

SUPPLEMENTARY INFORMATION

Respiratory Syncytial Virus Infection Changes Cargo Composition of Exosome Released from Airway Epithelial Cells

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Supplementary file legend for Gene Ontology data analysis files:

We have identified the most significantly enriched functional groups in the following categories: Gene Ontology Biological Process (GOTERM_BP_DIRECT), Gene_Ontology Molecular Function (GOTERM_MF_DIRECT), KEGG pathway (KEGG_PATHWAY). The results are shown in nine supplementary Excel spreadsheet files. We have imposed a p-value threshold of 0.01. Due to the large number of upregulated targets, we limited the set of targets of upregulated miRNAs to genes identified two or more times by TargetScan. The columns of the spreadsheets are as follows:

- A: Type of functional category (same for all results in a file),
- B: Functional category enriched,
- C: Number of identified genes with the annotation from column B
- D: P-Value for enrichment (uncorrected)
- E: Enrichment fold
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		Read Count (Avg)		Log2 Fold
S.No.	miRNA	Mock Exo	RSV Exo	Change
1	hsa-mir-6087	45.59	39800.59	9.7699
2	hsa-let-7e	0.62	468.17	9.5657
3	hsa-miR-182-5p	0.25	43.34	7.4339
4	hsa-miR-181b-5p	0.62	77.21	6.9655
5	hsa-mir-128-1	0.25	14.68	5.8724
6	hsa-miR-19b-3p	0.25	13.24	5.7227
7	hsa-mir-23b	1.14	54.52	5.5854
8	hsa-let-7i	12.76	610.07	5.5789
9	hsa-mir-22	2	79.13	5.3033
10	hsa-miR-24-3p	5.98	229.59	5.263
11	hsa-mir-182	1.39	45.8	5.0462
12	hsa-mir-378a	0.87	28.12	5.0172
13	hsa-mir-99b	1.14	35.93	4.9836
14	hsa-miR-320b	2.62	74.63	4.8312
15	hsa-let-7f-1	22.5	590.86	4.7148
16	hsa-miR-4516	2.97	77.27	4.7001
17	hsa-mir-21	121.4	3155.14	4.6999
18	hsa-mir-30c-2	2.1	42.72	4.3435
19	hsa-miR-423-5p	2.24	44.06	4.2989
20	hsa-miR-320c	1.75	34.03	4.2788
21	hsa-mir-23a	3.41	65.92	4.2744
22	hsa-miR-25-3p	6.01	113.35	4.2366
23	hsa-mir-25	6.01	113.35	4.2366
24	hsa-mir-423	5.13	85.27	4.0558
25	hsa-mir-324	0.62	10.25	4.0522
26	hsa-miR-98-5p	2	33.18	4.0495
27	hsa-miR-224-5p	1.14	15.93	3.8104
28	hsa-mir-92b	2.25	29.38	3.704
29	hsa-mir-10a	1.64	19.97	3.6088
30	hsa-mir-221	36.28	433.51	3.5787
31	hsa-miR-320d	1.14	13.17	3.5361
32	hsa-mir-34a	1.75	20.13	3.5214
33	hsa-let-7a-5p	126.89	1387.4	3.4508
34	hsa-miR-16-5p	15.01	150.62	3.3266
35	hsa-mir-106b	3.41	32.84	3.2689
36	hsa-mir-4449	25.37	214.29	3.0785
37	hsa-mir-103a-1	17.27	143.31	3.0528

38	hsa-mir-320a	72.59	504.05	2.7957
39	hsa-mir-27b	59.5	382.68	2.6851
40	hsa-let-7d	9.27	56.12	2.5971
41	hsa-mir-15b	1.85	10.13	2.451
42	hsa-mir-140	2.52	12.94	2.3598
43	hsa-let-7g	41.88	195.77	2.2248
44	hsa-miR-107	8.38	35.46	2.0807
45	hsa-mir-92a-1	56.61	238.69	2.0761
46	hsa-mir-192	30.42	128.24	2.0757
47	hsa-miR-92a-3p	53.72	225.96	2.0725
48	hsa-mir-125a	5.51	22.94	2.0563
49	hsa-mir-27a	28.68	114.13	1.9928
50	hsa-miR-29a-3p	14.88	53.23	1.839
51	hsa-mir-29a	14.88	53.23	1.839
52	hsa-mir-17	4.63	12.56	1.4416
53	hsa-mir-30d	25.98	69.77	1.4251
54	hsa-miR-17-5p	4.63	11.19	1.275
55	hsa-let-7b	301.51	717.56	1.2509
56	hsa-mir-93	34.52	79.26	1.1992
57	hsa-mir-223	21	0.17	-6.9115
58	hsa-mir-2964a	62.14	0.57	-6.7673
59	hsa-mir-205	18.17	0.29	-5.9932
60	hsa-mir-143	65.39	1.41	-5.5322
61	hsa-miR-3168	222.71	4.82	-5.5304
62	hsa-miR-146a-5p	15.8	0.46	-5.1029
63	hsa-miR-10b-5p	56.07	4	-3.809
64	hsa-mir-328	21.77	1.83	-3.5758
65	hsa-miR-1246	237.74	23.03	-3.3677
66	hsa-miR-185-5p	17.3	6.91	-1.3244
		Read Count (Avg)		
S.No.	miRNA	Mock Exo	RSV Exo	
1	hsa-mir-31	0	529.15	N/A
2	hsa-mir-3687	0	114.57	N/A
3	hsa-mir-222	0	80.93	N/A
4	hsa-mir-151a	0	66.1	N/A
5	hsa-miR-4449	0	65.29	N/A
6	hsa-mir-663a	0	56.03	N/A
7	hsa-mir-196a-2	0	53.41	N/A
8	hsa-mir-4508	0	37.12	N/A
9	hsa-mir-1248	0	34.64	N/A

10	hsa-miR-4497	0	28.19	N/A
11	hsa-mir-1273f	0	28.08	N/A
12	hsa-mir-28	0	26.67	N/A
13	hsa-mir-191	0	20.44	N/A
14	hsa-miR-3648	0	17.54	N/A
15	hsa-miR-194-5p	0	17.14	N/A
16	hsa-miR-128	0	14.3	N/A
17	hsa-mir-1307	0	13.91	N/A
18	hsa-mir-744	0	13.07	N/A
19	hsa-miR-148b-3p	0	12.31	N/A
20	hsa-miR-1307-3p	0	12.02	N/A
21	hsa-mir-663b	0	11.33	N/A
22	hsa-miR-152	0	11.19	N/A
23	hsa-mir-421	0	10.99	N/A
24	hsa-mir-7-1	0	10.43	N/A
25	hsa-mir-486	0	10.26	N/A
26	hsa-miR-1321	50.5	0	N/A
27	hsa-mir-204	34.07	0	N/A
28	hsa-mir-637	22.18	0	N/A
29	hsa-mir-4689	19.39	0	N/A
30	hsa-mir-144	15.38	0	N/A
31	hsa-miR-4269	11.12	0	N/A
32	hsa-mir-885	10.5	0	N/A
33	hsa-mir-4795	10.5	0	N/A
34	hsa-mir-718	10.29	0	N/A

Supplementary Table 1. Complete list of miRNAs whose expression in exosomes was changed following RSV infection.

Supplementary Table 2. Predicted target genes of miRNAs upregulated by RSV from Table 2.

