

Supplemental Table 4

Ingenuity Pathway Analysis of Genome-wide shRNA Library Screen

Networks	Molecules in Network	Score	
Top Diseases and Functions			
Cellular Growth and Proliferation, Cell Cycle, Cellular Development	BAI3,BAP1,BCAS2,CDKN3,CUL7,Cyclin B,CYL2,DLG1,DUSP4,FBX05,FBXW8,FDP5,FZD8,GLMN,GSR,KSR1,MCM6,MCRS1,MGST2,P-TEFb,PPP1CC,PRPF19,RFLL1,RGS13,RFNF34,RPL111,RL23,SUPT5H,TP53,TP73,TP53,TRIM22,UCL1,1,VWOX,ZFP361	45	
Cell Death and Survival, Digestive System Development and Function, Organismal Development	BAG4,BCL2L1,BCL2L1,BCL7B,BCR (complex),caspase CD83,CPNE4,DDOST,FCER1A,GPX4,IFN Beta,Igm,Interferon,Ala,LARGE,LPXN,LTBR,M6PR,NFKB2,NFKB (complex),NGFR,NPC1,NR0B2,PPP2R5E,RNF141,RRML1,RL6,SPRY1,SPRY2,TLR9,TRAF1,TRIM13,TRC2D3,ZNF366	34	
Lipid Metabolism, Small Molecule Biochemistry, Cell Death and Survival	ABCC4,AK1,APLNR,APOB,ARHGEF4,B4GALT5,BECN1,C4A,C4B,CKXBR,CD36,CLNS1A,DDX47,Growth hormone,HNRNP1A1,HSF1,Hsp27,Hsp70,Hsp90,KIR2DS4 (includes others),KIR3DL1,KN2T2,LDL,LDLR,NEUS,PKK (complex),PKK (family),PLCG2,RC3TOR,SCAR1,SELE,SEU,AD,SNRP1,TAF11,TPN1,TUBA1C,AGTR2,BMP7,caldesin,CASP14,Caspase 3/7,Cg,Collagen(s),CSF2RA,EDN1,ESPL1,FASLG,FBLN2,FCGR2B,FJX1,FST,FAGTAB,Gm-csf,HSD3B1,IgG,IL1L1,IL12 (complex),MMP2,MRC1,P38,MAPK,PIA51,Rnr,RP53,RP524,RP5A,SRSF9,STAT2,TGFB1,Vegf,VIPR1,ZFP36	32	
Gene Expression, Inflammatory Disease, Connective Tissue Disorders	ADCY,AKAP1,Ap1,ARHGFEF,CCL27,CD3,CD39,CLC4C,CDP4,DUSP6,EDNR,ENPP1,ERK,ERK1/2,F	28	
Cellular Assembly and Organization, Cellular Function and Maintenance, Tissue Development	Actin,Fibronectin,GN11,IGKAP1,LCF2,LEP,MAPK,MEK,NCK1,NMUR1,Pka,PKA2,PPP2R2A,PSM56,PSMB8,RAP1A,SIAMH,STAH,TCR,THY1,TNFSF8,AHSP,CDCP1,COL4A6,Creb,CXCL1,CXCL2,ERCC8,ERMAP,estrogen receptor,Focal adhesion kinase,GB3,GPT,Histone h3,Histone h4,HLA-DQB1,HLA-DRB1,HTATSF1,ICAM3,IDI1,IFNL1,IL10R8,Immunoglobulin,LMO4,LOXL2,MCM3,MED20,p85 (pak3r),RBBP8,RNA polymerase	26	
Neurological Disease, Psychological Disorders, Cell-To-Cell Signaling and Interaction	ILRPL10A,SP3B2,SPTA1,STAT5ab,TJP3,UBC	23	
Embryonic Development, Organismal Development, Cellular Assembly and Organization	BCL2,BCL2L1,BNIP1,BRE,CHST12,CLASP1,CPD,CRTA1,DLX3,ETS2,FBX08,FUT9,GOS2,GADD45B,GLA,GREM1,HGFAC,HNF1A,HS3ST3B1,IL136RN,MAFF,NAPAN,EFM,PLA2G1B,PPP1R1A,PSEN1,PSMD7,RAB35,SDB5,SEC2B,STOX1,TNF,TREM1,VAMP3,ZNF155	20	
Inflammatory Response, Humoral Immune Response, Protein Synthesis	ACO2,ATIC,BCL6,C1QA,C1QC,CD48,CD72,CRBN,CTSC,EPB41L2,FCER1G,FCGR7,FGD2,FUT7,FZD4,GART,HRK,IFNG,IL13,IL37,IRF4,JA2,KIR2DL4,KLK1,KLRC1,LL	12	
DNA Replication, Recombination, and Repair, Cellular Growth and Proliferation, Embryonic Development	ABCC1,ACLS3,AMOTL2,B4GALT1,CAMK4,CCD14,GETN2,CSP4,EEJ,F5,F11,FOXO3,GNB2,GTSE1,HEY2,IL2RA,ITGB1,LIN9,MGAT1,MYBL2,NOTCH4,RAD23B,RNF111,SLC16A1,STAT6B,SVMY1,TACSTD2,TMEM126B,TP53,TTK,UXT,XPC,ZMYM6,ZNF24,ZNF507	12	
Cancer, Dermatological Diseases and Conditions, Gastrointestinal Disease	AIM1,CNN2,CPT1B,CRAT,CTNBB1,DEFAS,DKK3,DPEP1,EDN3,F13A1,GAD1,GPX2,HSD17BH,ILKRC3,IPN81,LDHB,MUC6,NA10,PCCA,PCDH11Y,PCR,PIGC,PIY,PLS3,PPP1R10,PTCH1,PTGDR,PTEN,OPCT,PCN1,SLC26A2,SNAPC1,TCF,TOB2	10	
Cellular Development, Cellular Growth and Proliferation, Gene Expression	ABH43,ABHD16A,STG2,CND1,CONE2,CDKN1C,Cipr,DDX5,EPNA5,FLJ1F57,GF3CA,HIC1,HIRA,HMG2,INS2,MLF,KRT10,LOC1196751,1et,7,LIN28A,LRRIIP1,MBD3,NCOA1,NRA42,POLD3,PPP1R12B,SERPINE5,Smed3,SMPDL3A,STXBPA1L1,TPG3,UGT1A9 (includes others),ZNF367	10	
Cell Morphology, Cellular Development, Embryonic Development	CCL14,CCL17,CNT2,CDH1,CNOT8,DDX5,EAF2,EWSR1,GAB2,GALNT3,GRB2,GF2H1,HAMP,IRS4,MED24,MED26,MEN1,MSX2,NTRK3,PIK3C2B,PLC gamma,POLR2A,PPD2,PUF60,RPL9,RPL18,SFRP4,Shc,SKAP2,STAT5B,SUPT1H,TAFA4,TAFA2,TLK2,ZNF141	10	
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	CABIN1,CDKN1B,CHKA,CCL17A1,CTSB,EGFR,EIF5A,ESR1,FAM188A,GPAM,HABP2,HBE1,HIF1A,IL6,IL37,IL11A,IL36G,LCAT,LRSAM1,mir-155-5p (miRNAs wiseec UAUUGCU),mir-218-5p (and other miRNAs wiseec	10	
Infectious Disease, Cell Death and Survival, Molecular Transport	UGUGCU),MPG,NAE1,NEU1,NR2F2,PK2,PLG,PKRAC2B,S100A10,SERPINF2,SIRT6,STC2,TFEB,TMEM56B,TWF1	10	
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Cell Death and Survival	APL2,APOLB,B4GALNT1,C19orf66,CA12,CD24,CHAC1,CLDN7,CPVL,DDX60,ENTPD1,EYAA4,GLS,GPATC11,HERC6,HNRNP2B1,IFI35,IFIT5,IFITM3,IFNA2,IFNL1,CN1,LCR9,LCNP1,LPR2,MIF,ATP6,M7,CD2,MUC3,OA51,RIMKB,SP110,TDRD7,TMEH140,TRIM14,TRIM31	9	
Cell Cycle, Cellular Assembly and Organization, DNA Replication, Recombination, and Repair	ABLIM,ACP2,ADCY7,ARHGFE5,ARPC1A,ATP9A,DUSP9,DYRK3,ERN1,FSH,GNLY,GNRH,HRK,IL1,LOC1891,LPCAT2,MT3,PDGF BB,PDXX,PLCL1,PLN3,POPS,PPF1A4,PIPH,PRKX,PRPF18,PSMC3,PSMD1,PSMD3,PTPRN,RLF3,NFK1,LMBIM6,TOB1,USP14	9	
Inflammatory Response, Cellular Movement, Immune Cell Trafficking	AKAP12,ALOX5,ATF3,AURKA,BAG5,BCRA1,BRINP3,CCNA2,CN81,CCNE1,CCDC25,CHUK,ERCC6L,EREG,FSCX3,ITGB1,KIF11,KIF23,KIF2C,KIFC1,MBD2,MICAL1,MFTMT,MYO18A,NUPR1,PLK1,PSMB3,RAB29,RAD51,RILF2,SL6,GALNAC6,STIL,STK36,TFAP2A,Y11	9	
Cancer, Hematological Disease, Immunological Disease	ARHGFE6,B9G,CCLE2A,DRB,CD39DC,CDK11A,CHST2,CHST4,CTSA,DLU1I,ELF1,ELF1,GLB1,GMFB,IL10RA,JAG2,LLR45,MMP8,NCSTN,NPR1,NTSC3,A,OASL,PAK1,PGA5 (includes others),PGM1,PTGS1,RHOJ,S100A8,SDC4,SPTBN5,TGM2,TNF,TNFAIP2	9	
Molecular Transport, RNA Trafficking, Gene Expression	26s Proteasome,Actin,Alpha tubulin,APP1,AR,ARQ2,CELF1,CTBP2,ELAVL1,FN1A,FNTA,B,Gen5,GLRX,GPAA1,GSN,HDAC6,IDE,LMOD1,mediator,PIGK,PIGT,PPID,PSMB1,PSMB5,RUVBL2,SEPT4,TAD2B,TGFB11,TP90,TPP1,TRAP1,TUBB3,TUBB2A,Ubiquitin,WIPF1	9	
Cardiovascular System Development and Function, Organismal Development, Developmental Disorder	ACACA,ALYREF,BIRC6,BRF1,C17orf85,CASP9,CDKN1A,CHTOP,CLA2,DDX39A,ERH,FHIT,FOXG1,GT2I,MRPS35,MTBP,MYC,NCBP1,NCBP2,PEB4,POLDIP3,P1MS,RNF148,RNF48,SRF,SRRT,TAT,THOC1,THOC2,THOC3,THOC5,THOC6,THOC7,TP1,ZC3H11A	9	
Cell Cycle, Cellular Movement, Cell Morphology	ADAR,BCL2L1,B.BKR8,CHAT,CRHR1,DAG1,DEAF1,DNAJC15,Extensin,FYB,GPRI1,HLA-E,IFIT5,IFIT4,IFIT3,IRF5,IRF5,IGL3,SBP,MAPK1,NR3C1,NUDT11,OA53,PDLIM2,PTX2,Pkd(s),POMGN1,PTGER3,PTK2B,SGPL1,SGPP1,SKAP1,SLC22A3,TNFRSF8,T,RMZ3,TRIM38	9	
Cancer, Cellular Movement, Cell Morphology	BICD2,CHEK1,COL8A1,DFB4,DLK1,DDX11,DYRK1B,E2F4,E2T2,EXOSC8,HAPLN1,KRAS,LAMP2,MTHFD1,MYC,MYCBP2,NEK8,NOXA1,NOXO1,PKN2,PKP2,PLCE1,POLR3A,POLR3C,POLR3F,PPP1R9,RAC1,RFK,SEMA3A,SSX2IP,TIAM1,TNFRSF10A,VP28,ZH2,ZNF217	8	
DNA Replication, Recombination, and Repair, Cellular Function and Maintenance, Hematological System Development and Function	ABLIM1,ALG6,ALG10,ARAF,SAC11,CBFB,CYP27,DRD3,DSG2,ENG,EWSR1,FGF17,FLNA,GATM,HMOX1,ICK,ITGB3,JUP,LCR,MAP7,MAP3K3,MGEA5,MMP14,NTHL1,PAK1,PLAU,PRKCG,PRDM1,SVL1,TFE3,TGFB1,TGFB2,TTCC2,VIM,YYH4G	8	
Protein Ubiquitination Pathway	ANPEP,Ap1,BRIP1,CASP8A2,CBLB,CXCR5,FAS,HERC2,LMX1B,MAP2K11,MSH6,NEED4,NKX6-1,NMNAT1,NPH5E,NPTN,NRXN1,OPRM1,PARP1,PCNA,PDGFA,PMS1,POLD1,RAPGEF4,RECQL5,RFC1,RFC2,RFC4,RNF20,SPARC,SRSF4,SRSF6,TGFB1,USP1,WDR48	8	
Canonical Pathways			
Chondroitin Sulfate Biosynthesis	-log(p-value)	Ratio	Molecules
Dermatan Sulfate Biosynthesis (Late Stages)	4.25 4.22E+00	0.173 1.95E-01	CHST2,B4GALT7,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1 CHST2,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1 HLA-DOA,HALEP,PK3C2G,CD83,IL37,HLA-DQB1,NFKB2,FCGR2B,TLR9,HLA-DRB1,PLCE1,NGFR,PLCG2,FCER1G,LTBR,PLCL1,IFNA5
Dendritic Cell Maturation	4.19E+00	1.01E-01	CHST2,B4GALT7,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1
Dermatan Sulfate Biosynthesis	4.12E+00	1.67E-01	CHST2,B4GALT7,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1
T Helper Cell Differentiation	4.09E+00	1.49E-01	STAT6,HLA-DOA,HLA-DRB1,TGFB1,NGFR,IL10RB,FCER1G,HLA-DQB1,BCL6,IL4
Heparan Sulfate Biosynthesis	4.05E+00	1.64E-01	CHST2,B4GALT7,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1
Chondroitin Sulfate Biosynthesis (Late Stages)	3.99E+00	1.82E-01	CHST2,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1
Heparan Sulfate Biosynthesis (Late Stages)	3.72E+00	1.67E-01	CHST2,GAL3ST2,HS3ST3B1,CHST4,HS6ST3,CHST12,SULT1B1,SULT2B1
Crosstalk between Dendritic Cells and Natural Killer Cells	3.68E+00	1.24E-01	KIR3DL1,HLA-DRB1,ICAM3,CD83,LTBR,NFKB2,TLR9,IFNA5,HLA-E,FASLG,IL4
Altered T Cell and B Cell Signaling in Rheumatoid Arthritis	3.39E+00	1.23E-01	HLA-DOA,HLA-DRB1,TGFB1,FCER1G,HLA-DQB1,NFKB2,IL37,TLR9,FASLG,IL4
Protein Ubiquitination Pathway	3.36E+00	7.87E-02	PSMB3,NEED4,USP14,PSMB5,PSMD7,MED20,UBC4B,BIRC6,USP1,PSMD3,PSMB8,PSMB6,USP2,6,UCLH1,UBE2D4,PSMB2,BAP1,PSMD1,UBC,PSM3C
Autoimmune Thyroid Disease Signaling	3.32E+00	1.67E-01	HLA-DOA,HLA-DRB1,FCER1G,HLA-DQB1,HLA-E,FASLG,IL4
Graft-versus-Host Disease Signaling	3.19E+00	1.59E-01	HLA-DOA,HLA-DRB1,FCER1G,HLA-DQB1,IL37,HLA-E,FASLG EC5T1,GAL3ST2,CHST4,CPT1B,IL37,CHST12,SULT2B1,CHST2,HS3ST3B1,NR0B2,SCARB1,MGST
LPS/IL-1 Mediated Inhibition of RXR Function	3.12E+00	8.17E-02	2,NGFR,HS6ST3,CPT1C,ABCC4,SULT1B1
Allograft Rejection Signaling	2.96E+00	1.46E-01	HLA-DOA,HLA-DRB1,FCER1G,HLA-DQB1,HLA-E,FASLG,IL4
Antioxidant Action of Vitamin C	2.88E+00	1.06E-01	PLCE1,PLA2G2D,LCAT,CSF2RA,PLCG2,PLA2G1B,NFKB2,STAT5B,PLCL1,GLRX
Antigen Presentation Pathway	2.85E+00	1.62E-01	HLA-DOA,PSMB5,HLA-DRB1,PSMB8,PSMB6,HLA-E
OX40 Signaling Pathway	2.65E+00	1.30E-01	CD3G,HLA-DOA,HLA-DRB1,FCER1G,HLA-DQB1,NFKB2,HLA-E RPL11,EIF3C,PIK3C2G,RPL23,RPL9,RPL10A,RPL6,PPP1CC,EIF3B,RPL30L,RP53,RPL18,RP2S4,RPSA
EIF2 Signaling	2.65E+00	8.14E-02	ARHGFE4,PLA2G1B,ARHGFE1,NFKB2,FCGR2B,RAP1A,HDAC6,ARHGFE5,CD3G,PPP1R12B,PLCE1,PLA2G2D,PLCG2,ARHGFE6,NFKB2,FCER1G,LCF2
Phospholipase C Signaling	2.62E+00	7.36E-02	CD3G,HLA-DOA,HLA-DRB1,NGFR,PIA51,FCER1G,HLA-DQB1,NFKB2,HLA-E,FASLG
Type I Diabetes Mellitus Signaling	2.49E+00	9.43E-02	GSR,GLRX
Glutathione Redox Reactions II	2.47E+00	6.67E-01	CD3G,HLA-DOA,HLA-DRB1,PLCG2,GN11,FCER1G,GNB2,PIK3C2G,FCER1A,NFKB2,HLA-DQB1,FCGR2B,LCF2
Role of NFAT in Regulation of the Immune Response	2.36E+00	7.83E-02	PPP2R2A,DUSP6,PLA2G1B,PIK3C2G,RAPGEF4,RAP1A,KSR1,PPP1CC,PPP1R10,PLA2G2D,PPP1R7,PLCG2,DUSP4,PPP2R5E
ERK/MAPK Signaling	2.34E+00	7.53E-02	R7,PLCG2,DUSP4,PPP2R5E
Breast Cancer Regulation by Statmin1	2.26E+00	1.37E-02	TP53,TUBB3,ARHGFE4,PPP2R2A,PIK3C2G,ARHGFE1,ARHGFE5,PPP1CC,PPP1R10,PPP1R7,ARHGFE16,GNB2,TUBA1C,PPP2R5E
Trans-amination/ Diphosphate Biosynthesis	2.18E+00	5.00E-01	FDP5,IDI1
Communication between Innate and Adaptive Immune Cells	2.18E+00	9.76E-02	HLA-DRB1,FCER1G,CD83,IL37,TLR9,IFNA5,HLA-E,IL4
Assembly of RNA Polymerase III Complex	2.17E+00	2.50E-01	GTFS3A,SP3A1,BRF1
Role of Pattern Recognition Receptors in Recognition of Bacteria and Viruses	2.14E+00	8.40E-02	OAS1,TGFB1,PLCG2,PIK3C2G,C1QC,C1QA,NFKB2,TLR9,IFNA5,IL4
Atherosclerosis Signaling	2.11E+00	8.33E-02	SELE,APOB,PLA2G2D,LCAT,TGFB1,CD36,PLA2G1B,NFKB2,IL37,ALOXE3 PPP1CC,APOB,PPP1R10,PPP1R7,PPP2R2A,NGFR,PLCG2,PIK3C2G,ARG2,PPP2R5E,NFKB2,RAP1,IL4
Production of Nitric Oxide and Reactive Oxygen Species in Macrophages	2.09E+00	7.26E-02	C4A/C4B,APOB,LDLR,LCAT,NGFR,CD36,ACACA,ARG2,NFKB2,IL37
LXR/RXR Activation	2.09E+00	8.26E-02	PLCE1,PLA2G2D,LCAT,PLCG2,PLA2G1B,PLCL1
Phospholipase C Signaling	2.01E+00	1.11E-01	CAPN5,TP53,PLCG2,BIRC6,BCL2L1,NFKB2,BCL2L1,FASLG
Apoptosis Signaling	2.00E+00	9.09E-02	TUBB3,STK36,GN11,PIK3C2G,MMP2,NCK1,RAP1A,HERC2,FZD8,MICAL1,SRGAP3,PLCE1,SEMA4,ARPC1A,FZD4,NTRK3,NGFR,EFNA5,PLCG2,GNB2,TUBA1C,BMP7,PLCL1,PTCH2
Axonal Guidance Signaling	1.97E+00	6.56E-02	KIR3DL1,KIR2DS4 (includes others),PLCG2,PIK3C2G,FCER1G,KLCA3,NCK1,LCF2,KLRC1
Natural Killer Cell Signaling	1.95E+00	8.33E-02	ARHGFE5,ARHGFE4,PPP1R7,PLCE1,ARHGFE16,PLCG2,GN11,GNB2,PIK3C2G,GATA6,ARHGFE1,NFKB2,PLCL1
Thrombin Signaling	1.94E+00	6.95E-02	GPAM,AGPAT2,AGPAT1
CDP-diacetylglucosyl Biosynthesis I	1.88E+00	2.00E-01	

