

Supplementary Tables

Table S1. RNA-sequencing data of 38 genes related to osteoblasts, osteoclasts, bone remodeling, osteoporosis, and sarcopenia in mesenchymal stromal cells among participants in the control group.

Gene symbol	Entrez Gene Name	no .1		no .2		no .3		no .4		no .5	
		Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value
<i>ACKR3</i>	atypical chemokine receptor 3	6.86	9.29 x 10 ⁻¹²	1.44	1.99 x 10 ⁻¹	1.30	3.50 x 10 ⁻¹	3.90	1.51 x 10 ⁻⁶	15.06	1.14 x 10 ⁻¹⁹
<i>AGT</i>	angiotensinogen	-2.11	1.12 x 10 ⁻²	1.01	9.85 x 10 ⁻¹	4.00	2.13 x 10 ⁻⁶	-1.02	9.58 x 10 ⁻¹	3.40	2.00 x 10 ⁻⁴
<i>BCL2</i>	BCL2 apoptosis regulator	-1.47	1.66 x 10 ⁻¹	1.54	1.16 x 10 ⁻¹	2.09	7.37 x 10 ⁻³	1.19	5.36 x 10 ⁻¹	-1.07	8.24 x 10 ⁻¹
<i>BDKRB2</i>	bradykinin receptor B2	27.36	1.08 x 10 ⁻⁵²	3.53	6.82 x 10 ⁻⁹	1.68	1.76 x 10 ⁻²	12.46	2.82 x 10 ⁻³¹	17.27	2.08 x 10 ⁻³⁴
<i>BMP2</i>	bone morphogenetic protein 2	8.68	3.29 x 10 ⁻¹⁵	-1.20	5.51 x 10 ⁻¹	1.28	4.17 x 10 ⁻¹	2.63	1.26 x 10 ⁻³	6.76	4.85 x 10 ⁻¹⁰
<i>C3AR1</i>	complement C3a receptor 1	1.32	4.26 x 10 ⁻¹	3.40	4.33 x 10 ⁻⁴	1.16	6.70 x 10 ⁻¹	2.26	1.85 x 10 ⁻²	1.05	9.15 x 10 ⁻¹
<i>C5AR1</i>	complement C5a receptor 1	-2.64	1.13 x 10 ⁻³	1.50	1.64 x 10 ⁻¹	1.31	3.58 x 10 ⁻¹	-1.33	3.25 x 10 ⁻¹	-2.94	6.29 x 10 ⁻⁴
<i>CCL5</i>	C-C motif chemokine ligand 5	5.64	1.10 x 10 ⁻⁶	2.64	6.31 x 10 ⁻³	1.20	6.08 x 10 ⁻¹	1.27	5.03 x 10 ⁻¹	4.47	4.87 x 10 ⁻⁴
<i>CFB</i>	complement factor B	9.54	9.42 x 10 ⁻⁵²	1.40	2.59 x 10 ⁻²	1.36	4.20 x 10 ⁻²	2.17	2.61 x 10 ⁻⁷	3.97	1.12 x 10 ⁻²¹
<i>CSF1</i>	colony stimulating factor 1	4.44	3.40 x 10 ⁻¹⁷	2.41	6.33 x 10 ⁻⁷	1.69	3.20 x 10 ⁻³	2.02	6.8 x 10 ⁻⁵	3.50	1.00 x 10 ⁻¹¹
<i>CXCL2</i>	C-X-C motif chemokine ligand 2	9.75	1.09 x 10 ⁻¹⁰	1.28	4.87 x 10 ⁻¹	2.03	4.48 x 10 ⁻²	2.12	3.37 x 10 ⁻²	3.79	2.17 x 10 ⁻³
<i>CXCL3</i>	C-X-C motif chemokine ligand 3	81.44	7.09 x 10 ⁻⁵¹	1.57	1.35 x 10 ⁻¹	2.47	2.62 x 10 ⁻³	10.27	3.02 x 10 ⁻¹⁵	20.71	4.91 x 10 ⁻¹⁷
<i>DKK1</i>	dickkopf WNT signaling pathway inhibitor 1	2.34	1.72 x 10 ⁻³	-4.20	1.23 x 10 ⁻⁷	-2.93	7.36 x 10 ⁻⁵	-1.54	1.09 x 10 ⁻¹	1.07	8.16 x 10 ⁻¹
<i>EFNB2</i>	ephrin B2	1.19	5.32 x 10 ⁻¹	1.94	1.97 x 10 ⁻²	1.17	5.75 x 10 ⁻¹	2.07	1.04 x 10 ⁻²	-1.05	8.73 x 10 ⁻¹

