

Supplemental Table 1 Result of cDNA microarray: 84 upregulated genes in original MKN-7 cells in the presence or absence of co-culture with UE6E7T-12 BM-MSCs

Gene ID	Gene symbol	Gene title	Folds
NM_000089	COL1A2	collagen, type I, alpha 2	1773.01
NM_000358	TGFB1	transforming growth factor, beta-induced,	223.26
NM_004105	EFEMP1	EGF-containing fibulin-like extracellular matrix 1	166.6
NM_003118	SPARC	secreted protein, acidic, cysteine-rich	160.87
NM_002852	PTX3	pentraxin-related gene, rapidly induced by IL-1 beta	137.26
NM_000138	FBN1	fibrillin 1	132.55
NM_212475	FN1	fibronectin 1	126.44
NM_004369	COL6A3	collagen, type VI, alpha 3	113.81
NM_003380	VIM	vimentin	91.51
NM_000090	COL3A1	collagen, type III, alpha 1	84.29
NM_000602	SERPINE1	serpin peptidase inhibitor, clade E, member 1	82.55
NM_003289	TPM2	tropomyosin 2	82.30
NM_000093	COL5A1	collagen, type V, alpha 1	77.58
NM_006317	BASP1	brain abundant, membrane attached signal protein 1	68.49
NM_033138	CALD1	caldesmon 1	68.28
NM_002192	INHBA	inhibin, beta A	63.44
NM_003246	THBS1	thrombospondin 1	62.70
NM_006475	POSTN	periostin, osteoblast specific factor	53.73
NM_000088	COL1A1	collagen, type I, alpha 1	53.42
NM_000609	CXCL12	chemokine (C-X-C motif) ligand 12	44.44
NM_002317	LOX	lysyl oxidase	43.56
NM_000362	TIMP3	TIMP metalloproteinase inhibitor 3	42.92
NM_007085	FSTL1	folliculin-like 1	41.98
NM_001901	CTGF	connective tissue growth factor	40.51
NM_174556	IGFBP3	insulin-like growth factor binding protein 3	36.88
NM_033664	CDH11	cadherin 11, type 2, OB-cadherin	33.30
NM_013352	DSE	dermatan sulfate epimerase	31.67
NM_015170	SULF1	sulfatase 1	30.72

NM_002727	SRGN	serglycin	29.67
NM_004385	VCAN	versican	29.61
NM_004181	UCHL1	ubiquitin carboxyl-terminal esterase L1	29.01
NM_003247	THBS2	thrombospondin 2	28.44
NM_002167	ID3	inhibitor of DNA binding 3	27.04
NM_012293	PXDN	peroxidasin homolog	26.65
NM_003186	TAGLN	transgelin	24.94
NM_001627	ALCAM	activated leukocyte cell adhesion molecule	23.65
NM_000165	GJA1	gap junction protein, alpha 1	23.38
NM_000393	COL5A2	collagen, type V, alpha 2	20.38
NM_021913	AXL	AXL receptor tyrosine kinase	20.34
NM_003068	SNAI2	snail homolog 2	20.09
NM_005909	MAP1B	microtubule-associated protein 1B	19.25
NM_001613	ACTA2	actin, alpha 2, smooth muscle, aorta	17.39
NM_002345	LUM	lumican	16.73
NM_004598	SPOCK1	sparc/osteonectin, cwcv and kazal-like 1	16.59
NM_013372	GREM1	gremlin 1, cysteine knot superfamily, homolog	16.54
NM_000961	PTGIS	prostaglandin I2 synthase	11.30
NM_002998	SDC2	syndecan 2	9.24
NM_002318	ENTPD4	ectonucleoside triphosphate diphosphohydrolase 4	9.07
NM_006209	ENPP2	ectonucleotide pyrophosphatase/phosphodiesterase 2	8.68
NM_133507	DCN	decorin	7.70
NM_005613	RGS4	regulator of G-protein signaling 4	7.66
NM_006832	FERMT2	fermitin family homolog 2	6.60
NM_022648	TNS1	tensin 1	6.08
NM_018847	KLHL9	kelch-like 9	5.87
NM_005159	ACTC1	actin, alpha, cardiac muscle 1	5.24
NM_001848	COL6A1	collagen, type VI, alpha 1	4.54
NM_006039	MRC2	mannose receptor, C type 2	4.49
NM_003641	IFITM1	interferon induced transmembrane protein 1	4.44
NM_016081	PALLD	palladin, cytoskeletal associated protein	4.41
NM_006500	MCAM	melanoma cell adhesion molecule	4.27