Protein Kinase A Signaling 1.84E+00
CD28 Signaling in T Helper Cells 1.83E+00
PKC δ Signaling in T Lymphocytes 1.83E+00
Sperm Motility 1.83E+00
D-myo-inositol-5-phosphate Metabolism 1.77E+00
Synaptic Long Term Potentiation 1.76E+00
Tec Kinase Signaling 1.76E+00
Synaptic Long Term Depression 1.75E+00
Endothelin-1 Signaling 1.73E+00
Phosphatidylglycerol Biosynthesis II (Non-plastidic) 1.73E+00
ICOS/ICOSL Signaling in T Helper Cells 1.62E+00
IL-15 Signaling 1.61E+00
Triacylglycerol Biosynthesis 1.61E+00
Systemic Lupus Erythematosus Signaling 1.59E+00
Sphingosine and Sphingosine-1-phosphate Metabolism 1.55E+00
CTLA4 Signaling in Cytotoxic T Lymphocytes 1.55E+00
Endothelin-1 Signaling 1.55E+00
Nur77 Signaling in T Lymphocytes 1.54E+00
TREM1 Signaling 1.53E+00
Basal Cell Carcinoma Signaling 1.53E+00
Cdc42 Signaling 1.50E+00
Fc Epsilon RI Signaling 1.49E+00
Interferon Signaling 1.48E+00
Toll-like Receptor Signaling 1.45E+00
JAK/Stat Signaling 1.45E+00
Glycogen Degradation II 1.45E+00
Lymphotxin β Receptor Signaling 1.45E+00
Cardiac β -adrenergic Signaling 1.44E+00
Chronic Myeloid Leukemia Signaling 1.43E+00
IL-4 Signaling 1.43E+00
Doxamine-DARPP32 Feedback in cAMP Signaling 1.38E+00
Dolichyl-diphosphooligosaccharide Biosynthesis 1.36E+00
Calcium-induced T Lymphocyte Apoptosis 1.33E+00
Dopamine Receptor Signaling 1.33E+00
Superpathway of Inositol Phosphate Compounds 1.32E+00
MIF Regulation of Innate Immunity 1.31E+00
Induction of Apoptosis by HIV1 1.31E+00
D-myo-inositol (1,4,5,6)-Tetraakisphosphate Biosynthesis 1.30E+00
D-myo-inositol (3,4,5,6)-Tetraakisphosphate Biosynthesis 1.30E+00
Glycogen Degradation III 1.29E+00
Ceramide Signaling 1.26E+00
Xenobiotic Metabolism Signaling 1.26E+00
Epithelial Adherens Junction Signaling 1.26E+00
PPAR α /RXR α Activation 1.26E+00
Granulocyte Adhesion and Diapedesis 1.26E+00
Wnt/ β -catenin Signaling 1.24E+00
3-phosphoinositide Biosynthesis 1.21E+00
IL-15 Production 1.21E+00
Mitotic Roles of Polo-Like Kinase 1.21E+00
B Cell Development 1.17E+00
Hepatic Fibrosis/ Hepatic Stellate Cell Activation 1.15E+00
Remodeling of Epithelial Adherens Junctions 1.14E+00
Role of p14/p19ARF in Tumor Suppression 1.13E+00
CCR5 Signaling in Macrophages 1.11E+00
Neurotrophin/Trk Signaling 1.11E+00
IL-10 Signaling 1.09E+00
AMPK Signaling 1.08E+00
Cytotoxic T Lymphocyte-mediated Apoptosis of Target Cells 1.06E+00
3-phosphoinositide Degradation 1.04E+00
G-Protein Coupled Receptor Signaling 1.03E+00
Small Cell Lung Cancer Signaling 1.03E+00
Inhibition of Angiogenesis by TSP1 1.03E+00
Complement System 1.03E+00
Role of Cytokines in Mediating Communication between Immune Cells 1.00E+00
14-3-3-mediated Signaling 1.00E+00
Signaling by Rho Family GTPases 9.99E-01
TWEAK Signaling 9.99E-01
MIF-mediated Glucocorticoid Regulation 9.99E-01
Superpathway of Geranylgeranylphosphate Biosynthesis I (via Mevalonate) 9.96E-01
Leptin Signaling in Obesity 9.91E-01
Molecular Mechanisms of Cancer 9.76E-01
BMP signaling pathway 9.73E-01
p70S6K Signaling 9.71E-01
IL-9 Signaling 9.69E-01
Regulation of eIF4 and p70S6K Signaling 9.56E-01
Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis 9.51E-01
Mitochondrial L-carnitine Shuttle Pathway 9.51E-01
Tight Junction Signaling 9.48E-01
Role of CHK Proteins in Cell Cycle Checkpoint Control 9.35E-01
p53 Signaling 9.35E-01
CDK5 Signaling 9.35E-01
cAMP-mediated signaling 9.26E-01
Cytokines and Cell Cycle Regulation 9.19E-01
NF- κ B Signaling 9.13E-01
Regulation of IL-2 Expression in Activated and Anergic T Lymphocytes 9.01E-01
HIF1 α Signaling 8.89E-01
Reelin Signaling in Neurons 8.84E-01
Thyroid Cancer Signaling 8.37E-01
Role of JAK1 and JAK3 in β Cytokine Signaling 8.35E-01
Role of Lipids/Lipid Rafts in the Pathogenesis of Influenza 8.34E-01
Huntington's Disease Signaling 8.30E-01
ICoF Signaling 8.19E-01
Eicosanoid Signaling 8.17E-01
Ovarian Cancer Signaling 8.13E-01
IL-12 Signaling and Production in Macrophages 8.01E-01
GM-CSF Signaling 7.99E-01
Sphingosine-1-phosphate Signaling 7.93E-01
Fc γ RIIB Signaling in B Lymphocytes 7.91E-01
Relaxin Signaling 7.90E-01

5.71E-02
7.96E-02
7.96E-02
7.96E-02
7.96E-02
7.96E-02
7.96E-02
7.05E-02
7.96E-02
6.55E-02
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9.09E-02
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6.25E-02
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7.32E-02
5.30E-02
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SDGPP1,ASAH2
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OAS1,PIAS1,PSMB8,IFNA5
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PGM1,AGL
PIK3C2G,CXCL1,LTBR,NFKB2,TRAF1
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HDAC6,TP53,TGFB1,CTBP2,PIK3C2G,NFKB2,STAT5B
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ALG3,ALG6
CD3G,HLA-DOA,HLA-DRB1,FCER1G,HLA-DQB1
PPP1CC,PPP1R10,PPP1R7,PPP2R2A,PPP2R5E,DRD3
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TGFB1,IL37,IFNA5,IL4
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CSF2RA,PIK3C2G,STAT5B,BCL2A1
PLCE1,PLCG2,PIK3C2G,PLCL1,CASP14,ASAH2
PLCG2,PIK3C2G,FCGR2B
NPR1,GNAA11,PDE1B,GNB2,PIK3C2G,NFKB2,RAP1A

