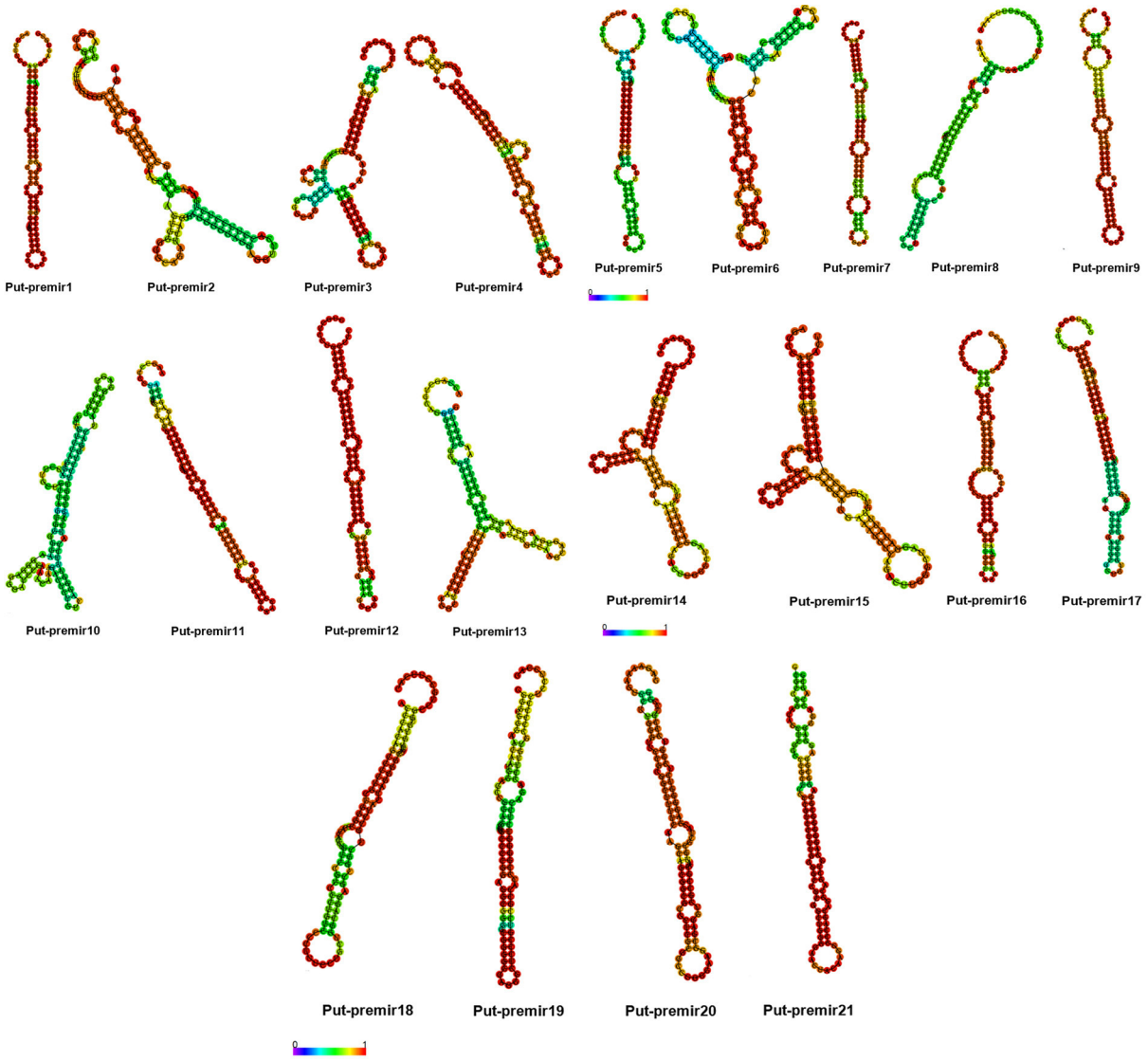


Figure S1: This figure presents the secondary structures of candidate pre-miRNAs, which were predicted by the RNAfold web server based on MFE. The base pair probabilities are illustrated using a color gradient ranging from 0 to 1. MFE: Minimum free energy

(A)

```
>pre-miRNA
seq    = CGGGCGGGAACAAUGGAGCCGGAGCUGGUGCCCCGGAGGCGGGGCGGGGGGAGGGCUCCCGUCCGCCACCCGGGGUCUCCAGACCUUGUGCCCCCCUCCUCCAG
struct = .(((.(((.((((.((....(((.....(((((((.((((((.(((((.....)))))))))))))..)))))))))))...)))))).)))))).........
seq_3p = UCCCGUCCGCCACCCGGGGU

 g      g      a-       ugguc    ccga  u    a    c   c-------
a gggggc gggcgg  ggccccg     gagg    gg aaca ggg ggg
g |||||| ||||||  |||||||     ||||    || |||| ||| |||
c cUCCCG UCCGCC  CCGGGGU     cucc    cc uugu ccc ccc
 g      -      AC       -----    aga-  -    g   -   uccuccag
```

(B)

```
>pre-miRNA
seq    = GUGCUCCUGAGGGAUUGGGGAGGGCCUGGAGUUUCUGGCUGUCCUUGGAAAGUUGAUUUAAUAAGGGUUCCAGGAAAACCAGCCUCCCUCCCCUCUCCCUCUCC
struct = ........((((((..(((((((((.((((..(((((((...(((((((.(((.....)))..)))))))..))))))))..))))...)))))))))..)))))))...
seq_3p = UAUUUAAUAAGGGUUCCAGGAAA

 g   g-      guc       ga    c--        uu      cguucgug
u aaa  guuccu   ggucuuu  gguc   gggagggg  agggag
u |||  ||||||   |||||||  ||||   ||||||||  ||||||
U UUU  UAAGGG   CCAGGAA  ccag   cccucccc  ucccuc
 A   AA      UU-       Aa    ccu        uc      ucc-----
```

Figure S2: The results of the FOMmiR analysis are shown for the sequences of (A) put-premir19 and (B) put-premir12. In both panels, the predicted mature miRNA sequence is displayed in red. miRNA: MicroRNA

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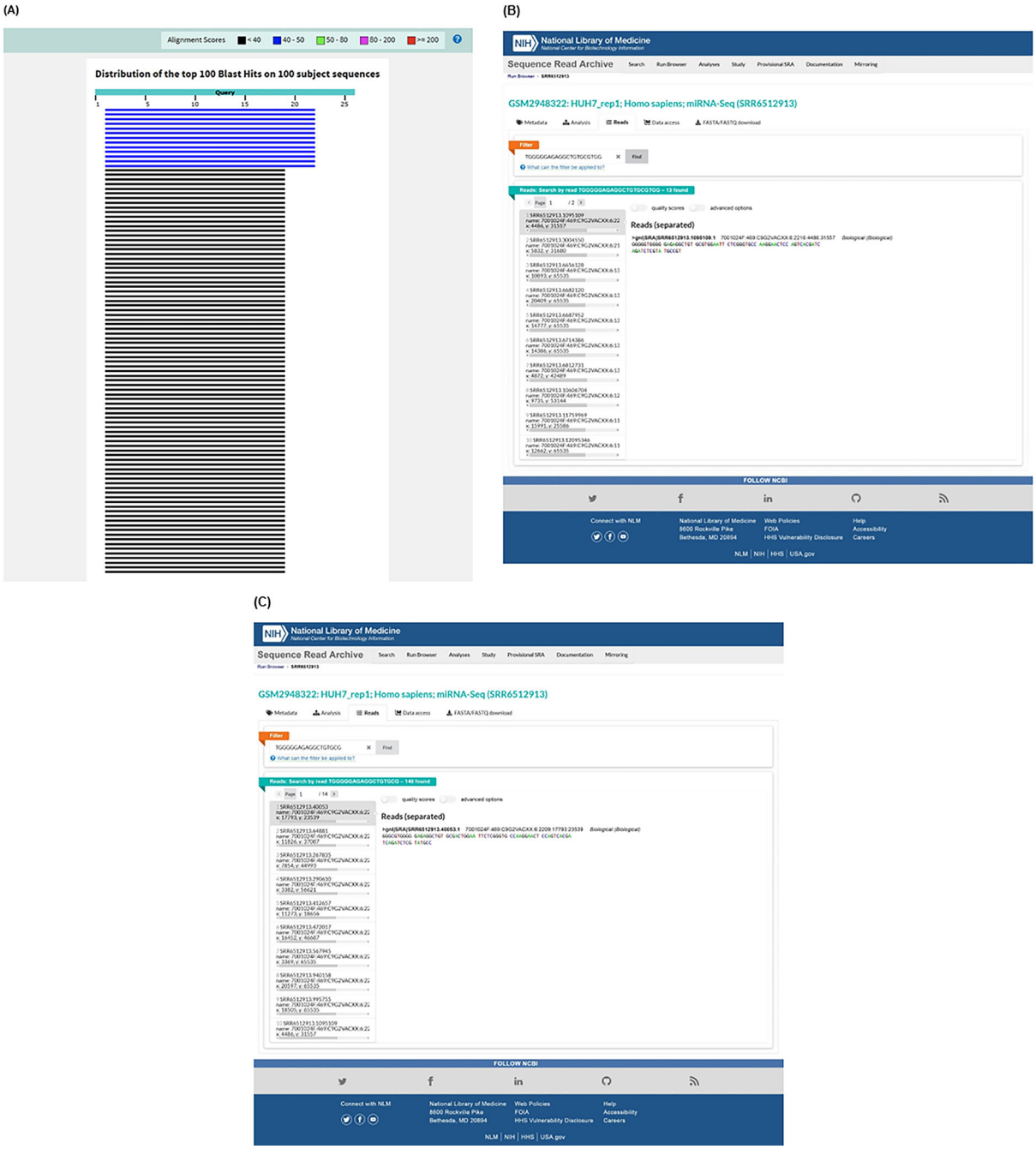


Figure S3: Panel (A) displays the BLAST results for a selected sequence of put-premir11 (ATGGGGGAGAGGCTGTGCGTGGTGCC) against 29 SRXs related to various tumors. These alignments revealed 13 and 140 aligned reads with the sequence, as depicted in panels (B) and (C), respectively. SRX: SRA experiment set; BLAST: Basic local alignment search tool

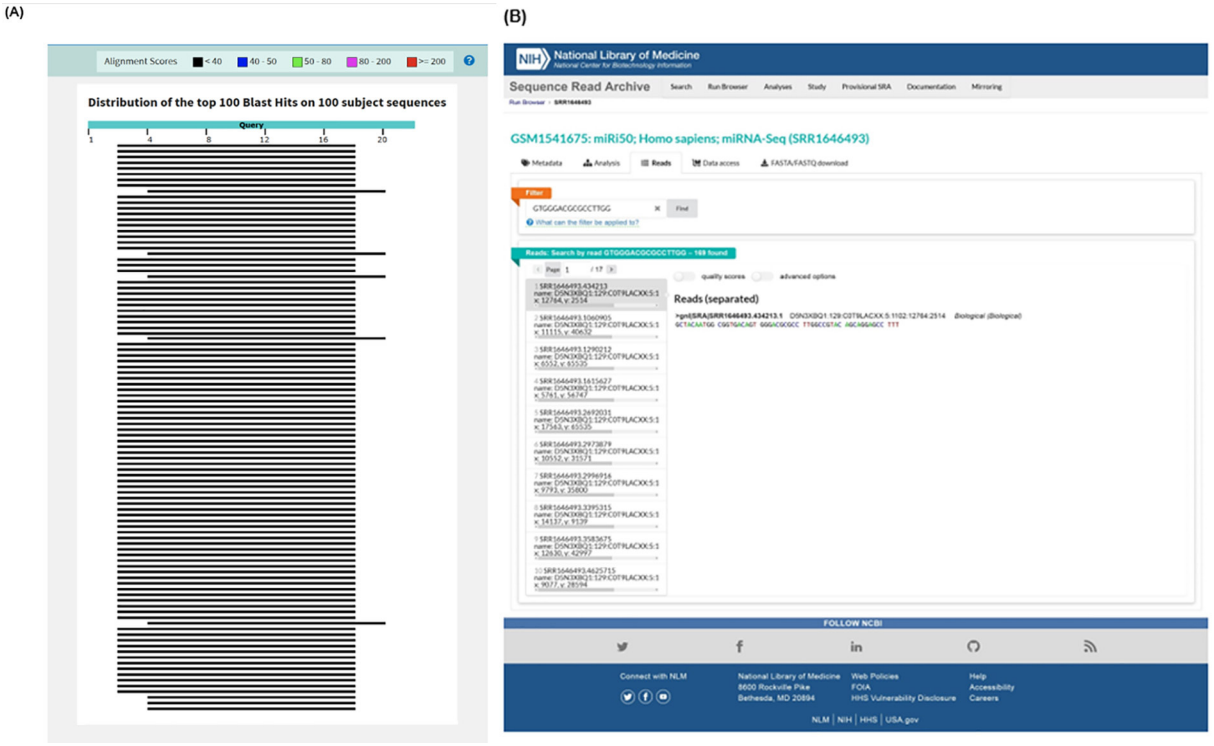


Figure S4: Panel (A) illustrates the BLAST results of the MatureBayes-predicted 3′ stem sequence of put-premir16 (CCGTGGGACGCGCCTTGGTCTG) against 29 SRXs associated with different tumors. Panel (B) demonstrates the identification of 169 aligned reads corresponding to this sequence. SRX: SRA experiment set; BLAST: Basic local alignment search tool

Table S1: Detection of real pre-miRNAs from the pseudo-ones by online prediction software programs mentioned in the table

