Version Date: 2/27/2025

Product Summary

Human Adipose-Derived Mesenchymal Stem Cells

Catalog Number: CR1004-500

Product Overview	
Product Name	**Human Adipose-Derived Mesenchymal Stem Cells (MSCs)**
Catalog #s	CR1004-500
Quantity	1 vial (approx. 500,000 cells)
Product Form	Frozen
Cell Type	Human adipose-derived mesenchymal stem cells
Reagents Needed	– **Serum** – Customer choice of high-grade or fully defined Fetal Bovine Serum (FBS) – **Antibiotic** – Penicillin/Streptomycin/Amphotericin B solution or Penicillin/Streptomycin solution, 100x (not included)[1] – 70% isopropanol solution – **Phosphate-buffered saline (PBS)** – based on customer preference, we recommend using Phosphate-buffered saline (DPBS, 1X), Dulbecco's formula (Cat. J67670.AP) manufactured by Thermo Fisher – **Trypsin-EDTA** (0.25%) – based on customer preference

Product Description

Human Adipose-Derived Mesenchymal Stem Cells (AdMSCs)

Human Adipose-Derived Mesenchymal Stem Cells (AdMSCs) are stem cells isolated from adult human lipoaspirate tissue collected during elective surgical liposuction procedures. These cells exhibit high proliferation capacity, strong differentiation potential, and robust immunomodulatory properties, making them a powerful tool for research and therapeutic applications. Their ability to maintain stability through multiple passages while retaining differentiation capabilities ensures consistent and reliable results in laboratory settings.

AdMSCs have demonstrated significant potential in regenerative medicine, particularly in treating autoimmune [i] and neurodegenerative diseases [ii]. Researchers have reported that these cells can differentiate into multiple lineages, including chondrogenic, osteogenic, adipogenic, and neural cell types. Their adaptability and therapeutic relevance make them a valuable resource for studying cell-based therapies, tissue engineering, and disease modeling.

These cells provide a promising platform for investigating novel treatment strategies, including wound healing, bone and cartilage regeneration, and immune modulation. With their ease of expansion, and ability to secrete bioactive factors that promote tissue repair, AdMSCs are widely used in preclinical and clinical studies. Whether applied in, cell therapy development, or in vitro disease modeling, these cells offer a scalable and reproducible system for biomedical research.

Product Specifications:

- Source: Human lipoaspirate tissue from elective liposuction procedures
- Multipotency: Capable of differentiating into chondrogenic, osteogenic, adipogenic, and neural lineages
- Applications: Regenerative medicine, tissue engineering, immunotherapy, metabolic disease research, and neurodegenerative disease studies
- Quality Assurance: Screened for viability, sterility, and mycoplasma contamination
- Please contact us for additional donor information

Recommended Products for Adipose-Derived Mesenchymal Stem Cells:

- Human MSC Expansion Media (MR1016)
- Human Chondrogenic Differentiation Media (MR1008)

Shipping & Storage:

- Vial contains approximately 500,000 cells
- Shipped with dry ice or liquid nitrogen to maintain stability and viability during transport

Product Image

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- Storage recommendation: Store in liquid nitrogen vapor phase for long-term viability

Note: This product is designed and tested to function with Cellular Engineering Technologies Inc. ("CET") media products MR1016 Human Mesenchymal Stem Cell Expansion Media or MR1008 Human Chondrogenic Differentiation Media (both not included). Although investigators are welcome to use this product with other media formulations, CET cannot and will not guarantee this product's performance. Additionally, such use of third-party media with this product will void CET's warranty should they not function as indicated. Please refer to CET's Terms & Conditions, available at www.cet.bio.

Media Formulation Instructions (for MR1016 Human Mesenchymal Stem Cell Expansion Media not included)	
Defrosting and preparing serum	1. Defrost fifty (50) mL of FBS (not included) and five (5) mL of antibiotic/antimycotic solution (not included) in a 37°C water bath until ice in the tubes is no longer visible. 2. Immediately disinfect the tubes and the bottle containing this base media with 70% isopropanol (not included).
Mixing	1. Working in a laminar flow hood, remove five (5) mL of Human Mesenchymal Stem Cell Expansion Media (MR1016) (not included) from the bottle and discard. This and all other procedures must be done in a sterile manner. 2. Add fifty (50) mL of FBS to the base media. 3. Add five (5) mL of the antibiotic/antimycotic solution to the base media[1]. 4. Cap the bottle containing the mixed liquid solution and gently swirl a few times. This formulated media is now considered complete media and ready to use with cells.

