

Supplementary Table 1 | The PPI nodes of DEGs involved in the ceRNA network of UCEC.

symbol	type	num-Interactions
FBXL3	pc	3
MYLIP	pc	1
NFIX	pc	1
MAMLD1	pc	1
IGF1	pc	1
WWTR1	pc	3
SAMD4A	pc	1
RUNX3	pc	1
BAK1	pc	3
VCL	pc	2
TIMP2	pc	1
CELF2	pc	5
PER3	pc	3
ELN	pc	3
MYLK	pc	1
KIF26A	pc	3
KLF6	pc	2
SYT1	pc	3
MEF2A	pc	1
REEP1	pc	1
RORA	pc	5
NEDD4	pc	2
CYBRD1	pc	1
FRY	pc	1
NUAK1	pc	1
KLHL20	pc	2
TNRC6C	pc	2
TNS1	pc	1
COL4A4	pc	3
MECOM	pc	1
MMP2	pc	3
NID2	pc	3
RAPGEF4	pc	1
SEL1L3	pc	1
DPYSL2	pc	1
TMEM38B	pc	1
NRP1	pc	1
CECR2	pc	3
RBFOX2	pc	1
COCH	pc	1

SEC23A pc 1
SRPX pc 1
SCML2 pc 7
EEA1 pc 3
ARL2BP pc 1
ABCC1 pc 1
FBXO31 pc 2
XYLT1 pc 2
CAV2 pc 1
HOXA3 pc 1
HOXA5 pc 1
AGFG2 pc 1
PRUNE2 pc 1
TLE4 pc 1
RAB11FIP2 pc 2
CNTNAP1 pc 3
MPP2 pc 2
TMEM97 pc 1
PMP22 pc 3
GAB1 pc 4
ELK3 pc 1
CREBL2 pc 3
HCFC2 pc 2
RIPOR2 pc 1
UST pc 1
QKI pc 5
PDE10A pc 1
FAM46A pc 2
PDE4D pc 3
NR3C1 pc 3
TRIM23 pc 1
SMAD5 pc 1
PDGFRB pc 3
ZBTB47 pc 6
FOXP1 pc 1
CCDC88A pc 2
EFEMP1 pc 2
KCNC4 pc 1
MEF2D pc 3
AKT3 pc 4
FBXO30 pc 2
CTGF pc 2
CCND2 pc 5
NEK9 pc 1

PPP1R3C pc 1
MASTL pc 1
RECK pc 2
RAP2C pc 1
TRERF1 pc 1
ATXN1 pc 3
BMP2 pc 1
THRA pc 2
SGPP1 pc 3
ZFP36 pc 3
DOCK4 pc 3
MINDY2 pc 1
FGF13 pc 1
LRCH2 pc 2
H19 lnc 5
SYT11 pc 1
STARD13 pc 1
BEX1 pc 2
PDZD2 pc 1
IL6ST pc 1
KCTD1 pc 3
EMP1 pc 3
DTNA pc 1
TBX3 pc 1
WNT10A pc 2
CALCOCO2 pc 1
KLF4 pc 2
ARPC5L pc 1
RNF38 pc 1
TUBB2A pc 3
PI15 pc 4
THBS1 pc 2
SEMA6D pc 1
TTLL7 pc 1
ARHGAP24 pc 1
KIAA1109 pc 1
GABARAPL1 pc 1
MAP3K12 pc 1
MBNL2 pc 1
NOVA1 pc 1
FRMD6 pc 2
SERF2 pc 2
BNIP2 pc 1
TPM1 pc 3

HDGF pc 1
ATP8B2pc 1
MEIS1 pc 1
GULP1 pc 1
LPPpc 3
SETD7 pc 1
DAAM2 pc 2
PNRC1 pc 1
ZNF711pc 1
TACC1 pc 1
NACC2 pc 1
ZEB1 pc 1
FAM13C pc 2
INCENP pc 1
ARID5B pc 1
LATS2 pc 1
PDCD4 pc 1
DIXDC1 pc 2
FOXO1 pc 1
CRIM1 pc 2
DIP2C pc 1
NR3C2 pc 1
DST pc 1
MBNL1pc 1
PANK1 pc 1
HHEX pc 1
BMP6 pc 1
PTPRD pc 4
KCTD15 pc 3
CACNA2D1pc 1
PRKCA pc 1
GABPA pc 1
TMEM55A pc 3
PPARGC1B pc 2
ADAMTSL3 pc 1
NPTN pc 1
LRP8 pc 1
KITpc 2
TSPAN18 pc 1
MORC3pc 1
BTG2 pc 5
IL6R pc 2
PLPP3 pc 1
GBP2 pc 1

