Ribosome profiling reveals distinct translational alterations in steatohepatitis-associated and virus infection-associated hepatocellular carcinoma

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Supplementary Figures

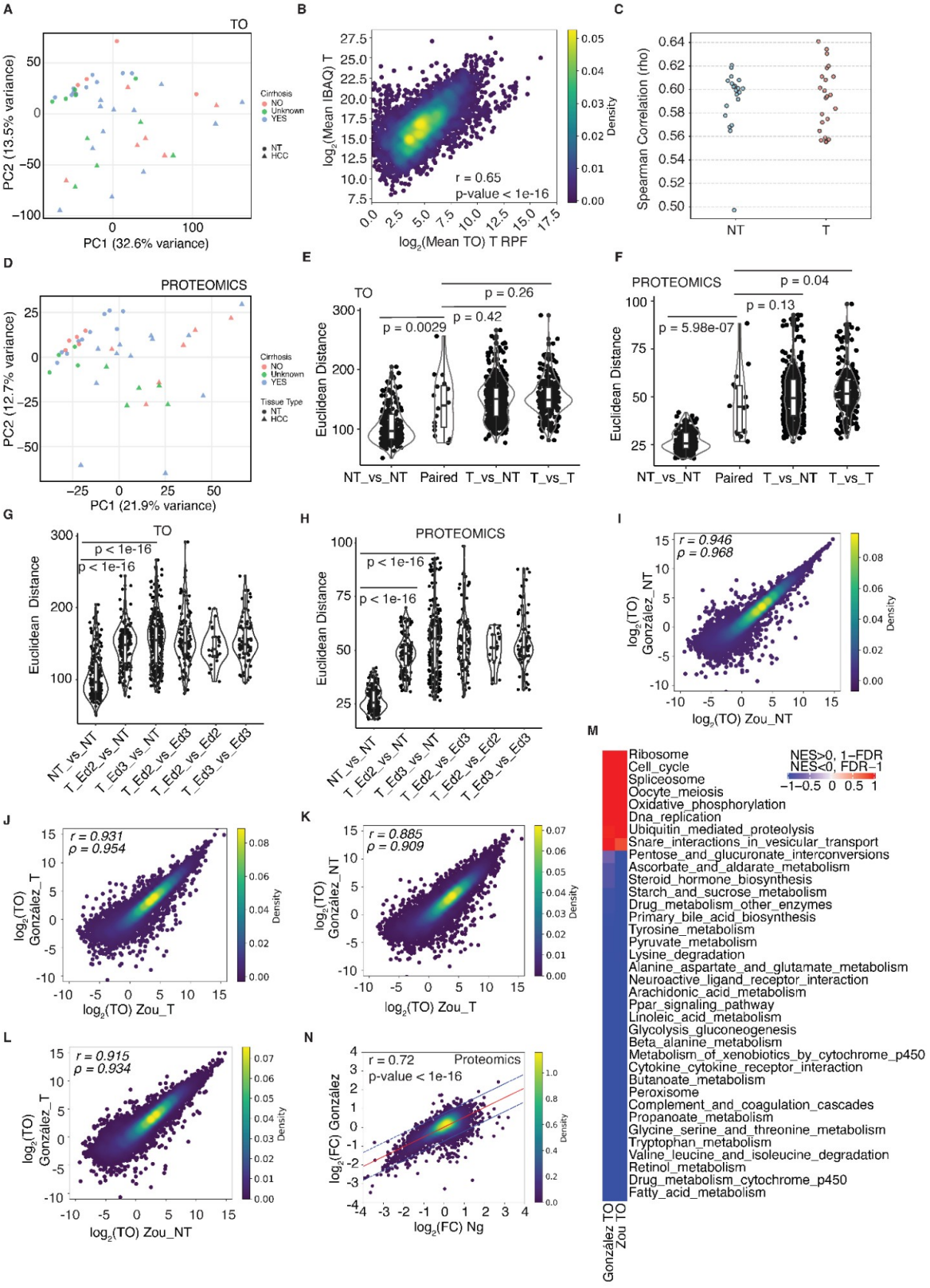


Figure S1. Comparative PCA, correlation, and pathway analyses across ribosome profiling and proteomics data. A. Principal component analysis (PCA) of TO data labeled by presence/absence of cirrhosis. **B.** Spearman Correlation of TO (RPF-based TPM) with the protein intensity calculated as Intensity-Based Absolute Quantification (iBAQ) signal for tumor

samples. **C.** Dotplot of Spearman Correlation of TO with iBAQ signal for individual NT and T samples. **D.** As in A, based on proteomics data. **E.** Euclidean distances between TOs of individual genes in pairs of all NT, T-NT, T-T and paired T-NT samples from viral/non-viral disease background groups. **F.** Same as D**,** for protein intensity values. **G.** Euclidean distances between TO values of individual genes in pairs of NT and T samples grouped by Edmondson's grade. **H.** Same as F**,** from protein intensity values of individual genes in pairs of NT and T samples grouped by Edmondson's grade. **I.** Correlation of average RPF TPM values from NT samples from this study and Zou study [36] **J.** Same as I, for T samples . **K.** Same as I, for NT samples from this study and T from Zou study and same for NT samples from Zou study, **L.** Same as K, for T samples from this study. **M.** GSEA analysis using KEGG pathways on RPF data in this study and Zou study, shown pathways have adjusted p-value < 0.001. **N.** Correlation of log_2FC values (T. vs. NT) using proteomics data, Ng study [9] on x-axis, this study on y-axis.

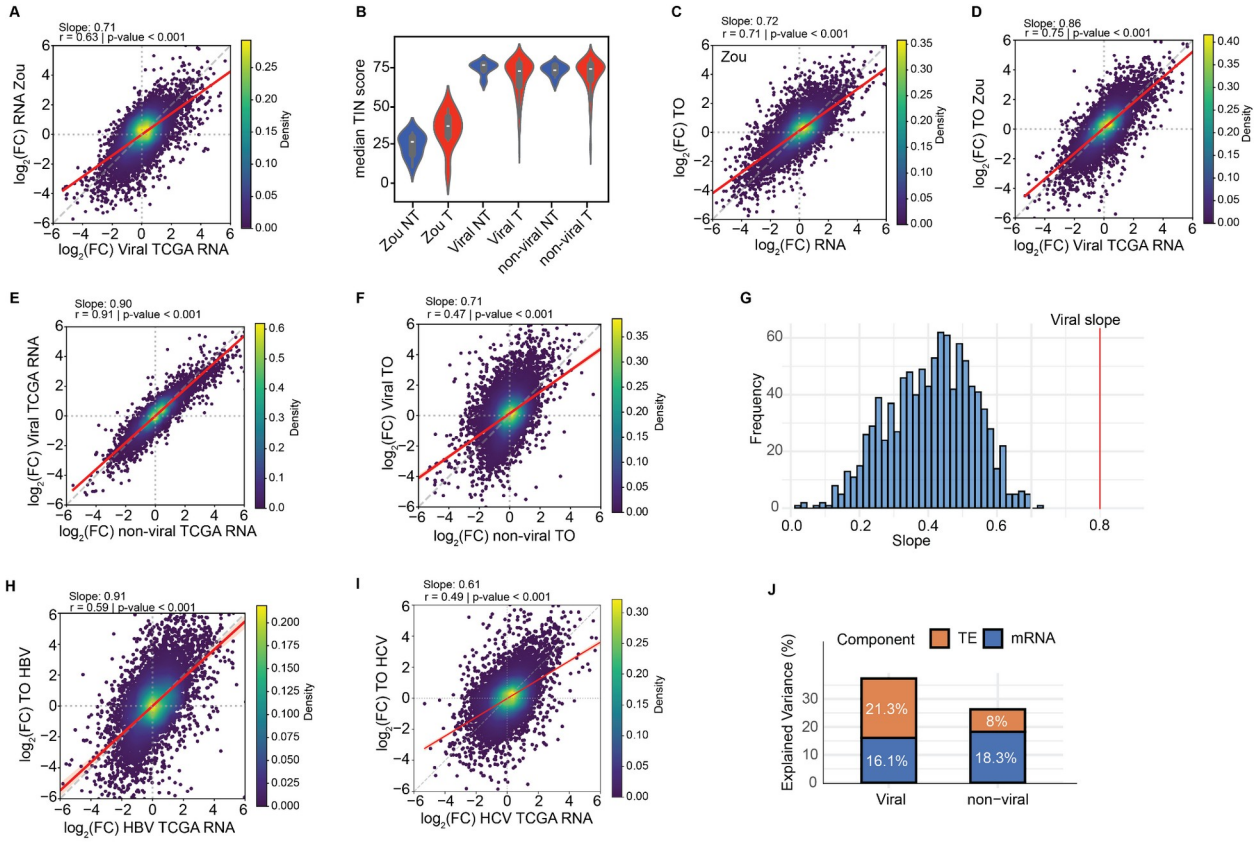


Figure S2. Translatome differences between backgrounds are more pronounced than RNA-level differences. A. Correlation of T-NT mRNA level changes in the viral infection background samples from TCGA (x-axis) and the Zou dataset. **B.** Median TIN scores across the transcriptome for NT and T samples from Zou dataset and for NT and T samples from TCGA samples with viral and non-viral backgrounds. **C.** Correlation of T-NT changes at the mRNA (x-axis) and RPF (y-axis) levels in the Zou dataset. The diagonal line (blue, dashed) corresponds to changes in translational output that are entirely explained by changes in mRNA levels. Red line shows the linear regression fit. **D.** Same as C, using mRNA data from TCGA viral samples (x-axis), and the RPF data from the Zou dataset (y-axis). **E.** Correlation of T-NT mRNA level changes in non-viral (x-axis) compared to viral (y-axis) background samples from TCGA. **F.** Correlation of T-NT TO level changes in non-viral (x-axis) compared to viral (y-axis) background samples from our dataset. **G.** Distribution of the linear regression slope TO-vs-mRNA level change in non-viral-background samples, constructed from 1000 resamplings of 4 of the 13 NT and 14 T NASH samples in our dataset. **H.** Correlation of mRNA level changes in viral background samples from TCGA (x-axis) compared to TO level changes in HBV samples from our dataset (y-axis). **I.** Correlation of mRNA level changes in viral background samples from TCGA (x-axis) compared to TO level changes in HCV samples from our dataset (y-axis). **J.** Stacked bar plot illustrating the proportion of variance in T vs. NT protein level changes explained by changes in mRNA abundance and TE for samples with viral and non-viral background.

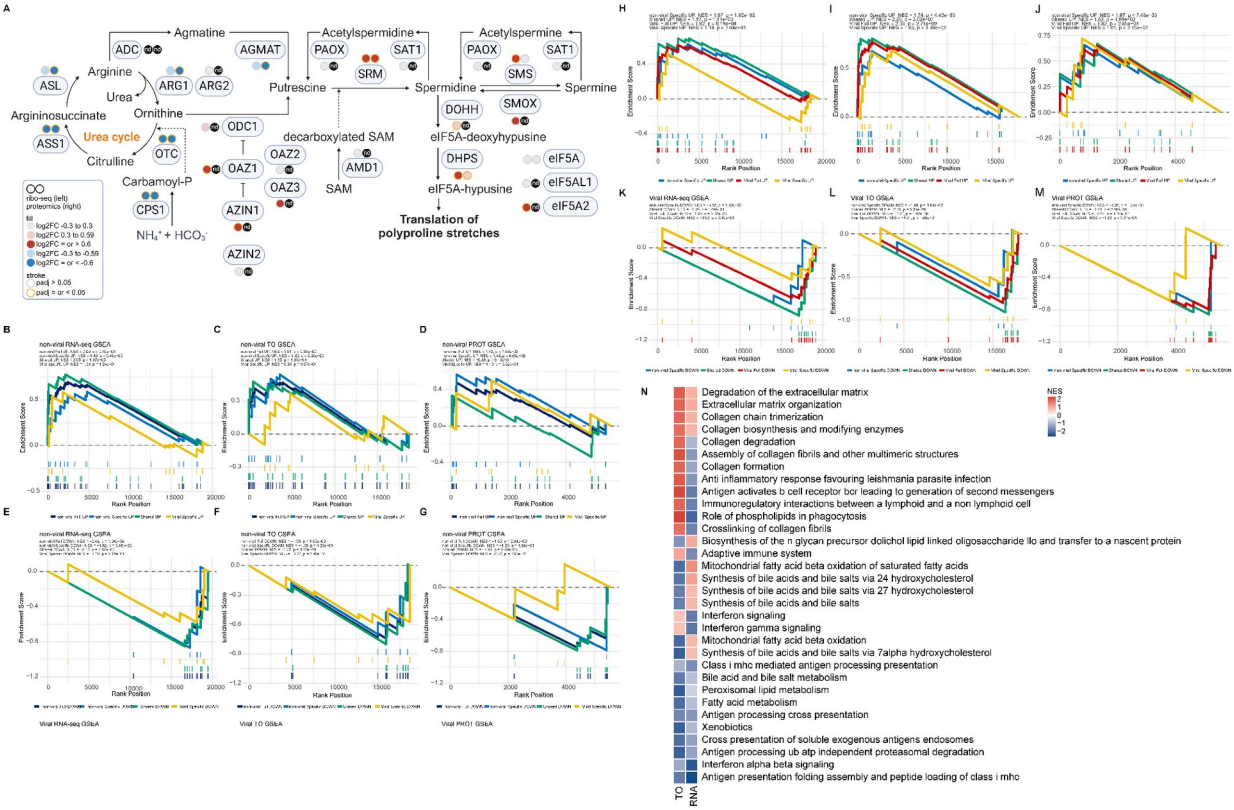


Figure S3. Metabolic pathway and GSEA analysis of viral vs. non-viral tumor samples across multi-omic levels. A. Urea cycle, arginine biosynthesis and polyamine synthesis pathways colored by log_2FC from ribosome profiling (circles on the left) and proteomics data (circles on the right). Created with BioRender, design based on [47]. **B.** GSEA analysis performed on samples of viral origin in RNA level using viral RNA markers that are upregulated. **C.** Same as B in TO level. **D.** Same as B, in protein level. **E.** Same as B, for markers that are downregulated. **F.** Same as E, in TO level. **G.** Same as E, in protein level. **H.** Same as B, on samples of non-viral origin. **I.** Same as C, on samples of non-viral origin. **J.** Same as D, on samples of non-viral origin. **K.** Same as E, on samples of non-viral origin. **L.** Same as F, on samples of non-viral origin. **M.** Same as G, on samples of non-viral origin. **N.** GSEA performed on non-tumor samples, non-viral relative to viral using differential analysis performed using DeSeq2. Reactome pathways that are related to immune system and inflammation, extracellular matrix and collagen, lipid, fatty acid, bile acid, and xenobiotics metabolism were used in GSEA. Only categories showing significant up (red) or down (blue) regulation (adj. p-value < 0.05) in the non-viral compared to viral background are shown.

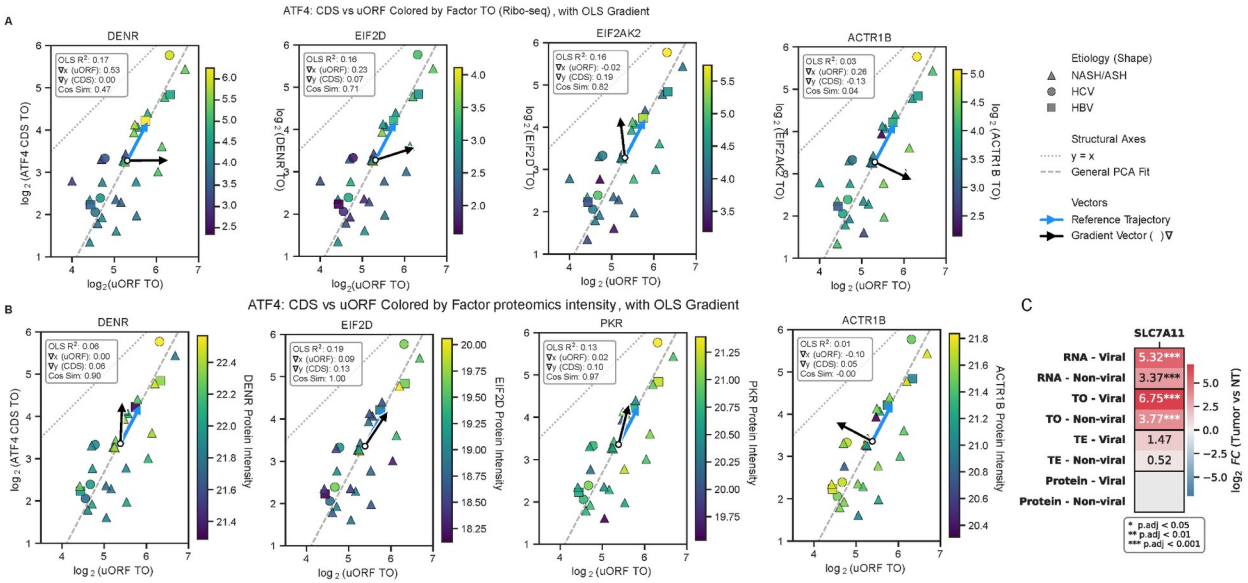


Figure S4. ATF4 translational regulation. A. Scatter plots mapping ATF4 uORF2 TO (x-axis) against its CDS TO (y-axis) across Ribo-seq samples. Color gradients reflect the TO levels of selected genes (DENR, EIF2D, EIF2AK2 (encodes PKR kinase), ACTR1B. **B.** Identical coordinate mapping as in (A), with color gradients representing the corresponding protein intensities. In both panels, marker shapes denote the underlying liver disease etiology. General PCA fit corresponds to the angle of PC1 anchored to the centroid of the data. Gradient vector is constructed from the coefficients in the OLS models (See Methods). **C.** Multi-omic quantification of SLC7A11 gene.

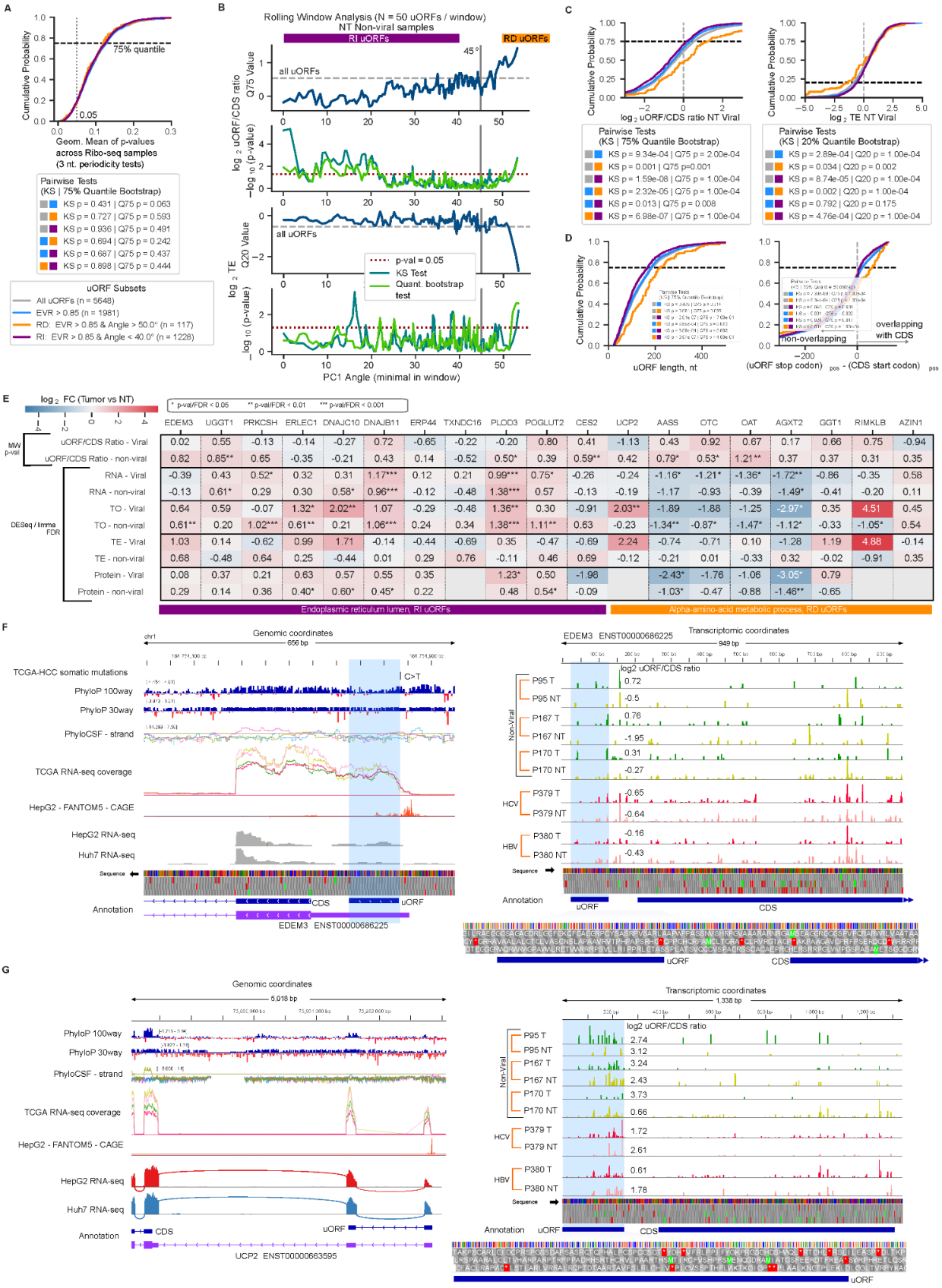


Figure S5. Properties of ncORFs. A. Distribution of geometric mean of combined Fisher p-values assessing the frame bias of individual uORFs in individual samples. **B.** Rolling window analysis of the distribution of selected uORF features along the PC1 angle estimated for the uORF (Figure 4D). The selected features are the same as in Figure 4E. uORFs were sorted by

the PC1 angle and overlapping windows of 50 uORFs, sliding by 10 at a time were defined. For each such window, a distribution of the selected feature was obtained to calculate a quantile of interest (75% quantile for uORF/CDS ratio, to match Figure 4E, top, 25% quantile for CDS TE, to match Figure 4E, bottom). The corresponding statistical significance in a test against all uORFs was also assessed for each window. **C.** Cumulative distributions of the same features as in Figure 4E, but for the viral non-tumor cohort of ribo-seq samples. **D.** Cumulative distributions of uORF nucleotide length (left) and the difference in transcriptomic coordinates between the last nucleotide of the uORF and the first nucleotide of the corresponding CDS (right). **E.** T-NT changes of selected RD and RI uORF-containing genes at RNA, TO, TE and protein levels, in samples of viral and non-viral backgrounds. Gene selection corresponds to the top categories from the GO enrichment analysis presented in Figure 4F-G. **F-G.** Summary annotation of the EDEM3 (F) and UCP2 (G) genes. Left panels: gene loci with the following tracks - poly(A) site given in the PolyASite database [80], somatic mutations observed in the TCGA cohort of HCC patients, nucleotide-level PhyloP score computed from 100 vertebrates as well as 30 primates [82], codon-level PhyloCSF score indicating selection for protein coding capacity [83], coverage of the locus by RNA-seq reads from the TCGA data, CAGE data showing transcription start sites [84], coverage of the locus by RNA-seq reads, including spliced reads, from liver cell lines [85]. Right panel: coverage of the respective mRNAs by A-site positions (indicated in violet in the left panels) inferred from RPFs in individual patient samples. The disease background of the individual patients is also indicated.

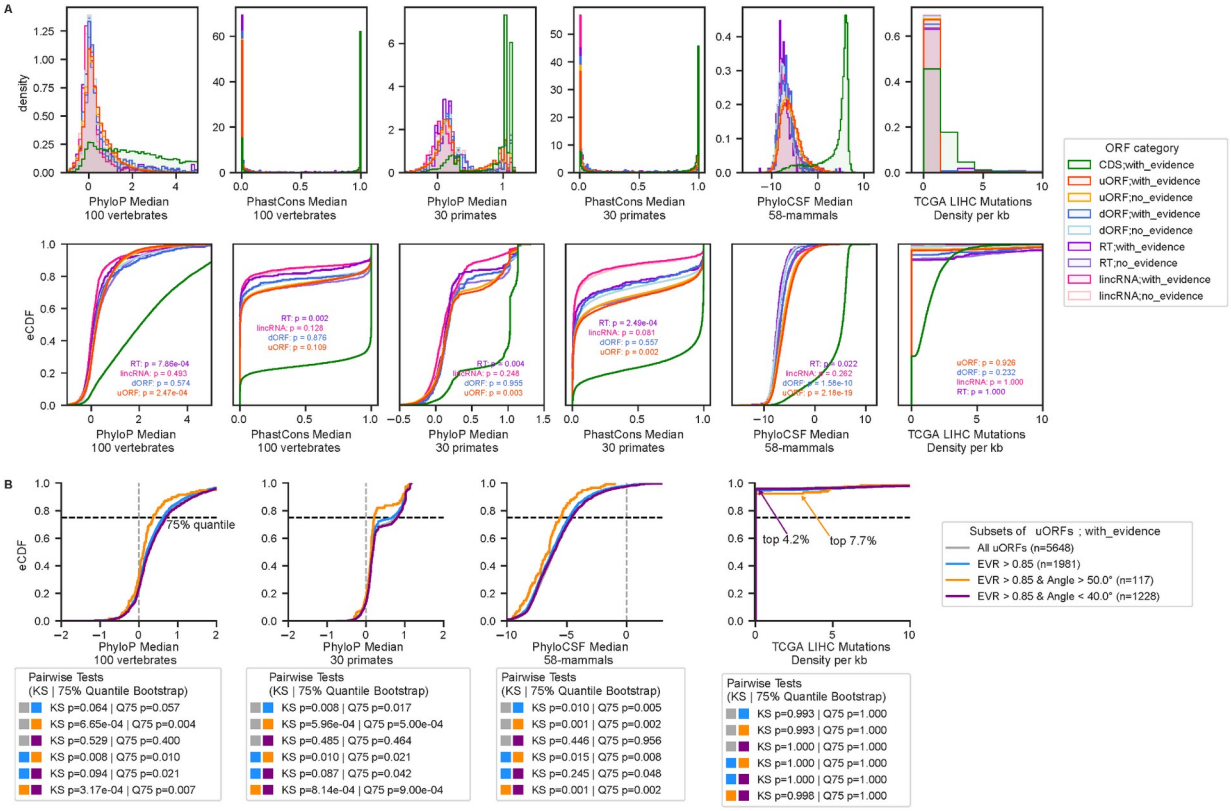


Figure S6. Cumulative distributions of measures of evolutionary conservation and mutation density for selected categories of uORFs. **A.** All categories. **B.** Subset of uORFs. See main text for details.

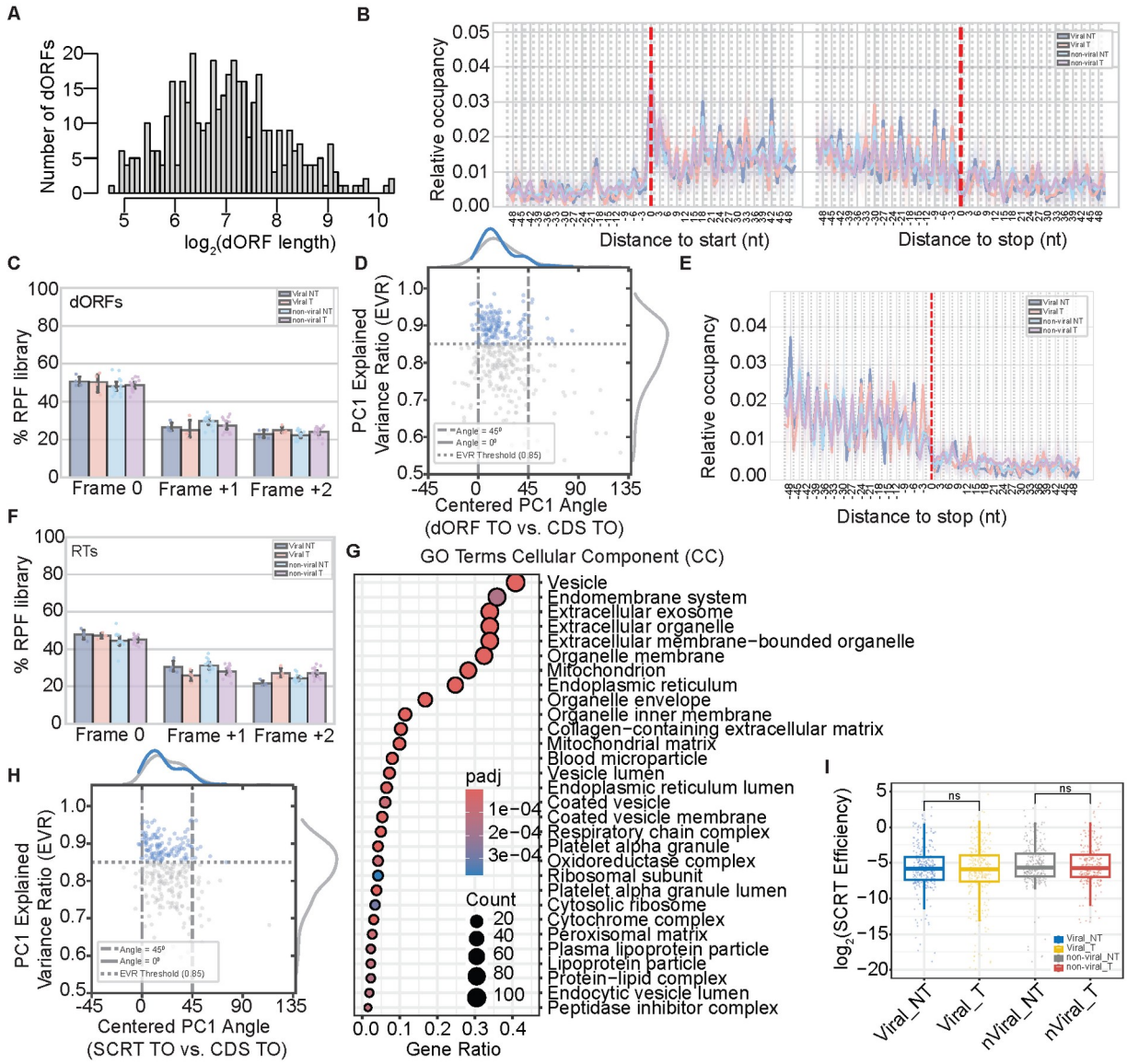


Figure S7. dORF/RT analysis. A. Length distribution of dORFs with significant frame bias. **B.** Metagene plots showing the relative proportion of P sites mapping in the [-50;+50] nucleotide windows centered on the start (left panel) or stop (right panel) codons of the select dORFs. The proportions were calculated for each gene individually, then averaged across genes. **C.** Frame bias of reads mapping to the inferred dORFs in individual samples of different groups. Error bars represent standard deviations. **D.** dORF TO coupling to CDS TO based on the angle and explained variance ratio of PC1. **E.** Metagene plots showing the relative proportion of P sites mapping in the [-50;+50] nucleotide windows centered on the stop codons of the presumed SCRT targets. **F.** Frame bias of reads mapping to SCRT regions in individual samples of different groups. **G.** Cellular compartment GO enrichment analysis of genes with evidence of SCRT. As background, all translated genes (TO) are used. **H.** SCRT TO coupling to CDS TO based on the angle and explained variance ratio of PC1. **I.** Distribution of SCRT efficiency ($\log_2$ RT/CDS RPF density) in samples of different types.

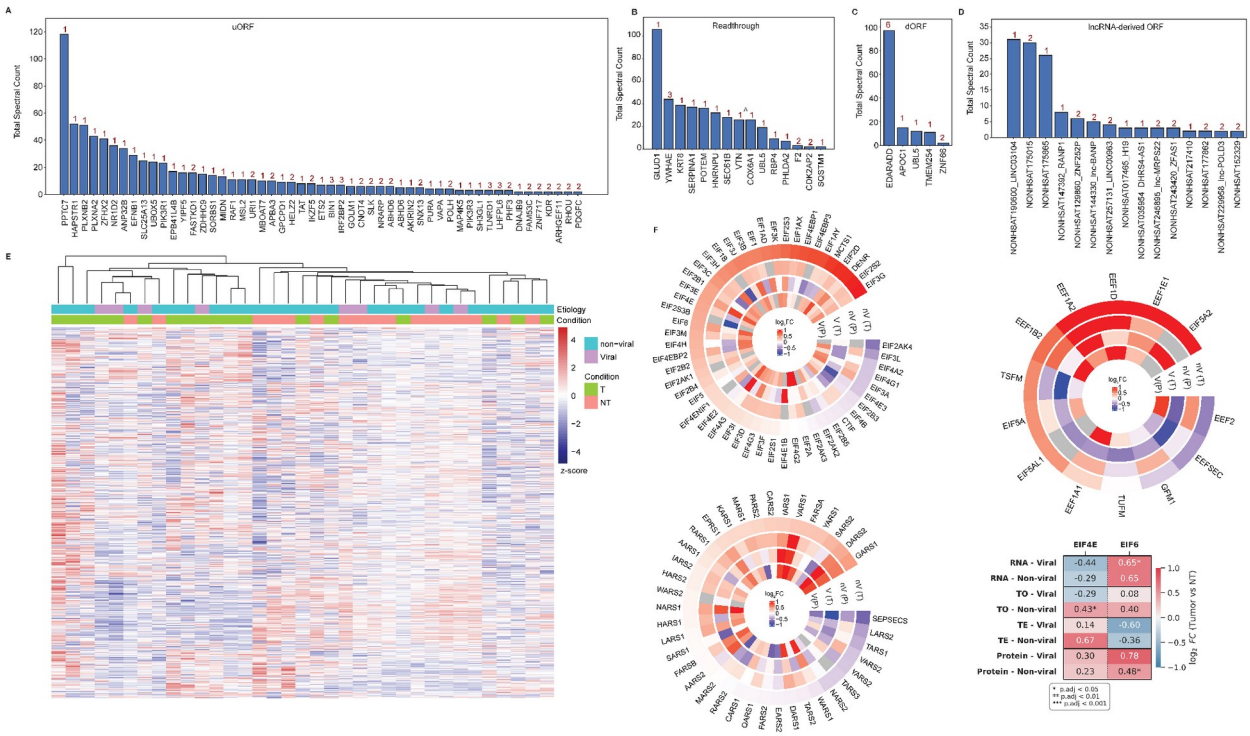


Figure S8. Proteomics evidence for ncORFs. A. uORF derived peptides, with spectral evidence from at least 3 datasets. The host gene is indicated on the x-axis, while the y-axis gives the total number of identified spectra. The number of distinct peptides quantified from the respective uORF from mass spectrometry data is shown on top of each bar. **B.** Similar to A, for readthrough-isoforms from at least 2 datasets. **C.** Similar to A, for dORF-derived peptides from at least 2 datasets. **D.** Similar to A for lncRNA-derived peptides from at least 2 datasets. **E.** Clustering of TO of lncRNA derived-ORFs across all samples with viral or non-viral background. **F.** mRNA and protein-level changes of translation factors in T-NT of viral and non-viral background as well as EIF4E and EIF6 specifically.

Table S1.

Sheet: Ribo-seq Samples (43 rows)

#	Biobank ID	Liver disease background	Cirrhosis	Edmondson grade	Sex	Age
1	P12-HCC	ASH	YES	3	F	66
2	P28-NT	ASH/NASH	NO	n.a.	M	78
3	P28-HCC	ASH/NASH	NO	3	M	78
4	P30-NT	?	?	n.a.	n.a	n.a
5	P30-HCC	?	?	2	n.a	n.a
6	P32-NT	HCV	YES	n.a.	n.a	n.a
7	P32-HCC	HCV	YES	3	n.a	n.a
8	P34-HCC	HBV	NO	3	n.a	n.a
9	P90-HCC	?	YES	2	M	73
10	P95-NT	ASH/NASH	NO	n.a.	F	75
11	P95-HCC	ASH/NASH	NO	1	F	75
12	P158-NT	ASH	YES	n.a.	M	60
13	P160-NT	ASH/NASH	YES	n.a.	F	67
14	P160-HCC	ASH/NASH	YES	2	F	67
15	P167-NT	ASH/NASH	YES	n.a.	M	78
16	P167-HCC	ASH/NASH	YES	2	M	78
17	P170-NT	ASH/NASH	NO	n.a.	M	77
18	P170-HCC	ASH/NASH	NO	2	M	77
19	P174-NT	?	YES	n.a.	M	78
20	P174-HCC	?	YES	2/3	M	78
21	P185-NT	ASH	YES	n.a.	M	59
22	P185-HCC	ASH	YES	3	M	59
23	P275-NT	ASH/NASH	NO	n.a.	M	80
24	P275-HCC	ASH/NASH	NO	3	M	80
25	P282-NT	NASH	YES	n.a.	M	78
26	P282-HCC-A	NASH	YES	3	M	78
27	P282-HCC-B	ASH/NASH	YES	2	M	78
28	P282-HCC-D	ASH/NASH	YES	2	M	78
29	P296-NT	ASH/NASH	YES	n.a.	M	80
30	P296-HCC	ASH/NASH	YES	3	M	80
31	P347-NT	ASH/NASH	?	n.a.	M	79
32	P347-HCC	ASH/NASH	?	3	M	79
33	P375-NT	ASH/NASH	NO	n.a.	M	66
34	P379-NT	HCV	NO	n.a.	M	69
35	P379-HCC	HCV	NO	3	M	69
36	P380-NT	HBV	YES	n.a.	M	69
37	P380-HCC	HBV	YES	3	M	69
38	P398-NT	HCV+ASH/NASH	YES	n.a.	M	57
39	P398-HCC	HCV+ASH/NASH	YES	2	M	57
40	P406-NT	ASH/NASH	YES	n.a.	M	80
41	P406-HCC	ASH/NASH	YES	2	M	80
42	P434-NT	HBV	YES	n.a.	M	66
43	P437-HCC	?	?	2	M	75

Sheet: TCGA Samples (223 rows)

Sample.ID	Condition	Background
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Sample.ID	Condition	Background
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TCGA.DD.A116.11A	NT	Viral
TCGA.DD.A119.11A	NT	Viral
TCGA.DD.A1EE.11A	NT	Viral
TCGA.DD.A1EH.11A	NT	Viral
TCGA.DD.A1EI.11A	NT	Viral
TCGA.DD.A1EL.11A	NT	Viral
TCGA.EP.A12J.11A	NT	Viral
TCGA.ES.A2HT.11A	NT	Viral
TCGA.FV.A23B.11A	NT	Viral
TCGA.G3.A3CH.11A	NT	Viral
TCGA.3K.AAZ8.01A	T	Viral
TCGA.5C.AAPD.01A	T	Viral
TCGA.BC.A10W.01A	T	Viral
TCGA.BW.A5NO.01A	T	Viral
TCGA.BW.A5NP.01A	T	Viral
TCGA.CC.A9FU.01A	T	Viral
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TCGA.DD.A116.01A	T	Viral
TCGA.DD.A119.01A	T	Viral
TCGA.DD.A1EA.01A	T	Viral
TCGA.DD.A1EE.01A	T	Viral
TCGA.DD.A1EH.01A	T	Viral
TCGA.DD.A1EI.01A	T	Viral
TCGA.DD.A1EL.01A	T	Viral
TCGA.DD.A4NF.01A	T	Viral
TCGA.DD.A4NO.01A	T	Viral
TCGA.DD.A4NQ.01A	T	Viral
TCGA.DD.A73D.01A	T	Viral
TCGA.DD.AAC8.01A	T	Viral
TCGA.DD.AAC9.01A	T	Viral
TCGA.DD.AACA.01A	T	Viral
TCGA.DD.AACB.01A	T	Viral
TCGA.DD.AACC.01A	T	Viral
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TCGA.DD.A4NJ.01A	T	non-viral
TCGA.DD.A4NL.01A	T	non-viral
TCGA.DD.A4NS.01A	T	non-viral
TCGA.DD.A4NV.01A	T	non-viral
TCGA.DD.A73A.01A	T	non-viral
TCGA.DD.A73E.01A	T	non-viral
TCGA.DD.AACP.01A	T	non-viral
TCGA.DD.AACV.01A	T	non-viral
TCGA.DD.AADU.01A	T	non-viral
TCGA.DD.AAW2.01A	T	non-viral
TCGA.ED.A627.01A	T	non-viral
TCGA.ED.A66X.01A	T	non-viral
TCGA.ED.A97K.01A	T	non-viral
TCGA.EP.A26S.01A	T	non-viral
TCGA.EP.A3JL.01A	T	non-viral
TCGA.EP.A3RK.01A	T	non-viral
TCGA.FV.A2QQ.01A	T	non-viral
TCGA.FV.A3I1.01A	T	non-viral
TCGA.FV.A4ZP.01A	T	non-viral
TCGA.G3.A25S.01A	T	non-viral
TCGA.G3.A25V.01A	T	non-viral
TCGA.G3.A3CI.01A	T	non-viral

Sample.ID	Condition	Background
TCGA.G3.A5SL.01A	T	non-viral
TCGA.G3.A6UC.01A	T	non-viral
TCGA.G3.A7M5.01A	T	non-viral
TCGA.G3.A7M7.01A	T	non-viral
TCGA.G3.A7M8.01A	T	non-viral
TCGA.G3.AAV5.01A	T	non-viral
TCGA.GJ.A3OU.01A	T	non-viral
TCGA.MR.A8JO.01A	T	non-viral
TCGA.NI.A4U2.01A	T	non-viral
TCGA.NI.A8LF.01A	T	non-viral
TCGA.RC.A6M6.01A	T	non-viral
TCGA.T1.A6J8.01A	T	non-viral
TCGA.UB.AA0U.01A	T	non-viral
TCGA.WQ.AB4B.01A	T	non-viral
TCGA.WX.AA44.01A	T	non-viral
TCGA.ZP.A9CY.01A	T	non-viral
TCGA.ZP.A9D0.01A	T	non-viral
TCGA.ZP.A9D1.01A	T	non-viral

Sheet: MassIVE_Proteomics_ID (43 rows)

Sample name in MassIVE	Biobank ID
002_ag-045	P12-HCC
003_ag-045	P28-NT
004_ag-045	P28-HCC
005_ag-045	P30-NT
010_ag-045	P90-HCC
011_ag-045	P95-NT
012_ag-045	P95-HCC
013_ag-045	P158-NT
015_ag-045	P160-NT
016_ag-045	P160-HCC
017_ag-045	P167-NT
018_ag-045	P167-HCC
019_ag-045	P170-NT
020_ag-045	P170-HCC
021_ag-045	P174-NT
022_ag-045	P174-HCC
023_ag-045	P185-NT
024_ag-045	P185-HCC
025_ag-045	P296-NT
026_ag-045	P296-HCC
027_ag-045	P347-NT
028_ag-045	P347-HCC
029_ag-045	P375-NT
031_ag-045	P379-NT
032_ag-045	P379-HCC
033_ag-045	P380-NT
034_ag-045	P380-HCC
035_ag-045	P398-NT
036_ag-045	P398-HCC

Sample name in MassIVE	Biobank ID
037_ag-045	P406-NT
038_ag-045	P406-HCC
039_ag-045	P434-NT
042_ag-045	P437-HCC
043_ag-045	P282-NT
044_ag-045	P282-HCC-A
045_ag-045	P282-HCC-B
046_ag-045	P282-HCC-D
047_ag-045	P34-HCC
054_ag-045	P275-NT
055_ag-045	P275-HCC
065_ag-045	P30-HCC
066_ag-045	P32-NT
067_ag-045	P32-HCC

Table S2.

Biobank ID	Total Library (reads/RPFs)	Mapped to rRNA (reads/RPFs)	Mapped to mRNAs (reads/RPFs)
P28_NT	17980565	9163813	4577577
P30_NT	14821221	2956776	3558918
P32_NT	23328557	3298606	16451127
P95_NT	17935381	3200165	11083161
P158_NT	24180364	1535393	19422236
P160_NT	22054901	11390741	8252727
P167_NT	25752925	10669192	12644005
P170_NT	58940161	19501048	34756782
P174_NT	24986390	12213953	10932608
P185_NT	25528807	13118328	10081915
P275_NT	24753119	14993853	6163081
P296_NT	34353335	1582076	29460301
P347_NT	40188318	2249554	34647684
P375-NT	25567319	4200088	19392972
P379_NT	45795357	1672014	39538062
P380_NT	37126982	3507411	31097351
P398-NT	22127669	2723286	15799239
P406_NT	52569839	3157011	44957256
P434-NT	23619021	3227746	17125298
P282_NT	28340866	5198308	21153115
P12_HCC	21559269	7117182	10080286
P28_HCC	22229976	4163638	10266891
P30_HCC	16505142	5121921	5217547
P32_HCC	20251621	2674352	11988419
P90_HCC	27143995	2996586	20027883
P95_HCC	26378985	5721679	17361814
P160_HCC	20169622	7305855	8830819
P167_HCC	22384986	10158110	10212549
P170_HCC	24959738	15560376	6596124
P174_HCC	24563461	15259415	5394701
P185_HCC	28708595	15620791	10756177
P275_HCC	23241529	12133885	7453113
P296-HCC	16735842	1957903	11276249
P347-HCC	15098212	3035168	7317170
P379_HCC	32894318	2998179	18547730
P380_HCC	29357340	5058908	21403666
P398-HCC	13201025	4518926	5533185
P406_HCC	49497716	2301122	41067143
P437_HCC	39611231	6191086	23891145
P282_HCC_A	29390115	3823369	22192961
P282_HCC_B	27978880	2685125	20808070
P282_HCC_D	29839238	4411432	19832690
P34_HCC	17147259	9602866	5689816

Table S3.

Because of its size, Table S3 is provided as a separate Excel file (Supplementary_Table_S3.xlsx). It contains the following sheets:

• Supplementary_Table_S3: 19,798 rows × 28 columns

Table S4.

Gene Symbol / Marker	Full Name	Direction of Change	Disease Context	NonViral_ RNA_ log2FC	NonViral_ RNA_ pval	NonViral_ RNA_ padj	NonViral_ RPF_ log2FC	NonViral_ RPF_ pval	NonViral_ RPF_ padj	NonViral_ protein_ log2FC	NonViral_ protein_ pval	NonViral_ protein_ padj	Viral_ RNA_ log2FC	Viral_ RNA_ pval	Viral_ RNA_ padj	Viral_ RPF_ log2FC	Viral_ RPF_ pval	Viral_ RPF_ padj	Viral_ protein_ log2FC	Viral_ protein_ pval	Viral_ protein_ padj
ACACA	Acetyl-CoA Carboxylase Alpha	Upregulated	NASH-HCC (De novo lipogenesis)	2.011	0.0444	0.115	-1.59	0.112	0.241	0.39	NA	0.821	1.956	0.0505	0.11	0.681	0.496	0.727	0.282	NA	0.852
ACLY	ATP Citrate Lyase	Upregulated	NASH-HCC (De novo lipogenesis)	4.248	2.16e-05	3.21e-04	1.943	0.052	0.14	5.207	NA	6.95e-04	3.856	1.15e-04	8.39e-04	3.543	3.96e-04	0.0068	3.521	NA	0.0438
ADIPOQ	Adiponectin	Downregulated	NASH-HCC (Loss of anti-inflammatory signaling)	0.168	0.867	NA	1.226	0.22	0.385	NA	NA	NA	0.0329	0.974	NA	1.28	0.2	0.444	NA	NA	NA
AFP	Alpha-Fetoprotein	Upregulated	Viral-HCC (Oncofetal dedifferentiation)	5.059	4.21e-07	1.23e-05	2.718	0.00656	0.0314	NA	NA	NA	6.464	1.02e-10	6.52e-09	3.441	NA	NA	NA	NA	NA
AKR1B10	Aldo-Keto Reductase Family 1 Member B10	Upregulated	Pan-Etiology HCC (Detoxification / Lipid metabolism)	7.152	8.56e-13	1.25e-10	7.074	1.51e-12	6.19e-10	5.441	NA	4.94e-04	3.419	6.27e-04	0.00331	8.287	1.16e-16	4.23e-13	7.914	NA	0.00251
ALDH2	Aldehyde Dehydrogenase 2	Downregulated	Pan-Etiology HCC (Detoxification loss)	-5.693	1.25e-08	6.40e-07	-3.374	7.41e-04	0.00639	-3.79	NA	0.00836	-4.514	6.36e-06	7.77e-05	-4.323	1.54e-05	5.78e-04	-2.947	NA	0.0683
ALDOB	Aldolase B	Downregulated	Pan-Etiology HCC (Loss of hepatocyte identity)	-3.174	0.0015	0.00905	-1.908	0.0563	0.148	-1.976	NA	0.156	-2.652	0.00801	0.0256	-2.633	0.00846	0.0593	-3.19	NA	0.0544
ARG1	Arginase 1	Downregulated	Pan-Etiology HCC (Urea cycle loss)	-2.145	0.0319	0.0904	1.183	0.237	0.405	-1.541	NA	0.28	-2.168	0.0301	0.0731	-2.152	0.0314	0.143	-2.925	NA	0.0695
AXIN2	Axin 2	Upregulated	Pan-Etiology HCC (Wnt signaling)	3.308	9.38e-04	0.00631	-0.752	0.452	0.626	NA	NA	NA	2.907	0.00365	0.0136	1.164	0.244	0.498	NA	NA	NA
BIRC5	Baculoviral IAP Repeat Containing 5	Upregulated	Pan-Etiology HCC (Hyper-proliferation)	8.886	6.32e-19	4.42e-16	2.455	0.0141	0.0553	NA	NA	NA	10.067	7.70e-24	1.75e-20	5.297	1.18e-07	1.32e-05	NA	NA	NA
CCL2	C-C Motif Chemokine Ligand 2	Upregulated	NASH-HCC (Macrophage recruitment)	-2.563	0.0104	0.0393	-4.242	2.22e-05	4.71e-04	NA	NA	NA	-2.744	0.00606	0.0204	-0.989	0.323	0.579	NA	NA	NA
CD8A	CD8a Molecule	Upregulated	Viral-HCC (Cytotoxic T-cell infiltration)	-0.914	0.361	0.506	-0.846	0.397	0.576	NA	NA	NA	-2.307	0.0211	0.055	0.43	NA	NA	NA	NA	NA
CDK1	Cyclin Dependent Kinase 1	Upregulated	Pan-Etiology HCC (Hyper-proliferation)	8.597	8.15e-18	4.36e-15	5.036	4.76e-07	2.55e-05	1.718	NA	0.222	8.086	6.18e-16	1.70e-13	5.121	3.03e-07	2.72e-05	2.954	NA	0.0678
COL1A1	Collagen Type I Alpha 1	Upregulated	Pan-Etiology HCC (Fibrosis)	3.865	1.11e-04	0.00119	0.815	0.415	0.591	-2.231	NA	0.106	1.973	0.0485	0.107	5.336	9.49e-08	1.14e-05	0.47	NA	0.75
CPS1	Carbamoyl-Phosphate Synthase 1	Downregulated	Pan-Etiology HCC (Urea cycle loss)	-1.936	0.0528	0.131	-1.978	0.0479	0.132	-1.395	NA	0.333	-2.823	0.00476	0.0169	-2.593	0.00951	0.0642	-3.115	NA	0.0578
CPT1A	Carnitine Palmitoyltransferase 1A	Downregulated	NASH-HCC (Loss of beta-oxidation)	-1.973	0.0484	0.122	-1.917	0.0552	0.146	0.923	NA	0.538	-1.611	0.107	0.197	-1.843	0.0654	0.227	-0.483	NA	0.743
CTNNB1	Catenin Beta 1	Upregulated	Pan-Etiology HCC (Wnt signaling)	0.0329	0.974	0.982	0.152	0.879	0.935	-2.764	NA	0.0479	0.54	0.589	0.701	0.375	0.708	0.864	-0.174	NA	0.908
CXCL10	C-X-C Motif Chemokine Ligand 10	Upregulated	Viral-HCC (T-cell recruitment)	-0.742	0.458	0.597	-0.527	0.598	0.746	NA	NA	NA	-2.925	0.00345	0.013	2.475	0.0133	0.081	NA	NA	NA
CXCL14	C-X-C Motif Chemokine Ligand 14	Downregulated	Viral-HCC (Epigenetic silencing)	-3.551	3.84e-04	0.00314	-7.818	5.37e-15	3.59e-12	NA	NA	NA	-3.288	0.00101	0.00484	-1.79	0.0735	0.243	NA	NA	NA
CYP2C9	Cytochrome P450 Family 2 Subfamily C	Downregulated	Pan-Etiology HCC (Drug metabolism loss)	-2.96	0.00307	0.0156	-4.642	3.46e-06	1.16e-04	-4.042	NA	0.00534	-3.626	2.88e-04	0.00176	-3.875	1.07e-04	0.00253	-3.366	NA	0.0479
CYP2E1	Cytochrome P450 Family 2 Subfamily E	Downregulated	Pan-Etiology HCC (Drug metabolism loss)	-1.794	0.0727	0.164	-3.828	1.29e-04	0.00176	-4.239	NA	0.00386	-2.354	0.0186	0.0498	-2.817	0.00485	0.041	-4.013	NA	0.0314
EPCAM	Epithelial Cellular Adhesion Molecule	Upregulated	Pan-Etiology HCC (Dedifferentiation)	2.268	0.0233	0.0719	-2.004	0.045	0.126	0.135	NA	0.945	1.338	0.181	0.293	1.613	NA	NA	0.197	NA	0.896
EZH2	Enhancer of Zeste 2 Polycomb Repressive	Upregulated	Pan-Etiology HCC (Hyper-proliferation)	8.087	6.12e-16	1.82e-13	1.621	0.105	0.231	NA	NA	NA	7.914	2.48e-15	5.24e-13	5.161	2.45e-07	2.34e-05	NA	NA	NA
FASN	Fatty Acid Synthase	Upregulated	NASH-HCC (De novo lipogenesis)	3.261	0.00111	0.00718	-0.486	0.627	0.768	1.547	NA	0.278	2.769	0.00563	0.0192	-1.769	0.0769	0.25	-1.32	NA	0.354
GNMT	Glycine N-Methyltransferase	Downregulated	NASH-HCC (Loss of methyl-donor pathway)	-2.549	0.0108	0.0405	-3.027	0.00247	0.0154	-4.029	NA	0.0055	-0.667	0.505	0.628	-1.486	0.137	0.356	-3.219	NA	0.053

Gene Symbol / Marker	Full Name	Direction of Change	Disease Context	NonViral_ RNA_ log2FC	NonViral_ RNA_ pval	NonViral_ RNA_ padj	NonViral_ RPF_ log2FC	NonViral_ RPF_ pval	NonViral_ RPF_ padj	NonViral_ protein_ log2FC	NonViral_ protein_ pval	NonViral_ protein_ padj	Viral_ RNA_ log2FC	Viral_ RNA_ pval	Viral_ RNA_ padj	Viral_ RPF_ log2FC	Viral_ RPF_ pval	Viral_ RPF_ padj	Viral_ protein_ log2FC	Viral_ protein_ pval	Viral_ protein_ padj
GPC3	Glypican-3	Upregulated	Pan-Etiology HCC (Dedifferentiation)	9.386	6.23e-21	8.08e-18	8.18	2.85e-16	2.54e-13	NA	NA	NA	9.76	1.67e-22	2.16e-19	5.554	2.80e-08	4.30e-06	NA	NA	NA
HK2	Hexokinase 2	Upregulated	Pan-Etiology HCC (Warburg effect)	0.779	0.436	0.578	-3.254	0.00114	0.00877	NA	NA	NA	0.826	0.409	0.538	1.208	0.227	0.477	NA	NA	NA
HMGCR	3-Hydroxy-3-Methylglutaryl-CoA Reductase	Upregulated	NASH-HCC (Cholesterol synthesis)	-1.588	0.112	0.225	0.82	0.412	0.589	0.718	NA	0.645	1.04	0.298	0.427	-1.636	0.102	0.298	-0.752	NA	0.605
HSPA5	Heat Shock Protein Family A Member 5	Upregulated	NASH-HCC (ER stress chaperone)	3.008	0.00263	0.0138	4.425	9.65e-06	2.56e-04	4.764	NA	0.00158	3.4	6.75e-04	0.00351	1.144	0.252	0.507	2.94	NA	0.0683
ISG15	ISG15 Ubiquitin Like Modifier	Upregulated	Viral-HCC (Antiviral response)	1.026	0.305	0.45	1.351	0.177	0.332	-0.196	NA	0.915	-1.52	0.129	0.226	1.445	0.148	0.372	1.424	NA	0.318
KRT19	Keratin 19	Upregulated	Pan-Etiology HCC (Dedifferentiation)	-1.516	0.13	0.249	-6.244	4.28e-10	8.17e-08	-2.305	NA	0.0957	0.585	0.559	0.675	2.657	0.00789	0.0567	1.292	NA	0.365
LCN2	Lipocalin-2	Upregulated	NASH-HCC (Apoptosis / Lipotoxicity)	6.951	3.64e-12	4.62e-10	6.538	6.25e-11	1.50e-08	-1.07	NA	0.47	6.238	4.45e-10	2.42e-08	5.834	5.41e-09	1.28e-06	0.99	NA	0.492
LDHA	Lactate Dehydrogenase A	Upregulated	Pan-Etiology HCC (Warburg effect)	-2.955	0.00313	0.0158	-1.439	0.15	0.296	-0.258	NA	0.886	-2.653	0.00798	0.0255	0.393	0.695	0.858	2.531	NA	0.0994
MCM2	Minichromosome Maintenance Complex 2	Upregulated	Viral-HCC (Replicative stress)	6.557	5.51e-11	5.44e-09	1.277	0.202	0.363	1.865	NA	0.183	5.439	5.35e-08	1.38e-06	3.843	1.21e-04	0.0028	3.534	NA	0.0436
MKI67	Marker Of Proliferation Ki-67	Upregulated	Pan-Etiology HCC (Hyper-proliferation)	8.574	1.00e-17	4.85e-15	2.16	0.0308	0.0962	NA	NA	NA	7.317	2.54e-13	3.24e-11	4.696	2.66e-06	1.48e-04	NA	NA	NA
MT1M	Metallothionein 1M	Downregulated	Pan-Etiology HCC (Loss of ROS protection)	-5.078	3.81e-07	1.13e-05	-3.374	7.41e-04	0.00639	NA	NA	NA	-3.019	0.00253	0.0102	-1.963	0.0496	0.192	NA	NA	NA
MX1	MX Dynamin Like GTPase 1	Upregulated	Viral-HCC (Antiviral response)	-2.531	0.0114	0.042	-1.708	0.0876	0.203	-0.00733	NA	0.997	-2.74	0.00615	0.0206	0.0961	0.923	0.967	3.451	NA	0.0456
OAS1	2'-5'-Oligoadenylate Synthetase 1	Upregulated	Viral-HCC (Antiviral response)	-3.267	0.00109	0.00706	-1.021	0.307	0.483	-2.17	NA	0.116	-3.288	0.00101	0.00484	-1.581	0.114	0.318	-1.427	NA	0.317
OTC	Ornithine Transcarbamylase	Downregulated	Pan-Etiology HCC (Urea cycle loss)	-1.644	0.1	0.207	-2.749	0.00598	0.0293	-2.165	NA	0.117	-2.636	0.0084	0.0266	-1.999	0.0456	0.182	-1.471	NA	0.304
PARP1	Poly(ADP-Ribose) Polymerase 1	Upregulated	Viral-HCC (DNA damage repair)	3.42	6.25e-04	0.00461	2.329	0.0199	0.0707	1.752	NA	0.213	4.701	2.59e-06	3.58e-05	2.634	0.00845	0.0593	3.029	NA	0.0625
PCNA	Proliferating Cell Nuclear Antigen	Upregulated	Viral-HCC (Replicative stress)	5.072	3.94e-07	1.16e-05	2.03	0.0424	0.121	4.115	NA	0.00478	4.426	9.60e-06	1.10e-04	3.085	0.00204	0.0223	4.176	NA	0.0271
PKM	Pyruvate Kinase M1/2	Upregulated	Pan-Etiology HCC (Warburg effect)	3.966	7.32e-05	8.58e-04	-0.199	0.843	0.913	0.891	NA	0.552	3.418	6.30e-04	0.00331	3.912	9.14e-05	0.00227	3.132	NA	0.057
PPARA	Peroxisome Proliferator-Activated Receptor α	Downregulated	NASH-HCC (Loss of fatty acid oxidation)	-2.551	0.0107	0.0403	-1.461	0.144	0.288	NA	NA	NA	-2.439	0.0147	0.0414	-2.703	0.00687	0.0518	NA	NA	NA
RASSF1	Ras Association Domain Family Member 1	Downregulated	Viral-HCC (Epigenetic silencing)	2.998	0.00272	0.0141	1.478	0.139	0.281	NA	NA	NA	5.401	6.63e-08	1.65e-06	1.96	0.05	0.193	NA	NA	NA
SCD	Stearoyl-CoA Desaturase 1	Upregulated	NASH-HCC (MUFA synthesis)	-0.167	0.868	0.914	1.765	0.0775	0.186	2.041	0.0503	0.141	-0.326	0.744	0.825	-0.62	0.535	0.754	0.234	0.82	0.877
SIRT1	Sirtuin 1	Downregulated	NASH-HCC (Loss of metabolic sensing)	-2.931	0.00338	0.0168	-4.478	7.53e-06	2.12e-04	NA	NA	NA	-2.096	0.0361	0.0844	-1.824	0.0681	0.232	NA	NA	NA
SOCS1	Suppressor Of Cytokine Signaling 1	Downregulated	Viral-HCC (Epigenetic silencing)	-1.38	0.168	0.298	-0.607	0.544	0.704	NA	NA	NA	2.507	0.0122	0.0358	0.0925	0.926	0.968	NA	NA	NA
SPP1	Osteopontin	Upregulated	NASH-HCC (Profibrogenic signaling)	5.617	1.94e-08	9.53e-07	2.474	0.0134	0.0532	-3.785	NA	0.00847	5.826	5.69e-09	2.11e-07	6.87	6.43e-12	4.70e-09	2.9	NA	0.0712
SQLE	Squalene Epoxidase	Upregulated	NASH-HCC (Cholesterol biosynthesis)	2.565	0.0103	0.0391	3.818	1.35e-04	0.00181	2.47	NA	0.0743	7.585	3.32e-14	5.62e-12	2.511	0.012	0.0756	1.619	NA	0.258

Gene Symbol / Marker	Full Name	Direction of Change	Disease Context	NonViral_ RNA_ log2FC	NonViral_ RNA_ pval	NonViral_ RNA_ padj	NonViral_ RPF_ log2FC	NonViral_ RPF_ pval	NonViral_ RPF_ padj	NonViral_ protein_ log2FC	NonViral_ protein_ pval	NonViral_ protein_ padj	Viral_ RNA_ log2FC	Viral_ RNA_ pval	Viral_ RNA_ padj	Viral_ RPF_ log2FC	Viral_ RPF_ pval	Viral_ RPF_ padj	Viral_ protein_ log2FC	Viral_ protein_ pval	Viral_ protein_ padj
SREBF1	Sterol Regulatory Element Binding Factor 1	Upregulated	NASH-HCC (Master regulator of lipogenesis)	-1.336	0.181	0.315	-3.282	0.00103	0.00814	NA	NA	NA	-0.167	0.867	0.913	-1.618	0.106	0.304	NA	NA	NA
STAT1	Signal Transducer And Activator Of Transcription	Upregulated	Viral-HCC (Antiviral response)	-1.093	0.274	0.42	-1.788	0.0738	0.179	0.159	NA	0.933	-2.28	0.0226	0.0583	1.59	0.112	0.315	3.128	NA	0.057
TIMP1	Tissue Inhibitor Of Metalloproteinase 1	Upregulated	NASH-HCC (Matrix degradation block)	1.123	0.262	0.406	2.281	0.0225	0.0771	4.121	NA	0.0047	1.294	0.196	0.311	2.672	0.00753	0.055	9.414	NA	9.77e-04
TOP2A	DNA Topoisomerase II Alpha	Upregulated	Pan-Etiology HCC (Hyper-proliferation)	8.689	3.66e-18	2.21e-15	1.147	0.251	0.422	NA	NA	NA	7.758	8.61e-15	1.72e-12	5.144	2.68e-07	2.51e-05	NA	NA	NA
TREM2	Triggering Receptor Expressed On Myeloid Cells 2	Upregulated	NASH-HCC (Macrophage activation)	3.651	2.61e-04	0.00232	2.435	0.0149	0.0574	NA	NA	NA	4.435	9.20e-06	1.06e-04	4.318	1.58e-05	5.84e-04	NA	NA	NA
HP	Haptoglobin	Downregulated	Viral-HCC (Antiviral response)	-1.268	0.0187	0.0501	-2.594	0.00461	0.0395	-0.0748	0.861	0.906	-1.847	9.84e-04	0.00654	-0.543	0.0413	0.119	-0.115	0.575	0.725
GPLD1	Phosphatidylinositol-glycan-specific phospholipase D	Downregulated	Viral-HCC (Antiviral response)	-0.794	0.0966	0.182	-2.156	0.0302	0.139	-0.331	0.359	0.505	-0.357	0.509	0.641	0.181	0.656	0.789	-0.171	0.408	0.58
APOB	Apolipoprotein B-100	Downregulated	Viral-HCC (Lipid Balance)	-1	2.14e-04	0.00139	-0.95	0.305	0.561	-0.187	0.705	0.792	-1.003	0.0111	0.0412	-0.286	0.231	0.398	0.139	0.378	0.551

Table S5.

Pathway	Viral_ RNA_ NES	Viral_ RNA_ pvalue	Viral_ RNA_ p.adjust	Viral_ RPF_ NES	Viral_ RPF_ pvalue	Viral_ RPF_ p.adjust	NonViral_ RNA_ NES	NonViral_ RNA_ pvalue	NonViral_ RNA_ p.adjust	NonViral_ RPF_ NES	NonViral_ RPF_ pvalue	NonViral_ RPF_ p.adjust
CELL CYCLE MITOTIC	1.939	1.66e-20	1.34e-18	1.824	1.82e-16	1.48e-14	1.917	7.40e-24	5.99e-22	2.355	1.95e-27	2.37e-25
COMPLEMENT CASCADE	-3.091	3.11e-22	3.78e-20	-2.097	7.63e-08	6.87e-07	-3.486	2.61e-33	6.35e-31	-3.12	1.04e-27	2.37e-25
CELL CYCLE	1.916	4.08e-24	9.92e-22	1.748	8.22e-17	9.99e-15	1.862	2.23e-25	2.71e-23	2.24	6.62e-27	5.37e-25
BINDING AND UPTAKE OF LIGANDS BY SCAVENGER RECEPTORS	-2.67	3.05e-13	9.27e-12	-1.179	0.124	0.253	-2.938	9.22e-18	3.64e-16	-3.056	1.16e-23	7.06e-22
PARASITE INFECTION	-2.437	5.06e-11	6.83e-10	0.81	0.814	1	-2.698	6.41e-15	1.56e-13	-2.972	2.65e-23	1.29e-21
CELL CYCLE CHECKPOINTS	2.011	1.02e-14	4.97e-13	2.057	3.08e-16	1.87e-14	1.993	9.08e-17	2.76e-15	2.501	1.54e-22	6.22e-21
FCGAMMA RECEPTOR FCGR DEPENDENT PHAGOCYTOSIS	-2.202	5.13e-10	4.79e-09	0.903	0.679	1	-2.474	5.67e-13	1.06e-11	-2.82	2.57e-21	8.93e-20
M PHASE	1.869	8.61e-14	3.49e-12	1.79	4.90e-11	1.32e-09	1.792	7.10e-13	1.23e-11	2.335	3.04e-21	9.22e-20
DNA REPLICATION	2.063	1.11e-11	2.28e-10	1.909	2.86e-08	2.88e-07	2.025	8.11e-12	1.16e-10	2.636	7.19e-21	1.94e-19
LEISHMANIA INFECTION	-1.8	1.35e-07	6.41e-07	0.902	0.715	1	-1.901	3.14e-09	2.94e-08	-2.606	3.45e-20	8.37e-19
TRANSLATION	1.738	2.82e-09	2.21e-08	-1.126	0.0513	0.118	1.3	0.0101	0.0209	2.306	9.42e-20	2.08e-18
FCERI MEDIATED NF KB ACTIVATION	-1.957	3.54e-06	1.33e-05	0.382	1	1	-2.727	1.04e-15	2.81e-14	-2.837	1.45e-19	2.94e-18
DNA REPLICATION PRE INITIATION	2.109	1.65e-11	3.09e-10	1.992	5.92e-09	8.46e-08	2.023	1.76e-10	2.23e-09	2.668	2.06e-19	3.85e-18
ANTI INFLAMMATORY RESPONSE FAVOURING LEISHMANIA PARASITE INFECTION	-2.073	3.33e-08	1.84e-07	0.943	0.597	0.942	-2.256	1.84e-10	2.23e-09	-2.784	2.66e-19	4.62e-18
FC EPSILON RECEPTOR FCERI SIGNALING	-2.102	2.12e-09	1.72e-08	0.425	1	1	-2.626	2.82e-18	1.37e-16	-2.662	1.14e-18	1.85e-17
SIGNALING BY THE B CELL RECEPTOR BCR	-2.046	1.80e-08	1.07e-07	0.58	0.997	1	-2.699	1.05e-17	3.64e-16	-2.708	1.23e-18	1.87e-17
IMMUNOREGULATORY INTERACTIONS BETWEEN A LYMPHOID AND A NON LYMPHOID CELL	-2.44	4.52e-16	2.75e-14	1.389	0.014	0.0353	-2.648	6.44e-19	3.91e-17	-2.617	1.88e-18	2.69e-17
CELL SURFACE INTERACTIONS AT THE VASCULAR WALL	-1.982	4.44e-09	3.27e-08	1.206	0.116	0.239	-2.331	2.94e-14	6.49e-13	-2.59	2.71e-18	3.66e-17
DISEASES OF PROGRAMMED CELL DEATH	2.081	1.62e-08	9.85e-08	2.086	1.13e-08	1.45e-07	2.082	2.61e-09	2.64e-08	2.662	2.27e-16	2.91e-15
HATS ACETYLATE HISTONES	1.898	2.10e-07	9.62e-07	1.84	3.14e-06	1.91e-05	1.843	1.24e-06	6.84e-06	2.53	2.55e-16	3.10e-15
POSITIVE EPIGENETIC REGULATION OF RRNA EXPRESSION	2.016	1.53e-07	7.14e-07	1.907	3.84e-06	2.22e-05	1.886	8.56e-06	3.65e-05	2.623	5.86e-16	6.78e-15
CHROMOSOME MAINTENANCE	2.144	2.15e-11	3.61e-10	1.949	8.02e-08	6.96e-07	2.03	1.22e-09	1.35e-08	2.537	6.39e-16	7.06e-15
HCMV LATE EVENTS	2.001	6.32e-08	3.40e-07	1.977	1.86e-07	1.50e-06	1.913	7.66e-07	4.37e-06	2.598	8.43e-16	8.90e-15
RNA POLYMERASE I TRANSCRIPTION	1.956	2.73e-07	1.18e-06	1.831	2.11e-05	1.01e-04	1.841	7.27e-06	3.25e-05	2.603	1.39e-15	1.41e-14
POTENTIAL THERAPEUTICS FOR SARS	-1.901	5.66e-07	2.26e-06	0.571	0.998	1	-2.483	4.51e-14	9.13e-13	-2.555	1.48e-15	1.44e-14
RHO GTPASE EFFECTORS	1.845	2.91e-11	4.43e-10	1.83	6.94e-11	1.53e-09	1.867	8.52e-13	1.38e-11	2.192	1.75e-15	1.64e-14
MATERNAL TO ZYGOTIC TRANSITION MZT	1.878	5.04e-06	1.77e-05	1.869	8.75e-07	5.91e-06	1.711	1.23e-04	4.32e-04	2.565	2.06e-15	1.85e-14
NEGATIVE EPIGENETIC REGULATION OF RRNA EXPRESSION	2.04	3.08e-08	1.78e-07	1.891	4.25e-06	2.40e-05	1.881	2.33e-06	1.20e-05	2.592	2.13e-15	1.85e-14
AMYLOID FIBER FORMATION	1.971	2.91e-07	1.22e-06	1.76	8.17e-05	3.15e-04	1.936	4.20e-07	2.68e-06	2.622	2.85e-15	2.39e-14
G2 M CHECKPOINTS	1.91	9.76e-08	4.74e-07	1.985	2.11e-09	3.66e-08	1.941	2.89e-09	2.81e-08	2.446	4.50e-15	3.64e-14
MITOTIC PROPHASE	1.895	3.54e-07	1.46e-06	1.82	5.35e-06	2.89e-05	1.79	6.00e-06	2.75e-05	2.482	4.65e-15	3.65e-14
HCMV EARLY EVENTS	2.1	2.07e-10	2.28e-09	1.899	2.98e-07	2.19e-06	1.981	7.65e-09	6.88e-08	2.511	6.82e-15	5.18e-14
HCMV INFECTION	2.005	1.83e-09	1.54e-08	1.794	4.78e-06	2.64e-05	1.878	3.81e-08	2.89e-07	2.418	1.78e-14	1.31e-13
CELLULAR SENESCENCE	1.741	8.99e-06	3.03e-05	1.679	2.92e-05	1.32e-04	1.693	8.22e-06	3.57e-05	2.35	3.95e-14	2.82e-13
RUNX1 REGULATES TRANSCRIPTION OF GENES INVOLVED IN DIFFERENTIATION OF HSCS	1.857	3.96e-06	1.46e-05	1.834	1.32e-05	6.68e-05	1.779	6.17e-05	2.24e-04	2.522	7.16e-14	4.97e-13
GENE SILENCING BY RNA	1.981	2.19e-07	9.87e-07	1.754	8.92e-05	3.39e-04	1.846	7.36e-06	3.25e-05	2.522	2.41e-13	1.63e-12
INNATE IMMUNE SYSTEM	0	0.999	1	0.778	0.996	1	0	0.999	1	-1.677	2.81e-13	1.85e-12
OXIDATIVE STRESS INDUCED SENESCENCE	1.864	7.51e-06	2.57e-05	1.764	7.07e-05	2.91e-04	1.827	4.55e-06	2.13e-05	2.459	3.32e-13	2.12e-12
MEIOSIS	2.043	9.19e-09	6.38e-08	1.886	9.36e-07	6.14e-06	2.011	1.35e-08	1.17e-07	2.472	5.39e-13	3.36e-12
REGULATION OF CDH1 GENE TRANSCRIPTION	1.874	5.09e-06	1.77e-05	2.067	2.06e-08	2.39e-07	1.872	1.22e-05	4.87e-05	2.459	7.27e-13	4.41e-12
REPRODUCTION	2.031	4.22e-10	4.10e-09	1.862	5.64e-07	3.92e-06	1.894	7.23e-08	5.17e-07	2.352	9.14e-13	5.42e-12
DNA REPAIR	1.656	1.10e-06	4.23e-06	1.31	0.0122	0.0312	1.644	1.15e-07	7.76e-07	2.086	9.52e-13	5.51e-12
SRP DEPENDENT COTRANSLATIONAL PROTEIN TARGETING TO MEMBRANE	2.197	2.23e-11	3.61e-10	0.347	1	1	1.604	7.26e-04	0.00208	2.468	9.86e-13	5.57e-12
HEMOSTASIS	-1.534	0.5	0.66	0.979	0.581	0.929	0	0.999	1	-1.801	1.22e-12	6.74e-12
EUKARYOTIC TRANSLATION INITIATION	2.207	5.18e-12	1.40e-10	-0.6	0.999	1	1.595	6.21e-04	0.00186	2.395	1.34e-12	7.24e-12
SENESCENCE ASSOCIATED SECRETORY PHENOTYPE SASP	1.986	8.67e-08	4.30e-07	1.887	3.59e-06	2.13e-05	1.884	2.64e-06	1.34e-05	2.481	1.41e-12	7.43e-12
CELLULAR RESPONSES TO STIMULI	1.296	4.12e-04	0.0011	0.866	0.936	1	1.03	0.36	0.529	1.722	2.15e-12	1.11e-11
HOMOLOGY DIRECTED REPAIR	1.897	2.23e-07	9.87e-07	1.745	2.49e-05	1.16e-04	1.873	4.94e-07	3.08e-06	2.327	4.05e-12	2.05e-11

Pathway	Viral_ RNA_ NES	Viral_ RNA_ pvalue	Viral_ RNA_ p.adjust	Viral_ RPF_ NES	Viral_ RPF_ pvalue	Viral_ RPF_ p.adjust	NonViral_ RNA_ NES	NonViral_ RNA_ pvalue	NonViral_ RNA_ p.adjust	NonViral_ RPF_ NES	NonViral_ RPF_ pvalue	NonViral_ RPF_ p.adjust
PRE NOTCH EXPRESSION AND PROCESSING	1.806	3.30e-05	1.01e-04	1.764	7.30e-05	2.96e-04	1.886	2.00e-06	1.05e-05	2.427	4.56e-12	2.26e-11
TELOMERE MAINTENANCE	2.077	7.04e-09	5.03e-08	1.782	5.27e-05	2.24e-04	1.962	3.82e-07	2.51e-06	2.406	1.15e-11	5.60e-11
DENGUE VIRUS INFECTION	1.281	0.0128	0.0265	1.185	0.073	0.157	1.184	0.0674	0.125	1.956	2.35e-11	1.12e-10
MITOTIC METAPHASE AND ANAPHASE	1.84	6.82e-08	3.52e-07	1.837	2.96e-08	2.88e-07	1.765	7.12e-08	5.17e-07	2.135	5.81e-11	2.72e-10
RIBOSOME ASSOCIATED QUALITY CONTROL	1.973	1.47e-08	9.15e-08	-0.75	0.991	1	1.473	0.00439	0.0104	2.232	6.58e-11	3.02e-10
DENGUE VIRUS HOST INTERACTIONS	1.528	1.02e-04	2.99e-04	1.401	0.00385	0.012	1.418	0.00167	0.00446	2.056	6.76e-11	3.04e-10
ACTIVATION OF ANTERIOR HOX GENES IN HINDBRAIN DEVELOPMENT DURING EARLY EMBRYOGENESIS	1.965	2.82e-07	1.20e-06	1.99	6.00e-08	5.61e-07	1.887	7.73e-07	4.37e-06	2.347	7.58e-11	3.35e-10
CELLULAR RESPONSE TO STARVATION	1.977	3.82e-09	2.90e-08	0.823	0.831	1	1.382	0.016	0.0321	2.24	1.20e-10	5.22e-10
RESPONSE OF EIF2AK4 GCN2 TO AMINO ACID DEFICIENCY	2.214	1.12e-11	2.28e-10	0.313	1	1	1.528	0.00522	0.0119	2.375	1.24e-10	5.30e-10
INFLUENZA VIRAL RNA TRANSCRIPTION AND REPLICATION	2.138	1.00e-11	2.28e-10	-0.502	1	1	1.566	0.00182	0.00476	2.222	1.92e-10	8.04e-10
MITOTIC SPINDLE CHECKPOINT	2.042	1.03e-08	6.76e-08	2.06	4.31e-09	6.98e-08	2.014	1.93e-08	1.51e-07	2.324	2.31e-10	9.52e-10
DNA DOUBLE STRAND BREAK REPAIR	1.771	4.17e-06	1.49e-05	1.639	1.60e-04	6.00e-04	1.756	1.38e-06	7.47e-06	2.172	3.30e-10	1.32e-09
INFLUENZA INFECTION	2.039	2.38e-10	2.51e-09	0.572	0.998	1	1.506	0.00149	0.00411	2.187	3.31e-10	1.32e-09
REGULATION OF PD L1 CD274 TRANSCRIPTION	1.868	1.03e-05	3.37e-05	1.961	1.36e-06	8.50e-06	1.712	4.21e-04	0.00131	2.357	4.92e-10	1.93e-09
EPIGENETIC REGULATION OF GENE EXPRESSION BY MLL3 AND MLL4 COMPLEXES	1.511	0.00504	0.0115	1.469	0.0102	0.0277	1.591	9.60e-04	0.00271	2.24	5.53e-10	2.13e-09
REGULATION OF PD L1 CD274 EXPRESSION	1.481	0.0028	0.00654	1.573	4.52e-04	0.00164	1.352	0.0181	0.0361	2.113	6.57e-10	2.50e-09
REGULATION OF HOMOTYPIC CELL CELL ADHESION	1.414	0.00535	0.0118	1.53	5.88e-04	0.00207	1.443	0.00272	0.00674	2.077	7.32e-10	2.74e-09
NONSENSE MEDIATED DECAY NMD	2.165	1.28e-10	1.55e-09	-0.351	1	1	1.451	0.0101	0.0209	2.26	7.69e-10	2.83e-09
RESOLUTION OF SISTER CHROMATID COHESION	2.138	1.87e-10	2.17e-09	2.121	6.34e-11	1.53e-09	2.051	1.46e-10	1.98e-09	2.205	2.23e-09	8.08e-09
CHROMATIN ORGANIZATION	1.577	2.16e-05	6.92e-05	1.377	0.00628	0.0184	1.493	1.42e-04	4.86e-04	1.955	2.50e-09	8.94e-09
SEPARATION OF SISTER CHROMATIDS	1.887	3.28e-08	1.84e-07	1.926	1.30e-08	1.58e-07	1.853	1.59e-08	1.29e-07	2.076	2.61e-09	9.20e-09
REGULATION OF EXPRESSION OF SLITS AND ROBOS	1.998	1.29e-09	1.12e-08	0.512	1	1	1.508	0.00149	0.00411	2.123	3.09e-09	1.07e-08
RRNA PROCESSING	1.94	5.74e-10	5.17e-09	-0.468	1	1	1.437	0.00282	0.00692	2.026	4.19e-09	1.43e-08
REGULATION OF ENDOGENOUS RETROELEMENTS BY KRAB ZFP PROTEINS	1.981	4.05e-07	1.64e-06	1.837	1.66e-05	8.06e-05	1.858	4.32e-06	2.10e-05	2.237	4.78e-09	1.61e-08
EPIGENETIC REGULATION BY WDR5 CONTAINING HISTONE MODIFYING COMPLEXES	1.404	0.0142	0.029	1.314	0.0428	0.0999	1.474	0.00357	0.00858	2.088	1.09e-08	3.63e-08
RESPIRATORY ELECTRON TRANSPORT	1.082	0.325	0.451	-2.172	8.84e-11	1.65e-09	0.673	0.962	1	2.109	1.29e-08	4.24e-08
TCF DEPENDENT SIGNALING IN RESPONSE TO WNT	1.558	3.30e-04	8.91e-04	1.733	1.22e-06	7.80e-06	1.545	1.81e-04	6.04e-04	2	1.51e-08	4.90e-08
METABOLISM OF RNA	1.591	1.17e-10	1.49e-09	0.453	1	1	1.213	0.0095	0.0199	1.633	1.92e-08	6.13e-08
ADHERENS JUNCTIONS INTERACTIONS	1.497	6.33e-04	0.00164	1.585	7.42e-05	2.96e-04	1.469	6.39e-04	0.0019	1.953	2.25e-08	7.11e-08
REGULATION OF ENDOGENOUS RETROELEMENTS	1.829	4.16e-06	1.49e-05	1.586	0.00182	0.00605	1.735	4.01e-05	1.48e-04	2.084	2.34e-08	7.30e-08
SELENOAMINO ACID METABOLISM	2.018	1.47e-08	9.15e-08	-0.97	0.566	0.917	1.23	0.131	0.22	2.097	3.19e-08	9.80e-08
CO INHIBITION BY PD 1	1.355	0.0146	0.0296	1.565	1.65e-04	6.06e-04	1.241	0.0744	0.137	1.988	3.56e-08	1.08e-07
SIGNALING BY ROBO RECEPTORS	1.768	1.38e-06	5.26e-06	0.631	0.997	1	1.294	0.0358	0.0701	1.963	5.24e-08	1.57e-07
REGULATION OF T CELL ACTIVATION BY CD28 FAMILY	1.105	0.251	0.381	1.48	5.63e-04	0.00201	1.065	0.339	0.502	1.842	7.87e-08	2.33e-07
SIGNALING BY NOTCH	1.485	0.00137	0.00336	1.399	0.00831	0.0232	1.5	5.57e-04	0.00169	1.92	1.29e-07	3.77e-07
MITOCHONDRIAL TRANSLATION	1.41	0.0255	0.0481	-2.147	5.73e-09	8.46e-08	0.981	0.525	0.725	2.075	2.75e-07	7.97e-07
ESTROGEN DEPENDENT GENE EXPRESSION	1.421	0.0138	0.0284	1.478	0.00703	0.0203	1.465	0.00553	0.0124	1.994	3.68e-07	1.05e-06
BIOLOGICAL OXIDATIONS	-2.225	1.41e-13	4.91e-12	-2.315	2.60e-15	1.05e-13	-2.107	4.01e-12	6.09e-11	-1.868	3.87e-07	1.09e-06
CELL JUNCTION ORGANIZATION	1.447	7.46e-04	0.00187	1.611	8.37e-06	4.42e-05	1.476	2.90e-04	9.27e-04	1.763	5.59e-07	1.56e-06
MITOTIC PROMETAPHASE	1.955	2.62e-10	2.65e-09	1.84	2.72e-08	2.87e-07	1.912	1.31e-09	1.38e-08	1.872	7.12e-07	1.97e-06
UB SPECIFIC PROCESSING PROTEASES	1.375	0.0157	0.0315	1.415	0.00811	0.0232	1.42	0.00557	0.0124	1.85	1.26e-06	3.45e-06
RHO GTPASES ACTIVATE FORMINS	1.97	9.80e-09	6.62e-08	1.907	1.51e-07	1.27e-06	1.927	1.48e-08	1.24e-07	1.942	1.59e-06	4.29e-06
AEROBIC RESPIRATION AND RESPIRATORY ELECTRON TRANSPORT	0.775	0.923	1	-2.242	1.33e-15	6.44e-14	0.397	1	1	1.754	2.81e-06	7.51e-06
SYNTHESIS OF DNA	1.769	3.27e-05	1.01e-04	1.397	0.0286	0.0689	1.818	1.19e-05	4.83e-05	1.958	3.07e-06	8.11e-06
TRANSCRIPTIONAL REGULATION BY RUNX1	1.126	0.218	0.337	1.442	0.004	0.0123	1.205	0.105	0.182	1.788	3.18e-06	8.31e-06
RIBOSOME QUALITY CONTROL RQC COMPLEX EXTRACTS AND DEGRADES NASCENT PEPTIDE	1.837	9.51e-06	3.17e-05	-0.595	1	1	1.476	0.0112	0.0228	2.026	3.22e-06	8.31e-06
PHASE I FUNCTIONALIZATION OF COMPOUNDS	-2.105	7.55e-08	3.82e-07	-2.218	7.92e-09	1.07e-07	-2.146	9.65e-08	6.70e-07	-1.988	4.66e-06	1.19e-05
SIGNALING BY WNT	1.296	0.0174	0.0346	1.585	8.63e-06	4.46e-05	1.393	0.00209	0.00536	1.676	4.92e-06	1.25e-05
ESR MEDIATED SIGNALING	1.377	0.0109	0.0231	1.508	9.17e-04	0.00314	1.424	0.00363	0.00864	1.757	1.07e-05	2.67e-05
CELL CELL COMMUNICATION	1.397	0.00172	0.00417	1.514	5.35e-05	2.24e-04	1.455	2.35e-04	7.61e-04	1.646	1.68e-05	4.16e-05

