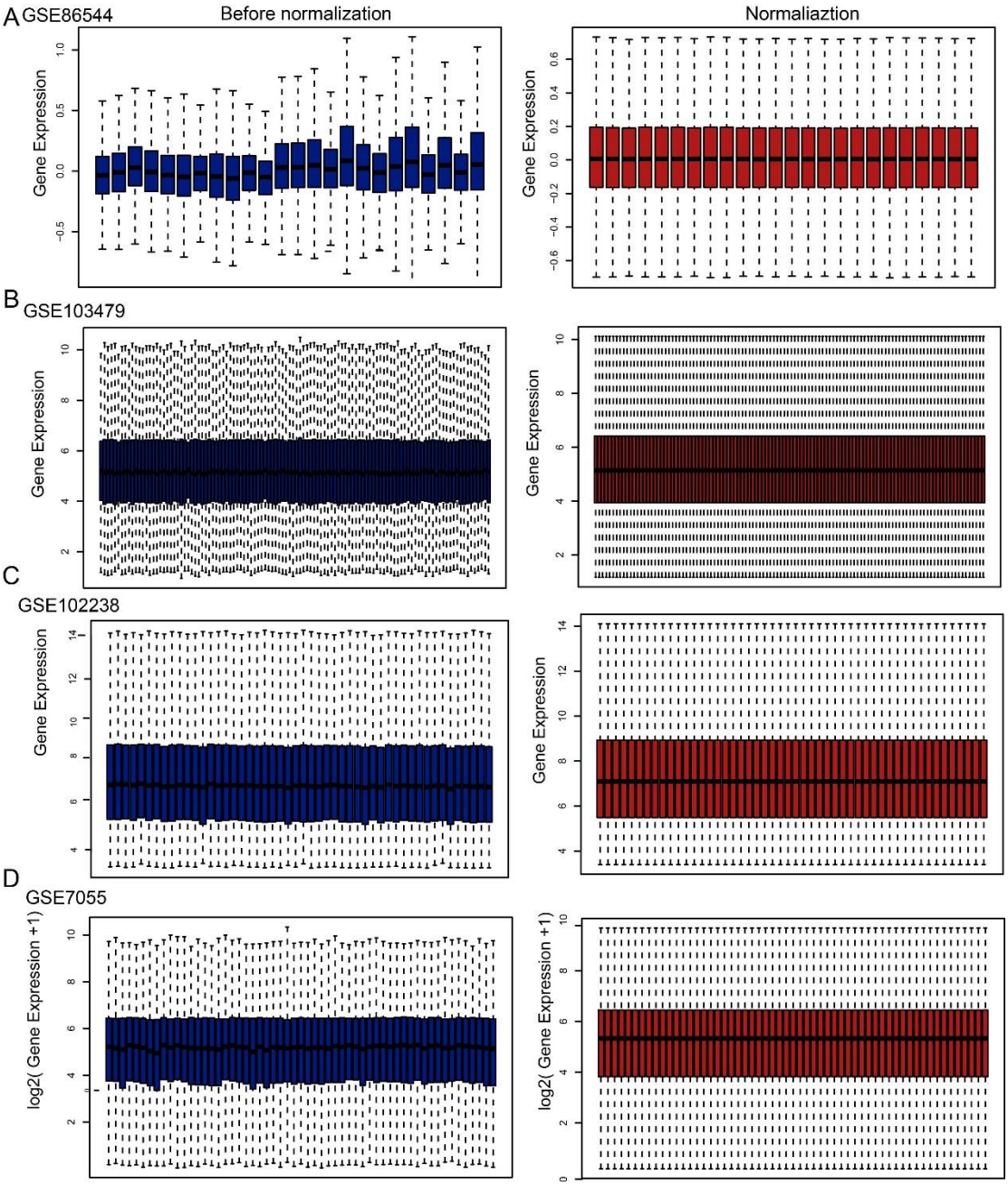
