

Supplementary table S1. Gene list of up and down regulated DEGs common and specific to HPAIV and LPAIV

Type of DEGs	Regulation	No. of genes	Name of genes
HPAIV	Up	521	<p><i>CLMP AACS C2CD5 CLOCK URB2 KATNBL1 LGALSL CTB-5409.9 FH BTG2 HERC1 RAE1 MTF2 DHCR24 ACYP1 ELP4 GAPVD1 LOC423793 LETM2 IRS4 HERPUD2 SEC24D BRIX1 ARHGAP11A MRPL18 BPGM TPX2 TBC1D14 EP300 MAN1A1 MITF ASXL3 SMYD4 NUBP2 STARD8 P4HA2 CSTF1 TICAM1 LRIF1 PACSIN2 PRKRIR ATP11B CACNA2D1 FBXO34 PPIL3 ZEB1 CLUH FASTKD3 RB1CC1 SPTLC1 USP47 ENPP4 PPP1R13B PEX2 CDC2L1 CHD9 COX15 SLU7 DAB2 RP11-690P14.4 IRF2BP2 PPCS RRP7A TRAPPC12 SCYL3 CCDC117 BET1L USP15 NAMPT FAHD1 ELOVL5 DIP2A ARHGAP17 RIOK1 CCNLI NOM1 C3H2ORF3 EAPP ITM2B TFB2M PRKCB TMEM60 SNIP1 WDR33 RFWD2 LIAS TFB1M CYP2J21 UTP18 KPNA2 SMC3 ID4 API5 RBM17 RIN3 ZCRB1 ANLN TSSC1 STIM2 KATNBI GFPT2 HAGHL SEC24B RFTN1 VPS4B STIL MAML1 RBM33 SEC24C ZBTB38 GTF2H2 ISM1 PAPD7 ALDH18A1 ANKRD13C PCDH19 DCUN1D1 FBXO11 ZFC3H1 C24H11ORF57 TBPL1 PM5 TMEM196 MRPL39 TSC22D2 SLC6A15 POLE3 NUP58 F2RL1 FAM46A POLR1E RP11-295P9.13 RAB3GAP2 MCM9 RASA2 LSM14A MYCBP2 RPA2 UBR3 TNFSF10 UMAD1 TSHZ3 MRPL14 WDR35 CCDC80 RHOB NISCH SLC24A5 MMP16 PPP1R8 SON WDFY2 IDII CDCA4 LIMD1 ESF1 CEP76 RRM2 PIK3C3 NGLY1 METRNL ELAC2 USP42 LARS IPP ANKRD28 NIPBL TSEN15 NCDN CAPRIN2 LUC7L2 TMEM39B GOLGA2 THBS1 SNAPC1 DDX49 BAMBI TRNT1 GBGT1 IQSEC1 CRIPT LTBP1 CRBN DHX30 KIAA1456 BTBD11 CWC22 GTPBP10 INTS8 ITGA1 LOC431003 ASNS RAD50 KRAS MVK KRR1 GUF1 CCNB3 WDR44 MON2 KIF2A PPAP2B PLA2G7 GCN1 MARCH5 HSPA8 TMEM11 UBXN7 FAM72A SOCS1 GLB1L FZD8 IPO13 SUN1 SPRY2 HSPA4L NPLOC4 PRR5 B3GALT6 RNF103 WRN ESRRG ANAPC5 GPX8 ISPD NOC3L AP3B1 TRIM37 LNX2 ALG8 NDNF FBXW7 FAM210A IREB2 GRSF1 CDR2 ZNF606 UBL7 ARMC6 KIAA0196 ZER1 PPP1R12A GLIPR1L INTS2 NAA16 E4F1 MLLT10 DDX24 STRADA TAMM41 ATP1A1 SAP30BP ARIH2 MSMO1 DPP8 TMEM171 ASPH SEC62 SH3D19 DDX59 NADK SLC30A5 LAMB3 UBR5 CDC37L1 PRPF4B VCAN EXOC1 ARHGAP42 ABHD17B RP11-231C18.3 GGNBP2 BACH1 SLC46A2 MTHFD2 RBMS3 RNF139 CUL4B RAPGEF2 SRFBP1 COPB1 PDCD11 SVIL TM7SF3 IFT22 MFSD2A PPHLN1 ORAI2 CYTH3 RAF1 SGOL1 KBTBD2 KIF20B SDE2 COBL SLA ZMYM2 CENPL CIT TLK1 TIMM10B MTMR12 SLC38A1 ITGB1 SENP6 CDKN1A RBBP5 ZNF516 RBM26 SGK1 CUL2 ARPC5L PCNA HNRNPA3 HSPA2 ACAP3 C1ORF50 LAMTOR3 ZMIZ1 IGBP1 ANTXR1 TAF9 EIF4A2 SLC25A29 STAMPB RABGAP1L MYH10 CCNF PTC1 MEF2BNB</i></p>