NM_006169	NNMT	nicotinamide N-methyltransferase	4.20
NM_032801	JAM3	junctional adhesion molecule 3	4.15
NM_032348	MXRA8	matrix-remodelling associated 8	4.11
NM_052966	FAM129A	family with sequence similarity 129, member A	4.03
NM_004772	C5orf13	chromosome 5 open reading frame 13	3.79
NM_006868	RAB31	RAB31, member RAS oncogene family	3.78
NM_000877	IL1R1	interleukin 1 receptor, type I	3.64
NM_006009	TUBA1A	tubulin, alpha 1a	3.26
NM_000428	LTBP2	latent transforming growth factor beta binding protein 2	3.18
NM_003392	WNT5A	wingless-type MMTV integration site family, 5A	3.08
NM_016441	CRIM1	cysteine rich transmembrane BMP regulator 1	3.07
NM_021034	IFITM3	interferon induced transmembrane protein 3	2.95
NM_001554	CYR61	cysteine-rich, angiogenic inducer, 61	2.81
NM_181690	AKT3	v-akt murine thymoma viral oncogene homolog 3	2.77
NM_001711	BGN	biglycan	2.64
NM_005514	HLA-B	major histocompatibility complex, class I, B	2.64
NM_002205	ITGA5	integrin, alpha 5	2.53
NM_025190	ANKRD36B	ankyrin repeat domain 36B	2.50
NM_019052	CCHCR1	coiled-coil alpha-helical rod protein 1	2.49
NM_006435	IFITM2	interferon induced transmembrane protein 2	2.46
NM_003122	SPINK1	serine peptidase inhibitor, Kazal type 1	2.44
NM_006051	APBB3	amyloid beta precursor protein-binding, family B, 3	2.25
NM_001161520	COG5	component of oligomeric golgi complex 5	2.17
NM_032109	ARID5B	AT rich interactive domain 5B	2.15

Supplemental Table 2 Result of cDNA microarray: 103 upregulated genes in CD133⁺ MKN-7 cells in the presence or absence of co-culture with UE6E7T-12 BM-MSCs

Gene ID	Gene symbol	Gene title	Folds
NM_000089	COL1A2	collagen, type I, alpha 2	550.74
NM_003118	SPARC	secreted protein, acidic, cysteine-rich	520.18
NM_003289	TPM2	tropomyosin 2	359.88
NM_006475	POSTN	periostin, osteoblast specific factor	247.45
NM_004369	COL6A3	collagen, type VI, alpha 3	244.19
NM_002345	LUM	lumican	202.95
NM_033138	CALD1	caldesmon 1	182.67
NM_000358	TGFB1	transforming growth factor, beta-induced	178.15
NM_000138	FBN1	fibrillin 1	157.64
NM_000602	SERPINE1	serpin peptidase inhibitor, clade E, member 1	150.14
NM_002167	ID3	inhibitor of DNA binding 3	92.01
NM_000393	COL5A2	collagen, type V, alpha 2	87.54
NM_000090	COL3A1	collagen, type III, alpha 1	84.87
NM_003186	TAGLN	transgelin	73.68
NM_015170	SULF1	sulfatase 1	69.16
NM_007085	FSTL1	folliculin-like 1	67.51
NM_003380	VIM	vimentin	66.70
NM_174556	IGFBP3	insulin-like growth factor binding protein 3	65.26
NM_002317	LOX	lysyl oxidase	64.55
NM_006097	MYL9	myosin, light chain 9, regulatory	63.40
NM_004105	EFEMP1	EGF-containing fibulin-like extracellular matrix protein 1	57.97
NM_003246	THBS1	thrombospondin 1	54.32
NM_000088	COL1A1	collagen, type I, alpha 1	53.17
NM_002192	INHBA	inhibin, beta A	46.99
NM_006988	ADAMTS1	ADAM metalloproteinase with thrombospondin 1 motif, 1	44.01
NM_018847	KLHL9	kelch-like 9	42.84
NM_013372	GREM1	gremlin 1, cysteine knot superfamily, homolog	40.27
NM_212476	FN1	fibronectin 1	38.13