Cell Cycle: G1/S Checkpoint Regulation	7.81E-01	6.35E-02	HDAC6,RPL11,TP53,TGFBI
Hypoxia Signaling in the Cardiovascular System	7.81E-01	6.35E-02	UBE2D,TP53,EDN1,BIRC6
Role of NANOG in Mammalian Embryonic Stem Cell Pluripotency	7.80E-02	7.80E-02	TP53,FZD8,FZD4,PIK3C2G,GATA6,BMP7
mTOR Signaling	7.77E-01	4.95E-02	EIF3C,EIF3B,PPP2R2A,PIK3C2G,PPP2R5E,RICTOR,RPS3,RPSA,RPS24
UVA-Induced MAPK Signaling	7.61E-01	5.75E-02	TP53,PLCE1,PLCG2,PIK3C2G,PLCL1
Any Hydrocarbon Receptor Signaling	7.55E-01	5.19E-02	TP53,MGST2,NR0B2,TP73,TGFB1,NFKB2,FASLG
Angiopoietin Signaling	7.47E-01	6.15E-02	PIK3C2G,NCK1,NFKB2,STAT5B
CCR3 Signaling in Eosinophils	7.30E-01	5.31E-02	PPP1R12B,PLA2G2D,PLA2G1B,GNB2,PIK3C2G,CCL24
Hematopoiesis from Pluripotent Stem Cells	7.28E-01	6.82E-02	CD3G,FCER1G,IL4
PPAR Signaling	7.19E-01	5.56E-02	NR0B2,NGFR,NFKB2,IL37,STAT5B
Erythropoietin Signaling	7.15E-01	5.97E-02	PLCG2,PIK3C2G,NFKB2,STAT5B
IL-22 Signaling	7.09E-01	8.33E-02	IL10RB,STAT5B
Tumoricidal Function of Hepatic Natural Killer Cells	7.09E-01	8.33E-02	M6PR,FASLG
Role of JAK1, JAK2 and TYK2 in Interferon Signaling	7.09E-01	8.33E-02	NFKB2,IFNA5
Role of Oct4 in Mammalian Embryonic Stem Cell Pluripotency	7.08E-01	6.67E-02	TP53,PPP1R8,NR2F2
Chemokine Signaling	7.00E-01	5.89E-02	PPP1R12B,PLCG2,PIK3C2G,CCL24
Renal Cell Carcinoma Signaling	6.85E-01	5.80E-02	TGFB1,PIK3C2G,UBC,RAP1A
p38 MAPK Signaling	6.84E-01	5.13E-02	TP53,PLA2G2D,TGFB1,PLA2G1B,IL37,FASLG
Pyrimidine Ribonucleotides Interconversion	6.82E-01	8.00E-02	ENTPD1,ENTPD2
Fcγ Receptor-mediated Phagocytosis in Macrophages and Monocytes	6.80E-01	5.38E-02	ARPC1A,VAMP3,PIK3C2G,NCK1,LCP2
HMG21 Signaling	6.73E-01	5.08E-02	SELE,TGFB1,NGFR,PIK3C2G,NFKB2,IL4
P2Y Purigenic Receptor Signaling Pathway	6.73E-01	5.08E-02	PLCE1,PLCG2,GNB2,PIK3C2G,NFKB2,PLCL1
Antiproliferative Role of TOG in T Cell Signaling	6.57E-01	7.69E-02	TGFB1,TOG1
Thyroid Hormone Metabolism II (via Conjugation and/or Degradation)	6.57E-01	7.69E-02	SULT1B1,UGT1A9 (includes others)
D-erythro-inositol (1,4,5)-trisphosphate Biosynthesis	6.56E-01	7.69E-02	PLCE1,PLCG2
PDFR Signaling	6.56E-01	5.63E-02	TP53,PIK3C2G,NFKB2,FASLG
Ephrin A Signaling	6.53E-01	6.25E-02	EFNA5,NGFR,PIK3C2G
Glioblastoma Multiforme Signaling	6.51E-01	4.83E-02	TP53,FZD8,PLCE1,FZD4,PLCG2,PIK3C2G,PLCL1
Glia Signaling	6.51E-01	5.00E-02	APLN,NR,PTGER3,GNB2,DRD3,RAP1A,AGTR2
Talimasepa Signaling	6.44E-01	5.21E-02	HDAC6,TP53,PPP2R2A,PIK3C2G,PPP2R5E
RhoGDI Signaling	6.37E-01	4.65E-02	ARHGEF5,ARHGEF4,ARPC1A,PPP1R12B,ARHGEP16,GNAA11,GNB2,ARHGEF1
Cell Cycle Control of Chromosomal Replication	6.33E-01	7.41E-02	MCM3,MCM6
Pyrimidine Ribonucleotides De Novo Biosynthesis	6.33E-01	7.41E-02	ENTPD1,ENTPD2
Superpathway of Cholesterol Biosynthesis	6.33E-01	7.41E-02	FDPS,IDI1
PI3K Signaling in B Lymphocytes	6.20E-01	4.88E-02	PLCE1,PLCG2,NFKB2,FCGR2B,PLCL1,IL4
Agranulocyte Adhesion and Diapedesis	6.12E-01	4.57E-02	SELE,CCL27,CCL24,CCL14,MMP2,CXCL1,IL37,CXCL2
Cellular Effects of Sildenafil (Viagra)	6.10E-01	4.84E-02	PLCE1,PPP1R12B,SLC4A11,PLCG2,PDE1B,PLCL1
TNFR2 Signaling	6.10E-01	7.14E-02	NFKB2,TRAF1
FXR/RXR Activation	6.00E-01	4.80E-02	C4A/C4B,APOB,SCARB1,LCAT,NR0B2,IL37
Gap Junction Signaling	5.96E-01	4.64E-02	TUBB3,PLCE1,PLCG2,NPR1,PIK3C2G,TUBA1C,PLCL1
Acute Myeloid Leukemia Signaling	5.89E-01	5.26E-02	CSF2RA,PIK3C2G,NFKB2,STAT5B
VEGF Family Ligand-Receptor Interactions	5.89E-01	5.26E-02	PLA2G2C,PLCG2,PLA2G1B,PIK3C2G
Conic Hedgehog Signaling	5.88E-01	6.90E-02	STK36,PTCH2
Colorectal Cancer Metastasis Signaling	5.84E-01	4.69E-02	TP53,FZD8,FZD4,TGFB1,PTGER3,GNB2,PIK3C2G,MMP2,NFKB2,TLR9
Insulin Receptor Signaling	5.71E-01	4.69E-02	PPP1C8,PPP1R10,PPP1R7,PIK3C2G,STXB4,NCK1
Role of IL-17A in Arthritis	5.57E-01	5.56E-02	PIK3C2G,CXCL1,NFKB2
Regulation of the Epithelial-Mesenchymal Transition Pathway	5.56E-01	4.40E-02	FGF17,FZD8,NOTCH4,FZD4,TGFB1,PIK3C2G,MMP2,NFKB2
Sperm Cell-Seminal Cell Junction Signaling	5.53E-01	4.40E-02	TUBB3,AGGF1,TGFB1,ACTN3,PIK3C2G,TUBA1C,IQGAP1
4-1BB Signaling in T Lymphocytes	5.47E-01	6.45E-02	NFKB2,TRAF1
G Protein Signaling Mediated by Tubby	5.47E-01	6.45E-02	PLCG2,GNB2
Human Embryonic Stem Cell Pluripotency	5.44E-01	4.58E-02	FZD8,FZD4,TGFB1,NTRK3,PIK3C2G,BMP7
Thrombopoietin Signaling	5.43E-01	5.45E-02	PLCG2,PIK3C2G,STAT5B
Clastrin-mediated Endocytosis Signaling	5.41E-01	4.95E-02	FGF17,AP0B,LDLR,ARPC1A,CLTA,PIK3C2G,STAM,UBC
Actin Nucleation by ARP-WASP Complex	5.29E-01	5.38E-02	ARPC1A,PPP1R12B,NCK1
ErbB2-ErbB3 Signaling	5.29E-01	5.38E-02	PIK3C2G,NRG4,STAT5B
Role of Tissue Factor in Cancer	5.25E-01	4.67E-02	TP53,GNAA11,PIK3C2G,CXCL1,STAT5B
Diler of Osteoblasts, Osteoclasts and Chondrocytes in Rheumatoid Arthritis	5.18E-01	4.21E-02	FZD8,FZD4,DKK3,TGFB1,NGFR,PIK3C2G,BMP7,IL37,IL4
Corticotropin Releasing Hormone Signaling	5.16E-01	4.63E-02	PLCG2,NPR1,RAP1A,PTCH2,FASLG
Myc Mediated Apoptosis Signaling	5.02E-01	5.17E-02	TP53,PIK3C2G,FASLG
ErbB4 Signaling	5.02E-01	5.17E-02	PLCG2,PIK3C2G,NRG4
ATM Signaling	4.89E-01	5.08E-02	TP53,TP73,TLK2
TRXR/RXR Activation	4.86E-01	4.71E-02	LDLR,SCARB1,PIK3C2G,ACACA
ErbB Signaling	4.86E-01	4.71E-02	PLCG2,PIK3C2G,NRG4,NCK1
Leukocyte Extravasation Signaling	4.77E-01	4.15E-02	ICAM3,PLCG2,ACTN3,PIK3C2G,THY1,MMP2,RAPGEF4,RAP1A
Activation of IRF by Cytosolic Pattern Recognition Receptors	4.77E-01	5.00E-02	NFKB2,ADAR,IFNA5
Antiproliferative Role of Somatostatin Receptor 2	4.77E-01	5.00E-02	NPR1,GNB2,PIK3C2G
Cell Cycle Regulation by BTG Family Proteins	4.76E-01	5.71E-02	PPP2R2A,PPP2R5E
tRNA Splicing	4.76E-01	5.71E-02	PDE1B,TRPT1
TGF-β Signaling	4.66E-01	4.60E-02	RNF111,TGFB1,BMP7,PITX2
Role of PI3K/AKT Signaling in the Pathogenesis of Influenza	4.65E-01	4.92E-02	PIK3C2G,NFKB2,IFNA5
Integrin Signaling	4.64E-01	4.10E-02	CAPN5,ARPC1A,PPP1R12B,PLCG2,ACTN3,PIK3C2G,NCK1,RAP1A
Estrogen-Dependent Breast Cancer Signaling	4.53E-01	4.84E-02	PIK3C2G,NFKB2,STAT5B
Factors Promoting Cardiogenesis in Vertebrates	4.47E-01	4.49E-02	FZD8,FZD4,TGFB1,BMP7
Notch Signaling	4.45E-01	5.41E-02	NOTCH4,HEY2
B Cell Receptor Signaling	4.42E-01	4.09E-02	PLCG2,PIK3C2G,NFKB2,FCGR2B,BCL6,BCL2A1,RAP1A
Ephrin Receptor Signaling	4.35E-01	4.07E-02	ARPC1A,EFNA5,GNAA11,GNB2,PIK3C2G,NCK1,RAP1A
CD40 Signaling	4.31E-01	4.69E-02	PIK3C2G,NFKB2,TRAF1
IL-17A Signaling in Airway Cells	4.31E-01	4.69E-02	PIK3C2G,CXCL1,NFKB2
Apoptin Mediated Signaling	4.30E-01	5.26E-02	NFKB2,TRAF1
IL-1 Signaling	4.28E-01	4.28E-02	ECSIT,GNAA11,GNB2,NFKB2
Glucocorticoid Receptor Signaling	4.20E-01	3.88E-02	CD3G,SELE,TAF1,VIPR1,TGFB1,PIK3C2G,TAT,STAT5B,TSXC22D3,IL4
Non-Small Cell Lung Cancer Signaling	4.20E-01	4.62E-02	TP53,FHIT,PIK3C2G
Docosahexaenoic Acid (DHA) Signaling	4.16E-01	5.13E-02	PIK3C2G,BCL2A1
SAPK/JNK Signaling	4.11E-01	4.30E-02	TP53,PIK3C2G,FCER1G,DUSP4
Role of MAPK Signaling in the Pathogenesis of Influenza	4.10E-01	4.10E-02	PLA2G2D,LCAT,PLA2G1B
Role of NFAT in Cardiac Hypertrophy	4.10E-01	3.98E-02	HDAC6,PLCE1,TGFB1,PLCG2,GNB2,PIK3C2G,PLCL1
NRF2-mediated Oxidative Stress Response	4.03E-01	3.95E-02	GSR,USP14,SCARB1,MGST2,PIK3C2G,ABCC4,BACH1
Role of PKR in Interferon Induction and Antiviral Response	4.03E-01	5.00E-02	TP53,NFKB2
B Cell Activating Factor Signaling	4.03E-01	4.03E-02	NFKB2,TRAF1
Transcriptional Regulatory Network in Embryonic Stem Cells	4.03E-01	5.00E-02	GATA6,SMARCD1
Mouse Embryonic Stem Cell Pluripotency	4.02E-01	4.26E-02	TP53,FZD8,FZD4,PIK3C2G
Melatonin Signaling	3.90E-01	4.41E-02	PLCE1,PLCG2,PLCL1
GDNF Family Ligand-Receptor Interactions	3.90E-01	4.41E-02	PLCG2,PIK3C2G,NCK1
Macropinocytosis Signaling	3.90E-01	4.41E-02	NRF2,PLCG2,PIK3C2G
Role of RIG-I-like Receptors in Antiviral Innate Immunity	3.90E-01	4.88E-02	NFKB2,IFNA5
Mechanisms of Viral Exit from Host Cells	3.90E-01	4.88E-02	NEDD4,VPS28
Role of Hypercytokinemia/hyperchemokinaemia in the Pathogenesis of Influenza	3.90E-01	4.88E-02	IL37,IFNA5
Role of IL-17F in Allergic Inflammatory Airway Diseases	3.85E-01	3.90E-02	CXCL1,NFKB2
T Cell Receptor Signaling	3.85E-01	4.17E-02	CD3G,PIK3C2G,NFKB2,LCP2
Growth Hormone Signaling	3.80E-01	4.35E-02	PLCG2,PIK3C2G,STAT5B
Melanoma Signaling	3.77E-01	4.76E-02	TP53,PIK3C2G
Actin Cytoskeleton Signaling	3.76E-01	3.81E-02	FGF17,ARHGEF4,ARPC1A,PPP1R12B,ACTN3,PIK3C2G,ARHGEF1,IQGAP1
Estrogen Receptor Signaling	3.64E-01	4.04E-02	TAF1,MED12,NR0B2,TRRAP,CTBP2
Neuropathic Pain Signaling In Dorsal Horn Neurons	3.62E-01	3.04E-02	PLCE1,PLCG2,PIK3C2G,PLCL1
IL-3 Signaling	3.62E-01	4.23E-02	STAT6,PIK3C2G,STAT5B
FLT3 Signaling in Hematopoietic Progenitor Cells	3.62E-01	4.23E-02	STAT6,PIK3C2G,STAT5B
Hepatic Cholestasis	3.48E-01	3.80E-02	NR0B2,TGFB1,NGFR,NFKB2,IL37,IL4

Prolactin Signaling	3.44E-01
Role of Wnt/GSK-3 β Signaling in the Pathogenesis of Influenza	3.44E-01
Rac Signaling	3.33E-01
nNOS Signaling in Neurons	3.32E-01
Melatonin Degradation I	3.21E-01
HER-2 Signaling in Breast Cancer	3.19E-01
Pancreatic Adenocarcinoma Signaling	3.13E-01
MLP Signaling in Neutrophils	3.06E-01
Renin-Angiotensin Signaling	3.00E-01
Glucagon Signaling	3.00E-01
Prostate Cancer Signaling	2.89E-01
CREB Signaling in Neurons	2.89E-01
Hereditary Breast Cancer Signaling	2.76E-01
Endometrial Cancer Signaling	2.75E-01
Serotonin Degradation	2.75E-01
Superpathway of Melatonin Degradation	2.75E-01
UVB-Induced MAPK Signaling	2.67E-01
IL-2 Signaling	2.67E-01
Sertoli Cell-Sertoli Cell Junction Signaling	2.66E-01
Type II Diabetes Mellitus Signaling	2.64E-01
Gli3 Signaling	2.60E-01
IL-6 Signaling	2.53E-01
Regulation of Cellular Mechanics by Calpain Protease	2.51E-01
Neuregulin Signaling	2.50E-01
Bladder Cancer Signaling	2.50E-01
FAK Signaling	2.50E-01
G Beta Gamma Signaling	2.38E-01
Glioma Invasiveness Signaling	2.36E-01

Upstream Regulators

Upstream Regulator	Molecule Type
BIRC5	other
SREBF1	transcription regulator
IFNG	cytokine
TNF	cytokine
miR-24	microRNA
miR-29b-3p (and other miRNAs w/seed AGCAACA)	mature microRNA
ELF1	transcription regulator
Igm	complex
TFAP2A	transcription regulator
NPPB	other
TREM1	transmembrane receptor
Cg	complex
TP53	transcription regulator
SMC3	other
MTTP	transporter
CD40	transmembrane receptor
IgG	complex
ELAVL1	other
GATA6	transcription regulator
PROC	peptidase
IL17F	cytokine
TGM2	enzyme
IL1B	cytokine
HNRNP2B1	other
HNF1A	transcription regulator
E2F1	transcription regulator
ITGAV	ion channel
MBD3	other
JAG2	growth factor
GAPDH	enzyme
L1CAM	other
F10	peptidase
Jnk	group
SLC5A8	transporter
PCM1	other
miR-542-3p (miRNAs w/seed GUGACAG)	mature microRNA
HEY1	transcription regulator
FSH	complex
IL17A	cytokine
RNA polymerase II	complex
ADCY	group
HEXIM1	transcription regulator
NOTCH2	transcription regulator
SCUBE3	other
STAU1	transporter
ZAP70	kinase
IL33	cytokine
LDL	complex
HMG81	other
LIPG	enzyme
SREBF2	transcription regulator
KRAS	enzyme
E2F3	transcription regulator
SP1	transcription regulator
LPL	enzyme
SPINT2	other
CD40LG	cytokine
RBL1	transcription regulator
RELA	transcription regulator
IL3	cytokine
S100A6	transporter
E2F4	transcription regulator

Bio Functions

Categories	Diseases or Functions Annotation
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4.11E-02	PLCG2,PIK3C2G,STAT5B
4.11E-02	FZD8,FZD4,IFNA5
3.88E-02	ARPC1A,PIK3C2G,NFKB2,IQGAP1
4.38E-02	CAPN5,DLG2
4.26E-02	SULT1B1,UGT1A9 (includes others)
3.95E-02	TP53,PIK3C2G,MMP2
3.77E-02	TP53,TGFB1,PIK3C2G,NFKB2
3.74E-02	ARPC1A,GNB2,PIK3C2G,NFKB2
3.70E-02	PLCG2,PIK3C2G,NFKB2,AGTR2
3.70E-02	VIPR1,GNB2,RAPGEF4,RAP1A
3.75E-02	TP53,PIK3C2G,NFKB2
3.65E-02	PLCE1,PLCG2,GN11,GNB2,PIK3C2G,PLCL1
3.57E-02	HDAC6,TP53,PIK3C2G,UBC
3.85E-02	TP53,PIK3C2G
3.85E-02	SULT1B1,UGT1A9 (includes others)
3.85E-02	SULT1B1,UGT1A9 (includes others)
3.77E-02	TP53,PIK3C2G
3.77E-02	PIK3C2G,STAT5B
3.45E-02	DLG1,TUBB3,TJP3,AGGF1,ACTN3,TUBA1C
3.51E-02	NGFR,CD36,PIK3C2G,NFKB2
3.45E-02	PLCG2,GN11,GNB2,PIK3C2G,NFKB2
3.45E-02	NGFR,PIK3C2G,NFKB2,IL37
3.64E-02	CAPN5,ACTN3
3.49E-02	PLCG2,NR4,STAT5B
3.49E-02	FSF1,TP53,MMP2
3.49E-02	CAPN5,PLCG2,PIK3C2G
3.41E-02	PLCG2,GN11,GNB2
3.51E-02	PIK3C2G,MMP2

p-value of overlap Target molecules in dataset

2.68E-04	FASLG,TP53,TP73
5.83E-04	ACACA,FDP5,GSR,LDLR,NR0B2,PLS3,RPS24
8.23E-04	BCL2A1,BEEN1,C10A,C10C,CXCL1,CXCL2,DPP4,FCER1G,HLA-DOB1,HRK,LARGE,LGALS9,MMP2,OAS1,PSMB8,SELE,SF3A1,TP73,TRIM22,VIPR1
8.86E-04	BCL2A1,CCL27,CD83,CHST2,CHST4,CXCL1,CXCL2,DPP4,EDN1,FST,GPX4,MCM3,MMP2,NCK1,NFKB2,NR0B2,OAS1,PSMB8,SCARB1,SELE,TGFB1,TP53,TP533,TRAF1,TSC2D3,VIPR1
9.25E-04	SPRY2,TGFB1
1.19E-03	CN0T8,GMBF,LOXL2,MYBL2,ZFP36L1
1.40E-03	CDK11A,FCER1G,TLR9
1.67E-03	BCL2A1,FCGR2B,NFKB2,TRAF1,ZFP36L1
1.82E-03	CXCL1,CXCL2,ITGBL1,MMP2,PPP2R2A,TPM3
1.85E-03	HSD3B1,IDI1,LDLR,SCARB1
2.05E-03	BRE,CD83,CR7AM,CXCL1,CXCL2,DUSP4,EDN1,GREM1,HS3ST3B1,NPC1,RGS13,SNAPC1,SPRY2
2.61E-03	DUSP6,FASLG,FJX1,FST,GATA6,HSD3B1,MMP2,SPRY2,TP53
3.81E-03	BAI3,BAP1,CDKN3,CXCL1,CYLC2,DLG1,DUSP4,FASLG,FDP5,GSR,KSR1,MCM3,MCM6,MOG2,MMP2,NFKB2,NR0B2,OAS1,PPP1CC,RGS13,TGFB1,TNFRSF10A,TP53,TP533,TP73,TRIM22,ZFP36
5.33E-03	L1
5.33E-03	HLA-DQB1,HLA-DRB1
6.54E-03	AP0B,GPT
7.24E-03	BCL2A1,BCL6,CD83,FASLG,FCGR2B,NFKB2,RGS13,TP53
7.24E-03	EDN1,FCGR2B,FST,HLA-E,LDLR,PLS3,TACSTD2,TOBI,ZFP36
7.56E-03	ARG2,CD83,IL4,MYBL2,PLCG2,TP53
7.95E-03	EDN1,FASLG,TGFB1
8.70E-03	MMP2,TP53
8.70E-03	CXCL1,TGFB1
8.80E-03	BCL2A1,BCL6,CCL24,CD36,FCER1G,ICAM3,LGALS9,MMP2,OAS1,PGA5 (includes others),TGFB1,TP53,TRIM22
8.85E-03	AP0B,BCL2A1,CXCL1,CXCL2,DPP4,EDN1,ENPP1,LDLR,NR0B2,SELE,TGFB1,TOB1
9.22E-03	CPVL,ENTPD1,EYA4,FZD8,NTRK3,OAS1,RIMKLB,TLR1,TRIM31,WV0X
1.00E-02	BCL6,CPO,FBX08,FUT9,HGFAC,NAPA,NR0B2,UGT1A9 (includes others),ZNF155
1.09E-02	DUSP4,EYA4,MCM3,MCM6,MYBL2,NKX6-1,PPP1R8,RBBP8,STAM,TP53,TP73
1.17E-02	MMP2,TGFB1,TP53
1.17E-02	ABHD16A,DPP4,EFNA5
1.24E-02	BCL6,CCL24,CCR8,CXCL1
1.24E-02	CXCL1,ENPP1,FCER1G,OAS1
1.28E-02	ID1,MMP2
1.28E-02	MMP2,SELE
1.41E-02	CD83,EDN1,GATA6,MMP2,TGFB1,ZFP36
1.76E-02	TNFRSF10A,TP53
1.76E-02	MCM3,TP53
1.76E-02	RPL11,TP53
1.76E-02	NR2F2,TP53
1.77E-02	ARHGFE5,ARPC1A,BEEN1,DUSP3,GATA6,HSD3B1,LDLR,MMP2,PLCL1,PSMD1,PSMD3,SCARB1,TM6IM6,TOB1,TP53
1.91E-02	BCL2A1,CXCL1,CXCL2,MRC1
2.12E-02	CXCL2,GPT,LDLR,MCM3,MMP2,RBBP8,RPL10A,TGFB1
2.29E-02	LEP,TP53
2.29E-02	LOXL2,TP53
2.29E-02	HEY2,TP53
2.29E-02	MMP2,TGFB1
2.29E-02	ALOX5,CASP14
2.29E-02	IL4,TSC2D3
2.48E-02	CD36,IL4,SCARB1
2.54E-02	CD36,NPC1,SCARB1,TGFB1
2.81E-02	CD36,HLA-DRB1,MRC1
3.54E-02	CD36,LDLR
3.54E-02	FDP5,LDLR
3.82E-02	DUSP4,DUSP6,TNFRSF10A,TP53
3.93E-02	MYBL2,PPP1R8,TP73
4.12E-02	C10C,C5F2RA,DUSP6,PSMB8
4.24E-02	LDLR,SCARB1
4.24E-02	HABP2,TGFB1
4.29E-02	BCL6,CD83,FCGR2B,NFKB2,TRAF1,ZFP36L1
4.34E-02	MYBL2,PPP1R8,TP53
4.71E-02	BECN1,CXCL1,CXCL2,EDN1,FASLG,NFKB2,TGFB1,TP53
4.78E-02	CD83,FCGR2B,IL4
4.78E-02	CDKN3,CXCL2,SELE
4.78E-02	MCM3,MCM6,MYBL2,PKN2,PPP1R8,RBBP8,SS2IP,STAM,TP53

