

**Table S7. Lists of up-regulated HCC zebrafish enriched genes in human HCC data sets.**

The HCC up-regulated zebrafish enriched genes, comprising of carcinoma-specific and overlapping enriched genes in both stages, were significantly associated with human HCC (GSE6764) (FDR q-value  $\leq 0.05$  and FWER p-value  $\leq 0.05$ ). GSEA identified the genes from this gene list which contributed maximally to the GSEA score of human HCC transcriptomic profiles.

<b>Zebrafish up-regulated HCC enriched genes in human hepatocellular carcinoma (GSE6764)</b>		
No.	Gene Symbol	Gene Name
1	ABCC2	ATP-binding cassette, sub-family C (CFTR/MRP), member 2
2	ABI1	Abl-interactor 1
3	ADAM10	ADAM metalloproteinase domain 10
4	AHR	Aryl hydrocarbon receptor
5	AIP	Aryl hydrocarbon receptor interacting protein
6	ALCAM	Activated leukocyte cell adhesion molecule
7	ANGPT1	Angiopoietin 1
8	ANXA11	Annexin A11
9	AP3B1	Adaptor-related protein complex 3, beta 1 subunit
10	APOE	Apolipoprotein E
11	APOM	Apolipoprotein M
12	ARHGEF2	Rho/Rac guanine nucleotide exchange factor (GEF) 2
13	ARPC2	Actin related protein 2/3 complex, subunit 2, 34kDa
14	ARPC5	Actin related protein 2/3 complex, subunit 5, 16kDa
15	ARRB2	Arrestin, beta 2
16	ASNS	Asparagine synthetase (glutamine-hydrolyzing)
17	BAG2	BCL2-associated athanogene 2
18	BCR	Breakpoint cluster region
19	BIRC5	Baculoviral IAP repeat-containing 5
20	BRD7	Bromodomain containing 7
21	BSG	Basigin (Ok blood group)
22	C1GALT1	Core 1 synthase, glycoprotein-N-acetylgalactosamine 3-beta-galactosyltransferase, 1
23	CACNA1D	Calcium channel, voltage-dependent, L type, alpha 1D subunit
24	CANX	Calnexin
25	CAV1	Caveolin 1, caveolae protein, 22kDa
26	CBL	Cas-Br-M (murine) ecotropic retroviral transforming sequence
27	CCL21	Chemokine (C-C motif) ligand 21
28	CCNA2	Cyclin A2
29	CCNB1	Cyclin B1
30	CCNB2	Cyclin B2
31	CCNE1	Cyclin E1

32	CCNG2	Cyclin G2
33	CCT4	Chaperonin containing TCP1, subunit 4 (delta)
34	CCT6A	Chaperonin containing TCP1, subunit 6A (zeta 1)
35	CCT7	Chaperonin containing TCP1, subunit 7 (eta)
36	CD74	CD74 molecule, major histocompatibility complex, class II invariant chain
37	CD9	CD9 molecule
38	CDC2	Cyclin-dependent kinase 1
39	CDC20	Cell division cycle 20 homolog (S. cerevisiae)
40	CDC25A	Cell division cycle 25 homolog A (S. pombe)
41	CDC27	Cell division cycle 27 homolog (S. cerevisiae)
42	CDC42EP4	CDC42 effector protein (Rho GTPase binding) 4
43	CDC45L	Cell division cycle 45 homolog (S. cerevisiae)
44	CDIPT	CDP-diacylglycerol--inositol 3-phosphatidyltransferase
45	CHKA	Choline kinase alpha
46	COL1A2	Collagen, type I, alpha 2
47	CORO1C	Coronin, actin binding protein, 1C
48	CPNE3	Copine III
49	CSNK2A1	Casein kinase 2, alpha 1 polypeptide
50	CSNK2B	Casein kinase 2, beta polypeptide
51	CTNNB1	Catenin (cadherin-associated protein), beta 1, 88kDa
52	CTSK	Cathepsin K
53	CXCR4	Chemokine (C-X-C motif) receptor 4
54	DBN1	Drebrin 1
55	DERL1	Der1-like domain family, member 1
56	DLG1	Discs, large homolog 1 (Drosophila)
57	DNAJA1	DnaJ (Hsp40) homolog, subfamily A, member 1
58	DUSP2	Dual specificity phosphatase 2
59	ECT2	Epithelial cell transforming sequence 2 oncogene
60	EDNRA	Endothelin receptor type A
61	EIF4A2	Eukaryotic translation initiation factor 4A2
62	ENPP2	Ectonucleotide pyrophosphatase/phosphodiesterase 2
63	ERGIC3	ERGIC and golgi 3
64	EXT1	Exostosin 1
65	FBXO11	F-box protein 11
66	FGFR4	Fibroblast growth factor receptor 4
67	FLNC	Filamin C, gamma
68	FTH1	Ferritin, heavy polypeptide 1
69	GAD1	Glutamate decarboxylase 1 (brain, 67kDa)
70	GBF1	Golgi brefeldin A resistant guanine nucleotide exchange factor 1
71	GPR34	G protein-coupled receptor 34
72	GRB2	Growth factor receptor-bound protein 2
73	HS6ST1	Heparan sulfate 6-O-sulfotransferase 1
74	HSP90AA1	Heat shock protein 90kDa alpha (cytosolic), class A member 1
75	HSPD1	Heat shock 60kDa protein 1 (chaperonin)
76	IL15	Interleukin 15
77	KITLG	KIT ligand
78	KRT18	Keratin 18
79	LAMB1	Laminin, beta 1
80	LPL	Lipoprotein lipase
81	MAPK1	Mitogen-activated protein kinase 1