Target Gene	Number of miRNAs
TRIM71	20
FIGN	17
ONECUT2	16
HIC2	15
IGF2BP1	15
AGO3	14
CHIC1	14
HMGA2	14
AGO2	13
SESN3	13
CLCN5	12
ANKRD52	11
CCND2	11
FOXP2	11
LIN28B	11
NR6A1	11
ONECUT3	11
QKI	11
ACVR2B	10
ARID3B	10
CNNM2	10
FZD3	10
GABRB1	10
LPP	10
PBX3	10
POU2F1	10
TAOK1	10
ZNF286B	10
ZNF704	10
ABHD13	9
BNC2	9
CPD	9
DCUN1D3	9
FRS2	9
IGDCC3	9

INO80D	9
KDM5A	9
KIAA2022	9
MTDH	9
NUFIP2	9
S1PR1	9
SKIL	9
STOX2	9
ZBTB20	9
ZNF652	9
AAK1	8
ATXN1	8
CPEB4	8
DCUN1D1	8
FAM222B	8
FNDC3B	8
GXYLT1	8
IGF1R	8
KCNC3	8
KCTD16	8
KLF7	8
MBD2	8
MEX3A	8
PBX2	8
PLXNC1	8
PURB	8
USP44	8
YAF2	8
YOD1	8
ZBTB16	8
AGO4	7
AKT3	7
AL590483.1	7
ARID3A	7
ARPP19	7
ATXN3	7

BEND4	7
C14orf28	7
CBX5	7
CDC73	7
CLOCK	7
CREBRF	7
CSRNP3	7
CYLD	7
DYRK2	7
EGR3	7
EOGT	7
GAN	7
GIGYF1	7
IRF6	7
ITGB3	7
ITGB8	7
KCMF1	7
LCOR	7
LRIG2	7
MAPK1	7
MAPK1IP1L	7
MTMR12	7
NOVA2	7
ONECUT1	7
PAPPA	7
PBX1	7
PCDHA10	7
PCDHA11	7
PCDHA12	7
PCDHA13	7
PCDHA1	7
PCDHA2	7
PCDHA3	7
PCDHA4	7
PCDHA5	7
PCDHA6	7
PCDHA7	7
PCDHA8	7

PCDHA9	7
PCDHAC1	7
PCDHAC2	7
PGM2L1	7
PTPRD	7
RAB3GAP2	7
RIT1	7
RNF152	7
SALL4	7
SH2B3	7
SNX30	7
SOX6	7
SREK1	7
ST3GAL1	7
TET3	7
TGFBR1	7
THRA	7
TNPO1	7
TSC22D2	7
WDFY2	7
ZBTB10	7
ZBTB37	7
ZNF24	7
ZNF280B	7
ADCY9	6
ATXN1L	6
BMP2K	6
BRWD1	6
BRWD3	6
BZW1	6
C1GALT1	6
C20orf194	6
CELF1	6
CFL2	6
CPEB1	6
DCAF8	6
DDX3X	6
DICER1	6

DLC1	6
DLGAP4	6
DMD	6
DNAJA2	6
DNAL1	6
DR1	6
DTNA	6
ETNK1	6
EXOC5	6
FNDC3A	6
GNAQ	6
GPCPD1	6
GRIN2A	6
HIF1AN	6
HS2ST1	6
ITSN1	6
KIAA1244	6
KIAA1958	6
KLHL15	6
KPNA4	6
LGALSL	6
LPGAT1	6
LRRC40	6
MEF2C	6
MEIS2	6
MSI2	6
NFIA	6
NKAP	6
NLN	6
OSBPL3	6
PIK3CA	6
PLXDC2	6
PLXNA4	6
PPARGC1B	6
PRR14L	6
PTAFR	6
PTAR1	6
PTEN	6

PXDN	6
RAP2C	6
RASA1	6
RGS17	6
RIMKLA	6
RIMS4	6
RORA	6
SDK1	6
SFMBT1	6
SLC16A10	6
SOX12	6
SOX4	6
STARD13	6
SYNCRIPI	6
TGFBR2	6
TMEM178B	6
TMEM64	6
TNIK	6
TNRC6B	6
TOR1AIP2	6
TSC1	6
UBN2	6
WWC2	6
XKR4	6
ZBTB4	6
ZNF512B	6
ZNF697	6
ABL2	5
ACAP2	5
ACVR2A	5
AGO1	5
ANKFY1	5
AP3M1	5
APBA1	5
ARL5A	5
ATP11A	5
ATXN7L3	5
B3GALT1	5

BEND3	5
BPTF	5
C19orf26	5
CACNA1E	5
CACNB4	5
CALN1	5
CBFA2T3	5
CCDC144A	5
CDK13	5
CDK6	5
CECR6	5
CNKS3R	5
CNOT6L	5
CPEB3	5
CTD-2140B24.4	5
CTDSPL2	5
CYB561D1	5
DCBLD2	5
DDI2	5
DDX3Y	5
DUSP16	5
ERO1L	5
EVX2	5
FOXP1	5
GALNT1	5
GATA6	5
GDF5OS	5
GMFB	5
GPBP1	5
GPR61	5
GRAMD1B	5
GREB1L	5
HAS2	5
HCFC2	5
HOXA1	5
IGF2BP2	5
IGF2BP3	5
KCNJ6	5

KIAA0247	5
KIAA1549	5
KLF13	5
KLF8	5
KLHL3	5
KLHL36	5
KMT2E	5
LIN28A	5
LMLN	5
LPHN3	5
MAP1B	5
MAP3K3	5
MGLL	5
MIB1	5
MIER1	5
MITF	5
MKL2	5
MTF2	5
MXI1	5
MYCN	5
N4BP1	5
NAA20	5
NABP1	5
NAP1L1	5
NEDD4L	5
NEK9	5
NLK	5
NRAS	5
NRK	5
NXT2	5
OTUD7B	5
PARM1	5
PARP8	5
PCGF3	5
PDK3	5
PDZD8	5
PHC1	5
PHIP	5

PLAG1	5
PPP1R15B	5
PRDM1	5
PRKAR2A	5
PRLR	5
PTCHD1	5
PYGO2	5
RAB30	5
RAB8B	5
RAD23B	5
REEP1	5
RGS9BP	5
RICTOR	5
RNF165	5
RNF38	5
RSF1	5
RUNX1T1	5
SAMD4A	5
SCN1A	5
SEMA4G	5
SENP2	5
SH3KBP1	5
SKIDA1	5
SLAIN2	5
SLC10A7	5
SLC30A7	5
SLC6A6	5
SLC7A14	5
SNN	5
SRSF7	5
STIM2	5
STK24	5
STRN	5
SYT11	5
TANC2	5
TFAP2B	5
TMEM151B	5
TMEM246	5

TRIM41	5
USP15	5
VANGL2	5
VCPIP1	5
VGLL3	5
WIPI2	5
WNT9B	5
XIAP	5
XYLT1	5
ZBTB7A	5
ZMYND11	5
ZNF200	5
ZNF268	5
ZNF292	5
ZNF516	5
ZNF644	5
ZNF710	5
ZNF772	5
ZNF791	5
AC140061.12	4
ACER2	4
ACER3	4
ACSL6	4
ADAMTS15	4
ADAMTS5	4
ADCY6	4
ADRB1	4
AEN	4
AFF1	4
AIFM1	4
AKAP2	4
AKAP5	4
AMMECR1L	4
APBB2	4
AQR	4
ARID5B	4
ARL5B	4
ASXL2	4

ATAD2B	4
ATF7IP2	4
ATG14	4
ATG16L1	4
ATP2A2	4
ATP2B2	4
ATXN7	4
AZIN1	4
B3GNT7	4
BACH1	4
BAHD1	4
BCAP29	4
BCAT1	4
BCL2L11	4
BDP1	4
BLCAP	4
BLOC1S6	4
BMPR1A	4
BMPR2	4
BSN	4
BTBD3	4
BVES	4
CACNA1C	4
CADM2	4
CALM1	4
CAMSAP2	4
CBL	4
CBX7	4
CCNJ	4
CCNT2	4
CCR7	4
CDC34	4
CDH20	4
CDV3	4
CECR2	4
CHD7	4
CHMP7	4
CHST3	4

