

Table S1. Detailed information of co-differentially expressed (59 upregulated and 49 downregulated) lncRNAs in GEO (GSE23400, GSE26886 and GSE45670) datasets.

Name	P-value	FDR	Fold-change	Regulation	Name	P-value	FDR	Fold-change	Regulation
TPRXL	0.0023	0.0115	17.2033	Up	LINC01105	0.0000	0.0001	-49.1803	Down
ALOX12P2	0.0020	0.0104	16.3833	Up	SNORD116-4	0.0000	0.0002	-19.1083	Down
UCA1	0.0020	0.0084	15.8000	Up	LINC00982	0.0003	0.0027	-17.539	Down
HOXA11-AS	0.0001	0.0012	12.7500	Up	HAND2-AS1	0.0001	0.0015	-14.5631	Down
RPLP0P2	0.0025	0.0116	12.3533	Up	PCAT18	0.0027	0.0123	-14.0187	Down
HOTAIR	0.0001	0.0013	10.6400	Up	SNORD116-28	0.0000	0.0001	-12.9310	Down
FAM83A-AS1	0.0022	0.0112	10.3533	Up	UG0898H09	0.0002	0.0021	-11.9522	Down
FAR2P1	0.0058	0.0236	10.0233	Up	SNORD116-20	0.0000	0.0000	-11.4504	Down
GUCY1B2	0.0001	0.0009	8.6600	Up	LOC400043	0.0000	0.0001	-11.3636	Down
DUSP5P1	0.0012	0.0069	8.1200	Up	LINC00950	0.0001	0.0009	-11.2360	Down
TMEM191A	0.0000	0.0002	7.9233	Up	PWAR5	0.0000	0.0006	-10.3448	Down
MIR924HG	0.0001	0.0010	7.9100	Up	C20orf166-AS1	0.0005	0.0040	-10.1010	Down
PVT1	0.0000	0.0002	7.1933	Up	LINC01018	0.0002	0.0014	-9.3168	Down
LOC399815	0.0000	0.0001	6.9300	Up	PWARSN	0.0000	0.0002	-9.3168	Down
FOXD2-AS1	0.0000	0.0002	6.4700	Up	TPTEP1	0.0000	0.0003	-8.8757	Down
FIRRE	0.0007	0.0049	6.3867	Up	IPW	0.0000	0.0002	-8.8496	Down
MIR4435-2HG	0.0000	0.0001	6.3667	Up	LINC00689	0.0001	0.0011	-8.1081	Down
RAET1K	0.0000	0.0003	6.2533	Up	SMIM10L2A	0.0000	0.0007	-7.8504	Down
FAM86JP	0.0000	0.0000	5.2067	Up	LINC00472	0.0001	0.0008	-6.5217	Down
LINC00887	0.0038	0.0170	5.1767	Up	LINC00889	0.0014	0.0078	-6.0000	Down
LINC00152	0.0000	0.0002	5.1033	Up	ZNF300P1	0.0000	0.0003	-5.7692	Down
TCAM1P	0.0035	0.0155	5.0000	Up	DIRC3	0.0012	0.0044	-5.5556	Down
PTGES2-AS1	0.0002	0.0012	4.8067	Up	LOC100499484-C9ORF174	0.0005	0.0029	-5.4545	Down
CYP2D7	0.0000	0.0002	4.6167	Up	ZNF542P	0.0000	0.0001	-5.0847	Down
COL6A4P1	0.0011	0.0067	4.4000	Up	LOC148696	0.0000	0.0007	-5.0000	Down
LOC728554	0.0002	0.0023	4.2667	Up	PART1	0.0042	0.0161	-5.0000	Down
SNHG4	0.0000	0.0006	4.1933	Up	LOC100128164	0.0011	0.0070	-4.0000	Down
AGAP2-AS1	0.0007	0.0046	4.1300	Up	TP73-AS1	0.0000	0.0003	-3.8450	Down
DLEU2	0.0000	0.0001	3.9167	Up	SMIM10L2B	0.0005	0.0041	-3.7500	Down
CHKB-AS1	0.0002	0.0017	3.6533	Up	SLC26A4-AS1	0.0002	0.0016	-3.6585	Down
MCTS2P	0.0005	0.0031	3.4967	Up	LOC202181	0.0004	0.0025	-3.6145	Down
MAFG-AS1	0.0000	0.0004	3.4767	Up	PSMG3-AS1	0.0000	0.0001	-3.3708	Down
TMPO-AS1	0.0000	0.0003	3.3600	Up	MEG3	0.0035	0.0135	-3.3333	Down
DDX12P	0.0003	0.0027	3.3133	Up	CYP4Z2P	0.0016	0.0082	-3.0928	Down
LINC00176	0.0036	0.0152	3.3000	Up	LINC00341	0.0020	0.0102	-2.9703	Down
HCP5	0.0013	0.0073	3.2067	Up	MBL1P	0.0045	0.0185	-2.9412	Down
LINC01588	0.0035	0.0161	3.2033	Up	ZFP91-CNTF	0.0111	0.0361	-2.9412	Down