p-value	Molecules	# Molecules
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			ABCC4,ACACA,AGGF1,AGPAT2,AGTR2,APOB,ARG2,ASAH2,B4GALT5,BAG4,BAG5,BAP1,BCAS2,BCL2A1,BCL2L10,BCL2L14,BCL6,BECN1,BFAR,BIRC6,BMP7,BNIP1,BRE,CASP14,C4A,C4B,C4C,CA SP14,CCR8,CD36,CDCP1,CRBN,CSF2RA,CTBP2,CUL7,CXCL1,DDX47,DKK3,DP4,DUSP4,DUSP 6,EA2F,EDN1,ENTPD1,ESPL1,FASLG,FBXO5,FCER1A,FCGR2B,FDP5,FIH1,FLI1,FOXG1,FST,GATA 6,GBA2,GLRX,GNA11,GPY4,GSR,HDAC6,HLA DRB1,HNRNP1,HRK,HSF1,ICAM3,IL4,INVS,KIR2DS4 (includes others),KIR3DL1,KLRC1,KMT2A,KSR1,LEP,LGALS9,LMO4,LONP1,LTBR,MCRS1,MPG,MYBL2,MYO 18A,NAE1,NAPA,NCK1,NEU3,NFKB2,NGFR,NOTCH4,NTRK3,PCDH11Y,PDE1B,PIAS1,PITX2,PKN2,PPP1R10,PPP2R2A,PRG3,PRPF19,PSMD7,PTGER3,RAB35,RAPGE4,RAF4,REPS2,RICTOR,RNF144B,RNF34,RPS24,SCARB1,SEMA4D,SF3A1,SHOX,SHH2,SPRY2,STAT5 B,STAT6,SUPV3L1,TGFB1,TGIF2LX,THOC2,THY1,TLR9,TMBIM6,TNFRSF10A,TNFSF8,TP01,TP53,T,TP73,TRAF1,TSC22D3,TUBB3,UCHL1,VPS28,WNK3,WWOX	137
Cell Death and Survival	cell death	1.74E-07		
			ACACA,AGGF1,AGPAT2,AGTR2,ARG2,ASAH2,B4GALT5,BAG4,BAP1,BCAS2,BCL2A1,BCL2L10,BCL 2L14,BCL6,BECN1,BFAR,BIRC6,BMP7,BNIP1,BRE,CASP14,CCR8,CD36,CDCP1,CSF2RA,CTBP2, CXCL1,DDX47,DKK3,DP4,DUSP4,EA2F,EDN1,ENTPD1,ESPL1,FASLG,FBXO5,FCER1A,FCGR2B, FDP5,FIH1,FLI1,FOXG1,FST,GATA6,GBA2,GLRX,GNA11,HDAC6,HNRNP1,HRK,HSF1,ICAM3,IL4,INVS,KI R3DL1,KMT2A,KSR1,LEP,LGALS9,LMO4,LTBR,MCRS1,MPG,MYBL2,MYO18A,NAE1,NAPA,NEU3,N FK2,NGFR,NOTCH4,NTRK3,OAS1,PCDH11Y,PDE1B,PIAS1,PITX2,PKN2,PPP1R10,PPP2R2A,PR PF19,RAP1A,RAPGE4,REPS2,RICTOR,RNF144B,RNF34,RPS24,SCARB1,SEMA4D,SHOX,SHH2,SPRY2,STAT5B,STAT6,SUPV3L1,TGFB1,THY1,TLR9,TMBIM6,TNFRSF10A,TNFSF8,TP01,TP53,T, P73,TRAF1,TSC22D3,UCHL1,WNK3,WWOX	110
Cell Death and Survival	apoptosis	3.64E-07		
Developmental Disorder, Hereditary Disorder, Metabolic Disease	inborn error of carbohydrate metabolism	6.29E-07	AGL,AGXT,ALG3,ALG6,ATP6V0A2,B3GALNT2,B4GALT1,CTSA,DDOST,GALT,LARGE,LDBH,M6PR MCM6,PGM1,POMGNT1	
			AGPAT1,AGPAT2,APOB,ASAH2,B4GALT1,B4GALT4,GBA2,GPX4,IL4,LARGE,LCAT,NEU3,NPC1,N R0B2,PCYT2,PIGY,PLA2G1B,PLCG2,SGPP1,SPTLC2,ST6GALNAC6,ST8SIA2,ST8SIA3	
Lipid Metabolism, Small Molecule Biochemistry	metabolism of membrane lipid derivative	6.72E-07		
			ALPL2,ATIC,BCL6,C10A,C4A/C4B,CCL14,CCL24,CD36,CD83,CHST8,CSF2RA,CXCL1,CXCL2,DP 4,DRD3,EDN1,EGFL8,ENTPD1,FCGR2B,FDP5,FZD8,GNB2,GSR,HLA-DOA,HLA-DOB1,HLA- DRB1,HNRNP1,IL10RB,IL4,LDBH,LGALS9,LMO4,MMP2,MRC1,NGFR,NOTCH4,NRG4,PGA5 (includes others),PIK3C2G,PPP1R7,PSMB2,PSMB5,PSMB8,PSMD1,RNF30,RP11,RPS24,RPS3,RPSA,S100 A10,SCML1,SELE,STAT6,TGFB1,TLR1,TLR9,TNFRSF10A,TNFSF8,TP53,TP73,TRAF1,TRIM26,TRI M31,UCHL1,VIPR1,ZFP36	
Inflammatory Disease	chronic inflammatory disorder	9.23E-06		
			ABCC4,ACACA,AGGF1,AGPAT2,AGTR2,APOB,ASAH2,B4GALT5,BAG4,BAG5,BAP1,BCAS2,BCL2A1 ,BCL2L10,BCL6,BECN1,BIRC6,BMP7,CASP14,CCR8,CD36,CDCP1,CRBN,CSF2RA,CTBP2,CUL7,C XCL1,DKK3,DP4,DUSP4,EA2F,EDN1,FASLG,FBXO5,FCER1A,FDP5,FIH1,FLI1,FOXG1,FST,GATA 6,GBA2,GLRX,GNA11,GPY4,HDAC6,HNRNP1,HRK,HSF1,IL4,INVS,KIR3DL1,KMT2A,KSR1,LEP,LG ALS9,LMO4,LONP1,LTBR,MCRS1,MPG,MYBL2,NAE1,NAPA,NEU3,NFKB2,NGFR,NOTCH4,NPC1,N TRK3,PCDH11Y,PDE1B,PIAS1,PITX2,PKN2,PPP1R10,PPP2R2A,PRPF19,PSMD7,RAB35,RAPGE4 ,REPS2,RICTOR,RNF144B,RNF34,RPS24,SCARB1,SEMA4D,SF3A1,SHOX,SHH2,SPRY2,STAT5B, STAT6,TGFB1,TGIF2LX,THOC2,THY1,TLR9,TMBIM6,TNFRSF10A,TNFSF8,TP01,TP53,TP73,TRAF 1,TSC22D3,TUBB3,UCHL1,VPS28,WWOX	
Cell Death and Survival	necrosis	1.22E-05		
Cell Death and Survival, Gastrointestinal Disease, Hepatic System Disease	apoptosis of hepatocytes	1.34E-05		
			ACACA,AGPAT2,BAP1,BCAS2,BCL2A1,BCL2L10,BCL6,BECN1,BIRC6,BMP7,CASP14,CDCP1,CSF2 RA,CTBP2,DKK3,DP4,DUSP4,EA2F,EDN1,FASLG,FBXO5,FCER1A,FIH1,FLI1,FOXG1,FST,GATA6, GBA2,GLRX,GNA11,HDAC6,HNRNP1,HSF1,IL4,INVS,KIR3DL1,KMT2A,KSR1,LEP,LMO4,MCRS1, MPG,NAPA,NEU3,NFKB2,NGFR,NOTCH4,NTRK3,PCDH11Y,PDE1B,PIAS1,PPP1R10,PPP2R2A,PR PF19,RAPGE4,REPS2,RICTOR,RNF144B,RNF34,RPS24,SCARB1,SHOX,SHH2,SPRY2,STAT5B, STAT6,TGFB1,THY1,TMBIM6,TNFRSF10A,TP01,TP53,TP73,TRAF1,TSC22D3,UCHL1,WWOX	
Cell Death and Survival	apoptosis of tumor cell lines	1.71E-05		
Lipid Metabolism, Small Molecule Biochemistry	synthesis of lipid	2.03E-05	AGPAT1,AGPAT2,BMP7,CD83,CXCL1,DKK3,DP4,EDN1,EDNRA,FCER1A,GBA2,GPAM,HSD3B1,I D1,IL4,LARGE,LCAT,LEP,MGST2,NPC1,OXSM,PCYT2,PIGY,PLA2G1B,PLA2G2D,PLCE1,PLCG2,P RG3,SPTLC2,ST8SIA2,ST8SIA3,TP53	
Carbohydrate Metabolism	metabolism of carbohydrate	2.85E-05	AGPAT1,AGPAT2,APLN,RB4GALT1,B4GALT2,B4GALT1,B4GALT7,CCKBR,CHST12,CHST2,CH ST4,CHST8,ENPP1,FUT9,GALT,HS3ST3B1,LARGE,LCAT,MGAT1,NEU3,PIGY,PLA2G1B,PLCG2,PP P1CC,ST6GALNAC6,ST8SIA2,ST8SIA3,TGFB1	
Post-Translational Modification	glycosylation of protein	3.56E-05	ALG6,B4GALT1,DDOST,FUT9,MGAT1,NPC1,POFUT1,POMGNT1,ST8SIA2,ST8SIA3	
			ABCC4,ACACA,AGPAT2,APOB,BAP1,BCAS2,BCL2A1,BCL2L10,BCL6,BECN1,BIRC6,BMP7,CASP1 4,CDCP1,CRBN,CSF2RA,CTBP2,CUL7,DKK3,DP4,DUSP4,EA2F,EDN1,FASLG,FBXO5,FCER1A,F HIT,FLI1,FOXG1,FST,GATA6,GBA2,GLRX,GNA11,GPY4,HDAC6,HNRNP1,HSF1,IL4,INVS,KIR3DL1 KMT2A,KSR1,LEP,LMO4,LONP1,LTBR,MCRS1,MPG,MYBL2,NAPAE1,NAPA,NEU3,NFKB2,NGFR,NOTCH4, NTRK3,PCDH11Y,PDE1B,PIAS1,PPP1R10,PPP2R2A,PRPF19,PSMD7,RAB35,RAPGE4,REPS2,RI CTOR,RNF144B,RNF34,RPS24,SCARB1,SF3A1,SHOX,SHH2,SPRY2,STAT5B,STAT6,TGFB1,TGIF2L X,THOC2,THY1,TMBIM6,TNFRSF10A,TP01,TP53,TP73,TRAF1,TSC22D3,TUBB3,UCHL1,VPS28, WWOX	
Cell Death and Survival	cell death of tumor cell lines	5.19E-05		
Developmental Disorder, Hereditary Disorder, Metabolic Disease	congenital disorders of glycosylation	5.62E-05	ALG3,ALG6,ATP6V0A2,B3GALNT2,B4GALT1,DDOST,LARGE,PGM1,POMGNT1	
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	transport of cholesterol	6.88E-05	APOB,CD36,LCAT,LDLR,NPC1	
Cellular Movement	migration of ovarian cancer cell lines	8.05E-05	CDCP1,CTBP2,DP4,EDN1,IQGAP1,TP53,WWOX	
Cellular Movement	cell movement of ovarian cancer cell lines	1.01E-04	CDCP1,CTBP2,DP4,EDN1,IQGAP1,TGFB1,TP53,WWOX	
Lipid Metabolism, Small Molecule Biochemistry	metabolism of sphingolipid	1.19E-04	ASAH2,B4GALT1,GBA2,LARGE,NEU3,SGPP1,SPTLC2,ST6GALNAC6,ST8SIA2,ST8SIA3	
Gene Expression	synthesis of rRNA	1.52E-04	ERCC8,FST,TP53	
RNA Post-Transcriptional Modification	processing of mRNA	1.70E-04	CDK11A,CELF1,DDX39A,HNRNP1,PRPF19,RBM11A1 (includes others),SF3A1,SF3B2,SNRNP1,SRSF4,SRSF6,SRSF9,SUP75H	
Post-Translational Modification	ubiquitination of protein	1.83E-04	RIM13,TRIM17,TRIM23,UBE4B,VPS28	
Cancer, Gastrointestinal Disease	metastatic colorectal carcinoma	1.95E-04	DUSP4,FASLG,LGR4,MMP2,TP01	
			AGGF1,BCAS2,CDK11A,CELF1,DDX39A,DDX47,HNRNP1,INTS8,PRPF19,RBM11A1 (includes others),RPL11,RPS24,SF3A1,SF3B2,SNRNP1,SRSF4,SRSF6,SRSF9,SUP75H,UTP20	
RNA Post-Transcriptional Modification	processing of RNA	1.98E-04		
Gastrointestinal Disease, Hepatic System Disease, Organismal Injury and Abnormalities	cirrhosis of liver	2.36E-04	ABCC4,APOB,CSF2RA,DLG1,FASLG,FST,HLA-DOB1,IL4,LDLR,LEP,NOTCH4,TGFB1,TLR9,TP73 14	
			ABCC4,APOB,CSF2RA,DLG1,FASLG,FST,HLA-DOB1,IL4,LDLR,LEP,NOTCH4,TGFB1,TLR9,TP73 14	
Connective Tissue Disorders, Immunological Disease, Inflammatory Disease, Skeletal and Muscular Disorders	rheumatoid arthritis	2.38E-04	BACH1,BCL11B,BCL6,BMP7,BRF1,CBFB,CTCF,DKK3,EDN1,ENY2,FASLG,FLI1,FOXG1,FST,FZD4 ,GATA6,GMEB2,GREM1,GTF2A1L,GTFC3A4,HDAC6,HEY2,HNRNP1,HSF1,HTATSF1,IL10RB,IL4,IQ GAP1,KMT2A,LCP1,LGALS9,LOXL2,LRRFP1,LTBR,MED20,NCK1,NFKB2,NOTCH4,NRF2,PCDH1 1Y,PIAS1,PITX2,PLA2G1B,PPP1R8,PSMB2,PSMC3,PTGER3,RBBP9,RNF111,RNF20,RPL6,SHOX,S KAP1,SOX30,SRSF6,STAT5B,STAT6,STK36,SUP75H,TA1,TFEB,TGFB1,TLR1,TP01,TP53,TP73,T RIM13,TRIM17,TRIM22,TSC22D3,ZHX2,ZNF141,ZNF202,ZNF345,ZNF366,ZNF367,ZNF76	
Gene Expression	transcription	3.47E-04		
Cardiovascular System Development and Function, Tissue Morphology	contraction of blood vessel	3.70E-04	EDN1,IL4,TGFB1	
Cancer, Cell Cycle	polyploidy of tumor cell lines	3.70E-04	FBXO5,GATA6,SPRY2	
Metabolic Disease	systemic light chain amyloidosis	3.70E-04	PSMB2,PSMB5,PSMD1	
Cell Death and Survival	cell death of prostate cancer cell lines	3.82E-04	ACACA,BECN1,BIRC6,BMP7,DKK3,EA2F,EDN1,FASLG,FST,NAPA,NFKB2,NGFR,SHH2,TGFB1,TM BIM6,TNFRSF10A,TP01,TP53	
			BACH1,BCL11B,BCL6,BMP7,BRF1,CBFB,CTCF,DKK3,EDN1,ENY2,FASLG,FLI1,FOXG1,FST,FZD4 ,GATA6,GMEB2,GREM1,GTF2A1L,GTFC3A4,HDAC6,HEY2,HNRNP1,HSF1,HTATSF1,IL10RB,IL4,IQ GAP1,KMT2A,LCP1,LGALS9,LOXL2,LRRFP1,LTBR,MED20,NCK1,NFKB2,NOTCH4,NRF2,PCDH1 1Y,PIAS1,PITX2,PLA2G1B,PPP1R8,PSMB2,PSMC3,PTGER3,RBBP9,RNF111,RNF20,RPL6,SHOX,S KAP1,SOX30,SRSF6,STAT5B,STAT6,STK36,SUP75H,TA1,TFEB,TGFB1,TLR1,TP01,TP53,TP73,T RIM13,TRIM17,TRIM22,TSC22D3,ZHX2,ZNF141,ZNF202,ZNF345,ZNF366,ZNF367,ZNF76	
Gene Expression	transcription of RNA	4.01E-04		
Cancer, Gastrointestinal Disease, Respiratory Disease	nasopharyngeal cancer	4.16E-04	FBLN2,LTBR,MMP2,THY1,TP01,TP53,TUBA1C,TUBB3,UCHL1	