CHSY3	4
CLASP1	4
CNKS2	4
CNOT2	4
CNOT6	4
COL27A1	4
COPS2	4
CPEB2	4
CREBL2	4
CRK	4
CTB-54O9.9	4
CTPS1	4
CUL5	4
CYTH3	4
DAB1	4
DCP1A	4
DCX	4
DENND6A	4
DIAPH2	4
DLGAP2	4
DNAJB14	4
DPYSL3	4
DST	4
DTX2	4
DTX4	4
DVL3	4
DYNC1LI2	4
E2F2	4
EEA1	4
EFNB2	4
ELL2	4
ELMSAN1	4
EMB	4
EMC7	4
ENAH	4
EPC1	4
EPHA4	4
EPN2	4

ETV3	4
EVI5	4
EYA3	4
FAM117B	4
FAM118A	4
FAM160B1	4
FAM168A	4
FAM179B	4
FAM208A	4
FAM43A	4
FAM63B	4
FAXC	4
FMR1	4
FNIP2	4
FRMD4B	4
FSD2	4
FUT9	4
FXR1	4
GAS7	4
GATSL2	4
GBX2	4
GCNT4	4
GID4	4
GJC1	4
GK5	4
GNAL	4
GNS	4
GRIN2B	4
HECTD2	4
HELZ	4
HHIP	4
HIAT1	4
HIC1	4
HIF3A	4
HLF	4
HNRNPA1	4
HOXA9	4
HOXD1	4

IGF1	4
IKZF1	4
IL1RAPL1	4
IL6R	4
IMPG2	4
IPO5	4
ITGA1	4
JAZF1	4
JHDM1D	4
KCND3	4
KLF6	4
KMT2A	4
KPNA1	4
KRAS	4
LBR	4
LEPROTL1	4
LHX9	4
LIMCH1	4
LIMD2	4
LMTK2	4
LPHN1	4
LPHN2	4
MAP3K2	4
MAPK8	4
MARCH9	4
MBLAC2	4
MBNL2	4
MBNL3	4
MBTPS2	4
MDM4	4
MED12L	4
MED28	4
MEF2A	4
MEF2D	4
MFAP3L	4
MIER3	4
MLEC	4
MMP16	4

MOB3B	4
MRPS25	4
MSANTD4	4
MXD1	4
MYRIP	4
MZT1	4
NAA30	4
NACC2	4
NCKAP1	4
NFIB	4
NFIC	4
NIPAL4	4
NOVA1	4
NRP1	4
NSUN3	4
NUP37	4
OTUD3	4
PACS2	4
PAK1	4
PALM2	4
PALM2-AKAP2	4
PAN3	4
PAPD5	4
PAQR3	4
PARD6B	4
PCDH19	4
PCGF5	4
PDE12	4
PDGFRA	4
PGRMC1	4
PHF8	4
PI4K2A	4
PKN2	4
PLEKHA3	4
PLEKHA8	4
PLEKHO1	4
PPM1L	4
PPP1R12B	4

PPP1R16B	4
PRKAA2	4
PRKAB2	4
PRKACB	4
PROX1	4
PRSS22	4
PTPRG	4
RAB11FIP4	4
RAB27A	4
RAB2A	4
RALGPS1	4
RANBP2	4
RAP1A	4
RAP1B	4
RAPGEF2	4
RASL10B	4
RGP1	4
RIMS3	4
RNF150	4
RNF20	4
RNF217	4
RNF44	4
RP1-170O19.20	4
RRAGD	4
RRP1B	4
SAMD12	4
SAR1B	4
SCN8A	4
SCUBE3	4
SECISBP2L	4
SEMA4C	4
SENP5	4
SESTD1	4
SLC25A12	4
SLC26A9	4
SLC30A1	4
SLC5A3	4
SLC8A1	4

SMARCAD1	4
SMARCC1	4
SMC1A	4
SMCR8	4
SMURF2	4
SNTB2	4
SNX17	4
SOCS4	4
SOX5	4
SP1	4
SPATA13	4
SPATA2	4
SPATS2L	4
SPIRE1	4
SREK1IP1	4
SYT1	4
TBL1X	4
TBX18	4
TET2	4
TGFBR3	4
THBS1	4
TIA1	4
TMCC1	4
TMEM106B	4
TMEM2	4
TMEM255A	4
TMEM41A	4
TNKS	4
TNRC6C	4
TP53	4
TP53INP1	4
TPD52L2	4
TRABD2B	4
TRHDE	4
TRIM67	4
TRPM6	4
TTLL4	4
UGCG	4

UGGT1	4
UNKL	4
USP46	4
VEZT	4
VKORC1L1	4
VLDLR	4
VSTM5	4
WARS2	4
WASL	4
WDTC1	4
WNK3	4
YIPF6	4
YY1	4
ZADH2	4
ZC3H7B	4
ZFP36L1	4
ZFP36L2	4
ZIC3	4
ZNF207	4
ZNF256	4
ZNF275	4
ZNF281	4
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PARPBP	1
PARVB	1
PAX9	1
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PCBP2	1
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PCSK5	1
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PDE7A	1
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PDHX	1
PDIA6	1
PDLIM2	1
PDPK1	1
PDPN	1
PDZD2	1
PDZD4	1
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PET117	1
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PEX19	1
PEX5L	1
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PGM3	1
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PHB2	1
PHC3	1
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PKP2	1
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PLEKHO2	1
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PRPF4B	1
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PRR11	1
PRR3	1
PRR5L	1
PRRC2C	1
PRRG3	1
PRSS8	1
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PSD4	1
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RBM26	1
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REV1	1
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RGMB	1
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RRP12	1
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RUNX3	1
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SEC22A	1
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SEC24D	1
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TBC1D9	1
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TCF23	1
TCF7	1
TCP11L2	1
TDRD6	1
TECTB	1
TEF	1
TESK2	1
TEX2	1
TFAM	1
TFDP2	1
TGFBRAP1	1
TGIF1	1
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TGM5	1
TGOLN2	1
THBS3	1
THBS4	1
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TIAM1	1
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TLL1	1
TLN1	1
TLN2	1

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TMED2	1
TMED4	1
TMED8	1
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TMEM120B	1
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TMEM170B	1
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TNFRSF19	1
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TRIM37	1
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TRMT10B	1
TRMT1L	1
TRPC3	1
TRPM7	1
TRPV3	1
TRRAP	1
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TSHZ1	1
TSHZ2	1

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TSPAN4	1
TSPAN9	1
TSPYL2	1
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TTC9C	1
TTLL7	1
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TXNDC12	1
TXNL1	1
TXNRD1	1
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USP42	1
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USP9Y	1
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VCL	1
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VGF	1
VHL	1
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VPS37A	1
VPS37D	1
VPS4B	1
VSIG10	1
VSIG10L	1
VSTM2B	1
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WBP2	1

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WDR26	1
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WDR91	1
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WIF1	1
WIPF1	1
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WISP1	1
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WNT10A	1
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WNT4	1
WNT7B	1
WNT8B	1
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WSB2	1
WSCD1	1
WSCD2	1
WT1	1
WTIP	1
WWC1	1
WWP1	1
XBP1	1
XPO4	1
XPO7	1
YIF1A	1
YLPM1	1
YTHDC2	1
YWHAB	1
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ZBTB46	1
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ZC3H15	1
ZC3H8	1
ZCCHC24	1
ZDHHC14	1
ZDHHC18	1
ZDHHC2	1
ZDHHC23	1
ZEB1	1
ZFAND4	1
ZFC3H1	1
ZFHX3	1
ZFHX4	1
ZFP1	1
ZFP14	1
ZFP3	1
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ZFP82	1
ZFX	1
ZFYVE9	1
ZHX1	1
ZHX2	1
ZIC5	1
ZKSCAN1	1
ZMPSTE24	1
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ZNF699	1
ZNF706	1
ZNF711	1
ZNF780B	1
ZNF787	1
ZNF804A	1
ZNRF1	1
ZNRF3	1
ZRANB2	1
ZSCAN12	1
ZSWIM1	1
ZXDA	1
ZXDB	1
ZZEF1	1
ZZZ3	1

Supplementary Table 3. Predicted target genes of all detected miRNAs from Table 3.