82	MAPK3	Mitogen-activated protein kinase 3
83	MAPKAPK2	Mitogen-activated protein kinase-activated protein kinase 2
84	MAPRE1	Microtubule-associated protein, RP/EB family, member 1
85	MCM2	Minichromosome maintenance complex component 2
86	MCM3	Minichromosome maintenance complex component 3
87	MCM4	Minichromosome maintenance complex component 4
88	MCM5	Minichromosome maintenance complex component 5
89	MCM6	Minichromosome maintenance complex component 6
90	MCM7	Minichromosome maintenance complex component 7
91	MDM2	Mdm2 p53 binding protein homolog (mouse)
92	MDM4	Mdm4 p53 binding protein homolog (mouse)
93	MET	Met proto-oncogene (hepatocyte growth factor receptor)
94	MMP14	Matrix metalloproteinase 14 (membrane-inserted)
95	MOBK1A	MOB1, Mps One Binder kinase activator-like 1A (yeast)
96	MR1	Major histocompatibility complex, class I-related
97	NBN	Nibrin
98	NCKIPSD	NCK interacting protein with SH3 domain
99	NLK	Nemo-like kinase
100	NPM1	Nucleophosmin (nucleolar phosphoprotein B23, numatrin)
101	NUP107	Nucleoporin 107kDa
102	PA2G4	Proliferation-associated 2G4, 38kDa
103	PARVB	Parvin, beta
104	PIK3CA	Phosphoinositide-3-kinase, catalytic, alpha polypeptide
105	PLTP	Phospholipid transfer protein
106	POLE2	Polymerase (DNA directed), epsilon 2 (p59 subunit)
107	POP4	Processing of precursor 4, ribonuclease P/MRP subunit ( <i>S. cerevisiae</i> )
108	PPP1CB	Protein phosphatase 1, catalytic subunit, beta isozyme
109	PRKCB1	Protein kinase C, beta
110	RAB3GAP2	RAB3 GTPase activating protein subunit 2 (non-catalytic)
111	RABIF	RAB interacting factor
112	RAC1	Ras-related C3 botulinum toxin substrate 1 (rho family, small GTP binding protein Rac1)
113	RAC3	Ras-related C3 botulinum toxin substrate 3 (rho family, small GTP binding protein Rac3)
114	RACGAP1	Rac GTPase activating protein 1
115	RCC1	Regulator of chromosome condensation 1
116	RELA	v-Rel reticuloendotheliosis viral oncogene homolog A (avian)
117	RHOA	Ras homolog gene family, member A
118	RHOT1	Ras homolog gene family, member T1
119	ROCK2	Rho-associated, coiled-coil containing protein kinase 2
120	RPL10A	Ribosomal protein L10a
121	RPL13	Ribosomal protein L13
122	RPL18	Ribosomal protein L18
123	RPL19	Ribosomal protein L19
124	RPL23A	Ribosomal protein L23a
125	RPL28	Ribosomal protein L28
126	RPL30	Ribosomal protein L30
127	RPL35	Ribosomal protein L35
128	RPL4	Ribosomal protein L4
129	RPL5	Ribosomal protein L5
130	RPL7	Ribosomal protein L7

131	RPL7A	Ribosomal protein L7a
132	RPL8	Ribosomal protein L8
133	RPL9	Ribosomal protein L9
134	RPS10	Ribosomal protein S10
135	RPS18	Ribosomal protein S18
136	RPS2	Ribosomal protein S2
137	RPS21	Ribosomal protein S21
138	RPS3	Ribosomal protein S3
139	RPS5	Ribosomal protein S5
140	RPS7	Ribosomal protein S7
141	RPS8	Ribosomal protein S8
142	RRM1	Ribonucleotide reductase M1
143	RRM2	Ribonucleotide reductase M2
144	RUNX1	Runt-related transcription factor 1
145	RUVBL2	RuvB-like 2 (E. coli)
146	S100A4	S100 calcium binding protein A4
147	SCIN	Scinderin
148	SLC25A3	Solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 3
149	SP1	Sp1 transcription factor
150	SRC	v-Src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog (avian)
151	SSR2	Signal sequence receptor, beta (translocon-associated protein beta)
152	STAT5B	Signal transducer and activator of transcription 5B
153	STMN1	Stathmin 1
154	TBX2	T-box 2
155	TCF7	Transcription factor 7 (T-cell specific, HMG-box)
156	TGFB2	Transforming growth factor, beta 2
157	THY1	Thy-1 cell surface antigen
158	TIAL1	TGFB1-induced anti-apoptotic factor 1
159	TK1	Thymidine kinase 1, soluble
160	TLN1	Talin 1
161	TOM1	Target of myb1 (chicken)
162	TPR	Translocated promoter region (to activated MET oncogene)
163	TRAM1	Translocation associated membrane protein 1
164	TRPA1	Transient receptor potential cation channel, subfamily A, member 1
165	TTN	Titin
166	TXNDC5	Thioredoxin domain containing 5 (endoplasmic reticulum)
167	UBE2D2	Ubiquitin-conjugating enzyme E2D 2 (UBC4/5 homolog, yeast)
168	UBE2H	Ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast)
169	VANGL1	Vang-like 1 (van gogh, Drosophila)
170	VAPA	VAMP (vesicle-associated membrane protein)-associated protein A, 33kDa
171	VAV3	Vav 3 guanine nucleotide exchange factor
172	VEGFC	Vascular endothelial growth factor C
173	WNT4	Wingless-type MMTV integration site family, member 4
174	YWHAB	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide