

Table S1. circRNA-miRNA interaction pairs

Up-regulation	Down-regulation
hsa_circ_0099630	hsa-miR-339-5p
hsa_circ_0099630	hsa-miR-370-3p
hsa_circ_0099630	hsa-miR-6856-5p
hsa_circ_0099630	hsa-miR-671-3p
hsa_circ_0099630	hsa-miR-7706
hsa_circ_0101692	hsa-miR-23b-5p
hsa_circ_0101692	hsa-miR-23a-5p
hsa_circ_0101692	hsa-miR-3605-5p
hsa_circ_0101692	hsa-miR-181c-3p
hsa_circ_0131845	hsa-miR-769-5p
hsa_circ_0131845	hsa-miR-769-3p
hsa_circ_0131845	hsa-miR-6856-5p
hsa_circ_0031594	hsa-miR-23b-5p
hsa_circ_0031594	hsa-miR-1260b
hsa_circ_0031594	hsa-miR-23a-5p
hsa_circ_0031594	hsa-miR-224-5p
hsa_circ_0031594	hsa-miR-181c-3p
hsa_circ_0031594	hsa-miR-6507-5p
hsa_circ_0031594	hsa-miR-6793-5p
hsa_circ_0031594	hsa-miR-518c-5p

Table S1. circRNA-miRNA interaction pairs

Down-regulation	Up-regulation
hsa_circ_0130618	hsa-mir-3936
hsa_circ_0130619	hsa-mir-4675
hsa_circ_0130619	hsa-miR-6792-3p
hsa_circ_0130619	hsa-mir-3936
hsa_circ_0130619	hsa-miR-619-3p
hsa_circ_0130619	hsa-mir-765
hsa_circ_0130619	hsa-miR-3124-3p
hsa_circ_0130619	hsa-mir-2113
hsa_circ_0130619	hsa-miR-1236-3p
hsa_circ_0130619	hsa-miR-7106-3p
hsa_circ_0130619	hsa-miR-4649-3p
hsa_circ_0130619	hsa-mir-4487
hsa_circ_0130619	hsa-miR-1976
hsa_circ_0130619	hsa-mir-4417
hsa_circ_0130619	hsa-miR-877-5p
hsa_circ_0130619	hsa-miR-1207-5p
hsa_circ_0130619	hsa-miR-6775-5p
hsa_circ_0130619	hsa-miR-5787
hsa_circ_0130619	hsa-miR-4270
hsa_circ_0130619	hsa-miR-149-3p
hsa_circ_0130619	hsa-miR-6743-5p
hsa_circ_0059817	hsa-miR-6505-5p
hsa_circ_0059817	hsa-miR-4649-3p
hsa_circ_0059817	hsa-mir-4314
hsa_circ_0059817	hsa-mir-4417
hsa_circ_0059817	hsa-mir-4530
hsa_circ_0059817	hsa-miR-1207-5p
hsa_circ_0059817	hsa-miR-6775-5p
hsa_circ_0059817	hsa-miR-6743-5p
hsa_circ_0011489	hsa-mir-4675
hsa_circ_0011489	hsa-miR-1236-3p
hsa_circ_0011489	hsa-miR-6792-3p
hsa_circ_0011489	hsa-mir-4314
hsa_circ_0011489	hsa-mir-4487
hsa_circ_0011489	hsa-miR-6775-5p
hsa_circ_0011489	hsa-miR-1207-5p
hsa_circ_0011489	hsa-miR-4270
hsa_circ_0011489	hsa-miR-5787
hsa_circ_0011489	hsa-miR-6743-5p
hsa_circ_0011489	hsa-miR-149-3p
hsa_circ_0094266	hsa-miR-1236-3p
hsa_circ_0094266	hsa-miR-149-3p