Target Gene	Number of miRNAs
ZBTB20	12
QKI	11
DCP2	10
SZRD1	10
CADM1	7
KMT2A	7
NFAT5	7
RPS6KA5	7
ADAMTS5	6
AGO2	6
CSF1	6
MTF1	6
MTMR9	6
NSD1	6
NUDT3	6
SLC5A3	6
TXNIP	6
UBN2	6
ZNF618	6
C16orf52	5
C18orf25	5
CBX5	5
CFL2	5
CPEB4	5
DCUN1D4	5
ITGA5	5
ITGA9	5
KAT7	5
KCND3	5
KIAA0232	5
MGAT4A	5
MITF	5

MSI2	5
MYO9A	5
ONECUT2	5
PDE4D	5
PNRC2	5
ROBO1	5
RSBN1L	5
RYBP	5
SERBP1	5
SFMBT1	5
TEAD1	5
TGIF2	5
TMED7	5
TNPO1	5
UBE2D3	5
ZFHX3	5
ABCA1	4
ACVR2B	4
AGO1	4
AGO3	4
ARHGAP21	4
ARRDC3	4
ATP11A	4
ATP6AP2	4
ATP8A1	4
B4GALT5	4
BAZ2A	4
BAZ2B	4
BCL2L11	4
BHLHE41	4
C5orf30	4
C7orf60	4
CBLB	4

CDK19	4		MED12L	4
CDK5R1	4		MEOX2	4
CLCN3	4		MIER1	4
CNNM2	4		MOB1B	4
DYNLL2	4		MXD1	4
DYRK1A	4		NAA15	4
E2F3	4		NCAM1	4
EFNB2	4		NOVA1	4
ELAVL4	4		NPTN	4
FBXO28	4		OSBPL11	4
FIGN	4		PITPNM2	4
FRYL	4		PPARGC1A	4
GDF6	4		PPP1R10	4
GRID2	4		PTEN	4
GRIN2B	4		RAB14	4
GRIN2D	4		RBM24	4
HLA-DQB2	4		RC3H1	4
HOMER1	4		RICTOR	4
HSPA4L	4		RMND5A	4
INO80	4		RNF38	4
JHDM1D	4		ROCK1	4
JMJD1C	4		S1PR1	4
KCNJ6	4		SIRT7	4
KCNN3	4		SLC24A4	4
KCNQ4	4		SLC7A11	4
KLF6	4		SMAD2	4
LCOR	4		SMURF2	4
LEPROTL1	4		SNN	4
LIN28B	4		SOS2	4
MAP3K2	4		SOX11	4
MAPK1	4		SPTY2D1	4
MARCH3	4		SS18	4
MBOAT2	4		SYT1	4
MDGA2	4		TAF4	4
MDM4	4		TCF4	4

TNRC6A	4
TNRC6C	4
UBE2W	4
UHMK1	4
WDR47	4
WNT1	4
ZC3H12C	4
ZDHHC7	4
ABL2	3
AC140061.12	3
ACHE	3
ACVR1	3
ADAM10	3
ADAM22	3
ADCY2	3
AFF3	3
AGFG1	3
AKIRIN1	3
ANK2	3
ANKFY1	3
ARF4	3
ARFGEF1	3
ARID3A	3
ARL8B	3
ATXN3	3
BBX	3
BICC1	3
BMP3	3
BNIP2	3
BRWD3	3
C15orf27	3
C16orf70	3
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CAND1	3
CCDC6	3

CCDC71	3
CCNK	3
CHD1	3
CHD9	3
CHST1	3
CLCN5	3
CLCN6	3
CNOT6	3
CNOT7	3
CNR1	3
CPD	3
CSNK2A1	3
DCP1A	3
DDAH1	3
DDX6	3
DLG2	3
DLL4	3
DPYSL5	3
DSTYK	3
DTX4	3
DUSP1	3
E2F7	3
EGR3	3
EIF4E3	3
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ELMO1	3
EPB41L1	3
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FAM184A	3
FBXO33	3
FBXW7	3
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FMR1	3
FOSB	3
FOXF1	3

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GGA2	3	
GMFB	3	
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IL6ST	3	
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EPHB2	1		
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FAM172A	1		
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FAM222B	1		
FAM53C	1		
FAM63B	1		
FAM65B	1		
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FOXN3	1		
FOXN4	1		
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FOXQ1	1		
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FXR2	1		
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FZD5	1		
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GCNT2	1		
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GFPT2	1		
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GJA3	1		
GJB1	1		
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GPR63	1
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GPRIN3	1
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GRHL3	1
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GRM5	1
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GSPT2	1
GTDC1	1
GTF2A2	1
GXYLT1	1
GYG1	1
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H3F3C	1
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HAO1	1
HAPLN1	1
HCN4	1
HDAC4	1
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ITPKC	1		
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KIAA1147	1		
KIAA1199	1		
KIAA1549L	1		
KIAA1551	1		
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KLHDC8A	1		

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LOX	1
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LPPR5	1
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LRP6	1
LRRC4C	1

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MAGT1	1
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MAN2A2	1
MANEAL	1
MAP2	1
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MAP3K3	1
MAP4K5	1
MAP7D3	1
MAPK10	1
MAPK14	1
MAPK6	1
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MATR3	1
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MDN1	1
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MEF2C	1
MEGF11	1
MEPCE	1
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MFHAS1	1
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MGAT4B	1
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MIB1	1
MICALCL	1
MICU3	1
MID1IP1	1
MIEF1	1
MIER2	1
MINPP1	1
MKNK2	1
MME	1
MN1	1
MOSPD3	1
MPP6	1
MPPED1	1
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MSI1	1
MSL1	1
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MTMR4	1
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MYRIP	1
MYT1	1
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NAIF1	1
NAPEPLD	1
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NAV3	1
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NDUFS4	1
NEBL	1
NEDD4	1
NEK2	1
NEK6	1
NEO1	1
NETO2	1
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NIPBL	1
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NKX6-1	1
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NMRK1	1

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NPAT	1
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NPTXR	1
NR1D2	1
NR2F6	1
NR5A2	1
NR6A1	1
NRBF2	1
NREP	1
NRIP1	1
NRIP2	1
NRP2	1
NRXN1	1
NSUN3	1
NTN1	1
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ORC5	1
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PALM2	1
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PAPPA	1
PAPSS2	1
PARD6B	1
PAX2	1
PAX5	1
PAX6	1
PAX9	1
PCBD1	1
PCDH1	1
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PDGFA	1
PDGFRA	1
PDHB	1
PDHX	1
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PDLIM2	1

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PDS5B	1		
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PFN2	1		
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PPAT	1		
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PPIF	1		
PPIG	1		
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PRPF19	1		
PRR12	1		
PRSS53	1		