NM_002727	SRGN	serglycin	38.12
NM_002852	PTX3	pentraxin-related gene, rapidly induced by IL-1 beta	37.13
NM_002998	SDC2	syndecan 2	35.03
NM_001901	CTGF	connective tissue growth factor	34.25
NM_001792	CDH2	cadherin 2, type 1, N-cadherin	32.07
NM_000609	CXCL12	chemokine (C-X-C motif) ligand 12	31.63
NM_013352	DSE	dermatan sulfate epimerase	28.39
NM_033664	CDH11	cadherin 11, type 2, OB-cadherin	27.22
NM_006317	BASP1	brain abundant, membrane attached signal protein 1	23.99
NM_005909	MAP1B	microtubule-associated protein 1B	23.70
NM_001613	ACTA2	actin, alpha 2, smooth muscle, aorta	22.71
NM_001627	ALCAM	activated leukocyte cell adhesion molecule	22.40
NM_021913	AXL	AXL receptor tyrosine kinase	21.90
NM_000093	COL5A1	collagen, type V, alpha 1	20.42
NM_005159	ACTC1	actin, alpha, cardiac muscle 1	19.34
NM_000526	KRT14	keratin 14	18.93
NM_006832	FERMT2	fermitin family homolog 2	18.25
NM_000362	TIMP3	TIMP metalloproteinase inhibitor 3	18.05
NM_006209	ENPP2	ectonucleotide pyrophosphatase/phosphodiesterase 2	17.78
NM_000165	GJA1	gap junction protein, alpha 1	17.65
NM_004385	VCAN	versican	17.37
NM_012293	PXDN	peroxidase homolog	17.22
NM_022648	TNS1	tensin 1	16.30
NM_003068	SNAI2	snail homolog 2	16.05
NM_003247	THBS2	thrombospondin 2	15.93
NM_005613	RGS4	regulator of G-protein signaling 4	13.11
NM_000961	PTGIS	prostaglandin I2 (prostacyclin) synthase	12.68
NM_002318	ENTPD4	ectonucleoside triphosphate diphosphohydrolase 4	12.26
NM_004598	SPOCK1	sparc/osteonectin, cwcv and kazal-like 1	10.61
NM_015150	RFTN1	raftlin, lipid raft linker 1	9.75
NM_001711	BGN	biglycan	9.70
NM_005576	LOXL1	lysyl oxidase-like 1	7.93

NM_005531	IFI16	interferon, gamma-inducible protein 16	6.63
NM_006009	TUBA1A	tubulin, alpha 1a	6.58
NM_016441	CRIM1	cysteine rich transmembrane BMP regulator 1	6.52
NM_001554	CYR61	cysteine-rich, angiogenic inducer, 61	5.93
NM_006288	THY1	Thy-1 cell surface antigen	5.72
NM_001449	FHL1	four and a half LIM domains 1	5.68
NM_016081	PALLD	palladin, cytoskeletal associated protein	4.90
NM_001321	CSRP2	cysteine and glycine-rich protein 2	4.58
NM_006039	MRC2	mannose receptor, C type 2	4.47
NM_001458	FLNC	filamin C, gamma	4.36
NM_133507	DCN	decorin	4.31
NM_024563	C5orf23	chromosome 5 open reading frame 23	4.14
NM_002444	MSN	moesin	4.11
NM_000428	LTBP2	latent transforming growth factor beta binding protein 2	4.10
NM_002305	LGALS1	lectin, galactoside-binding, soluble, 1	4.04
NM_003097	SNRPN	small nuclear ribonucleoprotein polypeptide N	3.96
NM_181690	AKT3	v-akt murine thymoma viral oncogene homolog 3	3.85
NM_003392	WNT5A	wingless-type MMTV integration site family, 5A	3.78
NM_014840	NUAK1	NUAK family, SNF1-like kinase, 1	3.60
NM_013409	FST	follistatin	3.33
NM_032348	MXRA8	matrix-remodelling associated 8	3.30
NM_004772	C5orf13	chromosome 5 open reading frame 13	3.21
NM_018431	DOK5	docking protein 5	3.12
NM_001018004	TPM1	tropomyosin 1	3.05
NM_005952	MT1X	metallothionein 1X	2.80
NM_005953	MT2A	metallothionein 2A	2.78
NM_006868	RAB31	RAB31, member RAS oncogene family	2.74
NM_003676	DEGS1	degenerative spermatocyte homolog 1, lipid desaturase	2.67
NM_001262	CDKN2C	cyclin-dependent kinase inhibitor 2C	2.58
NM_000820	GAS6	growth arrest-specific 6 /	2.57
NM_000584	IL8	interleukin 8	2.49
NM_003709	KLF7	Kruppel-like factor 7	2.44

