

Beneficial Effect of IL-4 and SDF-1 on Myogenic Potential of Mouse and Human Adipose Tissue-Derived Stromal Cells

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Table 1. Taqman assays used in qPCR analyzes.

Species	Gene	Taqman Assay No.	Species	Gene	Taqman Assay No.
MOUSE	<i>Cd90</i>	Mm00493682_g1	HUMAN	<i>CD90</i>	Hs00264235_m1
	<i>Cd105</i>	Mm00468256_m1		<i>CD105</i>	Hs00923996_m1
	<i>IL4R</i>	Mm01275139_m1		<i>IL4R</i>	Hs00965056_m1
	<i>IL13R</i>	Mm00446726_m1		<i>CXCR4</i>	Hs00976734_m1
	<i>Cxcr7</i>	Mm02619632_s1		<i>CXCR7</i>	Hs00664172_s1
	<i>Myod</i>	Mm00440387_m1		<i>CD9</i>	Hs01124022_m1
	<i>Myf5</i>	Mm00435125_m1		<i>CDH15</i>	Hs00170504_m1
	<i>Cdh15</i>	Mm00483191_m1		<i>DESMIN</i>	Hs00157258_m1
	<i>Myh3</i>	Mm01319006_g1		<i>MYF5</i>	Hs00271574_m1
	<i>Myogenin</i>	Mm00446194_m1		<i>MYOGENIN</i>	Hs01072232_m1
	<i>Cd9</i>	Mm00514275_g1		<i>MYH3</i>	Hs01074230_m1
	<i>Ccl2</i>	Mm00441242_m1		<i>LMNA</i>	Hs00153462_m1
	<i>IL-1b</i>	Mm00434228_m1		<i>LAMA3</i>	Hs00165042_m1
	<i>IL-6</i>	Mm00446190_m1		<i>BLIM</i>	Hs01046520_m1
	<i>Tnf-α</i>	Mm00443258_m1		<i>CXCL2</i>	Hs00601957_m1
	<i>Il-L-10</i>	Mm01288386_m1		<i>CXCL14</i>	Hs01557413_m1
	<i>Hprt</i>	Mm00446968_m1		<i>IGFBP5</i>	Hs00181213_m1
				<i>TGFB</i>	Hs00998133_m1
				<i>CCL2</i>	Hs00234140_m1
				<i>BDNF</i>	Hs01055414_m1
				<i>ACTB</i>	Hs01060665_g1
				<i>HPRT</i>	Hs02800695_m1

Table 2. List of genes which expression was changed as a result of IL-4, SDF-1 or IL-4 and SDF-1 treatment and which were visualized in Venn graphs (Figure 8B).

