

BONE MARROW-DERIVED MESENCHYMAL STEM CELLS

Point your stem cell research in a new direction – more success, less hassle

ATCC® BONE MARROW-DERIVED MESENCHYMAL STEM CELLS; NORMAL, HUMAN

- Cryopreserved at the second passage to achieve the highest viability and plating efficiency
- Fully characterized cells to ensure cell authenticity and purity
- Optimized cell growth system to retain cell differentiation potential after multiple passages

Mesenchymal stem cells (MSC) are capable of replicating as undifferentiated cells or differentiating down multiple pathways to form bone, cartilage, fat, muscle, tendon/ligament tissues or marrow stroma. Research applications for MSCs range from cell differentiation and gene regulation, cell-based screening assays in drug discovery to gene therapy and transplantation, and base material for the creation of iPS cell lines.

The ATCC bone marrow-derived mesenchymal stem cell system includes cryopreserved cells, ATCC® Normal Human Bone Marrow-Derived Mesenchymal Stem Cells (ATCC® PCS-500-012™), media, Mesenchymal Stem Cell Basal Media (ATCC® PCS-500-030™), and supplement, Mesenchymal Stem Cell Growth Kit (ATCC® PCS-500-041™).

LOW PASSAGE CELLS TO ACHIEVE THE HIGHEST VIABILITY AND PLATING EFFICIENCY

Unlike embryonic stem cells, MSCs do not have the ability to proliferate *in vitro* continuously. Repeated passaging of MSCs often leads to reduced viability and proliferation potential. ATCC bone marrow-derived mesenchymal stem cells are cryopreserved at the second passage, thus ensuring the cells attaining the most *in vivo* like properties, such as highest viability, plating efficiency, proliferation and differentiation potential.

FULLY CHARACTERIZED CELLS TO ENSURE CELL AUTHENTICITY AND PURITY

ATCC bone marrow-derived MSCs are quality tested via flow cytometry to ensure proper expression of a panel of mesenchymal stem cell markers, as recommended by the International Society for Cellular Therapy (ISCT), more than other commercially available MSCs. The cells positively express (greater than >95%) CD105, CD73, CD90, CD166, CD44, and CD29, and lack expression (less than < 5%) of CD45, CD34, CD14 and CD19 surface molecules (Figure 1).

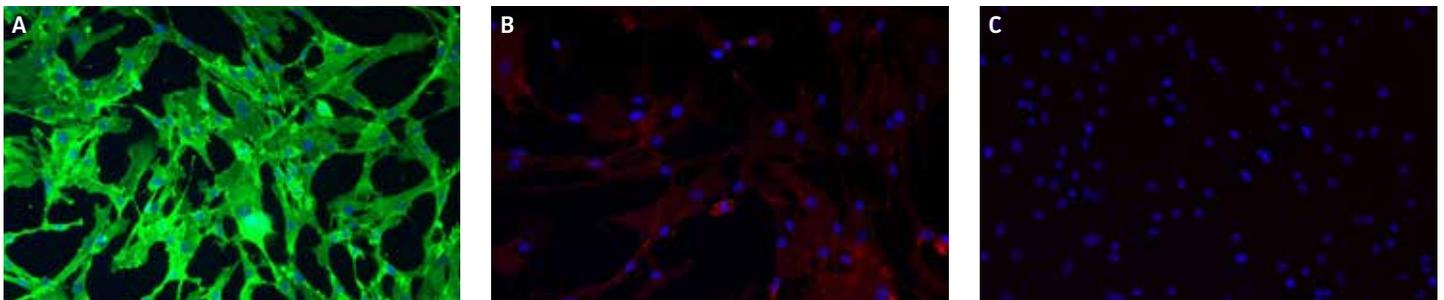


Figure 1. Immunocytochemistry analysis of MSC marker expression in ATCC bone marrow- derived MSCs (Passage post-thaw).

Nuclei were stained with DAPI (blue) in all images. (A) >95% of cells stain positive for CD44 expression. (B) >95% of cells stain positive for CD105 expression, (C) <5% of cells stain positive for CD45 expression.

OPTIMIZED CELL GROWTH SYSTEM TO RETAIN CELL DIFFERENTIATION POTENTIAL AFTER MULTIPLE PASSAGES

The three components of the ATCC bone marrow-derived MSC system – cells, basal media, and supplement – are optimized to work together to provide an ideal cell culture system. As a system, it ensures cell expansion in an undifferentiated state and cells retaining optimal differentiation potential to multiple lineages, such as adipogenesis, chondrogenesis, and osteogenesis (Figure 2).

