

Table S2. Statistically enriched human gene sets (NES ≥ 1.5 , nominal enrichment p-value ≤ 0.05 and FDR q-value ≤ 0.25) representing biological processes and pathways in zebrafish liver hyperplasia and carcinoma identified by GSEA. The up- or down-regulated activity of a gene set is defined respectively by positive or negative values of NES. The list of genes in each significantly enriched gene set that contributed most to the enrichment results in hyperplasia and carcinoma are also listed. Within these gene lists, genes having \log_2 fold-change ≥ 1.5 and FDR-adjusted p-value ≤ 0.01 are underlined and these are termed as zebrafish enriched genes.

Zebrafish liver hyperplasia (3 months)		Enriched GO gene sets (NES ≥ 1.5 , NOM p -value ≤ 0.05 and FDR q -value ≤ 0.25) in zebrafish liver hyperplasia (3 months)	Enriched gene lists
	Up-regulated	<p>BLOOD_COAGULATION CELL_CYCLE_ARREST_GO_0007050 CHEMICAL_HOMEOSTASIS</p> <p>COAGULATION DNA_METABOLIC_PROCESS</p> <p>DNA_REPAIR</p> <p>DNA_REPLICATION</p> <p>ESTABLISHMENT_OF_LOCALIZATION</p> <p>HEMOSTASIS HOMEOSTATIC_PROCESS</p> <p>IMMUNE_SYSTEM_PROCESS</p> <p>LIPID_METABOLIC_PROCESS</p> <p>LIPID_TRANSPORT</p> <p>NEGATIVE_REGULATION_OF_MULTICELLULAR_ORGANISMAL_PROCESS REGULATION_OF_ANATOMICAL_STRUCTURE_MORPHOGENESIS REGULATION_OF_BODY_FLUID_LEVELS REGULATION_OF_RNA_METABOLIC_PROCESS</p> <p>REGULATION_OF_TRANSCRIPTION_DNA_DEPENDENT</p> <p>RESPONSE_TO_DNA_DAMAGE_STIMULUS</p> <p>RESPONSE_TO_ORGANIC_SUBSTANCE RESPONSE_TO_WOUNDING</p> <p>WOUND_HEALING</p>	<p>F10, F2, F7, F9, LMAN1, PLG, PROC CUL5, GADD45A, NBN, NOTCH2, PPM1G, TP53 AIFM3, ANGPTL3, APOA1, APOA4, APOE, BAX, BCL2, CALCB, CALR, CLCN3, CP, DERL1, EDNRA, NPC2, RHCG, SLC40A1, SOD1, SRI, TFR2, THY1 F10, F2, F7, F9, LMAN1, PLG, PROC BAX, DDB1, GADD45A, IGF1, KIN, MCM2, MCM3, MCM5, MRE11A, MSH2, MSH6, NBN, ORC3L, POLA1, POLB, POLD2, POLE2, RAD51, RAD52, RFC3, RUVBL2, SOD1, SUMO1, TINF2, TP53, XPC DDB1, GADD45A, MRE11A, MSH2, MSH6, NBN, POLA1, POLE2, RAD51, RAD52, RFC3, RUVBL2, SOD1, SUMO1, TP53, XPC IGF1, KIN, MCM2, MCM3, MCM5, MRE11A, MSH2, MSH6, NBN, ORC3L, POLA1, POLB, POLD2, POLE2, RAD51, RFC3, ABCB11, ABCD3, AGXT, AHSG, APOA1, APOA4, APOE, AQP9, ARCN1, AVP, BAX, C3orf31, CALR, CEL, CHKA, COX17, DERL1, DPH3, EDNRA, F2 F10, F2, F7, F9, LMAN1, PLG, PROC AIFM3, APOA1, APOA4, APOE, BAX, BCL2, CALCB, CALR, CLCN3, CP, DERL1, EDNRA, GPX1, LDB1, MAFB, PCDH15, RHCG, SLC40A1, SOD1, SRI, TFR2, THY1 APOA1, APOA4, AQP9, CTSW, FYN, LDB1, NFIL3, NOTCH2, MAFB, OPRK1 ACAD8, ACAD5, ACAT2, ACOX3, ANGPTL3, APOA1, APOA4, CEL, CHKA, CYP11A1, CYP2J2, ECHS1, EDF1, GPX4, HACL1, HA01, HSD11B2, LPL, MTTP, NPC2, NR2F2, PECL, PI4KB, PLTP, PPARD ABCD3, ANGPTL3, APOA1, APOA4, APOE, CHKA, GOT2, NPC2, PPARD AHSG, F2, PROC, SOD1, THY1 APOE, FGD1, MAPT, ROBO1, ROBO2, THY1 CEL, F10, F2, F7, F9, LMAN1, PLG, PROC ARNTL, ATF5, CALR, EDF1, ESR2, GATA6, HIRA, HSBP1, JUNB, LDB1, MAFA, MDFIC, MDM2, MTF1, NARG1, NEUROG1, NFKB2, NFYA, NKX2-5, NME2, NOTCH2 ARNTL, ATF5, CALR, EDF1, ESR2, GATA6, HIRA, HSBP1, JUNB, LDB1, MAFA, MDFIC, MDM2, MTF1, NARG1, NEUROG1, NFKB2, NFYA, NKX2-5, NME2, NOTCH2, NR2F2 DDB1, GADD45A, MRE11A, MSH2, MSH6, NBN, POLA1, POLE2, RAD51, RAD52, RFC3, RUVBL2, SOD1, SUMO1, TP53, XPC AQP9, BCL2, GOT2, MAFA, SOD1 AHSG, CDO1, F10, F2, F7, F9, LMAN1, NMI, PLG, PROC, RTN4RL1, SOD1 F10, F2, F7, F9, LMAN1, PLG, PROC, RTN4RL1</p>

	Down-regulated	CALCIUM_INDEPENDENT_CELL_CELL_ADHESION DEVELOPMENTAL_MATURATION FATTY_ACID_BIOSYNTHETIC_PROCESS	<u>CLDN23</u> , <u>CLDN3</u> , <u>CLDN4</u> , <u>CLDN7</u> , <u>CLDN8</u> <u>FARP2</u> , <u>KRT19</u> , <u>MYH11</u> , <u>MYOZ1</u> , <u>TTN</u> <u>CD74</u> , <u>FADS2</u> , <u>PTGDS</u> , <u>PTGES3</u> , <u>PTGS1</u>
		Enriched KEGG gene sets (NES ≥1.5, NOM <i>p</i>-value ≤0.05 and FDR <i>q</i>-value ≤0.25) in zebrafish liver hyperplasia	Enriched gene lists
