody based separation and then expanded. CD34+ stem cells have been used by stem cell scientists for a variety of purposes including ex vivo expansion, tissue differentiation and immunological applications.



CD34 kappa FITC



CD34 +

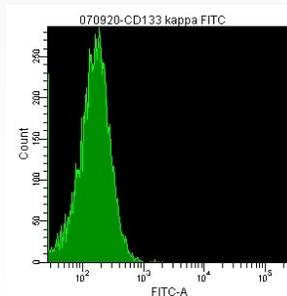
### Ordering Information

CET Catalog #	Quantity
HCD34-100	100,000 cells
HCD34-500	500,000 cells
HCD34-1000	1,000,000 cells

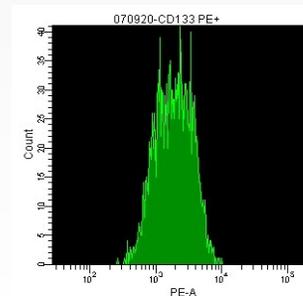
## CD133+ or Prominin-1 Hematopoietic Stem Cells



CD133+ or Prominin-1 expressing cells are more primitive and rarer stem cells than their CD34+ counterparts and also used in a variety of hematological and immunological applications.



CD133 kappa FITC



CD133 +

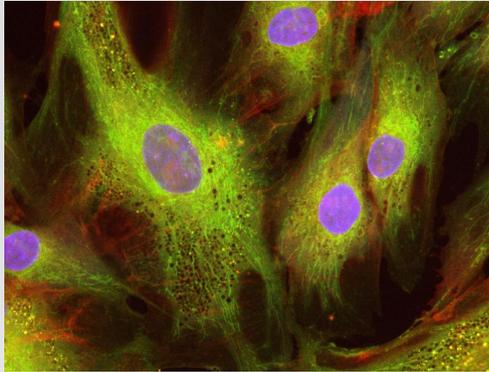
### Ordering Information

CET Catalog #	Quantity
HCD133-100	100,000 cells
HCD133-500	500,000 cells
HCD133-1000	1,000,000 cells

All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2, Hepatitis B and Hepatitis C.

# Human Stem Cells

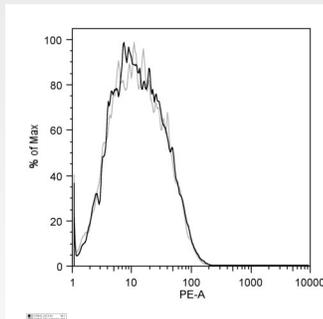
## Human Adipose Derived Mesenchymal Stem Cells



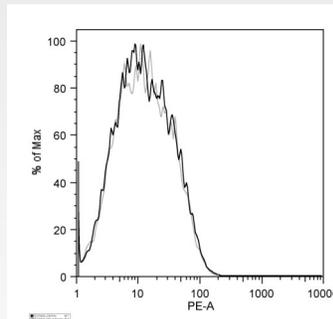
Human adipose derived mesenchymal stem cells are isolated from processed lipoaspirate. To ensure quality and consistency, cells are harvested from normal donors and passed three times to obtain a homogenous population. These cells are tailored for a variety of applications including differentiation into neuron like cells, adipocytes and osteoblasts. Cells are easy to manage and can be grown to confluency.

### Ordering Information

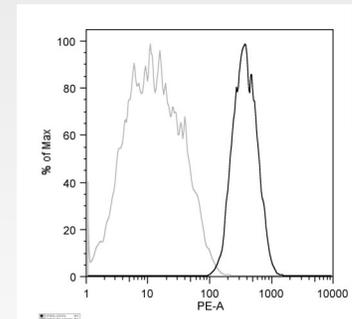
CET Catalog #	Quantity
HMSC.AD-100	100,000 cells
HMSC.AD-500	500,000 cells