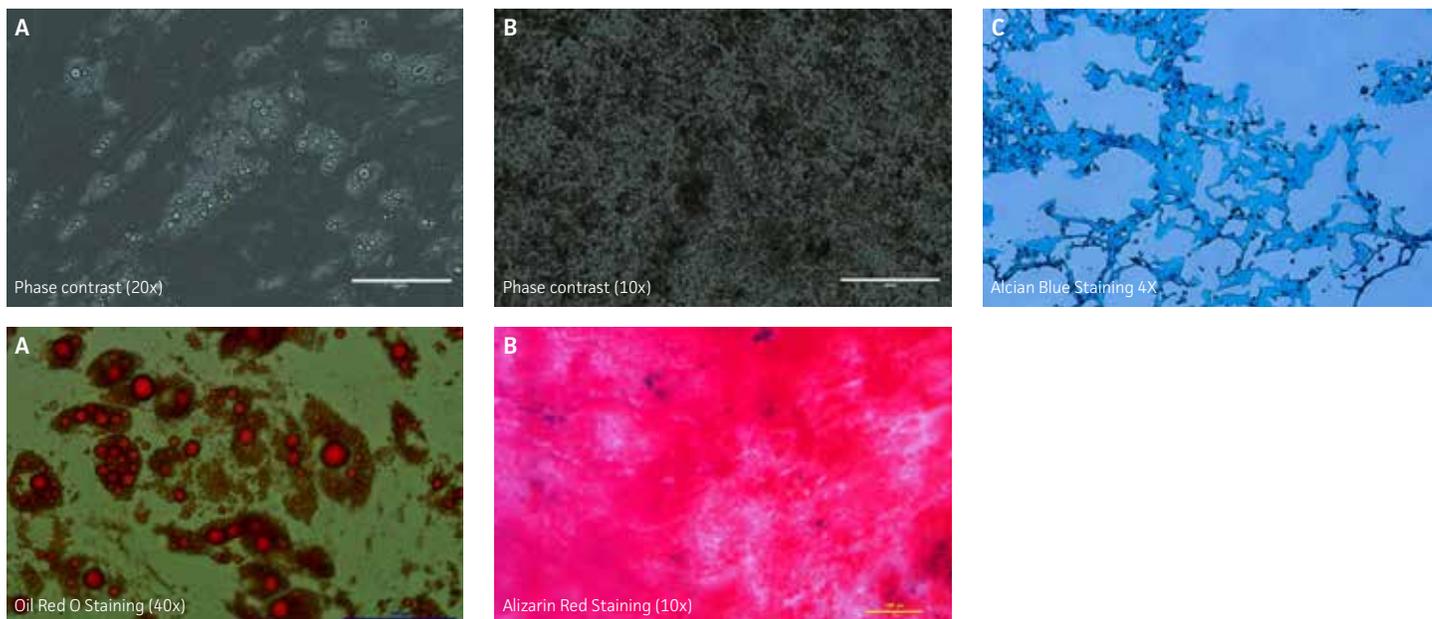


Figure 2. Qualitative analysis of adipogenesis, osteogenesis, and chondrogenesis of ATCC bone marrow-derived MSCs.

(A) Passage 3 post-thaw. Cultured in ATCC adipogenic differentiation medium for 3 weeks. (B) Passage 3 post-thaw. Cultured in ATCC osteogenic differentiation medium for 4 weeks, (C) Passage 4 post-thaw. Cultured in ATCC chondrocyte differentiation medium for 4 weeks.

REFERENCES

1. Science; Apr 2, 1999; 284, 5411
2. Cytotherapy (2006) Vol. 8, No. 4, 315- 317

Ordering information

BONE MARROW-DERIVED MESENCHYMAL STEM CELL SYSTEM

ATCC® No.	Product Description	Quantity
PCS-500-012™	Bone Marrow-derived Mesenchymal Stem Cells	1 vial (1 x 10 ⁶ viable cells/mL)
PCS-500-030™	Mesenchymal Stem Cell Basal Medium	485 mL
PCS-500-041™	Mesenchymal Stem Cell Growth Kit for BM-MSCs	1 kit
PCS-500-053™	Adipocyte Differentiation Toolkit for BM-MSCs	1 kit
PCS-500-052™	Osteocyte Differentiation Tool	1 kit
PCS-500-051™	Chondrocyte Differentiation Tool	1 kit

PHONE

800.638.6597
703.365.2700

EMAIL

tech@atcc.org

WEB

www.atcc.org



10801 University Blvd.
Manassas, VA 20110

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