Pathway	Viral_ RNA_ NES	Viral_ RNA_ pvalue	Viral_ RNA_ p.adjust	Viral_ RPF_ NES	Viral_ RPF_ pvalue	Viral_ RPF_ p.adjust	NonViral_ RNA_ NES	NonViral_ RNA_ pvalue	NonViral_ RNA_ p.adjust	NonViral_ RPF_ NES	NonViral_ RPF_ pvalue	NonViral_ RPF_ p.adjust
S PHASE	1.604	4.54e-04	0.0012	1.318	0.0453	0.105	1.717	9.01e-06	3.78e-05	1.805	1.83e-05	4.50e-05
SENSORY PERCEPTION	1.068	0.287	0.413	0.867	0.853	1	0.917	0.776	0.947	1.511	2.11e-05	5.12e-05
TRANSCRIPTIONAL REGULATION BY TP53	1.216	0.0514	0.0913	0.971	0.588	0.934	1.126	0.166	0.271	1.602	2.48e-05	5.97e-05
OLFACTORY SIGNALING PATHWAY	0.893	0.76	0.896	0.858	0.791	1	-1.383	1.48e-04	5.00e-04	1.59	2.61e-05	6.21e-05
MITOTIC G1 PHASE AND G1 S TRANSITION	1.757	2.65e-05	8.37e-05	1.534	0.0033	0.0107	1.828	4.01e-06	1.99e-05	1.787	2.82e-05	6.66e-05
DEUBIQUITINATION	1.185	0.118	0.193	1.306	0.0221	0.0536	1.222	0.0663	0.124	1.638	3.33e-05	7.78e-05
MRNA SPLICING	1.546	1.76e-04	4.97e-04	0.566	1	1	1.208	0.101	0.177	1.668	8.11e-05	1.88e-04
INTERLEUKIN 4 AND INTERLEUKIN 13 SIGNALING	-1.208	0.0772	0.133	1.284	0.083	0.177	-1.401	0.00849	0.0181	-1.775	1.16e-04	2.65e-04
SIGNALING BY RHO GTPASES MIRO GTPASES AND RHOBTB3	1.267	0.0034	0.0078	1.468	2.86e-07	2.17e-06	1.426	5.58e-07	3.39e-06	1.391	2.13e-04	4.84e-04
DRUG ADME	-2.481	4.44e-11	6.35e-10	-2.407	8.50e-11	1.65e-09	-2.364	5.04e-10	5.83e-09	-1.709	3.43e-04	7.73e-04
EPIGENETIC REGULATION OF GENE EXPRESSION	1.341	0.00748	0.0164	1.055	0.342	0.607	1.257	0.0288	0.057	1.506	3.58e-04	7.99e-04
EXTRACELLULAR MATRIX ORGANIZATION	1.236	0.0437	0.0792	1.673	2.20e-07	1.73e-06	1.445	3.08e-04	9.72e-04	-1.465	4.54e-04	0.001
VESICLE MEDIATED TRANSPORT	0.614	1	1	0.754	0.994	1	0.663	1	1	-1.335	4.95e-04	0.00108
SIGNALING BY RECEPTOR TYROSINE KINASES	-1.012	0.508	0.667	1.198	0.0367	0.0875	0.748	0.989	1	-1.358	5.20e-04	0.00113
SIGNALING BY NUCLEAR RECEPTORS	1.082	0.294	0.42	1.112	0.223	0.43	1.182	0.103	0.18	1.497	5.27e-04	0.00113
MITOTIC G2 G2 M PHASES	1.658	1.46e-05	4.73e-05	1.402	0.00986	0.0269	1.6	9.41e-05	3.36e-04	1.601	6.10e-04	0.0013
PROCESSING OF CAPPED INTRON CONTAINING PRE MRNA	1.538	9.75e-05	2.89e-04	0.592	1	1	1.197	0.0792	0.145	1.491	6.61e-04	0.0014
SIGNALING BY NTRKS	-1.614	2.69e-04	7.42e-04	0.765	0.894	1	-1.619	1.25e-04	4.32e-04	-1.631	7.14e-04	0.0015
MRNA 3 END PROCESSING	1.547	7.96e-04	0.00197	0.753	0.918	1	1.243	0.0926	0.164	1.624	7.31e-04	0.00152
O LINKED GLYCOSYLATION	0.768	0.883	0.979	1.554	0.00356	0.0114	0.943	0.606	0.798	-1.615	7.97e-04	0.00163
VIRAL INFECTION PATHWAYS	1.003	0.49	0.65	0.691	1	1	0.729	1	1	1.284	7.94e-04	0.00163
FATTY ACID METABOLISM	-1.93	6.43e-08	3.40e-07	-2.262	4.58e-12	1.39e-10	-1.786	5.97e-07	3.54e-06	-1.55	9.63e-04	0.00195
SIGNALING BY INTERLEUKINS	-1.342	1.91e-04	5.34e-04	0.858	0.879	1	-1.454	0.5	0.694	-1.378	9.76e-04	0.00196
SARS COV 2 INFECTION	0.95	0.632	0.788	0.689	0.99	1	0.732	0.97	1	1.458	0.00111	0.00222
MRNA POLYADENYLATION	1.455	0.0111	0.0233	0.589	0.997	1	1.149	0.23	0.358	1.551	0.004	0.00791
SARS COV INFECTIONS	-0.821	1	1	0.585	1	1	-1.138	0.5	0.694	-1.307	0.0048	0.00941
G ALPHA I SIGNALLING EVENTS	0.842	0.865	0.966	1.222	0.0655	0.142	0.872	0.817	0.983	-1.335	0.00689	0.0133
PLATELET ACTIVATION SIGNALING AND AGGREGATION	-1.472	5.11e-05	1.55e-04	-1.37	0.00103	0.00349	-1.328	0.00154	0.00419	-1.367	0.00686	0.0133
NEUTROPHIL DEGRANULATION	-1.345	1.56e-04	4.46e-04	0.772	0.974	1	-1.194	0.5	0.694	-1.281	0.00702	0.0134
CYTOKINE SIGNALING IN IMMUNE SYSTEM	0	0.999	1	0.982	0.574	0.924	0	0.999	1	-1.228	0.00747	0.0142
SIGNALING BY GPCR	0.954	0.674	0.827	1.238	0.0083	0.0232	0.982	0.578	0.78	-1.231	0.00775	0.0146
NUCLEOTIDE EXCISION REPAIR	1.411	0.0224	0.0432	-0.654	0.998	1	1.185	0.19	0.302	1.525	0.00805	0.015
DISEASES OF GLYCOSYLATION	0.846	0.785	0.917	1.484	0.00627	0.0184	0.975	0.546	0.75	-1.424	0.01	0.0186
CLASS A 1 RHODOPSIN LIKE RECEPTORS	1.024	0.436	0.585	1.376	0.00455	0.0136	0.966	0.6	0.797	-1.306	0.0104	0.0191
SARS COV 1 INFECTION	1.273	0.0749	0.13	0.516	1	1	0.534	0.999	1	1.45	0.0108	0.0197
PHASE II CONJUGATION OF COMPOUNDS	-2.081	6.03e-07	2.36e-06	-2.174	2.40e-08	2.65e-07	-1.811	2.06e-05	7.81e-05	-1.474	0.0117	0.0213
GASTRULATION	1.508	0.00518	0.0117	1.412	0.0212	0.052	1.338	0.0458	0.088	1.472	0.0119	0.0214
PI3K AKT SIGNALING IN CANCER	-1.613	5.33e-04	0.00139	0.868	0.724	1	-1.404	0.005	0.0116	-1.456	0.0133	0.0237
NEGATIVE REGULATION OF THE PI3K AKT NETWORK	-1.594	6.93e-04	0.00177	0.765	0.879	1	-1.542	6.94e-04	0.00201	-1.422	0.0154	0.0273
PEPTIDE LIGAND BINDING RECEPTORS	1.056	0.368	0.505	1.214	0.105	0.219	0.957	0.6	0.797	-1.354	0.0164	0.0286
SARS COV 2 HOST INTERACTIONS	1.083	0.311	0.434	-0.437	1	1	0.676	0.972	1	1.383	0.0163	0.0286
RESPONSE TO ELEVATED PLATELET CYTOSOLIC CA2	-1.483	0.00178	0.00428	-1.752	4.12e-05	1.79e-04	-1.717	3.10e-05	1.16e-04	-1.396	0.0185	0.0321
DISEASES OF METABOLISM	-1.133	0.0962	0.163	0.924	0.685	1	0.667	0.989	1	-1.287	0.0212	0.0365
CELLULAR RESPONSE TO CHEMICAL STRESS	1.016	0.454	0.606	0.637	0.995	1	0.89	0.738	0.919	1.334	0.028	0.0479
NEUROTRANSMITTER RECEPTORS AND POSTSYNAPTIC SIGNAL TRANSMISSION	1.487	0.00196	0.00466	1.446	0.00413	0.0125	1.527	4.61e-04	0.00142	1.332	0.0288	0.0489
C TYPE LECTIN RECEPTORS CLRS	0.609	0.994	1	1.414	0.0178	0.0442	-0.745	0.99	1	-1.352	0.0314	0.053
TRANSMISSION ACROSS CHEMICAL SYNAPSES	1.414	0.00234	0.00551	1.234	0.0597	0.134	1.416	0.00181	0.00476	1.277	0.0356	0.0596
REGULATION OF TP53 ACTIVITY	1.197	0.137	0.22	1.099	0.289	0.533	1.241	0.0886	0.158	1.336	0.0364	0.0605
HIV INFECTION	1.029	0.428	0.578	0.482	1	1	0.897	0.734	0.919	1.287	0.0415	0.0687
NEURONAL SYSTEM	1.309	0.00533	0.0118	1.192	0.0627	0.137	1.303	0.0052	0.0119	1.218	0.0469	0.0771

Pathway	Viral_ RNA_ NES	Viral_ RNA_ pvalue	Viral_ RNA_ p.adjust	Viral_ RPF_ NES	Viral_ RPF_ pvalue	Viral_ RPF_ p.adjust	NonViral_ RNA_ NES	NonViral_ RNA_ pvalue	NonViral_ RNA_ p.adjust	NonViral_ RPF_ NES	NonViral_ RPF_ pvalue	NonViral_ RPF_ p.adjust
POST TRANSLATIONAL PROTEIN MODIFICATION	0.939	0.804	0.932	1.018	0.401	0.696	0.967	0.687	0.888	1.134	0.0506	0.0825
HIV LIFE CYCLE	1.116	0.261	0.381	0.599	0.997	1	0.951	0.595	0.797	1.298	0.0534	0.0866
FACTORS INVOLVED IN MEGAKARYOCYTE DEVELOPMENT AND PLATELET PRODUCTION	1.42	0.0103	0.022	1.402	0.0152	0.038	1.587	2.35e-04	7.61e-04	1.286	0.0562	0.0904
GPCR LIGAND BINDING	1.065	0.302	0.424	1.275	0.0108	0.0283	1.043	0.361	0.529	1.191	0.0629	0.101
MITF M REGULATED MELANOCYTE DEVELOPMENT	1.108	0.27	0.391	1.053	0.382	0.668	1.181	0.158	0.259	1.252	0.0723	0.115
METABOLISM OF LIPIDS	0	0.999	1	-1.528	0.5	0.837	0	0.999	1	-1.112	0.0781	0.123
NERVOUS SYSTEM DEVELOPMENT	1.219	0.0237	0.0454	1.065	0.284	0.526	1.075	0.241	0.37	1.155	0.086	0.134
RHO GTPASE CYCLE	0.515	1	1	1.088	0.236	0.452	0.797	0.958	1	-1.138	0.0859	0.134
RAC1 GTPASE CYCLE	-0.948	0.679	0.829	1.16	0.177	0.347	0.708	0.953	1	-1.19	0.0993	0.154
FORMATION OF THE CORNIFIED ENVELOPE	1.274	0.083	0.142	1.586	0.00365	0.0115	1.519	0.0031	0.00753	1.24	0.103	0.159
INFECTIOUS DISEASE	0.92	0.855	0.961	0.821	0.994	1	0.751	1	1	1.095	0.123	0.187
METABOLISM OF CARBOHYDRATES AND CARBOHYDRATE DERIVATIVES	-0.867	0.938	1	0.852	0.844	1	0.708	0.98	1	-1.131	0.134	0.203
DEGRADATION OF THE EXTRACELLULAR MATRIX	1.641	2.93e-04	7.99e-04	1.887	4.09e-07	2.92e-06	1.762	1.62e-05	6.23e-05	-1.179	0.135	0.203
MITF M DEPENDENT GENE EXPRESSION	1.204	0.16	0.254	1.102	0.3	0.548	1.349	0.0435	0.0846	1.199	0.146	0.22
AUTOPHAGY	1.113	0.262	0.381	0.599	0.997	1	1.002	0.496	0.694	1.173	0.15	0.223
ADAPTIVE IMMUNE SYSTEM	0	0.999	1	1.198	0.0089	0.0246	0.654	1	1	-1.066	0.155	0.23
METABOLISM OF WATER SOLUBLE VITAMINS AND COFACTORS	-1.241	0.0494	0.0889	-1.696	8.01e-05	3.14e-04	-1.389	0.0084	0.0181	-1.161	0.157	0.231
POTASSIUM CHANNELS	1.434	0.0184	0.0361	1.363	0.0427	0.0999	1.46	0.014	0.0284	1.177	0.172	0.252
KERATINIZATION	1.434	0.00778	0.0169	1.591	0.00227	0.00746	1.491	0.00193	0.005	1.154	0.176	0.256
RHOA GTPASE CYCLE	0.668	0.978	1	1.076	0.336	0.604	0.964	0.57	0.774	-1.131	0.194	0.281
DEVELOPMENTAL CELL LINEAGES	1.588	7.48e-04	0.00187	1.708	2.92e-05	1.32e-04	1.742	4.48e-06	2.13e-05	1.132	0.211	0.304
ION CHANNEL TRANSPORT	1.185	0.144	0.231	1.218	0.103	0.217	1.243	0.0798	0.145	1.118	0.215	0.307
COPI DEPENDENT GOLGI TO ER RETROGRADE TRAFFIC	1.76	5.90e-05	1.77e-04	1.49	0.0104	0.0277	1.815	1.33e-05	5.22e-05	1.139	0.217	0.308
G ALPHA Q SIGNALLING EVENTS	1.2	0.117	0.193	1.176	0.145	0.288	1.18	0.136	0.226	1.107	0.223	0.315
REGULATION OF INSULIN LIKE GROWTH FACTOR IGF TRANSPORT AND UPTAKE BY INSULIN LIKE GROWTH FACTOR BINDING PROTEINS IGFBPS	1.297	0.0689	0.121	0.989	0.503	0.837	1.227	0.129	0.219	-1.109	0.227	0.319
APOPTOSIS	0.982	0.536	0.693	0.648	0.989	1	1.042	0.409	0.591	1.117	0.229	0.319
SLC MEDIATED TRANSMEMBRANE TRANSPORT	0.985	0.532	0.691	0.982	0.54	0.887	1.088	0.287	0.431	1.098	0.235	0.326
INTRACELLULAR SIGNALING BY SECOND MESSENGERS	-1.092	0.198	0.311	0.559	1	1	-1.016	0.268	0.407	-1.067	0.254	0.351
ASPARAGINE N LINKED GLYCOSYLATION	0.789	0.927	1	0.518	1	1	0.735	0.971	1	1.076	0.261	0.359
CDC42 GTPASE CYCLE	-0.914	0.758	0.896	1.08	0.326	0.591	0.825	0.825	0.988	-1.081	0.27	0.369
PROTEIN LOCALIZATION	-0.947	0.619	0.783	-2.283	3.83e-12	1.33e-10	-1.329	0.00236	0.00597	1.09	0.271	0.369
GLYCOSAMINOGLYCAN METABOLISM	0.819	0.821	0.945	1.189	0.159	0.314	0.884	0.718	0.918	-1.073	0.284	0.383
KEAP1 NFE2L2 PATHWAY	1.131	0.256	0.381	1.077	0.341	0.607	1.04	0.415	0.596	1.088	0.286	0.384
SIGNALING BY TGFB FAMILY MEMBERS	-1.267	0.0221	0.0431	0.813	0.849	1	-0.882	0.834	0.994	-1.07	0.294	0.392
METABOLISM OF STEROIDS	0.65	0.986	1	-1.496	8.66e-04	0.00301	0.648	0.979	1	1.069	0.311	0.413
TRANSPORT OF SMALL MOLECULES	0.844	0.94	1	0.81	0.975	1	0.966	0.644	0.836	1.037	0.326	0.431
STIMULI SENSING CHANNELS	1.36	0.0407	0.0744	1.324	0.0615	0.137	1.497	0.00772	0.0168	1.061	0.337	0.442
BACTERIAL INFECTION PATHWAYS	0.769	0.867	0.966	1.333	0.0549	0.125	1.128	0.272	0.411	-1.049	0.345	0.45
PHOSPHOLIPID METABOLISM	-0.926	0.763	0.896	0.869	0.777	1	0.624	0.991	1	-1.039	0.347	0.45
GOLGI TO ER RETROGRADE TRANSPORT	1.676	1.49e-04	4.30e-04	1.452	0.0121	0.0312	1.758	1.06e-05	4.38e-05	1.042	0.364	0.468
NEDDYLATION	0.753	0.943	1	0.533	1	1	0.703	0.973	1	1.034	0.364	0.468
HOST INTERACTIONS OF HIV FACTORS	0.978	0.528	0.689	0.486	1	1	0.866	0.735	0.919	1.031	0.388	0.496
G ALPHA S SIGNALLING EVENTS	0.978	0.543	0.695	1.069	0.353	0.622	1.032	0.432	0.618	1.027	0.396	0.504
CARDIAC CONDUCTION	1.247	0.105	0.177	0.966	0.553	0.902	1.056	0.387	0.563	1.005	0.447	0.566
MAPK1 MAPK3 SIGNALING	-1.054	0.3	0.424	0.872	0.797	1	0.623	0.995	1	-1	0.45	0.566
MUSCLE CONTRACTION	1.385	0.00918	0.0198	1.002	0.489	0.83	1.228	0.0886	0.158	1	0.452	0.566
GLYCEROPHOSPHOLIPID BIOSYNTHESIS	0.658	0.978	1	0.918	0.644	1	0.75	0.902	1	-0.995	0.454	0.566
L1CAM INTERACTIONS	1.063	0.372	0.508	1.171	0.191	0.372	1.328	0.0478	0.0907	-0.991	0.463	0.575
RNA POLYMERASE II TRANSCRIPTION	1.048	0.258	0.381	0.959	0.716	1	0.982	0.608	0.798	0.994	0.495	0.61

Pathway	Viral_ RNA_ NES	Viral_ RNA_ pvalue	Viral_ RNA_ p.adjust	Viral_ RPF_ NES	Viral_ RPF_ pvalue	Viral_ RPF_ p.adjust	NonViral_ RNA_ NES	NonViral_ RNA_ pvalue	NonViral_ RNA_ p.adjust	NonViral_ RPF_ NES	NonViral_ RPF_ pvalue	NonViral_ RPF_ p.adjust
COPI MEDIATED ANTEROGRADE TRANSPORT	1.259	0.11	0.183	0.917	0.633	0.993	1.342	0.0545	0.103	0.969	0.509	0.625
PROGRAMMED CELL DEATH	0.907	0.701	0.843	0.665	0.99	1	0.886	0.75	0.92	0.974	0.522	0.637
METABOLISM OF AMINO ACIDS AND DERIVATIVES	1.073	0.297	0.422	-2.237	8.34e-20	2.03e-17	-1.23	0.143	0.236	0.971	0.541	0.658
REGULATION OF LIPID METABOLISM BY PPARALPHA	-1.085	0.243	0.374	-1.796	1.58e-05	7.82e-05	-1.435	0.00594	0.0131	-0.951	0.567	0.686
SIGNALING BY VEGF	-0.859	0.845	0.961	1.035	0.42	0.724	0.445	1	1	-0.948	0.577	0.694
MAPK FAMILY SIGNALING CASCADES	-0.963	0.611	0.777	0.88	0.799	1	0.675	0.991	1	-0.965	0.583	0.695
SUMOYLATION	1.14	0.207	0.322	0.993	0.503	0.837	1.133	0.218	0.342	0.949	0.582	0.695
ANTIGEN PROCESSING UBIQUITINATION PROTEASOME DEGRADATION	0.637	0.997	1	0.7	0.986	1	0.657	0.993	1	0.953	0.592	0.7
INTERLEUKIN 1 FAMILY SIGNALING	-1.013	0.421	0.571	-0.92	0.727	1	-1.151	0.111	0.19	-0.943	0.595	0.7
RAB REGULATION OF TRAFFICKING	-0.491	1	1	0.544	0.999	1	0.332	1	1	-0.941	0.596	0.7
PTEN REGULATION	1.123	0.261	0.381	0.269	1	1	0.877	0.723	0.918	0.931	0.61	0.713
TOLL LIKE RECEPTOR TLR1 TLR2 CASCADE	-1.316	0.0313	0.0576	-1.143	0.135	0.274	-1.512	0.00155	0.0042	-0.929	0.624	0.725
CARGO RECOGNITION FOR CLATHRIN MEDIATED ENDOCYTOSIS	-1.162	0.127	0.206	0.736	0.91	1	-0.888	0.799	0.966	-0.922	0.629	0.728
CELLULAR RESPONSES TO MECHANICAL STIMULI	-0.969	0.54	0.694	0.794	0.838	1	0.734	0.894	1	-0.918	0.638	0.732
INTRA GOLGI AND RETROGRADE GOLGI TO ER TRAFFIC	1.318	0.0268	0.0501	1.103	0.268	0.504	1.442	0.00262	0.00656	0.932	0.638	0.732
METABOLISM OF VITAMINS AND COFACTORS	-1.202	0.0533	0.0938	-1.558	3.22e-05	1.42e-04	-1.141	0.0995	0.175	-0.937	0.645	0.736
TOLL LIKE RECEPTOR CASCADES	-1.243	0.0245	0.0465	-0.789	0.986	1	-1.332	0.00678	0.0148	-0.916	0.685	0.777
INTEGRATION OF ENERGY METABOLISM	1.227	0.135	0.218	0.656	0.975	1	1.346	0.046	0.088	0.876	0.727	0.821
DISEASES OF SIGNAL TRANSDUCTION BY GROWTH FACTOR RECEPTORS AND SECOND MESSENGERS	-0.951	0.73	0.869	0.753	0.981	1	-0.834	1	1	-0.937	0.738	0.826
SPHINGOLIPID METABOLISM	0.901	0.663	0.822	1.272	0.0942	0.199	0.923	0.633	0.827	0.872	0.737	0.826
CLASS I MHC MEDIATED ANTIGEN PROCESSING PRESENTATION	0.473	1	1	0.685	0.995	1	0.554	1	1	0.902	0.785	0.875
CILIUM ASSEMBLY	1.32	0.0288	0.0534	1.11	0.255	0.484	1.379	0.00918	0.0194	-0.89	0.788	0.875
ER TO GOLGI ANTEROGRADE TRANSPORT	0.938	0.628	0.786	0.793	0.872	1	1.01	0.476	0.676	0.851	0.809	0.893
TOLL LIKE RECEPTOR 9 TLR9 CASCADE	-1.258	0.0509	0.0909	-0.736	0.985	1	-1.404	0.00481	0.0112	-0.844	0.822	0.904
TRANSPORT TO THE GOLGI AND SUBSEQUENT MODIFICATION	0.791	0.887	0.979	0.725	0.955	1	0.826	0.842	0.998	0.856	0.828	0.906
RESPIRATORY SYNCYTIAL VIRUS INFECTION PATHWAY	-0.924	0.699	0.843	0.689	0.958	1	-0.847	0.882	1	0.82	0.842	0.918
CELLULAR RESPONSE TO HEAT STRESS	1.132	0.262	0.381	0.758	0.881	1	0.874	0.711	0.914	0.798	0.873	0.947
BETA CATENIN INDEPENDENT WNT SIGNALING	0.702	0.952	1	0.652	0.983	1	0.865	0.748	0.92	-0.8	0.921	0.983
CLATHRIN MEDIATED ENDOCYTOSIS	-0.942	0.671	0.827	0.704	0.96	1	0.537	0.998	1	-0.812	0.914	0.983
MHC CLASS II ANTIGEN PRESENTATION	1.545	0.00311	0.0072	1.31	0.0619	0.137	1.603	6.77e-04	0.00198	0.777	0.922	0.983
TRNA PROCESSING	1.427	0.0181	0.0357	0.564	0.999	1	1.146	0.24	0.37	0.771	0.922	0.983
ADIPOGENESIS	0.629	0.985	1	-0.751	0.977	1	0.729	0.904	1	-0.638	0.998	1
ANTIMICROBIAL MECHANISM OF IFN STIMULATED GENES	1.075	0.338	0.466	1.106	0.275	0.514	1.153	0.197	0.311	0.731	0.98	1
CIRCADIAN CLOCK	-0.673	0.999	1	-1.148	0.144	0.288	-0.917	0.725	0.918	-0.73	0.974	1
DEATH RECEPTOR SIGNALING	0.568	0.999	1	0.867	0.752	1	-0.728	1	1	-0.63	1	1
DISORDERS OF TRANSMEMBRANE TRANSPORTERS	-1.147	0.109	0.183	-1.31	0.0106	0.0281	-0.977	0.55	0.75	0.695	0.993	1
HEDGEHOG OFF STATE	1.135	0.258	0.381	-0.725	0.986	1	1.199	0.179	0.289	-0.603	0.999	1
INTERFERON SIGNALING	-0.92	0.827	0.948	0.983	0.536	0.886	0.711	0.975	1	-0.725	0.998	1
INTERLEUKIN 1 SIGNALING	-0.909	0.725	0.868	-1.01	0.425	0.728	-1.112	0.184	0.295	-0.613	0.998	1
MEMBRANE TRAFFICKING	0.891	0.848	0.961	0.809	0.967	1	0.92	0.786	0.955	0.799	0.996	1
MYD88 INDEPENDENT TLR4 CASCADE	-0.919	0.684	0.831	-0.56	0.999	1	-1.112	0.183	0.295	-0.761	0.953	1
ORGANELLE BIOGENESIS AND MAINTENANCE	1.145	0.164	0.258	0.742	0.966	1	1.159	0.134	0.224	0.644	1	1
SARS COV 2 ACTIVATES MODULATES INNATE AND ADAPTIVE IMMUNE RESPONSES	-1.088	0.247	0.378	-0.642	1	1	-0.813	0.937	1	0.491	1	1
SIGNALING BY HEDGEHOG	0.933	0.623	0.784	0.474	1	1	1.106	0.292	0.436	-0.735	0.981	1
TCR SIGNALING	-0.852	0.851	0.961	0.873	0.714	1	-1.071	0.256	0.392	0.465	1	1
TRANSCRIPTIONAL REGULATION BY RUNX2	0.815	0.805	0.932	0.675	0.96	1	0.856	0.743	0.92	0.657	0.992	1

Table S5 (continued). Leading-edge (core enrichment) genes

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
CELL CYCLE MITOTIC	SKA1 / CENPA / TUBB3 / SPC25 / NEK2 / TUBA3D / UBE2C / BIRC5 / CCNE1 / NUF2 / TUBAL3 / E2F2 / BUB1B / HJURP / FOXM1 / PKMYT1 / CDC20 / CCNB2 / GTSE1 / TOP2A / PLK1 / CENPK / RRM2 / ERCC6L / NCAPH / CENPF / CENPM / MYBL2 / KIF2C / CDK1 / CDC25C / H2BC17 / CDC6 / CDCA8 / NDC80 / H2AC14 / ESPL1 / KIF20A / NCAPG / MCM10 / CDT1 / CENPO / BUB1 / H4C13 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / H2BC13 / KIF23 / AURKB / CCNA2 / PTTG1 / E2F1 / HMMR / CHMP3 / ORC1 / FBXO5 / CENPI / TICRR / H3C2 / CDC45 / CDCA5 / H3C3 / CENPS / H2BC26 / TPX2 / H2BC9 / E2F5 / AURKA / H2BC14 / SPC24 / H3C10 / ZWINT / NCAPD2 / GINS1 / MAD2L1 / TK1 / MASTL / CENPL / H2AC4 / CENPH / H3C13 / SGO1 / ORC6 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H3C11 / H4C9 / H2BC3 / GINS2 / BORA / H3C1 / H3C12 / H2BC21 / H3C8 / UBE2S / PLK4 / H4C1 / H2AC7 / H2BC8 / DNA2 / CDC25A / KNL1 / GMNN / H2BC11 / CDC25B / SPDL1 / TYMS / H2BC7 / MCM7 / MCM4 / MCM2 / CENPU / H2BC12 / CEP72 / FBXL18 / ESCO2 / H2AC8 / LMNB1 / CDC7 / H3C7 / MCM3 / H3-4 / FEN1 / POLA2 / NCAPG2 / H4C8 / H2BC6 / DBF4 / SRC / MCM6 / B9D2 / CEP290 / CDKN2A / RFC4 / GINS4 / NDE1 / CEP131 / CCNE2 / CPAP / CHMP4C / CDKN2C / ZWILCH / SMC2 / RCC2 / TUBG2 / NUP210 / H2BC5 / LIN9 / FIRRM / CEP164 / VRK1 / PRIM2 / E2F6 / RCC1	H3C2 / H2BC3 / H3C13 / CDC25C / PTTG1 / H3C3 / SPC25 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / CENPF / CCNB2 / H4C1 / H3C10 / CDK1 / CDKN2A / CCNA2 / UBE2C / SPC24 / H2BC15 / H3C1 / SKA1 / H3C12 / TUBA3D / CDCA5 / CDT1 / RRM2 / CENPA / CENPM / CENPU / H2AC4 / SGO1 / UBE2S / CDKN2B / H2BC10 / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / TUBA4B / H2BC12 / CCNB1 / MAD2L1 / H2BC8 / MYBL2 / H3C8 / CENPO / H2BC9 / CDC25A / HMMR / GINS1 / H2AC7 / H2BC21 / ERCC6L / H2BC14 / GINS2 / CENPI / AURKA / BUB1B / H4C9 / GMNN / H2BC6 / H3-4 / H3C6 / CDC45 / CDC20 / PLK1 / CKS1B / KIF20A / CENPK / GINS4 / MCM10 / CENPP / KIF2C / FBXO5 / H4C8 / TPX2 / H2AC8 / CDCA8 / BUB1 / HJURP / CENPH / H2BC7 / MCM4 / ZWINT / TK1 / H4C4 / SPDL1 / NCAPH / UBA52 / RPS27 / PKMYT1 / KIF23 / NCAPG / MASTL / DYNLL1 / CEP72 / H2BC5 / ANAPC11 / ORC6 / EMD / CCNE2 / CHMP2A / H2AC14 / H2AX / H2AZ2 / PSMA6 / TICRR / H4C2 / POLA2 / NDC80 / CDKN2D / ESCO2 / H3-3A / ENSA / H3C7 / LMNB1 / RFC4 / CETN2 / BANF1 / TMPO / CENPN / RPA3 / BORA / H2AC6 / SSNA1 / E2F1 / ORC1 / DBF4 / H2AC20 / RAB2A / MCM8 / SGO2 / ITGB3BP / POLE3 / PPP2R5A / CDKN2C / GTSE1 / DNA2 / LYN / E2F2 / CEP41 / NUP210 / H2BC4 / KNL1 / TUBB2A / UBE2E1 / CHMP4C / ANAPC15 / GINS3 / E2F5 / UBE2D1 / PPP2CA / POLE2 / CCNE1 / LBR / H4C6 / RCC1 / NDE1 / MZT1 / NUP62 / CHMP3 / H4C16 / ARPP19 / MZT2B / HSP90AB1 / SUMO1 / DCTN3 / CDK4 / SKA2 / RBX1 / NEK7 / FBXL18 / TOP2A / DCTN2 / POLD2 / H4C3 / FOXM1 / CHMP4B / OPTN / PSMD7 / MCM5 / DYNC1I1 / PSMD8 / TUBB4A / MZT2A / TUBA3E / PMF1 / POLE4 / PSMB4 / H4C5 / H3-3B / TUBA1B / YWHAG / FBXL7 / RPS27A / GORASP2 / H2AJ
COMPLEMENT CASCADE	FCN2 / C9 / FCN3 / COLEC10 / CFP / C8A / C6 / MBL2 / CPB2 / C5 / C1R / MASP1 / C8B / CLU / ELANE / F2 / MASP2 / C1S / CFI / VTN / IGKV2D-30 / CPN1 / CFD / IGKV1-17 / SERPING1 / C3 / CFHR2 / CFB / CFHR4 / C8G / CFHR3 / CPN2 / CFHR1 / C7 / IGHV3-48 / PROS1	FCN2 / ELANE / FCN3 / CFP / COLEC10 / IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / C7 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / COLEC11 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / MASP1 / IGLV1-47 / FCN1 / IGKV1-5 / CFD / CR1 / IGKV3-11 / IGLV1-40 / IGLV3-1 / GZMM / IGKV3D-20 / C5AR1 / IGLC3 / C8A / C6
CELL CYCLE	SFN / SKA1 / CENPA / TUBB3 / SPC25 / NEK2 / TUBA3D / UBE2C / BIRC5 / CCNE1 / NUF2 / TUBAL3 / E2F2 / BUB1B / HJURP / SYCE2 / FOXM1 / PKMYT1 / CDC20 / CCNB2 / GTSE1 / TOP2A / PLK1 / CENPK / RRM2 / ERCC6L / CHEK1 / NCAPH / CENPF / CENPM / MYBL2 / KIF2C / CDK1 / CDC25C / H2BC17 / CDC6 / CDCA8 / NDC80 / H2AC14 / ESPL1 / KIF20A / SMC1B / NCAPG / PRDM9 / MCM10 / CDT1 / CENPO / BUB1 / H4C13 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / H2BC13 / KIF23 / AURKB / CCNA2 / PTTG1 / E2F1 / HMMR / CHMP3 / ORC1 / FBXO5 / CENPW / CENPI / TICRR / H3C2 / PSMC3IP / CDC45 / CDCA5 / H3C3 / CLSPN / OIP5 / EXO1 / CENPS / H2BC26 / MSH4 / TPX2 / H2BC9 / E2F5 / BLM / AURKA / RAD51 / H2BC14 / SPC24 / H3C10 / ZWINT / NCAPD2 / GINS1 / MAD2L1 / TK1 / DSCC1 / MASTL / CENPL / H2AC4 / CENPH / H3C13 / SGO1 / NEK11 / ORC6 / PIF1 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H3C11 / H4C9 / H2BC3 / GINS2 / BORA / H3C1 / H3C12 / SYCP1 / H2BC21 / H3C8 / UBE2S / PLK4 / H4C1 / H2AC7 / RHNO1 / H2BC8 / DNA2 / CDC25A / KNL1 / BRCA2 / GMNN / H2BC11 / CDC25B / SPDL1 / TYMS / H2BC7 / MCM7 / MCM4 / MCM2 / CENPU / PCBP4 / H2BC12 / CEP72 / FBXL18 / ESCO2 / H2AC8 / LMNB1 / CDC7 / H3C7 / CHEK2 / MCM3 / H3-4 / FEN1 / POLA2 / NCAPG2 / H4C8 / H2BC6 / DBF4 / SRC / MCM6 / B9D2 / CEP290 / YWHAZ / CDKN2A / CHTF18 / RFC4 / BARD1 / GINS4 / NDE1 / RAD1 / CEP131 / CCNE2 / NBN / CPAP / CHMP4C / RNF8 / CDKN2C / ZWILCH / SMC2 / RCC2 / TUBG2 / NUP210 / H2BC5 / LIN9 / FIRRM / CEP164 / VRK1 / MAPK11 / PRIM2 / E2F6 / RCC1 / BRCA1 / FIGNL1 / GINS3 / RUVBL1 / SYCE3 / RMI2 / CDKN1C / RBL1 / TUBA4A / H4C4 / NSD2 / ESCO1 / FBXL7 / CEP41 / SMC4 / MCM5 / CDK4 / CEP152 / H4C16 / RMI1 / ITGB3BP / KIF2A / CDKN2D / TUBG1 / CKS1B / INCENP / HSP90AB1 / HSPA2 / NUP37 / TUBA1B / SPO11 / DAXX / TERT / SFI1 / CCND3 / NUP62 / TUBA4B / RAD50 / TUBA1A / ZNF385A / MZT1 / TEX15	H3C2 / H2BC3 / H3C13 / CDC25C / PTTG1 / H3C3 / SPC25 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / CENPF / CCNB2 / H4C1 / H3C10 / CDK1 / CDKN2A / CCNA2 / SYCE2 / UBE2C / SPC24 / H2BC15 / H3C1 / SKA1 / DMC1 / H3C12 / TUBA3D / OIP5 / CDCA5 / CDT1 / RRM2 / CENPA / CENPM / CENPU / H2AC4 / SGO1 / UBE2S / CDKN2B / H2BC10 / CENPW / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / TUBA4B / H2BC12 / CCNB1 / MAD2L1 / H2BC8 / MYBL2 / H3C8 / CENPO / EXO1 / H2BC9 / CDC25A / HMMR / GINS1 / H2AC7 / H2BC21 / ERCC6L / H2BC14 / GINS2 / RAD51 / CENPI / AURKA / BUB1B / H4C9 / GMNN / RMI2 / H2BC6 / H3-4 / H3C6 / CDC45 / CDC20 / PLK1 / CKS1B / KIF20A / CENPK / POLR2K / GINS4 / MCM10 / CENPP / KIF2C / FBXO5 / H4C8 / TPX2 / H2AC8 / CDCA8 / BUB1 / HJURP / CENPH / H2BC7 / MCM4 / PCBP4 / CENPX / ZWINT / TK1 / H4C4 / POLR2J / SPDL1 / NCAPH / UBA52 / RPS27 / NHP2 / SFN / PKMYT1 / KIF23 / NCAPG / MASTL / DYNLL1 / CEP72 / H2BC5 / ANAPC11 / ORC6 / EMD / CCNE2 / CHMP2A / H2AC14 / H2AX / TEX12 / H2AZ2 / PSMA6 / TICRR / DSCC1 / H4C2 / POLA2 / NDC80 / POLR2I / CDKN2D / ESCO2 / NSD2 / UBE2V2 / H3-3A / ENSA / H3C7 / POLR2F / LMNB1 / POLR2H / RFC4 / CETN2 / BANF1 / RAD50 / TMPO / CENPN / RPA3 / BORA / H2AC6 / NOP10 / SSNA1 / E2F1 / ORC1 / DBF4 / H2AC20 / RAB2A / MCM8 / SYCP2 / SMC1B / SGO2 / ITGB3BP / POLE3 / PPP2R5A / CDKN2C / GTSE1 / DNA2 / LYN / CHEK1 / E2F2 / CEP41 / NUP210 / YWHAH / H2BC4 / KNL1 / TUBB2A / UBE2E1 / CHMP4C / ANAPC15 / GINS3 / E2F5 / UBE2D1 / PPP2CA / POLE2 / CCNE1 / RAD1 / LBR / TERF1 / H4C6 / BABAM1 / CLSPN / RCC1 / NDE1 / MZT1 / NUP62 / YWHAZ / POLR2E / CHMP3 / H4C16 / ARPP19 / MIS18A / MZT2B / HSP90AB1 / SUMO1 / DCTN3 / CDK4 / SKA2 / RBX1 / NEK7 / FBXL18 / TOP2A / POLR2L / DCTN2 / POLD2 / H4C3 / FOXM1 / CHMP4B / POLR2G / FKBP6 / OPTN / PSMD7 / MCM5 / CHEK2 / ATRIP / DYNC1I1 / PSMD8 / TUBB4A / MZT2A / TUBA3E / PMF1 / POLE4 / PSMB4 / RNF8 / H4C5 / H3-3B / RAD9B / TUBA1B / YWHAG / FBXL7 / RPS27A / GORASP2 / H2AJ
BINDING AND UPTAKE OF LIGANDS BY SCAVENGER RECEPTORS	STAB2 / SAA1 / CD5L / MARCO / ALB / HBB / HP / APOA1 / AMBP / MASP1 / HPX / IGKV2D-30 / HPR / FTL / IGKV1-17	MARCO / STAB2 / IGHA2 / JCHAIN / IGHV4-59 / CD5L / IGHV4-39 / IGHV2-70 / IGHA1 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / SSC5D / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / COLEC11 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / CD163 / MASP1 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / IGKV3D-20 / STAB1 / IGLC3
PARASITE INFECTION	WIPF3 / IGLV3-25 / IGKV4-1 / IGLV2-23 / IGKV1D-16 / SRC / IGHV3-7 / ARPC1B / IGLC3 / SYK / IGHV3-11 / WASF1 / CD3G / IGHG2 / MYO5A / WIPF1 / WIPF2 / VAV3 / IGHG4 / ABI2 / ARPC5 / WASF2 / RAC1 / IGHV3-23 / ACTR3 / IGLV1-47 / CD247 / IGLV1-40 / MAPK3 / ABL1 / GRB2 / FGR / IGHV3-30 / ACTR2 / IGLV1-44 / ARPC2 / MYO9B / IGLV2-14 / PTK2 / IGLV2-8 / BTK / HCK / ARPC3 / IGHV3-53 / IGLC2 / LYN / IGLV7-43 / ACTB	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / MYO10 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / IGKV3D-20 / MYH2 / FGR / IGLC3 / NCKAP1L / FCGR3A / CD247 / VAV1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
CELL CYCLE CHECKPOINTS	SFN / SKA1 / CENPA / SPC25 / UBE2C / BIRC5 / CCNE1 / NUF2 / BUB1B / PKMYT1 / CDC20 / CCNB2 / GTSE1 / PLK1 / CENPK / ERCC6L / CHEK1 / CENPF / CENPM / KIF2C / CDK1 / CDC25C / H2BC17 / CDC6 / CDCA8 / NDC80 / MCM10 / CENPO / BUB1 / H4C13 / DYNC1I1 / KIF18A / CCNB1 / H2BC13 / AURKB / CCNA2 / ORC1 / CENPI / CDC45 / CLSPN / EXO1 / CENPS / H2BC26 / H2BC9 / BLM / H2BC14 / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / NEK11 / ORC6 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H4C9 / H2BC3 / H2BC21 / UBE2S / H4C1 / RHNO1 / H2BC8 / DNA2 / CDC25A / KNL1 / H2BC11 / SPDL1 / H2BC7 / MCM7 / MCM4 / MCM2 / CENPU / PCBP4 / H2BC12 / CDC7 / CHEK2 / MCM3 / H3-4 / H4C8 / H2BC6 / DBF4 / MCM6 / B9D2 / YWHAZ / CDKN2A / RFC4 / BARD1 / NDE1 / RAD1 / CCNE2 / NBN / RNF8 / ZWILCH / RCC2	H2BC3 / CDC25C / SPC25 / H4C13 / H2BC17 / H2BC11 / CENPF / CCNB2 / H4C1 / CDK1 / CDKN2A / CCNA2 / UBE2C / SPC24 / H2BC15 / SKA1 / CENPA / CENPM / CENPU / SGO1 / UBE2S / H2BC10 / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / H2BC12 / CCNB1 / MAD2L1 / H2BC8 / CENPO / EXO1 / H2BC9 / CDC25A / H2BC21 / ERCC6L / H2BC14 / CENPI / BUB1B / H4C9 / RMI2 / H2BC6 / H3-4 / CDC45 / CDC20 / PLK1 / CENPK / MCM10 / CENPP / KIF2C / H4C8 / CDCA8 / BUB1 / CENPH / H2BC7 / MCM4 / PCBP4 / ZWINT / H4C4 / SPDL1 / UBA52 / RPS27 / SFN / PKMYT1 / DYNLL1 / H2BC5 / ANAPC11 / ORC6 / CCNE2 / H2AX / PSMA6 / H4C2 / NDC80 / NSD2 / UBE2V2 / RFC4 / RAD50 / CENPN / RPA3 / ORC1 / DBF4 / MCM8 / SGO2 / ITGB3BP / PPP2R5A / GTSE1 / DNA2 / CHEK1 / YWHAH / H2BC4 / KNL1 / UBE2E1 / ANAPC15 / UBE2D1 / PPP2CA / CCNE1 / RAD1 / H4C6 / BABAM1 / CLSPN / NDE1 / YWHAZ / H4C16 / SKA2 / RBX1 / H4C3 / PSMD7 / MCM5 / CHEK2 / ATRIP / DYNC1I1 / PSMD8 / PMF1 / PSMB4 / RNF8 / H4C5 / RAD9B / YWHAG / RPS27A
FCGAMMA RECEPTOR FCGR DEPENDENT PHAGOCYTOSIS	WIPF3 / ITPR3 / IGLV3-25 / IGKV4-1 / FCGR2A / FCGR1A / IGLV2-23 / LIMK1 / IGKV1D-16 / SRC / IGHV3-7 / ARPC1B / IGLC3 / SYK / IGHV3-11 / WASF1 / PAK1 / PLD4 / CD3G / IGHG2 / MYO5A / HSP90AB1 / WIPF1 / WIPF2 / VAV3 / IGHG4 / ABI2 / ARPC5 / WASF2 / RAC1 / CFL1 / ITPR1 / PRKCD / IGHV3-23 / ACTR3 / IGLV1-47 / CD247 / IGLV1-40 / MAPK3 / ABL1 / GRB2 / FGR / IGHV3-30 / ACTR2 / IGLV1-44 / ARPC2 / MYO9B / IGLV2-14 / PTK2 / IGLV2-8 / PIK3CB / BTK / HCK / NF2	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / PLPP4 / IGLV1-44 / MYO10 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / IGKV3D-20 / MYH2 / PLD4 / FGR / IGLC3 / ITPR2 / NCKAP1L / FCGR3A / CD247 / VAV1
M PHASE	SKA1 / CENPA / TUBB3 / SPC25 / NEK2 / TUBA3D / UBE2C / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / CCNB2 / PLK1 / CENPK / ERCC6L / NCAPH / CENPF / CENPM / KIF2C / CDK1 / H2BC17 / CDCA8 / NDC80 / H2AC14 / ESPL1 / KIF20A / NCAPG / CENPO / BUB1 / H4C13 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / H2BC13 / KIF23 / AURKB / PTTG1 / CHMP3 / FBXO5 / CENPI / H3C2 / CDCA5 / H3C3 / CENPS / H2BC26 / H2BC9 / H2BC14 / SPC24 / H3C10 / ZWINT / NCAPD2 / MAD2L1 / MASTL / CENPL / H2AC4 / CENPH / H3C13 / SGO1 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / UBE2S / PLK4 / H4C1 / H2AC7 / H2BC8 / KNL1 / H2BC11 / SPDL1 / H2BC7 / CENPU / H2BC12 / CEP72 / H2AC8 / LMNB1 / H3C7 / H3-4 / NCAPG2 / H4C8 / H2BC6 / B9D2 / CEP290 / NDE1 / CEP131 / CPAP / CHMP4C / ZWILCH / SMC2 / RCC2 / TUBG2 / NUP210 / H2BC5 / FIRRM / CEP164 / VRK1 / RCC1	H3C2 / H2BC3 / H3C13 / PTTG1 / H3C3 / SPC25 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / CENPF / CCNB2 / H4C1 / H3C10 / CDK1 / UBE2C / SPC24 / H2BC15 / H3C1 / SKA1 / H3C12 / TUBA3D / CDCA5 / CENPA / CENPM / CENPU / H2AC4 / SGO1 / UBE2S / H2BC10 / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / TUBA4B / H2BC12 / CCNB1 / MAD2L1 / H2BC8 / H3C8 / CENPO / H2BC9 / H2AC7 / H2BC21 / ERCC6L / H2BC14 / CENPI / BUB1B / H4C9 / H2BC6 / H3-4 / H3C6 / CDC20 / PLK1 / KIF20A / CENPK / CENPP / KIF2C / FBXO5 / H4C8 / H2AC8 / CDCA8 / BUB1 / CENPH / H2BC7 / ZWINT / H4C4 / SPDL1 / NCAPH / UBA52 / RPS27 / KIF23 / NCAPG / MASTL / DYNLL1 / CEP72 / H2BC5 / ANAPC11 / EMD / CHMP2A / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / NDC80 / H3-3A / ENSA / H3C7 / LMNB1 / CETN2 / BANF1 / TMPO / CENPN / H2AC6 / SSNA1 / H2AC20 / RAB2A / SGO2 / ITGB3BP / PPP2R5A / CEP41 / NUP210 / H2BC4 / KNL1 / TUBB2A / UBE2E1 / CHMP4C / ANAPC15 / UBE2D1 / PPP2CA / LBR / H4C6 / RCC1 / NDE1 / MZT1 / NUP62 / CHMP3 / H4C16 / ARPP19 / MZT2B / SUMO1 / DCTN3 / SKA2 / NEK7 / DCTN2 / H4C3 / CHMP4B / PSMD7 / DYNC1I1 / PSMD8 / TUBB4A / MZT2A / TUBA3E / PMF1 / PSMB4 / H4C5 / H3-3B / TUBA1B / YWHAG / RPS27A / GORASP2 / H2AJ
DNA REPLICATION	UBE2C / CCNE1 / H2BC17 / CDC6 / H2AC14 / MCM10 / CDT1 / H4C13 / H2BC13 / CCNA2 / ORC1 / H3C2 / CDC45 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / GINS1 / H2AC4 / H3C13 / ORC6 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / GINS2 / H3C1 / H3C12 / H2BC21 / H3C8 / UBE2S / H4C1 / H2AC7 / H2BC8 / DNA2 / GMNN / H2BC11 / H2BC7 / MCM7 / MCM4 / MCM2 / H2BC12 / H2AC8 / CDC7 / H3C7 / MCM3 / FEN1 / POLA2 / H4C8 / H2BC6 / DBF4 / MCM6 / RFC4 / GINS4 / CCNE2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CCNA2 / UBE2C / H2BC15 / H3C1 / H3C12 / CDT1 / H2AC4 / UBE2S / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / GINS1 / H2AC7 / H2BC21 / H2BC14 / GINS2 / H4C9 / GMNN / H2BC6 / H3C6 / CDC45 / GINS4 / MCM10 / H4C8 / H2AC8 / H2BC7 / MCM4 / H4C4 / UBA52 / H2BC5 / ANAPC11 / ORC6 / CCNE2 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / POLA2 / H3-3A / H3C7 / RFC4 / RPA3 / H2AC6 / ORC1 / DBF4 / H2AC20 / MCM8 / POLE3 / SSBP1 / DNA2 / H2BC4 / UBE2E1 / ANAPC15 / GINS3 / UBE2D1 / POLE2 / CCNE1 / H4C6 / H4C16 / RBX1 / POLD2 / H4C3 / PSMD7 / MCM5 / PSMD8 / POLE4 / PSMB4 / H4C5 / H3-3B / RPS27A / H2AJ / CDC6 / RPA4
LEISHMANIA INFECTION	GNG4 / DPEP1 / ADORA2B / GNGT1 / WIPF3 / ITPR3 / IGLV3-25 / NOX1 / IGKV4-1 / PRKACG / GNAZ / CYSLTR2 / FCGR2A / FCGR1A / CYSLTR1 / RHBDF2 / IGLV2-23 / IL6 / PSTPIP1 / IGKV1D-16 / SRC / IGHV3-7 / ARPC1B / GNG10 / IGLC3 / SYK / IGHV3-11 / PYCARD / ENTPD1 / WASF1 / CYBA / NFKB2 / GNG8 / CD3G / TXN / IGHG2 / P2RX4 / MYO5A / HSP90AB1 / WIPF1 / WIPF2 / DVL2 / VAV3 / IGHG4 / ABI2 / ARPC5 / ADCY7 / WASF2 / ADCY3 / RAC1 / DVL3 / ITPR1 / ADAM17 / NOXO1 / IGHV3-23 / GNGT2 / GNB1 / WNT5A / ACTR3 / IL18 / IGLV1-47 / CD247 / IL1A / IGLV1-40 / MAPK3 / ABL1 / GRB2 / GNB5 / FGR / IGHV3-30 / ACTR2 / IGLV1-44 / ARPC2 / ADCY8 / MYO9B / ADCY4 / IGLV2-14 / GNG11 / PTK2 / IGLV2-8 / FURIN	IL6 / IGHV4-59 / IGHV4-39 / IGHV2-70 / IL1B / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / MYO10 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / GGT5 / PRKAR2B / IGKV5-2 / IGHV1-69 / IGKV2D-30 / CTSG / IGHV3-13 / IL10 / IGLV3-25 / IGKV2D-40 / ADCY5 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / MEFV / IGKV4-1 / IGLV2-23 / HMOX1 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / NLRP3 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / GNB3 / CD163 / FZD7 / IGLV1-47 / IGKV1-5 / IGKV3-11 / JUN / IGLV1-40 / DPEP2 / IGLV3-1 / IGKV3D-20 / MYH2 / PLK2 / FGR / IGLC3 / CYSLTR1 / ITPR2 / NCKAP1L / FCGR3A / CD247 / VAV1 / CYBA / GNB4
TRANSLATION	SEM1 / RPS4Y2 / GSPT2 / MT-ND3 / MRPL1 / KGD4 / MRPL39 / TSFM / RPS17 / MRPS31 / MT-ATP6 / MT-ND2 / MT-ND5 / MRPL54 / MT-CO3 / MT-ATP8 / MT-ND1 / MRPS18C / MRPL46 / RPL36AL / MRPL37 / MT-CYB / PPA2 / UBB / MRPS2 / RPL3L / RCHY1 / MRPL32 / MRPS25 / MT-CO1 / AURKAIP1 / MRPS22 / GFM2 / PTCD3 / SARS1 / MRPL38 / EEF2 / NDUFAB1 / PSMA6 / KLHDC10 / PSMB1 / MRPL33 / MRPL35 / UBE2D3 / HBS1L / PSMA3 / RPL26 / EIF3C / MRPL36 / EIF2B3 / MT-CO2 / SARS2 / MRPS24 / TUFM / MRPS6 / MRPS9 / LTN1 / RPS24 / MRPL16 / TCF25 / MRPL41 / APEH / RPL39L / RPS9 / TARS1 / RARS2 / MRPS26 / SRP54 / RPS15A / MRPL53 / MRPL40 / MRPL2 / RPS27L / MT-ND4 / PSMB6 / MRPL22 / RPS29 / RPL24 / EIF4A2 / EIF3L / EEF1A1 / MRPL44 / MRPL20 / MRPL19 / SEC61A2 / MT-ND6 / PSMB7 / UBC / GFM1 / OXA1L / PABPC1 / EIF4B / PSMD6 / MRPS30 / RPL34 / MARS2 / MRPL49 / MRPL14 / MRPL58 / AARS1 / RPL9 / RPL11 / TARS2 / MRPL34 / VARS2 / SRP19 / HARS1 / RPL22 / MRPS35 / EIF4H / MRPL43 / MRPS27 / MRPL21 / RPL3 / RPL15 / FAU / LARS2 / PSMC1 / MTRF1 / RPSA / SEC61B / RPL12 / ELOB / PSMC6 / MRPL51 / EIF4E / NARS2 / MRPS28 / PSMA5 / RPS3A / MRPL57 / EARS2 / MTRES1 / MT-ND4L / RPL7A / RPS11 / RPL32 / EIF3A / RPS26 / MRPS15 / PSMD12 / CHCHD1	EEF1A2 / RPL39L / RPL22L1 / ELOC / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / MRPL55 / RPL7 / TRAM1 / EEF1E1 / RPS21 / RPL28 / SSR2 / RPS5 / RPS17 / MRPS24 / UBA52 / RPS27 / RPL38 / SEC61G / RPS11 / SRP9 / RPS28 / RPS20 / RPS14 / RPS19 / MRPS33 / RPS16 / RPS15 / MT-CO2 / SSR1 / MRPL36 / PSMA6 / RPL35A / RPL37A / MRPS21 / RPL35 / RPL37 / MRPL9 / RPS23 / EIF3G / SPCS1 / RPLP1 / MT-ND4L / MRPL13 / RPL36 / RPS24 / MRPS12 / EEF1D / RPS18 / RPL29 / RPLP2 / MRPL53 / RPS10 / RPL26L1 / CHCHD1 / EIF2S2 / RPL27 / RPL13 / MRPL15 / RPL18 / MRPL11 / SSR3 / MT-CO1 / RPL10 / RPS26 / RPS29 / RPN2 / RPL18A / MRPL57 / SEC61B / EIF4EBP1 / GADD45GIP1 / MRPS14 / UBE2D1 / RPS6 / EIF1AX / MRPL4 / SRPRB / RPL10A / MT-ND4 / SEC11C / RPL32 / PPA1 / MRPL18 / TRMT112 / MRPL27 / RPS12 / MRPS16 / RPL12 / RPS8 / MRPL58 / RPL21 / AIMP2 / EIF2S3 / MRPL24 / RPS7 / RPL23A / MRPS6 / RBX1 / SSR4 / SRP19 / RPS4X / EEF1B2 / RPL27A / MRPS34 / RPL23 / MRPL41 / FAU / ELOB / MRPL34 / EIF3K / MRPS28 / PSMD7 / RPL19 / DDOST / RPS15A / PSMD8 / RPL34 / UBE2D2 / PSMB4 / RPL13A / MRPS15 / RPS25 / EIF3B / RPS27A / EIF3J / RPL31 / MALSU1 / MRRF / MRPS10 / MT-ND1 / MTIF3 / UFD1 / MT-CO3 / SRP14 / MRPL33 / TSFM / MRPL20 / EIF3H / KGD4 / RPL7A / MRPL52 / MRPL51 / AIMP1 / RPN1 / MRPL43 / EIF3C / MRPS23 / AURKAIP1 / RPS27L / MT-ATP8 / MRPS7 / MRPL22 / MRPL47 / GARS1 / RPL22 / MRPL28 / MRPL21 / MRPS18C / RPS2 / RPL9 / MRPL23 / RPS9 / NDUFAB1 / DAP3 / EIF2B1 / EIF3E / RPL26 / RPSA / RPS3A / PSMA7 / RPL6 / RPL24 / MRPS11 / PSMC4 / MRPS18B / SEC61A1 / EIF4E / RPS13 / RPL14 / MRPS18A / MT-ND2 / DARS2

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
FCERI MEDIATED NF KB ACTIVATION	IGLV3-25 / IGKV4-1 / IGHE / RASGRP1 / IGLV2-23 / IGKV1D-16 / IGHV3-7 / IGLC3 / CARD11 / IGHV3-11	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / FCER1A / IGHE / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / RASGRP4 / IGKV3D-20
DNA REPLICATION PRE INITIATION	UBE2C / H2BC17 / CDC6 / H2AC14 / MCM10 / CDT1 / H4C13 / H2BC13 / ORC1 / H3C2 / CDC45 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / ORC6 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / UBE2S / H4C1 / H2AC7 / H2BC8 / GMNN / H2BC11 / H2BC7 / MCM7 / MCM4 / MCM2 / H2BC12 / H2AC8 / CDC7 / H3C7 / MCM3 / POLA2 / H4C8 / H2BC6 / DBF4 / MCM6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / UBE2C / H2BC15 / H3C1 / H3C12 / CDT1 / H2AC4 / UBE2S / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / GMNN / H2BC6 / H3C6 / CDC45 / MCM10 / H4C8 / H2AC8 / H2BC7 / MCM4 / H4C4 / UBA52 / H2BC5 / ANAPC11 / ORC6 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / POLA2 / H3-3A / H3C7 / RPA3 / H2AC6 / ORC1 / DBF4 / H2AC20 / MCM8 / POLE3 / H2BC4 / UBE2E1 / ANAPC15 / UBE2D1 / POLE2 / H4C6 / H4C16 / H4C3 / PSMD7 / MCM5 / PSMD8 / POLE4 / PSMB4 / H4C5 / H3-3B / RPS27A / H2AJ / CDC6 / RPA4
ANTI INFLAMMATORY RESPONSE FAVOURING LEISHMANIA PARASITE INFECTION	GNG4 / DPEP1 / ADORA2B / GNGT1 / ITPR3 / IGLV3-25 / IGKV4-1 / PRKACG / GNAZ / CYSLTR2 / FCGR2A / FCGR1A / CYSLTR1 / RHBDF2 / IGLV2-23 / IL6 / IGKV1D-16 / SRC / IGHV3-7 / GNG10 / IGLC3 / SYK / IGHV3-11	IL6 / IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / GGT5 / PRKAR2B / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IL10 / IGLV3-25 / IGKV2D-40 / ADCY5 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / GNB3 / CD163 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / DPEP2 / IGLV3-1 / IGKV3D-20 / PLK2 / FGR / IGLC3 / CYSLTR1 / ITPR2 / FCGR3A / CD247
FC EPSILON RECEPTOR FCERI SIGNALING	ITPR3 / IGLV3-25 / HRAS / IGKV4-1 / IGHE / LAT / RASGRP1 / GRAP2 / IGLV2-23 / IGKV1D-16 / IGHV3-7 / LAT2 / IGLC3 / CARD11 / SYK / IGHV3-11	FOS / IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / FCER1A / IGHE / IGHV3-30 / IGLV3-27 / ITK / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / MAPK10 / NFATC1 / IGKV1-5 / NFATC2 / IGKV3-11 / JUN / IGLV1-40 / IGLV3-1 / RASGRP4 / IGKV3D-20
SIGNALING BY THE B CELL RECEPTOR BCR	ORAI2 / ITPR3 / IGLV3-25 / HRAS / IGKV4-1 / RASGRP1 / IGLV2-23 / NFKBIE / IGKV1D-16 / IGHV3-7 / CD22 / TRPC1 / IGLC3 / CARD11 / SYK / IGHV3-11	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHM / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGHD / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / PRKCB / NFATC1 / IGKV1-5 / NFATC2 / IGKV3-11 / IGLV1-40 / IGLV3-1 / IGKV3D-20 / TRPC1 / IGLC3 / ITPR2
IMMUNOREGULATORY INTERACTIONS BETWEEN A LYMPHOID AND A NON LYMPHOID CELL	CD1A / TRAV29DV5 / TRAV19 / TREM2 / COLEC12 / SIGLEC12 / COL1A1 / LAIR2 / IGLV3-25 / COL1A2 / TREML4 / CD200 / COL2A1 / NCR3LG1 / CD300LD / IGKV4-1 / MICB / CD34 / ICAM5 / CD8B / COL3A1 / SLAMF7 / CD1B / FCGR1A / ICAM4 / CD300LF / CD3D / TREML2 / LILRB4 / PILRB / MICA / IGLV2-23 / CD40LG / CD1C / ULBP1 / ULBP3 / IGKV1D-16 / IFITM1 / LAIR1 / IGHV3-7 / ICAM1 / KLRB1 / CD22 / OSCAR / IGLC3 / CD300LB / ITGB2 / IGHV3-11 / LILRA6 / CLEC2D / SIGLEC10 / LILRB3 / CD3G / TREM1 / CD96 / CD3E / KLRC1 / JAML	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / SIGLEC11 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / FCGR2B / IGKV5-2 / IGHV1-69 / CD300E / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / LILRA5 / IGKV4-1 / IGLV2-23 / SH2D1B / CD160 / LILRA2 / LILRB5 / KLRF1 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / KIR3DL2 / SELL / CD1D / KLRC1 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / NCR1 / IGHV3-48 / IGLV1-47 / KLRD1 / IFITM1 / IGKV1-5 / SIGLEC9 / CD1C / PIANP / SIGLEC7 / IGKV3-11 / IGLV1-40 / IGLV3-1 / SLAMF7 / CD226 / KLRB1 / NCR3 / IGKV3D-20 / SIGLEC5 / LILRB2 / IGLC3 / CD300A / SIGLEC1 / FCGR3A / CD247 / SH2D1A / CD300C / ULBP1 / LILRA1
CELL SURFACE INTERACTIONS AT THE VASCULAR WALL	MMP1 / CD177 / SLC7A11 / ITGA3 / SLC16A3 / COL1A1 / PF4V1 / IGLV3-25 / COL1A2 / SLC7A6 / OLR1 / SLC7A10 / HRAS / IGKV4-1 / IGHA2 / PSG3 / CD44 / CEACAM6 / EPCAM / ITGAX / CAV1 / IGLL1 / ITGA6 / IGLV2-23 / IGKV1D-16 / SLC7A5 / ANGPT1 / CD2 / SRC / IGHV3-7 / GRB7 / ITGAV / CD48 / IGLC3 / ITGB3 / TGFB1 / ITGB2 / IGHV3-11 / SPN / ITGAM / PSG5 / BSG / SIRPG / NRAS / ATP1B3 / TREM1 / JAML / PROCR / LCK	CEACAM6 / IGHA2 / JCHAIN / IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHA1 / IGHM / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGLV1-44 / SELE / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / SELP / THBD / IGKV5-2 / IGHV1-69 / TSPAN7 / IGKV2D-30 / EPCAM / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / VPREB1 / SLC7A8 / IGKV1-16 / IGKV4-1 / IGLV2-23 / ATP1B2 / TEK / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGLL1 / CD177 / CD244 / SELL / IGKV3-15 / IGLV2-14 / IGKV1D-16 / MAG / IGHV3-48 / IGLV1-47 / PROCR / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / PF4 / GP6 / IGKV3D-20
DISEASES OF PROGRAMMED CELL DEATH	CDC25C / H2BC17 / H2AC14 / H4C13 / EZH2 / CDK5R1 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / CDC25A / H2BC11 / CDC25B / H2BC7 / GSDME / H2BC12 / H2AC8 / DNMT3A / LMNB1 / H3C7 / POLA2 / DNMT1 / H4C8 / H2BC6 / CDKN2A / MLKL / CAPN2 / DNMT3B / H2BC5 / PRIM2 / SOD2	H3C2 / H2BC3 / H3C13 / CDC25C / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDKN2A / CDK5R1 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / CDC25A / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / SOD2 / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLA2 / H3-3A / H3C7 / LMNB1 / H2AC6 / H2AC20 / CDK5
HATS ACETYLATE HISTONES	H2AC13 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H4C13 / H2AC16 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / MRGBP / H2BC12 / KAT2A / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / ENY2 / H2AC8 / H2BC7 / H2BC18 / H4C4 / H2AC13 / H2BC5 / H2AC21 / H2AC14 / PAX3 / VPS72 / H4C2 / TAF10 / H3C7
POSITIVE EPIGENETIC REGULATION OF RRNA EXPRESSION	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / KAT2A / H2AC8 / H3C7 / H4C8 / H2BC6 / TAF1A / POLR1G / CHD3 / H2BC5 / EHMT2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR1H / H3-3A / H3C7 / POLR2F / POLR2H / H2AC6 / H2AC20 / H2BC4 / H4C6 / CBX3 / POLR2E / POLR1G / H4C16 / TBP / POLR2L / H4C3 / DEK

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
CHROMOSOME MAINTENANCE	CENPA / HJURP / CENPK / CENPM / H2BC17 / H2AC14 / CENPO / H4C13 / H2BC13 / CCNA2 / CENPW / CENPI / OIP5 / CENPS / H2BC26 / H2BC9 / BLM / H2BC14 / DSCC1 / CENPL / H2AC4 / CENPH / PIF1 / H2AX / H2BC15 / H4C6 / H2BC10 / H4C9 / H2BC3 / H2BC21 / H4C1 / H2AC7 / H2BC8 / DNA2 / KNL1 / H2BC11 / H2BC7 / CENPU / H2BC12 / H2AC8 / H3-4 / FEN1 / POLA2 / H4C8 / H2BC6 / CHTF18 / RFC4	H2BC3 / H4C13 / H2BC17 / H2BC11 / H4C1 / CCNA2 / H2BC15 / OIP5 / CENPA / CENPM / CENPU / H2AC4 / H2BC10 / CENPW / CENPL / H2BC13 / H2BC12L / H2BC12 / H2BC8 / CENPO / H2BC9 / H2AC7 / H2BC21 / H2BC14 / CENPI / H4C9 / H2BC6 / H3-4 / CENPK / POLR2K / CENPP / H4C8 / H2AC8 / HJURP / CENPH / H2BC7 / CENPX / H4C4 / POLR2J / NHP2 / H2BC5 / H2AC14 / H2AX / H2AZ2 / DSCC1 / H4C2 / POLA2 / POLR2I / H3-3A / POLR2F / POLR2H / RFC4 / CENPN / RPA3 / H2AC6 / NOP10 / H2AC20 / ITGB3BP / DNA2 / H2BC4 / KNL1 / TERF1 / H4C6 / POLR2E / H4C16 / MIS18A / POLR2L / POLD2 / H4C3 / POLR2G
HCMV LATE EVENTS	H2AC13 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H4C13 / H2AC16 / H2BC13 / CHMP3 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / CHMP4C / NUP210 / H2BC18 / H2BC5 / H2AC21	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / H2AC8 / H2BC7 / H2BC18 / VPS28 / H4C4 / H2AC13 / H2BC5 / H2AC21 / CHMP2A / H2AC14 / H4C2 / H3C7 / H2AC6 / H2AC20 / VPS37D / NUP210 / H2BC4 / CHMP4C / H4C6 / CHMP1A / NUP62 / CHMP3 / H4C16
RNA POLYMERASE I TRANSCRIPTION	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / KAT2A / H2AC8 / H3C7 / H4C8 / H2BC6 / TAF1A / POLR1G / CHD3 / CAVIN1 / H2BC5 / EHMT2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR1H / GTF2H5 / H3-3A / H3C7 / POLR2F / POLR2H / H2AC6 / H2AC20 / H2BC4 / H4C6 / CBX3 / POLR2E / POLR1G / H4C16 / TBP / POLR2L / H4C3
POTENTIAL THERAPEUTICS FOR SARS	ATP1A3 / IGLV3-25 / TLR7 / IGKV4-1 / PDCD1 / CYSLTR1 / IMPDH1 / IGLV2-23 / IGKV1D-16 / IGHV3-7 / CHD3 / IGLC3 / BRMS1 / SYK / IGHV3-11 / JAK3 / ZBP1 / ATP1B3 / IFNGR2 / HSP90AB1 / FNTB / FXYD7 / PHF21A / IMPDH2 / SAP30 / ATP1B1 / IGHV3-23 / CHD4 / IGLV1-47 / IGLV1-40 / ITGA4 / GRB2 / FXYD3 / ATP1A1 / ATP1A4 / TUBB / IGHV3-30 / IGLV1-44 / HDAC1 / IFNGR1 / IGLV2-14 / IGLV2-8 / FURIN / RBBP7 / BTK / RBBP4 / FKBP1A / FNTA / ITGB1 / RBX1 / IGHV3-53 / GATAD2A / IGLC2	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHM / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGHD / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / IGKV4-1 / IGLV2-23 / ATP1B2 / IGHV3-30 / FXYD6 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / IGKV3D-20
RHO GTPASE EFFECTORS	SFN / SKA1 / CENPA / TUBB3 / SPC25 / IQGAP3 / TUBA3D / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / PLK1 / CENPK / DIAPH3 / ERCC6L / CENPF / CENPM / KIF2C / CDC25C / H2BC17 / CDCA8 / NDC80 / H2AC14 / CENPO / BUB1 / H4C13 / TUBA3E / WIPF3 / DYNC1I1 / KIF18A / H2BC13 / AURKB / CENPI / H3C2 / H3C3 / NOX1 / CIT / CENPS / H2BC26 / H2BC9 / KIF14 / H2BC14 / SPC24 / H3C10 / PAK3 / ZWINT / MAD2L1 / CENPL / H2AC4 / CENPH / NCF2 / H3C13 / SGO1 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H3C11 / H4C9 / S100A9 / H2BC3 / PKN3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / PRC1 / KLC2 / KNL1 / H2BC11 / SPDL1 / H2BC7 / RHOQ / CENPU / H2BC12 / FMNL1 / H2AC8 / H3C7 / LIMK1 / H4C8 / H2BC6 / SRC / FMNL3 / B9D2 / YWHAZ / FLNA / NDE1 / ARPC1B / RHPN1 / ZWILCH / RCC2 / H2BC5 / MAPK11 / MYL9 / RAC2 / PPP1R14A / WASF1 / TUBA4A / H4C4 / CYBA / PFN2 / PAK1 / H4C16 / ITGB3BP / KIF2A / RHOC / INCENP / NUP37 / WIPF1 / TUBA1B / NCF4 / WIPF2 / TUBA4B / DVL2 / TUBA1A / ABI2 / ARPC5	H3C2 / H2BC3 / H3C13 / CDC25C / H3C3 / SPC25 / H4C13 / H2BC17 / H3C11 / H2BC11 / CENPF / H4C1 / H3C10 / SPC24 / H2BC15 / H3C1 / SKA1 / H3C12 / TUBA3D / CENPA / CENPM / CENPU / H2AC4 / SGO1 / H2BC10 / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / TUBA4B / H2BC12 / KIF14 / MAD2L1 / H2BC8 / H3C8 / CENPO / H2BC9 / H2AC7 / H2BC21 / ERCC6L / H2BC14 / CENPI / BUB1B / TAX1BP3 / H4C9 / H2BC6 / H3C6 / CDC20 / PLK1 / CENPK / CENPP / KIF2C / H4C8 / IQGAP3 / H2AC8 / CDCA8 / BUB1 / KLK2 / CENPH / H2BC7 / ZWINT / H4C4 / SPDL1 / RPS27 / SFN / DIAPH3 / PRC1 / DYNLL1 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / NDC80 / H3-3A / H3C7 / ARPC5 / CENPN / H2AC6 / PIN1 / H2AC20 / SGO2 / ITGB3BP / PPP2R5A / PAK3 / CFL1 / YWHAH / H2BC4 / KNL1 / TUBB2A / PPP2CA / LIN7B / H4C6 / NDE1 / YWHAZ / LIMK2 / H4C16 / ARPC1B
MATERNAL TO ZYGOTIC TRANSITION MZT	DUXA / UHRF1 / H2BC17 / H2AC14 / H4C13 / DUX4 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / FGF8 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / NPM2 / H2BC10 / H3C11 / H4C9 / PADI6 / H2BC3 / H3C1 / H3C12 / TEAD4 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H1-8 / H4C13 / H2BC17 / H3C11 / H2BC11 / UHRF1 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / TPRX1 / H2BC10 / H2BC13 / LEUTX / H2BC12L / ELOC / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / DUXA / H4C4 / PRM2 / H2BC5 / H2AC14 / H2AX / NOBOX / H2AZ2 / H4C2 / ZSCAN4 / H3-3A / H3C7 / PADI6
NEGATIVE EPIGENETIC REGULATION OF RRNA EXPRESSION	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / DNMT1 / H4C8 / H2BC6 / TAF1A / DNMT3B / POLR1G	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR1H / GTF2H5 / H3-3A / H3C7 / POLR2F / POLR2H / SAP30L / H2AC6 / H2AC20
AMYLOID FIBER FORMATION	ODAM / CALCA / H2BC17 / H2AC14 / H4C13 / H2BC13 / CALB1 / SNCA / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / LYZ / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / SNCAIP / H3C1 / TSPAN5 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / TSPAN15 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / ODAM / NPPA / H2AC4 / H2BC10 / CALCA / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AZ1 / H4C8 / H2AC8 / TSPAN5 / H2BC7 / LYZ / H4C4 / UBA52 / H2BC5 / H2AC14 / H2AX / SAA1 / H4C2 / H3-3A / H3C7 / PRL / H2AC6 / H2AC20 / TSPAN33 / SNCAIP / PSENEN
G2 M CHECKPOINTS	SFN / PKMYT1 / CCNB2 / GTSE1 / CHEK1 / CDK1 / CDC25C / H2BC17 / CDC6 / MCM10 / H4C13 / CCNB1 / H2BC13 / CCNA2 / ORC1 / CDC45 / CLSPN / EXO1 / H2BC26 / H2BC9 / BLM / H2BC14 / ORC6 / H2AX / H2BC15 / H4C6 / H2BC10 / H4C9 / H2BC3 / H2BC21 / H4C1 / RHNO1 / H2BC8 / DNA2 / CDC25A / H2BC11 / H2BC7 / MCM7 / MCM4 / MCM2 / H2BC12 / CDC7 / CHEK2 / MCM3 / H3-4 / H4C8 / H2BC6 / DBF4 / MCM6 / YWHAZ / RFC4 / BARD1 / RAD1 / NBN / RNF8 / H2BC5 / BRCA1 / RMI2 / H4C4 / NSD2 / MCM5 / H4C16 / RMI1	H2BC3 / CDC25C / H4C13 / H2BC17 / H2BC11 / CCNB2 / H4C1 / CDK1 / CCNA2 / H2BC15 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / CCNB1 / H2BC8 / EXO1 / H2BC9 / CDC25A / H2BC21 / H2BC14 / H4C9 / RMI2 / H2BC6 / H3-4 / CDC45 / MCM10 / H4C8 / H2BC7 / MCM4 / H4C4 / UBA52 / SFN / PKMYT1 / H2BC5 / ORC6 / H2AX / PSMA6 / H4C2 / NSD2 / UBE2V2 / RFC4 / RAD50 / RPA3 / ORC1 / DBF4 / MCM8 / GTSE1 / DNA2 / CHEK1 / YWHAH / H2BC4 / RAD1 / H4C6 / BABAM1 / CLSPN / YWHAZ / H4C16 / H4C3 / PSMD7 / MCM5 / CHEK2 / ATRIP / PSMD8 / PSMB4 / RNF8 / H4C5 / RAD9B / YWHAG / RPS27A
MITOTIC PROPHASE	CCNB2 / PLK1 / CDK1 / H2BC17 / H2AC14 / H4C13 / CCNB1 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / MASTL / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / LMNB1 / H3C7 / H3-4 / NCAPG2 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / CCNB2 / H4C1 / H3C10 / CDK1 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / CCNB1 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3-4 / H3C6 / PLK1 / H4C8 / H2AC8 / H2BC7 / H4C4 / MASTL / H2BC5 / EMD / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / ENSA / H3C7 / LMNB1 / BANF1 / TMPO / H2AC6 / H2AC20 / RAB2A
HCMV EARLY EVENTS	TUBB3 / TUBA3D / TUBAL3 / H2AC13 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H4C13 / EZH2 / H2AC16 / TUBA3E / DYNC1I1 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / TUBA3D / H2AC4 / H2BC10 / H2BC13 / H2AC17 / TUBA4B / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / H2AC8 / H2BC7 / H2BC18 / H4C4 / H2AC13 / DYNLL1 / H2BC5 / H2AC21 / H2AC14