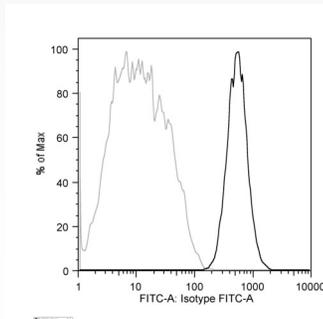
CD14-



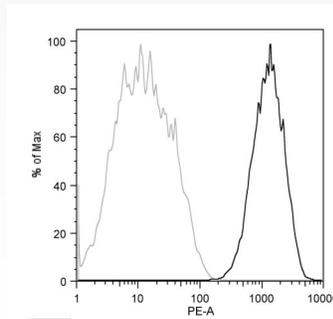
CD45-



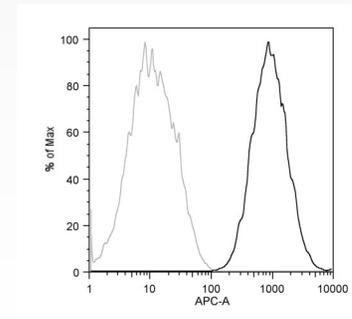
CD29+



CD44+



CD90+

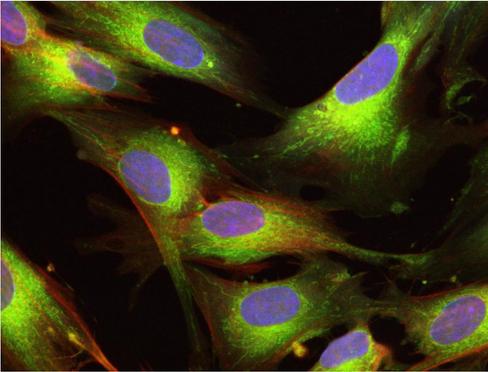


CD105+

All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2, Hepatitis B and Hepatitis C.



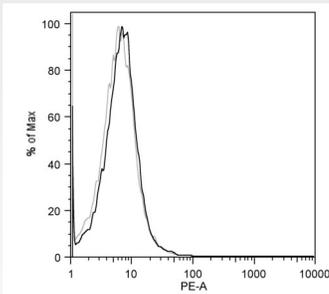
## Human Amniotic Membrane Mesenchymal Stem Cells



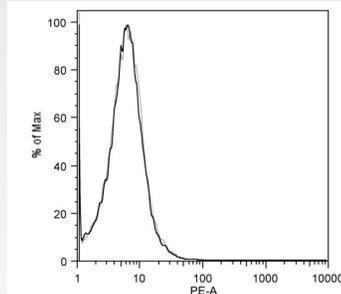
Human amniotic membrane mesenchymal stem cells are harvested after the amniotic membrane has been stripped of amniotic epithelial stem cells. The membrane is then digested enzymatically and mesenchymal stem cells are released. These cells have a variety of applications but are best suited for animal studies involving graft versus host responses and tissue differentiation into hepatocyte like cells.

### Ordering Information

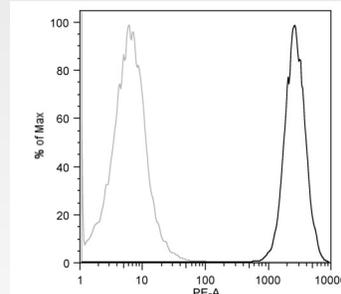
CET Catalog #	Quantity
HMSC.AM-100	100,000 cells
HMSC.AM-500	500,000 cells