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PTCHD3	1		
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PTGER3	1		
PTGFRN	1		
PTGIS	1		
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PTPN9	1		
PTPRB	1		
PTRH2	1		
PURA	1		
PXN	1		
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RAB15	1		
RAB20	1		
RAB27A	1		
RAB33B	1		
RAB38	1		
RAB3B	1		
RAB4A	1		
RAB6B	1		
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RAD54L2	1		
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REEP2	1		
RELN	1		
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RP11-407N17.3	1		
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RP13-996F3.5	1		

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SCN3B	1
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SDC4	1
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SEC61A1	1
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SEMA7A	1
SEPHS1	1
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SETD8	1
SFMBT2	1
SFPQ	1
SFRP1	1
SGCE	1
SGPP1	1
SH2D3C	1
SH3RF1	1
SHC3	1
SHE	1
SHISA6	1
SHOC2	1
SIK2	1
SIPA1L3	1
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SIX1	1
SIX5	1
SKOR1	1
SLC12A6	1
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SLC16A1	1
SLC1A3	1
SLC22A23	1
SLC25A16	1
SLC25A25	1
SLC26A11	1
SLC29A4	1
SLC30A10	1
SLC30A1	1
SLC30A7	1
SLC30A8	1
SLC35F3	1
SLC38A4	1
SLC39A10	1

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SLC39A13	1
SLC40A1	1
SLC44A1	1
SLC6A6	1
SLC7A14	1
SLC9A7	1
SLCO3A1	1
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SLIT2	1
SLTM	1
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SMARCA2	1
SMG1	1
SMIM14	1
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SNX18	1
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SNX29	1
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SOX17	1
SOX6	1
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SRI	1
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SRM	1
SRP72	1
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STAC	1
STAG1	1
STAT5B	1
STEAP3	1
STIM2	1
STK24	1
STK32B	1
STK35	1
STK39	1
STK40	1
STMN1	1
STRN4	1
STX16	1
SUCO	1
SUFU	1
SUMO2	1
SURF4	1
SV2A	1
SYDE1	1
SYNDIG1	1

SYNRG	1
SYTL3	1
SYVN1	1
TACC1	1
TAF3	1
TAL1	1
TAS2R5	1
TBC1D13	1
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TBC1D25	1
TBC1D30	1
TBC1D4	1
TCEANC2	1
TCF7L2	1
TEFM	1
TET1	1
TEX2	1
TFEB	1
TGFBR1	1
TGFBR2	1
TGFBR3	1
TGIF1	1
TGOLN2	1
THAP1	1
THAP11	1
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THBS1	1
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THRΒ	1
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TTF2	1		
TTLL7	1		
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UBE2N	1		
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UBE2V2	1		
UBXN7	1		
ULK1	1		
UNC13B	1		
UNC13C	1		
UNC80	1		
UNKL	1		
UPF1	1		
URGCP	1		
USP46	1		
UST	1		
VANGL2	1		
VAPA	1		
VAT1L	1		
VAV3	1		
VCAN	1		
VCL	1		
VEGFC	1		
VGLL3	1		
VPS4B	1		
VWC2L	1		
VWDE	1		
WBP1L	1		
WDR37	1		
WDR7	1		
WDTC1	1		
WIPF2	1		
WISP1	1		
WNK1	1		
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XPR1	1		
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ZBTB42	1
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ZCCHC24	1
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ZFP36L2	1
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ZIC1	1
ZKSCAN2	1
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ZMYM4	1
ZNF185	1
ZNF202	1
ZNF24	1
ZNF280C	1
ZNF385D	1
ZNF462	1
ZNF488	1
ZNF516	1
ZNF532	1
ZNF608	1
ZNF638	1
ZNF800	1
ZNF827	1
ZZZ3	1

Supplementary Table 4. Predicted target genes of miRNAs downregulated by RSV from Table 2 and 3.

Target Gene	miRNAs
PAX2	5
DYNLL2	4
KLF7	4
AAK1	3
BSN	3
CADM1	3
CALCOCO1	3
DPF2	3
FIGN	3
FOSL2	3
GPR61	3
LCOR	3
LPHN1	3
LRRC15	3
MED1	3
NFIX	3
NOX5	3
PDE7A	3
PRX	3
ST5	3
THRA	3
TRAF6	3
WWC2	3
ACKR2	2
AGO1	2
ANKFY1	2
ATG7	2
ATP1A3	2
BCL2L2	2
BEND3	2

CADM2	2
CBX5	2
CDKN2AIP	2
CECR6	2
CREB1	2
CSMD1	2
CSRNP3	2
DLGAP2	2
DNAH10OS	2
DNAJB2	2
ELAVL3	2
EPHA8	2
FAM76A	2
FBXO28	2
GATA6	2
GPR75	2
HIC2	2
HTT	2
IGF2R	2
IGSF1	2
IKZF3	2
IKZF4	2
IRAK1	2
KCND3	2
KIAA0141	2
KIAA0247	2
KLHDC10	2
KLHL29	2
KPNA5	2
LRRC8B	2
MDGA2	2

MDM4	2	ZNF367	2
MEX3A	2	ZNRF3	2
MIEF1	2	ABCA9	1
MSI1	2	ABCC1	1
MTSS1L	2	ABCG1	1
MYBL1	2	ABCG4	1
MYO5A	2	ABHD15	1
NMNAT2	2	ABL2	1
NOVA1	2	AC012215.1	1
NR6A1	2	AC138655.1	1
PBX2	2	ACER3	1
PCDH10	2	ACTG1	1
PCDH1	2	ACTN4	1
POLR3H	2	ADAM19	1
PRKAA2	2	AFAP1L2	1
PTPRA	2	AFF4	1
RIMS2	2	AGO3	1
RORA	2	AGPAT3	1
RORB	2	AGPAT6	1
SETD9	2	AHSA2	1
SHANK3	2	AKAP2	1
SMTNL2	2	ALPL	1
SNX22	2	AMIGO2	1
SOBP	2	AMN	1
STRN	2	ANK1	1
TANC2	2	ANK3	1
TBC1D20	2	ANKRD12	1
USP3	2	ANKRD34A	1
VPS52	2	ANXA7	1
VWC2L	2	APP	1
XYLT1	2	APPL1	1
ZBTB16	2	AQPEP	1
ZNF280C	2	ARHGAP19-SLIT1	1

ARHGEF12	1		BMP2K	1
ARIH2	1		BMPR1A	1
ARMC8	1		BNC1	1
ARNT	1		BRD4	1
ARRDC3	1		BTG2	1
ARSJ	1		BTRC	1
ASB16	1		C10orf76	1
ASIC1	1		C14orf28	1
ATCAY	1		C16orf52	1
ATF2	1		C16orf72	1
ATP5J2-PTCD1	1		C16orf89	1
ATP6V1F	1		C17orf75	1
ATP8B1	1		C17orf78	1
ATXN2	1		C21orf33	1
ATXN7	1		C2CD2L	1
BACH2	1		C3orf14	1
BAG1	1		C4orf3	1
BAI1	1		C5AR2	1
BAZ1B	1		CA10	1
BAZ2A	1		CABP4	1
BAZ2B	1		CADM4	1
BBX	1		CALCR	1
BCL2L11	1		CALN1	1
BCL2L14	1		CAMK1G	1
BCL6	1		CAMK2B	1
BCORL1	1		CAMK2D	1
BCR	1		CAMK2G	1
BDNF	1		CAMSAP1	1
BEND4	1		CAPZA1	1
BICD1	1		CAPZB	1
BICD2	1		CARD10	1
BLZF1	1		CASD1	1
BMF	1		CASK	1

