Supplementary Materials

Table S1. Comprehensive list of dysregulated lncRNAs in hepatocellular carcinomas.

lncRNA	Class	Dysregulation in HCC	Effect on HCC	Function	Reference
AB019562	antisense	upregulated	Promotes cell proliferation and metastasis, suppresses of apoptosis	-	[1]
AB209630	antisense	downregulated	Suppresses cell proliferation and metastasis	-	[2]
AF070632	intergenic	downregulated	Potential biomarker	-	[3]
AF113014	antisense	downregulated	Inhibits cell proliferation and tumor growth	miRNA sponge	[4]
ANRIL	antisense	upregulated	Promotes cell proliferation, metastasis, and invasion, suppresses apoptosis; associated with poor prognosis	epigenetic modification	[3,5–7]
AOC4P	intergenic	downregulated	Inhibits cell proliferation, migration, and invasion by regulating EMT	-	[8]
BANCR	intergenic	upregulated	Promotes cell proliferation, migration and invasion; suppresses apoptosis via inhibition of the activity of MEK	-	[9]
CARLo-5	intergenic	upregulated	Promotes cell proliferation, migration, invasion, metastasis	-	[10]
CASC15	intergenic	upregulated	Promotes cell proliferation, migration, invasionand tumor growth; inhibit apoptosis	-	[11]
CASC2	intergenic	downregulated	Inhibits cell migration, invasion, EMT and tumor growth; induces apoptosis	miRNA sponge	[12–14]
DANCR	intergenic	upregulated	Promotes stemness, cell vitality, tumor shrinkage	mRNA binding	[15]
DBH-AS1	antisense	upregulated	Promotes cell proliferation, migration; suppresses apoptosis	-	[16]
DILC	non-coding transcript variant	downregulated	Enhances liver cancer stem cells expansion and promotes HCC initiation and progression	chromatin remodeling	[17]
DREH	intergenic	downregulated	Inhibits cell proliferation, growth and metastasis	-	[18,19]
FTX	intergenic	downregulated	Inhibits cell proliferation and metastasis	miRNA sponge, protein binding	[20–22]
GAS5	intergenic	downregulated	Suppresses cell proliferation, migration, invasion and apoptosis	miRNA sponge	[23–26]
GPC3-AS1	antisense	upregulated	Promotes cell proliferation and migration in vitro and xenograft tumor growth in vivo	epigenetic modification	[27,28]

HAND2-AS1	intergenic	upregulated	Promotes metastasis	-	[29]
HANR	intergenic	upregulated	Promotes cell proliferation, tumor growth, inhibit apoptosis and chemosensitivity to doxorubicin	protein binding	[30]
HNF1A-AS1	antisense	upregulated	Regulates tumor growth and apoptosis promotes cell proliferation and S-phase progression	miRNA sponge, protein binding	[31,32]
HOXD-AS1	intergenic	upregulated	Promotes cancer metastasis and inhibits apoptosis	miRNA sponge	[33,34]
HOXD-AS2	intergenic	upregulated	Promotes proliferation and invasion and inhibits apoptosis.	-	[35]
ICR	antisense	upregulated	Promotes portal vein tumor thrombus (PVTT) through stabilizing ICAM-1	mRNA binding	[36]
Igf2as	antisense	upregulated	Promotes cell proliferation and inhibit apoptosis	-	[37]
INTS6P1	intergenic	downregulated	Inhibits cell growth and migration	miRNA sponge	[38,39]
linc00152	intergenic	upregulated	Diagnostic candidate	chromatin remodeling	[40]
linc00176	intergenic	upregulated	Regulates cell cycle and cell survival	miRNA sponge	[41]
linc00441	bidirectional	upregulated	Promotes the proliferation, inhibits apoptosis and cell cycle arrest	epigenetic modification	[42]
linc00462	intergenic	upregulated	Promotes cancer progression	-	[43]
linc00657	intergenic	upregulated	Promotes proliferation and invasion	miRNA sponge	[44]
linc00974	intergenic	upregulated	Promotes cell proliferation and invasion, inhibit apoptosis	miRNA sponge	[45]
linc01225	intergenic	upregulated	Promotes proliferation, invasion, inhibits apoptosis	protein binding	[46]
linc01419	intergenic	upregulated	Predicted to regulate cell cycle	-	[47]
lincRNA-p21	intergenic	downregulated	Inhibits migration and invasion	miRNA sponge	[48,49]
lincRNA-UFC1	intergenic	upregulated	Promotes cell proliferation, cell migration and invasion and inhibits G0/G1 cell cycle arrest	protein binding	[50]
linc-ROR	intergenic	upregulated	Confers chemoresistance	miRNA sponge	[51]
lnc-beta-Catm	intergenic	upregulated	Promotes self-renewal of liver cscs and tumor propagation	protein binding	[52]
LncBRM	intergenic	upregulated	Promotes self-renewal maintenance of liver cscs and tumour initiation	chromatin remodeling	[53]
lncRNA00673	intergenic	upregulated	Promotes cell proliferation	-	[54]

