



DATA SHEET

Product Name: GFP-Human Mesenchymal Stem Cells, Bone Marrow

Catalog Number: HMSC-GFP

Cell Quantity: $\geq 500,000$ viable cells

Passage: P1

Shipping Format: Cryopreserved (vapor phase liquid nitrogen)

Product Description

Primary Human Mesenchymal Stem Cells (hMSCs) isolated from normal human bone marrow aspirate. These cells are characterized by:

- Plastic adherence
- Expression of specific surface markers (positive: CD73, CD90, CD105; negative: CD34, CD45, HLA-DR)
- Multipotent differentiation potential (osteogenic, chondrogenic, adipogenic)

Storage & Handling

Condition	Temperature	Stability
Cryopreserved	$< -135^{\circ}\text{C}$ (LN2 vapor)	Indefinite
Thawed (in culture)	37°C , 5% CO_2	Do not refreeze

Recommended Thawing & Culture

1. Thaw vial in 37°C water bath (≤ 2 minutes).
2. Transfer dropwise to 10 mL pre-warmed. Mesenchymal Stem Cells Growth Media (MSCGM001)
3. Centrifuge at 300 x g for 5 minutes.
4. Resuspend in 5 mL medium and seed into T25 flask.
5. Change medium after 24 hours to remove non-adherent cells.

Quality Control

- **Sterility:** Negative for bacteria & fungi
- **Mycoplasma:** Negative (PCR)
- **Viability post-thaw:** $\geq 85\%$ (target 90%+)
- **Identity:** Flow cytometry (see COA)

Differentiation Potential (Certified)

Lineage	Induction Time	Confirmation Stain
Osteogenic	14–21 days	Alizarin Red S
Adipogenic	14–21 days	Oil Red O
Chondrogenic	21–28 days	Alcian Blue

Flow Cytometry (Surface Markers)

Marker	Expected Expression	% Positive	Result
CD73	$\geq 95\%$	98.4%	Pass
CD90	$\geq 95\%$	99.1%	Pass
CD105	$\geq 95\%$	97.6%	Pass
CD34	$\leq 2\%$	0.3%	Pass
CD45	$\leq 2\%$	0.2%	Pass
HLA-DR	$\leq 1\%$	0.1%	Pass

Differentiation Assay (Functional)

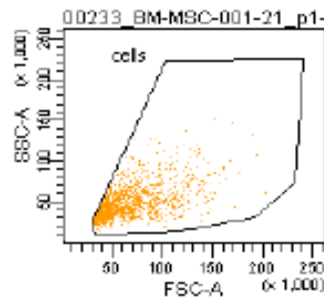
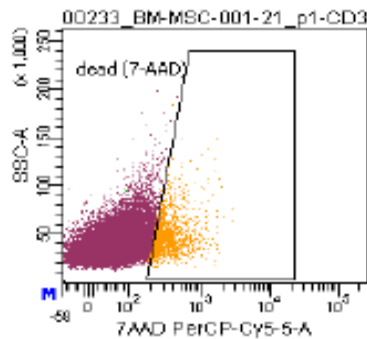
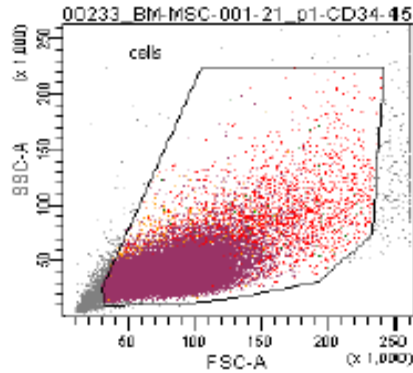
Assay	Induction	Staining	Result
Osteogenesis	18 days	Alizarin Red S	Positive (mineralization)
Adipogenesis	18 days	Oil Red O	Positive (lipid droplets)
Chondrogenesis	24 days	Alcian Blue	Positive (proteoglycan matrix)



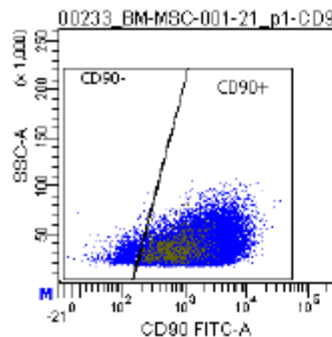
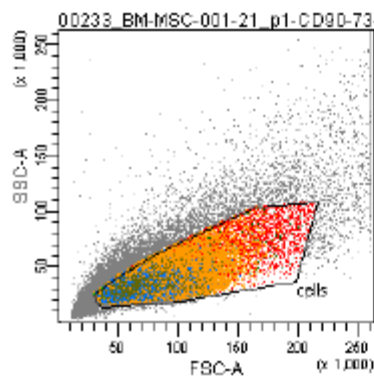
Donor Information (De-identified)

- **Ethnicity:** Caucasian
- **Cell Type:** Stem Cell
- **Growth Properties:** Adherent
- **HIV, HBV, HCV, HTLV:** Negative (by nucleic acid test)
- **Morphology:** Well-spread spindle-shaped, fibroblast-like morphology for at least 5 passages. Fewer than 2% cells exhibit spontaneous myofibroblast-like morphology within each passage.