Predicted pre-miRNA	MiPred	iMcRNA-ExPseSSC	iMcRNA-PseSSC	iMiRNA-PseDPC	miRNA-dis	iMiRNA-SSF	miRNA-deKmer
Put-premir1	Pseudo miRNA precursor	False	False	False	False	Real pre-miRNA	False
Put-premir2	Not a pre-miRNA hairpin	False	False	False	False	Pseudo pre-miRNA	False
Put-premir3	Not a pre-miRNA hairpin	False	False	False	False	Pseudo pre-miRNA	False
Put-premir4	Not a pre-miRNA hairpin	False	False	Real	Real	Pseudo pre-miRNA	False
Put-premir5	Pseudo miRNA precursor	False	False	False	False	Pseudo pre-miRNA	False
Put-premir6	Not a pre-miRNA hairpin	False	False	False	False	Pseudo pre-miRNA	False
Put-premir7	Pseudo miRNA precursor	False	False	False	False	Pseudo pre-miRNA	False
Put-premir8	Not a pre-miRNA hairpin	False	False	False	False	Pseudo pre-miRNA	False
Put-premir9	Pseudo miRNA precursor	Real	False	Real	False	Real pre-miRNA	False
Put-premir10	Not a pre-miRNA hairpin	Real	Real	Real	Real	Pseudo pre-miRNA	False
Put-premir11	Pseudo miRNA precursor	Real	False	False	False	Real pre-miRNA	False
Put-premir12	Pseudo miRNA precursor	Real	Real	Real	Real	Real pre-miRNA	False
Put-premir13	Pseudo miRNA precursor	False	Real	False	False	Pseudo pre-miRNA	False
Put-premir14	Not a pre-miRNA hairpin	Real	Real	Real	Real	Real pre-miRNA	False
Put-premir15	Not a pre-miRNA hairpin	Real	Real	Real	Real	Real pre-miRNA	False
Put-premir16	Pseudo miRNA precursor	False	False	False	False	Pseudo pre-miRNA	False
Put-premir17	Pseudo miRNA precursor	Real	False	Real	Real	Real pre-miRNA	False
Put-premir18	Pseudo miRNA precursor	Real	Real	False	False	Pseudo pre-miRNA	False
Put-premir19	Pseudo miRNA precursor	Real	Real	Real	Real	Real pre-miRNA	Real
Put-premir20	Pseudo miRNA precursor	Real	False	False	False	Pseudo pre-miRNA	False
Put-premir21	Pseudo miRNA precursor	False	False	False	False	Real pre-miRNA	Real

Table S2: Summary of candidate precursor analysis

Predicted pre-miRNA	MiREval	Number of detected hairpins using MiREval	miRNA spotter	PHDcleav
Put-premir1	+	1	+	+
Put-premir2	-	-	-	-
Put-premir3	+	1	-	-
Put-premir4	+	1	+	-
Put-premir5	+	2	-	+
Put-premir6	+	1	-	-
Put-premir7	+	1	+	+
Put-premir8	+	1	-	+
Put-premir9	+	4	+	+
Put-premir10	+	3	-	-
Put-premir11	+	2	+	-
Put-premir12	+	2	+	+
Put-premir13	+	2	+	+
Put-premir14	+	1	-	-
Put-premir15	+	1	-	-
Put-premir16	+	1	+	+
Put-premir17	+	4	+	+
Put-premir18	+	2	+	+
Put-premir19	+	4	+	+
Put-premir20	+	2	-	+
Put-premir21	+	3	+	+

MiREval and miRNA Spotter were used to validate the stem-loop structures of the candidates, and PHDcleav was used to predict Dicer processing sites. Positive predictions for secondary structures or cleavage sites by the respective software are indicated by (+), while negative predictions are indicated by (-)

Table S3: List of the mature miRNA sequences predicted via the MatureBayes online tool

Pre-miRNA candidate	Location	Length	Mature miRNA sequence
Put-premir1	Mature 5′ stem Mature 3′ stem	22	CATGCTCCCCCCGTGCCCGTGG CGTGGCGAGGGCAGGACATCGA
Put-premir2	Mature 5′ stem Mature 3′ stem	22	AGTTTCTGAAGCAGAGTGGGGG AGGTTCACCTTCCTCTGAAACT
Put-premir3	Mature 5′ stem Mature 3′ stem	22	ATGCTGGGGGGGCAGCCCAAGG AACCTCTCGCTAACAGGTGTCA
Put-premir4	Mature 5′ stem Mature 3′ stem	22	CAGTGCGGCTTCCTGGCTGACT GAGGAGCAGGAATGGGCAGACT
Put-premir5	Mature 5′ stem Mature 3′ stem	22	TGTGTCTGCAGCTGCGACCTGT TGTCATGCACTTCCTGGTCTGG
Put-premir6	Mature 5′ stem Mature 3′ stem	22	AAGTGTTTTCAATTTGAAAGAG TCCCCACCCTCCCGGCAACTTT
Put-premir7	Mature 5′ stem Mature 3′ stem	22	AGTACCTGGACACAGTGGAGGG AGAGCTTGTCCCTGTTTTGTGA
Put-premir8	Mature 5′ stem Mature 3′ stem	22	TCGGTGAGATGCTTCTGCACTC CTCTGGCCGGGTCCTGCCAGCC
Put-premir9	Mature 5′ stem Mature 3′ stem	22	ATGGCTTGTGTCTGGGCGGTGA TGGGGAGTCATTATCCGGGAGG
Put-premir10	Mature 5′ stem Mature 3′ stem	22	TGGGGGAAGGGAGGGATCCCAA TCAGGGTTTCCATCACCTGGTT
Put-premir11	Mature 5′ stem Mature 3′ stem	22	TTTTGCAGAAACCTGCACCTAT CCTATGGGGGAGAGGCTGTGCG
Put-premir12	Mature 5′ stem Mature 3′ stem	22	TGAGGGATTGGGGAGGGCCTGG AGGGTTCCAGGAAAACCAGCCT
Put-premir13	Mature 5′ stem Mature 3′ stem	22	CACCTGCAAGGCTGCAGGTTAC CAGGTTACATCTATCTGTCAAG
Put-premir14	Mature 5′ stem Mature 3′ stem	22	AGAAGATTCTGGTGTTTCCAGA TTGTTTTTCCTCCTAAGGTTGC
Put-premir15	Mature 5′ stem Mature 3′ stem	22	AGAAGATTCTGGTGTTTCCAGA TTGTTTTTCCTCCTAAGGTTGC
Put-premir16	Mature 5′ stem Mature 3′ stem	22	AGGCTTGTTTAAAAGCGAAGTA CCGTGGGACGCGCCTTGGTCTG
Put-premir17	Mature 5′ stem Mature 3′ stem	22	GGGAGGAGGGCGGGAGTGGGCG TGTGTTGCATTCCACTCCATGT
Put-premir18	Mature 5′ stem Mature 3′ stem	22	TGTCCCCTTTCCTGCTGGCAGG AGGAGCCGGCTGCCTACCAGGG
Put-premir19	Mature 5′ stem Mature 3′ stem	22	TGGTGCCCCGGAGGCGGGGCGG CGTCCGCCACCCGGGGTCTCCA
Put-premir20	Mature 5′ stem Mature 3′ stem	22	TTTCAAGCAGCGGCGCGCTCGC CGAGGGGTCTCGGTCCCGTCCG
Put-premir21	Mature 5′ stem Mature 3′ stem	22	CCGTCCTTTGGGGCCGCGGCTG AGGCAGCTGCAGGGGGCGGAGG

miRNA: MicroRNA

Table S4: List of SRXs from the NCBI-SRA database used for blasting with selected sequences

Number	SRXs related to different tumors	SRXs related to breast cancer cell lines
1	SRX3600937	SRX2923335
2	ERX1934177	SRX2628419
3	SRX2782923	ERX1437398
4	SRX2782918	SRX2156911
5	SRX2539122	SRX995307
6	SRX2485273	SRX995303
7	SRX1653517	SRX995300
8	SRX1531968	SRX995297
9	SRX1089880	SRX1008357
10	SRX1057150	SRX2923336
11	SRX1055543	SRX2628421
12	SRX838074	SRX2069644
13	SRX755907	SRX2069635
14	SRX729365	SRX2069641
15	SRX729266	SRX2069671
16	SRX693076	SRX2069670
17	SRX693075	SRX2069669
18	SRX513284	SRX2069654
19	SRX513283	SRX1452190
20	SRX513286	
21	SRX513285	
22	SRX546234	
23	SRX1430685	
24	SRX1959033	
25	SRX3075587	
26	SRX2539095	
27	DRX032950	
28	DRX032959	
29	SRX2485278	

All selected SRXs were based on transcriptomic source and miRNA-seq strategy. SRA: Sequence Read Archive; SRX: SRA experiment set

Table S5: List of 1014 target genes predicted by miRDB software

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
Put-premir1	Put-miR1-1 (MatureBayes 5'stem)	FNDC3B	64778	Fibronectin Type III Domain Containing 3B
		PTGDR	5729	Prostaglandin D2 Receptor
		PRKAR1A	5573	Protein Kinase cAMP-Dependent Type I Regulatory Subunit Alpha
		RNF121	55298	Ring Finger Protein 121
		ETF1	2107	Eukaryotic Translation Termination Factor 1
		FOXL2NB	401089	FOXL2 Neighbor
		NSMCE3	56160	NSE3 Homolog, SMC5-SMC6 Complex Component
	Put-miR1-2 (MatureBayes 3'stem)	MAP3K12	7786	Mitogen-Activated Protein Kinase Kinase Kinase 12
		RECK	8434	Reversion-Inducing Cysteine-Rich Protein With Kazal Motifs
	Put-miR1-3 (UCSC putative mature miR)	EMP1	2012	Epithelial Membrane Protein 1
		RGS6	9628	Regulator Of G Protein Signaling 6
		ZNF99	7652	Zinc Finger Protein 99
		MED13L	23389	Mediator Complex Subunit 13L
		MLLT6	4302	MLLT6, PHD Finger Containing
		ZNF740	283337	Zinc Finger Protein 740
		FOXG1	2290	Forkhead Box G1
		ZNF135	7694	Zinc Finger Protein 135
		SETD5	55209	SET Domain Containing 5
		LYRM9	201229	LYR Motif Containing 9
		ZNF589	51385	Zinc Finger Protein 589
		SDK2	54549	Sidekick Cell Adhesion Molecule 2
		ZCCHC4	29063	Zinc Finger CCHC-Type Containing 4
		ARMH3	79591	Armadillo Like Helical Domain Containing 3
		MEX3A	92312	Mex-3 RNA Binding Family Member A
		KLHDC3	116138	Kelch Domain Containing 3
		KIF21B	23046	Kinesin Family Member 21B
		SCN2B	6327	Sodium Voltage-Gated Channel Beta Subunit 2
		BRD2	6046	Bromodomain Containing 2
		BTBD3	22903	BTB Domain Containing 3
		KCNJ12	3768	Potassium Inwardly Rectifying Channel Subfamily J Member 12
		KCNJ18	100134444	Potassium Inwardly Rectifying Channel Subfamily J Member 18
		BCL11B	64919	BAF Chromatin Remodeling Complex Subunit BCL11B
		TIGIT	201633	T Cell Immunoreceptor With Ig And ITIM Domains
		TSPAN10	83882	Tetraspanin 10
		EOMES	8320	Eomesodermin
		TNFRSF12A	51330	TNF Receptor Superfamily Member 12A
		GPATCH2L	55668	G-Patch Domain Containing 2 Like
		CEBPA	1050	CCAAT Enhancer Binding Protein Alpha
		LRRC4	64101	Leucine Rich Repeat Containing 4
		ARPIN	348110	Actin Related Protein 2/3 Complex Inhibitor
		ZNF37A	7587	Zinc Finger Protein 37A
		SRF	6722	Serum Response Factor
		FAM155B	27112	Family With Sequence Similarity 155 Member B
		FOXO4	4303	Forkhead Box O4
		ASXL1	171023	ASXL Transcriptional Regulator 1
		CCDC117	150275	Coiled-Coil Domain Containing 117
		RREB1	6239	Ras Responsive Element Binding Protein 1
		PIK3C2B	5287	Phosphatidylinositol-4-Phosphate 3-Kinase Catalytic Subunit Type 2 Beta
		TEAD2	8463	TEA Domain Transcription Factor 2
		SEMA4F	10505	Semaphorin 4F

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		PLXNB1	5364	Plexin B1
		PEX5	5830	Peroxisomal Biogenesis Factor 5
		UNC13A	23025	Unc-13 Homolog A
		ADGRL2	23266	Adhesion G Protein-Coupled Receptor L2
		BLCAP	10904	BLCAP Apoptosis Inducing Factor
		CPLX2	10814	Complexin 2
		PDIA3	2923	Protein Disulfide Isomerase Family A Member 3
		ZNF266	10781	Zinc Finger Protein 266
		LAIR2	3904	Leukocyte Associated Immunoglobulin Like Receptor 2
		ACVR1	90	Activin A Receptor Type 1
		SIRT1	23411	Sirtuin 1
		UBE4B	10277	Ubiquitination Factor E4B
		MAPK14	1432	Mitogen-Activated Protein Kinase 14
		AFF4	27125	AF4/FMR2 Family Member 4
Put-premir4	Put-miR4-1 (MatureBayes 3'stem)	RC3H1	149041	Ring Finger And CCCH-Type Domains 1
		PLAG1	5324	PLAG1 Zinc Finger
		ALG9	79796	ALG9 Alpha-1,2-Mannosyltransferase
		IER3	8870	Immediate Early Response 3
		MTMR3	8897	Myotubularin Related Protein 3
		TOMM22	56993	Translocase Of Outer Mitochondrial Membrane 22
		GRIN2B	2904	Glutamate Ionotropic Receptor NMDA Type Subunit 2B
		NUFIP2	57532	Nuclear FMR1 Interacting Protein 2
		ITGB8	3696	Integrin Subunit Beta 8
		SRSF1	6426	Serine And Arginine Rich Splicing Factor 1
		RBM27	54439	RNA Binding Motif Protein 27
		RFC3	5983	Replication Factor C Subunit 3
		JMJD6	23210	Jumonji Domain Containing 6, Arginine Demethylase And Lysine Hydroxylase
		ATAD2B	54454	ATPase Family AAA Domain Containing 2B
		SUGT1	10910	SGT1 Homolog, MIS12 Kinetochore Complex Assembly Cochaperone
		DNTTIP2	30836	Deoxynucleotidyltransferase Terminal Interacting Protein 2
		SLC9A9	285195	Solute Carrier Family 9 Member A9
	Put-miR4-2 (SSCpofiler putative mature miR)	CLIC2	1193	Chloride Intracellular Channel 2
		ROCK2	9475	Rho Associated Coiled-Coil Containing Protein Kinase 2
		PCDH15	65217	Protocadherin Related 15
		ITGAV	3685	Integrin Subunit Alpha V
		SNX3	8724	Sorting Nexin 3
		CYSLTR2	57105	Cysteinyl Leukotriene Receptor 2
		RALY	22913	RALY Heterogeneous Nuclear Ribonucleoprotein
Put-premir19	Put-miR19-1 (MatureBayes 5'stem)	WNT4	54361	Wnt Family Member 4
		TBPL1	9519	TATA-Box Binding Protein Like 1
		ATP6V0A1	535	ATPase H+ Transporting V0 Subunit A1
		COMMD10	51397	COMM Domain Containing 10
		MBNL1	4154	Muscleblind Like Splicing Regulator 1
		BMF	90427	Bcl2 Modifying Factor
		DLGAP3	58512	DLG Associated Protein 3
		UBP1	7342	Upstream Binding Protein 1
		USP3	9960	Ubiquitin Specific Peptidase 3
		DHX35	60625	DEAH-Box Helicase 35
		SLC35E4	339665	Solute Carrier Family 35 Member E4
		PRG2	5553	Proteoglycan 2, Pro Eosinophil Major Basic Protein
		NECAP1	25977	NECAP Endocytosis Associated 1
		ANKRD44	91526	Ankyrin Repeat Domain 44

