Product sheet

Human Mesenchymal Stem Cells - Amnion | 300644

General information

Description	Amnion-derived Human Mesenchymal Stem Cells (hMSCs) possess several distinctive features that differentiate them from MSCs derived from other tissues, such as bone marrow, adipose tissue, and umbilical cord. One of the most significant distinctions is their origin from the amnion, a membrane of the placenta, which endows them with unique biological properties. Unlike MSCs from adult tissues, amnion hMSCs are more primitive and exhibit higher proliferative capacity, allowing for extended expansion in culture without significant loss of differentiation potential or stemness. This high proliferative capacity is particularly advantageous for applications requiring large cell quantities, such as tissue engineering and regenerative medicine. Another key difference lies in the immunomodulatory properties of amnion hMSCs. These cells demonstrate enhanced immunosuppressive abilities compared to MSCs from other sources, making them highly effective in modulating immune responses. This property is especially useful in research focused on inflammatory diseases, autoimmune conditions, and graft-versus-host disease (GVHD). Amnion hMSCs also secrete a distinct profile of bioactive molecules, including anti-inflammatory cytokines and growth factors, which contribute to their superior capacity for promoting tissue repair and reducing inflammation in various in vitro models. Additionally, amnion hMSCs are known for their lower immunogenicity compared to MSCs derived from other tissues. This reduced potential to elicit an immune response makes them particularly suitable for allogeneic applications and co-culture systems, where interactions between different cell types are studied without the complication of immune rejection. Furthermore, amnion hMSCs are ethically sourced from the placental tissue of healthy donors, eliminating ethical concerns associated with MSCs derived from more invasive procedures, such as bone marrow aspiration. Collectively, these attributes make amnion hMSCs a unique and versatile tool for a wide range of biomedical research applications.
Organism	Human
Tissue	Amnion
Disease	Normal mesenchymal stem cells, amnion-derived (non-tumorigenic; ethically sourced from placental tissue)
Metastatic site	Not applicable (normal, non-tumorigenic primary stem cell)
Applications	Drug testing, regenerative medicine, disease research

Characteristics

Age	Please inquire
Gender	Please inquire
Ethnicity	Caucasian

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Morphology	Well-spread spindle shaped, fibroblast-like morphology for at least within 5 passages. Fewer than 2% cells exhibit spontaneous myofibroblast-like morphology within each passage.
Cell type	Stem cell
Growth properties	Adherent

Regulatory Data

Citation	Human Mesenchymal Stem Cells, Amnion (Cytion catalog number 300644)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	Not assigned
GMO Status	No genetic modification; primary human mesenchymal stem cells isolated from amnion (placental tissue). Not transformed or immortalized.

Biomolecular Data

Antigen expression	A comprehensive panel of markers, including CD73/CD90/CD105 (positive) and CD14/CD34/CD45/HLA-DR (negative), are used in flow cytometry analysis to identify cultivated MSCs (P2-P3) prior to cryopreservation. These markers are recommended by the ISCT MSC committee.
Viruses	Donor is negative for HBV (PCR), Treponema pallidum (PCR), and HIV-1/2 (IFA). Cells are negative for HBV, HCV, HSV1, HSV2, CMV, EBV, HHV6, Toxoplasma gondii, Treponema pallidum, Chlamydia trachomatis, Ureaplasma urealyticum, and Ureaplasma parvum.

Handling

Culture Medium	Alpha MEM, w: 2.0 mM stable Glutamine, w/o: Ribonucleosides, w/o: Deoxyribonucleosides, w: 1.0 mM Sodium pyruvate, w: 2.2g/L NaHCO3
Supplements	Supplement the medium with 10% FBS, 2 ng/mL bFGF
Dissociation Reagent	Trypsin-EDTA

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Subculturing	For routine adherent cell culture: Aspirate the old culture medium from the adherent cells, and wash them with PBS to remove any remaining medium. After aspirating the PBS, add the appropriate volume of Trypsin/EDTA solution based on the culture vessel size (e.g., 1 ml for a T25 flask, 3 ml for a T75 flask) and incubate at room temperature or 37°C until the cells detach (5-10 minutes). Monitor detachment under a microscope, and gently tap the vessel if necessary to release the cells. Once detached, add complete medium to inactivate the Trypsin/EDTA, gently resuspend the cells, and transfer an aliquot of the cell suspension into a new culture vessel containing fresh medium. Place the vessel in an incubator set to 37°C with 5% CO_2, and change the medium every 2-3 days.
Seeding density	1 to 3 x 10^4 cells/cm^2
Fluid renewal	First fluid renewal after 24 hours, then every 2 to 3 days.
Freeze medium	As a cryopreservation medium, we use 80% FBS + 10% basal medium + 10% DMSO to maintain viability, or CM-1 (Cytion catalog number 800100) for superior cryoprotection, preventing unwanted differentiation while preserving pluripotency.

Thawing and Culturing Cells

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

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Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
Shipping Conditions	Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.
Storage Conditions	For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Quality Control & Molecular Analysis

Sterility	Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods. To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.