

## MiRNAs and piRNAs from bone marrow mesenchymal stem cell extracellular vesicles induce cell survival and inhibit cell differentiation of cord blood hematopoietic stem cells: a new insight in transplantation

### Supplementary Materials

Supplementary Table S1: Mature EVs miRNAs analyzed with small RNA sequencing

Quartile	hsa-miR name	readCount	#uniqueReads	norm_expressed_all	norm_expressed_mapped
1st quartile	hsa-miR-3168	14423	65	9.04E-01	6.30E + 01
	hsa-miR-22-3p	2447	22	1.53E-01	1.07E + 01
	hsa-miR-378a-3p	775	15	4.86E-02	3.38E + 00
	hsa-miR-205-5p	523	15	3.28E-02	2.28E + 00
	hsa-miR-203a	515	20	3.23E-02	2.25E + 00
	hsa-miR-27b-3p	458	15	2.87E-02	2.00E + 00
	hsa-miR-423-5p	347	14	2.17E-02	1.52E + 00
	hsa-miR-21-5p	272	14	1.70E-02	1.19E + 00
	hsa-miR-181a-5p	231	12	1.45E-02	1.01E + 00
	hsa-miR-92a-3p	221	14	1.38E-02	9.65E - 01
	hsa-miR-146b-5p	161	10	1.01E-02	7.03E - 01
	hsa-miR-10a-5p	114	7	7.14E-03	4.98E - 01
	hsa-miR-26a-5p	112	6	7.02E-03	4.89E - 01
	hsa-miR-148a-3p	107	8	6.70E-03	4.67E - 01
	hsa-let-7f-5p	102	5	6.39E-03	4.45E - 01
	hsa-miR-486-5p	98	10	6.14E-03	4.28E - 01
	hsa-miR-28-3p	96	10	6.02E-03	4.19E - 01
	hsa-miR-4792	92	7	5.76E-03	4.02E - 01
	hsa-let-7a-5p	84	5	5.26E-03	3.67E - 01
	hsa-miR-3182	83	3	5.20E-03	3.62E - 01
hsa-miR-423-3p	80	6	5.01E-03	3.49E - 01	
2nd quartile	hsa-miR-4516	70	8	4.39E-03	3.06E - 01
	hsa-miR-1246	69	8	4.32E-03	3.01E - 01
	hsa-miR-222-3p	61	4	3.82E-03	2.66E - 01
	hsa-miR-320a	59	11	3.70E-03	2.58E - 01
	hsa-let-7i-5p	53	5	3.32E-03	2.31E - 01
	hsa-miR-4301	53	5	3.32E-03	2.31E - 01
	hsa-miR-21-3p	50	4	3.13E-03	2.18E - 01
	hsa-miR-191-5p	46	5	2.88E-03	2.01E - 01
	hsa-let-7b-5p	44	10	2.76E-03	1.92E - 01
	hsa-miR-4448	36	3	2.26E-03	1.57E - 01
	hsa-miR-127-3p	35	4	2.19E-03	1.53E - 01
	hsa-miR-92b-3p	33	4	2.07E-03	1.44E - 01
	hsa-miR-182-5p	32	5	2.01E-03	1.40E - 01
	hsa-miR-1307-5p	31	5	1.94E-03	1.35E - 01
	hsa-miR-192-5p	27	3	1.69E-03	1.18E - 01
	hsa-miR-146a-5p	26	4	1.63E-03	1.14E - 01
	hsa-miR-210-3p	23	5	1.44E-03	1.00E - 01
	hsa-miR-221-3p	23	3	1.44E-03	1.00E - 01
	hsa-miR-25-3p	21	1	1.32E-03	9.17E - 02
	hsa-miR-4488	20	5	1.25E-03	8.73E - 02
hsa-miR-432-5p	20	4	1.25E-03	8.73E - 02	
hsa-miR-30a-5p	20	2	1.25E-03	8.73E - 02	