DUSP19	pc	1
SLC16A14	pc	4
PDLIM5	pc	1
CDC42EP3	pc	1
GNPDA2	pc	2
CLDN1	pc	3
FSTL1	pc	3
SLMAP	pc	1
SPRY1	pc	3
EDIL3	pc	1
ZNF704	pc	2
DLC1	pc	1
OTUD1	pc	1
MARCH8	pc	2
ZCCHC24	pc	3
JCAD	pc	1
RAB8B	pc	2
TUB	pc	1
PRTG	pc	1
DOLPP1	pc	1
GPX4	pc	1
AXL	pc	2
SCARA3	pc	1
MECP2	pc	3
SDC2	pc	1
ZEB2	pc	2
ANTXR1	pc	1
S1PR1	pc	1
PRNP	pc	1
JMJD1C	pc	4
KLF11	pc	1
ID4	pc	2
PTPRM	pc	1
HEG1	pc	2
SPTBN2	pc	1
ZBTB4	pc	3
ZCCHC12	pc	1
FZD4	pc	1
NRIP3	pc	2
FOSL1	pc	1
ZBTB38	pc	1
MAF	pc	1
C14orf28	pc	1
MYADM	pc	2

GAS1 pc 2
TMEM64 pc 1
PLAG1 pc 1
C3orf58 pc 1
CREB3L2 pc 1
SYNM pc 1
SATB1 pc 7
MEX3B pc 1
CBX6 pc 3
KIRREL1 pc 3
FOXO4 pc 3
PRR16 pc 1
NR2F2 pc 1
TEAD1 pc 1
FNBP1 pc 1
PEAR1 pc 1
WNK3 pc 1
DNM3 pc 4
LPAR1 pc 1
DLL1 pc 2
RUSC2 pc 1
DMD pc 1
PJA2 pc 1
CHIC1 pc 1
COL15A1 pc 3
TMEM170B pc 1
RAB12 pc 5
S1PR3 pc 1
VAMP2 pc 1
EPB41L4A-AS1 lnc 5
HCG11 lnc 1
MAGI2-AS3 lnc 1
CD302 pc 1
LINC00958 lnc 2
TMEM200B pc 2
CHURC1 pc 2
AC093010.3 lnc 2
LINC00667 lnc 3
hsa-miR-106a-5p mir 6
hsa-miR-106b-5p mir 5
hsa-miR-130b-3p mir 49
hsa-miR-17-5p mir 6
hsa-miR-185-5p mir 5
hsa-miR-18a-5p mir 33

hsa-miR-18b-5p mir 31
hsa-miR-19a-3p mir 36
hsa-miR-20b-5p mir 6
hsa-miR-214-3p mir 11
hsa-miR-29a-3p mir 34
hsa-miR-29b-3p mir 35
hsa-miR-29c-3p mir 35
hsa-miR-370-3p mir 5
hsa-miR-374b-5p mir 83
hsa-miR-376c-3p mir 15
hsa-miR-449a mir 29
hsa-miR-449b-5p mir 23
hsa-miR-93-5p mir 6

Supplementary Table 2 | The lncRNA–miRNA–mRNA ceRNA network of UCEC.

fromNode	toNode	Network
MAGI2-AS3	hsa-miR-374b-5p	ceRNA
AC093010.3	hsa-miR-18a-5p	ceRNA
AC093010.3	hsa-miR-18b-5p	ceRNA
LINC00667	hsa-miR-449a	ceRNA
LINC00667	hsa-miR-449b-5p	ceRNA
LINC00667	hsa-miR-19a-3p	ceRNA
HCG11	hsa-miR-376c-3p	ceRNA
LINC00958	hsa-miR-185-5p	ceRNA
LINC00958	hsa-miR-214-3p	ceRNA
EPB41L4A-AS1	hsa-miR-17-5p	ceRNA
EPB41L4A-AS1	hsa-miR-20b-5p	ceRNA
EPB41L4A-AS1	hsa-miR-93-5p	ceRNA
EPB41L4A-AS1	hsa-miR-106b-5p	ceRNA
EPB41L4A-AS1	hsa-miR-106a-5p	ceRNA
H19	hsa-miR-29c-3p	ceRNA
H19	hsa-miR-29b-3p	ceRNA
H19	hsa-miR-29a-3p	ceRNA
H19	hsa-miR-130b-3p	ceRNA
H19	hsa-miR-370-3p	ceRNA
AKT3	hsa-miR-374b-5p	ceRNA
ZCCHC24	hsa-miR-374b-5p	ceRNA
RECK	hsa-miR-374b-5p	ceRNA
PI15	hsa-miR-374b-5p	ceRNA
RIPOR2	hsa-miR-374b-5p	ceRNA
PPP1R3C	hsa-miR-374b-5p	ceRNA
TACC1	hsa-miR-374b-5p	ceRNA
ZEB2	hsa-miR-374b-5p	ceRNA
MYLK	hsa-miR-374b-5p	ceRNA
DMD	hsa-miR-374b-5p	ceRNA
UST	hsa-miR-374b-5p	ceRNA
NR3C1	hsa-miR-374b-5p	ceRNA
TNS1	hsa-miR-374b-5p	ceRNA
C14orf28	hsa-miR-374b-5p	ceRNA
LRCH2	hsa-miR-374b-5p	ceRNA
RAB8B	hsa-miR-374b-5p	ceRNA
FBXL3	hsa-miR-374b-5p	ceRNA
CYBRD1	hsa-miR-374b-5p	ceRNA
FRMD6	hsa-miR-374b-5p	ceRNA
TMEM55A	hsa-miR-374b-5p	ceRNA
CAV2	hsa-miR-374b-5p	ceRNA
ZBTB38	hsa-miR-374b-5p	ceRNA