LncRNA-AFAP1-AS1	intergenic	upregulated	Promotes cell proliferation, clonal growth, cell migration and invasion; inhibits apoptosis	-	[55,56]
LncRNA-ATB	intergenic	upregulated	Promotes EMT, cell invasion and metastasis	miRNA sponge, mRNA binding	[57–59]
lncRNA-CPS1-IT1	intronic	downregulated	Inhibits cell proliferation, migration, invasion, EMT and metastasis	protein binding	[60,61]
lncRNA-GIHCG	undefined	upregulated	Promotes cell proliferation, migration, invasion and metastasis	epigenetic modification	[62]
lncRNA-hPVT1	intergenic	upregulated	Promotes proliferation and stem cell-like property	protein binding	[63,64]
lncRNA-MUF	intronic	upregulated	Promotes EMT *via* WNT/beta-catenin signaling;	miRNA sponge, protein binding	[65]
lncSHRG	intergenic	upregulated	Promotes tumor cell proliferation	protein binding	[66]
LncSox4	non-coding transcript variant	upregulated	Promotes tumor progression	protein binding	[67]
LncTCF7	intergenic	upregulated	Promotes tumor growth and propagation, and EMT	chromatin remodeling	[68,69]
LOC728290	intergenic	downregulated	Potential tumor biomarker	-	[70]
LOC90784	intergenic	upregulated	Promotes cell proliferation, invasion and migration		[71]
MIAT	intergenic	upregulated	Promotes cell growth, motility, invasion, migration and metastasis	miRNA sponge	[72]
MVIH	intergenic	upregulated	Promotes tumor growth and intrahepatic metastasis by activating angiogenesis; promotes cell proliferation and invasion	miRNA sponge, protein binding	[74]
OCT4-pg4	pseudogene	upregulated	Promotes growth and tumorigenicity	miRNA sponge	[75]
PANDAR	anti-sense	upregulated	Promotes cell proliferation, colony formation and cycle progression	-	[76]
PCAT-1	intergenic	upregulated	Promotes cell proliferation, migration, apoptosis, invasion and metastasis	miRNA sponge	[77–80]
PCAT-14	intergenic	upregulated	Promotes proliferation, invasion, cell cycle arrest	epigenetic modification	[81]
PCNA-AS1	antisense	upregulated	Promotes tumor growth	mRNA binding	[82,83]
PDIA3P1	antisense	upregulated	Promotes cell proliferation, migration, and invasion; suppresses apoptosis	-	[84]
PRAL	intergenic	downregulated	Inhibits cell growth	protein binding	[85]

PTENP1	intergenic	downregulated	Inhibits cell proliferation, invasion, metastasis and angiogenesis; promotes apoptosis	miRNA sponge	[86,87]
PVT1	intergenic	upregulated	Promotes cell proliferation, stem cell-like properties of HCC cells, tumor progression	miRNA sponge, protein binding	[88–92]
SNHG20	sense-overlapping	upregulated	Promotes cells proliferation, migration, and invasion	chromatin remodeling	[93,94]
SNHG6	antisense	upregulated	Promotes cellular proliferation, migration, and invasion	miRNA sponge, protein binding	[95]
SNHG6-003	antisense	upregulated	Promotes cell proliferation, induces drug resistance and promotes apoptosis	miRNA sponge	[96]
SNHG7	intergenic	upregulated	Promotes cell proliferation, stem cell-like properties of HCC cells, tumor progression	-	[88]
SPRY4-IT1	intronic	upregulated	Promotes cell proliferation, colony formation, cell invasion, migration and EMT; inhibit cell cycle arrest at G0/G1 and apoptosis	epigenetic modification, protein binding	[97–99]
TINCR	intronic	upregulated	Promotes differentiation, invasion, and metastasis	miRNA sponge	[100]
TUC338	sense	upregulated	Promotes cell growth, proliferation and cell cycle progression	chromatin remodeling	[101,102]
TUG1	intergenic	upregulated	Promotes cell proliferation, colony formation, tumorigenicity; suppresses apoptosis	miRNA sponge, epigenetic modification	[103–105]
UBE2CP3	intergenic	upregulated	Induces EMT	-	[106]
UCA1	intergenic	upregulated	Promotes cell growth, proliferation, invasion and metastasis	miRNA sponge	[107–110]
WRAP53	intergenic	upregulated	Promotes cell proliferation and invasion	-	[111]
WT1-AS	bidirectional	downregulated	Promotes apoptosis by binding to the promoter region of WT1	chromatin remodeling	[112]
ZEB1-AS1	antisense	upregulated	Promotes tumor growth, EMT and metastasis	chromatin remodeling	[113]
ZFAS1	antisense	upregulated	Promotes cell invasion and metastasis	miRNA sponge	[114]

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