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
HCMV INFECTION	TUBB3 / TUBA3D / TUBAL3 / H2AC13 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H4C13 / EZH2 / H2AC16 / TUBA3E / DYNC1I1 / H2BC13 / CHMP3 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / TUBA3D / H2AC4 / H2BC10 / H2BC13 / H2AC17 / TUBA4B / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / H2AC8 / H2BC7 / H2BC18 / VPS28 / H4C4 / H2AC13 / DYNLL1 / H2BC5 / H2AC21 / CHMP2A / H2AC14 / H4C2 / H3C7 / H2AC6 / H2AC20 / VPS37D / NUP210 / H2BC4 / TUBB2A / CHMP4C / EZH2 / H4C6 / CHMP1A / NUP62 / CHMP3 / H4C16 / H4C3 / CHMP4B / DYNC1I1 / SNF8 / TUBB4A / TUBA3E / MVB12A
CELLULAR SENESCENCE	HMGA2 / UBE2C / CCNE1 / E2F2 / H2BC17 / H2AC14 / H4C13 / EZH2 / H1-5 / H2BC13 / CCNA2 / E2F1 / H3C2 / H3C3 / H2BC26 / H2BC9 / CBX2 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / HMGA1 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H1-3 / H2BC21 / H3C8 / UBE2S / H4C1 / H2AC7 / H2BC8 / H2BC11 / CXCL8 / H2BC7 / H2BC12 / H2AC8 / IL6 / LMNB1 / H3C7 / H3-4 / H4C8 / H2BC6 / CDKN2A / CCNE2 / NBN / CDKN2C / H2BC5 / EHMT2 / MAPK11 / MAPKAPK3	H3C2 / H1-5 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDKN2A / CCNA2 / UBE2C / H2BC15 / H3C1 / H1-1 / H3C12 / H2AC4 / UBE2S / CDKN2B / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H1-2 / HMGA1 / H4C9 / H2BC6 / H3-4 / H3C6 / H4C8 / H2AC8 / CBX2 / TXN / H1-0 / H2BC7 / H4C4 / UBA52 / H2BC5 / ANAPC11 / CCNE2 / H2AC14 / H2AX / H2AZ2 / H4C2 / CDKN2D / HMGA2 / BMI1 / H3-3A / H3C7 / LMNB1 / RAD50 / H2AC6 / E2F1 / H2AC20 / CBX8 / CDKN2C / CBX4 / E2F2 / H2BC4 / H1-4 / UBE2E1 / ANAPC15 / UBE2D1 / EZH2 / CCNE1 / TERF1 / H4C6 / MAPKAPK5
RUNX1 REGULATES TRANSCRIPTION OF GENES INVOLVED IN DIFFERENTIATION OF HSCS	H2BC17 / H2AC14 / LMO1 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / TP73 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / UBA52 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / H2AC6 / H2AC20
GENE SILENCING BY RNA	H2BC17 / H2AC14 / H4C13 / H2BC13 / MYBL1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / MAEL / H2BC10 / H3C11 / H4C9 / H2BC3 / PIWIL4 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / TDRD12 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / H4C8 / H2AC8 / H2BC7 / TDRD6 / MYBL1 / H4C4 / POLR2J / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR2I / H3-3A / H3C7 / POLR2F / POLR2H / H2AC6 / H2AC20 / ASZ1 / TDRKH / H2BC4 / AGO2 / H4C6 / POLR2E / H4C16 / POLR2L / H4C3 / POLR2G / FKBP6
INNATE IMMUNE SYSTEM	SERPINB3 / OLFM4 / NOS1 / MUC13 / CD177 / MUC1 / REG3A / ATP6V1E2 / ATP6V0D2 / LCN2 / MUC3A / PI3 / MUC5AC / ATP6V1C2 / MUC5B / ATP6V0A4 / MUC12 / CHI3L1 / CHIT1 / MUC16 / MMP9 / SLC2A5 / TCN1 / CTSV / TNFAIP6 / TREM2 / S100P / PKM / ATP6V1B1 / RHOF / PLAU / CCL22 / PGLYRP4 / WIPF3 / S100A7 / ITPR3 / MUC20 / S100A1 / IGLV3-25 / LPO / BIRC3 / FABP5 / RAB3D / CHGA / OLR1 / CTSK / TLR7 / HRAS / MAPK12 / PAK3 / PTPRN2 / LYZ / ANXA2 / IGKV4-1 / CXCL1 / NCF2 / LY96 / PRKACG / ART1 / TRPM2 / IGHE / DEFB128 / RELB / S100A9 / FCGR2A / IKBKE / PYGB / CHRNB4 / FCGR1A / IFNA6 / LAT / ABCA13 / AMPD3 / RASGRP1 / SERPINB12 / IMPDH1 / MAPK13 / S100A11 / CD44 / PRSS2 / LPCAT1 / LGALS3 / CLEC4E / CTSD / CEACAM6 / GRAP2 / CD55 / POLR3G / RIPK2 / AIM2 / PADI2 / CLEC4A / GSDME / GLA / ITGAX / CCL17 / QPCT / CKAP4 / GBP2 / IKBIP / CLEC6A / MUC15 / ADAM8 / IGLV2-23 / CRISP3 / NLRP4 / GPR84 / RAB9B / PSTPIP1 / S100B / LIMK1 / IGKV1D-16 / ACLY / CLEC4D / ALDH3B1 / CTSC / MMP25 / LAIR1 / SRC / MCEMP1 / IGHV3-7 / ATP11A / KIR2DS4 / DEFB126 / CEP290 / TRAF3 / GNLY / DUSP4 / ITGAV / HSPA6 / DOK3 / PLAUR / ARPC1B / LAT2 / CR2 / DSC1 / ADGRE3 / IFNA14 / NOD1 / CASP5 / SARM1 / OSCAR / ACP3 / DNASE1L1 / IGLC3 / CD300LB / CARD11 / CLEC5A / SYK / NBEAL2 / ITGB2 / IGHV3-11 / KCNAB2 / MAPK11 / TMC6 / HSPA1B / MAPKAPK3 / PYCARD / ITGAM / CALML5 / SNAP25 / CANT1 / RAC2 / GM2A / WASF1 / IRAK1 / CASP2 / CYBA / STING1 / NFKB2 / CXCR2 / TBC1D10C / NRAS / LILRB3 / CARD9 / ZBP1 / PAK1 / CGAS / PLD4 / ALOX5 / CD3G / TREM1 / GRN / TXN / IRF5 / ATAD3B / NOS2 / MNDA / ARHGAP9 / IGHG2 / ATP6V1F / MYO5A / GLIPR1 / CD59 / HSP90AB1 / LCK / WIPF1 / HRNR / MUCL1 / RAP2B / ATP6V1C1 / NCF4 / WIPF2 / RAB24 / RAB31 / DUSP7 / VAV3 / POLR3K / IGHG4 / TRAF2 / SEMG1 / ABI2 / ARPC5 / CRACR2A / WASF2 / NEU1 / SIRPB1 / TLR10 / ATP8A1 / DNM3 / USP14 / RAC1 / PTAFR / BCL2 / LRRC14 / CFL1 / LRRC7 / VAT1 / NCR2 / DEFB113 / CTSA / ITPR1 / RAB10 / HSPA1A	MUC5B / FCN2 / ELANE / MUC6 / FCN3 / MUC1 / CEACAM6 / ITLN1 / CFP / FOS / PLAC8 / COLEC10 / IGHV4-59 / IGHV4-39 / IGHV2-70 / IL1B / TCN1 / CLEC4C / IGHV1-46 / IGHV4-34 / IGKV3-20 / CCL22 / PGLYRP1 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / PLPP4 / IGLV1-44 / RNASE3 / MYO10 / C7 / FPR2 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGHG4 / IGLV2-8 / IGHV3-33 / IGHG2 / IGLV6-57 / IGHG1 / CLEC4E / MPO / IGKV5-2 / IGHV1-69 / CD300E / IGKV2D-30 / CTSG / PELI2 / QSOX1 / MUC3A / IGHV3-13 / RIPK3 / CRISPLD2 / IGLV3-25 / IGKV2D-40 / LTF / FOLR3 / SIGLEC14 / AIM2 / IGLV3-19 / IGHV3-11 / FPR1 / IGKV1D-39 / IGKV1-16 / MEFV / IGKV4-1 / IGLV2-23 / TMC6 / COLEC11 / PTPRB / FCER1A / SIRPB1 / HMOX1 / PRTN3 / ACAA1 / CRISP3 / IGHE / IGHV3-30 / CLEC4D / IGLV3-27 / ITK / IGHV3-7 / RETN / AGL / IGHV3-23 / IRAK3 / AOC1 / MMP8 / HK3 / CD177 / S100B / CRACR2A / SELL / NLRP3 / NOS1 / OLFM4 / S100A8 / IGKV3-15 / IGLV2-14 / KIR2DS4 / PLAUR / UNC13D / CGAS / IGKV1D-16 / IGHV3-48 / S100A12 / MASP1 / NOS3 / DUSP4 / IGLV1-47 / TLR4 / KLRD1 / MAPK10 / CCR2 / DEFA3 / NFATC1 / SLCO4C1 / FCN1 / IGKV1-5 / CFD / HERC5 / PGM1 / CTSV / CR1 / SIGLEC9 / BPI / CD4 / GBP4 / NFATC2 / ALOX5 / IGKV3-11 / CAMP / JUN / IGLV1-40 / FCAR / IGLV3-1 / RASGRP4 / GNLY / GSTP1 / FGL2 / TLR2 / GZMM / IGKV3D-20 / LPO / TKFC / CXCR1 / SLC2A3 / MYH2 / SIGLEC5 / AGER / C5AR1 / NLRC4 / DUSP6 / IQGAP1 / LILRB2 / PLD4 / NBEAL2 / FGR / UBR4 / DOCK2 / SEMG1 / IGLC3 / PGLYRP2 / C8A / P2RX1 / CD300A / DEFB113 / MNDA / ITPR2 / DHX58 / CLEC12A / C6 / CEACAM3 / RAC2 / CLEC5A / CXCR2 / NCKAP1L / IFIH1 / IFI16 / RAB9B / FCGR3A / CD247 / VAV1 / CEP290 / C9 / CAT / NFAM1 / IQGAP2 / DYNC1H1 / CYBA / TXK / CD36 / CD180 / CLEC10A
OXIDATIVE STRESS INDUCED SENESCENCE	E2F2 / H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / E2F1 / H3C2 / H3C3 / H2BC26 / H2BC9 / CBX2 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / CDKN2A / CDKN2C / H2BC5 / MAPK11 / MAPKAPK3 / H4C4 / CDK4 / H4C16 / TXN / CDKN2D / RNF2 / CBX4	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDKN2A / H2BC15 / H3C1 / H3C12 / H2AC4 / CDKN2B / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / CBX2 / TXN / H2BC7 / H4C4 / UBA52 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / CDKN2D / BMI1 / H3-3A / H3C7 / H2AC6 / E2F1 / H2AC20 / CBX8 / CDKN2C / CBX4 / E2F2 / H2BC4 / EZH2 / H4C6 / MAPKAPK5 / H4C16 / MAPKAPK2 / CDK4
MEIOSIS	SYCE2 / H2BC17 / H2AC14 / SMC1B / PRDM9 / H4C13 / H2BC13 / H3C2 / PSMC3IP / H3C3 / H2BC26 / MSH4 / H2BC9 / BLM / RAD51 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / SYCP1 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / BRCA2 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / LMNB1 / H3C7 / H3-4 / H4C8 / H2BC6 / NBN / H2BC5 / FIRRM / BRCA1 / FIGNL1 / SYCE3 / H4C4 / CDK4 / H4C16	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / SYCE2 / H2BC15 / H3C1 / DMC1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / RAD51 / H4C9 / H2BC6 / H3-4 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / TEX12 / H2AZ2 / H4C2 / H3-3A / H3C7 / LMNB1 / RAD50 / RPA3 / H2AC6 / H2AC20 / SYCP2 / SMC1B
REGULATION OF CDH1 GENE TRANSCRIPTION	TFAP2A / H2BC17 / H2AC14 / PKM / H4C13 / EZH2 / H2BC13 / H3C2 / H3C3 / TWIST1 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / CTBP2 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / TFAP2A / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / H2AC20 / FOXQ1
REPRODUCTION	KCNU1 / SYCE2 / H2BC17 / H2AC14 / SMC1B / IZUMO2 / PRDM9 / H4C13 / ADAM2 / H2BC13 / PDPN / H3C2 / PSMC3IP / H3C3 / H2BC26 / MSH4 / H2BC9 / BLM / RAD51 / H2BC14 / H3C10 / H2AC4 / CATSPERB / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / SYCP1 / H2BC21 / H3C8 / BMP4 / ZP4 / H4C1 / H2AC7 / H2BC8 / BRCA2 / CATSPER1 / H2BC11 / ZP3 / H2BC7 / CATSPER4 / H2BC12 / H2AC8 / LMNB1 / H3C7 / H3-4 / H4C8 / H2BC6 / IZUMO1 / ADAM20 / NBN / H2BC5 / FIRRM / NANOG / BRCA1 / ADAM30 / FIGNL1 / SYCE3 / H4C4 / POU5F1 / PRDM1 / CDK4 / H4C16	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / ADAM2 / H2BC11 / H4C1 / H3C10 / SYCE2 / H2BC15 / H3C1 / DMC1 / NANOS3 / IZUMO1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / KCNU1 / H2BC12 / H2BC8 / ADAM20 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / RAD51 / H4C9 / H2BC6 / H3-4 / H3C6 / H4C8 / H2AC8 / PDPN / H2BC7 / H4C4 / CATSPER1 / H2BC5 / H2AC14 / H2AX / TEX12 / H2AZ2 / ZP1 / H4C2 / H3-3A / H3C7 / LMNB1 / RAD50 / ADAM30 / RPA3 / H2AC6 / H2AC20 / SYCP2 / SMC1B

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
DNA REPAIR	NEIL3 / CHEK1 / EYA1 / H2BC17 / H2AC14 / UBE2T / DTL / H4C13 / POLQ / XRCC2 / H2BC13 / CCNA2 / EME1 / FANCI / CLSPN / EXO1 / CENPS / H2BC26 / H2BC9 / BLM / RAD51 / H2BC14 / H2AC4 / H2AX / H2BC15 / H4C6 / FANCE / H2BC10 / RAD51AP1 / H4C9 / H2BC3 / FAAP24 / H2BC21 / H4C1 / H2AC7 / RHNO1 / H2BC8 / DNA2 / BRCA2 / H2BC11 / FANCD2 / H2BC7 / KPNA2 / DCLRE1B / H2BC12 / FANCG / H2AC8 / CHEK2 / H3-4 / COPS7B / FEN1 / FANCB / H4C8 / H2BC6 / EYA4 / RFC4 / BARD1 / RAD1 / INO80B / NBN / RNF8 / POLN / MSH2 / H2BC5 / FIRRM / BRCA1 / FIGNL1 / PIAS3 / DCLRE1C / RUVBL1 / RMI2 / H4C4 / NSD2	H2BC3 / H4C13 / H2BC17 / H2BC11 / H4C1 / XRCC2 / CCNA2 / UBE2T / H2BC15 / DTL / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / RAD51AP1 / EXO1 / H2BC9 / H2AC7 / POLN / H2BC21 / H2BC14 / RAD51 / H4C9 / RMI2 / H2BC6 / H3-4 / POLR2K / H4C8 / H2AC8 / H2BC7 / CENPX / EME1 / H4C4 / POLR2J / FANCA / UBA52 / XRCC3 / PCLAF / H2BC5 / MUTYH / FANCB / H2AC14 / H2AX / H2AZ2 / H4C2 / SUMO3 / POLR2I / TCEA1 / KPNA2 / NSD2 / GTF2H5 / UBE2V2 / ISY1 / POLR2F / POLR2H / RFC4 / CETN2 / POLQ / POLB / RAD50 / RPA3 / RAD23A / H2AC6 / COPS5 / H2AC20 / MAD2L2 / POLE3 / APBB1 / OGG1 / DNA2 / CHEK1 / ERCC1 / CHD1L / H2BC4 / INO80C / POLE2 / RAD1 / SUMO2 / FAAP20 / TERF1 / H4C6 / BABAM1 / TIPIN / CLSPN / POLR2E / ALKBH2 / H4C16 / SUMO1 / RBX1 / POLR2L / POLD2 / H4C3 / POLR2G / NEIL3 / UBE2B / CHEK2 / ATRIP / PNKP / PMS2 / MCRS1 / POLE4 / ERCC8 / RNF8 / RAD23B / H4C5 / RAD9B / RPS27A / H2AJ / UBXN1 / COPS6 / MPG / UFD1 / GTF2H2 / SPIDR / RAD51C / FANCE / RHNO1 / RAD9A / RNF4 / ACTB / FIRRM / INO80E / BLM / COPS7B / MNAT1 / CCNA1
SRP DEPENDENT COTRANSLATIONAL PROTEIN TARGETING TO MEMBRANE	RPL36A / RPL22L1 / SSR2 / SEC61G / TRAM1 / RPL8 / RPN2 / RPL30 / SSR3 / DDOST / SSR1 / RPLP2 / RPL10L / RPL27 / RPS21 / RPS18 / RPL38 / RPL35A / SSR4 / SEC11A / RPL7 / RPL23A / RPL27A / RPL17 / RPS16 / RPL36 / SRPRB / RPL10A / SEC11C / RPS7 / RPL37A / SEC61A1 / RPS19 / RPL23 / RPS14 / RPS27 / RPS3 / RPS4Y1 / RPL19 / RPL37 / RPL13 / RPS27A / RPL39 / RPS15 / SRP9 / SPCS2 / RPS5 / SPCS1 / SRP14 / RPS25 / RPS4X / SRP68 / SRPRA / RPS8 / SRP72 / RPL18A / RPLP1 / RPLP0 / RPL28 / RPS23 / RPS28 / RPS20 / RPS6 / RPS12 / RPS13 / RPL14 / RPL31 / SPCS3 / RPL13A / RPL26L1 / RPS2 / RPL6 / RPL35 / UBA52 / RPL29 / RPL10 / RPS10 / RPN1 / RPL4 / RPL5 / RPL21 / RPL18 / RPS26 / RPL32 / RPS11 / RPL7A / RPS3A / RPL12 / SEC61B / RPSA / FAU / RPL15 / RPL3 / RPL22 / SRP19 / RPL11 / RPL9 / RPL34 / SEC61A2 / RPL24 / RPS29 / RPS27L / RPS15A / SRP54 / RPS9 / RPL39L / RPS24	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / TRAM1 / RPS21 / RPL28 / SSR2 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / SEC61G / RPS11 / SRP9 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / SSR1 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / SPCS1 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / SSR3 / RPL10 / RPS26 / RPS29 / RPN2 / RPL18A / SEC61B / RPS6 / SRPRB / RPL10A / SEC11C / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / SSR4 / SRP19 / RPS4X / RPL27A / RPL23 / FAU / RPL19 / DDOST / RPS15A / RPL34 / RPL13A / RPS25 / RPS27A / RPL31 / SRP14 / RPL7A / RPN1 / RPS27L / RPL22 / RPS2 / RPL9 / RPS9 / RPL26 / RPSA / RPS3A / RPL6 / RPL24 / SEC61A1 / RPS13 / RPL14
HEMOSTASIS	MMP1 / NOS1 / CD177 / SLC7A11 / GNG4 / TUBB3 / ITGA3 / ITGA2 / TUBA3D / EGF / TUBAL3 / SLC16A3 / KIF4A / DGKK / KIF18B / LRP8 / KIF2C / KIFC1 / ORAI2 / KIF20A / CD109 / PLAU / GNGT1 / TUBA3E / COL1A1 / PF4V1 / ITPR3 / KIF18A / PDPN / KIF23 / KCNMB3 / PCDH7 / HBE1 / H3C2 / IGLV3-25 / H3C3 / COL1A2 / SLC7A6 / RAB27B / OLR1 / TRPC3 / PIK3R6 / SERPINE2 / PDE10A / P2RX2 / KIFC2 / SLC7A10 / RACGAP1 / H3C10 / HRAS / TGFB2 / ANXA2 / KIF15 / IGKV4-1 / F13A1 / KIF21B / H3C13 / IGHA2 / PRKACG / VEGFD / PRKCG / ABCC4 / CENPE / IRAG1 / H3C11 / KIF11 / H3C1 / PSG3 / H3C12 / IFNA6 / LAT / MICAL1 / ACTN2 / H3C8 / S100A10 / RASGRP1 / PDE1A / CD44 / KLC2 / PDGFA / CEACAM6 / SLC8A2 / KIF26B / EPCAM / KCNMB4 / F2RL2 / VEGFC / TIMP1 / ITGAX / CAV1 / IGLL1 / ITGA6 / IGLV2-23 / H3C7 / TGFB3 / F2RL3 / IGKV1D-16 / SLC7A5 / ANGPT1 / CD2 / TAGLN2 / SRC / DGKI / IGHV3-7 / YWHAZ / LHFPL2 / ISLR / GRB7 / FLNA / ITGAV / PLAUR / GNG10 / TRPC7 / SPARC / CD48 / IFNA14 / DGKH / MAFG / IGLC3 / MANF / ITGB3 / CYRIB / SYK / TGFB1 / ITGB2 / IGHV3-11 / SRI / SPN / CARMIL1 / ITGA2B / ITGA10 / TRPC6 / ITGAM / PSG5 / GNA15 / PDGFB / RAC2 / SCG3 / ATP2A1 / BSG / SIRPG / TUBA4A / KIF20B / MYB / NRAS / VWF / GNG8 / HBD / PIK3CG / ATP1B3 / CALU / TREM1 / KIF2A / NOS2 / JAML / ABHD12 / P2RX4 / PROCR / LCK / GUCY1A2 / ATP2A3 / TUBA1B / GATA1	CLEC1B / CEACAM6 / ADAMTS13 / ECM1 / IGHA2 / JCHAIN / IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHA1 / IGHM / EHD3 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGF2 / IGKV1-17 / IGLV1-44 / SELE / KIF19 / IGHV3-53 / GATA5 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / SELP / THBD / KIF12 / PRKAR2B / F3 / IGKV5-2 / IGHV1-69 / TSPAN7 / IGKV2D-30 / MMRN1 / QSOX1 / EPCAM / ADRA2B / IGHV3-13 / RAB27B / IGLV3-25 / IGKV2D-40 / SERPINB2 / PTGIR / PLA2G4A / F8 / THBS1 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / VPREB1 / SLC7A8 / IGKV1-16 / SCG3 / HGF / IGKV4-1 / IGLV2-23 / GNA14 / PDE2A / ATP1B2 / P2RY12 / DGKK / PRTN3 / VEGFD / PRKCG / TEK / PRKG1 / SPP2 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / IGLL1 / CD177 / CD244 / DOCK8 / SELL / NOS1 / IGKV3-15 / IGLV2-14 / SRGN / PLAUR / SLC8A3 / TBXA2R / IGKV1D-16 / MAG / IGHV3-48 / GUCY1A1 / GNB3 / NOS3 / DOCK10 / IGLV1-47 / PROCR / PRKCB / SLC8A1 / IGKV1-5 / CFD / ZFPM2 / TUBB6 / IGKV3-11 / IGLV1-40 / IGLV3-1 / CTSW / KIF4B / PF4 / RHOB / GUCY1B1 / SERPINE1 / TOR4A / KLC4 / GP6 / PDE5A / IGKV3D-20 / CLEC3B / FGR / DOCK2 / KCNMB1 / IGLC3 / KIF3C / ENDOD1 / P2RX1 / L1CAM / INPP5D / HBD / ATP2A3 / STXBP2 / ITPR2 / CEACAM3 / RAC2 / KIF1A / KLKB1 / KIF13B / VAV1 / DGKE / PIK3R6 / PLG / ISLR / DGKG / TUBB1 / CD36 / GNB4
EUKARYOTIC TRANSLATION INITIATION	RPS4Y2 / RPS17 / RPL36AL / RPL3L / RPL26 / EIF3C / EIF2B3 / RPS24 / RPL39L / RPS9 / RPS15A / RPS27L / RPS29 / RPL24 / EIF4A2 / EIF3L / PABPC1 / EIF4B / RPL34 / RPL9 / RPL11 / RPL22 / EIF4H / RPL3 / RPL15 / FAU / RPSA / RPL12 / EIF4E / RPS3A / RPL7A / RPS11 / RPL32 / EIF3A / RPS26 / RPL18 / EIF1AX / EIF2S1 / RPL21 / RPL5 / RPL4 / RPS10 / RPL10 / EIF3I / RPL29 / UBA52 / RPL35 / RPL6 / RPS2 / EIF3F / RPL26L1 / RPL13A / EIF5 / RPL31 / RPL14 / RPS13 / EIF4EBP1 / RPS12 / RPS6 / RPS20 / RPS28 / RPS23 / RPL28 / EIF2B1 / EIF3K / RPLP0 / EIF4G1 / RPLP1 / RPL18A / RPS8 / RPS4X / EIF2B5 / RPS25 / RPS5 / RPS15 / RPL39 / RPS27A / RPL13 / EIF2B4 / RPL37 / EIF3J / RPL19 / RPS4Y1 / EIF3M / RPS3 / RPS27 / RPS14 / RPL23 / EIF2B2 / RPS19 / EIF2S2 / RPL37A / RPS7 / RPL10A / RPL36 / EIF3G / RPS16 / RPL17 / RPL27A / RPL23A / RPL7 / EIF2S3 / RPL35A / RPL38 / RPS18 / RPS21 / RPL27 / RPL10L / EIF3D / EIF3H / RPLP2 / EIF3B / RPL30 / RPL8 / EIF3E	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / EIF3G / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / EIF2S2 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / EIF4EBP1 / RPS6 / EIF1AX / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / EIF2S3 / RPS7 / RPL23A / RPS4X / RPL27A / RPL23 / FAU / EIF3K / RPL19 / RPS15A / RPL34 / RPL13A / RPS25 / EIF3B / RPS27A / EIF3J / RPL31 / EIF3H / RPL7A / EIF3C / RPS27L / RPL22 / RPS2 / RPL9 / RPS9 / EIF2B1 / EIF3E / RPL26 / RPSA / RPS3A / RPL6 / RPL24 / EIF4E / RPS13 / RPL14
SENESCENCE ASSOCIATED SECRETORY PHENOTYPE SASP	UBE2C / H2BC17 / H2AC14 / H4C13 / H2BC13 / CCNA2 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / UBE2S / H4C1 / H2AC7 / H2BC8 / H2BC11 / CXCL8 / H2BC7 / H2BC12 / H2AC8 / IL6 / H3C7 / H4C8 / H2BC6 / CDKN2A / CDKN2C / H2BC5 / EHMT2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDKN2A / CCNA2 / UBE2C / H2BC15 / H3C1 / H3C12 / H2AC4 / UBE2S / CDKN2B / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / UBA52 / H2BC5 / ANAPC11 / H2AC14 / H2AX / H2AZ2 / H4C2 / CDKN2D / H3-3A / H3C7 / H2AC6 / H2AC20 / CDKN2C / H2BC4 / UBE2E1 / ANAPC15 / UBE2D1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
CELLULAR RESPONSES TO STIMULI	SLC7A11 / HMGA2 / CREB3L1 / NQO1 / SPP1 / GNG4 / ATP6V1E2 / ATP6V0D2 / TUBB3 / ATP6V1C2 / TUBA3D / UBE2C / CA9 / CCNE1 / EGF / G6PD / TUBAL3 / E2F2 / COX8C / H2BC17 / H2AC14 / DCSTAMP / RPL36A / ATP6V1B1 / H4C13 / EZH2 / GNGT1 / TUBA3E / H1-5 / DYNC1I1 / H2BC13 / CCNA2 / E2F1 / NOX4 / H3C2 / H3C3 / ASNS / H2BC26 / H2BC9 / SNCB / CBX2 / RLN1 / H2BC14 / KDELR3 / H3C10 / TXNRD1 / ANXA2 / AREG / H2AC4 / NCF2 / H3C13 / LY96 / PRKACG / EGLN3 / BLVRA / MMP14 / H2AX / H2BC15 / H4C6 / HMGA1 / H2BC10 / H3C11 / H4C9 / H2BC3 / IKBKE / PDE4D / HSPB8 / H3C1 / H3C12 / H1-3 / H2BC21 / H3C8 / PRKAA2 / UBE2S / TKT / H4C1 / EXOSC4 / H2AC7 / SRXN1 / CASTOR2 / H2BC8 / H2BC11 / PDGFA / CXCL8 / CAMK2A / H2BC7 / GPX8 / CACNB2 / RPL22L1 / H2BC12 / ABCC1 / H2AC8 / IL6 / LMNB1 / H3C7 / H3-4 / H4C8 / H2BC6 / HYOU1 / NPAS2 / CDKN2A / ME1 / ITGAV / HSPA6 / SAMTOR / BAG2 / CAPN2 / ATF4 / GNG10 / HSPA12A / FKBP14 / CCNE2 / NBN / CDKN2C / MAFG / ITGB3 / SOD3 / NUP210 / CUL7 / H2BC5 / EHMT2 / MAPK11 / HSPA1B / MAPKAPK3 / SOD2 / RRAGD / BRCA1 / HIF1A / TUBA4A / H4C4 / CYBA / CACNB1 / TNFRSF21 / GNG8 / TSPYL2 / CDK4 / H4C16 / DNAJB11 / TXN / STIP1 / CDKN2D / RNF2 / CBX4 / COL4A6 / GPX2 / ATP6V1F / HSP90AB1 / HSPA2 / NUP37 / TUBA1B / ATP6V1C1 / SCMH1 / SERPINH1 / NCF4 / CXXC1 / CACNA2D1 / NUP62 / TUBA4B / WTIP / CRYAB / RAD50 / HSPB1 / TUBA1A / RAMP2 / ADCY7 / CREB3 / ADCY3 / RAI1 / DDX11 / WFS1 / SQSTM1 / DPP3 / ELOC / CREB3L2 / BCL2 / PRKCI / MAP4K4 / GJA1 / RPL8 / CARM1 / HM13 / HSPA1A / DDIT3 / HSPA1L / CREB3L4 / RPL30 / NUP205 / TALDO1 / PRKCD / CDC27 / DYNLL1 / MYDGF / ERO1A / CDK6 / NCF1 / ATR / GNGT2 / GNB1 / RPS6KA1 / EXOSC5 / PREB / MAPKAPK5 / EXTL3 / NUDT2 / ATP6V1H / DCTN2	SLC7A11 / H3C2 / H1-5 / H2BC3 / NQO1 / H3C13 / AQP8 / H3C3 / H4C13 / H2BC17 / EXOSC4 / H3C11 / RPL39L / H2BC11 / H4C1 / H3C10 / ADCY8 / CDKN2A / CCNA2 / UBE2C / RPL22L1 / H2BC15 / H3C1 / H1-1 / H3C12 / TUBA3D / COX4I2 / H2AC4 / SPP1 / UBE2S / CDKN2B / H2BC10 / H2BC13 / NOX4 / H2BC12L / ELOC / TUBA4B / H2BC12 / RPL36A / H2BC8 / SRXN1 / RPL30 / H3C8 / H2BC9 / H2AC7 / ATP6V1B1 / H2BC21 / H2BC14 / RPL8 / H1-2 / HMGA1 / LY96 / H4C9 / H2BC6 / H3-4 / H3C6 / RPL10L / G6PD / GNG10 / SOD2 / ME1 / RPL39 / H4C8 / IKBKG / RPL7 / H2AC8 / GNG5 / CBX2 / ATP6V1F / TXN / RHEB / H1-0 / GPX2 / H2BC7 / COX6C / COX6B1 / ATP6V1G2 / RPS21 / RPL28 / RPS5 / LAMTOR2 / EGF / RPS17 / H4C4 / COL4A6 / UBA52 / DCSTAMP / RPS27 / RPL38 / STIP1 / CYCS / RRAGD / ITGB3 / RPS11 / DYNLL1 / RPS28 / H2BC5 / ANAPC11 / RPS20 / P2RY2 / CCNE2 / RPS14 / RPS19 / RPS16 / H2AC14 / RPS15 / CASTOR2 / H2AX / HSPE1 / EXOSC5 / MT-CO2 / ATOX1 / LAMTOR4 / SSR1 / H2AZ2 / PSMA6 / COX7B / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / H4C2 / MAP1LC3B / RPLP1 / COX7A2 / DNAJB11 / CDKN2D / NFYB / HMGA2 / COX8A / CEBPG / RPL36 / RPS24 / P4HB / BMI1 / H3-3A / HSPA5 / H3C7 / HM13 / LMNB1 / HSPB1 / DDIT3 / RPS18 / ATP6V0B / RPL29 / RPLP2 / RPS10 / RPL26L1 / SQSTM1 / TKT / EIF2S2 / RPL27 / RPL13 / RAD50 / RPA3 / HYOU1 / H2AC6 / ATP6V0E1 / RPL18 / TXNRD1 / E2F1 / H2AC20 / ATP6V1H / COX7C / MT1E / COX5A / BAG2 / CBX8 / PTGES3 / MT-CO1 / HSF1 / RPL10 / RPS26 / RPS29 / NDUFA4 / CDKN2C / EGLN1 / CBX4 / RPL18A / PDGFA / HIGD1A / LAMTOR5 / COX4I1 / E2F2 / KDELR3 / GNB1 / CALR / NUP210 / ATP6V1C1 / H2BC4 / H1-4 / CRYAB / MYDGF / TUBB2A / UBE2E1 / GNB5 / ANAPC15 / UBE2D1 / MAFG / RLN1 / PPP2CA / RPS6 / EZH2 / CCNE1 / CHAC1 / ADCY2 / ATP6V0E2 / SRPRB / RPL10A / TERF1 / PRKAA2 / H4C6 / TALDO1 / GOSR2 / COX5B / MAPKAPK5 / AKT1S1 / RPL32 / MRPL18 / NUP62 / SHC1 / RPS12 / NPAS2 / PECAM1 / RPL12 / PDIA6 / RPS8 / H4C16 / RPS19BP1 / ATF2 / RPL21 / HSP90AB1 / EIF2S3 / MAPKAPK2 / DCTN3 / CDK4 / RPS7 / RPL23A / ATP6V0C / RBX1 / RPS4X / RPL27A / DCTN2 / RPL23 / H4C3 / LAMTOR3 / FAU / SERP1 / COX6A1 / ELOB / HDGF / PRDX5 / HSBP1 / DNAJC3 / ANXA2 / CAPZA2 / PSMD7 / RPL19 / DYNC1I1 / COX6A2 / NUDT2 / RPS15A / PSMD8 / TUBB4A / TUBA3E / RPL34 / WFS1 / UBE2D2 / PSMB4 / RPL13A / LAMTOR1 / H4C5 / RPS25 / H3-3B / TUBA1B / RPS27A / H2AJ / ERO1A / HSP90B1 / CAPNS2
HOMOLOGY DIRECTED REPAIR	CHEK1 / H2BC17 / H4C13 / POLQ / XRCC2 / H2BC13 / CCNA2 / EME1 / CLSPN / EXO1 / H2BC26 / H2BC9 / BLM / RAD51 / H2BC14 / H2AX / H2BC15 / H4C6 / H2BC10 / RAD51AP1 / H4C9 / H2BC3 / H2BC21 / H4C1 / RHNO1 / H2BC8 / DNA2 / BRCA2 / H2BC11 / H2BC7 / H2BC12 / H3-4 / FEN1 / H4C8 / H2BC6 / RFC4 / BARD1 / RAD1 / NBN / RNF8 / H2BC5 / FIRRM / BRCA1 / FIGNL1 / RMI2 / H4C4 / NSD2 / H4C16 / RMI1 / RAD50 / PCNA / POLD3 / TOPBP1 / POLD1 / TP53BP1 / POLE2 / RAD51D / ATR / TIPIN / LIG3 / SLX4	H2BC3 / H4C13 / H2BC17 / H2BC11 / H4C1 / XRCC2 / CCNA2 / H2BC15 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / RAD51AP1 / EXO1 / H2BC9 / H2BC21 / H2BC14 / RAD51 / H4C9 / RMI2 / H2BC6 / H3-4 / H4C8 / H2BC7 / EME1 / H4C4 / UBA52 / XRCC3 / H2BC5 / H2AX / H4C2 / NSD2 / UBE2V2 / RFC4 / POLQ / RAD50 / RPA3 / POLE3 / DNA2 / CHEK1 / ERCC1 / H2BC4 / POLE2 / RAD1 / SUMO2 / H4C6 / BABAM1 / TIPIN / CLSPN / H4C16 / POLD2 / H4C3 / ATRIP / POLE4 / RNF8 / H4C5 / RAD9B / RPS27A / SPIDR / RAD51C / RHNO1 / RAD9A / RNF4 / FIRRM / BLM / CCNA1
PRE NOTCH EXPRESSION AND PROCESSING	H2BC17 / H2AC14 / H4C13 / H2BC13 / E2F1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / NOTCH3 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / KAT2A / H2AC8 / H3C7 / H4C8 / H2BC6 / ST3GAL4	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / ATP2A1 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / E2F1 / H2AC20 / MFNG
TELOMERE MAINTENANCE	H2BC17 / H2AC14 / H4C13 / H2BC13 / CCNA2 / H2BC26 / H2BC9 / BLM / H2BC14 / DSCC1 / H2AC4 / PIF1 / H2AX / H2BC15 / H4C6 / H2BC10 / H4C9 / H2BC3 / H2BC21 / H4C1 / H2AC7 / H2BC8 / DNA2 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3-4 / FEN1 / POLA2 / H4C8 / H2BC6 / CHTF18 / RFC4 / H2BC5 / PRIM2 / RUVBL1 / H4C4 / H4C16 / DAXX / TERT / PCNA / POLA1 / POLD3	H2BC3 / H4C13 / H2BC17 / H2BC11 / H4C1 / CCNA2 / H2BC15 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3-4 / POLR2K / H4C8 / H2AC8 / H2BC7 / H4C4 / POLR2J / NHP2 / H2BC5 / H2AC14 / H2AX / H2AZ2 / DSCC1 / H4C2 / POLA2 / POLR2I / H3-3A / POLR2F / POLR2H / RFC4 / RPA3 / H2AC6 / NOP10 / H2AC20 / DNA2 / H2BC4 / TERF1 / H4C6 / POLR2E / H4C16 / POLR2L / POLD2 / H4C3 / POLR2G
DENGUE VIRUS INFECTION	HAVCR1 / GPC3 / NEK2 / MMP9 / H2AC13 / H2BC17 / H2AC14 / GPC2 / H2AC12 / H2AC25 / H4C13 / H2AC16 / H2BC13 / H3C2 / H3C3 / ELAVL2 / H2BC26 / GPC5 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / LY96 / TUSC3 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / IKBKE / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / DNAJC10 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CAMK2A / H2BC7 / KPNA2 / P4HA2 / KPNA7 / PPIL6 / H2BC12 / H2AC8 / H3C7 / TYRO3 / H4C8 / H2BC6 / HYOU1 / BAG2 / CLEC5A / H2BC18 / H2BC5 / AGRN / HSPA1B / H2AC21 / SF3B4 / H4C4 / STING1 / PML / CGAS / SF3A2 / SNRPD1 / TXNL4A / H4C16 / DNAJB11 / EIF4A3 / SNRPB / CPSF4 / PPIL1	GPC3 / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / HAVCR1 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / LY96 / SNRPD2 / H4C9 / H2BC6 / H3C6 / SNRPE / H2AC15 / POLR2K / H4C8 / H2AC8 / H2BC7 / H2BC18 / H4C4 / H2AC13 / POLR2J / UBA52 / DPM2 / SDC2 / H2BC5 / H2AC21 / PRCC / H2AC14 / CANX / H4C2 / SPCS1 / MAP1LC3B / DPM3 / POLR2I / KPNA2 / DNAJB11 / P4HB / HSPA5 / H3C7 / ISY1 / POLR2F / KDELR1 / TMEM258 / POLR2H / AP2S1 / HYOU1 / H2AC6 / RPL18 / ELAVL2 / H2AC20 / PUF60 / ALYREF / BAG2 / SF3B4 / DYNLT1 / PRKG2 / OST4 / RPN2 / C4BPB / EMC4 / P4HA2 / LYN / TXNL4A / BUD31 / CALR / SNRPF / U2AF2 / H2BC4 / CPSF4 / SNRPB / SNRPG / PDIA3 / ELAVL1 / SDC1 / AGRN / SNRPD1 / H4C6 / SF3B6 / RNASEK / SEC11C / CSTF2 / GPC5 / NACA / PEX19 / POLR2E / H4C16 / BTF3 / HSP90AB1 / SUMO1 / SNRPA1 / POLR2L / H4C3 / PPIL1 / POLR2G / CDC73 / DNAJC3 / DAD1 / HNRNPC / DDOST / RNPS1 / SRSF9 / MAGT1 / HNRNPR / RTN3
MITOTIC METAPHASE AND ANAPHASE	SKA1 / CENPA / TUBB3 / SPC25 / TUBA3D / UBE2C / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / CCNB2 / PLK1 / CENPK / ERCC6L / CENPF / CENPM / KIF2C / CDK1 / CDCA8 / NDC80 / ESPL1 / CENPO / BUB1 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / AURKB / PTTG1 / CHMP3 / FBXO5 / CENPI / CDCA5 / CENPS / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE	PTTG1 / SPC25 / CENPF / CCNB2 / CDK1 / UBE2C / SPC24 / SKA1 / TUBA3D / CDCA5 / CENPA / CENPM / CENPU / SGO1 / UBE2S / NUF2 / CENPL / BIRC5 / AURKB / TUBA4B / CCNB1 / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / FBXO5 / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / UBA52 / RPS27 / DYNLL1 / ANAPC11 / EMD / CHMP2A / PSMA6 / NDC80 / LMNB1 / BANF1 / TMPO / CENPN / SGO2 / ITGB3BP / PPP2R5A / KNL1 / TUBB2A / UBE2E1 / CHMP4C / ANAPC15 / UBE2D1 / PPP2CA / LBR / RCC1 / NDE1 / NUP62 / CHMP3 / SUMO1 / SKA2 / CHMP4B / PSMD7 / DYNC1I1 / PSMD8 / TUBB4A / TUBA3E / PMF1 / PSMB4 / TUBA1B / RPS27A

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
RIBOSOME ASSOCIATED QUALITY CONTROL	SEM1 / RPS4Y2 / RPS17 / RPL36AL / UBB / RPL3L / RCHY1 / PSMA6 / KLHDC10 / PSMB1 / UBE2D3 / HBS1L / PSMA3 / RPL26 / LTN1 / RPS24 / TCF25 / RPL39L / RPS9 / RPS15A / RPS27L / PSMB6 / RPS29 / RPL24 / PSMB7 / UBC / PSMD6 / RPL34 / RPL9 / RPL11 / RPL22 / RPL3 / RPL15 / FAU / PSMC1 / RPSA / RPL12 / ELOB / PSMC6 / PSMA5 / RPS3A / RPL7A / RPS11 / RPL32 / RPS26 / PSMD12 / RPL18	RPL39L / RPL22L1 / ELOC / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / UBE2D1 / RPS6 / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / RBX1 / RPS4X / RPL27A / RPL23 / FAU / ELOB / PSMD7 / RPL19 / RPS15A / PSMD8 / RPL34 / UBE2D2 / PSMB4 / RPL13A / RPS25 / RPS27A / RPL31
DENGUE VIRUS HOST INTERACTIONS	GPC3 / NEK2 / MMP9 / H2AC13 / H2BC17 / H2AC14 / GPC2 / H2AC12 / H2AC25 / H4C13 / H2AC16 / H2BC13 / H3C2 / H3C3 / ELAVL2 / H2BC26 / GPC5 / H2BC9 / H2BC14 / H3C10 / H2AC17 / H2AC4 / H3C13 / LY96 / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / H2BC3 / IKBKE / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CAMK2A / H2BC7 / PPIL6 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / CLEC5A / H2BC18 / H2BC5 / AGRN / H2AC21 / SF3B4 / H4C4 / STING1 / PML / CGAS / SF3A2 / SNRPD1 / TXNL4A / H4C16 / EIF4A3 / SNRPB / CPSF4 / PPIL1	GPC3 / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / LY96 / SNRPD2 / H4C9 / H2BC6 / H3C6 / SNRPE / H2AC15 / POLR2K / H4C8 / H2AC8 / H2BC7 / H2BC18 / H4C4 / H2AC13 / POLR2J / SDC2 / H2BC5 / H2AC21 / PRCC / H2AC14 / H4C2 / POLR2I / H3C7 / ISY1 / POLR2F / POLR2H / H2AC6 / RPL18 / ELAVL2 / H2AC20 / PUF60 / ALYREF / SF3B4 / DYNLT1 / C4BPB / TXNL4A / BUD31 / SNRPF / U2AF2 / H2BC4 / CPSF4 / SNRPB / SNRPG / ELAVL1 / SDC1 / AGRN / SNRPD1 / H4C6 / SF3B6 / CSTF2 / GPC5 / PEX19 / POLR2E / H4C16 / HSP90AB1 / SNRPA1 / POLR2L / H4C3 / PPIL1 / POLR2G / CDC73 / HNRNPC / RNPS1 / SRSF9
ACTIVATION OF ANTERIOR HOX GENES IN HINDBRAIN DEVELOPMENT DURING EARLY EMBRYOGENESIS	PAX6 / H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / HOXC4 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / HOXA3 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / HOXA1 / PCGF2 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / PAX6 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / H4C8 / H2AC8 / H2BC7 / H4C4 / POLR2J / H2BC5 / H2AC14 / H2AX / H2AZ2 / HOXD1 / H4C2 / POLR2I / H3-3A / H3C7 / POLR2F / POLR2H / H2AC6 / DPY30 / H2AC20
CELLULAR RESPONSE TO STARVATION	ATP6V1E2 / ATP6V0D2 / ATP6V1C2 / RPL36A / ATP6V1B1 / ASNS	RPL39L / RPL22L1 / RPL36A / RPL30 / ATP6V1B1 / RPL8 / RPL10L / RPL39 / RPL7 / ATP6V1F / RHEB / ATP6V1G2 / RPS21 / RPL28 / RPS5 / LAMTOR2 / RPS17 / UBA52 / RPS27 / RPL38 / RRAGD / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / CASTOR2 / LAMTOR4 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / CEBPG / RPL36 / RPS24 / DDIT3 / RPS18 / ATP6V0B / RPL29 / RPLP2 / RPS10 / RPL26L1 / EIF2S2 / RPL27 / RPL13 / ATP6V0E1 / RPL18 / ATP6V1H / RPL10 / RPS26 / RPS29 / RPL18A / LAMTOR5 / ATP6V1C1 / RPS6 / ATP6V0E2 / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / ATF2 / RPL21 / EIF2S3 / RPS7 / RPL23A / ATP6V0C / RPS4X / RPL27A / RPL23 / LAMTOR3 / FAU / RPL19 / RPS15A / RPL34 / RPL13A / LAMTOR1 / RPS25 / RPS27A / RPL31 / ATP6V1G1 / TRIB3 / RPL7A / ATP6V1D / RPS27L / ASNS / RPL22 / RPS2 / RPL9 / RPS9 / MLST8 / SLC38A9 / RPL26 / RPSA / RPS3A / RPL6 / RPL24 / ATP6V1E1 / RPS13 / RPL14
RESPONSE OF EIF2AK4 GCN2 TO AMINO ACID DEFICIENCY	RPL36A / ASNS	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / CEBPG / RPL36 / RPS24 / DDIT3 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / EIF2S2 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / RPS6 / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / ATF2 / RPL21 / EIF2S3 / RPS7 / RPL23A / RPS4X / RPL27A / RPL23 / FAU / RPL19 / RPS15A / RPL34 / RPL13A / RPS25 / RPS27A / RPL31 / TRIB3 / RPL7A / RPS27L / ASNS / RPL22 / RPS2 / RPL9 / RPS9 / RPL26 / RPSA / RPS3A / RPL6 / RPL24 / RPS13 / RPL14
INFLUENZA VIRAL RNA TRANSCRIPTION AND REPLICATION	RPS4Y2 / RPS17 / RPL36AL / RPL3L / NUP88 / RPL26 / NUP54 / RPS24 / RPL39L / RPS9 / RPS15A / RANBP2 / GRSF1 / RPS27L / RPS29 / RPL24 / RPL34 / POLR2L / RPL9 / RPL11 / RPL22 / RPL3 / RPL15 / FAU / RPSA / NUP214 / RPL12 / RPS3A / RPL7A / RPS11 / RPL32 / RPS26 / POLR2E / RPL18 / NUP98 / NUP160 / RPL21 / POLR2I / RPL5 / RPL4 / RPS10 / RPL10 / RPL29 / UBA52 / RPL35 / RPL6 / RPS2 / POLR2F / RPL26L1 / RPL13A / RPL31 / NUP58 / RPL14 / RPS13 / NUP50 / RPS12 / RPS6 / RPS20 / POLR2A / POLR2C / RPS28 / RPS23 / RPL28 / POLR2D / RPLP0 / RPLP1 / RPL18A / RPS8 / NUP35 / SEC13 / RPS4X / RPS25 / SEH1L / RPS5 / AAAS / RPS15 / RPL39 / RPS27A / RPL13 / RPL37 / RPL19 / RPS4Y1 / RPS3 / RPS27 / RPS14 / POLR2B / IPO5 / RPL23 / RPS19 / HSP90AA1 / POLR2J / RPL37A / NUP153 / NUP188 / NUP85 / NUP43 / RPS7 / NUP133 / RPL10A / RPL36 / TPR / POM121C / RPS16 / RPL17 / DNAJC3 / GTF2F1 / POM121 / RPL27A / RPL23A / GTF2F2 / RPL7 / NUP155 / RPL35A / NUP107 / RPL38 / RPS18 / POLR2G / RAE1 / RPS21 / NUP42 / RPL27 / RPL10L / PARP1 / POLR2K / NUP93 / RPLP2 / NDC1 / POLR2H / NUP205 / RPL30 / RPL8 / NUP62 / NUP37	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / POLR2K / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / POLR2J / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / POLR2I / RPL36 / RPS24 / POLR2F / RPS18 / RPL29 / RPLP2 / RPS10 / POLR2H / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / NUP210 / RPS6 / RPL10A / RPL32 / NUP62 / RPS12 / RPL12 / POLR2E / RPS8 / RPL21 / RPS7 / RPL23A / RPS4X / POLR2L / RPL27A / RPL23 / FAU / POLR2G / DNAJC3 / RPL19 / RPS15A / RPL34 / RPL13A / RPS25 / RPS27A / RPL31 / NUP42 / RPL7A / RPS27L / HSP90AA1 / RPL22 / POM121 / RPS2 / RPL9 / RPS9 / RPL26 / RPSA / RPS3A / NDC1 / RPL6 / RPL24 / RPS13 / RPL14 / NUP58 / GTF2F2 / PARP1
MITOTIC SPINDLE CHECKPOINT	SKA1 / CENPA / SPC25 / UBE2C / BIRC5 / NUF2 / BUB1B / CDC20 / PLK1 / CENPK / ERCC6L / CENPF / CENPM / KIF2C / CDCA8 / NDC80 / CENPO / BUB1 / DYNC1I1 / KIF18A / AURKB / CENPI / CENPS / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE / UBE2S / KNL1 / SPDL1	SPC25 / CENPF / UBE2C / SPC24 / SKA1 / CENPA / CENPM / CENPU / SGO1 / UBE2S / NUF2 / CENPL / BIRC5 / AURKB / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / RPS27 / DYNLL1 / ANAPC11 / NDC80 / CENPN / SGO2 / ITGB3BP / PPP2R5A / KNL1 / UBE2E1 / ANAPC15 / UBE2D1 / PPP2CA
DNA DOUBLE STRAND BREAK REPAIR	CHEK1 / EYA1 / H2BC17 / H4C13 / POLQ / XRCC2 / H2BC13 / CCNA2 / EME1 / CLSPN / EXO1 / H2BC26 / H2BC9 / BLM / RAD51 / H2BC14 / H2AX / H2BC15 / H4C6 / H2BC10 / RAD51AP1 / H4C9 / H2BC3 / H2BC21 / H4C1 / RHNO1 / H2BC8 / DNA2 / BRCA2 / H2BC11 / H2BC7 / KPNA2 / H2BC12 / CHEK2 / H3-4 / FEN1 / H4C8 / H2BC6 / EYA4 / RFC4 / BARD1 / RAD1 / NBN / RNF8 / H2BC5 / FIRRM / BRCA1 / FIGNL1 / DCLRE1C / RMI2 / H4C4 / NSD2 / H4C16 / RMI1 / RAD50 / PCNA / POLD3 / TOPBP1 / POLM / POLD1 / TP53BP1 / POLE2 / RAD51D / ATR / TIPIN / PRKDC / LIG3 / SLX4	H2BC3 / H4C13 / H2BC17 / H2BC11 / H4C1 / XRCC2 / CCNA2 / H2BC15 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / RAD51AP1 / EXO1 / H2BC9 / H2BC21 / H2BC14 / RAD51 / H4C9 / RMI2 / H2BC6 / H3-4 / H4C8 / H2BC7 / EME1 / H4C4 / UBA52 / XRCC3 / H2BC5 / H2AX / H4C2 / KPNA2 / NSD2 / UBE2V2 / RFC4 / POLQ / RAD50 / RPA3 / POLE3 / APBB1 / DNA2 / CHEK1 / ERCC1 / H2BC4 / POLE2 / RAD1 / SUMO2 / H4C6 / BABAM1 / TIPIN / CLSPN / H4C16 / SUMO1 / POLD2 / H4C3 / CHEK2 / ATRIP / POLE4 / RNF8 / H4C5 / RAD9B / RPS27A / UBXN1 / SPIDR / RAD51C / RHNO1 / RAD9A / RNF4 / FIRRM / BLM / CCNA1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
INFLUENZA INFECTION	RPL36A / KPNA2 / KPNA7 / RPL22L1 / MLKL / NUP210 / TGFB1 / CPSF4 / NUP37 / NUP62 / RPL8 / HSPA1A / RPL30 / NUP205 / POLR2H / NDC1 / RAN / RPLP2 / NUP93 / POLR2K / PARP1 / RPL10L / RPL27 / NUP42 / RPS21 / RAE1 / ISG15 / POLR2G / RPS18 / RPL38 / CLTA / NUP107 / RPL35A / NUP155 / CANX / RPL7 / GTF2F2 / RPL23A / KPNB1 / RPL27A / XPO1 / POM121 / KPNA4 / GTF2F1 / DNAJC3 / RPL17 / RPS16 / POM121C / TPR / RPL36 / CALR / RPL10A / NUP133 / RPS7 / NUP43 / NUP85 / NUP188 / NUP153 / RPL37A / POLR2J / HSP90AA1	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / POLR2K / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / POLR2J / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / CANX / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / POLR2I / KPNA2 / RPL36 / RPS24 / POLR2F / RPS18 / RPL29 / RPLP2 / RPS10 / POLR2H / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / CALR / NUP210 / CPSF4 / CLTA / RPS6 / RPL10A / RPL32 / NUP62 / RPS12 / RPL12 / POLR2E / RPS8 / RPL21 / RPS7 / RPL23A / RPS4X / POLR2L / RPL27A / RPL23 / FAU / POLR2G / DNAJC3 / RPL19 / RPS15A / RPL34 / RPL13A / RPS25 / RPS27A / RPL31 / NUP42 / RPL7A / KPNA7 / RPS27L / ISG15 / HSP90AA1 / RPL22 / POM121 / RPS2 / RPL9 / RPS9 / RPL26 / RPSA / KPNA4 / RPS3A / NDC1 / RPL6 / RPL24 / RPS13 / RPL14 / NUP58 / GTF2F2 / PARP1
REGULATION OF PD L1 CD274 TRANSCRIPTION	H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / LEF1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / TEAD4 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / TEAD2 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / MYCN / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / DPY30 / H2AC20
EPIGENETIC REGULATION OF GENE EXPRESSION BY MLL3 AND MLL4 COMPLEXES	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / LPL / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / CIDEC / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / FABP4 / H4C8 / H2AC8 / H2BC7 / H4C4 / LPL / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / DPY30 / H2AC20 / CDK5
REGULATION OF PD L1 CD274 EXPRESSION	NEK2 / H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / B3GNT3 / LEF1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / TUSC3 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / PDCD1 / H3C12 / TEAD4 / H2BC21 / H3C8 / PRKAA2 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / PRKAG1 / TEAD2 / PRKAB1 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / MYCN / H4C4 / UBA52 / PRKAG3 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / TMEM258 / H2AC6 / DPY30 / COPS5 / H2AC20 / OST4 / RPN2 / DERL1 / H2BC4 / AGO2 / EZH2 / PRKAA2 / H4C6 / RNF5 / H4C16 / CDK4 / RBX1 / H4C3 / TEAD2 / DAD1 / PSMD7 / DDOST / PSMD8 / MAGT1 / PSMB4 / H4C5 / H3-3B / YWHAG / RPS27A / H2AJ
REGULATION OF HOMOTYPIC CELL CELL ADHESION	TFAP2A / H2BC17 / H2AC14 / PKM / H4C13 / EZH2 / H2BC13 / CDH11 / CDH24 / H3C2 / H3C3 / TWIST1 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / BHLHE22 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / CSNK2A3 / ADAM33 / CTBP2 / ACTA2 / PRDM8 / MTBP / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / HOXC8 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / CDH8 / H4C9 / H2BC6 / H3C6 / TFAP2A / H4C8 / H2AC8 / H2BC7 / MYCN / H4C4 / UBA52 / H2BC5 / H2AC14 / H2AX / CANX / H2AZ2 / PSMA6 / H4C2 / SPCS1 / H3-3A / PRKCSH / H3C7 / TMEM258 / ACTA1 / H2AC6 / H2AC20 / FOXQ1 / OST4 / RPN2 / H2BC4 / WT1 / AGO2 / EZH2 / H4C6 / SEC11C / MTBP / H4C16 / BHLHE22 / H4C3 / MCRIP1 / DAD1 / PSMD7 / DDOST / PSMD8 / PSMB4 / H4C5 / H3-3B / TCF3 / RPS27A / H2AJ
NONSENSE MEDIATED DECAY NMD	RPS4Y2 / GSPT2 / PPP2R2A / RPS17 / RPL36AL / RPL3L / RPL26 / SMG6 / SMG1 / RPS24 / RPL39L / RPS9 / RPS15A / RPS27L / RPS29 / RPL24 / PABPC1 / RPL34 / RPL9 / RPL11 / RPL22 / DCP1A / RPL3 / RPL15 / FAU / RPSA / RPL12 / RPS3A / RPL7A / RPS11 / RPL32 / RPS26 / RPL18 / RPL21 / MAGOH / UPF2 / RPL5 / NCBP1 / RPL4 / RPS10 / RPL10 / RPL29 / UBA52 / RPL35 / RPL6 / RPS2 / RPL26L1 / RPL13A / RPL31 / RPL14 / RPS13 / ETF1 / RPS12 / RPS6 / RPS20 / GSPT1 / UPF1 / RPS28 / RPS23 / RPL28 / RPLP0 / EIF4G1 / MAGOHB / PPP2R1A / RPLP1 / RPL18A / RPS8 / PPP2CA / RPS4X / RPS25 / RPS5 / RPS15 / RPL39 / RPS27A / RPL13 / RPL37 / RPL19 / RPS4Y1 / RBM8A / RPS3 / RPS27 / RPS14 / SMG8 / RPL23 / CASC3 / RPS19 / RPL37A / RPS7 / RPL10A / RPL36 / RPS16 / RPL17 / UPF3A / RPL27A / RPL23A / UPF3B / RPL7 / RPL35A / RNPS1 / RPL38 / RPS18 / RPS21 / RPL27 / RPL10L / RPLP2 / NCBP2 / SMG5 / RPL30 / SMG7 / RPL8 / SMG9	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / MAGOHB / PPP2CA / RPS6 / UPF3A / RBM8A / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / RPS4X / RPL27A / RPL23 / FAU / RPL19 / RPS15A / RNPS1 / RPL34 / RPL13A / RPS25 / RPS27A / RPL31 / NCBP2 / SMG7 / MAGOH / RPL7A / RPS27L / RPL22 / RPS2 / RPL9 / RPS9 / RPL26 / RPSA / RPS3A / RPL6 / RPL24 / UPF3B / RPS13 / RPL14
RESOLUTION OF SISTER CHROMATID COHESION	SKA1 / CENPA / TUBB3 / SPC25 / TUBA3D / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / CCNB2 / PLK1 / CENPK / ERCC6L / CENPF / CENPM / KIF2C / CDK1 / CDCA8 / NDC80 / CENPO / BUB1 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / AURKB / CENPI / CDCA5 / CENPS / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE	SPC25 / CENPF / CCNB2 / CDK1 / SPC24 / SKA1 / TUBA3D / CDCA5 / CENPA / CENPM / CENPU / SGO1 / NUF2 / CENPL / BIRC5 / AURKB / TUBA4B / CCNB1 / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / RPS27 / DYNLL1
CHROMATIN ORGANIZATION	H2AC13 / H2BC17 / H2AC14 / MECOM / PRDM9 / H2AC12 / H2AC25 / H4C13 / EZH2 / H2AC16 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / DPF1 / H2AC17 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2AC15 / PADI6 / H2BC3 / H3C1 / H3C12 / H2AC11 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / ACTL6B / H2BC7 / MRGBP / PADI2 / H2BC12 / KAT2A / H2AC8 / DNMT3A / H3C7 / H4C8 / H2BC6 / PADI1 / YEATS2 / BCL11A / CHD3 / BRMS1 / H2BC18 / H2BC5 / EHMT2 / H2AC21 / RUVBL1 / H4C4 / NFKB2 / NSD2 / CDK4 / H4C16 / VPS72	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / PADI3 / H2BC11 / H4C1 / H3C10 / H2AC16 / H2AC12 / H2BC15 / H3C1 / H2AC11 / H3C12 / H2AC4 / PADI1 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H2AC15 / H4C8 / ENY2 / H2AC8 / H2BC7 / H2BC18 / H4C4 / H2AC13 / H2BC5 / H2AC21 / H2AC14 / PAX3 / H2AX / VPS72 / H2AZ2 / H4C2 / KDM4D / SUV39H2 / NSD2 / TAF10 / H3C7 / PADI6 / SAP30L / H2AC6 / DPF1 / DPY30 / H2AC20 / PADI4 / SMYD2 / DR1 / MRGBP / H2BC4 / SMYD3 / EZH2 / H4C6 / MORF4L2 / SAP18 / COPRS / H4C16 / ATF2
SEPARATION OF SISTER CHROMATIDS	SKA1 / CENPA / TUBB3 / SPC25 / TUBA3D / UBE2C / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / PLK1 / CENPK / ERCC6L / CENPF / CENPM / KIF2C / CDCA8 / NDC80 / ESPL1 / CENPO / BUB1 / TUBA3E / DYNC1I1 / KIF18A / AURKB / PTTG1 / CENPI / CDCA5 / CENPS / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE	PTTG1 / SPC25 / CENPF / UBE2C / SPC24 / SKA1 / TUBA3D / CDCA5 / CENPA / CENPM / CENPU / SGO1 / UBE2S / NUF2 / CENPL / BIRC5 / AURKB / TUBA4B / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / UBA52 / RPS27 / DYNLL1 / ANAPC11 / PSMA6 / NDC80 / CENPN / SGO2 / ITGB3BP / PPP2R5A / KNL1 / TUBB2A / UBE2E1 / ANAPC15 / UBE2D1 / PPP2CA / NDE1 / SKA2 / PSMD7 / DYNC1I1 / PSMD8 / TUBB4A / TUBA3E / PMF1 / PSMB4 / TUBA1B / RPS27A

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
REGULATION OF EXPRESSION OF SLITS AND ROBOS	MSI1 / ROBO1 / RPL36A / LHX4	LHX3 / MSI1 / RPL39L / ROBO1 / RPL22L1 / ELOC / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / MAGOHB / RPS6 / UPF3A / RBM8A / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / RBX1 / RPS4X / RPL27A / RPL23 / FAU / ELOB / PSMD7 / RPL19 / RPS15A / PSMD8 / RNPS1 / RPL34 / PSMB4 / RPL13A / RPS25 / RPS27A / LHX4 / RPL31
RRNA PROCESSING	RPP21 / RCL1 / RPS4Y2 / RPP14 / HSD17B10 / MRM3 / RPS17 / UTP3 / TFB1M / RPL36AL / TRUB2 / RPL3L / MTERF4 / EXOSC6 / TRMT10C / DIS3 / WDR18 / RPL26 / IMP3 / RPS24 / ELAC2 / FASTKD2 / RPL39L / RPS9 / RIOK3 / RPS15A / RPS27L / RPS29 / RPL24 / EXOSC7 / EXOSC2 / EXOSC9 / RPL34 / FCF1 / RPL9 / RIOK2 / RPL11 / RPL22 / RPUSD3 / RPL3 / RPL15 / FAU / RPSA / RPL12 / SENP3 / WDR36 / WDR3 / RPS3A / KRR1 / RPL7A / RPS11 / RPL32 / RPS26 / MPHOSPH10 / RPL18 / NOB1 / NOP14 / MTREX / RPL21 / C1D / EXOSC10 / RPL5 / RPL4 / RPUSD4 / RPP30 / RPS10 / RPL10 / TBL3 / RPL29 / UBA52 / RPL35 / RPL6 / RPS2 / PELP1 / DDX47 / IMP4 / RPL26L1 / PWP2 / RPL13A / RPL31 / RPL14 / RRP1 / RPS13 / RPS12 / DDX49 / RPS6 / RPS20 / EXOSC8 / RPS28 / TSR1 / DDX21 / MRM2 / RPS23 / EXOSC3 / RPL28 / WDR12 / RPLP0 / NOL11 / RPLP1 / UTP4 / RPL18A / RPS8 / ERI1 / XRN2 / NOL9 / RPS4X / RPS25 / RPS5 / RPS15 / WDR43 / NOC4L / RPL39 / NAT10 / RPS27A / THUMPD1 / RPL13 / RPL37 / WDR75 / NIP7 / RPL19 / RPS4Y1 / RPS3 / RPS27 / RPS14 / RCC1L / GAR1 / NCL / TRMT112 / RPL23 / RPP38 / RPS19 / TSR3 / LAS1L / RPL37A / NOP10 / CSNK1D / DIMT1 / RPP40 / RPS7 / MTERF3 / UTP15 / RPL10A / SNU13 / RPL36 / RRP7A / BMS1 / UTP11 / RPS16 / NHP2 / RPL17 / NOL6 / PDCD11 / TEX10 / GNL3 / PNO1 / UTP6 / RPL27A / EXOSC1 / LTV1 / RPL23A / DDX52 / RPL7 / NGRN / WDR46 / EMG1 / NOP58 / MRM1 / RPL35A / PES1 / MPHOSPH6 / RPL38 / ISG20L2 / UTP25 / RPS18 / FTSJ3 / RRP36 / RPS21 / RPL27 / RPL10L / UTP20 / BYSL / UTP18 / FBL / RPLP2 / NOP56 / EXOSC5 / DKC1 / RPL30 / BUD23 / RPL8 / RBM28 / NOP2 / DHX37 / RRP9 / RIOK1 / UTP14A / EBNA1BP2	EXOSC4 / RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPP21 / RPL39 / RPL7 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / BOP1 / NHP2 / RPL38 / RPS11 / EBNA1BP2 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / EXOSC5 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / FBL / MPHOSPH6 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / NOP10 / RPL18 / RPL10 / RPS26 / RPS29 / RPL18A / DCAF13 / RPS6 / SNU13 / RPL10A / RBM28 / RPL32 / TRMT112 / ISG20L2 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / RPS4X / RPL27A / PNO1 / RPL23 / FAU / NOP2 / RPL19 / RRP36 / RPS15A / RPL34 / RPP40 / RPL13A / MTERF3 / RPS25 / RPS27A / RPL31 / BUD23 / EXOSC1 / UTP25 / RRP7A / RPL7A / NGRN / RRP9 / SENP3 / RPS27L / IMP4 / RPL22 / RPS2 / RPL9 / GAR1 / RPS9 / GNL3 / WDR46 / DKC1 / RPP30 / RPL26 / RPSA / RPS3A / EXOSC3 / RPL6 / RPL24
REGULATION OF ENDOGENOUS RETROELEMENTS BY KRAB ZFP PROTEINS	H2BC17 / H2AC14 / H4C13 / ZNF257 / H2BC13 / H3C2 / H3C3 / H2BC26 / ZNF610 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / ZNF454 / H3C11 / H4C9 / ZNF320 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / ZNF816 / CHD3 / H2BC5 / ZNF93 / H4C4 / ZNF669 / H4C16 / ZNF273	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / H2AC20
EPIGENETIC REGULATION BY WDR5 CONTAINING HISTONE MODIFYING COMPLEXES	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / LPL / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / CIDEC / H2BC12 / KAT2A / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / FABP4 / H4C8 / H2AC8 / H2BC7 / H4C4 / LPL / H2BC5 / TASP1 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / DPY30 / H2AC20 / CDK5
RESPIRATORY ELECTRON TRANSPORT	ETFDH / COX6A2 / COQ10A / SDHA / GOT2 / MT-ND3 / SLC25A13 / FXN / SDHB / SURF1 / ETFA / SDHD / UQCRC2 / ETFB / SCO1 / MT-ND2 / TACO1 / MT-ND5 / MT-CO3 / NDUFAF1 / MT-ND1 / NDUFS7 / MT-CYB / HIGD1A / DMAC1 / TTC19 / NDUFA10 / NDUFB8 / GOT1 / TMEM177 / NDUFV2 / COX17 / UQCRC1 / MT-CO1 / NDUFV3 / COX18 / NDUFV1 / NDUFB1 / NDUFS4 / FOXRED1 / SLC25A22 / NDUFAB1 / COQ10B / NDUFA9 / ECSIT / SLC25A18 / NUBPL / COX14 / SLC25A11 / BCS1L / TRAP1 / NDUFAF7 / MT-CO2 / NDUFAF5 / NDUFC2 / NDUFB7 / UQCRFS1 / COX5B / NDUFB6 / NDUFA2 / COX4I1 / UQCRQ / LYRM7 / NDUFB11 / COX7A2L / MT-ND4 / COX6A1 / HSPA9 / COX7C / MDH1 / MT-ND6 / COA5 / NDUFC1 / OXA1L / NDUFA4 / COX7B / NFS1 / HSCB / NDUFB4 / NDUFS2 / PET100 / COX15 / ACAD9 / NDUFS5 / UQCC3 / NDUFS3 / COX7A2 / SCO2 / TMEM186 / NDUFS6 / DMAC2 / NDUFB10 / SFXN4 / NDUFA5	COX4I2 / RAB5IF / NDUFAF8 / UQCC2 / UQCRQ / COX6C / COX6B1 / UQCC6 / UQCRB / NDUFA1 / NDUFAF2 / CYCS / NDUFA3 / NDUFB9 / NDUFA2 / MT-CO2 / UQCC5 / COX7B / NDUFA13 / HIGD2A / COX7A2 / COX8A / UQCC3 / COX20 / UQCR10 / NDUFS6 / UQCRHL / COA3 / COX7C / NDUFC1 / COX5A / NDUFA6 / MT-CO1 / NDUFB2 / COX17 / NDUFA4 / HIGD1A / COX4I1 / NDUFAF6 / LYRM4 / CMC1 / NDUFB1 / NDUFAF4 / SFXN4 / NDUFB3 / MT-ND4 / COX5B / MDH2 / TMEM126A / CYC1 / COA5 / NDUFS8 / COX6A1 / NDUFAF5 / NDUFB7 / NDUFAF3 / NDUFB4 / COX6A2 / ISCU / COX19 / SMIM20 / UQCRFS1 / NDUFB6 / MT-ND1 / MT-CO3 / NDUFS7 / PET100 / LYRM2 / HCCS / NDUFV3 / NDUFB10 / NDUFS4 / SDHC / NDUFA12 / NDUFA11 / TMEM126B / NDUFA8 / NDUFA5 / COA1 / TACO1 / UQCRH
TCF DEPENDENT SIGNALING IN RESPONSE TO WNT	WNT3A / DKK4 / RSPO2 / DKK1 / KREMEN2 / H2BC17 / H2AC14 / WIF1 / H4C13 / H2BC13 / DKK2 / LEF1 / H3C2 / H3C3 / SFRP2 / SOX2 / H2BC26 / H2BC9 / H2BC14 / SOX4 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / WNT3 / H2BC8 / H2BC11 / H2BC7 / SRY / CAV1 / H2BC12 / BCL9 / H2AC8 / FZD6 / FZD2 / H3C7 / PYGO1 / H3-4 / H4C8 / H2BC6 / RNF43 / YWHAZ / LGR5 / HECW1 / TLE3 / RSPO3	DKK4 / H3C2 / SOX2 / H2BC3 / H3C13 / SOX3 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / WNT3A / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3-4 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / UBA52 / BCL9 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / H2AC6 / DKK2 / DPY30 / SFRP2 / H2AC20 / SOX4

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
METABOLISM OF RNA	IGF2BP3 / IGF2BP1 / SRSF12 / APOBEC2 / IGF2BP2 / RPL36A / APOBEC3H / EXOSC4 / APOBEC3B / SARNP / ADAT2 / RPL22L1 / DDX39A / WDR4 / PNRC2 / YWHAZ / GTPBP3 / BOP1 / TRMT6 / DCAF13 / NUP210 / PUS7 / RPP25 / MAPK11 / POP1 / METTL1 / LUZP4 / HEATR1 / DCPS / DXO / SF3B4 / SF3A2 / SNRPD1 / TXNL4A / EIF4A3 / SNRPB / CPSF4 / LAGE3 / PPIL1 / EBNA1BP2 / NUP37 / UTP14A / NUP62 / LSM4 / HSPB1 / PUS1 / RIOK1 / SMG9 / TSEN54 / ZC3H3 / RRP9 / ALYREF / DHX37 / PRCC / NOP2 / PAN3 / RBM28 / RPL8 / SNRPA1 / FAM98B / HSPA1A / TNFSF13 / BUD23 / TRMT1 / SMG7 / RPL30 / NUP205 / ADAT1 / SNRPA / SMG5 / PRKCD / DKC1 / TCERG1 / POLR2H / NCBP2 / SNRNP48 / EXOSC5 / NOP56 / CSTF2 / PRKRIP1 / NDC1 / CNOT11 / POP7 / GTF2H1 / APOBEC3A / RAN / RPLP2 / SUPT5H / EFTUD2 / FAM50A / LSM8 / GON7 / XPOT / FTSJ1 / PSMD14 / LSM7 / MAPKAPK2 / NUP93 / FBL / THOC1 / UTP18 / POLR2K / BUD13 / BYSL / EPRS1 / UTP20 / PSMD2 / RPL10L / RPL27 / NUP42 / REXO2 / TFIP11 / RPS21 / RAE1 / CCAR1 / RRP36 / POLR2G / THOC6 / CNOT3 / U2SURP / PUF60 / FTSJ3 / RPS18 / UTP25 / SNRNP70 / ISG20L2 / LSM2 / RPL38 / MPHOSPH6 / RNPS1 / NUP107 / SNRPC / PES1 / MFAP1 / RPL35A / MRM1 / RNPC3 / SNRPN / WTAP / TRMT61A / NUP155 / PRPF3 / NOP58 / EMG1 / EDC3 / CNOT6 / SNRPE / KHSRP / WDR46 / CNOT9 / ALKBH8 / PHF5A / LSM11 / RBM42 / GTF2H3 / THOC5 / NGRN / RPL7 / DDX23 / DDX52 / TRDMT1 / UPF3B / HNRNPA1 / GTF2F2 / RPL23A / LSM5 / WDR77 / LTV1 / NXT1 / ERCC3 / EXOSC1 / USP39 / DHX8 / RPL27A / UTP6 / XPO1 / POM121 / PPIH / PSMC4 / GTF2F1 / PNO1 / HNRNPR / GNL3 / FUS / UPF3A / TEX10 / PDCD11 / NOL6 / RPL17 / NHP2 / RPS16 / POM121C / CDK7 / UTP11 / U2AF2 / DDX41 / BMS1 / TPR / TSEN2 / RNMT / SLBP / WDR82 / METTL3 / TSEN15 / CACTIN / APOBEC3C / TRNT1 / SYF2 / BUD31 / RRP7A / RPL36 / CPSF6 / CDKAL1 / YWHAB / PNPT1 / SART1 / PQBP1 / HNRNPA3 / SNU13 / GEMIN6 / NKAP / RPL10A / ADAR / THOC2 / UTP15 / TBRG4 / NUP133 / STEEP1 / MTERF3 / TNPO1 / RPS7 / NUP43 / RPP40 / ZNF473 / DIMT1 / CSNK1D / NUP85 / TPRKB / SNRPD2 / CPSF2 / ZCRB1 / NUP188 / NOP10 / TRMT9B / NUP153 / SRSF9 / HNRNPL / RPL37A / SF3A3 / HNRNPU / POLR2J / ADAT3 / PARN / LSM1 / PRMT5 / DHX9 / CPSF1 / RBM22 / THADA / GTF2H5 / LAS1L / RBM17 / PSMB5 / YJU2 / CPSF3 / PPP1CB / TSR3 / ZMAT2 / PRPF19 / CHTOP / RPS19 / RPP38 / CASC3 / ANP32A / HNRNPC / TRMT12 / QTRT2 / PRKCA	IGF2BP3 / EXOSC4 / RPL39L / LAGE3 / RPL22L1 / SRSF12 / IGF2BP1 / RPL36A / RPL30 / RPL8 / SNRPD2 / RPL10L / SNRPE / POLR2K / RPP21 / RPL39 / RPL7 / LSM2 / LSM10 / RPS21 / RPL28 / RPS5 / RPS17 / POLR2J / UBA52 / APOBEC3B / RPS27 / BOP1 / NHP2 / RPL38 / RPS11 / EBNA1BP2 / RPS28 / LSM4 / PRCC / RPS20 / RPS14 / RPS19 / UBL5 / RPS16 / RPS15 / EXOSC5 / PSMA6 / RPL35A / RPL37A / LSM5 / RPL35 / RPL37 / RPS23 / DDX39A / SNRNP25 / TSEN15 / RPLP1 / POLR2I / SLIRP / ZMAT2 / RPL36 / GTF2H5 / RPS24 / ISY1 / FBL / POLR2F / MPHOSPH6 / SNRPA / HSPB1 / RPS18 / RPL29 / RPLP2 / RPS10 / POLR2H / FAM50A / RPL26L1 / GEMIN7 / RPL27 / RPL13 / NOP10 / RPL18 / LSM8 / PUF60 / ALYREF / ZCRB1 / SNRPC / POP7 / SF3B4 / LSM7 / RPL10 / RPS26 / RPS29 / CHTOP / ZMAT5 / THOC3 / RPL18A / RNF113A / TXNL4A / SLBP / DCAF13 / BUD31 / GON7 / SNRPF / NUP210 / ZC3H3 / U2AF2 / CPSF4 / SNRPB / SNRPG / MAGOHB / ELAVL1 / POP4 / SNRPD1 / PPP2CA / RBM42 / RPS6 / UPF3A / NKAP / SNU13 / RBM8A / RPL10A / SF3B6 / CNOT3 / CSTF2 / RBM28 / RPL32 / TRMT112 / NUP62 / ISG20L2 / PUS7 / RPS12 / SAP18 / RPL12 / YWHAZ / POLR2E / RPS8 / RPL21 / MAPKAPK2 / SNRPA1 / RPS7 / RPL23A / APOBEC4 / RPS4X / POLR2L / RPL27A / DXO / PNO1 / RPL23 / FAU / ADAT2 / LSM3 / PPIL1 / NOP2 / POLR2G / TCERG1 / PSMD7 / RPL19 / HNRNPC / GEMIN6 / RRP36 / LSM1 / RPS15A / PSMD8 / RNPS1 / SRSF9 / RPL34 / HNRNPR / LENG1 / SNRNP27 / URM1 / PSMB4 / RPP40 / RPL13A / SF3B5 / MTERF3 / RPS25 / RPS27A / RPL31 / TP53RK / BUD23 / DDX41 / EXOSC1 / SUGP1 / TRMT12 / RTRAF / NCBP2 / ANP32A / GTF2H2 / FTSJ1 / NUP42 / SET / SRSF3 / UTP25 / RBM17 / SMG7 / RRP7A / TPRKB / PPP1CA / HNRNPA3 / PQBP1 / SDE2 / MNAT1 / MAGOH / PRKRIP1 / KHSRP / PUS1 / CWC27 / SRSF2 / RPL7A / NGRN / RRP9 / CNOT9 / PAIP1 / GEMIN2 / THOC7 / SENP3 / RPS27L / IMP4 / PPIH / PHF5A / SUPT5H / U2AF1L4 / GPKOW / IGF2BP2 / YWHAB / NUDT21 / WDR4 / HTATSF1 / RPL22 / POM121 / HNRNPA2B1 / RPS2 / CWC15 / CNOT6 / QNG1 / RPL9 / GAR1 / RPS9 / GNL3 / WDR46 / DKC1 / TYW1 / SRSF10 / RPP30 / FASTK / FAM32A / RPL26 / RPSA / RPS3A / EXOSC3 / NDC1 / PSMA7 / RPL6 / RPL24 / WTAP / UPF3B / PSMC4 / NXT1 / PRPF3 / EIF4E / HNRNPL / OSGEP / RPS13 / CTU1 / RPL14 / PCBP1 / DIMT1 / C9orf78 / SNRNP48 / NUP58 / GTF2F2 / EDC3 / TSEN54 / PRPF31 / CCAR1 / PCBP2 / DCPS / C2orf49 / LUZP4 / GSPT1 / ZBTB8OS / SMG9 / DNAJC8 / NCL / RPLP0 / POLR2C / NT5C3B / IMP3 / ADRM1 / ADAR / TSR3 / ETF1 / SYF2 / RPL4 / RPP14 / RAN / YBX1 / MAPK11 / UTP14A / C1D / POM121C / PTBP1 / PPP2R1A / HNRNPH1 / STEEP1 / EXOSC7 / GTF2H3 / POLR2D / BYSL / GPATCH1 / HSPA1A / SRSF7 / PSMD14 / RPL36AL / PSMA3 / GEMIN8 / PNRC2 / SMG5 / KRR1 / TRA2B / SF3A2 / PHAX / IK / RBM39 / CPSF6 / RPS4Y2 / MFAP1 / NIP7 / CNOT11 / NSUN4 / CNOT2 / METTL1 / PSMB3 / POP5 / PSMB5 / YJU2 / TYW3 / PSMC2 / METTL3 / PSMD11 / UTP11 / LTV1 / SRSF11 / UBC / HNRNPU / USP39 / LSM6 / CTU2 / PSMC5 / PRPF4 / NOP14 / HNRNPD / SNRPB2 / SEC13 / TNFSF13 / BUD13 / CDKAL1
ADHERENS JUNCTIONS INTERACTIONS	CDH9 / TFAP2A / CDH17 / NECTIN4 / CDH10 / H2BC17 / H2AC14 / PKM / H4C13 / EZH2 / H2BC13 / CDH11 / CDH24 / H3C2 / H3C3 / TWIST1 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / BHLHE22 / H2BC21 / H3C8 / CDH12 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CDH13 / CDH3 / H2BC7 / CSNK2A3 / ADAM33 / CTBP2 / ACTA2 / PRDM8 / NECTIN1 / MTBP / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDH13 / HOXC8 / H2BC15 / H3C1 / H3C12 / CDH7 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / CDH8 / H4C9 / H2BC6 / H3C6 / TFAP2A / H4C8 / CDH10 / H2AC8 / H2BC7 / MYCN / H4C4 / CDH15 / UBA52 / H2BC5 / H2AC14 / H2AX / CANX / H2AZ2 / PSMA6 / H4C2 / SPCS1 / H3-3A / PRKCSH / H3C7 / NECTIN1 / CADM1 / TMEM258 / ACTA1 / H2AC6 / H2AC20 / FOXQ1 / OST4 / RPN2 / PVR / H2BC4 / WT1 / AGO2 / EZH2 / H4C6 / SEC11C / MTBP / H4C16 / BHLHE22 / H4C3 / MCRIP1 / NECTIN2 / DAD1 / PSMD7 / DDOST / PSMD8 / PSMB4 / H4C5 / H3-3B / TCF3 / RPS27A / H2AJ
REGULATION OF ENDOGENOUS RETROELEMENTS	H2BC17 / H2AC14 / H4C13 / ZNF257 / H2BC13 / H3C2 / H3C3 / H2BC26 / ZNF610 / H2BC9 / H2BC14 / H3C10 / DPF1 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / ZNF454 / H3C11 / H4C9 / ZNF320 / H2BC3 / PIWIL4 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / H2BC7 / H2BC12 / H2AC8 / DNMT3A / H3C7 / H4C8 / H2BC6 / ZNF816 / CHD3 / H2BC5 / ZNF93 / EHMT2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / H2BC7 / H4C4 / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / H3-3A / H3C7 / H2AC6 / DPF1 / H2AC20
SELENOAMINO ACID METABOLISM	CBS / MAT1A / RPS4Y2 / GNMT / SEPSECS / CTH / NNMT / PAPSS2 / RPS17 / RPL36AL / EEFSEC / SEPHS2 / INMT / RPL3L / HNMT / PSTK / AHCY / SARS1 / RPL26 / RPS24 / RPL39L / RPS9 / RPS15A / RPS27L / RPS29 / RPL24 / RPL34 / RPL9 / RPL11 / RPL22 / RPL3 / RPL15 / FAU / RPSA / RPL12 / RPS3A / RPL7A / RPS11 / RPL32 / RPS26 / SECISBP2	RPL39L / RPL22L1 / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / EEF1E1 / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / TXNRD1 / RPL10 / RPS26 / RPS29 / SCLY / RPL18A / RPS6 / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / AIMP2 / RPS7 / RPL23A / RPS4X / RPL27A / RPL23 / FAU / RPL19 / RPS15A / RPL34 / RPL13A / RPS25 / RPS27A / RPL31
CO INHIBITION BY PD 1	NEK2 / TRAV29DV5 / TRAV19 / H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / B3GNT3 / LEF1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / TUSC3 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / PDCD1 / H3C12 / TEAD4 / H2BC21 / H3C8 / PRKAA2 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CD3D / H2BC7 / H2BC12 / H2AC8 / H3C7 / HLA-DQA1 / PRKAG1 / TEAD2 / PRKAB1 / H4C8 / HLA-DRB5 / H2BC6 / HLA-DQB2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / H2AC8 / TRBV12-3 / H2BC7 / MYCN / H4C4 / UBA52 / PRKAG3 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / TMEM258 / H2AC6 / DPY30 / COPS5 / H2AC20 / OST4 / RPN2 / DERL1 / H2BC4 / AGO2 / EZH2 / PRKAA2 / H4C6 / RNF5 / H4C16 / CDK4 / RBX1 / H4C3 / TEAD2 / DAD1 / PSMD7 / DDOST / PSMD8 / MAGT1 / PSMB4 / H4C5 / H3-3B / YWHAG / RPS27A / H2AJ
SIGNALING BY ROBO RECEPTORS	MSI1 / ROBO1 / RPL36A / LHX4 / NELL2 / PAK3 / CAP2 / PRKACG / SLIT2 / ENAH / ARHGAP39 / RPL22L1 / SRC / ISL1 / AKAP5 / SLIT3 / SLIT1 / PFN2 / PAK1 / COL4A5 / EIF4A3 / VASP / RAC1 / ELOC / CXCR4 / RPL8 / SRGAP3 / RPL30 / NCBP2 / RPLP2 / PSMD14 / LHX3 / ABL1 / SRGAP1 / PSMD2 / RPL10L / RPL27 / PAK4 / ABL2 / RPS21 / NCK2 / MYO9B / RPS18 / RPL38 / RNPS1	LHX3 / MSI1 / RPL39L / ROBO1 / RPL22L1 / ENAH / ELOC / RPL36A / RPL30 / CAP2 / RPL8 / RPL10L / RPL39 / RPL7 / DCC / RPS21 / RPL28 / RPS5 / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / RPLP1 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPS26 / RPS29 / PAK3 / RPL18A / MAGOHB / RPS6 / UPF3A / RBM8A / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / RPS7 / RPL23A / RBX1 / RPS4X / RPL27A / RPL23 / PAK1 / FAU / ELOB / PSMD7 / RPL19 / RPS15A / PSMD8 / RNPS1 / AKAP5 / RPL34 / PSMB4 / RPL13A / RPS25 / RPS27A / LHX4 / RPL31