<i>HGF</i>	hepatocyte growth factor	1.22	5.68×10^{-1}	2.21	2.40×10^{-2}	1.34	4.05×10^{-1}	1.82	8.84×10^{-2}	1.56	2.05×10^{-1}
<i>HSD11B1</i>	hydroxysteroid 11-beta dehydrogenase 1	30.42	1.71×10^{-30}	4.50	5.62×10^{-7}	1.15	6.60×10^{-1}	18.48	1.29×10^{-22}	29.31	8.69×10^{-26}
<i>ID1</i>	inhibitor of DNA binding 1, HLH protein	2.28	2.79×10^{-3}	1.61	8.32×10^{-2}	1.80	3.35×10^{-2}	1.49	1.52×10^{-1}	5.36	2.84×10^{-9}
<i>IGF1</i>	insulin like growth factor 1	9.02	2.86×10^{-10}	1.15	6.94×10^{-1}	1.07	8.51×10^{-1}	1.79	9.45×10^{-2}	14.37	3.56×10^{-12}
<i>IGF2</i>	insulin like growth factor 2	1.48	2.20×10^{-1}	3.94	1.50×10^{-5}	-1.07	8.34×10^{-1}	5.63	4.87×10^{-8}	4.82	1.72×10^{-5}
<i>IL6</i>	interleukin 6	5.48	1.44×10^{-6}	1.27	4.95×10^{-1}	1.16	6.83×10^{-1}	1.51	2.47×10^{-1}	1.66	2.44×10^{-1}
<i>IL1R1</i>	interleukin 1 receptor type 1	3.73	2.24×10^{-11}	2.23	4.44×10^{-5}	-1.03	8.82×10^{-1}	2.57	1.68×10^{-6}	3.84	1.08×10^{-10}
<i>MDK</i>	midkine	1.98	3.45×10^{-2}	1.97	3.57×10^{-2}	1.07	8.34×10^{-1}	2.11	2.07×10^{-2}	3.02	3.02×10^{-3}
<i>MEF2C</i>	myocyte enhancer factor 2C	-2.28	1.44×10^{-3}	-1.75	2.96×10^{-2}	1.05	8.47×10^{-1}	-2.70	1.29×10^{-4}	-2.13	4.67×10^{-3}
<i>NTN1</i>	netrin 1	8.15	2.19×10^{-11}	2.26	9.80×10^{-3}	1.06	8.61×10^{-1}	7.59	1.02×10^{-10}	9.84	2.20×10^{-12}
<i>OASL</i>	2'-5'-oligoadenylate synthetase like	7.49	2.63×10^{-9}	3.38	3.28×10^{-4}	1.48	2.50×10^{-1}	2.56	5.6×10^{-3}	1.80	1.68×10^{-1}
<i>PCSK1</i>	proprotein convertase subtilisin/kexin type 1	58.89	6.25×10^{-39}	6.65	1.76×10^{-9}	2.04	2.65×10^{-2}	21.93	6.03×10^{-23}	77.42	3.62×10^{-39}
<i>PPARG</i>	peroxisome proliferator activated receptor gamma	1.23	4.90×10^{-1}	2.80	6.42×10^{-4}	-1.01	9.63×10^{-1}	2.47	2.72×10^{-3}	2.02	3.67×10^{-2}
<i>PPARGC1A</i>	PPARG coactivator 1 alpha	19.93	1.06×10^{-18}	3.02	1.23×10^{-3}	3.13	8.48×10^{-4}	12.55	9.02×10^{-14}	32.31	1.25×10^{-21}
<i>PPL</i>	periplakin	10.94	8.19×10^{-14}	9.13	5.06×10^{-12}	2.68	2.17×10^{-3}	19.03	3.57×10^{-20}	19.77	1.18×10^{-15}
<i>PTGER4</i>	prostaglandin E receptor 4	-1.02	9.39×10^{-1}	2.25	1.11×10^{-4}	2.54	8.54×10^{-6}	3.79	1.93×10^{-10}	5.32	2.16×10^{-15}
<i>PTPN22</i>	protein tyrosine phosphatase non-receptor type 22	8.39	9.75×10^{-10}	3.02	1.49×10^{-3}	1.19	6.18×10^{-1}	4.24	3.36×10^{-5}	7.19	9.98×10^{-7}
<i>RAPGEF3</i>	Rap guanine nucleotide exchange factor 3	2.29	9.04×10^{-3}	2.07	2.19×10^{-2}	1.05	8.76×10^{-1}	2.22	1.19×10^{-2}	4.01	1.77×10^{-5}
<i>SFRP1</i>	secreted frizzled related protein 1	6.40	1.01×10^{-8}	6.34	1.16×10^{-8}	2.66	2.57×10^{-3}	6.85	2.85×10^{-9}	6.66	1.30×10^{-5}