			<p><i>CRISPLD1 EPS15 DDX52 IL13RA1 ADCK3 SPDL1 NEK1 HARB1 TUBB4B PRKX SLC25A12 CITED4 SQLE HDAC1 PSMD7 PPP1R3C CBS SETD6 ENC1 ZHX1 SIPA1L1 OXR1 ABCC1 CCNK BTBD9 NUP205 HEXB RNF151 ATP5C1 DIEXF WIPF1 RFFL TICRR SMCHD1 HTRA3 PRRC2C ARHGEF18 SNRNP200 LIG4 PSMB1 KIAA0368 DVLI FBXO3 AQR C14H8ORF33 C2H7ORF25 AGAP1 ARHGAP24 FAM107B JPH1 CPT1A CUL3 PWWP2B GOLGA5 FAM208A VTI1B FEZ2 LRRC45 FASTKD2 RP11-449H3.3 RP11-574K11.31 EDEM2 FBXL5 SPRED2 AATF CDC20 MRPL50 FOXO3 CIR1 CSRP2BP TMEM184C TBP G0S2 INADL EEF1B2 ADNP2 LOC111218510 TMLHE ARMC10 DCUN1D2 LIPT1 TADA2A CEBPB VPS13C EPC1 CASP2 GEM VPS13A SNRNP48 MYC HIAT1 PARD3 ORC5 PELI1 CALHM2 GOSR1 ROR1 GAB1 PPP2R3A SYNM NUP50 TYRO3 SNX14 BMP2K AR ARID1B LONP2 ALG1 MFSD1 AKAP17A PHLDB2 MAP2K3 SESTD1 BUB1 BHLHE41 CNOT10 ANKRD9 CWF19L2 LPCAT1 WAC LFNG PLAA FDPS SEH1L FBXO25 DAPK1 UBR4 FOXO1 CTCF POC1B RFTN2 PANK3 EDEM3 PRNP NDEL1 USP8 PIAS1 CES1 TRIP13 CCND3 INSIG1 CNOT2 ZC3H14 LOC100857702 TMEM62 PBX3 CTGF CCDC93 WAPAL CTDP1 CASP8AP2 TRMT5 SAT1 CWC25 ELK4 GARS CHAC1 SSFA2 CD109 RYBP UBE2QL1 WBSCR16 LOC422090 SYAP1 HMBS BET1 CPSF2 MRPL22 B3GNT2 FRMD4B TDP1 EYA2 NSUN4 ATRN TTC30A RERE FGFBP1 ISY1 PDE3B TPRA1 TRAPPC13 PHLPP1 FAM60A KIF23 GPR89B POT1 CNEP1R1 PIK3IP1 KLF3 NDE1 PKN2</i></p>
	Down	151	<p><i>HNRNPD1 TMEM98 LGALS3 IL8L1 RPL23 RSPO3 ACBD6 TAF3 HIST2H4B LRRC20 NFYC JTB RNF11 F3 LMO3 CTSZ TMEM183A RPLP1 RASA4 PPIA VAC14 CUL9 NDUFV3 SS18L2 LOC101752275 TTL AP2M1 LOC101751989 STAT5B AP1P CSDE1 DCTN5 CLTB ANAPC13 PCBD2 NDUFB6 CHCHD3 IDH2 SH3GLB1 POC1A ZNF438 NEMP2 ANAPC16 SIRT2 MRPL2 LOC424167 DPH7 LOC100858311 FHL5 PECAM1 UQCRFS1 COTL1 TFDP2 KCNH2 HAGH PDE4C ATP5J2 HDAC8 SLC4A8 DHX33 RCCD1 BCAP31 MMD FGF18 ATP6V0E2 E2F1 C19orf12A VSNL1 ANKRD44 PLCG2 PGS1 CLDN5 LONRF3 NPM3 MAPKAPK2 UBN1 IRF7 NUDCD3 COA5 CMPK2 CACFD1 RP11-426L16.10 GBX2 LYRM4 SLC25A20 RP5-966M1.6 IL8L2 IRAK2 VPS25 SLC25A39 LOC423967 MAFF FRZB CRELD1 SNORA73 AADAT VPS72 CZIB CHD7 VSIG10L HNRNPA2B1 SIDT2 RAB15 CMTM3 HYPK SNRPA1 LYG2 DRAM2 SMIM14 SEPW1 CPLANE2 IL6 <i>acdh-6</i> EIF5A2 GKN2 C12ORF57 SLC17A6 TM2D1 RPL22L1 MPV17 IL17REL SNORD12C SLMO2 NOA1 BOLA3 CAMK2N2 DCPS GPR61 C6ORF163 DPH3 C6H10ORF88 RGCC EAF2 NEK9 SRRM3 DLG3 UBE2D1 TMEM169 VPS16 ZDHHC9 RBM38 IDH3G RPS21 ATG4A BATF3 TLL1 HOPX PPRC1 HSCB TUB XPR1</i></p>