NM_021630	PDLIM2	PDZ and LIM domain 2	2.34
NM_133494	NEK7	NIMA (never in mitosis gene a)-related kinase 7	2.32
NM_001848	COL6A1	collagen, type VI, alpha 1	2.30
NM_001015880	PAPSS2	3'-phosphoadenosine 5'-phosphosulfate synthase 2	2.30
NM_000232	SGCB	sarcoglycan, beta	2.30
NM_015675	GADD45B	growth arrest and DNA-damage-inducible, beta	2.26
NM_001845	COL4A1	collagen, type IV, alpha 1	2.25
NM_177424	STX12	syntaxin 12	2.21
NM_007315	STAT1	signal transducer and activator of transcription 1	2.19
NM_005168	RND3	Rho family GTPase 3	2.19
NM_005627	SGK1	serum/glucocorticoid regulated kinase 1	2.19

Supplemental Table 3 Result of cDNA microarray: 106 upregulated genes in CD133⁻ MKN-7 cells in the presence or absence of co-culture with UE6E7T-12 BM-MSCs

Gene ID	Gene symbol	Gene title	Folds
NM_003118	SPARC	secreted protein, acidic, cysteine-rich	717.99
NM_000089	COL1A2	collagen, type I, alpha 2	707.13
NM_002345	LUM	lumican	248.19
NM_000358	TGFBI	transforming growth factor, beta-induced	235.32
NM_003246	THBS1	thrombospondin 1	226.97
NM_000138	FBN1	fibrillin 1	126.69
NM_000602	SERPINE1	serpin peptidase inhibitor, clade E, member 1	124.63
NM_012293	PXDN	peroxidasin homolog	111.59
NM_033138	CALD1	caldesmon 1	102.78
NM_004369	COL6A3	collagen, type VI, alpha 3	93.78
NM_002317	LOX	lysyl oxidase	93.64
NM_002998	SDC2	syndecan 2	83.90
NM_003289	TPM2	tropomyosin 2	76.49
NM_006475	POSTN	periostin, osteoblast specific factor	74.20
NM_000090	COL3A1	collagen, type III, alpha 1	71.94
NM_001627	ALCAM	activated leukocyte cell adhesion molecule	65.29
NM_003380	VIM	vimentin	61.43
NM_007805	FSTL1	folliculin-like 1	60.61
NM_002192	INHBA	inhibin, beta A	58.32
NM_015170	SULF1	sulfatase 1	57.37
NM_000393	COL5A2	collagen, type V, alpha 2	54.20
NM_006988	ADAMTS1	ADAM metalloproteinase with thrombospondin 1 motif, 1	52.95
NM_004105	EFEMP1	EGF-containing fibulin-like extracellular matrix 1	50.88
NM_003408	MFAP5	microfibrillar associated protein 5	50.29
NM_000526	KRT14	keratin 14	49.67
NM_001901	CTGF	connective tissue growth factor	48.59
NM_000609	CXCL12	chemokine (C-X-C motif) ligand 12	41.34
NM_000088	COL1A1	collagen, type I, alpha 1	40.49

NM_033664	CDH11	cadherin 11, type 2, OB-cadherin	38.44
NM_212476	FN1	fibronectin 1	36.18
NM_003186	TAGLN	transgelin	35.43
NM_174556	IGFBP3	insulin-like growth factor binding protein 3	33.81
NM_000165	GJA1	gap junction protein, alpha 1	32.67
NM_004835	VCAN	versican	31.39
NM_002727	SRGN	serglycin	29.67
NM_002852	PTX3	pentraxin-related gene, rapidly induced by IL-1 beta	26.78
NM_002167	ID3	inhibitor of DNA binding 3	23.77
NM_003068	SNAI2	snail homolog 2	22.36
NM_005613	RGS4	regulator of G-protein signaling 4	21.89
NM_000093	COL5A1	collagen, type V, alpha 1	20.38
NM_000362	TIMP3	TIMP metalloproteinase inhibitor 3	19.46
NM_001613	ACTA2	actin, alpha 2, smooth muscle, aorta	16.81
NM_004598	SPOCK1	sparc/osteonectin, cwcv and kazal-like 1	16.44
NM_006317	BASP1	brain abundant, membrane attached signal protein 1	16.41
NM_005909	MAP1B	microtubule-associated protein 1B	15.24
NM_013372	GREM1	gremlin 1, cysteine knot superfamily, homolog	15.18
NM_031442	TMEM47	transmembrane protein 47	14.61
NM_005159	ACTC1	actin, alpha, cardiac muscle 1	12.54
NM_006832	FERMT2	fermitin family homolog 2	11.72
NM_018847	KLHL9	kelch-like 9	10.63
NM_003247	THBS2	thrombospondin 2	10.06
NM_013352	DSE	dermatan sulfate epimerase	8.76
NM_002318	ENTPD4	ectonucleoside triphosphate diphosphohydrolase 4	8.42
NM_021913	AXL	AXL receptor tyrosine kinase	8.16
NM_022648	TNS1	tensin 1	7.85
NM_000961	PTGIS	prostaglandin I2 (prostacyclin) synthase	7.45
NM_006009	TUBA1A	tubulin, alpha 1a	6.15
NM_001554	CYR61	cysteine-rich, angiogenic inducer, 61	5.58
NM_016081	PALLD	palladin, cytoskeletal associated protein	4.85
NM_013409	FST	folistatin	4.70

