

Supplementary materials

Table S1. Enrichment of molecular function GO terms using DAVID. GO terms were ranked according to count (%). False discovery rate (FDR) corrected p-values were determined using the Benjamini-Hochberg procedure. Top 10 are depicted.

GO Term	Description	Count (%)	FDR
GO:0007165	Signal transduction	7.4	7.3e-1
GO:0098609	Cell-cell adhesion	6.8	6.1e-60
GO:0007155	Cell adhesion	6.1	1.5e-19
GO:0006508	Proteolysis	4.9	2.4e-6
GO:0055114	Oxidation-reduction process	4.9	3.6e-3
GO:0030198	Extracellular matrix organization	4.3	8.6e-31
GO:0016032	Viral process	4.1	8.3e-14
GO:0000398	mRNA splicing, via spliceosome	3.9	2.6e-20
GO:0043066	Negative regulation of apoptotic process	3.9	3.8e-3
GO:0008284	Positive regulation of cell proliferation	3.9	7.8e-3

Table S2. Enrichment of molecular function GO terms using STRINGdb. False discovery rate (FDR) corrected p-values were determined using the Benjamini-Hochberg procedure. GO terms were ranked according to strength. Top 10 are depicted.

GO Term	Description	Count	Strength	FDR
GO:0051920	Peroxiredoxin activity	7 of 7	1.02	3.1e-3
GO:0044388	Small protein activating enzyme binding	5 of 5	1.02	2.7e-2
GO:0008379	Thioredoxin peroxidase activity	5 of 5	1.02	2.7e-2
GO:0048407	Platelet-derived growth factor binding	9 of 11	0,93	9.1e-4
GO:0030020	Extracellular matrix structural constituent conferring tensile strength	21 of 28	0,9	2.1e-8
GO:0004298	Threonine-type endopeptidase activity	16 of 21	0,9	1.8e-6
GO:0032050	Clathrin heavy chain binding	6 of 8	0,9	2.3e-2
GO:0031995	Insulin-like growth factor ii binding	6 of 8	0,9	2.3e-2
GO:0015037	Peptide disulfide oxidoreductase activity	9 of 13	0,86	2.3e-2
GO:0043394	Proteoglycan binding	25 of 37	0,85	2.0e-9

Table S3. Information concerning antioxidant proteins identified in AOD.

Accession	Gene ID	Protein Name	Function
Q06830	PRDX1	Peroxiredoxin-1	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
P32119	PRDX2	Peroxiredoxin-2	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
P30048	PRDX3	Thioredoxin-dependent peroxide reductase	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
Q13162	PRDX4	Peroxiredoxin-4	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
P30044	PRDX5	Peroxiredoxin-5	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
P30041	PRDX6	Peroxiredoxin-6	Catalyzes the reduction of H ₂ O ₂ and organic hydroperoxides to water and alcohols. Protects cells against oxidative stress.
P00441	SOD1	Superoxide dismutase	Attaches to Cu and Zn to break down superoxide radicals. Protects the cell from reactive oxygen species toxicity.
P99999	CYCS	Cytochrome c	Transfers electrons to the cytochrome oxidase complex. Involved in apoptosis.

Table S4. Gene primers (all from Applied Biosystems)

Gene Type	Gene	Assay ID
Reference	GAPDH	Hs02758991_g1
Apoptotic	CASP3	Hs00234387_m1
Pro-apoptotic	BAX	Hs00180269_m1
Anti-apoptotic	BCL-2	Hs00153350_m1
Osteogenic	Col1a2 (Collagen type I)	Hs01028956_m1
Osteogenic	BMP-2 (bone morphogenetic protein 2)	Hs00154192_m1
Osteogenic	SPP1 (Osteopontin)	Hs00960942_m1
Osteogenic	RUNX2 (runt-related transcription factor 2)	Hs01047973_m1

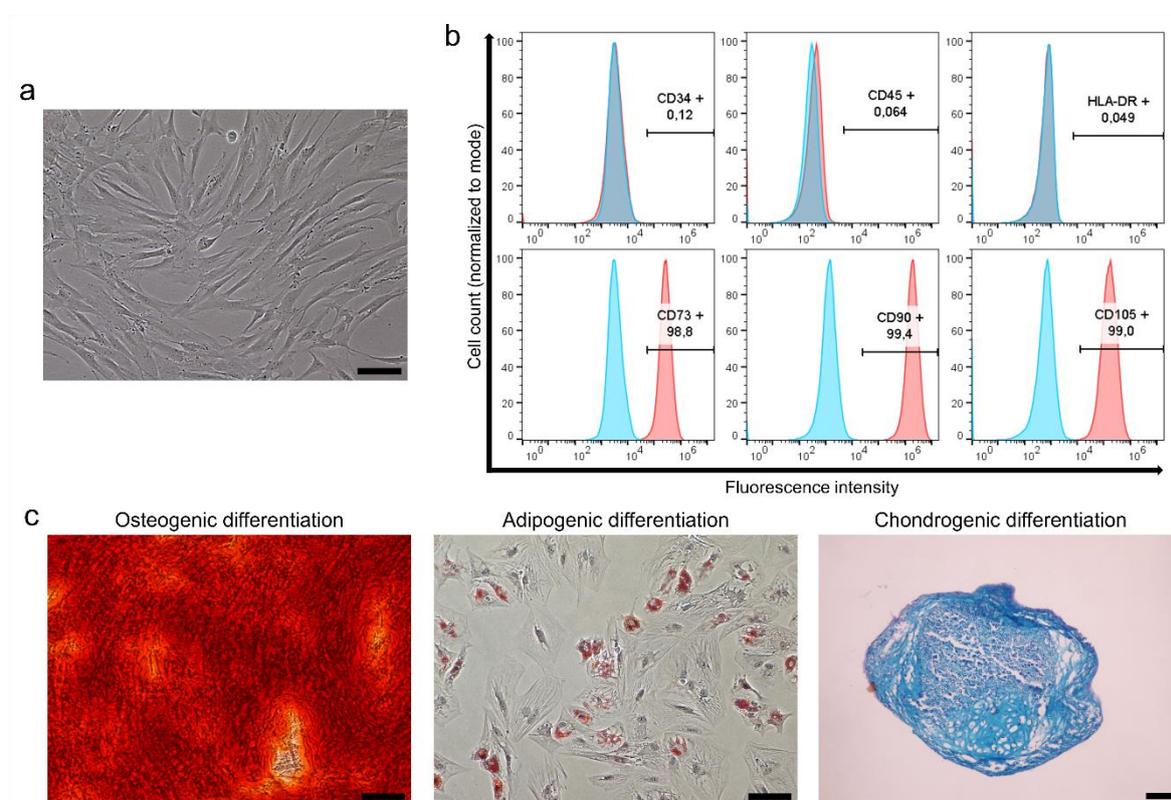


Figure S1. Characterization and multi-differentiation of hBMSC. (a) Microscopic image showing fibroblastic morphology of hBMSC. Scale bar 100 μ m. (b) Histograms showing percentage of cell surface marker expression using flow cytometry analysis of hBMSC, antibody control (blue) and the stained cells (red). (c) Images showing tri-lineage differentiation into osteogenic, adipogenic and chondrogenic lineages confirmed by Alizarin red, Oil red O and Alcian blue staining, respectively. Scale bars 100 μ m.