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
	Put-miR19-2 (FOMmiR putative mature miR 3p)	FAM20C	56975	FAM20C Golgi Associated Secretory Pathway Kinase
Put-premir20	Put-miR20-1 (MatureBayes 5'stem)	NAP1L3	4675	Nucleosome Assembly Protein 1 Like 3
		OSBPL11	114885	Oxysterol Binding Protein Like 11
		YOD1	55432	YOD1 Deubiquitinase
		MAB21L1	4081	Mab-21 Like 1
		KLF6	1316	Kruppel-like factor 6
		DICER1	23405	Dicer 1, Ribonuclease III
		SKIL	6498	SKI Like Proto-Oncogene
		ATP11C	286410	ATPase Phospholipid Transporting 11C
		ODC1	4953	Ornithine Decarboxylase 1
		KDM7A	80853	Lysine Demethylase 7A
		HSPA12A	259217	Heat Shock Protein Family A (Hsp70) Member 12A
		STK39	27347	Serine/Threonine Kinase 39
		RSPH4A	345895	Radial Spoke Head Component 4A
		TMEM245	23731	Transmembrane Protein 245
		OVOL2	58495	Ovo Like Zinc Finger 2
		TIMM17A	10440	Translocase Of Inner Mitochondrial Membrane 17A
		UNC80	285175	Unc-80 Homolog, NALCN Channel Complex Subunit
		ATAD2B	54454	ATPase Family AAA Domain Containing 2B
		RALGAPB	57148	Ral GTPase Activating Protein Non-Catalytic Subunit Beta
		PPP1R15B	84919	Protein Phosphatase 1 Regulatory Subunit 15B
		DCLK1	9201	Doublecortin Like Kinase 1
		DBF4	10926	DBF4 Zinc Finger
		CMPK1	51727	Cytidine/Uridine Monophosphate Kinase 1
		POLR2M	81488	RNA Polymerase II Subunit M
		GCOM1	145781	GRINL1A Complex Locus 1
		MRFAP1	93621	Morf4 Family Associated Protein 1
		PTPN4	5775	Protein Tyrosine Phosphatase Non-Receptor Type 4
		FUBP3	8939	Far Upstream Element Binding Protein 3
		DCBLD2	131566	Discoidin, CUB And LCCL Domain Containing 2
		NFIB	4781	Nuclear Factor I B
		MORF4L2	9643	Mortality Factor 4 Like 2
		FAM98A	25940	Family With Sequence Similarity 98 Member A
		FAM200B	285550	Family With Sequence Similarity 200 Member B
		STRADB	55437	STE20 Related Adaptor Beta
		CAPZA2	830	Capping Actin Protein Of Muscle Z-Line Subunit Alpha 2
		RAB28	9364	RAB28, Member RAS Oncogene Family
		MCTP1	79772	Multiple C2 And Transmembrane Domain Containing 1
		ZDHHC6	64429	Zinc Finger DHHC-Type Palmitoyltransferase 6
		PPIP5K2	23262	Diphosphoinositol Pentakisphosphate Kinase 2
		ATP5F1E	514	ATP Synthase F1 Subunit Epsilon
		NAB1	4664	NGFI-A Binding Protein 1
		PAM	5066	Peptidylglycine Alpha-Amidating Monooxygenase
		YPEL2	388403	Yippee Like 2
		POLQ	10721	DNA Polymerase Theta
		TRIM71	131405	Tripartite Motif Containing 71
		COMMD3-BMI1	100532731	COMMD3-BMI1 Readthrough
		RANBP3L	202151	RAN Binding Protein 3 Like
		CIPC	85457	CLOCK Interacting Pacemaker
		SEMA6D	80031	Semaphorin 6D
		PSD3	23362	Pleckstrin And Sec7 Domain Containing 3
		STYX	6815	Serine/Threonine/Tyrosine Interacting Protein
		HBP1	26959	HMG-Box Transcription Factor 1
		EP300	2033	E1A Binding Protein P300

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		PALM2	114299	Paralemin 2
		TRPC3	7222	Transient Receptor Potential Cation Channel Subfamily C Member 3
		KCNT2	343450	Potassium Sodium-Activated Channel Subfamily T Member 2
		GRIA3	2892	Glutamate Ionotropic Receptor AMPA Type Subunit 3
		CHD1	1105	Chromodomain Helicase DNA Binding Protein 1
		REEP3	221035	Receptor Accessory Protein 3
		SIX4	51804	SIX Homeobox 4
		CCPG1	9236	Cell Cycle Progression 1
		BIVM	54841	Basic, Immunoglobulin-Like Variable Motif Containing
		GJA1	2697	Gap Junction Protein Alpha 1
		IL1R1	3554	Interleukin 1 Receptor Type 1
		C12orf76	400073	Chromosome 12 Open Reading Frame 76
		OLIG3	167826	Oligodendrocyte Transcription Factor 3
		USF3	205717	Upstream Transcription Factor Family Member 3
		KDM6A	7403	Lysine Demethylase 6A
		HOOK3	84376	Hook Microtubule Tethering Protein 3
		GPR171	29909	G Protein-Coupled Receptor 171
		AAK1	22848	AP2 Associated Kinase 1
		CA13	377677	Carbonic Anhydrase 13
		TMEM59	9528	Transmembrane Protein 59
		PDE4B	5142	Phosphodiesterase 4B
		CCR5	1234	C-C Motif Chemokine Receptor 5
		NUDT19	390916	nudix hydrolase 19
		CREB1	1385	cAMP responsive element binding protein 1
		SKI	6497	SKI proto-oncogene
		DHX35	60625	DEAH-box helicase 35
		ULK1	8408	Unc-51 Like Autophagy Activating Kinase 1
		FERMT2	10979	Fermitin Family Member 2
		CUL4B	8450	Cullin 4B
		CACNA2D3	55799	Calcium Voltage-Gated Channel Auxiliary Subunit Alpha2delta 3
		WT1	7490	Wilms Tumor 1
		PPM1A	5494	Protein Phosphatase, Mg2+/Mn2+ Dependent 1A
		PALM3	342979	Paralemmin 3
		C5	727	Complement C5
		RCBTB1	55213	RCC1 And BTB Domain Containing Protein 1
		GCNT1	2650	Glucosaminyl (N-Acetyl) Transferase 1
		HIPK1	204851	Homeodomain Interacting Protein Kinase 1
		NCAM2	4685	Neural Cell Adhesion Molecule 2
		MLANA	2315	Melan-A
		ZNF518A	9849	Zinc Finger Protein 518A
		NEMF	9147	Nuclear Export Mediator Factor
		LPCAT2	54947	Lysophosphatidylcholine Acyltransferase 2
		FAR1	84188	Fatty Acyl-CoA Reductase 1
		CDK6	1021	Cyclin-dependent kinase 6
	Put-miR20-2 (MatureBayes 3'stem)	FOXP4	116113	Forkhead Box P4
		KAAG1	353219	Kidney Associated Antigen 1
		IL24	11009	Interleukin 24
		VGF	7425	VGF Nerve Growth Factor Inducible
		CASC4	113201	Cancer Susceptibility 4
		NOVA1	4857	NOVA Alternative Splicing Regulator 1
		FAP	2191	Fibroblast Activation Protein Alpha
	Put-miR20-3 (UCSC putative mature miR)	NEMF	9147	Nuclear Export Mediator Factor
		ALG13	79868	ALG13, UDP-N-Acetylglucosaminyltransferase Subunit
		ING3	54556	Inhibitor Of Growth Family Member 3

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		YTHDF2	51441	YTH N6-Methyladenosine RNA Binding Protein F2
		CBL	867	Cbl Proto-Oncogene
		LSM14B	149986	LSM Family Member 14B
		SUN1	23353	Sad1 And UNC84 Domain Containing 1
		UNK	85451	Unk Zinc Finger
		CEP44	80817	Centrosomal Protein 44
		CAPSL	133690	Calcyphosine Like
		ETFRF1	144363	Electron Transfer Flavoprotein Regulatory Factor 1
		TMEM245	23731	Transmembrane Protein 245
		GABPB1	2553	GA Binding Protein Transcription Factor Subunit Beta 1
		MED9	55090	Mediator Complex Subunit 9
		REST	5978	RE1 Silencing Transcription Factor
		PTPN20	26095	Protein Tyrosine Phosphatase, Non-Receptor Type 20
		CELF4	56853	CUGBP Elav-Like Family Member 4
		NFAT5	10725	Nuclear Factor Of Activated T Cells 5
		MICOS13	125988	Mitochondrial Contact Site And Cristae Organizing System Subunit 13
		RBPJ	3516	Recombination Signal Binding Protein For Immunoglobulin Kappa J Region
		ARFGEF1	10565	ADP Ribosylation Factor Guanine Nucleotide Exchange Factor 1
Put-premir7	Put-miR7-1 (MatureBayes 5'stem)	DLG5	9231	Discs Large MAGUK Scaffold Protein 5
		DENND1B	163486	DENN Domain Containing 1B
		SGPP1	81537	Sphingosine-1-Phosphate Phosphatase 1
		BZW2	28969	Basic Leucine Zipper And W2 Domains 2
		SOX2	6657	SRY-Box Transcription Factor 2
		PHIP	55023	Pleckstrin Homology Domain Interacting Protein
		VCAM1	7412	Vascular Cell Adhesion Molecule 1
		MEGF9	1955	Multiple EGF Like Domains 9
		C10orf53	282966	Chromosome 10 Open Reading Frame 53
		PAN3	255967	Poly(A) Specific Ribonuclease Subunit PAN3
		ADAM12	8038	ADAM Metallopeptidase Domain 12
		DCBLD2	131566	Discoidin, CUB And LCCL Domain Containing 2
		TMPO	7112	Thymopoietin
		OSBPL11	114885	Oxysterol Binding Protein Like 11
		CHD9	80205	Chromodomain Helicase DNA Binding Protein 9
		MED12L	116931	Mediator Complex Subunit 12L
		RHOQ	23433	Ras Homolog Family Member Q
		ZBED4	9889	Zinc Finger BED-Type Containing 4
		ADPGK	83440	ADP-dependent glucokinase
		SIAH3	283514	Siah E3 Ubiquitin Protein Ligase Family Member 3
		CLEC1A	51267	C-Type Lectin Domain Family 1 Member A
		PHTF2	57157	Putative Homeodomain Transcription Factor 2
	Put-miR7-2 (MatureBayes 3'stem)	ARID2	196528	AT-Rich Interaction Domain 2
		ZNF451	26036	Zinc Finger Protein 451
		MARCO	8685	Macrophage Receptor With Collagenous Structure
		MED1	5469	Mediator Complex Subunit 1
		STXBP6	29091	Syntaxin Binding Protein 6
		ITK	3702	IL2 Inducible T Cell Kinase
		MTSS1	9788	MTSS I-BAR Domain Containing 1
		PSTK	118672	Phosphoseryl-TRNA Kinase
		RIBC1	158787	RIB43A Domain With Coiled-Coils 1
		AEBP1	165	AE Binding Protein 1
		SPTB	6710	Spectrin Beta, Erythrocytic
		CUL2	8453	Cullin 2
		KRT74	121391	Keratin 74
		GPM6A	2823	Glycoprotein M6A

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
	Put-miR7-3 (SSCpofiler putative mature miR)	KSR2	283455	Kinase Suppressor Of Ras 2
		ARRB1	408	Arrestin Beta 1
		PPP2R5B	5526	Protein Phosphatase 2 Regulatory Subunit B'Beta
		ELN	2006	Elastin
		KCTD1	284252	Potassium Channel Tetramerization Domain Containing 1
		CHAD	1101	Chondroadherin
		ZC3H11A	9877	Zinc Finger CCCH-Type Containing 11A
		CD9	928	CD9 Molecule
		BTN2A2	10385	Butyrophilin Subfamily 2 Member A2
		CA12	771	Carbonic Anhydrase 12
		RAP1GAP2	23108	RAP1 GTPase Activating Protein 2
		MRPL57	78988	Mitochondrial Ribosomal Protein L57
Put-premir9	Put-miR9-1 (MatureBayes 5'stem)	ATP1B1	481	ATPase Na+/K+ Transporting Subunit Beta 1
		CACNG3	10368	Calcium Voltage-Gated Channel Auxiliary Subunit Gamma 3
		PRKD3	23683	Protein Kinase D3
		GABPA	2551	GA Binding Protein Transcription Factor Subunit Alpha
		ONECUT2	9480	One Cut Homeobox 2
		ZFHX4	79776	Zinc Finger Homeobox 4
		SCN2A	6326	Sodium Voltage-Gated Channel Alpha Subunit 2
		POGLUT1	56983	Protein O-Glucosyltransferase 1
		FAM19A1	407738	Family With Sequence Similarity 19 Member A1, C-C Motif Chemokine Like
		TRAM2	9697	Translocation Associated Membrane Protein 2
		ATOH8	84913	Atonal BHLH Transcription Factor 8
		ELOVL6	79071	ELOVL Fatty Acid Elongase 6
		HECTD2	143279	HECT Domain E3 Ubiquitin Protein Ligase 2
		OCRL	4952	OCRL Inositol Polyphosphate-5-Phosphatase
		CAMK2B	816	Calcium/Calmodulin Dependent Protein Kinase II Beta
		MED21	9412	Mediator Complex Subunit 21
		RORA	6095	RAR Related Orphan Receptor A
		JAM3	83700	Junctional Adhesion Molecule 3
		PTX3	5806	Pentraxin 3
		CCDC144NL	339184	Coiled-Coil Domain Containing 144 Family, N-Terminal Like
		ACLY	47	ATP Citrate Lyase
		DIAPH1	1729	Diaphanous Related Formin 1
		LUZP1	7798	Leucine Zipper Protein 1
		PIK3R3	8503	Phosphoinositide-3-Kinase Regulatory Subunit 3
		KCNJ6	3763	Potassium Inwardly Rectifying Channel Subfamily J Member 6
		MPHOSPH6	10200	M-Phase Phosphoprotein 6
		TMCO1	54499	Transmembrane And Coiled-Coil Domains 1
		FAM20B	9917	FAM20B Glycosaminoglycan Xylosylkinase
		CDKN1B	1027	Cyclin Dependent Kinase Inhibitor 1B
		PABPC1L2A	340529	Poly(A) Binding Protein Cytoplasmic 1 Like 2A
	Put-miR9-2 (MatureBayes 3'stem)	SV2A	9900	Synaptic Vesicle Glycoprotein 2A
		VAT1	10493	Vesicle Amine Transport 1
		NACC1	112939	Nucleus Accumbens Associated 1
		SYNGAP1	8831	Synaptic Ras GTPase Activating Protein 1
		NGFR	4804	Nerve Growth Factor Receptor
		TRIM66	9866	Tripartite Motif Containing 66
		CSNK1A1	1452	Casein Kinase 1 Alpha 1
		ANKRD26	22852	Ankyrin Repeat Domain 26
		ATP1A3	478	ATPase Na+/K+ Transporting Subunit Alpha 3