Table S1. Continued.

Name	P-value	FDR	Fold-change	Regulation	Name	P-value	FDR	Fold-change	Regulation
ANXA2P1	0.0028	0.0115	3.1967	Up	LOC728743	0.0000	0.0007	-2.9126	Down
DGCR9	0.0057	0.0230	3.1733	Up	LINC00663	0.0002	0.0020	-2.8846	Down
ANXA2P2	0.0000	0.0005	3.0767	Up	SBFIP1	0.0022	0.0110	-2.8846	Down
AURKAPS1	0.0001	0.0010	3.0067	Up	RAMP2-AS1	0.0034	0.0152	-2.8571	Down
LINC00346	0.0069	0.0223	2.9067	Up	AOC4P	0.0017	0.0091	-2.8037	Down
LOC388242	0.0039	0.0159	2.8967	Up	FAM66A	0.0007	0.0049	-2.7778	Down
SNHG3	0.0001	0.0010	2.8000	Up	CMAHP	0.0009	0.0045	-2.7027	Down
FAM86HP	0.0001	0.0008	2.7567	Up	LOC283856	0.0024	0.0114	-2.5424	Down
LOC100133985	0.0055	0.0222	2.6867	Up	LINC00476	0.0021	0.0109	-2.4793	Down
RBM12B-AS1	0.0002	0.0022	2.6100	Up	C21orf62-AS1	0.0043	0.0179	-2.4000	Down
MAN1B1-AS1	0.0023	0.0118	2.5267	Up	MIR600HG	0.0023	0.0114	-2.4000	Down
SNHG17	0.0000	0.0005	2.4233	Up	HAVCR1P1	0.0099	0.0329	-2.2059	Down
LINC01001	0.0077	0.0292	2.3933	Up	FBXO22-AS1	0.0038	0.0169	2.2567	Up
SNHG1	0.0001	0.0010	2.3867	Up	TIPARP-AS1	0.0024	0.0120	2.2200	Up
BTN2A3P	0.0007	0.0048	2.3600	Up	SNHG15	0.0001	0.0013	2.1233	Up
PMS2P1	0.0003	0.0018	2.3533	Up	LINC01184	0.0001	0.0198	2.1198	Up
HNRNPA3P1	0.0030	0.0099	2.2633	Up	CYP11B1-AS1	0.0002	0.0144	2.0982	Up

FDR, false discovery rate; GEO, Gene Expression Omnibus.

Table SII. Details information of co-differentially expressed (30 upregulated, 15 downregulated) miRNAs in GEO (GSE97049, GSE6188 and GSE55856) datasets.