			ASMT,BACH1,BCL11B,BCL6,BMP7,BRF1,CBFB,CTCF,DKK3,EDN1,EIF3B,EIF3C,ENVY2,FASLG,FLI1,FOXG1,FST,FZD4,GATA6,GLM3,GMEB2,GREM1,GT2A,IL6,GFSC4,HDAC6,HEY2,HNRNP1A,HS1,HTATSF1,IL10RB,IL4,IQGAP1,KMT2A,LCP2,LGALS9,LOXL2,LRRFP1,LTRB,MED20,METAP1,NCK1,NFKB2,NOTCH4,NR2F2,PCDH11Y,PIAS1,PITX2,PLA2G1B,PPP1R8,PRG3,PSMC3,PTGER3,RBPB8,RNF111,RNF20,RPL6,SHOX,SKAP1,SOX30,SPRY2,STAT5B,STAT6,STK36,SUPT5H,TAF11,TFEB,TGFBI,TFE1,TFPI1,TP53,TP73,TRIM13,TRIM17,TRIM22,TSC22D3,ZH2,ZNF141,ZNF202,ZNF345,ZNF366,ZNF367,ZNF78	5.22E-04	82
Gene Expression		expression of RNA		5.23E-04	4
Cellular Growth and Proliferation		cytostasis of lung cancer cell lines		5.23E-04	4
Metabolic Disease		systemic amyloidosis		5.23E-04	4
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry		uptake of cholesterol			
Cardiovascular Disease		occlusion of artery		5.86E-04	37
		ABHD16A,AGPAT1,APLP2,ATIC,BCL6,C10A,C4A,C4B,CCL14,CCL24,CD36,CD83,CHST8,CTSA,CXCL1,CXCL2,DDP4,EGFL8,FASLG,FCGR2B,FDPS,GNB2,GSR,HLA-DOA,HLA-DOB1,HLA-DRB1,HNRNP1A,IL4,LDBL,LMO4,MMP2,MRC1,NGFR,NOTCH4,OAS1,PGM1,PPP1R7,PSMB8,PTGER3,RNF39,RPL11,RPS24,RPS3,RPS4,S100A10,SCML1,SELE,STAT6,TGFBI,TLR9,TNFRSF10A,TP53,TRAF1,TRIM2,TRIM51,VIPR1,XKR6,ZFP96			
Immunological Disease		systemic autoimmune syndrome		6.10E-04	57
		BCL11B,BCL6,BMP7,BRF1,CBFB,CTCF,DKK3,EDN1,ENVY2,FASLG,FOXG1,FST,FZD4,GATA6,GLM3,GMEB2,GREM1,GT2A,IL6,HDAC6,HEY2,HSF1,HTATSF1,IL4,KMT2A,LOXL2,LRRFP1,MED20,NCCK1,NFKB2,NOTCH4,NR2F2,PITX2,PLA2G1B,PTGER3,RBPB8,RNF111,RNF20,RPL6,SHOX,SKAP1,SOX30,SPRY2,STAT5B,STAT6,SUPT5H,TAF1,TFEB,TGFBI,TFE1,TP53,TP73,TRIM22,TSC22D3,ZH2,ZNF141,ZNF202,ZNF345,ZNF366,ZNF367,ZNF78			
Gene Expression		expression of DNA		6.24E-04	6
Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities		mantle cell lymphoma		6.36E-04	60
		ADAT,ADAR,APOB,BAG5,CD36,CD83,CDCP1,CPVL,CSMD1,CTSA,EDN1,ENPP1,FUT9,GATA6,GLRX,HABP2,HLA-DRB1,IL4,LDLR,LPXN,MMP2,MYO3B,NPR1,NR2F2,PDE4DIP,PTGER3,RPL9,RUVBL2,SCARB1,SELE,SLC22A3,SSX2IP,SUPV3L1,TGFBI,THY1,TUBA1C,TUBB3,UTP20,WWOX,ZFP36			
Cardiovascular Disease		disorder of artery		6.61E-04	41
Cellular Growth and Proliferation		colony formation of lymphoma cell lines		7.21E-04	3
Cellular Growth and Proliferation		cytostasis of bone cancer cell lines		7.21E-04	3
Organismal Injury and Abnormalities, Renal and Urological Disease		hematuria		7.21E-04	3
Cellular Assembly and Organization		quantity of lysosome		7.21E-04	3
Carbohydrate Metabolism, Small Molecule Biochemistry		signaling of inositol phosphate		7.21E-04	3
Infectious Disease		transmission of virus		7.21E-04	3
Cellular Growth and Proliferation, Hematological System Development and Function		inhibition of lymphocytes		7.36E-04	4
Nucleic Acid Metabolism, Small Molecule Biochemistry		phosphorylation of nucleotide		7.36E-04	4
Gene Expression		synthesis of RNA		7.36E-04	4
		ERCC8,FST,HTATSF1,TP53			
Gene Expression		transcription of DNA		9.01E-04	58
Carbohydrate Metabolism		synthesis of carbohydrate		9.41E-04	17
Connective Tissue Disorders, Skeletal and Muscular Disorders		osteopenia		1.00E-03	4
Cell Death and Survival		cell death of fibrosarcoma cell lines		1.01E-03	8
Lipid Metabolism, Small Molecule Biochemistry		metabolism of glycosphingolipid		1.01E-03	4
Metabolic Disease		light chain associated amyloidosis		1.01E-03	4
Cancer		primitive neuroectodermal tumor		1.13E-03	15
Cell Morphology, Cellular Function and Maintenance		autophagy of Cytoplasm		1.15E-03	2
Cellular Development, Tissue Development		epithelial-mesenchymal transition of fibroblasts		1.15E-03	2
Cellular Development, Tissue Development		epithelial-mesenchymal transition of hepatocytes		1.15E-03	2
Cell-To-Cell Signaling and Interaction		gap junctional intercellular communication of smooth muscle cells		1.15E-03	2
Cancer		growth of head and neck squamous cell carcinoma		1.15E-03	2
Neurological Disease, Psychological Disorders		hypersomnia		1.15E-03	2
Cell Cycle		mitogenesis of leukocytes		1.15E-03	2
Cell Morphology		morphology of skin cell lines		1.15E-03	2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response		activation of dendritic cells		1.22E-03	6
Developmental Disorder, Gastrointestinal Disease, Hematological Disease, Hepatic System Disease		Wilson's disease		1.23E-03	3
Hereditary Disorder, Metabolic Disease, Neurological Disease, Nutritional Disease		brain metastasis		1.23E-03	3
Cancer, Neurological Disease		cytostasis of carcinoma cell lines		1.23E-03	3
Cellular Growth and Proliferation		gap junctional intercellular communication of cells		1.23E-03	3
Cell-To-Cell Signaling and Interaction		metabolism of N-acetylglucosamine		1.23E-03	3
Carbohydrate Metabolism, Small Molecule Biochemistry		medulloblastoma		1.28E-03	9
Cancer, Neurological Disease					
Lipid Metabolism, Small Molecule Biochemistry		fatty acid metabolism		1.37E-03	22
Cellular Development, Hematopoiesis		maturation of leukocytes		1.41E-03	7
Gastrointestinal Disease, Hepatic System Disease, Inflammatory Disease, Organismal Injury and Abnormalities		primary biliary cirrhosis		1.43E-03	10
Cell Death and Survival		cytotoxicity of T lymphocytes		1.61E-03	5
Cell-To-Cell Signaling and Interaction, Cellular Compromise		respiratory burst of cells		1.61E-03	5
		ABCC4,APOB,CSF2RA,DLG1,FST,HLA-DOB1,IL4,LDLR,NOTCH4,TLR9			
Cell-To-Cell Signaling and Interaction		communication of cells		1.62E-03	12
		AGTR2,APLN,ASAH2,BAG4,BAI3,BRE,C10A,CAPN5,CCL24,CCL27,CCR8,CD3G,CD83,CHST4,CXCL1,DRD3,EDN1,EDNRA,FASLG,FCGR2B,FGF17,GMFB,GNA11,GNB2,HDAC6,HLA-DOA,ICK,IL10RB,IQGAP1,KLRC1,KLRC3,LGALS9,IL1RB5,LPXN,LTBR,M6PR,MPP1,NAE1,NMU1,NPC1,NR2F2,PLA2G1B,PPP1R12B,PTCH2,PTGER3,RAP1A,RAPGEF4,RHO,SIK2,SKAP2,STAM1,STAT6,TACSTD2,TGFBI,TFE1,TFE2,TNFRSF10A,TNFSF8,TOB1,TRIM13,VIPR1			
Cell Death and Survival		apoptosis of prostate cancer cell lines		1.65E-03	62
Lipid Metabolism, Small Molecule Biochemistry		metabolism of glycolipid		1.67E-03	9
Carbohydrate Metabolism		synthesis of polysaccharide		1.67E-03	9
RNA Post-Transcriptional Modification		splicing of mRNA		1.71E-03	11
		ACACA,BIRC6,BMP7,DKK3,EA2F,EDN1,FASLG,FST,NAPA,NGFR,SIAH2,TGFBI,TMBIM6,TNFRSF10A,TP53			
RNA Post-Transcriptional Modification		splicing of RNA		1.72E-03	8
Hematological Disease, Immunological Disease		eosinophilia		1.78E-03	7
Post-Translational Modification		polyubiquitination of protein		1.78E-03	7
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Tissue Development		binding of dendritic cells		1.92E-03	3
Cellular Development, Hematological System Development and Function, Hematopoiesis		maturation of lymphocytes		1.92E-03	3
		AGTR2,APLN,ASAH2,BAG4,BAI3,BRE,CAPN5,CCL24,CCR8,CD3G,CD83,CXCL1,DRD3,EDN1,EDNRA,FASLG,FCGR2B,FGF17,GMFB,GNA11,GNB2,HDAC6,HLA-DOA,ICK,IL10RB,IQGAP1,KLRC1,KLRC3,LGALS9,IL1RB5,LPXN,LTBR,M6PR,MPP1,NAE1,NMU1,NPC1,NR2F2,PLA2G1B,PPP1R12B,PTCH2,PTGER3,RAP1A,RAPGEF4,RHO,SIK2,SKAP2,STAM1,STAT6,TACSTD2,TFE1,TFE2,TNFRSF10A,TNFSF8,TOB1,TRIM13,VIPR1			
Cell-To-Cell Signaling and Interaction		signal transduction		1.93E-03	57
		APLP2,ATIC,BCL6,C10A,CCL14,CCL24,CD36,CD83,CHST6,CXCL1,CXCL2,DDP4,EDN1,EGFL8,ENPP1,FCGR2B,FDPS,GNB2,GSR,HLA-DOA,HLA-DOB1,HLA-DRB1,HLA-DRB1,HLA-E,HNRNP1A,IL4,LDBL,LMO4,MMP2,MRC1,NGFR,NOTCH4,PPP1R7,PSMB8,RNF39,RPL11,RPS24,RPS3,RPS4,S100A10,SCML1,SELE,SLC1A7,STAT6,TGFBI,TLR9,TNFRSF10A,TP53,TRAF1,TRIM2,TRIM3,TUBA1C,TUBB3,VIPR1,ZFP36			
Connective Tissue Disorders, Skeletal and Muscular Disorders		arthropathy		1.94E-03	54
		APLP2,ATIC,BCL6,C10A,CCL14,CCL24,CD36,CD83,CHST8,CXCL1,CXCL2,DDP4,EDN1,EGFL8,FCGR2B,FDPS,GNB2,GSR,HLA-DOA,HLA-DOB1,HLA-DRB1,HLA-E,HNRNP1A,IL4,LDBL,LMO4,MMP2,MRC1,NGFR,NOTCH4,PPP1R7,PSMB8,RNF39,RPL11,RPS24,RPS3,RPS4,S100A10,SCML1,SELE,SLC1A7,STAT6,TGFBI,TLR9,TNFRSF10A,TP53,TRAF1,TRIM2,TRIM3,TUBA1C,TUBB3,VIPR1,ZFP36			
Connective Tissue Disorders, Inflammatory Disease, Skeletal and Muscular Disorders		arthritis		2.07E-03	53
		BECN1,FASLG,FHIT,FS1,GNA11,HSF1,INVS,MCRS1,NAPA,PCDH11,YPP1R10,PPP2R2A,PRPF19,RICTOR,RNF144B,RNF34,RPS24,TGFBI,TP53,TP73,UCLH1			
Cell Death and Survival		apoptosis of cervical cancer cell lines		2.09E-03	21