NOVA1 hsa-miR-374b-5p ceRNA
TLE4 hsa-miR-374b-5p ceRNA
MECP2 hsa-miR-374b-5p ceRNA
RUSC2 hsa-miR-374b-5p ceRNA
STARD13 hsa-miR-374b-5p ceRNA
CDC42EP3 hsa-miR-374b-5p ceRNA
PDE10A hsa-miR-374b-5p ceRNA
SETD7 hsa-miR-374b-5p ceRNA
MINDY2 hsa-miR-374b-5p ceRNA
NR2F2 hsa-miR-374b-5p ceRNA
TBX3 hsa-miR-374b-5p ceRNA
MAMLD1 hsa-miR-374b-5p ceRNA
EDIL3 hsa-miR-374b-5p ceRNA
VAMP2 hsa-miR-374b-5p ceRNA
MORC3 hsa-miR-374b-5p ceRNA
RAB12 hsa-miR-374b-5p ceRNA
PNRC1 hsa-miR-374b-5p ceRNA
FOXO1 hsa-miR-374b-5p ceRNA
ADAMTSL3 hsa-miR-374b-5p ceRNA
LATS2 hsa-miR-374b-5p ceRNA
ATP8B2 hsa-miR-374b-5p ceRNA
FGF13 hsa-miR-374b-5p ceRNA
BNIP2 hsa-miR-374b-5p ceRNA
HEG1 hsa-miR-374b-5p ceRNA
PRKCA hsa-miR-374b-5p ceRNA
SATB1 hsa-miR-374b-5p ceRNA
MEF2D hsa-miR-374b-5p ceRNA
AGFG2 hsa-miR-374b-5p ceRNA
GABPA hsa-miR-374b-5p ceRNA
CREB3L2 hsa-miR-374b-5p ceRNA
FOXP1 hsa-miR-374b-5p ceRNA
KIAA1109 hsa-miR-374b-5p ceRNA
SEC23A hsa-miR-374b-5p ceRNA
PRR16 hsa-miR-374b-5p ceRNA
PDZD2 hsa-miR-374b-5p ceRNA
NUAK1 hsa-miR-374b-5p ceRNA
PDE4D hsa-miR-374b-5p ceRNA
DIP2C hsa-miR-374b-5p ceRNA
ANTXR1 hsa-miR-374b-5p ceRNA
JMJD1C hsa-miR-374b-5p ceRNA
TMEM38B hsa-miR-374b-5p ceRNA
KCNC4 hsa-miR-374b-5p ceRNA
ARID5B hsa-miR-374b-5p ceRNA
SGPP1 hsa-miR-374b-5p ceRNA