Name	P-value	FDR	Fold-change	Regulation	Name	P-value	FDR	Fold-change	Regulation
hsa-miR-205-5p	0.0001	0.0005	56.8567	Up	hsa-miR-133a-3p	0.0000	0.0000	-19.8675	Down
hsa-miR-141-5p	0.0000	0.0000	49.2133	Up	hsa-miR-145-3p	0.0000	0.0000	-18.4049	Down
hsa-miR-200c-3p	0.0000	0.0000	43.9500	Up	hsa-miR-145-5p	0.0000	0.0000	-16.3934	Down
hsa-miR-183-5p	0.0000	0.0000	43.4933	Up	hsa-miR-195-5p	0.0000	0.0001	-6.8182	Down
hsa-miR-141-3p	0.0000	0.0000	43.1067	Up	hsa-let-7c-5p	0.0051	0.0170	-6.1224	Down
hsa-miR-200a-5p	0.0000	0.0000	36.3467	Up	hsa-miR-125b-5p	0.0003	0.0016	-6.0000	Down
hsa-miR-182-5p	0.0000	0.0000	24.3600	Up	hsa-miR-125b-2-3p	0.0039	0.0133	-5.6604	Down
hsa-miR-210-3p	0.0000	0.0000	22.6700	Up	hsa-miR-143-5p	0.0002	0.0009	-5.1724	Down
hsa-miR-200b-3p	0.0000	0.0000	18.8433	Up	hsa-miR-143-3p	0.0008	0.0038	-4.7619	Down
hsa-miR-200a-3p	0.0000	0.0000	15.0833	Up	hsa-miR-497-5p	0.0000	0.0000	-4.4776	Down
hsa-miR-224-5p	0.0003	0.0018	9.7400	Up	hsa-miR-28-5p	0.0000	0.0000	-4.4118	Down
hsa-miR-142-3p	0.0000	0.0001	9.2167	Up	hsa-miR-125a-5p	0.0001	0.0004	-4.1667	Down
hsa-miR-20b-5p	0.0107	0.0312	5.8600	Up	hsa-miR-320a	0.0011	0.0047	-2.8037	Down
hsa-miR-31-5p	0.0047	0.0159	5.6033	Up	hsa-miR-101-3p	0.0047	0.0166	-2.6316	Down
hsa-miR-21-3p	0.0001	0.0004	5.4567	Up	hsa-miR-328-3p	0.0012	0.0049	-2.3256	Down
hsa-miR-15b-3p	0.0000	0.0000	4.9167	Up	hsa-miR-16-5p	0.0000	0.0002	3.2367	Up
hsa-miR-15b-5p	0.0000	0.0000	4.7133	Up	hsa-miR-330-5p	0.0050	0.0170	3.1267	Up
hsa-miR-425-5p	0.0002	0.0010	4.4367	Up	hsa-miR-106b-5p	0.0001	0.0004	2.9933	Up
hsa-miR-135b-5p	0.0128	0.0346	4.0167	Up	hsa-miR-33a-5p	0.0100	0.0302	2.8567	Up
hsa-miR-93-5p	0.0000	0.0002	3.9700	Up	hsa-let-7g-3p	0.0020	0.0081	2.5633	Up
hsa-miR-185-5p	0.0001	0.0005	3.6567	Up	hsa-miR-130b-3p	0.0103	0.0306	2.3500	Up
hsa-miR-32-5p	0.0000	0.0001	3.6200	Up	hsa-miR-484	0.0026	0.0094	2.2933	Up
hsa-miR-200c-5p	0.0031	0.0119	3.5667	Up					

FDR, false discovery rate; GEO, Gene Expression Omnibus.

Table SIII. Genes in the ceRNA network.

Gene	Biostyle	Regulation	Degree	Gene	Biostyle	Regulation	Degree
hsa-miR-330-5p	miRNA	Up	21	PRICKLE2	mRNA	Down	2
hsa-miR-93-5p	miRNA	Up	20	hsa-miR-125a-5p	miRNA	Down	2
hsa-miR-106b-5p	miRNA	Up	18	E2F2	mRNA	Up	2
hsa-miR-20b-5p	miRNA	Up	18	E2F3	mRNA	Up	2
hsa-miR-15b-5p	miRNA	Up	14	WASF3	mRNA	Down	2
hsa-miR-135b-5p	miRNA	Up	12	MIR600HG	lncRNA	Down	2
hsa-miR-185-5p	miRNA	Up	12	hsa-miR-15b-3p	miRNA	Up	2
hsa-let-7c-5p	miRNA	Down	11	ZNF300P1	lncRNA	Down	2
hsa-miR-182-5p	miRNA	Up	10	LINC00982	lncRNA	Down	2
hsa-miR-205-5p	miRNA	Up	10	CYFIP2	mRNA	Down	1
LINC01105	lncRNA	Down	9	HCP5	lncRNA	Up	1
hsa-miR-484	miRNA	Up	9	GUCY1B2	lncRNA	Up	1
hsa-miR-130b-3p	miRNA	Up	9	FGF2	mRNA	Down	1
hsa-miR-320a	miRNA	Down	9	MYLK	mRNA	Down	1
hsa-miR-145-5p	miRNA	Down	9	HOXA10	mRNA	Up	1
hsa-miR-28-5p	miRNA	Down	8	IPW	lncRNA	Down	1
hsa-miR-141-3p	miRNA	Up	8	CYP2D7	lncRNA	Up	1
hsa-miR-31-5p	miRNA	Up	7	PLAU	mRNA	Up	1
hsa-miR-200c-3p	miRNA	Up	7	STMN1	mRNA	Up	1
hsa-miR-16-5p	miRNA	Up	7	SH3GL2	mRNA	Down	1
LINC00472	lncRNA	Down	7	EPHA5	mRNA	Down	1
PART1	lncRNA	Down	6	MAGI1	mRNA	Down	1
hsa-miR-497-5p	miRNA	Down	6	PRKCB	mRNA	Down	1
LOC100128164	lncRNA	Down	6	CACNA2D2	mRNA	Down	1
hsa-miR-328-3p	miRNA	Down	6	PWAR5	lncRNA	Down	1
UG0898H09	lncRNA	Down	6	CYP2U1	mRNA	Down	1
hsa-miR-200b-3p	miRNA	Up	5	COL4A3	mRNA	Down	1
MEG3	lncRNA	Down	5	LINC00887	lncRNA	Up	1
hsa-miR-21-3p	miRNA	Up	5	PGR	mRNA	Down	1
hsa-let-7g-3p	miRNA	Up	5	LINC00889	lncRNA	Down	1
hsa-miR-200a-3p	miRNA	Up	5	MASP1	mRNA	Down	1
SMIM10L2A	lncRNA	Down	5	IL6ST	mRNA	Down	1
hsa-miR-101-3p	miRNA	Down	5	GRIA1	mRNA	Down	1
hsa-miR-224-5p	miRNA	Up	5	SLC1A2	mRNA	Down	1
LINC00476	lncRNA	Down	5	ACACB	mRNA	Down	1
hsa-miR-32-5p	miRNA	Up	5	FAM86HP	lncRNA	Up	1
LINC00346	lncRNA	Up	5	GRIN2A	mRNA	Down	1
RPS6KA2	mRNA	Down	4	PRKAR2B	mRNA	Down	1
KIF5A	mRNA	Down	4	KCNMB2	mRNA	Down	1
LINC01588	lncRNA	Up	4	ICOS	mRNA	Up	1
C20orf166-AS1	lncRNA	Down	4	BTN2A3P	lncRNA	Up	1
SMIM10L2B	lncRNA	Down	4	LINC00950	lncRNA	Down	1
HAND2-AS1	lncRNA	Down	4	GRIA3	mRNA	Down	1
hsa-miR-183-5p	miRNA	Up	4	CADM3	mRNA	Down	1
THRB	mRNA	Down	4	FAM66A	lncRNA	Down	1
KCNMA1	mRNA	Down	4	IQSEC3	mRNA	Down	1
PPP1R12B	mRNA	Down	4	PDE2A	mRNA	Down	1
hsa-miR-195-5p	miRNA	Down	4	HMGA2	mRNA	Up	1
ATP1A2	mRNA	Down	4	SNHG4	lncRNA	Up	1
RELN	mRNA	Down	4	PTGES2-AS1	lncRNA	Up	1
TP73-AS1	lncRNA	Down	4	HNRNPA3P1	lncRNA	Up	1
hsa-miR-143-3p	miRNA	Down	4	CNTN2	mRNA	Down	1
PDCD4	mRNA	Down	4	TCF3	mRNA	Up	1
RPLP0P2	lncRNA	Up	3	FGFR1	mRNA	Down	1
RPS6KA6	mRNA	Down	3	FAM86JP	lncRNA	Up	1
ZNF542P	lncRNA	Down	3	LINC00341	lncRNA	Down	1
PSMG3-AS1	lncRNA	Down	3	DUSP5P1	lncRNA	Up	1
LINC01001	lncRNA	Up	3	SLC2A1	mRNA	Up	1