This product is for research use only. Not for human therapeutic or diagnostic use.



Experiment Name: Experiment_2021-08-28_		
Specimen Name: 00233_BM-MSC-001-21_p1		
Record Date: Sep 28, 2021 1:41:19 PM		
Tube: CD34-45-14-HLADR-7AAD		
Population	#Events	%Parent
All Events	35,735	###
cells	33,734	94.4
dd-SSC	29,561	87.9
dd-FSC	29,537	89.5
dead (7-AAD)	1,278	4.3
alive	28,259	95.7
CD45+	1	0.0
CD34+	2	0.0
HLA-DR+	18,786	56.5
CD14+	2	0.0
CD45-34-	28,204	99.8



Experiment Name: Experiment_2021-08-28_		
Specimen Name: 00233_BM-MSC-001-21_p1		
Record Date: Sep 28, 2021 1:43:08 PM		
Tube: CD90-73-105		
Population	#Events	%Parent
All Events	50,137	###
cells	40,608	81.0
dd-SSC	34,919	86.0
dd-FSC	34,706	89.4
CD90+	33,809	87.7
CD90-	911	2.6
CD73+	34,599	99.7
CD105+	34,496	99.4
CD90+73+	33,745	97.2
CD90+73+105+	33,637	99.7
CD90+73low	748	2.2
CD90-low73+	912	2.6
CD90-low105+	983	2.8



MATERIAL SAFETY DATA SHEET (MSDS)

Product Name: GFP-Human Mesenchymal Stem Cells, Bone Marrow

Lot Number: HMSC001

Section 1: Identification

Product use: Research & development (cell biology, regenerative medicine studies)

Classification: Biological substance, Category B (UN3373)

Section 2: Hazard Identification

Hazard Type	Classification
Human origin	Potential biohazard (Universal Precautions apply)
Cryoprotectant (DMSO)	10% DMSO in freezing medium – Irritant (Eyes/Skin)
Liquid nitrogen	Extreme cold – Risk of cryogenic burns

Primary risk: Potential for bloodborne pathogens (though donor-tested negative – no test guarantees complete absence).

Section 3: Composition

- Human bone marrow-derived mesenchymal stem cells



- Cryopreservation medium: 90% FBS + 10% DMSO

Section 4: First Aid Measures

- **Eye contact (medium splash):** Rinse with water for 15 minutes.
- **Skin contact:** Wash with soap and water.
- **Cryogenic burn (LN2):** Immerse in lukewarm water (40°C). Do not rub. Seek medical attention.
- **Needle stick / exposure:** Wash wound, report to supervisor, follow institutional BBP protocol.

Section 5: Firefighting Measures

Non-flammable cells. DMSO is combustible (flash point 87°C). Use CO₂, dry chemical, or alcohol-resistant foam.

Section 6: Accidental Release Measures

- **Vial breakage (frozen):** Use heavy gloves and face shield. Allow to thaw, cover with absorbent, disinfect with 10% bleach for 20 minutes.
- **Spill (liquid culture):** Absorb with paper towels → disinfect area → autoclave waste.

Section 7: Handling & Storage

- **Handling:** Use BSL-2 precautions. Wear lab coat, gloves, eye protection.
- **Storage:** Cryovial in LN2 vapor phase or -80°C (short-term).
- **Thawing:** Never refreeze. Thaw in sealed container or within biosafety cabinet after wiping with 70% ethanol.

Section 8: Exposure Controls

Agent	Occupational Exposure Limit	Control
DMSO	None established in air	Use in BSC
LN2 vapor	Simple asphyxiant	Ensure ventilation

PPE: Nitrile gloves, safety goggles, lab coat, face shield when handling LN2.

Section 9: Physical & Chemical Properties (Medium)

- Appearance: Pinkish-red liquid (cryo or culture media)
- pH: 7.2 – 7.4
- Cryoprotectant: DMSO (10%)

Section 10: Stability & Reactivity

Stable if stored correctly. Avoid repeated freeze-thaw. Incompatible with strong oxidizers.

Section 11: Toxicological Information

DMSO – May cause skin/eye irritation.

FBS – Low toxicity, potential allergen in sensitive individuals.

Cells – No acute toxicity; theoretical risk of xenotransplantation-related issues if misused in vivo (not intended).

Section 12: Ecological Information



Dispose as biohazardous waste – not to be released into environment.

Section 13: Disposal

Decontaminate by autoclaving (121°C, 30 min) or 10% bleach (≥30 min). Dispose as medical/infectious waste per local regulations.

Section 14: Transport Information

Regulation	Classification
UN Number	UN3373
Proper Shipping Name	Biological substance, Category B
Packaging	Triple packaging (leakproof primary, absorbent secondary, rigid outer)

Section 15: Regulatory Information

- OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030) applies.
- IATA DGR (PI 650) for air transport.

Section 16: Other Information

Date prepared: 15-Mar-2021

Disclaimer: The information herein is believed to be correct but does not claim to be all-inclusive. Users assume all risks of use.



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