Cell Death and Survival	apoptosis of phagocytes	2.27E-03	CXCL1,FASLG,FCER1A,IL4,LEP,TGFB1,TLR9,TP53	8
Cell-To-Cell Signaling and Interaction, Tissue Development	adhesion of tumor cell lines	2.36E-03	ARHGFB1,BAGALNT2,BAGALT1,EMP7,CDCP1,CXCL2,DKK3,FAM188A,FUT9,LEP,LTBR,MMP2,NEU3,PTX2,RPSA,SELE,SKAP1,TGFB1,UCHL1	19
Cancer	Ewing's sarcoma	2.44E-03	FDPS,FLI1,TP53,TUBA1C,TUBB3	6
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	steroid metabolism	2.58E-03	APOB,BMP7,DKK3,GBA2,IL4,LCAT,NPC1,NR0B2,SULT2B1,TP53,WVVOX	11
Cellular Movement	chemotaxis	2.60E-03	APLN,R,C4A/C4B,CCL14,CCL24,CCL27,CCR8,CD36,CSF2RA,CXCL1,CXCL2,DP4,FASLG,GN111,LL,LGALS9,MMP2,NEDD4,PLA2G1B,RICTOR,SELE,TGFB1,USP14,VIPR1	23
Cancer	head and neck cancer	2.61E-03	AKAP1,ATIC,BAI3,CD83,CDKN3,CSF7,CXCL1,CXCL2,EY4,FBLN2,FHIT,FOXG1,GALNT3,GATA6,CNA11,GSR,HRK,ITGBL1,KLRCL1,LOXL2,LTBR,MAP7,MMP2,MRC1,MYO3B,NUDT11,PTCH2,RAPGEF4,RFN20,SEMA4D,SPRY1,STAT8,STAT5B,TACSTD2,TAI1,TGFB1,THY1,TLK2,TOPI1,TP53,TP73,TRAP1,TUBA1C,TUBB3,UCHL1	45
Cell Cycle	ploidy of tumor cell lines	2.68E-03	FBXO5,GATA6,MCRS1,SPRY2,TP53	5
Gastrointestinal Disease, Hematological Disease, Immunological Disease, Inflammatory Disease	eosinophilia of esophagus	2.75E-03	CCL24,CCR8,FCER1A,IL4	4
Cell-To-Cell Signaling and Interaction	activation of cells	2.78E-03	BCL2A1,DDOST,DP4,DUSP3,EDN1,ENTPD1,FASLG,FCER1G,IL4,IQGAP1,KIR2DS4 (includes others),KIR3DL1,LGR4,LTBR,MMP2,NCK1,PPP1R1A,PRG3,RAB35,SEMA4D,TGFB1,TLR9,TNFRSF10A,TP53,TP73	25
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	chemotaxis of granulocytes	2.81E-03	CCL14,CCL24,CSF2RA,CXCL1,CXCL2,FASLG,LGALS9,PLA2G1B,SELE,TGFB1	10
Cellular Movement	chemotaxis of cells	2.92E-03	APLN,R,C4A/C4B,CCL14,CCL24,CCL27,CCR8,CD36,CSF2RA,CXCL1,CXCL2,DP4,FASLG,GN111,LL,LGALS9,MMP2,NEDD4,PLA2G1B,RICTOR,SELE,TGFB1,VIPR1	22
Cardiovascular Disease	peripheral arterial occlusive disease	2.96E-03	ADAR,BAG3,CD36,CD83,CPIVL,CTSA,GLRX,HLA-DRB1,LPXN,NR2F2,PDE4DIP,PTGER3,RLP9,RUVBL2,SLC22A3,SSX2IP,THY1	17
Gene Expression	repression of RNA	2.97E-03	BCL6,FOXG1,MCRS1,NR2F2,RBBP8,RUVBL2,TAI1,TP53,ZNF107	9
Cancer, Dermatological Diseases and Conditions, Hematological Disease, Immunological Disease	ALK-negative anaplastic large cell lymphoma	3.12E-03	HDAC6,PSMB2,PSMB5,PSMD1,TP53	5
Organismal Injury and Abnormalities	cell death of blood cells	3.16E-03	APOB,BCL6,CCR8,CSF2RA,CXCL1,FASLG,FCER1A,FLI1,HRK,IL4,LEP,LGALS9,MYBL2,NFKB2,SEMA4D,STAT5B,TGFB1,TLR9,TNFRSF8,TP53	20
Cell Death and Survival	oral cavity carcinoma	3.33E-03	CD83,CXCL1,CXCL2,GATA6,ITGBL1,MAP7,MYO3B,NUDT11,SEMA4D,SPRY1,TACSTD2,TGFB1,TP53,TUBA1C,TUBB3	15
Cancer, Gastrointestinal Disease	accumulation of carcinoma cell lines	3.37E-03	FHIT	2
Tissue Development	alcoholic cirrhosis	3.37E-03	FASLG,TGFB1	2
Gastrointestinal Disease, Hepatic System Disease, Organismal Injury and Abnormalities	arrest in G0/G1 phase transition of cervical cancer cell lines	3.37E-03	PITX2,TGFB1	2
Cell Cycle	class switching of B lymphocytes	3.37E-03	IL4,TGFB1	2
Hematological System Development and Function, Humoral Immune Response	complement component C1q deficiency	3.37E-03	C1QA,C1QC	2
Developmental Disorder, Hereditary Disorder, Immunological Disease	cytostasis of fibroblast cell lines	3.37E-03	TBC1D3 (includes others),TP53	2
Cellular Growth and Proliferation, Connective Tissue Development and Function	depletion of cholesterol	3.37E-03	LDLR,SCARB1	2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	inactivation of mast cells	3.37E-03	FCER1A,FCGR2B	2
Cellular Development, Hematological System Development and Function, Hypersensitivity Response	lifespan of B lymphocytes	3.37E-03	BCL6,SEMA4D	2
Cell Death and Survival, Cellular Development, Hematological System Development and Function	senescence of fibrosarcoma cell lines	3.37E-03	MCRS1,TP53	2
Cell Cycle	synthesis of chondroitin sulfate B	3.37E-03	B4GALNT1,CHST12	2
Biochemistry, Tissue Development	catabolism of RNA	3.39E-03	PPP1R18,RNASE6,SUPV3L1,ZFP36	4
RNA Damage and Repair	function of lymphocytes	3.39E-03	DLG1,HLA-E,LEP,TGFB1	2
Cellular Function and Maintenance, Hematological System Development and Function	cell death of hematopoietic cells	3.51E-03	CSF2RA,FASLG,FLI1,HRK,TGFB1,TP53	6
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	quantity of glycosphingolipid	3.51E-03	B4GALNT1,IL4,NEU3,NGFR,SCARB1,SGPP1	6
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	activation of lymphocytes	3.51E-03	DDOST,DP4,DUSP3,FASLG,FCER1G,IL4,KIR3DL1,NCK1,SEMA4D,TGFB1,TLR9,TP53	12
Cell Death and Survival	cell viability	3.66E-03	APOB,B4GALT5,BCL2A1,BCL6,BECN1,BIRC6,BMP7,CDK11A,CRBN,DPP4,DUSP6,EIF3C,FASLG,FBXO5,FHIT,GATA6,IL4,LEP,MPG,MYBL2,NEK3,NEK9,NFKB2,NGFR,NTSC3A,PPP1R12B,PPP1R19B,PPP2R2A,PRPF19,PSM3,RAPGEF4,RHO,RICTOR,RPSA,SEMA4D,SF3A1,SGPP1,SLC22A3,SNRPD1,SULT2B1,SUPT5H,TFEB,TGFB1,TP53,TP73,TUBB3,USP14,WVVOX,ZFP36,ZNF208	53
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	release of eicosanoid	3.70E-03	FCER1G,IL4,LEP,PLA2G1B,PLA2G2D,PRG3,S100A10	7
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	cell movement of granulocytes	3.71E-03	CCL14,CCL24,CSF2RA,CXCL1,CXCL2,FASLG,IL4,LEP,LGALS9,PLA2G1B,SELE,TGFB1	12
Cancer	malignant neoplasm of aerodigestive tract	3.84E-03	AKAP1,ATIC,BAI3,BRINP3,CD83,CTSB,CXCL1,CXCL2,FBLN2,FHIT,FZD4,GATA6,ITGBL1,LTBR,MAP7,MMP2,MYO3B,NGFR,NUDT11,PPP1R10,SEMA4D,SPRY1,TACSTD2,TGFB1,THY1,TOPI1,TP53	12
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	processing of polysaccharide	3.91E-03	TUBA1C,TUBB3,UCHL1,WVVOX,ZNF345	32
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	release of leukotriene C4	3.91E-03	POPDC1,STSB2,STSB3A3	3
Digestive System Development and Function, Gastrointestinal Disease, Hepatic System Development and Function, Hepatic System Disease, Inflammatory Disease, Inflammatory Response, Organ Development	inflammation of liver	3.93E-03	FCER1G,IL4,PRG3	3
Gene Expression	activation of DNA endogenous promoter	3.98E-03	APOB,C4A/C4B,CXCL1,CXCL2,FCGR2B,GPT,IL10RB,IL4,LEP,LGALS9,TGFB1,TP73	12
Cancer, Dermatological Diseases and Conditions	skin carcinoma	4.00E-03	BCL11B,BCL6,C8FB,EDN1,FASLG,FST,GATA6,GMEB2,GREM1,GTFA21A,HEY2,HSF1,HTATS1,KMT2A,LRRFP1,MED20,NCK1,NR2F2,PITX2,PLA2G1B,RBBP8,SHOX,SKAP1,SOX30,STAT5B,STAT6,SUPT5H,TAI1,TFEB,TGFB1,TP53,TP73,ZKX2,ZNF141,ZNF202,ZNF345,ZNF366,ZNF367,ZNF76	39
Cell Cycle	G1 phase of carcinoma cell lines	4.13E-03	CCL27,EDN1,LGR4,NTRK3,PTCH2,STAT5B,TNFRSF10A,TOPI1,TP53	9
Immunological Disease	Wiskott-Aldrich syndrome	4.13E-03	BAP1,FAM188A,RFFL,TP53	4
Lipid Metabolism, Small Molecule Biochemistry	metabolism of eicosanoid	4.15E-03	ADAR,C4A/C4B,FCGR2B,OAS1	4
Cell Cycle	G1 phase of lung cancer cell lines	4.18E-03	CD83,CXCL1,EDN1,EDNRA,FCER1G,GPX4,IL4,MGST2,PLA2G1B,PLA2G2D,PRG3,TP53	12
Cell Death and Survival	apoptosis of smooth muscle cells	4.18E-03	BAP1,FAM188A,PKS1,RFFL,TP53	5
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	cell survival	4.29E-03	AGTR2,EDN1,FASLG,GATA6,TP53	5
Molecular Transport	quantity of metal	4.33E-03	APOB,B4GALT5,BCL2A1,BCL6,BECN1,BIRC6,BMP7,CDK11A,CRBN,DPP4,DUSP6,EIF3C,FASLG,FBXO5,FHIT,GATA6,IL4,LEP,MPG,MYBL2,NCK1,NEK3,NEK9,NFKB2,NGFR,NTSC3A,NTRK3,PPP1R12B,PPP1R19B,PPP2R2A,PRPF19,PSM3,RAPGEF4,RHO,RICTOR,RPSA,SEMA4D,SF3A1,SGPP1,SLC22A3,SNRPD1,SULT2B1,SUPT5H,TFEB,TGFB1,TP53,TP73,TUBB3,USP14,WVVOX,ZFP36,ZNF208	55
Connective Tissue Disorders, Inflammatory Disease, Skeletal and Muscular Disorders	Rheumatic Disease	4.38E-03	AKAP1,APLP2,CCKBR,CCL24,CCR8,EDN1,EDNRA,ENTPD1,ENTPD2,GN111,LL,IL4,LGR4,NMUR1,PLC1,SELE,TGFB1,TP73	8
Cell Death and Survival	apoptosis of fibrosarcoma cell lines	4.40E-03	APLP2,ATIC,BCL6,C1QA,CCL14,CCL24,CD36,CD83,CHST8,CTSA,CXCL1,CXCL2,DP4,DRD3,EDN1,EDNRA,EGF8,FCGR2B,FDPS,GNB2,GSR,HLA-DOA,HLA-DOB1,HLA-DRB1,HLA-E,HNRNP1A,IL4,LDHB,LMOD1,M6PR,MMP2,MRC1,NGFR,NOTCH4,PPP1R7,PSMB8,RFN39,RLP11,RPS24,TP53,TRAF1,SELE,S100A17,STAT6,TGFB1,TLR9,TNFRSF10A,TP53,TRAF1,TRIM26,TRIM31,TUBA1C,TUBB3,VIPR1,XKR6,ZFP36	57
Cell Death and Survival	production of HIV-1	4.75E-03	BCL2A1,FASLG,MCRS1,NFKB2,TP53,TRAF1	6
Infectious Disease	cell death of cervical cancer cell lines	4.79E-03	APOB,BCL2A1,BECN1,FASLG,FHIT,FST,GN111,HSF1,INVS,MCRS1,NAPA,PCDH11Y,PPP1R10,PPP2R2A,PRPF19,RICTOR,RFN14B,RFN34,RPS24,TGFB1,TNFRSF10A,TP53,TP73,UCHL1	24
Neurological Disease	progressive motor neuropathy	4.81E-03	LCP2,STAT5B,TAT,TLR9,TRIM22	5
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	chemotaxis of neutrophils	4.89E-03	ACTN3,BECN1,C4A/C4B,CHAT,COLGALT2,CXCL1,DLG2,DRD3,FCGR2B,FHIT,GALNT3,GATM,HLA-DOB1,HLA-DRB1,HLA-E,HNRNP1A,HRK,IL4,LDHB,LMOD1,M6PR,NEDD4,NGFR,NOTCH4,OAS1,PPP1R1A,SLC1A7,THY1,TP53,TRIM31,TUBA1C,UCHL1,ZFP36L1	33
Cell-To-Cell Signaling and Interaction, Cellular Compromise, Cellular Function and Maintenance, Inflammatory Response	respiratory burst of phagocytes	4.96E-03	CCL24,CSF2RA,CXCL1,CXCL2,FASLG,PLA2G1B,SELE,TGFB1	8
Cellular Response to Therapeutics	sensitivity of cells	4.96E-03	CXCL1,FCER1A,IL4,TGFB1	4
Inflammatory Response	inflammation of organ	5.20E-03	MPG,MYBL2,TOPI1,TP53	4
Cancer, Neurological Disease	recurrent malignant glioma	5.24E-03	APOB,BCL11B,C4A/C4B,CCL27,CPIVL,CSF2RA,CXCL1,CXCL2,DP4,EDN1,EDNRA,FCER1A,FCER1G,FCGR2B,GPT,GSR,HDAC6,HLA-DRB1,IDI1,IL10RB,IL4,LEP,LGALS9,NAPA,NRG4,PSMB2,PSMB5,PSMD1,SELE,TGFB1,TGM6,TLR9	40
Cell-To-Cell Signaling and Interaction	response of breast cancer cell lines	5.24E-03	GSR,TOPI1,TP53	3
Cellular Response to Therapeutics	sensitivity of tumor cell lines	5.24E-03	MPG,TGFB1,TP53	3
		5.24E-03	MPG,TOPI1,TP53	3