3rd quartile	hsa-miR-769-5p	19	1	1.19E-03	8.30E-02
	hsa-miR-30e-5p	17	1	1.07E-03	7.42E-02
	hsa-miR-151a-3p	16	5	1.00E-03	6.99E-02
	hsa-miR-181b-5p	15	3	9.40E-04	6.55E-02
	hsa-let-7e-5p	15	3	9.40E-04	6.55E-02
	hsa-miR-30d-5p	14	4	8.77E-04	6.11E-02
	hsa-miR-103a-3p	14	1	8.77E-04	6.11E-02
	hsa-miR-181a-2-3p	12	3	7.52E-04	5.24E-02
	hsa-miR-30c-5p	12	2	7.52E-04	5.24E-02
	hsa-miR-532-5p	12	2	7.52E-04	5.24E-02
	hsa-let-7g-5p	10	3	6.27E-04	4.37E-02
	hsa-miR-142-5p	10	3	6.27E-04	4.37E-02
	hsa-miR-27a-5p	10	2	6.27E-04	4.37E-02
	hsa-miR-654-3p	10	1	6.27E-04	4.37E-02
	hsa-miR-3960	9	4	5.64E-04	3.93E-02
	hsa-miR-141-3p	9	2	5.64E-04	3.93E-02
	hsa-miR-27a-3p	9	2	5.64E-04	3.93E-02
	hsa-miR-223-3p	9	1	5.64E-04	3.93E-02
	hsa-miR-186-5p	8	3	5.01E-04	3.49E-02
	hsa-miR-877-5p	8	3	5.01E-04	3.49E-02
	hsa-miR-3615	8	2	5.01E-04	3.49E-02
	hsa-miR-27b-5p	8	1	5.01E-04	3.49E-02
	hsa-miR-4532	7	2	4.39E-04	3.06E-02
hsa-miR-26b-5p	7	2	4.39E-04	3.06E-02	
hsa-miR-125a-5p	7	1	4.39E-04	3.06E-02	
4th quartile	hsa-miR-212-3p	7	1	4.39E-04	3.06E-02
	hsa-miR-125b-1-3p	6	2	3.76E-04	2.62E-02
	hsa-miR-100-5p	6	2	3.76E-04	2.62E-02
	hsa-miR-150-5p	6	2	3.76E-04	2.62E-02
	hsa-miR-148b-3p	6	2	3.76E-04	2.62E-02
	hsa-miR-339-3p	6	2	3.76E-04	2.62E-02
	hsa-miR-93-3p	6	1	3.76E-04	2.62E-02
	hsa-miR-212-5p	6	1	3.76E-04	2.62E-02
	hsa-miR-1468-5p	6	1	3.76E-04	2.62E-02
	hsa-miR-574-5p	6	1	3.76E-04	2.62E-02
	hsa-miR-7641	5	2	3.13E-04	2.18E-02
	hsa-miR-31-5p	5	2	3.13E-04	2.18E-02
	hsa-miR-345-5p	5	2	3.13E-04	2.18E-02
	hsa-miR-16-5p	5	2	3.13E-04	2.18E-02
	hsa-miR-101-3p	5	2	3.13E-04	2.18E-02
	hsa-miR-130a-3p	5	1	3.13E-04	2.18E-02
	hsa-miR-205-3p	5	1	3.13E-04	2.18E-02
	hsa-miR-193b-5p	5	1	3.13E-04	2.18E-02
	hsa-miR-5096	5	1	3.13E-04	2.18E-02

**Supplementary Table S2: Differentially expressed genes in UCB-CD34+ treated with EVs vs control ( $p$ -value < 0.05, logFC = 0.7)**

