

Supplementary Figure Legends

Supplementary Fig. 1. Analysis of mRNA expression of the selected proteins by real-time PCR.

Cells were treated with OSM as described in Fig. 4A, and real-time PCR were performed.

Supplementary Fig. 2. Cells (700 cells/well) in a 96 well plate were cultured in serum-free medium for indicated time, and MTT assay was performed.

Supplementary Fig. 3. HOP and LOP BMSCs were treated with OSM for 12 h and secretion of SMOC1 was analyzed by Western blotting.

Supplementary Fig. 4. Schematic domain structures of SMOC1 and SPARC, and phylogenic analysis of SMOC1-related proteins.

Supplementary Table 1.**Primer sequences and PCR conditions**

gene		sequence		size (bp)	annealing temp (°C)	cycle
CTGF	F	5'-	AACACCATAGGTAGAATGTAAAGC	250	55	28
	R	5'-	CTGATCAGCTATATAGAGTCACTC			
SMOC1	F	5'-	CACCACTGACATGGTTCAGG	450	55	33
	R	5'-	CGAGGCGTCCTACTTCTTTG			
CHI3L1	F	5'-	TGATGTGACGCTCTACGGC	161	54	29
	R	5'-	AATGGCGGTACTGACTTGATG			
TGfb1	F	5'-	CTACTACGCCAAGGAGGTCAC	254	56	29
	R	5'-	AGCAGCCGGTTGCTGAGGTAT			
TSP2	F	5'-	CTGTGTCAAACTCAGCCTGGC	434	61	30
	R	5'-	TCCTTCTCATCGGTCACACCG			
EFEMP1	F	5'-	TGCCATCAGACATCTTCCAG	292	55	25
	R	5'-	TGCCTGTGGTTGACTCTTAGAA			
Periostin	F	5'-	CACAACCTGGAGACTGGAC	322	59	25
	R	5'-	GTGTCTGCTGGATAGAGGAG			
TIMP-3	F	5'-	CATCAAGCAGATGAAGATGTACC	269	59	28
	R	5'-	GGTAGTAGCAGGACTTGATCTTGC			
GAPDH	F	5'-	5'-CCACTGGCGTCTTCACCAC	500	56	25
	R	5'-	5'-CCTGCTTCACCACCTTCTTG			

Supplementary Table 2.

List of secretory proteins commonly identified in both high and low osteogenic potential BMSCs