LPAIV	Up	232	<p><i>SEC23A ABCA3 KLHL13 PDHA1 DUSP12 TBC1D4 FBXO21 MAST2 GFPT1 THAP4 HIC2 CENPQ COQ6 C12ORF10 HMGB3 NDUFS1 HOMER3 EPN2 RAB40B ZDHHC15 L3MBTL2 CDYL2 ACY1 SFXN1 CTNNBIP1 CRY2 DIP2C KIDINS220 ATAD2 GADD45A INTS6 C28H19ORF10 GTPBP1 SHQ1</i></p>

			<p><i>PRDM2 YARS2 AK4 RREB1 DCBLD2 GEMIN8 DHRS7 CHRAC1 PSMC2 SH3BP5 TIAM2 DNAJA4 GATA6 UBA6 POLE2 ZNF598 ARNT CASC5 LDLRAD4 BTRC GPN2 DCBLD1 SYS1 CMPK1 BAZ2B PPM1A FOPNL ALCAM SLAIN2 SDR42E1 ZNF501 TIMM23 ABCB10 SPRTN TSR3 GPI SNX6 FARI C6H10ORF137 SPTBN1 SRP54 TNFAIP8 HSF2 MTHFS PTPN5 PID1 CAMSAP2 USP34 COIL APLP2 HMGCL NT5DC2 EZR FOXF1 PDP1 HACE1 SPTAN1 WBP2 CABIN1 SMU1 ATG4B SLC43A2 TANC1 C7ORF26 MYO3AL TMEM97 L2HGDH PLA2R1 BHLHE40 GPALPP1 TARDBP AHCYL1 TOM1L2 DYM FOCAD NSFL1C TRMT6 DLG3 AHR LOC424588 RP11-296A16.1 NAA30 NSRP1 LMO4 HDAC3 OPA1 TMPO DNAJC30 CMBL MPDZ TXNDC11 UBE2A VMP1 ARFRP1 MRPS28 PEX5 REL VPS39 VAPB UBXN6 YARS DYNC2LI1 BVES PNAT3 MAP1LC3B NUDCD3 RABL2B SPAG9 TARSL2 PTPN3 CHUK STAT3 ADM TMX2 CA9 E2F6 NOVA1 NDUFA9 TALDO1 EIF2S2 FNDC3B NUP133 CCSAP CLDNI GRPEL2 MIA3 GARNL3 HK1 MFAP1 PARP4 SHC4 EAF1 RARS LRRC28 AP2B1 TECPR2 MKX IGFBP3 ISG20L2 TNFAIP8L1 LRRC57 RND3 ADCK2 PTX3 ICOSLG DHCR7 PANK4 PPP6R2 STX6 ERCC3 PPA1 INO80 GAS6 TFPI2 MFSD9 LIG3 DCP1B JUN CYBRD1 ADAMTSL3 PICK1 NANP ACTG1 RASA3 ARHGEF10 LZTS3 PIP5K1C IWS1 TSPAN14 TDP2 TP53RK RP11-478C19.2 SMARCA1 AMD1 SLC16A1 FAM45A SF3B3 RANBP9 GCLC BEND5 CTBPL POLB ANAPC10 TOB1 ATF7IP SLC2A1 SLC25A43 SMARCA1 DACT1 TOR1A ZFYVE9 BNC1 SELO ATLI PGK1 GRAMD1C COG7 CDYL</i></p>
	Down	85	<p><i>C11orf31 ATP5F1D IFIT5 LOC100857928 RPS28 RILPL2 LOC417676 ANKRD42 LOC419594 CIS GNG2 SLTM CCNI SREK1IP1 SCT CREBRF WISP2 ING4 COX7C MOV10 OSCP1 MX1 RPLP0 LOC101751244 BAK1 ARPP19 ATP5D SFSWAP MAP2K2 SLC9A5 EPDR1 BTG4 APOB EFTUD2 SDC2 LY6E LAPTM4A SEC11C CSF3 GAD1 KCNT1 GFOD1 HIST1H2B7L2 INHBA MYCN B4GALT2 NAIFI1 LOC100857518 OASL CNNI RPL29 APOA1BP PPIC RARB NUFIP1 SCN8A OGDH PUS1 MUSTN1 B2M TUBB1 PLACL2 GPX3 REXO1 PARP6 RNF130 FAM192A ENSGALG00000032428 PHF3 LOC770612 CCDC141 TIAM1 CEP152 TA3 RAB6A RPS15A LYG CYSTM1 CCL4 PSIP1 TULP4 LOC101752229 AIRE CLK1 RPL31</i></p>