ID Entrez	Symbol	Entrez Gene Name	Log Ratio
3569	IL6	interleukin 6	4.396
6346	CCL1	chemokine (C-C motif) ligand 1	3.456
1437	CSF2	colony stimulating factor 2 (granulocyte-macrophage)	3.151
10563	CXCL13	chemokine (C-X-C motif) ligand 13	3.086
10148	EBI3	Epstein-Barr virus induced 3	2.884
5743	PTGS2	prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)	2.696
6363	CCL19	chemokine (C-C motif) ligand 19	2.66
56300	IL36G	interleukin 36, gamma	2.541
6364	CCL20	chemokine (C-C motif) ligand 20	2.144
6349	CCL3L1	chemokine (C-C motif) ligand 3-like 1	2.124
83862	TMEM120A	transmembrane protein 120A	2.065
6348	CCL3	chemokine (C-C motif) ligand 3	2.034
10537	UBD	ubiquitin D	1.953
6372	CXCL6	chemokine (C-X-C motif) ligand 6	1.941
3553	IL1B	interleukin 1, beta	1.933
3627	CXCL10	chemokine (C-X-C motif) ligand 10	1.877
3488	IGFBP5	insulin-like growth factor binding protein 5	1.876
2920	CXCL2	chemokine (C-X-C motif) ligand 2	1.821
9536	PTGES	prostaglandin E synthase	1.778
3620	IDO1	indoleamine 2,3-dioxygenase 1	1.656
3779	KCNMB1	potassium large conductance calcium-activated channel, subfamily M, beta member 1	1.624
7130	TNFAIP6	tumor necrosis factor, alpha-induced protein 6	1.61
3552	IL1A	interleukin 1, alpha	1.584
4502	MT2A	metallothionein 2A	1.572
6648	SOD2	superoxide dismutase 2, mitochondrial	1.547
2919	CXCL1	chemokine (C-X-C motif) ligand 1	1.45
57817	HAMP	hepcidin antimicrobial peptide	1.426
4495	MT1G	metallothionein 1G	1.424
8710	SERPINB7	serpin peptidase inhibitor, clade B (ovalbumin), member 7	1.416
4489	MT1A	metallothionein 1A	1.407
114614	MIR155HG	MIR155 host gene (non-protein coding)	1.394
11009	IL24	interleukin 24	1.389
5327	PLAT	plasminogen activator, tissue	1.387
2633	GBP1	guanylate binding protein 1, interferon-inducible	1.348
1236	CCR7	chemokine (C-C motif) receptor 7	1.279
6775	STAT4	signal transducer and activator of transcription 4	1.279
4790	NFKB1	nuclear factor of kappa light polypeptide gene enhancer in B-cells 1	1.277
6890	TAP1	transporter 1, ATP-binding cassette, sub-family B (MDR/TAP)	1.236