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CCDC9	1		CNTN2	1
CCND2	1		CNTNAP5	1
CCNJ	1		CORO2B	1
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CD80	1		CREBRF	1
CDC14A	1		CRK	1
CDC42	1		CRLF3	1
CDC42EP3	1		CRNL1	1
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CELF6	1		CTSK	1
CEP350	1		CXorf36	1
CEP85L	1		CYB561	1
CHD6	1		CYP20A1	1
CHL1	1		CYP4V2	1
CHST11	1		CYTH1	1
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CNKS3R	1		DCTN3	1
CNNM3	1		DDHD1	1
CNNM4	1		DGCR14	1

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DGKI	1		
DHDDS	1		
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DLG2	1		
DLG5	1		
DLGAP3	1		
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EPHB2	1		
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ERBB4	1		
ERGIC2	1		
ERI2	1		
ERI3	1		
ERLEC1	1		
ESRRG	1		
ESYT2	1		
EVI5	1		
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FAIM2	1		
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FAM134C	1		
FAM168A	1		
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FAM196A	1		
FAM208A	1		
FAM210A	1		
FAM222A	1		
FAM26E	1		

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FAM53C	1	GCLM	1
FAM65B	1	GDNF	1
FAM83F	1	GGA2	1
FAXC	1	GINM1	1
FBXL20	1	GINS2	1
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FBXW2	1	GLYATL3	1
FKBP15	1	GMPS	1
FLJ20373	1	GNA13	1
FLOT2	1	GNL1	1
FLRT2	1	GOLGA3	1
FLT1	1	GOSR1	1
FMO2	1	GPBP1	1
FNBP1L	1	GPCPD1	1
FNDC5	1	GPR107	1
FRK	1	GPR12	1
FRS2	1	GPR156	1
FRYL	1	GPR26	1
FSTL4	1	GPR37L1	1
FXR2	1	GPRIN3	1
FZD1	1	GPX8	1
FZD2	1	GRID1	1
GABPA	1	GRK5	1
GABRB1	1	GRSF1	1
GABRB2	1	GTF2H1	1
GALM	1	GTPBP1	1
GALNT10	1	H3F3B	1
GALNT1	1	H3F3C	1
GALNT8	1	HAS3	1
GATA3	1	HAUS3	1
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HOMEZ	1		KCNAB3	1
HOOK3	1		KCNC3	1
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HOXB3	1		KCNN3	1
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IFRG15	1		KIAA1429	1
IGDCC4	1		KIAA1462	1
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IL1RAPL1	1		KIF1B	1
IMPA2	1		KIF24	1
INHBB	1		KIF26B	1
INO80D	1		KIF3C	1
INPP5K	1		KLC1	1
IRS1	1		KLC2	1
IST1	1		KLF11	1
ITGB8	1		KLHL3	1
ITSN1	1		KLK5	1
JARID2	1		KMT2D	1
JAZF1	1		KPNA6	1

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LANCL1	1
LAYN	1
LCP2	1
LEPRE1	1
LFNG	1
LGASL	1
LHFPL4	1
LIF	1
LIN28A	1
LIX1L	1
LPCAT3	1
LRCH3	1
LRRC16B	1
LRRC8E	1
LRRFIP1	1
LSAMP	1
LSM11	1
LTB	1
LYVE1	1
LZIC	1
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MANEAL	1
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MAP3K7	1
MAPK14	1
MAPKBP1	1
MAPRE1	1
MAPRE2	1
MAPT	1
MARCH6	1

MARK1	1
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MFHAS1	1
MID2	1
MLLT3	1
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MORN4	1
MRRF	1
MTDH	1
MTF1	1
MTF2	1
MTMR3	1
MTMR9	1
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MYLK	1
MYLK3	1
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MYO6	1
MYPN	1
MYT1	1
MYT1L	1
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NFE2L1	1		
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NPAS4	1		
NR1D1	1		
NR2C2	1		
NR4A3	1		
NR5A2	1		
NRAS	1		
NRP2	1		
NRSN1	1		
NSD1	1		
NT5C1A	1		
NT5DC1	1		
NTPCR	1		
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NUFIP2	1		
NUMB	1		
NUP37	1		
NUP50	1		
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ONECUT2	1		
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OSTN	1		
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OTUD7A	1		
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PAK7	1		
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PALM2-AKAP2	1		
PAPD5	1		
PAPOLA	1		
PARPBP	1		
PARS2	1		
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PAX7	1		
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PER1	1		
PEX5L	1		
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PHF7	1		
PHLDB1	1		
PHLPP2	1		
PHOX2B	1		
PHYHIP	1		
PIK3CA	1		
PIK3CB	1		
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PIP5K1B	1		
PITPNA	1		
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PLA2G2F	1		
PLAC8	1		
PLEKHA1	1		
PLEKHG3	1		
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POC1A	1		
POLH	1		
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PPIP5K2	1		
PPM1L	1		
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PPP1R3E	1		
PQLC1	1		
PRCP	1		
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PRIM2	1		
PRKAR2A	1		
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PRRT2	1		
PRRT3	1		
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PSMD11	1		
PTCD1	1		
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PTGFRN	1		
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PURG	1		
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RAP2A	1		
RARB	1		
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RBM27	1		
RBMS3	1		
RCAN1	1		
RCSD1	1		

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RFTN2	1		SBSPON	1
RFX7	1		SCARB1	1
RHOBTB2	1		SCARB2	1
RIC8B	1		SCN1A	1
RIMS4	1		SCN3A	1
RNASEL	1		SCN3B	1
RNF165	1		SDC1	1
RNF180	1		SDHC	1
RNF186	1		SEC22A	1
RNF20	1		SEC23IP	1
RNF26	1		SEL1L3	1
RNF32	1		SEMA3G	1
RNF4	1		SERPINE1	1
ROBO1	1		SERTAD4	1
ROCK2	1		SESN3	1
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RP6-24A23.6	1		SH3D19	1
RPA3	1		SH3GL2	1
RPAP2	1		SHISA7	1
RPRD1A	1		SHOC2	1
RRAGD	1		SIAH2	1
RSBN1	1		SIX3	1
RUNX1T1	1		SLA2	1
RYBP	1		SLC10A3	1
S1PR1	1		SLC16A2	1
SAMD12	1		SLC19A3	1
SAMD14	1		SLC22A23	1
SAMD8	1		SLC24A2	1

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SLC25A15	1		
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SLC2A14	1		
SLC2A3	1		
SLC35C2	1		
SLC35G1	1		
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SLC39A1	1		
SLC39A14	1		
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SLC6A5	1		
SLC8A1	1		
SLC9A7	1		
SLCO3A1	1		
SLITRK3	1		
SMAD2	1		
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SMG7	1		
SMUG1	1		
SMURF1	1		
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SNX18	1		
SNX30	1		
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SORL1	1		
SORT1	1		
SOX13	1		
SOX5	1		
SP8	1		
SPAG9	1		
SPATA2	1		
SPATS2	1		
SPECC1L	1		
SPIN3	1		
SPRY3	1		
SPTY2D1	1		
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SRRD	1		
SRRM4	1		
SRSF1	1		
SRSF12	1		
SSBP2	1		
SSX2IP	1		
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STAC2	1		
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STXBP4	1		
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SUPT6H	1		
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SYNGAP1	1		
SYNM	1		
SYT1	1		
SYT13	1		
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TAF9B	1		
TAPBP	1		
TBC1D22B	1		
TBL1X	1		
TBL2	1		
TBX19	1		
TBX5	1		
TCF12	1		
TCF21	1		
TDRKH	1		
TEAD1	1		
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TET2	1		
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TFAP2C	1		
TFRC	1		
TGOLN2	1		
THBS2	1		
THSD7A	1		
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USH1C	1		
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VASN	1		
VAT1	1		
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WNK3	1		
WNT9B	1		
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XKR4	1		
XRN1	1		
YARS	1		
YWHAZ	1		
ZBTB20	1		
ZBTB2	1		
ZBTB26	1		
ZBTB43	1		
ZBTB8B	1		
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ZC3H11A	1		
ZC3H6	1		
ZCCHC3	1		
ZDHHC13	1		
ZDHHC18	1		
ZDHHC21	1		
ZFAND5	1		
ZFYVE1	1		
ZMYND11	1		
ZNF148	1		
ZNF202	1		
ZNF226	1		
ZNF37A	1		
ZNF385A	1		
ZNF423	1		
ZNF512B	1		
ZNF532	1		
ZNF549	1		