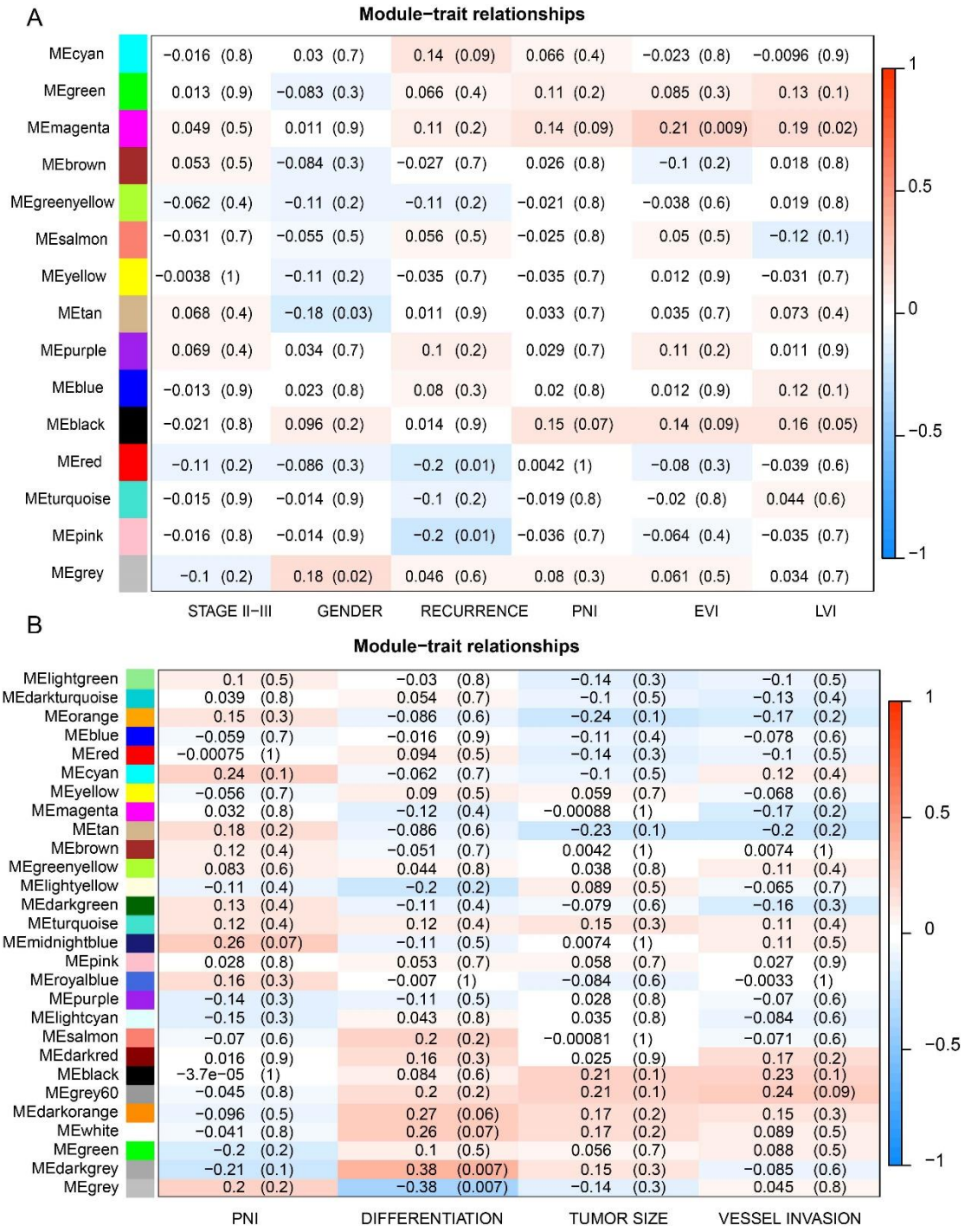