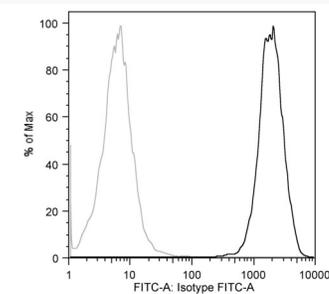
CD14-



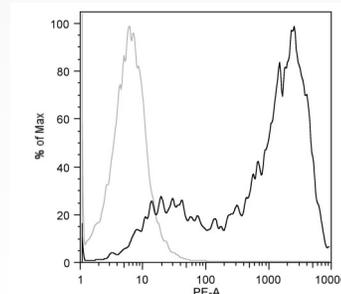
CD45-



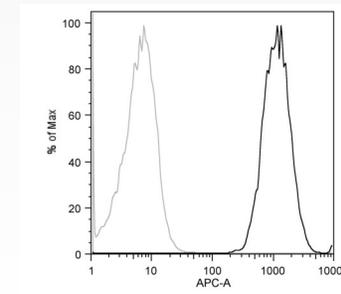
CD29+



CD44+



CD90+

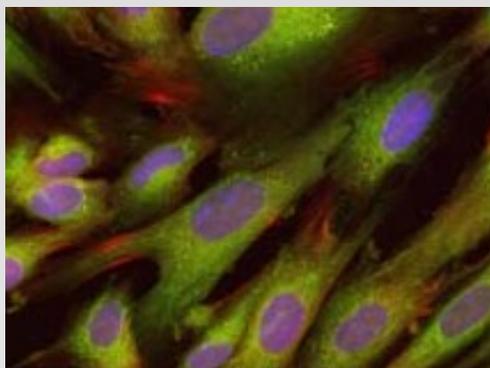


CD105+

All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2, Hepatitis B and Hepatitis C.

# Human Stem Cells

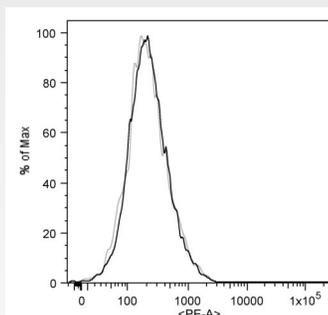
## Human Bone Marrow Mesenchymal Stem Cells



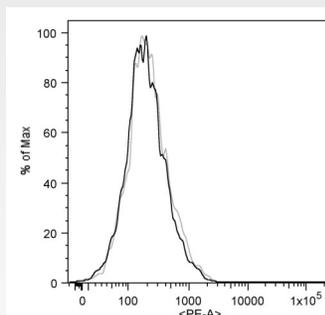
Human bone marrow mesenchymal stem cells were first used as a model system for the study of somatic stem cells. Our cells are isolated from red marrow collected from a single normal donor. The cells are then passed thrice to assure consistency. These cells are extremely versatile and have been used in a host of tissue differentiation applications including, but not limited to, adipogenic, chondrogenic, osteogenic and neural cell like conversions.

### Ordering Information

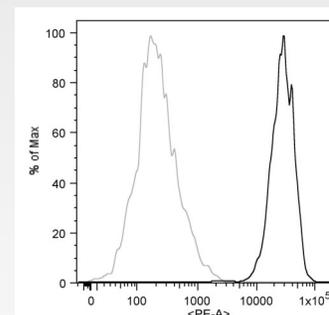
CET Catalog #	Quantity
HMSC.BM-100	100,000 cells
HMSC.BM-500	500,000 cells



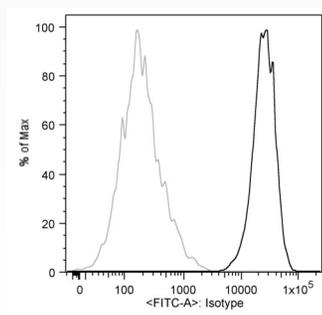
CD14-



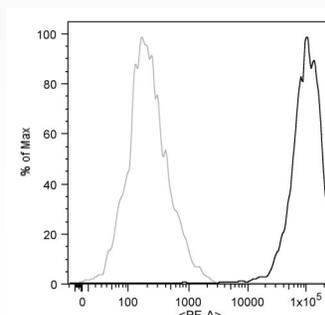
CD45-



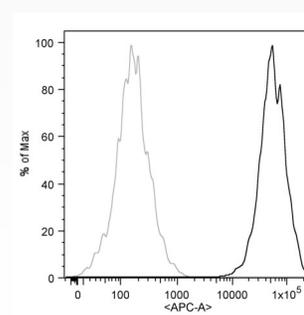
CD29+



CD44+



CD90+

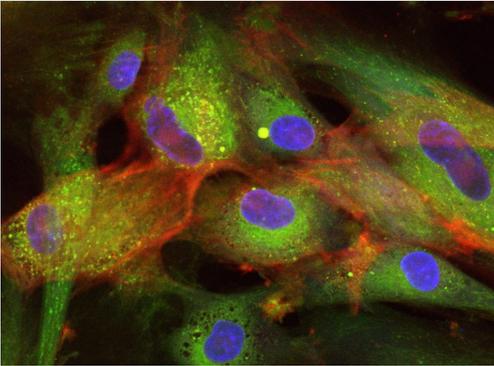


CD105+

All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2,



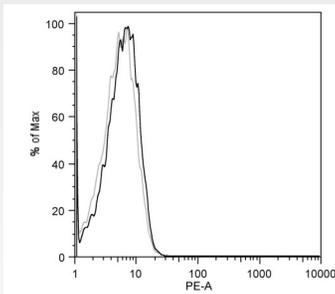
## Human Wharton's Jelly Mesenchymal Stem Cells



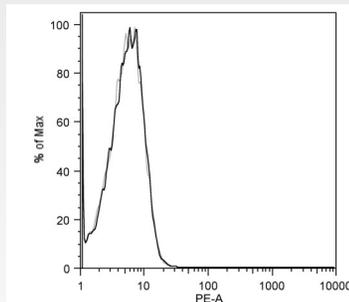
Human wharton's jelly mesenchymal stem cells are isolated from a single donor umbilical cord. The cord is dissected to remove blood vessels and preserve the substance between the vessels, which is the wharton's jelly. The wharton's jelly is then digested enzymatically, plated and passed thrice to yield a homogenous population. Unlike other MSC populations, these cells are slower growing and cannot be grown to extremely high densities. These cells are well suited to differentiate into hepatocyte like cells.

### Ordering Information

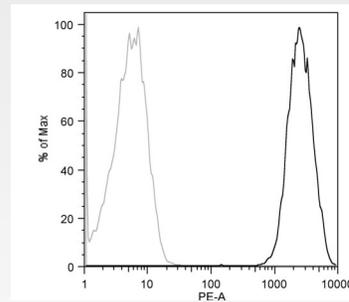
CET Catalog #	Quantity
HMSC.WJ-100	100,000 cells
HMSC.WJ-500	500,000 cells



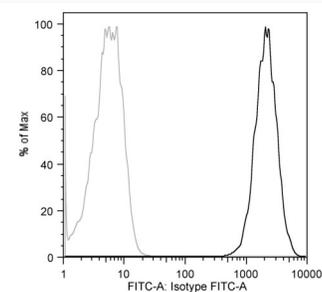
CD14-



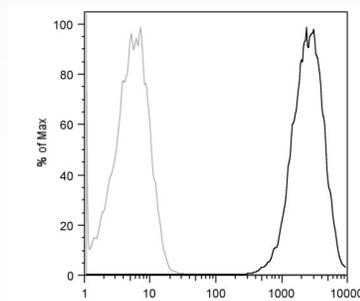
CD45-



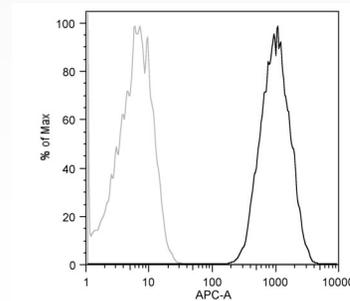
CD29+



CD44+



CD90+



CD105+

All CET stem cells are characterized and tested with a panel of known stromal, stem and hematopoietic markers. Each cell type is analyzed by flow cytometry to ensure >95% purity. All stem cells test negative for HIV-1, HIV-2, Hepatitis B and Hepatitis C.

# Stem Cell Media

## Cryopreservation Media

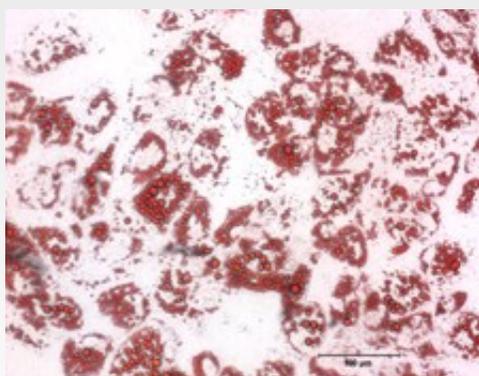


CET's cryopreservation media is extremely versatile and can be used to freeze both adherent and non adherent cells. Our media has been tested with hematopoietic stem cells, mesenchymal stem cells, amniotic epithelial stem cells, cancer cells, endothelial cells, fibroblasts and immune cells. Cells can then be stored on a long term basis in the vapor phase of a liquid nitrogen storage tank. Upon thawing, cells show greater than 95% viability, very little debris formation and cell death.