	Up-regulated	HSA00230_PURINE_METABOLISM HSA00240_PYRIMIDINE_METABOLISM HSA00480_GLYTATHIONE_METABOLISM HSA00561_GLYCEROLIPID_METABOLISM HSA03030_DNA_POLYMERASE HSA03320_PPAR_SIGNALING_PATHWAY HSA04010_MAPK_SIGNALING_PATHWAY HSA04012_ERBB_SIGNALING_PATHWAY HSA04110_CELL_CYCLE HSA04115_P53_SIGNALING_PATHWAY HSA04150_MTOR_SIGNALING_PATHWAY HSA04310_WNT_SIGNALING_PATHWAY HSA04370_VEGF_SIGNALING_PATHWAY HSA04540_GAP_JUNCTION HSA04610_COMPLEMENT_AND_COAGULATION_CASCADES HSA04720_LONG_TERM_POTENTIATION HSA04730_LONG_TERM_DEPRESSION HSA04912_GNRH_SIGNALING_PATHWAY	<u>ADK</u> , <u>ADSSL1</u> , <u>AK5</u> , <u>GDA</u> , <u>NME2</u> , <u>NME4</u> , <u>PDE8B</u> , <u>POLA1</u> , <u>POLA2</u> , <u>POLD2</u> , <u>POLE2</u> , <u>RFC5</u> , <u>RRM2</u> DCTD, <u>DHODH</u> , <u>DPYD</u> , <u>NME2</u> , <u>NME4</u> , <u>NP</u> , <u>POLA1</u> , <u>POLA2</u> , <u>POLD2</u> , <u>POLE2</u> , <u>RFC5</u> , <u>RRM2</u> , <u>RRM2B</u> , <u>TK1</u> , <u>UPB1</u> <u>GGT1</u> , <u>GPX1</u> , <u>GPX4</u> , <u>MGST1</u> , <u>OPLAH</u> <u>CEL</u> , <u>GK</u> , <u>LIPA</u> , <u>LIPC</u> , <u>LPL</u> <u>POLA1</u> , <u>POLA2</u> , <u>POLB</u> , <u>POLD2</u> , <u>POLE2</u> , <u>RFC5</u> <u>ACSL5</u> , <u>APOA1</u> , <u>FABP2</u> , <u>FABP3</u> , <u>GK</u> , <u>LPL</u> , <u>PLTP</u> , <u>PPARD</u> , <u>RXRA</u> , <u>UBC</u> <u>BRAF</u> , <u>DUSP5</u> , <u>DUSP6</u> , <u>FGFR4</u> , <u>GADD45A</u> , <u>GADD45B</u> , <u>GNG12</u> , <u>MAP3K12</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>MAPK8</u> , <u>MAPKAPK2</u> , <u>MAPT</u> , <u>NFKB2</u> , <u>NLK</u> , <u>PDGFRA</u> , <u>PRKACA</u> , <u>PRKCB1</u> , <u>TP53</u> <u>BRAF</u> , <u>CAMK2A</u> , <u>CAMK2D</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>MAPK8</u> , <u>PIK3CA</u> , <u>PRKCB1</u> , <u>SRC</u> <u>CCNB1</u> , <u>CCNB2</u> , <u>CCND1</u> , <u>CDC25A</u> , <u>GADD45A</u> , <u>GADD45B</u> , <u>MCM2</u> , <u>MCM3</u> , <u>MCM5</u> , <u>MDM2</u> , <u>ORC3L</u> , <u>PCNA</u> , <u>SMAD4</u> , <u>TFDP1</u> , <u>TP53</u> , <u>YWHAB</u> <u>BAX</u> , <u>CCNB1</u> , <u>CCNB2</u> , <u>CCND1</u> , <u>CCNG2</u> , <u>GADD45A</u> , <u>GADD45B</u> , <u>IGF1</u> , <u>IGFBP3</u> , <u>MDM2</u> , <u>RRM2</u> , <u>RRM2B</u> , <u>TP53</u> <u>BRAF</u> , <u>CAB39</u> , <u>IGF1</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>PIK3CA</u> <u>CAMK2A</u> , <u>CAMK2D</u> , <u>CCND1</u> , <u>CTBP1</u> , <u>FZD8</u> , <u>MAPK8</u> , <u>NLK</u> , <u>PPARD</u> , <u>PRICKLE1</u> , <u>PRKACA</u> , <u>PRKCB1</u> , <u>TP53</u> , <u>WNT16</u> <u>MAPK1</u> , <u>MAPK3</u> , <u>MAPKAPK2</u> , <u>PIK3CA</u> , <u>PRKCB1</u> , <u>PXN</u> , <u>SRC</u> <u>DRD2</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>PDGFRA</u> , <u>PRKACA</u> , <u>PRKCB1</u> , <u>PRKG2</u> , <u>SRC</u> , <u>TUBA1A</u> <u>A2M</u> , <u>C1S</u> , <u>C3</u> , <u>C8G</u> , <u>C9</u> , <u>CFB</u> , <u>CFH</u> , <u>F10</u> , <u>F2</u> , <u>F7</u> , <u>F9</u> , <u>FGA</u> , <u>FGB</u> , <u>FGG</u> , <u>MASP2</u> , <u>PLG</u> , <u>PROC</u> , <u>SERPINA1</u> , <u>SERPINC1</u> , <u>SERPINF2</u> <u>BRAF</u> , <u>CAMK2A</u> , <u>CAMK2D</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>PRKACA</u> , <u>PRKCB1</u> <u>BRAF</u> , <u>IGF1</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>PRKCB1</u> , <u>PRKG2</u> <u>CAMK2A</u> , <u>CAMK2D</u> , <u>MAPK1</u> , <u>MAPK3</u> , <u>MAPK8</u> , <u>MMP14</u> , <u>PRKACA</u> , <u>PRKCB1</u> , <u>SRC</u>
Down-regulated	HSA00010_GLYCOLYSIS_AND_GLUconeogenesis HSA00330_ARGININE_AND_PROLINE_METABOLISM HSA01430_CELL_COMMUNICATION HSA04530_TIGHT_JUNCTION	<u>ADH5</u> , <u>ALDH7A1</u> , <u>ALDOA</u> , <u>BPGM</u> , <u>GAPDH</u> , <u>PDHB</u> , <u>PFKM</u> , <u>PGAM2</u> , <u>PKM2</u> , <u>TPI1</u> <u>ASS1</u> , <u>CKB</u> , <u>CKM</u> , <u>GOT1</u> , <u>NOS1</u> , <u>PYCR1</u> , <u>RARS2</u> <u>COL11A2</u> , <u>COL17A1</u> , <u>COL1A1</u> , <u>COL1A2</u> , <u>COL2A1</u> , <u>COL5A1</u> , <u>COL6A1</u> , <u>DSG2</u> , <u>GJC1</u> , <u>ITGB4</u> , <u>KRT15</u> , <u>KRT17</u> , <u>KRT18</u> , <u>KRT19</u> , <u>KRT8</u> , <u>VIM</u> <u>CLDN23</u> , <u>CLDN3</u> , <u>CLDN4</u> , <u>CLDN7</u> , <u>CLDN8</u> , <u>GNAI2</u> , <u>MYH2</u> , <u>MYH4</u> , <u>MYH6</u> , <u>MYL2</u> , <u>MYL7</u> , <u>MYL9</u> , <u>NRAS</u> , <u>OCLN</u> , <u>PPP2R1A</u> , <u>PPP2R1B</u> , <u>RRAS</u> , <u>TJP3</u>	