Supplementary Figure 1 Standardization of gene expression

Notes: (A) Standardization of GSE86544, (B) standardization of GSE103479, (C) standardization of GSE102238, (D) Standardization of GSE7055. The blue bar represents the data before normalization, and the red bar represents the data after normalization.

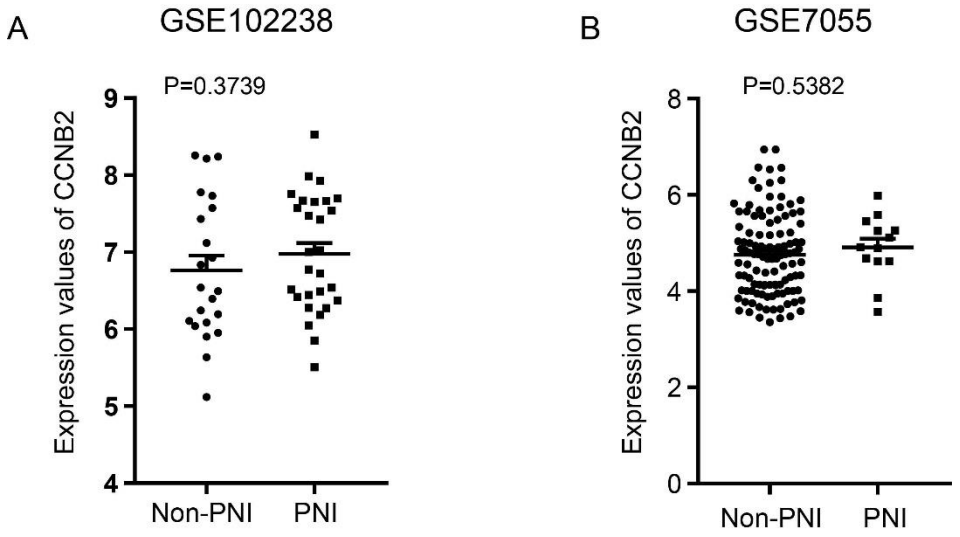


Supplementary Figure 2 Correlation between module eigengenes and clinical traits especially PNI in GSE103479 and GSE102238 datasets**.**

Notes: (A, B) Module-trait relationships in GSE103479 and GSE102238 datasets. The correlation coefficients and corresponding P-values in the brackets are contained in each cell. The table is color-

coded by correlation between eigengenes and traits according to the color legend on the right side. The modules with the most significant differences are displayed in brackets.

Abbreviations: PNI, perineural invasion.



Supplementary Figure 3 The expression values of CCNB2 in pancreatic cancer (GSE102238) and colon cancer (GSE103479).

Notes: (A, B) CCNB2 expression values were detected in GSE102238 and GSE103479.