### Ordering Information

CET Catalog #	Quantity
CRYO.Media-100	100 mL

## Adipogenic Differentiation Media

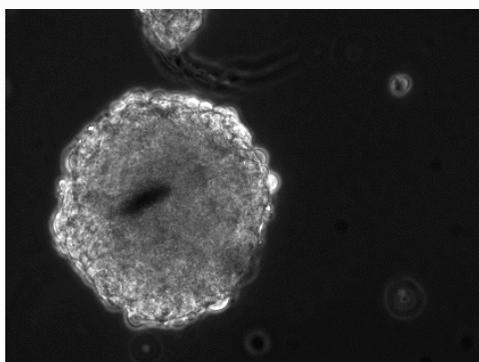


Adipogenic differentiation media is designed to pair with adipose derived and bone marrow derived mesenchymal stem cells. Differentiation into adipocytes begins within seven days and reaches a maximum within fifteen to twenty one days. Adipocytes are visible microscopically with large droplets of fat as inclusions within cell membranes.

### Ordering Information

CET Catalog #	Quantity
ADI.D.Media-450	450 mL

## Cardiomyocyte Differentiation Media



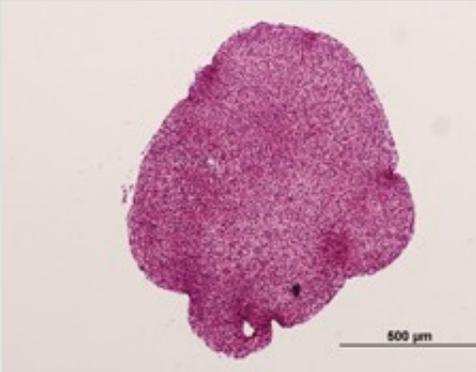
CET's cardiomyocyte differentiation media is designed to work with murine ES cell lines. Within six days of cell culture in this media, efficient differentiation of embryoid bodies into cardiomyocytes is seen, as witnessed by beating clones. Cells can then be assayed electrophysiologically or using traditional molecular biology or protein chemistry techniques.

### Ordering Information

CET Catalog #	Quantity
CARDIO.D.Media-100	100 mL



## Chondrogenic Differentiation Media

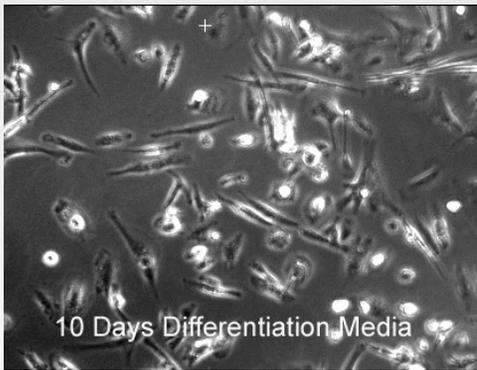


Chondrogenic differentiation media is designed to pair with bone marrow mesenchymal stem cells. Chondrogenic differentiation is a slow process and can take up to 28 days. Cells must be grown in a pellet or three dimensional culture to yield chondrocytes. This can be confirmed by sectioning and staining.

### Ordering Information

CET Catalog #	Quantity
CHO.D.Media-450	450 mL

## Endothelial Progenitor Cell Differentiation Media

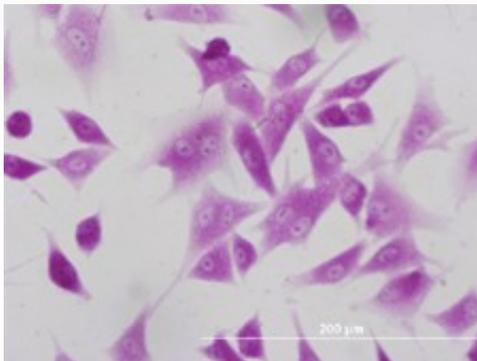


CET's EPC differentiation media is designed to differentiate both hematopoietic stem cells and CD14+ cells into endothelial progenitors. Differentiation is enhanced by plating cells on either fibronectin or matrigel coated dishes. EPC's are useful in the study of vascular dysfunction and vasculogenesis.