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		PRX	57716	Periaxin
		SNX33	257364	Sorting Nexin 33
		LARP1	23367	La Ribonucleoprotein 1, Translational Regulator
		CD1E	913	CD1e Molecule
		ACYP2	98	Acylphosphatase 2
		SLC1A2	6506	Solute Carrier Family 1 Member 2
		FAM174B	400451	Family With Sequence Similarity 174 Member B
		SPINDOC	144097	Spindlin Interactor And Repressor Of Chromatin Binding
		SOGA1	140710	Suppressor Of Glucose, Autophagy Associated 1
		MCC	4163	MCC Regulator Of WNT Signaling Pathway
		ASH1L	55870	ASH1 Like Histone Lysine Methyltransferase
Put-premir11	Put-miR11-1 (MatureBayes 5'stem)	NPAT	4863	Nuclear Protein, Coactivator Of Histone Transcription
		RAB10	10890	RAB10, Member RAS Oncogene Family
		RUSC1	23623	RUN And SH3 Domain Containing 1
		PDS5A	23244	PDS5 Cohesin Associated Factor A
		BACH2	60468	BTB Domain And CNC Homolog 2
		AGFG1	3267	ArfGAP With FG Repeats 1
		IRF2BPL	64207	Interferon Regulatory Factor 2 Binding Protein Like
		HOOK3	84376	Hook Microtubule Tethering Protein 3
		AGO3	192669	Argonaute RISC Catalytic Component 3
		AUTS2	26053	AUTS2, Activator Of Transcription And Developmental Regulator
		HBS1L	10767	HBS1 Like Translational GTPase
		CDC42EP3	10602	CDC42 Effector Protein 3
		AGPAT5	55326	1-Acylglycerol-3-Phosphate O-Acyltransferase 5
		JAKMIP2	9832	Janus Kinase And Microtubule Interacting Protein 2
		GSPT1	2935	G1 To S Phase Transition 1
		IGF1	3479	Insulin-like Growth Factor 1
		FAM86B1	85002	Family With Sequence Similarity 86 Member B1
		TENT4B	64282	Terminal Nucleotidyltransferase 4B
		CCDC9B	388115	Coiled-Coil Domain Containing 9B
		XPO4	64328	Exportin 4
		DENND1B	163486	DENN Domain Containing 1B
		TAOK1	57551	TAO Kinase 1
		CAMTA1	23261	Calmodulin Binding Transcription Activator 1
		WAC	51322	WW Domain Containing Adaptor With Coiled-Coil
		CHGB	1114	Chromogranin B
		ACTN1	87	Actinin Alpha 1
		CLCN5	1184	Chloride Voltage-Gated Channel 5
		MVB12B	89853	Multivesicular Body Subunit 12B
		BCL7A	605	BAF Chromatin Remodeling Complex Subunit BCL7A
		EPHB1	2047	EPH Receptor B1
		ITGA6	3655	Integrin Subunit Alpha 6
		PABPC1L	80336	Poly(A) Binding Protein Cytoplasmic 1 Like
		BSND	7809	Barttin CLCNK Type Accessory Subunit Beta
		KIF16B	55614	Kinesin Family Member 16B
		NUP160	23279	Nucleoporin 160
		ADAM19	8728	ADAM Metallopeptidase Domain 19
		USP9X	8239	Ubiquitin Specific Peptidase 9 X-Linked
		HIPK1	204851	Homeodomain Interacting Protein Kinase 1
		PSD3	23362	Pleckstrin And Sec7 Domain Containing 3
		NR2C2	7182	Nuclear Receptor Subfamily 2 Group C Member 2
		PPHLN1	51535	Periphilin 1
		KCTD1	284252	Potassium Channel Tetramerization Domain Containing 1
		ARID1A	8289	AT-Rich Interaction Domain 1A
		RASGRF2	5924	Ras Protein Specific Guanine Nucleotide Releasing Factor 2

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		ADAM22	53616	ADAM Metallopeptidase Domain 22
		ITPR1	3708	Inositol 1,4,5-Trisphosphate Receptor Type 1
		CGGBP1	8545	CGG Triplet Repeat Binding Protein 1
		GLIPR1	11010	GLI Pathogenesis Related 1
		STOX1	219736	Storkhead Box 1
		SPIDR	23514	Scaffold Protein Involved In DNA Repair
		CAMK1D	57118	Calcium/Calmodulin Dependent Protein Kinase ID
		ANKRD12	23253	Ankyrin Repeat Domain 12
		DMBT1	1755	Deleted In Malignant Brain Tumors 1
		SHANK2	22941	SH3 And Multiple Ankyrin Repeat Domains 2
		RB1	5925	RB Transcriptional Corepressor 1
		MED26	9441	Mediator Complex Subunit 26
		GLP2R	9340	Glucagon-like Peptide 2 Receptor
		LRRN1	57633	Leucine Rich Repeat Neuronal 1
		ASAP1	50807	ArfGAP With SH3 Domain, Ankyrin Repeat And PH Domain 1
		ATP11C	286410	ATPase Phospholipid Transporting 11C
		CYP7B1	9420	Cytochrome P450 Family 7 Subfamily B Member 1
		UBE2D4	51619	Ubiquitin Conjugating Enzyme E2 D4 (Putative)
		LARP4B	23185	La Ribonucleoprotein 4B
		PGRMC1	10857	Progesterone Receptor Membrane Component 1
		ANK3	288	Ankyrin 3
		ATP2A2	488	ATPase Sarcoplasmic/Endoplasmic Reticulum Ca2+ Transporting 2
		ACTL8	81569	Actin Like 8
		PJA2	9867	Praja Ring Finger Ubiquitin Ligase 2
		RSPO3	84870	R-Spondin 3
		RSPH10B	222967	Radial Spoke Head 10 Homolog B
		RSPH10B2	728194	Radial Spoke Head 10 Homolog B2
		CAMK4	814	Calcium/Calmodulin Dependent Protein Kinase IV
		FOSL1	8061	FOS Like 1, AP-1 Transcription Factor Subunit
		KPNA3	3839	Karyopherin Subunit Alpha 3
		MLXIPL	51085	MLX Interacting Protein Like
		KIF11	3832	Kinesin Family Member 11
		PTCD2	79810	Pentatricopeptide Repeat Domain 2
		CNIH2	254263	Cornichon Family AMPA Receptor Auxiliary Protein 2
		FIGN	55137	Fidgetin, Microtubule Severing Factor
		LPGAT1	9926	Lysophosphatidylglycerol Acyltransferase 1
		RHOV	171177	Ras Homolog Family Member V
		FAM86B2	653333	Family With Sequence Similarity 86 Member B2
		DKK2	27123	Dickkopf WNT Signaling Pathway Inhibitor 2
		PCDH7	5099	Protocadherin 7
		FLRT3	23767	Fibronectin Leucine Rich Transmembrane Protein 3
		USP25	29761	Ubiquitin Specific Peptidase 25
		CCDC141	285025	Coiled-Coil Domain Containing 141
		DOP1A	23033	DOP1 Leucine Zipper Like Protein A
		ZSCAN18	65982	Zinc Finger And SCAN Domain Containing 18
		RSPH4A	345895	Radial Spoke Head Component 4A
		SEMA6A	57556	Semaphorin 6A
		TRAF5	7188	TNF Receptor Associated Factor 5
		SEC63	11231	SEC63 Homolog, Protein Translocation Regulator
		TET1	80312	Tet Methylcytosine Dioxygenase 1
		GEM	2669	GTP Binding Protein Overexpressed In Skeletal Muscle
		SPTBN4	57731	Spectrin Beta, Non-Erythrocytic 4
		TBC1D30	23329	TBC1 Domain Family Member 30
		GABBR2	9568	Gamma-Aminobutyric Acid Type B Receptor Subunit 2
		RALA	5898	RAS Like Proto-Oncogene A
		GMFB	2764	Glia Maturation Factor Beta

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		BLOC1S6	26258	Biogenesis Of Lysosomal Organelles Complex 1 Subunit 6
		TFRC	7037	Transferrin Receptor
		PWWP3B	139221	PWWP Domain Containing 3B
		RBMS3	27303	RNA Binding Motif Single Stranded Interacting Protein 3
		SERPINB11	89778	Serpin Family B Member 11 (Gene/Pseudogene)
		CGN	57530	Cingulin
		SLAMF7	57823	SLAM Family Member 7
		SKI	6497	SKI Proto-Oncogene
		RAD50	10111	RAD50 Double Strand Break Repair Protein
		DNASE2	1777	Deoxyribonuclease 2, Lysosomal
		ETNK1	55500	Ethanolamine Kinase 1
		GGNBP2	79893	Gametogenetin Binding Protein 2
		TRAPPC8	22878	Trafficking Protein Particle Complex 8
		F8	2157	Coagulation Factor VIII
		MARCKSL1	65108	MARCKS Like 1
		PURB	5814	Purine Rich Element Binding Protein B
		SLC10A7	84068	Solute Carrier Family 10 Member 7
		ZFP36L1	677	ZFP36 Ring Finger Protein Like 1
		CD93	22918	CD93 Molecule
	Put-miR11-2 (MatureBayes 3'stem)	BRPF1	7862	Bromodomain And PHD Finger Containing 1
		FKBP9	11328	FKBP Prolyl Isomerase 9
		TRABD2B	388630	TraB Domain Containing 2B
		SNX9	51429	Sorting Nexin 9
		IARS	3376	Isoleucyl-tRNA Synthetase
		ADRA1A	148	Adrenoceptor Alpha 1A
	Put-miR11-3 (UCSC putative mature miR)	MECP2	4204	Methyl-CpG Binding Protein 2
		PPP1R9B	84687	Protein Phosphatase 1 Regulatory Subunit 9B
		SLC6A17	388662	Solute Carrier Family 6 Member 17
		WIZ	58525	WIZ Zinc Finger
		NFIX	4784	Nuclear Factor I X
		NR1D1	9572	Nuclear Receptor Subfamily 1 Group D Member 1
		CASTOR2	729438	Cytosolic Arginine Sensor For MTORC1 Subunit 2
		SHISAL1	85352	Shisa Like 1
		ACTB	60	Actin Beta
		NLGN2	57555	Neuroligin 2
		HEYL	26508	Hes Related Family BHLH Transcription Factor With YRPW Motif Like
		SRF	6722	Serum Response Factor
		ELK1	2002	ETS Transcription Factor ELK1
		PKNOX2	63876	PBX/Knotted 1 Homeobox 2
		PVALB	5816	Parvalbumin
		MAP1A	4130	Microtubule Associated Protein 1A
		EPB41L1	2036	Erythrocyte Membrane Protein Band 4.1 Like 1
		NFASC	23114	Neurofascin
		CAMK1D	57118	Calcium/Calmodulin Dependent Protein Kinase ID
		PPP2R2D	55844	Protein Phosphatase 2 Regulatory Subunit Bdelta
		DIRAS1	148252	DIRAS Family GTPase 1
		JPH4	84502	Junctophilin 4
		MIEN1	84299	Migration And Invasion Enhancer 1
		PANX2	56666	Pannexin 2
		PDE1B	5153	Phosphodiesterase 1B
		SLC7A8	23428	Solute Carrier Family 7 Member 8
		TFAP2B	7021	Transcription Factor AP-2 Beta
		C6orf141	135398	Chromosome 6 Open Reading Frame 141
		ITGA3	3675	Integrin Subunit Alpha 3

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		CYP2B6	1555	Cytochrome P450 Family 2 Subfamily B Member 6
		APLNR	187	Apelin Receptor
		DPYSL5	56896	Dihydropyrimidinase Like 5
		STIM1	6786	Stromal Interaction Molecule 1
		PCDHB11	56125	Protocadherin Beta 11
		MPZ	4359	Myelin Protein Zero
		TMEM222	84065	Transmembrane Protein 222
		KALRN	8997	Kalirin RhoGEF Kinase
		UBTF	7343	Upstream Binding Transcription Factor
		LIX1L	128077	Limb And CNS Expressed 1 Like
		CES4A	283848	Carboxylesterase 4A
		CNTNAP1	8506	Contactin Associated Protein 1
		LRRC59	55379	Leucine Rich Repeat Containing 59
		DIRAS2	54769	DIRAS Family GTPase 2
		ZFC3H1	196441	Zinc Finger C3H1-Type Containing
		BIRC2	329	Baculoviral IAP Repeat Containing 2
		RSU1	6251	Ras Suppressor Protein 1
		SHANK2	22941	SH3 And Multiple Ankyrin Repeat Domains 2
		PLXNA4	91584	Plexin A4
		PRKACA	5566	Protein Kinase CAMP-Activated Catalytic Subunit Alpha
		TMEM63B	55362	Transmembrane Protein 63B
		ADORA3	140	Adenosine A3 Receptor
		UBAP2L	9898	Ubiquitin Associated Protein 2 Like
		AP2M1	1173	Adaptor Related Protein Complex 2 Subunit Mu 1
		INAVA	55765	Innate Immunity Activator
		ARRB2	409	Arrestin Beta 2
		APBA1	320	Amyloid Beta Precursor Protein Binding Family A Member 1
		SNX29	92017	Sorting Nexin 29
		SMARCC2	6601	SWI/SNF Related, Matrix Associated, Actin Dependent Regulator Of Chromatin Subfamily C Member 2
		SLC28A1	9154	Solute Carrier Family 28 Member 1
		BMP1	649	Bone Morphogenetic Protein 1
		LSAMP	4045	Limbic System Associated Membrane Protein
		ZNF691	51058	Zinc Finger Protein 691
		STAC2	342667	SH3 and Cysteine-Rich Domain 2
		TCF7	6932	Transcription Factor 7
		AFAP1	60312	Actin Filament Associated Protein 1
		KMT2D	8085	Lysine Methyltransferase 2D
		NAT16	375607	N-Acetyltransferase 16 (Putative)
		FOXP4	116113	Forkhead Box P4
		CTDSP1	58190	CTD Small Phosphatase 1
		RBM23	55147	RNA Binding Motif Protein 23
		FAM174B	400451	Family With Sequence Similarity 174 Member B
Put-premir12	Put-miR12-1 (MatureBayes 5'stem)	KLK4	9622	Kallikrein Related Peptidase 4
		ZNF583	147949	Zinc Finger Protein 583
		ZNF782	158431	Zinc Finger Protein 782
		LURAP1	541468	Leucine Rich Adaptor Protein 1
		RXRA	6256	Retinoid X Receptor Alpha
		PAK3	5063	P21 (RAC1) Activated Kinase 3
		LGALS3	3958	Galectin 3
		SELL	6402	Selectin L
		RGSL1	353299	Regulator Of G Protein Signaling Like 1
		WNT7B	7477	Wnt Family Member 7B
		CPEB4	80315	Cytoplasmic Polyadenylation Element Binding Protein 4
		C12orf75	387882	Chromosome 12 Open Reading Frame 75
		PCBP2	5094	Poly(RC) Binding Protein 2
		CCL28	56477	C-C Motif Chemokine Ligand 28