Zebrafish HCC (9 months)		Enriched GO gene sets (NES ≥1.5, NOM <i>p</i>-value ≤0.05 and FDR <i>q</i>-value ≤0.25) in zebrafish HCC (9 months)	Enriched gene lists
	Up-regulated	ACTIN_CYTOSKELETON_ORGANIZATION_AND_BIOGENESIS ACTIN_FILAMENT_BASED_PROCESS AMINO_ACID_AND_DERIVATIVE_METABOLIC_PROCESS AMINO_ACID_METABOLIC_PROCESS ANGIOGENESIS ANTI_APOPTOSIS	<u>ADRA2A</u> , <u>ARHGEF2</u> , <u>ARPC5</u> , <u>CDC42</u> , <u>CXCL12</u> , <u>DBN1</u> , <u>DLG1</u> , <u>RAC1</u> , <u>RAC3</u> , <u>RACGAP1</u> , <u>RHOA</u> , <u>RND1</u> , <u>SCIN</u> , <u>TTN</u> <u>ADRA2A</u> , <u>ARHGEF2</u> , <u>ARPC5</u> , <u>CDC42</u> , <u>CXCL12</u> , <u>DBN1</u> , <u>DLG1</u> , <u>MYH10</u> , <u>RAC1</u> , <u>RAC3</u> , <u>RACGAP1</u> , <u>RHOA</u> , <u>RND1</u> , <u>SCIN</u> , <u>TTN</u> <u>AARS</u> , <u>ASMTL</u> , <u>DHPS</u> , <u>ETNK1</u> , <u>FPGS</u> , <u>GAD1</u> , <u>GGT1</u> , <u>GSTZ1</u> , <u>HGD</u> , <u>MAT1A</u> , <u>MSRA</u> , <u>PAH</u> , <u>SMS</u> , <u>TGFB2</u> , <u>WARS</u> , <u>YARS</u> <u>AARS</u> , <u>ALDH18A1</u> , <u>CDO1</u> , <u>FPGS</u> , <u>GAD1</u> , <u>GCLM</u> , <u>GGT1</u> , <u>GSTZ1</u> , <u>HGD</u> , <u>KARS</u> , <u>MAT1A</u> , <u>MSRA</u> , <u>PAH</u> , <u>SMS</u> , <u>WARS</u> , <u>YARS</u> <u>ANGPT1</u> , <u>ANGPTL3</u> , <u>C1GALT1</u> , <u>CANX</u> , <u>PLG</u> , <u>RUNX1</u> , <u>SHH</u> , <u>TGFB2</u> , <u>THY1</u> <u>ANXA4</u> , <u>BCL2</u> , <u>BCL2L1</u> , <u>BIRC5</u> , <u>BNIP2</u> , <u>BNIP3L</u> , <u>CDC2</u> , <u>DAD1</u> , <u>GPX1</u> , <u>HSPA9</u> , <u>NOTCH2</u> , <u>NPM1</u> , <u>RELA</u> , <u>TIAF1</u> , <u>TPT1</u> , <u>TXNDC5</u>

	<p>BIOSYNTHETIC_PROCESS</p> <p>CARBOHYDRATE_BIOSYNTHETIC_PROCESS CARBOXYLIC_ACID_METABOLIC_PROCESS CATION_HOMEOSTASIS</p> <p>CELL_CELL_SIGNALING</p> <p>CELL_CYCLE_CHECKPOINT_GO_0000075 CELL_PROLIFERATION_GO_0008283</p> <p>CELL_SURFACE_RECEPTOR_LINKED_SIGNAL_TRANSDUCTION_GO_0007166</p> <p>CELLULAR_BIOSYNTHETIC_PROCESS</p> <p>CELLULAR_CATION_HOMEOSTASIS</p> <p>CELLULAR_HOMEOSTASIS</p> <p>CELLULAR_LIPID_METABOLIC_PROCESS</p> <p>CELLULAR_LOCALIZATION</p> <p>CELLULAR_PROTEIN_CATABOLIC_PROCESS</p> <p>CHEMICAL_HOMEOSTASIS</p> <p>CYTOKINE_PRODUCTION DEFENSE_RESPONSE</p> <p>EPITHELIAL_TO_MESENCHYMAL_TRANSITION ESTABLISHMENT_OF_CELLULAR_LOCALIZATION</p> <p>ESTABLISHMENT_OF_PROTEIN_LOCALIZATION</p> <p>G_PROTEIN_COUPLED_RECEPTOR_PROTEIN_SIGNALING_PATHWAY</p> <p>GENERATION_OF_PRECURSOR_METABOLITES_AND_ENERGY GLYCEROPHOSPHOLIPID_METABOLIC_PROCESS GOLGI_VESICLE_TRANSPORT</p> <p>HOMEOSTATIC_PROCESS</p> <p>IMMUNE_RESPONSE</p> <p>IMMUNE_SYSTEM_PROCESS</p> <p>INTRACELLULAR_PROTEIN_TRANSPORT</p> <p>INTRACELLULAR_TRANSPORT</p>	<p>ADK, ALG5, ALG8, APOA1, ASMTL, CD74, CHPT1, CTPS, DHCR7, EEF1A1, EIF3C, EIF3E, EIF3F, EIF4A2, ETNK1, EXT1, FADS2, GALNT2, GCHFR, GYS2, HS6ST1, HSP90AA1, HSP90AB1, INHBB</p> <p>EXT1, GYS2, HS6ST1, MPDU1, PMM2</p> <p>AGXT, CD74, FADS2, HAACL1, HAO1, IGF1</p> <p>BCL2, CALR, CLCN3, CP, CXCL12, CXCR4, EDNRA, FTH1, SOD1, TFR2, THY1</p> <p>AGT, APOE, CCL21, CD9, EFN1, EFN2, FGF18, FGF4, FGF5, FGF6, GAD1, GCHFR, GJA3, GJB2, GRB2, IL15, INHBB, MAPK1, MBP</p> <p>BIRC5, CCNA2, CCNG2, CDC45L, NBN, TGFB1</p> <p>ABII, ADRA2A, ARHGEF2, CD74, CDC25A, CDC27, CLEC11A, COL18A1, CTBP1, DLG1, FABP3, FGF10, FGF18, FGF4, FGF5, FGF6, FLT1, FTH1, GCG, GPX1, IGF1, IL15</p> <p>ABII, ADRA2A, AGT, APOA1, APOE, BIRC2, BSG, C3, CBL, CXCL12, CXCR4, EDNRA, ENPP2, FGF5, FGFR4, FYN, GCG</p> <p>ADK, ASMTL, CD74, EEF1A1, EIF3C, EIF3E, EIF3F, EIF4A2, ETNK1, EXT1, FADS2, GCHFR, HS6ST1, HSP90AA1, HSP90AB1, INHBB, PAH, PMM2, RPL13, RPL18, RPL19, RPL23A, RPL26, RPL28, RPL30</p> <p>BCL2, CALR, CLCN3, CP, CXCL12, CXCR4, EDNRA, FTH1, SOD1, TFR2, THY1</p> <p>AIFM3, BCL2, BCL2L1, CALR, CLCN3, CP, CXCL12, CXCR4, EDNRA, FTH1, GPX1, PCDH15, RHCG, RHOT1, SOD1, TFR2, THY1</p> <p>APOA1, APOM, CD74, CHPT1, DHCR7, ETNK1, FADS2, GPX4, HAACL1, HAO1, LPL, PI4KB, PIK3C2A, PIK3R1, SERINC1, SHH, SOD1, WWOX</p> <p>AGXT, AP3B1, APOA1, APOE, ARCN1, BCL2, BCL2L1, BIRC5, CALR, CANX, CD74, CDH1, DERL1, DOPEY2, ERGIC3, GBF1, GOSR2, GSK3B, HSP90AA1, KDELR2, KRT18, LMAN1, MYH10, NCKIPSD, NPM1, NUP107, PDIA3, PDIA4, PEX3, RAB14</p> <p>CDC20, DERL1, EDEM1, RNF11, SYVN1, UBE2