Protein name	Symbol	Accession #	Peptide hit #
GLIA-DERIVED NEXIN PRECURSOR.	SERPINE2	IP100009890	37
40S RIBOSOMAL PROTEIN S18.	RPS18	IP100013296	13
CHLORIDE INTRACELLULAR CHANNEL PROTEIN 4.	CLIC4	IP100001960	14
MICROFIBRILLAR-ASSOCIATED PROTEIN 5 PRECURSOR.	MFAP5	IP100012832	8
40S RIBOSOMAL PROTEIN S16.	RPS16	IP100221092	5
MALATE DEHYDROGENASE, CYTOPLASMIC.	MDH1	IP100291005	5
HEMOGLOBIN SUBUNIT ALPHA.	HBA2	IP100410714	14
CATHEPSIN B PRECURSOR.	CTSB	IP100295741	7
FIBRILLIN-1 PRECURSOR.	FBN1	IP100328113	7
PROENKEPHALIN A PRECURSOR.	PENK	IP100000828	19
INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 3 PRECURSOR.	IGFBP3	IP100018305	10
UBIQUITIN CARBOXYL-TERMINAL HYDROLASE ISOZYME L1.	UCHL1	IP100018352	10
COFILIN-1.	CFL1	IP100012011	24
CYSTEINE AND GLYCINE-RICH PROTEIN 1.	CSRP1	IP100442073	5
TRANSGELIN.	TAGLN	IP100216138	38
TRANSGELIN-2.	TAGLN2	IP100550363	13
ANNEXIN A2 ISOFORM 1.	ANXA2	IP100418169	25
L-LACTATE DEHYDROGENASE B CHAIN.	LDHB	IP100219217	9
ISOFORM 2C2 OF COLLAGEN ALPHA-2(VI) CHAIN PRECURSOR.	COL6A2	IP100304840	6
MYOSIN-9.	MYH9	IP100019502	6
ISOFORM 1 OF SULFATASE-MODIFYING FACTOR 2 PRECURSOR.	SUMF2	IP100171412	3
PROTEASOME SUBUNIT ALPHA TYPE-2.	PSMA2	IP100219622	3
CD59 GLYCOPROTEIN PRECURSOR.	CD59	IP100011302	13
METALLOPROTEINASE INHIBITOR 2 PRECURSOR.	TIMP2	IP100027166	23
UNCHARACTERIZED PROTEIN ENSP00000368744.	ANXA2P2	IP100334627	84
ISOFORM LONG OF 14-3-3 PROTEIN BETA/ALPHA.	YWHAB	IP100216318	14
60S RIBOSOMAL PROTEIN L12.	RPL12	IP100024933	8
PEROXIREDOXIN-4.	PRDX4	IP100011937	4
PEROXIREDOXIN-1.	PRDX1	IP100000874	13
DESTRIN.	DSTN	IP100473014	5
ANNEXIN A1.	ANXA1	IP100218918	38
KERATIN, TYPE I CYTOSKELETAL 9.	KRT9	IP100019359	65
14-3-3 PROTEIN ZETA/DELTA.	YWHAZ	IP100021263	20
VIMENTIN.	VIM	IP100418471	48
UNCHARACTERIZED PROTEIN ALB.	ALB	IP100022434	69
PHOSPHOGLYCERATE MUTASE 2.	PGAM2	IP100218570	8
ALPHA 3 TYPE VI COLLAGEN ISOFORM 1 PRECURSOR.	COL6A3	IP100022200	90
COLLAGEN ALPHA-1(VI) CHAIN PRECURSOR.	COL6A1	IP100291136	33
TRANSFORMING GROWTH FACTOR-BETA-INDUCED PROTEIN IG-H3 PRECURSOR.	TGFBI	IP100018219	79
KERATIN, TYPE II CYTOSKELETAL 1.	KRT1	IP100220327	91
HISTONE H4.	HIST2H4A	IP100453473	31
BETA-2-MICROGLOBULIN.	B2M	IP100004656	24
ISOFORM 1 OF FIBRONECTIN PRECURSOR.	FN1	IP100022418	216
ANNEXIN A5.	ANXA5	IP100329801	27