Common	Up	76	<p><i>TBC1D19 GLT1D1 RTN4 IVNSIABP BTBD3 TUBGCP3 RECQL TYW3 BRAP LEO1 TTC37 ZYG11B IPO9 ARHGAP21 HERPUD1 C6ORF57 TLR1A FOXN3 STX2 MPHOSPH10 SLC25A46 HMOX2 SPTY2D1 SASS6 BTG1 SESN1 SRPK2 PSAT1 VWA8 KIF11 TENM3 C19H17ORF85 ACAT2 RP1-27O5.3 ZMYND8 PEX16 UFL1 GPR146 HLF CEP192 WISP1 NABP1 NFS1 ZCCHC8 SLITRK2 LRRFIP2 DDX26B NCAPD3 RPNI SYDE2 RPP25L PPM1G C3H6ORF120 RALGAP1 NUDT4 CLK3 ATXN7 PPP1R21 ZNF217 GAK CENPN MAP2K4 FBXO28 H2AFZ ME1 DGCR2 FTSJ2 PINX1 STK17B LRRFIP1 LRIG2 NUSAP1 STAG3 WEE1 APIAR RLF</i></p>
	Down	12	<p><i>SRGN K123 HSP25 IFI6 EEAI RASGRP3 IFI27L2 LOC101749175 H2A-VI TOR1B USP18 C11H19orf12</i></p>

Supplementary table S2. Gene ontology (GO) analysis of DEGs from LPAIV and HPAIV infected chicken lungs.

LPAIV				
GO	Terms	Count	P-Value	Genes
Biological Process	endoplasmic reticulum organization	5	8.E-04	VAPB, ATL1, PEX5, LOC417192, VMP1
	SMAD protein import into nucleus	4	8.E-04	JUN, SPTBN1, TOB1, ZFYVE9
	peptidyl-threonine dephosphorylation	3	8.E-03	PPM1G, PPM1A, PDP1
	Golgi organization	6	2.E-02	HACE1, NSFL1C, ARHGAP21, COG7, DYM, VMP1
	mitotic nuclear division	6	3.E-02	WEE1, ANAPC10, ARPP19, CENPN, KLHL13, NUSAP1
	response to xenobiotic stimulus	3	3.E-02	ARNT, AHR, GCLC
	response to organic cyclic compound	3	3.E-02	ARNT, AHR, HSF2
	maturation of SSU-rRNA	3	4.E-02	MPHOSPH10, TSR3, RPS28
regulation of cell cycle	5	5.E-02	TARDBP, BTRC, CCNI, JUN, STAT3	
Cellular Component	cytoplasm	75	2.E-03	OASL, BTG1, BRAP, CREBRF, LOC424588, HACE1, KIAA0586, NSFL1C, NUDCD3, RASA3, RALGAP1, RECQL, SH3BP5, SHQ1, TBC1D4, WISP1, ATF7IP, ACY1, RARS, ARNT, AHR, ATXN7, AIRE, ATG4B, BTRC, BVES, ARPP19, CABIN1, CCDC141, CHUK, CRY2, CMPK1, DLG3, DACT1, EFTUD2, EIF2S2, GPI, GLT1D1, GADD45A, GAS6, HSF2, HMGB3, HDAC3, KIF11, ME1, MAST2, MAP2K2, MAP2K4, MX1, NABP1, NUSAP1, NUDT4, PSAT1, PID1, POLB, PICK1, PPP6R2, PTPN3, PPA1, RREB1, RNF130, SESN1, STAT3, SMU1, SPAG9, TARSL2, TALDO1, TOB1, TULP4, TUBB1, TNFAIP8, TNFAIP8L1, TDP2, YARS, REL,