D2, UBE2G1, UBE2H, UBE2L3</p> <p>AIFM3, ANGPTL3, APOA1, APOE, BCL2, BCL2L1, CALR, CAV1, CLCN3, CP, CXCL12, CXCR4, DERL1, EDNRA, FTH1, RHCG, SOD1, TFR2, THY1</p> <p>APOA1, INHBB, SOD1, TGFB2, TLR3</p> <p>AHSG, BCL2, BNIP3L, CCL21, CXCR4, HP, INHBB, RAC1, RELA, TGFB1, TIAL1, TLR3</p> <p>CTNNA1, S100A4, TGFB1, TGFB2, TGFB3</p> <p>AGXT, AP3B1, APOA1, APOE, ARCN1, BCL2, BCL2L1, BIRC5, CALR, CANX, CD74, CDH1, DERL1, DOPEY2, ERGIC3, GBF1, GOSR2, GSK3B, HSP90AA1, KDELR2, KRT18, LMAN1, MYH10, NCKIPSD, NPM1, NUP107, PDIA3, PDIA4, PEX3, RAB14, RAB3GAP2, RHOT1</p> <p>AGXT, AIP, ANGPTL3, AP3B1, APOA1, ARCN1, CALR, CANX, CD74, CDH1, DERL1, GSK3B, KDELR2, NCKIPSD, NPM1, PDIA3, PEX3, RAB3GAP2, SNAPIN, SSR2, TGFB1, TPR, TRAM1</p> <p>ADRA2A, APOA1, APOE, C3, CXCL12, CXCR4, EDNRA, ENPP2, GCG, GPR34</p> <p>APOM, GPX4, GSK3B, GYS2, ISL1, PDX1, SLC25A3</p> <p>APOA1, DPM1, PI4KB, PIGF, PIK3C2A, PIK3R1, SERINC1</p> <p>COPB2, COPZ1, DOPEY2, ERGIC3, GBF1, GOLGA5, GOSR2, KRT18, LMAN1, LMAN2L, RAB14, RER1, SCAMP3, SEC22A, TMED10, ZW10</p> <p>AIFM3, ANGPTL3, APOA1, APOE, BCL2, BCL2L1, CALR, CAV1, CLCN3, CP, CXCL12, CXCR4, DERL1, EDNRA, FTH1, GPX1, MAFB, PCDH15, RHCG, RHOT1, SOD1, TFR2, THY1</p> <p>ANXA11, APOA1, AQP9, BCL2, BNIP3L, CCL21, CD74, CTSW, CXCL12, CXCR4, FTH1, FYN, IL15, MBP, MRI, NFIL3, PAX5, TCF7, TGFB1, TGFB2, THY1, VTN</p> <p>ANXA11, APOA1, AQP9, BCL2, BNIP3L, CCL21, CD74, CDC42, CTSW, CXCL12, CXCR4, FTH1, FYN, IL15, MAFB, MBP, NFIL3, NOTCH2</p> <p>AGXT, AP3B1, ARCN1, CALR, CD74, CDH1, DERL1, GSK3B, KDELR2, NCKIPSD, NPM1, PDIA3, PEX3, RAB3GAP2, SNAPIN, SSR2, TGFB1, TPR, TRAM1</p> <p>AGXT, ANP32A, AP3B1, AP3M1, APOE, APPBP2, ARCN1, BCL2, BCL2L1, CALR, CD74, CDH1, COPZ1, CRYAA, DERL1, DOPEY2, ERGIC3, GBF1, GOSR2, GSK3B, HSP90AA1, KDELR2, KHDRBS1, KIF1B, KRT18, LMAN1, MTX2, MYH10, NCKIPSD, NPM1, NUP107, PDIA3, PEX3, RAB14, RAB3GAP2, RHOT1, RPL11, SEC22A, SNAPIN, SSR2, STARD3, TGFB1, TIMM17A, TMED10, TOM1</p>
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ION_HOMEOSTASIS	AIFM3, BCL2, BCL2L1, CALR, CLCN3, CP, CXCL12, CXCR4, EDNRA, FTH1, RHCG, SOD1, TFR2, THY1
ION_TRANSPORT	CACNA1D, FXYD1, KCNC1, KCNJ1, RHCG, SGK1, SLC34A2, SLC8A1, TRPA1, UCP3
LIPID_BIOSYNTHETIC_PROCESS	APOA1, CD74, CHPT1, DHCR7, ETNK1, FADS2, PI4KB, PIK3C2A, SOD1
LIPID_TRANSPORT	ABCD3, ANGPTL3, APOA1, APOE, CAV1, CHKA
MACROMOLECULE_BIOSYNTHETIC_PROCESS	AARS, ALG1, ALG5, ALG8, APOA1, CEBPG, DHPS, DPM1, EIF1A1, EIF2B1, EIF2S3, EIF3C, EIF3E, EIF3F, EIF4A2, EXT1, GALNT2, GYS2, HS6ST1, INHBB, MGAT4B, MPDU1, NACA, PIGF, PMM2, RPL11, RPL13, RPL18, RPL19, RPL23A, RPL26, RPL28, RPL30, RPL34, RPL35
MACROMOLECULE_LOCALIZATION	AGXT, AIP, ANGPTL3, AP3B1, APOA1, ARCNI, BIRC5, CALR, CANX, CD74, CDH1, DERL1, GSK3B, KDELR2, NCKIPSD, NPM1, NUP107, PDIA3, PEX3, RAB3GAP2, SNAPIN, SSR2, TGFB1, TPR, TRAM1
MEMBRANE_LIPID_METABOLIC_PROCESS	APOA1, APOM, CHPT1, ETNK1, GPX4, LPL, PI4KB, PIK3C2A, PIK3R1, SERINC1
MEMBRANE_ORGANIZATION_AND_BIOGENESIS	AGRN, AHSG, BCL2, BCL2L1, CBL, CD9, CORO1C, GOSR2, PI4KB, PICALM, RAB1E, RAC1, SOD1, VAPA
MONOCARBOXYLIC_ACID_METABOLIC_PROCESS	AGXT, CD74, FADS2, HACL1, HAO1, IGF1
MONOVALENT_INORGANIC_CATION_TRANSPORT	KCNC1, KCNJ1, SGK1, SLC8A1, UCP3
MULTI_ORGANISM_PROCESS	AGT, BCL2, BNIP3L, C9, CXCL12, CXCR4, DERL1, FLT1, MAFF, PPARC, SOD1, TGFB1, TLR3, TNIP1
NEGATIVE_REGULATION_OF_APOPTOSIS	ANXA4, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CD74, CDC2, DAD1, GPX1, GSK3B, HSPA9, KRT18, MAPK8, NME2, NOTCH2, NPM1, PIMI, PROC, RELA, SOD1, TIAF1, TPT1, TXNDC5
NEGATIVE_REGULATION_OF_BIOLOGICAL_PROCESS	AB11, ADAM10, AHSG, AMBP, ANXA4, APOA1, ARHGEF2, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CD74, CDC2, CDC42, CDC45L, COL18A1, CTBP1, DAD1, DLG1, FABP3, FTH1
NEGATIVE_REGULATION_OF_DEVELOPMENTAL_PROCESS	AHSG, ANXA4, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CD74, CDC2, DAD1, GPX1, GSK3B, HSPA9, KRT18, MAFB, MAPK8, NME2, NOTCH1, NOTCH2, NPM1, PIMI, PLG, PROC, RELA, SHH, SOD1, THY1, TIAF1, TPT1, TXNDC5
NEGATIVE_REGULATION_OF_METABOLIC_PROCESS	ARHGEF2, CDC42, CDC45L, ID1, ID2, IGF1, INHBB, KLF12, MAPRE1, MDM2, MDM4, PA2G4, SOD1, STAT3, TBX2, TGFB1, TP63