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
REGULATION OF T CELL ACTIVATION BY CD28 FAMILY	NEK2 / TRAV29DV5 / TRAV19 / H2BC17 / H2AC14 / H4C13 / EZH2 / H2BC13 / B3GNT3 / LEF1 / H3C2 / H3C3 / H2BC26 / H2BC9 / PIK3R6 / H2BC14 / CTLA4 / H3C10 / PAK3 / ICOS / H2AC4 / H3C13 / TUSC3 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / PDCD1 / H3C12 / TEAD4 / H2BC21 / H3C8 / PRKAA2 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CD3D / GRAP2 / H2BC7 / CD80 / H2BC12 / H2AC8 / THEM4 / H3C7 / HLA-DQA1 / PRKAG1 / TEAD2 / PRKAB1 / H4C8 / HLA-DRB5 / H2BC6 / SRC / HLA-DQB2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / NEK2 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / THEM4 / H2AC8 / TRBV12-3 / H2BC7 / MYCN / H4C4 / UBA52 / PRKAG3 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / TMEM258 / H2AC6 / DPY30 / COPS5 / H2AC20 / PPP2R5A / OST4 / RPN2 / PAK3 / LYN / DERL1 / H2BC4 / CD28 / AGO2 / PPP2CA / EZH2 / PRKAA2 / H4C6 / RNF5 / H4C16 / PIK3R3 / CDK4 / RBX1 / PAK1 / H4C3 / TEAD2 / DAD1 / PSMD7 / DDOST / PSMD8 / MAGT1 / PSMB4 / H4C5 / H3-3B / YWHAG / RPS27A / H2AJ
SIGNALING BY NOTCH	DNER / EGF / MDK / H2BC17 / H2AC14 / DLGAP5 / H4C13 / H2BC13 / E2F1 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / TACC3 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / JAG2 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / NOTCH3 / H2BC8 / NBEA / H2BC11 / CNTN1 / H2BC7 / ACTA2 / H2BC12 / KAT2A / JAG1 / H2AC8 / H3C7 / H4C8 / H2BC6 / ST3GAL4 / YWHAZ / TLE3	H3C2 / H2BC3 / H3C13 / MDK / H3C3 / H4C13 / H2BC17 / H3C11 / DNER / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / DLGAP5 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / TACC3 / H4C9 / H2BC6 / H3C6 / H4C8 / ATP2A1 / H2AC8 / H2BC7 / EGF / H4C4 / UBA52 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / H2AC6 / E2F1 / H2AC20 / MFNG / HES5 / HDAC11 / PSENEN
MITOCHONDRIAL TRANSLATION	MT-ND3 / MRPL1 / KGD4 / MRPL39 / TSFM / MRPS31 / MT-ATP6 / MT-ND2 / MT-ND5 / MRPL54 / MT-CO3 / MT-ATP8 / MT-ND1 / MRPS18C / MRPL46 / MRPL37 / MT-CYB / MRPS2 / MRPL32 / MRPS25 / MT-CO1 / AURKAIP1 / MRPS22 / GFM2 / PTCD3 / MRPL38 / NDUFAB1 / MRPL33 / MRPL35 / MRPL36 / MT-CO2 / MRPS24 / TUFM / MRPS6 / MRPS9 / MRPL16 / MRPL41 / MRPS26 / MRPL53 / MRPL40 / MRPL2 / MT-ND4 / MRPL22 / MRPL44 / MRPL20 / MRPL19 / MT-ND6 / GFM1 / OXA1L / MRPS30 / MRPL49 / MRPL14 / MRPL58 / MRPL34 / MRPS35 / MRPL43 / MRPS27 / MRPL21 / MTRF1 / MRPL51 / MRPS28 / MRPL57 / MTRES1 / MT-ND4L / MRPS15 / CHCHD1 / MRPL48 / MRPS18A / MRPL3 / MRPL28 / MRPS14 / MRPL27 / MRPS11	MRPL55 / MRPS24 / MRPS33 / MT-CO2 / MRPL36 / MRPS21 / MRPL9 / MT-ND4L / MRPL13 / MRPS12 / MRPL53 / CHCHD1 / MRPL15 / MRPL11 / MT-CO1 / MRPL57 / GADD45GIP1 / MRPS14 / MRPL4 / MT-ND4 / MRPL18 / MRPL27 / MRPS16 / MRPL58 / MRPL24 / MRPS6 / MRPS34 / MRPL41 / MRPL34 / MRPS28 / MRPS15 / MALSU1 / MRRF / MRPS10 / MT-ND1 / MTIF3 / MT-CO3 / MRPL33 / TSFM / MRPL20 / KGD4 / MRPL52 / MRPL51 / MRPL43 / MRPS23 / AURKAIP1 / MT-ATP8 / MRPS7 / MRPL22 / MRPL47 / MRPL28 / MRPL21 / MRPS18C / MRPL23 / NDUFAB1 / DAP3 / MRPS11 / MRPS18B / MRPS18A / MT-ND2
ESTROGEN DEPENDENT GENE EXPRESSION	H2BC17 / H2AC14 / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CTSD / H2BC7 / KPNA2 / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / H4C8 / H2AC8 / H2BC7 / H4C4 / POLR2J / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR2I / KPNA2 / H3-3A / H3C7 / POLR2F / POLR2H / H2AC6 / H2AC20 / PTGES3 / GTF2A2 / H2BC4 / USF1 / AGO2 / H4C6 / EBAG9 / POLR2E / H4C16 / ATF2 / HSP90AB1 / TBP / POLR2L / H4C3 / POLR2G
BIOLOGICAL OXIDATIONS	ADH7 / CYP26A1 / CYP2C19 / CYP2A7 / UGT2B17 / CYP1A2 / NAT2 / CYP1A1 / ADH4 / CYP2C9 / CYP3A7 / ADH1A / ADH1B / CYP2A13 / UGT2B10 / CYP2A6 / CYP2C8 / CYP4F12 / CYP3A43 / CYP2B6 / CYP4A22 / GSTZ1 / CYP8B1 / GLYAT / CYP4V2 / ADH6 / CYP2E1 / ACSM5 / GLYATL1 / CES3 / CYP4A11 / UGT2B7 / SULT2A1 / GSTA2 / CYP39A1 / MAT1A / ACSM2A / UGT1A3 / CYP11A1 / CYP4F2 / UGT1A4 / ALDH2 / ACSM2B / CYP7A1 / CYP4F8 / CYP4F3 / CYP2J2 / GLYATL2 / UGP2 / FMO3 / CYP3A4 / UGT3A2 / MTARC2 / ABHD14B / MAOB / GSTM2 / ACY1 / CMBL / SULT1A2 / GSTA5 / CYP46A1 / SULT1A1 / ACSS2 / SLC35D1 / UGT2B15 / GGT6 / RXRA / ADH1C / UGT1A1 / GSTA1 / MAOA / ACY3 / NNMT / MGST2 / MGST1 / CYP27A1 / AKR1A1 / POMC / AKR7A3 / SULT1E1	CYP1A2 / CYP26A1 / CYP2C19 / NAT2 / CYP3A4 / GSTM5 / GSTM2 / CYP26B1 / GLYATL3 / GGT5 / CYP3A43 / CYP2E1 / CYP39A1 / GSTZ1 / FMO1 / CYP2C8 / GGT6 / CYP1A1 / CYP2C9 / GLYATL2 / FMO2 / CYP2F1 / CYP2A7 / ADH7 / CYP2S1 / CYP4F12 / AOC1 / CYP2B6 / PTGIS / ADH4 / ADH6 / AOC2 / SULT1E1 / GLYATL1 / GLYAT / AOC3 / ACSM2B / CYP4A22 / CYP4A11 / CYP8B1 / ALDH2 / GSTT2B / DPEP2 / CYP3A7 / GSTP1 / NNMT / ADH1B / FMO3 / ACSM2A / SULT1A1 / TBXAS1 / SULT2A1 / ACSM5 / UGT1A3 / ADH1A / UGP2 / MAT1A / CYP4V2 / SULT1A2 / ACY1 / MAOA / CYP2C18 / MTARC2 / SULT1C4 / UGT1A5 / GSTA1 / CYP2A6 / CYP4F2 / GSTM4
CELL JUNCTION ORGANIZATION	CLDN18 / CDH9 / TFAP2A / CDH17 / ITGB4 / FLNC / CLDN19 / NECTIN4 / LAMC2 / CDH10 / H2BC17 / H2AC14 / PKM / H4C13 / CLDN2 / EZH2 / H2BC13 / CDH11 / LAMA3 / CDH24 / H3C2 / H3C3 / TWIST1 / H2BC26 / H2BC9 / H2BC14 / CLDN6 / H3C10 / H2AC4 / H3C13 / CLDN10 / H2AX / H2BC15 / LAMB3 / H4C6 / H2BC10 / FBLIM1 / H3C11 / H4C9 / H2BC3 / H3C1 / CLDN4 / H3C12 / BHLHE22 / H2BC21 / H3C8 / CDH12 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CDH13 / CLDN15 / CLDN16 / CDH3 / H2BC7 / CSNK2A3 / ADAM33 / CTBP2 / ACTA2 / PRDM8 / NECTIN1 / MTBP / H2BC12 / ITGA6 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC / FLNA / CLDN7 / SDK2 / CDH6 / HEYL / H2BC5 / CD151 / CDH8	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / CLDN15 / H2BC11 / H4C1 / H3C10 / CDH13 / HOXC8 / H2BC15 / H3C1 / H3C12 / CDH7 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / CLDN19 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / CDH8 / PARD6A / H4C9 / H2BC6 / H3C6 / TFAP2A / CLDN7 / H4C8 / CDH10 / H2AC8 / CLDN16 / H2BC7 / LAMB3 / MYCN / H4C4 / CDH15 / UBA52 / CLDN4 / H2BC5 / H2AC14 / H2AX / CANX / H2AZ2 / PSMA6 / H4C2 / SPCS1 / ITGA6 / H3-3A / PRKCSH / H3C7 / NECTIN1 / CADM1 / TMEM258 / ACTA1 / H2AC6 / H2AC20 / FOXQ1 / OST4 / RPN2 / PVR / H2BC4 / WT1 / AGO2 / EZH2 / H4C6 / SEC11C / KRT14 / MTBP / H4C16 / COL17A1 / BHLHE22 / H4C3 / MCRIP1 / NECTIN2 / DAD1 / PSMD7 / DDOST / PSMD8 / PSMB4 / H4C5 / H3-3B / FLNC / TCF3 / RPS27A / H2AJ
MITOTIC PROMETAPHASE	SKA1 / CENPA / TUBB3 / SPC25 / NEK2 / TUBA3D / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / CCNB2 / PLK1 / CENPK / ERCC6L / NCAPH / CENPF / CENPM / KIF2C / CDK1 / CDCA8 / NDC80 / NCAPG / CENPO / BUB1 / TUBA3E / DYNC1I1 / KIF18A / CCNB1 / AURKB / CENPI / CDCA5 / CENPS / SPC24 / ZWINT / NCAPD2 / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE	SPC25 / NEK2 / CENPF / CCNB2 / CDK1 / SPC24 / SKA1 / TUBA3D / CDCA5 / CENPA / CENPM / CENPU / SGO1 / NUF2 / CENPL / BIRC5 / AURKB / TUBA4B / CCNB1 / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / NCAPH / RPS27 / NCAPG / DYNLL1 / CEP72 / NDC80 / CETN2 / CENPN / SSNA1 / SGO2 / ITGB3BP / PPP2R5A / CEP41 / KNL1 / TUBB2A / PPP2CA / NDE1 / MZT1 / MZT2B / DCTN3 / SKA2 / NEK7 / DCTN2 / DYNC1I1 / TUBB4A / MZT2A / TUBA3E / PMF1
UB SPECIFIC PROCESSING PROTEASES	CDC20 / H2AC13 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H2AC16 / H2BC13 / CCNA2 / CLSPN / BIRC3 / H2BC26 / H2BC9 / TGFBR1 / H2BC14 / H2AC17 / USP26 / H2AC4 / H2BC15 / H2BC10 / H2AC15 / H2BC3 / H2AC11 / H2BC21 / H2AC7 / H2BC8 / CDC25A / H2BC11 / H2BC7 / H2BC12 / KAT2A / H2AC8	H2BC3 / H2BC17 / H2BC11 / CCNA2 / H2AC16 / H2AC12 / H2BC15 / H2AC11 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H2BC9 / CDC25A / H2AC7 / H2BC21 / H2BC14 / H2BC6 / CDC20 / H2AC15 / IKBKG / H2AC8 / H2BC7 / H2BC18 / H2AC13 / UBA52 / H2BC5 / H2AC21 / H2AC14 / PSMA6 / TAF10 / TOMM20 / POLB / FKBP8 / H2AC6 / H2AC20
RHO GTPASES ACTIVATE FORMINS	SKA1 / CENPA / TUBB3 / SPC25 / TUBA3D / BIRC5 / NUF2 / TUBAL3 / BUB1B / CDC20 / PLK1 / CENPK / DIAPH3 / ERCC6L / CENPF / CENPM / KIF2C / CDCA8 / NDC80 / CENPO / BUB1 / TUBA3E / DYNC1I1 / KIF18A / AURKB / CENPI / CENPS / SPC24 / ZWINT / MAD2L1 / CENPL / CENPH / SGO1 / SGO2 / CENPE	SPC25 / CENPF / SPC24 / SKA1 / TUBA3D / CENPA / CENPM / CENPU / SGO1 / NUF2 / CENPL / BIRC5 / AURKB / TUBA4B / MAD2L1 / CENPO / ERCC6L / CENPI / BUB1B / CDC20 / PLK1 / CENPK / CENPP / KIF2C / CDCA8 / BUB1 / CENPH / ZWINT / SPDL1 / RPS27 / DIAPH3 / DYNLL1 / NDC80 / CENPN / SGO2 / ITGB3BP / PPP2R5A / KNL1 / TUBB2A / PPP2CA / NDE1 / SKA2 / DYNC1I1 / TUBB4A / TUBA3E / PMF1 / TUBA1B / DVL3 / ACTB / KIF18A / DSN1 / ZWILCH / PFN1 / RAC1 / KIF2A / TUBA4A

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
AEROBIC RESPIRATION AND RESPIRATORY ELECTRON TRANSPORT	PM20D1 / ADHFE1 / GSTZ1 / GPT / ETFDH / COX6A2 / SLC25A27 / PDHA2 / MPC1 / UCP3 / PC / COQ10A / L2HGDH / ACAT1 / HAGH / SDHA / GOT2 / SUCLG2 / MT-ND3 / SLC25A4 / SLC25A13 / D2HGDH / FXN / PDP2 / KGD4 / NNT / SDHB / SURF1 / IDH2 / ATP5PF / ETFA / SDHD / SIRT3 / UQCRC2 / PDK2 / ETFB / SCO1 / MT-ATP6 / MT-ND2 / TACO1 / MT-ND5 / SUCLG1 / MT-CO3 / DMAC2L / NDUFAF1 / MT-ATP8 / MT-ND1 / FAHD1 / NDUFS7 / MT-CYB / HIGD1A / UBB / DMAC1 / TTC19 / PDK4 / NDUFA10 / UCP1 / PDHB / NDUFB8 / GOT1 / TMEM177 / NDUFV2 / COX17 / RMND5A / UQCRC1 / FH / MT-CO1 / NDUFV3 / COX18 / PKLR / DLST / NDUFV1 / ATP5PO / NDUFB1 / NDUFS4 / FOXRED1 / SLC25A22 / NDUFAB1 / ATP5F1D / PDHX / COQ10B / NDUFA9 / ECSIT / ATP5PB / SLC25A18 / ATP5MC3 / NUBPL / COX14 / SLC25A11 / BCS1L / TRAP1 / SUCLA2 / SIRT4 / ATP5F1A / ATP5ME / NDUFAF7 / MT-CO2 / NDUFAF5 / NDUFC2 / ATP5MC2 / NDUFB7 / ATP5F1C / UQCRFS1 / COX5B / NDUFB6 / DLD / SDHAF2 / NDUFA2 / PDHA1 / COX4I1 / UQCRQ / LYRM7 / PDK3 / NDUFB11 / COX7A2L / MT-ND4 / COX6A1 / SDHAF4 / HSPA9 / COX7C / ATP5MJ / MKLN1 / MDH1 / MT-ND6 / COA5 / UBC / NDUFC1 / OXA1L / NDUFA4 / COX7B / LDHAL6A / NFS1 / HSCB / NDUFB4 / NDUFS2 / PET100 / COX15 / ATP5F1B / ACAD9 / NDUFS5 / UQCC3 / NDUFS3 / COX7A2 / SCO2 / TMEM186 / NDUFS6 / SDHAF1 / GID8 / DMAC2 / NDUFB10 / SFXN4 / NDUFA5	COX4I2 / ATP5MF / RAB5IF / PDHA2 / LDHAL6B / NDUFAF8 / ME1 / UQCC2 / UQCRQ / COX6C / COX6B1 / UQCC6 / UQCRB / PDK1 / NDUFA1 / NDUFAF2 / UBA52 / CYCS / ATP5MK / MPC2 / NDUFA3 / DLAT / NDUFB9 / NDUFA2 / MT-CO2 / UQCC5 / COX7B / NDUFA13 / HIGD2A / ATP5MC1 / COX7A2 / COX8A / ATP5F1E / UQCC3 / COX20 / UQCR10 / NDUFS6 / ATP5MG / UQCRHL / COA3 / ATP5PD / COX7C / NDUFC1 / COX5A / SDHAF4 / NDUFA6 / MT-CO1 / NDUFB2 / COX17 / SDHAF3 / ATP5ME / NDUFA4 / HIGD1A / COX4I1 / NDUFAF6 / LYRM4 / CMC1 / NDUFB1 / NDUFAF4 / SFXN4 / NDUFB3 / MT-ND4 / COX5B / MDH2 / TMEM126A / ISCA2 / CYC1 / COA5 / SDHAF1 / NDUFS8 / ATP5MC3 / COX6A1 / NDUFAF5 / NDUFB7 / NDUFAF3 / ATP5PF / NDUFB4 / COX6A2 / ISCU / COX19 / ATP5MC2 / SMIM20 / ATP5F1D / UQCRFS1 / RPS27A / ATP5PO / NDUFB6 / MT-ND1 / MT-CO3 / NDUFS7 / PET100 / LYRM2 / HCCS / NDUFV3 / NDUFB10 / KGD4 / NDUFS4 / SDHC / NDUFA12 / NDUFA11 / MT-ATP8 / TMEM126B / SLC25A14 / ATP5MJ / NDUFA8 / ISCA1 / NDUFA5 / COA1 / TACO1 / UQCRH
SYNTHESIS OF DNA	UBE2C / CCNE1 / CDC6 / CDT1 / CCNA2 / ORC1 / CDC45 / GINS1 / ORC6 / GINS2 / UBE2S / DNA2 / GMNN / MCM7 / MCM4 / MCM2 / MCM3 / FEN1 / POLA2 / MCM6 / RFC4 / GINS4 / CCNE2 / PRIM2 / GINS3	CCNA2 / UBE2C / CDT1 / UBE2S / GINS1 / GINS2 / GMNN / CDC45 / GINS4 / MCM4 / UBA52 / ANAPC11 / ORC6 / CCNE2 / PSMA6 / POLA2 / RFC4 / RPA3 / ORC1 / MCM8 / POLE3 / DNA2 / UBE2E1 / ANAPC15 / GINS3 / UBE2D1 / POLE2 / CCNE1 / RBX1 / POLD2 / PSMD7 / MCM5 / PSMD8 / POLE4 / PSMB4 / RPS27A / CDC6 / CCNA1 / RFC2 / RFC3 / CDC26 / ANAPC16 / MCM7 / MCM2 / PCNA / PSMA7 / PSMC4 / PRIM2
TRANSCRIPTIONAL REGULATION BY RUNX1	SERPINB13 / CTSV / H2BC17 / H2AC14 / LMO1 / IFNG / H4C13 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / TP73 / CTSK / CBX2 / H2BC14 / CTLA4 / H3C10 / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / TNFRSF18 / H2BC11 / LGALS3 / ACTL6B / H2BC7 / IL2RA / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC / RSPO3 / FOXP3 / IL2 / H2BC5 / RUNX2 / ITGA2B / MYL9 / CSF2 / H4C4 / MYB / PML / H4C16 / RNF2 / CBX4 / GATA1 / SCMH1 / CCND3 / SMARCD1 / TCF3	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / NFE2 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / H4C8 / FOXP3 / H2AC8 / CBX2 / H2BC7 / IFNG / H4C4 / SERPINB13 / UBA52 / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / BMI1 / H3-3A / LGALS3 / H3C7 / H2AC6 / DPY30 / H2AC20 / CBX8
RIBOSOME QUALITY CONTROL RQC COMPLEX EXTRACTS AND DEGRADES NASCENT PEPTIDE	SEM1 / RPL36AL / UBB / RPL3L / RCHY1 / PSMA6 / KLHDC10 / PSMB1 / PSMA3 / RPL26 / LTN1 / TCF25 / RPL39L / PSMB6 / RPL24 / PSMB7 / UBC / PSMD6 / RPL34 / RPL9 / RPL11 / RPL22 / RPL3 / RPL15 / PSMC1 / RPL12 / ELOB / PSMC6 / PSMA5 / RPL7A / RPL32 / PSMD12 / RPL18	RPL39L / RPL22L1 / ELOC / RPL36A / RPL30 / RPL8 / RPL10L / RPL39 / RPL7 / RPL28 / UBA52 / RPL38 / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / RPLP1 / RPL36 / RPL29 / RPLP2 / RPL26L1 / RPL27 / RPL13 / RPL18 / RPL10 / RPL18A / UBE2D1 / RPL10A / RPL32 / RPL12 / RPL21 / RPL23A / RBX1 / RPL27A / RPL23 / ELOB / PSMD7 / RPL19 / PSMD8 / RPL34 / UBE2D2 / PSMB4 / RPL13A / RPS27A / RPL31 / UFD1
PHASE I FUNCTIONALIZATION OF COMPOUNDS	ADH7 / CYP26A1 / CYP2C19 / CYP2A7 / CYP1A2 / CYP1A1 / ADH4 / CYP2C9 / CYP3A7 / ADH1A / ADH1B / CYP2A13 / CYP2A6 / CYP2C8 / CYP4F12 / CYP3A43 / CYP2B6 / CYP4A22 / CYP8B1 / CYP4V2 / ADH6 / CYP2E1 / CES3 / CYP4A11 / CYP39A1 / CYP11A1 / CYP4F2 / ALDH2 / CYP7A1 / CYP4F8 / CYP4F3 / CYP2J2 / FMO3 / CYP3A4 / MTARC2 / MAOB / CMBL / CYP46A1 / ACSS2 / RXRA / ADH1C / MAOA	CYP1A2 / CYP26A1 / CYP2C19 / CYP3A4 / CYP26B1 / CYP3A43 / CYP2E1 / CYP39A1 / FMO1 / CYP2C8 / CYP1A1 / CYP2C9 / FMO2 / CYP2F1 / CYP2A7 / ADH7 / CYP2S1 / CYP4F12 / AOC1 / CYP2B6 / PTGIS / ADH4 / ADH6 / AOC2 / AOC3 / CYP4A22 / CYP4A11 / CYP8B1 / ALDH2 / CYP3A7 / ADH1B / FMO3 / TBXAS1 / ADH1A / CYP4V2 / MAOA / CYP2C18 / MTARC2 / CYP2A6 / CYP4F2 / CYP2J2 / POMC / PTGS1 / SMOX / CYP1B1 / ACSS1
SIGNALING BY WNT	WNT3A / DKK4 / GNG4 / WNT7B / RSPO2 / DKK1 / KREMEN2 / WNT2B / H2BC17 / H2AC14 / WIF1 / H4C13 / GNGT1 / ITPR3 / H2BC13 / DKK2 / LEF1 / H3C2 / H3C3 / SFRP2 / SOX2 / H2BC26 / H2BC9 / H2BC14 / SOX4 / H3C10 / WNT6 / WNT9B / H2AC4 / H3C13 / PRKCG / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / ROR1 / H3C8 / H4C1 / H2AC7 / WNT3 / H2BC8 / H2BC11 / CAMK2A / H2BC7 / SRY / CTBP2 / CAV1 / PLCB1 / H2BC12 / BCL9 / H2AC8 / FZD6 / FZD2 / H3C7 / PYGO1 / H3-4 / H4C8 / H2BC6 / PDE6B / RNF43 / YWHAZ / ROR2 / LGR5 / HECW1 / TLE3 / RSPO3 / GNG10 / CSNK1G2 / H2BC5 / BCL9L / WNT10B / RAC2 / SCRIB / RUVBL1 / CCDC88C / AXIN2 / H4C4 / SOX9	DKK4 / H3C2 / SOX2 / H2BC3 / H3C13 / SOX3 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / WNT3A / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / LEF1 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / PARD6A / H4C9 / H2BC6 / H3-4 / H3C6 / GNG10 / PLCB1 / H4C8 / H2AC8 / GNG5 / H2BC7 / H4C4 / UBA52 / BCL9 / WNT7A / H2BC5 / H2AC14 / H2AX / H2AZ2 / PSMA6 / H4C2 / H3-3A / H3C7 / PDE6A / AP2S1 / H2AC6 / DKK2 / DPY30 / SFRP2 / H2AC20 / SOX4 / PRKG2 / PPP2R5A / CLTB / SNX3 / GNB1 / PYGO2 / TMED5 / H2BC4 / CLTA / GNB5 / RAC3 / AGO2 / PPP2CA / H4C6 / WNT9B
ESR MEDIATED SIGNALING	MMP3 / GNG4 / MMP7 / EGF / EREG / MMP9 / H2BC17 / H2AC14 / H4C13 / GNGT1 / SPHK1 / H2BC13 / H3C2 / H3C3 / H2BC26 / H2BC9 / H2BC14 / H3C10 / HRAS / AREG / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CTSD / H2BC7 / KPNA2 / CAV1 / IGF1R / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC / TLE3 / GNG10 / S1PR3	MMP3 / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / GNG10 / POLR2K / H4C8 / H2AC8 / GNG5 / H2BC7 / EGF / H4C4 / POLR2J / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR2I / KPNA2 / H3-3A / H3C7 / POLR2F / HSPB1 / POLR2H / H2AC6 / H2AC20 / PTGES3 / GTF2A2 / GNB1 / H2BC4 / GNB5 / USF1 / AGO2 / H4C6 / EBAG9 / SHC1 / POLR2E / H4C16 / ATF2 / PIK3R3 / HSP90AB1 / TBP / NRAS / POLR2L / H4C3
CELL CELL COMMUNICATION	CLDN18 / CDH9 / TFAP2A / CDH17 / ITGB4 / FLNC / CLDN19 / NECTIN4 / LAMC2 / NPHS2 / CDH10 / H2BC17 / H2AC14 / PKM / H4C13 / CLDN2 / EZH2 / H2BC13 / CDH11 / LAMA3 / CDH24 / H3C2 / H3C3 / TWIST1 / H2BC26 / H2BC9 / H2BC14 / CLDN6 / H3C10 / H2AC4 / H3C13 / CLDN10 / H2AX / H2BC15 / LAMB3 / H4C6 / H2BC10 / FBLIM1 / H3C11 / H4C9 / H2BC3 / H3C1 / CLDN4 / H3C12 / BHLHE22 / ACTN2 / H2BC21 / H3C8 / CDH12 / H4C1 / H2AC7 / H2BC8 / H2BC11 / CDH13 / CLDN15 / CLDN16 / CDH3 / H2BC7 / CSNK2A3 / ADAM33 / CTBP2 / ACTA2 / PRDM8 / NECTIN1 / MTBP / H2BC12 / ITGA6 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC / FLNA / CLDN7 / SDK2 / CDH6 / HEYL / SKAP2 / H2BC5 / CD151 / CDH8	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / CLDN15 / H2BC11 / H4C1 / H3C10 / CDH13 / HOXC8 / H2BC15 / H3C1 / H3C12 / CDH7 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / CLDN19 / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / CDH8 / PARD6A / H4C9 / H2BC6 / H3C6 / ACTN2 / TFAP2A / CLDN7 / H4C8 / CDH10 / H2AC8 / CLDN16 / H2BC7 / LAMB3 / MYCN / H4C4 / CDH15 / UBA52 / CLDN4 / H2BC5 / H2AC14 / H2AX / CANX / H2AZ2 / PSMA6 / H4C2 / SPCS1 / ITGA6 / H3-3A / PRKCSH / H3C7 / NECTIN1 / CADM1 / TMEM258 / ACTA1 / H2AC6 / H2AC20 / NPHS2 / FOXQ1 / OST4 / RPN2 / PVR / H2BC4 / WT1 / AGO2 / EZH2 / KIRREL2 / H4C6 / SEC11C / KRT14 / MTBP / H4C16 / COL17A1 / BHLHE22 / H4C3 / MCRIP1 / NECTIN2 / DAD1 / PSMD7 / DDOST / PSMD8 / PSMB4 / H4C5 / H3-3B / FLNC / TCF3 / RPS27A / H2AJ

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
S PHASE	UBE2C / CCNE1 / CDC6 / CDT1 / CCNA2 / E2F1 / ORC1 / CDC45 / CDCA5 / E2F5 / GINS1 / ORC6 / GINS2 / UBE2S / DNA2 / CDC25A / GMNN / CDC25B / MCM7 / MCM4 / MCM2 / ESCO2 / MCM3 / FEN1 / POLA2 / MCM6 / RFC4 / GINS4 / CCNE2 / LIN9 / PRIM2 / GINS3 / ESCO1 / MCM5 / CDK4 / CKS1B / PCNA / POLA1 / POLD3 / POLD1 / POLE2 / MAX / CDC27	CCNA2 / UBE2C / CDCA5 / CDT1 / UBE2S / CDC25A / GINS1 / GINS2 / GMNN / CDC45 / CKS1B / GINS4 / MCM4 / UBA52 / ANAPC11 / ORC6 / CCNE2 / PSMA6 / POLA2 / ESCO2 / RFC4 / RPA3 / E2F1 / ORC1 / MCM8 / POLE3 / DNA2 / UBE2E1 / ANAPC15 / GINS3 / E2F5 / UBE2D1 / POLE2 / CCNE1 / CDK4 / RBX1 / POLD2 / PSMD7 / MCM5 / PSMD8 / POLE4 / PSMB4 / RPS27A / CDC6 / LIN54 / LIN52 / MNAT1 / CCNA1 / LIN9 / CDC25B / RFC2 / RFC3 / CDC26 / ANAPC16 / MCM7 / MCM2 / RAD21 / PCNA / PSMA7 / PSMC4 / PRIM2 / MAX
SENSORY PERCEPTION	RBP2 / OR51E2 / GPC3 / AKR1B10 / OR1F1 / OR52E2 / OR4K13 / LRP8 / OR51E1 / STRA6 / USH1C / GPC2 / GNGT1 / OR13J1 / OR13C8 / ITPR3 / STRC / OR8D4 / GNAL / OR4D6 / OR2W3 / LHFPL5 / GPC5 / LRP12 / OR8G5 / CALHM1 / OR14A2 / OR4K17 / STX1A / LPL / OTOG / OR52A5 / OR4C15 / OR2AP1 / OR7G1 / OR2T1 / OPN1SW / RCVRN / OR7C1 / TAS2R16 / OR13C2 / FSCN2 / CABP1 / MYO15A / GUCY2D / OR2F2 / OTOGL / RGS9BP / AKR1C3 / EBF1 / OR1G1 / OR52J3 / OR4A16 / OR12D2 / OR4E1 / OR7G2 / LRRC52 / OR10X1 / OR2L13 / GRK7 / OR6C76 / OR2S2 / OR2B2 / OR4S1 / CTBP2 / RBP3 / PCLO / CACNB2 / OR10P1 / TAS1R1 / OR5C1 / OR7D4	GPC3 / AKR1B10 / RLBP1 / SCNN1G / OR8K3 / OR13D1 / OR13C8 / OR2AE1 / OR1F1 / OR4K17 / RBP3 / OR5B3 / OR5H6 / SLC26A5 / OR52D1 / STRC / OR4D10 / OR51E1 / OR4D6 / OR6N2 / OR11H6 / GRK1 / OR2B3 / CNGB1 / OR14J1 / TAS2R1 / OR8A1 / OR5AL1 / OR9G1 / PNLIP / TAS1R2 / CIB2 / GRXCR1 / ABCA4 / TAS2R13 / GNAL / OR52R1 / OR6Q1 / OR2B11 / OR6C4 / APOA2 / OR10J3 / OR7C1 / OR5A1 / OR2A2 / AKR1C3 / OR51E2 / OR52B6 / OR1A1 / OR4D5 / RPE65 / TAS2R38 / OR10K2 / HSD17B1 / LPL / OR2A1 / OR8B2 / OR5M8 / OR2Z1 / OR14K1 / LRRC52 / SDC2 / OR2S2 / FSCN2 / GRM4 / OR1B1 / OR3A2 / OR5H2 / OR52N5 / OR2A14 / OR8J3 / OR10G3 / OR1L1 / OR1L3 / OR5AR1 / OR2A12 / TAS1R1 / EBF1 / AKR1C1 / GUCY2D / OR7E24 / OR52W1 / OR4C5 / GRXCR2 / OR11A1 / OR6C76 / PDE6A / CLIC5 / OR4L1 / SCNN1D / OR51F2 / RGS9BP / GNAT1 / OR5J2 / OTOF / RGS9 / OR7D4 / OR2D2 / CLPS / OR5P2 / OR5AN1 / OR10C1 / OR51B2 / OR2T34 / PCDH15 / OR6F1 / TAS2R41 / GNB1 / OR5F1 / OR4Q3 / OR4K3 / OR5D16 / RAB3A / OR10X1 / GNB5 / OR4C11 / SDC1 / RTP1 / AGRN / OR2L13 / TRPM5 / OR6X1 / GPC5 / OR6K2 / OR10P1 / OR10J5 / OR51V1 / OR1N1 / OR2AG1 / OR6C2 / APOE / SCN3A / TRPM4 / BCO1 / OR9G4 / GPIHBP1 / DNAJC5 / OR2T10 / WHRN / CAPZA2 / OTOP1 / SAG / OR4K5 / TAS2R50 / OPN1SW / TAS2R8 / OR2L5 / OR11G2 / OR6B3 / OR14A16 / OR4N5 / OR4N2 / OR2D3 / OR10H4 / TAS2R7 / OR2C1 / OR10J1 / OR4F15 / OR10A2 / OR2Y1 / CHRNA10 / OR5W2 / OR56A4 / OR6J1 / OR5D14 / STX1A / OR8B4 / OR10H3 / OR2AG2 / OR2T35 / OR51I1 / OR4E2 / RBP2 / DHRS9 / RDH10 / ACTB / OR13A1 / OR4K13
TRANSCRIPTIONAL REGULATION BY TP53	SFN / BIRC5 / CCNE1 / G6PD / E2F7 / COX8C / CHEK1 / CDK1 / CDC25C / E2F8 / CCNB1 / CDK5R1 / AURKB / CCNA2 / E2F1 / FANCI / EXO1 / PMAIP1 / TPX2 / TP73 / BLM / AURKA / ARID3A / TXNRD1 / PRELID3A / PRKAA2 / RHNO1 / DNA2 / TP53I3 / FANCD2 / PCBP4 / POU4F1 / BCL2L14 / CHEK2 / GLS / PRKAG1 / PRKAB1 / PPP1R13L / YWHAZ / CDKN2A / RFC4 / BARD1 / RAD1 / NELFE / CCNE2 / NBN / CPAP / CHD3 / MSH2 / EHMT2 / MAPK11 / RRAGD / BRCA1 / DYRK2 / BBC3 / RMI2 / CASP2 / RBL1 / PML / PRDM1 / TAF6 / RMI1 / TXN / NDRG1 / GPX2 / TAF10 / SMYD2 / DAXX / RAD50 / ZNF385A / CDK5 / PCNA / BID / ELOC / TOPBP1 / CARM1 / PLAGL1 / RAD51D / POLR2H / ATR / YWHAH / MAPKAPK5 / RNF34 / ING2 / CNOT11 / GTF2H1 / AGO2 / CHD4	CDC25C / CDK1 / CDKN2A / CCNA2 / CDK5R1 / E2F8 / E2F7 / COX4I2 / ELOA2 / BIRC5 / AURKB / ELOC / CCNB1 / TP53I3 / EXO1 / AURKA / RMI2 / BCL2L14 / G6PD / POLR2K / TPX2 / TXN / RHEB / GPX2 / COX6C / COX6B1 / PCBP4 / LAMTOR2 / POLR2J / UBA52 / SFN / CYCS / NELFE / RRAGD / BID / PRKAG3 / CCNE2 / MT-CO2 / LAMTOR4 / COX7B / BBC3 / SUPT4H1 / POLR2I / TCEA1 / COX7A2 / COX8A / GTF2H5 / TAF10 / BAX / PRELID3A / POLR2F / NDRG1 / POLR2H / RFC4 / RAD50 / RPA3 / TXNRD1 / E2F1 / PIN1 / COX7C / COX5A / CDK5 / ARID3A / MT-CO1 / SMYD2 / NDUFA4 / DNA2 / CHEK1 / LAMTOR5 / COX4I1 / YWHAH / AGO2 / PPP2CA / TP73 / CCNE1 / RAD1 / PRKAA2 / TMEM219 / CNOT3 / COX5B / AIFM2 / MAPKAPK5 / TP53BP2 / YWHAZ / POLR2E / ATF2 / TBP / POLR2L / LAMTOR3 / COX6A1 / ELOB / PRDX5 / TP53INP1 / ING2 / POLR2G / CHEK2 / ATRIP / COX6A2 / PIP4P1 / PMS2 / PRELID1 / LAMTOR1 / TAF9 / RAD9B / TAF12 / YWHAG / RPS27A / TAF11 / TP53AIP1 / RABGGTB / TP53RK / GATAD2B / TAF13 / MT-CO3 / GTF2H2 / RHNO1 / RAD9A / MEAF6 / BLM / MNAT1 / CCNA1 / TP63 / PIDD1 / BRD7 / CARM1 / CNOT9 / FANCI / CSNK2B / NBN / SUPT5H / PRDX2 / MAPKAP1 / MBD3 / YWHAB / RFC2 / RRM2B
OLFACTORY SIGNALING PATHWAY	OR51E2 / OR1F1 / OR52E2 / OR4K13 / OR51E1 / OR13J1 / OR13C8 / OR8D4 / GNAL / OR4D6 / OR2W3 / OR8G5 / OR14A2 / OR4K17 / OR52A5 / OR4C15 / OR2AP1 / OR7G1 / OR2T1 / OR7C1 / OR13C2 / OR2F2 / EBF1 / OR1G1 / OR52J3 / OR4A16 / OR12D2 / OR4E1 / OR7G2 / OR10X1 / OR2L13 / OR6C76 / OR2S2 / OR2B2 / OR4S1 / OR10P1 / OR5C1 / OR7D4 / OR13H1 / OR4C5	OR8K3 / OR13D1 / OR13C8 / OR2AE1 / OR1F1 / OR4K17 / OR5B3 / OR5H6 / OR52D1 / OR4D10 / OR51E1 / OR4D6 / OR6N2 / OR11H6 / OR2B3 / CNGB1 / OR14J1 / OR8A1 / OR5AL1 / OR9G1 / GNAL / OR52R1 / OR6Q1 / OR2B11 / OR6C4 / OR10J3 / OR7C1 / OR5A1 / OR2A2 / OR51E2 / OR52B6 / OR1A1 / OR4D5 / OR10K2 / OR2A1 / OR8B2 / OR5M8 / OR2Z1 / OR14K1 / OR2S2 / OR1B1 / OR3A2 / OR5H2 / OR52N5 / OR2A14 / OR8J3 / OR10G3 / OR1L1 / OR1L3 / OR5AR1 / OR2A12 / EBF1 / OR7E24 / OR52W1 / OR4C5 / OR11A1 / OR6C76 / OR4L1 / OR51F2 / OR5J2 / OR7D4 / OR2D2 / OR5P2 / OR5AN1 / OR10C1 / OR51B2 / OR2T34 / OR6F1 / GNB1 / OR5F1 / OR4Q3 / OR4K3 / OR5D16 / OR10X1 / OR4C11 / RTP1 / OR2L13 / OR6X1 / OR6K2 / OR10P1 / OR10J5 / OR51V1 / OR1N1 / OR2AG1 / OR6C2 / OR9G4 / OR2T10 / OR4K5 / OR2L5 / OR11G2 / OR6B3 / OR14A16 / OR4N5 / OR4N2 / OR2D3 / OR10H4 / OR2C1 / OR10J1 / OR4F15 / OR10A2 / OR2Y1 / OR5W2 / OR56A4 / OR6J1 / OR5D14 / OR8B4 / OR10H3 / OR2AG2 / OR2T35 / OR51I1 / OR4E2
MITOTIC G1 PHASE AND G1 S TRANSITION	CCNE1 / E2F2 / TOP2A / RRM2 / MYBL2 / CDK1 / CDC6 / MCM10 / CDT1 / CCNB1 / CCNA2 / E2F1 / ORC1 / FBXO5 / CDC45 / E2F5 / TK1 / ORC6 / CDC25A / GMNN / TYMS / MCM7 / MCM4 / MCM2 / CDC7 / MCM3 / POLA2 / DBF4 / SRC / MCM6 / CDKN2A / CCNE2 / CDKN2C / LIN9 / PRIM2 / E2F6 / CDKN1C / RBL1 / MCM5 / CDK4 / CDKN2D / CKS1B	CDK1 / CDKN2A / CCNA2 / CDT1 / RRM2 / CDKN2B / CCNB1 / MYBL2 / CDC25A / GMNN / CDC45 / CKS1B / MCM10 / FBXO5 / MCM4 / TK1 / UBA52 / ORC6 / CCNE2 / PSMA6 / POLA2 / CDKN2D / RPA3 / E2F1 / ORC1 / DBF4 / MCM8 / POLE3 / CDKN2C / LYN / E2F2 / E2F5 / PPP2CA / POLE2 / CCNE1 / CDK4 / TOP2A / PSMD7 / MCM5 / PSMD8 / POLE4 / PSMB4 / RPS27A / CDC6 / RPA4 / LIN54 / LIN52 / CDC7 / MNAT1 / CCNA1 / LIN9 / TYMS / E2F3 / MCM7 / MCM2 / PCNA / PSMA7 / PSMC4 / PRIM2 / MAX
DEUBIQUITINATION	UCHL1 / TNIP3 / CDC20 / H2AC13 / CDK1 / H2BC17 / H2AC14 / H2AC12 / H2AC25 / H2AC16 / ATXN3L / H2BC13 / CCNA2 / CLSPN / BIRC3 / H2BC26 / H2BC9 / TGFBR1 / H2BC14 / H2AC17 / USP26 / H2AC4 / H2BC15 / H2BC10 / H2AC15 / H2BC3 / H2AC11 / H2BC21 / OTUB2 / H2AC7 / H2BC8 / CDC25A / H2BC11 / H2BC7 / RIPK2 / H2BC12 / KAT2A / H2AC8 / H2BC6 / TRAF3 / BARD1 / INO80B / NOD1 / STAMBPL1 / FOXK1 / H2BC18 / H2BC5 / TGFB1 / H2AC21 / BRCA1 / RUVBL1 / AXIN2 / HIF1A	H2BC3 / H2BC17 / H2BC11 / CDK1 / CCNA2 / H2AC16 / H2AC12 / H2BC15 / H2AC11 / H2AC4 / H2BC10 / H2BC13 / H2AC17 / H2BC12 / H2BC8 / H2BC9 / CDC25A / H2AC7 / H2BC21 / H2BC14 / H2BC6 / CDC20 / H2AC15 / STAMBPL1 / OTUB2 / IKBKG / H2AC8 / H2BC7 / H2BC18 / H2AC13 / ATXN3L / UBA52 / H2BC5 / H2AC21 / H2AC14 / PSMA6 / TAF10 / TOMM20 / POLB / RAD23A / FKBP8 / H2AC6 / JOSD2 / H2AC20 / NEDD8 / SNX3

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
MRNA SPLICING	SRSF12 / SF3B4 / SF3A2 / SNRPD1 / TXNL4A / EIF4A3 / SNRPB / PPIL1 / LSM4 / ALYREF / PRCC / SNRPA1 / SNRPA / TCERG1 / POLR2H / NCBP2 / SNRNP48 / PRKRIP1 / EFTUD2 / FAM50A / LSM8 / LSM7 / POLR2K / BUD13 / TFIP11 / CCAR1 / POLR2G / U2SURP / PUF60 / SNRNP70 / LSM2 / RNPS1 / SNRPC / MFAP1 / RNPC3 / SNRPN / PRPF3 / SNRPE / PHF5A / RBM42 / DDX23 / UPF3B / HNRNPA1 / GTF2F2 / LSM5 / USP39 / DHX8 / PPIH / GTF2F1 / HNRNPR / FUS / U2AF2 / DDX41 / CACTIN / SYF2 / BUD31 / SART1 / PQBP1 / HNRNPA3 / SNU13 / NKAP / STEEP1 / SNRPD2 / ZCRB1 / SRSF9 / HNRNPL / SF3A3 / HNRNPU / POLR2J / DHX9 / RBM22 / RBM17 / YJU2 / ZMAT2 / PRPF19 / CASC3 / HNRNPC / RBM25 / SRSF2 / PPIL2 / U2AF1L4 / SUGP1 / HNRNPH1 / SF3B2 / SDE2 / HTATSF1 / RNF113A / POLR2B / PRPF6 / RBM8A / RBMX2 / CWC27 / SNRNP40 / SRSF11 / IK / SF3A1 / SLU7 / SF3B6 / SMNDC1 / HNRNPM / SRSF3 / PRPF40A	SRSF12 / SNRPD2 / SNRPE / POLR2K / LSM2 / POLR2J / LSM4 / PRCC / UBL5 / LSM5 / SNRNP25 / POLR2I / ZMAT2 / ISY1 / POLR2F / SNRPA / POLR2H / FAM50A / LSM8 / PUF60 / ALYREF / ZCRB1 / SNRPC / SF3B4 / LSM7 / ZMAT5 / RNF113A / TXNL4A / BUD31 / SNRPF / U2AF2 / SNRPB / SNRPG / MAGOHB / SNRPD1 / RBM42 / NKAP / SNU13 / RBM8A / SF3B6 / SAP18 / POLR2E / SNRPA1 / POLR2L / LSM3 / PPIL1 / POLR2G / TCERG1 / HNRNPC / RNPS1 / SRSF9 / HNRNPR / LENG1 / SNRNP27 / SF3B5 / DDX41 / SUGP1 / NCBP2 / SRSF3 / RBM17 / HNRNPA3 / PQBP1 / SDE2 / MAGOH / PRKRIP1 / CWC27 / SRSF2 / PPIH / PHF5A / U2AF1L4 / GPKOW / HTATSF1 / HNRNPA2B1 / CWC15 / SRSF10 / FAM32A / UPF3B / PRPF3 / HNRNPL / PCBP1 / C9orf78 / SNRNP48 / GTF2F2 / PRPF31 / CCAR1 / PCBP2 / DNAJC8 / POLR2C / SYF2 / YBX1 / PTBP1 / HNRNPH1 / STEEP1 / POLR2D / GPATCH1 / SRSF7 / TRA2B / SF3A2 / IK / RBM39 / MFAP1 / YJU2 / SRSF11 / HNRNPU / USP39 / LSM6 / PRPF4 / HNRNPD / SNRPB2 / BUD13 / SRSF4 / CCDC12 / HNRNPA1 / PRPF18 / SNRNP35 / BCAS2 / RBM22 / LUC7L3 / HNRNPH2 / ZRSR2
INTERLEUKIN 4 AND INTERLEUKIN 13 SIGNALING	MMP1 / MMP3 / MUC1 / LCN2 / BIRC5 / CCL11 / IL13RA2 / MMP9 / CCL22 / COL1A2 / IL23R / SOX2 / TWIST1 / IL12B / F13A1 / IGHE / ALOX15 / CXCL8 / TIMP1 / ITGAX / IL6 / LAMA5 / ICAM1 / IL2RG / ANXA1 / TGFB1 / ITGB2 / ITGAM / OSM / NANOG / JAK3 / HIF1A	MUC1 / FOS / IL6 / PTGS2 / SOCS3 / IL1B / IL13RA2 / CCL22 / OSM / CCL2 / IGHG4 / IGHG1 / IL10 / FCER2 / HGF / HMOX1 / IGHE / ANXA1 / JUNB / VIM / TNF / FOXO1 / CXCL8 / ALOX5 / MYC / PIM1 / IL12B / FSCN1 / BCL6 / HIF1A / IL23A / CD36 / MAOA / CCND1 / IRF4 / STAT3 / GATA3 / JAK2 / NANOG / POMC / JAK1 / RORA / IL13 / LIF / IL1A / LAMA5
SIGNALING BY RHO GTPASES MIRO GTPASES AND RHOBTB3	MUC13 / STMN2 / SFN / SKA1 / CENPA / TUBB3 / SPC25 / IQGAP3 / TUBA3D / BIRC5 / ANLN / CCNE1 / NUF2 / TUBAL3 / BUB1B / LRRC1 / CDC20 / PLK1 / CENPK / DIAPH3 / ERCC6L / RHOV / CENPF / CENPM / KIF2C / CDC25C / H2BC17 / CDCA8 / NDC80 / ECT2 / H2AC14 / RHOF / BAIAP2L2 / CENPO / BUB1 / H4C13 / DEPDC1B / TUBA3E / FAM83B / WIPF3 / SEMA4F / DYNC1I1 / KIF18A / DLG5 / H2BC13 / ARHGAP11A / AURKB / PCDH7 / CENPI / PLEKHG4 / H3C2 / H3C3 / NOX1 / CCDC187 / CIT / CENPS / H2BC26 / H2BC9 / DBN1 / KIF14 / H2BC14 / SPC24 / RACGAP1 / H3C10 / PAK3 / ZWINT / ARHGEF39 / MAD2L1 / NHS / CENPL / H2AC4 / CENPH / NCF2 / H3C13 / SGO1 / H2AX / H2BC15 / H4C6 / H2BC10 / SGO2 / CENPE / H3C11 / H4C9 / S100A9 / H2BC3 / PKN3 / H3C1 / RHOH / H3C12 / FRS3 / H2BC21 / H3C8 / H4C1 / H2AC7 / H2BC8 / PRC1 / TRIP10 / TIAM2 / KLC2 / KNL1 / H2BC11 / OBSCN / CHN1 / SPDL1 / H2BC7 / GIT1 / RHOQ / ARHGAP39 / CAV1 / CKAP4 / CENPU / H2BC12 / FMNL1 / JAG1 / ARHGEF16 / H2AC8 / LMNB1 / H3C7 / RAB9B / PLEKHG4B / RHOBTB1 / ARHGAP33 / LIMK1 / MYO19 / H4C8 / TFRC / H2BC6 / ARHGAP22 / SRC / YKT6 / FGD1 / FMNL3 / RASGRF2 / B9D2 / PLIN3 / NIPSNAP2 / YWHAZ / CDC42EP5 / GRB7 / FLNA / NDE1 / ARPC1B / RHPN1 / IL32 / ARHGAP18 / ABR / ARHGAP28 / ZWILCH / RCC2 / DSG2 / TPM4 / KCTD13 / CAVIN1 / H2BC5 / OPHN1 / MAPK11 / CKB / MYL9 / RAC2 / PPP1R14A / ARHGEF2 / SCRIB / WASF1 / CPD / TUBA4A / H4C4 / CYBA / PFN2 / MCAM / SH3BP1 / PAK1 / TPM3 / PRAG1 / ARHGAP6 / H4C16 / STIP1 / SHKBP1 / ARHGAP27 / ITGB3BP / ARHGEF25 / HGS / KIF2A / SWAP70 / ARHGEF5 / ARHGAP9 / RHOC / ARHGAP44 / CCDC88A / CEP97 / PLXNA1 / INCENP / ARHGEF3 / GMIP / HSP90AB1 / LCK / NUP37 / SLITRK5 / WIPF1 / TUBA1B / ARHGAP40 / NCF4 / WIPF2 / CCT6A / TUBA4B / DVL2 / VAV3 / TUBA1A / ABI2 / ARPC5 / WASF2 / DEF6 / CDC42EP3 / RASAL2 / ARHGEF28 / TAGAP / MCF2L / RAC1 / PKN1 / CFL1 / CENPQ / DVL3 / RALBP1 / GJA1 / KNTC1 / PEAK1 / SRGAP3 / TMPO / BAIAP2L1 / NOXO1 / KLC1 / PRKCD / ARHGDIB / MAPRE1 / DYNLL1 / NCF1 / ARHGEF11 / YWHAH / ARHGAP15 / EFHD2 / MCF2 / SLC1A5 / ARHGEF18 / ZAP70	H3C2 / H2BC3 / H3C13 / CDC25C / MUC13 / H3C3 / SPC25 / H4C13 / H2BC17 / H3C11 / H2BC11 / CENPF / H4C1 / H3C10 / SPC24 / H2BC15 / H3C1 / SKA1 / H3C12 / TUBA3D / CENPA / CENPM / CENPU / H2AC4 / SGO1 / H2BC10 / NUF2 / CENPL / H2BC13 / BIRC5 / AURKB / H2BC12L / TUBA4B / H2BC12 / KIF14 / MAD2L1 / H2BC8 / ECT2 / CCDC187 / H3C8 / CENPO / H2BC9 / H2AC7 / H2BC21 / ERCC6L / H2BC14 / IL32 / PARD6A / CENPI / BUB1B / TAX1BP3 / H4C9 / H2BC6 / H3C6 / CDC20 / DEPDC1B / PLK1 / CENPK / CENPP / KIF2C / H4C8 / IQGAP3 / H2AC8 / CDCA8 / BUB1 / KLK2 / GOLGA8R / CENPH / H2BC7 / BAIAP2L2 / ZWINT / H4C4 / SPDL1 / ARHGAP11A / RPS27 / STIP1 / SFN / DIAPH3 / PRC1 / DYNLL1 / H2BC5 / EMD / ANLN / H2AC14 / H2AX / HSPE1 / ARHGEF39 / H2AZ2 / H4C2 / NDC80 / RACGAP1 / H3-3A / BCAP31 / H3C7 / ARPC5 / LMNB1 / RHOF / ATP6AP1 / PLEKHG4 / TMPO / ARHGAP6 / CENPN / TFRC / H2AC6 / RASGRF2 / PIN1 / H2AC20 / HINT2 / SGO2 / ITGB3BP / PPP2R5A / ARHGEF16 / STBD1 / TPM3 / PAK3
DRUG ADME	CYP2C19 / UGT2B17 / NAT2 / SLCO1B3 / PCK1 / CYP2C9 / ADH1A / UGT2B10 / CYP2C8 / GLYAT / ALB / CYP2E1 / SLC22A7 / ACSM5 / HSD11B1 / GLYATL1 / UGT2B7 / SULT2A1 / GSTA2 / BCHE / XDH / ACSM2A / UGT1A3 / UGT1A4 / ACSM2B / PON3 / ADK / PON1 / SLCO1B1 / GLYATL2 / CYP3A4 / UGT3A2 / SLCO2B1 / ACY1 / SLC22A2 / SULT1A1 / UGT2B15 / GGT6 / SLC22A1 / UGT1A1 / GSTA1 / SLC22A3 / SULT1E1 / SERPINA6 / UGT2B28	CYP2C19 / NAT2 / CYP3A4 / SLCO1B3 / GLYATL3 / GGT5 / SLC28A3 / CYP2E1 / CYP2C8 / GGT6 / CYP2C9 / GLYATL2 / SLCO1A2 / XDH / PCK1 / SULT1E1 / GLYATL1 / GLYAT / ACSM2B / GSTP1 / ACSM2A / SULT1A1 / SULT2A1 / SLC29A2 / ACSM5 / UGT1A3 / ADH1A / ABCG2 / ACY1 / VAV1 / SLC22A7 / SULT1C4 / PON3 / UGT1A5 / GSTA1 / ALB
EPIGENETIC REGULATION OF GENE EXPRESSION	UHRF1 / EZHIP / H2BC17 / H2AC14 / H4C13 / EZH2 / ZNF257 / H2BC13 / H3C2 / H3C3 / H2BC26 / ZNF610 / H2BC9 / H2BC14 / H3C10 / DPF1 / LPL / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / ZNF454 / H3C11 / H4C9 / ZNF320 / TET1 / H2BC3 / PIWIL4 / H3C1 / H3C12 / H2BC21 / H3C8 / H4C1 / H2AC7 / PHF19 / H2BC8 / H2BC11 / H2BC7 / CIDEC / H2BC12 / KAT2A / H2AC8 / DNMT3A / H3C7 / DNMT1 / H4C8 / H2BC6 / TAF1A / YEATS2 / ZNF816 / DNMT3B / POLR1G / CHD3 / H2BC5 / ZNF93 / EHMT2	H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / UHRF1 / H4C1 / H3C10 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / POLR2K / FABP4 / H4C8 / H2AC8 / H2BC7 / H4C4 / LPL / H2BC5 / TASP1 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR1H / GTF2H5 / H3-3A / H3C7 / POLR2F / POLR2H / SAP30L / H2AC6 / DPF1 / DPY30 / H2AC20 / CDK5 / EZHIP / DR1 / H2BC4 / EZH2 / SUMO2 / H4C6 / CBX3 / SCD / SAP18 / POLR2E / POLR1G / H4C16 / TBP / ADIPOQ / POLR2L / BOD1 / H4C3 / DEK
EXTRACELLULAR MATRIX ORGANIZATION	MMP12 / MMP1 / MMP3 / SPP1 / COL11A1 / MMP11 / ITGA3 / ITGB4 / ITGA2 / SCUBE1 / IBSP / VCAN / MMP7 / MFAP5 / LAMC2 / COL10A1 / MMP9 / LOXL4 / CTSV / COL7A1 / ADAM12 / COMP / ACAN / COL1A1 / ADAMTS8 / MATN3 / MMP13 / COL9A1 / BCAN / LAMA3 / CAPN12 / CAPN6 / CAPN8 / ITGB6 / COL15A1 / ITGAE / COL1A2 / TLL1 / DDR1 / DTNA / LOXL2 / LAMA4 / CTSK / LOX / CAPN13 / COL2A1 / TGFB2 / COL5A1 / ADAMTS9 / ADAMTS16 / MMP17 / FBN3 / COL8A1 / ICAM5 / MMP14 / LAMB3 / COL5A2 / COL3A1 / ADAMTS14 / KLK7 / ICAM4 / SPOCK3 / MFAP2 / BMP4 / LOXL1 / MATN1 / MMP16 / EFEMP1 / CD44 / PRSS2 / SGCZ / MMP10 / MMP24 / COL4A2 / PDGFA / BMP7 / CTSD / TNC / CEACAM6 / COL4A1 / COL6A3 / ACTA2 / TIMP1 / COL24A1 / ITGAX / P4HA2 / ADAMTS5 / BMP2 / ITGA6 / ADAM9 / ADAM8 / LAMA5 / LAMC1 / TGFB3 / LTBP2 / MMP25 / COL13A1 / ICAM1 / COL23A1 / FBN1 / TLL2 / ITGAV / SGCG / CAPN2 / NID2 / SCUBE3 / COL9A3 / SPARC / PLOD3 / COL16A1 / ITGA11 / COL22A1 / ITGB3 / FBLN2 / CD151 / TGFB1 / ITGB2 / AGRN / ITGA2B / ITGA10 / COL12A1 / ITGAM / PLEC / PDGFB / CRTAP / EMILIN2 / BSG / LUM / COL6A2 / LAMB1 / SSPN / PRSS1 / VWF / COL8A2	BMP10 / ELANE / CEACAM6 / COL6A6 / COL25A1 / CAPN6 / COL19A1 / MFAP4 / CAPN3 / NCAM1 / DCN / COL10A1 / NRXN1 / TNXB / CMA1 / ADAMTS1 / LAMA1 / SGCD / CTSG / TNC / TNN / SGCA / NTN4 / LTBP4 / P3H2 / LTBP1 / ADAMTS4 / THBS1 / ITGAD / BGN / EMILIN1 / MMP19 / MUSK / TPSAB1 / PTPRS / ITGA9 / MMP8 / LAMC3 / SPOCK3 / COLGALT2 / FBLN5 / PLEC / FBN2 / CTSV / FMOD / MATN4 / P3H3 / ADAMTS9 / COL9A2 / SERPINE1 / COL13A1 / LAMA2 / LAMC2 / COL16A1 / NID2 / LAMB1 / HAPLN1 / SNTG2 / DST / PXDN / P4HA3 / KLKB1 / PLG / COL26A1 / DMD / ASPN

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
VESICLE MEDIATED TRANSPORT	SFN / SH3GL3 / TUBB3 / GJA10 / TUBA3D / EGF / TUBAL3 / KIF4A / EREG / KIF18B / DNAJC6 / KIF2C / KIFC1 / KIF20A / COL7A1 / COLEC12 / SYT8 / TUBA3E / COL1A1 / DYNC1I1 / KIF18A / KIF23 / CHMP3 / KIAA0319 / IGLV3-25 / COL1A2 / GRK3 / RAB27B / FOLR1 / KIFC2 / KDELR3 / RACGAP1 / KIF15 / IGKV4-1 / AREG / CYTH3 / KIF21B / IGHA2 / CLVS2 / PAFAH1B3 / SEC31B / COL3A1 / CENPE / RAB38 / S100A9 / KIF11 / GJC1 / PRKAA2 / RAB33A / SGIP1 / TRIP10 / KLC2 / COL4A2 / CD3D / BICD1 / COL4A1 / CD55 / KIF26B / AP1M2 / RHOQ / SYT1 / IGLV2-23 / GJA3 / RAB9B / IGKV1D-16 / PRKAG1 / COPS7B / PRKAB1 / TFRC / SYTL1 / CTSC / SRC / IGHV3-7 / YKT6 / HYOU1 / PLIN3 / SORT1 / YWHAZ / RIN1 / TBC1D2	MARCO / STAB2 / IGHA2 / JCHAIN / IGHV4-59 / CD5L / IGHV4-39 / IGHV2-70 / IGHA1 / SH3GL2 / IGHV1-46 / IGHV4-34 / RAB36 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / CHRM2 / IGKV1-17 / IGLV1-44 / KIF19 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / EREG / IGLV6-57 / ANK3 / SYT9 / KIF12 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / AREG / IGHV3-13 / AMPH / RAB27B / IGLV3-25 / IGKV2D-40 / SSC5D / PLA2G4A / F8 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / FCHO1 / IGKV4-1 / IGLV2-23 / COLEC11 / MAN1C1 / IGHV3-30 / IGLV3-27 / IGHV3-7 / IGHV3-23 / AP1G2 / IGKV3-15 / IGLV2-14 / CFTR / IGKV1D-16 / SPTBN2 / IGHV3-48 / CD163 / MASP1 / IGLV1-47 / IGKV1-5 / CD4 / TUBB6 / IGKV3-11 / TGFA / IGLV1-40 / IGLV3-1 / GJD3 / KIF4B / DENND2A / KLC4 / IGKV3D-20 / HBEGF / IL7R / STAB1 / RAB38 / IGLC3 / KIF3C / TRIP10 / DENND1C / GOLGB1 / GJA4 / RAB9B / KIF1A / KIF13B / DENND3 / ALS2 / TUBB1 / DYNC1H1 / RIN1 / DENND2D / CD36 / PRKAG2 / SEC24B / RIN2 / MIA2 / PACSIN3 / TUBA1A
SIGNALING BY RECEPTOR TYROSINE KINASES	VGF / TNS4 / SPP1 / SHC3 / COL11A1 / ATP6V1E2 / SH3GL3 / ATP6V0D2 / ITGA3 / ITGA2 / FAM83A / GABRG2 / ATP6V1C2 / ATP6V0A4 / EGF / LAMC2 / EREG / MMP9 / NRG4 / CHEK1 / MDK / ADAM12 / SPINT1 / ATP6V1B1 / GABRB2 / FAM83B / SPHK1 / COL1A1 / ITPR3 / CDK5R1 / MUC20 / COL9A1 / LAMA3 / CDK5R2 / THBS4 / COL1A2 / MST1R / LAMA4 / FGF8 / COL2A1 / HRAS / MAPK12 / PAK3 / COL5A1 / AREG / NCF2 / PRKACG / GABRQ / VEGFD / KITLG / FGF19 / THBS2 / LAMB3 / COL5A2 / COL3A1 / FAM83D / FRS3 / PCSK5 / GABRG3 / BDNF / NRG2 / MAPK13 / COL4A2 / PDGFA / STMN1 / CTSD / GRAP2 / COL4A1 / COL6A3 / PTPRO / VEGFC / COL24A1 / CAV1 / TPH1 / FGF1 / IGF1R / KL / LAMA5 / THEM4 / LAMC1 / S100B / RRAD / DNMT1 / SRC / SPRED1 / FLRT1 / GRB7 / DUSP4 / ITGAV / IL2RG / PDGFRB / ANOS1 / COL9A3 / SPARC	FOSB / COL6A6 / FOS / ESRP1 / FOSL1 / FAM83B / SH3GL2 / PTN / CXCL12 / IGF2 / FGF23 / CILP / EGR3 / EGR2 / GABRB3 / CMA1 / NTF3 / EREG / ID1 / LTK / LAMA1 / GALNT3 / PDGFRA / F3 / ARC / AREG / ID4 / SPINT2 / THBS1 / NRG3 / HGF / EGR1 / NTRK3 / VEGFD / PTPRS / IGF1R / PGR / AXL / LAMC3 / S100B / JUNB / GFAP / FAM83A / TGFBR3 / ESR1 / NOS3 / DUSP4 / TPH1 / GRAP / PRKCB / RIT2 / TGFA / MYC / COL9A2 / FLT3 / SHC3 / HBEGF / DUSP6 / PTK2B / LAMA2 / PRDM1 / LAMC2 / ID3 / LAMB1 / PTPRO / ITPR2 / FLRT2 / ASCL1 / ALKAL1 / FGF1 / FGF3 / NCKAP1L / TRIB1 / HIF1A / NGF / SGK1 / BDNF / CD274 / VAV1 / FES / PLG / TIAM1 / PRR5 / CYBA / FLT4 / FGFR1 / SH2D2A / PIK3C3 / COL6A3 / POLR2A / GABRB1 / NCOR1 / RRAD / NRP2 / HGFAC / FGF8 / IGF1 / IRS2 / STAT3 / ALKAL2 / COL4A4 / DOCK1 / JAK2 / PIK3R4 / CYBB / FGFBP2 / KIT / LAMB2 / EPGN / PIK3CA
SIGNALING BY NUCLEAR RECEPTORS	MMP3 / SDR16C5 / GNG4 / MMP7 / FABP6 / EGF / EREG / MMP9 / H2BC17 / H2AC14 / H4C13 / GNGT1 / SPHK1 / H2BC13 / H3C2 / H3C3 / FABP5 / H2BC26 / H2BC9 / H2BC14 / H3C10 / HRAS / AREG / H2AC4 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / H3C11 / H4C9 / H2BC3 / H3C1 / H3C12 / H2BC21 / H3C8 / AKR1C3 / H4C1 / H2AC7 / H2BC8 / H2BC11 / RXRG / CTSD / H2BC7 / KPNA2 / CYP26B1 / CAV1 / CRABP2 / IGF1R / H2BC12 / H2AC8 / H3C7 / H4C8 / H2BC6 / SRC	MMP3 / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / FABP6 / H2BC15 / H3C1 / H3C12 / H2AC4 / H2BC10 / H2BC13 / H2BC12L / H2BC12 / H2BC8 / H3C8 / H2BC9 / H2AC7 / SDR16C5 / H2BC21 / H2BC14 / H4C9 / H2BC6 / H3C6 / PDHA2 / GNG10 / POLR2K / H4C8 / CYP26C1 / AKR1C3 / H2AC8 / GNG5 / H2BC7 / EGF / H4C4 / PDK1 / POLR2J / FABP5 / DLAT / H2BC5 / H2AC14 / H2AX / H2AZ2 / H4C2 / POLR2I / KPNA2 / H3-3A / H3C7 / POLR2F / HSPB1 / POLR2H / H2AC6 / H2AC20 / PTGES3 / GTF2A2 / GNB1 / H2BC4 / GNB5 / USF1 / NR1H2 / AGO2 / H4C6 / RDH13 / PPARD / EBAG9 / SCD / SHC1 / POLR2E / H4C16 / ATF2 / PIK3R3 / APOC1 / HSP90AB1 / APOE / TBP / NRAS / POLR2L / H4C3
MITOTIC G2 G2 M PHASES	TUBB3 / NEK2 / TUBA3D / TUBAL3 / HJURP / FOXM1 / PKMYT1 / CCNB2 / GTSE1 / PLK1 / CENPF / MYBL2 / CDK1 / CDC25C / TUBA3E / CCNB1 / CCNA2 / E2F1 / HMMR / TICRR / TPX2 / AURKA / SGO1 / BORA / PLK4 / CDC25A / CDC25B / CEP72 / FBXL18 / CEP290 / NDE1 / CEP131 / CPAP / TUBG2 / LIN9 / CEP164 / TUBA4A / FBXL7 / CEP41 / CEP152 / TUBG1 / HSP90AB1 / TUBA1B / SFI1 / TUBA4B / TUBA1A / MZT1	CDC25C / NEK2 / CENPF / CCNB2 / CDK1 / CCNA2 / TUBA3D / SGO1 / TUBA4B / CCNB1 / MYBL2 / CDC25A / HMMR / AURKA / PLK1 / TPX2 / HJURP / UBA52 / PKMYT1 / DYNLL1 / CEP72 / PSMA6 / TICRR / CETN2 / BORA / SSNA1 / E2F1 / GTSE1 / CEP41 / TUBB2A / PPP2CA / NDE1 / MZT1 / MZT2B / HSP90AB1 / DCTN3 / RBX1 / FBXL18 / DCTN2 / FOXM1 / OPTN / PSMD7 / PSMD8 / TUBB4A / MZT2A / TUBA3E / PSMB4 / TUBA1B / YWHAG / FBXL7 / RPS27A / LIN54 / LCMT1 / LIN52 / MNAT1 / CCNA1 / FKBPL / TUBA4A / LIN9 / CEP131 / TUBG1 / CDC25B
PROCESSING OF CAPPED INTRON CONTAINING PRE MRNA	SRSF12 / SARNP / DDX39A / NUP210 / LUZP4 / SF3B4 / SF3A2 / SNRPD1 / TXNL4A / EIF4A3 / SNRPB / CPSF4 / PPIL1 / NUP37 / NUP62 / LSM4 / ALYREF / PRCC / SNRPA1 / NUP205 / SNRPA / TCERG1 / POLR2H / NCBP2 / SNRNP48 / CSTF2 / PRKRIP1 / NDC1 / EFTUD2 / FAM50A / LSM8 / LSM7 / NUP93 / THOC1 / POLR2K / BUD13 / NUP42 / TFIP11 / RAE1 / CCAR1 / POLR2G / THOC6 / U2SURP / PUF60 / SNRNP70 / LSM2 / RNPS1 / NUP107 / SNRPC / MFAP1 / RNPC3 / SNRPN / WTAP / NUP155 / PRPF3 / SNRPE / PHF5A / RBM42 / THOC5 / DDX23 / UPF3B / HNRNPA1 / GTF2F2 / LSM5 / NXT1 / USP39 / DHX8 / POM121 / PPIH / GTF2F1 / HNRNPR / FUS / POM121C / U2AF2 / DDX41 / TPR / SLBP / METTL3 / CACTIN / SYF2 / BUD31 / CPSF6 / SART1 / PQBP1 / HNRNPA3 / SNU13 / NKAP / THOC2 / NUP133 / STEEP1 / NUP43 / NUP85 / SNRPD2 / CPSF2 / ZCRB1 / NUP188 / NUP153 / SRSF9 / HNRNPL / SF3A3 / HNRNPU / POLR2J / DHX9 / CPSF1 / RBM22 / RBM17 / YJU2 / CPSF3 / PPP1CB / ZMAT2 / PRPF19 / CHTOP / CASC3 / HNRNPC / RBM25 / SRSF2 / PPIL2 / U2AF1L4 / SUGP1 / HNRNPH1 / SF3B2 / SDE2 / HTATSF1 / PPP1CA / PAPOLA / RNF113A / CLP1 / POLR2B / PRPF6 / RBM8A / RBMX2 / CWC27 / SNRNP40 / SRSF11 / IK / SF3A1 / SLU7 / SF3B6 / SMNDC1 / HNRNPM / SRSF3 / RPS27A / PRPF40A	SRSF12 / SNRPD2 / SNRPE / POLR2K / LSM2 / POLR2J / UBA52 / LSM4 / PRCC / UBL5 / LSM5 / DDX39A / SNRNP25 / POLR2I / ZMAT2 / ISY1 / POLR2F / SNRPA / POLR2H / FAM50A / LSM8 / PUF60 / ALYREF / ZCRB1 / SNRPC / SF3B4 / LSM7 / CHTOP / ZMAT5 / THOC3 / RNF113A / TXNL4A / SLBP / BUD31 / SNRPF / NUP210 / U2AF2 / CPSF4 / SNRPB / SNRPG / MAGOHB / SNRPD1 / RBM42 / NKAP / SNU13 / RBM8A / SF3B6 / CSTF2 / NUP62 / SAP18 / POLR2E / SNRPA1 / POLR2L / LSM3 / PPIL1 / POLR2G / TCERG1 / HNRNPC / RNPS1 / SRSF9 / HNRNPR / LENG1 / SNRNP27 / SF3B5 / RPS27A / DDX41 / SUGP1 / NCBP2 / NUP42 / SRSF3 / RBM17 / PPP1CA / HNRNPA3 / PQBP1 / SDE2 / MAGOH / PRKRIP1 / CWC27 / SRSF2 / THOC7 / PPIH / PHF5A / U2AF1L4 / GPKOW / NUDT21 / HTATSF1 / POM121 / HNRNPA2B1 / CWC15 / SRSF10 / FAM32A / NDC1 / WTAP / UPF3B / NXT1 / PRPF3 / EIF4E / HNRNPL / PCBP1 / C9orf78 / SNRNP48 / NUP58 / GTF2F2 / PRPF31 / CCAR1 / PCBP2 / LUZP4 / DNAJC8 / POLR2C / SYF2 / YBX1 / POM121C / PTBP1 / HNRNPH1 / STEEP1 / POLR2D / GPATCH1 / SRSF7 / TRA2B / SF3A2 / IK / RBM39 / CPSF6 / MFAP1 / YJU2 / METTL3 / SRSF11 / UBC / HNRNPU / USP39 / LSM6 / PRPF4 / HNRNPD / SNRPB2 / SEC13 / BUD13 / SRSF4 / CCDC12 / NUP35 / HNRNPA1 / PRPF18 / SNRNP35 / BCAS2 / RBM22 / LUC7L3 / HNRNPH2 / ZRSR2 / CSTF3
SIGNALING BY NTRKS	VGF / SHC3 / SH3GL3 / CDK5R1 / CDK5R2 / HRAS / MAPK12 / FRS3 / PCSK5 / BDNF / MAPK13 / PTPRO / TPH1 / RRAD / SRC / DUSP4 / MAPK11 / MAPKAPK3 / ASCL1 / NRAS / RALA / GRIN2B / RALGDS / DUSP7 / CDK5 / DNM3 / RAC1 / NTRK1 / RIT2 / RPS6KA1 / RIT1 / CHD4 / MEF2D / MAPK7 / MAPK3 / MAPKAPK2 / GRB2 / NGF / SHC1 / BAX	FOSB / FOS / FOSL1 / SH3GL2 / EGR3 / EGR2 / NTF3 / ID1 / F3 / ARC / ID4 / EGR1 / NTRK3 / PTPRS / JUNB / DUSP4 / TPH1 / RIT2 / SHC3 / DUSP6 / ID3 / PTPRO / ASCL1 / TRIB1 / NGF / SGK1 / BDNF / TIAM1 / RRAD / IRS2 / STAT3 / PIK3CA / GAB1 / MAP2K1 / MAPK7 / ADCYAP1R1 / AP2A2
MRNA 3 END PROCESSING	SRSF12 / SARNP / DDX39A / LUZP4 / SF3B4 / SF3A2 / SNRPD1 / EIF4A3 / SNRPB / CPSF4 / ALYREF / SNRPA1 / SNRPA / TCERG1 / POLR2H / NCBP2 / CSTF2 / THOC1 / POLR2K / CCAR1 / POLR2G / THOC6 / U2SURP / PUF60 / SNRNP70 / RNPS1 / SNRPC / SNRPN / SNRPE / PHF5A / THOC5 / UPF3B / HNRNPA1 / GTF2F2 / GTF2F1 / HNRNPR / FUS / U2AF2 / CPSF6 / HNRNPA3 / THOC2 / SNRPD2 / CPSF2 / SRSF9 / HNRNPL / SF3A3 / HNRNPU / POLR2J / DHX9 / CPSF1 / RBM17 / CPSF3 / PPP1CB / CHTOP / CASC3 / HNRNPC / RBM25 / SRSF2 / U2AF1L4 / SUGP1 / HNRNPH1 / SF3B2 / HTATSF1 / PPP1CA / PAPOLA / CLP1 / POLR2B / RBM8A / SRSF11 / SF3A1 / SLU7 / SF3B6 / SMNDC1 / HNRNPM / SRSF3 / RPS27A / PRPF40A	SRSF12 / SNRPD2 / SNRPE / POLR2K / POLR2J / UBA52 / DDX39A / POLR2I / POLR2F / SNRPA / POLR2H / PUF60 / ALYREF / SNRPC / SF3B4 / CHTOP / THOC3 / SNRPF / U2AF2 / CPSF4 / SNRPB / SNRPG / MAGOHB / SNRPD1 / RBM8A / SF3B6 / CSTF2 / POLR2E / SNRPA1 / POLR2L / POLR2G / TCERG1 / HNRNPC / RNPS1 / SRSF9 / HNRNPR / SF3B5 / RPS27A / SUGP1 / NCBP2 / SRSF3 / RBM17 / PPP1CA / HNRNPA3 / MAGOH / SRSF2 / THOC7 / PHF5A / U2AF1L4 / NUDT21 / HTATSF1 / HNRNPA2B1 / SRSF10 / UPF3B / HNRNPL / PCBP1 / GTF2F2 / CCAR1 / PCBP2 / LUZP4 / DNAJC8 / POLR2C / YBX1 / PTBP1 / HNRNPH1 / POLR2D / SRSF7 / TRA2B / SF3A2 / RBM39 / CPSF6 / SRSF11 / UBC / HNRNPU / HNRNPD / SNRPB2