MYLIP hsa-miR-374b-5p ceRNA
PLPP3 hsa-miR-374b-5p ceRNA
ARL2BP hsa-miR-374b-5p ceRNA
FAM46A hsa-miR-374b-5p ceRNA
DUSP19 hsa-miR-374b-5p ceRNA
DST hsa-miR-374b-5p ceRNA
PDLIM5 hsa-miR-374b-5p ceRNA
SLC16A14 hsa-miR-374b-5p ceRNA
ID4 hsa-miR-374b-5p ceRNA
LPAR1 hsa-miR-374b-5p ceRNA
C3orf58 hsa-miR-374b-5p ceRNA
MEX3B hsa-miR-374b-5p ceRNA
TTLL7 hsa-miR-374b-5p ceRNA
NFIX hsa-miR-374b-5p ceRNA
BMP2 hsa-miR-374b-5p ceRNA
MEIS1 hsa-miR-374b-5p ceRNA
ZCCHC24 hsa-miR-18a-5p ceRNA
ZCCHC24 hsa-miR-18b-5p ceRNA
HCFC2 hsa-miR-18a-5p ceRNA
HCFC2 hsa-miR-18b-5p ceRNA
CD302 hsa-miR-18a-5p ceRNA
NR3C1 hsa-miR-18a-5p ceRNA
NR3C1 hsa-miR-18b-5p ceRNA
NEDD4 hsa-miR-18a-5p ceRNA
NEDD4 hsa-miR-18b-5p ceRNA
FBXL3 hsa-miR-18a-5p ceRNA
FBXL3 hsa-miR-18b-5p ceRNA
ZBTB4 hsa-miR-18a-5p ceRNA
ZBTB4 hsa-miR-18b-5p ceRNA
LPP hsa-miR-18a-5p ceRNA
LPP hsa-miR-18b-5p ceRNA
XYLT1 hsa-miR-18a-5p ceRNA
XYLT1 hsa-miR-18b-5p ceRNA
DOCK4 hsa-miR-18a-5p ceRNA
DOCK4 hsa-miR-18b-5p ceRNA
GAB1 hsa-miR-18a-5p ceRNA
GAB1 hsa-miR-18b-5p ceRNA
KLF4 hsa-miR-18a-5p ceRNA
KLF4 hsa-miR-18b-5p ceRNA
CNTNAP1 hsa-miR-18a-5p ceRNA
CNTNAP1 hsa-miR-18b-5p ceRNA
FBXO31 hsa-miR-18a-5p ceRNA
FBXO31 hsa-miR-18b-5p ceRNA
CREBL2 hsa-miR-18a-5p ceRNA

CREBL2 hsa-miR-18b-5p ceRNA
CRIM1 hsa-miR-18a-5p ceRNA
CRIM1 hsa-miR-18b-5p ceRNA
ZBTB47 hsa-miR-18a-5p ceRNA
ZBTB47 hsa-miR-18b-5p ceRNA
SATB1 hsa-miR-18a-5p ceRNA
SATB1 hsa-miR-18b-5p ceRNA
MEF2D hsa-miR-18a-5p ceRNA
MEF2D hsa-miR-18b-5p ceRNA
RAB11FIP2 hsa-miR-18a-5p ceRNA
RAB11FIP2 hsa-miR-18b-5p ceRNA
KLHL20 hsa-miR-18a-5p ceRNA
KLHL20 hsa-miR-18b-5p ceRNA
KLF6 hsa-miR-18a-5p ceRNA
KLF6 hsa-miR-18b-5p ceRNA
DAAM2 hsa-miR-18a-5p ceRNA
DAAM2 hsa-miR-18b-5p ceRNA
THBS1 hsa-miR-18a-5p ceRNA
THBS1 hsa-miR-18b-5p ceRNA
ATXN1 hsa-miR-18a-5p ceRNA
ATXN1 hsa-miR-18b-5p ceRNA
GNPDA2 hsa-miR-18a-5p ceRNA
GNPDA2 hsa-miR-18b-5p ceRNA
CTGF hsa-miR-18a-5p ceRNA
CTGF hsa-miR-18b-5p ceRNA
PDE4D hsa-miR-18a-5p ceRNA
PDE4D hsa-miR-18b-5p ceRNA
TMEM170B hsa-miR-18a-5p ceRNA
KIT hsa-miR-18a-5p ceRNA
KIT hsa-miR-18b-5p ceRNA
ZNF704 hsa-miR-18a-5p ceRNA
ZNF704 hsa-miR-18b-5p ceRNA
BEX1 hsa-miR-18a-5p ceRNA
BEX1 hsa-miR-18b-5p ceRNA
DIXDC1 hsa-miR-449a ceRNA
DIXDC1 hsa-miR-449b-5p ceRNA
TMEM200B hsa-miR-449a ceRNA
TMEM200B hsa-miR-449b-5p ceRNA
RECK hsa-miR-449a ceRNA
GAS1 hsa-miR-449a ceRNA
GAS1 hsa-miR-449b-5p ceRNA
TUB hsa-miR-19a-3p ceRNA
RAPGEF4 hsa-miR-19a-3p ceRNA
RAB8B hsa-miR-19a-3p ceRNA