NEGATIVE_REGULATION_OF_MULTICELLULAR_ORGANISMAL_PROCESS	AHSG, PROC, SOD1, TGFB2, THY1
NEGATIVE_REGULATION_OF_PROGRAMMED_CELL_DEATH	ANXA4, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CD74, CDC2, DAD1, GPX1, GSK3B, HSPA9, KRT18, MAPK8, NME2, NOTCH2, NPM1, PIMI, PROC, RELA, SOD1, TIAF1, TPT1, TXNDC5
NITROGEN_COMPOUND_BIOSYNTHETIC_PROCESS	ASMTL, ETNK1, GCHFR, HSP90AA1, HSP90AB1, PAH, TGFB2
ORGAN_MORPHOGENESIS	ANGPTL3, C1GALT1, CANX, COL18A1, FGF10, FLI1, LAMB1, NKX6-1, NOTCH2, PAX3, PAX5, PAX6, PDX1, PLG, PROX1, RUNX1, SHH, SOD1, TGFB1, TGFB2, TGFB3, THY1
ORGANIC_ACID_METABOLIC_PROCESS	AGXT, CD74, FADS2, FPGS, GAD1, GGT1, GSTZ1, HACL1, HAO1, IGF1, MAT1A, MSRA, PAH
PHOSPHOINOSITIDE_METABOLIC_PROCESS	DPM1, PI4KB, PIGF, PIK3C2A, PIK3R1
PHOSPHOLIPID_BIOSYNTHETIC_PROCESS	APOA1, CHPT1, DPM1, ETNK1, PI4KB, PIGF, PIK3C2A
PHOSPHOLIPID_METABOLIC_PROCESS	APOA1, CHPT1, ETNK1, GPX4, LPL, PI4KB, PIK3C2A, PIK3R1, SERINC1
PHOSPHORYLATION	AB11, ADAM10, BCR, CCND1, CSNK2A1, CTBP1, GLYCTK, GSK3B, IGF1, IGF1R, MAPK3, MAPK8, MAPKAP2, MCM7, MKNK2, MOBKL1A, PIK3R1, PRKCB1, PIMI, ROCK2
POSITIVE_REGULATION_OF_CELL_PROLIFERATION	ADRA2A, CLEC11A, FGF10, FGF18, FGF4, FLT1, IGF1, IL15, LAMB1, NME2, TBX2, TGFB2, TGFB2, TSPAN31
POSITIVE_REGULATION_OF_CELLULAR_COMPONENT_ORGANIZATION_AND_BIOGENESIS	AHSG, CBL, CDC42, CDC42EP4, ROBO2
POSITIVE_REGULATION_OF_CELLULAR_PROCESS	ADRA2A, AHSG, AIFM3, ANGPTL3, APOE, ARNTL, ASNS, BIRC2, BIRC5, BNIP3L, CBL, CCND1, CDC42, CDC42EP4, CDH1, CLEC11A, CLOCK, ECT2, EGR1, FGF10, FGF18, FGF4, FLT1
POST_TRANSLATIONAL_PROTEIN_MODIFICATION	AB11, ADAM10, BCR, CBL, CCND1, CSNK2A1, CTBP1, GAD1, GLYCTK, GSK3B, IGF1, IGF1R, MAPK3, MAPK8, MAPKAP2, MDM2, MKNK2, MOBKL1A
PROTEIN_AMINO_ACID_PHOSPHORYLATION	AB11, ADAM10, BCR, CCND1, CSNK2A1, CTBP1, GLYCTK, GSK3B, IGF1, IGF1R, MAPK3, MAPK8, MAPKAP2, MKNK2, MOBKL1A, PIMI, PRKCB1, ROCK2, SGK1, TGFB1
PROTEIN_FOLDING	AIP, BAG2, CCT4, CCT6A, CCT7, DNAJA1, HSP90AA1, HSPE1, LMAN1, LRPAP1, RUVBL2

PROTEIN_KINASE_CASCADE	ADRA2A, AMBP, BIRC2, CXCR4, ECT2, FGFR1, FYN, GADD45G, HMOX1, MAPK8, MAPKAPK2, MKNK2, NLK, RELA, RHOA, SOD1, SRC, STAT3, STAT5B
PROTEIN_LOCALIZATION	AGXT, AIP, ANGPTL3, AP3B1, APOA1, ARCNI, BIRC5, CALR, CANX, CD74, CDH1, DERL1, GSK3B, KDELR2, NCKIPSD, NPM1, PDIA3, PEX3, RAB3GAP2, SNAPIN, SSR2, TGFB1, TPR, TRAM1
PROTEIN_METABOLIC_PROCESS	ABI1, ADAM10, ADPRH, AGRN, AIP, AKT2, ALG5, ALG8, ANGPTL3, APOA1, APOE, ARHGEF2, BAG2, BCR, CBL, CCND1, CCT4, CCT6A, CCT7, CD74, CD9, CDC20, CDC42, CLDN14, CSNK2A1, CTBP1, CTSK, CXCL12
PROTEIN_MODIFICATION_PROCESS	ABI1, ADAM10, ADPRH, AKT2, ALG5, ALG8, BCR, CBL, CCND1, CSNK2A1, CTBP1, FBXO11, GAD1, GALNT2, GLYCTK, GSK3B, IGFBP3
PROTEIN_TARGETING	AGXT, CALR, CDH1, GSK3B, NCKIPSD, PDIA3, SSR2, TGFB1, TPR, TRAM1
PROTEIN_TRANSPORT	AGXT, AIP, ANGPTL3, AP3B1, ARCNI, CALR, CD74, CDH1, DERL1, GSK3B, KDELR2, NCKIPSD, NPM1, PDIA3, PEX3, RAB3GAP2, SNAPIN, SSR2, TGFB1, TPR, TRAM1
RAS_PROTEIN_SIGNAL_TRANSDUCTION	ADRA2A, APOA1, APOE, ARHGAP29, GNB1, GRAP, GRB2, IGF1, NOTCH2, RAC1, RHOA
REGULATION_OF_ANATOMICAL_STRUCTURE_MORPHOGENESIS	CDO1, CDC42, CDC42EP4, ROBO2, THY1
REGULATION_OF_APOPTOSIS	AIFM3, ANXA4, APOE, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CALR, CD74, CDC2, DAD1, GPX1, GSK3B, HSPA9, HSPD1, IGFBP3, KRT18, MAPK1, MAPK8, NME2, NOTCH2, NPM1, PIM1, PLG
REGULATION_OF_CELL_DIFFERENTIATION	IGFBP3, MAFB, NME2, NOTCH1, NOTCH2, RUNX1, SCIN, SHH, TGFB2
REGULATION_OF_CELL_MIGRATION	ANGPTL3, LAMB1, PLG, SHH, THY1
REGULATION_OF_CELL_PROLIFERATION	ABI1, ADRA2A, ARHGEF2, CLEC11A, COL18A1, CTBP1, FABP3, FGF10, FGF18, FGF4, FLT1, FTH1, GPX1, IGF1, IL15, LAMB1, MDM2, MDM4, NME2, NOTCH2, NPM1, PLG, SCIN
REGULATION_OF_CELLULAR_COMPONENT_ORGANIZATION_AND_BIOGENESIS	AHSG, APOE, ARHGEF2, CBL, CDC42, CDC42EP4, CXCL12, EIF3C, EIF3E, EIF3F, EIF4A2, MAPRE1, RAC1, ROBO2, THY1
REGULATION_OF_CELLULAR_METABOLIC_PROCESS	AHR, ANGPTL3, ARHGEF2, ARNTL, ATF5, BRD7, CALR, CCND1, CDC45L, CLOCK, CXCL12, EGRI, EIF3C, EIF3E, EIF3F, EIF4A2, GATA6
REGULATION_OF_CELLULAR_PROTEIN_METABOLIC_PROCESS	ANGPTL3, ARHGEF2, CCND1, CXCL12, EIF3C, EIF3E, EIF3F, EIF4A2, IGFBP3, INHBB, MAPRE1, SHH, TGFB1, TLR3
