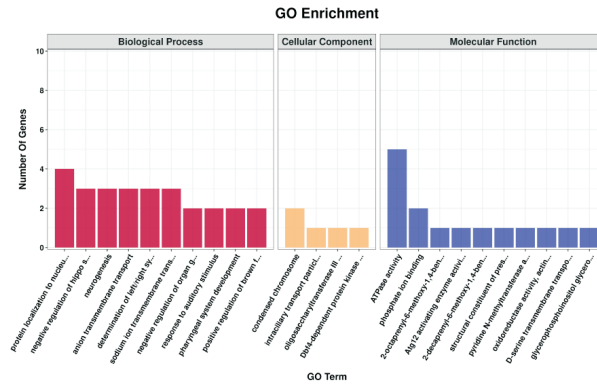


Figure S1 Uptake of cBDEVs and Se-BDEVs. cBDEVs and Se-BDEVs labeled with PKH-26 were observed by fluorescence microscopy with the view of the light field, scale bar = 50 μ m.

A



B

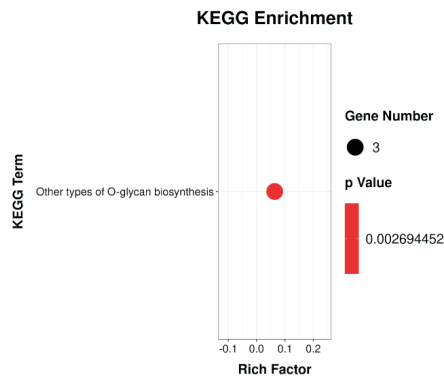


Figure S2 Functional analysis of *peu*-miR2916-p5_1ss3AG (miR2916-p5) target genes (TGs). (A) GO analysis of miR2916-p5 TGs. (B) KEGG enrichment analysis of miR2916-p5 TGs.

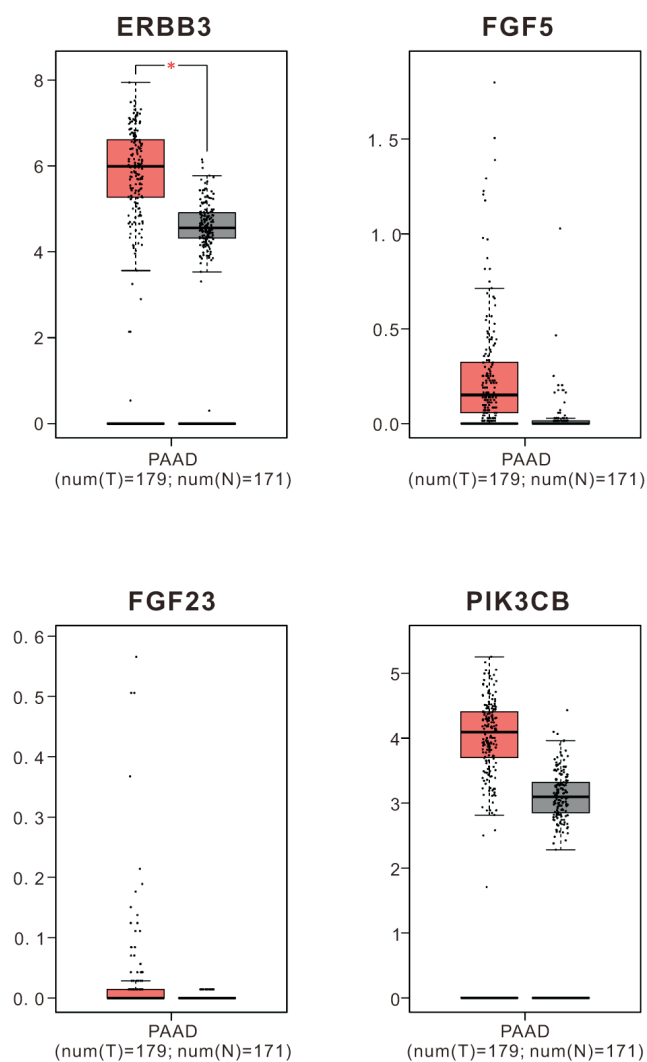


Figure S3 Gene Expression Profiling Interactive Analysis (GEPIA) was utilized for analyzing ERBB3, FGF23, PIK3CB, and FGF5 expression in pancreatic cancer and normal tissues. * $p < 0.05$.

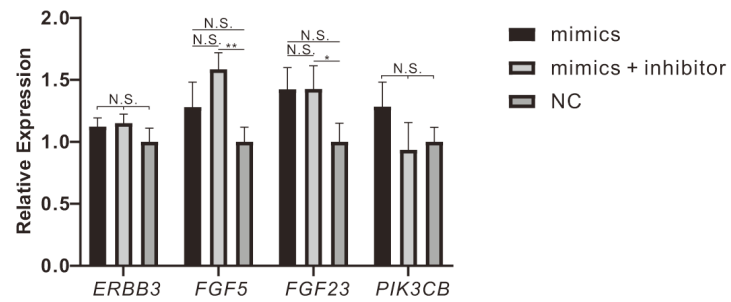


Figure S4 RT-PCR was utilized for detecting ERBB3, FGF5, FGF23, and PIK3CB expression in PANC-1 cells transfected with miR167a mimics, miR167a mimics + inhibitor, and miR167a NC, respectively. * $p < 0.05$, ** $p < 0.01$, N.S., not significant.

Supplementary Table 1. All annotated miRNAs in miRNA-seq

miR_name	annotation	miR_seq	up/down	pvalue(t_test)	BDEVs(mean)	Se-BDEVs(mean)	log2(fold_change)	BDEVs_1	BDEVs_2	Se-BDEVs_1	Se-BDEVs_2	Se-BDEVs_3
bna-miR159_R-3	known	TTGGATTGAAGGGAGCT	up	0.147394396	90.63025728	131.9645619	0.542085871	90.90	90.36	154.68	144.60	96.61
bra-miR158-3p	candidate	TTTCCAAATGTAGACAAAGCA	down	0.5	8.521807796	0	-inf	17.04	0	0	0	0
bna-miR394a	known	TTGGCATTCTGTCCACCTCC	up	0.293112393	0	10.99288299	inf	0	0	26.02	0	6.96
aly-miR319c-3p_R-1	candidate	TTGGACTGAAGGGAGCTCCT	up	0.231391349	1.928399145	43.10936448	4.482525694	0.71	3.15	28.91	90.38	10.04
aly-miR319a-3p_R-1	candidate	TTGGACTGAAGGGAGCTCCC	up	0.104884606	0.844553847	26.86792195	4.991551524	0.71	0.98	33.73	38.16	8.71
aly-miR858-5p_L-1R-1	candidate	TTCGTTGTCTGTTTCGACCT	up	0.422649731	0	0.662610191	inf	0	0	0	0	1.99
cca-miR6118-3p_1ss15AG	candidate	TTCCGAGGCCACCCGTTC AAC	down	0.5	1.657018183	0	-inf	3.31	0	0	0	0
bna-miR396a	known	TTCCACAGCTTCTTGAACCT	down	0.5	1.420301299	0	-inf	2.84	0	0	0	0
bol-miR398a-3p_R-2	candidate	TGTGTTCTCAGGTCACCCC	up	0.422649731	0	1.987830573	inf	0	0	0	0	5.96
bra-miR164a	candidate	TGGAGAAGCAGGTCACGTGCA	down	0.5	1.301942858	0	-inf	2.60	0	0	0	0
bna-miR160a_R-1	known	TGCCTGGCTCCCTGTGATGCC	up	0.422649731	0	0.185530853	inf	0	0	0	0	0.56
cas-miR408_L-1R+1	candidate	TGCACTGCCTCTTCCTGGCT	up	0.31275874	0	19.96183996	inf	0	0	49.15	0	10.73
cme-miR171h_R-2	candidate	TGATTGAGCCGCGTCAATA	up	0.422649731	0	0.530088153	inf	0	0	0	0	1.59
bna-miR171f	known	TGATTGAGCCGCGCCAATATC	down	0.5	0.631245022	0	-inf	1.26	0	0	0	0
cca-MIR167-p3_2ss3TA17TA_3	candidate	TGAGTGTGTGTGTGTGAGTGTGT	down	0.5	46.15979223	0	-inf	92.32	0	0	0	0
cca-MIR167-p3_2ss3TA17TA_2	candidate	TGAGTGTGTGTGTGTGAGTGTG	down	0.5	46.15979223	0	-inf	92.32	0	0	0	0
cca-MIR167-p5_2ss3TA17TA_1	candidate	TGAGTGTGTGTGTGTGAGTGT	down	0.5	46.15979223	0	-inf	92.32	0	0	0	0
cca-MIR167-p3_2ss3TA17TA_1	candidate	TGAGTGTGTGTGTGTGAGTGT	down	0.5	46.15979223	0	-inf	92.32	0	0	0	0
bna-miR156a_R-1	known	TGACAGAAGAGAGTGAGCAC	down	0.5	0.184113131	0	-inf	0.37	0	0	0	0
bna-miR167a_R-2	known	TGAAGCTGCCAGCATGATCT	up	0.013930886	0.235998573	9.681946181	5.358447033	0	0.47	7.95	12.05	9.04
aly-MIR408-p3_2ss15TC17TG	candidate	TCTCTCTCTCCTCCCGCTC	down	0.5	2.603885715	0	-inf	5.21	0	0	0	0
bra-MIR5719-p3_1ss21AT	candidate	TCGGATTATCATCACAACT	up	0.459089184	0.131110318	1.45774242	3.474882686	0	0.26	0	0	4.37
bna-miR166a	known	TCGGACCAGGCTTCATTCCCC	up	0.143133343	2.397641521	23.60964608	3.299688537	4.66	0.14	24.58	39.16	7.09
stu-miR166b_2ss20TC21CA	candidate	TCGGACCAGGCTTCATTCCCA	down	0.5	4.497620781	0	-inf	9.00	0	0	0	0
bna-miR166f	known	TCGGACCAGGCTTCATTCCCC	up	0.20628029	0	38.09572613	inf	0	0	26.02	78.33	9.94
bna-miR168a_R-1	known	TCGCTTGGTGCAGGTCGGGA	down	0.413736921	1.74843625	0	-inf	3.08	0.42	0	0	0
bra-miR162-3p_R-1	candidate	TCGATAAACCTCTGCATCCA	up	0.422649731	0	9.63749702	inf	0	0	28.91	0	0
ath-miR8175_L-2	candidate	TCCCCGCAACGGCGCCA	down	0.711854249	2.812225604	1.855308534	-0.600053212	4.26	1.36	0	0	5.57
bol-miR824	candidate	TAGACCATTGTGAGAAAGGA	down	0.5	1.657018183	0	-inf	3.31	0	0	0	0
bol-MIR172b-p5	candidate	GCAGCACCATTAAGATTACACA	down	0.5	1.657018183	0	-inf	3.31	0	0	0	0
peu-MIR2916-p3_2ss17TC18GA	candidate	GATGCCGACCAGGGATCAGCGGA	down	0.147394396	416.0136686	291.215208	-0.514545232	415.20	416.83	222.63	253.06	397.96
bra-miR158-5p	candidate	CTTTGTCTATCGTTGGAAAAG	up	0.576334385	0.471997146	1.45774242	1.626885779	0	0.94	0	0	4.37
nta-MIR168a-p3_2ss17AG18AG	candidate	CGGTGGCGGCGGCGGCGG	down	0.5	4.615979223	0	-inf	9.23	0	0	0	0
nta-MIR168a-p5_2ss3CG20AG	candidate	CGGCGGTGGCGGCGGCGGCG	down	0.5	16.80689871	0	-inf	33.61	0	0	0	0
nta-MIR168a-p3_1ss3CG	candidate	CGGCGGTGGCGGCGGCGGCG	down	0.5	1.893735066	0	-inf	3.79	0	0	0	0
peu-MIR2916-p5_1ss3AG	candidate	CCGTCTAGTCTCAACCATA	down	0.035932799	585.0173644	66.91125324	-3.128158676	503.26	666.77	20.24	0	180.50
bra-miR1885a	candidate	CATCAATGAAAGGTATGATTCC	down	0.5	1.183584416	0	-inf	2.37	0	0	0	0
bra-miR164e-3p_R-1	candidate	CACGTGCTCCCTCCTCCAA	up	0.422649731	0	0.662610191	inf	0	0	0	0	1.99
bol-miR172a_R-1	candidate	AGAATCTTGTATGATGCTGCA	down	0.695671822	1.538659741	0.72887121	-1.077938409	3.08	0	0	0	2.19
mdm-MIR167f-p3_2ss8GA17TG	candidate	AGAAGGAAAAGAAGAAGGA	down	0.5	2.367168832	0	-inf	4.73	0	0	0	0
ppe-miR1511-3p_L+1R-4	candidate	AACTGGCTCTGATACCA	down	0.5	1.183584416	0	-inf	2.37	0	0	0	0

Supplementary table 2. Targets genes of the 41 annotated miRNAs (a total of 2556 target genes)

Symbol NAME									
HOXA11	HNRNPDL	ALDH9A1	INO80D	AC018630.2	INF2	ZER1	PDAP1	RASSF7	CDAN1
RPUSD1	FSTL1	AK2	ORAI2	CORO1B	ANKRD26	CCR5	RHOG	CHMP1A	ASAH2B
SPRTN	EIF5A2	WAC	SLIT3	NLRC5	MFN2	LRRC14	NMD3	TTC28	TSC1
CD74	PRICKLE2	NEIL1	TBC1D28	ANKRD65	DPP4	ZNF382	SLC66A2	NAV3	TRANK1
CD4	CDCP1	HTT	RBFOX2	KCTD10	STAT3	ACOX1	ZNF37A	NSG1	PRKCB
RNASET2	LZTFL1	EYA4	MBTD1	SALL2	KPNA4	CABP5	DGCR8	TBC1D32	POU3F4
BOD1L1	DTX3L	AP3M1	DPP6	GGA3	RIPK1	STAT5B	PSMD13	NSD2	ITFG2
CTNS	RHO	CD47	SMCR8	TIFAB	KAT14	NCKAP1L	MPI	SFTPA1	DEPDC5
DCN	MASP1	NUDCD3	KIAA1671	EFCAB11	MARK1	CD300LG	ATP2B2	THADA	ABCC8
TLL1	RFT1	FBXL3	PARD3B	NFATC3	COPB2	KRT86	ACVR2B	DOT1L	GNPAT
APPBP2	IL17RD	STAU2	PRKAR1B	SLC22A6	PARP1	TAMALIN	MKLN1	GXYLT1	OSBPL2
AQR	CAMK2D	MLF1	MBD5	ZNF268	PPIH	FGF11	ABHD2	PHB2	KDSR
LMCD1	DAPP1	SLC25A46	MECP2	HES7	CTSB	WDR90	PKIA	HIVEP1	TUG1
CEACAM1	IHO1	TAT	CBX6	ADAMTSL1	HNRNPA2B1	SOX8	LMBR1	PLA2G4E	ESRRB
PPP2R5B	HSPA4L	CCR9	ELAVL1	FKBP5	PCSK6	MAP4K2	SPPL3	UBE2QL1	KNG1
FSTL3	PRSS12	AREL1	ZFPM2	TMEM138	THBS2	CYB561A3	MAP2K4	ZNF705G	AL451062.2
ST6GAL1	TMEM161B	SEMA4D	ICOSLG	ANKK1	CIT	DRAXIN	ARFIP1	PPP4R1	AL358113.1
P2RY10	LMBRD2	THRB	SLC8A1	VPS13D	ACO2	AZIN2	NSD1	SZRD1	GPR174
TIGAR	ANKRD33B	AADAACL2	RNF43	ZNF236	PSEN2	AGL	DPAGT1	CPNE1	ST3GAL3
MTMR7	RPS23	CCDC25	SAMD12	RDX	NPEPPS	REL	CRKL	SNRNP70	GSS
CDK13	CDC20B	RSPO1	ITGA6	ZNRF3	LAMB1	ZNF514	ARNT	KIAA1841	ACBD6
GAL3ST2	GPX8	MAN1A2	SHANK2	RIC1	VCP	SPATA18	FAM78B	ATG3	ATP7A
UHRF1BP1	ANKRA2	COG6	FAM131B	CAND1	CTSA	BMP10	TRDMT1	PANX2	MSH2
SLC13A1	CCDC127	GABRG2	CLEC16A	MMAB	EIF3E	TGFA	WNK3	HS1BP3	AL590560.2
PCDHB2	TNFRSF21	ARHGEF12	ZC3H8	MARS1	NUDCD1	FZD5	NUTM2G	MAFK	SLC6A1
RRN3	CREBRF	ELP5	SAPCD2	MTHFD1	KIF5C	IFITM3	LARS1	CLVS2	TBL1X
TFAP2C	GALNT10	RSPO3	TTC7A	HOXC11	POMT1	NXF1	SLFN14	SLC2A12	GRHL2
SPG21	MYOZ3	NHEJ1	LSM5	CCDC38	GSK3B	GANAB	NABP1	CDCA5	ANKRD44
RGS17	BMPER	ZBTB14	VSTM5	BICDL1	MCL1	ELF5	EFCAB14	TMEM47	POGLUT1
TGFBR3	COL1A2	PEX2	TTC31	DDX23	QPCTL	SSH3	AC078815.1	AWAT2	PDE10A
TMED1	LMTK2	SLC30A6	METTL21A	NUBPL	PABPC1	CHORDC1	ADGRL2	FRMPD3	ENPP1

MMP11	RAD21	SPOCK3	ZNF142	PCBP2	CTSC	PRR23D1	AKAP9	FBXO25	AC010197.2
MICALL1	OSGIN2	DCHS2	PLB1	BICD1	PITRM1	EFEMP2	HSPA12A	TACC1	CTPS1
HMGXB4	RAD54B	ZBTB20	DKC1	CS	EIF3I	FAM186B	AGO1	FBXO10	LRRC3B
TAB1	ZMAT4	CCR3	PRR29	AL139353.1	AC064824.1	RAD50	NPHP1	NTRK2	UROS
CNIH1	KIF27	TENT4B	PIGZ	DAO	C2CD3	EXT2	IFT172	ASB6	ZC3HC1
SPTLC2	PGM2L1	RIMKLB	AEBP1	DNAJC22	HSP90B1	RHCE	DISP1	ADD3	FKBP6
TUBB1	PCF11	DENND2D	SLC35F6	KCNC2	KMT2C	FBXO3	GDAP1	NPFFR1	AC006059.2
CSNK2A1	JAKMIP3	ETFBKMT	FAM122C	RAB5B	IFITM1	RAB30	SLC52A2	SLC1A2	FARS2
APMAP	NDRG2	CREB5	WDR26	SLC16A7	OAS1	ZNF720	NEDD4L	ZC3H12C	CDC42
MXRA5	ARHGEF40	GOLGA7	NDUFA10	ZBED6	SNX9	KMT2A	CEP104	ATM	TCEANC2
ATP1B4	CLMN	ZBTB44	SLC23A3	DYNLL1	DYNC1H1	B4GALNT4	CLCC1	ZNF343	GAN
F9	GPR176	CADPS	MTO1	SLC48A1	CTSZ	ANKLE2	HLCS	CEP164	ZNF620
FMR1	FOXN4	NFIA	UPB1	SENPI	SLC1A3	C5orf63	IGHMBP2	CABLES2	HDAC8
PCSK1N	ADAMTS15	ST7L	TNFAIP8	TUBA1C	OAS2	ZNF423	LCOR	HIRIP3	AC097625.1
NUTF2	GABRB3	CNTNAP3	EZH1	MARF1	ERN1	TMEM106A	NGLY1	DUSP6	DYNC2H1
SLC38A7	TMEM132B	ZNF346	ITPRID2	ESPL1	OCLN	SPOCK2	CAST	ARID5B	FANCC
SMPD3	BORCS7-ASMT	ICA1L	POU6F2	B4GALNT1	TCTN1	RFXANK	PLCE1	SPOPL	AC013489.1
HSDL1	TRIM44	CX3CR1	CLEC17A	LIN7A	DDX20	KIAA1958	DYM	CD226	TTC37
ZNF500	IDH3A	POM121	LMBR1L	ANKRD13A	TNPO1	PTPN21	AARS1	FREM2	HSPA9
TOX3	HDGFL3	GDA	CCDC103	PPP2R3C	MAP3K14	MS4A4A	RBMS3	CCSER1	HTR5A
MGA	ZNF407	TRIM33	NAPEPLD	SYNE2	ALS2	GZF1	COPS2	SLC12A2	IGF1R
EHD4	GALR1	PPP1CB	USP54	NRDE2	AGT	ENOX2	DCP2	PSMG4	ADA2
EXTL3	TVP23A	PRKAR1A	DNAJC10	ALDH6A1	CTSV	PHF8	DENND5B	FAM193B	AC097634.4
PAG1	ZNF592	SLC4A8	SNAP47	DNAL1	ACADM	CDIN1	PRTG	FBXL5	CEP63
DECR1	AP1G1	SYN3	TAF4B	STON2	HMGCR	ADCY2	TBR1	JADE1	KDM5B
PLAT	CLPX	BCAS4	TP63	SHMT2	FAM126A	ACACB	TMEM72	SH3BP2	DNAJC13
TBC1D17	NEMP1	MAP2K6	SMYD1	PSMC6	VRK1	GLS	SHOX2	C4orf54	ITGA1
SGTA	NAB2	ANKRD12	BCL6	PRPF39	EIF4G3	SLC25A15	ARHGAP8	TRIO	ACSL6
C19orf44	STAT6	MAP3K15	RASGRF1	TCL1A	CNGB3	ZNF81	LYST	ADGRL3	C9orf57
FSD1	GPRC5B	RRAGD	UBE2W	CYP46A1	CANX	TRIM2	EIF4E3	HARS1	PPOX
CRX	CRK	FRA10AC1	CDV3	C14orf132	MAPK1IP1L	GAS2	MTR	SATB1	PGRMC2
CDC37	TPM4	SNX11	TSPYL4	LIN52	ASAH2	SYT9	LAMA4	SCNN1A	PGM2