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
O LINKED GLYCOSYLATION	MUC13 / GALNT5 / MUC1 / MUC3A / MUC5AC / B3GNT4 / MUC5B / MUC12 / SBSPON / MUC16 / ADAMTS8 / MUC20 / B3GNT3 / ADAMTS20 / MGAT5B / GALNT13 / B3GNT5 / GALNT7 / ADAMTS9 / ADAMTS12 / ADAMTS16 / GCNT3 / THBS2 / GALNTL6 / ADAMTS14 / SPON2 / ST6GALNAC4 / MUC15 / ADAMTS5 / ADAMTS10 / SLC35A4 / ST3GAL4 / EMID1 / B4GALT6 / ADAMTSL5 / GALNT10 / ADAMTS15 / ST3GAL2 / GALNT18 / B3GNT8 / LARGE2 / THSD7A	MUC5B / MUC6 / MUC1 / ADAMTS13 / CFP / ADAMTS1 / GALNT3 / MMRN1 / MUC3A / ADAMTS4 / THBS1 / CHST4 / GALNT16 / GALNT14 / MGAT5B / ADAMTSL2 / SBSPON / B3GNT7 / B3GNT4 / ADAMTSL3 / ADAMTS15 / ADAMTS9 / SPON1 / ST6GALNAC3 / B3GNT9
VIRAL INFECTION PATHWAYS	HAVCR1 / GPC3 / SFN / TUBB3 / NEK2 / TUBA3D / TUBAL3 / MMP9 / H2AC13 / ANO4 / ATP1A3 / H2BC17 / H2AC14 / ANO9 / RPL36A / GPC2 / H2AC12 / H2AC25 / H4C13 / EZH2 / H2AC16 / TUBA3E / DYNC1I1 / H2BC13 / CHMP3 / H3C2 / IGLV3-25 / H3C3 / ELAVL2 / H2BC26 / GPC5 / H2BC9 / H2BC14 / TLR7 / H3C10 / IGKV4-1 / H2AC17 / H2AC4 / H3C13 / LY96 / TUSC3 / H2BC15 / H4C6 / HMGA1 / CD8B / H2BC10 / RCAN3 / H3C11 / H4C9 / H2AC15 / H2BC3 / IKBKE / H3C1 / PDCD1 / H3C12 / IFNA6 / ANO3 / H2AC11 / H2BC21 / H3C8 / CYSLTR1 / DNAJC10 / H4C1 / H2AC7 / IMPDH1 / H2BC8 / ZDHHC11 / ANO7 / ST6GALNAC4 / H2BC11 / CAMK2A / H2BC7 / RIPK2 / KPNA2 / MGAT4C / AP1M2 / P4HA2 / CAV1 / KPNA7 / PPIL6 / RPL22L1 / IGF1R / H2BC12 / IGLV2-23 / H2AC8 / H3C7 / TYRO3 / IGKV1D-16 / FEN1 / MGAT5 / H4C8 / H2BC6 / ST3GAL4 / IGHV3-7 / HYOU1 / YWHAZ / TRAF3 / MLKL / PACS1 / BAG2 / NELFE / CHMP4C / IFNA14 / CHD3 / NOD1 / IGLC3 / ST3GAL2 / CLEC5A / NUP210 / BRMS1 / MGAT4A / H2BC18 / SYK / H2BC5 / TGFB1 / IGHV3-11 / AGRN / CDK19 / HSPA1B / H2AC21 / RCC1 / PYCARD / CD28 / JAK3 / SF3B4 / IRAK1 / TUBA4A / H4C4 / STING1 / PML / ZBP1 / CGAS / SF3A2 / ATP1B3 / SNRPD1 / TXNL4A / H4C16 / MAP1B / MED9 / TAF6 / DNAJB11 / EIF4A3 / SNRPB / MED17 / CPSF4 / PPIL1 / IFNGR2 / SRPK1 / TAF10 / HSP90AB1 / LCK / NUP37 / TUBA1B / DAXX / NUP62 / TUBA4B / DPM2 / TUBA1A / ST6GALNAC2 / ALYREF / RAC1 / ELOC / FNTB / MED10 / PRCC / CXCR4 / AP1S1 / FUT8 / PARP6 / GJA1 / RPL8 / SNRPA1 / FXYD7 / HSPA1A / CCR5 / PHF21A / IMPDH2 / STT3A / NEDD4L / RPN2 / RPL30 / NUP205 / VPS41 / CD2BP2 / SAP30 / ATP1B1 / IGHV3-23 / DYNLL1 / POLR2H / NCBP2 / YWHAH / MED15 / CSTF2 / ATP6V1H / NDC1 / DDOST / CBX1 / TLR8 / GTF2H1 / TLR6 / RAN / CHD4 / TUBA1C / PPIA	GPC3 / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / RPL39L / NEK2 / H2BC11 / HAVCR1 / FXYD3 / H4C1 / H3C10 / H2AC16 / H2AC12 / RPL22L1 / H2BC15 / H3C1 / H2AC11 / H3C12 / IFNA6 / TUBA3D / H2AC4 / ELOA2 / H2BC10 / H2BC13 / H2AC17 / ELOC / TUBA4B / H2BC12 / RPL36A / H2BC8 / RPL30 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / RPL8 / HMGA1 / LY96 / SNRPD2 / H4C9 / H2BC6 / H3C6 / RPL10L / SNRPE / H2AC15 / POLR2K / RPL39 / H4C8 / IKBKG / RPL7 / H2AC8 / H2BC7 / H2BC18 / VPS28 / RPS21 / RPL28 / RPS5 / RPS17 / H4C4 / H2AC13 / POLR2J / UBA52 / RPS27 / DPM2 / RPL38 / SFN / NELFE / RPS11 / SDC2 / DYNLL1 / RPS28 / H2BC5 / H2AC21 / PRCC / RPS20 / RPS14 / CHMP2A / RPS19 / PPIA / RPS16 / H2AC14 / RPS15 / FXYD7 / CANX / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / AP1S1 / RPS23 / H4C2 / SPCS1 / HLA-A / SUPT4H1 / MAP1LC3B / DPM3 / RPLP1 / POLR2I / TCEA1 / KPNA2 / DNAJB11 / ATP1A3 / RPL36 / GTF2H5 / TAF10 / RANBP1 / RPS24 / P4HB / BCAP31 / HSPA5 / PRKCSH / H3C7 / ISY1 / ST6GALNAC2 / POLR2F / KDELR1 / RPS18 / RPL29 / RPLP2 / TMEM258 / RPS10 / POLR2H / RPL26L1 / GEMIN7 / IMPDH2 / MGAT4A / RPL27 / BANF1 / AP2S1 / RPL13 / FKBP1A / SAP30L / HYOU1 / HLA-G / H2AC6 / RPL18 / ELAVL2 / H2AC20 / PUF60 / HLA-F / ATP6V1H / ALYREF / BAG2 / ZDHHC9 / PTGES3 / ZCRB1 / SF3B4 / DYNLT1 / PRKG2 / OST4 / RPL10 / RPS26 / RPS29 / RPN2 / C4BPB / ANO10 / GTF2A2 / EMC4 / UBE2V1 / P4HA2 / RPL18A / LYN / TXNL4A / BUD31 / CALR / VPS37D / SNRPF / NUP210 / U2AF2 / YWHAH / H2BC4 / CD28 / CPSF4 / SNRPB / SNRPG / CLTA / PDIA3 / TUBB2A / CHMP4C / ELAVL1 / SDC1 / AGRN / SNRPD1 / RPS6 / EZH2 / IFNGR2 / GOLGA7 / RPL10A / H4C6 / SF3B6 / CHMP1A / RNASEK / SEC11C / RCC1 / CSTF2 / RPL32 / GPC5 / IFNGR1 / IRF3 / NACA / CD8B / NUP62 / RPS12 / SAP18 / PEX19 / RPL12 / YWHAZ / POLR2E / RPS8 / CHMP3 / H4C16 / BTF3 / NOD2 / MED29 / RPL21 / HSP90AB1 / SUMO1 / SRPK1 / SNRPA1 / RPS7 / RPL23A / ATP1B1 / ZDHHC3 / TBP / RBX1 / RPS4X / POLR2L / RPL27A / RPL23 / H4C3 / BRMS1 / FAU / ELOB / PPIL1 / CHMP4B / POLR2G / CDC73 / DNAJC3 / ST6GALNAC4 / DAD1 / BST2 / PSMD7 / IRAK1 / RPL19 / HNRNPC / DYNC1I1 / GEMIN6 / DDOST / ISCU / RIPK2 / RPS15A / PSMD8 / RNPS1 / SNF8 / TUBB4A / SRSF9 / TUBA3E / ATP1A4 / MVB12A / MAGT1 / RPL34 / TLR7 / HNRNPR / B2M / RTN3 / SIGMAR1 / MED30 / PSMB4 / MED22 / RPL13A / SF3B5 / H4C5 / RPS25 / TAF9 / TUBA1B / TAF12 / YWHAG / RPS27A / TAF11 / MGAT5
FATTY ACID METABOLISM	CYP2C19 / CYP1A2 / CYP1A1 / HAO2 / CYP2C9 / THRSP / CYP2C8 / CYP4A22 / CYP8B1 / EPHX2 / ACSM3 / HPGD / ACSL1 / CYP4A11 / ACAA2 / ACADL / ACAA1 / ACACB / SCP2 / ACADS / ACAD11 / CYP4F2 / PON3 / ACOT12 / EHHADH / PON1 / ACOX2 / CYP4F8 / CYP4F3 / ACADM / CYP2J2 / ECHS1 / CPT2 / MMUT / MLYCD / HADH / ACBD4 / SLC25A20 / CBR4 / ACOX1 / ACOT2 / SLC27A2 / RXRA / ACADVL / PHYH / MCEE / MMAA / PECR / PRKAG2 / FAAH / HADHB / ECI1 / ACSL5 / ACBD5 / PCCA / HACL1 / PCCB / CRAT / ACSF3 / ACSF2 / PCTP / ACOT4 / ELOVL6 / DECR1 / PTGR1 / ACOT1 / ECI2 / AMACR / HSD17B4 / CPT1A / NUDT7 / HSD17B8 / HADHA / DBI / ACAD10 / CROT / ALDH3A2 / PTGS2	CYP1A2 / PTGS2 / CYP2C19 / GGT5 / ACSM3 / PLA2G4A / CYP2C8 / ACOT11 / CYP1A1 / ACAA2 / CYP2C9 / ACSL5 / ACSBG1 / ACAA1 / HAO2 / ACACB / EPHX2 / PTGIS / PTGDS / SCD5 / ACADS / ACADL / ACOX2 / OLAH / CYP4A22 / CYP4A11 / CYP8B1 / ACSL1 / ALOX5 / DPEP2 / MMUT / EHHADH / TBXAS1 / ACAD11 / CPT2 / SCP2 / ACADM / PRKAG2 / HADHA / PON3 / ACOT2 / MLYCD / PECR / MMAA / ACOX1 / ACAD10 / CYP4F2 / ACSF2 / FAAH / CYP2J2 / ACOT12 / ACOT1 / PTGS1 / HADHB / CYP1B1
SIGNALING BY INTERLEUKINS	MMP1 / MMP3 / MUC1 / LCN2 / BIRC5 / CCL11 / IL13RA2 / MMP9 / IL22RA2 / IFNG / CCL22 / CCL20 / CSF3 / H3C2 / H3C3 / COL1A2 / IL23R / SOX2 / TWIST1 / CLCF1 / H3C10 / STX1A / ANXA2 / IL12B / F13A1 / CXCL1 / H3C13 / IL21R / IGHE / H3C11 / ALOX15 / H3C1 / H3C12 / H3C8 / IL12RB2 / CXCL10 / CXCL8 / PTPN20 / RIPK2 / TIMP1 / ITGAX / IL2RA / IKBIP / CD80 / IL6 / LAMA5 / LMNB1 / H3C7 / PTPN7 / S100B / ICAM1 / STX3 / YWHAZ / DUSP4 / IL2RG / LGALS9 / IL2 / OSMR / IL32 / IL1RL2 / BOLA2B / NOD1 / ANXA1 / IL1R2 / SYK / TGFB1 / ITGB2 / IL12RB1 / MAPK11 / MAPKAPK3 / SOD2 / ITGAM / OSM / NANOG / CSF2 / IL21 / SNAP25 / PTPN14 / JAK3 / HIF1A / IRAK1 / NFKB2 / CSF2RB / IL11 / ALOX5 / PTPN12 / NOS2 / RALA / LCK / IL15RA / IL34 / IL15 / IL18BP / DUSP7 / IGHG4 / TRAF2 / IL27RA / CCL3L3 / IL7 / SQSTM1 / USP14 / TNF / PTPRZ1 / PTAFR / BCL2 / LRRC14 / CFL1 / IFNL1 / SNRPA1 / SMARCA4 / FGF2 / FSCN1 / CCR5	MUC1 / IL20RA / FOS / IL6 / PTGS2 / SOCS3 / IL1B / IL13RA2 / CCL22 / LIFR / OSM / IL1RL1 / CCL2 / CA1 / IGHG4 / CCL19 / IL20RB / IGHG1 / RAG1 / SOCS2 / CTSG / IL33 / PELI2 / CCL3 / IL10 / SERPINB2 / FCER2 / FPR1 / HGF / IL22RA2 / PTPN13 / HMOX1 / PRTN3 / CCL4 / CCL3L3 / IGHE / IL5 / CXCL2 / IRAK3 / ANXA1 / S100B / JUNB / VIM / TNF / S100A12 / DUSP4 / MAPK10 / CCR2 / FOXO1 / CXCL8 / CD4 / TSLP / ALOX5 / JUN / MYC / PIM1 / CCR1 / IL31RA / IL2RB / IL12B / IL18R1 / FSCN1 / IL1RAP / AGER / BCL6 / DUSP6 / PTK2B / IL7R / INPP5D / STXBP2 / CSF1 / CTF1 / HIF1A / IL23A / VAV1 / IL16 / IL18RAP / CNTFR
SARS COV 2 INFECTION	HAVCR1 / GPC3 / SFN / ANO4 / ANO9 / GPC2 / CHMP3 / GPC5 / TLR7 / TUSC3 / IKBKE / IFNA6 / ANO3 / ZDHHC11 / ANO7 / ST6GALNAC4 / RIPK2 / KPNA2 / MGAT4C / CAV1 / MGAT5 / ST3GAL4 / YWHAZ / TRAF3 / CHMP4C / IFNA14 / NOD1 / ST3GAL2 / NUP210 / MGAT4A / AGRN	GPC3 / HAVCR1 / IFNA6 / SNRPD2 / SNRPE / IKBKG / RPS21 / RPS5 / RPS17 / UBA52 / RPS27 / SFN / RPS11 / SDC2 / RPS28 / RPS20 / RPS14 / CHMP2A / RPS19 / RPS16 / RPS15 / CANX / RPS23 / HLA-A / MAP1LC3B / KPNA2 / RPS24 / PRKCSH / ST6GALNAC2 / RPS18 / TMEM258 / RPS10 / GEMIN7 / MGAT4A / HLA-G / HLA-F / ZDHHC9 / ZCRB1 / OST4 / RPS26 / RPS29 / RPN2 / ANO10 / UBE2V1 / SNRPF / NUP210 / YWHAH / SNRPB / SNRPG / CHMP4C / SDC1 / AGRN / SNRPD1 / RPS6 / GOLGA7 / GPC5 / IRF3 / NUP62 / RPS12 / YWHAZ / RPS8 / CHMP3 / NOD2 / HSP90AB1 / SUMO1 / SRPK1 / RPS7 / ZDHHC3 / RPS4X / FAU / CHMP4B / ST6GALNAC4 / DAD1 / IRAK1 / GEMIN6 / DDOST / ISCU / RIPK2 / RPS15A / MAGT1 / TLR7 / B2M / RPS25 / YWHAG / RPS27A / MGAT5
MRNA POLYADENYLATION	SRSF12 / SF3B4 / SF3A2 / SNRPD1 / SNRPB / CPSF4 / SNRPA1 / SNRPA / TCERG1 / POLR2H / NCBP2 / CSTF2 / POLR2K / CCAR1 / POLR2G / U2SURP / PUF60 / SNRNP70 / SNRPC / SNRPN / SNRPE / PHF5A / HNRNPA1 / GTF2F2 / GTF2F1 / HNRNPR / FUS / U2AF2 / CPSF6 / HNRNPA3 / SNRPD2 / CPSF2 / SRSF9 / HNRNPL / SF3A3 / HNRNPU / POLR2J / DHX9 / CPSF1 / RBM17 / CPSF3 / PPP1CB / HNRNPC / RBM25 / SRSF2 / U2AF1L4 / SUGP1 / HNRNPH1 / SF3B2 / HTATSF1 / PPP1CA / PAPOLA / CLP1 / POLR2B / SRSF11 / SF3A1 / SF3B6 / SMNDC1 / HNRNPM / SRSF3 / RPS27A / PRPF40A	SRSF12 / SNRPD2 / SNRPE / POLR2K / POLR2J / UBA52 / POLR2I / POLR2F / SNRPA / POLR2H / PUF60 / SNRPC / SF3B4 / SNRPF / U2AF2 / CPSF4 / SNRPB / SNRPG / SNRPD1 / SF3B6 / CSTF2 / POLR2E / SNRPA1 / POLR2L / POLR2G / TCERG1 / HNRNPC / SRSF9 / HNRNPR / SF3B5 / RPS27A / SUGP1 / NCBP2 / SRSF3 / RBM17 / PPP1CA / HNRNPA3 / SRSF2 / PHF5A / U2AF1L4 / NUDT21 / HTATSF1 / HNRNPA2B1 / SRSF10 / HNRNPL / PCBP1 / GTF2F2 / CCAR1 / PCBP2 / DNAJC8 / POLR2C / YBX1 / PTBP1 / HNRNPH1 / POLR2D / SRSF7 / TRA2B / SF3A2 / RBM39 / CPSF6 / SRSF11 / UBC / HNRNPU / HNRNPD / SNRPB2 / SRSF4 / HNRNPA1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
SARS COV INFECTIONS	HAVCR1 / GPC3 / SFN / ANO4 / ATP1A3 / ANO9 / GPC2 / CHMP3 / IGLV3-25 / GPC5 / TLR7 / IGKV4-1 / TUSC3 / RCAN3 / IKBKE / PDCD1 / IFNA6 / ANO3 / CYSLTR1 / IMPDH1 / ZDHHC11 / ANO7 / ST6GALNAC4 / RIPK2 / KPNA2 / MGAT4C / CAV1 / IGLV2-23 / IGKV1D-16 / MGAT5 / ST3GAL4 / IGHV3-7 / YWHAZ / TRAF3 / CHMP4C / IFNA14 / CHD3 / NOD1 / IGLC3 / ST3GAL2 / NUP210 / BRMS1 / MGAT4A / SYK / IGHV3-11 / AGRN / PYCARD / JAK3 / IRAK1 / STING1 / ZBP1 / ATP1B3 / SNRPD1 / SNRPB / IFNGR2 / SRPK1 / HSP90AB1 / NUP37 / NUP62 / ST6GALNAC2 / FNTB / FUT8 / PARP6 / GJA1 / FXYD7 / PHF21A / IMPDH2 / STT3A / RPN2 / NUP205 / VPS41 / SAP30 / ATP1B1 / IGHV3-23 / YWHAH / NDC1 / DDOST / TLR8 / CHD4 / PPIA / HLA-A / IGLV1-47 / IGLV1-40 / ITGA4 / NUP93 / IKBKG / GRB2 / NPIPB3 / FXYD3 / ATP1A1 / HLA-F / ATP1A4 / VPS18 / TUBB / NUP42 / IGHV3-30 / IGLV1-44 / RPS21 / RAE1 / ISG15 / IRAK2 / HDAC1 / VPS33A / PPIB / IFNGR1 / RPS18 / ZDHHC5 / ZDHHC20 / AKT3 / IGLV2-14 / STAT1 / NUP107 / IGLV2-8 / FURIN / RBBP7 / EDEM2 / CRB3 / BTK / NPM1 / VPS45 / IL17A / RBBP4 / FKBP1A / NUP155 / SNRPE / FNTA / ITGB1 / CANX / NOD2 / RBX1 / NLRP12 / IGHV3-53 / HNRNPA1 / GATAD2A / IGLC2 / KPNB1 / IGLV7-43 / POM121 / PPIH / YWHAG / PARP8 / ANO10 / IGHV1-2 / TMEM258 / MAP3K7 / MTA2 / RPS16 / POM121C / SMAD3 / IRF3 / ST3GAL1 / GSK3B / TPR / CHMP4B / VPS11 / ATP1A2 / IGHM / PRMT1 / ARID4B / BECN1 / HDAC2 / IGHV3-33 / YWHAB / RIGI / VAV1 / GEMIN6 / TYK2 / AP2B1 / NUP133 / NCK1 / GALNT1 / IRF7 / RPS7 / NUP43 / OST4 / MAN1B1 / NUP85 / SNRPD2 / ZCRB1 / NUP188 / NUP153 / PATJ / PTGES3 / ZDHHC2 / GSK3A / MTA3	IGHV4-59 / IGHV4-39 / IGHV2-70 / IGHM / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / IGKV1-17 / IGHD / IGLV1-44 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / IGKV5-2 / IGHV1-69 / IGKV2D-30 / IGHV3-13 / RIPK3 / ANO9 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / ANO3 / IGKV4-1 / IGLV2-23 / ATP1B2 / IGHV3-30 / FXYD6 / IGLV3-27 / IGHV3-7 / IGHV3-23 / NLRP3 / IGKV3-15 / IGLV2-14 / IGKV1D-16 / IGHV3-48 / MASP1 / IGLV1-47 / IGKV1-5 / IGKV3-11 / IGLV1-40 / IGLV3-1 / VPS33B / ANO2 / SERPINE1 / TLR2 / IGKV3D-20 / MGAT4C / TKFC / ST6GALNAC3 / ZDHHC11 / IGLC3 / GPC4 / CYSLTR1 / RANBP2
G ALPHA I SIGNALLING EVENTS	CXCL5 / P2RY4 / GNG4 / PTGDR2 / SSTR5 / CCR8 / HTR1D / CCL13 / GRM2 / GAL / APLN / CXCR5 / GNGT1 / CCL20 / ITPR3 / RGS20 / GNAL / GPSM2 / LPAR2 / LPAR3 / HCAR3 / RGSL1 / RGS17 / GPR17 / CXCL3 / HTR1B / CNR1 / RGS6 / MCHR1 / PMCH / CXCL1 / GPSM1 / PRKACG / PRKCG / OXGR1 / GNAZ / PDE4A / OPN1SW / TAS2R16 / GPR18 / MCHR2 / PDE4D / CXCL9 / DRD3 / HRH4 / DRD4 / NPB / S1PR2 / CCR9 / PDE1A / NBEA / CXCL10 / CCL25 / RGS10 / RGR / CXCL8 / CAMK2A / RGS19 / KPNA2 / PLCB4 / MTNR1A / PLCB1 / TAS1R1 / PNOC / CCR4 / SRC / BDKRB2 / RGS11 / CAMKK1 / GNG10 / S1PR3 / RGS1 / ANXA1 / HCAR2 / CCR3 / GPSM3 / GALR1 / ACKR3 / PDYN / TAS2R3 / GNA15	CCL23 / NPY1R / CXCL3 / CXCL12 / CHRM2 / NPY5R / RXFP4 / FPR2 / CCL21 / CAMK2B / TAS2R40 / CCL19 / CCL4L2 / PRKAR2B / OXER1 / GPR55 / CXCL13 / RGS4 / ADRA2B / ADCY5 / PLA2G4A / FPR1 / CAMK4 / RGS16 / CCR9 / GNA14 / NBEA / P2RY12 / CCL4 / PRKCG / LPAR2 / PDE4D / CNR2 / CXCL2 / RGS6 / PLCB2 / ANXA1 / P2RY13 / SSTR1 / LPAR1 / GNB3 / SUCNR1 / CCR2 / CXCR5 / S1PR3 / CXCL8 / NMUR1 / PF4 / CCR1 / GPR183 / CCR7 / CXCR1 / C5AR1 / MCHR2 / PDE4B / LPAR3 / CHRM4 / PNOC / CCR4 / HRH4 / CAMKK1 / ITPR2
PLATELET ACTIVATION SIGNALING AND AGGREGATION	MPIG6B / CLEC1B / IGF2 / SPP2 / ORM2 / ORM1 / ALB / PLG / TF / LEFTY2 / FGB / FGA / IGF1 / ITIH4 / FGG / ADRA2B / GP6 / ITIH3 / APOH / ECM1 / F8 / APOA1 / SERPINF2 / P2RY12 / SERPINA4 / KNG1 / CLU / A1BG / HGF / CDC37L1 / SELP / F2 / FYN / PIK3R3 / TBXA2R / SELENOP / HRG / MMRN1 / SOD1 / RAPGEF4 / GNA14 / AHSG / CFD / SERPING1 / CLEC3B / RHOB / MGLL / GNG3 / A2M / PIK3R1 / THPO / NHLRC2 / SYTL4 / RARRES2 / APOOL / SERPINA1 / SERPINE1 / GP5 / ABHD6 / PROS1 / GNB3	CLEC1B / ECM1 / IGF2 / SELP / MMRN1 / QSOX1 / ADRA2B / RAB27B / PLA2G4A / F8 / THBS1 / SCG3 / HGF / GNA14 / P2RY12 / DGKK / VEGFD / PRKCG / SPP2 / SRGN / TBXA2R / GNB3 / PRKCB / CFD / CTSW / PF4 / RHOB / SERPINE1 / TOR4A / GP6 / CLEC3B / ENDOD1 / STXBP2 / ITPR2 / RAC2 / VAV1 / DGKE / PIK3R6 / PLG / ISLR / DGKG / CD36 / GNB4 / PCYOX1L / DGKA / ABHD6 / SERPINA4 / RASGRP2 / ALB / IGF1 / FERMT3 / GNG11 / PLCG2 / PIK3CA / APBB1IP / TGFB3 / AHSG / NHLRC2 / A2M / ITGA2B / PIK3R5 / GNGT2 / LCP2 / ITIH4 / LEFTY2
NEUTROPHIL DEGRANULATION	SERPINB3 / OLFM4 / CD177 / LCN2 / CHI3L1 / CHIT1 / MMP9 / SLC2A5 / TCN1 / TNFAIP6 / S100P / PKM / RHOF / PLAU / S100A7 / FABP5 / RAB3D / OLR1 / PTPRN2 / LYZ / ANXA2 / CXCL1 / TRPM2 / S100A9 / FCGR2A / PYGB / CHRNB4 / ABCA13 / AMPD3 / SERPINB12 / IMPDH1 / S100A11 / CD44 / PRSS2 / LPCAT1 / LGALS3 / CTSD / CEACAM6 / CD55 / PADI2 / GLA / ITGAX / QPCT / CKAP4 / ADAM8 / CRISP3 / GPR84 / RAB9B / ACLY / CLEC4D / ALDH3B1 / CTSC / MMP25 / LAIR1 / MCEMP1 / ATP11A / CEP290 / ITGAV / HSPA6 / DOK3 / PLAUR / DSC1 / ADGRE3 / OSCAR / ACP3 / DNASE1L1 / CLEC5A / NBEAL2 / ITGB2 / KCNAB2 / TMC6 / HSPA1B / PYCARD / ITGAM / CALML5 / SNAP25 / CANT1 / GM2A / CYBA / STING1 / CXCR2 / TBC1D10C / NRAS / LILRB3 / ALOX5 / GRN / ATAD3B / MNDA / ARHGAP9 / GLIPR1 / CD59 / HSP90AB1 / HRNR / RAP2B / RAB24 / RAB31 / ARPC5 / CRACR2A / NEU1 / SIRPB1 / ATP8A1 / RAC1 / PTAFR / LRRC7 / VAT1 / CTSA / RAB10 / HSPA1A / MVP / IMPDH2 / P2RX1 / PRKCD / CD58 / CD53 / DYNLL1	ELANE / CEACAM6 / CFP / PLAC8 / TCN1 / CLEC4C / PGLYRP1 / RNASE3 / FPR2 / MPO / CTSG / QSOX1 / CRISPLD2 / LTF / FOLR3 / SIGLEC14 / FPR1 / TMC6 / PTPRB / SIRPB1 / PRTN3 / ACAA1 / CRISP3 / CLEC4D / RETN / AGL / AOC1 / MMP8 / HK3 / CD177 / CRACR2A / SELL / OLFM4 / S100A8 / PLAUR / UNC13D / S100A12 / SLCO4C1 / FCN1 / CFD / PGM1 / CR1 / SIGLEC9 / BPI / ALOX5 / CAMP / FCAR / GSTP1 / FGL2 / TLR2 / CXCR1 / SLC2A3 / SIGLEC5 / C5AR1 / IQGAP1 / LILRB2 / NBEAL2 / FGR / UBR4 / DOCK2 / P2RX1 / CD300A / MNDA / CLEC12A / CEACAM3 / CLEC5A / CXCR2 / NCKAP1L / RAB9B / CEP290 / CAT / NFAM1 / IQGAP2 / DYNC1H1 / CYBA / CD36 / ALDH3B1 / FCGR3B / TIMP2 / DSP / AGPAT2 / STING1 / ACP3 / STK11IP / VNN1 / PYGL / CYBB / IDH1 / HUWE1 / QPCT / PNP / GHDC / AHSG / PLEKHO2 / TYROBP / MGAM / COPB1 / COTL1 / TMT1A / VPS35L / AP2A2 / C3AR1 / SLC11A1 / DNAJC13 / PTPRC / MS4A3 / BIN2 / MME / ANPEP / HBB / EEF2 / HP / STK10
CYTOKINE SIGNALING IN IMMUNE SYSTEM	MMP1 / MMP3 / MUC1 / SFN / TRIM31 / LCN2 / TUBB3 / TNFSF15 / TUBA3D / BIRC5 / CCL11 / TUBAL3 / IL13RA2 / MMP9 / IL22RA2 / CDK1 / TNFSF4 / TRIM17 / IFNG / CCL22 / TUBA3E / CCL20 / SPHK1 / CD70 / MAPT / SNCA / CSF3 / H3C2 / H3C3 / COL1A2 / BIRC3 / IL23R / CENPS / SOX2 / TWIST1 / CLCF1 / TNFRSF4 / LTA / H3C10 / HRAS / STX1A / ANXA2 / IL12B / F13A1 / CXCL1 / H3C13 / IL21R / FANCE / TNFRSF11A / IGHE / H3C11 / RELB / FAAP24 / ALOX15 / FCGR1A / H3C1 / CIITA / H3C12 / IFNA6 / H3C8 / TNFSF9 / TNFSF18 / TRIM6 / TNFRSF9 / CD44 / TNFRSF18 / IL12RB2 / CXCL10 / CXCL8 / GRAP2 / CAMK2A / PTPN20 / RIPK2 / LTB / KPNA2 / TIMP1 / ITGAX / KPNA7 / GBP2 / IL2RA / IKBIP / CD80 / TRIM46 / FANCG / IL6 / LAMA5 / CD40LG / LMNB1 / H3C7 / PTPN7 / S100B / HLA-DQA1 / TNFRSF25 / IFITM1 / FANCB / HLA-DRB5 / GBP5 / SRC / HLA-DQB2 / ICAM1 / TNFSF13B / STX3 / YWHAZ / ISG20 / TRAF3 / DUSP4 / FLNA / IL2RG / LGALS9 / EDA2R / IL2 / OSMR / TNFSF8 / IL32 / TNFSF11 / IL1RL2 / BOLA2B / IFNA14 / NOD1 / TRIM45 / NUP210 / EDA / ANXA1 / IFIT2 / IL1R2 / SYK / TGFB1 / ITGB2 / IL12RB1 / MAPK11 / HSPA1B / MAPKAPK3 / SOD2 / ITGAM / OSM / NANOG / CSF2 / IL21 / EDARADD / SNAP25 / PTPN14 / JAK3 / OAS3 / HIF1A / IRAK1 / TUBA4A / NFKB2 / NRAS / CSF2RB / PML / IL11 / ALOX5 / EIF4A3 / PTPN12 / IRF5 / NOS2 / FANCF / RALA / IFNGR2 / MID1 / LCK / HSPA2 / NUP37 / IL15RA / TUBA1B / IL34 / NUP62 / TUBA4B / IL15 / IL18BP / DUSP7 / IFI27 / TUBA1A / IGHG4 / TRAF2 / IL27RA / CCL3L3 / IL7 / OASL / SQSTM1 / USP14 / TNF / PTPRZ1 / ELOC / FNTB / PTAFR / BCL2 / LRRC14 / CFL1 / IFI35 / IFNL1 / SNRPA1 / SMARCA4 / FGF2 / HSPA1A / TNFRSF8 / FSCN1 / TNFSF13 / CCR5 / ADAM17	MUC1 / IL20RA / FOS / IL6 / PTGS2 / SOCS3 / IL1B / IL13RA2 / CCL22 / LIFR / OSM / GHR / IL1RL1 / TNFRSF17 / CCL2 / CA1 / NCAM1 / CAMK2B / IGHG4 / CCL19 / IL20RB / IGHG1 / RSAD2 / RAG1 / SOCS2 / CTSG / IL33 / PELI2 / TNFSF9 / TNFRSF13B / CCL3 / IL10 / SERPINB2 / FCER2 / FPR1 / IFI44L / HGF / EGR1 / IL22RA2 / PTPN13 / IRF9 / MT2A / HMOX1 / PRTN3 / CCL4 / CCL3L3 / IGHE / IL5 / CXCL2 / IRAK3 / ANXA1 / S100B / JUNB / VIM / EDAR / TNF / SMAD7 / S100A12 / DUSP4 / MAPK10 / HSPA2 / CCR2 / IFITM1 / FOXO1 / HERC5 / CXCL8 / CD4 / GBP4 / TSLP / TRIM22 / ALOX5 / TUBB6 / JUN / TNFRSF9 / MYC / PIM1 / TNFSF8 / FLT3 / CCR1 / IFIT1 / IL31RA / IL2RB / IL12B / IL18R1 / FSCN1 / TNFSF18 / IL1RAP / AGER / BCL6 / DUSP6 / MX2 / RNASEL / PTK2B / IL7R / CD27 / TNFRSF13C / RANBP2 / INPP5D / STXBP2 / CSF1 / KPNA5 / CTF1 / IFIH1 / HIF1A / OAS2 / IL23A / VAV1 / FANCC / IL16 / IL18RAP / CNTFR / HLA-DQA2 / TUBB1 / CD36 / TNFSF11 / CSF3R / TRIM62 / MAOA / CIITA / GBP1 / TUBA1A / CCND1 / MX1 / IRF4 / HAVCR2 / GBP7 / IL27 / IRS2 / STAT3 / TRIM5 / SLA / GATA3 / JAK2 / NANOG / NOD1 / POMC / UBA7 / PLCG2 / PIK3CA / GBP5 / MAP2K3 / JAK1 / STAT4 / HCK / CSF2RB / CSF1R / HLA-DPA1 / TRIM3 / RORA / PTPN20 / IFI44 / IL13 / MAP2K1 / MAPK7 / TRIM48 / FLNB / HLA-DPB1 / FANCL / HLA-DRB5 / USP18 / LIF / IL1A / IL1R1 / TNFRSF8 / LAMA5 / TRIM35 / NLRX1 / LCP1 / TRIM29 / NUP160 / SOCS6 / CISH / BCL2

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
SIGNALING BY GPCR	CXCL5 / MMP3 / P2RY4 / WNT3A / UTS2B / GPR68 / GNG4 / WNT7B / NTS / GPR35 / PLPPR4 / CALCA / CCL11 / PTGDR2 / SSTR5 / VIP / CCR8 / HTR1D / CCL13 / DGKK / WNT2B / PTHLH / GRM2 / TACR2 / GAL / ADORA2B / CHRM3 / APLN / TSHR / ECT2 / QRFPR / CXCR5 / CCL22 / GNGT1 / CCL20 / MC5R / ITPR3 / XK / RGS20 / GPR150 / GNAL / KISS1 / GPSM2 / LPAR2 / GPR25 / HRH2 / LPAR3 / GHRL / P2RY6 / GRK3 / HCAR3 / TRPC3 / RGSL1 / RGS17 / PIK3R6 / GPR17 / HTR2C / PDE10A / CXCL3 / HTR1B / CNR1 / RGS6 / HRAS / WNT6 / MCHR1 / ARHGEF39 / ADM2 / WNT9B / PMCH / GRPR / GPHB5 / CXCL1 / GPSM1 / GHRHR / PRKACG / NMB / PRKCG / OXGR1 / RLN2 / GNAZ / PDE4A / OPN1SW / TAS2R16 / CCL7 / GPR18 / DRD5 / NPFFR2 / CYSLTR2 / PDE8B / MCHR2 / PDE4D / UCN2 / UTS2 / CXCL9 / DRD3 / PLPPR1 / CYSLTR1 / HRH4 / DRD4 / NPB / RASGRP1 / S1PR2 / CCR9 / PDE1A / RGS2 / WNT3 / TIAM2 / NBEA / OBSCN / CXCL10 / CCL25 / HCRTR2 / RGS10 / RGR / CXCL8 / CAMK2A / CD55 / RGS19 / KPNA2 / FFAR4 / F2RL2 / PTH2R / PLCB4 / MTNR1A / CCL17 / PLCB1 / TAS1R1 / HTR1A / PNOC / ARHGEF16 / FZD6 / FZD2 / GPR84 / F2RL3 / TAC1 / CCR4 / CGA / GHSR / PROKR2 / SRC / DGKI / FGD1 / BDKRB2 / RASGRF2 / HRH1 / RGS11 / HTR4 / CAMKK1 / GNG10 / S1PR3 / TRPC7 / CALCR / OXTR / ABR / ADGRE3 / DGKH / RGS1 / ANXA1 / HCAR2 / CCR3 / GPSM3 / GALR1 / ACKR3 / TRPC6 / FSHR / WNT10B / PDYN / GIP / MAS1 / TAC3 / TAS2R3 / GNA15 / UCN3 / ARHGEF2 / PTGER3 / TACR3 / EDNRA / ARHGEF35 / ARHGEF38 / CXCR2 / NRAS / GNG8 / LTB4R / PIK3CG / PAK1 / FFAR3 / ADORA3 / ARHGEF25 / CCL28 / ARHGEF5 / ABHD12 / RHOC / RXFP4 / GPR183 / PDE7A / CXCL11 / ARHGEF3 / PLPPR2 / RGS8 / ADRB3 / MLN / CCKAR / RGS5 / FPR3 / CCR10 / WNT4 / VAV3 / RAMP2 / PDE3A / CDK5 / CCL3L3 / ADCY7 / ADORA1 / ADCY3	CRHBP / CCL23 / GNRH2 / OXT / VIPR1 / WNT7B / NPY1R / WNT9A / CXCL3 / CCL22 / CXCL12 / PTH1R / CHRM2 / NPY5R / RXFP4 / FPR2 / GPR83 / CCL2 / CCL21 / CAMK2B / RGS2 / ADRA1A / TAS2R40 / CCL19 / PDE7B / CCK / CCL4L2 / ADGRE1 / PRKAR2B / OXER1 / RXFP1 / GPR55 / CXCL13 / RGS4 / ADRA2B / AVPR1A / CCL3 / GLP2R / PTGIR / RLN2 / ADCY5 / PLA2G4A / FPR1 / CAMK4 / RGS16 / CCR9 / GNA14 / PTCH2 / WNT11 / PDE2A / NBEA / EDNRB / P2RY12 / ARHGEF17 / DGKK / CCL4 / ACKR4 / FFAR2 / PRKCG / CCL3L3 / LPAR2 / PDE4D / CNR2 / TSHR / CXCL2 / RGS6 / ADM / LTB4R / PLCB2 / ARHGEF4 / ANXA1 / XCR1 / EDN2 / P2RY13 / GPR15 / SSTR1 / TBXA2R / LPAR1 / GNB3 / FZD7 / SUCNR1 / PRKCB / CCR2 / FFAR3 / PDE8B / FZD8 / CXCR5 / S1PR3 / CXCL8 / CCL7 / NMUR1 / PF4 / RHOB / ADRA1B / CCR1 / GPR183 / CCR7 / CXCR1 / PDE3A / EDN1 / HBEGF / C5AR1 / WNT10A / MCHR2 / RAMP3 / FZD1 / ABR / GPRC6A / PDE4B / LPAR3 / CHRM4 / PNOC / CALCR / LTB4R2 / CYSLTR1 / CCR4 / HRH4 / CAMKK1 / ITPR2 / FGD4 / TAC1 / CXCR2 / ARHGEF26 / ADRB3
NUCLEOTIDE EXCISION REPAIR	ISY1 / UBB / ELL / POLE / DDB2 / USP45 / COPS4 / ZNF830 / GTF2H2 / XPA / UBE2V2 / XPC / UBC / ERCC5 / POLR2L / SUMO1 / CCNH / INO80 / RAD23B / POLD2 / ERCC6 / MNAT1 / ERCC4 / ERCC2 / ACTR5 / RFC5 / POLR2E / PIAS1 / RPA2 / COPS7A / XAB2 / POLR2I / USP7 / POLE3 / POLK / UBA52 / POLR2F / TCEA1 / PARP2 / DDB1 / UVSSA / ACTR8 / INO80D / CUL4A / PPIE / ERCC8 / POLR2A / RNF111 / RAD23A / POLR2C / RPA1 / POLR2D / UBE2N / RFC1 / POLE4 / ERCC1 / COPS3 / RPA3 / SUMO3 / GTF2H4 / COPS2 / COPS6 / AQR / XRCC1 / RPS27A / GPS1 / YY1 / POLR2B / CUL4B / TFPT / COPS8 / PRPF19 / GTF2H5 / NFRKB / POLR2J / COPS5 / POLD4 / CDK7 / ACTB / ERCC3 / LIG1 / RBX1 / SUMO2 / GTF2H3 / RFC2 / CHD1L / INO80C / CETN2 / POLR2G / PARP1 / POLR2K / RFC3 / GTF2H1 / LIG3 / POLR2H / INO80E / POLE2 / POLD1 / MCRS1 / ACTL6A / POLD3 / PCNA / RUVBL1 / PIAS3 / INO80B / RFC4 / COPS7B	POLR2K / POLR2J / UBA52 / SUMO3 / POLR2I / TCEA1 / GTF2H5 / UBE2V2 / ISY1 / POLR2F / POLR2H / RFC4 / CETN2 / RPA3 / RAD23A / COPS5 / POLE3 / ERCC1 / CHD1L / INO80C / POLE2 / SUMO2 / POLR2E / SUMO1 / RBX1 / POLR2L / POLD2 / POLR2G / MCRS1 / POLE4 / ERCC8 / RAD23B / RPS27A / COPS6 / GTF2H2 / ACTB / INO80E / COPS7B / MNAT1 / RFC2 / XPA / RUVBL1 / RFC3 / XRCC1 / COPS8 / PCNA / UBE2N / PARP1 / POLR2C / GPS1 / GTF2H3 / POLR2D / LIG1 / COPS4 / LIG3 / RFC1 / POLD1 / ACTL6A
DISEASES OF GLYCOSYLATION	MUC13 / GPC3 / MUC1 / MUC3A / MUC5AC / MUC5B / VCAN / MUC12 / SBSPON / MUC16 / GPC2 / ACAN / ADAMTS8 / MUC20 / BCAN / ADAMTS20 / GPC5 / SLC26A2 / ADAMTS9 / ADAMTS12 / ADAMTS16 / CHST6 / THBS2 / ADAMTS14 / SPON2 / NOTCH3 / OGN / CSPG5 / MUC15 / CHST3 / ADAMTS5 / CSPG4 / ADAMTS10	MUC5B / MUC6 / MUC1 / ADAMTS13 / CFP / DCN / ADAMTS1 / GALNT3 / MUC3A / ALG9 / ADAMTS4 / THBS1 / BGN / ADAMTSL2 / SBSPON / PRELP / CHST3 / PGM1 / ADAMTSL3 / FMOD / ADAMTS15 / ADAMTS9 / SPON1 / GNE / GPC4
CLASS A 1 RHODOPSIN LIKE RECEPTORS	CXCL5 / P2RY4 / UTS2B / GPR68 / NTS / GPR35 / PLPPR4 / CCL11 / PTGDR2 / SSTR5 / CCR8 / HTR1D / CCL13 / TACR2 / GAL / ADORA2B / CHRM3 / APLN / TSHR / QRFPR / CXCR5 / CCL22 / CCL20 / MC5R / XK / KISS1 / LPAR2 / HRH2 / LPAR3 / GHRL / P2RY6 / HCAR3 / GPR17 / HTR2C / CXCL3 / HTR1B / CNR1 / MCHR1 / PMCH / GRPR / GPHB5 / CXCL1 / NMB / OXGR1 / RLN2 / OPN1SW / CCL7 / GPR18 / DRD5 / NPFFR2 / CYSLTR2 / MCHR2 / UTS2 / CXCL9 / DRD3 / PLPPR1 / CYSLTR1 / HRH4 / DRD4 / NPB / S1PR2 / CCR9 / CXCL10 / CCL25 / HCRTR2 / RGR / CXCL8 / FFAR4 / F2RL2 / MTNR1A / CCL17 / HTR1A / PNOC / F2RL3 / TAC1 / CCR4 / CGA / GHSR / PROKR2	CCL23 / GNRH2 / OXT / NPY1R / CXCL3 / CCL22 / CXCL12 / CHRM2 / NPY5R / RXFP4 / FPR2 / CCL2 / CCL21 / ADRA1A / CCL19 / CCK / OXER1 / RXFP1 / GPR55 / CXCL13 / ADRA2B / AVPR1A / CCL3 / PTGIR / RLN2 / FPR1 / CCR9 / EDNRB / P2RY12 / CCL4 / ACKR4 / FFAR2 / CCL3L3 / LPAR2 / CNR2 / TSHR / CXCL2 / LTB4R / ANXA1 / XCR1 / EDN2 / P2RY13 / SSTR1 / TBXA2R / LPAR1 / SUCNR1 / CCR2 / FFAR3 / CXCR5 / S1PR3 / CXCL8 / CCL7 / NMUR1 / PF4 / ADRA1B / CCR1 / GPR183 / CCR7 / CXCR1 / EDN1 / C5AR1 / MCHR2 / LPAR3 / CHRM4 / PNOC / LTB4R2 / CYSLTR1 / CCR4 / HRH4 / TAC1 / CXCR2 / ADRB3
SARS COV 1 INFECTION	SFN / CHMP3 / TLR7 / RCAN3 / IKBKE / ST6GALNAC4 / KPNA2 / CAV1 / ST3GAL4 / YWHAZ / TRAF3 / CHMP4C / ST3GAL2 / PYCARD	RPS21 / RPS5 / RPS17 / UBA52 / RPS27 / SFN / RPS11 / RPS28 / RPS20 / RPS14 / CHMP2A / RPS19 / PPIA / RPS16 / RPS15 / CANX / RPS23 / MAP1LC3B / KPNA2 / RPS24 / PRKCSH / ST6GALNAC2 / RPS18 / RPS10 / FKBP1A / ZCRB1 / RPS26 / RPS29 / YWHAH / CHMP4C / RPS6 / IRF3 / RPS12 / YWHAZ / RPS8 / CHMP3 / SUMO1 / RPS7 / RPS4X / FAU / CHMP4B / ST6GALNAC4 / BST2 / RPS15A / TLR7 / RPS25 / YWHAG / RPS27A
PHASE II CONJUGATION OF COMPOUNDS	UGT2B17 / CYP1A2 / NAT2 / UGT2B10 / GSTZ1 / GLYAT / ACSM5 / GLYATL1 / UGT2B7 / SULT2A1 / GSTA2 / MAT1A / ACSM2A / UGT1A3 / UGT1A4 / ACSM2B / GLYATL2 / UGP2 / UGT3A2 / ABHD14B / GSTM2 / SULT1A2 / GSTA5 / SULT1A1 / SLC35D1 / UGT2B15 / GGT6 / UGT1A1 / GSTA1 / NNMT / MGST2 / MGST1 / AKR1A1 / SULT1E1 / UGT2B28 / COMT / GSTA3 / UGT2B11 / GSTO1 / GSTM1 / UGT3A1 / ESD / ABHD10	CYP1A2 / NAT2 / GSTM5 / GSTM2 / GLYATL3 / GGT5 / GSTZ1 / GGT6 / GLYATL2 / SULT1E1 / GLYATL1 / GLYAT / ACSM2B / GSTT2B / GSTP1 / NNMT / ACSM2A / SULT1A1 / SULT2A1 / ACSM5 / UGT1A3 / UGP2 / MAT1A / SULT1A2 / SULT1C4 / UGT1A5 / GSTA1 / GSTM4
GASTRULATION	ZIC2 / WNT3A / TFAP2A / OSR1 / PAX6 / MESP2 / POU3F1 / TBPL2 / LEF1 / SOX1 / SOX2 / FGF8 / LHX1 / DLX5 / TEAD4 / BMP4 / KAT2A / TEAD2 / MSX1 / DLL3 / FOXC2 / CLDN7 / GSC / NANOG / GBX2 / POU5F1 / MYB / SMAD2 / ZNF521	SOX2 / WNT3A / MESP2 / ZIC2 / ZIC1 / PAX7 / LEF1 / GBX2 / TBPL2 / IHH / PAX6 / TFAP2A / CLDN7 / OTX2 / MSX1 / PAX3 / RIPPLY2 / PSMA6
PI3K AKT SIGNALING IN CANCER	EGF / EREG / NRG4 / PIK3R6 / FGF8 / ICOS / AREG / KITLG / FGF19 / FOXO6 / BDNF / NRG2 / PDGFA / FGF1 / CD80 / KL / SRC / PDGFRB / EPGN / PDGFB / CD28 / RAC2	FGF23 / NTF3 / EREG / PDGFRA / AREG / NRG3 / HGF / NTRK3 / ESR2 / NR4A1 / ESR1 / FOXO6 / FOXO1 / TGFA / FLT3 / HBEGF / RAC2 / FGF1 / FGF3 / BDNF / VAV1 / PIK3R6 / PRR5 / FGFR1 / TRAT1 / FGF8 / IRS2 / KIT / EPGN / PIK3CA / GAB1 / STRN / MDM2 / PIK3R5
NEGATIVE REGULATION OF THE PI3K AKT NETWORK	EGF / EREG / NRG4 / PIK3R6 / FGF8 / ICOS / AREG / KITLG / FGF19 / BDNF / NRG2 / PDGFA / FGF1 / CD80 / KL / THEM4 / SRC / PDGFRB / EPGN / PDGFB / CD28 / RAC2 / IRAK1 / PIK3CG / LCK / RAC1 / IER3 / FGF2 / PIP5K1B / FGF4 / CD19 / PPP2R5B / PIP4K2C / ERBB3 / PIP5K1C / MAPK3 / GRB2 / FGF20 / FGF17 / RHOG	FGF23 / IL1RL1 / NTF3 / EREG / PDGFRA / IL33 / AREG / NRG3 / HGF / NTRK3 / ESR2 / ESR1 / TGFA / FLT3 / IL1RAP / HBEGF / PHLPP1 / RAC2 / FGF1 / FGF3 / BDNF / VAV1 / PIK3R6 / FGFR1 / IER3 / TRAT1 / FGF8 / IRS2 / KIT / EPGN / PIK3CA / GAB1 / STRN

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
PEPTIDE LIGAND BINDING RECEPTORS	CXCL5 / UTS2B / NTS / CCL11 / SSTR5 / CCR8 / CCL13 / TACR2 / GAL / APLN / QRFPR / CXCR5 / CCL22 / CCL20 / MC5R / XK / KISS1 / GHRL / CXCL3 / MCHR1 / PMCH / GRPR / CXCL1 / NMB / RLN2 / CCL7 / NPFFR2 / MCHR2 / UTS2 / CXCL9 / NPB / CCR9 / CXCL10 / CCL25 / HCRTR2 / CXCL8 / F2RL2 / CCL17 / PNOC / F2RL3 / TAC1 / CCR4 / GHSR / PROKR2	CCL23 / OXT / NPY1R / CXCL3 / CCL22 / CXCL12 / NPY5R / RXFP4 / FPR2 / CCL2 / CCL21 / CCL19 / CCK / RXFP1 / CXCL13 / AVPR1A / CCL3 / RLN2 / FPR1 / CCR9 / EDNRB / CCL4 / ACKR4 / CCL3L3 / CXCL2 / ANXA1 / XCR1 / EDN2 / SSTR1 / CCR2 / CXCR5 / CXCL8 / CCL7 / NMUR1 / PF4 / CCR1 / CCR7 / CXCR1 / EDN1 / C5AR1 / MCHR2 / PNOC / CCR4 / TAC1 / CXCR2
SARS COV 2 HOST INTERACTIONS	MBL2 / SFTPD / TKFC / MASP1 / RPS4Y2 / MASP2 / IL17RC / SEC24B / IFNA2 / RPS17 / TAB2 / CNBP / SAR1B / UBB / SEC23A / UBE2V1 / AKT2 / VPS33B / NLRP3 / AKT1 / PIK3R4 / TRAF6 / NUP88 / PALS1 / G3BP2 / RNF135 / SEC24D / NUP54 / TUFM / RPS24 / YWHAE / RPS9 / RPS15A / RANBP2 / TAB3 / RPS27L / RPS29 / TLR2 / TOMM70 / SIKE1 / UBC / MAP1LC3B	IFNA6 / SNRPD2 / SNRPE / IKBKG / RPS21 / RPS5 / RPS17 / UBA52 / RPS27 / SFN / RPS11 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / RPS23 / HLA-A / MAP1LC3B / KPNA2 / RPS24 / RPS18 / RPS10 / GEMIN7 / HLA-G / HLA-F / RPS26 / RPS29 / UBE2V1 / SNRPF / NUP210 / YWHAH / SNRPB / SNRPG / SNRPD1 / RPS6 / IRF3 / NUP62 / RPS12 / YWHAZ / RPS8 / NOD2 / HSP90AB1 / RPS7 / RPS4X / FAU / IRAK1 / GEMIN6 / RIPK2 / RPS15A / TLR7 / B2M / RPS25 / YWHAG / RPS27A / HLA-B / NUP42 / IRAK2 / GEMIN2 / RPS27L / YWHAB / ISG15 / HLA-C / HSP90AA1 / POM121 / RPS2 / RPS9 / RPSA / RPS3A / NDC1 / CAV1 / CRB3 / RPS13 / UBE2N
RESPONSE TO ELEVATED PLATELET CYTOSOLIC CA2	IGF2 / SPP2 / ORM2 / ORM1 / ALB / PLG / TF / LEFTY2 / FGB / FGA / IGF1 / ITIH4 / FGG / ITIH3 / APOH / ECM1 / F8 / APOA1 / SERPINF2 / SERPINA4 / KNG1 / CLU / A1BG / HGF / CDC37L1 / SELP / SELENOP / HRG / MMRN1 / SOD1 / AHSG / CFD / SERPING1 / CLEC3B / A2M / NHLRC2 / SYTL4 / RARRES2 / APOOL / SERPINA1 / SERPINE1	ECM1 / IGF2 / SELP / MMRN1 / QSOX1 / RAB27B / F8 / THBS1 / SCG3 / HGF / VEGFD / PRKCG / SPP2 / SRGN / PRKCB / CFD / CTSW / PF4 / SERPINE1 / TOR4A / CLEC3B / ENDOD1 / STXBP2 / PLG / ISLR / CD36 / PCYOX1L / SERPINA4 / ALB / IGF1 / FERMT3 / TGFB3 / AHSG / NHLRC2 / A2M / ITGA2B / ITIH4 / LEFTY2
DISEASES OF METABOLISM	CYP19A1 / MUC13 / GPC3 / CYP27B1 / CYP24A1 / MUC1 / MUC3A / MUC5AC / MUC5B / VCAN / MUC12 / SBSPON / MUC16 / GPC2 / ACAN / ADAMTS8 / MUC20 / BCAN / ADAMTS20 / GPC5 / SLC26A2 / ADAMTS9 / ADAMTS12 / ADAMTS16 / CHST6 / THBS2 / ADAMTS14 / SPON2 / CYP17A1 / NOTCH3 / OGN / CSPG5 / CYP26B1 / SLC34A2 / MUC15 / CHST3 / ADAMTS5 / CSPG4 / ADAMTS10	MUC5B / MUC6 / MUC1 / ADAMTS13 / CFP / CYP26B1 / DCN / ADAMTS1 / GALNT3 / SLC34A2 / MUC3A / ALG9 / ADAMTS4 / BCKDHA / THBS1 / BGN / ADAMTSL2 / PC / SBSPON / PRELP / CHST3 / PGM1 / ADAMTSL3 / FMOD / ADAMTS15 / ADAMTS9 / FMO3 / MMUT / PPM1K / SPON1 / TBXAS1 / ASS1 / GNE / GPC4 / DBT / MCCC1 / KHK / MAT1A / OTC / ACY1 / CPS1 / ALDOB / ADAMTSL1 / AMN / BCKDHB / MAOA / LUM / HIBCH / IVD / GPC2 / TCN2 / ACAT1 / MMAA / MUC16 / SDC3 / CHST6 / MUC21 / SFTPB / POMC / SFTPD / IDH1 / CSF2RB / PNP / ABCA3 / SEMA5A / CYP1B1 / ECHS1 / PAPSS2 / MMACHC / ABCD4 / SLC35D1 / SLC37A4 / MUC4
CELLULAR RESPONSE TO CHEMICAL STRESS	SLC7A11 / NQO1 / EGF / G6PD / COX8C / NOX4 / TXNRD1 / AREG / NCF2 / BLVRA / PRKAA2 / TKT / SRXN1 / PDGFA / GPX8 / ABCC1	SLC7A11 / NQO1 / AQP8 / CDKN2A / COX4I2 / NOX4 / SRXN1 / G6PD / SOD2 / ME1 / TXN / GPX2 / COX6C / COX6B1 / EGF / UBA52 / CYCS / MT-CO2 / ATOX1 / PSMA6 / COX7B / MAP1LC3B / COX7A2 / COX8A / P4HB / HM13 / SQSTM1 / TKT / TXNRD1 / COX7C / COX5A / MT-CO1 / NDUFA4 / PDGFA / COX4I1 / MAFG / PRKAA2 / TALDO1 / COX5B / RBX1 / COX6A1 / PRDX5 / PSMD7 / COX6A2 / NUDT2 / PSMD8 / PSMB4 / RPS27A / ERO1A / GPX6 / STAP2 / UFD1 / MT-CO3
NEUROTRANSMITTER RECEPTORS AND POSTSYNAPTIC SIGNAL TRANSMISSION	GNG4 / KCNJ6 / GABRA2 / TUBB3 / GABRG2 / HTR3A / TUBA3D / GABRA3 / TUBAL3 / CHRNA5 / GABRB2 / NEFL / GNGT1 / TUBA3E / GABRR3 / MAPT / GNAL / CHRNA7 / CACNG4 / CHRNB2 / CHRND / HRAS / CHRNA3 / KCNJ4 / KCNJ16 / CHRNA6 / PRKACG / GABRQ / PRKCG / GLRA3 / CHRNB4 / ACTN2 / GABRG3 / RASGRF1 / PRKAA2 / NBEA / KCNJ5 / CAMK2A / KCNJ9 / GIT1 / KPNA2 / GRIN1 / GRIK5 / PLCB1 / HTR3C / DLG3 / GLRB / GRIN2A / PRKAG1 / GABRR1 / PRKAB1 / GLRA1 / SRC / RASGRF2 / CAMKK1 / GABRA6 / GNG10	GABRR3 / KCNJ6 / RASGRF1 / ADCY8 / GABRA3 / GABRG2 / GABRB2 / TUBA3D / MAPT / GRIK4 / GRIK5 / KCNJ12 / TUBA4B / GRIN2B / HTR3A / GRIK3 / KCNJ5 / GABRA6 / GNAL / ACTN2 / GNG10 / PLCB1 / HTR3C / GNG5 / KCNJ3 / CACNG3 / GABBR2 / GRIK2 / GABRA1 / CHRNA1 / PRKAG3 / GRIA4 / CHRNB4 / CHRNG / KPNA2 / HTR3B / CACNG2 / NRGN / AP2S1 / RASGRF2 / CHRNA3 / GNB1 / TUBB2A / GNB5 / CHRNB3 / LIN7B / ADCY2 / NCALD / NPTN / PRKAA2
C TYPE LECTIN RECEPTORS CLRS	MUC13 / MUC1 / MUC3A / MUC5AC / MUC5B / MUC12 / MUC16 / CCL22 / ITPR3 / MUC20 / HRAS / PAK3 / PRKACG / RELB / CLEC4E / CLEC4A / CCL17 / CLEC6A / MUC15 / CLEC4D / SRC / CARD11 / SYK / PYCARD / NFKB2 / NRAS / CARD9 / PAK1	MUC5B / MUC6 / MUC1 / IL1B / CLEC4C / CCL22 / CLEC4E / MUC3A
TRANSMISSION ACROSS CHEMICAL SYNAPSES	GNG4 / KCNJ6 / GABRA2 / TUBB3 / GABRG2 / HTR3A / TUBA3D / GABRA3 / TUBAL3 / CHRNA5 / SYN3 / SLC1A7 / GABRB2 / NEFL / GNGT1 / TUBA3E / GABRR3 / MAPT / GNAL / CHRNA7 / CACNG4 / CHRNB2 / CHAT / CHRND / HRAS / STX1A / ACHE / SLC38A1 / CHRNA3 / KCNJ4 / KCNJ16 / CHRNA6 / PRKACG / GABRQ / PRKCG / GLRA3 / CHRNB4 / ACTN2 / GABRG3 / RASGRF1 / PRKAA2 / NBEA / PPFIA3 / KCNJ5 / CAMK2A / KCNJ9 / GIT1 / KPNA2 / GRIN1 / GRIK5 / CACNB2 / CACNA2D3 / SYT1 / PLCB1 / HTR3C / DLG3 / GLRB / GRIN2A / GLS / PRKAG1 / GABRR1 / PRKAB1 / GLRA1 / SRC / RASGRF2 / CAMKK1 / GABRA6 / GNG10	GABRR3 / KCNJ6 / RASGRF1 / ADCY8 / GABRA3 / GABRG2 / GABRB2 / TUBA3D / MAPT / SLC32A1 / GRIK4 / SYN3 / GRIK5 / KCNJ12 / TUBA4B / GRIN2B / HTR3A / GRIK3 / KCNJ5 / GABRA6 / GNAL / ACTN2 / GNG10 / PLCB1 / RIMS1 / HTR3C / PPFIA4 / GNG5 / GAD1 / KCNJ3 / CACNG3 / GLUL / GABBR2 / SLC38A1 / GRIK2 / GABRA1 / CHRNA1 / PRKAG3 / GRIA4 / CHRNB4 / CHRNG / SLC6A11 / KPNA2 / HTR3B / CACNG2 / NRGN / AP2S1 / RASGRF2 / CHRNA3 / CACNB4 / SLC18A3 / GNB1 / CACNA1A / RAB3A / TUBB2A / GNB5 / CHRNB3 / LIN7B / ADCY2 / NCALD / NPTN / PRKAA2
REGULATION OF TP53 ACTIVITY	CHEK1 / CDK1 / CDK5R1 / AURKB / CCNA2 / EXO1 / TPX2 / TP73 / BLM / AURKA / PRKAA2 / RHNO1 / DNA2 / POU4F1 / CHEK2 / PRKAG1 / PRKAB1 / PPP1R13L / CDKN2A / RFC4 / BARD1 / RAD1 / NBN / CHD3 / EHMT2 / MAPK11 / BRCA1 / DYRK2 / RMI2 / PML / PRDM1 / TAF6 / RMI1 / TAF10 / SMYD2 / DAXX / RAD50 / ZNF385A / CDK5 / TOPBP1 / ATR / MAPKAPK5 / RNF34 / ING2 / CHD4 / RFC3 / PIP4K2C / BRIP1 / KMT5A / BRPF1 / TAF2 / MRE11 / HDAC1 / TAF5 / AKT3 / TTC5 / RAD9A / MEAF6 / RBBP7 / TP53BP2 / BRPF3 / PRKAG3 / RBBP4 / SUPT16H / RFC2	CDK1 / CDKN2A / CCNA2 / CDK5R1 / AURKB / EXO1 / AURKA / RMI2 / TPX2 / UBA52 / PRKAG3 / TAF10 / RFC4 / RAD50 / RPA3 / PIN1 / CDK5 / SMYD2 / DNA2 / CHEK1 / PPP2CA / TP73 / RAD1 / PRKAA2 / MAPKAPK5 / TP53BP2 / TBP / TP53INP1 / ING2 / CHEK2 / ATRIP / PIP4P1 / TAF9 / RAD9B / TAF12 / RPS27A / TAF11 / TP53RK / GATAD2B / TAF13 / RHNO1 / RAD9A / MEAF6 / BLM / CCNA1 / TP63 / BRD7 / CSNK2B / NBN / MAPKAP1 / MBD3 / RFC2
HIV INFECTION	CHMP3 / HMGA1 / CD8B / AP1M2 / FEN1 / PACS1 / NELFE / CHMP4C / NUP210 / RCC1 / CD28 / TAF6 / TAF10 / LCK / NUP37 / NUP62 / RAC1 / ELOC / CXCR4 / AP1S1 / CCR5 / NEDD4L / NUP205 / POLR2H / NCBP2 / ATP6V1H / NDC1 / GTF2H1 / RAN / PPIA / SUPT5H / XRCC4 / SUPT4H1 / APOBEC3G / HLA-A / CD247 / PSMD14 / NUP93 / POLR2K / CTDP1 / TAF2 / PSMD2 / VPS37C / NUP42 / MVB12A / RAE1 / GTF2E1 / TAF5 / POLR2G / VPS28 / NELFA / NUP107 / FURIN / RANGAP1 / NPM1 / HCK / NUP155 / SUPT16H / BANF1 / GTF2H3 / RBX1 / RANBP1 / GTF2F2 / AP1S2 / LIG1 / KPNB1 / ERCC3 / XPO1 / POM121 / PSMC4 / GTF2F1 / TAF11 / NELFB / XRCC6 / POM121C / CDK7 / GTF2A2 / TAF3 / TPR / CHMP4B / SSRP1 / RNMT / TAF8 / AP2B1 / TSG101 / NUP133 / PAK2 / NUP43 / TAF1 / NUP85 / PSIP1 / NUP188 / NUP153 / CUL5	ELOA2 / ELOC / HMGA1 / POLR2K / VPS28 / POLR2J / UBA52 / NELFE / CHMP2A / PPIA / PSMA6 / AP1S1 / HLA-A / SUPT4H1 / POLR2I / TCEA1 / GTF2H5 / TAF10 / RANBP1 / POLR2F / POLR2H / BANF1 / AP2S1 / ATP6V1H / GTF2A2 / VPS37D / NUP210 / CD28 / CHMP4C / RCC1 / CD8B / NUP62 / POLR2E / CHMP3 / TBP / RBX1 / POLR2L / ELOB / CHMP4B / POLR2G / PSMD7 / PSMD8 / MVB12A / B2M / PSMB4 / TAF9 / TAF12 / RPS27A / TAF11 / NCBP2 / TAF13 / GTF2H2 / NUP42 / CHMP2B / MNAT1 / RAC1 / MVB12B / SUPT5H / VPS37A / POM121 / NPM1 / CCNK / NMT2 / NDC1 / PSMA7 / PSMC4 / GTF2E1 / ARF1 / XRCC4 / TSG101 / CHMP5 / NUP58 / GTF2F2 / SLC25A5 / POLR2C / ADRM1 / RAN / PAK2 / VPS37C / POM121C / GTF2H3 / POLR2D / LIG1 / PSMD14 / PSMA3 / GTF2E2 / TAF6 / TAF2 / PSMB3 / PSIP1 / PSMB5 / AP1S2 / PSMC2 / PSMD11 / TAF5 / UBC / CHMP4A / PSMC5 / SEC13

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
NEURONAL SYSTEM	KCNV1 / GNG4 / KCNJ6 / GABRA2 / TUBB3 / GABRG2 / KCNQ3 / HTR3A / GJA10 / TUBA3D / GABRA3 / TUBAL3 / KCNF1 / CHRNA5 / NLGN3 / KCNH6 / SYN3 / SLC1A7 / GABRB2 / NEFL / NLGN1 / GNGT1 / TUBA3E / KCNN4 / GABRR3 / KCNJ14 / KCNMB3 / MAPT / GNAL / CHRNA7 / CACNG4 / CHRNB2 / HCN4 / CHAT / KCNS1 / KCNA10 / CHRND / KCNK13 / KCND2 / HRAS / STX1A / KCNAB3 / ACHE / LRFN4 / SLC38A1 / CHRNA3 / KCNJ4 / KCNJ16 / KCNH3 / CHRNA6 / PRKACG / GABRQ / HOMER1 / SLITRK4 / PRKCG / KCNG4 / PANX2 / KCNA1 / GLRA3 / CHRNB4 / GJC1 / ACTN2 / GABRG3 / RASGRF1 / SLITRK1 / PRKAA2 / NBEA / PPFIA3 / KCNK9 / KCNJ5 / CAMK2A / KCNJ9 / KCNK7 / KCNB2 / GIT1 / KPNA2 / GRIN1 / KCNMB4 / GRIK5 / CACNB2 / CACNA2D3 / SYT1 / PLCB1 / HTR3C / DLG3 / GLRB / GRIN2A / HOMER3 / GLS / KCND1 / KCNA2 / PRKAG1 / GABRR1 / PRKAB1 / GLRA1 / SRC / RASGRF2	GABRR3 / KCNJ6 / RASGRF1 / ADCY8 / KCNA7 / GABRA3 / GABRG2 / GABRB2 / TUBA3D / MAPT / SLC32A1 / GJA10 / KCNN1 / GRIK4 / SYN3 / GRIK5 / KCNJ12 / TUBA4B / GRIN2B / GJC1 / KCNH4 / HTR3A / GRIK3 / LRFN4 / KCNK10 / KCNJ5 / HOMER1 / GABRA6 / GNAL / KCNK9 / KCNA5 / KCNF1 / ACTN2 / GNG10 / PLCB1 / KCNG4 / RIMS1 / KCNC2 / KCNK4 / HTR3C / KCNK7 / SHARPIN / PPFIA4 / GNG5 / GRM5 / GAD1 / KCNJ11 / KCNJ3 / CACNG3 / GLUL / GABBR2 / SLC38A1 / GRIK2 / GABRA1 / CHRNA1 / PRKAG3 / NLGN3 / GRIA4 / CHRNB4 / KCNA4 / CHRNG / SLC6A11 / KPNA2 / HTR3B / CACNG2 / NRGN / KCNC1 / NRXN2 / AP2S1 / HCN4 / RASGRF2 / KCNJ14 / CHRNA3 / KCNH5 / HCN2 / KCNH6 / SHANK1 / LRFN3 / CACNB4 / KCNV1 / SLC18A3 / GNB1 / KCNMB3 / CACNA1A / RAB3A / TUBB2A / GNB5 / CHRNB3 / LIN7B / KCNS2 / ADCY2 / NCALD / HOMER3 / NPTN / PRKAA2 / LRFN2 / SLITRK4 / SLC5A7 / DLGAP4
POST TRANSLATIONAL PROTEIN MODIFICATION	VGF / RAET1G / LYPD1 / MUC13 / GALNT5 / AFP / GPC3 / SPP1 / MUC1 / LY6K / TFAP2A / TUBB3 / MUC3A / UCHL1 / MUC5AC / B3GNT4 / MUC5B / STC2 / NTM / TUBA3D / LYPD3 / UBE2C / BIRC5 / VCAN / SCG2 / MUC12 / ASB16 / SBSPON / PLET1 / TUBAL3 / RAB3B / UBD / TNIP3 / B4GALNT2 / TMEM132A / MUC16 / CDC20 / TOP2A / LYPD5 / MDGA2 / H2AC13 / ALPI / CDK1 / H2BC17 / CDCA8 / ST6GALNAC5 / H2AC14 / COL7A1 / CD109 / UBE2T / H2AC12 / DTL / H2AC25 / H4C13 / H2AC16 / TUBA3E / ATXN3L / RAB34 / ADAMTS8 / DYNC1I1 / MATN3 / FBXL16 / H2BC13 / MUC20 / B3GNT3 / AURKB / CCNA2 / LSAMP / RAB42 / VASH2 / ADAMTS20 / MGAT5B / TTLL9 / GALNT13 / CLSPN / CCNF / FBXL19 / BIRC3 / RAB3D / PRND / RAB27B / THY1 / H2BC26 / H2BC9 / TGFBR1 / B3GNT5 / FOLR1 / GP2 / CBX2 / BLM / AURKA / H2BC14 / KDELR3 / GALNT7 / FBXW10 / VDR / MSLN / FBXO32 / AREG / MELTF / H2AC17 / USP26 / ADAMTS9 / ADAMTS12 / ADAMTS16 / CHGB / H2AC4 / ASB2 / TUSC3 / GCNT3 / H2BC15 / SEC31B / PSMA8 / THBS2 / H4C6 / ASB11 / H2BC10 / ULBP2 / MGAT3 / H4C9 / SPARCL1 / H2AC15 / RAB38 / GALNTL6 / H2BC3 / IKBKE / ASB5 / EIF5A2 / ADAMTS14 / PIGZ / RAB23 / ARSI / SPON2 / H2AC11 / H2BC21 / BMP4 / GOLM1 / OTUB2 / UBE2S / CEACAM7 / H4C1 / H2AC7 / RAB33A / H2BC8 / RNF144A / CDC25A / ST6GALNAC4 / H2BC11 / UBE2Q2 / IZUMO1R / FUT3 / TNC / MDGA1 / GFPT2 / CD55 / H2BC7 / RIPK2 / MGAT4C / LRRC49 / NTNG1 / TIMP1 / UBE2W / TTLL6 / CKAP4 / MUC15 / H2BC12 / ADAMTS5 / KAT2A / FBXL18 / H2AC8 / IL6 / DNMT3A / ADAMTS10 / RAB9B / LAMC1 / KCTD7 / CD52 / CGA / TTLL3 / FBXW12 / PRSS41 / DCAF16 / COPS7B / MGAT5 / PCGF2 / DNMT1 / TECTB / H4C8 / H2BC6 / SLC35A4 / CTSC / ST3GAL4 / YKT6 / EMID1 / CDKN2A / TRAF3 / FBN1 / EID3 / BARD1 / SRD5A3 / ST8SIA1 / B4GALT6 / PLAUR / SLC35C1 / CHML / SHISA5 / DNMT3B / ANK2 / NEU2 / INO80B / ADAMTSL5 / KBTBD13 / ASPH / CHD3 / NOD1 / GALNT10 / TTLL10 / TTLL4 / STAMBPL1 / ADAMTS15 / FSTL3 / TMED3 / ST3GAL2 / FOXK1 / DCAF13 / NUP210 / MGAT4A / NR5A1 / CUL7 / H2BC18 / THRA / RAB36 / H2BC5 / TGFB1 / CNTN5	GPC3 / MUC15 / B4GALNT2 / RAB3B / H2BC3 / ASB16 / MUC13 / H4C13 / SCG2 / H2BC17 / ASB15 / H2BC11 / H4C1 / CDK1 / CDKN2A / CCNA2 / UBE2C / UBD / LYPD1 / UBE2T / MDGA2 / GALNT13 / H2AC16 / LY6H / H2AC12 / H2BC15 / TEX101 / H2AC11 / FBXW10 / TUBA3D / BPIFB2 / FBXL22 / FBXL16 / DTL / H2AC4 / SPP1 / CNIH3 / UBE2S / H2BC10 / ADAMTS19 / H2BC13 / BIRC5 / AURKB / H2AC17 / ELOC / TUBA4B / H2BC12 / H2BC8 / CHML / EIF5A2 / H2BC9 / CDC25A / NRN1 / H2AC7 / ALPI / CGA / EMID1 / SPON2 / ASB5 / H2BC21 / GCNT7 / STC2 / H2BC14 / CD109 / LYPD5 / RPL8 / AURKA / H4C9 / H2BC6 / GALNT9 / FBXO2 / CDC20 / H2AC15 / VNN2 / A4GNT / STAMBPL1 / ENAM / TFAP2A / OTUB2 / APOA2 / ASPH / UMOD / H4C8 / IKBKG / H2AC8 / CDCA8 / LY6K / CBX2 / SPARCL1 / RAB44 / LYPD4 / THY1 / CHST8 / GPAA1 / GFUS / H2BC7 / H2BC18 / PSMG3 / H4C4 / H2AC13 / PSMA8 / ATXN3L / UBA52 / DPM2 / UBE2A / FBXO27 / AMBN / LMAN1L / SDC2 / PSMD4 / AFP / TRAPPC2 / ADAMTS17 / DLAT / DYNLL1 / H2BC5 / H2AC21 / SPRN / UBE2M / NSMCE2 / TECTB / H2AC14 / DPH3 / CANX / PSMA6 / AGBL3 / COMMD6 / ADAMTS20 / PSMD10 / SLC17A5 / RPS23 / H4C2 / COMMD4 / HLA-A / DPM3 / SUMO3 / ALG3 / UBE2F / PSMG4 / NPL / TIMP1 / COMMD5 / DMP1 / NEU1 / UBE2V2 / TAF10 / P4HB / BMI1 / PRKCSH / ADAMTS16 / ST6GALNAC2 / MVD / VWA1 / KDELR1 / TOMM20 / PIGC / TMEM258 / CETN2 / KBTBD13 / SQSTM1 / COMMD7 / MGAT4A / CCNF / POLB / PSMB9 / RAD23A / FKBP8 / H2AC6 / ST8SIA1 / COPE / JOSD2 / METTL21A / COPS5 / H2AC20 / RAB2A / POMP / TMED9 / PIGF / CBX8 / VASH2 / THSD7A / TPGS2 / B3GALNT2 / TMEM132A / OST4 / NEDD8 / SAE1 / SNX3 / PEX2 / RPN2 / GALNT17 / CBX4 / B4GALT6 / RWDD1 / TTLL2 / DCAF16 / DCAF13 / DERL1 / KDELR3 / CALR / RAET1G / KCTD7 / NUP210 / U2AF2 / H2BC4 / RAB3A / PIGU / PDIA3 / TUBB2A / UBE2E1 / LMAN2 / SLC35C1 / FBXW12 / TRAPPC2L / NR1H2 / ST3GAL5 / INO80C / UBE2D1 / NAPB / RNF7 / AGBL1 / NTNG2 / RPS6 / GCNT3 / SUMO2 / TTL / DHPS / H4C6 / RAB29 / BABAM1 / GOSR2 / TTLL4 / KDELR2 / CLSPN / RNF5 / GMDS / NUP62 / CTSA / ADAMTSL5 / GP2 / TRAF2 / MATN3 / PDIA6 / SATB2 / CALU / EEF2KMT / H4C16 / LHB / MGAT3 / SPTB / NOD2 / APOE / SUMO1 / PIGT / DCTN3 / USP26 / RBX1 / KLHL5 / MLEC / RAB3C / FBXL18 / TOP2A / RPL27A / DCTN2 / H4C3 / GPIHBP1 / LAMC1 / ELOB / NAPA / SEMA5B / ING2 / COMMD8 / DCAF17 / GALNT18 / CDC73 / DNAJC3 / RAB24 / ST6GALNAC4 / DAD1 / CAPZA2 / IZUMO1R / PSMD7 / CD59 / UBE2B / TMED7 / PIGM / HNRNPC / DYNC1I1 / DDOST / RIPK2 / THSD1 / PSMD8 / TMED2 / TUBB4A / SVBP / KCTD6 / MCRS1 / RARA / TUBA3E / DDA1 / UGGT2 / MAGT1 / WFS1 / UBE2D2 / RAB41 / ERCC8 / PSMB4 / DPAGT1 / NUCB1 / COPZ1 / RAD23B / GALNTL5 / H4C5 / GALNT10 / LRR1 / UBE2E3 / TUBA1B / FBXL7 / FKTN / RPS27A / MGAT5 / UBXN1 / HSP90B1
HIV LIFE CYCLE	CHMP3 / HMGA1 / FEN1 / NELFE / CHMP4C / NUP210 / RCC1 / TAF6 / TAF10 / NUP37 / NUP62 / ELOC / CXCR4 / CCR5 / NEDD4L / NUP205 / POLR2H / NCBP2 / NDC1 / GTF2H1 / RAN / PPIA / SUPT5H / XRCC4 / SUPT4H1 / NUP93 / POLR2K / CTDP1 / TAF2 / VPS37C / NUP42 / MVB12A / RAE1 / GTF2E1 / TAF5 / POLR2G / VPS28 / NELFA / NUP107 / FURIN / RANGAP1 / NUP155 / SUPT16H / BANF1 / GTF2H3 / RANBP1 / GTF2F2 / LIG1 / ERCC3 / XPO1 / POM121 / GTF2F1 / TAF11 / NELFB / XRCC6 / POM121C / CDK7 / GTF2A2 / TAF3 / TPR / CHMP4B / SSRP1 / RNMT / TAF8 / TSG101 / NUP133 / NUP43 / TAF1 / NUP85 / PSIP1 / NUP188 / NUP153	ELOA2 / ELOC / HMGA1 / POLR2K / VPS28 / POLR2J / UBA52 / NELFE / CHMP2A / PPIA / SUPT4H1 / POLR2I / TCEA1 / GTF2H5 / TAF10 / RANBP1 / POLR2F / POLR2H / BANF1 / GTF2A2 / VPS37D / NUP210 / CHMP4C / RCC1 / NUP62 / POLR2E / CHMP3 / TBP / POLR2L / ELOB / CHMP4B / POLR2G / MVB12A / TAF9 / TAF12 / RPS27A / TAF11 / NCBP2 / TAF13 / GTF2H2 / NUP42 / CHMP2B / MNAT1 / MVB12B / SUPT5H / VPS37A / POM121 / CCNK / NMT2 / NDC1 / GTF2E1 / XRCC4 / TSG101 / CHMP5 / NUP58 / GTF2F2
FACTORS INVOLVED IN MEGAKARYOCYTE DEVELOPMENT AND PLATELET PRODUCTION	TUBB3 / TUBA3D / TUBAL3 / KIF4A / KIF18B / KIF2C / KIFC1 / KIF20A / TUBA3E / KIF18A / KIF23 / HBE1 / H3C2 / H3C3 / KIFC2 / RACGAP1 / H3C10 / KIF15 / KIF21B / H3C13 / PRKACG / CENPE / H3C11 / KIF11 / H3C1 / H3C12 / IFNA6 / MICAL1 / H3C8 / KLC2	H3C2 / H3C13 / H3C3 / H3C11 / H3C10 / H3C1 / H3C12 / IFNA6 / TUBA3D / KIF25 / TUBA4B / H3C8 / NFE2 / KIFC1 / H3C6 / KIF20A / KIF2C / KIF4A
GPCR LIGAND BINDING	CXCL5 / P2RY4 / WNT3A / UTS2B / GPR68 / GNG4 / WNT7B / NTS / GPR35 / PLPPR4 / CALCA / CCL11 / PTGDR2 / SSTR5 / VIP / CCR8 / HTR1D / CCL13 / WNT2B / PTHLH / GRM2 / TACR2 / GAL / ADORA2B / CHRM3 / APLN / TSHR / QRFPR / CXCR5 / CCL22 / GNGT1 / CCL20 / MC5R / XK / KISS1 / LPAR2 / HRH2 / LPAR3 / GHRL / P2RY6 / HCAR3 / GPR17 / HTR2C / CXCL3 / HTR1B / CNR1 / WNT6 / MCHR1 / ADM2 / WNT9B / PMCH / GRPR / GPHB5 / CXCL1 / GHRHR / NMB / OXGR1 / RLN2 / OPN1SW / TAS2R16 / CCL7 / GPR18 / DRD5 / NPFFR2 / CYSLTR2 / MCHR2 / UCN2 / UTS2 / CXCL9 / DRD3 / PLPPR1 / CYSLTR1 / HRH4 / DRD4 / NPB / S1PR2 / CCR9 / WNT3 / CXCL10 / CCL25 / HCRTR2 / RGR / CXCL8 / CD55 / FFAR4 / F2RL2 / PTH2R / MTNR1A / CCL17 / TAS1R1 / HTR1A / PNOC / FZD6 / FZD2 / F2RL3 / TAC1 / CCR4 / CGA / GHSR / PROKR2	UTS2B / PTH2R / NPB / CCL25 / ADRA1D / DRD3 / MCHR1 / GCG / CCL20 / WNT3A / KISS1 / CHRM5 / PTGFR / RAMP1 / XK / PTGDR2 / HTR1F / GRPR / NPY2R / C5AR2 / HCAR3 / CALCA / GRM2 / TAS2R1 / TACR2 / HTR6 / GHRHR / HTR4 / P2RY4 / PLPPR1 / GALR1 / TRHR / APLN / TAS1R2 / ADM2 / CGA / IHH / PLPPR2 / PTHLH / CNR1 / PROK1 / TAS2R13 / DRD5 / NMB / HTR1B / MLNR / FFAR4 / PYY / GALR2 / GNG10 / CCKBR / NMUR2 / LPAR4 / FZD9 / PLPPR4 / GPR37L1 / QRFP / OXTR / GNG5 / GRM5 / HTR2A / UCN2 / TAS2R38 / GABBR2 / CHRM3 / TACR3 / WNT7A / MC5R / GRM4 / P2RY2 / AGTR2 / FZD10 / TAAR2 / NPBWR2 / HTR5A / TAS1R1 / NPY / KISS1R / SAA1 / OPN3 / P2RY6
MITF M REGULATED MELANOCYTE DEVELOPMENT	WNT3A / TFAP2A / ITGA2 / PLK1 / EDIL3 / MC5R / CCNB1 / LEF1 / TYRP1 / BIRC7 / SOX2 / DPF1 / DCT / POU3F2 / KITLG / CDC25B / MCM2 / TFEC / TYR / YWHAZ / CDKN2A / TNFSF11 / BCL2A1 / BRCA1 / SOX9 / MCM5 / TCF7 / IARS1 / ATP6V1F / MYO5A / FOXD3 / ATP6V1C1 / TERT / SMARCD1 / ACTL6A / BCL2 / SMARCA4 / BCL7C / YWHAH / RPS6KA1 / ATP6V1H	SOX2 / WNT3A / ALX3 / CDKN2A / MLANA / ZIC1 / LEF1 / CCNB1 / ITGA2 / CEACAM1 / PLK1 / TFAP2A / EDIL3 / ATP6V1F / EEF1E1 / MC5R / PAX3 / HINT1 / ATP6V0B / DPF1 / ATP6V0E1 / ATP6V1H / ATP6V1C1 / YWHAH / USF1 / AGO2 / ATP6V0E2 / YWHAZ / AIMP2 / SUMO1 / ATP6V0C / MCM5 / TRPM1 / YWHAG / EDN3 / SNAI2 / ACTB / ATP6V1G1 / SOX9 / TCF7L1 / AIMP1 / ATP6V1D / BCL7C / CDC25B / GPR143 / BCL7A / MC4R / YWHAB / BCL7B / TYR / TFE3 / MAPK1 / MCM2