REGULATION_OF_DEVELOPMENTAL_PROCESS	AHSG, AIFM3, ANGPTL3, ANXA4, APOE, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CALR, CD74, CDC2, CDC42, CDC42EP4, DAD1, GPX1, GSK3B, HSPA9, HSPD1, IGFBP3, KRT18, MAFB
REGULATION_OF_METABOLIC_PROCESS	AHR, ANGPTL3, ARHGEF2, ARNTL, ATF5, BRD7, CALR, CCND1, CDC42, CDC45L, CLOCK, CXCL12, EGRI, EIF3C, EIF3E, EIF3F, EIF4A2, GATA6
REGULATION_OF_MITOTIC_CELL_CYCLE	ASNS, BIRC5, DLG1, RCC1, TGFB1
REGULATION_OF_MOLECULAR_FUNCTION	ADRA2A, AIFM3, ANGPTL3, BCL2, BIRC5, CCND1, CCNG1, CDC25A, CXCR4, EDNRA, GADD45G, GPX1, ID1, ID2, NPM1
REGULATION_OF_PROGRAMMED_CELL_DEATH	AIFM3, ANXA4, APOE, ASNS, BCL2, BCL2L1, BIRC5, BNIP2, BNIP3L, CALR, CD74, CDC2, DAD1, GPX1, GSK3B, HSPA9, HSPD1, IGFBP3, KRT18, MAPK1, MAPK8, NME2, NOTCH2, NPM1, PIM1, PLG
REGULATION_OF_PROTEIN_METABOLIC_PROCESS	ANGPTL3, ARHGEF2, CCND1, CDC42, CXCL12, EIF3C, EIF3E, EIF3F, EIF4A2, IGFBP3, INHBB, MAPRE1, MDM2, MDM4, SHH, TGFB1, TLR3
REGULATION_OF_TRANSFERASE_ACTIVITY	ADRA2A, CCND1, CCNG1, CDC25A, CXCR4, GADD45G, SERINC1, SOD1, THY1
RESPONSE_TO_ORGANIC_SUBSTANCE	AQP9, BCL2, GYS2, RELA, SOD1
RHO_PROTEIN_SIGNAL_TRANSDUCTION	ADRA2A, APOA1, APOE, ARHGAP29, RAC1, RHOA, APOA1, AQP9, CANX, CLCNKA, COPZ1, DOPEY2, ERGIC3, GBF1, GOSR2, INHBB, KCNJ1, KRT18, LMAN1, PDIA4, RAB14, RIMS1, SCIN, SNAPIN, TMED10
SIGNAL_TRANSDUCTION	ABI1, ADAM10, ADRA2A, AGRN, AGT, AIFM3, ALCAM, AMBP, ANGPT1, ANXA4, APOA1, APOE, ARHGAP29, BCAR3, BCL2L1, BIRC2, BSG, C3, CBL, CCNA2, CD74, ADRA2A, APOA1, APOE, ARHGAP29, GNB1, GRAP, GRB2, IGF1, NOTCH2, PTPLAD1, RAC1, RHOA, RUNC3A, VAV3
SMALL_GTPASE_MEDIATED_SIGNAL_TRANSDUCTION	CDO1, CHST5, EXT1, GCLM, GPX1, HS6ST1, MSRA, SMS, SOD1, TPST1
SULFUR_METABOLIC_PROCESS	

	<p>TRANSLATION</p> <p>TRANSPORT</p> <p>TRNA_METABOLIC_PROCESS VASCULATURE_DEVELOPMENT</p> <p>VESICLE_MEDIATED_TRANSPORT</p>	<p>AARS, CEBPG, DHPS, <u>EEF1A1</u>, EIF2B1, EIF2S3, EIF3C, EIF3E, EIF3F, EIF4A2, INHBB, NACA, RPL11, <u>RPL13</u>, <u>RPL18</u>, <u>RPL19</u>, <u>RPL23A</u>, <u>RPL26</u>, <u>RPL28</u>, <u>RPL30</u>, <u>RPL34</u>, <u>RPL35</u>, <u>RPL4</u>, <u>RPL5</u>, <u>RPL6</u>, <u>RPL7</u>, <u>RPL7A</u>, <u>RPL8</u>, <u>RPL9</u>, <u>RPS10</u>, <u>RPS11</u>, <u>RPS12</u>, <u>RPS2</u>, <u>RPS3</u>, <u>RPS3A</u>, <u>RPS5</u>, <u>RPS9</u>, <u>TLR3</u>, <u>TNIP1</u>, WARS, YARS</p> <p><u>ABCB11</u>, <u>ABCC2</u>, <u>ABCD3</u>, AGXT, <u>AHSG</u>, AIP, <u>ANGPTL3</u>, <u>AP3B1</u>, <u>APOA1</u>, <u>APOE</u>, <u>AQP9</u>, <u>ARCN1</u>, <u>BCL2</u>, <u>BCL2L1</u>, <u>CACNA1D</u>, <u>CALR</u>, <u>CAV1</u>, <u>CBL</u>, <u>CD74</u>, <u>CDH1</u>, <u>CHKA</u>, <u>CORO1C</u>, <u>CPNE3</u>, <u>DERL1</u>, <u>EDNRA</u>, <u>ERGIC3</u>, <u>FXYD1</u>, <u>GBF1</u>, <u>GJB2</u></p> <p>AARS, KARS, <u>POP4</u>, SARS, SSB, WARS, YARS</p> <p><u>ANGPTL3</u>, <u>C1GALT1</u>, <u>CANX</u>, <u>PLG</u>, <u>RUNX1</u>, <u>SHH</u>, <u>TGFB2</u>, <u>THY1</u></p> <p><u>AHSG</u>, <u>CBL</u>, <u>COPZ1</u>, <u>CORO1C</u>, <u>CPNE3</u>, <u>DOPEY2</u>, <u>ERGIC3</u>, <u>GBF1</u>, <u>GOSR2</u>, <u>KRT18</u>, <u>LMAN1</u>, <u>LRPAP1</u>, <u>PI4KB</u>, <u>PICALM</u>, <u>PPT1</u>, <u>RAB14</u>, <u>RAB1A</u>, <u>RAC1</u>, <u>RIMS1</u>, <u>SCIN</u>, <u>SEC22A</u>, <u>SEC23B</u>, <u>TMED10</u>, <u>TOM1</u>, <u>VPS33B</u></p>
Down-regulated	<p>APOPTOTIC_NUCLEAR_CHANGES APOPTOTIC_PROGRAM</p> <p>CASPASE_ACTIVATION CELL_CYCLE_ARREST_GO_0007050 CELL_DEVELOPMENT</p> <p>CELL_STRUCTURE_DISASSEMBLY_DURING_APOPTOSIS</p> <p>CHROMOSOME_SEGREGATION COVALENT_CHROMATIN_MODIFICATION DNA_METABOLIC_PROCESS</p> <p>DNA_PACKAGING DNA_REPAIR</p> <p>GROWTH</p> <p>INDUCTION_OF_APOPTOSIS_BY_EXTRACELLULAR_SIGNALS INDUCTION_OF_APOPTOSIS_BY_INTRACELLULAR_SIGNALS MICROTUBULE_BASED_PROCESS</p> <p>NEGATIVE_REGULATION_OF_CELL_CYCLE NEGATIVE_REGULATION_OF_GROWTH NUCLEAR_ORGANIZATION_AND_BIOGENESIS POSITIVE_REGULATION_OF_CASPASE_ACTIVITY POSITIVE_REGULATION_OF_DEVELOPMENTAL_PROCESS</p> <p>POSITIVE_REGULATION_OF_HYDROLASE_ACTIVITY RESPONSE_TO_HORMONE_STIMULUS RESPONSE_TO_OXIDATIVE_STRESS</p>	