Control Versus Selected Treatments	Number of Genes	Gene List
IL-4	265	JARID2, CYB561, MBTD1, ZRANB1, NCAPH2, VRK2, ARNTL2, ANK1, CHPF2, BOD1L1, TNC, GOPC, OGFR, AP3D1, RASSF1, ATP11A, ABCC9, TCF3, C19orf10, KIFAP3, FBLN1, SMARCA2, CPOX, CHMP2B, NID2, AARS, SEL1L3, CCDC80, PSME1, SNAP23, DPYSL2, KCNK6, TTLL12, HIF1A, C20orf24, SLC17A9, SAMHD1, E2F1, SRPX2, PLA2G15, HMOX2, LACTB, VPS18, NDRG1, BNIP3L, PPP6R1, DHX40, MED13, LRRC59, SLC9A3R1, TMEM104, NDUFC1, CPZ, KLF3, CCDC86, TMEM109, ELK3, WNT5B, SH2B3, OAS3, ST8SIA1, SENP6, ARRDC3, SUB1, TARS, CRBN, MAPKAPK3, AUP1, DOK1, STAT1, GLS, FHL2, PASK, PLEKHB2, COX7A2L, RPA2, PHF3, PLAGL1, KLF12, GTF3C3, KLF9, TMEM214, GPAM, WDR11, EGR1, GLT8D2, CCDC53, PTK2B, CLCC1, FAM126A, HJURP, OBSL1, FAM210B, USP9X, EFNB2, NCLN, GNAI1, MPST, CALU, SPCS3, TRPM4, HELZ2, PAK4, SH3BGRL, TRAF7, CLUH, MORC4, BTG1, TMEM106C, SLC38A2, BTF3L4, FADS2, COL4A2, NREP, OSTF1, CD36, PHF21A, PRADC1, GNS, LAMC1, ENPP2, NUMA1, LRRC32, RSL24D1, CIR1, CCNG2, NIPA2, TSPAN3, NCOA2, DEF8, ABCA8, BCAS3, PTRH2, COL6A2, AKT1, EMP3, CARM1, FHAD1, PIGK, DCAF6, ADAM15, DEGS1, SFXN5, FBLN7, ZC3H8, OSBPL10, SLIT2, RPS3A, CBR4, SRD5A1, PNRC1, IGFBP3, SLC12A9, SLC16A2, CHST7, MFHAS1, SNX30, CTF1, HNMT, C11orf57, JMY, RMND5A, KCTD15, ANKH, ENAH, ADAMTS1, SLC16A1, DEPTOR, PHKG2, TMEM171, NBL1, C19orf47, MGAT4B, PPAP2B, AGL, ZNF281, CGGBP1, IGFBP7, ANKZF1, ATRIP, RHOBTB3, ANKRA2, C7orf60, TMEM65, DACT1, HTRA1, TAF10, PPFIBP2, RPL27A, PIP4K2C, SCG5, PPP2R3B, PPP1R14A, SPINT2, YIF1B, FAM57A, KCTD5, BEST1, POLR2G, STIP1, GDNF, GPRIN1, RAC3, PUSL1, NIPA1, DCLK2, C11orf24, ATP6V0E2, CANT1, RPS7, PPP1R3B, MAP3K11, PPP1R14B, LRFN4, SLC19A1, C1QTNF1, C16orf91, RGMB, RPL15, ARHGAP1, ATG13, CLTB, TUBB6, DIRAS1, C18orf32, IL17RA, ARL6IP6, RIC8A, RPP25, MPI, MTURN, PHLDA2, MFSD5, SETD3, TMED9, RPS27L, PURA, ZNF397, COL4A1, THSD4, TUBB4B, NBR1, ZNF548, FAM180A, EIF4BP6, ATAD3A, MPZL1, MFAP3L, SMG5, TGM2, BMPR2, REPIN1, MIR503HG, ERCC6, RPL41, MIF, STARD4-AS1, PGAM5, GS1-251I9.4, CHMP4A, RP11-166D19.1, RP11-473I1.10, RPL10, MUSTN1, RP11-572C15.6
IL-4+SDF-1	209	JARID2, ZRANB1, VRK2, ARNTL2, ANK1, CUL7, RCN1, AP3D1, RASSF1, ABCC9, RAB27A, PHRF1, TCF3, TEAD2, FBLN1, TNS1, SMARCA2, CPOX, NID2, AARS, CCDC80, PSME1, SNAP23, DPYSL2, HIF1A, TRPC4AP, C20orf24, SAMHD1, E2F1, USP11, SRPX2, MGRN1, PLA2G15, HMOX2, LACTB, NDRG1, ERI1, DHX40, SLC9A3R1, NDUFC1, CPZ, MTCH2, TMEM109, ELK3, WNT5B, SH2B3, OAS3, ST8SIA1, RWDD1, C5orf15, UBE3A, REEP6, AUP1, DOK1, LANCL1, STAT1, FHL2, PLEKHB2, ICMT, RPA2, PLAGL1, KLF12, LTBP2, MTRF1, TGFBI, EGR1, GLT8D2, CCDC53, PTK2B, TBX2, CLCC1, FAM126A, GLIPR2, HJURP, MXD4, OBSL1, VAMP7, EFNB2, KTN1, GNAI1, MPST, CALU, SPCS3, HIP1R, SYNE1, SH3BGRL, CLUH, POMP, POSTN, MORC4, LOXL2, TMEM106C, SLC38A2, COL4A2, NREP, OSTF1, CD36,