Abbreviations: CCNB2, cyclin B2

Supplementary Table 1 Results of top 20 pathway enrichment analysis of GSE7055

Term	Category	Description	Count	Log10(P)	Genes
GO:0000280	GO Biological Processes	nuclear division	33	-23.4	BIRC5,BUB1B,CCNB1,CCNE1,CDC20,CKS2,KIF11,MAD2L1,MYBL2,SPAST,TOP2A,TTK,PRC1,PKMYT1,PTTG1,TRIP13,DLGAP5,TACC3,SMC2,SPAG5,UBE2C,ZWINT,TPX2,FBXO5,RACGAP1,NUSAP1,SPDL1,CDCA8,CEP55,NDC1,NSFL1C,KIF18B,ASPM
GO:1902850	GO Biological Processes	microtubule cytoskeleton organization involved in mitosis	15	-12.89	BIRC5,CCNB1,CDC20,KIF11,MAD2L1,MYBL2,SPAST,TTK,PRC1,TACC3,TPX2,RACGAP1,NUSAP1,SPDL1,NSFL1C
GO:0007156	GO Biological Processes	homophilic cell adhesion via plasma membrane adhesion molecules	16	-12.53	PCDHA9,NECTIN3,PCDHAC2,PCDHAC1,PCDHA13,PCDHA12,PCDHA11,PCDHA10,PCDHA8,PCDHA7,PCDHA6,PCDHA5,PCDHA4,PCDHA3,PCDHA2,PCDHA1
GO:0045787	GO Biological Processes	positive regulation of cell cycle	18	-8.88	CCNB1,CCNE1,CDK1,CKS2,ECT2,EZH2,FEN1,MAD2L1,SPAST,THOC5,DLGAP5,SPAG5,UBE2C,CIT,FBXO5,RACGAP1,NUSAP1,NSFL1C
R-HSA-453279	Reactome Gene Sets	Mitotic G1-G1/S phases	12	-8.74	CCNA2,CCNB1,CCNE1,CDK1,E2F3,MCM2,MYBL2,RRM2,TK1,TOP2A,ORC6,FBXO5
GO:0140013	GO Biological Processes	meiotic nuclear division	12	-8.03	BUB1B,CCNE1,CDC20,CKS2,TOP2A,TTK,PTTG1,TRIP13,SMC2,FBXO5,NDC1,ASPM
R-HSA-69478	Reactome Gene Sets	G2/M DNA replication checkpoint	4	-7.78	CCNB1,CDK1,PKMYT1,CCNB2

GO:0006260	GO Biological Processes	DNA replication	13	-6.64	CCNA2,CCNE1,CDK1,FEN1,MCM2,RRM1,RRM2,PCLAF,GINS1,RNASEH2A,ORC6,FBXO5,GINS2
GO:0032506	GO Biological Processes	cytokinetic process	6	-6.31	ANXA11,ECT2,SPAST,KIF20A,RACGAP1,CEP55
GO:0071103	GO Biological Processes	DNA conformation change	13	-5.81	CCNB1,CDK1,HMGB3,MCM2,TOP2A,GINS1,SMC2,NUSAP1,GINS2,MIS18A,HJURP,CENPM,CENPU
GO:0044571	GO Biological Processes	[2Fe-2S] cluster assembly	3	-5.36	NFS1,BOLA2,BOLA2B
M14	Canonical Pathways	PID AURORA B PATHWAY	5	-4.93	BIRC5,KIF20A,SMC2,RACGAP1,CDCA8
GO:0006310	GO Biological Processes	DNA recombination	11	-4.76	FEN1,HMGB3,KPNA2,MCM2,MSH2,STAT6,TOP2A,TNFSF4,TRIP13,RAD51AP1,GINS2
GO:0051303	GO Biological Processes	establishment of chromosome localization	6	-4.52	CCNB1,DLGAP5,SPAG5,SPDL1,CDCA8,CEP55
GO:0051653	GO Biological Processes	spindle localization	5	-4.49	MAD2L1,NUSAP1,SPDL1,NSFL1C,ASPM
GO:0034502	GO Biological Processes	protein localization to chromosome	6	-4.4	CCT6A,CDK1,EZH2,MSH2,TTK,SPDL1
GO:0032886	GO Biological Processes	regulation of microtubule-based process	9	-4.31	KIF11,SPAST,TACC3,SPAG5,TPX2,MEMO1,NSFL1C,MAP6D1,RAB6C
GO:0006890	GO Biological Processes	retrograde vesicle-mediated transport, Golgi to ER	6	-4.28	KIF11,RAB6A,RACGAP1,RAB6B,RAB6C,RAB6D

hsa03013	KEGG Pathway	RNA transport	8	-4.27	THOC5,EIF4G3,EIF2B3,TACC3,RPP40, GEMIN8,NDC1,THOC7
M242	Canonical Pathways	PID AURORA A PATHWAY	4	-4.05	THOC5,EIF4G3,EIF2B3,TACC3,RPP40, GEMIN8,NDC1,THOC7