RAB3D	RSKR	ZNF705A	RECQL5	TMEM229B	SPECC1	ZNF705E	SCLT1	PARVB	NEIL3
USF2	DIP2B	LDLRAD4	ZNF345	TMEM30B	RABL2B	LRRK1	PRKD1	SMTNL2	CEP192
SIPA1L3	SLC22A11	RUNX2	LMOD3	NSFL1C	DDHD1	BTG4	BDH1	ZC3H12B	NCAPG
NAMPT	MSANTD4	DSE	FLNA	PPP2R5C	TRPS1	DERA	ADAMTS5	LRP1	ATP8A1
SP4	TNRC6B	AP4M1	FNBP1	SLC7A7	SREBF1	FNTA	RGR	NEDD4	BDP1
MPP6	SLAMF1	ZRANB1	WDR6	RIN3	CDKL1	DBF4B	NNT	SMIM15	CSF1R
TSPAN12	FUT9	ZDHHC14	WDR48	TMEM260	MOV10L1	IFITM2	RAD54L	ATAD3A	LMNA
WASL	PCSK9	CTAG1B	ZNF286A	APIG2	ATP6V1C1	TP53AIP1	DLG1	OASL	TADA2B
CEP41	MAP4K4	ATG2B	PERP	SYNE3	LRRC2	C11orf65	ADGRL4	YIF1B	TNFRSF10C
ZNF862	ELOVL6	FAM3C	RBM14-RBM4	TOGARAM1	CDRT1	BCLAF1	MYSM1	SCARB1	CYP4F12
TNFSF8	CCDC7	NFIX	ATF2	WDR93	ELMO1	ZNF585B	SCN8A	ANKRD6	LRRCC1
SETX	CKAP2L	MAK16	DIO2	GDPGP1	GCNT3	PCDHGA2	AP3B2	NECAP1	ANK1
NUFIP2	ANKRD49	ZNF605	KIAA1549	RHCG	ZNF445	RPS6KA4	SCN3B	OFD1	DENND3
P2RX1	STARD5	ETS2	EIF2AK1	MEX3B	JMY	ARHGAP27	CUL1	DOK4	SLC36A2
CPD	UBTF	MSN	L3MBTL1	USP3	KRBA2	DPF2	RET	SP100	NKX6-3
DDX5	SIX2	VPS13A	PGAP1	INO80	PGM5	OLFML1	BRPF1	MEF2C	KCTD9
LRRC59	PDS5A	MYLK	PHF14	SHISA9	TCEA1	SLC7A8	CEP290	LIN54	POLB
FOXN1	RNF139	ANKS1A	SEL1L2	HMBOX1	RSL1D1	POLG	ALDH3A2	PTAR1	JPH1
ZPR1	REPS2	PEA15	CACNA2D2	ATP8B4	DKK3	PRR23D2	AL135905.2	UPK3BL1	NDUFAF6
CCND1	AGAP1	ANGEL2	OARD1	DUOXA1	TMEM106B	ABCC12	JAK1	BCLAF3	CCAR2
MLEC	TTBK1	PFKFB3	CCDC150	DNAJC17	BICRA	SLC38A6	ATAD3B	PAQR9	SREK1
CSRNP2	MYO1B	MMP17	FKBP7	PSTPIP1	IL31RA	POGLUT3	AC018809.3	RRP1B	RUNX1T1
SYT10	ADCYAP1R1	TPPP	TANC2	TM2D3	ZSCAN29	DIS3L	ZNF599	FAM205C	MROH5
OAS3	KNDC1	CLCN3	ZDHHC3	SEMA4B	HRH1	USP35	CPS1	ZNF169	PIK3R1
NUP107	JPT1	SLA2	CPLANE1	TRPM1	PAFAH1B1	BDNF	RFX7	TNC	CYFIP2
TPI1	MUC7	SCUBE1	SGCE	EME2	FOXRED2	PPM1A	CFAP298- TCP10L	FCF1	ALG11
GOLT1B	LRATD2	NAA60	MYOCD	TUBB8	PABPN1	ANO1	COL13A1	SH2B3	KIF13B
RFX4	IRS1	DAAM1	LRCH3	GLG1	CCDC9B	NPAT	HEY1	KAT5	SMIM12
ACOT13	NECAB2	STAT1	C12orf65	ZNF598	WIF1	ZNF678	DENR	BRI3BP	SNAP91
EXOC2	MINAR1	DCAF12	PVR	KLHDC4	MMP16	TGIF1	PITPNM2	DCAF5	SPIDR
VEGFA	DEGS2	NCKAP1	NANOS1	BRD7	BACH1	ZBED6CL	SLC7A11	ING4	PPP1R2B
LOX	LCMT2	MAP3K3	TMEM185B	TMEM231	ANKRD9	CCDC141	C4orf33	TMEM248	KCNK9

LNPEP	FEN1	LDB3	ZDHHC17	RGL3	RAB11FIP1	RNF222	PTPRO	GRM8	ZDHHC11B
ST8SIA4	PPM1D	TNNI1	TMEM233	MLYCD	NTAQ1	RUFY4	VPS26B	ANKFY1	PNMA2
SLC7A14	LRP8	LRRC10	KAT6A	PML	CYB5RL	CA12	KCTD16	CRHR2	NDUFB9
CRBN	IBTK	FAM110B	EIF4A2	CCDC187	KIT	PRR27	SFXN1	ZNF70	CA2
ABTB1	ATOH8	BRINP2	ZNF398	CNTROB	ZNF19	SH3BP4	KDM3B	SLC24A2	ERICH1
TTL	LGI3	NAA35	SEMA3E	MINAR2	MYO1E	PCNX2	APC	UBE2L3	ITGB2
TLX2	ZNF396	QKI	ZNF737	BEAN1	TMEM268	SIGLEC1	ZDHHC18	JPH2	LYRM2
DOK1	BPTF	CIPC	NANS	NOMO2	DPYSL5	FRMD6	GRM4	DCDC1	DGLUCY
IGFBP5	ZNF672	ASTN1	PHACTR2	PDPR	RHPN1	PCDH18	SNX30	TP53INP1	FBXW11
ORC2	NEGR1	MSRB1	FGD4	PLA2G15	AL591806.2	AP3D1	SNX12	TMEM215	ATP6V1H
COX7A2L	GON7	CMTM3	CYLD	SNX29	ZNF276	TPRG1	PAFAH2	SMAD4	DOCK2
PLEKHA3	OTUD7A	COLGALT2	MXD3	ADAT1	FAM160B2	ARHGAP5	MTFR1L	FAM122B	TBC1D9B
CDC7	KLF13	PLXNB3	RGPD1	CDH1	C8orf58	PRICKLE1	MACO1	DICER1	GFRA2
VAMP4	SUCLG2	PCGF3	XPO1	CDH13	WNT4	RSU1	RCAN3	SHISA6	TBC1D31
ABCG2	USH2A	TRIM58	ABHD4	MDFIC2	STC1	BNC1	EPB41L4B	RBPJL	DNHD1
ADCK1	MAB21L4	ZNF670	P4HA2	CSK	IGF2BP1	UBE2G2	BMPR2	WNT8B	ARHGAP32
PGF	CAVIN4	CNST	ATP13A3	C15orf39	PPP1R12B	BCL11B	EPHB2	STK4	ARHGAP23
NEK9	NKIRAS2	KIF26B	HPS4	ANKRD11	CBFB	DRD2	ITCH	HMCN2	FP565260.2
FLVCR2	AFF1	ADSS2	PUM2	NAE1	ZNF235	IL36RN	AMER1	LGR6	NKAIN3
TGFB3	CARNS1	KMO	CERS1	METRNL	NR2F6	SLC4A5	CCDC40	FBXW5	SMIM11B
RHOQ	AIFM2	B3GALNT2	APLN	SYT16	KALRN	IKZF3	KLF8	ACTL6A	FP565260.6
TMEM214	RPL4	DISC1	ZNF625-ZNF20	CES2	RSPH1	ZFYVE26	MXRA7	BORCS8	VCL
ATAD2B	NUP93	C1orf198	TBL1XR1	PDK3	TRAPPC10	STRBP	PLA2G2F	DPH3	CYP26A1
CRIP1	ELF4	OBSCN	PLEKHM1	TBL3	GATD3A	SMARCE1	CAPZB	MEIS1	RFPL2
SLF2	DUSP13	STUM	SLC39A10	TSC2	LRRC3	ADARB1	CDC14B	CLIC4	TMEM272
HOXB1	RSF1	ENAH	AC000093.1	ZKSCAN2	CACFD1	UQCC1	SIK3	SLC5A11	ZEB2
INSL4	STOX2	FBXO28	SETD2	SNX33	MAPT	WDR20	IQSEC2	MTHFD2	NFAT5
LRP11	CSPG4	PRKN	SETD5	SERTM2	CHD5	ZADH2	COBLL1	FKBP10	SLC39A9
FZD3	TMOD3	SLC30A10	THOC2	PIGB	GNAO1	ZNF660	MCF2L	PI4KB	NHSL2
NCAPH	ABCD2	SLC22A2	YEATS2	CDYL2	PTPN3	TSPEAR	DIRAS2	LSAMP	CELF2
ZNF211	LINGO2	RPS6KC1	EIF2B5	MMP2	PCSK2	CYP11B2	MKX	BTBD11	STX3
CPXM2	DAG1	NSL1	ARMCX4	DEXI	ZC3H3	DIRAS1	S1PR3	THOC5	FGGY
CSMD2	EGFL7	SLC30A1	SMPD4	SLC12A4	TTPAL	PLAAT3	LY6G5B	SUPT20H	PATJ