Table SIII. Continued.

Gene	Biostyle	Regulation	Degree	Gene	Biostyle	Regulation	Degree
CYBRD1	mRNA	Down	3	AOC4P	lncRNA	Down	1
CPEB3	mRNA	Down	3	MBL1P	lncRNA	Down	1
hsa-miR-33a-5p	miRNA	Up	3	CMAHP	lncRNA	Down	1
TCAM1P	lncRNA	Up	3	ALAD	mRNA	Down	1
DDX12P	lncRNA	Up	3	EXO1	mRNA	Up	1
GRIK3	mRNA	Down	3	DIRC3	lncRNA	Down	1
SLC2A4	mRNA	Down	3	IKBKE	mRNA	Up	1
hsa-miR-133a-3p	miRNA	Down	3	LOC283856	lncRNA	Down	1
SLC26A4-AS1	lncRNA	Down	3	TGFBR2	mRNA	Down	1
ITGB8	mRNA	Up	3	MMP14	mRNA	Up	1
PWARSN	lncRNA	Down	3	ESPL1	mRNA	Up	1
PTGER3	mRNA	Down	3	LINC00689	lncRNA	Down	1
S1PR1	mRNA	Down	3	CLDN16	mRNA	Up	1
PPP2R3A	mRNA	Down	3	MOCS1	mRNA	Down	1
LOC148696	lncRNA	Down	3	VAMP2	mRNA	Down	1
SBF1P1	lncRNA	Down	3	CD44	mRNA	Up	1
HPSE2	mRNA	Down	2	CYP4Z2P	lncRNA	Down	1
FAR2P1	lncRNA	Up	2	ARHGEF6	mRNA	Down	1
PRKACB	mRNA	Down	2	HAVCR1P1	lncRNA	Down	1
hsa-miR-425-5p	miRNA	Up	2	PVT1	lncRNA	Up	1
C21orf62-AS1	lncRNA	Down	2	NTN4	mRNA	Down	1
CPLX2	mRNA	Down	2	LOC202181	lncRNA	Down	1
ALOX12P2	lncRNA	Up	2	ADCY6	mRNA	Down	1
RAB11FIP2	mRNA	Down	2	ERBB4	mRNA	Down	1
LOC399815	lncRNA	Up	2	IGF2BP1	mRNA	Up	1
PCAT18	lncRNA	Down	2	NCAM1	mRNA	Down	1
hsa-miR-200c-5p	miRNA	Up	2	RAMP2-AS1	lncRNA	Down	1
FZD4	mRNA	Down	2	KCNJ10	mRNA	Down	1
LINC00663	lncRNA	Down	2	KCNJ11	mRNA	Down	1
EDA	mRNA	Down	2	NEGR1	mRNA	Down	1
LOC100499484-C9ORF174	lncRNA	Down	2	ZFP91-CNTF	lncRNA	Down	1
FIRRE	lncRNA	Up	2	FOXD2-AS1	lncRNA	Up	1
LINC00176	lncRNA	Up	2	PDE7B	mRNA	Down	1
YWHAZ	mRNA	Up	2	LOC728743	lncRNA	Down	1