<i>SOD2</i>	superoxide dismutase 2	12.35	4.37×10^{-71}	1.22	1.63×10^{-1}	1.23	1.47×10^{-1}	2.14	7.49×10^{-8}	3.92	9.87×10^{-23}
<i>STAT1</i>	signal transducer and activator of transcription 1	1.14	5.12×10^{-1}	-1.87	1.95×10^{-3}	-1.12	5.70×10^{-1}	-2.13	1.66×10^{-4}	-1.72	1.13×10^{-2}
<i>STC1</i>	stanniocalcin 1	12.30	9.38×10^{-15}	1.99	5.08×10^{-2}	1.49	2.57×10^{-1}	2.41	1.23×10^{-2}	5.00	5.46×10^{-6}
<i>TF</i>	transferrin	9.48	1.06×10^{-11}	8.84	4.41×10^{-11}	2.21	1.68×10^{-2}	4.16	1.74×10^{-5}	5.08	6.04×10^{-5}
<i>TNFRSF11B</i>	TNF receptor superfamily member 11b	2.63	4.68×10^{-9}	-2.20	1.88×10^{-6}	-4.73	1.02×10^{-20}	-1.36	6.29×10^{-2}	-1.56	9.13×10^{-3}

Entrez gene name, expression levels, and *p*-values of genes are listed for each sample. All data leave 2 digits after the decimal point.

Table S2. Genes commonly upregulated or downregulated in control subject no. 3 according to RNA-sequencing data, compared to control participants no. 1 (A), 2 (B), 4 (C), and 5 (D).