		GNS, LAMC1, ENPP2, DSCC1, NUMA1, ITGA11, ACTR2, FGF5, NIPA2, TSPAN3, ZFH3, BCAS3, PTRH2, SLC39A6, FHAD1, DEGS1, OSBPL10, SLIT2, SRD5A1, IGFBP3, SLC12A9, C7orf55-LUC7L2, CHST7, TACC1, UHRF2, SNX30, HSD17B12, ALDOA, CTF1, TWF1, PTPRK, RMND5A, KCTD15, ADAMTS1, DEPTOR, FBXO32, TMEM171, VPS11, MGAT4B, SYVN1, CMPK1, PPAP2B, SMC6, IGFBP7, ANKZF1, ATRIP, RHOBTB3, ANKRA2, C7orf60, ZNF367, DACT1, TAF10, CYB5A, C11orf74, PPFIBP2, PIP4K2C, SCG5, PPP2R3B, PPP1R14A, BEST1, POLR2G, GPRIN1, RAC3, NIPA1, DCLK2, C11orf24, ATP6V0E2, TVP23B, PPP1R3B, PPP1R14B, LRFN4, EIF1AX, C16orf91, RGMB, RPL15, ARHGAP1, ATG13, CLTB, TUBB6, BNIP3, IL17RA, ARL6IP6, CTD-2192J16.15, RPP25, MPI, SSC5D, PHLDA2, SETD3, COL4A1, THSD4, TUBB4B, HBA2, FAM111B, FAM180A, TAF13, MPZL1, PAPSS2, MFAP3L, SMG5, HBA1, MIR503HG, MSL3P1, ATF6B, hsa-mir-6723, MIF, HBB, SOCS2-AS1, CHMP4A, RP11-166D19.1, RPL10, BGN, RP11-572C15.6
SDF-1	31	DNAJC25, NCKAP1, IFT80, CECR5, NUCB2, MGRN1, UBE2W, DHX40, DAP, TARS, UBE3A, PTBP3, MTRF1, MXD4, VAMP7, BTF3L4, FADS2, KIAA1033, DEF8, RCN3, UBA3, TWF1, CCDC122, ABCA5, SYVN1, SMC6, FAM57A, HSPBAP1, GPRIN1, MSL3P1, hsa-mir-6723
IL-4 and IL-4+SDF-1	142	JARID2, ZRANB1, VRK2, ARNTL2, ANK1, AP3D1, RASSF1, ABCC9, TCF3, FBLN1, SMARCA2, CPOX, NID2, AARS, CCDC80, PSME1, SNAP23, DPYSL2, HIF1A, C20orf24, SAMHD1, E2F1, SRPX2, PLA2G15, HMOX2, LACTB, NDRG1, DHX40, SLC9A3R1, NDUFC1, CPZ, TMEM109, ELK3, WNT5B, SH2B3, OAS3