



Data Sheet

RFP-Human Lung Tissue-Derived Mesenchymal Stem Cells (HLMSCs)

Catalog Number: HLM002

Cell Quantity: 500,000 cells per vial

Viability: \geq 90% post-thaw

Passage: Passage 1 (P1)

Tissue Origin: Normal Human Lung Parenchyma (donor-screened, IRB-consented)

Shipping Condition: Dry ice (vapor phase)

Storage: Liquid nitrogen vapor phase (-135°C to -190°C)

Product Description

Human Lung Tissue-Derived Mesenchymal Stem Cells (HLMSCs) are isolated from healthy human lung parenchyma using enzymatic digestion and plastic adherence. These cells exhibit fibroblast-like morphology and meet the International Society for Cell & Gene Therapy (ISCT) minimal criteria for mesenchymal stem cells (MSCs): plastic adherence, specific surface marker expression, and trilineage differentiation potential.

HLMSCs are ideal for research in pulmonary fibrosis, COPD, asthma modeling, drug screening, regenerative medicine, and immunomodulation studies.

Expression Marker Profile (Flow Cytometry Validation)

All HLMSCs are characterized by flow cytometry at passage 1. Cells are **positive** for standard MSC markers and **negative** for hematopoietic & endothelial lineage markers.

Marker	Expression	Cell Type Significance
CD73	Positive (>95%)	MSC ecto-5'-nucleotidase
CD90 (Thy-1)	Positive (>95%)	MSC adhesion/thymocyte marker
CD105 (Endoglin)	Positive (>95%)	MSC TGF- β co-receptor
CD44	Positive (>90%)	Hyaluronan receptor
CD29 (ITGB1)	Positive (>90%)	Integrin, adhesion
CD166 (ALCAM)	Positive (>90%)	Activated leukocyte cell adhesion
CD49e (ITGA5)	Positive (>85%)	Fibronectin receptor
CD13	Positive (>85%)	Aminopeptidase N
CD34	Negative (<2%)	Hematopoietic stem cell marker
CD45	Negative (<2%)	Pan-leukocyte marker
CD31 (PECAM-1)	Negative (<2%)	Endothelial cell marker



Marker	Expression	Cell Type Significance
CD14	Negative (<2%)	Monocyte/macrophage marker
HLA-DR	Negative (<2%)	MHC class II (immune activation)
CD11b	Negative (<2%)	Macrophage/myeloid marker

Functional Validation

Assay	Result
Osteogenic differentiation	Positive (Alizarin Red S staining)
Adipogenic differentiation	Positive (Oil Red O staining)
Chondrogenic differentiation	Positive (Alcian Blue / Collagen II)
Colony-forming unit-fibroblast (CFU-F)	Positive (≥ 20 colonies per 500 cells plated)

Key Secreted Factors (Confirmed by ELISA)

- **VEGF** (angiogenic)
- **HGF** (anti-fibrotic, regenerative)
- **TGF- β 1** (low baseline, inducible)
- **PGE2** (immunomodulatory)



Growth Medium (Recommended)

Complete MSC Medium (Catalog # MSCM003):

Plating Density: 5,000 – 10,000 cells/cm²

Subcultivation: At 70–80% confluency (typically 5–7 days)

Trypsinization: 0.25% Trypsin-EDTA (2–3 min, 37°C)

Thawing Instructions

1. Remove vial from liquid nitrogen and immediately place in 37°C water bath.
2. Gently swirl until only a small ice pellet remains (60–90 seconds).
3. Decontaminate vial with 70% ethanol.
4. Slowly transfer cells into 10 mL pre-warmed complete MSC medium.
5. Centrifuge at 300 × g for 5 minutes at room temperature.
6. Discard supernatant, resuspend pellet in 1 mL complete medium.
7. Plate into T25 flask or appropriate vessel with pre-equilibrated medium (37°C, 5% CO₂).

Note: Do not vortex or centrifuge immediately after thawing without dilution. Change medium after 24 hours to remove residual DMSO.

Quality Control

- **Sterility:** Negative for bacteria, fungi, mycoplasma (by PCR)
- **Virus Testing:** Negative for HIV-1/2, HBV, HCV, HTLV-I/II (donor serum)
- **Cell Identity:** STR profiling available upon request
- **Endotoxin:** < 0.5 EU/mL



Limitations & Warnings

- **For research use only.** Not for therapeutic or diagnostic use in humans or animals.
- Cells are from healthy, anonymous donors. Donor screening performed per FDA/EC guidelines, but residual risk of unknown infectious agents cannot be fully excluded.
- Prolonged passage beyond P5 may result in decreased stemness and differentiation capacity.

Ordering & Storage Information

Parameter	Detail
Catalog #	HLM001
Quantity	500,000 cells
Vials per pack	1 vial
Shipping	Dry ice
Storage	Liquid nitrogen vapor phase
Shelf life	>1 year (stable under proper storage)