### Ordering Information

CET Catalog #	Quantity
EPC.Media-100	100 mL

## Hepatocyte Like Cell Differentiation Media



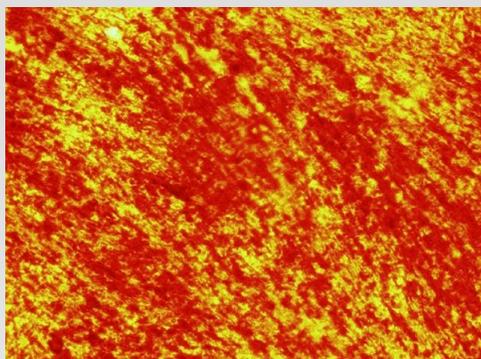
CET's hepatocyte like cell differentiation media is designed to work with adipose derived and wharton's jelly mesenchymal stem cells. Differentiation takes about twenty eight days and is accomplished through three successive steps using each component of CET's hepatocyte like cell differentiation media. At the end of this time frame, cells are positive for many liver genes, including cytochrome p450 2AB and 3A4.

### Ordering Information

CET Catalog #	Quantity
HLC.Media-100	100 mL of each step A, B, and C

## Stem Cell Media

### Osteogenic Differentiation Media

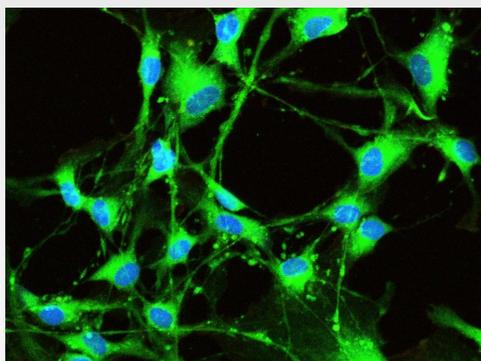


Osteogenic differentiation media is designed to pair with adipose derived mesenchymal stem cells, bone marrow derived mesenchymal stem cells and multipotent unrestricted somatic stem cells. Differentiation into bone begins within seven days and can take up to twenty eight days to reach a maximum. Cells can then be stained for intracellular calcium and observed microscopically.

#### Ordering Information

CET Catalog #	Quantity
OST.D.Media-450	450 mL

### Neural Differentiation Media



CET's neural differentiation media is designed to work with adipose derived mesenchymal stem cells, bone marrow stem cells and multipotent unrestricted somatic stem cells. Unlike other similar medias in the market, CET's neural differentiation media leads to neural differentiation within hours. Neural differentiation starts within 4 hours and reaches a maximum within 28 hours. Neural differentiation can be maintained by changing cell cultures with fresh neural differentiation media. Differentiated cells have tested positive for beta iii tubulin, galactocerebrosidase and tyrosine hydroxylase expression by western blot.

#### Ordering Information

CET Catalog #	Quantity
NEU.D.Media-450	450 mL

### Amniotic Epithelial Stem Cell Expansion Media



CET's amniotic epithelial stem cell expansion media allows for reliable cell culture of AE stem cells. Cells can be grown as adherent monolayers on tissue culture dishes or as hanging drops. When grown as adherent cells, spheroid formation will be seen within seven to ten days of culture. Data suggests that spheroids are the most pluripotent and the rest of the epithelial cells act as a feeder layer.

#### Ordering Information

CET Catalog #	Quantity
HAEC.E.Media-450	450 mL



## Cord Blood Multipotent Unrestricted Somatic Stem Cell Expansion Media



CET's CBMUSSC expansion media is designed to be flexible enough to expand either MSCs or CBMUSSC. When used with these cells, it is possible to derive extremely high densities for further studies. These cell numbers are usually necessary when doing animal studies where cell numbers are critical to gauging a therapeutic or clinical response.