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
METABOLISM OF LIPIDS	CIDEA / CYP2C19 / CYP1A2 / SLCO1B3 / CYP1A1 / MFSD2A / HAO2 / SRD5A2 / CYP2C9 / THRSP / CYP2C8 / HSD17B13 / CYP4A22 / CYP8B1 / ETNK2 / EPHX2 / HSD3B1 / SLC27A5 / ALB / PNPLA5 / CYP2E1 / ACSM3 / HSD11B1 / GBA3 / HPGD / FITM1 / ACSL1 / CYP4A11 / ST6GALNAC6 / ACAA2 / ACADL / ACAA1 / SULT2A1 / MOGAT2 / ACACB / SLC10A1 / HMGCS2 / SCP2 / ACADS / ACAD11 / CYP39A1 / BCHE / ETNPPL / APOA5 / CYP11A1 / CYP4F2 / ALAS1 / SRD5A1 / PLIN2 / HSD3B2 / PON3 / ACOT12 / BDH1 / EHHADH / FABP1 / STARD5 / PON1 / ACOX2 / SLC51A / BDH2 / PEMT / CYP7A1 / BMX / GC / APOA1 / SLCO1B1 / CYP4F8 / CYP4F3 / ACADM / CYP2J2 / PNPLA7 / ECHS1 / TMEM86B / AKR1D1 / CPT2 / CYP3A4 / BAAT / GPD1 / INSIG1 / HMGCL / PLPP3 / ABCB4 / DGAT2 / MMUT / MLYCD / G0S2 / AGPAT2 / ST8SIA5 / PITPNM3 / HADH / ACBD4 / PLA2G10 / SLC25A20 / CBR4 / ACOX1 / ABCB11 / PLIN1 / ACOT2 / SLC27A2 / TPTE / CYP46A1 / PNPLA3 / LRP2 / HMGCLL1 / RXRA / ACAT1 / CPNE6 / ACADVL / PHYH / PIK3R3 / PIK3C2G / PPARA / MCEE / PLAAT5 / MMAA / MTMR4 / PECR / PRKAG2 / AKR1C4 / SEC24B / LSS / FAAH / ACAT2 / HADHB / GPAM / CYP27A1 / PEX11A / MSMO1 / SC5D / ECI1 / ACSL5 / SMPD3 / ANGPTL4 / ACBD5 / PCCA / POMC / ACER1 / PLA2G2E / HACL1 / HSD17B2 / CHPT1 / STARD4 / PCCB / CRAT / ACSF3 / SERPINA6 / RORA / MGLL / EBP / ACSF2 / PCTP / LHB / MVK / ARSD / PLA2G12A / ORMDL3 / ACOT4 / PIK3R1 / ELOVL6 / DECR1 / PTGR1 / ACOT1 / GRHL1 / PITPNM2 / RGL1 / ECI2 / PLA2G2A / CERS4 / AMACR / ACSS3 / HSD17B4 / LPIN2 / CPT1A / PLAAT3 / NUDT7 / SAR1B / HSD17B8 / HADHA / DBI / CEPT1 / ACAD10 / CROT / ABCG2 / AGMO / SREBF1 / ALDH3A2 / TNFAIP8L1	FITM1 / SMPD3 / CYP1A2 / PITPNM3 / HMGCLL1 / PTGS2 / CH25H / PLPP2 / CYP2C19 / CYP3A4 / SLCO1B3 / PLAAT1 / CPNE6 / GGT5 / SRD5A2 / PLA2G5 / CYP2E1 / SLC44A4 / CYP39A1 / ACSM3 / PLA2G4A / CYP2C8 / ACOT11 / CYP1A1 / ACAA2 / CYP2C9 / PTPN13 / PLA2R1 / SLCO1A2 / ACSL5 / APOA5 / MFSD2A / ACSBG1 / ACAA1 / HAO2 / PNPLA7 / ACACB / TPTE2 / EPHX2 / AKR1D1 / GBA3 / PTGIS / PTGDS / PLIN1 / SCD5 / ACADS / ACADL / ACOX2 / OLAH / CYP4A22 / CYP4A11 / CYP8B1 / OSBPL10 / FA2H / ACSL1 / OSBPL7 / ALOX5 / DPEP2 / MFSD2B / PLPP3 / MBOAT2 / RGL1 / NEU4 / HMGCS2 / AWAT2 / MMUT / HELZ2 / DEGS2 / EHHADH / LIPH / OXCT1 / PHOSPHO1 / TBXAS1 / INPP5J / ST6GALNAC6 / ETNK2 / SULT2A1 / PLD4 / LPIN2 / ACAD11 / OSBPL5 / PIKFYVE / CPT2 / SLC27A5 / SCP2 / GPD1L / INPP5D / OXCT2 / ABCG2 / GLB1L2 / MOGAT2 / STARD4 / BDH2 / ARSF / LPIN3 / PIK3R6 / SREBF1 / SLC10A1 / ACADM / CD36 / PRKAG2 / HSD17B13 / HADHA / HSD3B2 / ALDH3B1 / SEC24B / PIK3C3 / MED13L / TSPOAP1 / ACHE / BMX / PON3 / PNPLA6 / NCOR1 / ACOT2 / NEU3 / AGPAT2 / MLYCD / PLA2G2F / PEX11A / ACAT1 / ALB / PEMT / PECR / GBA2 / GPAM / MMAA / ACOX1 / ACAD10 / STAR / MTMR4 / CYP4F2 / GSTM4 / ACSF2 / PIK3C2G / PPARGC1A / PIK3R4 / PCYT1B / SLC10A2 / FAAH / CYP2J2 / PLB1 / POMC / ACOT12 / PIK3CA / STARD5 / HMGCL / GPD1 / RORA / PNPLA3 / FABP12 / ACOT1 / HSD11B2 / PTGS1 / HADHB / FAR2 / BDH1 / CYP1B1 / FAM120B / PIK3R5 / FAR1 / FABP3 / CHD9 / INPP4B / ECHS1 / SC5D / PLA2G2D / SPTLC3 / ALAS1 / BCHE / GDPD5 / TNFAIP8L2 / SEC23A / SRD5A1 / ACSF3 / LIPE / GALC / MED13 / CPT1A / PIK3CD / CIDEC
NERVOUS SYSTEM DEVELOPMENT	SHC3 / MPZ / TUBB3 / ITGA2 / KCNQ3 / TUBA3D / TUBAL3 / MSI1 / KIF4A / MMP9 / GAP43 / EFNA5 / POU3F1 / TREM2 / ROBO1 / RPL36A / LHX4 / TUBA3E / CDK5R1 / EPHA10 / COL9A1 / EPHB2 / SEMA3A / NRCAM / EPHB3 / CD24 / DOK6 / CNTNAP1 / TRPC3 / EFNA3 / COL2A1 / HRAS / NELL2 / TRPC4 / PAK3 / COL5A1 / PLXNC1 / POU3F2 / DPYSL3 / CAP2 / PLXNA3 / CRMP1 / PRKACG / VLDLR / PDLIM7 / COL5A2 / COL3A1 / ABLIM2 / EPHA5 / PMP22 / EPHB6 / EPHA8 / SLIT2 / COL4A2 / CNTN1 / DPYSL4 / SEMA7A / ENAH / COL4A1 / GIT1 / COL6A3 / GRIN1 / CACNB2 / ARHGAP39 / RPL22L1 / DOK5 / DCX / DLG3 / LAMC1 / EPHA7 / LIMK1 / SRC / SCN4A / GRB7 / ITGAV / TRPC1 / ARPC1B / TRPC7 / ANK2 / COL9A3 / PRX / EFNB1 / RAP1GAP / UNC5D / ISL1 / AGAP2 / ITGB3 / RRAS / AGRN / ITGA2B / ITGA10 / MYL9 / EPHA6 / TRPC6 / SCN2B / AKAP5 / SLIT3 / SLIT1 / CACNA1C / SCN4B / COL6A2 / CACNA1S / TUBA4A / LAMB1 / PFN2 / CACNB1 / NRAS / RGMA / CACNA1I / PAK1 / COL4A5 / EIF4A3 / RHOC / PLXNA1 / SEMA3E / GRIN2B / HSP90AB1 / TUBA1B / EFNA4 / VASP / KCNQ2 / TUBA4B / VAV3 / TUBA1A / ARPC5 / CDK5 / RPS6KA4 / DNM3 / ARHGEF28 / RAC1 / ELOC / CFL1 / CXCR4 / COL4A3 / RPL8 / SMARCA4 / SRGAP3 / EPHA3 / MSN / COL6A1 / SEMA4D / MYL12A / RPL30	MPZ / LHX3 / NRCAM / SCN1A / UNC5D / MSI1 / RPL39L / ROBO1 / CDK5R1 / RPL22L1 / TUBA3D / ENAH / ELOC / TUBA4B / GRIN2B / RPL36A / RPL30 / SCN4A / ITGA2 / CAP2 / RPL8 / COL5A3 / ARTN / RPL10L / RPL39 / KIF4A / RPL7 / DCC / TREM2 / TRPC7 / RPS21 / RPL28 / RPS5 / ABLIM2 / RPS17 / UBA52 / RPS27 / RPL38 / GFRA4 / ITGB3 / COL2A1 / RPS11 / SDC2 / GAP43 / GDNF / DNM3 / RPS28 / RPS20 / RPS14 / RPS19 / RPS16 / RPS15 / PSMA6 / RPL35A / EFNA1 / RPL37A / RPL35 / RPL37 / HJV / RPS23 / RPLP1 / RPL36 / CYP51A1 / RPS24 / TRPC3 / ARPC5 / RPS18 / DRP2 / RPL29 / RPLP2 / RPS10 / RPL26L1 / SDCBP / RPL27 / AP2S1 / RPL13 / RPL18 / PLXNC1 / TRPC6 / CDK5 / PSENEN / CLTB / RPL10 / RPS26 / RPS29 / PAK3 / CACNB4 / CFL1 / EFNA2 / RPL18A / LYN / ALCAM / PRX / CLTA / TUBB2A / MAGOHB / RGMA / AGRN / RPS6 / UPF3A / RBM8A / EFNA4 / RPL10A / CRMP1 / RPL32 / CD24 / SHC1 / RPS12 / RPL12 / APH1A / RPS8 / LIMK2 / ARPC1B / SPTB / PIK3R3 / RPL21 / HSP90AB1 / SCN3A / DAB1 / RPS7 / RPL23A / DOK4 / RBX1 / NRAS / RPS4X / MYL6 / RPL27A / RPL23 / PAK1 / FAU / LAMC1 / ELOB / MYL12A / PSMD7 / RPL19 / RPS15A / PSMD8 / RNPS1 / TUBB4A / NCSTN / AKAP5 / TUBA3E / RPL34 / PSMB4 / RPL13A / COL4A3 / RPS25 / TUBA1B / RPS27A
RHO GTPASE CYCLE	MUC13 / STMN2 / IQGAP3 / ANLN / LRRC1 / DIAPH3 / RHOV / ECT2 / RHOF / BAIAP2L2 / DEPDC1B / FAM83B / WIPF3 / SEMA4F / DLG5 / ARHGAP11A / PCDH7 / PLEKHG4 / NOX1 / CCDC187 / CIT / DBN1 / KIF14 / RACGAP1 / PAK3 / ARHGEF39 / NHS / NCF2 / PKN3 / RHOH / FRS3 / TRIP10 / TIAM2 / OBSCN / CHN1 / GIT1 / RHOQ / ARHGAP39 / CAV1 / CKAP4 / FMNL1 / JAG1 / ARHGEF16 / LMNB1 / PLEKHG4B / RHOBTB1 / ARHGAP33 / TFRC / ARHGAP22 / SRC / YKT6 / FGD1 / FMNL3 / RASGRF2 / NIPSNAP2 / CDC42EP5 / GRB7 / RHPN1 / IL32 / ARHGAP18 / ABR / ARHGAP28 / DSG2 / TPM4 / KCTD13 / CAVIN1 / OPHN1 / CKB / RAC2 / ARHGEF2 / SCRIB / WASF1 / CPD / CYBA / MCAM / SH3BP1 / PAK1 / TPM3 / PRAG1 / ARHGAP6 / STIP1 / SHKBP1 / ARHGAP27 / ARHGEF25 / HGS / SWAP70 / ARHGEF5 / ARHGAP9 / RHOC / ARHGAP44 / CCDC88A / CEP97 / PLXNA1 / ARHGEF3 / GMIP / HSP90AB1 / LCK / SLITRK5 / WIPF1 / TUBA1B / ARHGAP40 / NCF4 / WIPF2 / CCT6A / VAV3 / ABI2 / WASF2 / DEF6 / CDC42EP3 / RASAL2 / ARHGEF28 / TAGAP / MCF2L / RAC1 / PKN1 / RALBP1 / GJA1 / PEAK1 / SRGAP3 / TMPO / BAIAP2L1 / NOXO1 / ARHGDIB / NCF1 / ARHGEF11 / ARHGAP15 / EFHD2 / MCF2 / SLC1A5 / ARHGEF18 / ZAP70	FAM83B / RND3 / PTPN13 / ARHGEF17 / ARHGAP10 / ARHGEF4 / ARHGAP8 / DOCK8 / VIM / NHS / CFTR / SLITRK3 / POTEE / DNMBP / DOCK10 / DLC1 / DAAM1 / TAGAP / RHOB / BASP1 / MYO9A / PDE5A / SYDE1 / IQGAP1 / PTK2B / ARHGAP23 / FMNL1 / ABR / PREX2 / DOCK2 / TRIP10 / FERMT2 / DBT / FGD4 / ARAP2 / RAC2 / ARHGEF26 / NCKAP1L / DST / SYDE2 / FGD2 / FARP2 / ALS2 / ADD3 / VAV1 / VANGL2 / TIAM1 / DBN1 / IQGAP2 / ABCD3 / EPHA2 / CYBA / ANKFY1 / FGD3 / WDR6 / STEAP3 / USP9X / ARAP3 / ARHGEF40 / TJP2 / DSP / OSBPL11 / ARHGAP27 / WDR81 / RALGAPA1 / CDC42BPB / DOCK1 / WDR11 / CYBB / ARHGAP25 / ARL13B / ARHGAP26 / PIK3CA / UACA / DOCK11 / GJA1 / CDC42BPA / ARHGEF3 / WAS / ARHGEF6 / STARD13 / RHOV / SPEN / STARD8 / NOXO1 / PLEKHG6 / RHPN1 / ARHGAP30 / ARHGAP20 / NOX3 / ARHGAP42 / ARHGAP4 / STK10 / CAVIN1 / KALRN / FMNL2 / SPATA13 / PREX1 / ARHGAP15 / PLD1 / CYFIP1 / PHIP / PLD2 / DOCK5 / SLC1A5 / ARHGAP9 / ROCK1 / ARHGAP24 / WHAMM / SH3BP1 / CYFIP2 / ROCK2 / PLEKHG1 / CUL3 / ARHGAP31 / ARHGAP29 / NET1 / RND1 / SOS2 / LMAN1 / PIK3R1 / ARHGAP32 / PLXNB1 / FAM13A / MCF2 / SRGAP2 / RHOBTB1 / RNF20 / SOWAHC / AKAP13 / ARHGEF10L / EPSTI1 / NISCH / SRC / DSG1 / CDC42 / DOCK4 / RHOBTB2 / CPNE8 / ACTC1 / UBXN11 / FILIP1 / PKP4 / ARHGEF12 / DOCK7 / JUP / ARHGEF28 / CSK / MTR / TRIO / ARHGAP35 / ARHGAP5 / ARHGEF18 / GRB7 / BLTP3B / SLK / PEAK1 / ARHGAP45 / ANKRD26 / DIAPH1 / NCF1 / GOPC / RHOH / KIDINS220 / DEF6 / VAV3 / PCDH7 / AAAS / ALDH3A2
RAC1 GTPASE CYCLE	IQGAP3 / DIAPH3 / ECT2 / DEPDC1B / WIPF3 / PLEKHG4 / NOX1 / CIT / RACGAP1 / PAK3 / ARHGEF39 / NHS / NCF2 / TIAM2 / CHN1 / GIT1 / ARHGAP39 / CAV1 / FMNL1 / JAG1 / ARHGAP33 / TFRC / ARHGAP22 / YKT6 / RASGRF2 / ABR / OPHN1 / WASF1 / CYBA / MCAM / SH3BP1 / PAK1 / ARHGAP27 / ARHGEF25 / SWAP70 / ARHGEF5 / ARHGAP9 / ARHGAP44 / GMIP / WIPF1 / NCF4 / WIPF2 / VAV3 / ABI2 / WASF2 / DEF6 / TAGAP / MCF2L / RAC1 / PKN1 / RALBP1 / SRGAP3 / TMPO / BAIAP2L1 / NOXO1 / ARHGDIB / NCF1 / ARHGEF11 / ARHGAP15 / MCF2 / SLC1A5 / ARHGEF18	ARHGAP10 / ARHGEF4 / DOCK8 / NHS / DOCK10 / DLC1 / TAGAP / IQGAP1 / ARHGAP23 / FMNL1 / ABR / PREX2 / DOCK2 / FERMT2 / ARAP2 / NCKAP1L / SYDE2 / FARP2 / ALS2 / VAV1 / TIAM1 / IQGAP2 / EPHA2 / CYBA / ARAP3 / ARHGAP27 / DOCK1 / CYBB / ARHGAP25 / ARHGAP26 / PIK3CA / DOCK11 / CDC42BPA / WAS / ARHGEF6 / NOXO1 / PLEKHG6 / ARHGAP30 / ARHGAP20 / NOX3 / ARHGAP42 / ARHGAP4 / KALRN / SPATA13 / PREX1 / ARHGAP15 / PLD1 / CYFIP1 / PLD2 / DOCK5 / SLC1A5 / ARHGAP9 / ARHGAP24 / SH3BP1 / CYFIP2 / PLEKHG1 / ARHGAP31 / ARHGAP29 / SOS2 / PIK3R1 / ARHGAP32 / FAM13A / MCF2 / SRGAP2 / NISCH / CDC42 / DOCK4
FORMATION OF THE CORNIFIED ENVELOPE	KRT20 / PI3 / TGM1 / KRT23 / PKP3 / KRT86 / KRT19 / KRT80 / KRT3 / KRT72 / KRT37 / KRT17 / KRT38 / SPINK5 / KRT16 / LCE1B / KRT2 / EVPL / KRT81 / LCE4A / KRT4 / KLK8 / KRT32 / KLK14 / ST14 / KLK13 / KRT6C / KRT77 / KRT6A / KRT6B / KRT39 / KLK5 / KRT15 / DSC1 / LCE1F / DSG2 / KRT75 / KRT40 / KRT12	KRT75 / KRT35 / SPRR2G / DSC1 / KRT23 / DSG4 / KRT82 / KRT28 / KRT39 / KRT84 / SPINK5 / KRT25 / KRT33A / KRT38 / KRT6C / KRT81 / SPRR3 / KRT85 / KLK13 / DSG3 / SPRR2A / SPRR2F / KRT86 / CSTA / KLK8 / KRT71 / LCE3D / LIPK / KRT32 / KRT9 / KRT14 / KRT34 / KLK5 / KRT77 / PI3 / CASP14 / RPTN / KRT33B / LCE3B / LCE3C

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
INFECTIOUS DISEASE	HAVCR1 / GPC3 / GUCY2C / SFN / GNG4 / SH3GL3 / TUBB3 / NEK2 / TUBA3D / TUBAL3 / UPK1A / LAMC2 / MMP9 / DPEP1 / H2AC13 / ANO4 / ADORA2B / ATP1A3 / H2BC17 / H2AC14 / ANO9 / RPL36A / GPC2 / H2AC12 / H2AC25 / H4C13 / EZH2 / H2AC16 / GNGT1 / TUBA3E / WIPF3 / DYNC1I1 / ITPR3 / H2BC13 / CHMP3 / LAMA3 / H3C2 / IGLV3-25 / H3C3 / NOX1 / ELAVL2 / H2BC26 / GPC5 / H2BC9 / LAMA4 / H2BC14 / TLR7 / H3C10 / STX1A / COL5A1 / TXNRD1 / IGKV4-1 / H2AC17 / H2AC4 / H3C13 / LY96 / PRKACG / ANTXR1 / TUSC3 / H2BC15 / LAMB3 / GNAZ / H4C6 / HMGA1 / CD8B / H2BC10 / COL5A2 / RCAN3 / H3C11 / H4C9 / H2AC15 / H2BC3 / CYSLTR2 / FCGR2A / IKBKE / FCGR1A / H3C1 / PDCD1 / H3C12 / IFNA6 / ANO3 / H2AC11 / H2BC21 / H3C8 / CYSLTR1 / NHERF4 / DNAJC10 / H4C1 / H2AC7 / IMPDH1 / SV2B / H2BC8 / ZDHHC11 / ANO7 / ST6GALNAC4 / H2BC11 / COL4A2 / COL4A1 / CAMK2A / H2BC7 / RIPK2 / KPNA2 / MGAT4C / EPCAM / AP1M2 / RHBDF2 / P4HA2 / CAV1 / KPNA7 / PPIL6 / SYT1 / GBP2 / RPL22L1 / IGF1R / H2BC12 / IGLV2-23 / H2AC8 / IL6 / LAMA5 / H3C7 / LAMC1 / PSTPIP1 / TYRO3 / IGKV1D-16 / FEN1 / MGAT5 / H4C8 / H2BC6 / SRC / ST3GAL4 / IGHV3-7 / HYOU1 / YWHAZ / TRAF3 / MLKL / PACS1 / BAG2 / ARPC1B / GNG10 / NELFE / CHMP4C / IFNA14 / CHD3 / NOD1 / IGLC3 / ST3GAL2 / CLEC5A / NUP210 / BRMS1 / MGAT4A / H2BC18 / SYK / H2BC5 / TGFB1 / IGHV3-11 / AGRN / CDK19 / HSPA1B / H2AC21 / RCC1 / PYCARD / ENTPD1 / SNAP25 / CD28 / CORO1A / JAK3 / SF3B4 / WASF1 / IRAK1 / TUBA4A / H4C4 / CYBA / LAMB1 / STING1 / NFKB2 / PML / GNG8 / ZBP1 / CGAS / SF3A2 / ATP1B3 / COL4A5 / SNRPD1 / TXNL4A / H4C16 / CD3G / MAP1B / MED9 / TAF6 / DNAJB11 / TXN / EIF4A3 / SNRPB / MED17 / CPSF4 / HGS / PPIL1 / NOS2 / IFNGR2 / SRPK1 / TRIM27 / IGHG2 / P2RX4 / COL4A6 / TAF10 / MYO5A / RNF213 / HSP90AB1 / LCK / NUP37 / WIPF1 / TUBA1B / DAXX / WIPF2 / NUP62 / TUBA4B / DVL2 / DPM2 / VAV3 / TUBA1A / IGHG4 / ST6GALNAC2 / ABI2 / ARPC5 / ADCY7 / WASF2 / ADCY3 / ALYREF / RAC1 / ELOC / FNTB / MED10 / PRCC / CXCR4 / AP1S1 / FUT8 / DVL3 / PARP6 / GJA1 / COL4A3 / RPL8 / SNRPA1 / FXYD7 / ITPR1 / HSPA1A / CCR5 / ADAM17 / PHF21A / IMPDH2 / STT3A / NEDD4L / NOXO1 / RPN2 / RPL30 / NUP205 / VPS41 / CD2BP2 / SAP30 / ATP1B1 / IGHV3-23 / DYNLL1 / POLR2H / NCBP2 / GNGT2 / GNB1 / WNT5A / YWHAH / COL5A3 / MED15 / CSTF2 / ATP6V1H	GPC3 / GUCY2C / H3C2 / H2BC3 / H3C13 / H3C3 / H4C13 / H2BC17 / H3C11 / RPL39L / NEK2 / H2BC11 / HAVCR1 / GNAZ / FXYD3 / H4C1 / H3C10 / ADCY8 / H2AC16 / H2AC12 / RPL22L1 / H2BC15 / H3C1 / H2AC11 / H3C12 / IFNA6 / TUBA3D / H2AC4 / ELOA2 / H2BC10 / DPEP1 / H2BC13 / H2AC17 / ELOC / TUBA4B / H2BC12 / RPL36A / H2BC8 / RPL30 / H3C8 / H2BC9 / H2AC7 / H2BC21 / H2BC14 / NOS2 / RPL8 / HMGA1 / LY96 / SNRPD2 / COL5A3 / H4C9 / H2BC6 / H3C6 / RPL10L / SNRPE / H2AC15 / GNG10 / POLR2K / RPL39 / H4C8 / IKBKG / RPL7 / H2AC8 / GNG5 / TXN / H2BC7 / LAMB3 / H2BC18 / VPS28 / RPS21 / RPL28 / RPS5 / RPS17 / H4C4 / H2AC13 / POLR2J / COL4A6 / UBA52 / RPS27 / DPM2 / RPL38 / SFN / NELFE / RPS11 / SDC2 / DYNLL1 / RPS28 / H2BC5 / H2AC21 / PRCC / RPS20 / RPS14 / CHMP2A / RPS19 / PPIA / RPS16 / H2AC14 / RPS15 / FXYD7 / CANX / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / AP1S1 / RPS23 / H4C2 / SPCS1 / HLA-A / SUPT4H1 / MAP1LC3B / FCGR2A / DPM3 / LAMA4 / RPLP1 / POLR2I / TCEA1 / KPNA2 / DNAJB11 / ATP1A3 / RPL36 / GTF2H5 / TAF10 / RANBP1 / RPS24 / P4HB / BCAP31 / HSPA5 / PRKCSH / H3C7 / ISY1 / ARPC5 / ST6GALNAC2 / POLR2F / KDELR1 / RPS18 / RPL29 / RPLP2 / TMEM258 / RPS10 / POLR2H / RPL26L1 / GEMIN7 / IMPDH2 / MGAT4A / RPL27 / BANF1 / AP2S1 / RPL13 / FKBP1A / SAP30L / HYOU1 / HLA-G / H2AC6 / RPL18 / TXNRD1 / ELAVL2 / H2AC20 / PUF60 / HLA-F / ATP6V1H / ALYREF / BAG2 / ZDHHC9 / PTGES3 / ZCRB1 / SF3B4 / DYNLT1 / PRKG2 / OST4 / RPL10 / RPS26 / RPS29 / RPN2 / C4BPB / ANO10 / GTF2A2 / EMC4 / UBE2V1 / P4HA2 / RPL18A / LYN / TXNL4A / BUD31 / GNB1 / CALR / VPS37D / VAMP1 / SNRPF / NUP210 / U2AF2 / YWHAH / H2BC4 / CD28 / CPSF4 / SNRPB / SNRPG / CLTA / PDIA3 / TUBB2A / CHMP4C / ELAVL1 / GNB5 / SDC1 / AGRN / SNRPD1 / RPS6 / EZH2 / ADCY2 / IFNGR2 / GOLGA7 / RPL10A / H4C6 / SF3B6 / CHMP1A / RNASEK / SEC11C / RCC1 / CSTF2 / RPL32 / GPC5 / IFNGR1 / IRF3 / NACA / CD8B / NUP62 / RPS12 / SAP18 / PEX19 / RPL12 / YWHAZ / POLR2E / RPS8 / CHMP3 / H4C16 / ARPC1B / BTF3 / NOD2 / MED29 / RPL21 / HSP90AB1 / SUMO1 / SRPK1 / SNRPA1 / RPS7 / RPL23A / ATP1B1 / ZDHHC3 / TBP / CALM3 / RBX1 / RPS4X / POLR2L / RPL27A / RPL23 / H4C3 / BRMS1 / FAU / LAMC1 / ELOB / PPIL1 / CHMP4B / POLR2G / CDC73 / DNAJC3 / ST6GALNAC4 / DAD1 / BST2 / PSMD7 / IRAK1 / BRK1 / RPL19 / HNRNPC / DYNC1I1 / GEMIN6 / DDOST / ISCU / RIPK2 / RPS15A / PSMD8 / RNPS1 / SNF8 / TUBB4A / SRSF9 / TUBA3E / ATP1A4 / MVB12A / MAGT1 / RPL34 / TLR7 / UBE2D2 / HNRNPR / B2M / RTN3 / SIGMAR1 / MED30 / PSMB4 / MED22 / RPL13A / SF3B5 / COL4A3 / H4C5 / RPS25 / TAF9 / TUBA1B / TAF12 / YWHAG / RPS27A / TAF11 / MGAT5
METABOLISM OF CARBOHYDRATES AND CARBOHYDRATE DERIVATIVES	FUT2 / GPC3 / B3GNT4 / HKDC1 / VCAN / G6PD / B4GALNT2 / CEMIP / B3GALT1 / PFKP / HAS3 / PKM / GPC2 / ACAN / B3GNT3 / BCAN / HMMR / CSGALNACT1 / B3GALT5 / HS3ST1 / GPC5 / NDST2 / B3GALT2 / ABCC5 / SLC26A2 / PRKACG / CHST6 / CHST1 / SLC2A1 / PYGB / PGK2 / ENO2 / UST / TKT / GLB1L2 / CD44 / FUT3 / GAPDHS / OGN / CSPG5 / CHST11 / CHST3 / GNPDA2 / CSPG4 / ST3GAL4 / HYAL3 / B4GALT6 / HS3ST2 / GLB1L / PGM2L1 / G6PC3 / RPEL1 / UXS1 / BPGM / CHSY1 / ST3GAL2 / FUT9 / NUP210	STAB2 / NDST3 / B3GALT5 / HAS2 / LYVE1 / HAS1 / DCN / G6PC2 / BGN / AKR1E2 / AGL / HK3 / FBP1 / PC / PCK1 / PRELP / PCK2 / PYGM / B3GNT7 / CHST3 / B3GNT4 / PGM1 / FMOD / FUT4 / ST3GAL6 / HK2 / TKFC / B3GAT1 / ST6GALNAC6 / ENO2 / HYAL4 / GCKR / GPC4 / RANBP2 / PFKM / PFKFB3 / CHSY3 / KHK / GLB1L2 / UGP2 / RHD / ALDOB / NDST4 / HS3ST3A1 / PGM2L1 / HS3ST1 / DSE / LUM / CSGALNACT1 / SLC26A1 / GPC2 / SORD / PHKA1 / PFKP / DSEL / SDC3 / CHST6 / PYGL / FUT9
DEGRADATION OF THE EXTRACELLULAR MATRIX	MMP12 / MMP1 / MMP3 / SPP1 / COL11A1 / MMP11 / SCUBE1 / MMP7 / LAMC2 / COL10A1 / MMP9 / CTSV / COL7A1 / ACAN / COL1A1 / ADAMTS8 / MMP13 / COL9A1 / BCAN / LAMA3 / CAPN12 / CAPN6 / CAPN8 / COL15A1 / COL1A2 / TLL1 / CTSK / CAPN13 / COL2A1 / COL5A1 / ADAMTS9 / ADAMTS16 / MMP17 / FBN3 / COL8A1 / MMP14 / LAMB3 / COL5A2 / COL3A1 / KLK7 / SPOCK3 / MMP16 / CD44 / PRSS2 / MMP10 / MMP24 / COL4A2 / CTSD / COL4A1 / COL6A3 / TIMP1 / ADAMTS5 / ADAM9 / ADAM8 / LAMA5 / LAMC1 / MMP25 / COL13A1 / COL23A1 / FBN1 / TLL2 / CAPN2 / SCUBE3 / COL9A3	ELANE / COL6A6 / COL25A1 / CAPN6 / COL19A1 / CAPN3 / DCN / COL10A1 / CMA1 / ADAMTS1 / CTSG / ADAMTS4 / MMP19 / TPSAB1 / MMP8 / SPOCK3 / FBN2 / CTSV / ADAMTS9 / COL9A2 / COL13A1 / LAMC2 / COL16A1 / LAMB1 / KLKB1 / PLG / COL26A1
MITF M DEPENDENT GENE EXPRESSION	TFAP2A / ITGA2 / PLK1 / EDIL3 / CCNB1 / LEF1 / TYRP1 / BIRC7 / SOX2 / DPF1 / DCT / POU3F2	SOX2 / CDKN2A / MLANA / LEF1 / CCNB1 / ITGA2 / CEACAM1 / PLK1 / TFAP2A / EDIL3 / ATP6V1F / HINT1 / ATP6V0B / DPF1 / ATP6V0E1 / ATP6V1H / ATP6V1C1 / USF1 / AGO2 / ATP6V0E2 / ATP6V0C / MCM5 / TRPM1 / ACTB / ATP6V1G1 / TCF7L1 / ATP6V1D / BCL7C / CDC25B / GPR143 / BCL7A / BCL7B / TYR
AUTOPHAGY	TUBB3 / TUBA3D / TUBAL3 / TUBA3E / DYNC1I1 / CHMP3	TUBA3D / CETN1 / TUBA4B / RHEB / VPS28 / LAMTOR2 / UBA52 / TOMM5 / RRAGD / PRKAG3 / DYNLL1 / CHMP2A / LAMTOR4 / MAP1LC3B / TOMM40 / TOMM20 / SQSTM1 / ATG12 / ATG10 / HSF1 / UBE2V1 / TOMM22 / LAMTOR5 / LAMP2 / VPS37D / TUBB2A / CHMP4C / PRKAA2 / RNASE1 / CHMP3 / HSP90AB1 / LAMTOR3 / CHMP4B / OPTN / DYNC1I1 / TOMM7 / TUBB4A / TUBA3E / MVB12A / UBE2D2 / LAMTOR1 / MTERF3 / TUBA1B / MAP1LC3A / RPS27A

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
ADAPTIVE IMMUNE SYSTEM	BTNL8 / TUBB3 / CD1A / NEK2 / TUBA3D / UBE2C / ASB16 / TUBAL3 / TRAV29DV5 / TRIM71 / TRAV19 / KIF4A / CDC20 / CTSV / KIF2C / H2BC17 / ORAI2 / TREM2 / H2AC14 / KIF20A / RNF182 / COLEC12 / H4C13 / TRIM50 / EZH2 / TUBA3E / SIGLEC12 / COL1A1 / DYNC1I1 / ITPR3 / KIF18A / FBXL16 / H2BC13 / KIF23 / B3GNT3 / LEF1 / S100A1 / LAIR2 / H3C2 / IGLV3-25 / H3C3 / COL1A2 / CCNF / FBXL19 / TREML4 / H2BC26 / TRIM9 / H2BC9 / CD200 / PIK3R6 / CTSK / H2BC14 / COL2A1 / RACGAP1 / BTN1A1 / CTLA4 / H3C10 / HRAS / PAK3 / FBXW10 / NCR3LG1 / ICOS / CD300LD / KIF15 / FBXO32 / IGKV4-1 / MICB / H2AC4 / NCF2 / H3C13 / LY96 / PRKACG / ASB2 / TUSC3 / CD34 / ICAM5 / H2AX / H2BC15 / H4C6 / CD8B / ASB11 / H2BC10 / COL3A1 / CENPE / H3C11 / H4C9 / S100A9 / H2BC3 / SLAMF7 / ASB5 / CD1B / KIF11 / FCGR1A / H3C1 / PDCD1 / H3C12 / ICAM4 / LAT / TEAD4 / H2BC21 / H3C8 / CD300LF / PRKAA2 / UBE2S / TRIM63 / RASGRP1 / CBLL2 / H4C1 / H2AC7 / H2BC8 / KLC2 / H2BC11 / TRIM36 / CD3D / UBE2Q2 / TREML2 / TRIM69 / CTSD / GRAP2 / ENAH / H2BC7 / RIPK2 / LILRB4 / TRAIP / AP1M2 / PILRB / UBE2W / MICA / CD80 / H2BC12 / PTPN22 / IGLV2-23 / FBXL18 / H2AC8 / NFKBIE / CD40LG / THEM4 / CD1C / H3C7 / ULBP1 / ULBP3 / KCTD7 / IGKV1D-16 / HLA-DQA1 / PRKAG1 / FBXW12 / TEAD2 / PRKAB1 / IFITM1 / H4C8 / HLA-DRB5 / H2BC6 / CTSC / LAIR1 / SRC / TAP2 / IGHV3-7 / HLA-DQB2 / ICAM1 / TRIM11 / YWHAZ / KLRB1 / ERAP2 / CD22 / TAP1 / ITGAV / TRPC1 / DERL3 / RBCK1 / RAP1GAP / KBTBD13 / ERLEC1 / OSCAR / IGLC3 / CD300LB / CARD11 / HLA-DMB / CUL7 / SYK / H2BC5 / ITGB2 / IGHV3-11 / RAP1GAP2 / LILRA6 / CD28 / CLEC2D / SIGLEC10 / CTSE / HLA-DOA / HIF1A / TUBA4A / H4C4 / CYBA / NFKB2 / NRAS / LILRB3 / RNF19B / BTLA / FBXL7 / PIK3CG / PAK1 / CDK4 / H4C16 / KLHL13 / CD3G / TREM1 / SPSB2 / CD96 / KIF2A / HLA-DMA / CD3E / KLRC1 / JAML	FOSB / FOS / SOCS3 / CTSE / IGHV4-59 / IGHV4-39 / IGHV2-70 / SH3GL2 / IGHM / SPSB4 / IGHV1-46 / IGHV4-34 / IGKV3-20 / IGLV2-11 / IGLV3-21 / IGHV2-5 / CD207 / IGKV1-17 / IGHD / IGLV1-44 / SIGLEC11 / IGHV3-53 / IGLV7-43 / IGHV1-2 / IGLV2-8 / IGHV3-33 / IGLV6-57 / FCGR2B / IGKV5-2 / IGHV1-69 / CD300E / IGKV2D-30 / IGHV3-13 / IGLV3-25 / IGKV2D-40 / IGLV3-19 / IGHV3-11 / IGKV1D-39 / IGKV1-16 / LILRA5 / IGKV4-1 / IGLV2-23 / SH2D1B / CD160 / ASB10 / LILRA2 / XDH / LILRB5 / KLRF1 / PRKG1 / IGHV3-30 / IGLV3-27 / ITK / IGHV3-7 / IGHV3-23 / KIR3DL2 / MRC1 / SELL / CD1D / S100A8 / KLRC1 / IGKV3-15 / IGLV2-14 / LONRF1 / IGKV1D-16 / NCR1 / SPTBN2 / IGHV3-48 / IGLV1-47 / TLR4 / KLRD1 / PRKCB / NFATC1 / IFITM1 / IGKV1-5 / HERC5 / CTSV / SIGLEC9 / CD1C / CD4 / PIANP / HECTD1 / SIGLEC7 / NFATC2 / TUBB6 / IGKV3-11 / JUN / IGLV1-40 / IGLV3-1 / SLAMF7 / KIF4B / CD226 / MYC / KLRB1 / KLC4 / NCR3 / TLR2 / IGKV3D-20 / RAP1GAP2 / CBLL2 / SIGLEC5 / ATF3 / LILRB2 / TRPC1 / MRC2 / UBR4 / BLMH / IGLC3 / KIF3C / CD101 / CD300A / ZBTB16 / PPL / INPP5D / ITPR2 / SIGLEC1 / KBTBD7 / FBXO10 / KMT2A / HIF1A / FCGR3A / CD247 / MOV10 / CD274 / VAV1 / PDCD1LG2 / SH2D1A / PIK3R6 / CD300C / ULBP1 / HLA-DQA2 / UBR2 / LILRA1 / TUBB1 / DYNC1H1 / PRR5 / CYBA / CD36 / PRKAG2 / UBR1 / SEC24B / KBTBD6 / HERC3 / TLR6 / EPAS1 / PIK3C3 / TUBA1A / FBXO15 / KLHL11 / TEAD4 / CCND1 / HLA-DOA / CD200R1 / KLHL3 / KLHL41 / LILRB1 / LTN1
METABOLISM OF WATER SOLUBLE VITAMINS AND COFACTORS	SLC22A13 / ACACB / AMN / SLC19A3 / AOX1 / MTHFD1 / SHMT1 / SLC23A1 / NADK2 / PC / MMUT / SLC25A42 / MMACHC / PANK1 / NMRK1 / SLC25A16 / SLC52A1 / NUDT12 / ALDH1L1 / LRP2 / GPHN / MMAA / BTD / CYB5A / NNMT / ABCD4 / MCCC2 / MCCC1 / PCCA / PCCB / SHMT2 / PNPO / MTHFS / NMNAT1 / MTHFD2L / FPGS / GSTO1 / DHFR / QPRT / MOCS1 / DHFR2 / PANK3 / VNN1 / PARP9 / MOCOS / ENPP1	TCN1 / SLC52A1 / MTHFD2 / ACACB / PC / MTHFD1 / AOX1 / GPHN / NNMT / MMUT / SLC2A3 / SLC19A3 / PANK1 / MCCC1 / NMNAT2 / NAMPT / AMN / SLC22A13 / SHMT1 / CD38 / TCN2 / MMAA / VNN1 / COASY / NADK2 / SLC2A1 / PANK3 / MMACHC / ABCD4 / PARP9 / PARP4 / SLC19A2 / MOCOS / NMRK1 / NMNAT1 / SLC25A16
POTASSIUM CHANNELS	KCNV1 / GNG4 / KCNJ6 / KCNQ3 / KCNF1 / KCNH6 / GNGT1 / KCNN4 / KCNJ14 / KCNMB3 / HCN4 / KCNS1 / KCNA10 / KCNK13 / KCND2 / KCNAB3 / KCNJ4 / KCNJ16 / KCNH3 / KCNG4 / KCNA1 / KCNK9 / KCNJ5 / KCNJ9 / KCNK7 / KCNB2 / KCNMB4 / KCND1 / KCNA2 / KCNK10 / GNG10 / KCNAB2 / KCNH2 / KCNG3 / KCNA7	KCNJ6 / KCNA7 / KCNN1 / KCNJ12 / KCNH4 / KCNK10 / KCNJ5 / KCNK9 / KCNA5 / KCNF1 / GNG10 / KCNG4 / KCNC2 / KCNK4 / KCNK7 / GNG5 / KCNJ11 / KCNJ3 / GABBR2 / KCNA4 / KCNC1 / HCN4 / KCNJ14 / KCNH5 / HCN2 / KCNH6 / KCNV1 / GNB1 / KCNMB3 / GNB5 / KCNS2
KERATINIZATION	KRT20 / PI3 / TGM1 / KRT23 / KRTAP13-2 / PKP3 / KRT86 / KRT19 / KRT80 / KRT3 / KRT72 / KRT37 / KRT17 / KRT38 / SPINK5 / KRT16 / LCE1B / KRTAP10-10 / KRT2 / EVPL / KRT81 / LCE4A / KRT4 / KLK8 / KRT32 / KLK14 / ST14 / KRTAP3-1 / KLK13 / KRT6C / KRT77 / KRT6A / KRT6B / KRT39 / KRTAP15-1 / KLK5 / KRT15 / DSC1 / KRTAP17-1 / LCE1F / DSG2 / KRT75 / KRT40 / KRTAP27-1 / KRT12 / KRTAP16-1 / KLK12 / SPINK9 / FLG / KRTAP4-1 / KRTAP10-3 / KRTAP12-3 / KRT78 / LORICRIN	KRT75 / KRT35 / SPRR2G / DSC1 / KRT23 / DSG4 / KRT82 / KRT28 / KRT39 / KRT84 / KRTAP3-1 / SPINK5 / KRT25 / KRT33A / KRT38 / KRT6C / KRT81 / SPRR3 / KRT85 / KLK13 / DSG3 / SPRR2A / KRTAP21-1 / SPRR2F / KRT86 / CSTA / KRTAP10-8 / KLK8 / KRT71 / LCE3D / LIPK / KRT32 / KRT9 / KRT14 / KRT34 / KLK5 / KRT77 / KRTAP15-1 / PI3 / CASP14 / RPTN / KRTAP24-1 / KRT33B / LCE3B / LCE3C / KRTAP19-3
RHOA GTPASE CYCLE	IQGAP3 / ANLN / DIAPH3 / ECT2 / DEPDC1B / ARHGAP11A / PCDH7 / PLEKHG4 / CIT / RACGAP1 / PKN3 / OBSCN / ARHGAP39 / CAV1 / TFRC / ARHGAP22 / YKT6 / FMNL3 / RASGRF2 / RHPN1 / ARHGAP18 / ABR / ARHGAP28 / CAVIN1 / OPHN1 / ARHGEF2 / MCAM / ARHGAP6 / ARHGEF25 / ARHGEF5 / ARHGAP9 / ARHGAP44 / ARHGEF3 / GMIP / ARHGAP40 / VAV3 / DEF6 / ARHGEF28 / TAGAP / MCF2L / PKN1 / TMPO / ARHGDIB / ARHGEF11 / MCF2 / ARHGEF18	ARHGEF17 / ARHGAP10 / ARHGEF4 / ARHGAP8 / DLC1 / DAAM1 / TAGAP / MYO9A / IQGAP1 / ARHGAP23 / ABR / PREX2 / DOCK2 / ARAP2 / VAV1 / TIAM1 / ABCD3 / ARAP3 / ARHGEF40 / TJP2 / ARHGAP26 / ARHGEF3 / STARD13 / STARD8 / PLEKHG6 / RHPN1 / ARHGAP30 / ARHGAP20 / ARHGAP42 / ARHGAP4 / STK10 / CAVIN1 / KALRN / PREX1 / PLD1 / ARHGAP9 / ROCK1 / ARHGAP24 / ROCK2 / ARHGAP31 / ARHGAP29 / NET1 / LMAN1 / PIK3R1 / ARHGAP32 / FAM13A / MCF2 / SOWAHC / AKAP13 / ARHGEF10L / ACTC1 / ARHGEF12 / JUP / ARHGEF28 / TRIO / ARHGAP35 / ARHGAP5 / ARHGEF18 / SLK / ARHGAP45 / DIAPH1 / DEF6 / VAV3 / PCDH7 / AAAS / ARHGEF2 / CIT / VAV2 / ARHGAP21 / FMNL3
DEVELOPMENTAL CELL LINEAGES	REG1A / SPINK1 / COL11A1 / MUC1 / PDIA2 / TFAP2A / ITGB4 / PLA2G1B / EGF / LAMC2 / KRT23 / TFPI2 / CTRC / KRT19 / COL1A1 / HOPX / LAMA3 / KRT17 / COL1A2 / FABP5 / CD24 / SPINK5 / LAMA4 / ANKRD30A / GP2 / COL2A1 / COL5A1 / ANXA2 / AREG / CER1 / CLDN10 / LAMB3 / COL5A2 / COL3A1 / KLK7 / DLX5 / CD44 / CNN1 / CELA3B / EPCAM / ACTA2 / COL24A1 / ITGA6 / CSPG4 / LAMA5 / ERICH5 / LAMC1 / DMKN / TFRC / KLK5	REG1A / SPINK1 / AQP8 / PDIA2 / PTF1A / KRT23 / SYCN / SBSN / AMY2A / PNLIP / COL5A3 / ERICH5 / TFAP2A / CTRC / SPINK5 / KLK7 / PRSS3 / COL24A1 / HOPX / ANKRD30A / LAMB3 / EGF / COL2A1 / FABP5 / SLPI / SPRR2A / ITGA6 / LAMA4
ION CHANNEL TRANSPORT	ATP6V1E2 / ATP6V0D2 / ATP6V1C2 / ATP6V0A4 / BEST3 / ANO4 / ATP1A3 / BSND / ANO9 / ATP6V1B1 / TRPM6 / TRPM3 / TRPA1 / MCOLN2 / TRPC3 / WNK4 / CLCN1 / TRPC4 / ATP10B / ATP8B3 / SLC9C2 / TRPM2 / RYR2 / ANO3 / TRPV2 / ANO7 / STOML3 / CASQ1 / CAMK2A / ASIC5 / ATP11A / ASIC1 / TTYH3 / MLKL / ATP10A / TRPC1 / RYR1 / ATP13A2 / TRPC7 / BEST1 / ASPH / SRI / ATP8B2 / TRPC6	CLCNKA / WNK4 / SCNN1G / FXYD3 / CLCN1 / CLCNKB / CLCA2 / ATP6V1B1 / SLC9C2 / ASPH / ATP2A1 / ATP6V1F / SLC9C1 / ASIC4 / TRPC7 / ATP6V1G2 / PDZD11 / UBA52 / FXYD7 / PLN / ATP1A3 / TRPC3 / ATP6V0B / ATP6AP1 / SCNN1D / ATP6V0E1 / ATP6V1H / TRPC6 / ANO10 / ATP2B4 / ATP6V1C1 / ATP6V0E2 / TRPM5 / ATP6V0A4 / ATP6V0C / TRPM4 / ATP1B1 / CLCN2 / CLCA1 / TRPM3 / SLN / ATP1A4 / ATP8B3 / TRPM1 / TTYH3 / RPS27A / ATP4B / ATP4A / ANO7 / ASIC2 / ATP6V1G1 / ASIC3 / ATP2C1 / RYR1 / ATP6V1D / ATP12A / ATP8B1 / ATP8A2 / TRPV3 / OSTM1 / WWP1
COPI DEPENDENT GOLGI TO ER RETROGRADE TRAFFIC	TUBB3 / TUBA3D / TUBAL3 / KIF4A / KIF18B / KIF2C / KIFC1 / KIF20A / TUBA3E / KIF18A / KIF23 / KIFC2 / KDELR3 / RACGAP1 / KIF15 / KIF21B / CENPE / KIF11 / KLC2 / KIF26B	TUBA3D / KIF25 / TUBA4B / KIFC1 / KIF20A / KIF2C / KIF4A / KIF23 / KIF11 / RACGAP1 / KDELR1 / KIF15 / COPE / TMED9 / KDELR3 / TUBB2A / NAPB / KDELR2 / BNIP1 / NAPA / TMED7 / TMED2 / TUBB4A / TUBA3E / COPZ1 / TUBA1B / COPZ2 / USE1 / KIF18A / KIF2A / TUBA4A / TMED10 / KIF22 / ARF5 / SURF4 / KIF9
G ALPHA Q SIGNALLING EVENTS	MMP3 / UTS2B / GPR68 / GNG4 / NTS / DGKK / TACR2 / CHRM3 / QRFPR / GNGT1 / ITPR3 / KISS1 / LPAR2 / LPAR3 / GHRL / P2RY6 / TRPC3 / RGSL1 / RGS17 / GPR17 / HTR2C / HRAS / MCHR1 / PMCH / GRPR / NMB / NPFFR2 / CYSLTR2 / MCHR2 / UTS2 / CYSLTR1 / RASGRP1 / RGS2 / HCRTR2 / RGS19 / FFAR4 / F2RL2 / PLCB4 / PLCB1 / F2RL3 / TAC1 / GHSR / PROKR2 / DGKI / BDKRB2 / HRH1 / GNG10 / TRPC7 / OXTR / DGKH / RGS1 / ANXA1 / TRPC6 / TAC3 / GNA15 / TACR3 / EDNRA / NRAS / GNG8 / LTB4R / FFAR3	UTS2B / MMP3 / ADRA1D / MCHR1 / GCG / KISS1 / CHRM5 / PTGFR / GRPR / TACR2 / TRHR / PROK1 / NMB / MLNR / FFAR4 / GNG10 / PLCB1 / CCKBR / NMUR2 / LPAR4 / RGS5 / QRFP / OXTR / GNG5 / GRM5 / DGKI / TRPC7 / HTR2A / RGSL1 / CHRM3 / TACR3

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
REGULATION OF INSULIN LIKE GROWTH FACTOR IGF TRANSPORT AND UPTAKE BY INSULIN LIKE GROWTH FACTOR BINDING PROTEINS IGFBPS	VGF / MMP1 / AFP / GPC3 / SPP1 / STC2 / VCAN / SCG2 / TMEM132A / PAPPA / MATN3 / MSLN / MELTF / CHGB / SPARCL1 / BMP4 / GOLM1 / TNC / KLK13 / TIMP1 / CKAP4 / IL6 / LAMC1 / FBN1 / SHISA5 / FSTL3 / MGAT4A / MFGE8 / IGFBP6 / IGFBP5 / MXRA8 / KLK1 / SCG3 / LGALS1 / LAMB1	IL6 / IGF2 / FGF23 / IGFBP3 / CTSG / TNC / QSOX1 / CCN1 / LTBP1 / IGFALS / SCG3 / IGFBP6 / CHRDL1 / IGFBP5 / APOA5 / SPP2
APOPTOSIS	SFN / H1-5 / E2F1 / MAPT / CLSPN / PMAIP1 / TP73 / LY96 / H1-3 / GSDME / LMNB1 / YWHAZ / CDKN2A / DSG2 / PLEC / BBC3 / HMGB2 / APIP / GZMB / BMF / TRAF2 / BAK1 / BID / BCL2 / PRKCD / DYNLL1 / YWHAH / FASLG / UNC5B / UNC5A / GSN / DSG3 / VIM / PSMD14 / MAPK3 / DAPK3 / BAX / H1-1 / PSMD2 / LMNA / CARD8 / AKT3 / PTK2 / STK24 / TP53BP2 / TRADD	H1-5 / CDKN2A / H1-1 / MAPT / H1-2 / DAPK2 / LY96 / DCC / H1-0 / UBA52 / SFN / CYCS / BID / DYNLL1 / DSG3 / PSMA6 / BBC3 / BAX / BCAP31 / LMNB1 / HMGB2 / E2F1 / YWHAH / H1-4 / TP73 / STK24 / CASP3 / CLSPN / TP53BP2 / TRAF2 / YWHAZ / OCLN / APIP / PSMD7 / PSMD8 / PSMB4 / YWHAG / RPS27A
SLC MEDIATED TRANSMEMBRANE TRANSPORT	SLC6A14 / SLC7A11 / SLC30A3 / SLC22A8 / SLC22A11 / SLC5A11 / SLC16A3 / SLC6A15 / SLC26A9 / SLC1A7 / SLC12A1 / SLC22A6 / SLC22A12 / SLC9A2 / SLC5A2 / LCN9 / SLC6A20 / SLC7A6 / FGF21 / SLC7A10 / SLC6A6 / SLC5A5 / SLC38A1 / SLC26A2 / SLC22A4 / SLC7A1 / SLC26A6 / SLC44A5 / SLC29A4 / SLC29A2 / SLCO4A1 / SLC39A10 / SLC2A1 / SLC22A5 / AHCYL2 / SLC5A10 / SLC6A9 / SLC5A4 / SLC8A2 / SLC50A1 / SLCO1C1 / SLC39A4 / SLC34A2 / SLC41A1 / SLC24A3 / SLC30A8 / SLC4A3 / SLC4A9 / SLC7A5 / SLC4A10 / ARL2 / SLC2A6	SLC22A11 / SLC22A12 / SLC7A11 / SLC5A4 / SLC5A11 / SLC34A3 / FGF21 / SLC32A1 / SLC9A3 / SLC26A6 / SLC26A9 / SLC6A7 / BSG / SLC6A5 / SLC7A6 / SLC5A8 / PDZD11 / SLC39A4 / SLC6A14 / SLC38A1 / SLC50A1 / SLC39A10 / SLC7A3 / SLC5A5 / SLCO1C1 / SLC35B3 / SLC44A5 / SLC22A6 / SLC7A10 / SLC35B4 / SLC36A1 / SLC8A2 / SLC17A5 / SLC10A6 / SLC22A4 / SLC6A11 / SLC5A2 / SLC13A2 / SLC22A8 / SLC6A9 / SLC13A4 / SLC7A9 / SLC2A6 / SLC44A3 / SLC2A4 / ARL2BP / SLC35C1 / SLC39A3 / SLC26A2 / SLC5A7 / SLC33A1 / SLC9A6 / MFSD4B / LCN12 / SLC35A2 / SLC7A1 / SLC22A5 / SLC6A3 / SLC5A6 / SLC26A3 / CTNS / SLCO2A1 / SLC1A6 / SLC5A10
INTRACELLULAR SIGNALING BY SECOND MESSENGERS	EGF / EREG / NRG4 / MECOM / EZH2 / ITPR3 / PIK3R6 / CBX2 / FGF8 / ICOS / AREG / PRKACG / PRKCG / KITLG / FGF19 / FOXO6 / BDNF / PDE1A / NRG2 / NBEA / PDGFA / CAMK2A / KPNA2 / FGF1 / CD80 / KL / THEM4 / SRC / CAMKK1 / PDGFRB / EPGN / CHD3 / RRAGD / PDGFB / CD28 / RAC2 / MAF1 / IRAK1 / PML / PIK3CG / RNF2 / TRIM27 / CBX4 / LCK / SCMH1 / ATN1 / ADCY7 / ADCY3 / HDAC7 / RAC1 / IER3 / FGF2 / ITPR1 / PIP5K1B / FGF4 / CD19 / PRKCD	FGF23 / IL1RL1 / CAMK2B / NTF3 / SNAI1 / EREG / PRKAR2B / PDGFRA / IL33 / AREG / ADCY5 / CAMK4 / NRG3 / HGF / EGR1 / NBEA / NTRK3 / PRKCG / ESR2 / NR4A1 / ESR1 / FOXO6 / FOXO1 / TGFA / JUN / FLT3 / IL1RAP / HBEGF / PREX2 / PHLPP1 / SALL4 / CAMKK1 / ITPR2 / RAC2 / FGF1 / FGF3 / SGK1 / BDNF / MOV10 / VAV1 / PIK3R6 / PRR5 / FGFR1 / IER3 / TRAT1 / FGF8 / IRS2 / KIT / EPGN / PIK3CA / GAB1 / PHC1 / ADCY7 / STRN / MDM2 / PIK3R5 / PRKX / CBX6
ASPARAGINE N LINKED GLYCOSYLATION	TUBB3 / TUBA3D / TUBAL3 / B4GALNT2 / ST6GALNAC5 / COL7A1 / TUBA3E / DYNC1I1 / FOLR1 / KDELR3 / AREG / TUSC3 / SEC31B / MGAT3 / ST6GALNAC4 / FUT3 / GFPT2 / CD55 / MGAT4C / CGA / MGAT5 / CTSC / ST3GAL4 / YKT6 / SRD5A3 / ST8SIA1 / B4GALT6 / SLC35C1 / ANK2 / NEU2 / TMED3 / ST3GAL2 / MGAT4A	B4GALNT2 / TUBA3D / CNIH3 / TUBA4B / CGA / UMOD / CHST8 / GFUS / UBA52 / DPM2 / LMAN1L / TRAPPC2 / DYNLL1 / CANX / SLC17A5 / DPM3 / ALG3 / NPL / NEU1 / PRKCSH / ST6GALNAC2 / MVD / KDELR1 / TMEM258 / MGAT4A / ST8SIA1 / COPE / TMED9 / OST4 / RPN2 / B4GALT6 / DERL1 / KDELR3 / CALR / PDIA3 / TUBB2A / LMAN2 / SLC35C1 / TRAPPC2L / ST3GAL5 / NAPB / GOSR2 / KDELR2 / RNF5 / GMDS / CTSA / LHB / MGAT3 / SPTB / DCTN3 / MLEC / DCTN2 / NAPA / ST6GALNAC4 / DAD1 / CAPZA2 / CD59 / TMED7 / DYNC1I1 / DDOST / TMED2 / TUBB4A / TUBA3E / UGGT2 / MAGT1 / DPAGT1 / COPZ1 / RAD23B / TUBA1B / RPS27A / MGAT5 / UBXN1 / COPZ2 / EDEM3 / NUDT14 / HK1 / B4GALT3 / STT3A / DOLK / TRAPPC4 / TUBA4A / CNIH2 / YKT6 / ALG13 / RPN1 / TMED10 / ALG8 / LMAN2L / ALG1 / SRD5A3 / BET1 / STX5 / STX17 / ARF5 / B4GALT2 / NEU2 / SEC31B / SYVN1 / SPTA1 / CTSZ / TRAPPC6A / SEC22B / CNIH1 / BET1L / ARF1 / SEL1L / SEC22C / ALG5
CDC42 GTPASE CYCLE	IQGAP3 / DIAPH3 / ECT2 / DEPDC1B / WIPF3 / PLEKHG4 / RACGAP1 / PAK3 / CHN1 / GIT1 / ARHGAP39 / CAV1 / FMNL1 / ARHGEF16 / PLEKHG4B / ARHGAP33 / TFRC / ARHGAP22 / YKT6 / FGD1 / FMNL3 / RASGRF2 / CDC42EP5 / ABR / OPHN1 / SCRIB / PAK1 / SHKBP1 / ARHGAP27 / ARHGEF25 / ARHGEF5 / ARHGAP9 / ARHGAP44 / GMIP / WIPF1 / ARHGAP40 / WIPF2 / VAV3 / DEF6 / CDC42EP3 / TAGAP / MCF2L / RALBP1 / SRGAP3 / TMPO / ARHGDIB / ARHGEF11 / MCF2	ARHGAP10 / ARHGEF4 / DOCK8 / DNMBP / DOCK10 / DLC1 / DAAM1 / TAGAP / SYDE1 / IQGAP1 / FMNL1 / ABR / PREX2 / FGD4 / ARAP2 / ARHGEF26 / FGD2 / TIAM1 / IQGAP2 / FGD3 / STEAP3 / ARAP3 / ARHGAP27 / WDR81 / CDC42BPB / ARHGAP26 / DOCK11 / CDC42BPA / WAS / ARHGEF6 / STARD13 / STARD8 / ARHGAP30 / ARHGAP20 / ARHGAP42 / ARHGAP4 / FMNL2 / SPATA13 / PREX1 / PLD1 / ARHGAP9 / ARHGAP24 / PLEKHG1 / ARHGAP31 / ARHGAP29 / PIK3R1 / ARHGAP32 / MCF2 / SRGAP2 / CDC42 / CPNE8 / ARHGEF12 / DOCK7 / JUP / TRIO / ARHGAP35 / ARHGAP5
PROTEIN LOCALIZATION	HAO2 / AGXT / EPHX2 / DAO / ACAA1 / SCP2 / CAT / PXMP2 / LDHD / HAO1 / EHHADH / ACOX2 / PIPOX / DHRS4 / DDO / BAAT / HMGCL / MLYCD / OTC / ACOX1 / ACOT2 / SLC27A2 / PHYH / ECH1 / PECR / CYB5A / GRPEL1 / SLC25A4 / SLC25A13 / PMPCA / ABCD3 / ACBD5 / HACL1 / FXN / VAMP2 / CRAT / PEX14 / ACOT4 / ECI2 / PEX13 / AMACR / HMOX1 / HSD17B4 / PEX3 / NUDT7 / LONP2 / CROT / ALDH3A2 / UBB / NDUFB8 / CMC2 / COX17 / GSTK1 / IDH1 / ATAD1 / CHCHD10 / PMPCB / TIMM8A / UBE2D3 / BCS1L / ATP5F1A / PITRM1 / SLC25A17 / SERP1 / USP9X / PEX5 / ZFAND6 / PEX1 / COQ2 / GET1 / PEX16 / DNAJC19 / ACOX3 / HSPA9	CHCHD7 / COA6 / NOS2 / TIMM8B / UBL4A / FIS1 / UBA52 / TOMM5 / SEC61G / TIMM13 / CHCHD3 / EMD / TIMM9 / TAFAZZIN / ATP5MC1 / CHCHD2 / TOMM40 / TOMM20 / TIMM17A / PXMP4 / CHCHD4 / COX17 / CAMLG / PEX2 / OTOF / TOMM22 / GFER / CHCHD5 / TIMM8A / SEC61B / TIMM17B / UBE2D1 / PEX19 / COA4 / CYC1 / CHCHD10 / SERP1 / TOMM7 / COX19 / UBE2D2 / TIMM10 / CMC2 / GET1 / RPS27A / GET4 / STX1A
GLYCOSAMINOGLYCAN METABOLISM	GPC3 / B3GNT4 / VCAN / CEMIP / HAS3 / GPC2 / ACAN / B3GNT3 / BCAN / HMMR / CSGALNACT1 / HS3ST1 / GPC5 / NDST2 / ABCC5 / SLC26A2 / CHST6 / CHST1 / UST / GLB1L2 / CD44 / OGN / CSPG5 / CHST11 / CHST3 / CSPG4 / ST3GAL4 / HYAL3 / B4GALT6 / HS3ST2 / GLB1L / UXS1 / CHSY1 / ST3GAL2 / AGRN / IDUA / B4GALT2	STAB2 / NDST3 / HAS2 / LYVE1 / HAS1 / DCN / BGN / PRELP / B3GNT7 / CHST3 / B3GNT4 / FMOD / ST3GAL6 / B3GAT1 / HYAL4 / GPC4 / CHSY3 / GLB1L2 / NDST4 / HS3ST3A1 / HS3ST1 / DSE / LUM / CSGALNACT1 / SLC26A1 / GPC2 / DSEL / SDC3 / CHST6
KEAP1 NFE2L2 PATHWAY	SLC7A11 / NQO1 / EGF / G6PD / TXNRD1 / AREG / PRKAA2 / TKT / SRXN1 / PDGFA / ABCC1 / CDKN2A / ME1 / ATF4 / MAFG / SOD3	SLC7A11 / NQO1 / CDKN2A / SRXN1 / G6PD / ME1 / TXN / EGF / UBA52 / PSMA6 / MAP1LC3B / SQSTM1 / TKT / TXNRD1 / PDGFA / MAFG / PRKAA2 / TALDO1 / RBX1 / PSMD7 / PSMD8 / PSMB4 / RPS27A
SIGNALING BY TGFB FAMILY MEMBERS	AMH / INHA / PMEPA1 / ITGB6 / COL1A2 / TGFBR1 / E2F5 / MYF6 / TGFB2 / CER1 / MMP14 / HELLS / MMP16 / TIMP1 / BMP2 / TGFB3 / LTBP2 / FBN1 / ITGAV / INHBA / BMPR1B / FSTL3 / ITGB3 / TGFB1 / RBL1 / SMAD2 / TCF3 / TGIF1 / ITGA8 / FST / FGF2 / GIPC1 / NEDD4L / ITGB8 / ARHGEF18 / CDKN2B / BAMBI / AGO2 / ITGB5 / CBL / NCSTN / SMURF1 / MAPK3 / UBE2D1	BMP10 / GDF2 / AMHR2 / LTBP4 / LTBP1 / CHRDL1 / JUNB / SMAD7 / TGFBR3 / ACVR1C / ACVR2B / PPP1R15A / MYC / SERPINE1 / SMAD9 / MOV10 / USP9X / TIMP2 / USP15 / NCOR1 / BMPR1B / SKIL / SMAD6 / MTMR4 / MYOD1 / FSTL3 / SKI / ACVRL1 / AMH / TGFB3 / ITGB6 / CGN / ACVR2A / ITGA8 / ARRB1 / TGFB2 / PMEPA1 / SMAD4 / NCOR2 / FSTL1
METABOLISM OF STEROIDS	SLCO1B3 / SRD5A2 / CYP8B1 / HSD3B1 / SLC27A5 / ALB / HSD11B1 / ACACB / SLC10A1 / SCP2 / CYP39A1 / CYP11A1 / SRD5A1 / HSD3B2 / STARD5 / ACOX2 / SLC51A / CYP7A1 / GC / SLCO1B1 / AKR1D1 / BAAT / INSIG1 / ABCB11 / SLC27A2 / CYP46A1 / LRP2 / RXRA / PPARA / AKR1C4 / SEC24B / LSS / ACAT2 / GPAM / CYP27A1 / MSMO1 / SC5D / POMC / HSD17B2 / STARD4 / SERPINA6 / EBP / LHB / MVK / ELOVL6	AKR1B15 / CYP17A1 / FABP6 / SLC51B / CYP7A1 / CYP24A1 / CGA / SQLE / STARD6 / HSD17B14 / AKR1C3 / CYP27B1 / HSD17B1 / CYP21A2 / CYP19A1 / HSD3B1 / FDX2 / AKR1C1 / NFYB / CYP51A1 / MVD / IDI1 / AKR1C2 / PMVK / TM7SF2 / ELOVL6 / LBR / SUMO2 / ARV1 / SCD / LHB / GGPS1 / INSIG1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
TRANSPORT OF SMALL MOLECULES	SLC6A14 / SLC7A11 / ABCA12 / GNG4 / ATP6V1E2 / ATP6V0D2 / LCN2 / PIP / SLC30A3 / SLC22A8 / ATP6V1C2 / ATP6V0A4 / BEST3 / SLC22A11 / SLC5A11 / SLC16A3 / SLC6A15 / ANO4 / SLC26A9 / ATP1A3 / SLC1A7 / BSND / SLC12A1 / ANO9 / ATP6V1B1 / TRPM6 / SLC22A6 / SLC22A12 / GNGT1 / FLVCR1 / TRPM3 / SLC9A2 / SLC5A2 / TRPA1 / AQP10 / MCOLN2 / LCN9 / SLC6A20 / SOAT2 / SLC7A6 / CSN3 / FGF21 / TRPC3 / WNK4 / SLC7A10 / CLCN1 / TRPC4 / NPC1 / ATP10B / LPL / SLC6A6 / SLC5A5 / ABCC5 / ATP8B3 / SLC38A1 / SLC26A2 / SLC22A4 / SLC7A1 / PRKACG / VLDLR / SLC9C2 / TUSC3 / CA4 / TRPM2 / SLC26A6 / SLC44A5 / RYR2 / ABCC4 / SLC29A4 / SLC29A2 / SLCO4A1 / SLC39A10 / SLC2A1 / PCSK5 / ANO3 / SLC22A5 / AHCYL2 / TRPV2 / SLC5A10 / ANO7 / SLC6A9 / SLC5A4 / ABCA7 / STOML3 / CASQ1 / SLC8A2 / CAMK2A / SLC50A1 / ABCB9 / CIDEC / SLCO1C1 / SLC39A4 / SLC34A2 / SLC41A1 / RHAG / ABCC1 / SLC24A3 / SLC30A8 / ASIC5 / SLC4A3 / SLC4A9 / MCUB / SLC7A5 / SLC4A10 / ARL2 / TFRC / SLC2A6 / ATP11A / ASIC1 / TTYH3 / MLKL / ATP10A / SLC36A4 / TRPC1 / RYR1 / SLC35C1 / SLC22A15 / ATP13A2 / GNG10 / TRPC7 / DERL3 / BEST1	LCN2 / SLC22A11 / SLC22A12 / SLC7A11 / CLCNKA / WNK4 / SCNN1G / AQP8 / SLC5A4 / CA4 / SLC5A11 / FXYD3 / ADCY8 / SLC34A3 / FGF21 / NIPAL4 / CLCN1 / FLVCR1 / SLC32A1 / CLCNKB / CLCA2 / SLC9A3 / SLC26A6 / SLC26A9 / ATP6V1B1 / SLC9C2 / SLC6A7 / ABCA4 / BSG / GNG10 / APOA2 / SOAT2 / ASPH / SLC6A5 / NIPAL2 / SLC7A6 / ATP2A1 / GNG5 / ATP6V1F / SLC9C1 / ASIC4 / TRPC7 / ATP6V1G2 / KCNJ11 / SLC5A8 / PDZD11 / SLC39A4 / SLC6A14 / SLC38A1 / LPL / UBA52 / SLC50A1 / SLC39A10 / ANGPTL8 / SLC7A3 / PCSK5 / SLC5A5 / SLCO1C1 / SLC35B3 / SLC44A5 / FXYD7 / SLC22A6 / PSMA6 / SLC7A10 / AQP12A / SLC35B4 / SLC36A1 / SLC8A2 / SLC17A5 / SLC10A6 / PLN / RHCG / SLC22A4 / SLC6A11 / ATP1A3 / SLC5A2 / SLC13A2 / P4HB / FTMT / ABCC4 / TRPC3 / ATP6V0B / ATP6AP1 / AQP2 / EIF2S2 / AP2S1 / ABCA12 / TFRC / SLC22A8 / SCNN1D / ATP6V0E1 / ATP6V1H / TRPC6 / SLC6A9 / SLC13A4 / SLC7A9 / SLC2A6 / NEDD8 / ANO10 / SLC44A3 / ATP2B4 / DERL1 / SLC2A4 / GNB1 / ARL2BP / NPC1 / CYB5RL / ATP6V1C1 / MB / CLTA / SLC35C1 / GNB5 / NR1H2 / SLC39A3 / ADCY2 / ATP6V0E2 / TRPM5 / MRS2 / SLC26A2 / RNF5 / SLC5A7 / AVPR2 / SMDT1 / PEX19 / CYB5R1 / ATP6V0A4 / SLC33A1 / SCARB1 / SLC9A6 / APOC1 / APOE / EIF2S3 / MFSD4B / ATP6V0C / TRPM4 / ATP1B1 / LCN12 / GPIHBP1 / CLCN2 / SLC35A2 / SLC7A1 / CLCA1 / SLC22A5 / SLC6A3 / TRPM3 / PSMD7 / PSMD8 / SLN / SLC5A6 / ATP1A4 / MAGT1 / SLC26A3 / CTNS / SLCO2A1 / SLC1A6 / SLC5A10 / ATP8B3 / TRPM1 / PSMB4 / SLC36A2
STIMULI SENSING CHANNELS	BEST3 / ANO4 / BSND / ANO9 / TRPM6 / TRPM3 / TRPA1 / MCOLN2 / TRPC3 / WNK4 / CLCN1 / TRPC4 / SLC9C2 / TRPM2 / RYR2 / ANO3 / TRPV2 / ANO7 / STOML3 / CASQ1 / ASIC5 / ASIC1 / TTYH3 / MLKL / TRPC1 / RYR1 / TRPC7 / BEST1 / ASPH / SRI / TRPC6	CLCNKA / WNK4 / SCNN1G / CLCN1 / CLCNKB / CLCA2 / SLC9C2 / ASPH / SLC9C1 / ASIC4 / TRPC7 / UBA52
BACTERIAL INFECTION PATHWAYS	GUCY2C / SH3GL3 / UPK1A / LAMC2 / LAMA3 / LAMA4 / STX1A / COL5A1 / TXNRD1 / ANTXR1 / LAMB3 / COL5A2 / NHERF4 / SV2B / COL4A2 / COL4A1 / EPCAM / SYT1 / GBP2 / LAMA5 / LAMC1 / SRC / SNAP25 / CORO1A / LAMB1 / COL4A5 / HGS / NOS2 / TRIM27 / COL4A6 / RNF213 / HSP90AB1	SH3GL2 / LAMA1 / CTSG / EPCAM / LTF / MRC1 / LAMC3 / SV2A / STX1B / GBP4 / VPS33B / TLR2 / HBEGF / LAMA2 / LAMC2 / LAMB1 / DUSP16
PHOSPHOLIPID METABOLISM	MTMR7 / PLA2G4E / PLA2G4F / GDPD3 / PLA2G1B / INPP5J / LIPH / CPNE7 / PLA2G3 / ALPI / PLAAT1 / PLA2G2D / CHAT / PIK3R6 / LPCAT4 / ACHE / PCYT1B / SLC44A5 / INPP4B / PLBD1 / LPCAT1 / GPD1L / GDPD1 / MTMR2	PITPNM3 / PLAAT1 / CPNE6 / PLA2G5 / SLC44A4 / PLA2G4A / PTPN13 / PLA2R1 / MFSD2A / PNPLA7 / TPTE2 / OSBPL10 / MBOAT2 / AWAT2 / LIPH / PHOSPHO1 / INPP5J / ETNK2 / PLD4 / LPIN2 / OSBPL5 / PIKFYVE / GPD1L / INPP5D / LPIN3 / PIK3R6 / HADHA / PIK3C3 / ACHE / BMX / PNPLA6 / AGPAT2 / PLA2G2F / PEMT / GPAM / MTMR4 / PIK3C2G / PIK3R4 / PCYT1B / PLB1 / PIK3CA / GPD1 / PNPLA3 / HADHB / PIK3R5 / INPP4B / PLA2G2D / BCHE / GDPD5 / TNFAIP8L2 / PIK3CD / PLEKHA2 / PLD1 / PLD2 / MTMR9 / SLC44A2 / MTMR3 / CHAT / DGAT2 / CSNK2A1 / MTMR12 / CEPT1 / PIK3R1 / SBF2 / PIK3C2A / TMEM86B / PLAAT3
GOLGI TO ER RETROGRADE TRANSPORT	TUBB3 / TUBA3D / TUBAL3 / KIF4A / KIF18B / KIF2C / KIFC1 / KIF20A / TUBA3E / DYNC1I1 / KIF18A / KIF23 / KIFC2 / KDELR3 / RACGAP1 / KIF15 / KIF21B / PAFAH1B3 / CENPE / KIF11 / KLC2 / BICD1 / KIF26B	TUBA3D / KIF25 / TUBA4B / KIFC1 / KIF20A / KIF2C / KIF4A / KIF23 / KIF11 / DYNLL1 / RACGAP1 / KDELR1 / KIF15 / COPE / TMED9 / KDELR3 / TUBB2A / NAPB / KDELR2 / DCTN3 / BNIP1 / DCTN2 / NAPA / PAFAH1B3 / CAPZA2 / TMED7 / DYNC1I1 / TMED2 / TUBB4A / TUBA3E / COPZ1 / TUBA1B / COPZ2 / USE1 / KIF18A / KIF2A / TUBA4A / TMED10 / KIF22 / ARF5 / SURF4 / KIF9 / SEC22B / PLA2G6
NEDDYLATION	BIRC5 / ASB16 / UBD / DTL / FBXL16 / CCNF / FBXL19 / FBXW10 / FBXO32 / ASB2 / ASB11 / ASB5	ASB16 / ASB15 / UBD / FBXW10 / FBXL22 / FBXL16 / DTL / BIRC5 / ELOC / ASB5 / FBXO2 / UBA52 / FBXO27 / UBE2M / PSMA6 / COMMD6 / COMMD4 / UBE2F / COMMD5 / KBTBD13 / SQSTM1 / COMMD7 / CCNF / COPS5 / NEDD8 / DCAF16 / DCAF13 / KCTD7 / FBXW12 / UBE2D1 / RNF7 / RBX1 / KLHL5 / FBXL18 / ELOB / COMMD8 / DCAF17 / PSMD7 / PSMD8 / KCTD6 / DDA1 / UBE2D2 / ERCC8 / PSMB4 / LRR1 / FBXL7 / RPS27A / COPS6 / COMMD9 / FBXO17 / UFD1
HOST INTERACTIONS OF HIV FACTORS	HMGA1 / CD8B / AP1M2 / PACS1 / NUP210 / RCC1 / CD28 / LCK / NUP37 / NUP62 / RAC1 / ELOC / AP1S1 / NUP205 / ATP6V1H / NDC1 / RAN / PPIA / APOBEC3G / HLA-A / CD247 / PSMD14 / NUP93 / PSMD2 / NUP42 / RAE1 / NUP107 / RANGAP1 / NPM1 / HCK / NUP155 / BANF1 / RBX1 / RANBP1 / AP1S2 / KPNB1 / XPO1 / POM121 / PSMC4 / POM121C / TPR / AP2B1 / NUP133 / PAK2 / NUP43 / NUP85 / PSIP1 / NUP188 / NUP153 / CUL5	ELOC / HMGA1 / UBA52 / PPIA / PSMA6 / AP1S1 / HLA-A / RANBP1 / BANF1 / AP2S1 / ATP6V1H / NUP210 / CD28 / RCC1 / CD8B / NUP62 / RBX1 / ELOB / PSMD7 / PSMD8 / B2M / PSMB4 / RPS27A / NUP42 / RAC1 / POM121 / NPM1 / NDC1 / PSMA7 / PSMC4 / ARF1 / NUP58 / SLC25A5 / ADRM1 / RAN / PAK2 / POM121C / PSMD14 / PSMA3 / PSMB3 / PSIP1 / PSMB5 / AP1S2 / PSMC2 / PSMD11 / UBC / PSMC5 / SEC13
G ALPHA S SIGNALLING EVENTS	GNG4 / CALCA / VIP / PTHLH / ADORA2B / TSHR / GNGT1 / MC5R / GPR150 / GPR25 / HRH2 / GRK3 / PDE10A / ADM2 / GPHB5 / GHRHR / PRKACG / RLN2 / GNAZ / PDE4A / DRD5 / CYSLTR2 / PDE8B / PDE4D	PTH2R / GCG / GNAZ / ADCY8 / RAMP1 / CALCA / HTR6 / GHRHR / HTR4 / GPR32 / ADM2 / CGA / PTHLH / DRD5 / GPR150 / GNG10 / GNG5
CARDIAC CONDUCTION	NOS1 / TNNI3 / ATP1A3 / ORAI2 / ITPR3 / KCNJ14 / CACNG4 / KCNK13 / KCND2 / KCNIP4 / KCNJ4 / CORIN / RYR2 / KCNE5 / KCNK9 / CASQ1 / SLC8A2 / CAMK2A / KCNK7 / KCNIP1 / CACNG6 / CACNB2 / KCND1 / FGF12 / KCNK15 / KCNK12 / SCN4A / FGF13 / TRPC1 / KCNK10 / RYR1 / ASPH / SRI / KCNH2 / SCN2B / ATP2A1 / CACNA1C / SCN4B / KCNK2 / CACNB1	SCN1A / FGF14 / FXYD3 / KCNIP3 / NPPA / KCNJ12 / SCN4A / KCNK10 / KCNK9 / KCNA5 / ASPH / KCNK4 / KCNK7 / NKX2-5 / ATP2A1 / KCNJ11 / FGF12 / FGF13 / FXYD7 / SLC8A2 / PLN / ATP1A3
MAPK1 MAPK3 SIGNALING	DUSP9 / SHC3 / EGF / EREG / NRG4 / CDK1 / NEFL / FGF8 / HRAS / MAPK12 / AREG / KITLG / FGF19 / FRS3 / LAT / ACTN2 / RASGRF1 / RASGRP1 / KSR1 / RASGEF1A / NRG2 / PDGFA / CAMK2A / GRIN1 / IL2RA / FGF1 / DLG3 / KL / IL6 / MRAS / PTPN7 / SPRED3 / RASAL1 / ANGPT1 / ARL2 / ABHD17C / PEA15 / SRC / SPRED1 / RASGRF2 / DUSP4 / IL2RG / IL2 / PDGFRB / DUSP8 / EPGN / ITGB3 / ITGA2B / KSR2 / CSF2 / PDGFB / JAK3 / NRAS / CSF2RB / VWF	IL6 / FGF23 / NCAM1 / CAMK2B / EREG / PDGFRA / AREG / NEFL / GFRA3 / NRG3 / DUSP2 / HGF / TEK / IL5 / SPRED3 / RET / CNKSR1 / SPTBN2 / DUSP1 / DUSP4 / DLG3 / DUSP5 / TGFA / RASGRP4 / FLT3 / RGL1 / SHC3 / IL2RB / HBEGF / DUSP6 / IQGAP1 / DUSP16 / KBTBD7 / FGF1 / FGF3 / RAPGEF2 / GFRA2 / FGFR1 / FGF8 / IRS2 / PSPN / JAK2 / RASA2 / KIT / EPGN / PIK3CA / JAK1 / APBB1IP / CSF2RB / RASA3 / MAP2K1 / NF1 / ITGA2B
MUSCLE CONTRACTION	NOS1 / TNNT1 / NEB / TNNC1 / TNNI3 / ATP1A3 / ORAI2 / MYH3 / ITPR3 / KCNJ14 / CACNG4 / KCNK13 / KCND2 / KCNIP4 / ANXA2 / KCNJ4 / CORIN / TNNI2 / RYR2 / KCNE5 / TPM2 / ACTN2 / KCNK9 / CASQ1 / SLC8A2 / CAMK2A / KCNK7 / KCNIP1 / ACTA2 / CACNG6 / CACNB2 / KCND1 / FGF12 / KCNK15 / KCNK12 / SCN4A / FGF13 / TRPC1 / KCNK10 / RYR1 / TNNT2 / ASPH / ANXA1 / TPM4 / SRI / MYL9 / KCNH2 / SCN2B / ATP2A1 / CACNA1C / SCN4B / KCNK2 / MYBPC1 / CACNB1 / MYH6 / CACNA1I / PAK1 / ATP1B3 / TPM3 / TMOD2 / ACTG2 / KCNK6 / GUCY1A2 / ATP2A3 / LMOD1 / TPM1 / KCNA5 / NPR2	SCN1A / FGF14 / FXYD3 / KCNIP3 / NPPA / TNNI2 / KCNJ12 / SCN4A / TCAP / MYL4 / KCNK10 / TNNC1 / TRIM72 / KCNK9 / KCNA5 / MYBPC1 / ACTN2 / NEB / ASPH / KCNK4 / KCNK7 / NKX2-5 / ATP2A1 / MYH8 / KCNJ11 / FGF12 / FGF13 / TPM1 / FXYD7 / MYH6 / SLC8A2 / PLN