A				B			
Common up (27)	Common down (0)	no.3 down & no.1 up (6)	no.3 up & no.1 down (5)	Common up (30)	Common down (3)	no.3 down & no.2 up (3)	no.3 up & no.2 down (2)
<i>ACKR3</i>	—	<i>DKK1</i>	<i>AGT</i>	<i>ACKR3</i>	<i>DKK1</i>	<i>IGF2</i>	<i>BMP2</i>
<i>BDKRB2</i>		<i>IGF2</i>	<i>BCL2</i>	<i>AGT</i>	<i>STAT1</i>	<i>IL1R1</i>	<i>MEF2C</i>
<i>BMP2</i>		<i>IL1R1</i>	<i>C5AR1</i>	<i>BCL2</i>	<i>TNFRSF11B</i>	<i>PPARG</i>	
<i>C3AR1</i>		<i>PPARG</i>	<i>MEF2C</i>	<i>BDKRB2</i>			
<i>CCL5</i>		<i>STAT1</i>	<i>PTGER4</i>	<i>C3AR1</i>			
<i>CFB</i>		<i>TNFRSF11B</i>		<i>C5AR1</i>			
<i>CSF1</i>				<i>CCL5</i>			
<i>CXCL2</i>				<i>CFB</i>			
<i>CXCL3</i>				<i>CSF1</i>			
<i>EFNB2</i>				<i>CXCL2</i>			
<i>HGF</i>				<i>CXCL3</i>			
<i>HSD11B1</i>				<i>EFNB2</i>			
<i>ID1</i>				<i>HGF</i>			
<i>IGF1</i>				<i>HSD11B1</i>			
<i>IL6</i>				<i>ID1</i>			
<i>MDK</i>				<i>IGF1</i>			
<i>NTN1</i>				<i>IL6</i>			
<i>OASL</i>				<i>MDK</i>			
<i>PCSK1</i>				<i>NTN1</i>			
<i>PPARGC1A</i>				<i>OASL</i>			
<i>PPL</i>				<i>PCSK1</i>			
<i>PTPN22</i>				<i>PPARGC1A</i>			
<i>RAPGEF3</i>				<i>PPL</i>			

SFRP1
SOD2
STC1
TF

PTGER4
PTPN22
RAPGEF3
SFRP1
SOD2
STC1
TF

C

Common up (29)	Common down (3)	no.3 down & no.4 up (3)	no.3 up & no.4 down (3)
<i>ACKR3</i>	<i>DKK1</i>	<i>IGF2</i>	<i>AGT</i>
<i>BCL2</i>	<i>STAT1</i>	<i>IL1R1</i>	<i>C5AR1</i>
<i>BDKRB2</i>	<i>TNFRSF11B</i>	<i>PPARG</i>	<i>MEF2C</i>
<i>BMP2</i>			
<i>C3AR1</i>			
<i>CCL5</i>			
<i>CFB</i>			
<i>CSF1</i>			
<i>CXCL2</i>			
<i>CXCL3</i>			
<i>EFNB2</i>			
<i>HGF</i>			
<i>HSD11B1</i>			
<i>ID1</i>			
<i>IGF1</i>			
<i>IL6</i>			
<i>MDK</i>			

D

Common up (28)	Common down (2)	no.3 down & no.5 up (4)	no.3 up & no.5 down (4)
<i>ACKR3</i>	<i>STAT1</i>	<i>DKK1</i>	<i>BCL2</i>
<i>AGT</i>	<i>TNFRSF11B</i>	<i>IGF2</i>	<i>C5AR1</i>
<i>BDKRB2</i>		<i>IL1R1</i>	<i>EFNB2</i>
<i>BMP2</i>		<i>PPARG</i>	<i>MEF2C</i>
<i>C3AR1</i>			
<i>CCL5</i>			
<i>CFB</i>			
<i>CSF1</i>			
<i>CXCL2</i>			
<i>CXCL3</i>			
<i>HGF</i>			
<i>HSD11B1</i>			
<i>ID1</i>			
<i>IGF1</i>			
<i>IL6</i>			
<i>MDK</i>			
<i>NTN1</i>			

NTN1
OASL
PCSK1
PPARGC1A
PPL
PTGER4
PTPN22
RAPGEF3
SFRP1
SOD2
STC1
TF

OASL
PCSK1
PPARGC1A
PPL
PTGER4
PTPN22
RAPGEF3
SFRP1
SOD2
STC1
TF

Table S3. Expression of 24 genes related to obesity and diabetes in mesenchymal stromal cells among participants in the control group based on RNA-sequencing data.