, ST8SIA1, AUP1, DOK1, STAT1, FHL2, PLEKHB2, RPA2, PLAGL1, KLF12, EGR1, GLT8D2, CCDC53, PTK2B, CLCC1, FAM126A, HJURP, OBSL1, EFNB2, GNAI1, MPST, CALU, SPCS3, SH3BGRL, CLUH, MORC4, TMEM106C, SLC38A2, COL4A2, NREP, OSTF1, CD36, GNS, LAMC1, ENPP2, NUMA1, NIPA2, TSPAN3, BCAS3, PTRH2, FHAD1, DEGS1, OSBPL10, SLIT2, SRD5A1, IGFBP3, SLC12A9, CHST7, SNX30, CTF1, RMND5A, KCTD15, ADAMTS1, DEPTOR, TMEM171, MGAT4B, PPAP2B, IGFBP7, ANKZF1, ATRIP, RHOBTB3, ANKRA2, C7orf60, DACT1, TAF10, PPFIBP2, PIP4K2C, SCG5, PPP2R3B, PPP1R14A, BEST1, POLR2G, GPRIN1, RAC3, NIPA1, DCLK2, C11orf24, ATP6V0E2, PPP1R3B, PPP1R14B, LRFN4, C16orf91, RGMB, RPL15, ARHGAP1, ATG13, CLTB, TUBB6, IL17RA, ARL6IP6, RPP25, MPI, PHLDA2, SETD3, COL4A1, THSD4, TUBB4B, FAM180A, MPZL1, MFAP3L, SMG5, MIR503HG, MIF, CHMP4A, RP11-166D19.1, RPL10, RP11-572C15.6
IL-4+SDF-1 and SDF-1	12	MGRN1, DHX40, UBE3A, MTRF1, MXD4, VAMP7, TWF1, SYVN1, SMC6, GPRIN1, MSL3P1, hsa-mir-6723
IL-4 and SDF-1	7	DHX40, TARS, BTF3L4, FADS2, DEF8, FAM57A, GPRIN1
IL-4 and IL-4+SDF-1 and SDF-1	2	DHX40, GPRIN1
IL-4 only	118	CYB561, MBTD1, NCAPH2, CHPF2, BOD1L1, TNC, GOPC, OGFR, ATP11A, C19orf10, KIFAP3, CHMP2B, SEL1L3, KCNK6, TTLL12, SLC17A9, VPS18, BNIP3L, PPP6R1, MED13, LRRC59, TMEM104, KLF3, CCDC86, SENP6, ARRDC3, SUB1, CRBN, MAPKAPK3, GLS, PASK, COX7A2L, PHF3, GTF3C3, KLF9, TMEM214, GPAM, WDR11, FAM210B, USP9X, NCLN, TRPM4, HELZ2, PAK4, TRAF7, BTG1, PHF21A, PRADC1,