<b>3669</b>	ISG20	interferon stimulated exonuclease gene 20kDa	1.235
<b>1462</b>	VCAN	versican	1.226
<b>22846</b>	VASH1	vasohibin 1	1.219
<b>94235</b>	GNG8	guanine nucleotide binding protein (G protein), gamma 8	1.211
<b>5996</b>	RGS1	regulator of G-protein signaling 1	1.194
<b>5553</b>	PRG2	proteoglycan 2, bone marrow (natural killer cell activator, eosinophil granule major basic protein)	1.186
<b>8809</b>	IL18R1	interleukin 18 receptor 1	1.185
<b>6367</b>	CCL22	chemokine (C-C motif) ligand 22	1.181
<b>114897</b>	C1QTNF1	C1q and tumor necrosis factor related protein 1	1.149
<b>8743</b>	TNFSF10	tumor necrosis factor (ligand) superfamily, member 10	1.144
<b>9662</b>	CEP135	centrosomal protein 135kDa	1.131
<b>5366</b>	PMAIP1	phorbol-12-myristate-13-acetate-induced protein 1	1.107
<b>145864</b>	HAPLN3	hyaluronan and proteoglycan link protein 3	1.1
<b>9367</b>	RAB9A	RAB9A, member RAS oncogene family	1.07
<b>4499</b>	MT1M	metallothionein 1M	1.067
<b>64092</b>	SAMSN1	SAM domain, SH3 domain and nuclear localization signals 1	1.065
<b>7292</b>	TNFSF4	tumor necrosis factor (ligand) superfamily, member 4	1.065
<b>11001</b>	SLC27A2	solute carrier family 27 (fatty acid transporter), member 2	1.053
<b>115361</b>	GBP4	guanylate binding protein 4	1.033
<b>8870</b>	IER3	immediate early response 3	1.029
<b>23180</b>	RFTN1	raftlin, lipid raft linker 1	1.022
<b>3429</b>	IFI27	interferon, alpha-inducible protein 27	1.021
<b>3559</b>	IL2RA	interleukin 2 receptor, alpha	1.016
<b>57801</b>	HES4	hes family bHLH transcription factor 4	1.015
<b>7453</b>	WARS	tryptophanyl-tRNA synthetase	0.993
<b>3589</b>	IL11	interleukin 11	0.989
<b>135</b>	ADORA2A	adenosine A2a receptor	0.983
<b>2532</b>	ACKR1	atypical chemokine receptor 1 (Duffy blood group)	0.971
<b>10135</b>	NAMPT	nicotinamide phosphoribosyltransferase	0.97
<b>10538</b>	BATF	basic leucine zipper transcription factor, ATF-like	0.967
<b>11040</b>	PIM2	Pim-2 proto-oncogene, serine/threonine kinase	0.96
<b>6624</b>	FSCN1	fascin actin-bundling protein 1	0.956
<b>4885</b>	NPTX2	neuronal pentraxin II	0.953
<b>51312</b>	SLC25A37	solute carrier family 25 (mitochondrial iron transporter), member 37	0.952
<b>56265</b>	CPXM1	carboxypeptidase X (M14 family), member 1	0.951
<b>115362</b>	GBP5	guanylate binding protein 5	0.947
<b>388372</b>	CCL4L1/ CCL4L2	chemokine (C-C motif) ligand 4-like 1	0.931
<b>3456</b>	IFNB1	interferon, beta 1, fibroblast	0.93
<b>11274</b>	USP18	ubiquitin specific peptidase 18	0.93
<b>9173</b>	IL1RL1	interleukin 1 receptor-like 1	0.927
<b>9638</b>	FEZ1	fasciculation and elongation protein zeta 1 (zygin I)	0.926
<b>51561</b>	IL23A	interleukin 23, alpha subunit p19	0.923

306	ANXA3	annexin A3	0.909
2706	GJB2	gap junction protein, beta 2, 26kDa	0.908
9242	MSC	musculin	0.9
7295	TXN	thioredoxin	0.897
8140	SLC7A5	solute carrier family 7 (amino acid transporter light chain, L system), member 5	0.895
8738	CRADD	CASP2 and RIPK1 domain containing adaptor with death domain	0.891
10409	BASP1	brain abundant, membrane attached signal protein 1	0.881
64218	SEMA4A	sema domain, immunoglobulin domain (Ig), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 4A	0.879
57007	ACKR3	atypical chemokine receptor 3	0.869
139411	PTCHD1	patched domain containing 1	0.862
4791	NFKB2	nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100)	0.856
11182	SLC2A6	solute carrier family 2 (facilitated glucose transporter), member 6	0.855
5209	PFKFB3	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3	0.843
4049	LTA	lymphotoxin alpha	0.829
4001	LMNB1	lamin B1	0.818
23413	NCS1	neuronal calcium sensor 1	0.818
5008	OSM	oncostatin M	0.814
890	CCNA2	cyclin A2	0.801
3576	CXCL8	chemokine (C-X-C motif) ligand 8	0.8
375449	MAST4	microtubule associated serine/threonine kinase family member 4	0.792
83641	FAM107B	family with sequence similarity 107, member B	0.792
23753	SDF2L1	stromal cell-derived factor 2-like 1	0.787
3604	TNFRSF9	tumor necrosis factor receptor superfamily, member 9	0.787
10938	EHD1	EH-domain containing 1	0.784
127544	RNF19B	ring finger protein 19B	0.774
970	CD70	CD70 molecule	0.765
644314	MT1IP	metallothionein 1I, pseudogene	0.764
1847	DUSP5	dual specificity phosphatase 5	0.762
55848	PLGRKT	plasminogen receptor, C-terminal lysine transmembrane protein	0.762
135112	NCOA7	nuclear receptor coactivator 7	0.761
9833	MELK	maternal embryonic leucine zipper kinase	0.759
10410	IFITM3	interferon induced transmembrane protein 3	0.754
6373	CXCL11	chemokine (C-X-C motif) ligand 11	0.754
22875	ENPP4	ectonucleotide pyrophosphatase/phosphodiesterase 4 (putative)	0.752
29957	SLC25A24	solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 24	0.751
654	BMP6	bone morphogenetic protein 6	0.739
51316	PLAC8	placenta-specific 8	0.739
8651	SOCS1	suppressor of cytokine signaling 1	0.737
9595	CYTIP	cytohesin 1 interacting protein	0.734
7128	TNFAIP3	tumor necrosis factor, alpha-induced protein 3	0.734
2117	ETV3	ets variant 3	0.728
4494	MT1F	metallothionein 1F	0.724