Cell Cycle	mitosis	BMP7, DLG1, DRD3, EDN1, FBXO5, FLI1, IL4, INVS, KPNB1, LEP, MAP9, MASTL, NAE1, PCDH11Y, PHF13,	5.33E-03	21
Cancer, Dermatological Diseases and Conditions	basal-cell carcinoma	RBBP9, RPS24, SPRY2, STL1, TGFBI, TP53	5.38E-03	7
Cell Death and Survival	cell death of muscle cells	CCL27, EDN1, NTRK3, PTC2, STAT5B, TNFRSF10A, TP53	5.38E-03	7
Cell Death and Survival	cell viability of mononuclear leukocytes	AGTR2, EDN1, FASLG, GATA6, TGFBI, TNFRSF10A, TP53	5.45E-03	6
Lipid Metabolism, Small Molecule Biochemistry	synthesis of leukotriene	AP0B, BCL6, IL4, MYBL2, SEMA4D, TGFBI	5.46E-03	5
Cancer, Hematological Disease, Immunological Disease	multiple myeloma	FCER1G, IL4, MGST2, PLA2G1B, PRG3	5.64E-03	13
Cell Cycle	mitosis of tumor cell lines	BRINP3, CRBN, CSMD1, CXCL1, FDXP, GSR, HS6S23, LCP2, MMP2, PSMB2, PSMB5, PSMD1, TP53	5.66E-03	11
Lipid Metabolism, Small Molecule Biochemistry	synthesis of eicosanoid	BMP7, FBXO5, FLI1, INVS, MASTL, NAE1, PCDH11Y, RBBP9, RPS24, STL1, TP53	5.66E-03	8
Cell Death and Survival	apoptosis of epithelial cells	CD83, CXCL1, EDN1, EDNRA, FCER1G, IL4, MGST2, PLA2G1B, PLA2G2D, PRG3, TP53	5.70E-03	11
Immunological Disease	immunodeficiency	ASA2, BCL2A1, FASLG, IL4, STAT5, TGFBI, TNFRSF10A, TP53	5.73E-03	7
		ADAR, AK2, C10A, C10C, C4A, C4B, FASLG, FCGR2B, IL4, INFKR, NHEJ1, OAS1, PLOC2, STAT5B, TTC3	5.73E-03	14
		ALA, ALA, ALURK, ALUFP1, ALU1, F2C, F2Z, ARF, AP1, LINA, ARHGEF1, B3BP1, I, SBR4DL1, /, BCAF9, BRP1, BCL11B, BCL2, A1, BCL6, BCLCN1, BIRC5, BMP7, BRP1, BRINP3, C1GALT1C1, CCKBR, CCL14, CCL24, CD38, CD83, CDC		
		P1, CDKN3, CNOT8, CSF2RA, CTBP2, CUL7, CXCL1, CXCL2, DHH, DKK3, DLG1, DPP4, DUSP4, DUSP6, E		
		DN1, EIF3C, ENPP1, ENTDP1, FAM188A, FASLG, FBLN2, FCER1A, FHIT, FLI1, FOXG1, FST, GATA6, GDF9		
		, GLMN, GPX4, GREM1, HABP2, HDAC6, HGFAC, HLA-		
		DRB1, HHRNP4, HSF1, ICAM3, IL4, IQGAP1, KIR2DS4 (includes		
		others), KMT2A, LEP, LGALS9, LTRB, MCM3, MCRS1, MGAT1, MMP2, MYBL2, NAA10, NCK1, NEURL1, NF		
		KB2, NGFR, NOTCH4, NR2F2, NRG4, NTSC3A, NTHL1, NTRK3, PLCE1, PLOC2, PLS3, PPP1CC, PPP1R1		
		0, PRPF19, PSMB2, PSMD3, RBMY1A1 (includes		
		others), RICTOR, RNF111, RNF20, RPSA, S100A10, SCARB1, SF3B2, SPRY2, STAT5B, STL1, SUPV3L1, T		
		ACSTD2, TBC1D3 (includes		
		others), TGFBI, TJP3, TLR9, TNFRSF10A, TNFSF8, TOB1, TOP1, TP53, TP73, TRRAP, TSC22D3, TUBB3,		
Cellular Growth and Proliferation	proliferation of cells	UBC, UCHL1, USP1, UTP20, VIPR1, VPS28, WWOX, ZFP36	5.83E-03	128
Molecular Transport	quantity of metal ion	AKAP1, CCKBR, CCL24, CCR8, EDN1, EDNRA, ENTDP1, ENTDP2, GNA11, IL4, LGR4, NMUR1, PLCL1, SE	5.87E-03	16
Immunological Disease, Inflammatory Response, Organismal Injury and Abnormalities, Renal and Urological Disease	IgA nephropathy	LE, TGFBI, TP73	5.91E-03	4
Post-Translational Modification	autoubiquitination of protein	ERIC3, LRSAM1, TRIM13, TRIM17	5.91E-03	4
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	activation of leukocytes	DDOST, DPP4, DUSP3, EDN1, FASLG, FCER1G, IL4, KIR3DL1, LTRB, NCK1, PRG3, RAB35, SEMA4D, TG	5.95E-03	17
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	activation of blood cells	FB1, TLR9, TNFRSF10A, TP53	5.95E-03	17
Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities	peripheral T-cell lymphoma	DDOST, DPP4, DUSP3, EDN1, ENTDP1, FASLG, FCER1G, IL4, KIR3DL1, LTRB, NCK1, PRG3, RAB35, SE	5.96E-03	18
Cancer, Gastrointestinal Disease	oral cancer	M44D, TGFBI, TLR9, TNFRSF10A, TP53	6.04E-03	6
		HDAC6, PSMB2, PSMB5, PSMD1, TP53, TUBB3	6.04E-03	17
		AKAP1, ATIC, CD83, CXCL1, CXCL2, GATA6, ITGBL1, MAP7, MYO3B, NUDT11, SEMA4D, SPRY1, TACST	6.42E-03	17
		D2, TGFBI, TP53, TUBA1C, TUBB3	6.42E-03	17
		AGGF1, APLNR, ARHGEF4, BCL11B, BMP7, BRINP3, C14orf45, CCL14, COL4A, COL27, CCR8, CD38, CD		
		CPI, CHST2, CSF2RA, CTBP2, CXCL1, CXCL2, DKK3, DPP4, EDN1, EFNA5, FAM188A, FASLG, FBLN2, F		
		UT9, GATA6, GNA11, IL4, IQGAP1, KMT2A, LEP, LGALS9, MMP2, NCK1, NEDD4, NEU3, NFKB2, NOTCH4,		
		NTRK3, PDE4DIP, PITX2, PLA2G1B, PLCL1, RAP1A, RICTOR, RNF20, RUVBL2, S100A10, SCARB1, SELE		
		, SEMA4D, SGPP1, SPRY2, TACSTD2, TGFBI, THY1, TP53, TP73, TP63, TSC22D3, TUBA1C, USP14, VIP		
Cellular Movement	cell movement	R1, VPS28, WWOX	6.42E-03	66
		AADAT, ADAR, APOB, BAG5, BCL6, CD38, CD83, CDCP1, CPVL, CSMD1, CTSA, DLG2, DRD3, EDN1, EDN		
		RA, ENP1, FUT9, GATA6, GLRX, HABP2, HLA-		
		DRB1, IL4, LDLR, LPXN, MMP2, MYO3B, NPR1, NR2F2, PDE4DIP, PTGER3, RPL9, RUVBL2, SCARB1, SEL		
		E, SLC22A3, SSX2IP, SUPV3L1, TGFBI, THY1, TLR9, TUBA1C, TUBB3, UTP20, WWOX, ZFP36	6.46E-03	45
Cardiovascular Disease	vascular disease		6.46E-03	45
Cell Death and Survival	apoptosis of blood cells	CCR8, CSF2RA, CXCL1, FASLG, FCER1A, FLI1, IL4, LEP, LGALS9, NFKB2, STAT5B, TGFBI, TLR9, TP53	6.55E-03	14
Cell Death and Survival	apoptosis of spleen cell lines	FASLG, TGFBI	6.55E-03	2
Cell Cycle	arrest in G0/G1 phase transition of lung cancer cell lines	FHIT, TP53	6.59E-03	2
Cellular Development, Cellular Growth and Proliferation	arrest in growth of bladder cancer cell lines	TP53, TP73	6.59E-03	2
Cell Cycle	arrest in interphase of stomach cancer cell lines	TGFBI, TP53	6.59E-03	2
Cancer, Neurological Disease	brainstem glioma	GSR, TP53	6.59E-03	2
Cellular Movement, Embryonic Development	cell rolling of embryonic cell lines	FUT9, SELE	6.59E-03	2
Cellular Movement, Hair and Skin Development and Function	cell rolling of epithelial cell lines	FUT9, SELE	6.59E-03	2
Cell Death and Survival, Cellular Function and Maintenance	colony survival of lung cancer cell lines	TP53, TUBB3	6.59E-03	2
Cardiovascular System Development and Function, Tissue Morphology	contraction of umbilical vein	IL4, TGFBI	6.59E-03	2
Cell-To-Cell Signaling and Interaction, Tissue Development	dissociation of cells	CCKBR, NPR1	6.59E-03	2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function	epithelial-mesenchymal transition of kidney cell lines	BMP7, TGFBI	6.59E-03	2
Function	expansion of regulatory T lymphocytes		6.59E-03	2
Endocrine System Development and Function	insulin sensitivity	LGALS9, TGFBI	6.59E-03	2
Cancer, Gastrointestinal Disease	metastatic colon carcinoma	LEP, SCARB1	6.59E-03	2
Cell Morphology	morphology of prostate cell lines	FASLG, LGR4	6.59E-03	2
Cell Cycle, Cellular Development, Connective Tissue Development and Function	premature senescence of fibroblasts	GALNT3, TGFBI	6.59E-03	2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Inflammatory Response	proliferation of colony-forming granulocyte-macrophages	MYBL2, TP53	6.59E-03	2
Endocrine System Development and Function, Tissue Morphology	quantity of endocrine cells		6.59E-03	2
Cell Signaling	transduction of protein	CXCL2, TGFBI	6.59E-03	2
Cancer	transformation of blood cells	FST, NRG4	6.59E-03	2
Infectious Disease	transmission of HIV-1	IL10RB, PLOC2	6.59E-03	2
Drug Metabolism, Lipid Metabolism, Small Molecule Biochemistry	synthesis of prostaglandin E2	KMT2A, LGALS9	6.59E-03	2
Cell Signaling	activation of enzyme	CD36, LCP2	6.61E-03	8
		CD83, CXCL1, EDN1, EDNRA, FCER1G, IL4, PLA2G2D, TP53	6.67E-03	8
		BCL2L10, CTSA, CXCL1, EDNRA, FASLG, GMBF, GTF3CA, IQGAP1, NCK1, NMUR1, NR2F2, PLA2G1B, PL		
		CE1, PPM1E, PPP1R12B, SELE, TRIM23	6.67E-03	17
Neurological Disease, Skeletal and Muscular Disorders	neuromuscular disease		6.71E-03	48
Cell Death and Survival	apoptosis of leukemia cell lines	ACTN3, AEBP1, APLNR, ARHGEF1, B4GALT5, BCL11B, BCL6, BECN1, C4A, C4B, CCKBR, CHAT, COLGA	6.79E-03	19
Developmental Disorder, Hereditary Disorder, Metabolic Disease, Neurological Disease, Ophthalmic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders	muscle-eye-brain disease	L72, CPT1B, CXCL1, DKK3, DLG2, DRD3, FCGR2B, FHIT, GALNT3, HLA-DOB1, HLA-DRB1, HLA-		
Molecular Transport, Small Molecule Biochemistry	release of histamine	E, IL4, LDLR, LDLR, LEP, LMO1, MPR, NAPA, NEDD4, NOTCH4, OAS1, PDE1B, PDE4DIP, PPR1A, RPS		
Dermatological Diseases and Conditions	toxic epidermal necrolysis	M8, SLC17, SSX2IP, STSIA3, THY1, TP53, TP13, TRIM31, TUBA1C, UBCE2D4, UCHL1	6.79E-03	48
Cell Signaling, Molecular Transport, Vitamin and Mineral Metabolism	mobilization of Ca2+	BCL2A1, BCL2L10, BECN1, CSF2RA, DPP4, FASLG, FCER1A, HDAC6, IL4, KIR3DL1, KMT2A, NOTCH4, PI		
		AS1, STAT5B, TGFBI, TOP1, TP53, TP73, TSC22D3	6.79E-03	19
		B3GALNT2, LARGE, POMGN1	6.81E-03	3
		FCER1G, IL4, PRG3	6.81E-03	3
		C4A/C4B, FASLG, FCGR2B	6.81E-03	3
		C4A/C4B, CCL27, CCR6, CLEC4C, CXCL1, EDN1, FCER1A, FCER1G, FCGR2B, IL4, KIR2DS4 (includes		
		others), NMUR1, PKN2, PLCE1, RHO, TP53	6.89E-03	16
		AKAP1, ATIC, BA13, BRINP3, CAPN5, CD83, CDKN3, CS7, CXCL1, CXCL2, EYA4, FBLN2, FHIT, FOXG1, G		
		ALNT3, GATA6, GNA11, GSR, HLA-		
		E, HKK1, IFNLR1, ITGB1, ILKRC1, LDXL2, LTRB, MAP7, MCRS1, MMP2, MRC1, MYO3B, NTRK3, NUDT11,		
		PCDH11Y, PTD42, RAPGEF4, RNF20, SELE, SEMA4D, SPRY1, ST18, STAT5B, TACSTD2, TAF1, TGFBI,		
		THY1, TLK2, TOP1, TP53, TP73, TRRAP, TUBA1C, TUBB3, UCHL1, UHRF1BP1L	6.89E-03	54
		FASLG, IL4, MYBL2, PIAS1, SHOX, TGFBI, TNFRSF10A, TP53, TRAF1	6.92E-03	9
		IL4, LEP, PITX2, TGFBI	6.96E-03	4
		BCL2A1, DUSP4, TGFBI, TNFRSF10A, TP53	6.99E-03	5
		MMP2, PITX2, RHO, TLE1, TP53	6.99E-03	5
		ARPC1A, CFBF, CSTB, CXCL1, DDX39A, KPNB1, LDLR, OXSM, SULT2B1, TOP1, TWF1, ZFP36	7.00E-03	12
		FDPS, FLI1, TOP1, TP53, TUBA1C, TUBB3, USP1, WWOX	7.11E-03	8
		CD83, CXCL1, CXCL2, FHIT, GATA6, ITGBL1, MAP7, MRC1, MYO3B, SEMA4D, SPRY1, STAT5B, TACSTD		
		2, TGFBI, TP53, TP73, TUBA1C, TUBB3	7.13E-03	18
		BCL2A1, BCL2L10, BECN1, CSF2RA, DPP4, FASLG, FCER1A, GPX4, HDAC6, HSF1, IL4, KIR3DL1, KMT2A		
		, NOTCH4, PIAS1, STAT5B, TGFBI, TOP1, TP53, TP73, TSC22D3	7.15E-03	21
		DDOST, DPP4, DUSP3, FCER1G, KIR3DL1, NCK1, TGFBI, TLR9, TP53	7.37E-03	9
		BAP1, BCL11B, BCL6, BMP7, FHIT, IL4, TGFBI, TNFSF8, TOP1, TP53, TP73	7.43E-03	11

Cellular Development	differentiation of tumor cell lines	7.45E-03	B4GALNT1, BECN1, CBFB, DPP4, FLI1, FST, GREM1, IFNA5, KMT2A, LOXL2, NCK1, STS8IA2, TGFBI, THY1, TP73, USP1	16
Infectious Disease	replication of virus	7.48E-03	ADAR, COLEC10, CTBP2, DLG2, DUSP3, EIF3C, FASLG, FDP5, HDAC6, HSF1, HTATSF1, IL4, KPNB1, ILG	30
Cell Death and Survival	apoptosis of vascular endothelial cells	7.49E-03	ALS9, LONP1, MGAT1, NAA10, NEK8, NHL1, OAS1, PPP1R8, RFFL, RPSA, RVBL2, SF3A1, SPRY2, TGF	7
Cell Cycle	interphase of cervical cancer cell lines	7.49E-03	B1, TLR9, TP53, TRIM2	3
Infectious Disease	production of virus	7.49E-03	AGGF1, CD39, FASLG, LEP, TGFBI, TNFRSF10A, TP53	7
Cellular Development, Hematopoiesis	maturation of dendritic cells	7.87E-03	CDKN3, MASTL, MFG, PITX2, PPP2R2A, SPRY2, TGFBI	7
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	chemotaxis of leukocytes	7.97E-03	POB, BECN1, LCP2, STATA5B, TAT, TLR9, TRIM22	5
Cellular Movement	cell movement of blood cells	8.06E-03	CD83, FCGR2B, IL4, NFKB2, NGFR	15
Cell Death and Survival	apoptosis of muscle cells	8.07E-03	CCL14, CCL24, CCL27, CSF2RA, CXCL1, CXCL2, DPP4, FASLG, GNA11	22
Developmental Disorder, Hereditary Disorder, Metabolic Disease	congenital disorder of glycosylation type 1	8.13E-03	C4A/C4B, CCL14, CCL24, CCL27, CCR8, CD36, CHST2, CSF2RA, CXCL1, CXCL2, DPP4, FASLG, GNA11	6
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	respiratory burst of myeloid cells	8.13E-03	L4, LEP, LGALS9, PLA2G1B, SELE, SEMA4D, TGFBI, THY1, VIPR1	22
Cell Cycle	cell cycle progression	8.26E-03	AGTR2, EDN1, FASLG, GATA6, TGFBI, TP53	4
Cell Death and Survival	apoptosis of endothelial cells	8.35E-03	ALG3, ALG6, DDOST, PGM1	4
Developmental Disorder, Hereditary Disorder, Metabolic Disease, Neurological Disease, Ophthalmic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders	Walker-Warburg syndrome	8.63E-03	CXCL1, FCER1A, IL4, TGFBI	4
Cell Death and Survival	cell survival of lung cancer cell lines	8.63E-03	BAP1, BCL6, BMP7, CDKN3, CUL7, DLG1, DRD3, DUSP3, EDN1, FBXO5, FLI1, HERC2, IL4, INVS, KMT2A, K	3
Cell Morphology	conversion of cells	8.63E-03	PNB1, LEP, MAP9, MASTL, NAE1, NGFR, PCDH11Y, PHF13, PKN2, RBBP8, RNF167, RPL11, RPS24, SHO	3
Cellular Function and Maintenance, Hematological System Development and Function	function of T lymphocytes	8.63E-03	X, SPRY2, STIL, TAF1, TBC1D3 (includes others), TGFBI, TOP1, TP53, TP73, USP1, WWOX	39
Cell Cycle, Cellular Movement	cytokinesis	8.63E-03	AGGF1, CD36, FASLG, GATA6, IL4, LEP, TGFBI, TNFRSF10A, TP53	9
Molecular Transport, Protein Trafficking	transport of protein	8.63E-03	B3GALNT2, LARGE, POMGNT1	3
Cell Cycle	ploidy of cells	8.63E-03	FBXO5, TP53, TUBB3	3
Cancer, Dermatological Diseases and Conditions, Hematological Disease, Immunological Disease	ALK-positive anaplastic large cell lymphoma	8.63E-03	BCL6, TGFBI, TP53	3
Organismal Injury and Abnormalities	apoptosis of antigen presenting cells	8.81E-03	DLG1, LEP, TGFBI	3
Cell Death and Survival	metabolism of cholesterol	8.81E-03	BECN1, BIRC2, CETN2, GATA6, MAP9, MASTL, PKN2, PPP1CC, RAB35, TP53	10
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	metabolism of cholesterol	8.77E-03	ADAR, BCL6, CD39, CTSA, HDAC6, KPNB1, M6PR, PPP1R10, RAB39P, RAPIA, TGFBI	11
		8.81E-03	EDN1, FBXO5, GATA6, MCRS1, PKD2, SPRY2, TP53	7
		8.81E-03	HDAC6, PSMB2, PSMB5, PSDM1, TP53	5
		8.81E-03	FASLG, IL4, TGFBI, TLR9, TP53	5
		8.81E-03	APOB, IL4, LCAT, NPC1, NROB2	5
		8.81E-03	ADAR, APLNR, APOB, ARPC1A, BECN1, BICD2, C4A/C4B, CD36, CLNS1A, CLTA, COLEC10, CTBP2, DDO	2
		8.87E-03	ST, DLG2, DPP4, DUSP5, EDNRA, EIF3C, FASLG, FCGR2B, FDP5, GPT, HDAC6, ILA	2
		8.87E-03	DOA, HSF1, HTATSF1, IL10RB, IL4, KPNB1, LCP2, LDLR, LGALS9, LONP1, MED20, MGAT1, MRC1, NAA10	10
		8.87E-03	, NEDD4, NEK8, NROB2, NHL1, NUDT11, OAS1, OSBP1, PGM1, PI3K, PIKY, PIK3CG, PKN2, POLR3A,	11
		8.87E-03	PPP1R8, PPP2R2A, PPP2R5E, PSMB6, PSMC3, RFFL, RIMS4, RPL10A, RPL18, RPSA, RVBL2, SCARB1	83
		8.87E-03	, SF3A1, SF3B2, SPRY2, SRSF6, STASB, TAT, TGFBI, THOC2, TLR9, TP53, TP73, TRIM22, TRIM44, TRIM	83
		8.87E-03	62, TRP11, TUBA1C, TUBB3, TWRF1, USP26, VAMPS, VPS28	8
		9.37E-03	BCL6, CD83, GSR, HNRNP1, RPSA, S100A10, STAT6, ZFP36	8
		9.43E-03	EDN1, NMUR1, PLCE1, SELE	4
		9.43E-03	FASLG, IL4, TGFBI, TLR9	4
		9.43E-03	CXCL24, CSF2RA, CXCL1, CXCL2, FASLG, IL4, PLA2G1B, SELE, TGFBI	9
		9.68E-03	CXCL2, ICAM3, IL4, LGALS9, SELE, THY1	6
		9.68E-03	BMP7, MMP2, PITX2, RHO, TLE1, TP53	6
		9.68E-03	HDAC6, PSMB2, PSMB5, PSDM1, TP53, TUBB3	6
		9.76E-03	CD83, CXCL1, CXCL2, GATA6, ITGBL1, MAP7, MYO3B, SEMA4D, SPRY1, TACSTD2, TGFBI, TUBA1C, TU	13
		9.83E-03	BBS3	5
		9.83E-03	CXCL1, CXCL2, FASLG, GPT, TGFBI	5
		9.83E-03	BCL6, IL4, MYBL2, SEMA4D, TGFBI	5
		9.83E-03	DUSP6, FDP5, FGF17, LEP, POLR3A	5
		9.83E-03	EDN1, FASLG, LGR4, TUBA1C, TUBB3	12
		1.02E-02	FASLG, IL4, MYBL2, NFKB2, NPC1, PIAS1, SHOX, TGFBI, TNFRSF10A, TP53, TP73, TRAF1	12
		1.07E-02	FHIT, TP53	2
		1.07E-02	SELE, THY1	2
		1.07E-02	TP53, TP73	2
		1.07E-02	FUT9, SELE	2
		1.07E-02	CCR8, MMP2	2
		1.07E-02	TOP1, TP53	2
		1.07E-02	CSF2RA, IL4	2
		1.07E-02	BCL6, NOTCH4	2
		1.07E-02	HLA-E, LEP	2
		1.07E-02	ASA2, GBA2	2
		1.07E-02	B3GALT1, PITX2	2
		1.07E-02	LONP1, TP53	2
		1.07E-02	FDP5, MMP2	2
		1.07E-02	FCER1G, TLR9	2
		1.07E-02	B4GALNT1, NEU3	2
		1.07E-02	TOP1, TP53	2
		1.07E-02	ENTPD1, LEP	2
		1.07E-02	PLA2G1B, PLA2G2D	2
		1.07E-02	ALG6, B4GALT1, DDOST	3
		1.07E-02	BCL6, IL4, TGFBI	3
		1.07E-02	ADAR, OAS1, SPRY2	3
		1.07E-02	CD36, MRC1, RPSA	3
		1.08E-02	HDAC6, PSMB2, PSMB5, PSDM1	4
		1.08E-02	GALT, NMUR1, PLA2G1B, PLA2G2D	4
		1.08E-02	CSF2RA, FASLG, FLI1, TGFBI, TP53	5
		1.10E-02	ADAR, POLR3A, TLR9, TRIM13, TRIM25, TRIM31, TRIM62	7
		1.12E-02	CD83, CXCL1, EDN1, EDNRA, FCER1G, IL4, MGST2, OXSM, PLA2G1B, PLA2G2D, PRG3, TP53	12
		1.14E-02	CCL14, CCL24, CCL27, CCR8, CHST2, CSF2RA, CXCL1, CXCL2, DPP4, FASLG, GNA11, IL4, LEP, LGALS9	20
		1.14E-02	, PLA2G1B, SELE, SEMA4D, TGFBI, THY1, VIPR1	20
		1.17E-02	CCL14, CCL24, CSF2RA, CXCL1, CXCL2, FASLG, IL4, LGALS9, PLA2G1B, SELE, TGFBI, VIPR1	12
		1.19E-02	CD83, CXCL1, EDN1, EDNRA, FCER1G, GPX4, IL4, PLA2G2D, TP53	9
		1.21E-02	C4A/C4B, CSMD1, FCGR2B, MMP2, RNF111	5
		1.21E-02	APOB, BCL6, IL4, LEP, MYBL2, SEMA4D, TGFBI, TNFRSF9	8
		1.21E-02	AKAP1, CCKBR, CCL24, CCR6, EDN1, EDNRA, ENTPD1, ENTPD2, GNA11, IL4, NMUR1, PLCL1, SELE, TG	7
		1.22E-02	FBI, TP73	15
		1.24E-02	FHIT, PITX2, TGFBI, TP53	4
		1.24E-02	FAM188A, PIAS1, RFFL, TP53	5
		1.25E-02	BAP1, FAM188A, FHIT, PIAS1, RFFL, TP53	6
		1.25E-02	ARPC1A, BICD2, CLNS1A, CLTA, DDOST, DPP4, EDNRA, HLA-	6
		1.25E-02	DOA, HTATSF1, KPNB1, LCP2, LGALS9, MED20, MGAT1, MRC1, NEDD4, NROB2, NUDT11, OSBP1, PG	39
		1.25E-02	M1, PI3K, PIKY, PKN2, POLR3A, PPP2R2A, PPP2R5E, PSMB6, PSMC3, RIMS4, RPL10A, RPL18, SF3A1, S	39
		1.27E-02	FASLG, IL4, LTR, RAB35, TGFBI, TLR9, TNFRSF10A	7
		1.31E-02	B4GALT5, FASLG, TP53	3
		1.25E-02	infection by HIV-1	
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response	activation of antigen presenting cells	1.27E-02		
Cancer, Cell Death and Survival, Neurological Disease, Tumor Morphology	apoptosis of glioma cells	1.31E-02		