		LRRC32, RSL24D1, CIR1, CCNG2, NCOA2, ABCA8, COL6A2, AKT1, EMP3, CARM1, PIGK, DCAF6, ADAM15, SFXN5, FBLN7, ZC3H8, RPS3A, CBR4, PNRC1, SLC16A2, MFHAS1, HNMT, C11orf57, JMY, ANKH, ENAH, SLC16A1, PHKG2, NBL1, C19orf47, AGL, ZNF281, CGGBP1, TMEM65, HTRA1, RPL27A, SPINT2, YIF1B, KCTD5, STIP1, GDNF, PUSL1, CANT1, RPS7, MAP3K11, SLC19A1, C1QTNF1, DIRAS1, C18orf32, RIC8A, MTURN, MFSD5, TMED9, RPS27L, PURA, ZNF397, NBR1, ZNF548, EIF4BP6, ATAD3A, TGM2, BMPR2, REPIN1, ERCC6, RPL41, STARD4-AS1, PGAM5, GS1-251I9.4, RP11-473I1.10, MUSTN1
IL-4+SDF-1 only	57	CUL7, RCN1, RAB27A, PHRF1, TEAD2, TNS1, TRPC4AP, USP11, ERI1, MTCH2, RWDD1, C5orf15, REEP6, LANCL1, ICMT, LTBP2, TGFBI, TBX2, GLIPR2, KTN1, HIP1R, SYNE1, POMP, POSTN, LOXL2, DSCC1, ITGA11, ACTR2, FGF5, ZFH3, SLC39A6, C7orf55-LUC7L2, TACC1, UHRF2, HSD17B12, ALDOA, PTPRK, FBXO32, VPS11, CMPK1, ZNF367, CYB5A, C11orf74, TVP23B, EIF1AX, BNIP3, CTD-2192J16.15, SSC5D, HBA2, FAM111B, TAF13, PAPSS2, HBA1, ATF6B, HBB, SOCS2-AS1, BGN
SDF-1 only	14	DNAJC25, NCKAP1, IFT80, CECR5, NUCB2, UBE2W, DAP, PTBP3, KIAA1033, RCN3, UBA3, CCDC122, ABCA5, HSPBAP1
IL-4 and IL-4+SDF-1 only	140	JARID2, ZRANB1, VRK2, ARNTL2, ANK1, AP3D1, RASSF1, ABCC9, TCF3, FBLN1, SMARCA2, CPOX, NID2, AARS, CCDC80, PSME1, SNAP23, DPYSL2, HIF1A, C20orf24, SAMHD1, E2F1, SRPX2, PLA2G15, HMOX2, LACTB, NDRG1, SLC9A3R1, NDUFC1, CPZ, TMEM109, ELK3, WNT5B, SH2B3, OAS3, ST8SIA1, AUP1, DOK1, STAT1, FHL2, PLEKHB2, RPA2, PLAGL1, KLF12, EGR1, GLT8D2, CCDC53, PTK2B, CLCC1, FAM126A, HJURP, OBSL1, EFNB2, GNAI1, MPST, CALU, SPCS3, SH3BGRL, CLUH, MORC4, TMEM106C, SLC38A2, COL4A2, NREP, OSTF1, CD36, GNS, LAMC1, ENPP2, NUMA1, NIPA2, TSPAN3, BCAS3, PTRH2, FHAD1, DEGS1, OSBPL10, SLIT2, SRD5A1, IGFBP3, SLC12A9, CHST7, SNX30, CTF1, RMND5A, KCTD15, ADAMTS1, DEPTOR, TMEM171, MGAT4B, PPAP2B, IGFBP7, ANKZF1, ATRIP, RHOBTB3, ANKRA2, C7orf60, DACT1, TAF10, PPFIBP2, PIP4K2C, SCG5, PPP2R3B, PPP1R14A, BEST1, POLR2G, RAC3, NIPA1, DCLK2, C11orf24, ATP6V0E2, PPP1R3B, PPP1R14B, LRFN4, C16orf91, RGMB, RPL15, ARHGAP1, ATG13, CLTB, TUBB6, IL17RA, ARL6IP6, RPP25, MPI, PHLDA2, SETD3, COL4A1, THSD4, TUBB4B, FAM180A, MPZL1, MFAP3L, SMG5, MIR503HG, MIF, CHMP4A, RP11-166D19.1, RPL10, RP11-572C15.6
IL-4 and_SDF-1 only	10	MGRN1, UBE3A, MTRF1, MXD4, VAMP7, TWF1, SYVN1, SMC6, MSL3P1, hsa-mir-6723
IL-4+SDF-1 and SDF-1 only	5	TARS, BTF3L4, FADS2, DEF8, FAM57A

Table 3. Selected molecular and cellular functions predicted to differ between IL-4 and SDF-1 and control, i.e. non treated hADSCs (according to Gene Ontology and GO Annotations).

Gene Ontology ID	Gene Ontology Term	Number of All Genes in the Category	Number of Genes which Expression was Up- (↑) or Downregulated (↓)	
			↑ IL-4 and SDF 1	↓ IL-4 and SDF-1
GO:0008283	cell proliferation	1186	17	10
GO:0007049	cell cycle	1441	14	12
GO:0007267	cell-cell signaling	889	11	9
GO:0048869	cellular developmental process	2513	36	27
GO:0016477	cell migration	884	16	8
GO:0030154	cell differentiation	2367	32	25
GO:0030198	extracellular matrix organization	226	9	3