

STANDARDIZED CELLS
FOR REPRODUCIBLE RESULTS

HELPFUL PROTOCOLS AND
TECHNICAL LITERATURE

FRIENDLY, QUALIFIED
TECHNICAL SUPPORT



Normal Human Endothelial Cells

Specification Sheet

Human Umbilical Vein Endothelial Cells (HUVEC)

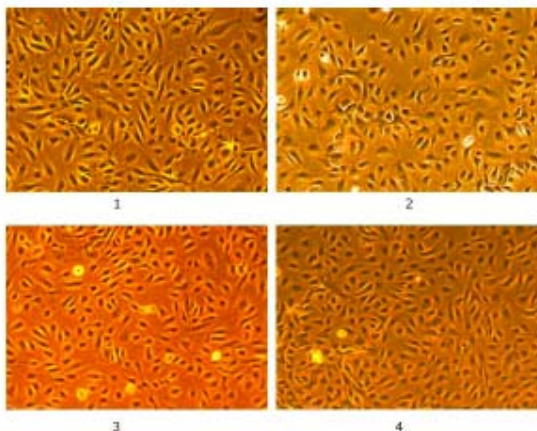
HUVEC 10-Donor Pool

Human Aortic Endothelial Cells (HAoEC)

Human Coronary Artery Endothelial Cells (HCAEC)

Human Pulmonary Artery Endothelial Cells (HPAEC)

Lifeline's normal human endothelial cells, when grown in Lifeline's VascuLife[®] Medium, provide an ideal low-serum culture model, with or without human VEGF, for the study of angiogenesis, atherosclerosis or vascular biology. Lifeline's normal human endothelial cells are isolated in VascuLife EnGS Medium to ensure that they remain unexposed to recombinant human VEGF.



Endothelial cells, P3, 4 to 7 days after inoculation with 2,500 cells/cm², 100X 1) HAoEC 2) HPAEC 3) HCAEC 4) HUVEC 10-Donor Pool

Lifeline's human endothelial cells are cryopreserved at the earliest possible passage to ensure the highest viability, purity and plating efficiency. Our human endothelial cells are quality tested in VascuLife EnGS Medium and demonstrate optimal reduced-serum growth over a period of at least 15 population doublings at rates equal to or greater than other serum-supplemented media. Lifeline's human endothelial cells are not exposed to antimicrobials or phenol red when cultured in VascuLife medium; an advantage since these supplements can cause cell stress and "masking effects" that may negatively impact experimental results. Lifeline offers these traditional supplements; however they are not needed, or recommended, to achieve optimal cell performance in most research applications.

CELL FEATURES:

- HUVEC are isolated from human umbilical cords, cultured on plastic and cryopreserved as primary* cells.
- HAoEC and HUVEC 10-Donor Pool are isolated from human aorta or umbilical cord, cultured on plastic and cryopreserved as secondary* cells.
- HPAEC are isolated from human pulmonary artery, cultured on plastic and cryopreserved as secondary or tertiary cells.
- HCAEC are isolated from human coronary arteries, cultured on plastic and cryopreserved as tertiary cells.
- Human endothelial cells can be grown in low serum (2%) medium without phenol red or antimicrobials when cultured in VascuLife medium.
- Culture human endothelial cells with or without VEGF.
- Lifeline's human endothelial cells are extensively tested to meet quality standards and exhibit optimal performance.
- Lifeline guarantees performance and quality.

Quality Testing for Guaranteed Consistency and Reproducible Results

Lifeline Cell Technology manufactures products using the highest quality raw materials and incorporates extensive quality assurance in every production run. Exacting standards and production procedures ensure consistent performance.

NORMAL HUMAN ENDOTHELIAL CELLS ARE TESTED FOR:	
• Cell Count	500,000 cryopreserved cells per vial
• Proliferation and Morphology	Normal cell appearance for 15 population doublings
• Cell Viability	Minimum 50% viability when thawed from cryopreservation
• Sterility	Negative for mycoplasma Negative for bacterial and fungal growth
• Virus	Negative for HIV-1, HIV-2, HBV, and HCV by PCR
• Specific Staining	von Willebrand Factor positive Smooth muscle <i>α</i> -actin negative

PRODUCT INFORMATION:	
Part #	Description
FC-0003	HUVEC, Human Umbilical Endothelial Cells, Primary* - 500,000 cells per vial
FC-0014	HAoEC, Normal Human Aortic Endothelial Cells, Secondary - 500,000 cells per vial
FC-0032	HCAEC, Normal Human Coronary Artery Endothelial Cells, Tertiary - 500,000 cells per vial
FC-0044	HUVEC 10-Donor Pool, Secondary - 500,000 cells per vial
FC-0055	HPAEC, Normal Human Pulmonary Artery Endothelial Cells, Secondary or Tertiary – 500,000 cells per vial
LL-0002	VascuLife® EnGS Medium Complete Kit (VascuLife Basal Medium, VascuLife EnGS LifeFactors® Kit)
LL-0003	VascuLife VEGF Medium Complete Kit (VascuLife Basal Medium, VascuLife VEGF LifeFactors Kit)

*Lifeline Technical Note: There are different and often contradictory terminologies used by cell culture companies to define the passage number of cells. Lifeline's designation of 'primary cells' are cells that have been isolated from tissue, plated onto culture vessels, expanded, harvested and cryopreserved. The term 'secondary' indicates that the cells have been isolated, plated and expanded in culture vessels twice before being harvested for cryopreservation.

The Lifeline® Guarantee

Lifeline's rigorous quality control ensures sterility and performance to standardized testing criteria. All donated tissues have been obtained under proper informed consent and adheres to the Declaration of Helsinki, The Human Tissue Act (UK), CFR Title 21, and HIPAA Regulations relative to obtaining and handling human tissue for Research Use. If Lifeline's products do not meet our posted performance and quality standards, we will replace them at no charge or provide a full refund. Upon request, Lifeline will provide lot specific QC test results, material safety data sheets, and certificates of analysis. See complete guarantee/warranty statement at lifelinecelltech.com or contact your Lifeline representative for more information.

Safety Statement

This product is For Research Use Only and is not approved for human or veterinary use, or for use in *in vitro* diagnostic or in clinical procedures.

Lifeline recommends storing cryopreserved vials in liquid nitrogen vapor phase. Handle cryopreserved vials with caution. Always wear eye protection and gloves when working with cell cultures. Aseptically vent any liquid nitrogen from cryopreserved vials by carefully loosening the vial cap in a biosafety cabinet prior to thawing the vials in a water bath. If vials must be stored in liquid phase, the vials should be transferred to vapor phase storage or -80°C for at least 24 hours prior to being thawed.

To place an order call Lifeline Technical Service and Sales
at **877.845.7787** or visit **lifelinecelltech.com** for more information.

Lifeline Cell Technology
8425 Progress Drive, Suite Z
Frederick, MD 21701

Lifeline Cell Technology is an [International Stem Cell](#) company