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		SNX3	8724	Sorting Nexin 3
		SESN3	143686	Sestrin 3
		TEK	7010	TEK Receptor Tyrosine Kinase
		RORA	6095	RAR Related Orphan Receptor A
		APBB3	10307	Amyloid Beta Precursor Protein Binding Family B Member 3
		MPIG6B	80739	Megakaryocyte And Platelet Inhibitory Receptor G6b
		SRFBP1	153443	Serum Response Factor Binding Protein 1
		CARNMT1	138199	Carnosine N-Methyltransferase 1
	Put-miR12-2 (UCSC putative mature miR)	GYS1	2997	Glycogen Synthase 1
		WARS	7453	Tryptophanyl-tRNA Synthetase 1
		VGLL2	245806	Vestigial Like Family Member 2
		CACNB2	783	Calcium Voltage-Gated Channel Auxiliary Subunit Beta 2
		SUMO2	6613	Small Ubiquitin Like Modifier 2
		SLC30A4	7782	Solute Carrier Family 30 Member 4
		RIC3	79608	RIC3 Acetylcholine Receptor Chaperone
		EXTL2	2135	Exostosin Like Glycosyltransferase 2
		SUMO4	387082	Small Ubiquitin Like Modifier 4
		LRPAP1	4043	LDL Receptor Related Protein Associated Protein 1
		AAK1	22848	AP2 Associated Kinase 1
		SMKR1	100287482	Small Lysine Rich Protein 1
		XPO7	23039	Exportin 7
		OLA1	29789	Obg Like ATPase 1
		SLC6A20	54716	Solute Carrier Family 6 Member 20
		INSIG1	3638	Insulin Induced Gene 1
		ZNF124	7678	Zinc Finger Protein 124
		TRIM2	23321	Tripartite Motif Containing 2
		ZBTB4	57659	Zinc Finger And BTB Domain Containing 4
		SOGA3	387104	SOGA Family Member 3
		KLHL8	57563	Kelch Like Family Member 8
		RPSA	3921	Ribosomal Protein SA
		FCER2	2208	Fc Fragment Of IgE Receptor II
		ZNF668	79759	Zinc Finger Protein 668
	Put-miR12-3 (Selected sequence)	ZFAND3	60685	Zinc Finger AN1-Type Containing 3
		AGO1	26523	Argonaute RISC Catalytic Component 1
		FYCO1	79443	FYVE And Coiled-Coil Domain-Containing Protein 1
		REPS2	9185	RALBP1 Associated Eps Domain Containing 2
		SEZ6	124925	Seizure Related 6 Homolog
		JADE2	23338	Jade Family PHD Finger 2
		EIF5	1983	Eukaryotic Translation Initiation Factor 5
		PAX5	5079	Paired Box 5
		TRAPPC3L	100128327	Trafficking Protein Particle Complex 3 Like
		EVC	2121	EvC Ciliary Complex Subunit 1
		CLASP2	23122	Cytoplasmic Linker Associated Protein 2
		SORT1	6272	Sortilin 1
		LEMD2	221496	LEM Domain Containing 2
		TXNIP	10628	Thioredoxin Interacting Protein
		ARHGAP21	57584	Rho GTPase Activating Protein 21
		RSBN1L	222194	Round Spermatid Basic Protein 1 Like
		PHLDB1	23187	Pleckstrin Homology Like Domain Family B Member 1
		CLOCK	9575	Clock Circadian Regulator
		ATP10B	23120	ATPase Phospholipid Transporting 10B (Putative)
		PNO1	56902	Partner Of NOB1 Homolog
		ADCY1	107	Adenylate Cyclase 1
		CRIM1	51232	Cysteine Rich Transmembrane BMP Regulator 1
		TBL1X	6907	Transducin Beta Like 1 X-Linked

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		PIP4K2B	8396	Phosphatidylinositol-5-Phosphate 4-Kinase Type 2 Beta
		SAV1	60485	Salvador Family WW Domain Containing Protein 1
		ANKRD36	375248	Ankyrin Repeat Domain 36
		LRGUK	136332	Leucine Rich Repeats And Guanylate Kinase Domain Containing
		BAG4	9530	BCL2 Associated Athanogene 4
		IGFBP5	3488	Insulin Like Growth Factor Binding Protein 5
		AP1G1	164	Adaptor Related Protein Complex 1 Subunit Gamma 1
		AREL1	9870	Apoptosis Resistant E3 Ubiquitin Protein Ligase 1
		PRDM4	11108	PR/SET Domain 4
		HSPB6	126393	Heat Shock Protein Family B (Small) Member 6
		CACHD1	57685	Cache Domain Containing 1
		SMURF1	57154	SMAD Specific E3 Ubiquitin Protein Ligase 1
		AAK1	22848	AP2 Associated Kinase 1
		WASHC4	23325	WASH Complex Subunit 4
		CNOT10	25904	CCR4-NOT Transcription Complex Subunit 10
		NDST1	3340	N-Deacetylase And N-Sulfotransferase 1
		ATP1B4	23439	ATPase Na+/K+ Transporting Family Member Beta 4
		LEXM	163747	Lymphocyte Expansion Molecule
		MFSD11	79157	Major Facilitator Superfamily Domain Containing 11
	Put-miR12-4 (FOMmiR (seq_3p))	ARFIP1	27236	ADP Ribosylation Factor Interacting Protein 1
		KCNH7	90134	Potassium Voltage-Gated Channel Subfamily H Member 7
		ADGRL4	64123	Adhesion G Protein-Coupled Receptor L4
		PRPF4B	8899	Pre-mRNA Processing Factor 4B
		NPAT	4863	Nuclear Protein, Coactivator Of Histone Transcription
		DCLK1	9201	Doublecortin Like Kinase 1
		FAM110C	642273	Family With Sequence Similarity 110 Member C
		CRISP1	167	Cysteine Rich Secretory Protein 1
		ELF1	1997	E74-like ETS Transcription Factor 1
		A1CF	29974	APOBEC1 Complementation Factor
		RAB21	23011	RAB21, Member RAS Oncogene Family
		AVL9	23080	AVL9 Cell Migration Associated
		UGT8	7368	UDP Glycosyltransferase 8
		CIAO2A	84191	Cytosolic Iron-Sulfur Assembly Component 2A
		GUCY1A2	2977	Guanylate Cyclase 1 Soluble Subunit Alpha 2
		RBM18	92400	RNA Binding Motif Protein 18
		RAB6B	51560	RAB6B, Member RAS Oncogene Family
		TMOD3	29766	Tropomodulin 3
		MSR1	4481	Macrophage Scavenger Receptor 1
		MTREX	23517	Mtr4 Exosome RNA Helicase
		ANTXR1	84168	ANTXR Cell Adhesion Molecule 1
		EOGT	285203	EGF Domain Specific O-Linked N-Acetylglucosamine Transferase
		CD47	961	CD47 Molecule
		SELENOT	51714	Selenoprotein T
		RORA	6095	RAR Related Orphan Receptor A
		INO80	54617	INO80 Complex ATPase Subunit
		HIPK3	10114	Homeodomain Interacting Protein Kinase 3
		KRAS	3845	KRAS Proto-Oncogene, GTPase
		GABPA	2551	GA Binding Protein Transcription Factor Subunit Alpha
		PCMTD1	115294	Protein-L-Isoaspartate (D-Aspartate) O-Methyltransferase Domain Containing 1
		ZFP3	124961	ZFP3 Zinc Finger Protein
		SLC25A33	84275	Solute Carrier Family 25 Member 33
		FAM84B	157638	Family With Sequence Similarity 84 Member B
		SNX16	64089	Sorting Nexin 16
		FBXO42	54455	F-Box Protein 42

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		KCTD6	200845	Potassium Channel Tetramerization Domain Containing 6
		RAD50	10111	RAD50 Double Strand Break Repair Protein
		DENND1B	163486	DENN Domain Containing 1B
		TOMM20	9804	Translocase Of Outer Mitochondrial Membrane 20
		PIKFYVE	200576	Phosphoinositide Kinase, FYVE-Type Zinc Finger Containing
		PEG10	23089	Paternally Expressed 10
		TASOR	23272	Transcription Activation Suppressor
		IDI2	91734	Isopentenyl-Diphosphate Delta Isomerase 2
		NMBR	4829	Neuromedin B Receptor
		CEP135	9662	Centrosomal Protein 135
		RDH10	157506	Retinol Dehydrogenase 10
		TMEM33	55161	Transmembrane Protein 33
		EXT2	2132	Exostosin Glycosyltransferase 2
		NETO2	81831	Neuropilin And Tolloid Like 2
		KCTD3	51133	Potassium Channel Tetramerization Domain Containing 3
		ICE2	79664	Interactor Of Little Elongation Complex ELL Subunit 2
		RBM26	64062	RNA Binding Motif Protein 26
		LHFPL3	375612	LHFPL Tetraspan Subfamily Member 3
		TMTC3	160418	Transmembrane And Tetratricopeptide Repeat Containing 3
		GJC1	10052	Gap Junction Protein Gamma 1
		TRIM55	84675	Tripartite Motif Containing 55
		HHIP	64399	Hedgehog Interacting Protein
		C15orf61	145853	Chromosome 15 Open Reading Frame 61
		PTGS2	5743	Prostaglandin-Endoperoxide Synthase 2
		PCDHB4	56131	Protocadherin Beta 4
		POGZ	23126	Pogo Transposable Element Derived With ZNF Domain
		DEK	7913	DEK Proto-Oncogene
		BCL2L15	440603	BCL2 Like 15
		NXPH1	30010	Neurexophilin 1
		CCNJ	54619	Cyclin J
		SFRP5	6425	Secreted Frizzled Related Protein 5
		RRH	10692	Retinal Pigment Epithelium-Derived Rhodopsin Homolog
		STYX	6815	Serine/Threonine/Tyrosine Interacting Protein
		PGM2	55276	Phosphoglucomutase 2
		GABRG2	2566	Gamma-Aminobutyric Acid Type A Receptor Subunit Gamma2
		NEXMIF	340533	Neurite Extension And Migration Factor
		PAK2	5062	P21 (RAC1) Activated Kinase 2
		CDH11	1009	Cadherin 11
		ABCE1	6059	ATP Binding Cassette Subfamily E Member 1
		KCTD9	54793	Potassium Channel Tetramerization Domain Containing 9
		RIMS2	9699	Regulating Synaptic Membrane Exocytosis 2
		GRIA2	2891	Glutamate Ionotropic Receptor AMPA Type Subunit 2
		GASK1B	51313	Golgi Associated Kinase 1B
		PCLO	27445	Piccolo Presynaptic Cytomatrix Protein
		TICAM2	353376	Toll Like Receptor Adaptor Molecule 2
		TMED7-TICAM2	100302736	TMED7-TICAM2 Readthrough
		SGCZ	137868	Sarcoglycan Zeta
		UEVLD	55293	UEV And Lactate/Malate Dehydrogenase Domains
		OTOP2	92736	Otopetrin 2
		REEP3	221035	Receptor Accessory Protein 3
		FBXO21	23014	F-Box Protein 21
		QKI	9444	QKI, KH Domain Containing RNA Binding
		PNPLA4	8228	Patatin Like Phospholipase Domain Containing 4
		C5orf24	134553	Chromosome 5 Open Reading Frame 24

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		ANKDD1B	728780	Ankyrin Repeat And Death Domain Containing 1B
		PPM1A	5494	Protein Phosphatase, Mg2+/Mn2+ Dependent 1A
		HMGN4	10473	High Mobility Group Nucleosomal Binding Domain 4
		ARFGEF3	57221	ARFGEF Family Member 3
		LAD1	3898	Ladinin 1
		PCCA	5095	Propionyl-CoA Carboxylase Subunit Alpha
		CMTM6	54918	CKLF Like MARVEL Transmembrane Domain Containing 6
		MPZL2	10205	Myelin Protein Zero Like 2
		ZC3H12D	340152	Zinc Finger CCCH-Type Containing 12D
		CLYBL	171425	Citrate Lyase Beta Like
		VEZT	55591	Vezatin, Adherens Junctions Transmembrane Protein
		KITLG	4254	KIT Ligand
		SEC62	7095	SEC62 Homolog, Preprotein Translocation Factor
		ATP2C2	9914	ATPase Secretory Pathway Ca2+ Transporting 2
		ADAM10	102	ADAM Metallopeptidase Domain 10
		PTCD3	55037	Pentatricopeptide Repeat Domain 3
		CTH	1491	Cystathionine Gamma-Lyase
		ARL13B	200894	ADP Ribosylation Factor Like GTPase 13B
		NCOR1	9611	Nuclear Receptor Corepressor 1
		RNPC3	55599	RNA Binding Region (RNP1, RRM) Containing 3
		SLC4A7	9497	Solute Carrier Family 4 Member 7
		JAKMIP1	152789	Janus Kinase And Microtubule Interacting Protein 1
		LHX9	56956	LIM Homeobox 9
		TTC8	123016	Tetratricopeptide Repeat Domain 8
		YAP1	10413	Yes Associated Protein 1
		C11orf45	219833	Chromosome 11 Open Reading Frame 45
		KCTD8	386617	Potassium Channel Tetramerization Domain Containing 8
		ELOVL2	60481	ELOVL Fatty Acid Elongase 5
		ACVR2A	92	Activin A Receptor Type 2A
		ZNF416	55659	Zinc Finger Protein 416
		CBLB	868	Cbl Proto-Oncogene B
		ATP11B	23200	ATPase Phospholipid Transporting 11B (Putative)
		GALNT12	79695	Polypeptide N-Acetylgalactosaminyltransferase 12
		ABCC9	10060	ATP Binding Cassette Subfamily C Member 9
		UTP11	51118	UTP11 Small Subunit Processome Component
		USO1	8615	USO1 Vesicle Transport Factor
		PRKCI	5584	Protein Kinase C Iota
		CDC37L1	55664	Cell Division Cycle 37 Like 1
		PDZRN4	29951	PDZ Domain Containing Ring Finger 4
		HS2ST1	9653	Heparan Sulfate 2-O-Sulfotransferase 1
		NCOA6	23054	Nuclear Receptor Coactivator 6
		MYBL1	4603	MYB Proto-Oncogene Like 1
		ANKRD36B	57730	Ankyrin Repeat Domain 36B
		GTPBP10	85865	GTP Binding Protein 10
		TM9SF4	9777	Transmembrane 9 Superfamily Member 4
		FUT4	2526	Fucosyltransferase 4
		NUFIP2	57532	Nuclear FMR1 Interacting Protein 2
		SPNS2	124976	Sphingolipid Transporter 2
		PPP1R2	5504	Protein Phosphatase 1 Regulatory Inhibitor Subunit 2
		PIK3C2G	5288	Phosphatidylinositol-4-Phosphate 3-Kinase Catalytic Subunit Type 2 Gamma
		SLC16A7	9194	Solute Carrier Family 16 Member 7
		CSTA	1475	Cystatin A
		ALDOB	229	Aldolase, Fructose-Bisphosphate B
		LGR4	55366	Leucine Rich Repeat Containing G Protein-Coupled Receptor 4
		ALDH3A2	224	Aldehyde Dehydrogenase 3 Family Member A2
		BAZ1A	11177	Bromodomain Adjacent To Zinc Finger Domain 1A