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
GLYCEROPHOSPHOLIPID BIOSYNTHESIS	PLA2G4E / PLA2G4F / PLA2G1B / LIPH / CPNE7 / PLA2G3 / ALPI / PLAAT1 / PLA2G2D / CHAT / LPCAT4 / ACHE / PCYT1B / SLC44A5 / PLBD1 / LPCAT1 / GPD1L	PITPNM3 / PLAAT1 / CPNE6 / PLA2G5 / SLC44A4 / PLA2G4A / PLA2R1 / MFSD2A / OSBPL10 / MBOAT2 / AWAT2 / LIPH / PHOSPHO1 / ETNK2 / PLD4 / LPIN2 / OSBPL5 / GPD1L / LPIN3 / HADHA / ACHE / AGPAT2 / PLA2G2F / PEMT / GPAM / PCYT1B / PLB1 / GPD1 / PNPLA3 / HADHB / PLA2G2D / BCHE
L1CAM INTERACTIONS	TUBB3 / ITGA2 / KCNQ3 / TUBA3D / TUBAL3 / KIF4A / GAP43 / TUBA3E / EPHB2 / NRCAM / CD24 / CNTNAP1 / CNTN1 / DCX / DLG3 / LAMC1 / SRC / SCN4A / ITGAV / ANK2 / ITGB3 / ITGA2B / ITGA10 / SCN2B / SCN4B / TUBA4A / LAMB1 / PAK1 / TUBA1B / KCNQ2 / TUBA4B / TUBA1A / RPS6KA4 / DNM3 / RAC1	SH3GL2 / SCN7A / NCAM1 / RPS6KA6 / ANK3 / LAMA1 / CNTN1 / ITGA9 / EZR / SPTBN2 / DLG3 / TUBB6 / KIF4B / CHL1 / L1CAM / SCN11A / LAMB1 / DPYSL2 / TUBB1 / FGFR1 / TUBA1A / SCN9A / CNTN2 / NRP2 / SCN2A / SCN2B / MAP2K1 / ITGA2B / AP2A2 / SCN10A
RNA POLYMERASE II TRANSCRIPTION	SERPINB13 / SPP1 / SFN / TFAP2A / UBE2C / BIRC5 / ZNF676 / CCNE1 / G6PD / E2F7 / ZNF730 / GPRIN1 / ZNF300 / NR6A1 / COX8C / RRM2 / CHEK1 / CTSV / MYBL2 / CDK1 / NR0B1 / CDC25C / H2BC17 / H2AC14 / LMO1 / IFNG / H4C13 / EZH2 / E2F8 / ZNF257 / COL1A1 / CCNB1 / CDK5R1 / MMP13 / H2BC13 / AURKB / LEF1 / CCNA2 / E2F1 / ZNF735 / H3C2 / H3C3 / FANCI / COL1A2 / EXO1 / ZNF716 / SOX2 / PMAIP1 / TWIST1 / H2BC26 / TPX2 / ZNF610 / H2BC9 / TRPC3 / TP73 / E2F5 / CTSK / CBX2 / BLM / AURKA / RAD51 / H2BC14 / ARID3A / ZNF860 / CTLA4 / H3C10 / ELL3 / VDR / ZNF208 / TXNRD1 / FBXO32 / ZNF215 / ZNF99 / PRELID3A / ZNF732 / H2AC4 / ZNF724 / H3C13 / H2AX / H2BC15 / H4C6 / H2BC10 / ZNF454 / FOXO6 / H3C11 / H4C9 / MLLT3 / ZNF320 / H2BC3 / AGRP / TFAP2E / ZNF707 / ZNF233 / H3C1 / H3C12 / DLX5 / TFAP2D / TEAD4 / H2BC21 / H3C8 / PRKAA2 / UBE2S / TRIM63 / BDNF / H4C1 / H2AC7 / RHNO1 / NOTCH3 / H2BC8 / DNA2 / TNFRSF18 / TP53I3 / ZNF703 / H2BC11 / LGALS3 / RXRG / ZNF605 / ZNF439 / ZFP69B / ACTL6B / FANCD2 / CAMK2A / ZNF775 / H2BC7 / SARNP / ZNF157 / RORB / ZNF681 / ZNF184 / GLI2 / CAV1 / ZNF727 / IL2RA / PCBP4 / ZNF736 / H2BC12 / ZNF607 / BMP2 / POU4F1 / KAT2A / KRBA1 / DDX39A / JAG1 / BCL2L14 / ZNF517 / H2AC8 / IL6 / ZNF213 / CDC7 / H3C7 / GRIN2A / CHEK2 / GLS / CGA / ZNF287 / PRKAG1 / TEAD2 / PRKAB1 / PCGF2 / PPP1R13L / H4C8 / H2BC6 / SRC / YWHAZ / CDKN2A / RFC4 / BARD1 / ZNF696 / RSPO3 / FOXP3 / IL2 / NPAS4 / RAD1 / ZNF37A / ATAD2 / NELFE / CCNE2 / NBN / CPAP / ZIM2 / CHD3 / HIVEP3 / MSH2 / ZFP69 / NR5A1 / ZNF611 / THRA / H2BC5 / TGFB1 / ZNF738 / EHMT2 / MAPK11 / RUNX2 / ITGA2B / E2F6 / SOD2 / SNAPC1 / MYL9 / RRAGD / ZNF490 / LUZP4 / CSF2 / BRCA1 / ZNF486 / DYRK2 / BBC3 / ZNF792 / CCNG2 / MSX2 / NR2E3 / ZNF706 / RMI2 / SNAPC2 / IRAK1 / CASP2 / HDAC11 / RBL1 / H4C4 / SOX9 / ZNF74 / MYB / PML / ZNF234 / ZNF679 / SMAD2 / ZNF692 / ZNF746 / ZNF521 / PRDM1 / CDK4 / ZNF138 / ZNF669 / H4C16 / GEM / ZNF273 / TAF6 / RMI1 / TXN / EIF4A3 / SNRPB / MED17 / CPSF4 / NDRG1 / NKX3-2 / RNF2 / NR2C2AP / ZIK1 / CBX4 / ZNF668 / TCF7 / GPX2 / ZNF699 / TAF10 / GRIN2B / ZNF804B / ZNF430 / GATA1 / SMYD2 / ZNF189 / ZNF479 / ZNF45 / DAXX / SCMH1 / CCND3 / SMARCD1 / ZNF559 / TCF3 / ZKSCAN3 / RAD50 / PPARD / RUNX3 / ZNF688 / ZNF385A / ZNF655 / CDK5 / RPRD1A / KCTD1 / ZNF544 / ZNF677 / TGIF1 / HAND2 / RARG / ITGBL1 / PCNA / ZFP28 / HDAC7 / ZKSCAN5 / CBX3 / BID / ALYREF / ZNF678 / ELOC / TOPBP1 / MED10 / ACTL6A / GAD1 / ZNF202 / ZNF101 / AXIN1 / NOP2 / CCND2 / ZNF436 / CARM1 / SMARCA4 / TFAP2B / NABP2 / SPI1 / ZNF200 / ZNF14 / ZNF468 / ZNF43 / DDIT3 / ZNF624 / ZNF782 / INTS3 / ZNF483 / NEDD4L / ZNF317 / MAX / PLAGL1 / RAD51D / ZNF30 / HEY1 / CDC27 / ZNF667 / CDK6 / POLR2H / NCBP2 / ATR / ZNF737 / YWHAH / MED15 / MAPKAPK5 / CSTF2 / RNF34 / ING2 / ZNF547 / FASLG / CNOT11 / ZNF25 / ZNF573 / CDKN2B / ZNF749 / GTF2H1 / ZNF701 / ZNF587 / AGO2	ZNF679 / H3C2 / SOX2 / H2BC3 / H3C13 / CDC25C / H3C3 / H4C13 / H2BC17 / H3C11 / H2BC11 / H4C1 / H3C10 / CDK1 / CDKN2A / CCNA2 / UBE2C / CDK5R1 / E2F8 / H2BC15 / ZNF99 / H3C1 / E2F7 / KCNIP3 / H3C12 / NPPA / COX4I2 / RRM2 / NR2E1 / ZNF750 / H2AC4 / SPP1 / UBE2S / CDKN2B / ELOA2 / H2BC10 / LEF1 / ZNF732 / H2BC13 / BIRC5 / ZNF706 / AURKB / H2BC12L / ELOC / GRIN2B / H2BC12 / CCNB1 / H2BC8 / MYBL2 / H3C8 / TP53I3 / EXO1 / H2BC9 / PITX2 / H2AC7 / NFE2 / CGA / IHH / H2BC21 / H2BC14 / RAD51 / AURKA / H4C9 / RMI2 / H2BC6 / BCL2L14 / H3C6 / ZNF804B / G6PD / SNRPE / TFAP2A / NR2C2AP / POLR2K / SOD2 / H4C8 / TPX2 / NKX2-5 / FOXP3 / H2AC8 / CBX2 / LSM10 / TXN / RHEB / GPX2 / H2BC7 / COX6C / COX6B1 / PCBP4 / GAD1 / LAMTOR2 / IFNG / H4C4 / POLR2J / SERPINB13 / ZFP69B / UBA52 / SFN / CYCS / NELFE / RRAGD / ZNF735 / NR2E3 / BID / PRKAG3 / H2BC5 / ANAPC11 / CCNE2 / H2AC14 / H2AX / ATAD2 / MT-CO2 / LAMTOR4 / H2AZ2 / PSMA6 / COX7B / NPY / H4C2 / DDX39A / BBC3 / SUPT4H1 / GCK / POLR2I / TCEA1 / COX7A2 / NFYB / COX8A / ZNF775 / GTF2H5 / TAF10 / BAX / BMI1 / H3-3A / LGALS3 / H3C7 / TRPC3 / PRELID3A / POLR2F / DDIT3 / NDRG1 / POLR2H / RFC4 / RAD50 / RPA3 / H2AC6 / TXNRD1 / DPY30 / BMP2 / E2F1 / PIN1 / H2AC20 / ALYREF / COX7C / COX5A / UXT / ZNF696 / CBX8 / CDK5 / HDAC11 / ARID3A / MT-CO1 / SMYD2 / ZNF676 / ZNF138 / CHTOP / NDUFA4 / GTF2A2 / CBX4 / ZNF490 / THOC3 / DNA2 / CHEK1 / LAMTOR5 / SLBP / COX4I1 / SNRPF / U2AF2 / YWHAH / STUB1 / H2BC4 / CPSF4 / SNRPB / SNRPG / UBE2E1 / MAGOHB / NABP2 / ANAPC15 / NR1H2 / E2F5 / UBE2D1 / AGO2 / PPP2CA / TP73 / EZH2 / CCNE1 / RAD1 / RPRD1A / ELL3 / AGRP / LBR / RBM8A / PRKAA2 / H4C6 / TMEM219 / CBX3 / ZIM3 / CNOT3 / COX5B / AIFM2 / MAPKAPK5 / CSTF2 / FOXG1 / OPRM1 / PPARD / SSU72 / TP53BP2 / MSTN / MMP13 / YWHAZ / POLR2E / SATB2 / H4C16 / ATF2 / ZNF492 / HNF4G / SNAPC2 / APOE / SUMO1 / CDK4 / OCLN / TBP / RBX1 / ZNF716 / POLR2L / NOTCH3 / H4C3 / DEK / LAMTOR3 / COX6A1 / ELOB / PRDX5 / TP53INP1 / NOP2 / ING2 / KCTD15 / POLR2G / ZNF114 / TEAD2 / CDC73 / ZNF697 / PSMD7 / IRAK1 / ZNF454 / CHEK2 / ATRIP / COX6A2 / PIP4P1 / PMS2 / PSMD8 / RNPS1 / SRSF9 / KCTD6 / RARA
COPI MEDIATED ANTEROGRADE TRANSPORT	TUBB3 / TUBA3D / TUBAL3 / TUBA3E / DYNC1I1 / FOLR1 / KDELR3	TUBA3D / TUBA4B / DYNLL1 / KDELR1 / COPE / TMED9 / KDELR3 / TUBB2A / NAPB / GOSR2 / KDELR2 / SPTB / DCTN3 / DCTN2 / NAPA / CAPZA2 / CD59 / TMED7 / DYNC1I1 / TMED2 / TUBB4A / TUBA3E / COPZ1 / TUBA1B / COPZ2 / TUBA4A / YKT6 / TMED10 / BET1 / STX5 / ARF5 / SPTA1
PROGRAMMED CELL DEATH	SFN / H1-5 / E2F1 / MAPT / CHMP3 / CLSPN / BIRC3 / PMAIP1 / TP73 / LY96 / H1-3 / GSDME / LMNB1 / YWHAZ / CDKN2A / MLKL / CHMP4C / CASP5 / DSG2 / PLEC / BBC3 / HMGB2 / APIP / GZMB / BMF / TRAF2 / BAK1 / BID / BCL2 / PRKCD / DYNLL1 / YWHAH / FASLG / UNC5B / UNC5A / GSN / DSG3 / IL18 / VIM / PSMD14 / IL1A / MAPK3 / DAPK3	H1-5 / CDKN2A / H1-1 / MAPT / H1-2 / DAPK2 / LY96 / DCC / H1-0 / UBA52 / SFN / CYCS / BID / DYNLL1 / CHMP2A / DSG3 / PSMA6 / BBC3 / BAX / BCAP31 / LMNB1 / SDCBP / HMGB2 / E2F1 / YWHAH / STUB1 / H1-4 / CHMP4C / TP73 / STK24 / CASP3 / CLSPN / TP53BP2 / TRAF2 / YWHAZ / CHMP3 / OCLN / APIP / CHMP4B / PSMD7 / PSMD8 / CDC37 / PSMB4 / YWHAG / RPS27A
METABOLISM OF AMINO ACIDS AND DERIVATIVES	IDO2 / UROC1 / AADAT / BHMT / SEM1 / GLS2 / ASPA / BBOX1 / DBH / GSTZ1 / AGXT / HOGA1 / GPT / FTCD / ALDH6A1 / AGXT2 / DMGDH / GCDH / DAO / TDO2 / ASS1 / ASPG / SARDH / CBS / CPS1 / PXMP2 / SDS / AMDHD1 / MAT1A / TPH2 / DBT / HAAO / BCKDHA / ACADSB / PHGDH / PRODH2 / IYD / GLUD1 / FOLH1 / TAT / SUOX / RIDA / HAO1 / HAL / SHMT1 / CKMT2 / KMO / BHMT2 / BCKDHB / ARG1 / PIPOX / GRHPR / ECHS1 / ACMSD / DDO / CSAD / PAH / CDO1 / AMT / AASS / OTC / IVD / HIBCH / RPS4Y2 / ADI1 / GNMT / ALDH4A1 / PSAT1 / HPD / PPM1K / GADL1 / SLC25A15 / DHTKD1 / ACAT1 / QDPR / SEPSECS / GLDC / SLC6A12 / ASL / TST / GOT2 / CTH / AUH / NNMT / ALDH9A1 / SLC25A13 / MCCC2 / GAMT / DIO1 / HSD17B10 / MCCC1 / AGMAT / GATM / KGD4 / NAGS / OAT / GPT2 / CHDH / FAH / AFMID	DIO2 / DUOXA2 / NQO1 / RPL39L / RPL22L1 / OAZ3 / RPL36A / RPL30 / CGA / SLC6A7 / RPL8 / SLC6A8 / RPL10L / RPL39 / PSPH / DUOX2 / RPL7 / EEF1E1 / BCAT2 / RPS21 / RPL28 / RPS5 / GLUL / RPS17 / UBA52 / RPS27 / RPL38 / RPS11 / RPS28 / RPS20 / SLC5A5 / RPS14 / RPS19 / RPS16 / RPS15 / PSMA6 / RPL35A / RPL37A / RPL35 / RPL37 / RPS23 / SLC6A11 / SRM / RPLP1 / SERINC4 / RPL36 / RPS24 / RPS18 / RPL29 / RPLP2 / RPS10 / RPL26L1 / RPL27 / RPL13 / RPL18 / TXNRD1 / BCAT1 / RPL10 / RPS26 / RPS29 / SCLY / RPL18A / TSTD1 / RPS6 / RPL10A / RPL32 / RPS12 / RPL12 / RPS8 / RPL21 / AIMP2 / RPS7 / RPL23A / TPH2 / APIP / RPS4X / RPL27A / RPL23 / FAU / OAZ1 / PSMD7 / RPL19 / RPS15A / PSMD8 / GADL1 / RPL34 / PSMB4 / RPL13A / RPS25 / RPS27A / PYCR1 / CRYM
REGULATION OF LIPID METABOLISM BY PPARALPHA	CYP1A1 / ACSL1 / CYP4A11 / SULT2A1 / HMGCS2 / APOA5 / ALAS1 / PLIN2 / FABP1 / CYP7A1 / APOA1 / ACADM / CPT2 / ABCB4 / G0S2 / ACOX1 / RXRA / PPARA / PEX11A / ANGPTL4 / RORA / GRHL1 / RGL1 / CPT1A / SREBF1 / HMGCS1 / HMGCR / AGT / UGT1A9 / NR1H4 / PPARG / PPARGC1A / APOA2 / MED16 / ABCA1 / MED18 / NR1H3 / NCOR1 / MED11 / ARNT / FAM120B / FDFT1	CYP1A1 / APOA5 / CYP4A11 / ACSL1 / RGL1 / HMGCS2 / HELZ2 / SULT2A1 / CPT2 / SREBF1 / ACADM / CD36 / MED13L / NCOR1 / PEX11A / ACOX1 / PPARGC1A / RORA / FAM120B / CHD9 / ALAS1 / MED13 / CPT1A / MED23 / NCOR2 / APOA1 / ABCA1 / PPARA / SMARCD3 / MED16 / NR1H4 / PLIN2 / SIN3A / EP300 / MED12 / FABP1
SIGNALING BY VEGF	SPHK1 / ITPR3 / HRAS / MAPK12 / PAK3 / NCF2 / PRKACG / VEGFD / MAPK13 / VEGFC / CAV1 / THEM4 / SRC / ITGAV / ITGB3 / MAPK11 / MAPKAPK3 / WASF1 / CYBA / NRAS / PAK1 / NCF4 / HSPB1 / VAV3 / ABI2 / WASF2 / RAC1 / ITPR1 / PRKCD / NCF1	VEGFD / AXL / NOS3 / PRKCB / PTK2B / ITPR2 / NCKAP1L / VAV1 / PRR5 / CYBA / FLT4 / SH2D2A / NRP2 / DOCK1 / CYBB / PIK3CA / ITPR3 / SHC2 / RICTOR / CDH5 / CYFIP1 / MAPK13 / ROCK1 / NRP1 / CYFIP2 / ROCK2 / FYN / PIK3R1 / PRKCZ / SRC / CDC42 / JUP / PLCG1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
MAPK FAMILY SIGNALING CASCADES	IGF2BP1 / DUSP9 / SHC3 / EGF / EREG / ETV4 / NRG4 / CDK1 / NEFL / FGF8 / HRAS / MAPK12 / PAK3 / AREG / PRKACG / KITLG / FGF19 / FRS3 / LAT / ACTN2 / RASGRF1 / RASGRP1 / KSR1 / RASGEF1A / NRG2 / MMP10 / PDGFA / CAMK2A / MAPK4 / GRIN1 / IL2RA / FGF1 / DLG3 / KL / IL6 / MRAS / PTPN7 / SPRED3 / RASAL1 / ANGPT1 / ARL2 / ABHD17C / PEA15 / SRC / SPRED1 / RASGRF2 / CDC42EP5 / DUSP4 / IL2RG / IL2 / PDGFRB / DUSP8 / EPGN / ITGB3 / ITGA2B / KSR2 / CSF2 / PDGFB / JAK3 / NRAS / CSF2RB / VWF	IL6 / FGF23 / NCAM1 / CAMK2B / EREG / PDGFRA / RAG1 / AREG / NEFL / GFRA3 / NRG3 / DUSP2 / HGF / TEK / IL5 / SPRED3 / RET / CNKSR1 / SPTBN2 / DUSP1 / DUSP4 / FOXO1 / DLG3 / DUSP5 / TGFA / JUN / RASGRP4 / MYC / FLT3 / RGL1 / SHC3 / IL2RB / HBEGF / DUSP6 / IQGAP1 / DUSP16 / KBTBD7 / FGF1 / FGF3 / RAPGEF2 / MOV10 / GFRA2 / FGFR1 / FGF8 / IRS2 / PSPN / JAK2 / RASA2 / KIT / EPGN / PIK3CA / JAK1 / APBB1IP / CSF2RB / RASA3 / MAP2K1 / CDC14B / NF1 / ITGA2B
SUMOYLATION	TFAP2A / BIRC5 / TOP2A / CDCA8 / H4C13 / AURKB / CBX2 / BLM / AURKA / VDR / H4C6 / H4C9 / IKBKE / H4C1 / DNMT3A / PCGF2 / DNMT1 / H4C8 / CDKN2A / EID3 / DNMT3B / CHD3 / NUP210 / NR5A1 / THRA / BRCA1 / PIAS3 / NSMCE2 / H4C4 / NFKB2 / PML / H4C16 / RNF2 / TRIM27 / CBX4 / INCENP / NUP37 / DAXX / SCMH1 / NUP62 / SAE1 / PCNA / HDAC7	H4C13 / H4C1 / CDKN2A / BIRC5 / AURKB / AURKA / H4C9 / TFAP2A / H4C8 / IKBKG / CDCA8 / CBX2 / H4C4 / NSMCE2 / H4C2 / SUMO3 / BMI1 / CETN2 / CBX8 / SAE1 / CBX4 / NUP210 / NR1H2 / SUMO2 / H4C6 / NUP62 / SATB2 / H4C16 / SUMO1 / TOP2A / H4C3 / ING2 / HNRNPC / RARA
ANTIGEN PROCESSING UBIQUITINATION PROTEASOME DEGRADATION	UBE2C / ASB16 / TRIM71 / CDC20 / RNF182 / TRIM50 / FBXL16 / CCNF / FBXL19 / TRIM9 / FBXW10 / FBXO32 / ASB2 / ASB11 / ASB5 / UBE2S / TRIM63 / CBLL2 / TRIM36 / UBE2Q2 / TRIM69 / TRAIP / UBE2W / FBXL18 / KCTD7 / FBXW12	ASB16 / ASB15 / UBE2C / FBXW10 / FBXL22 / FBXL16 / UBE2S / TRIM69 / ELOC / ASB5 / FBXO2 / CDC20 / TRIM71 / TRIM50 / UBA52 / UBE2A / FBXO27 / ANAPC11 / UBE2M / PSMA6 / UBE2F / UBE2V2 / KBTBD13 / CCNF / UBE2V1 / ANAPC13 / KCTD7 / STUB1 / UBE2E1 / FBXW12 / UBE2D1 / RNF7 / RNF220 / RNF115 / RBX1 / KLHL5 / UBE2Q1 / FBXL18 / ELOB / UBE2J1 / PSMD7 / UBE2B / UBE2D4 / PSMD8 / KCTD6 / TRAIP / ZNRF1 / UBE2D2 / PSMB4 / LRR1 / UBE2E3 / FBXL7 / RPS27A
INTERLEUKIN 1 FAMILY SIGNALING	SEM1 / SAA1 / S100A12 / IL33 / IL1RL1 / IL1RN / MAP2K4 / IL1RAP / CTSG / TAB2 / IL18R1 / MAP2K1 / MYD88 / UBB / UBE2V1 / USP18 / IL1F10 / IL1R1 / SIGIRR / TRAF6 / MAPK8 / PSMA6 / PSMB1 / PSMA3 / TP53 / NFKBIA / PTPN4 / PTPN5 / TAB3 / PSMB6 / STAT3 / NKIRAS1 / NLRX1 / PSMB7 / UBC / IL1B / PSMD6 / TOLLIP	IL1B / IL1RL1 / CTSG / IL33 / PELI2 / PTPN13 / IRAK3 / S100B / S100A12 / ALOX5 / IL18R1 / IL1RAP / AGER
RAB REGULATION OF TRAFFICKING	RAB27B / RAB38 / RAB33A / RAB9B / SYTL1 / RIN1 / TBC1D2 / CHML / ANKRD27 / RAB3IP / TBC1D10C / TBC1D16 / DENND2D / DENND6B / RAB31 / RINL / SBF1 / RAB10 / CCZ1B / RAB7B / TRAPPC4 / TBC1D7 / HPS4 / AKT3 / TRAPPC3 / DENND2B / DENND5A / ALS2CL / DENND1C	RAB27B / DENND2A / RAB38 / DENND1C / RAB9B / DENND3 / ALS2 / RIN1 / DENND2D / RIN2 / SYTL1 / TRAPPC8 / ALS2CL / DENND5B / RAB33A / DENND4C / RAB3GAP1 / RAB8B / RAB3IL1 / DENND4A / TBC1D24 / MADD / TBC1D15 / RABEP1 / GAPVD1 / TRAPPC11 / GDI2 / RAB33B / RABGEF1 / RIC1 / ULK1 / SBF2 / TBC1D2 / RIN3 / DENND4B
PTEN REGULATION	MECOM / EZH2 / CBX2	NR2E1 / CBX2 / RHEB / LAMTOR2 / UBA52 / RRAGD / MAF1 / LAMTOR4 / PSMA6 / BMI1 / CBX8 / CBX4 / LAMTOR5 / STUB1 / AGO2 / EZH2 / ATF2 / LAMTOR3 / PSMD7 / MECOM / PSMD8 / PSMB4 / LAMTOR1 / RPS27A / GATAD2B / SNAI2 / TRIM27 / CSNK2B / MBD3 / XIAP / USP13 / MAPK1 / MLST8 / SLC38A9 / PSMA7 / PSMC4
TOLL LIKE RECEPTOR TLR1 TLR2 CASCADE	SAA1 / FGB / FGA / S100A12 / SFTPA1 / FGG / SFTPD / FOS / CD14 / DUSP6 / MAP2K3 / MAP2K4 / TAB2 / TLR4 / MAP2K1 / MYD88 / UBB / VRK3 / SFTPA2 / UBE2V1 / USP18 / SIGIRR / TRAF6 / JUN / PPP2CB / MAPK8	FOS / PELI2 / IRAK3 / S100B / S100A8 / S100A12 / DUSP4 / TLR4 / MAPK10 / JUN / TLR2 / AGER / DUSP6 / CD36 / TLR6 / NOD1 / SFTPD / MAP2K3 / MAP2K1 / MAPK7 / USP18 / NLRX1 / MAP3K8 / NFKBIA / MAP2K4 / ALPK1 / BTK
CARGO RECOGNITION FOR CLATHRIN MEDIATED ENDOCYTOSIS	SH3GL3 / EGF / EREG / SYT8 / KIAA0319 / GRK3 / AREG / SGIP1 / CD3D / SYT1 / COPS7B / TFRC / EPGN / FCHO1 / SYT11 / EPN2 / CD3G / HGS / DVL2 / STON1 / AGFG1 / WNT5A / STON2 / AAK1 / SNAP91 / DAB2 / IL7R / CBL	SH3GL2 / CHRM2 / EREG / SYT9 / AREG / FCHO1 / CFTR / CD4 / TGFA / HBEGF / IL7R
CELLULAR RESPONSES TO MECHANICAL STIMULI	SPP1 / GNG4 / GNGT1 / ANXA2 / PRKACG / MMP14 / IKBKE / PDE4D / CACNB2 / ITGAV / CAPN2 / GNG10 / ITGB3 / CACNB1 / GNG8 / CACNA2D1 / RAMP2 / ADCY7 / ADCY3 / GJA1 / GNGT2 / GNB1 / PECAM1 / YAP1 / ABL1 / IKBKG / GNB5 / PIEZO1 / CAPNS1 / ADCY8 / ADCY4 / GNG11 / STAT1 / PTK2 / PIK3CB / PTPN1 / CALCRL / ITGA5 / ITGB1	PRKAR2B / ADCY5 / CACNB2 / PDE4D / ADM / TRPV4 / NLRP3 / GNB3 / NOS3 / CACNA2D1 / PRR5 / FLT4 / GNB4 / CACNG7 / GNG11 / PIK3CA / GJA1 / ADCY7 / PPP2R2A / GNGT2 / PIK3CD / PANX1 / RICTOR / CDH5 / NFKBIA / FYN / STAT1 / GNG2
INTRA GOLGI AND RETROGRADE GOLGI TO ER TRAFFIC	TUBB3 / TUBA3D / TUBAL3 / KIF4A / KIF18B / KIF2C / KIFC1 / KIF20A / TUBA3E / DYNC1I1 / KIF18A / KIF23 / KIFC2 / KDELR3 / RACGAP1 / KIF15 / CYTH3 / KIF21B / PAFAH1B3 / CENPE / KIF11 / KLC2 / BICD1	TUBA3D / KIF25 / TUBA4B / KIFC1 / KIF20A / KIF2C / KIF4A / RABEPK / KIF23 / KIF11 / DYNLL1 / VAMP4 / RACGAP1 / KDELR1 / KIF15 / COPE / STX10 / TMED9 / KDELR3 / STX6 / TUBB2A / NAPB / GOSR2 / KDELR2 / SCOC / DCTN3 / BNIP1 / DCTN2 / NAPA / PAFAH1B3 / CAPZA2 / TMED7 / DYNC1I1 / TMED2 / TUBB4A / TUBA3E / RAB41 / VTI1A / COPZ1 / TUBA1B / COPZ2 / CYTH2 / SNAP29 / USE1 / KIF18A / KIF2A / TUBA4A / YKT6 / TMED10 / KIF22 / NAA38 / STX5 / ARF5 / RAB43 / VAMP3 / SURF4 / KIF9 / TGOLN2 / SEC22B / PLA2G6
METABOLISM OF VITAMINS AND COFACTORS	SLC22A13 / LRAT / APOA4 / TTPA / ACACB / AMN / SLC19A3 / AOX1 / APOC3 / TTR / MTHFD1 / SHMT1 / APOA1 / SLC23A1 / NADK2 / PC / MMUT / SLC25A42 / RBP4 / MMACHC / PANK1 / BCO2 / NMRK1 / GCH1 / SLC25A16 / SLC52A1 / NUDT12 / ALDH1L1 / LRP2 / GPHN / LDLR / MMAA / AKR1C4 / BTD / CYB5A / NNMT / ABCD4 / MCCC2 / MCCC1 / PCCA / CLPS / PCCB / COQ6 / SDC4 / SHMT2 / APOM / PNPO / RETSAT / MTHFS / NMNAT1 / APOE / VKORC1 / MTHFD2L / FPGS / ACO1 / RDH11 / PDSS2 / GCHFR / GSTO1 / DHFR / COQ9 / QPRT / COQ4 / MOCS1 / DHFR2 / APOB / PANK3 / VNN1 / PARP9 / MOCOS / SDC1 / ENPP1	LRAT / TCN1 / BCO2 / SLC52A1 / APOA4 / MTHFD2 / ACACB / PC / MTHFD1 / NOS3 / AOX1 / HPDL / GPHN / NNMT / MMUT / SLC2A3 / SLC19A3 / GPC4 / PANK1 / MCCC1 / NMNAT2 / NAMPT / AMN / SLC22A13 / SHMT1 / LDLR / CD38 / GPC2 / TCN2 / MMAA / SDC3 / VNN1 / COASY / PLB1 / NADK2 / RETSAT / IDH1 / ACO1 / SLC2A1 / PANK3 / MMACHC / ABCD4 / PARP9 / PARP4 / SLC19A2 / COQ5 / MOCOS / NMRK1 / NMNAT1 / SLC25A16
TOLL LIKE RECEPTOR CASCADES	SAA1 / FGB / BPI / FGA / S100A12 / SFTPA1 / FGG / SFTPD / FOS / TLR3 / CD14 / DUSP6 / MAP2K3 / MAP2K4 / TAB2 / TLR4 / MAP2K1 / APOB / MYD88 / UBB / VRK3 / SFTPA2 / UBE2V1 / USP18 / SIGIRR / PIK3R4 / TRAF6 / JUN / PLCG2 / LBP / PPP2CB / MAPK8	FOS / PELI2 / RIPK3 / IRAK3 / S100B / S100A8 / S100A12 / DUSP4 / TLR4 / MAPK10 / CTSV / BPI / JUN / TLR2 / AGER / DUSP6 / CD36 / CD180 / TLR6 / PIK3C3 / TASL / PIK3R4 / NOD1 / SFTPD / PLCG2 / MAP2K3 / MAP2K1 / MAPK7 / USP18 / NLRX1
INTEGRATION OF ENERGY METABOLISM	GNG4 / ACSL4 / CHRM3 / GNGT1 / ITPR3 / STX1A / PRKACG / SLC2A1 / PRKAA2 / TKT / CACNB2 / PLCB1 / ACLY / GNG10 / MARCKS / GNA15 / SNAP25 / AKAP5 / CACNA1C / GNG8	GCG / ADCY8 / ACSL4 / GNG10 / PLCB1 / KCNC2 / GNG5 / KCNJ11 / CHRM3 / TKT / ADRA2C / ADIPOR1 / GNB1 / CACNA1A / GNB5 / PPP2CA / ADCY2 / PRKAA2 / TALDO1 / AGPAT1 / MLX / ADIPOQ

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
DISEASES OF SIGNAL TRANSDUCTION BY GROWTH FACTOR RECEPTORS AND SECOND MESSENGERS	WNT3A / DKK4 / DUSP9 / DKK1 / KREMEN2 / EGF / FOXM1 / EREG / NRG4 / CCNB1 / DKK2 / NOX4 / TWIST1 / TGFBR1 / PIK3R6 / FGF8 / HRAS / KIAA1549 / FAM131B / ICOS / AREG / KITLG / FGF19 / FOXO6 / JAG2 / FRS3 / BDNF / KSR1 / NRG2 / PDGFA / CAMK2A / CTBP2 / FGF1 / CD80 / KAT2A / JAG1 / KL / MRAS / FZD6 / SPRED3 / DNMT1 / SRC / SPRED1 / RNF43 / MPRIP / BCL11A / PDGFRB / DUSP8 / EPGN / ERLEC1 / HEYL / BCL2A1 / ITGB3 / TPM4 / TGFB1 / ITGA2B / KSR2 / PDGFB / CD28 / RAC2 / AGTRAP / HDAC11 / NRAS / VWF / ATIC / SMAD2 / PIK3CG / TPM3 / PTPN12 / HHAT / GZMB / ALK	ESRP1 / FGF23 / CAMK2B / NTF3 / EREG / PDGFRA / AREG / IL10 / NRG3 / HGF / NTRK3 / GZMB / ESR2 / NR4A1 / SPRED3 / CNKSR1 / JUNB / CTBP2 / ESR1 / FOXO6 / PPFIBP1 / FZD8 / FOXO1 / BCL11A / TGFA / JUN / MYC / PIM1 / FLT3 / HDAC6 / HBEGF / HEYL / HES1 / HDAC8 / DUSP6 / IQGAP1 / NEURL1B / RANBP2 / GOLGB1 / DUSP16 / RAC2 / DLL1 / BIRC6 / FGF1 / FGF3 / BDNF / MOV10 / FAM131B / VAV1 / PIK3R6 / PRR5 / KANK1 / FGFR1 / KREMEN1 / AKAP9 / PRF1 / POLR2A / NCOR1 / IRF4 / CNTRL / TRAT1 / MYO18A / FGF8 / IRS2 / STAT3 / JAK2 / MYH9 / KIT / EPGN / PIK3CA / APBB1IP / GAB1 / TRIP11 / HDAC9 / STRN / MAP2K1 / NF1 / MDM2 / GOLGA4 / MPRIP / ITGA2B / PIK3R5
SPHINGOLIPID METABOLISM	FUT2 / UGT8 / SPTSSB / SGPP2 / PLPP2 / ST6GALNAC5 / SPHK1 / FA2H / B3GNT5 / B3GALNT1 / B4GALNT1 / GAL3ST1 / ARSI / GLB1L2 / GLA / ABCC1 / ALDH3B1 / GBA1 / B4GALT6 / GLB1L / NEU2 / PRKD1 / ST3GAL2 / CSNK1G2 / ARSJ / GM2A	SPTSSB / CERS3 / FUT2 / B4GALNT1 / SPTSSA / GLB1L3 / GBA1 / GLA / NEU1 / CERS2 / GM2A / GAL3ST1 / PPM1L / ORMDL2 / B4GALT6 / PLPP1 / HEXB / ST3GAL5
CLASS I MHC MEDIATED ANTIGEN PROCESSING PRESENTATION	UBE2C / ASB16 / TRIM71 / CDC20 / CTSV / RNF182 / TRIM50 / FBXL16 / S100A1 / CCNF / FBXL19 / TRIM9 / FBXW10 / FBXO32 / NCF2 / LY96 / ASB2 / ASB11 / S100A9 / ASB5 / FCGR1A / UBE2S / TRIM63 / CBLL2 / TRIM36 / UBE2Q2 / TRIM69 / TRAIP / UBE2W / FBXL18 / KCTD7 / FBXW12 / TAP2 / TRIM11 / ERAP2 / TAP1 / ITGAV	ASB16 / ASB15 / UBE2C / FBXW10 / FBXL22 / FBXL16 / UBE2S / TRIM69 / ELOC / S100A1 / ASB5 / LY96 / FBXO2 / CDC20 / IKBKG / TRIM71 / TRIM50 / UBA52 / SEC61G / UBE2A / FBXO27 / ANAPC11 / UBE2M / CANX / PSMA6 / HLA-A / UBE2F / UBE2V2 / BCAP31 / HSPA5 / KBTBD13 / CCNF / PSMB9 / HLA-G / HLA-F / STX4 / UBE2V1 / ANAPC13 / CALR / KCTD7 / SEC61B / STUB1 / PDIA3 / UBE2E1 / FBXW12 / UBE2D1 / RNF7 / RNF220 / RNF115 / RBX1 / KLHL5 / UBE2Q1 / FBXL18 / ELOB / UBE2J1 / PSMD7 / UBE2B / UBE2D4 / PSMD8 / KCTD6 / TRAIP / ZNRF1 / UBE2D2 / B2M / PSMB4 / LRR1 / UBE2E3 / FBXL7 / RPS27A / HLA-B / PJA1 / FBXO17 / VAMP8 / RNF4 / TAPBP / ZNRF2 / PSME1 / RBCK1 / TAP2 / RNF41
CILIUM ASSEMBLY	TUBB3 / NEK2 / TUBA3D / TUBAL3 / PLK1 / CDK1 / TUBA3E / MCHR1 / PLK4 / FBF1 / CYS1 / CEP72 / IFT80 / IFT81 / B9D2 / CEP290 / NDE1 / CEP131 / CPAP / DYNLT2 / KIF24 / IFT52 / TMEM67 / CEP164 / UNC119B / NPHP3 / TCTN2 / TMEM216 / TUBA4A / RAB3IP / CEP41 / CEP152 / TUBG1 / CEP97 / DYNLRB2 / TUBA1B / SFI1 / INPP5E / TUBA1A / ASAP1 / NEDD1 / HAUS1 / IFT70B / NPHP4 / BBS12 / CEP250 / CCT3 / KIF17 / SDCCAG8 / MAPRE1 / DYNLL1 / DCTN2 / CCT5 / KIF3A / TUBA1C / PDE6D / TUBB8B / DYNC2LI1 / MKKS / SCLT1 / CKAP5 / CNGB1 / IFT56 / IQCB1 / CEP78 / CEP162 / TUBB6 / CEP89 / TUBB / KIF3C / ATAT1 / TUBA3C / RPGRIP1L / IFT22 / DYNC1I2 / IFT70A / CETN2 / SEPTIN2	CNGA2 / NPHP3 / BBS5 / PRKAR2B / CYS1 / DYNC2H1 / NPHP4 / IFT122 / NPHP1 / TUBB6 / IFT70A / IFT172 / HDAC6 / IFT70B / PCNT / KIF3C / CEP290 / TUBB1 / DYNC1H1 / WDR19 / BBS1 / TUBA1A / AKAP9 / BBS7 / CNTRL / LZTFL1 / CC2D2A / EXOC8 / CEP192 / WDR35 / IFT88 / TCTN2 / ARL13B / TRIP11 / TTC21B / CEP250 / CEP135 / EXOC1 / IFT46 / PKD2 / NINL / HAUS3 / OFD1 / BBS9 / BBS10 / DYNLRB2 / SFI1 / DYNC2LI1 / CEP70 / BBS12 / IFT57 / IFT140 / GBF1 / DYNLT5 / CDK5RAP2 / ALMS1 / TUBAL3
ER TO GOLGI ANTEROGRADE TRANSPORT	TUBB3 / TUBA3D / TUBAL3 / COL7A1 / TUBA3E / DYNC1I1 / FOLR1 / KDELR3 / AREG / SEC31B	TUBA3D / CNIH3 / TUBA4B / LMAN1L / TRAPPC2 / DYNLL1 / KDELR1 / COPE / TMED9 / KDELR3 / TUBB2A / LMAN2 / TRAPPC2L / NAPB / GOSR2 / KDELR2 / SPTB / DCTN3 / DCTN2 / NAPA / CAPZA2 / CD59 / TMED7 / DYNC1I1 / TMED2 / TUBB4A / TUBA3E / COPZ1 / TUBA1B / COPZ2 / TRAPPC4 / TUBA4A / CNIH2 / YKT6 / TMED10 / LMAN2L / BET1 / STX5 / STX17 / ARF5 / SEC31B / SPTA1 / CTSZ / TRAPPC6A / SEC22B / CNIH1 / BET1L / ARF1 / SEC22C
TOLL LIKE RECEPTOR 9 TLR9 CASCADE	SAA1 / S100A12 / FOS / CD14 / DUSP6 / MAP2K3 / MAP2K4 / TAB2 / TLR4 / MAP2K1 / MYD88 / UBB / VRK3 / UBE2V1 / USP18 / PIK3R4 / TRAF6 / JUN / PPP2CB / MAPK8 / ECSIT / TP53 / NFKBIA	FOS / PELI2 / S100B / S100A12 / DUSP4 / TLR4 / MAPK10 / JUN / AGER / DUSP6 / PIK3C3 / TASL / PIK3R4 / NOD1 / MAP2K3 / MAP2K1 / MAPK7 / USP18 / NLRX1 / MAP3K8
TRANSPORT TO THE GOLGI AND SUBSEQUENT MODIFICATION	TUBB3 / TUBA3D / TUBAL3 / COL7A1 / TUBA3E / DYNC1I1 / FOLR1 / KDELR3 / AREG / SEC31B / MGAT3 / FUT3 / CD55 / MGAT4C / CGA / MGAT5 / CTSC / ST3GAL4 / YKT6 / B4GALT6 / ANK2 / TMED3 / MGAT4A	TUBA3D / CNIH3 / TUBA4B / CGA / CHST8 / LMAN1L / TRAPPC2 / DYNLL1 / KDELR1 / MGAT4A / COPE / TMED9 / B4GALT6 / KDELR3 / TUBB2A / LMAN2 / TRAPPC2L / NAPB / GOSR2 / KDELR2 / LHB / MGAT3 / SPTB / DCTN3 / DCTN2 / NAPA / CAPZA2 / CD59 / TMED7 / DYNC1I1 / TMED2 / TUBB4A / TUBA3E / COPZ1 / TUBA1B / MGAT5 / COPZ2 / B4GALT3 / TRAPPC4 / TUBA4A / CNIH2 / YKT6 / TMED10 / LMAN2L / BET1 / STX5 / STX17 / ARF5 / B4GALT2 / SEC31B / SPTA1 / CTSZ / TRAPPC6A / SEC22B / CNIH1 / BET1L / ARF1 / SEC22C
RESPIRATORY SYNCYTIAL VIRUS INFECTION PATHWAY	GPC3 / GPC2 / GPC5 / TLR7 / LY96 / H2BC15 / IFNA6 / IGF1R / IFNA14 / AGRN / CDK19 / MAP1B / MED9 / MED17 / HSP90AB1 / ELOC / MED10	GPC3 / H2BC15 / IFNA6 / ELOC / LY96 / UBA52 / SDC2 / SPCS1 / BCAP31 / SDC1 / AGRN / SEC11C / GPC5 / IRF3 / MED29 / HSP90AB1 / RBX1 / ELOB / TLR7 / MED30 / MED22 / RPS27A
CELLULAR RESPONSE TO HEAT STRESS	RLN1 / HSPB8 / CAMK2A / HSPA6 / BAG2 / HSPA12A / NUP210 / HSPA1B / TNFRSF21 / COL4A6 / HSP90AB1 / HSPA2 / NUP37 / SERPINH1 / NUP62 / CRYAB / HSPB1 / HSPA1A / HSPA1L / NUP205 / ATR / NDC1 / HSPA12B / DNAJC2 / MAPK3 / MAPKAPK2 / NUP93 / NUP42 / RAE1 / DNAJB6 / DEDD2 / NUP107 / HSF1 / NUP155 / HSPA5 / HSPA4 / HSPA13 / HSPH1 / POM121 / POM121C / RPS19BP1 / GSK3B / TPR / ATM / RPTOR / HSPA14 / NUP133 / NUP43 / NUP85 / NUP188 / NUP153 / PTGES3 / HSP90AA1 / MAPK1	COL4A6 / HSPA5 / HSPB1 / RPA3 / BAG2 / PTGES3 / HSF1 / NUP210 / CRYAB / RLN1 / AKT1S1 / MRPL18 / NUP62 / RPS19BP1 / HSP90AB1 / MAPKAPK2 / HSBP1 / CRYBA4 / NUP42 / FKBP4 / BAG1 / DNAJC2 / HSPB8 / HSP90AA1 / POM121 / MAPK1 / HIKESHI / MLST8 / NDC1 / DNAJB6 / NUP58 / SERPINH1 / YWHAE / POM121C / CAMK2A / HSPA1A / CAMK2G / ST13 / HSPA4 / HSPH1 / SEC13 / NUP35 / HSPA12B / BAG3 / HSPA1L / RPA1 / HSPA1B / MAPK3 / GSK3B / EEF1A1 / NUP50
BETA CATENIN INDEPENDENT WNT SIGNALING	GNG4 / GNGT1 / ITPR3 / LEF1 / PRKCG / ROR1 / CAMK2A / PLCB1 / FZD6 / FZD2 / PDE6B / ROR2 / GNG10 / RAC2 / SCRIB / AXIN2 / GNG8 / TCF7 / DVL2 / WNT4 / RAC1 / DVL3 / WNT1 / ITPR1 / GNGT2 / GNB1 / WNT5A	WNT11 / PRKCG / PRKG1 / PLCB2 / PRICKLE1 / GNB3 / FZD7 / PRKCB / NFATC1 / FZD8 / DAAM1 / MYC / FZD1 / ITPR2 / RAC2 / MOV10 / VANGL2 / GNB4
CLATHRIN MEDIATED ENDOCYTOSIS	SH3GL3 / EGF / EREG / DNAJC6 / SYT8 / KIAA0319 / GRK3 / AREG / SGIP1 / TRIP10 / CD3D / SYT1 / COPS7B / TFRC / EPGN / FCHO1 / SYT11 / EPN2 / CD3G / HGS / DVL2 / ARPC5 / DNM3 / STON1 / AGFG1 / WNT5A / STON2 / AAK1 / ACTR3 / SNAP91 / CTTN / DAB2 / IL7R / CBL / PIP5K1C / GRB2	SH3GL2 / CHRM2 / EREG / SYT9 / AREG / AMPH / FCHO1 / CFTR / CD4 / TGFA / HBEGF / IL7R / TRIP10
MHC CLASS II ANTIGEN PRESENTATION	TUBB3 / TUBA3D / TUBAL3 / KIF4A / CTSV / KIF2C / KIF20A / TUBA3E / DYNC1I1 / KIF18A / KIF23 / CTSK / RACGAP1 / KIF15 / CENPE / KIF11 / KLC2 / CTSD / AP1M2 / HLA-DQA1 / HLA-DRB5 / CTSC / HLA-DQB2 / HLA-DMB / CTSE / HLA-DOA / TUBA4A / KIF2A / HLA-DMA / TUBA1B / TUBA4B / TUBA1A / DNM3 / AP1S1 / CTSA / KLC1 / HLA-DQA2 / DYNLL1 / DCTN2 / KIF3A / CD74 / TUBA1C / TUBB8B / HLA-DRB1 / HLA-DRA / HLA-DOB / TUBB6	TUBA3D / TUBA4B / KIF20A / KIF2C / KIF4A / KIF23 / KIF11 / DNM3 / DYNLL1 / CANX / AP1S1 / RACGAP1 / KIF15 / AP2S1 / CTSF / CLTA / TUBB2A / CTSA / DCTN3 / DCTN2 / CAPZA2 / DYNC1I1 / TUBB4A / TUBA3E
TRNA PROCESSING	ADAT2 / WDR4 / GTPBP3 / TRMT6 / NUP210 / PUS7 / RPP25 / POP1 / METTL1 / CPSF4 / LAGE3 / NUP37 / NUP62 / PUS1 / TSEN54 / FAM98B / TRMT1 / NUP205 / ADAT1 / CSTF2 / NDC1 / POP7 / RAN / GON7 / XPOT / FTSJ1 / NUP93 / EPRS1 / NUP42 / RAE1 / NUP107 / TRMT61A / NUP155 / ALKBH8 / TRDMT1 / POM121 / POM121C / TPR / TSEN2 / TSEN15 / TRNT1 / CDKAL1 / NUP133 / NUP43 / RPP40 / NUP85 / TPRKB / NUP188 / TRMT9B / NUP153 / ADAT3 / CPSF1 / THADA / RPP38 / TRMT12 / QTRT2	LAGE3 / RPP21 / TSEN15 / POP7 / GON7 / NUP210 / CPSF4 / POP4 / CSTF2 / TRMT112 / NUP62 / PUS7 / ADAT2 / URM1 / RPP40 / TP53RK / TRMT12 / RTRAF / FTSJ1 / NUP42 / TPRKB / PUS1 / WDR4 / POM121 / QNG1 / TYW1 / RPP30 / NDC1 / OSGEP / CTU1 / NUP58 / TSEN54 / C2orf49 / ZBTB8OS / RPP14 / RAN / POM121C / METTL1 / POP5 / TYW3 / CTU2 / SEC13 / CDKAL1 / RPP38 / NUP35 / TRMT61A / QTRT1

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
ADIPOGENESIS	CIDEA / PCK1 / ADIRF / PLIN1 / RXRA / SLC2A4 / PPARA / CEBPD / ANGPTL4	EGR2 / KLF4 / PLIN1 / PCK1 / TNF / HELZ2 / PRDM16 / SREBF1 / CD36 / MED13L / NCOR1 / PPARGC1A / FAM120B / CHD9 / MTA1 / MED13 / ZNF638 / MED23 / ZNF423 / SMAD4 / NCOR2 / PPARA / SMARCD3 / MED16 / EP300 / MED12 / THRAP3 / MED18 / LEP / MED6 / MED14 / ADIRF
ANTIMICROBIAL MECHANISM OF IFN STIMULATED GENES	SFN / TUBB3 / TUBA3D / TUBAL3 / CDK1 / TUBA3E / SPHK1 / MAPT / SNCA / CENPS / FANCE / FAAP24 / KPNA2 / KPNA7 / GBP2 / FANCG / FANCB / GBP5 / FLNA / NUP210 / HSPA1B / OAS3 / TUBA4A / EIF4A3 / FANCF / HSPA2 / NUP37 / TUBA1B / NUP62 / TUBA4B / TUBA1A / OASL / FNTB / HSPA1A / HSPA1L / NUP205 / NDC1 / ILF2 / TUBA1C / TUBB8B / FANCA / MAPK3 / NUP93 / IKBKG / TUBB6 / ILF3 / TUBA3C / NUP42 / FANCM / RAE1 / NEDD4 / ISG15	CDK1 / TUBA3D / MAPT / TUBA4B / IKBKG / CENPX / FANCA / UBA52 / SFN / FANCB / KPNA2 / EIF2S2 / PIN1 / PPP2R5A / NUP210 / TUBB2A / UBE2E1 / PPP2CA / FAAP20 / IRF3 / NUP62 / ILF2 / EIF2S3 / SUMO1 / DNAJC3 / TUBB4A / TUBA3E / TUBA1B / RPS27A / FANCE / NUP42 / ACTB / TUBA4A / KPNA7 / ISG15 / GBP2 / POM121 / NPM1 / FAAP24 / KPNA4 / NDC1 / EIF4E / UBE2N / TRIM25 / NUP58 / TUBB2B
CIRCADIAN CLOCK	SEM1 / NOCT / PER3 / RXRA / PPARA / KLF15 / F7 / RORA / SIK1 / PER1 / RORC / SERPINE1 / CPT1A / SREBF1 / PER2 / UBB / NRIP1 / CIPC / CRY2 / FBXL3 / DBP	PER2 / SIK1 / PER1 / SERPINE1 / HELZ2 / NRIP1 / PER3 / CRY2 / KMT2A / SREBF1 / NAMPT / SIRT1 / NCOR1 / BHLHE40 / PPARGC1A / RAI1 / RORA / CHD9 / CPT1A / NOCT / FBXL3 / CSNK2A1 / PPARA / SMARCD3 / KLF15 / EP300 / PSMD1
DEATH RECEPTOR SIGNALING	ECT2 / BIRC3 / ARHGEF39 / IKBKE / TIAM2 / OBSCN / OMG / RIPK2 / ARHGEF16 / TRAF1 / FGD1 / RASGRF2 / RBCK1 / ABR / ARHGEF2 / IRAK1 / CASP2 / ARHGEF35 / ARHGEF38 / PRDM4 / ITGB3BP / ARHGEF5 / CLIP3 / ARHGEF3 / VAV3 / TRAF2 / SQSTM1 / LINGO1 / TNF / MCF2L / RAC1 / PRKCI / AATF / ADAM17 / TNFAIP3 / ARHGEF11 / MCF2 / ARHGEF18 / FASLG / TAX1BP1 / NSMAF / NCSTN / SHARPIN / UBE2D1 / MAPKAPK2 / IKBKG / NGF	SMPD3 / NGFR / ARHGEF17 / ARHGEF4 / TNF / MAG / TNFSF10 / ABR / FGD4 / ARHGEF26 / FGD2 / NGF / VAV1 / TIAM1 / FGD3 / ARHGEF40 / CLIP3 / ARHGEF3 / ARHGEF6 / KALRN / MADD / PREX1 / TNFRSF10D / OTUD1 / NFKBIA / FASLG / SPATA2 / ULK1 / NET1 / SOS2 / BIRC2 / MCF2 / MAGED1 / AKAP13 / ARHGEF10L / CFLAR
DISORDERS OF TRANSMEMBRANE TRANSPORTERS	GCK / SLCO1B3 / SEM1 / AVPR1A / SLC6A5 / SLC17A8 / SLC34A3 / AVPR2 / SLC5A1 / ABCG5 / SLC34A1 / SLC2A2 / APOA1 / SLCO1B1 / ABCC6 / GCKR / ABCG8 / ABCB4 / CP / ABCC9 / ABCB11 / SLC4A4 / ABCD4 / SLC40A1 / SLC1A1	SLC22A12 / SLC34A3 / BSG / SLC6A5 / KCNJ11 / SLC39A4 / SLC6A14 / UBA52 / SLC5A5 / PSMA6 / SLC17A5 / GCK / SLC5A2 / ABCA12 / SLC7A9 / DERL1 / NUP210 / SLC35C1 / SLC26A2 / RNF5 / SLC5A7 / NUP62 / AVPR2 / SLC33A1 / SLC9A6 / SLC35A2 / SLC22A5 / SLC6A3 / PSMD7 / PSMD8 / SLC26A3 / SLCO2A1 / PSMB4 / SLC36A2 / RPS27A / ERLEC1 / NUP42 / HK1
HEDGEHOG OFF STATE	ADCY1 / SEM1 / TUBB1	PRKAR2B / ADCY5 / DYNC2H1 / IFT122 / TUBB6 / IFT172 / TUBB1 / WDR19 / TUBA1A / WDR35 / IFT88 / ADCY7 / TTC21B / OFD1 / GLI2 / ADCY10 / FUZ / IFT57 / IFT140 / PSMD1 / PTCH1 / ADCY3 / SEM1 / ADCY1
INTERFERON SIGNALING	SFN / TRIM31 / TUBB3 / TUBA3D / TUBAL3 / CDK1 / TRIM17 / IFNG / TUBA3E / SPHK1 / MAPT / SNCA / CENPS / FANCE / FAAP24 / FCGR1A / CIITA / IFNA6 / TRIM6 / CD44 / CAMK2A / KPNA2 / KPNA7 / GBP2 / TRIM46 / FANCG / HLA-DQA1 / IFITM1 / FANCB / HLA-DRB5 / GBP5 / HLA-DQB2 / ICAM1 / ISG20 / FLNA / IFNA14 / TRIM45 / NUP210 / IFIT2 / HSPA1B / OAS3 / TUBA4A / PML / EIF4A3 / IRF5 / FANCF / IFNGR2 / MID1 / HSPA2 / NUP37 / TUBA1B / NUP62 / TUBA4B / IFI27 / TUBA1A / OASL / FNTB / PTAFR / IFI35 / HSPA1A / HSPA1L / HLA-DQA2 / NUP205 / PRKCD / NDC1 / TRIM62 / ILF2 / TUBA1C / TUBB8B / FANCA / HLA-A / HLA-DRB1 / HLA-DRA / MAPK3 / NUP93 / IKBKG / TUBB6 / HLA-F / HLA-DQB1 / TRIM29 / ILF3 / SP100 / TUBA3C / NUP42 / FANCM / RAE1 / NEDD4 / ISG15	SOCS3 / NCAM1 / CAMK2B / RSAD2 / IFI44L / EGR1 / IRF9 / MT2A / SMAD7 / HSPA2 / IFITM1 / HERC5 / GBP4 / TRIM22 / TUBB6 / PIM1 / IFIT1 / MX2 / RNASEL / RANBP2 / KPNA5 / IFIH1 / OAS2 / FANCC / HLA-DQA2 / TUBB1 / TRIM62 / CIITA / GBP1 / TUBA1A / MX1 / IRF4 / GBP7 / STAT3 / TRIM5 / JAK2 / UBA7 / GBP5 / JAK1 / HLA-DPA1 / TRIM3 / IFI44 / TRIM48 / FLNB / HLA-DPB1 / FANCL / HLA-DRB5 / USP18 / TRIM35 / TRIM29 / NUP160
INTERLEUKIN 1 SIGNALING	SEM1 / SAA1 / S100A12 / IL1RN / MAP2K4 / IL1RAP / TAB2 / MAP2K1 / MYD88 / UBB / UBE2V1 / USP18 / IL1R1 / TRAF6 / PSMA6 / PSMB1 / PSMA3 / TP53 / NFKBIA / TAB3 / PSMB6 / NKIRAS1 / NLRX1 / PSMB7 / UBC / IL1B / PSMD6 / TOLLIP	IL1B / PELI2 / IRAK3 / S100B / S100A12 / IL1RAP / AGER
MEMBRANE TRAFFICKING	SFN / SH3GL3 / TUBB3 / GJA10 / TUBA3D / EGF / TUBAL3 / KIF4A / EREG / KIF18B / DNAJC6 / KIF2C / KIFC1 / KIF20A / COL7A1 / SYT8 / TUBA3E / DYNC1I1 / KIF18A / KIF23 / CHMP3 / KIAA0319 / GRK3 / RAB27B / FOLR1 / KIFC2 / KDELR3 / RACGAP1 / KIF15 / AREG / CYTH3 / KIF21B / CLVS2 / PAFAH1B3 / SEC31B / CENPE / RAB38 / KIF11 / GJC1 / PRKAA2 / RAB33A / SGIP1 / TRIP10 / KLC2 / CD3D / BICD1 / CD55 / KIF26B / AP1M2 / RHOQ / SYT1 / GJA3 / RAB9B / PRKAG1 / COPS7B / PRKAB1 / TFRC / SYTL1 / CTSC / SRC / YKT6 / PLIN3 / SORT1 / YWHAZ / RIN1 / TBC1D2 / CHML / ANK2 / CHMP4C / EPGN / TMED3 / GJB4 / RAB36 / GJA5 / FCHO1 / ANKRD27 / BLOC1S3 / GJA8 / CPD / SYT11 / EPN2 / TUBA4A / KIF20B / RAB3IP / TBC1D10C / STX6 / CD3G / HGS / KIF2A / TBC1D16 / RALA / CYTH4 / MYO5A / CD59 / TUBA1B / DENND2D / TUBA4B / DVL2 / DENND6B / RAB31 / RINL / TUBA1A / ARPC5 / DNM3 / STON1 / COPG2 / RAC1 / SBF1 / ARFIP2 / AP1S1 / GJA1 / RAB10 / ACBD3 / AGFG1 / KLC1 / CYTH2 / DYNLL1 / WNT5A / YWHAH / PREB / STON2 / DCTN2 / DTNBP1 / CCZ1B / AAK1 / ACTR3 / KIF3A / SNAP91 / RABEPK / TUBA1C	CLVS1 / GJA3 / TUBA3D / GJA10 / KIF25 / CNIH3 / DNAJC6 / TUBA4B / GJC1 / CHML / KIFC1 / SGIP1 / TPD52 / KIF20A / GJA8 / KIF2C / KIF4A / RABEPK / VPS28 / TBC1D10C / EGF / UBA52 / SFN / KIF23 / KIF11 / LMAN1L / PRKAG3 / TRAPPC2 / DNM3 / DYNLL1 / CHMP2A / YIPF6 / SORT1 / VAMP4 / AP1S1 / BLOC1S3 / MAP1LC3B / GJB6 / RACGAP1 / SNAPIN / ARPC5 / KDELR1 / BLOC1S1 / KIF15 / AP2S1 / TFRC / ACBD3 / COPE / STX10 / COPS5 / TMED9 / STX4 / CLTB / NEDD8 / GJB5 / TBC1D7 / ASPSCR1 / SLC18A3 / SLC2A4 / KDELR3 / VPS37D / YWHAH / RAB3A / CLTA / STX6 / TUBB2A / CHMP4C / LMAN2 / TRAPPC2L / NAPB / PRKAA2 / GOSR2 / KDELR2 / EPS15L1 / AVPR2 / YWHAZ / SCOC / CHMP3 / GGA1 / SPTB / TBC1D16 / GJA5 / DCTN3 / BNIP1 / CPD / DCTN2 / NAPA / CHMP4B / PAFAH1B3 / OPTN / CAPZA2 / CD59 / TMED7 / DYNC1I1 / TMED2 / SNF8 / TUBB4A / TUBA3E / MVB12A / RAB41 / VTI1A / COPZ1 / TUBA1B / YWHAG / RPS27A / TXNDC5 / COPS6 / AGFG1 / ANKRD27 / COPZ2 / BIN1 / CYTH2 / AP3S1 / BLOC1S6 / SNAP29 / VAMP8 / GNS / ACTB / USE1 / VPS25 / KIF18A / HPS1 / CHMP2B / COPS7B / GGA3 / TRAPPC4 / RAC1 / KIF2A / TUBA4A / CNIH2 / MVB12B / YKT6 / TMED10 / NECAP1 / LMAN2L / KIF22 / BET1 / NAA38 / STX5 / YWHAB / STX17 / ARF5 / RAB43 / VPS37A / RAB39B / VAMP3 / SEC31B / SPTA1 / SURF4 / KIF9 / GABARAP / TOR1B / AVP / UBQLN1 / TGOLN2 / CTSZ / TRAPPC6A / RAB4A / EPN1 / COPS8 / ARPC3 / SEC22B / PLA2G6 / CNIH1 / GRB2 / ARPC2 / BET1L / HGS / KIAA0319 / RAB8A
MYD88 INDEPENDENT TLR4 CASCADE	SAA1 / S100A12 / FOS / CD14 / DUSP6 / MAP2K3 / MAP2K4 / TAB2 / TLR4 / MAP2K1 / UBB / VRK3 / UBE2V1 / USP18 / TRAF6 / JUN / PPP2CB / MAPK8 / UBE2D3 / TP53 / NFKBIA	FOS / RIPK3 / S100B / S100A12 / DUSP4 / TLR4 / MAPK10 / JUN / AGER / DUSP6
ORGANELLE BIOGENESIS AND MAINTENANCE	TUBB3 / NEK2 / TUBA3D / TUBAL3 / PLK1 / CDK1 / TUBA3E / MAPK12 / MCHR1 / PRKAA2 / PLK4 / FBF1 / CYS1 / CEP72 / IFT80 / PRKAG1 / PRKAB1 / IFT81 / B9D2 / CEP290 / NDE1 / CEP131 / CPAP / DYNLT2 / KIF24 / IFT52 / TMEM67 / CEP164 / MAPK11 / UNC119B / SOD2 / NPHP3 / TCTN2 / TMEM216 / TUBA4A / RAB3IP / CEP41 / CEP152 / TWNK / TUBG1 / CEP97 / DYNLRB2 / TUBA1B / SFI1 / INPP5E / TUBA1A / ASAP1 / NEDD1 / HAUS1 / IFT70B / NPHP4 / BBS12 / CARM1 / CEP250 / CCT3 / KIF17 / SDCCAG8 / MAPRE1 / DYNLL1 / PERM1 / DCTN2 / CCT5 / KIF3A / TUBA1C / PDE6D / TUBB8B / MEF2D / DYNC2LI1 / MKKS / SCLT1 / TBL1XR1 / CKAP5 / CNGB1 / IFT56 / IQCB1 / CEP78 / CEP162 / TUBB6 / CEP89 / TUBB / HCFC1 / KIF3C / ATAT1 / TUBA3C / RPGRIP1L / IFT22 / DYNC1I2 / IFT70A / CETN2 / SEPTIN2	MCHR1 / NEK2 / CDK1 / TUBA3D / CNGB1 / ATP5MF / PLK1 / SOD2 / DYNLT2 / CYCS / ATP5MK / PRKAG3 / DYNLT2B / DYNLL1 / CEP72 / CHCHD3 / B9D1 / ATP5MC1 / MARK4 / ATP5F1E / CETN2 / ATP5MG / CHCHD6 / SSNA1 / MAPK12 / PDE6D / ATP5PD / MICOS13 / SSBP1 / ATP5ME / CEP41 / TUBB2A / IFT25 / APOO / PRKAA2 / CCT3 / TMEM216 / NDE1 / ATF2 / DCTN3 / DCTN2 / ATP5MC3 / IFT27 / ATP5PF / TUBB4A / ATP5MC2 / TUBA3E / ATP5F1D / IFT20 / TUBA1B / YWHAG / ATP5PO / PERM1 / MKKS / MEF2D / IFT22 / TUBA4A / CARM1 / CEP131 / TUBG1 / MT-ATP8 / ARL3 / TWNK / IFT80 / ATP5MJ / HSP90AA1 / KIF24 / TCTN3 / IFT43 / NCOA2 / MTX1 / HAUS2 / CREB1 / DYNLRB1 / RAB8A / NCOA6 / CRTC2
SARS COV 2 ACTIVATES MODULATES INNATE AND ADAPTIVE IMMUNE RESPONSES	MBL2 / SFTPD / TKFC / MASP1 / MASP2 / IL17RC / SEC24B / IFNA2 / TAB2 / CNBP / SAR1B / UBB / SEC23A / UBE2V1 / NLRP3 / PIK3R4 / TRAF6 / NUP88 / G3BP2 / RNF135 / SEC24D / NUP54	IFNA6 / IKBKG / UBA52 / HLA-A / KPNA2 / HLA-G / HLA-F / UBE2V1 / NUP210 / IRF3 / NUP62 / NOD2 / HSP90AB1 / IRAK1 / RIPK2 / TLR7 / B2M / RPS27A / HLA-B / NUP42 / IRAK2 / ISG15 / HLA-C / HSP90AA1 / POM121

Pathway	Viral_RPF_core_enrichment	NonViral_RPF_core_enrichment
SIGNALING BY HEDGEHOG	TUBB3 / TUBA3D / GPC5 / GPR161 / PRKACG / GLI1 / GLI2 / DISP2 / KIF7 / IQCE / ERLEC1 / IFT52 / TUBA4A / HHAT / TUBA1B / BOC / TULP3 / DZIP1 / TUBA1A / ADCY7 / ADCY3 / ADAM17 / KIF3A / TUBA1C / PSMD14 / SMURF1 / TUBB6 / SCUBE2 / PSMD2 / TUBA3C / RPGRIP1L / SMURF2 / GLI3 / ADCY8 / ADCY4 / IHH / SMO / EVC2 / IFT140	HHIP / PRKAR2B / ADCY5 / PTCH2 / DYNC2H1 / IFT122 / EVC / TUBB6 / IFT172 / GAS1 / EVC2 / TUBB1 / WDR19 / TUBA1A / WDR35 / IFT88 / ADCY7 / TTC21B / SHH / OFD1 / GLI2 / ADCY10 / ARRB1 / CUL3 / FUZ / IFT57 / NOTUM / IFT140
TCR SIGNALING	TRAV29DV5 / TRAV19 / PAK3 / LAT / CD3D / GRAP2 / ENAH / RIPK2 / PTPN22 / HLA-DQA1 / HLA-DRB5 / HLA-DQB2 / CARD11 / PAK1 / CD3G / CD3E / LCK / VASP / CD101 / TRBV12-3 / HLA-DQA2 / ZAP70 / CD247 / PSMD14 / HLA-DRB1 / HLA-DRA / UBE2D1 / IKBKG / HLA-DQB1 / PSMD2 / PTPRC	ENAH / IKBKG / TRBV12-3 / UBA52 / PSMA6 / PAG1 / PAK3 / UBE2V1 / UBE2D1 / PAK1 / PSMD7 / RIPK2 / PSMD8 / UBE2D2 / PSMB4 / RPS27A
TRANSCRIPTIONAL REGULATION BY RUNX2	CDK1 / COL1A1 / CCNB1 / MMP13 / TWIST1 / DLX5 / LGALS3 / GLI2 / BMP2 / SRC / HIVEP3 / RUNX2 / MSX2 / SOX9 / ZNF521 / CDK4 / NKX3-2 / HAND2 / ITGBL1 / HEY1 / UCMA / YAP1 / PSMD14 / TWIST2 / SMURF1 / CBFB / MAPK3 / ABL1 / BAX / PSMD2 / GLI3 / AKT3 / IHH / STAT1	CDK1 / CCNB1 / IHH / UBA52 / PSMA6 / BAX / LGALS3 / BMP2 / STUB1 / MMP13 / SATB2 / CDK4 / RBX1 / PSMD7 / PSMD8 / PSMB4 / RPS27A / DLX5 / HEY1 / COL1A1 / SOX9 / WWP1 / NKX3-2 / MAPK1 / CBFB / PSMA7 / PSMC4

Table S6.

Because of its size, Table S6 is provided as a separate Excel file (Supplementary_Table_S6.xlsx). It contains the following sheets:

• All_ORFs_RPFCounts_ProteinInten: 28,303 rows × 88 columns

• uORF_Characterization: 5,648 rows × 14 columns

• uORF_CDS_log2_ratios: 5,648 rows × 35 columns

• lncRNA_ORF_Differential_Exp: 1,694 rows × 27 columns

Table S7.