### Ordering Information

CET Catalog #	Quantity
HMpC.E.Media-450	450 mL

## Hematopoietic Stem Cell Expansion Media



CET's hematopoietic stem cell expansion media is completely serum free and free of animal components and designed to work with both CD34+ and CD133+ cells. Unlike other basal medias in the market, our media is complete and contains all the growth factors needed to expand these stem cells.

### Ordering Information

CET Catalog #	Quantity
HSC.E.Media-100	100 mL

## Mesenchymal Stem Cell Expansion Media



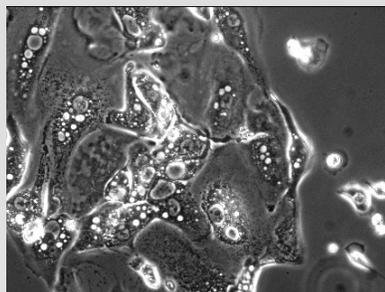
CET's mesenchymal stem cell expansion media is designed to work with all of our mesenchymal stem cells and MSBUSSC. It has a long shelf life of about six months, is inexpensive and maintains stem cells in an undifferentiated state.

### Ordering Information

CET Catalog #	Quantity
HMSC.E.Media-450	450 mL

# Cancer Biology-Tumor Samples and Cells

## Lung Cancer Tumor Samples

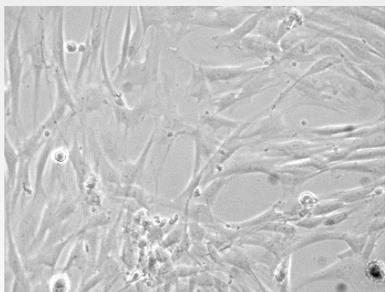


CET collects lung cancer tumor samples from patients who have been given full informed consent and are knowledgeable of their donations. All of this is done with appropriate institutional review board policies in place. Tumor samples are unique and frozen in cryopreservation media at the time of collection. Full demographic information is available with your order. Tumor samples are suitable for DNA and RNA isolation, microarray and proteomic analysis. Non-resected tumor samples are available from bronchoscopic procedures as well. CET can perform custom total RNA isolation and/or amplification and microarray analysis for differential gene expression from any tumor sample listed for an additional fee.

### Ordering Information

CET Catalog #	Quantity
HLC.TS-1	1 Biopsy Sample

## Lung Cancer Associated Fibroblasts

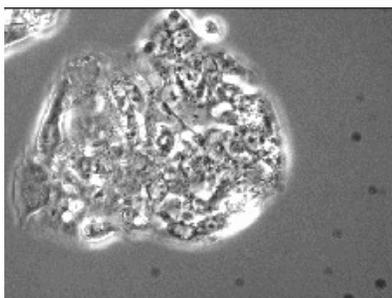


Increasing evidence in cancer literature indicates the importance of tumor associated fibroblasts. It is thought that these cells secrete cytokines and growth factors that may be necessary to potentiate tumor growth. CET's LCAF's are isolated from tumor tissue which has been enriched for fibroblast growth. Cells are then passed to assure homogeneity. LCAF's can be grown to make conditioned media, which can then be tested by GC or HPLC for growth factors secreted, and also for co-culture with tumor cells of the lung.

### Ordering Information

CET Catalog #	Quantity
HNSC.CLAF-500	500,000 cells

## HepG2 Human Hepatocellular Carcinoma Cell



HepG2 hepatocarcinoma cells have been the work horse for cell biologists for many years. They have been used in the study of carcinogenesis, as a surrogate for liver toxicity and drug screening, the analysis of signaling events, and molecular biology and protein based assays. CET's hepG2 cells are homogeneous and grow robustly in culture.

### Ordering Information

CET Catalog #	Quantity
HEPG2-500	500,000 cells



# Cancer Biology Media

## Lung Cancer Associated Fibroblast Expansion Media



CET's lung cancer associated fibroblast expansion media is designed to work with LCAF cells. LCAF cells can be propagated efficiently and robustly in this media formulation.