	spindle microtubule	4	1.E-02	HDAC3, KIF11, NUSAP1, POLB
	cytosol	31	1.E-02	ARFRP1, BTBD3, DNAAJ4, NSFL1C, RAB6A, ARHGEF10, SYS1, TIAMI, TP53RK, APIAR, AMD1, ATG4B, CTNNBIP1, CHUK, EZR, GEMIN8, GPI, GCLC, HK1, HDAC3, HOMER3, PEX5, PGK1, PPM1A, SLC2A1, SPAG9, STX6, YARS2, YARS, UBA6, REL,
	nucleus	65	4.E-02	ATAD2, BTG1, BTBD3, LOC416354, CLK1, LOC424588, HACE1, IWS1, LEO1, NSFL1C, PSIP1, RALGAP1, RECQL, SLTM, TARDBP, TP53RK, UFL1, WEE1, ATF7IP, APLP2, ARNT, AHR, AIRE, BTRC, BAZ2B, CABIN1, CTNNBIP1, CENPN, CENPQ, CDYL2, CDYL, CHUK, CRY2, CMPK1, FAM192A, GEMIN8, HSF2, HLF, HMGB3, HDAC3, HIC2, JUN, L3MBTL2, LIG3, MX1, NAIF1, NUSAP1, NUDT4, POLB, PPM1A, PUS1, RREB1, RPLP0, RNF130, STK17B, SESN1, STAT3, SMU1, SF3B3, TALDO1, TOB1, YARS, MYCN, REL, ZMYND8,
Molecular Function	enzyme binding	5	1.E-01	BTG1, VAPB, CSF3, DYM, PICK1
	protein heterodimerization activity	7	2.E-02	H2AFZ, VAPB, ARNT, AHR, CHUK, TENM3
	DNA binding	21	2.E-02	OASL, FBXO21, H2AFZ, INO80, IWS1, RECQL, SPTY2D1, SMARCA1, TARDBP, AIRE, BAZ2B, CHRAC1, ERCC3, LIG3, NUSAP1, POLB, POLE2, STAT3, TMPO, MYCN, REL
	histone binding	4	2.E-02	ATAD2, SPTY2D1, NCAPD3, ZMYND8
	poly(A) RNA binding	26	4.E-02	OASL, CLK3, GTPBP1, MPHOSPH10, MOV10, PSIP1, SLTM, EFTUD2, EIF2S2, EZR, FNDC3B, HMGB3, JUN, MFAP1, NUSAP1, PUS1, RPL29, RPL31, RPS28, RPLP0, SRP54, SPTBN1, TRMT6, YARS2, YARS, ZCCHC8
HPAIV				
GO	Terms	Count	P-Value	Genes
Biological Process	mitotic cytokinesis	5	5.E-03	ANLN, KIF23, MYH10, NUSAP1, USP8
	mitotic nuclear division	9	1.E-02	GEM, WEE1, ANAPC5, CENPN, KATNB1, KIF2A, NUSAP1, PPP1R12A, TADA2A
	negative regulation of translation	6	2.E-02	BTG2, CNOT2, DAPK1, ENCI, IREB2, RNF139
	cellular response to DNA damage stimulus	9	2.E-02	BTG2, AATF, CLOCK, CUL4B, CCNK, MCM9, RBBP5, SGK1, USP47
	dsRNA transport	3	2.E-02	SIDT2, RFTN2, RFTN1
	mitotic centrosome separation	3	3.E-02	KIF11, NDE1, NDEL1

	chromosome organization	4	3.E-02	GEM, LIG4, RLF, SMCHD1
	positive regulation of cytokinesis	4	4.E-02	CIT, CUL3, KIF23, PKN2
	embryonic cleavage	3	4.E-02	AATF, CUL3, TPRA1
	protein targeting to vacuole	3	4.E-02	VPS13A, VPS13C, VTI1B
	establishment of mitotic spindle orientation	4	4.E-02	NDE1, NDEL1, SPDL1, SPRY2