Sheet: uORFs (612 rows)

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
ALAADVQR	51	uORF_ENST00000449103_0_108	PLXNB2	7	PXD023000, PXD049964, PXD043841, PXD032201, PXD010085, PXD025705, ZAVOLAN,
AAAAAAAAAGTSVGLR	118	uORF_ENST00000354300_16_88	PPTC7	6	PXD023000, PXD049964, PXD032201, PXD010085, PXD025705, ZAVOLAN,
LALLGGR	41	uORF_ENST00000419474_288_420	ZFHX2	4	PXD049964, PXD002171, PXD032201, PXD010085,
LLPGEQLR	10	uORF_ENST00000245615_1_274	MBOAT7	4	PXD049964, PXD035261, PXD032201, PXD025705,
TLGRPGSLR	11	uORF_ENST00000442415_66_399	RAF1	3	PXD023000, PXD035261, PXD025705,
ALYWDGVR	11	uORF_ENST00000309993_235_838	MSL2	3	PXD043841, PXD032201, PXD036643,
KLMGLAR	29	uORF_ENST00000204961_40_202	EFNB1	2	PXD023000, PXD010085,
GAPLAGR	36	uORF_ENST00000312521_22_226	NR1D2	2	PXD049964, PXD010085,
LCETLTVPSGFNAVR	5	uORF_ENST00000295962_66_249	ABHD6	2	PXD049964, PXD016790,
LDAEALGAR	6	uORF_ENST00000388712_15_162	GOLM1	2	PXD016790, ZAVOLAN,
LLSPLLGR	8	uORF_ENST00000355962_46_94	TAT	2	PXD016790, PXD036643,
TAAAAAGAASWAR	10	uORF_ENST00000392271_8_293	URI1	2	PXD016790, PXD025705,
VLAALGAQNR	13	uORF_ENST00000682408_21_579	MIDN	2	PXD016790, PXD036643,
LSGGGGDGK	3	uORF_ENST00000682126_43_178	MAP4K5	2	PXD035928, PXD032201,
PGSEEFFPR	5	uORF_ENST00000541284_83_161	CNOT4	2	PXD035928, PXD032201,
LLTVLGR	5	uORF_ENST00000257787_30_183	AKIRIN2	2	PXD043841, PXD036643,
QAAWGER	9	uORF_ENST00000379019_35_197	GPCPD1	2	PXD043841, PXD035261,
TAGALLLPQER	43	uORF_ENST00000367033_135_471	PLXNA2	2	PXD043841, PXD025705,
KELASFGR	14	uORF_ENST00000649575_70_160	SORBS1	2	PXD035261, PXD025705,
QPAQAAGPGER	17	uORF_ENST00000374566_270_441	EPB41L4B	2	PXD035261, PXD025705,
TPASQSVGPAVAR	25	uORF_ENST00000416240_138_216	SLC25A13	2	PXD035261, PXD025705,
VAAGLEAGR	23	uORF_ENST00000697461_44_299	PIK3R1	2	PXD035261, ZAVOLAN,
GLGAGGEGGALGR	2	uORF_ENST00000249356_1_139	DNAJB9	2	PXD032201, PXD010085,
LAGALALAR	7	uORF_ENST00000667466_126_234	ETS2	2	PXD032201, ZAVOLAN,
LVLAVGK	3	uORF_ENST00000262741_540_627	PIK3R3	2	PXD032201, PXD010085,
LLLLPSASR	4	uORF_ENST00000651386_128_248	PURA	2	PXD025705, ZAVOLAN,
LLLMLGR	24	uORF_ENST00000217173_101_206	UBOX5	2	PXD025705, ZAVOLAN,
QLPAELGLR	15	uORF_ENST00000357166_133_265	ZDHHC9	2	PXD025705, ZAVOLAN,
TALAAQAGTPLPPPPPPR	34	uORF_ENST00000339399_127_307	ANP32B	2	PXD025705, ZAVOLAN,
TGDTAAGVR	4	uORF_ENST00000340541_34_292	VAPA	2	PXD025705, ZAVOLAN,
VAEAAPTGTAEAR	3	uORF_ENST00000269886_69_198	SH3GL1	2	PXD025705, ZAVOLAN,
VGSAVQAELR	52	uORF_ENST00000327827_13_109	HAPSTR1	2	PXD025705, ZAVOLAN,
TGLVQGLK	16	uORF_ENST00000274496_33_84	YIPF5	2	PXD036643, ZAVOLAN,
AVFAAATAVAMR	3	uORF_ENST00000428135_11_170	SNX13	2	PXD023143, ZAVOLAN,
GPGYVGAVR	1	uORF_ENST00000316757_26_179	APBA3	1	PXD023000,
LGQPGQPEPR	4	uORF_ENST00000222330_21_141	GSK3A	1	PXD023000,
PSPSAGLR	2	uORF_ENST00000266673_110_395	TMEM19	1	PXD023000,
SVGMGPAASPHPGAPGMWQDPALSTSR	2	uORF_ENST00000520584_189_471	ZFP41	1	PXD023000,
TSSPTVLK	2	uORF_ENST00000650617_31_136	SLC25A38	1	PXD023000,
VAALDQLSQSER	1	uORF_ENST00000430082_112_283	ECD	1	PXD023000,
ANGNSGSGILYR	1	uORF_ENST00000403633_67_235	BUD31	1	PXD049964,
GPGGCAGLRRPR	9	uORF_ENST00000316757_26_179	APBA3	1	PXD049964,
GPGPLHPPSR	1	uORF_ENST00000265354_39_507	SRF	1	PXD049964,
IIFLSKSK	1	uORF_ENST00000357998_114_216	FKTN	1	PXD049964,
ISAGLSGPK	1	uORF_ENST00000313368_349_421	TAF7	1	PXD049964,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
LALAAAR	3	uORF_ENST00000358491_14_113	ZNF429	1	PXD049964,
LEVSLSSAR	1	uORF_ENST00000242776_27_120	DDX39A	1	PXD049964,
LGEGGFLR	1	uORF_ENST00000434981_284_422	FAM53C	1	PXD049964,
LLLGIARGL	2	uORF_ENST00000650110_76_283	UBE3A	1	PXD049964,
RSEPGRGAAAQSPGSPGLEGGLCAAGWLCPASGPER	7	uORF_ENST00000690210_9_282	PTPN11	1	PXD049964,
SLGPLFPEVR	1	uORF_ENST00000542575_35_500	SLC1A5	1	PXD049964,
SLPGLPLR	1	uORF_ENST00000336811_13_607	ANG	1	PXD049964,
GHDDRLR	1	uORF_ENST00000466444_42_141	RWDD1	1	PXD005647,
AEEGAGAAAAVAAATWAGGGV	1	uORF_ENST00000622611_102_426	RBM26	1	PXD016790,
IPAITLPPAP	1	uORF_ENST00000447654_311_479	HMGA1	1	PXD016790,
LAELPSR	1	uORF_ENST00000403892_208_718	TST	1	PXD016790,
LASQSAAPAR	4	uORF_ENST00000372524_16_349	ZNF503	1	PXD016790,
LFPGTPSR	1	uORF_ENST00000297109_83_353	SAP30L	1	PXD016790,
LGSTGSELLR	2	uORF_ENST00000452236_65_314	SCAND3	1	PXD016790,
LSVCGTEGPR	2	uORF_ENST00000460680_20_134	BAP1	1	PXD016790,
LTASTHSFPGPR	21	uORF_ENST00000263734_244_361	EPAS1	1	PXD016790,
LTGPLLER	3	uORF_ENST00000372236_57_348	POLH	1	PXD016790,
PAGTEADAVSGR	1	uORF_ENST00000318627_245_338	FIBIN	1	PXD016790,
PEVLSQLR	3	uORF_ENST00000324765_16_202	DIAPH2	1	PXD016790,
PGNSTNSNFCACKFSSPGITTN	1	uORF_ENST00000261195_111_216	GYS2	1	PXD016790,
PPAAPAGGGAATAALR	1	uORF_ENST00000267984_65_299	TLNRD1	1	PXD016790,
RPTGAIVR	29	uORF_ENST00000617501_24_414	ZNF274	1	PXD016790,
VPSTGAPSMTSQALTPTR	1	uORF_ENST00000354546_93_225	ANXA6	1	PXD016790,
WCWPPLHAGVKIPGCK	1	uORF_ENST00000261597_45_213	NDC80	1	PXD016790,
DASVAHEVASLALPWFAVVLGYR	1	uORF_ENST00000535612_107_407	ARMC6	1	PXD010294,
IVGLAPAFENK	1	uORF_ENST00000344529_123_222	PIGC	1	PXD010294,
LFAESPACETVR	1	uORF_ENST00000534797_1311_1446	RNH1	1	PXD010294,
LLYGIGLLENK	1	uORF_ENST00000618847_3_258	CHST9	1	PXD010294,
MGVGSAFSQSGR	1	uORF_ENST00000492406_18_192	SLC35A5	1	PXD010294,
MSQALTVQKSES	1	uORF_ENST00000368094_81_120	IGSF9	1	PXD010294,
MSVNPAGLSASKNSPFLEDPGAGGQSNG	1	uORF_ENST00000355754_29_116	GBP4	1	PXD010294,
PDELGMESTGPLTASER	2	uORF_ENST00000361658_75_219	ULK2	1	PXD010294,
VSLPLSLLGR	2	uORF_ENST00000308893_655_847	TAOK2	1	PXD010294,
DGQSGSLASGPPR	1	uORF_ENST00000649983_113_467	LARP1B	1	PXD002171,
GWRPGCGFGLQTAVLVCAGR	1	uORF_ENST00000432791_177_576	KANSL1	1	PXD002171,
HEHLLYLR	5	uORF_ENST00000355995_61_184	TCF7L2	1	PXD002171,
ITSLLHK	3	uORF_ENST00000230449_33_195	EXOC2	1	PXD002171,
KFLFSGN	1	uORF_ENST00000550078_156_180	ZBED6	1	PXD002171,
MAAGALCVVLLLGR	8	uORF_ENST00000272542_6_51	SLC20A1	1	PXD002171,
MALGGGSTWRPR	5	uORF_ENST00000277165_51_96	FAM120A	1	PXD002171,
SASQASAAAAAAGPCARQGGLGFGLPPVPWK	1	uORF_ENST00000295087_18_189	ARL5A	1	PXD002171,
TLIPPVGAPFGHSMTLDPR	1	uORF_ENST00000569430_2225_2318	CLN3	1	PXD002171,
DSGGSSSMSAYSRK	1	uORF_ENST00000262662_911_1454	CDKN2C	1	PXD035928,
GSGAQEAGGSLR	1	uORF_ENST00000260385_665_1076	RMDN3	1	PXD035928,
IAGGQGLK	1	uORF_ENST00000652011_17_218	ZNF717	1	PXD035928,
LGPPLSAPR	2	uORF_ENST00000446044_564_714	MAPKAPK3	1	PXD035928,
SIPHQPLTASGSRWACTPQPFR	1	uORF_ENST00000618101_250_529	NR4A3	1	PXD035928,
SLDLVAWCSFSWLHPASR	1	uORF_ENST00000329321_56_353	GPR39	1	PXD035928,
EAAAGLLPHYSL	1	uORF_ENST00000396842_13_289	EAF1	1	PXD043841,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
KAEEAVALR	2	uORF_ENST00000354911_152_500	WAC	1	PXD043841,
LAADAPLQSR	3	uORF_ENST00000369878_88_163	CNNM2	1	PXD043841,
LSSRPLAAPPPGDR	2	uORF_ENST00000262376_450_744	UBN1	1	PXD043841,
QAASDLGHGL	4	uORF_ENST00000373606_45_99	MANBAL	1	PXD043841,
QEAESWPR	1	uORF_ENST00000455841_127_328	GTF2IRD1	1	PXD043841,
QPGGQEALGVASWK	1	uORF_ENST00000429697_188_500	KHK	1	PXD043841,
RWGDPGGGAWSCYMPAPR	1	uORF_ENST00000264313_60_123	SLAIN2	1	PXD043841,
TALTGCTCAVDATGAGR	1	uORF_ENST00000482345_91_310	MTMR6	1	PXD043841,
VVAGEGTLSFTWASAGSDR	1	uORF_ENST00000539542_129_405	DMXL1	1	PXD043841,
AAAAAAAAAAAASAAEEDSAARAPPATSAAESHRHR	1	uORF_ENST00000303210_38_281	GNB2	1	PXD035261,
AAAAIPGAR	17	uORF_ENST00000508775_45_201	RNASET2	1	PXD035261,
ALQLDLLPGKAMLKS	1	uORF_ENST00000263634_30_225	ASB3	1	PXD035261,
APAAAAESAVPGR	2	uORF_ENST00000309295_5_254	EHBP1L1	1	PXD035261,
GPAVWPR	1	uORF_ENST00000339012_73_235	CFAP36	1	PXD035261,
GPEPGSPPR	1	uORF_ENST00000369755_275_629	SLK	1	PXD035261,
GPGTPRPPCAEAR	1	uORF_ENST00000356628_36_306	NRARP	1	PXD035261,
LAAVTQR	17	uORF_ENST00000318080_33_291	CRAT	1	PXD035261,
LAPFDTR	1	uORF_ENST00000640218_68_203	HNRNPU	1	PXD035261,
LGGTGVIR	3	uORF_ENST00000345146_123_216	IDH1	1	PXD035261,
LSPGPAGAR	17	uORF_ENST00000238721_32_515	TP53I3	1	PXD035261,
NGINFSCVLVK	1	uORF_ENST00000465590_634_739	SKIL	1	PXD035261,
PFLSTLVPR	1	uORF_ENST00000223145_58_187	GLCCI1	1	PXD035261,
PGAAAAAPGPGAGGAPGWAPR	1	uORF_ENST00000379751_45_282	CENPB	1	PXD035261,
PGAGAPGAERGCRGGAGCGGR	6	uORF_ENST00000644942_48_588	DYRK1A	1	PXD035261,
PGLAAPPDLAGPR	3	uORF_ENST00000337014_232_502	HEXD	1	PXD035261,
PGSGASGPMPGR	27	uORF_ENST00000394833_26_383	SLC39A8	1	PXD035261,
PQYPIHALCLCQGFK	1	uORF_ENST00000372070_534_624	AKR1A1	1	PXD035261,
PSGPGASEPGPGRGTVMLGPDGR	6	uORF_ENST00000434316_20_257	SLC9D1	1	PXD035261,
QGVHQGAGPVGR	3	uORF_ENST00000221138_192_459	PPP2CB	1	PXD035261,
QIAQESSSLVGLIR	1	uORF_ENST00000320676_75_258	RBMX	1	PXD035261,
SPAAGPSPGLETEGRGPGPAAGPR	4	uORF_ENST00000295962_263_401	ABHD6	1	PXD035261,
SSACDPR	1	uORF_ENST00000648377_41_380	LHFPL6	1	PXD035261,
TFPAQGTPR	1	uORF_ENST00000238667_23_191	FLVCR2	1	PXD035261,
VGAASVPSSWCSR	1	uORF_ENST00000369068_201_600	RPRD2	1	PXD035261,
AAGAPGSSRR	1	uORF_ENST00000535902_129_198	MANSC1	1	PXD032201,
AASLGDAVEGDLLPGLDQAPATLLR	1	uORF_ENST00000405975_8_131	THADA	1	PXD032201,
AETGEAAAGK	1	uORF_ENST00000380680_152_440	UBL3	1	PXD032201,
AGPEQVEAGK	1	uORF_ENST00000710327_50_428	TRIM8	1	PXD032201,
CGVALCPIHRCQR	1	uORF_ENST00000309575_261_630	CHST2	1	PXD032201,
DSAGASESR	1	uORF_ENST00000522557_952_1039	HMGB1P1	1	PXD032201,
EDGPAGR	1	uORF_ENST00000618819_55_451	PTPN9	1	PXD032201,
ENLAEAVHWNAFTVIVMEAKYMKEK	1	uORF_ENST00000453153_133_298	FASTKD1	1	PXD032201,
FASPASGHR	1	uORF_ENST00000291386_102_261	SSU72	1	PXD032201,
GAAAGLDAR	1	uORF_ENST00000316724_56_239	BIN1	1	PXD032201,
GLAGSGGLR	1	uORF_ENST00000648377_41_380	LHFPL6	1	PXD032201,
GLTPCPGTCAPR	1	uORF_ENST00000506197_17_146	SMIM20	1	PXD032201,
GPGELPR	2	uORF_ENST00000297265_4_205	CHMP4C	1	PXD032201,
HPGAGPPSR	1	uORF_ENST00000249442_94_247	MTX2	1	PXD032201,
IGFSPGR	1	uORF_ENST00000220597_58_160	PAG1	1	PXD032201,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
ILDVGPR	1	uORF_ENST00000684063_81_309	KIF9	1	PXD032201,
KGGGAGVTR	1	uORF_ENST00000517876_35_437	CNOT8	1	PXD032201,
KQEGGGGGESAR	1	uORF_ENST00000409939_64_295	TBC1D10B	1	PXD032201,
LAELGLK	1	uORF_ENST00000262043_90_384	PHF3	1	PXD032201,
LEPFGENPR	1	uORF_ENST00000255194_58_133	AP3B1	1	PXD032201,
LGAGAGSGAGR	2	uORF_ENST00000295962_263_401	ABHD6	1	PXD032201,
LGGVFSR	1	uORF_ENST00000377126_779_1043	KLF9	1	PXD032201,
LGLCRSLALSAELPGTAASDAGPLDAAEPGFFTLSFRR	1	uORF_ENST00000300747_63_351	TRIM68	1	PXD032201,
LGPGILGAR	1	uORF_ENST00000682836_112_154	CREBZF	1	PXD032201,
LGSLFVPTCRAAQGEWAS	2	uORF_ENST00000361439_49_112	NSMCE1	1	PXD032201,
LLALWVGPLR	1	uORF_ENST00000307630_68_287	YWHAG	1	PXD032201,
LPGLLQNR	1	uORF_ENST00000309100_136_478	MAP3K11	1	PXD032201,
MNSVSQMEMQKSPSSPSLTLGAVDRSCSYSAIFAPPCN	1	uORF_ENST00000380249_155_272	FOCAD	1	PXD032201,
MQGGDFPFCQILMNK	1	uORF_ENST00000544612_22_88	ANKRD49	1	PXD032201,
NLVCGGK	2	uORF_ENST00000246174_293_431	ARMCX5	1	PXD032201,
PAALGEAR	1	uORF_ENST00000323078_26_506	LRRC61	1	PXD032201,
PAEPTLPASWR	1	uORF_ENST00000243997_10_154	ATP5F1E	1	PXD032201,
PLAWLGPTEPAAQHSDGSLPDCQPIGLDPR	1	uORF_ENST00000247087_117_501	AHDC1	1	PXD032201,
QESVPSK	1	uORF_ENST00000298832_109_214	TTLL5	1	PXD032201,
RGAGSGGLR	1	uORF_ENST00000291592_68_215	LRRC3	1	PXD032201,
SAAAGALR	2	uORF_ENST00000375078_228_678	CAMK2N1	1	PXD032201,
SASSSPSPAR	2	uORF_ENST00000498707_2_215	ADAMTS9	1	PXD032201,
SLGLGSGR	1	uORF_ENST00000366641_136_265	EGLN1	1	PXD032201,
SMCGRCVSSACAGHHLR	1	uORF_ENST00000263923_1_238	KDR	1	PXD032201,
TAGPCPSVGR	1	uORF_ENST00000298048_11_155	MELK	1	PXD032201,
TPSAQEAPR	1	uORF_ENST00000326397_7_289	RWDD4	1	PXD032201,
TYEAVAK	1	uORF_ENST00000568663_18_345	LYRM1	1	PXD032201,
VAAAAASGSGPSR	1	uORF_ENST00000238831_148_349	YIPF4	1	PXD032201,
VCSGMEQVCR	3	uORF_ENST00000469139_348_384	DAG1	1	PXD032201,
VTLLHPK	2	uORF_ENST00000683666_537_678	MINDY1	1	PXD032201,
EPSFWPGER	1	uORF_ENST00000368194_308_518	ARHGEF11	1	PXD010085,
GDLSADAGDPADR	1	uORF_ENST00000649389_27_270	STON2	1	PXD010085,
KGSDVDLRK	1	uORF_ENST00000310574_182_356	SLC5A6	1	PXD010085,
KMPSNAPTNFLR	1	uORF_ENST00000369144_19_247	EIF3A	1	PXD010085,
KSQNNFLELNK	1	uORF_ENST00000403633_397_499	BUD31	1	PXD010085,
LAGSVVR	1	uORF_ENST00000418389_40_181	NDUFA11	1	PXD010085,
TEPEAGSR	1	uORF_ENST00000400199_155_245	NRIP1	1	PXD010085,
TRQATFGLR	2	uORF_ENST00000262043_90_384	PHF3	1	PXD010085,
EAATGPPCPPLPAPPGAR	1	uORF_ENST00000313005_48_285	BACE1	1	PXD034886,
EPAAPGLPPSADTGSPGSPR	1	uORF_ENST00000323373_33_177	NR2C2	1	PXD034886,
LPTHCFLLCCDPAVSCR	3	uORF_ENST00000675850_41_179	DISP1	1	PXD034886,
QGFVCGGGLGLGLGK	1	uORF_ENST00000319715_341_701	RBBP6	1	PXD034886,
AAATVTVTK	6	uORF_ENST00000368886_9_132	IKZF5	1	PXD025705,
AEPTLLSR	2	uORF_ENST00000678995_16_187	ABCA1	1	PXD025705,
AHLVTLR	36	uORF_ENST00000399799_700_877	ROCK1	1	PXD025705,
ALVVSAEAGLR	2	uORF_ENST00000256544_33_186	KATNBL1	1	PXD025705,
ASELQGLR	2	uORF_ENST00000399332_39_522	HECTD1	1	PXD025705,
DGALGASEMLPSAR	1	uORF_ENST00000361361_329_623	ENTREP3	1	PXD025705,
EGAGPGAAGR	23	uORF_ENST00000374332_544_847	MAN1C1	1	PXD025705,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
GDLGGAAEAPSGGESIGGK	5	uORF_ENST00000417551_10_184	DLD	1	PXD025705,
GGSGAPGEEAAGWK	2	uORF_ENST00000261349_42_285	LRP6	1	PXD025705,
GPSPLLGGR	4	uORF_ENST00000411466_9_609	SRCAP	1	PXD025705,
GQSPNPSHG	1	uORF_ENST00000265978_82_454	FHIP1B	1	PXD025705,
GTPGCTLCLASPCRWTSASGPGP	1	uORF_ENST00000261313_6_123	PEBP1	1	PXD025705,
KDGALGASEMLPSAR	2	uORF_ENST00000361361_329_623	ENTREP3	1	PXD025705,
KVGLAEAIR	1	uORF_ENST00000541284_83_161	CNOT4	1	PXD025705,
LAQAAALR	1	uORF_ENST00000330817_98_239	ALG12	1	PXD025705,
LEALDFMSPKGI	1	uORF_ENST00000502994_100_139	RANBP3L	1	PXD025705,
LGDACGLAAAAGK	2	uORF_ENST00000297613_82_220	RPP25L	1	PXD025705,
LGPGVFGLK	2	uORF_ENST00000587424_105_312	SRSF8	1	PXD025705,
LGSPQEASAVAVR	10	uORF_ENST00000085068_22_202	ISOC2	1	PXD025705,
LPAALNVR	4	uORF_ENST00000337768_120_219	SUPT7L	1	PXD025705,
LPGQDPLR	1	uORF_ENST00000372236_57_348	POLH	1	PXD025705,
LVQAQGIGGK	6	uORF_ENST00000297625_36_159	MYORG	1	PXD025705,
MAAAEALER	3	uORF_ENST00000266070_81_144	DIDO1	1	PXD025705,
MSPGGGGSER	3	uORF_ENST00000650110_395_551	UBE3A	1	PXD025705,
NLIHTVR	13	uORF_ENST00000233057_167_326	EIF2AK2	1	PXD025705,
PGAGASAAGSNQTFQLPLMYLSVGGLC	6	uORF_ENST00000399299_22_121	SMIM11	1	PXD025705,
PGAGSGTQLGVQR	1	uORF_ENST00000548759_109_523	DTX1	1	PXD025705,
PGAPATSPR	4	uORF_ENST00000560424_163_589	SMAD3	1	PXD025705,
PGGSELAGR	5	uORF_ENST00000369755_275_629	SLK	1	PXD025705,
PGTATLQGR	1	uORF_ENST00000366691_12_174	RHOU	1	PXD025705,
PLAGGDGPGLPTPPAK	1	uORF_ENST00000223023_189_273	WASL	1	PXD025705,
PSGLGEVTR	5	uORF_ENST00000331803_276_519	UPP1	1	PXD025705,
QPCELALQR	2	uORF_ENST00000388995_63_255	FAM83G	1	PXD025705,
QTGATGSCQK	10	uORF_ENST00000267415_36_219	TINF2	1	PXD025705,
SAAAAALAAR	4	uORF_ENST00000283629_118_436	UBP1	1	PXD025705,
SGGAAAVAGEMSR	4	uORF_ENST00000321337_217_295	SENP3	1	PXD025705,
SGIPATSNCPEIMQK	1	uORF_ENST00000358912_91_373	PELI1	1	PXD025705,
SGSPAASLR	1	uORF_ENST00000502773_66_498	PDGFC	1	PXD025705,
SPGESGPCPSAPR	3	uORF_ENST00000294258_55_199	ZFPL1	1	PXD025705,
TAAAAAVGR	1	uORF_ENST00000504087_13_295	ANKRD50	1	PXD025705,
TAAGGSVVAR	2	uORF_ENST00000448552_37_127	CHTF8	1	PXD025705,
TAGSSGPGSR	7	uORF_ENST00000580170_145_592	PTPRM	1	PXD025705,
TAITGLPAGK	3	uORF_ENST00000360273_11_146	ATP2B2	1	PXD025705,
TAPAVSAAASR	4	uORF_ENST00000310015_66_195	SP3	1	PXD025705,
TDNLLCLHQAGCVPTMSLATGWER	5	uORF_ENST00000522652_403_493	ST3GAL1	1	PXD025705,
TGAPESVDSR	8	uORF_ENST00000627585_108_168	TNPO3	1	PXD025705,
TVVHFGAASAEGDDDEAQTASWQSR	2	uORF_ENST00000696421_4_88	G6PD	1	PXD025705,
VAFEINSPVPA	1	uORF_ENST00000488034_66_102	CUTA	1	PXD025705,
VAPQGGGPR	6	uORF_ENST00000372383_52_334	TSC22D3	1	PXD025705,
VGGAGGSGGGGVK	14	uORF_ENST00000394854_477_753	PPP3CA	1	PXD025705,
VLQVLGDPQLR	6	uORF_ENST00000601440_43_145	ZNF626	1	PXD025705,
VLTAGEAGK	3	uORF_ENST00000368875_13_325	PI4KB	1	PXD025705,
VSPTEGIR	8	uORF_ENST00000443950_398_434	HNRNPF	1	PXD025705,
AAAAAAAAGTR	2	uORF_ENST00000360954_30_327	HS3ST3B1	1	PXD036643,
AAAAAEGSPGR	3	uORF_ENST00000402219_108_711	SOS1	1	PXD036643,
AAGALAGP	6	uORF_ENST00000683543_466_847	KMT2D	1	PXD036643,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
AGSLSLSER	2	uORF_ENST00000308497_136_316	STOX2	1	PXD036643,
AVCAGSAEDAGPSPTADAGQK	1	uORF_ENST00000358935_300_390	MARCHF5	1	PXD036643,
DGAPSPR	5	uORF_ENST00000307972_66_450	FOXP4	1	PXD036643,
DPSEAAAGGGQEPAGGK	16	uORF_ENST00000378572_25_196	PRPF18	1	PXD036643,
EPKLSPSYWMWLSSAGSR	1	uORF_ENST00000529047_41_194	PC	1	PXD036643,
EVTVAAAAAALFIVPLGVCV	1	uORF_ENST00000264331_2_92	TOP2B	1	PXD036643,
FEVAAAGGAAGAGSR	2	uORF_ENST00000337338_1_202	LRRC8D	1	PXD036643,
GAGGAGPEAAGAR	5	uORF_ENST00000397778_39_147	SLC66A2	1	PXD036643,
GGPGRGGGGATSLLPPEDSCGHSLR	15	uORF_ENST00000697752_52_244	ROCK2	1	PXD036643,
HSPGDGVSGRR	1	uORF_ENST00000306107_216_549	ALCAM	1	PXD036643,
HVIPPSF	7	uORF_ENST00000210633_30_240	SEMA4G	1	PXD036643,
ICESSDLLLKMGDTVGPLPGALGCC	1	uORF_ENST00000204726_576_654	GOLGA3	1	PXD036643,
KGVPYLR	11	uORF_ENST00000432999_269_452	ZBED5	1	PXD036643,
KMIPMILK	7	uORF_ENST00000539826_61_145	ARHGAP5	1	PXD036643,
KSNAITAGAAESLSR	1	uORF_ENST00000474597_13_91	SSR1	1	PXD036643,
LAGGAEFR	1	uORF_ENST00000366929_56_113	TGFB2	1	PXD036643,
LCLLAVR	1	uORF_ENST00000366691_12_174	RHOU	1	PXD036643,
LDTVILPLLEDQLFNLNGLSGPPGSR	2	uORF_ENST00000279178_223_307	SLC22A9	1	PXD036643,
LELCIAR	3	uORF_ENST00000487519_70_172	TFAM	1	PXD036643,
LFELGEEGGK	34	uORF_ENST00000313777_21_150	FUZ	1	PXD036643,
LGGNCPCLLLEK	1	uORF_ENST00000296420_44_164	EMCN	1	PXD036643,
LGSAGSMCVSQVAGPTGAVR	1	uORF_ENST00000567435_12_204	UBL7	1	PXD036643,
LGSALGLCFTPSPR	1	uORF_ENST00000393743_42_177	DDX60	1	PXD036643,
LLVPGAR	11	uORF_ENST00000264639_41_146	PSMD3	1	PXD036643,
PGCGEAAGTAEVPPDAK	1	uORF_ENST00000378454_5_422	DCDC2	1	PXD036643,
PGPAQGESGAVR	1	uORF_ENST00000326270_39_288	TLK2	1	PXD036643,
RAFAGFAAAAAAFAAAAAAGGGDAGLGGEEGAR	1	uORF_ENST00000366609_98_743	IRF2BP2	1	PXD036643,
RGLAGSGGLR	1	uORF_ENST00000648377_41_380	LHFPL6	1	PXD036643,
TEGSAWWQSAGPDGR	1	uORF_ENST00000246041_46_394		1	PXD036643,
TPAAAAAR	1	uORF_ENST00000227451_72_504	DTX4	1	PXD036643,
VAAASGAGGAAAK	2	uORF_ENST00000225983_7_157	HDAC5	1	PXD036643,
VALAAGR	1	uORF_ENST00000448223_111_237	SMC6	1	PXD036643,
VALLAGR	10	uORF_ENST00000381809_15_57	AK3	1	PXD036643,
VCAPRLQRSR	1	uORF_ENST00000250535_19_127	CDO1	1	PXD036643,
VTAAAQLPSPAPR	1	uORF_ENST00000250448_2_284	FOXA1	1	PXD036643,
WSQSLSGGLVK	6	uORF_ENST00000495627_108_339	GMPPB	1	PXD036643,
AAAAGPRAL	1	uORF_ENST00000370272_243_315	DR1	1	PXD023143,
AAAAPGRAL	8	uORF_ENST00000267984_308_488	TLNRD1	1	PXD023143,
AAAEGAAAL	4	uORF_ENST00000607016_22_145	NUDT3	1	PXD023143,
AAALAAAVVA	1	uORF_ENST00000637181_153_351	TAB2	1	PXD023143,
AAAPASLPA	5	uORF_ENST00000381318_70_172	ITSN1	1	PXD023143,
AAAVAGAAV	6	uORF_ENST00000374656_22_55	RING1	1	PXD023143,
AAFAAAAAA	1	uORF_ENST00000366609_98_743	IRF2BP2	1	PXD023143,
AAGGGPQQAEI	1	uORF_ENST00000377759_20_452	SNX5	1	PXD023143,
AASGAAAAL	1	uORF_ENST00000392455_28_289	CCDC50	1	PXD023143,
AASPVAISA	15	uORF_ENST00000595125_275_638	ATF5	1	PXD023143,
AAVFPGV	1	uORF_ENST00000686138_22_298	ELF2	1	PXD023143,
AAVGTTVSL	4	uORF_ENST00000274457_69_195	FEM1C	1	PXD023143,
AHLSILQSL	2	uORF_ENST00000595125_275_638	ATF5	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
ALQLSLPTK	4	uORF_ENST00000636471_9_192	ZEB2	1	PXD023143,
ALWKAPSTA	2	uORF_ENST00000340857_239_320	H1-0	1	PXD023143,
ALYPLGLGFLK	1	uORF_ENST00000283871_4_136	HGD	1	PXD023143,
APAAGALHAA	2	uORF_ENST00000313766_278_515	FAM20C	1	PXD023143,
APKLMVRPF	2	uORF_ENST00000404933_45_186	SMS	1	PXD023143,
APRAAPPAGA	2	uORF_ENST00000520429_42_186	CCNC	1	PXD023143,
APRAFLPLP	2	uORF_ENST00000248378_12_51	EMC6	1	PXD023143,
APSGVGAAL	1	uORF_ENST00000311413_7_52	RNF26	1	PXD023143,
APSPGLGTRRM	1	uORF_ENST00000442415_86_212	RAF1	1	PXD023143,
APVPVAPRA	2	uORF_ENST00000447092_1166_1421	HYAL2	1	PXD023143,
ASAARLAPL	13	uORF_ENST00000269593_52_109	IGFBP4	1	PXD023143,
ASATAFFLK	1	uORF_ENST00000225726_98_209	CCDC47	1	PXD023143,
ASPVTLGK	11	uORF_ENST00000371237_14_71	C8B	1	PXD023143,
ATAAAAKFPRR	4	uORF_ENST00000341259_61_208	SH2B3	1	PXD023143,
ATAQAVAPPR	6	uORF_ENST00000609438_22_214	GPRIN3	1	PXD023143,
ATFFGIQLLK	7	uORF_ENST00000394420_155_278	RSPRY1	1	PXD023143,
ATVSGAIAR	2	uORF_ENST00000218104_18_309	ABCD1	1	PXD023143,
AVAAGPVTEK	2	uORF_ENST00000312814_21_81	TMEM168	1	PXD023143,
AVAPDTSVR	1	uORF_ENST00000305783_46_130	RNFT1	1	PXD023143,
AVQDRRVFLK	5	uORF_ENST00000368875_276_585	PI4KB	1	PXD023143,
AVSAAAVAK	2	uORF_ENST00000557016_20_128	ERH	1	PXD023143,
AVSAPVRPK	1	uORF_ENST00000358602_19_79	ANKRD17	1	PXD023143,
AVSGVALAR	2	uORF_ENST00000456763_28_145	MAPKBP1	1	PXD023143,
AYHGHGVSA	2	uORF_ENST00000429772_85_199	TMEM106C	1	PXD023143,
DARPGLGAGSAAR	4	uORF_ENST00000316724_56_239	BIN1	1	PXD023143,
DASKLTYIYI	6	uORF_ENST00000417237_207_261	TCAIM	1	PXD023143,
DGAPVRPAA	2	uORF_ENST00000375799_55_325	PLEKHM2	1	PXD023143,
DIRSLQTVSKR	2	uORF_ENST00000679496_682_895	MBNL2	1	PXD023143,
DPKHHFEL	7	uORF_ENST00000263991_342_372	EHBP1	1	PXD023143,
DRTSRPGTL	2	uORF_ENST00000265896_730_841	SQLE	1	PXD023143,
DSVLVLRGK	2	uORF_ENST00000347613_145_178	CLCN3	1	PXD023143,
DTLLDRANR	1	uORF_ENST00000391828_2_215	NLRP3	1	PXD023143,
DVASGVGSGR	1	uORF_ENST00000371699_772_997	EGFL7	1	PXD023143,
DVRGPLWAGR	2	uORF_ENST00000323037_424_796	ZNRF2	1	PXD023143,
DYFFKPVLF	10	uORF_ENST00000688928_136_220	SHOC2	1	PXD023143,
EAAAAGAEL	3	uORF_ENST00000265381_55_175	APBA1	1	PXD023143,
EAAGEVRAM	11	uORF_ENST00000256015_12_90	BTG1	1	PXD023143,
EAAPRPVER	1	uORF_ENST00000327492_228_495	TOB2	1	PXD023143,
EAHTGLGPR	2	uORF_ENST00000697805_7_202	RBCK1	1	PXD023143,
EALIGLKV	1	uORF_ENST00000367701_135_228	ZBTB37	1	PXD023143,
EARPETAGGPR	5	uORF_ENST00000356628_36_306	NRARP	1	PXD023143,
EAVGVMATR	5	uORF_ENST00000646708_28_136	TMF1	1	PXD023143,
EEAVVLRGL	2	uORF_ENST00000393972_45_195	WBP1	1	PXD023143,
EEIRITKAY	12	uORF_ENST00000308979_56_230	TLR1	1	PXD023143,
EEYRGGNNW	4	uORF_ENST00000698479_70_130	SKIC3	1	PXD023143,
EIIRQLNGV	6	uORF_ENST00000347613_414_513	CLCN3	1	PXD023143,
ELGPAFALR	2	uORF_ENST00000640540_43_160	PIGN	1	PXD023143,
ELGPAFALRSPR	2	uORF_ENST00000640540_43_160	PIGN	1	PXD023143,
ELPSSLSFPR	2	uORF_ENST00000392446_59_248	CANT1	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
ERAPSLLSL	1	uORF_ENST00000340600_383_521	SOCS2	1	PXD023143,
ESLRVPLGLAR	2	uORF_ENST00000216455_13_82	PSMA3	1	PXD023143,
ESSALPQLPK	1	uORF_ENST00000367070_150_261	C4BPA	1	PXD023143,
ESSPLAAAR	1	uORF_ENST00000302754_18_297	JUNB	1	PXD023143,
ETAAVTVAA	3	uORF_ENST00000607016_22_145	NUDT3	1	PXD023143,
ETAAVTVAAA	6	uORF_ENST00000607016_22_145	NUDT3	1	PXD023143,
ETAGASRGF	1	uORF_ENST00000652290_139_298	ZMAT3	1	PXD023143,
ETFRRKTGR	1	uORF_ENST00000539644_1630_1726	ZNF664	1	PXD023143,
ETGGVGDVSR	1	uORF_ENST00000376901_12_102	YIF1A	1	PXD023143,
ETSPLGAPR	3	uORF_ENST00000430580_247_397	NBPF1	1	PXD023143,
ETSQLSQIGR	1	uORF_ENST00000342228_67_220	SLC20A2	1	PXD023143,
ETWPGGPAR	2	uORF_ENST00000367242_57_117	TMEM183A	1	PXD023143,
ETYNKRHLK	11	uORF_ENST00000299505_192_261	GARRE1	1	PXD023143,
EVAAATPLR	3	uORF_ENST00000299084_47_227	SPRED1	1	PXD023143,
EVFRVGKLR	1	uORF_ENST00000393094_74_251	CUL5	1	PXD023143,
EVLRDTRGW	3	uORF_ENST00000260743_297_504	CALHM2	1	PXD023143,
EVSAVGALLQR	1	uORF_ENST00000393094_117_465	CUL5	1	PXD023143,
EVSQGIINK	1	uORF_ENST00000262626_656_824	HPN	1	PXD023143,
EVVTEVVSR	5	uORF_ENST00000395797_44_272	ZNF32	1	PXD023143,
EVYHTTVLK	4	uORF_ENST00000645276_14_236	CTNNB1	1	PXD023143,
FAAATAVAM	2	uORF_ENST00000428135_11_170	SNX13	1	PXD023143,
FAYRMGVTV	6	uORF_ENST00000447648_36_210	TECPR1	1	PXD023143,
FHMNPEVNF	2	uORF_ENST00000618457_239_293	PRLR	1	PXD023143,
FLAFLSREMAA	12	uORF_ENST00000531224_45_105	BCLAF1	1	PXD023143,
FLALGGGSF	1	uORF_ENST00000683877_87_210	STAMBP	1	PXD023143,
FLFSDPATA	6	uORF_ENST00000257663_77_317	TMEM60	1	PXD023143,
FPASENLVF	2	uORF_ENST00000406337_399_477	KAT6A	1	PXD023143,
FPLDFRTI	4	uORF_ENST00000371250_13_322	PLPP3	1	PXD023143,
FQAAPDRGF	8	uORF_ENST00000264710_458_620	RAB10	1	PXD023143,
FSMENQGDR	1	uORF_ENST00000663595_1_244	UCP2	1	PXD023143,
FSSSVFVAR	5	uORF_ENST00000308979_56_230	TLR1	1	PXD023143,
GAAFSSRPL	3	uORF_ENST00000240285_500_599	RDH10	1	PXD023143,
GLVPLPSPF	1	uORF_ENST00000369244_105_213	FBXL4	1	PXD023143,
GQLGRGGAF	4	uORF_ENST00000337179_123_234	NUDT4	1	PXD023143,
GQWLLKLI	1	uORF_ENST00000645276_14_236	CTNNB1	1	PXD023143,
GRFSDKISL	1	uORF_ENST00000529689_35_134	CCDC90B	1	PXD023143,
GRRGPSEPF	3	uORF_ENST00000298569_21_117	KIAA1191	1	PXD023143,
GRVAEPQSL	1	uORF_ENST00000423556_185_704	MIDEAS	1	PXD023143,
GSEEPGSPL	4	uORF_ENST00000273308_21_303	CNPY2	1	PXD023143,
GSQKIGNSY	1	uORF_ENST00000264663_25_274	NNT	1	PXD023143,
GSSSPLPFR	5	uORF_ENST00000281382_18_72	PIGF	1	PXD023143,
GTLMWHQMK	8	uORF_ENST00000352767_119_218	EIF4G1	1	PXD023143,
GTRRKQDIFTR	1	uORF_ENST00000367612_237_348	TOR1AIP2	1	PXD023143,
HASPVRPTV	10	uORF_ENST00000332780_25_187	KLHDC8B	1	PXD023143,
HGFSPRTV	1	uORF_ENST00000494664_40_145	TIMMDC1	1	PXD023143,
HHFLAPSTF	1	uORF_ENST00000248244_137_284	TICAM1	1	PXD023143,
HHMTPSILL	4	uORF_ENST00000304523_23_266	LDB2	1	PXD023143,
HMSAFVPEV	8	uORF_ENST00000369244_244_556	FBXL4	1	PXD023143,
HQLESILAM	2	uORF_ENST00000264110_227_281	ATF2	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
IIQLFTRPL	1	uORF_ENST00000673846_501_687	BIRC3	1	PXD023143,
IIVPSFYK	4	uORF_ENST00000544803_62_194	LNPK	1	PXD023143,
ILAMRLDAS	4	uORF_ENST00000355105_1146_1245	GPBP1L1	1	PXD023143,
ILDNATPPVH	2	uORF_ENST00000341584_52_166	SERPINA6	1	PXD023143,
ILEEEKHPY	5	uORF_ENST00000403665_15_72	F11	1	PXD023143,
ILKDGIMTKK	3	uORF_ENST00000216268_149_389	ZBED4	1	PXD023143,
ILLGTTHQL	8	uORF_ENST00000614189_129_231	PCGF5	1	PXD023143,
ISATSSSRNW	1	uORF_ENST00000409260_13_205	STK16	1	PXD023143,
ISDPGVQGY	5	uORF_ENST00000675825_67_391	ELP1	1	PXD023143,
ISDPSDGFSY	3	uORF_ENST00000306494_53_347	SLC22A25	1	PXD023143,
ISRSQLQTL	3	uORF_ENST00000393807_339_411	GASK1B	1	PXD023143,
ITFFSSSSAK	3	uORF_ENST00000429984_299_635	NUTM2E	1	PXD023143,
IVQNSLNIHNR	2	uORF_ENST00000282185_72_375	ATG10	1	PXD023143,
IVRVVGLEK	2	uORF_ENST00000531273_4_145	API5	1	PXD023143,
IWDLSITRL	21	uORF_ENST00000333055_17_281	MGAT1	1	PXD023143,
KFGETLPYK	1	uORF_ENST00000262146_66_156	MTFR1	1	PXD023143,
KIRELLQDQKR	2	uORF_ENST00000539644_1130_1328	ZNF664	1	PXD023143,
KLAPQLRGA	4	uORF_ENST00000265990_153_273	BTAF1	1	PXD023143,
KLSMFQLLY	3	uORF_ENST00000627468_369_477	OXNAD1	1	PXD023143,
KLTYIYIQK	9	uORF_ENST00000417237_207_261	TCAIM	1	PXD023143,
KLWQVIGVVLQK	3	uORF_ENST00000297857_459_555	ZHX1	1	PXD023143,
KPSNQINVAA	2	uORF_ENST00000553891_376_439	ZFYVE1	1	PXD023143,
KQPEPTADWPGY	1	uORF_ENST00000341584_9_180	SERPINA6	1	PXD023143,
KQSSVLMSY	2	uORF_ENST00000539644_1530_1611	ZNF664	1	PXD023143,
KTAAAATAF	2	uORF_ENST00000368886_9_132	IKZF5	1	PXD023143,
KYMKEKLLF	15	uORF_ENST00000453153_133_298	FASTKD1	1	PXD023143,
LGAAVLVL	2	uORF_ENST00000369799_44_302	AHCYL1	1	PXD023143,
LGPAILLTA	1	uORF_ENST00000676183_205_505	NOVA2	1	PXD023143,
LPAEEAPAL	2	uORF_ENST00000323078_124_379	LRRC61	1	PXD023143,
LPASERTEA	3	uORF_ENST00000394697_33_213	ADCY7	1	PXD023143,
LPKKNISEA	2	uORF_ENST00000367070_150_261	C4BPA	1	PXD023143,
LPKKNISEAA	1	uORF_ENST00000367070_150_261	C4BPA	1	PXD023143,
LPLPSQVGSRY	4	uORF_ENST00000393094_74_251	CUL5	1	PXD023143,
LPLRALEPA	4	uORF_ENST00000374700_30_129	AOX1	1	PXD023143,
LPPPARPPL	1	uORF_ENST00000530271_63_378	WNK1	1	PXD023143,
LPSPVRSTVL	1	uORF_ENST00000263923_1_238	KDR	1	PXD023143,
LPSSLSFPR	2	uORF_ENST00000392446_59_248	CANT1	1	PXD023143,
LSARGGGVAY	1	uORF_ENST00000171111_54_186	KEAP1	1	PXD023143,
LTQEIVFQK	1	uORF_ENST00000368194_308_518	ARHGEF11	1	PXD023143,
MAAAAAAAAAW	1	uORF_ENST00000303204_17_71	PRELID1	1	PXD023143,
MAAAVAGAAV	4	uORF_ENST00000374656_22_55	RING1	1	PXD023143,
MAASRVKL	2	uORF_ENST00000260818_27_57	DNAJC13	1	PXD023143,
METAAAVAA	1	uORF_ENST00000377045_14_44	ARAF	1	PXD023143,
MGPRPGLTL	4	uORF_ENST00000610401_39_195	SSBP3	1	PXD023143,
MIFIIVPSFYK	6	uORF_ENST00000544803_62_194	LNPK	1	PXD023143,
MIFKRVVL	6	uORF_ENST00000415076_34_127	COA1	1	PXD023143,
MLFFVSAVK	4	uORF_ENST00000265565_84_195	SCAP	1	PXD023143,
MLLLRPTIFK	4	uORF_ENST00000679496_550_625	MBNL2	1	PXD023143,
MPFVHVVY	2	uORF_ENST00000621372_27_213	LSR	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
MPLGKEAEL	2	uORF_ENST00000282470_156_225	SPARCL1	1	PXD023143,
MQMTIEMRTTR	1	uORF_ENST00000311916_281_350	TWNK	1	PXD023143,
MRFAGLVAA	11	uORF_ENST00000394125_6_117	RABEPK	1	PXD023143,
MRFAGLVAAA	4	uORF_ENST00000394125_6_117	RABEPK	1	PXD023143,
MSGPLSPRR	3	uORF_ENST00000377482_64_94	ERRFI1	1	PXD023143,
MTIEMRTTR	1	uORF_ENST00000311916_281_350	TWNK	1	PXD023143,
MTVPFNFVA	4	uORF_ENST00000374206_191_245	CDC26	1	PXD023143,
MVQPKGASIPR	2	uORF_ENST00000368457_144_189	PYGO2	1	PXD023143,
MVRPVAVAA	4	uORF_ENST00000373930_14_92	MEGF9	1	PXD023143,
MWYNILFER	2	uORF_ENST00000344936_27_249	ARHGAP12	1	PXD023143,
NSDLGRNQDY	7	uORF_ENST00000367070_24_144	C4BPA	1	PXD023143,
NSSDHVLLY	9	uORF_ENST00000369244_244_556	FBXL4	1	PXD023143,
NWFPASENLVF	2	uORF_ENST00000406337_399_477	KAT6A	1	PXD023143,
PAAAAALAA	1	uORF_ENST00000334512_34_328	ZMIZ1	1	PXD023143,
PAGQRRAL	1	uORF_ENST00000302850_327_495	INSR	1	PXD023143,
PRETGTPGAGAR	1	uORF_ENST00000430430_372_798	ZBTB10	1	PXD023143,
PRPPPPPPSPPPPP	1	uORF_ENST00000446231_186_447	SMG1	1	PXD023143,
QEIAVLQPF	2	uORF_ENST00000351870_30_171	MTERF1	1	PXD023143,
QIMMHHYHR	1	uORF_ENST00000367498_18_333	IVNS1ABP	1	PXD023143,
QRLARSSSL	1	uORF_ENST00000272102_12_57	ARF1	1	PXD023143,
QTLRVHTLK	3	uORF_ENST00000410097_93_156	METTL5	1	PXD023143,
QVIGVVLQK	14	uORF_ENST00000297857_459_555	ZHX1	1	PXD023143,
RALQLSLPTK	6	uORF_ENST00000636471_9_192	ZEB2	1	PXD023143,
RAMEPGLQGK	2	uORF_ENST00000683765_132_318	FGFR1	1	PXD023143,
RFVAMEFTF	3	uORF_ENST00000399002_20_80	SPTLC3	1	PXD023143,
RGRPEATVPPR	3	uORF_ENST00000361523_15_75	BECN1	1	PXD023143,
RISHWTATK	1	uORF_ENST00000674173_53_203	NIPA2	1	PXD023143,
RLAGLGALKV	5	uORF_ENST00000294016_133_595	ADCY9	1	PXD023143,
RLASASRAL	2	uORF_ENST00000327773_76_136	GAS6	1	PXD023143,
RLLPGSRNTTK	2	uORF_ENST00000683775_750_960	ATXN1L	1	PXD023143,
RLPPPPTTV	1	uORF_ENST00000610417_212_341	SAMD4B	1	PXD023143,
RPGLGAGSAA	2	uORF_ENST00000316724_56_239	BIN1	1	PXD023143,
RPPPFLSVSA	1	uORF_ENST00000267984_65_299	TLNRD1	1	PXD023143,
RPRGPTPPA	3	uORF_ENST00000309100_20_254	MAP3K11	1	PXD023143,
RPWSGPSSV	2	uORF_ENST00000467148_107_548	HELZ2	1	PXD023143,
RQWASYPPVHL	1	uORF_ENST00000311350_92_506	HERPUD2	1	PXD023143,
RRFLALGGGSF	3	uORF_ENST00000683877_87_210	STAMBP	1	PXD023143,
RRFSPPLRLF	10	uORF_ENST00000693560_244_409	PTEN	1	PXD023143,
RRLAASAVQLR	1	uORF_ENST00000340438_22_112	GSPT2	1	PXD023143,
RSAPAGVSL	2	uORF_ENST00000417626_18_126	IFRD2	1	PXD023143,
RSIDKPLAR	1	uORF_ENST00000456324_1018_1162	ZNF146	1	PXD023143,
RSSGWVLKHR	2	uORF_ENST00000397501_107_248	PTK2B	1	PXD023143,
RTAAAAAGAASW	1	uORF_ENST00000392271_8_293	URI1	1	PXD023143,
RTAGPGASY	2	uORF_ENST00000336576_23_173	DNAJB2	1	PXD023143,
RTARTATFPR	6	uORF_ENST00000599117_248_446	SUPT5H	1	PXD023143,
RTISGSLFYTK	2	uORF_ENST00000648894_392_584	PTP4A1	1	PXD023143,
RVFEVYHTTVLK	4	uORF_ENST00000645276_14_236	CTNNB1	1	PXD023143,
RVHEVFRVGK	9	uORF_ENST00000393094_74_251	CUL5	1	PXD023143,
RVRPTEHAHVGR	1	uORF_ENST00000534313_85_238	SIPA1	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
RVTGLVLRP	2	uORF_ENST00000549441_1107_1230	DNAJC22	1	PXD023143,
RVTSQFLVK	2	uORF_ENST00000529010_23_128	NUCB2	1	PXD023143,
RWGPVAHPF	3	uORF_ENST00000353704_15_159	CREB3	1	PXD023143,
SAARLAPLR	2	uORF_ENST00000269593_52_109	IGFBP4	1	PXD023143,
SAGPAQQLR	2	uORF_ENST00000307845_67_157	HPCAL1	1	PXD023143,
SAQGNHIPL	6	uORF_ENST00000682014_42_330	AZIN1	1	PXD023143,
SARGGGVAY	6	uORF_ENST00000171111_54_186	KEAP1	1	PXD023143,
SASAARLAPL	1	uORF_ENST00000269593_52_109	IGFBP4	1	PXD023143,
SATPVVRAA	4	uORF_ENST00000610745_15_240	CYP1B1	1	PXD023143,
SFLPTSPLLGF	1	uORF_ENST00000360843_19_406	TLK1	1	PXD023143,
SILQSLVPA	2	uORF_ENST00000595125_275_638	ATF5	1	PXD023143,
SIVKESILK	2	uORF_ENST00000244769_55_370	ATXN1	1	PXD023143,
SLAAVELKA	1	uORF_ENST00000318160_111_174	GREM2	1	PXD023143,
SLFGARPGR	5	uORF_ENST00000307145_160_223	KLF13	1	PXD023143,
SLGLLFLHLK	1	uORF_ENST00000337673_112_226	ZNF394	1	PXD023143,
SLGVYQTKLK	2	uORF_ENST00000388887_75_153	STAB2	1	PXD023143,
SLISTYFHV	13	uORF_ENST00000436346_503_716	CCDC88A	1	PXD023143,
SLKEGIVSY	8	uORF_ENST00000517970_49_478	WWP1	1	PXD023143,
SLLPLRVLL	15	uORF_ENST00000676402_73_145	CHMP1A	1	PXD023143,
SPLLLQAKA	2	uORF_ENST00000429772_85_199	TMEM106C	1	PXD023143,
SPNGARMVLQ	1	uORF_ENST00000434981_284_422	FAM53C	1	PXD023143,
SPVSGTWLL	2	uORF_ENST00000264864_61_97	PI4K2B	1	PXD023143,
SPVTLGK	3	uORF_ENST00000371237_14_71	C8B	1	PXD023143,
SRAQHIQLI	2	uORF_ENST00000396398_333_525	NAGA	1	PXD023143,
SRHLGAEAL	15	uORF_ENST00000268171_123_234	FURIN	1	PXD023143,
SRISATVKVKK	1	uORF_ENST00000332231_16_304	AP2A2	1	PXD023143,
SRVQGAARL	1	uORF_ENST00000337338_21_228	LRRC8D	1	PXD023143,
SSALPQLPK	3	uORF_ENST00000367070_150_261	C4BPA	1	PXD023143,
SSLGLLFLHLK	1	uORF_ENST00000337673_112_226	ZNF394	1	PXD023143,
SSNVQVMLK	1	uORF_ENST00000456324_1018_1162	ZNF146	1	PXD023143,
SSVLWLFPR	1	uORF_ENST00000652011_17_218	ZNF717	1	PXD023143,
STYNPSISLK	1	uORF_ENST00000282488_1455_1629	MBNL1	1	PXD023143,
SVAPASGAF	5	uORF_ENST00000223127_2_170	PLOD3	1	PXD023143,
SVAPSLPAR	1	uORF_ENST00000264414_142_367	CUL3	1	PXD023143,
SVASISLTK	15	uORF_ENST00000298289_75_171	RPL36AL	1	PXD023143,
SVASPVTLG	1	uORF_ENST00000371237_14_71	C8B	1	PXD023143,
SVASPVTLGK	26	uORF_ENST00000371237_14_71	C8B	1	PXD023143,
SVKSLSEKAGLR	2	uORF_ENST00000431972_110_236	AP5M1	1	PXD023143,
SVSAVLGARR	2	uORF_ENST00000372727_85_196	SYS1	1	PXD023143,
SVSPVSGEMKK	1	uORF_ENST00000409433_547_1288	PTRH2	1	PXD023143,
SVVPFPTEAK	1	uORF_ENST00000377850_352_592	SLC17A2	1	PXD023143,
SYAKSTQRF	14	uORF_ENST00000430580_113_149	NBPF1	1	PXD023143,
SYQKETFLW	7	uORF_ENST00000587424_25_130	SRSF8	1	PXD023143,
SYRPMGPGSAR	10	uORF_ENST00000553533_12_273	STAT6	1	PXD023143,
TAAPAAPPR	5	uORF_ENST00000366609_98_743	IRF2BP2	1	PXD023143,
TAFPSSSAWPQK	1	uORF_ENST00000296137_11_122	FYCO1	1	PXD023143,
TEAGAGAVAA	3	uORF_ENST00000360843_19_406	TLK1	1	PXD023143,
TFFDPVKEEDLLF	1	uORF_ENST00000374580_278_608	BMPR2	1	PXD023143,
TIIERMENY	3	uORF_ENST00000244519_56_98	BTN3A3	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
TLRPRAAGSPR	2	uORF_ENST00000397843_283_385	ARHGEF12	1	PXD023143,
TLTSLNILL	2	uORF_ENST00000373840_167_305	RAB14	1	PXD023143,
TPAGQRRAL	1	uORF_ENST00000302850_327_495	INSR	1	PXD023143,
TPTRPGPTL	1	uORF_ENST00000308893_629_866	TAOK2	1	PXD023143,
TRSEFFRAV	1	uORF_ENST00000522439_18_87	POLR2K	1	PXD023143,
TTLGRDALLAR	2	uORF_ENST00000261183_12_69	OSBPL8	1	PXD023143,
VAAEVAGAGR	1	uORF_ENST00000393972_45_195	WBP1	1	PXD023143,
VASISLTK	3	uORF_ENST00000298289_75_171	RPL36AL	1	PXD023143,
VASPVTLGK	15	uORF_ENST00000371237_14_71	C8B	1	PXD023143,
VAYHGHGVSA	6	uORF_ENST00000429772_85_199	TMEM106C	1	PXD023143,
VFLKAGASF	8	uORF_ENST00000368875_276_585	PI4KB	1	PXD023143,
VIFLLTSLK	1	uORF_ENST00000523638_125_224	ZNF260	1	PXD023143,
VLEVHVPQV	5	uORF_ENST00000615984_130_487	METTL23	1	PXD023143,
VPFPGPGVA	4	uORF_ENST00000378827_631_904	BMP2	1	PXD023143,
VPLEGSISA	1	uORF_ENST00000327097_21_111	MARCO	1	PXD023143,
VPRPPSPGPA	1	uORF_ENST00000322813_90_237	ATOSB	1	PXD023143,
VPRSGAPSA	1	uORF_ENST00000323037_245_470	ZNRF2	1	PXD023143,
VPSDRLALL	1	uORF_ENST00000220003_595_679	CSK	1	PXD023143,
VQYHGQHRV	2	uORF_ENST00000336643_54_96	SLC39A9	1	PXD023143,
VRFMKKNKL	2	uORF_ENST00000267549_28_352	GPR65	1	PXD023143,
VRFQGPASF	3	uORF_ENST00000222345_215_461	SIPA1L3	1	PXD023143,
VRSHGLVL	1	uORF_ENST00000236980_258_297	FASTKD2	1	PXD023143,
VSARSLGSW	1	uORF_ENST00000267984_65_299	TLNRD1	1	PXD023143,
VSSRVGTIF	1	uORF_ENST00000522652_53_254	ST3GAL1	1	PXD023143,
VTDKDTFEL	1	uORF_ENST00000404241_676_856	ATF4	1	PXD023143,
VTEKVYADTG	3	uORF_ENST00000312814_21_81	TMEM168	1	PXD023143,
VTEKVYADTGLY	15	uORF_ENST00000312814_21_81	TMEM168	1	PXD023143,
VTRFPGLAA	2	uORF_ENST00000635293_6_186	TP53	1	PXD023143,
VYVKHQRNL	2	uORF_ENST00000634733_59_143	H3C6	1	PXD023143,
WRHQGVGAL	1	uORF_ENST00000345093_195_318	RNF41	1	PXD023143,
YAKSTQRF	2	uORF_ENST00000430580_113_149	NBPF1	1	PXD023143,
YFVPHTKRY	9	uORF_ENST00000419821_261_327	TAOK3	1	PXD023143,
YVNEKRYPL	3	uORF_ENST00000376652_128_194	ENTPD6	1	PXD023143,
AAAVSHVGFWK	6	uORF_ENST00000605844_25_124	TAF15	1	ZAVOLAN,
AAGAASASPSR	3	uORF_ENST00000261789_9_111	TM9SF1	1	ZAVOLAN,
APPPPGPAAPDAR	1	uORF_ENST00000301873_30_441	LTBP3	1	ZAVOLAN,
APTSSVGWSMTAPAR	7	uORF_ENST00000467148_107_548	HELZ2	1	ZAVOLAN,
ASRPDFPGAGDPAGSGQGLTCR	1	uORF_ENST00000339950_216_348	USP1	1	ZAVOLAN,
DLGLQLDQTLSKGCK	1	uORF_ENST00000303921_272_401	GPR37	1	ZAVOLAN,
GASLDLGAHRGFYFL	7	uORF_ENST00000286186_48_99	CASP10	1	ZAVOLAN,
GPAAATVNTR	3	uORF_ENST00000519262_19_337	FAM110B	1	ZAVOLAN,
GPGILELCPADELLKMAQ	1	uORF_ENST00000366958_31_568	PROX1	1	ZAVOLAN,
GSALAEVCFTIR	4	uORF_ENST00000380814_49_382	SLC46A3	1	ZAVOLAN,
IPLLDTLR	1	uORF_ENST00000261537_54_471	MIB1	1	ZAVOLAN,
ITVVAAEEVR	5	uORF_ENST00000578049_58_130	SEC22B	1	ZAVOLAN,
KPLSSLGPR	1	uORF_ENST00000304858_88_169	HSPA4	1	ZAVOLAN,
LAGGAAFSR	1	uORF_ENST00000423811_78_198	ZFYVE27	1	ZAVOLAN,
LEGCRLHSPAPGQTLVQTTGVCW	2	uORF_ENST00000222122_253_325	DBP	1	ZAVOLAN,
LGAGAASEAVK	3	uORF_ENST00000648542_140_260	ZNF684	1	ZAVOLAN,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
LGPAEAPPR	2	uORF_ENST00000432074_84_195	DAP	1	ZAVOLAN,
LIDWAGVNCAEAGFPWGK	6	uORF_ENST00000326132_64_208	RNF185	1	ZAVOLAN,
LLVQWEFDSP	1	uORF_ENST00000550078_1529_1796	ZBED6	1	ZAVOLAN,
LPAIAMHYGPPFQSVDAHR	1	uORF_ENST00000354828_167_515	GABPA	1	ZAVOLAN,
LSLRAPLGR	3	uORF_ENST00000423947_4_121	ANO6	1	ZAVOLAN,
LSWAVAGCGARALDGP	3	uORF_ENST00000359947_293_344	PTPRF	1	ZAVOLAN,
LTLQGATAGAR	8	uORF_ENST00000539644_1252_1537	ZNF664	1	ZAVOLAN,
PAAAAFAFAFCFLR	1	uORF_ENST00000266269_81_468	PATZ1	1	ZAVOLAN,
PAGAGSAGTPR	8	uORF_ENST00000409785_66_285	KCMF1	1	ZAVOLAN,
PPVLSLCPLGIR	5	uORF_ENST00000683543_854_1178	KMT2D	1	ZAVOLAN,
QASGHFIICGGPVP	1	uORF_ENST00000328771_48_174	DHX34	1	ZAVOLAN,
RALFSSR	1	uORF_ENST00000478753_94_226	SEPHS2	1	ZAVOLAN,
SGLRSGSPAASLR	1	uORF_ENST00000502773_66_498	PDGFC	1	ZAVOLAN,
SHLLELR	1	uORF_ENST00000571816_259_436	RNF167	1	ZAVOLAN,
SQIVKANSR	2	uORF_ENST00000586539_12_105	ABCA8	1	ZAVOLAN,
TGGGLGTELR	9	uORF_ENST00000269159_27_282	IMPA2	1	ZAVOLAN,
TGGLCNLR	1	uORF_ENST00000377223_4_295	LZIC	1	ZAVOLAN,
TSPGLEACTEAGLRWEGPTR	1	uORF_ENST00000296785_122_596	ANKRA2	1	ZAVOLAN,
VAAAGWEGEVLR	15	uORF_ENST00000281741_6_210	TXNDC16	1	ZAVOLAN,
VAAASTPATDR	5	uORF_ENST00000369329_37_244	MAP3K7	1	ZAVOLAN,
VAAMLLFDLWMK	1	uORF_ENST00000704930_22_61	PUM2	1	ZAVOLAN,
VASLSSASVR	2	uORF_ENST00000273153_48_198	CSRNP1	1	ZAVOLAN,
VDPVELPNFR	1	uORF_ENST00000260383_31_127	TUBGCP4	1	ZAVOLAN,
VEAAAGTAQR	1	uORF_ENST00000541043_37_148	ACO1	1	ZAVOLAN,
VEAGAELAAPSSAGGLSPGPGR	2	uORF_ENST00000402744_62_182	CPE	1	ZAVOLAN,
VLGGASPPR	10	uORF_ENST00000298717_29_116	METTL3	1	ZAVOLAN,
VWTWAAAPGGGAK	2	uORF_ENST00000679879_60_291	BLTP1	1	ZAVOLAN,
APRSAVGAAGALAVL	3	uORF_ENST00000256646_207_354,uORF_ENST00000688759_211_358	NOTCH2, NOTCH2NLA	1	PXD023143,

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Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
PFPWGDGNHTLFHNPHVNPLPTGYEDEAR	26	ENST00000229379	COX6A1	5	PXD035028, PXD016790, PXD032201, PXD025705, PXD036643,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQG	38	ENST00000264335	YWHAE	4	PXD043841, PXD032201, PXD010085, PXD034886,
LVSESSDVLPKG	39	ENST00000552150	KRT8	3	PXD043841, PXD025705, ZAVOLAN,
SIAQYWLGCPAPGHLG	26	ENST00000226218	VTN	3	PXD043841, PXD025705, ZAVOLAN,
PWSQHYHQGYYCIPK	32	ENST00000640218	HNRNPU	3	PXD035028, PXD032201, PXD036643,
ILIFLPR	19	ENST00000586895	UBL5	3	PXD035261, PXD010294, ZAVOLAN,
VGPVPVLVMSLLFIASVFMLHIWGKYTR	28	ENST00000223641	SEC61B	3	PXD010294, PXD035928, ZAVOLAN,
SIQVSPLR	106	ENST00000277865	GLUD1	2	PXD023000, PXD025705,
NLLVAISR	2	ENST00000371467	RBP4	2	PXD010294, PXD025705,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQD	4	ENST00000264335	YWHAE	2	PXD032201, PXD034886,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQM	2	ENST00000264335	YWHAE	2	PXD032201, PXD036643,
TWPALSSPAAEELPVR	7	ENST00000314222	PHLDA2	2	PXD032201, PXD036643,
VVNPTQKG	37	ENST00000393087	SERPINA1	2	PXD025705, ZAVOLAN,
CPEVLFQPCFLGMESCGIHETTFNSIMK	36	ENST00000547889	POTEM	2	PXD025705, PXD036643,
HPPPLGPLLPTSSACPSSVSGLCGACVELQVSVRASFSAFFQDQGLGCK	2	ENST00000389805	SQSTM1	2	PXD002117, PXD003552,
GEGGQVLAEQR	2	ENST00000331334	GLRX5	1	PXD023000,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
DGQVINETSQHHDDLERKNCTHSVQQYITSK	2	ENST00000544301	VIM	1	PXD049964,
PFPWGDGNHTLFHNPHVNPLPTGYEDEVK	1	ENST00000229379	COX6A1	1	PXD016790,
PWSQHYHQGYYK	12	ENST00000640218	HNRNPU	1	PXD016790,
QEGGQVLAEQR	1	ENST00000331334	GLRX5	1	PXD016790,
DIDKDLVID	9	ENST00000231061	SPARC	1	PXD010294,
HSDFASNCCSINSPPLYCDSEIDAELKNILW	1	ENST00000504199	GC	1	PXD010294,
VIDQFGEVGGHSYSGLLEPIP	4	ENST00000311907	F2	1	PXD010294,
VIDQFGEMRGPLIFWAPGTNPVK	1	ENST00000311907	F2	1	PXD002171,
GKKLSLPAQ	2	ENST00000258739	KDELR2	1	PXD043841,
MEGGQVLAEQR	1	ENST00000331334	GLRX5	1	PXD043841,
SGPPGGSTKDTPPQQELAAR	1	ENST00000301488	CDK2AP2	1	PXD035261,
SGPPPGSQRGPGANISNPGLCGAEAACFSFR	1	ENST00000602845	NCBP2AS2	1	PXD035261,
VQAAVGTSAAPVPSDNHHER	1	ENST00000252486	APOE	1	PXD035261,
DASDAQPR	1	ENST00000484259	FXN	1	PXD032201,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQA	1	ENST00000264335	YWHAE	1	PXD032201,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQP	1	ENST00000264335	YWHAE	1	PXD032201,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQQ	1	ENST00000264335	YWHAE	1	PXD032201,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQY	1	ENST00000264335	YWHAE	1	PXD032201,
GGSYSQAACSDSAQGSDVSLTAM	1	ENST00000412585	HLA-B	1	PXD032201,
HDSKSLLSPATSEGPLAK	1	ENST00000331825	FTL	1	PXD032201,
PEHEGVR	1	ENST00000314133	COX8A	1	PXD032201,
RPSSPAASDSCWLQEPAVPRGQQMAMQDQPGSR	1	ENST00000334678	RPS19BP1	1	PXD032201,
VIDQFGEMR	2	ENST00000311907	F2	1	PXD010085,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQN	1	ENST00000264335	YWHAE	1	PXD034886,
KITIADCGQLEDK	1	ENST00000468812	PPIA	1	PXD034886,
KITIADCGQLETK	2	ENST00000468812	PPIA	1	PXD034886,
EVEGLLLQWT	9	ENST00000649620	TTR	1	PXD025705,
EWIFQAIKTHSEASGMVTQLPDR	1	ENST00000262626	HPN	1	PXD025705,
IWELAASPFPLSSILLPGW	1	ENST00000649813	COX6B1	1	PXD025705,
NLQYQCSK	6	ENST00000334575	GSTA1	1	PXD025705,
NPLAVSKIM	1	ENST00000378789	HAO1	1	PXD025705,
TILIFLK	4	ENST00000508393	ADH4	1	PXD025705,
DQDSKYEGGQVLAEQR	1	ENST00000331334	GLRX5	1	PXD036643,
SGEFGVPQVPFSK	1	ENST00000370355	SCD	1	PXD036643,
VTIMLPYQAENVTTIWR	4	ENST00000361575	RPL39	1	PXD036643,
ASGPIRPL	1	ENST00000301488	CDK2AP2	1	PXD023143,
FDTKPLL	1	ENST00000260379	RPLP1	1	PXD023143,
GLLGTPLTV	3	ENST00000372585	SLC22A7	1	PXD023143,
MPPDPRPTL	1	ENST00000290079	TMEM141	1	PXD023143,
QPRAQGAVGVL	1	ENST00000263100	A1BG	1	PXD023143,
SPSGPGKAL	1	ENST00000395479	REEP6	1	PXD023143,
TVHSTSIAF	1	ENST00000451311	TMSB4X	1	PXD023143,
EYLTTAFEVEERMK	2	ENST00000336915	SKAP1	1	ZAVOLAN,
NLVQFSRLCK	2	ENST00000361035	HAO2	1	ZAVOLAN,
QEGIEVGAR	2	ENST00000292614	POLR2J	1	ZAVOLAN,
SAGHLSQR	2	ENST00000367569	SF3B5	1	ZAVOLAN,
SQIDDLYSTIKVG	4	ENST00000706366	ACSL1	1	ZAVOLAN,
DNLTLWTSDMQGDGEEQNKEALQDVEDENQI	1	ENST00000264335	YWHAE	1	PXD032201,
FRCPEVLFQPCFLGMESCGIHETTFNSIMK	15	ENST00000547889	POTEM	1	PXD025705,
GLQLNELTMDDDTAVLVIDNGSGMCK	85	ENST00000547889	POTEM	1	PXD025705,

Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
PGPVPVMCLPSSQSR	1	ENST00000543245	ACADVL	1	PXD025705,
SISAYHENK	3	ENST00000295897	ALB	1	PXD025705,
MPPLLPSPPPGSSATGCTAVADSWT	1	ENST00000401088	SZRD1	1	PXD036643,
ASSTAFRIY	6	ENST00000507606	STMP1	1	PXD023143,
DVDIHKDLY	2	ENST00000547889	POTEM	1	PXD023143,
LSDVNRATY	1	ENST00000394485	MT1X	1	PXD023143,
SVRTILIFL	15	ENST00000508393	ADH4	1	PXD023143,
FSYIHLSSEEGGK	2	ENST00000223641	SEC61B	1	ZAVOLAN,
GPLIFWAPGTNPVK	4	ENST00000311907	F2	1	ZAVOLAN,
MQKEIAALAPSTMK	13	ENST00000547889	POTEM	1	ZAVOLAN,

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Peptide	Total Spectral Count	Transcript ID	Protein Name	Number of Datasets Found	Datasets Found
LAMQEFMVLPVGAANFR	40	dORF_ENST00000334232_1322_2489	EDARADD	6	PXD049964, PXD010294, PXD034886, PXD025705, PXD036643, ZAVOLAN,
DATGVGDGGAFAPNILENK	11	dORF_ENST00000334232_1322_2489	EDARADD	5	PXD023000, PXD016790, PXD032201, PXD034886, PXD036643,
ILIFLPR	12	dORF_ENST00000586895_306_363	UBL5	3	PXD010294, PXD043841, PXD035261,
AAVPSGASTGIYEVLELQDNDKTR	36	dORF_ENST00000334232_1322_2489	EDARADD	3	PXD002171, PXD043841, ZAVOLAN,
VTSQEGPLK	15	dORF_ENST00000592885_456_513	APOC1	2	PXD035928, PXD025705,
LPFLMLQR	11	dORF_ENST00000372273_885_1041	TMEM254	2	PXD032201, ZAVOLAN,
NYPVVSTEDPFDQDDWGAWQK	2	dORF_ENST00000334232_1322_2489	EDARADD	2	PXD025705, ZAVOLAN,
AKAIGAPR	20	dORF_ENST00000354124_1132_1354	C1QTNF1	1	PXD023000,
LTNGQNLHSRHIAPTTSASNLER	1	dORF_ENST00000644859_3569_3674	KNG1	1	PXD023000,
KQSTSPPPK	1	dORF_ENST00000344519_3183_3660	ZNF66	1	PXD049964,
PYTFLTNK	5	dORF_ENST00000377813_4588_4978	RRBP1	1	PXD016790,
SLENLQPDDEIEK	2	dORF_ENST00000297625_4460_4817	MYORG	1	PXD016790,
INHFLFAFR	1	dORF_ENST00000327435_593_680	ADI1	1	PXD032201,
QANIQIQEIQR	1	dORF_ENST00000344519_3710_4043	ZNF66	1	PXD032201,
VSVMEDEMNEMK	1	dORF_ENST00000344519_3183_3660	ZNF66	1	PXD032201,
DATGVGDGGAFAPNILENKEGLELLK	5	dORF_ENST00000334232_1322_2489	EDARADD	1	PXD034886,
AAVPSGASTGIYEVLELQDNDK	3	dORF_ENST00000334232_1322_2489	EDARADD	1	PXD025705,
RAGLSLR	14	dORF_ENST00000416247_1328_1862	SMIM13	1	PXD036643,
RLETEQVTIPMLMSDEIVPR	1	dORF_ENST00000482352_593_710	MRPL20	1	PXD036643,
ALSSLLHAL	32	dORF_ENST00000483233_1161_1332	ABHD14B	1	PXD023143,
HEFALVSL	1	dORF_ENST00000402696_2178_2292	TF	1	PXD023143,
IHEFALVSL	2	dORF_ENST00000402696_2178_2292	TF	1	PXD023143,
KVSGLFTNR	1	dORF_ENST00000447411_1948_2401	SLC38A4	1	PXD023143,
LAGLATQLI	5	dORF_ENST00000307145_1776_1881	KLF13	1	PXD023143,
LLLPRPPNL	4	dORF_ENST00000336577_2312_3056	MMP25	1	PXD023143,
QSSFHLAALR	2	dORF_ENST00000372273_738_870	TMEM254	1	PXD023143,
SSFHLAALR	1	dORF_ENST00000372273_738_870	TMEM254	1	PXD023143,
YHQSDSTVL	2	dORF_ENST00000558468_4092_4953	RNF31	1	PXD023143,
APLPSDYVNSESVQMSSLPFSNFK	4	dORF_ENST00000262187_1018_1174	RHEB	1	ZAVOLAN,
GGAGPAAWYSSPR	1	dORF_ENST00000302754_1330_1807	JUNB	1	ZAVOLAN,
GLSAASAVATACIGDK	11	dORF_ENST00000497547_2186_2624	RRP1	1	ZAVOLAN,
QDSPSAVCLER	2	dORF_ENST00000280800_3236_4454	PLBD2	1	ZAVOLAN,
VNETAGLSDGLER	4	dORF_ENST00000378526_4346_4391	LIG3	1	ZAVOLAN,

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Peptide	Total Spectral Count	Transcript ID	Number of Datasets Found	Datasets Found
VILLMGK	26	NONHSAT175865_167_347_lncRNA	3	PXD016790, PXD035928, PXD032201,
AAQGQPQVQFK	8	NONHSAT147392_0_330_lncRNA	3	PXD016790, PXD032201, PXD036643,
LQSGFIR	6	NONHSAT243420_41_80_lncRNA	3	PXD035028, PXD032201, PXD036643,
GGVNELSGGR	3	NONHSAT017465_616_1429_lncRNA	2	PXD023000, ZAVOLAN,
VEHIEFWR	3	NONHSAT035954_905_1034_lncRNA	2	PXD016790, PXD036643,
AGGTPSELVLSR	2	NONHSAT177862_1086_1830_lncRNA	2	PXD035261, PXD034886,
LGHLQGR	31	NONHSAT190600_2640_2847_lncRNA	2	PXD032201, PXD036643,
EASSRPEERAAAPVGR	2	NONHSAT214022_34_304_lncRNA	1	PXD023000,
ITSETSWPSAPASARGFIFN	2	NONHSAT152269_14_155_lncRNA	1	PXD049964,
KALTGSFEESLR	2	NONHSAT059662_783_1080_lncRNA	1	PXD049964,
AVLSGLGAR	1	NONHSAT235862_16_625_lncRNA	1	PXD016790,
DVPQAQSGIWDVCACCGAESLQHGLTLSPRLECIGMNTSHCSLNLPG	1	NONHSAT096090_491_683_lncRNA	1	PXD016790,
GDTSAAFQADR	1	NONHSAT192351_19215_19815_lncRNA	1	PXD016790,
IHTGEKPYECNECAK	2	NONHSAT129860_1674_3099_lncRNA	1	PXD016790,
LEGIWACASGPDPVR	1	NONHSAT235360_158_431_lncRNA	1	PXD016790,
LPVLSMLQSDVCPATQAGR	1	NONHSAT249976_1113_1239_lncRNA	1	PXD016790,
PGSFEAGTVK	1	NONHSAT142467_176_551_lncRNA	1	PXD016790,
AAVVSIGLIQNGDWTFQTLVMLETVPR	2	NONHSAT108914_445_913_lncRNA	1	PXD010294,
GCWDSTGPFCGCCLLCEMGLVCSSPEYIAQTSVSQTTALQEGELGKK	1	NONHSAT144330_357_669_lncRNA	1	PXD010294,
LTSVLLR	1	NONHSAT067172_158_440_lncRNA	1	PXD010294,
MAEANQSQDLNQGTNQLCTGMR	1	NONHSAT211854_825_1035_lncRNA	1	PXD010294,
WVPWESEESLLFASR	1	NONHSAT250035_42_378_lncRNA	1	PXD010294,
ADAAAGAAVFPTVEK	1	NONHSAT000399_144_456_lncRNA	1	PXD002171,
RGLAELR	2	NONHSAT249780_502_880_lncRNA	1	PXD035928,
ELSENEDPK	1	NONHSAT248740_19_232_lncRNA	1	PXD043841,
PSSLEMNMLHFTTTALPDSGIGSGR	3	NONHSAT017465_1286_1733_lncRNA	1	PXD043841,
EETPDPQNGAENK	1	NONHSAT246920_70_349_lncRNA	1	PXD035261,
KGALVSGFESSGVPGR	3	NONHSAT237896_7839_8028_lncRNA	1	PXD035261,
KTKCLIPAGR	2	NONHSAT245895_10_82_lncRNA	1	PXD035261,
QAEETGAR	2	NONHSAT182520_1209_1758_lncRNA	1	PXD035261,
VGAQGGSQLAAGAGPGVQAGDRCGGGGGGGPR	1	NONHSAT213069_309_474_lncRNA	1	PXD035261,
CLIPAGR	1	NONHSAT245895_10_82_lncRNA	1	PXD032201,
DVALALQVR	1	NONHSAT023366_87_210_lncRNA	1	PXD032201,
GLAPIVCLFHCLSVK	2	NONHSAT001215_555_645_lncRNA	1	PXD032201,
GSAESLQAGEAR	1	NONHSAT257131_5428_6151_lncRNA	1	PXD032201,
IGGTLPR	1	NONHSAT217410_52_148_lncRNA	1	PXD032201,
ISGACAPDPAGADPWER	1	NONHSAT212821_73_469_lncRNA	1	PXD032201,
LGNGEYTGFAIPR	1	NONHSAT238312_14_212_lncRNA	1	PXD032201,
LTASSAYR	2	NONHSAT257131_6293_6521_lncRNA	1	PXD032201,
LVSGVDSAR	2	NONHSAT188347_15_243_lncRNA	1	PXD032201,
PPNVEEIISEK	1	NONHSAT068057_343_796_lncRNA	1	PXD032201,
PQAAVALR	2	NONHSAT230246_386_671_lncRNA	1	PXD032201,
VEGEVQSQSPPPELGPFR	1	NONHSAT009691_30_99_lncRNA	1	PXD032201,
VLEALGR	1	NONHSAT116831_95_473_lncRNA	1	PXD032201,
WEAGAVSENLR	1	NONHSAT246144_583_787_lncRNA	1	PXD032201,
KEAGMSDREVIQER	1	NONHSAT248653_59_149_lncRNA	1	PXD010085,
TLHKAKNEDLDR	1	NONHSAT229958_684_1863_lncRNA	1	PXD010085,
PAGEATGGQTLGR	1	NONHSAT176428_10_151_lncRNA	1	PXD034886,

Peptide	Total Spectral Count	Transcript ID	Number of Datasets Found	Datasets Found
PLSGPASVFLCRTTGQAPSLCPR	5	NONHSAT159207_36_171_lncRNA	1	PXD034886,
ADAPAVSPESPQK	6	NONHSAT195695_121_427_lncRNA	1	PXD025705,
AETPGEQPR	2	NONHSAT182033_249_831_lncRNA	1	PXD025705,
AGGVAAGSASATGGLGWAGLGWAGWGR	2	NONHSAT156965_63_546_lncRNA	1	PXD025705,
AGSPLLLGK	3	NONHSAT182520_354_1155_lncRNA	1	PXD025705,
CIATLGVEVHPLVFHTNR	6	NONHSAT099298_0_321_lncRNA	1	PXD025705,
EELLLQLK	4	NONHSAT092514_137_344_lncRNA	1	PXD025705,
ELAAPEGK	2	NONHSAT149448_31_220_lncRNA	1	PXD025705,
EMSDCYTELEKAVIVLVENFYK	1	NONHSAT152329_57_354_lncRNA	1	PXD025705,
LENSMEQGK	2	NONHSAT233141_24_342_lncRNA	1	PXD025705,
SLSDYNIQK	20	NONHSAT175015_70_697_lncRNA	1	PXD025705,
AGALAGR	13	NONHSAT190641_1144_1516_lncRNA	1	PXD036643,
APPTPTPR	13	NONHSAT193357_11199_11535_lncRNA	1	PXD036643,
EMSDCYTELEK	1	NONHSAT152329_57_354_lncRNA	1	PXD036643,
GPPPQGGPGAR	4	NONHSAT177799_42_480_lncRNA	1	PXD036643,
LHSFSLR	32	NONHSAT250864_34_439_lncRNA	1	PXD036643,
LLLLLKPK	1	NONHSAT073818_235_457_lncRNA	1	PXD036643,
RGPQAPGTR	4	NONHSAT191486_25_241_lncRNA	1	PXD036643,
TLASPEPVMPK	3	NONHSAT121192_209_389_lncRNA	1	PXD036643,
AHAGPGREL	1	NONHSAT230230_1943_2594_lncRNA	1	PXD023143,
APYSPPITY	4	NONHSAT030758_1314_1521_lncRNA	1	PXD023143,
AQRPSSPAL	7	NONHSAT035954_218_455_lncRNA	1	PXD023143,
ARFYNPPGTPK	1	NONHSAT205117_130_193_lncRNA	1	PXD023143,
ARHPALPPL	2	NONHSAT217410_52_148_lncRNA	1	PXD023143,
ARSAITASL	4	NONHSAT258235_28_130_lncRNA	1	PXD023143,
ATAGPGTVKQR	1	NONHSAT145408_12_804_lncRNA	1	PXD023143,
DGYLRASEL	1	NONHSAT057004_479_842_lncRNA	1	PXD023143,
DIAAEVVF	2	NONHSAT157762_14_548_lncRNA	1	PXD023143,
DIVSIVGAEK	1	NONHSAT100290_473_584_lncRNA	1	PXD023143,
DVHTGSSFY	1	NONHSAT068981_42_288_lncRNA	1	PXD023143,
EAAAPRAVR	1	NONHSAT049670_136_262_lncRNA	1	PXD023143,
EGSGQIFQR	1	NONHSAT129584_665_881_lncRNA	1	PXD023143,
ENIGSVFLR	1	NONHSAT159845_13_286_lncRNA	1	PXD023143,
ETDIEMETRY	10	NONHSAT127668_263_326_lncRNA	1	PXD023143,
ETFKKAIQR	1	NONHSAT229958_684_1863_lncRNA	1	PXD023143,
EVLHFSVGV	5	NONHSAT181094_127_487_lncRNA	1	PXD023143,
FLDSRGELY	3	NONHSAT257131_5428_6151_lncRNA	1	PXD023143,
FLLKQSVLL	8	NONHSAT229283_413_776_lncRNA	1	PXD023143,
FPEHMANVEL	3	NONHSAT122462_155_686_lncRNA	1	PXD023143,
FPTTVVEERF	5	NONHSAT190621_189_594_lncRNA	1	PXD023143,
FQATSAHPF	6	NONHSAT079864_601_865_lncRNA	1	PXD023143,
FVMSLIVNR	15	NONHSAT225806_12_420_lncRNA	1	PXD023143,
GKTKIKISY	1	NONHSAT172661_318_381_lncRNA	1	PXD023143,
GLAPPFRGK	2	NONHSAT200250_20_392_lncRNA	1	PXD023143,
GRNDLIFTL	8	NONHSAT108768_98_284_lncRNA	1	PXD023143,
GRNDLIFTLQ	4	NONHSAT108768_98_284_lncRNA	1	PXD023143,
GTKEPGPLL	4	NONHSAT144330_357_669_lncRNA	1	PXD023143,
GVLSFLRELK	4	NONHSAT078994_628_847_lncRNA	1	PXD023143,
HDHAKGSPF	1	NONHSAT223354_229_268_lncRNA	1	PXD023143,
HHQTVSDNGL	1	NONHSAT079864_363_465_lncRNA	1	PXD023143,

Peptide	Total Spectral Count	Transcript ID	Number of Datasets Found	Datasets Found
HLNEGLITL	2	NONHSAT172661_287_461_lncRNA	1	PXD023143,
HPEPLFFHL	2	NONHSAT237113_532_760_lncRNA	1	PXD023143,
IHDQEDSARFF	4	NONHSAT152600_782_845_lncRNA	1	PXD023143,
ITVLPKKGW	2	NONHSAT166505_686_827_lncRNA	1	PXD023143,
KASVTVMFQ	1	NONHSAT230481_669_798_lncRNA	1	PXD023143,
KVAEAGAGRLGTK	2	NONHSAT165404_19_112_lncRNA	1	PXD023143,
KYQEVERVNR	1	NONHSAT127668_380_464_lncRNA	1	PXD023143,
LEPPITASF	4	NONHSAT153182_749_1022_lncRNA	1	PXD023143,
LFSIRQWTY	2	NONHSAT097974_121_235_lncRNA	1	PXD023143,
LLFQATSAHPF	1	NONHSAT079864_601_865_lncRNA	1	PXD023143,
LLSLVTGLK	3	NONHSAT175208_523_583_lncRNA	1	PXD023143,
LPRPVGRVVIL	1	NONHSAT230976_596_806_lncRNA	1	PXD023143,
MIFSGVFLR	2	NONHSAT215581_6_249_lncRNA	1	PXD023143,
MLLSHTGKLAL	1	NONHSAT129017_3363_3573_lncRNA	1	PXD023143,
MMTETKVEL	2	NONHSAT249198_74_140_lncRNA	1	PXD023143,
MPNVRSPGA	1	NONHSAT227726_625_928_lncRNA	1	PXD023143,
MTMSTILSK	9	NONHSAT100290_473_584_lncRNA	1	PXD023143,
MTMSTILSKK	9	NONHSAT100290_473_584_lncRNA	1	PXD023143,
NTDVHTGSSFY	9	NONHSAT068981_42_288_lncRNA	1	PXD023143,
QASYAIVL	1	NONHSAT243420_9_177_lncRNA	1	PXD023143,
QHEDLINLQSF	4	NONHSAT129860_1674_3099_lncRNA	1	PXD023143,
QQLHGYFSI	1	NONHSAT103321_31_79_lncRNA	1	PXD023143,
RFYNPPGTPK	5	NONHSAT205117_130_193_lncRNA	1	PXD023143,
RLMPVILTP	1	NONHSAT133802_254_422_lncRNA	1	PXD023143,
RMRIATEVLK	1	NONHSAT227343_251_458_lncRNA	1	PXD023143,
RPPDLGQVLSTL	2	NONHSAT257131_5772_5967_lncRNA	1	PXD023143,
RPSDPAPPI	2	NONHSAT251756_281_431_lncRNA	1	PXD023143,
RQWQGQVAK	1	NONHSAT112145_539_698_lncRNA	1	PXD023143,
RSMSPLTKVQK	7	NONHSAT258235_28_130_lncRNA	1	PXD023143,
RSPTTGTSL	5	NONHSAT133802_114_357_lncRNA	1	PXD023143,
RTWSHVVPR	1	NONHSAT017512_123_183_lncRNA	1	PXD023143,
RVLSHKHLFGK	2	NONHSAT002784_176_440_lncRNA	1	PXD023143,
RYTLVLFSL	4	NONHSAT212609_393_450_lncRNA	1	PXD023143,
SAQKLQTLW	1	NONHSAT017414_1065_1278_lncRNA	1	PXD023143,
SIWLRPYPA	2	NONHSAT124942_407_518_lncRNA	1	PXD023143,
SLLQPETPGLK	1	NONHSAT108436_551_662_lncRNA	1	PXD023143,
SLLSLVTGLK	6	NONHSAT175208_523_583_lncRNA	1	PXD023143,
SPALTLSKVLL	2	NONHSAT078315_6_444_lncRNA	1	PXD023143,
SQWSPALTL	2	NONHSAT078315_6_444_lncRNA	1	PXD023143,
SSHVRVEAL	1	NONHSAT190621_189_594_lncRNA	1	PXD023143,
SVHSKVLSK	1	NONHSAT243450_30_414_lncRNA	1	PXD023143,
SVVTDVVFK	3	NONHSAT131038_1456_1528_lncRNA	1	PXD023143,
SYPLITNVI	2	NONHSAT245657_237_303_lncRNA	1	PXD023143,
TLSKVLLSI	6	NONHSAT078315_6_444_lncRNA	1	PXD023143,
TPFATRSV	2	NONHSAT013504_131_230_lncRNA	1	PXD023143,
TPLSDNIEEL	1	NONHSAT092738_28_124_lncRNA	1	PXD023143,
VIHVSRPL	1	NONHSAT056552_85_307_lncRNA	1	PXD023143,
VLLERLENT	3	NONHSAT127668_321_477_lncRNA	1	PXD023143,
GTGLVESAGK	7	NONHSAT253456_82_208_lncRNA	1	ZAVOLAN,
IVENSLDAGATNIVMSPFLPATYR	4	NONHSAT121493_49_337_lncRNA	1	ZAVOLAN,

Peptide	Total Spectral Count	Transcript ID	Number of Datasets Found	Datasets Found
KAGSAWAVER	2	NONHSAT240897_66_258_lncRNA	1	ZAVOLAN,
LSPLEKNVGALGGK	14	NONHSAT185780_76_376_lncRNA	1	ZAVOLAN,
MTLLSQLDCSLQTSLMEGVAR	6	NONHSAT210055_1668_1734_lncRNA	1	ZAVOLAN,
SHAGILETLYSPGK	3	NONHSAT248938_796_1024_lncRNA	1	ZAVOLAN,
SLSDYNIQKESTLHLVLR	10	NONHSAT175015_70_697_lncRNA	1	ZAVOLAN,
SPGIDSNIDLR	4	NONHSAT094771_936_1527_lncRNA	1	ZAVOLAN,
GPLSPPNDLR	1	NONHSAT222357_796_1258_lncRNA, NONHSAT224532_724_1186_lncRNA	1	PXD032201,
GPAILMSPL	3	NONHSAT161705_7_403_lncRNA, NONHSAT161706_0_429_lncRNA	1	PXD023143,