PEPTIDYLPROLYL ISOMERASE B PRECURSOR.	PPIB	IPI00646304	28
TRIOSEPHOSPHATE ISOMERASE (FRAGMENT).	LOC729708	IPI00383071	14
INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 7 PRECURSOR.	IGFBP7	IPI00016915	37
METALLOPROTEINASE INHIBITOR 1 PRECURSOR.	TIMP1	IPI00032292	31
184 KDA PROTEIN.	COL5A1	IPI00477611	24
GAMMA-ENOLASE.	ENO2	IPI00216171	9
MYOSIN LIGHT POLYPEPTIDE 6B.	MYL6B	IPI00027255	7
C-TYPE LECTIN DOMAIN FAMILY 11 MEMBER A PRECURSOR.	CLEC11A	IPI00033466	5
TUBULIN BETA CHAIN.	TUBB	IPI00011654	5
HISTONE H2B TYPE 1-L.	HIST1H2BL	IPI00018534	4
INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 6 PRECURSOR.	IGFBP6	IPI00029235	4
PROTEIN DISULFIDE-ISOMERASE PRECURSOR.	P4HB	IPI00010796	4
RAB GDP DISSOCIATION INHIBITOR BETA.	GDI2	IPI00031461	4
14-3-3 PROTEIN GAMMA.	YWHAG	IPI00220642	3
ADENYLYL CYCLASE-ASSOCIATED PROTEIN 1.	CAP1	IPI00008274	3
RETICULOCALBIN-3 PRECURSOR.	RCN3	IPI00101037	3
61 KDA PROTEIN.		IPI00472102	2
CYTOCHROME C.	CYCS	IPI00465315	2
ISOFORM 1 OF PERIOSTIN PRECURSOR.	POSTN	IPI00007960	33
KERATIN, TYPE II CYTOSKELETAL 2 EPIDERMAL.	KRT2	IPI00021304	25
ACTIN, AORTIC SMOOTH MUSCLE.	ACTA2	IPI00008603	44
ISOFORM 1 OF L-LACTATE DEHYDROGENASE A CHAIN.	LDHA	IPI00217966	15
KERATIN, TYPE II CYTOSKELETAL 5.	KRT5	IPI00009867	12
PIGMENT EPITHELIUM-DERIVED FACTOR PRECURSOR.	SERPINF1	IPI00006114	10
ISOFORM M1 OF PYRUVATE KINASE ISOZYMES M1/M2.	PKM2	IPI00220644	8
PROFILIN-1.	PFN1	IPI00216691	22
HYPOTHETICAL PROTEIN LOC345651.	DKFZp686D0972	IPI00003269	18
ISOFORM 1 OF TROPOMYOSIN BETA CHAIN.	TPM2	IPI00013991	5
PEROXIREDOXIN-6.	PRDX6	IPI00220301	5
UNCHARACTERIZED PROTEIN ENSP00000348237.		IPI00453476	5
PLASMINOGEN ACTIVATOR INHIBITOR 1 PRECURSOR.	SERPINE1	IPI00007118	29
KERATIN, TYPE II CYTOSKELETAL 6B.	KRT6B	IPI00293665	9
LACTADHERIN PRECURSOR.	MFGE8	IPI00002236	12
ISOFORM 1 OF RAS-RELATED PROTEIN RAB-1A.	RAB1A	IPI00005719	4
RHO GDP-DISSOCIATION INHIBITOR 1.	ARHGDIA	IPI00003815	4
UNCHARACTERIZED PROTEIN C19ORF10 PRECURSOR.	C19orf10	IPI00056357	4
FRUCTOSE-BISPHOSPHATE ALDOLASE A.	ALDOA	IPI00465439	7
INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 4 PRECURSOR.	IGFBP4	IPI00305380	10
NUCLEOSIDE DIPHOSPHATE KINASE A.	NME1	IPI00012048	13
BIGLYCAN PRECURSOR.	BGN	IPI00010790	12
14-3-3 PROTEIN EPSILON.	YWHAE	IPI00000816	14
PROTEIN-LYSINE 6-OXIDASE PRECURSOR.	LOX	IPI00002802	10
TROPOMYOSIN 1 ALPHA CHAIN ISOFORM 2.	TPM1	IPI00000230	10
GLUTATHIONE S-TRANSFERASE P.	GSTP1	IPI00219757	5
SERINE PROTEASE 23 PRECURSOR.	PRSS23	IPI00026941	5
GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE.	GAPDH	IPI00219018	12
KERATIN, TYPE I CYTOSKELETAL 16.	KRT16	IPI00217963	9
KERATIN, TYPE I CYTOSKELETAL 10.	KRT10	IPI00009865	47
SPARC PRECURSOR.	SPARC	IPI00014572	75
ACTIN, CYTOPLASMIC 1.	ACTB	IPI00021439	32
FOLLISTATIN-RELATED PROTEIN 1 PRECURSOR.	FSTL1	IPI00029723	27