Table S2. miRNA-mRNA interaction pairs

Up-regulation	Down-regulation
hsa-miR-7106-3p	PLEKHG4B
hsa-miR-7106-3p	PTPRJ
hsa-miR-6792-3p	PLCXD3
hsa-miR-6792-3p	MMP2
hsa-miR-6792-3p	ZNF652
hsa-miR-6792-3p	SLC25A4
hsa-miR-6775-5p	HNRNPC
hsa-miR-6743-5p	MKNK2
hsa-miR-6505-5p	SLC25A37
hsa-miR-5787	MNT
hsa-miR-5787	RAP1GAP2
hsa-miR-4649-3p	APAF1
hsa-miR-4649-3p	TFCP2L1
hsa-miR-4649-3p	QSOX1
hsa-miR-4649-3p	CRY2
hsa-mir-4530	ORC4
hsa-mir-4487	SETD3
hsa-mir-4487	AP1G1
hsa-miR-4270	ZNF471
hsa-miR-4270	MNT
hsa-miR-4270	PCSK2
hsa-miR-4270	KRT80
hsa-miR-4270	SOAT1
hsa-miR-3124-3p	ALDH18A1
hsa-miR-3124-3p	LRP6
hsa-miR-3124-3p	ID4
hsa-miR-3124-3p	ZNF138
hsa-mir-2113	SOCS1
hsa-mir-2113	SLC38A1
hsa-mir-2113	ELL2
hsa-miR-1976	GK5
hsa-miR-1976	ZNF667
hsa-miR-1236-3p	PIGR
hsa-miR-1236-3p	ZCCHC2
hsa-miR-1236-3p	TM9SF3
hsa-miR-1207-5p	ZNF471
hsa-miR-1207-5p	MNT
hsa-miR-1207-5p	EDAR
hsa-miR-1207-5p	FOLR1
hsa-miR-1207-5p	KRT80
hsa-miR-1207-5p	PPM1L
hsa-miR-1207-5p	HDLBP
hsa-miR-1207-5p	ACACA
hsa-mir-765	SAMD4B
hsa-mir-765	SLITRK5
hsa-mir-765	NFIX
hsa-mir-765	RAB2A
hsa-mir-765	SIX3
hsa-mir-765	ATG13
hsa-miR-619-3p	RNF128
hsa-miR-149-3p	SLITRK5
hsa-miR-149-3p	NFIX
hsa-miR-149-3p	PIGR
hsa-miR-149-3p	CHST1
hsa-miR-149-3p	MNT
hsa-miR-149-3p	DUSP4

hsa-miR-149-3p	KRT80
hsa-miR-149-3p	ATP2A3
hsa-miR-149-3p	PLEKHH1
hsa-miR-149-3p	RAD51B
hsa-miR-149-3p	TMEM120B
hsa-miR-149-3p	ENTPD7
hsa-miR-149-3p	MORC4
hsa-miR-149-3p	MLEC
hsa-miR-149-3p	GCDH
hsa-miR-149-3p	CRIP1
hsa-miR-149-3p	MKNK2
hsa-miR-149-3p	MSMO1

Table S2. miRNA-mRNA interaction pairs

Down-regulation	Up-regulation
hsa_miR-6856-5p	RPS6KA3
hsa_miR-6856-5p	LAPTM4B
hsa_miR-6856-5p	SFMBT2
hsa_miR-6856-5p	CBX6
hsa_miR-6856-5p	TMEM43
hsa-miR-518c-5p	C1R
hsa-miR-769-3p	STMN1
hsa-miR-1260b	NCAPG2
hsa-miR-1260b	ZNF367
hsa-miR-1260b	SMOC1
hsa-miR-3605-5p	CAMK4
hsa-miR-3605-5p	ADAM12
hsa-miR-6507-5p	RACGAP1
hsa-miR-6507-5p	STK4
hsa-miR-6507-5p	CHEK1
hsa-miR-6507-5p	MOB1A
hsa-miR-6507-5p	SNX10
hsa-miR-6507-5p	PRC1
hsa-miR-6507-5p	ITGB8
hsa-miR-6793-5p	PLIN3

Table S3. GO enrichment analysis results

Term	Count	Pvalue	group
tube formation	5	0.000323188	BP
stem cell proliferation	3	0.012498254	BP
neutrophil degranulation	5	0.045455426	BP
positive regulation of cell cycle	4	0.071340266	BP
neutrophil activation involved in immune response	5	0.046459888	BP
neutrophil activation	5	0.049903986	BP
regulation of cell cycle G2/M phase transition	2	0.210914398	BP
fibrillar center	4	0.001780348	CC
extrinsic component of membrane	4	0.028354204	CC
nuclear membrane	4	0.028659877	CC
protein serine/threonine kinase activity	5	0.038523518	MF
kinase regulator activity	4	0.011583666	MF
transcription corepressor activity	4	0.01843276	MF

Table S4: KEGG enrichment analysis results

Term	Count	Pvalue
Long-term potentiation	2	0.039176824
p53 signaling pathway	2	0.045759395
Arrhythmogenic right ventricular cardiomyopathy	2	0.050359342
Longevity regulating pathway	2	0.065093696
Insulin signaling pathway	3	0.025980017
Spinocerebellar ataxia	3	0.029012191
MAPK signaling pathway	5	0.01146885
Cell cycle	2	0.114618953
Alzheimer disease	5	0.032383311