### Ordering Information

CET Catalog #	Quantity
HLCAF.E.Media-450	450 mL

## HepG2 Hepatocellular Carcinoma Expansion Media



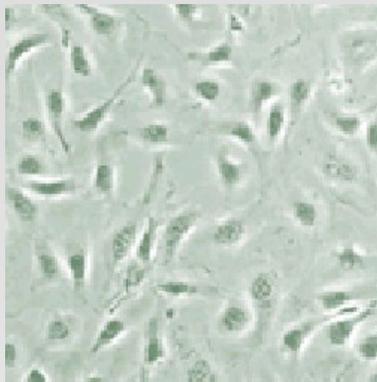
CET's hepg2 hepatocellular carcinoma expansion media is designed to work with HepG2 cells. HepG2 cells can be propagated efficiently and robustly in this media formulation.

### Ordering Information

CET Catalog #	Quantity
HEPG2.E.Media-450	450 mL

## Ancillary Cells

### Human Umbilical Vein Endothelial Cells

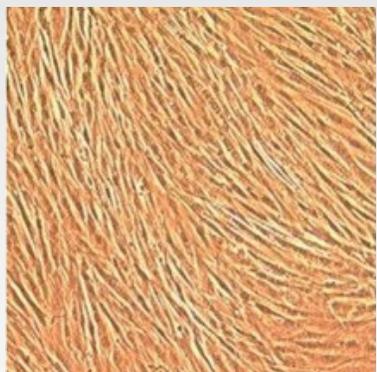


CET's human umbilical vein endothelial cells are isolated from single donors and grown without growth factors. Cells are available frozen or fresh upon request. Since these cells are a custom order, there is a waiting period between the time that you place your order and the time that cells are shipped. Please email or call us to give you an estimated time of shipping.

#### Ordering Information

CET Catalog #	Quantity
HUVEC-500	500,000 cells

### Human Foreskin Fibroblasts Cells

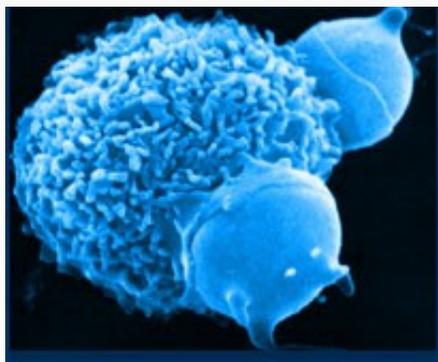


CET's human foreskin fibroblast cells are derived from neonatal human foreskins. Cells are passed until uniform fibroblast morphology is achieved. HFF's are versatile cells that are important in a variety of disciplines including use as stem cell feeder lines and in virological applications. CET can treat cells with mitomycin C, for use as feeder cells, for an additional charge. Please call or email if you are interested in this service.

#### Ordering Information

CET Catalog #	Quantity
HFFC-500	500,000 cells

### Human Immunological Cells



The immunological cells listed below are available from CET as a custom order. Please contact CET directly by phone or fax or email to place an order.

- **B Cells**- Cord or Peripheral Blood Derived
- **CD4+ T Cells**- Cord or Peripheral Blood Derived
- **CD8+ T Cells**- Cord or Peripheral Blood Derived
- **Dendritic Cells**- Peripheral Blood Derived
- **Basophils**- Cord or Peripheral Blood Derived
- **Eosinophils**- Cord or Peripheral Blood Derived
- **Neutrophils**- Cord Blood or Peripheral Blood Derived
- **Natural Killer Cells**- Cord Blood or Peripheral Blood Derived



# Ancillary Cell Media

## Human Umbilical Vein Endothelial Expansion Media



CET's human umbilical vein endothelial cell expansion media is designed to work with HUVEC's. These cells can be propagated efficiently and robustly in this media formulation.

### Ordering Information

CET Catalog #	Quantity
HUVEC.E.Media-450	450 mL

## Human Foreskin Fibroblast Expansion Media



CET's human foreskin fibroblast expansion media is designed to work with HFF's. These cells can be propagated efficiently and robustly in this media formulation.

### Ordering Information

CET Catalog #	Quantity
HFFC.E.Media-450	450 mL

## Promotion

CET has ongoing promotions. Please check out our website or contact your local distributor for further details

## Ancillary Products

CET would be happy to provide you with turn key solution for all your science needs. If you need a product and you do not see it in our catalogue please contact CET directly and we will be glad to help you.

All products within this brochure are for research use only. Not for diagnostic or therapeutic use.

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