ZNF608	1
ZNF652	1
ZNF704	1
ZNF81	1
ZNF827	1
ZNRF2	1

		Read Count (Avg)		Log2 Fold
S.No.	piRNA	Mock Exo	RSV Exo	Change
1	piR-32678	127.41	27150.88	7.7353
2	piR-31623	0.62	48.19	6.2854
3	piR-34736	1.74	128.93	6.214
4	piR-36169	6.52	231.03	5.1477
5	piR-36170	6.52	231.03	5.1477
6	piR-49143	22.5	590.86	4.7148
7	piR-33748	7.13	108.2	3.9227
8	piR-45371	7.13	108.2	3.9227
9	piR-49144	126.89	1387.4	3.4508
10	piR-33043	33.7	291.08	3.1105
11	piR-33044	33.7	291.08	3.1105
12	piR-34531	5.88	24.21	2.0418
13	piR-34532	5.88	24.21	2.0418
14	piR-34533	5.88	24.21	2.0418
15	piR-34534	5.88	24.21	2.0418
16	piR-34535	5.88	24.21	2.0418
17	piR-34536	5.88	24.21	2.0418
18	piR-51809	4.51	17.28	1.9379
19	piR-51810	4.51	17.28	1.9379
20	piR-51811	4.51	17.28	1.9379
21	piR-58469	8.52	27.25	1.6768
22	piR-61298	10.6	29.04	1.4536
23	piR-34871	26.03	64.15	1.301
24	piR-57125	46.18	110.77	1.2622
25	piR-35549	13.21	30.88	1.2251
26	piR-35550	13.21	30.88	1.2251
27	piR-35551	13.21	30.88	1.2251
28	piR-54265	18.53	39.57	1.0942
29	piR-59169	1364.92	6.02	-7.8241
30	piR-50653	22.7	0.13	-7.4733
31	piR-50654	22.7	0.13	-7.4733
32	piR-50655	22.7	0.13	-7.4733
33	piR-55865	22.7	0.13	-7.4733
34	piR-56226	22.7	0.13	-7.4733
35	piR-34756	10411.18	82.62	-6.9775
36	piR-34370	28.39	0.29	-6.6371
37	piR-45065	21.57	0.29	-6.2412
38	piR-40249	50.07	0.74	-6.0707
39	piR-40514	59.65	1.03	-5.8557

40	piR-36037	85.04	1.78	-5.5788
S.No.	piRNA	Mock Exo	RSV Exo	Read Count (Avg)
1	piR-31703	0	254.19	N/A
2	piR-33650	0	209.91	N/A
3	piR-40982	0	209.39	N/A
4	piR-32079	0	209.21	N/A
5	piR-31961	0	208.91	N/A
6	piR-33527	0	153.92	N/A
7	piR-33526	0	153.02	N/A
8	piR-36716	0	127.96	N/A
9	piR-36715	0	127.67	N/A
10	piR-36714	0	127.39	N/A
11	piR-36494	0	127.01	N/A
12	piR-36713	0	125.77	N/A
13	piR-35059	0	124.97	N/A
14	piR-34608	0	118.37	N/A
15	piR-48517	0	118.37	N/A
16	piR-60668	0	58.07	N/A
17	piR-61919	0	46.01	N/A
18	piR-31701	0	36.7	N/A
19	piR-34221	0	21.87	N/A
20	piR-61950	19.15	0	N/A
21	piR-59554	13.59	0	N/A
22	piR-61974	11.12	0	N/A

Supplementary Table 5. Complete list of piRNAs whose expression in exosomes was changed following RSV infection.

