**Product sheet**

# Human Mesenchymal Stem Cells - Chorion Villi | 300646

## General information

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| **Description** | Human Mesenchymal Stem Cells (MSCs) derived from chorion villi represent a highly versatile population of multipotent stromal cells capable of differentiating into multiple lineages, including adipocytes, osteoblasts, and chondrocytes. These cells are isolated from the chorionic villi, a part of the placenta that plays a critical role in maternal-fetal exchange. Chorion villi are unique in that they are composed of both fetal and maternal tissues, providing a distinct microenvironment that contributes to the robust self-renewing and differentiation capabilities of the MSCs derived from this source. The MSCs from chorion villi exhibit a more primitive phenotype compared to MSCs derived from adult tissues, often displaying a higher proliferation rate and broader differentiation potential. These characteristics make them particularly valuable for research in regenerative medicine, tissue engineering, and disease modeling.<br><br>These MSCs have been rigorously demonstrated in vitro to differentiate into adipocytes, osteoblasts, and chondrocytes when cultured in lineage-specific differentiation media, underscoring their potential for applications in tissue regeneration and disease modeling. The unique origin of these cells from the chorionic villi imparts them with specific immunomodulatory properties, which may differ from MSCs derived from other sources such as bone marrow or adipose tissue. This distinction is crucial for studies focusing on immune-related conditions or developing allogeneic cell therapies.<br><br>MSCs are cryopreserved at early passages in a specialized cryomedium, ensuring their viability and functionality post-thaw. Each cryovial contains a minimum of 1 x $10^6$ cells with a viability rate ranging between 92% and 95%, as determined by the Trypan Blue dye exclusion test. These cells are sourced from healthy donors who have provided informed consent, ensuring ethical collection practices. Each batch undergoes stringent quality control assessments, including thorough testing for cell identification, purity, potency, and viability. These measures guarantee that the cultured MSCs are of high quality and appropriate for research applications, excluding therapeutic or in vivo use. |
| **Organism** | Human |
| **Tissue** | Chorion Villi |
| **Applications** | Drug testing, regenerative medicine, disease research |

## Characteristics

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| **Age** | Please inquire |
| **Gender** | Please inquire |
| **Ethnicity** | Caucasian |
| **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. |

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| **Cell type** | Stem cell |
| **Growth properties** | Adherent |

## Regulatory Data

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| **Citation** | Human Mesenchymal Stem Cells, Chorion Villi (Cytion catalog number 300646) |
| **Biosafety level** | 1 |
| **NCBI_TaxID** | 9606 |

## Biomolecular Data

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| **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

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| **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 |
| **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. |

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| **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. |
| **Flask Coating** | None |

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| **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

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