<p><u>AIFM1</u>, <u>BAX</u>, <u>CASP3</u>, <u>DFFB</u>, <u>TOP2A</u></p> <p><u>AIFM1</u>, <u>APAF1</u>, <u>BAD</u>, <u>BAX</u>, <u>CASP3</u>, <u>CASP8</u>, <u>CASP8AP2</u>, <u>DFFB</u>, <u>F2</u>, <u>LCK</u>, <u>TOP2A</u>, <u>TP53</u></p> <p><u>APAF1</u>, <u>BAX</u>, <u>CASP8AP2</u>, <u>F2</u>, <u>LCK</u>, <u>TP53</u></p> <p><u>BTG4</u>, <u>CDKN1B</u>, <u>CUL3</u>, <u>CUL5</u>, <u>PPM1G</u>, <u>TP53</u></p> <p><u>AIFM1</u>, <u>ANXA1</u>, <u>APAF1</u>, <u>BAD</u>, <u>BAX</u>, <u>BCL6</u>, <u>BOK</u>, <u>BTG1</u>, <u>BTG4</u>, <u>CASP3</u>, <u>CASP6</u>, <u>CASP8</u>, <u>CASP8AP2</u>, <u>CDK5R1</u>, <u>CDKN1B</u>, <u>CSE1L</u>, <u>CUL3</u>, <u>CUL5</u>, <u>DAZL</u>, <u>DDX41</u>, <u>DFFB</u>, <u>F2</u>, <u>GADD45B</u>, <u>GSTM3</u>, <u>GSTP1</u></p> <p><u>CHAF1A</u>, <u>DEFB</u>, <u>HELLS</u>, <u>MAP3K12</u>, <u>MSH2</u>, <u>NUSAP1</u>, <u>PHB</u>, <u>RSF1</u>, <u>TOP2A</u></p> <p><u>ARL8B</u>, <u>CENPF</u>, <u>NUSAP1</u>, <u>SRPK1</u>, <u>TOP2A</u></p> <p><u>HELLS</u>, <u>HTATIP</u>, <u>MAP3K12</u>, <u>MYST3</u>, <u>PHB</u></p> <p><u>AIFM1</u>, <u>BAX</u>, <u>CDT1</u>, <u>DFFB</u>, <u>DNMT3B</u>, <u>DUT</u>, <u>EGF</u>, <u>FEN1</u>, <u>GMNN</u>, <u>HELLS</u>, <u>HMGB2</u>, <u>MSH2</u>, <u>NOL8</u>, <u>PMS1</u>, <u>PMS2</u>, <u>RAD51</u>, <u>RAD52</u>, <u>TOP2A</u>, <u>TP53</u>, <u>UNG</u>, <u>XPC</u></p> <p><u>CHAF1A</u>, <u>DFFB</u>, <u>HELLS</u>, <u>NAP1L1</u>, <u>NUSAP1</u>, <u>RSF1</u>, <u>TOP2A</u></p> <p><u>FEN1</u>, <u>HMGB2</u>, <u>MSH2</u>, <u>PMS1</u>, <u>PMS2</u>, <u>RAD51</u>, <u>RAD52</u>, <u>TP53</u>, <u>UNG</u>, <u>XPC</u></p> <p><u>BCL6</u>, <u>BMPR1B</u>, <u>CAPRIN2</u>, <u>CDKN1B</u>, <u>ING5</u>, <u>RTN4RL2</u>, <u>TP53</u>, <u>XRN2</u></p> <p><u>BAX</u>, <u>CASP8AP2</u>, <u>DAXX</u>, <u>PDCD6</u>, <u>SST</u></p> <p><u>AIFM1</u>, <u>BAX</u>, <u>CUL3</u>, <u>CUL5</u>, <u>TP53</u></p> <p><u>GSN</u>, <u>KIF23</u>, <u>KIFAP3</u>, <u>LIMA1</u>, <u>LRPPRC</u>, <u>MID1IP1</u>, <u>NUSAP1</u>, <u>PRC1</u>, <u>RHOT2</u></p> <p><u>BTG4</u>, <u>CDKN1B</u>, <u>CUL3</u>, <u>CUL5</u>, <u>GMNN</u>, <u>PPM1G</u>, <u>TP53</u></p> <p><u>BCL6</u>, <u>CAPRIN2</u>, <u>CDKN1B</u>, <u>ING5</u>, <u>SERTAD2</u>, <u>TP53</u></p> <p><u>AIFM1</u>, <u>BAX</u>, <u>CASP3</u>, <u>DFFB</u>, <u>TOP2A</u></p> <p><u>APAF1</u>, <u>BAX</u>, <u>CASP8AP2</u>, <u>F2</u>, <u>LCK</u>, <u>TP53</u></p> <p><u>AIFM1</u>, <u>BAX</u>, <u>BCL6</u>, <u>BMPR1B</u>, <u>BOK</u>, <u>BTG1</u>, <u>CASP3</u>, <u>CASP6</u>, <u>CASP8AP2</u>, <u>CDK5R1</u>, <u>CDKN1B</u>, <u>CUL3</u>, <u>CUL5</u>, <u>LCK</u>, <u>PDCD6</u>, <u>PDCD7</u>, <u>SST</u>, <u>TNFSF10</u>, <u>TOP2A</u>, <u>TP53</u>, <u>TP53BP2</u>, <u>TRADD</u>, <u>TRAIIP</u></p> <p><u>APAF1</u>, <u>BAX</u>, <u>CASP8AP2</u>, <u>F2</u>, <u>LCK</u>, <u>TNNT2</u>, <u>TP53</u></p> <p><u>GATA3</u>, <u>GSTM3</u>, <u>KRT19</u>, <u>NCOA6</u>, <u>PDCD7</u></p> <p><u>ANGPTL7</u>, <u>APOA4</u>, <u>NUDT1</u>, <u>PRDX6</u>, <u>SEPP1</u></p>
	Enriched KEGG gene sets (NES ≥1.5, NOM p-value ≤0.05 and FDR q-value ≤0.25) in zebrafish HCC (9 months)	Enriched gene lists
Up-regulated	<p>HSA00240_PYRIMIDINE_METABOLISM</p> <p>HSA00564_GLYCEROPHOSPHOLIPID_METABOLISM</p> <p>HSA00970_AMINOACYL_TRNA_BIOSYNTHESIS</p> <p>HSA03010_RIBOSOME</p> <p>HSA04010_MAPK_SIGNALING_PATHWAY</p> <p>HSA04012_ERBB_SIGNALING_PATHWAY</p> <p>HSA04060_CYTOKINE_CYTOKINE_RECEPTOR_INTERACTION</p>	<p><u>CTPS</u>, <u>DHODH</u>, <u>DPYD</u>, <u>ENTPD6</u>, <u>NME2</u>, <u>NME4</u>, <u>POLD2</u>, <u>RRM1</u>, <u>RRM2</u>, <u>TK1</u>, <u>TXNRD1</u>, <u>UPB1</u>, <u>UPP2</u></p> <p><u>AGPAT3</u>, <u>CDIPT</u>, <u>CHKA</u>, <u>CHPT1</u>, <u>ETNK1</u>, <u>GPD1</u></p> <p>AARS, <u>CARS</u>, <u>CARS2</u>, <u>EPRS</u>, <u>FARSA</u>, <u>HARS</u>, <u>KARS</u>, <u>QARS</u>, <u>SARS</u>, <u>TARS</u>, <u>WARS</u>, <u>YARS</u></p> <p><u>RPL10A</u>, <u>RPL13</u>, <u>RPL13A</u>, <u>RPL18</u>, <u>RPL19</u>, <u>RPL23A</u>, <u>RPL26</u>, <u>RPL28</u>, <u>RPL30</u>, <u>RPL34</u>, <u>RPL35</u>, <u>RPL35A</u>, <u>RPL36AL</u>, <u>RPL7</u>, <u>RPL8</u>, <u>RPL9</u>, <u>RPS10</u>, <u>RPS11</u>, <u>RPS12</u>, <u>RPS15A</u>, <u>RPS18</u>, <u>RPS2</u>, <u>RPS21</u>, <u>RPS24</u>, <u>RPS25</u>, <u>RPS26</u>, <u>RPS29</u>, <u>RPS3</u>, <u>RPS3A</u>, <u>RPS5