INHBA	CTBP2	IRF6	SF1	MYL4	VAMP7	HTR1A	AL662899.2	ABHD16A	COL11A1
PHF24	REST	TULP4	LRRC23	KIAA0753	BPNT2	FN1	FHAD1	DPH2	NRXN1
KLHL24	ZHX3	DYRK3	SHPRH	TRPV3	ANOS1	ST8SIA3	PDPN	ZSWIM8	SLC35A2
ZC3H13	VPS26C	SLC41A1	HSBP1	MINK1	AJUBA	TDRP	CLYBL	SLTM	KBTBD11-OT1
RAB9B	NRIP3	ETNK2	DCTN1	CA10	TEP1	CIITA	HS6ST3	FOXP1	KIFBP
SLC36A1	PPARGC1B	ATP2B4	NOL8	NOMO3	RPS6KA6	EDNRA	PPP1R11	APOL4	MAGI2
PLA2G12A	SH3RF3	ADORA1	DHDDS	MRTFB	SHANK3	DCUN1D3	TBC1D25	PDLIM7	ODF4
LYPD3	KLF7	TMEM183A	RBM6	DHX33	AMMECR1	MTURN	CARNMT1	DENND4C	AC068580.4
ZNF391	CHST2	NAV1	MDGA1	FBXW10	RALGAPB	PSEN1	MOG	AIG1	C13orf46
SSR1	TMEM255A	CFHR3	TAF1B	DNAH2	SIM1	ANO5	CEMP2	EML3	ACY1
VASP	GRAMD2A	SASH1	FAM160A1	CLUAP1	INPP4B	CAMKK2	SLITRK1	POLR2M	SCN2A
CD93	RND1	STX11	PLCL1	VPS33B	GAB1	NUPR1	KIF1B	ELP1	EPB41
TMX4	GGA2	XPR1	PDE1A	CAMTA2	MTPAP	AHCYL2	TRPM3	MCCC1	ALDH7A1
CTAG2	CLOCK	NPHS2	MTMR10	VPS53	ZNF264	SLITRK5	NEBL	OSBPL9	CACNB4
TRAF2	BAALC	TOR3A	ABCA7	CARD14	A1BG	HMGCS1	ZKSCAN4	SRSF10	AP003071.5
GFER	CYP2S1	RALGPS2	TMPRSS7	BAIAP2	CABIN1	ANGPT2	INSYN2B	NF1	PRRT2
PTPN12	CYP7B1	HECA	PLEKHF1	CFAP52	PLPPR5	MIEF1	DTD1	GMPS	EHMT1
SEZ6L	CCDC13	PAPPA2	RASGEF1B	SEC22B	MED15	LMNB2	KCTD12	ARHGEF26	SMIM33
CALU	ARL10	COP1	SEC14L1	FLII	PPM1F	BBX	CNTNAP3B	SNTN	CLN5
SMO	ZDHHC24	TNR	IGFN1	ENGASE	ACTR3	IQCE	KLF12	EVX1	IL10RB
PIAS1	SUGT1	SCYL3	NWD1	STARD3	CLNS1A	DCAF11	HIF3A	RINT1	EPB41L3
SNAP23	SLC5A6	TBX19	NSUN5	ACE	KCNK6	ARHGEF4	KRTAP9-2	PPM1L	ARHGEF9
TMOD2	DCAKD	POU2F1	ACOXL	SS18	WIZ	TRAF7	DIS3	PGAM5	BMPR1A
TPH1	SULT1B1	CCDC190	BEND7	NOTCH2NLA	COMMD9	TAC4	PCDH9	TMEM167A	KCNMA1
BCL2L2	NEFH	STX7	DIXDC1	CSF3	LIFR	CCNC	GPR153	ABCC3	PIGT
ARHGEF6	COL6A2	F11R	FBXO45	CABLES1	DNAJC6	GPR139	LYPD5	SH3TC1	EPM2A
ZC3H14	C11orf45	PIGM	CBLL1	RTTN	APLP2	LARP1B	NDUFAF5	HMCE5	KCNC1
DSC2	TBC1D16	ARHGAP18	RBSN	ANKRD30B	SIAE	ZNF609	PCDHA9	INTS3	AC131160.1
ANGEL1	SLCO2A1	HCN3	GNAI2	SMG8	KCNT1	ERICH3	CASK	DCANP1	LIAS
INTS2	CCPG1	HEY2	USP46	SPDYE4	ARID3A	AATK	TRIM13	METAP1	ELP4
SULT1C2	MOBP	EFNA3	FOXP2	RASSF5	TOLLIP	APOLD1	EXT1	ATP10D	SMARCA2
ADAMTS2	ZNF431	CEP85L	MICAL3	CCDC57	EPB41L5	ACAP2	DCLRE1C	GBA3	AC069544.1

ARFGEF3	CARHSP1	TSPYL1	SCAP	NARF	ZNF106	AK4	C19orf54	AC027644.4	NOTCH2
CARD10	PRDM2	LRRC27	INO80B-WBP1	SCRN2	SLC25A12	EXOSC3	FNDC3A	IL6ST	MED17
KIAA0930	PCSK1	GATAD2B	PRDM15	TRAPPC8	OSBP	XKR4	PLCH2	INTU	PIGN
ELOF1	SLC19A1	CHTOP	TGFBI	ACP6	USP13	RASSF1	XK	AR	SCN3A
USHBP1	FCHSD2	LCE1E	CAGE1	FDXR	SC5D	C16orf72	C11orf49	NFASC	OR2T29
PXDN	GLUL	MFSD4B	GMNC	SMIM21	SLC25A24	ZNF704	CCNI2	CCDC149	OR2AG1
GATA5	ZMYND8	SLC16A10	PRRC1	MYO15B	AGPS	FBLN1	RUBCNL	CTNND2	NOD2
GINS2	ANKS4B	BUB3	NLE1	MBP	SRD5A3	KCNK12	HYDIN	LUC7L3	OR2A12
TBC1D5	HOXB3	NR2E1	INTS6	ZNF230	ARHGAP31	SLC24A3	DHRS13	SH3TC2	OR2T6
GFPT2	FBXO31	PLEKHA1	ACHE	ME2	IL18RAP	KCNA4	GK	TMEM33	OR7C1
KRTAP9-8	AQP1	QRSL1	POLR2F	PSMC3IP	GABRA4	SLC9A7	CHGB	CDC42SE2	OR51I2
CHSY1	AL357673.1	GRIK2	NFIC	ATP9B	ARHGAP24	MYT1	POLR2J3	PDCD6-AHRR	
ADCY7	MRPL52	CACUL1	CRY2	TUBB6	PIKFYVE	PLCXD3	PTCHD1	ALPK1	
SLC6A11	ERCC4	ASCC3	ZNF561	CEP89	SLC4A4	ZNF26	EDN1	TADA2A	
PTCD3	NIPAL4	MAP3K7	SCN11A	ABCA5	RAPGEFL1	OTOP3	FOXO1	ZNF282	
RPA1	ARHGAP1	FCGR1B	TRIM67	HEATR6	CASC3	FO XK1	HGSNAT	OR8G1	
HSPA12B	MEN1	REG4	CACNA2D4	SLC16A2	FBXL20	MANEAL	PHKA2	SAMHD1	
SNAP25	CLCN6	GDAP2	SLC25A36	SUGP1	DNMT3A	CALN1	RHOBTB3	SLC11A2	
IMPA1	OGFOD3	FUNDC2	ARPP21	RND2	ITGA9	CARMIL1	TET2	ERCC3	
E2F5	SRSF7	PLXNA3	PRRT4	LGALS3BP	PRDM5	SNN	SLC25A35	OPA1	
LYVE1	C7	TAZ	HDAC9	WDR62	MIER2	TMCC2	SYAP1	AL162377.3	
SARAF	C8orf82	GSTM4	SYNE1	ZNF519	COL5A3	LPAR5	EMILIN1	SUCLA2	
VRTN	MRPS23	SYPL2	MPZL1	HAUS5	C3orf52	TRAPPC6B	OR52A1	ABCC4	
EIF2S1	EBF1	SFXN2	CHTF8	UBALD1	CXCL9	OPRM1	MOSPD2	CLCN5	
CTIF	STAT2	MYO6	TWIST2	RHPN2	EVC	KMT5A	KATNAL1	SLC33A1	
VHL	MEIS2	VAV3	BEST1	CNTD1	MGAT4A	ZFP41	B3GALT5	BTD	
CHL1	PRKDC	NTNG1	BTBD3	ZNF570	FAM184B	FLRT2	TLR7	AC073508.2	
ANO3	PALM2AKAP2	PRMT6	CTC1	PDE4A	MAP3K13	ANKRD17	FRMPD4	AC011330.3	
REGG	MITF	EXTL2	B3GNT9	BTBD2	RASGRF2	NR4A3	WRNIP1	SPG7	
SPX	UBXN11	KAZALD1	TMEM120B	WIP1	PCNP	NPLOC4	BRWD1	TCP10L	
RTL8C	AMBRA1	ALG14	TMEM150C	CHAF1A	RBM27	PDGFB	SBF1	ACSL1	
HRK	KIF26A	ABCD3	TANGO2	TUBG1	AFF4	CCDC88C	ADAMTS6	MED13L	
RNFT2	CNOT4	ARFGAP1	ARV1	BCL2	SEMA3A	PURA	KIF2A	PDK1	

BACH2	LDLRAD3	TMED5	ATP13A4	HSD17B1	PRKAR2A	IKZF1	RCAN1	SPOCK1
GDF11	ITGA11	MTF2	TEX22	KIAA1328	RPS6KA2	SS18L1	SLC5A3	USP12
PPP1R1A	YOD1	OGFRL1	IKZF2	AC087289.3	ADAM2	OPCML	ARSD	TRIM36
GNS	FGF13	BARHL2	ZNF154	ST6GALNAC1	CDK6	SNAI3	MIER3	NADK2
RGS8	RPS4X	ENTPD7	KCNH8	ANKS3	ANLN	WT1	TECRL	OTX1
RC3H1	CCNG2	LMO4	FHL2	MEX3C	DMTN	ASB7	CCDC91	A1CF
TMEM127	SOX6	PRKACB	LCT	ABHD17A	LZTS1	EEF1AKMT3	KLHL42	GRM1
C2orf49	AHRR	FHL1	UNC5C	RNMT	PMS2	ING1	LINC00634	SMARCA5
IGF2BP3	MBLAC2	BAG2	ZNF611	RANBP3	B4GALNT3	EFNA5	IGF2	RANBP2
ACSBG1	NCAM1	BEND6	ASNS	ALDH16A1	ERP27	OLIG2	CCP110	CCDC148
ABHD17C	NSD3	IFI44L	ZKSCAN5	NR1H2	N4BP2L2	RIOX2	SGCB	PLA2R1
LIMD2	HOXA3	FUBP1	SLCO2B1	CTAG1A	L2HGDH	PPFIA2	ITPRIPL2	CD96
GALNT5	ZNF559	PIGK	SUN2	LSM4	RAB15	MAFA	STK35	LPCAT1
KCTD3	MPPE1	LRRC7	EPS15L1	ZNF587B	TRIP11	PGP	CD274	FBXO36
IMP4	PXMP2	FRAT1	TOX4	HNRNPUL1	ZNF280D	BSG	SHOX	THY1
UGGT1	RANBP10	LEPROT	GALNT14	TRPM4	RAD51	CRACR2A	ZZEF1	OTULIN
RANBP6	TLE3	XPNPEP2	PPP2R2D	ZIM2	ARRDC4	KCTD11	JAK2	C10orf90
PI15	SIX5	OPALIN	FBXW8	SLC35E1	HEXA	TRARG1	FKBP1A	SORBS2
SLCO5A1	S100Z	DHCR24	RBM45	ZSCAN18	ZCCHC14	ZNF677	METTL22	C21orf91
DCUN1D5	PCNX4	TTC22	SLC20A1	KLK3	PDPK1	CPEB4	SEC14L4	TSEN2
THBS1	PROM2	CUL4B	FGF5	XRCC1	GALNT1	CDC42BPA	RFX3	MYO5B
GCHFR	WSCD1	SLC25A27	NPRL3	TECR	ASXL3	DLST	LGI2	ACAA2
ARHGAP29	AMOTL1	NKAP	ZNF727	CRB3	MYH10	PTBP3	SOD3	ANKRD40
LOXL4	PDLIM5	TSHZ2	TMED7	INSL3	CBX8	PTPRB	FBXL18	MAN2B2
ARL3	GINS3	PTEN	AKR7L	CYP2B6	TNFRSF11A	PDZD8	XKR6	MARVELD1
SATB2	EDEM3	MINPP1	UTP25	ZNF615	ZCCHC2	ZMIZ1	KCNA1	C16orf87
HECW2	GREM2	CHRD1	YJEFN3	CD320	FEM1A	TRIM46	NYNRIN	RASA2
ABI2	NBPF3	HECTD3	CRAT	MPV17L2	CCDC97	CHP1	ZIC4	TMEM87A
SLC40A1	BOK	FAM78A	INTS11	ZNF671	IFNAR1	CELF4	FOXL2NB	FAM168B
BCAT1	CD276	AIF1L	C1orf112	TMEM185A	RNPEPL1	C3orf70	AQP4	PSME4
ABCC9	ABL1	POLR3A	CDS2	CD22	IGLN5	PPIL2	TIGIT	SRP19
FOXN3	FIBIN	ZNF691	LMNB1	AC008878.2	PRDM16	TMEM104	GTPBP8	RTL8B
ZNF24	MAP6D1	SVBP	HPS3	H6PD	ARHGEF19	SLC10A7	CADM2	ZNF829