NM_133507	DCN	decorin	4.25
NM_001458	FLNC	filamin C, gamma	4.14
NM_003392	WNT5A	wingless-type MMTV integration site family, 5A	4.01
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NM_181690	AKT3	v-akt murine thymoma viral oncogene homolog 3	3.66
NM_006039	MRC2	mannose receptor, C type 2	3.63
NM_001018004	TPM1	tropomyosin 1	3.60
NM_003097	SNRPN	small nuclear ribonucleoprotein polypeptide N	3.53
NM_001015880	PAPSS2	3'-phosphoadenosine 5'-phosphosulfate synthase 2	3.39
NM_001791	CDC42	cell division cycle 42	3.08
NM_032348	MXRA8	matrix-remodelling associated 8	3.04
NM_014840	NUAK1	NUAK family, SNF1-like kinase, 1	3.04
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NM_001321	CSRP2	cysteine and glycine-rich protein 2	2.87
NM_001015	RPS11	Ribosomal protein S11	2.85
NM_016019	LUC7L2	LUC7-like 2	2.70
NM_004772	C5orf13	chromosome 5 open reading frame 13	2.69
NM_004472	FOXD1	forkhead box D1	2.67
NM_016441	CRIM1	cysteine rich transmembrane BMP regulator 1	2.62
NM_002037	FYN	FYN oncogene related to SRC, FGR, YES	2.59
NM_001848	COL6A1	collagen, type VI, alpha 1	2.54
NM_000428	LTBP2	latent transforming growth factor beta binding protein 2	2.50
NM_002006	FGF2	fibroblast growth factor 2	2.49
NM_133494	NEK7	NIMA (never in mitosis gene a)-related kinase 7	2.48
NM_032801	JAM3	junctional adhesion molecule 3	2.47
NM_005627	SGK1	serum/glucocorticoid regulated kinase 1	2.46
NM_002718	PPP2R3A	protein phosphatase 2, regulatory subunit B", alpha	2.42
NM_006290	TNFAIP3	tumor necrosis factor, alpha-induced protein 3	2.39
NM_015148	PASK	PAS domain containing serine/threonine kinase	2.39
NM_007166	PICALM	phosphatidylinositol binding clathrin assembly protein	2.36
NM_006369	LRRC41	leucine rich repeat containing 41	2.36

NM_000232	SGCB	sarcoglycan, beta	2.34
NM_004094	EIF2S1	eukaryotic translation initiation factor 2, subunit 1 alpha	2.29
NM_005953	MT2A	metallothionein 2A	2.29
NM_024324	CRELD2	cysteine-rich with EGF-like domains 2	2.27
NM_205768	ZNF238	zinc finger protein 238	2.26
NM_001427	EN2	engrailed homeobox 2	2.25
NM_000963	PTGS2	prostaglandin-endoperoxide synthase 2	2.22
NM_016332	SEPX1	selenoprotein X, 1	2.21
NM_005730	CTDSP2	CTD (carboxy-terminal domain) small phosphatase 2	2.17
NM_013316	CNOT4	CCR4-NOT transcription complex, subunit 4	2.17
NM_024408	NOTCH2	Notch homolog 2	2.11
NM_007315	STAT1	signal transducer and activator of transcription 1	2.11
NM_001706	BCL6	B-cell CLL/lymphoma 6	2.10
NM_014363	SACS	spastic ataxia of Charlevoix-Saguenay (sacsin)	2.01