Connective Tissue Disorders, Dermatological Diseases and Conditions, Hematological Disease	idiopathic thrombocytopenic purpura	1.31E-02	C4A/C4B,FASLG,FCGR2B	3
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function	proliferation of helper T lymphocytes	1.31E-02	HLA-DRB1,IL4,TGFB1	3
Endocrine System Development and Function, Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	synthesis of estrogen	1.31E-02	BMP7,HSD3B1,LEP	3
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction, Tissue Development	adhesion of vascular endothelial cells	1.36E-02	B4GALNT2,CD36,IL4,LTBR,SELE,TGFB1,THY1 AC02,ALOXE3,APOB,ATP6V0A2,B3GALNT2,B4GALNT1,C10A,C10C,CEP41,CRBN,DGUOK,DPD4 ENPF1,FASLG,FDP5,GAL1,GATM,GBA2,GBB3,HDAC6,HERC2,ICK,IL10RB,IL4,INVS,LARGE,LDLR, MMP2,NEK5,NHEJ1,NPH52,PGM1,POLR3A,POMGNT1,PSMB5,PSMB8,RPBP9,RHO,SLC4A11,STA T5B,STIL,TGFB1,TP53,TTCC3,UCHL1,WWOX	7
Hereditary Disorder	autosomal recessive disease	1.36E-02		46
			ABCC4,ACACA,ADAR,AGGF1,AGL,AGTR2,AGXT,ALG10,ANKFN1,APOB,ARHGEF1,ASAH2,ASNSD1 .ATIC,ATP6V0A2,B4GALNT1,B4GALNT1,BAG4,BAI3,BAP1,BCL11B,BCL6,BFAR,BIRC6,BMP7,BRE,B RF1,BRINP3,CAPN5,CCR8,CD3G,CDCEP1,CDKN3,CNTN4,COLEC10,CSF2RA,CSMD1,CTBP2,CTC FL,CXCL1,CYBBRA,CYP27C1,DDX39A,DPD4,DUSP21,DUSP3,EGSIT,EDNRA,EHBP1,ENPP1,EY4A, FASLG,FHIT,FZD4,GALST2,GALNT3,GATA6,GBA2,GNA11,GPR171,GSE1,HERC2,HLA- DOA,HRC,IDI1,IL4,INSM2,IQGAP1,KIAA1024,KIAA1755,KIR3DL1,KLRC3,KMT2A,KSR1,LARGE,LGAL S9,LGR4,HLA,LMOD1,LOXL2,LRRFP1,M6PR,MAP6,MAP9,MCEE,MCM3,MCRS1,MGDGA2,MICAL1, MMP2,MRS51,MYO3B,NAE1,NEURL1,NOTCH1,NPH52,NROB2,NTRK3,OAS1,OKSM,PCDHGA12, PCDHGA8,PDE4DIP,PIAS1,PIGK,PIK3C2G,PLCL1,POMGNT1,PPM1E,PPP1R10,PPP1R12B,PPP1R 7,PSMB8,PSMC3,PTCH2,RPBP8,RICTOR,RIMS4,RNF111,RNF20,SELE,SEMA4D,SF3B2,SLC22A2 0,SLC22A3,SLC38A5,SMARCA11,SPRY1,SPRY2,SPPLC2,SRGAP3,SSX2IP,ST18,STAT5B,STK36, SUPT5H,TACSTD2,TAI1,TAI1,TCF12D5,TJPS,TNFRSF10A,TOPI1,TP53,TRIM13,TRIM17,TRIM23,T RIM26,TRRAP,TTCC37,TTCC38,TUBB3,UBE4B,UGT1A9 (includes others),USP1,USP26,UTP20,VIPR1,VPS28,WNK3,XKR6,ZFP37,ZFR,ZHX2,ZNF208,ZNF449,ZNF507, ZNF904A	
Cancer, Gastrointestinal Disease	colon tumor	1.37E-02	ZNF904A	168
Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities	angioimmunoblastic T-cell lymphoma	1.41E-02	HDAC6,PSMB2,PSMB5,PSMD1	4
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	quantity of ceramide	1.41E-02	IL4,NGFR,SCARB1,SGPP1	4
Cellular Movement, Immune Cell Trafficking	leukocyte migration	1.46E-02	C4A/C4B,CCL14,CCL24,CCL27,CCR8,CHST2,CSF2RA,CXCL1,CXCL2,DPD4,FASLG,GNA11,IL4,LE P,LGAL,S9,PLA2G1B,SELE,SEMA4D,TGFB1,THY1,VIPR1	21
Cell Death and Survival	cell death of hematopoietic progenitor cells	1.47E-02	FASLG,FLI1,HRK,TGFB1,TP53	5
DNA Replication, Recombination, and Repair, Nucleic Acid Metabolism, Small Molecule Biochemistry	incorporation of thymidine	1.47E-02	EDN1,EDNRA,FASLG,NROB2,TGFB1	5
Neurological Disease	Movement Disorders	1.50E-02	ACTN3,AEBP1,APLN,ARHGEF1,B4GALT5,BCL11B,BCL6,BECN1,C4A/C4B,CKBR,CHAT,COLGA LTZ,CPT1B,DKK3,DLG2,DRD3,FASLG,FDP5,GALNT3,IL4,KLRC1,KLRC3,LDHB,LDLR,LEP,LMOD1, NAPA,NEDD4,PDE1B,PDE4DIP,PPP1R1A,PSMB8,SLC1A7,SSX2IP,ST8SIA3,TAI1,TGM6,THY1,TP5 3,TPH1,TPM3,TUBA1C,TUBB3,UBE2D4,UCHL1,WWOX	46
Cellular Movement, Hair and Skin Development and Function	cell movement of epithelial cell lines	1.54E-02	CCR8,CXCL1,FASLG,FUT9,NFKB2,PDE4DIP,SELE,TSC22D3	8
Neurological Disease, Psychological Disorders	disorder of basal ganglia	1.54E-02	ACTN3,ADAR,AEBP1,APLN,ARHGEF1,B4GALT5,BCL11B,BCL6,BECN1,C4A/C4B,CKBR,CHAT, COLGAL,T2,CPT1B,DKK3,DLG2,DRD3,GALNT3,IL4,LDHB,LDLR,LEP,LMOD1,NAPA,NEDD4,PDE1B, PDE4DIP,PPP1R1A,PSMB8,SLC1A7,SSX2IP,ST8SIA3,TAI1,THY1,TP53,TPH1,TPM3,TUBA1C,TUBB 3,UBE2D4,UCHL1	41
Cell Signaling	G-protein signaling, coupled to IP3 second messenger (phospholipase C activating)	1.57E-02	CKBR,NMUR1,PLCE1	3
Carbohydrate Metabolism	metabolism of oligosaccharide	1.57E-02	NEU5,ST8SIA3,ST8SIA4	3
Carbohydrate Metabolism, Small Molecule Biochemistry	synthesis of proteoglycan	1.57E-02	CHST8,HS3ST3B1,TGFB1	3
Cell Death and Survival	cell death of osteoclasts	1.58E-02	FASLG,TGFB1	2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Inflammatory Response	cell-mediated response of T lymphocytes	1.58E-02	IL4,LGAL,S9	2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	clearance of lipid	1.58E-02	LCAT,NPC1	2
Drug Metabolism, Endocrine System Development and Function, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	concentration of testosterone	1.58E-02	LEP,LGR4	2
Cellular Development, Embryonic Development	differentiation of embryonic stem cell lines	1.58E-02	FST,TP53	2
Protein Synthesis	expression of reporter protein	1.58E-02	TP53,TP73	2
Cell-To-Cell Signaling and Interaction, Inflammatory Response	immune response of dendritic cells	1.58E-02	IL4,SCARB1	2
Cardiovascular System Development and Function, Hematological System Development and Function	mean arterial pressure	1.58E-02	AGTR2,EDN1	2
Cardiovascular System Development and Function, Nervous System Development and Function, Organ Morphology	permeability of blood-brain barrier	1.58E-02	LDLR,MMP2	2
RNA Post-Transcriptional Modification	selection of splice site	1.58E-02	SRSF6,SRSF9	2
Molecular Transport	transport of bicarbonate	1.58E-02	SLC26A6,SLC4A11 ARPC1A,BICD2,C4A/C4B,CLNS1A,CLTA,DDOST,DPD4,EDNRA,FCGR2B,FDP5,HLA- DOA,HTATSF1,IL4,KPNB1,LCP2,LGAL,S9,MED20,MGAT1,MRC1,NEDD4,NROB2,NUDT11,OSBP3, PGM1,PIGK,PIGY,PKN2,POLR3A,PPP2R2A,PPP2R5E,PSMB6,PSMC3,RIMS4,RPL10A,RPL18,SF3A 1,SF3B2,SRSF6,THOC2,TRIM44,TRP11,TWF1,USP26	2
Infectious Disease	HIV infection	1.59E-02		43
Digestive System Development and Function, Gastrointestinal Disease, Hepatic System Development and Function, Hepatic System Disease, Infectious Disease, Inflammatory Disease, Inflammatory Response, Organ Development	hepatitis B	1.62E-02	C4A/C4B,FCGR2B,IL10RB,TGFB1,TP73	5
Cell Cycle	interphase of carcinoma cell lines	1.62E-02	BAP1,FAM188A,FHIT,RFFL,TP53	5
Cellular Growth and Proliferation	cytostasis	1.66E-02	BAP1,BCL11B,BCL6,BMP7,FHIT,HDAC6,IL4,IBC1D3 (includes others),TGFB1,TNFSF3,TOPI1,TP53,TP73	13
Cellular Development, Cellular Growth and Proliferation	proliferation of leukemia cell lines	1.66E-02	CDCP1,DUSP4,FLI1,GLMN,IL4,KMT2A,LEP,RNF20,STAT5B,TGFB1,TOPI1,TP53,WWOX	13
Infectious Disease	replication of RNA virus	1.73E-02	ADAR,COLEC10,DLG2,DUSP3,EIF3C,FASLG,FDP5,HDAC6,HSF1,IL4,KPNB1,LGAL,S9,LONP1,MGA T1,NAI1,NEK5,NTHL1,OAS1,PPP1R3,RFFL,RPSA,RUVBL2,SF3A1,TGFB1,TLR9,TP53,TRIM62	27
Cancer	large-cell carcinoma	1.77E-02	ATIC,GALNT13,TP53,TUBA1C,TUBB3	5
Developmental Disorder, Hereditary Disorder, Immunological Disease	severe combined immunodeficiency	1.77E-02	AK2,C4A/C4B,FCGR2B,IL4,NHEJ1	5
Cell Death and Survival	cell viability of lung cancer cell lines	1.77E-02	BIRC6,FBXO5,NFKB2,RICTOR,RPSA,TP53,TUBB3	7
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	homeostasis of cholesterol	1.79E-02	APOB,LCAT,LDLR,NPC1	4
Cell Cycle	arrest in G1 phase of carcinoma cell lines	1.86E-02	FAM188A,RFFL,TP53	3
Developmental Disorder, Hereditary Disorder, Immunological Disease	complement component deficiency	1.86E-02	C1QA,C1QC,C4A/C4B	3
Lipid Metabolism, Small Molecule Biochemistry	synthesis of prostaglandin D2	1.86E-02	EDN1,EDNRA,IL4 BRINP3,C4A/C4B,CRBN,CSMD1,CXCL1,DUSP4,FCGR2B,FDP5,GSR,HDAC6,HS6S1,KSR1,LCP2, MMP2,NEK5,PSMB2,PSMB5,PSMB8,PSMD1,SCARB1,TP53,ZFP37	22
Hamatological Disease	blood protein disorder	1.90E-02	AGGF1,CXCL1,GATA6,GNA11,KMT2A,LEP,NCK1,SELE,THY1	9
Cardiovascular System Development and Function, Cellular Movement	migration of vascular endothelial cells	1.91E-02	ASMT,CNOT8,EIF3B,EIF3C,METAP1,NCK1,PRG3,RPL23,TGFB1,TP53,TP73	11
Protein Synthesis	expression of protein	1.91E-02	ATIC,BAI3,CDKN3,EY4A,FOXG1,GSR,HRK,KLRC1,MAP7,PTCH2,RAPGEF4,RNF20,ST18,TAI1,TGF B1,TLK2,TOPI1,TP53,TP73,TRRAP	20
Cancer, Neurological Disease	central nervous system cancer	1.91E-02	AGGF1,ARHGEF4,BRINP3,C4A/C4B,CCL14,CCL24,CCL27,CCR8,CD36,CDCEP1,CHST2,CSF2RA,C TBP2,CXCL1,CXCL2,DPD4,EDN1,EFNA5,FAM188A,FASLG,FBLN2,GATA6,GNA11,IL4,IQGAP1,KMT 2A,LEP,LGAL,S9,MMP2,NCK1,NFKB2,NOTCH4,NTRK3,PDE4DIP,PTX2,PLA2G1B,PLCL1,RAP1A,RI CTOR,RNF20,RUVBL2,S100A10,SCARB1,SELE,SEMA4D,SGPP1,SPRY2,TACSTD2,TGFB1,THY1,T P53,TP73,TPM3,TSC22D3,VIPR1,VPS28,WWOX	57
Cellular Movement	migration of cells	1.98E-02	DPP4,FDP5,IL4,TGFB1	4
Hereditary Disorder, Respiratory Disease	Cystic Fibrosis	2.00E-02		5
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Inflammatory Response	immune response of neutrophils	2.00E-02	CD36,CXCL1,FCER1A,IL4	4
Neurological Disease, Psychological Disorders, Skeletal and Muscular Disorders	lewy body disease	2.00E-02	BECN1,DRD3,NEDD4,UCHL1	4
Cancer, Respiratory Disease	pleural mesothelioma	2.00E-02	ATIC,BAP1,TUBA1C,TUBB3	4
Cell Death and Survival	cell death of immune cells	2.02E-02	APOB,BCL6,CCR8,CXCL1,FASLG,FCER1A,IL4,LEP,LGAL,S9,MYBL2,NFKB2,SEMA4D,STAT5B,TGF B1,TLR9,TNFSF8,TP53	17
Cell Cycle	interphase of tumor cell lines	2.06E-02	BAP1,BMP7,CDKN3,DPD4,FAM188A,FHIT,IL4,MASTL,MGP,MYBL2,NAE1,PIAS1,PTX2,PPP2R2A,F BFB8,RFFL,RPL11,RPL23,SPRY2,TGFB1,TP53	21