SNCAIP	AC068946.1	RIMS3	GNAS	FKTN	CTTNBP2NL	SF3B1	TRIM71	LAIR1
XYLT1	ZFP3	SAMD8	AL662899.1	RASL10B	CD53	RORA	PCDHA4	GNG4
ICE2	C1orf131	ZMAT1	MUTYH	AC022400.5	SFT2D2	NPAS2	CHST9	PGBD5
GPATCH2L	PSAPL1	BMP8B	PARP9	HEATR9	FCRL4	GRB10	WASF2	AKT2
DSG2	ZBTB34	HPCAL4	SEC31B	BRD3OS	KCNH1	PSMF1	PIP4K2B	FAM117B
HERC2	ZNF572	URM1	TLE4	MCU	KCNN3	DEDD2	CAMK1D	MOXD1
COX10	NT5DC1	UBR2	ADCY5	MTRNR2L11	GDF7	ASXL2	GRIP2	CCDC50
RTRAF	FARP1	HNF4A	ZNF692	GVQW3	UBR3	PCGF5	SCN7A	CD300E
SLC6A4	EPHA10	INPP5B	ABHD14A- ACY1	CNKSR3	NXPE3	ZNF202	ABCG4	SDK2
PSMD11	ARHGEF18	STK40	GPR156	MMRN2	TCTA	CDCA4	MFRP	GRK5
P2RX7	SHROOM1	AGO3	MYO1G	SCOC	NICN1	SNTB2	CYP4A22	NT5DC3
GNB5	C2orf69	CHD6	KRT13	ZBTB25	STXBP5L	SCAI	GRK3	CD3G
MYO5C	HSPH1	TOR2A	SRPK2	FBXW2	SLIT2	FNDC3B	KRT8	ANO4
SECISBP2L	CLIP4	VSTM2L	ANP32A	RALBP1	VWA5B2	RBBP9	GATD3B	POU2AF1
GLCE	PRTFDC1	YARS1	NOVA1	USP6NL	APIAR	NRIP2	ZNHIT3	MTPN
SLC24A1	TENT5A	PBX3	CYP4A11	PTBP2	SPATA5	PPP2R5E	RAB11FIP4	STEAP3
FAF2	SLC25A22	CHIC1	TSNAXIP1	ZBTB8B	NDUFS6	EBAG9	EPOP	MKS1
CNOT6	AGPAT4	BSDC1	CD40	BHLHA15	OTULINL	PRPF4B	SCAMP1	LRRIQ1
SERPINA10	PAGR1	TXLNA	ARID1A	KCNJ6	RPL37	TTC33	SRD5A2	SLC24A4
ZDHHC2	INPP5K	KCTD20	CARD19	ITGB1	LIX1	GALNT16	PRDM11	B4GALNT2
SEH1L	B3GALNT1	PTPRU	RWDD1	H3-2	GABRB2	SGCD	FBXO21	PLXNA1
RPGRIP1L	ZDHHC8	PHACTR4	CHAT	SLC25A16	AP3S2	ATRX	HNRNPU	LONRF2
SMAD2	KIF1C	PTAFR	ADAM9	PNLDC1	NR2C2	CACNA1C	JMJD7- PLA2G4B	PHLPP2
TRAM1	MRFAP1L1	TGIF2	STIM2	SYT6	PTPRT	DDI2	GPR179	COG5
TMED2	FMN1	XKR8	TSN	NSA2	C11orf96	PLS3	SMIM31	MON2
RCOR1	PLXNA4	IPMK	FCGR2A	MED22	DDX52	KNCN	TTC19	KRTAP9-9
PRR11	RAB8B	PCDH15	B4GALT4	C17orf78	PRLR	PEG10	SLC12A5	CMTM4
LMF1	XRRA1	DES	DLG5	MED26	GAS2L2	COG4	PTPRE	NIT2
PKD1	EHD3	PHF20	AC006254.1	MGAT4C	SLC46A1	RUNX1	EPS8L3	CHD2
AXIN1	PPP2R1A	C10orf53	GCOM1	CACNB2	NAP1L1	CCNL2	C18orf25	USP49
UBN1	SMC1A	RBM12	COG2	CNOT3	PTPN9	PIIG	ZNF131	AKAP13
KDM7A	SHTN1	AC105052.3	GGT7	MYO1F	SMUG1	DDR1	IFFO1	ZNF207

AKNAD1	PCDHGB4	NIN	SCFD1	NUDT18	ZNF302	COL4A5	DACT1	HSPA2
SLC12A8	YTHDF3	ATP1A4	PDHB	POMK	MAPKBP1	FXN	FAM135B	AKAP5
PDZD7	CD160	EIF2A	VIM	ARCN1	ACAD9	KLHL29	VDR	CXXC4
FDPS	SERP2	NUP205	RABGAP1L	CDH4	DDX60L	PTCD2	SLA	CDC23
AKAP17A	ALDH3B1	RYBP	DNAJC5	EPHB6	COL6A6	STAG1	RAPGEF3	VSIR
SRSF12	PLEKHA2	SCP2	ABCB8	AGBL1	SPATS1	NR6A1	SMARCD1	OR52E4
FAM184A	RNASEH2B	ERCC6L2	SCEL	RPS6KA5	MIB2	ABCA2	C5orf24	OR4K2

Supplementary table 3. the 10 most significantly enriched terms of KEGG

Pathway Id	pathway description	S gene number	TS gene number	B gene number	TB gene number	Pvalue of Fisher's Exact Test
ko04724	Glutamatergic synapse	72	3,571	114	8,039	3.89E-05
ko05212	Pancreatic cancer	50	3,571	76	8,039	1.32E-04
ko04933	AGE-RAGE signaling pathway in diabetic complications	61	3,571	100	8,039	5.84E-04
ko05132	Salmonella infection	137	3,571	251	8,039	6.51E-04
ko05200	Pathways in cancer	272	3,571	531	8,039	6.63E-04
ko02010	ABC transporters	31	3,571	45	8,039	7.75E-04
ko04520	Adherens junction	45	3,571	71	8,039	9.59E-04
ko04340	Hedgehog signaling pathway	33	3,571	50	8,039	1.67E-03
ko00310	Lysine degradation	40	3,571	63	8,039	1.72E-03
ko05135	Yersinia infection	78	3,571	137	8,039	2.01E-03

Supplementary table 4. Target genes of peu-MIR2916-p5_1ss3AG

Gene ID	Symbol	TargetScan_score	miranda_Energy
ENSG00000102837	OLFM4	99	-14.43
ENSG00000132357	CARD6	99	-14.5
ENSG00000136816	TOR1B	95	-16.79
ENSG00000057704	TMCC3	90	-17.91
ENSG00000111412	SPRING1	94	-11.68
ENSG00000074621	SLC24A1	93	-34.77
ENSG00000102974	CTCF	96	-11.73
ENSG00000198522	GPN1	91	-10.99
ENSG00000114850	SSR3	94	-20.46
ENSG00000213064	SFT2D2	90	-17.5
ENSG00000151470	C4orf33	96	-13.96
ENSG00000110871	COQ5	97	-15.32
ENSG00000033867	SLC4A7	94	-15.67
ENSG00000164237	CMBL	95	-10.99
ENSG00000164535	DAGLB	96	-15
ENSG00000166716	ZNF592	95	-29.6
ENSG00000166741	NNMT	91	-26.75
ENSG00000167323	STIM1	97	-16.94
ENSG00000171155	C1GALT1C1	97	-13.18
ENSG00000174348	PODN	98	-17.19
ENSG00000176454	LPCAT4	90	-20.11
ENSG00000066735	KIF26A	92	-38.6
ENSG00000149294	NCAM1	98	-11.15
ENSG00000196083	IL1RAP	94	-17.14
ENSG00000179331	RAB39A	90	-18.77
ENSG00000179387	ELMOD2	99	-11.15
ENSG00000182473	EXOC7	96	-11.84
ENSG00000162105	SHANK2	93	-18.3
ENSG00000173065	FAM222B	96	-12.76
ENSG00000196459	TRAPPC2	94	-11.76
ENSG00000172673	THEMIS	98	-17.01
ENSG00000119917	IFIT3	94	-25.18
ENSG00000117010	ZNF684	98	-14.67
ENSG00000136936	XPA	99	-15.82
ENSG00000136925	TSTD2	98	-11.33
ENSG00000198176	TFDP1	90	-17.31
ENSG00000185963	BICD2	92	-16.42
ENSG00000134910	STT3A	95	-11.68
ENSG00000113645	WWC1	90	-13.36
ENSG00000114021	NIT2	99	-37.67
ENSG00000101144	BMP7	95	-17.11
ENSG00000197971	MBP	91	-17.92
ENSG00000067798	NAV3	94	-16.73
ENSG00000138036	DYNC2LI1	95	-11.68
ENSG00000163702	IL17RC	97	-12.48
ENSG00000006634	DBF4	99	-13.28
ENSG00000115421	PAPOLG	91	-11.15
ENSG00000091181	IL5RA	91	-15.37

ENSG00000114982	KANSL3	92	-17.11
ENSG00000184206	GOLGA6L4	97	-12.11
ENSG00000156976	EIF4A2	96	-18.28
ENSG00000188559	RALGAPA2	92	-16.43
ENSG00000151718	WWC2	93	-15.68
ENSG00000197548	ATG7	90	-16.74
ENSG00000133835	HSD17B4	92	-19.39
ENSG00000178234	GALNT11	91	-19.12
ENSG00000249242	TMEM150C	93	-18.53
ENSG00000166747	APIG1	99	-15.82
ENSG00000085982	USP40	94	-21.63
ENSG00000065911	MTHFD2	98	-11.15
ENSG00000144959	NCEH1	94	-12.99
ENSG00000163389	POGLUT1	99	-14.62
ENSG00000112130	RNF8	97	-16.6
ENSG00000164466	SFXN1	92	-11.1
ENSG00000164120	HPGD	99	-15.61
ENSG00000145390	USP53	99	-14.73
ENSG00000109805	NCAPG	96	-16.22
ENSG00000156804	FBXO32	93	-11.04
ENSG00000154263	ABCA10	96	-17.26
ENSG00000086991	NOX4	94	-13.92
ENSG00000149231	CCDC82	90	-17
ENSG00000113522	RAD50	95	-33.77
ENSG00000139220	PPFIA2	92	-11.46
ENSG00000054983	GALC	96	-12.83
ENSG00000119705	SLIRP	96	-14.69
ENSG0000006007	GDE1	99	-13.45
ENSG00000140945	CDH13	91	-17.16
ENSG00000174446	SNAPC5	98	-16.95
ENSG00000075336	TIMM21	92	-12.37
ENSG00000150637	CD226	91	-24.3
ENSG00000141452	RMC1	94	-16.69
ENSG00000189045	ANKDD1B	93	-19.16
ENSG00000172650	AGAP5	99	-19.16
ENSG00000278662	GOLGA6L10	97	-12.11
ENSG00000266714	MYO15B	97	-17.88
ENSG00000065923	SLC9A7	99	-13.84
ENSG00000145012	LPP	90	-14.31
ENSG00000197978	GOLGA6L9	98	-12.11
ENSG00000157613	CREB3L1	93	-20.67
ENSG00000203963	C1orf141	91	-11.89
ENSG00000176225	RTTN	92	-20.15
ENSG00000159961	OR3A3	93	-14.22
ENSG00000169814	BTD	97	-12.05
ENSG00000126778	SIX1	99	-11.15
ENSG00000117020	AKT3	98	-12.13