</u>, <u>RPS7</u>, <u>RPS8</u>, <u>RPS9</u>, <u>RPSA</u></p> <p><u>AKT2</u>, <u>ARRB2</u>, <u>CACNA1D</u>, <u>CDC42</u>, <u>DUSP1</u>, <u>DUSP2</u>, <u>FGF10</u>, <u>FGF18</u>, <u>FGF23</u>, <u>FGF4</u>, <u>FGF5</u>, <u>FGF6</u>, <u>FGF8</u>, <u>FGFR1</u>, <u>FGFR2</u>, <u>FGFR4</u>, <u>FLNC</u>, <u>GADD45G</u>, <u>GRB2</u>, <u>JUN</u>, <u>MAPK1</u>, <u>MAPK3</u>, <u>MAPK8</u>, <u>MAPKAPK2</u>, <u>MEF2C</u>, <u>MKNK2</u>, <u>NLK</u>, <u>PDGFRA</u>, <u>PRKCB1</u>, <u>RAC1</u>, <u>RAC3</u>, <u>RAP1B</u>, <u>STMN1</u>, <u>TGFBI</u>, <u>TGFB2</u>, <u>TGFB3</u>, <u>TGFBR2</u></p> <p><u>AKT2</u>, <u>CAMK2D</u>, <u>CBL</u>, <u>GRB2</u>, <u>GSK3B</u>, <u>IUN</u>, <u>MAPK1</u>, <u>MAPK3</u>, <u>MAPK8</u>, <u>PIK3CA</u>, <u>PIK3R1</u>, <u>PRKCB1</u>, <u>SRC</u>, <u>STAT5B</u>, <u>CCL21</u>, <u>CXCL12</u>, <u>CXCR4</u>, <u>FLT1</u>, <u>IL15</u>, <u>INHBB</u>, <u>KITLG</u>, <u>MET</u>, <u>PDGFRA</u>, <u>PRL</u>, <u>TGFB1</u>, <u>TGFB2</u>, <u>TGFB3</u>, <u>TGFBR2</u></p>

	<p>HSA04110_CELL_CYCLE</p> <p>HSA04150_MTOR_SIGNALING_PATHWAY HSA04310_WNT_SIGNALING_PATHWAY</p> <p>HSA04350_TGF_BETA_SIGNALING_PATHWAY</p> <p>HSA04370_VEGF_SIGNALING_PATHWAY</p> <p>HSA04510_FOCAL_ADHESION</p> <p>HSA04520_ADHERENS_JUNCTION</p> <p>HSA04610_COMPLEMENT_AND_COAGULATION_CASCADES</p> <p>HSA04620_TOLL_LIKE_RECEPTOR_SIGNALING_PATHWAY</p> <p>HSA04630_JAK_STAT_SIGNALING_PATHWAY</p> <p>HSA04660_T_CELL_RECEPTOR_SIGNALING_PATHWAY</p> <p>HSA04662_B_CELL_RECEPTOR_SIGNALING_PATHWAY</p> <p>HSA04664_FC_EPSILON_RI_SIGNALING_PATHWAY</p> <p>HSA04810_REGULATION_OF_ACTIN_CYTOSKELETON</p> <p>HSA04910_INSULIN_SIGNALING_PATHWAY</p> <p>HSA04912_GNRH_SIGNALING_PATHWAY</p>	<p>CCNA2, CCNB1, CCNB2, CCND1, CCNE1, CDC2, CDC20, CDC25A, CDC27, CDC45L, GADD45G, GSK3B, MCM2, MCM3, MCM4, MCM5, MCM6, MCM7, MDM2, TFDPI, TGFBI, TGFBI2, TGFBI3, YWHAB</p> <p>AKT2, IGF1, MAPK1, MAPK3, PIK3CA, PIK3R1, VEGFC, CAMK2D, CCND1, CER1, CSNK2A1, CSNK2B, CTBP1, CTNNA1, FZD8, GSK3B, JUN, MAPK8, NLK, PPAR, PRKCB1, RAC1, RAC3, RHOA, ROCK2, TCF7, TCF7L2, VANGL1, WNT16, WNT2B, WNT4</p> <p>GDF7, ID1, ID2, INHBB, MAPK1, MAPK3, NODAL, NOG, RHOA, ROCK2, SMAD7, SP1, TFDPI, TGFBI, TGFBI2, TGFBI3, TGFBR2</p> <p>AKT2, CDC42, MAPK1, MAPK3, MAPKAPK2, PIK3CA, PIK3R1, PRKCB1, RAC1, RAC3, SRC</p> <p>AKT2, BCL2, BIRC2, CAV1, CCND1, CDC42, COL1A2, CTNNA1, FLNC, FLT1, FYN, GRB2, GSK3B, IGF1, JUN, LAMB1, MAPK1, MAPK3, MAPK8, MET, PARVA, PARVB, PDGFRA, PIK3CA, PIK3R1, PPP1CB, PRKCB1, RAC1, RAC3, RAP1B, RHOA, ROCK2, SRC, TLN1, VAV3, VEGFC, VTN</p> <p>CDC42, CDH1, CSNK2A1, CSNK2B, CTNNA1, FGFR1, FYN, MAPK1, MAPK3, MET, NLK, RAC1, RAC3, RHOA, SRC, TCF7, TCF7L2, TGFBR2</p> <p>A2M, C1S, C3, C8G, C9, CFB, CFH, FGA, FGB, FGG, MASP2, PLG, PROC, SERPINA1, SERPINC1, SERPIND1, SERPINF2</p> <p>AKT2, CHUK, FOS, JUN, MAPK1, MAPK3, MAPK8, MYD88, PIK3CA, PIK3R1, PIK3R3, RAC1, RELA, STAT1, TLR3</p> <p>AKT2, BCL2L1, CBL, CCND1, GRB2, IL15, JAK1, PIK3CA, PIK3R1, PIM1, PRL, SPRY4, STAM, STAT3, STAT5B</p> <p>AKT2, CBL, CDC42, FYN, GRB2, JUN, PIK3CA, PIK3R1, RHOA, VAV3</p> <p>AKT2, GSK3B, JUN, PIK3CA, PIK3R1, PRKCB1, RAC1, RAC3, VAV3</p> <p>AKT2, FYN, GRB2, MAPK1, MAPK3, MAPK8, PIK3CA, PIK3R1, PRKCB1, RAC1, RAC3, VAV3</p> <p>ARPC2, ARPC5, CDC42, EGF10, EGF18, EGF23, EGF4, EGF5, EGF6, EGF8, EGFR1, EGFR2, EGFR4, ITGA5, MAPK1, MAPK3, MYH10, PDGFRA, PIK3CA, PIK3R1, PPP1CB, RAC1, RAC3, RDX, RHOA, ROCK2, SCIN, VAV3</p> <p>AKT2, CALM2, CBL, FLOT2, GRB2, GSK3B, GYS2, MAPK1, MAPK3, MAPK8, MKNK2, PCK1, PFKL, PIK3CA, PIK3R1, PKLR, PPP1CB, PPP1R3C</p> <p>CACNA1D, CALM2, CAMK2D, CDC42, GRB2, JUN, MAPK1, MAPK3, MAPK8, MMP14, PRKCB1, SRC</p>
Down-regulated	<p>HSA00010_GLYCOLYSIS_AND_GLUCCONEOGENESIS</p> <p>HSA00071_FATTY_ACID_METABOLISM</p> <p>HSA04210_APOPTOSIS</p> <p>HSA04512_ECM_RECEPTOR_INTERACTION</p>	<p>ADH5, ALDH2, ALDH7A1, ALDH9A1, ALDOC, BPGM, GAPDH, HK2, LDHA, PDHA1, PFKM, PGAM2, PKM2, TPI1</p> <p>ACSL1, ACSL5, ADH5, ALDH2, ALDH7A1, ALDH9A1, CPT2, HADHB</p> <p>AIFM1, APAF1, BAD, BAX, CAPN2, CASP3, CASP6, CASP8, CHP, DFFB, TNFSF10, TP53, TRADD</p> <p>CD36, COL1A1, COL11A2, COL2A1, COL4A6, COL6A1, FN1, HMMR, ITGA2, ITGA3, ITGB4, LAMA4</p>