TRIM23 hsa-miR-19a-3p ceRNA
TMEM55A hsa-miR-449a ceRNA
TMEM55A hsa-miR-449b-5p ceRNA
ZBTB4 hsa-miR-19a-3p ceRNA
LPP hsa-miR-19a-3p ceRNA
SLMAP hsa-miR-19a-3p ceRNA
REEP1 hsa-miR-19a-3p ceRNA
SAM4A hsa-miR-19a-3p ceRNA
MECP2 hsa-miR-19a-3p ceRNA
DOCK4 hsa-miR-19a-3p ceRNA
S1PR1 hsa-miR-19a-3p ceRNA
GAB1 hsa-miR-449a ceRNA
GAB1 hsa-miR-449b-5p ceRNA
DLC1 hsa-miR-19a-3p ceRNA
CALCOCO2 hsa-miR-449a ceRNA
AXL hsa-miR-449a ceRNA
AXL hsa-miR-449b-5p ceRNA
MBNL2 hsa-miR-19a-3p ceRNA
MBNL1 hsa-miR-19a-3p ceRNA
OTUD1 hsa-miR-19a-3p ceRNA
CREBL2 hsa-miR-19a-3p ceRNA
MEF2A hsa-miR-19a-3p ceRNA
THRA hsa-miR-449a ceRNA
THRA hsa-miR-449b-5p ceRNA
S1PR3 hsa-miR-449a ceRNA
MYADM hsa-miR-449a ceRNA
MYADM hsa-miR-449b-5p ceRNA
MARCH8 hsa-miR-449a ceRNA
MARCH8 hsa-miR-449b-5p ceRNA
EEA1 hsa-miR-19a-3p ceRNA
EEA1 hsa-miR-449a ceRNA
EEA1 hsa-miR-449b-5p ceRNA
FBXO30 hsa-miR-449a ceRNA
FBXO30 hsa-miR-449b-5p ceRNA
IL6ST hsa-miR-19a-3p ceRNA
DTNA hsa-miR-19a-3p ceRNA
SATB1 hsa-miR-19a-3p ceRNA
SATB1 hsa-miR-449a ceRNA
SATB1 hsa-miR-449b-5p ceRNA
TMEM64 hsa-miR-19a-3p ceRNA
PRTG hsa-miR-19a-3p ceRNA
NPTN hsa-miR-19a-3p ceRNA
SYT1 hsa-miR-19a-3p ceRNA
SYT1 hsa-miR-449a ceRNA

SYT1 hsa-miR-449b-5p ceRNA
VCL hsa-miR-449a ceRNA
VCL hsa-miR-449b-5p ceRNA
DLL1 hsa-miR-449a ceRNA
DLL1 hsa-miR-449b-5p ceRNA
ATXN1 hsa-miR-19a-3p ceRNA
PDCD4 hsa-miR-449a ceRNA
JMJD1C hsa-miR-449a ceRNA
JMJD1C hsa-miR-449b-5p ceRNA
CHIC1 hsa-miR-19a-3p ceRNA
SGPP1 hsa-miR-449a ceRNA
SGPP1 hsa-miR-449b-5p ceRNA
GBP2 hsa-miR-449a ceRNA
IL6R hsa-miR-449a ceRNA
IL6R hsa-miR-449b-5p ceRNA
PPARGC1B hsa-miR-449a ceRNA
PPARGC1B hsa-miR-449b-5p ceRNA
ID4 hsa-miR-19a-3p ceRNA
SYT11 hsa-miR-19a-3p ceRNA
PLAG1 hsa-miR-19a-3p ceRNA
CCDC88A hsa-miR-19a-3p ceRNA
CCDC88A hsa-miR-449a ceRNA
SCML2 hsa-miR-19a-3p ceRNA
SCML2 hsa-miR-449a ceRNA
SCML2 hsa-miR-449b-5p ceRNA
NRIP3 hsa-miR-449a ceRNA
NRIP3 hsa-miR-449b-5p ceRNA
IGF1 hsa-miR-19a-3p ceRNA
MPP2 hsa-miR-449a ceRNA
MPP2 hsa-miR-449b-5p ceRNA
WNT10A hsa-miR-19a-3p ceRNA
ZCCHC12 hsa-miR-376c-3pceRNA
CACNA2D1 hsa-miR-376c-3pceRNA
FRY hsa-miR-376c-3pceRNA
PJA2 hsa-miR-376c-3pceRNA
SATB1 hsa-miR-376c-3pceRNA
SMAD5 hsa-miR-376c-3pceRNA
TEAD1 hsa-miR-376c-3pceRNA
GULP1 hsa-miR-376c-3pceRNA
JMJD1C hsa-miR-376c-3pceRNA
SEMA6D hsa-miR-376c-3pceRNA
DNM3 hsa-miR-376c-3pceRNA
FAM46A hsa-miR-376c-3pceRNA
NRP1 hsa-miR-376c-3pceRNA

SDC2 hsa-miR-376c-3pceRNA
SEL1L3 hsa-miR-185-5p ceRNA
ARPC5L hsa-miR-214-3p ceRNA
ABCC1 hsa-miR-185-5p ceRNA
HDGF hsa-miR-214-3p ceRNA
SPTBN2 hsa-miR-214-3p ceRNA
DOLPP1 hsa-miR-214-3p ceRNA
TMEM97 hsa-miR-214-3p ceRNA
INCENP hsa-miR-214-3p ceRNA
SERF2 hsa-miR-214-3p ceRNA
SERF2 hsa-miR-185-5p ceRNA
GPX4 hsa-miR-214-3p ceRNA
MECOM hsa-miR-214-3p ceRNA
PANK1 hsa-miR-214-3p ceRNA
COCH hsa-miR-185-5p ceRNA
FAM13C hsa-miR-17-5p ceRNA
FAM13C hsa-miR-20b-5p ceRNA
CCND2 hsa-miR-17-5p ceRNA
CCND2 hsa-miR-93-5p ceRNA
CCND2 hsa-miR-106b-5p ceRNA
CCND2 hsa-miR-20b-5p ceRNA
CCND2 hsa-miR-106a-5pceRNA
RORA hsa-miR-17-5p ceRNA
RORA hsa-miR-93-5p ceRNA
RORA hsa-miR-106b-5p ceRNA
RORA hsa-miR-20b-5p ceRNA
RORA hsa-miR-106a-5pceRNA
CELF2 hsa-miR-17-5p ceRNA
CELF2 hsa-miR-93-5p ceRNA
CELF2 hsa-miR-106b-5p ceRNA
CELF2 hsa-miR-20b-5p ceRNA
CELF2 hsa-miR-106a-5pceRNA
CHURC1 hsa-miR-93-5p ceRNA
CHURC1 hsa-miR-106a-5pceRNA
BTG2 hsa-miR-17-5p ceRNA
BTG2 hsa-miR-93-5p ceRNA
BTG2 hsa-miR-106b-5p ceRNA
BTG2 hsa-miR-20b-5p ceRNA
BTG2 hsa-miR-106a-5pceRNA
AKT3 hsa-miR-29c-3p ceRNA
AKT3 hsa-miR-29b-3p ceRNA
AKT3 hsa-miR-29a-3p ceRNA
JCAD hsa-miR-130b-3p ceRNA
SYNM hsa-miR-130b-3p ceRNA

PRUNE2 hsa-miR-130b-3p ceRNA
PI15 hsa-miR-29c-3p ceRNA
PI15 hsa-miR-29b-3p ceRNA
PI15 hsa-miR-29a-3p ceRNA
SRPX hsa-miR-130b-3p ceRNA
ZEB1 hsa-miR-130b-3p ceRNA
TSPAN18 hsa-miR-130b-3p ceRNA
ZEB2 hsa-miR-130b-3p ceRNA
MAF hsa-miR-130b-3p ceRNA
PEAR1 hsa-miR-370-3p ceRNA
LRCH2 hsa-miR-130b-3p ceRNA
KIF26A hsa-miR-29c-3p ceRNA
KIF26A hsa-miR-29b-3p ceRNA
KIF26A hsa-miR-29a-3p ceRNA
FZD4 hsa-miR-130b-3p ceRNA
FRMD6 hsa-miR-130b-3p ceRNA
EFEMP1 hsa-miR-29c-3p ceRNA
EFEMP1 hsa-miR-29b-3p ceRNA
PMP22 hsa-miR-29c-3p ceRNA
PMP22 hsa-miR-29b-3p ceRNA
PMP22 hsa-miR-29a-3p ceRNA
FOXO4 hsa-miR-29c-3p ceRNA
FOXO4 hsa-miR-29b-3p ceRNA
FOXO4 hsa-miR-29a-3p ceRNA
TPM1 hsa-miR-29c-3p ceRNA
TPM1 hsa-miR-29b-3p ceRNA
TPM1 hsa-miR-29a-3p ceRNA
MECP2 hsa-miR-130b-3p ceRNA
NR3C2 hsa-miR-130b-3p ceRNA
PER3 hsa-miR-29c-3p ceRNA
PER3 hsa-miR-29b-3p ceRNA
PER3 hsa-miR-29a-3p ceRNA
RBFOX2 hsa-miR-130b-3p ceRNA
RNF38 hsa-miR-130b-3p ceRNA
CNTNAP1 hsa-miR-370-3p ceRNA
RAB12 hsa-miR-29c-3p ceRNA
RAB12 hsa-miR-29b-3p ceRNA
RAB12 hsa-miR-130b-3p ceRNA
RAB12 hsa-miR-29a-3p ceRNA
ZBTB47 hsa-miR-29c-3p ceRNA
ZBTB47 hsa-miR-29b-3p ceRNA
ZBTB47 hsa-miR-130b-3p ceRNA
ZBTB47 hsa-miR-29a-3p ceRNA
PRNP hsa-miR-130b-3p ceRNA