Supplementary table 5. Target genes of bna-miR167a_R-2

Gene ID	Symbol	TargetScan_score	miranda_Energy
ENSG00000052841	TTC17	96	-15.22
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ENSG00000062725	APPBP2	90	-36.62
ENSG00000067646	ZFY	97	-12.93
ENSG00000073598	FNDC8	96	-14.27
ENSG00000186847	KRT14	99	-13.4
ENSG00000077009	NMRK2	92	-18.71
ENSG00000112782	CLIC5	93	-29.63
ENSG00000064601	CTSA	99	-16.98
ENSG00000065060	UHRF1BP1	97	-33
ENSG00000100426	ZBED4	97	-16.5
ENSG00000100462	PRMT5	91	-15.29
ENSG00000100678	SLC8A3	92	-15.26
ENSG00000100711	ZFYVE21	99	-16.67
ENSG00000101888	NXT2	96	-13.18
ENSG00000104722	NEFM	95	-25.8
ENSG00000105835	NAMPT	91	-15.08
ENSG00000106004	HOXA5	92	-15.26
ENSG00000108829	LRRC59	93	-28.89
ENSG00000109163	GNRHR	90	-15.16
ENSG00000111203	ITFG2	95	-13.99
ENSG00000113140	SPARC	95	-15.95
ENSG00000113722	CDX1	97	-16.63
ENSG00000116209	TMEM59	93	-17.17
ENSG00000117281	CD160	92	-15.96
ENSG00000118972	FGF23	90	-21.48
ENSG00000119906	SLF2	97	-18.13
ENSG00000120256	LRP11	94	-42.45
ENSG0000006576	PHTF2	90	-13.18
ENSG00000127980	PEX1	93	-19.79
ENSG00000128595	CALU	91	-11
ENSG00000128713	HOXD11	99	-15.14
ENSG00000088854	C20orf194	90	-15.08
ENSG00000130700	GATA5	94	-30.76
ENSG00000131504	DIAPH1	95	-27.9
ENSG00000187272	KRTAP9-8	93	-41.06
ENSG00000133067	LGR6	92	-12.9
ENSG00000133800	LYVE1	99	-14.65
ENSG00000134152	KATNBL1	96	-15.67
ENSG00000134812	CBLIF	92	-14.42
ENSG00000112182	BACH2	93	-40.13
ENSG00000136231	IGF2BP3	97	-14.99
ENSG00000136379	ABHD17C	96	-37.47
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ENSG00000149305	HTR3B	90	-13.82
ENSG00000137709	POU2F3	92	-12.84
ENSG00000137936	BCAR3	95	-14.02
ENSG00000138083	SIX3	95	-15.19

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ENSG00000041353	RAB27B	94	-14.98
ENSG00000104219	ZDHHC2	92	-15.87
ENSG00000071991	CDH19	93	-13.28
ENSG00000116745	RPE65	99	-14.11
ENSG00000186868	MAPT	93	-55.94
ENSG00000108679	LGALS3BP	94	-14.82
ENSG00000003096	KLHL13	95	-27.48
ENSG00000080561	MID2	91	-17.29
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ENSG00000115318	LOXL3	94	-17.49
ENSG00000082258	CCNT2	98	-15.08
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ENSG00000115020	PIKFYVE	95	-17.29
ENSG00000052795	FNIP2	90	-13.69
ENSG00000114251	WNT5A	90	-10.48
ENSG00000198522	GPN1	97	-24.41
ENSG00000072803	FBXW11	96	-29
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ENSG00000167074	TEF	94	-14.95
ENSG00000065361	ERBB3	92	-26.44
ENSG00000180257	ZNF816	93	-16.16
ENSG00000116213	WRAP73	96	-13.18
ENSG00000142677	IL22RA1	96	-13.66
ENSG00000143147	GPR161	95	-13.66
ENSG00000143457	GOLPH3L	97	-17.73
ENSG00000143889	HNRNPLL	99	-15.84
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ENSG00000145375	SPATA5	90	-40.51
ENSG00000148053	NTRK2	90	-42.85
ENSG00000148143	ZNF462	91	-13.53
ENSG00000149929	HIRIP3	96	-30.56
ENSG00000149970	CNKSR2	96	-15.65
ENSG00000151490	PTPRO	98	-34.56
ENSG00000169550	MUC15	95	-13.31
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ENSG00000152661	GJA1	99	-23.4
ENSG00000152683	SLC30A6	97	-12.66
ENSG00000152822	GRM1	90	-32.61
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ENSG00000153246	PLA2R1	96	-24.56
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ENSG00000154556	SORBS2	97	-31.04
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ENSG00000156218	ADAMTSL3	95	-13.09
ENSG00000156273	BACH1	93	-12.66
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ENSG00000157470	FAM81A	91	-11.42
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ENSG00000026950	BTN3A1	90	-17.14
ENSG00000158458	NRG2	91	-17.32
ENSG00000140199	SLC12A6	97	-13.18
ENSG00000124160	NCOA5	92	-15.49
ENSG00000133433	GSTT2B	92	-12.52
ENSG00000067955	CBFB	99	-14.65
ENSG00000160181	TFF2	99	-13.38
ENSG00000160606	TLCD1	98	-15.99
ENSG00000160993	ALKBH4	93	-20.83
ENSG00000162378	ZYG11B	94	-17.28
ENSG00000162444	RBP7	98	-16.62
ENSG00000162490	DRAXIN	96	-57.71
ENSG00000162992	NEUROD1	96	-14.88
ENSG00000163083	INHBB	98	-13.18
ENSG00000163464	CXCR1	92	-28.82
ENSG00000163491	NEK10	90	-10.48
ENSG00000163638	ADAMTS9	90	-18.83
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ENSG00000164463	CREBRF	90	-36.22
ENSG00000164542	KIAA0895	94	-14.34
ENSG00000164609	SLU7	95	-14.63
ENSG00000164695	CHMP4C	99	-22.19
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ENSG00000165983	PTER	91	-17.81
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ENSG00000111670	GNPTAB	98	-12.66
ENSG00000167302	TEPSIN	97	-16.43
ENSG00000117090	SLAMF1	95	-31.66
ENSG00000080546	SESN1	92	-22.28
ENSG00000172461	FUT9	97	-45.21
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ENSG00000130779	CLIP1	94	-12.06
ENSG00000044115	CTNNA1	93	-13.58
ENSG00000172458	IL17D	91	-19.45
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ENSG00000154153	RETREG1	91	-21.36
ENSG00000174444	RPL4	95	-37.13

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ENSG00000163320	CGGBP1	93	-16.78
ENSG00000173705	SUSD5	91	-13.09
ENSG00000175040	CHST2	91	-32.33
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ENSG00000183434	TFDP3	98	-13.45
ENSG00000111186	WNT5B	90	-15.2
ENSG00000174151	CYB561D1	90	-23.44
ENSG00000153048	CARHSP1	94	-17.95
ENSG00000005483	KMT2E	99	-25.62
ENSG00000109685	NSD2	93	-13.61
ENSG00000138675	FGF5	97	-18.6
ENSG00000112936	C7	97	-35.77
ENSG00000152455	SUV39H2	99	-12.66
ENSG00000163581	SLC2A2	98	-15.29
ENSG00000196611	MMP1	92	-17.34
ENSG00000157514	TSC22D3	95	-15.38
ENSG00000170579	DLGAP1	95	-13.49
ENSG00000179256	SMCO3	94	-12.19
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ENSG00000126945	HNRNPH2	91	-21.05
ENSG00000149294	NCAM1	93	-30.61
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ENSG00000171476	HOPX	98	-16.27
ENSG00000181938	GINS3	94	-18.43
ENSG00000005102	MEOX1	96	-19.78
ENSG00000117069	ST6GALNA C5	94	-13.69
ENSG00000173166	RAPH1	94	-26.57
ENSG00000006128	TAC1	99	-13.23
ENSG00000197312	DDI2	97	-13.59
ENSG00000129636	ITFG1	95	-14.53
ENSG00000178718	RPP25	91	-16.54
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ENSG00000179632	MAF1	98	-28.62
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ENSG00000115414	FN1	90	-26.76
ENSG00000168952	STXBP6	98	-13.45
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ENSG00000100335	MIEF1	90	-32.27
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ENSG00000114439	BBX	96	-32.29
ENSG00000138759	FRAS1	92	-11.78
ENSG00000180357	ZNF609	96	-29.61
ENSG00000196652	ZKSCAN5	97	-15.28
ENSG00000107371	EXOSC3	90	-14.58