Cell Thawing and Plating Instructions	
Cell thawing	1. Remove the Human Adipose-Derived Mesenchymal Stem Cells vial from dry ice or a storage unit. 2. Defrost the vial of cells in a 37°C water bath with constant, moderate agitation until ice in the ampoule is barely visible. DO NOT OVERTHAW. 3. Immediately disinfect with 70% isopropanol (not included).
Cell plating	1. Working in a laminar flow hood, open the vial and transfer the contents to a sterile fifteen (15) mL tube. 2. Very slowly, add approximately ten (10) mL of complete media (see Media Formulation Instructions), pre-warmed to 37°C before use. 3. Centrifuge suspended cells at two hundred (200) x g for ten (10) minutes. 4. Decant the medium and gently resuspend the pellet in the appropriate amount of complete media necessary to achieve a plating density of 20,000 cells/cm^2 of surface area. 5. After 24 hours, aspirate media from the flask or dish, rinse with PBS (not included), and replenish with fresh complete media, pre-warmed to 37°C before use.
Observation and expansion	– It is normal for Adipose-Derived Mesenchymal Stem Cells normally grow slowly for one week post-thaw. It is also normal for some cells to be shed during media changes. – Subculture cells at a 1:3 split ratio using Trypsin/EDTA (0.25%) (not included).

Storage and Stability		
	Storage Temperature	**Storage Time**
Human Adipose-Derived Mesenchymal Stem Cells Cat. CR1004-500	Upon arrival, place the cells at a temperature below **-130°C**, preferably in liquid nitrogen vapor, until ready for use	12 months
Human Mesenchymal Stem Cell Expansion Media (not included) Cat. MR1016	4°C	3 months
Human Chondrogenic Differentiation Media (not included) Cat. MR1008	4°C	3 months
complete media *(see Media Formulation Instructions)*	2-8°C	Not applicable
Avoid repeated freeze-thaw cycles for cells. Avoid repeated exposure to room temperature and light for media.		

Publications and Product Citations

Exosomes Secreted by Wharton's Jelly-Derived Mesenchymal Stem Cells Promote the Ability of Cell Proliferation and Migration for Keratinocyte
Yu, H et al. | International Journal of Molecular Sciences 2024 APR
Department of Pediatrics, **Chang Gung University College of Medicine**
Department of Medical Education and Research, Kaohsiung Veterans General Hospital
Department of Dental Technology, **Shu-Zen Junior College of Medicine and Management**.

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Reversal of Pulmonary Fibrosis: Human Umbilical Mesenchymal Stem Cells from Wharton's Jelly versus Human-Adipose-Derived Mesenchymal Stem Cells Chu, KA et al. | International Journal of Molecular Sciences 2023 APR Department of Internal Medicine, **Kaohsiung Veterans General Hospital** College of Medicine, **National Sun Yat-sen University** Institute of Anatomy and Cell Biology, **National Yang Ming Chiao Tung University**.
Exosomes derived from human adipose-derived stem cells alleviate hepatic ischemia-reperfusion (I/R) injury through the miR-183/ALOX5 axis Gong, Y et al. | FASEB Journal: Official Publication of the Federation of American Societies for Experimental Biology 2023 MAR. Department of Hepatobiliary Surgery, **Third Military Medical University (Army Medical University)**.
Fermented Garlic Extract Increases Oxygen Consumption and UCP-1 mRNA Expression in Human Adipose-Derived Stem Cells Park, E et al. | Cell Journal 2019 OCT Department of Bioengineering, **Nagaoka University of Technology** Department of Biofood Science and Biotechnology, **Chungbuk Provincial University**.
Low power laser irradiation and human adipose-derived stem cell treatments promote bone regeneration in critical-sized calvarial defects in rats Wang YH et al. | PLOS ONE 2018 APR Department of Medical Research, College of Medicine, **Kaohsiung Medical University**.

[1] These solutions should be portioned in 5mL aliquots, stored at -20°C and never frozen/thawed. Although antimycotics are not necessary, CET highly recommends their usage for long-term cell culture. Antibiotics and antimycotics should not be used as an alternative to proper aseptic techniques.

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