KLF11 hsa-miR-130b-3p ceRNA
TIMP2 hsa-miR-130b-3p ceRNA
RAP2C hsa-miR-130b-3p ceRNA
HEG1 hsa-miR-130b-3p ceRNA
ELK3 hsa-miR-130b-3p ceRNA
DPYSL2 hsa-miR-130b-3p ceRNA
TRERF1 hsa-miR-130b-3p ceRNA
MAP3K12 hsa-miR-130b-3p ceRNA
NACC2 hsa-miR-130b-3p ceRNA
CBX6 hsa-miR-29c-3p ceRNA
CBX6 hsa-miR-29b-3p ceRNA
CBX6 hsa-miR-29a-3p ceRNA
QKI hsa-miR-29c-3p ceRNA
QKI hsa-miR-29b-3p ceRNA
QKI hsa-miR-370-3p ceRNA
QKI hsa-miR-130b-3p ceRNA
QKI hsa-miR-29a-3p ceRNA
NEK9 hsa-miR-130b-3p ceRNA
HHEX hsa-miR-130b-3p ceRNA
PDGFRB hsa-miR-29c-3p ceRNA
PDGFRB hsa-miR-29b-3p ceRNA
PDGFRB hsa-miR-29a-3p ceRNA
PTPRD hsa-miR-29c-3p ceRNA
PTPRD hsa-miR-29b-3p ceRNA
PTPRD hsa-miR-130b-3p ceRNA
PTPRD hsa-miR-29a-3p ceRNA
FNBP1 hsa-miR-130b-3p ceRNA
COL15A1 hsa-miR-29c-3p ceRNA
COL15A1 hsa-miR-29b-3p ceRNA
COL15A1 hsa-miR-29a-3p ceRNA
ARHGAP24 hsa-miR-130b-3p ceRNA
CECR2 hsa-miR-29c-3p ceRNA
CECR2 hsa-miR-29b-3p ceRNA
CECR2 hsa-miR-29a-3p ceRNA
KCTD15 hsa-miR-29c-3p ceRNA
KCTD15 hsa-miR-29b-3p ceRNA
KCTD15 hsa-miR-29a-3p ceRNA
TNRC6C hsa-miR-370-3p ceRNA
TNRC6C hsa-miR-130b-3p ceRNA
BAK1 hsa-miR-29c-3p ceRNA
BAK1 hsa-miR-29b-3p ceRNA
BAK1 hsa-miR-29a-3p ceRNA
SCARA3 hsa-miR-130b-3p ceRNA
GABARAPL1 hsa-miR-130b-3p ceRNA

ZFP36 hsa-miR-29c-3p ceRNA
ZFP36 hsa-miR-29b-3p ceRNA
ZFP36 hsa-miR-29a-3p ceRNA
DNM3 hsa-miR-29c-3p ceRNA
DNM3 hsa-miR-29b-3p ceRNA
DNM3 hsa-miR-29a-3p ceRNA
WWTR1 hsa-miR-29c-3p ceRNA
WWTR1 hsa-miR-29b-3p ceRNA
WWTR1 hsa-miR-29a-3p ceRNA
MASTL hsa-miR-130b-3p ceRNA
KIRREL1 hsa-miR-29c-3p ceRNA
KIRREL1 hsa-miR-29b-3p ceRNA
KIRREL1 hsa-miR-29a-3p ceRNA
NID2 hsa-miR-29c-3p ceRNA
NID2 hsa-miR-29b-3p ceRNA
NID2 hsa-miR-29a-3p ceRNA
SLC16A14 hsa-miR-29c-3p ceRNA
SLC16A14 hsa-miR-29b-3p ceRNA
SLC16A14 hsa-miR-29a-3p ceRNA
BMP6 hsa-miR-130b-3p ceRNA
KCTD1 hsa-miR-29c-3p ceRNA
KCTD1 hsa-miR-29b-3p ceRNA
KCTD1 hsa-miR-29a-3p ceRNA
TUBB2A hsa-miR-29c-3p ceRNA
TUBB2A hsa-miR-29b-3p ceRNA
TUBB2A hsa-miR-29a-3p ceRNA
SPRY1 hsa-miR-29c-3p ceRNA
SPRY1 hsa-miR-29b-3p ceRNA
SPRY1 hsa-miR-29a-3p ceRNA
COL4A4 hsa-miR-29c-3p ceRNA
COL4A4 hsa-miR-29b-3p ceRNA
COL4A4 hsa-miR-29a-3p ceRNA
SCML2 hsa-miR-29c-3p ceRNA
SCML2 hsa-miR-29b-3p ceRNA
SCML2 hsa-miR-130b-3p ceRNA
SCML2 hsa-miR-29a-3p ceRNA
FSTL1 hsa-miR-29c-3p ceRNA
FSTL1 hsa-miR-29b-3p ceRNA
FSTL1 hsa-miR-29a-3p ceRNA
LRP8 hsa-miR-130b-3p ceRNA
HOXA5 hsa-miR-130b-3p ceRNA
ZNF711 hsa-miR-130b-3p ceRNA
HOXA3 hsa-miR-130b-3p ceRNA
PTPRM hsa-miR-130b-3p ceRNA