GALECTIN-1.	LGALS1	IPI00219219	8
PHOSPHOGLYCERATE KINASE 1.	PGK1	IPI00169383	4
60S RIBOSOMAL PROTEIN L30.	RPL30	IPI00219156	2
TUBULIN ALPHA-4A CHAIN.	TUBA4A	IPI00007750	2
ISOFORM 1 OF TROPOMYOSIN ALPHA-4 CHAIN.	TPM4	IPI00010779	11
CYSTATIN-C PRECURSOR.	CST3	IPI00032293	12
14-3-3 PROTEIN THETA.	YWHAQ	IPI00018146	8
ELONGATION FACTOR 1-ALPHA 2.	EEF1A2	IPI00014424	8
PENTRAXIN-RELATED PROTEIN PTX3 PRECURSOR.	PTX3	IPI00029568	21
PROTEIN DISULFIDE-ISOMERASE A3 PRECURSOR.	PDIA3	IPI00025252	12
ISOFORM ALPHA-ENOLASE OF ALPHA-ENOLASE.	ENO1	IPI00465248	9
CADHERIN-2 PRECURSOR.	CDH2	IPI00290085	3
COLLAGEN ALPHA-2(V) CHAIN PRECURSOR.	COL5A2	IPI00739099	3
COLLAGEN ALPHA-2(I) CHAIN PRECURSOR.	COL1A2	IPI00304962	70
PEPTIDYL-PROLYL CIS-TRANS ISOMERASE A.	PPIA	IPI00419585	7
CHLORIDE INTRACELLULAR CHANNEL PROTEIN 1.	CLIC1	IPI00010896	8
14-3-3 PROTEIN ETA.	YWHAH	IPI00216319	4
KERATIN, TYPE I CYTOSKELETAL 14.	KRT14	IPI00384444	4
PUTATIVE UNCHARACTERIZED PROTEIN.	SH3BGL3	IPI00010402	5
KERATIN-75.	KRT75	IPI00005859	12
ALPHA-ENOLASE, LUNG SPECIFIC.		IPI00013769	6
COLLAGEN ALPHA-1(I) CHAIN PRECURSOR.	COL1A1	IPI00297646	63
PROCOLLAGEN C-ENDOPEPTIDASE ENHANCER 1 PRECURSOR.	PCOLCE	IPI00299738	8
72 KDA TYPE IV COLLAGENASE PRECURSOR.	MMP2	IPI00027780	16
TETRANECTIN PRECURSOR.	CLEC3B	IPI00009028	6
UBIQUITIN AND RIBOSOMAL PROTEIN S27A PRECURSOR.	RPS27A	IPI00179330	5
ANNEXIN VI ISOFORM 2.	ANXA6	IPI00002459	4
ISOFORM NON-MUSCLE OF MYOSIN LIGHT POLYPEPTIDE 6.	MYL6	IPI00335168	3
PHOSPHATIDYLETHANOLAMINE-BINDING PROTEIN 1.	PEBP1	IPI00219446	2
SERPIN H1 PRECURSOR.	SERPINH1	IPI00032140	15
ALPHA-ACTININ-1.	ACTN1	IPI00013508	6
RADIXIN.	RDX	IPI00017367	6
HEAT SHOCK PROTEIN BETA-1.	HSPB1	IPI00025512	3
SIMILAR TO TRANSALDOLASE 1.	TALDO1	IPI00550488	3
STROMAL CELL DERIVED FACTOR 4.	SDF4	IPI00009794	3
HISTONE H2AV.	H2AFV	IPI00018278	5
ISOFORM 1 OF SULFHYDRYL OXIDASE 1 PRECURSOR.	QSOX1	IPI00003590	5
THROMBOSPONDIN-1 PRECURSOR.	THBS1	IPI00296099	36
BASEMENT MEMBRANE-SPECIFIC HEPARAN SULFATE PROTEOGLYCAN CORE PROTEIN PRECURSOR.	HSPG2	IPI00024284	5
ISOFORM 1 OF KERATIN, TYPE I CYTOSKELETAL 13.	KRT13	IPI00009866	3
ISOFORM A OF DECORIN PRECURSOR.	DCN	IPI00012119	6
ISOFORM A OF LAMIN-A/C.	LMNA	IPI00021405	3
LUMICAN PRECURSOR.	LUM	IPI00020986	2