<b>25805</b>	BAMBI	BMP and activin membrane-bound inhibitor	0.723
<b>4091</b>	SMAD6	SMAD family member 6	0.716
<b>8544</b>	PIR	pirin (iron-binding nuclear protein)	0.713
<b>952</b>	CD38	CD38 molecule	0.707
<b>4312</b>	MMP1	matrix metalloproteinase 1 (interstitial collagenase)	0.703
<b>5698</b>	PSMB9	proteasome (prosome, macropain) subunit, beta type, 9	0.703
<b>4493</b>	MT1E	metallothionein 1E	0.701
<b>64108</b>	RTP4	receptor (chemosensory) transporter protein 4	0.7
<b>56603</b>	CYP26B1	cytochrome P450, family 26, subfamily B, polypeptide 1	-0.701
<b>9920</b>	KBTBD11	kelch repeat and BTB (POZ) domain containing 11	-0.702
<b>55357</b>	TBC1D2	TBC1 domain family, member 2	-0.708
<b>30061</b>	SLC40A1	solute carrier family 40 (iron-regulated transporter), member 1	-0.711
<b>23643</b>	LY96	lymphocyte antigen 96	-0.712
<b>8854</b>	ALDH1A2	aldehyde dehydrogenase 1 family, member A2	-0.712
<b>166012</b>	CHST13	carbohydrate (chondroitin 4) sulfotransferase 13	-0.717
<b>284422</b>	SMIM24	small integral membrane protein 24	-0.721
<b>440712</b>	C1orf186	chromosome 1 open reading frame 186	-0.722
<b>3490</b>	IGFBP7	insulin-like growth factor binding protein 7	-0.724
<b>23646</b>	PLD3	phospholipase D family, member 3	-0.725
<b>4048</b>	LTA4H	leukotriene A4 hydrolase	-0.735
<b>2354</b>	FOSB	FBJ murine osteosarcoma viral oncogene homolog B	-0.737
<b>2208</b>	FCER2	Fc fragment of IgE, low affinity II, receptor for (CD23)	-0.74
<b>6037</b>	RNASE3	ribonuclease, RNase A family, 3	-0.742
<b>222166</b>	MTURN	maturin, neural progenitor differentiation regulator homolog (Xenopus)	-0.742
<b>1848</b>	DUSP6	dual specificity phosphatase 6	-0.743
<b>11098</b>	PRSS23	protease, serine, 23	-0.745
<b>1393</b>	CRHBP	corticotropin releasing hormone binding protein	-0.747
<b>847</b>	CAT	catalase	-0.752
<b>10870</b>	HCST	hematopoietic cell signal transducer	-0.758
<b>442582</b>	STAG3L2/ STAG3L3	stromal antigen 3-like 3	-0.758
<b>1027</b>	CDKN1B	cyclin-dependent kinase inhibitor 1B (p27, Kip1)	-0.764
<b>51738</b>	GHRL	ghrelin/obestatin prepropeptide	-0.766
<b>11010</b>	GLIPR1	GLI pathogenesis-related 1	-0.77
<b>56833</b>	SLAMF8	SLAM family member 8	-0.771
<b>6036</b>	RNASE2	ribonuclease, RNase A family, 2 (liver, eosinophil-derived neurotoxin)	-0.775
<b>645638</b>	WFDC21P	WAP four-disulfide core domain 21, pseudogene	-0.779
<b>81501</b>	DCSTAMP	dendrocyte expressed seven transmembrane protein	-0.779
<b>3202</b>	HOXA5	homeobox A5	-0.788
<b>3045</b>	HBD	hemoglobin, delta	-0.788
<b>5997</b>	RGS2	regulator of G-protein signaling 2	-0.788
<b>10365</b>	KLF2	Kruppel-like factor 2	-0.79
<b>6518</b>	SLC2A5	solute carrier family 2 (facilitated glucose/fructose transporter), member 5	-0.794