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		PTBP3	9991	Polypyrimidine Tract Binding Protein 3
		CDC14A	8556	Cell Division Cycle 14A
		MRPL32	64983	Mitochondrial Ribosomal Protein L32
		FAM184B	27146	Family With Sequence Similarity 184 Member B
		PHF6	84295	PHD Finger Protein 6
		MED23	9439	Mediator Complex Subunit 23
		ZNF397	84307	Zinc Finger Protein 397
		ZNF326	284695	Zinc Finger Protein 326
		ZC2HC1A	51101	Zinc Finger C2HC-Type Containing 1A
		CXCL12	6387	C-X-C Motif Chemokine Ligand 12
		ZNF23	7571	Zinc Finger Protein 23
		SLC30A4	7782	Solute Carrier Family 30 Member 4
		CRTAP	10491	Cartilage Associated Protein
		FAM19A2	338811	Family With Sequence Similarity 19 Member A2, C-C Motif Chemokine Like
		MBNL1	4154	Muscleblind Like Splicing Regulator 1
		PRELID3A	10650	PRELI Domain Containing 3A
		PRKG2	5593	Protein Kinase CGMP-Dependent 2
		WASHC5	9897	WASH Complex Subunit 5
		BBS2	583	Bardet-Biedl Syndrome 2
		FPR3	2359	Formyl Peptide Receptor 3
		ATRNL1	26033	Attractin Like 1
		CACNA2D1	781	Calcium Voltage-Gated Channel Auxiliary Subunit Alpha2delta 1
		NCOA7	135112	Nuclear Receptor Coactivator 7
		VPS13A	23230	Vacuolar Protein Sorting 13 Homolog A
Put-premir16	Put-miR16-1 (MatureBayes 5'stem)	AREL1	9870	Apoptosis Resistant E3 Ubiquitin Protein Ligase 1
		KPNA3	3839	Karyopherin Subunit Alpha 3
		FAM19A1	407738	Family With Sequence Similarity 19 Member A1, C-C Motif Chemokine Like
		PRKD3	23683	Protein Kinase D3
		ZNF550	162972	Zinc Finger Protein 550
		TPH1	7166	Tryptophan Hydroxylase 1
		RAP2A	5911	RAP2A, Member Of RAS Oncogene Family
		MSRB3	253827	Methionine Sulfoxide Reductase B3
		SLC13A4	26266	Solute Carrier Family 13 Member 4
		ELOVL6	79071	ELOVL Fatty Acid Elongase 6
		YTHDF1	54915	YTH N6-Methyladenosine RNA Binding Protein 1
		BCCIP	56647	BRCA2 And CDKN1A Interacting Protein
		CCDC87	55231	Coiled-Coil Domain Containing 87
		NTRK2	4915	Neurotrophic Receptor Tyrosine Kinase 2
		PPFIA1	8500	PTPRF Interacting Protein Alpha 1
		MRAS	22808	Muscle RAS Oncogene Homolog
		SIAH1	6477	Siah E3 Ubiquitin Protein Ligase 1
		JAM3	83700	Junctional Adhesion Molecule 3
		RALGPS2	55103	Ral GEF With PH Domain And SH3 Binding Motif 2
		PDE7B	27115	Phosphodiesterase 7B
		GAS7	8522	Growth Arrest Specific 7
		MBD1	4152	Methyl-CpG Binding Domain Protein 1
		PELI2	57161	Pellino E3 Ubiquitin Protein Ligase Family Member 2
		OCRL	4952	OCRL Inositol Polyphosphate-5-Phosphatase
		ARCN1	372	Archain 1
		STRAP	11171	Serine/Threonine Kinase Receptor Associated Protein
		CACNG3	10368	Calcium Voltage-Gated Channel Auxiliary Subunit Gamma 3
		TNFSF11	8600	TNF Superfamily Member 11
		FERMT2	10979	Fermitin Family Member 2
		EFS	10278	Embryonal Fyn-Associated Substrate

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
	Put-miR16-2 (MatureBayes 3'stem)	ZMPSTE24	10269	Zinc Metallopeptidase STE24
		SF3B6	51639	Splicing Factor 3b Subunit 6
	Put-miR16-3 (SSCpofiler putative mature miR)	ITGB8	3696	Integrin Subunit Beta 8
		CNTN3	5067	Contactin 3
		B3GNT5	84002	UDP-GlcNAc:BetaGal Beta-1,3-N-Acetylglucosaminyltransferase 5
		C1orf131	128061	Chromosome 1 Open Reading Frame 131
		LRAT	9227	Lecithin Retinol Acyltransferase
		LPCAT1	79888	Lysophosphatidylcholine Acyltransferase 1
		FBXL5	26234	F-Box And Leucine Rich Repeat Protein 5
		ABCC9	10060	ATP Binding Cassette Subfamily C Member 9
		RARB	5915	Retinoic Acid Receptor Beta
		NPR3	4883	Natriuretic Peptide Receptor 3
		NLRP14	338323	NLR Family Pyrin Domain Containing 14
		ZCWPW2	152098	Zinc Finger CW-Type And PWWP Domain Containing 2
		FBXO33	254170	F-Box Protein 33
		ZNF660	285349	Zinc Finger Protein 660
		AMD1	262	Adenosylmethionine Decarboxylase 1
		NRF1	4899	Nuclear Respiratory Factor 1
		C12orf75	387882	Chromosome 12 Open Reading Frame 75
		TMEM38B	55151	Transmembrane Protein 38B
		SH3BGRL2	83699	SH3 Domain Binding Glutamate Rich Protein Like 2
		ARPP19	10776	CAMP Regulated Phosphoprotein 19
		UBE2L3	7332	Ubiquitin Conjugating Enzyme E2 L3
Put-premir17	Put-miR17-1 (MatureBayes 5'stem)	KCND1	3750	Potassium Voltage-Gated Channel Subfamily D Member 1
		ZNF444	55311	Zinc Finger Protein 444
		PDX1	3651	Pancreatic And Duodenal Homeobox 1
		LMLN	89782	Leishmanolysin Like Peptidase
		GLG1	2734	Golgi Glycoprotein 1
		NFIX	4784	Nuclear Factor I X
		HOXC4	3221	Homeobox C4
		NOVA2	4858	NOVA Alternative Splicing Regulator 2
		BCAM	4059	Basal Cell Adhesion Molecule (Lutheran Blood Group)
		POU2F2	5452	POU Class 2 Homeobox 2
		PDE6D	5147	Phosphodiesterase 6D
		EZH1	2145	Enhancer Of Zeste 1 Polycomb Repressive Complex 2 Subunit
		KLK4	9622	Kallikrein Related Peptidase 4
		ARID1A	8289	AT-Rich Interaction Domain 1A
		TRIM66	9866	Tripartite Motif Containing 66
		PLP2	5355	Proteolipid Protein 2
		ABCG4	64137	ATP Binding Cassette Subfamily G Member 4
		HEYL	26508	Hes Related Family BHLH Transcription Factor With YRPW Motif Like
		PLA2G3	50487	Phospholipase A2 Group III
		GPATCH1	55094	G-Patch Domain Containing 1
		KIRREL1	55243	Kirre Like Nephrin Family Adhesion Molecule 1
		EN2	2020	Engrailed Homeobox 2
		SOGA1	140710	Suppressor Of Glucose, Autophagy Associated 1
		KAT7	11143	Lysine Acetyltransferase 7
		CORO2B	10391	Coronin 2B
		URM1	81605	Ubiquitin Related Modifier 1
		GTPBP1	9567	GTP Binding Protein 1
		NAV1	89796	Neuron Navigator 1
		PSD2	84249	Pleckstrin And Sec7 Domain Containing 2

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		LAMC1	3915	Laminin Subunit Gamma 1
		COL27A1	85301	Collagen Type XXVII Alpha 1 Chain
		ASB16	92591	Ankyrin Repeat And SOCS Box Containing 16
		AHDC1	27245	AT-Hook DNA Binding Motif Containing 1
		RAB5B	5869	RAB5B, Member RAS Oncogene Family
		UNC5B	219699	Unc-5 Netrin Receptor B
		DENND1A	57706	DENN Domain Containing 1A
		STK40	83931	Serine/Threonine Kinase 40
		RPRD2	23248	Regulation Of Nuclear Pre-mRNA Domain Containing 2
		SERP2	387923	Stress Associated Endoplasmic Reticulum Protein Family Member 2
		CHRDL1	91851	Chordin Like 1
		FAM57A	79850	Family With Sequence Similarity 57 Member A
		CD164L2	388611	CD164 Molecule Like 2
		ELK1	2002	ELK1, ETS Transcription Factor
		VPS25	84313	Vacuolar Protein Sorting 25 Homolog
		FAM78A	286336	Family With Sequence Similarity 78 Member A
		SHISA6	388336	Shisa Family Member 6
		TNS1	7145	Tensin 1
		CSF1R	1436	Colony Stimulating Factor 1 Receptor
		SDK2	54549	Sidekick Cell Adhesion Molecule 2
		PSMD11	5717	Proteasome 26S Subunit, Non-ATPase 11
		CD34	947	CD34 Molecule
		CLSTN1	22883	Calsyntenin 1
		CNNM4	26504	Cyclin And CBS Domain Divalent Metal Cation Transport Mediator 4
		KPNA3	3839	Karyopherin Subunit Alpha 3
		DLX3	1747	Distal-Less Homeobox 3
		TCF4	6925	Transcription Factor 4
		GPR107	57720	G Protein-Coupled Receptor 107
		SOCS7	30837	Suppressor Of Cytokine Signaling 7
		TRIM67	440730	Tripartite Motif Containing 67
		LYSMD3	116068	LysM Domain Containing 3
		TEX2	55852	Testis Expressed 2
		DBNDD2	55861	Dysbindin Domain Containing 2
		KLK12	43849	Kallikrein Related Peptidase 12
		CADM4	199731	Cell Adhesion Molecule 4
		ZNF436	80818	Zinc Finger Protein 436
		HLA-DQA2	3118	Major Histocompatibility Complex, Class II, DQ Alpha 2
		SDK1	221935	Sidekick Cell Adhesion Molecule 1
		ZDHHC9	51114	Zinc Finger DHHC-Type Palmitoyltransferase 9
	Put-miR17-2 (MatureBayes 3'stem)	HSBP1L1	440498	Heat Shock Factor Binding Protein 1 Like 1
		RTN4RL1	146760	Reticulon 4 Receptor Like 1
		LAMC1	3915	Laminin Subunit Gamma 1
		ANKRD11	29123	Ankyrin Repeat Domain 11
		CACNA1B	774	Calcium Voltage-Gated Channel Subunit Alpha1 B
		ABI1	10006	Abl Interactor 1
		GFPT1	2673	Glutamine--Fructose-6-Phosphate Transaminase 1
		ATAD2B	54454	ATPase Family AAA Domain Containing 2B
		CASC1	55259	Cancer Susceptibility 1
		QKI	9444	QKI, KH Domain Containing RNA Binding
		KIAA1191	57179	KIAA1191
		ERBIN	55914	Erbb2 Interacting Protein
		ANKRD28	23243	Ankyrin Repeat Domain 28
	Put-miR17-3 (SSCpofiler putative mature miR)	SZRD1	26099	SUZ RNA Binding Domain Containing 1
		SCLY	51540	Selenocysteine Lyase

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
	Put-miR17-4 (UCSC putative mature miR)	TNRC6B	23112	Trinucleotide Repeat Containing Adaptor 6B
		SLC2A12	154091	Solute Carrier Family 2 Member 12
		ADGRA1	84435	Adhesion G Protein-Coupled Receptor A1
		NRXN1	9378	Neurexin 1
		CREBRF	153222	CREB3 Regulatory Factor
		LSAMP	4045	Limbic System Associated Membrane Protein
		SH3TC2	79628	SH3 Domain And Tetratricopeptide Repeats 2
		IGF2BP2	10644	Insulin-like Growth Factor 2 MRNA Binding Protein 2
		CELF4	56853	CUGBP Elav-Like Family Member 4
		TNFSF14	8740	TNF Superfamily Member 14
		IGF2	3481	Insulin-like Growth Factor 2
		ZBTB4	57659	Zinc Finger And BTB Domain Containing 4
		SLC24A2	25769	Solute Carrier Family 24 Member 2
		LRRC8C	84230	Leucine Rich Repeat Containing 8 VRAC Subunit C
		NCAN	1463	Neurocan
		ARL13B	200894	ADP Ribosylation Factor Like GTPase 13B
		SLC12A2	6558	Solute Carrier Family 12 Member 2
		MAPK10	5602	Mitogen-Activated Protein Kinase 10
		FLRT2	23768	Fibronectin Leucine Rich Transmembrane Protein 2
		NSL1	25936	NSL1, MIS12 Kinetochore Complex Component
		AIMP1	9255	Aminoacyl TRNA Synthetase Complex Interacting Multifunctional Protein 1
		ATRN	8455	Attractin
		ADAM12	8038	ADAM Metallopeptidase Domain 12
		BEAN1	146227	Brain Expressed Associated With NEDD4 1
		NAA30	122830	N-Alpha-Acetyltransferase 30, NatC Catalytic Subunit
		SLC15A1	6564	Solute Carrier Family 15 Member 1
		SLC8A3	6547	Solute Carrier Family 8 Member A3
		LIMD1	8994	LIM Domains Containing 1
		ZNRF3	84133	Zinc And Ring Finger 3
		MOBP	4336	Myelin Associated Oligodendrocyte Basic Protein
		PTPRD	5789	Protein Tyrosine Phosphatase Receptor Type D
		TMBIM1	64114	Transmembrane BAX Inhibitor Motif Containing 1
		SLC10A7	84068	Solute Carrier Family 10 Member 7
		ITPRID2	6744	ITPR Interacting Domain Containing 2
		ZNF407	55628	Zinc Finger Protein 407
		GLUL	2752	Glutamate-Ammonia Ligase
		PLXDC2	84898	Plexin Domain Containing 2
		LAP3	51056	Leucine Aminopeptidase 3
		MAB21L2	10586	Mab-21 Like 2
		PARPBP	55010	PARP1 Binding Protein
		MAP3K5	4217	Mitogen-Activated Protein Kinase Kinase Kinase 5
		PGM5	5239	Phosphoglucomutase 5
		TSHZ1	10194	Teashirt Zinc Finger Homeobox 1
		UFL1	23376	UFM1 Specific Ligase 1
		GSTM4	2948	Glutathione S-Transferase Mu 4
		PPAT	5471	Phosphoribosyl Pyrophosphate Amidotransferase
Put-premir21	Put-miR21-1 (MatureBayes 5'stem)	MRPL30	51263	Mitochondrial Ribosomal Protein L30
	Put-miR21-2 (MatureBayes 3'stem)	HS3ST3B1	9953	Heparan Sulfate-Glucosamine 3-Sulfotransferase 3B1
		RGS8	85397	Regulator Of G Protein Signaling 8
		FAM86C1	55199	Family With Sequence Similarity 86 Member C1
		MARCH3	115123	Membrane Associated Ring-CH-Type Finger 3
		SH3BGRL2	83699	SH3 Domain Binding Glutamate Rich Protein Like 2
		MTFR1L	56181	Mitochondrial Fission Regulator 1 Like
		NCAM1	4684	Neural Cell Adhesion Molecule 1

