

Supplemental Tables.

Table S1. MicroRNA primers for qRT-PCR

miRNA	Sequence (5'-3')
miR-6236-p5_4	TGAAAATGGATGGCGCTGGAGC
miR-7704_lss19GC	CGGGGTCGGCGGCGACGTC
miR-11987_L-1_lss8TA	GAGGAAACTCTGGTGGAGGT
PC-5p-21544_127	GAAGGGTCTGGGCGGCAGGGGCC
miR-5100-p3_lss17TC	ATCCCAGCGGTGCCTCCA
miR-1246-p5_lss18AG	TGGATTTTTGGAGCAGGGAG
miR-181a-2-3p	ACCACTGACCGTTGACTGTACC
miR-107_R-1	AGCAGCATTGTACAGGGCTATC
miR-210-3p	CTGTGCGTGTGACAGCGGCTGA
miR-4521_R+4	GCTAAGGAAGTCCTGTGCTCAGTTTT

Table S2. Gene primers for qRT-PCR

Gene	Forward primer (5'-3')	Reverse primer (5'-3')
<i>BBC3</i>	CCTCTGCCTCTCCAAGGTCCTC	CGTACTGTGCGTTGAGGTCGTC
<i>JUN</i>	TCCAAGTGCCGAAAAAGGAAG	CGAGTTCTGAGCTTTCAAGGT
<i>NRAS</i>	ACRACCTCCTCACTTGGCTGTCTG	GGTGTGTTTGTGCTGTGGAAGAAC
<i>FAS</i>	CACAGCCACATTCCCGAGTTGAG	CTACCCAGTATGCCCACCACAAAG
<i>PARP1</i>	TCCAGCAGGCGGTGTCTCAG	CTCGATGTCCAGCAGGTTGTCAAG
<i>PIK3R3</i>	AGACTGGAGGGAGGTGATGATGC	GGCTTAGGTGGCTTTGGTGGAAG
<i>APAF1</i>	TGCCTCAGCCTCCCAAGTAGC	GCCAAGAGTTCAAGACCAGCCTAG
<i>ATF4</i>	ATTCAGGCTTCTCACGGCATTGAG	CACCAAACACTCGCTGCTCAG
<i>DDIT3</i>	GCTTCTCTGGCTTGGCTGACTG	TTGGTCTTCCTCCTCTTCCTCCTG
<i>EIF2S1</i>	AGGCTTCTTCCTTCTTGTCAACCAG	CACCTGCTCCTACAGTTCCACATC
<i>PPP1R15A</i>	CAGGAGAGGACACAGAGGAAGAGG	AGCAGGAGTGGAAGAGGAAGCC
<i>EIF2AK2</i>	CTGTGGACAAGAGGAAGGCG	TCCATCCCAACAGCCATTGT
<i>CTSD</i>	GCTGGACATCGCTTGCTGGATC	AGAGGCTGACGACGCTAGCTG
<i>GABARAP</i>	CGTGGATCGCTCCGCTGAATC	CGCTTCTCGAACGGATGCTCTTC
<i>PRKAA1</i>	TTGAAACCTGAAAATGTCTGCT	GGTGAGCCACAACCTTGTTCTT
<i>ATG4A</i>	GTGGACAGATGATGCTGGCTCAAG	AAGAAGCACTGTAGGATGCGTTGG
<i>HMGB1</i>	TCCTTCGGCCTTCTTCCTCTTCTG	TTCGCAACATCACCAATGGACAGG
<i>MTOR</i>	CGGTGTTGCAGAGACTTGATGGAG	CTGTGAAGGCAGAAGGTCGGAATG
<i>MAPK1</i>	ACCAGACCTACTGCCAGAGAACC	TGGTCATTGCTGAGGTGTTGTGTC
<i>ATM</i>	CGAGTTGCAGGCCATTGGAGAG	GACTGTGCGTAGAGCCATGATAGG
<i>ATR</i>	GCATCTGTCTCTGGAGCAGCATAC	AGCATTCTGGCATGGAGTATTCGG
<i>MDM2</i>	TCGGTGTTGGGCATGGAGAGG	CTGGCTGGTCTGGATTATGGCTTC
<i>CDKN1A</i>	TCCAGCGACCTTCCTCATCCAC	TCCATAGCCTCTACTGCCACCATC
<i>SES2</i>	GAATCGGTCCTTGGCTGCTTCTG	AGTGTCTCCTGGGTGCCTTCTG
<i>SFN</i>	GTCTTCCACGAGATCGCCAAC	AGGGTGCTGTCTTTGTAGGAGTCC
<i>GADD45A</i>	AAGCGGCCAAGCTGCTCAAC	ACATCTCTGTCGTCGTCCTCGTC
<i>TP73</i>	AGCCCTTAGGACCACACATACCC	CACGCAAGCCGAGACACCAC
<i>CDK6</i>	GTGTGAACCGACCCAAGATGACC	CACCATGTGGACAAGCCAGGATG
<i>ZMAT3</i>	CCGCCTTAACCGCCAACCAG	CCCGAAGAGCAGTTCAGCAGATG
<i>IGFBP3</i>	GGCTTCTGCTGGTGTGTGGATAAG	CTTGCGGCGGGCGTCTACTTG
<i>RRM2B</i>	AGGATCTCCCTCACTGGAACAAGC	AGCCTCTGGAACCTGCACCTC
<i>β-actin</i>	CCTGGCACCCAGCACAAAT	GGGCCGGACTCGTCATAC

Table S3. Top 10 hub genes in the PPI networks of apoptosis and autophagy pathways.

Gene ID	Gene name	Degree	Regulation
ENSG00000198793	<i>MTOR</i>	34	down
ENSG00000177606	<i>JUN</i>	29	up
ENSG00000100030	<i>MAPK1</i>	29	down
ENSG00000232810	<i>TNF</i>	27	up
ENSG00000108443	<i>RPS6KB1</i>	23	down
ENSG00000149311	<i>ATM</i>	21	down
ENSG00000175104	<i>TRAF6</i>	20	down
ENSG00000133703	<i>KRAS</i>	19	down
ENSG00000145675	<i>PIK3R1</i>	17	down
ENSG00000177169	<i>ULK1</i>	17	up

Table S4. Top 10 hub genes in the PPI networks of PPER pathway.

Gene ID	Gene name	Degree	Regulation
ENSG00000102580	<i>DNAJC3</i>	20	down
ENSG00000166598	<i>HSP90B1</i>	19	down
ENSG00000080824	<i>HSP90AA1</i>	16	down
ENSG00000077232	<i>DNAJC10</i>	13	down
ENSG00000116406	<i>EDEM3</i>	13	down
ENSG00000074695	<i>LMAN1</i>	11	down
ENSG00000025796	<i>SEC63</i>	11	down
ENSG00000136731	<i>UGGT1</i>	11	down
ENSG00000128272	<i>ATF4</i>	10	up
ENSG00000175197	<i>DDIT3</i>	9	up

Table S5. Top 10 hub genes in the PPI networks of p53 signaling pathway.

Gene ID	Gene name	Degree	Regulation
ENSG00000124762	<i>CDKN1A</i>	18	up
ENSG00000116717	<i>GADD45A</i>	17	up
ENSG00000135679	<i>MDM2</i>	17	down
ENSG00000183765	<i>CHEK2</i>	13	down
ENSG00000149311	<i>ATM</i>	12	down
ENSG00000110092	<i>CCND1</i>	11	down
ENSG00000120868	<i>APAF1</i>	9	down
ENSG00000105810	<i>CDK6</i>	9	down
ENSG00000048392	<i>RRM2B</i>	9	down
ENSG00000078900	<i>TP73</i>	8	up

Table S6. Negative association between DEGs and DEMs in PPER pathway and p53 signaling pathway.

Gene Name	regulation	miRNA	regulation
PPER pathway			
<i>UBXN6</i>	up	miR-3158-3p	down
<i>BAG2</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_3	up
	down	miR-11987_L-1_1ss8TA	up
<i>DNAJA1</i>	down	miR-3968_L-3_1ss14AT	up
	down	miR-2478_L-2	up
	down	miR-11987_L-1_1ss8TA	up
	down	PC-5p-21544_127	up
<i>DNAJC10</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-5100-p3_1ss17TC	up
<i>EDEM3</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_3	up
	down	miR-6236-p3_1	up
<i>EIF2S1</i>	down	miR-3968_L-3_1ss14AT	up
	down	miR-2478_L-2	up
	down	PC-5p-21544_127	up
	down	miR-6236-p5_1	up
<i>HSP90AA1</i>	down	miR-6236-p3_1	up
	down	PC-5p-21544_127	up
	down	miR-7108-p3_1ss4GT	up
	down	miR-6236-p5_2	up
<i>HSPA4L</i>	down	miR-1246-p5_1ss18AG	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_3	up
	down	miR-1260	up
<i>HSPH1</i>	down	miR-11987_L-1_1ss8TA	up
	down	PC-5p-21544_127	up
	down	miR-6236-p5_2	up
	down	miR-1246-p5_1ss18AG	up
<i>MAN1A2</i>	down	miR-33a-p3	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_1	up
<i>SEC23A</i>	down	miR-6236-p5_3	up
	down	miR-6236-p3_1	up
	down	miR-11987_L-1_1ss8TA	up
	down	PC-5p-21544_127	up
<i>SEC24A</i>	down	miR-7108-p3_1ss4GT	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_3	up
<i>SEC24D</i>	down	miR-6236-p3_1	up
	down	miR-1246-p5_1ss18AG	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_3	up
<i>SEC24B</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_3	up
<i>SEC24C</i>	down	miR-6236-p3_1	up
	down	miR-11987_L-1_1ss8TA	up
	down	PC-5p-21544_127	up
	down	miR-7108-p3_1ss4GT	up
<i>SEC24E</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_3	up
	down	miR-6236-p3_1	up

<i>SEC31A</i>	down	miR-6236-p5_4	up
<i>SSR1</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_3	up
	down	miR-6236-p3_1	up
	down	miR-1246-p5_1ss18AG	up
	down	miR-3968_L-3_1ss14AT	up
	down	miR-2478_L-2	up
	down	miR-11987_L-1_1ss8TA	up
	down	PC-5p-21544_127	up
<i>STT3B</i>	down	miR-6236-p5_4	up
	down	miR-6236-p5_3	up
<i>UGGT1</i>	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_3	up
	down	miR-1260	up
	down	miR-3968_L-3_1ss14AT	up
	down	miR-2478_L-2	up
	down	miR-11987_L-1_1ss8TA	up
	down	miR-33a-p3	up
	down	miR-5100-p3_1ss17TC	up
<i>UGGT2</i>	down	miR-6236-p5_3	up
	down	miR-3968_L-3_1ss14AT	up
	down	miR-2478_L-2	up
	down	miR-33a-p3	up
<i>YOD1</i>	down	miR-6236-p5_4	up
p53 signaling pathway			
<i>CDKN1A</i>	up	miR-130b-3p	down
<i>GADD45A</i>	up	miR-130b-3p	down
<i>GADD45B</i>	up	miR-130b-3p	down
<i>SERPINE1</i>	up	miR-130b-3p	down
<i>SESN2</i>	up	miR-130b-3p	down
	up	miR-33b-3p_R-1	down
<i>TP73</i>	up	miR-1292-5p_R+1	down
	up	miR-181a-2-3p	down
	up	miR-210-3p	down
	up	miR-4521_R+4	down
<i>APAF1</i>	down	miR-5100-p3_1ss17TC	up
	down	miR-6236-p5_4	up
<i>ATM</i>	down	miR-2478_L-2	up
	down	miR-5100-p3_1ss17TC	up
	down	miR-3968_L-3_1ss14AT	up
	down	miR-6236-p5_1	up
	down	PC-5p-21544_127	up
<i>ATR</i>	down	miR-5100-p3_1ss17TC	up
	down	miR-6240-p3_1	up
<i>CCNE2</i>	down	miR-1246-p5_1ss18AG	up
	down	miR-2478_L-2	up
	down	miR-3968_L-3_1ss14AT	up
<i>CDK6</i>	down	miR-11987_L-1_1ss8TA	up
	down	miR-1246-p5_1ss18AG	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_3	up
	down	miR-6236-p5_4	up
	down	miR-6240-p3_1	up
<i>FAS</i>	down	miR-6236-p5_1	up

<i>GORAB</i>	down	miR-11987_L-1_1ss8TA	up
	down	miR-1246-p5_1ss18AG	up
<i>IGFBP3</i>	down	miR-33a-p3	up
	down	miR-6236-p5_1	up
<i>MDM2</i>	down	miR-6236-p5_3	up
	down	miR-11987_L-1_1ss8TA	up
	down	miR-2478_L-2	up
	down	miR-1260	up
	down	miR-4508_L+2R-1	up
	down	miR-5100-p3_1ss17TC	up
	down	miR-3968_L-3_1ss14AT	up
	down	miR-6236-p5_2	up
	down	miR-6240-p3_1	up
	down	PC-5p-21544_127	up
<i>RRM2</i>	down	miR-5100-p3_1ss17TC	up
	down	miR-6240-p3_1	up
	down	PC-5p-21544_127	up
<i>RRM2B</i>	down	miR-1246-p5_1ss18AG	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_3	up
	down	miR-6236-p5_4	up
	down	PC-5p-21544_127	up
<i>SESNI</i>	down	miR-1246-p5_1ss18AG	up
<i>SESNI</i> <i>SESNI3</i>	down	miR-11987_L-1_1ss8TA	up
	down	miR-1246-p5_1ss18AG	up
	down	miR-33a-p3	up
	down	miR-7108-p3_1ss4GT	up
	down	miR-6236-p5_1	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6240-p3_1	up
	down	miR-1246-p5_1ss18AG	up
	down	miR-33a-p3	up
<i>ZMAT3</i>	down	miR-5100-p3_1ss17TC	up
	down	miR-7108-p3_1ss4GT	up
	down	miR-6236-p5_2	up
	down	miR-6236-p5_4	up
	down	miR-6236-p5_4	up