<b>6503</b>	SLA	Src-like-adaptor	-0.802
<b>284</b>	ANGPT1	angiopoietin 1	-0.802
<b>10184</b>	LHFPL2	lipoma HMGIC fusion partner-like 2	-0.806
<b>84803</b>	AGPAT9	1-acylglycerol-3-phosphate O-acyltransferase 9	-0.81
<b>10261</b>	IGSF6	immunoglobulin superfamily, member 6	-0.817
<b>6281</b>	S100A10	S100 calcium binding protein A10	-0.818
<b>6386</b>	SDCBP	syndecan binding protein (syntenin)	-0.82
<b>1992</b>	SERPINB1	serpin peptidase inhibitor, clade B (ovalbumin), member 1	-0.823
<b>137075</b>	CLDN23	claudin 23	-0.839
<b>2745</b>	GLRX	glutaredoxin (thioltransferase)	-0.84
<b>79026</b>	AHNAK	AHNAK nucleoprotein	-0.843
<b>4071</b>	TM4SF1	transmembrane 4 L six family member 1	-0.867
<b>1991</b>	ELANE	elastase, neutrophil expressed	-0.869
<b>23601</b>	CLEC5A	C-type lectin domain family 5, member A	-0.872
<b>9332</b>	CD163	CD163 molecule	-0.878
<b>2359</b>	FPR3	formyl peptide receptor 3	-0.884
<b>3205</b>	HOXA9	homeobox A9	-0.889
<b>9834</b>	KIAA0125	KIAA0125	-0.89
<b>4613</b>	MYCN	v-myc avian myelocytomatosis viral oncogene neuroblastoma derived homolog	-0.894
<b>64798</b>	DEPTOR	DEP domain containing MTOR-interacting protein	-0.899
<b>8334</b>	HIST1H2AC	histone cluster 1, H2ac	-0.899
<b>10577</b>	NPC2	Niemann-Pick disease, type C2	-0.9
<b>123</b>	PLIN2	perilipin 2	-0.926
<b>2205</b>	FCER1A	Fc fragment of IgE, high affinity I, receptor for; alpha polypeptide	-0.929
<b>2124</b>	EVI2B	ecotropic viral integration site 2B	-0.947
<b>1230</b>	CCR1	chemokine (C-C motif) receptor 1	-0.971
<b>10437</b>	IFI30	interferon, gamma-inducible protein 30	-0.994
<b>10077</b>	TSPAN32	tetraspanin 32	-1.001
<b>3988</b>	LIPA	lipase A, lysosomal acid, cholesterol esterase	-1.022
<b>7305</b>	TYROBP	TYRO protein tyrosine kinase binding protein	-1.025
<b>55803</b>	ADAP2	ArfGAP with dual PH domains 2	-1.03
<b>2268</b>	FGR	FGR proto-oncogene, Src family tyrosine kinase	-1.042
<b>7941</b>	PLA2G7	phospholipase A2, group VII (platelet-activating factor acetylhydrolase, plasma)	-1.072
<b>678</b>	ZFP36L2	ZFP36 ring finger protein-like 2	-1.072
<b>27128</b>	CYTH4	cytohesin 4	-1.075
<b>11027</b>	LILRA2	leukocyte immunoglobulin-like receptor, subfamily A (with TM domain), member 2	-1.075
<b>4973</b>	OLR1	oxidized low density lipoprotein (lectin-like) receptor 1	-1.082
<b>54360</b>	CYTL1	cytokine-like 1	-1.115
<b>1178</b>	CLC	Charcot-Leyden crystal galectin	-1.144
<b>10457</b>	GPNMB	glycoprotein (transmembrane) nmb	-1.179
<b>1050</b>	CEBPA	CCAAT/enhancer binding protein (C/EBP), alpha	-1.182
<b>255631</b>	COL24A1	collagen, type XXIV, alpha 1	-1.23