ELN hsa-miR-29c-3p ceRNA
ELN hsa-miR-29b-3p ceRNA
ELN hsa-miR-29a-3p ceRNA
EMP1 hsa-miR-29c-3p ceRNA
EMP1 hsa-miR-29b-3p ceRNA
EMP1 hsa-miR-29a-3p ceRNA
CLDN1 hsa-miR-29c-3p ceRNA
CLDN1 hsa-miR-29b-3p ceRNA
CLDN1 hsa-miR-29a-3p ceRNA
RUNX3 hsa-miR-130b-3p ceRNA
FOSL1 hsa-miR-130b-3p ceRNA
WNT10A hsa-miR-130b-3p ceRNA
WNK3 hsa-miR-130b-3p ceRNA
MMP2 hsa-miR-29c-3p ceRNA
MMP2 hsa-miR-29b-3p ceRNA
MMP2 hsa-miR-29a-3p ceRNA

Supplementary Table 3 | All the significant genes of the K-M analysis.

genes	p-Value
MYLIP	0.0153007290934359
IGF1	0.0124337113210056
BAK1	0.0022569133989182
KIF26A	0.0495573689471963
NUAK1	0.0160461479039756
COL4A4	6.74631060509912e-05
RAPGEF4	0.0292102165138484
DPYSL2	0.032092309509903
CECR2	0.0326968990517328
SRPX	0.00626369965751139
SCML2	0.00031343648199722
HOXA3	0.0188399616816074
HOXA5	0.000492153373971682
MPP2	0.00210466434097412
TMEM97	0.0327991115544132
UST	0.00136511614703405
NR3C1	0.000351682926748031
CCDC88A	0.0402231528700057
MASTL	0.0106815832159883
RECK	0.0448245774723092
TRERF1	0.0400313855135688
ATXN1	0.00461759994270772
SYT11	0.0427531766036588
PDZD2	0.00191474720814122
IL6ST	0.0362176588774661
DTNA	0.00136154249413334
TLL7	0.0453691919483391
MAP3K12	0.0300999560919283
SERF2	0.0487934398399135
BNIP2	0.00497981249579815
HDGF	0.0101103838047254
ZNF711	0.0491826176355179
FAM13C	0.000406499805908012
PDCD4	0.0270176311648658
TMEM55A	0.0136527142457998
PPARGC1B	0.0447362756342101
LRP8	2.68435394147337e-05
SLC16A14	0.000653063938187204
CLDN1	0.00135456450269633
ZNF704	0.0357100812350255
DLC1	0.000260843725310544

OTUD1 0.0296050202752319
DOLPP1 0.00512218846546952
GPX4 0.0434400858471713
MECP2 0.043400116212685
PRNP 0.0037372625979184
KLF11 0.021928073460709
ID4 0.00150326591631178
C14orf28 0.000351640004148557
PLAG1 0.00846404176819926
CBX6 0.0342843119638246
KIRREL1 0.00120852999733345
TEAD1 0.014987171817747
WNK3 0.0268541599353778
LPAR1 0.00396818850773717
RUSC2 0.00498378504422636
LINC00958 0.0184133610588973
hsa-miR-17-5p 0.0470199510028908
hsa-miR-18a-5p 0.000616965145500803
hsa-miR-449a 0.00464426858895273
hsa-miR-449b-5p 0.0257353823876809
hsa-miR-93-5p 0.000498570009719423