Fig 2(b) left panel

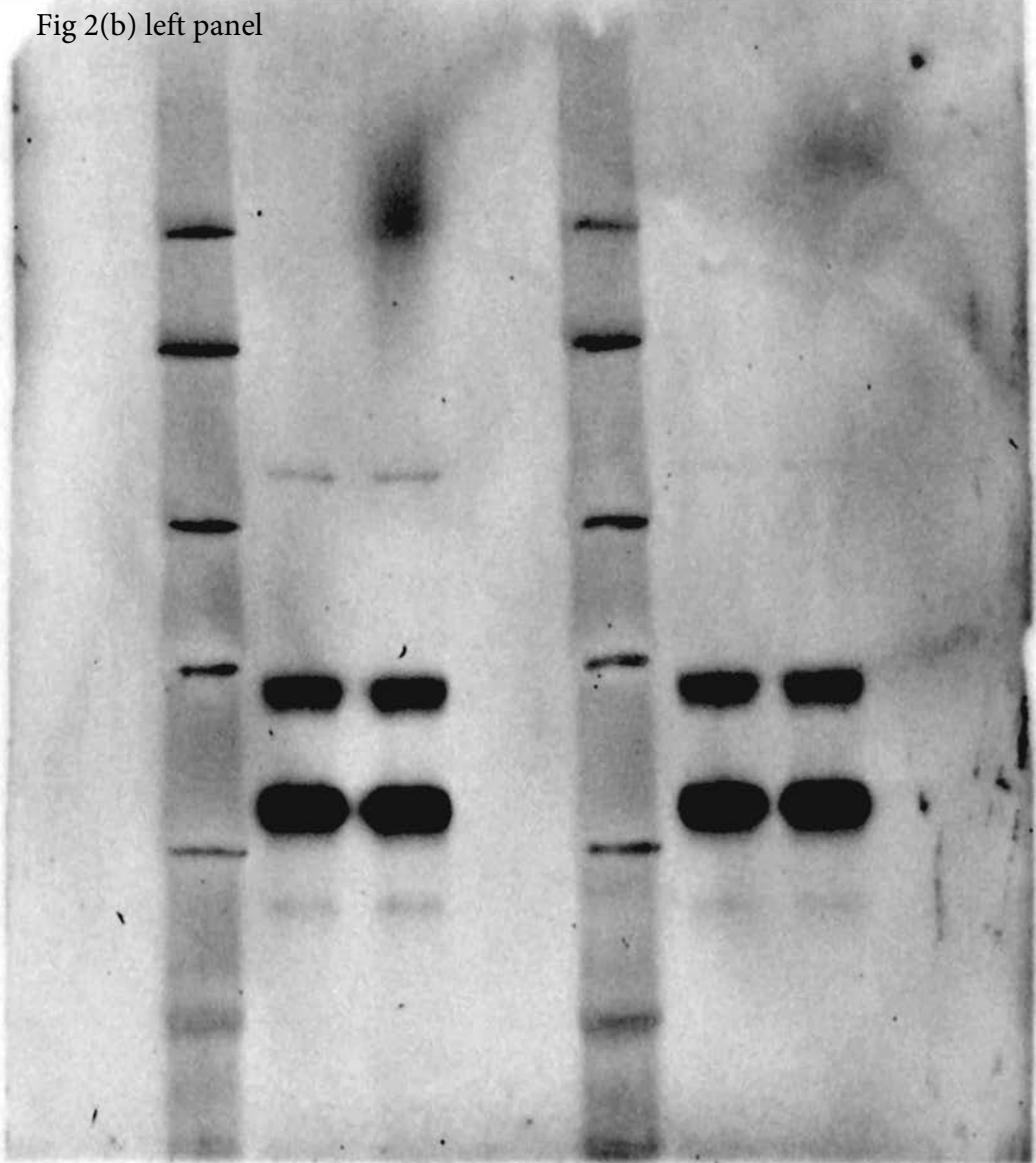


Fig 2(b) right panel

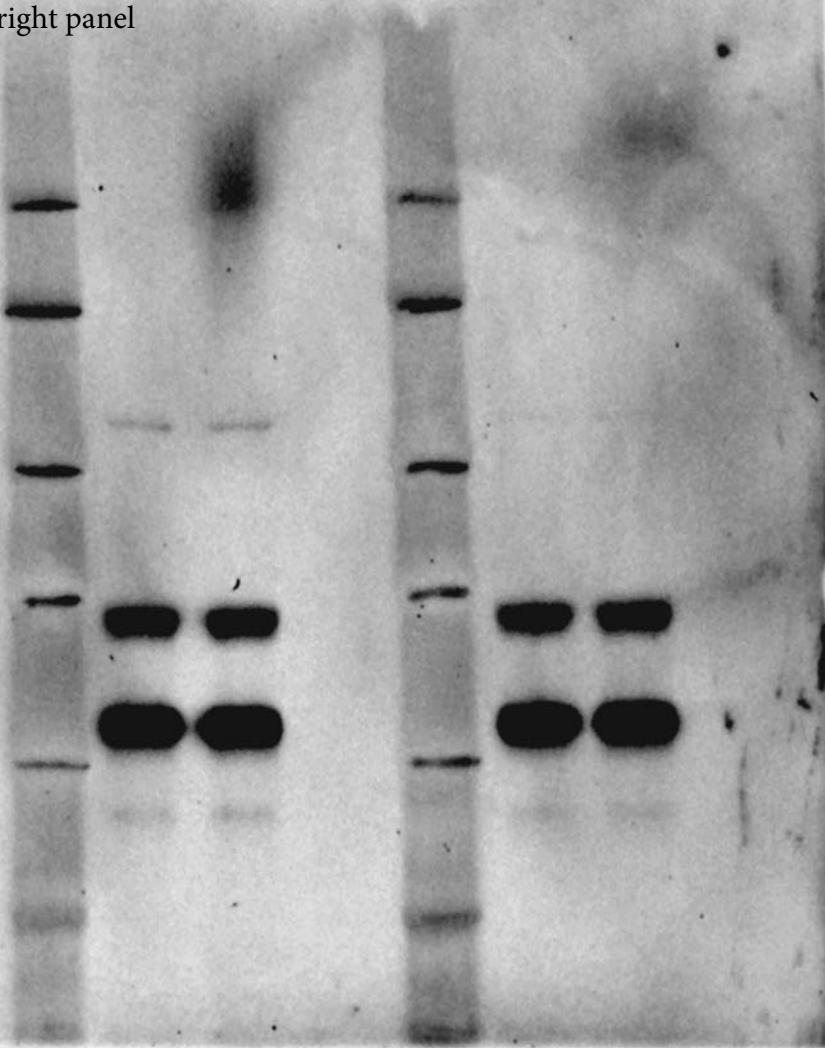


Fig 2(d) left panel

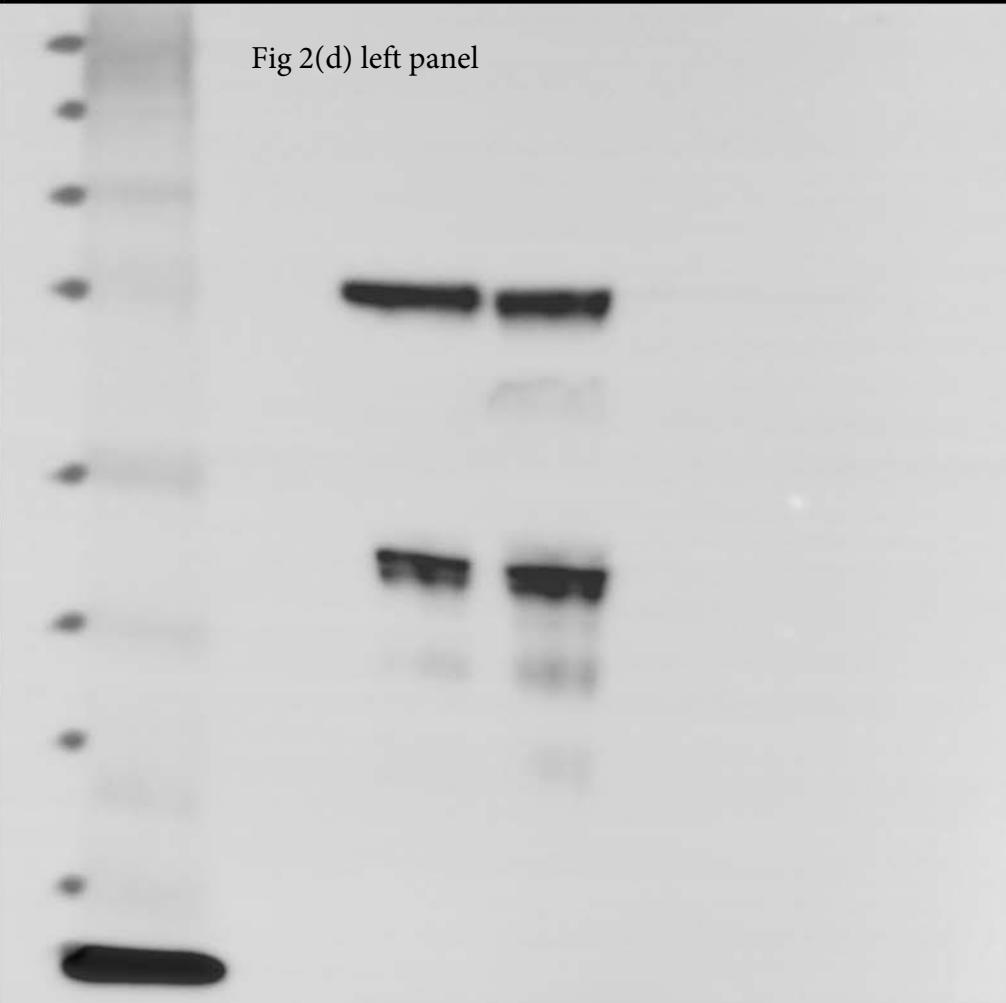


Fig 3 top

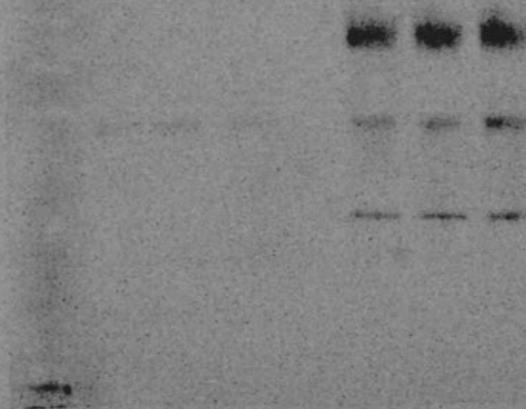


Fig 3 bottom