Pre-miRNA candidate	Mature miRNA	Target gene symbol	Gene ID	Description
		SLC25A31	83447	Solute Carrier Family 25 Member 31
		L3MBTL2	83746	L3MBTL Histone Methyl-Lysine Binding Protein 2
		HVCN1	84329	Hydrogen Voltage Gated Channel 1
		NECTIN1	5818	Nectin Cell Adhesion Molecule 1
		TTBK2	146057	Tau Tubulin Kinase 2
		TFDP1	7027	Transcription Factor Dp-1
		PACS2	23241	Phosphofurin Acidic Cluster Sorting Protein 2
		TBL1XR1	79718	Transducin Beta Like 1 X-Linked Receptor 1
		ARPC5	10092	Actin Related Protein 2/3 Complex Subunit 5
		TJP2	9414	Tight Junction Protein 2
		RARG	5916	Retinoic Acid Receptor Gamma
		NFASC	23114	Neurofascin
		ANKFY1	51479	Ankyrin Repeat And FYVE Domain Containing 1
		PARP16	54956	Poly(ADP-Ribose) Polymerase Family Member 16
		PRX	57716	Periaxin
		CNOT6L	246175	CCR4-NOT Transcription Complex Subunit 6 Like
		ZC3H11A	9877	Zinc Finger CCCH-Type Containing 11A
		NAT8L	339983	N-Acetyltransferase 8 Like
		NDST1	3340	N-Deacetylase And N-Sulfotransferase 1
		FAM86B1	85002	Family With Sequence Similarity 86 Member B1
		TXLNA	200081	Taxilin Alpha
		USP50	373509	Ubiquitin Specific Peptidase 50
		GOSR1	9527	Golgi SNAP Receptor Complex Member 1
		SEMA5A	9037	Semaphorin 5A
		E2F3	1871	E2F Transcription Factor 3
		GRIK3	2899	Glutamate Ionotropic Receptor Kainate Type Subunit 3
		CDK6	1021	Cyclin-Dependent Kinase 6
		SOCS6	9306	Suppressor Of Cytokine Signaling 6
		GGCX	2677	Gamma-Glutamyl Carboxylase
		CABLES2	81928	Cdk5 And Abl Enzyme Substrate 2
		ACVRL1	94	Activin A Receptor Like Type 1
		DIP2B	57609	Disco Interacting Protein 2 Homolog B
		RHBDF1	64285	Rhomboid 5 Homolog 1
		GDPD5	81544	Glycerophosphodiester Phosphodiesterase Domain Containing 5
		TRIM32	22954	Tripartite Motif Containing 32
		SYNJ1	8867	Synaptojanin 1
		NTNG1	22854	Netrin G1
		VPS26A	9559	VPS26, Retromer Complex Component A
		PPP1R16B	26051	Protein Phosphatase 1 Regulatory Subunit 16B
		NADK	65220	NAD Kinase
		RABGAP1	23637	RAB GTPase Activating Protein 1
		ODR4	54953	Odr-4 GPCR Localization Factor Homolog
		CXXC5	51523	CXXC Finger Protein 5
	Put-miR21-3 (UCSC putative mature miR)	NFIX	4784	Nuclear Factor I X
		PAX2	5076	Paired Box 2

Table S6: List of target genes related to cancers, breast cancer, and lung cancer

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
Put-premir1	Put-miR1-1 (MatureBayes 5'stem)	FNDC3B	6477		
		PTGDR	5729		
		PRKAR1A	5573	PRKAR1A	
	Put-miR1-2 (MatureBayes 3'stem)	MAP3K12	7786		
		RECK	8434		
	Put-miR1-3 (UCSC putative mature miR)	EMP1	2012		
		ZNF99	7652		
		MLLT6	4302		
		FOXG1	2290		
		LYRM9	201229		LYRM9
		SDK2	54549		
		ARMH3	79591		
		KIF21B	23046		
		BCL11B	64919		
		TIGIT	201633		
		EOMES	8320		
		TNFRSF12A	51330		
		CEBPA	1050		
		LRRC4	64101		
		FOXO4	4303		
		ASXL1	171023	ASXL1	
		RREB1	6239		
		PIK3C2B	5287		PIK3C2B
		SEMA4F	10505	SEMA4F	
		PLXNB1	5364	PLXNB1	
		ADGRL2	23266		
		BLCAP	10904		
		PDIA3	2923		
		ACVR1	90		
		SIRT1	23411		
		UBE4B	10277		
		AFF4	27125		
Put-premir4	Put-miR4-1 (MatureBayes 3'stem)	RC3H1	149041		
		PLAG1	5324		
		IER3	8870		
		SRSF1	6426		
		RBM27	54439		
		RFC3	5983		
	Put-miR4-2 (SSCPofiler putative mature miR)	ROCK2	9475		
		PCDH15	65217		
		ITGAV	3685		ITGAV
		CYSLTR2	57105		
		RALY	22913		
Put-premir19	Put-miR19-1 (MatureBayes 5'stem)	TBPL1	9519		
		BMF	90427		
		UBP1	7342		
		DHX35	60625		
	Put-miR19-2 (FOMmiR putative mature miR 3p)	---	---		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
Put-premir20	Put-miR20-1 (MatureBayes 5'stem)	KLF6	1316	KLF6	
		DICER1	23405	DICER1	DICER1
		SKIL	6498		
		ODC1	4953	ODC1	
		KDM7A	80853		KDM7A
		TIMM17A	10440		
		UNC80	285175		
		DCLK1	9201		
		GCOM1	145781		
		FUBP3	8939		
		NFIB	4781		
		POLQ	10721	POLQ	POLQ
		CIPC	85457		
		SEMA6D	80031	SEMA6D	
		PSD3	23362		PSD3
		EP300	2033	EP300	EP300
		GRIA3	2892		
		CHD1	1105		CHD1
		SIX4	51804		
		GJA1	2697		
		KDM6A	7403	KDM6A	KDM6A
		HOOK3	84376		HOOK3
		CCR5	1234		CCR5
		CREB1	1385		
		SKI	6497		
		DHX35	60625		
		CUL4B	8450		
		CACNA2D3	55799	CACNA2D3	CACNA2D3
		WT1	7490	WT1	
		PPM1A	5494		
		NCAM2	4685		NCAM2
		MLANA	2315		
		CDK6	1021	CDK6	CDK6
	Put-miR20-2 (MatureBayes 3'stem)	FOXP4	116113		FOXP4
		IL24	11009		
		VGF	7425		
		NOVA1	4857		
		FAP	2191	FAP	
	Put-miR20-3 (UCSC putative mature miR)	ING3	54556		
		YTHDF2	51441		
		CBL	867	CBL	CBL
		REST	5978		
		CELF4	56853		
		NFAT5	10725	NFAT5	
		RBPJ	3516	RBPJ	RBPJ
		ARFGEF1	10565		ARFGEF1
Put-premir7	Put-miR7-1 (MatureBayes 5'stem)	SOX2	6657		SOX2
		PHIP	55023		
		C10orf53	282966		
		PAN3	255967		PAN3
		ADAM12	8038		ADAM12
		CHD9	80205		
		MED12L	116931		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
	Put-miR7-2 (MatureBayes 3'stem)	ARID2	196528	ARID2	ARID2
		ZNF451	26036		
		MED1	5469		
		ITK	3702		ITK
		MTSS1	9788		MTSS1
		SPTB	6710		
		CUL2	8453		
		GPM6A	2823		
	Put-miR7-3 (SSCpofiler putative mature miR)	KSR2	283455		
		ELN	2006		
		ZC3H11A	9877		
Put-premir9	Put-miR9-1 (MatureBayes 5'stem)	ONECUT2	9480		
		ZFHX4	79776		ZFHX4
		POGLUT1	56983		
		OCRL	4952		
		PTX3	5806		
		ACLY	47		
		DIAPH1	1729		
		LUZP1	7798		
		PIK3R3	8503		PIK3R3
		CDKN1B	1027	CDKN1B	CDKN1B
	Put-miR9-2 (MatureBayes 3'stem)	NACC1	112939		
		NGFR	4804		
		CSNK1A1	1452	CSNK1A1	
		ANKRD26	22852		
		PRX	57716		
		LARP1	23367		
		CD1E	913		
		MCC	4163		
		ASH1L	55870		
Put-premir11	Put-miR11-1 (MatureBayes 5'stem)	NPAT	4863		
		PDS5A	23244		
		BACH2	60468		
		AGFG1	3267		
		HOOK3	84376		HOOK3
		JAKMIP2	9832		
		IGF1	3479		IGF1
		TENT4B	64282		
		XPO4	64328		
		CAMTA1	23261		
		WAC	51322		WAC
		CHGB	1114		
		BCL7A	605		
		EPHB1	2047	EPHB1	
		PABPC1L	80336		
		KIF16B	55614		
		ADAM19	8728		ADAM19
		USP9X	8239	USP9X	
		PSD3	23362		PSD3
		NR2C2	7182		
		PPHLN1	51535		
		ARID1A	8289	ARID1A	ARID1A
		RASGRF2	5924		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		ADAM22	53616		
		GLIPR1	11010		
		CAMK1D	57118		
		ANKRD12	23253		
		DMBT1	1755		
		SHANK2	22941		
		RB1	5925	RB1	RB1
		GLP2R	9340		
		ASAP1	50807		
		CYP7B1	9420		
		LARP4B	23185		
		PGRMC1	10857		
		ANK3	288		ANK3
		ATP2A2	488		
		PJA2	9867		
		RSPO3	84870		
		FOSL1	8061		
		MLXIPL	51085		
		DKK2	27123		
		PCDH7	5099	PCDH7	
		USP25	29761		
		SEMA6A	57556		
		TRAF5	7188	TRAF5	
		TET1	80312		
		SPTBN4	57731		
		RALA	5898		
		GMFB	2764		
		TFRC	7037		
		PWWP3B	139221		
		RBMS3	27303		
		SERPINB11	89778		
		SKI	6497		
		ETNK1	55500		
		GGNBP2	79893		GGNBP2
		F8	2157		
		ZFP36L1	677	ZFP36L1	
	Put-miR11-2 (MatureBayes 3'stem)	BRPF1	7862		
		FKBP9	11328		
		ADRA1A	148		
	Put-miR11-3 (UCSC putative mature miR)	PPP1R9B	84687		
		CASTOR2	729438		
		ACTB	60		
		ELK1	2002		
		MAP1A	4130		
		CAMK1D	57118		
		DIRAS1	148252		
		JPH4	84502		
		MIEN1	84299	MIEN1	
		PANX2	56666		
		PDE1B	5153		
		ITGA3	3675		ITGA3
		APLNR	187		APLNR
		STIM1	6786		STIM1
		TMEM222	84065		
		KALRN	8997		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		UBTF	7343		
		CNTNAP1	8506		
		ZFC3H1	196441		
		BIRC2	329		BIRC2
		SHANK2	22941		
		PRKACA	5566		
		SNX29	92017		
		LSAMP	4045		
		TCF7	6932		
		AFAP1	60312		
		KMT2D	8085	KMT2D	KMT2D
		FOXP4	116113		FOXP4
Put-premir12	Put-miR12-1 (MatureBayes 5'stem)	KLK4	9622		
		ZNF583	147949		
		RXRA	6256		
		PAK3	5063		PAK3
		LGALS3	3958		LGALS3
		WNT7B	7477		
		CPEB4	80315		
		C12orf75	387882		
		PCBP2	5094		
		SESN3	143686		
		APBB3	10307		
	Put-miR12-2 (UCSC putative mature miR)	VGLL2	245806		
		EXTL2	2135		
		AAK1	22848		
		SMKR1	100287482		
		XPO7	23039		
		OLA1	29789	OLA1	
		TRIM2	23321		
		ZBTB4	57659		
		KLHL8	57563		
		ZNF668	79759	ZNF668	
	Put-miR12-3 (Selected sequence)	ZFAND3	60685		
		REPS2	9185		
		PAX5	5079		PAX5
		CLASP2	23122		
		LEMD2	221496		
		TXNIP	10628		
		ARHGAP21	57584		
		RSBN1L	222194		
		PHLDB1	23187		
		ATP10B	23120		
		ADCY1	107		ADCY1
		CRIM1	51232		
		TBL1X	6907		
		SAV1	60485		
		ANKRD36	375248		
		BAG4	9530	BAG4	
		IGFBP5	3488		
		AP1G1	164		
		AREL1	9870		
		PRDM4	11108		
		CACHD1	57685		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		SMURF1	57154		
		AAK1	22848		
		NDST1	3340		
		MFSD11	79157		
	Put-miR12-4 (FOMmiR (seq_3p))	ARFIP1	27236		
		PRPF4B	8899		
		NPAT	4863		
		DCLK1	9201		
		ELF1	1997		
		A1CF	29974		
		RAB21	23011		
		AVL9	23080		
		CIAO2A	84191	CIAO2A	
		GUCY1A2	2977		
		RBM18	92400		
		MSR1	4481		
		MTREX	23517		
		ANTXR1	84168		
		CD47	961		
		INO80	54617		
		HIPK3	10114		
		KRAS	3845	KRAS	KRAS
		PCMTD1	115294		
		FAM84B	157638	FAM84B	
		SNX16	64089		
		KCTD6	200845		
		RAD50	10111	RAD50	
		DENND1B	163486		
		TOMM20	9804		
		PEG10	23089		
		NMBR	4829	NMBR	
		EXT2	2132	EXT2	
		NETO2	81831		
		RBM26	64062		
		LHFPL3	375612		
		TMTC3	160418		
		POGZ	23126		
		DEK	7913		
		CCNJ	54619		
		SFRP5	6425		
		PGM2	55276		
		PAK2	5062		
		CDH11	1009		CDH11
		KCTD9	54793		
		RIMS2	9699		RIMS2
		GRIA2	2891	GRIA2	
		SGCZ	137868		
		REEP3	221035		
		QKI	9444		
		PPM1A	5494		
		ARFGEF3	57221	ARFGEF3	
		PCCA	5095		
		ZC3H12D	340152		
		VEZT	55591		
		SEC62	7095		
		ATP2C2	9914		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		ADAM10	102		
		PTCD3	55037		
		ARL13B	200894		
		NCOR1	9611	NCOR1	
		SLC4A7	9497		
		YAP1	10413		
		KCTD8	386617		
		ACVR2A	92	ACVR2A	
		CBLB	868	CBLB	CBLB
		ATP11B	23200		ATP11B
		GALNT12	79695		
		ABCC9	10060		
		USO1	8615		
		PRKCI	5584		PRKCI
		CDC37L1	55664		
		PDZRN4	29951		
		HS2ST1	9653		
		NCOA6	23054	NCOA6	
		MYBL1	4603		
		ANKRD36B	57730		
		TM9SF4	9777		
		FUT4	2526		
		PIK3C2G	5288		
		SLC16A7	9194		
		LGR4	55366		
		BAZ1A	11177		
		PTBP3	9991		
		CDC14A	8556		
		PHF6	84295	PHF6	
		MED23	9439	MED23	
		CXCL12	6387	CXCL12	
		MBNL1	4154		
		CACNA2D1	781		CACNA2D1
Put-premir16	Put-miR16-1 (MatureBayes 5'stem)	AREL1	9870		
		BCCIP	56647	BCCIP	
		NTRK2	4915		
		MRAS	22808		
		SIAH1	6477		
		PDE7B	27115		
		GAS7	8522		
		MBD1	4152		
		OCRL	4952		
	Put-miR16-2 (MatureBayes 3'stem)	---	---		
	Put-miR16-3 (SSCpofiler putative mature miR)	ABCC9	10060		
		RARB	5915		RARB
		NPR3	4883		
		ZCWPW2	152098		
		NRF1	4899		
Put-premir17	Put-miR17-1 (MatureBayes 5'stem)	ZNF444	55311		
		PDX1	3651		
		POU2F2	5452		
		EZH1	2145		
		ARID1A	8289	ARID1A	ARID1A