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ENSG00000183077	AFMID	94	-17.81
ENSG00000183476	SH2D7	92	-14.38
ENSG00000183166	CALN1	96	-33.54
ENSG00000115705	TPO	99	-17.22
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ENSG00000182628	SKA2	92	-18.52
ENSG00000053372	MRTO4	99	-12.79
ENSG00000177426	TGIF1	91	-14.69
ENSG00000196981	WDR5B	90	-11.76
ENSG00000185070	FLRT2	91	-24.61
ENSG00000182601	HS3ST4	91	-28.11
ENSG00000184277	TM2D3	97	-15.73
ENSG00000186314	PRELID2	93	-29.73
ENSG00000187068	C3orf70	93	-31.8
ENSG00000069667	RORA	94	-31.84
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ENSG00000166261	ZNF202	96	-18.77
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ENSG00000185414	MRPL30	90	-28.93
ENSG00000154645	CHODL	90	-14.41
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ENSG00000135114	OASL	93	-32.55
ENSG00000156313	RPGR	95	-13.85
ENSG00000009954	BAZ1B	95	-13.97
ENSG00000188505	NCCRP1	94	-18.19
ENSG00000171049	FPR2	95	-14.57
ENSG00000113328	CCNG1	96	-14.33
ENSG00000135454	B4GALNT1	95	-16.5
ENSG00000058668	ATP2B4	96	-13.76
ENSG00000182606	TRAK1	92	-12.85
ENSG00000180376	CCDC66	94	-13.18
ENSG00000179603	GRM8	98	-34
ENSG00000112486	CCR6	96	-16.71
ENSG00000089289	IGBP1	91	-20.65
ENSG00000156504	FAM122B	98	-15.32
ENSG00000198947	DMD	90	-25.03
ENSG00000124232	RBPJL	93	-13.2
ENSG00000125354	SEPTIN6	91	-15.65
ENSG00000188282	RUFY4	94	-31.66
ENSG00000059122	FLYWCH1	92	-14.2
ENSG00000164733	CTSB	99	-13.18
ENSG00000188687	SLC4A5	92	-32.58
ENSG00000075711	DLG1	92	-19.99
ENSG00000119711	ALDH6A1	97	-25.51
ENSG00000169062	UPF3A	97	-13.18
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ENSG00000197753	LHFPL5	93	-18.21
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ENSG00000239886	KRTAP9-2	93	-41.06
ENSG00000142606	MMEL1	98	-13.66
ENSG00000165168	CYBB	95	-12.19
ENSG00000103064	SLC7A6	96	-13.93
ENSG00000134463	ECHDC3	94	-14.98
ENSG00000124523	SIRT5	99	-12.66
ENSG00000120688	WBP4	96	-15.96
ENSG00000177627	C12orf54	93	-13.74
ENSG00000046651	OFD1	92	-16.39
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ENSG00000102781	KATNAL1	97	-47.02
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ENSG00000112851	ERBIN	93	-12.94
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ENSG00000169299	PGM2	96	-14.7
ENSG00000133488	SEC14L4	93	-30.62
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ENSG00000164199	ADGRV1	98	-14.34
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ENSG00000116031	CD207	95	-24.64
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ENSG00000148343	MIGA2	93	-18.12
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ENSG00000162951	LRRTM1	90	-11
ENSG00000101353	MROH8	99	-20.02
ENSG00000232070	TMEM253	96	-13.18
ENSG00000168092	PAFAH1B2	94	-19.73
ENSG00000169554	ZEB2	92	-13.77
ENSG00000178252	WDR6	90	-39.98
ENSG00000115966	ATF2	92	-33.73
ENSG00000167378	IRGQ	97	-11.97
ENSG00000130396	AFDN	92	-12.45
ENSG00000106443	PHF14	90	-15.69
ENSG00000143756	FBXO28	98	-14.15
ENSG00000152217	SETBP1	95	-15.58

ENSG00000129932	DOHH	94	-22
ENSG00000112419	PHACTR2	99	-12.85
ENSG00000083799	CYLD	95	-32.17
ENSG00000172403	SYNPO2	96	-28.59
ENSG00000213297	ZNF625- ZNF20	92	-22.27
ENSG00000144278	GALNT13	99	-12.66
ENSG00000175166	PSMD2	98	-13.64
ENSG00000196440	ARMCX4	93	-46.46
ENSG00000087589	CASS4	94	-13.87
ENSG00000231852	CYP21A2	94	-15.29
ENSG00000164142	FAM160A1	95	-15.73
ENSG00000117859	OSBPL9	94	-15.77
ENSG00000115896	PLCL1	97	-17.01
ENSG00000149554	CHEK1	90	-13.71
ENSG00000137601	NEK1	98	-15.8
ENSG00000176510	OR10AC1	91	-16.6
ENSG00000164304	CAGE1	98	-31.31
ENSG00000205835	GMNC	94	-35.08
ENSG00000114648	KLHL18	94	-16.76
ENSG00000149582	TMEM25	98	-13.63
ENSG00000188729	OSTN	99	-16.53
ENSG00000135968	GCC2	99	-13.18
ENSG00000131018	SYNE1	94	-28.76
ENSG00000198001	IRAK4	92	-14.41
ENSG00000066382	MPPED2	95	-13.18
ENSG00000105983	LMBR1	93	-54.99
ENSG00000167995	BEST1	93	-32.87
ENSG00000119004	CYP20A1	90	-15.79
ENSG00000123104	ITPR2	94	-12.19
ENSG00000279170	TSTD3	95	-11.18
ENSG00000123485	HJURP	93	-14.14
ENSG00000179869	ABCA13	92	-20.91
ENSG00000185515	BRCC3	98	-22.75
ENSG00000137221	TJAP1	92	-13.18
ENSG00000123977	DAW1	96	-14.02
ENSG00000225663	MCRIP1	94	-14.86
ENSG00000163817	SLC6A20	90	-16.39
ENSG00000065325	GLP2R	91	-13.18
ENSG00000081154	PCNP	90	-18.93
ENSG00000113368	LMNB1	91	-14.28
ENSG00000114021	NIT2	92	-33.64
ENSG00000090266	NDUFB2	93	-13.18
ENSG00000187595	ZNF385C	93	-27.92
ENSG00000206199	ANKUB1	93	-13.66
ENSG00000196586	MYO6	90	-15.37
ENSG00000105939	ZC3HAV1	93	-12.22
ENSG00000105948	TTC26	93	-15.44
ENSG00000104313	EYA1	94	-24.99
ENSG00000004866	ST7	99	-14.02

ENSG00000212993	POU5F1B	95	-13.77
ENSG00000082781	ITGB5	94	-19.87
ENSG00000109689	STIM2	97	-14.36
ENSG00000165807	PPP1R36	92	-16.79
ENSG00000135249	RINT1	97	-13.18
ENSG00000095585	BLNK	93	-15.37
ENSG00000135775	COG2	90	-55.07
ENSG00000113971	NPHP3	90	-18.12
ENSG00000051382	PIK3CB	93	-21.19
ENSG00000065911	MTHFD2	99	-18.07
ENSG00000143224	PPOX	94	-14.83
ENSG00000136143	SUCLA2	97	-11
ENSG00000103197	TSC2	91	-16.71
ENSG00000180336	MEIOC	98	-13.42
ENSG00000163635	ATXN7	99	-13.66
ENSG00000076604	TRAF4	93	-16.08
ENSG00000099338	CATSPERG	93	-16.4
ENSG00000114850	SSR3	94	-19.12
ENSG00000155561	NUP205	90	-31.82
ENSG00000187609	EXD3	92	-16.55
ENSG00000009790	TRAF3IP3	99	-15.68
ENSG00000203722	RAET1G	99	-13.62
ENSG00000213213	CCDC183	96	-14.65
ENSG00000136861	CDK5RAP2	90	-14.63
ENSG00000112739	PRPF4B	90	-20.34
ENSG00000102531	FNDC3A	97	-14.47
ENSG00000129292	PHF20L1	97	-19.82
ENSG00000170906	NDUFA3	97	-12.98
ENSG00000187033	SAMD7	92	-20.8
ENSG00000180537	RNF182	91	-13.48
ENSG00000055732	MCOLN3	91	-13.91
ENSG00000106477	CEP41	91	-17.53
ENSG00000234545	FAM133B	94	-19.61
ENSG00000188517	COL25A1	90	-28.02
ENSG00000139597	N4BP2L1	90	-17.69
ENSG00000141232	TOB1	94	-20.64
ENSG00000184432	COPB2	94	-14.99
ENSG00000113356	POLR3G	90	-16.42
ENSG00000177646	ACAD9	94	-14.08
ENSG00000168152	THAP9	91	-15.06
ENSG00000145439	CBR4	99	-14.65
ENSG00000124795	DEK	90	-15.17
ENSG00000180822	PSMG4	99	-33.85
ENSG00000163104	SMARCD1	94	-20.34
ENSG00000151962	RBM46	98	-14.69
ENSG00000198780	FAM169A	97	-14.02
ENSG00000169247	SH3TC2	93	-29.55
ENSG00000174227	PIGG	96	-16.47
ENSG00000178222	RNF212	91	-14.22

ENSG00000186952	TMEM232	97	-13.18
ENSG00000109787	KLF3	94	-26.96
ENSG00000137802	MAPKBP1	94	-33.63
ENSG00000120440	TTLL2	93	-13.25
ENSG00000138640	FAM13A	97	-12.66
ENSG00000104408	EIF3E	96	-15.9
ENSG00000106536	POU6F2	99	-13.18
ENSG00000070501	POLB	90	-47.3
ENSG00000147677	EIF3H	99	-13.31
ENSG00000164944	VIRMA	90	-11.05
ENSG00000114248	LRRC31	92	-14.5
ENSG00000113712	CSNK1A1	96	-17.07
ENSG00000254004	ZNF260	90	-17.22
ENSG00000197892	KIF13B	91	-30.1
ENSG00000188596	CFAP54	90	-21.37
ENSG00000100557	CCDC198	99	-13.74
ENSG00000165490	DDIAS	99	-15.15
ENSG00000118513	MYB	92	-13.92
ENSG00000129158	SERGEF	96	-13.44
ENSG00000186318	BACE1	91	-11
ENSG00000107593	PKD2L1	90	-12.86
ENSG00000255302	EID1	95	-16.21
ENSG00000110660	SLC35F2	96	-15.81
ENSG00000123106	CCDC91	98	-13.18
ENSG00000155957	TMBIM4	98	-17.45
ENSG00000165821	SALL2	97	-36.67
ENSG00000087494	PTHLH	99	-14.03
ENSG00000061936	SFSWAP	95	-29.35
ENSG00000134516	DOCK2	95	-14.3
ENSG00000149948	HMGA2	94	-13.18
ENSG00000149483	TMEM138	94	-30.48
ENSG00000118600	RXYLT1	97	-14.32
ENSG00000166557	TMED3	92	-17.08
ENSG00000134531	EMP1	96	-16.89
ENSG00000182173	TSEN54	96	-13.18
ENSG00000107036	RIC1	94	-32.82
ENSG00000175899	A2M	97	-29.55
ENSG00000157895	C12orf43	93	-24.49
ENSG00000057294	PKP2	99	-12.84
ENSG00000139436	GIT2	99	-15.36
ENSG00000111058	ACSS3	98	-15.29
ENSG00000258830	AC137834.1	91	-19.54
ENSG00000136010	ALDH1L2	99	-15.71
ENSG00000203546	AL139353.1	92	-47.46
ENSG00000121749	TBC1D15	93	-13.68
ENSG00000079387	SENP1	91	-74.79
ENSG00000100558	PLEK2	92	-15.49
ENSG00000119599	DCAF4	93	-17.2
ENSG00000205659	LIN52	95	-17.34
ENSG00000092200	RPGRIP1	94	-14.2