1593	CYP27A1	cytochrome P450, family 27, subfamily A, polypeptide 1	-1.241
6446	SGK1	serum/glucocorticoid regulated kinase 1	-1.272
1536	CYBB	cytochrome b-245, beta polypeptide	-1.302
199675	MCEMP1	mast cell-expressed membrane protein 1	-1.308
4352	MPL	MPL proto-oncogene, thrombopoietin receptor	-1.329
301	ANXA1	annexin A1	-1.391
25907	TMEM158	transmembrane protein 158 (gene/pseudogene)	-1.393
7045	TGFBI	transforming growth factor, beta-induced, 68kDa	-1.397
6691	SPINK2	serine peptidase inhibitor, Kazal type 2	-1.434
1545	CYP1B1	cytochrome P450, family 1, subfamily B, polypeptide 1	-1.448
54	ACP5	acid phosphatase 5, tartrate resistant	-1.492
4318	MMP9	matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)	-1.518
1436	CSF1R	colony stimulating factor 1 receptor	-1.55
28984	RGCC	regulator of cell cycle	-1.634
1514	CTSL	cathepsin L	-1.657
2012	EMP1	epithelial membrane protein 1	-1.669
1043	CD52	CD52 molecule	-1.747
1959	EGR2	early growth response 2	-1.8
4353	MPO	myeloperoxidase	-2.024
4069	LYZ	lysozyme	-2.071
6354	CCL7	chemokine (C-C motif) ligand 7	-2.085
5473	PPBP	pro-platelet basic protein	-2.468
2203	FBP1	fructose-1,6-bisphosphatase 1	-2.989
6369	CCL24	chemokine (C-C motif) ligand 24	-3.003

**Supplementary Table S3: Correlation of sequenced EVs piRNAs and down-regulated target genes in UCB-Cd34+ treated with BM-MSC-EVs ( $p$ -value < 0.05, logFC = -0.4)**

miRNA		Regulated genes
<i>Name</i>	<i>readCount</i>	<i>Symbol (Entrez Gene ID)</i>
hsa_piR_004307_DQ575881	2965.67	FES (2242)
hsa_piR_017723_DQ594464	643.333	FOS (2353), HNRNPA0 (10949), RABGAP1 (23637)
hsa_piR_020814_DQ598650	13	CDK6 (1021), HBG2 (3048), MAP3K1 (4214), MPO (4353), RYR3 (6263), SLAMF8 (56833), SLC2A5 (6518), SOX4 (6659), STOM (2040), TPPI1 (1200), YPEL5 (51646)
hsa_piR_016745_DQ593052	11.6667	ANKRD28 (23243)
hsa_piR_002732_DQ573682	6	CYP1B1 (1545), USP3 (1545)



**Supplementary Table S4: Molecular and cellular functions of down-regulated piRNAs targeted genes ( $p$ -value < 0.05, logFC = -0.4)**

Gene Ontology Bio Functions	$p$ -value
<i>Molecular and Cellular Functions</i>	
<b>Cell Morphology</b>	$3.28^{-02}$ – $3.54^{-05}$
<b>Cellular Compromise</b>	$2.95^{-02}$ – $4.35^{-04}$
<b>Cell Death and Survival</b>	$3.12^{-02}$ – $4.85^{-04}$
<b>Cellular Development</b>	$3.12^{-02}$ – $5.01^{-04}$
<b>Cellular Growth and Proliferation</b>	$2.95^{-02}$ – $5.01^{-04}$