Cellular Component	nucleoplasm	72	3.E-04	BMP2K, BUB1, CEBPB, CTCF, CLK3, CWC25, E4F1, ELK4, EAF2, FBXO34, NDUFB6, PWWP2B, RAD50, RECQL, STRADA, SNIP1, TM2D1, TICRR, TPX2, UBXN7, WAC, WRN, ANLN, API5, CDC20, CLOCK, CUL2, CUL4B, CCNK, CMPK2, DCPS, DPP8, DPH3, DCTN5, ELAC2, FAHD1, GARS, HNRNPA2B1, HNRNPD, HYPK, KPNA2, KIF23, LRRC45, LIG4, MLLT10, NAMPT, NFYC, NABP1, NUP205, NUP50, PPHLN1, PRPF4B, PCNA, POT1, PACSIN2, PKN2, PPM1G, RFWD2, SGK1, SNRNP48, SNRPA1, SMC3, SYAP1, TTC37, USP8, ZC3H14, ZCCHC8, ZEB1, ZNF438, ZMIZ1, ZMYM2, ZHX1
	spindle pole	9	7.E-04	POC1A, POC1B, TPX2, KATNB1, KIF11, KIF2A, SPDL1, SMC3, VPS4B
	ubiquitin ligase complex	10	8.E-04	BRAP, DCUNID1, DCUNID2, FBXO11, ARIH2, HSPA2, HSPA8, RNF11, UBR3, UBE2D1,
	cytoplasm	129	2.E-03	AKAP17A, APIP, BTG1, BAMBI, BRAP, BUB1, CEBPB, CNOT10, CMTM3, CNEP1R1, CRIPT, CITED4, DHX30, EP300, ELK4, FBXO11, FBXO34, FRMD4B, GCN1, GAB1, HOPX, KIAA1456, KRAS, LMO3, NGLY1, NEK1, NUDCD3, RAB3GAP2, RASA2, RASA4, RAF1, RALGAPA1, RECQL, ARHGAP17, SLU7, STRADA, SNIP1, TBP, TBPL1, TSC22D2, WDR35, WISP1, WRN, AR, AATF, API5, ARIH2, ATXN7, CASP2, CDC20, CDC37L1, CDR2, CRBN, CLDN5, CLOCK, CLUH, CUL4B, CCND3, CBS, DAPK1, DPP8, DPH3, DLG3, ENC1, ELP4, FDPS, GGNBP2, GLT1D1, GARS, HARB11, HSPA2, HSPA8, HNRNPA2B1, HNRNPD, HDAC1, IPO13, ID4, IRF7, IRAK2, IREB2, KPNA2, KIF11, KIF2A, LGALS3, LRRC45, LIG4, MFSD2A, MEI1, MTF2, MAP2K4, MLLT10, NAMPT, NABP1, NUSAP1, NUP205, NUP50, NUBP2, NDE1, NDEL1, NUDT4, ORC5, PSAT1, PCNA, PSMB1, PRKCB, PRKX, RFTN2, RFTN1, RGCC, RRP7A, RFWD2, SEPW1, SGK1, SESN1, STAT5B, SNRNP48, SFA2, SPRY2, SMC3, SOCS1, TDP1, UBR3, USP15, USP47, UBE2D1, ZC3H14, ZEB1, ZNF438, ZMYM2
	nucleus	124	2.E-03	DHCR24, BTG1, BMP2K, BTBD3, BACHI, CEBPB, CTCF, CNOT10, CNOT2, CITED4, DCUNID1, DHX30, EAPP, E2F1, ELK4, ESF1, FBXO25, GEM, HOPX, KIAA1456, LEO1, LIMD1, LUC7L2, NGLY1, NEK1, NOC3L, NPLOC4, PAPD7, RBM38, RALGAPA1, RECQL, SDE2, SETD6, STRADA, TBP, TAF3, TBPL1, TSC22D2, UFL1, WEE1, AR, API5, ARIH2, BATF3, CAPRN2, CASP2, CDC2L1, CDCA4, CENPL, CENPN, CRBN, CHD7, C14H8ORF33, CLOCK, CUL3, CCNB3, CCND3, CCNF, CCNK, CDKN1A, CMPK2, DCPS, DIEXF, ESRG, FOXO1, GGNBP2, GBX2, HSPA2, HSPA8, HLF, HNRNPD, HDAC1, HDAC8, ID4, IRF7, IRAK2, KPNA2, KATNB1, LGALS3, LARS, LONP2, MITF, MCM9, MYH10, NUSAP1, NUBP2, NUDT4, PELI1, PBX3, PCNA, P4HA2, PSMB1, PRKCB, PRKX, PCBD2, RHOB, RGCC, RPA2, RBBP5, RRM2, STK17B, SRFBP1, SGK1, SESN1, SGOL1, STAT5B, SFA2, SPDL1, SPRY2, SVIL, TRMT5, TFDP2, TDP1, UBN1, USP15, USP47, MAFF, MYC, VPS4B, ZC3H14, ZEB1, ZMYND8, ZNF516, ZHX1
	nucleolus	31	2.E-02	BRIX1, CTCF, CRIPT, DDX24, DDX52, DAB2, FBXO11, FTSJ2, KRR1, LEO1, NOC3L, SPY2D1, URB2, WDR33, WRN, ACAT2, AATF, CUL2, DIEXF, FGF18, KATNBL1, KIF2A, NUSAP1, NOM1, NPM3, PDCD11, RBBP5, RPL23, SNAPC1, SLC30A5, ZC3H14
	centrosome	21	2.E-02	LEO1, WDR35, WRN, AATF, CAPRN2, DCTN5, HARB11, IFT22, KATNB1, KIF23, KIF2A, LRRC45, NDE1, NDEL1, PCNA, PKN2, PPP1R12A, RGCC, RFWD2, TUBGCP3, VPS4B
	small-subunit processome	5	3.E-02	KRR1, MPHOSPH10, UTP18, DIEXF, PDCD11
	catalytic step 2 spliceosome	8	3.E-02	CWC22, SLU7, AQR, HNRNPA2B1, PPL3, PRPF4B, SNRPA1, ZCCHC8
	nuclear speck	8	3.E-02	AKAP17A, CWC22, EAF2, NOC3L, SLU7, CIR1, PPP1R8, ZC3H14
	ribonucleoprotein granule	3	3.E-02	DHX30, FASTKD2, GRSF1
	centriole	7	4.E-02	POC1A, POC1B, CEP76, CCNF, PLK2, SASS6, TUBGCP3
	bicellular tight junction	7	4.E-02	CLMP, INADL, RAPGEF2, CLDN5, DLG3, PARD3, UBN1
	COPII vesicle coat	3	5.E-02	DHX30, FASTKD2, GRSF1
	mitochondrial inner membrane	13	5.E-02	COX15, GUF1, MPV17, TAMM41, CPT1A, CSDE1, FAHD1, IDH2, LGALS3, LETM2, SLC25A12, SLC25A20, UQCRCF1
Molecular Function	poly(A) RNA binding	55	5.E-05	AKAP17A, ATP5C1, BRIX1, CLK3, DDX24, DDX49, DDX52, DHX30, ESF1, FASTKD2, GRSF1, GCN1, KRR1, LSM14A, MPHOSPH10, NOC3L, RBM33, SNIP1, UTP18, WDR33, WBSCR16, ALDH18A1, AATF, API5, AQR, CSDE1, DIEXF, ELAC2, EIF4A2, FAM46A, HSPA2, HSPA8, HNRNPD, KPNA2, LGALS3, MRPL2, MRPL22, MRPL39, NUSAP1, NOM1, NPM3, PPHLN1, PRPF4B, PDCD11, PKN2, RRP7A, RPL23, RPS21, SRFBP1, SNRPA1, TFB2M, ZFC3H1, ZC3H14, ZCRB1, ZCCHC8
	protein kinase activity	12	4.E-03	BUB1, CLK3, FASTKD2, SCYL3, STRADA, CDC2L1, DAPK1, IRAK2, MMD, PIK3C3, PRPF4B, ROR1
	single-stranded telomeric DNA binding	3	2.E-02	RAD50, HNRNPA2B1, POT1
	phosphatase regulator activity	3	2.E-02	BMP2K, MTMR12, PPP1R12A
	nuclear localization sequence binding	4	4.E-02	BRAP, IPO13, KPNA2, NUP58