Gene Symbol	Entrez Gene Name	no .1		no .2		no .3		no .4		no .5	
		Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value	Expr Log Ratio	Expr <i>p</i> -value
<i>CIQTNF1</i>	C1q and TNF related 1	16.53	2.45 x 10 ⁻⁶³	3.11	1.55 x 10 ⁻¹¹	1.90	1.50 x 10 ⁻⁴	3.95	3.33 x 10 ⁻¹⁶	7.92	8.22 x 10 ⁻³⁵
<i>CFB</i>	complement factor B	9.54	9.42 x 10 ⁻⁵²	1.40	2.59 x 10 ⁻²	1.36	4.20 x 10 ⁻²	2.17	2.61 x 10 ⁻⁷	3.97	1.12 x 10 ⁻²¹
<i>CHI3L1</i>	chitinase 3 like 1	15.65	3.20 x 10 ⁻¹⁵	2.16	2.77 x 10 ⁻²	1.85	7.79 x 10 ⁻²	2.94	2.00 x 10 ⁻³	16.26	1.59 x 10 ⁻¹⁰
<i>CP</i>	ceruloplasmin	14.03	1.96 x 10 ⁻¹⁴	15.24	2.90 x 10 ⁻¹⁵	2.17	2.53 x 10 ⁻²	10.59	8.23 x 10 ⁻¹²	40.73	6.12 x 10 ⁻²²
<i>CSF1</i>	colony stimulating factor 1	4.44	3.40 x 10 ⁻¹⁷	2.41	6.33 x 10 ⁻⁷	1.69	3.20 x 10 ⁻³	2.02	6.80 x 10 ⁻⁵	3.50	1.00 x 10 ⁻¹¹
<i>CXCL2</i>	C-X-C motif chemokine ligand 2	9.75	1.09 x 10 ⁻¹⁰	1.28	4.87 x 10 ⁻¹	2.03	4.48 x 10 ⁻²	2.12	3.37 x 10 ⁻²	3.79	2.17 x 10 ⁻³
<i>GNAI4</i>	G protein subunit alpha 14	8.77	4.62 x 10 ⁻¹¹	4.35	8.63 x 10 ⁻⁶	1.34	3.86 x 10 ⁻¹	7.26	1.92 x 10 ⁻⁹	47.70	2.29 x 10 ⁻⁴³
<i>HSD11B1</i>	hydroxysteroid 11-beta dehydrogenase 1	30.42	1.71 x 10 ⁻³⁰	4.50	5.62 x 10 ⁻⁷	1.15	6.60 x 10 ⁻¹	18.48	1.29 x 10 ⁻²²	29.31	8.69 x 10 ⁻²⁶
<i>IGF1</i>	insulin like growth factor 1	9.02	2.86 x 10 ⁻¹⁰	1.15	6.94 x 10 ⁻¹	1.07	8.51 x 10 ⁻¹	1.79	9.45 x 10 ⁻²	14.37	3.56 x 10 ⁻¹²
<i>IL6</i>	interleukin 6	5.48	1.44 x 10 ⁻⁶	1.27	4.95 x 10 ⁻¹	1.16	6.83 x 10 ⁻¹	1.51	2.47 x 10 ⁻¹	1.66	2.44 x 10 ⁻¹
<i>KCNJ2</i>	potassium inwardly rectifying channel subfamily J member 2	13.25	1.87 x 10 ⁻¹⁶	8.06	3.16 x 10 ⁻¹¹	1.16	6.56 x 10 ⁻¹	6.69	1.66 x 10 ⁻⁹	4.85	5.07 x 10 ⁻⁵
<i>KYNU</i>	kynureninase	21.47	1.94 x 10 ⁻²⁰	5.51	2.70 x 10 ⁻⁷	3.76	6.62 x 10 ⁻⁵	17.83	3.25 x 10 ⁻¹⁸	35.81	1.14 x 10 ⁻²¹