ENSG00000092020	PPP2R3C	97	-15.08
ENSG00000133703	KRAS	99	-13.18
ENSG00000100784	RPS6KA5	93	-17.86
ENSG00000066629	EML1	94	-18.03
ENSG00000139926	FRMD6	91	-10.48
ENSG00000134138	MEIS2	93	-29.59
ENSG00000184254	ALDH1A3	99	-12.66
ENSG00000157734	SNX22	93	-14.38
ENSG00000166262	FAM227B	94	-19.04
ENSG00000166734	GOLM2	94	-13.06
ENSG00000104129	DNAJC17	93	-14.54
ENSG00000128944	KNSTRN	98	-13.95
ENSG00000140463	BBS4	98	-13.9
ENSG00000047346	FAM214A	99	-12.66
ENSG00000197006	METTL9	96	-24.1
ENSG00000159433	STARD9	98	-18.88
ENSG00000092531	SNAP23	92	-18.1
ENSG00000197912	SPG7	93	-13.23
ENSG00000159459	UBR1	98	-15.77
ENSG00000103528	SYT17	94	-12.94
ENSG00000179776	CDH5	97	-14.49
ENSG00000069943	PIGB	98	-12.66
ENSG00000140386	SCAPER	97	-19
ENSG00000187806	TMEM202	97	-20.36
ENSG00000103248	MTHFSD	90	-11.48
ENSG00000260314	MRC1	97	-17.51
ENSG00000183914	DNAH2	99	-13.18
ENSG00000184009	ACTG1	93	-17.45
ENSG00000074755	ZZEF1	93	-13.9
ENSG00000171861	MRM3	94	-12.66
ENSG00000129197	RPAIN	94	-13.75
ENSG00000065534	MYLK	96	-19.07
ENSG00000068489	PRR11	93	-12.48
ENSG00000159640	ACE	90	-31.37
ENSG00000108592	FTSJ3	91	-27.87
ENSG00000101695	RNF125	94	-16.06
ENSG00000266714	MYO15B	96	-12.98
ENSG00000132589	FLOT2	94	-29.15
ENSG00000108691	CCL2	93	-13.18
ENSG00000206432	TMEM200C	97	-12.66
ENSG00000266412	NCOA4	97	-17.47
ENSG00000109046	WSB1	97	-22.14
ENSG00000178927	CYBC1	94	-12.87
ENSG00000141622	RNF165	94	-12.66
ENSG00000167434	CA4	94	-14.65
ENSG00000166569	CPLX4	94	-18.23
ENSG00000152223	EPG5	94	-29.37
ENSG00000118900	UBN1	92	-17.67
ENSG00000175354	PTPN2	96	-12.87
ENSG00000087157	PGS1	96	-18.81

ENSG00000127540	UQCR11	94	-16.42
ENSG00000171791	BCL2	92	-27.04
ENSG00000130876	SLC7A10	96	-22.03
ENSG00000150477	KIAA1328	96	-31.1
ENSG00000126581	BECN1	96	-18.77
ENSG00000132478	UNK	95	-14.5
ENSG00000204604	ZNF468	95	-12.42
ENSG00000178935	ZNF552	95	-15.35
ENSG00000188785	ZNF548	97	-17.06
ENSG00000123815	COQ8B	94	-15.13
ENSG00000101158	NELFCD	94	-19.94
ENSG00000283580	AC098484.3	98	-17.09
ENSG00000117569	PTBP2	91	-45.86
ENSG00000134207	SYT6	98	-35.09
ENSG00000103148	NPRL3	94	-13.81
ENSG00000144935	TRPC1	91	-11
ENSG00000253846	PCDHGA10	98	-14.98
ENSG00000076351	SLC46A1	96	-14.05
ENSG00000101365	IDH3B	95	-18.42
ENSG00000276023	DUSP14	94	-14.78
ENSG00000275700	AATF	90	-12.98
ENSG00000189339	SLC35E2B	96	-15.42
ENSG00000085365	SCAMP1	90	-19.11
ENSG00000152242	C18orf25	98	-19.61
ENSG00000128266	GNAZ	98	-13.18
ENSG00000278053	DDX52	92	-21.76
ENSG00000132128	LRRC41	93	-22.37
ENSG00000024862	CCDC28A	90	-14.71
ENSG00000179583	CIITA	96	-19.98
ENSG00000161956	SENP3	94	-14.67
ENSG00000118242	MREG	92	-15.68
ENSG00000163214	DHX57	93	-28.74
ENSG00000099984	GSTT2	92	-12.52
ENSG00000273820	USP27X	98	-15.5
ENSG00000101413	RPRD1B	93	-13.44
ENSG00000095596	CYP26A1	95	-41.19
ENSG00000114062	UBE3A	91	-27.16
ENSG00000165304	MELK	93	-17.39
ENSG00000023041	ZDHHC6	94	-22.5
ENSG00000108231	LGI1	97	-13.05
ENSG00000259316	AC087632.2	97	-21.94
ENSG00000189195	BTBD8	96	-28.94
ENSG00000136531	SCN2A	96	-14.51
ENSG00000283208	AC001226.2	91	-13.65
ENSG00000197309	OR10D3	95	-12.66
ENSG00000177000	MTHFR	92	-16.97
ENSG00000284732	AP002512.3	96	-15.24
ENSG00000081923	ATP8B1	91	-29.74
ENSG00000133835	HSD17B4	97	-16.78
ENSG00000264058	AC073508.2	92	-17.08

ENSG00000215301	DDX3X	95	-13.81
ENSG00000060718	COL11A1	93	-10.5
ENSG00000113163	CERT1	96	-15.22
ENSG00000116035	VAX2	96	-16.41
ENSG00000168032	ENTPD3	90	-29.76
ENSG00000088035	ALG6	96	-16.33
ENSG00000187510	PLEKHG7	91	-12.19
ENSG00000077800	FKBP6	97	-32.95
ENSG00000172175	MALT1	94	-15.77
ENSG00000198589	LRBA	90	-16.82
ENSG00000035681	NSMAF	91	-19.05
ENSG00000198677	TTC37	93	-17.03
ENSG00000285816	AP000944.5	94	-25.86
ENSG00000285708	AC097634.4	90	-37.19
ENSG00000131174	COX7B	94	-23.29
ENSG00000261609	GAN	90	-17.51
ENSG00000213949	ITGA1	92	-38.34
ENSG00000170581	STAT2	92	-14.21
ENSG00000078747	ITCH	92	-19.58
ENSG00000070831	CDC42	99	-18.66
ENSG00000198707	CEP290	91	-14.22
ENSG00000061938	TNK2	91	-13.89
ENSG00000165868	HSPA12A	94	-48.26
ENSG00000106692	FKTN	90	-13.46
ENSG00000121957	GPSM2	98	-16.04
ENSG00000116991	SIPA1L2	97	-13.59
ENSG00000168356	SCN11A	92	-25.07
ENSG00000153944	MSI2	98	-17.41
ENSG00000156709	AIFM1	97	-17.38
ENSG00000145907	G3BP1	91	-12.19
ENSG00000135047	CTSL	96	-13.18
ENSG00000157601	MX1	93	-17.69
ENSG00000127914	AKAP9	94	-20.88
ENSG00000118217	ATF6	97	-14.57
ENSG00000055609	KMT2C	93	-48.08
ENSG00000120697	ALG5	90	-16.53
ENSG00000111331	OAS3	90	-31.73
ENSG00000043143	JADE2	90	-19.42

Supplementray table 6. GO analysis of target genes of miR167a

GO Id	Function	GO_term	S gene number	TS gene number	B gene number	TB gene number	Pvalue of Fisher's Exact Test
GO:0005515	molecular_function	protein binding	514	661	15,028	22,750	1.72E-11
GO:0005737	cellular_component	cytoplasm	274	661	7,411	22,750	7.49E-07
GO:0005654	cellular_component	nucleoplasm	167	661	4,200	22,750	6.60E-06
GO:0005856	cellular_component	cytoskeleton	71	661	1,478	22,750	2.12E-05
GO:0005634	cellular_component	nucleus	257	661	7,191	22,750	3.54E-05
GO:0016324	cellular_component	apical plasma membrane	26	661	377	22,750	4.75E-05
GO:0005829	cellular_component	cytosol	209	661	5,693	22,750	6.24E-05
GO:0099566	biological_process	regulation of postsynaptic cytosolic calcium ion concentration	4	661	11	22,750	1.98E-04
GO:0048066	biological_process	developmental pigmentation	4	661	11	22,750	1.98E-04
GO:0030054	cellular_component	cell junction	50	661	1,014	22,750	1.99E-04
GO:0048496	biological_process	maintenance of animal organ identity	3	661	5	22,750	2.34E-04
GO:0007049	biological_process	cell cycle	37	661	689	22,750	2.75E-04
GO:0034063	biological_process	stress granule assembly	5	661	23	22,750	4.44E-04
GO:0044389	molecular_function	ubiquitin-like protein ligase binding	5	661	23	22,750	4.44E-04
GO:1990822	biological_process	basic amino acid transmembrane transport	3	661	6	22,750	4.57E-04
GO:2000378	biological_process	negative regulation of reactive oxygen species metabolic process	5	661	24	22,750	5.48E-04
GO:0015807	biological_process	L-amino acid transport	4	661	14	22,750	5.60E-04
GO:0007601	biological_process	visual perception	16	661	218	22,750	6.73E-04
GO:0050910	biological_process	detection of mechanical stimulus involved in sensory perception of sound	4	661	15	22,750	7.47E-04
GO:0000226	biological_process	microtubule cytoskeleton organization	13	661	159	22,750	7.79E-04
GO:2000052	biological_process	pathway	3	661	7	22,750	7.83E-04
GO:0099580	molecular_function	ion antiporter activity involved in regulation of postsynaptic membrane potential	2	661	2	22,750	8.43E-04
GO:0031312	cellular_component	extrinsic component of organelle membrane	2	661	2	22,750	8.43E-04
GO:0062029	biological_process	positive regulation of stress granule assembly	2	661	2	22,750	8.43E-04
GO:0097324	biological_process	melanocyte migration	2	661	2	22,750	8.43E-04
GO:0010508	biological_process	positive regulation of autophagy	8	661	69	22,750	8.55E-04
GO:0015631	molecular_function	tubulin binding	8	661	70	22,750	9.41E-04

GO:0016604	cellular_component	nuclear body	22	661	373	22,750	1.45E-03
GO:0048471	cellular_component	perinuclear region of cytoplasm	37	661	760	22,750	1.64E-03
GO:0015174	molecular_function	basic amino acid transmembrane transporter activity	3	661	9	22,750	1.80E-03
GO:0035497	molecular_function	cAMP response element binding	4	661	19	22,750	1.93E-03
GO:0015297	molecular_function	antiporter activity	7	661	63	22,750	2.29E-03
GO:0051010	molecular_function	microtubule plus-end binding	4	661	20	22,750	2.36E-03
GO:0019002	molecular_function	GMP binding	2	661	3	22,750	2.48E-03
GO:0019959	molecular_function	interleukin-8 binding	2	661	3	22,750	2.48E-03

Supplementary table 7. KEGG analysis of target genes of miR167a

Pathway Id	pathway description	S gene number	TS gene number	B gene number	TB gene number	Pvalue of Fisher's Exact Test
ko04210	Apoptosis	13	285	136	8,039	1.03E-03
ko05412	Arrhythmogenic right ventricular cardiomyopathy	9	285	77	8,039	1.52E-03
ko04933	complications	10	285	100	8,039	2.77E-03
ko04140	Autophagy - animal	12	285	137	8,039	3.34E-03
ko04211	Longevity regulating pathway	9	285	89	8,039	4.13E-03
ko05162	Measles	12	285	142	8,039	4.47E-03
ko04621	NOD-like receptor signaling pathway	14	285	181	8,039	4.93E-03
ko04932	Non-alcoholic fatty liver disease	12	285	150	8,039	6.90E-03
ko04722	Neurotrophin signaling pathway	10	285	119	8,039	9.47E-03
ko05418	Fluid shear stress and atherosclerosis	11	285	138	8,039	9.76E-03