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		EN2	2020		
		KAT7	11143		
		NAV1	89796		
		LAMC1	3915		
		COL27A1	85301		
		ASB16	92591		
		UNC5B	219699		
		FAM57A	79850		FAM57A
		ELK1	2002		
		TNS1	7145		
		CSF1R	1436	CSF1R	
		SDK2	54549		
		TCF4	6925		
		GPR107	57720		
		CADM4	199731		
		SDK1	221935		
	Put-miR17-2 (MatureBayes 3'stem)	LAMC1	3915		
		CACNA1B	774		
		ABI1	10006		
		CASC1	55259		CASC1
		QKI	9444		
		ERBIN	55914		
		ANKRD28	23243		
	Put-miR17-3 (SSCpofiler putative mature miR)	---	---		
	Put-miR17-4 (UCSC putative mature miR)	TNRC6B	23112		
		ADGRA1	84435		
		LSAMP	4045		
		IGF2BP2	10644		
		CELF4	56853		
		IGF2	3481		
		SLC12A2	6558		
		MAPK10	5602		
		FLRT2	23768		
		NSL1	25936		
		AIMP1	9255		
		ADAM12	8038		ADAM12
		SLC15A1	6564		
		LIMD1	8994		
		ZNRF3	84133		
		PTPRD	5789	PTPRD	PTPRD
		GLUL	2752		
		PLXDC2	84898		
		MAP3K5	4217		
		UFL1	23376		
		GSTM4	2948		
Put-premir21	Put-miR21-1 (MatureBayes 5'stem)	---	---		
	Put-miR21-2 (MatureBayes 3'stem)	MTFR1L	56181		
		NCAM1	4684		
		HVCN1	84329		
		TTBK2	146057		
		TFDP1	7027		
		PACS2	23241		

Pre-miRNA	Mature miRNA	Target genes related to cancers	Gene ID	Target genes related to breast cancer	Target genes related to lung cancer
		TBL1XR1	79718	TBL1XR1	
		ARPC5	10092		ARPC5
		RARG	5916		
		PRX	57716		
		ZC3H11A	9877		
		NAT8L	339983		
		SEMA5A	9037		
		E2F3	1871		E2F3
		GRIK3	2899		GRIK3
		CDK6	1021	CDK6	CDK6
		RHBDF1	64285		
		TRIM32	22954		
		NADK	65220	NADK	
		CXXC5	51523		
	Put-miR21-3 (UCSC putative mature miR)	PAX2	5076	PAX2	

Table S7: List of oncogene or/and tumor suppressor target genes related to breast cancer

Pre-miRNA	Mature miRNA	Target gene	Description	Biological function
Put-premir1	Put-miR1-1	PRKAR1A	Protein Kinase cAMP-Dependent Type I Regulatory Subunit Alpha	It is a main subunit of type I protein kinase A (PKA), which acts as an important mediator of cAMP signaling in cells.[1]
	Put-miR1-3	ASXL1	ASXL Transcriptional Regulator 1	Participates in the regulation of transcription mediated by using ligand-bound nuclear hormone receptors. Participates in the epigenetic regulation of gene expression. Functions as a co-activator of the retinoic acid receptor (RAR).[2]
		PLXNB1	Plexin B1	It has a role in the development of GABAergic synapses. Acts in axon guidance, cell migration, and invasive growth.[2]
Put-premir20	Put-miR20-1	KLF6	Kruppel Like Factor 6	It is a zinc finger transcription factor that regulates several cellular processes and the transcription of a wide range of target genes. It leads to the inhibition of c-Jun-dependent transcription and acts as a functional antagonist for the c-Jun proto-oncogene.[3]
		DICER1	Dicer 1, Ribonuclease III	Participates in the generation of microRNAs. Binds to other proteins to form a complex which enhances the processing of small RNA.[4]
		POLQ	DNA Polymerase Theta	Promotes the mechanism of microhomology-mediated end-joining (MMEJ). Inhibits the homology-recombination repair (HR) pathway.[2]
		KDM6A	Lysine Demethylase 6A	Functions as a histone demethylase, which in particular demethylates 'Lys-27' of histone H3. It plays an essential role in regulating posterior development.[2]
		EP300	E1A Binding Protein P300	Acts as a histone acetyltransferase and regulates transcription through chromatin remodeling. Plays as a mediator of transcriptional repression. Acts in controlling the terminal differentiation of cells in the intestinal epithelium.[1, 2]
		CACNA2D3	Calcium Voltage-Gated Channel Auxiliary Subunit Alpha2delta 3	Acts as a regulator of calcium current density and calcium channel activation/inactivation kinetics.[2]
		WT1	WT1 Transcription Factor	Plays a critical role in cell development and survival. It has an important function in the development of the urogenital system. It is a tumor suppressor and also an oncogene that participates in tumor formation.[1, 2]
		CDK6	Cyclin-dependent kinase 6	Controls the cell cycle and differentiation. Promotes newborn neuron production.[2]
	Put-miR20-3	CBL	Cbl Proto-Oncogene	Acts as a negative regulator of numerous signaling pathways, which are triggered by activating cell surface receptors. Functions as an E3 ubiquitin-protein ligase, mediating the transfer of ubiquitin from ubiquitin-conjugating enzymes (E2) to particular substrates.[1, 2]
Put-premir7	Put-miR7-2	ARID2	AT-Rich Interaction Domain 2	Participates in embryonic patterning, control of cell cycle, transcriptional regulation, cell lineage gene regulation, and modification of chromatin structure. Participates in transcriptional activation and suppression of selected genes through chromatin remodeling.[2]
Put-premir9	Put-miR9-1	CDKN1B	Cyclin Dependent Kinase Inhibitor 1B	It plays a critical role in regulating cell cycle progression. Inhibits the kinase activity of CDK2, which is bound to cyclin A.[2]
	Put-miR9-2	CSNK1A1	Casein Kinase 1 Alpha 1	It plays a role in the phosphorylation of many proteins. It is involved in Wnt signaling. It may be involved in the disassembly of the keratin cytoskeleton and thus may regulate the migration of epithelial cells.[2]
Put-premir11	Put-miR11-1	ARID1A	AT-Rich Interaction Domain 1A	Participates in transcriptional activation and suppression of selected genes through chromatin remodeling. It is involved in tumor progression by controlling the cell cycle, modulating cell functions such as EMT, and regulating various signaling pathways.[2, 5]
		RB1	RB Transcriptional Corepressor 1	Acts as a negative regulator of the cell cycle. Functions as a transcriptional repressor for E2F1 target genes. Participates in the formation of heterochromatin by maintaining the overall chromatin structure. It leads to repressing transcription epigenetically.[2]

Pre-miRNA	Mature miRNA	Target gene	Description	Biological function
	Put-miR11-3	MIEN1	Migration And Invasion Enhancer 1	Enhances cellular migration by inducing the formation of filopodia at the leading edge of migrating cells. It has a function in the regulation of apoptosis.[2]
		KMT2D	Lysine Methyltransferase 2D	Plays the role of methylating the Lys-4 position of histone H3. Functions as an estrogen receptor co-activator by being recruited by ESR1. Regulates the transcription of the beta-globin and estrogen receptor genes.[2]
Put-premir12	Put-miR12-2	ZNF668	Zinc Finger Protein 668	Plays a role in the regulation of transcription. It is involved in the DNA repair process and participates in a part of the DNA damage response.[1, 2]
	Put-miR12-3	BAG4	BCL2 Associated Athanogene 4	Prevents the activity of HSP70/HSC70 chaperone by promoting substrate release. Inhibits constitutive TNFRSF1A signaling.[2]
	Put-miR12-4	KRAS	KRAS Proto-Oncogene, GTPase	It plays an important role in the pathways related to cell growth, survival, differentiation, and regulating cell proliferation.[1, 2]
		EXT2	Exostosin Glycosyltransferase 2	Encodes a glycosyltransferase that participates in the biosynthesis of heparan sulfate. It is involved in the exosomal release of CD63, SDCBP, and syndecan.[1, 2]
		NCOR1	Nuclear Receptor Corepressor 1	It is involved in the repression of transcription by certain nuclear receptors. Participates in histone deacetylation and chromatin condensation that may prevent access to basal transcription factors.[2]
		ACVR2A	Activin A Receptor Type 2A	Encodes a receptor for activins involved in different biological processes. It is involved in the induction of adipogenesis by GDF6.[2]
		CBLB	Cbl Proto-Oncogene B	It has an essential role in regulating peripheral immune tolerance through its E3 ubiquitin ligase activity, which limits T-cell activation and expansion. Promotes PIK3R1/p85 ubiquitination, which impairs its recruitment to the TCR (T-cell receptor) and subsequent activation.[1, 2]
		PHF6	PHD Finger Protein 6	Acts as a transcriptional regulator that suppresses the transcription of ribosomal RNA (rRNA).[2]
		CXCL12	C-X-C Motif Chemokine Ligand 12	It is involved in various cellular functions, including inflammatory response, development and organization of the immune system, embryogenesis, tissue homeostasis, tumor growth, and metastasis.[2, 6]
Put-premir17	Put-miR17-1	ARID1A	AT-Rich Interaction Domain 1A	Participates in transcriptional activation and suppression of selected genes through chromatin remodeling. It is involved in tumor progression by controlling the cell cycle, modulating cell functions such as EMT, and regulating various signaling pathways.[2, 5]
		CSF1R	Colony Stimulating Factor 1 Receptor	Functions as a cell-surface receptor for IL34 and CSF1. It has an important function in regulating the proliferation, survival, and differentiation of hematopoietic progenitor cells, particularly mononuclear phagocytes. It has an essential role in innate immunity and inflammatory processes. Promotes actin cytoskeleton reorganization and cancer cell invasion. Regulates membrane ruffles formation, cell adhesion, and cell migration.[2]
	Put-miR17-4	PTPRD	Protein Tyrosine Phosphatase Receptor Type D	It plays a role in regulating various cellular processes such as cell growth, mitotic cycle, differentiation, and oncogenic transformation.[2]
Put-premir21	Put-miR21-2	TBL1XR1	TBL1X Receptor 1	It plays an important role in nuclear receptor-mediated transcriptional activation. Interacts with histones H2B and H4.[1, 2]
		CDK6	Cyclin-dependent kinase 6	Controls the cell cycle and differentiation. Promotes newborn neuron production.[2]

Table S8: The list of published cancer-related functions of enriched pathways

miRNAs	Number of target genes	Term_name	Relevance to cancer
FGFR1-miR1	2834 common target genes	Hippo signaling pathway	The Hippo signaling pathway plays a critical role in the regulation of organ size, cell proliferation, and development. Dysregulation of this pathway may lead to tumorigenesis, cell invasion, migration, disease progression, and cancer drug resistance.[7]
		Apelin signaling pathway	The apelin signaling pathway participates in many physiological processes, such as angiogenesis, cell proliferation, vascular formation, and cardiovascular development. Various studies have indicated the overexpression of apelin and its receptor, APJ, in many malignant tissues, and the contribution of this axis in cancer progression has been demonstrated.[8, 9]
		Axon guidance	Axon guidance molecules participate in many pathological processes. Many of them regulate neuronal migration, neuronal survival, and apoptosis. Studies have shown that axon guidance molecules and their receptors are involved in tumorigenesis in many tissues.[10]
		Proteoglycans in cancer	Proteoglycans have many functions in cancer and angiogenesis and participate in cell growth through interaction with growth factors. They also act as a key regulator in cancer cell adhesion and migration.[11]
		GABAergic synapse	GABA acts as a major inhibitory neurotransmitter in the brain, and its increased levels have been identified in some tumors. Studies have shown the regulatory function of GABAergic signaling in tumor growth and metastasis, indicating the involvement of GABAergic signaling in tumorigenesis.[12]
		MAPK signaling pathway	MAPK pathways play an important role in regulating cell proliferation, differentiation, development, and apoptosis. Many studies indicated the involvement of MAPK pathways in various diseases, including cancer, and alterations in MAPK signaling cascades are found in cancers.[13, 14]
		Phosphatidylinositol signaling system	Phosphoinositides (PIs), the phosphorylated forms of phosphatidylinositol, play essential roles in biological processes such as membrane trafficking, cell adhesion, migration, and apoptosis, revealing significant involvement of PIs in cancer development and progression. Also, in this pathway, activated phospholipase C (PLC) significantly participates in the regulation of cellular signaling in cancer mechanisms.[15]

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