<i>LBP</i>	lipopolysaccharide binding protein	47.99	2.49 x 10 ⁻⁴¹	98.05	1.03 x 10 ⁻⁵⁷	3.72	1.34 x 10 ⁻⁵	66.30	2.21 x 10 ⁻⁴⁸	84.07	2.62 x 10 ⁻³⁹
<i>MME</i>	membrane metalloendopeptidase	15.40	3.13 x 10 ⁻⁴⁸	3.21	6.31 x 10 ⁻¹⁰	1.07	7.19 x 10 ⁻¹	6.60	9.86 x 10 ⁻²⁴	3.18	4.14 x 10 ⁻⁸
<i>NR4A2</i>	nuclear receptor subfamily 4 group A member 2	16.51	1.72 x 10 ⁻⁴⁰	4.20	1.42 x 10 ⁻¹¹	1.35	1.68 x 10 ⁻¹	6.80	1.52 x 10 ⁻¹⁹	7.02	5.13 x 10 ⁻¹⁸
<i>NTN1</i>	netrin 1	8.15	2.19 x 10 ⁻¹¹	2.26	9.80 x 10 ⁻³	1.06	8.61 x 10 ⁻¹	7.59	1.02 x 10 ⁻¹⁰	9.84	2.20 x 10 ⁻¹²
<i>OAS1</i>	2'-5'-oligoadenylate synthetase 1	8.05	1.79 x 10 ⁻⁹	3.94	7.73 x 10 ⁻⁵	2.70	4.21 x 10 ⁻³	3.43	3.82 x 10 ⁻⁴	7.11	1.57 x 10 ⁻⁶
<i>PCSK1</i>	proprotein convertase subtilisin/kexin type 1	58.89	6.25 x 10 ⁻³⁹	6.65	1.76 x 10 ⁻⁹	2.04	2.65 x 10 ⁻²	21.93	6.03 x 10 ⁻²³	77.42	3.62 x 10 ⁻³⁹
<i>PKD4</i>	pyruvate dehydrogenase kinase 4	10.25	8.95 x 10 ⁻¹³	1.57	1.69 x 10 ⁻¹	2.15	1.91 x 10 ⁻²	1.92	4.71 x 10 ⁻²	10.59	2.36 x 10 ⁻¹¹
<i>PLIN2</i>	perilipin 2	6.44	3.04 x 10 ⁻³⁶	1.52	4.82 x 10 ⁻³	1.07	6.74 x 10 ⁻¹	1.00	9.85 x 10 ⁻¹	1.37	3.76 x 10 ⁻²
<i>PPARGCIA</i>	PPARG coactivator 1 alpha	19.93	1.06 x 10 ⁻¹⁸	3.02	1.23 x 10 ⁻³	3.13	8.48 x 10 ⁻⁴	12.55	9.02 x 10 ⁻¹⁴	32.31	1.25 x 10 ⁻²¹

<i>PTGDS</i>	prostaglandin D2 synthase	9.26	1.78×10^{-25}	5.15	1.61×10^{-14}	4.07	5.27×10^{-11}	13.65	1.48×10^{-34}	3.19	1.91×10^{-6}
<i>SOD2</i>	superoxide dismutase 2	12.35	4.37×10^{-71}	1.22	1.63×10^{-1}	1.23	1.47×10^{-1}	2.14	7.49×10^{-8}	3.92	9.87×10^{-23}
<i>TF</i>	transferrin	9.48	1.06×10^{-11}	8.84	4.41×10^{-11}	2.21	1.68×10^{-2}	4.16	1.74×10^{-5}	5.08	6.04×10^{-5}

Entrez gene name, expression levels, and *p*-values of genes are listed for each sample. All data leave 2 digits after the decimal point.