Supplementary Table 2 Results of top 20 pathway enrichment analysis of GSE86544

Term	Category	Description	Count	Log10(P)	Genes
R-HSA-1280218	Reactome Gene Sets	Adaptive Immune System	91	-14.4	AP1B1,CALM2,CALR,CD3D,CD3E,CD86, CD40,CDC34,CENPE,CHUK,CTSD,CTSK, CXADR,FCGR3A,HLA-DOB,IKBKB,KIR2DL1,KIR3DL1,KLRB1,KIF22,KRAS,LCP2,LMO7,LYN,MICB,NFKBIE,PIK3CA,PPP2R5D,PRKACA,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,SIPA1,SIGLEC1,TLR4,UBA1,UBE2G1,VAV1,CUL2,CUL1,RIPK2,BTRC,SOCS3,UBA3,VAMP3,KIF3B,RASGRP1,RNF41,PSME3,SEC23A,CD226,SEC24A,KIF2C,RAPGEF4,GLMN,UBOX5,KIFAP3,MGRN1,UBR2,RASGRP3, HECTD1,KIF26A,FBXO2,FBXO9,KLHL20, BLNK,CD209,SAR1B,BTBD1,TREM2,TREM1,UBE2R2,UBE2W,TRIM39,TRIB3,PJA1, TUBAL3,ULBP1,KIF18A,CARD11,DCTN5, TUBB6,FBXL20,TRIM4,KLC4,FBXO17,AP1S3,BTLA
R-HSA-199991	Reactome Gene Sets	Membrane Trafficking	81	-14.36	AP1B1,BICD1,BTC,CALM2,CD3D,CENPE, CUX1,DAB2,EPS15,GOLGA4,KIFC1,KIF22,RAB8A,MYO6,PAFAH1B1,PAFAH1B2,PLA2G4A,PRKAB1,PRKAB2,RAB3A,RAB4A,VPS52,TRAPPC2,VAMP2,TSC2,WNT5A,STAM,GBF1,SYNJ1,SYNJ2,CYTH3,CYTH2, CYTH1,TRIP11,VAMP3,KIF3B,VPS4B,RIN1,GCC2,CLINT1,PUM1,SEC16A,STAM2,BET1,SEC23A,ARPC1A,KIF1C,SEC24A,COPS8,COPS6,KIF2C,KIFAP3,SCFD1,EXOC7, COG4,NECAP1,LDLRAP1,KIF26A,ARFGAP3,VPS4A,ITSN2,SAR1B,TRAPPC4,VTA1,

					VPS54,EXOC6,KIF26B,KIF16B,TUBAL3,KIF18A,COG8,DCTN5,TUBB6,KLC4,KIFC2,COG7,CHMP4C,FCHO2,NAA30,AP1S3,RAB43
GO:0022411	GO Biological Processes	cellular component disassembly	72	-13.31	ADD3,APC,APEH,MRPL49,CFL2,CSNK2A2,CTSK,DPP4,EIF5A,EPS8,ETF1,F2RL1,FAP,FZD2,GBA,H1-0,IGF1R,ITGAM,MMP2,MMP11,MMP13,MMP16,PAFAH1B1,PPP1CA,SET,SMARCC1,SMARCD1,SMARCD2,TSC2,FZD1,BECN1,GBF1,SYNJ1,CCNB2,VPS4B,HDAC6,RNF41,CAMKK2,NES,NEK6,KIF2C,SUPT16H,ATG14,SETX,FRAT2,GSPT2,LMOD1,WIPI2,VPS4A,MRPS18B,MRPL15,MRPS18C,TRMT112,VTA1,MRPS23,MRPL39,TREM2,MRPL50,PDXP,MRPL14,MRPS24,MRPS15,MRPS11,MRPS9,MRPL1,KIF18A,GRWD1,GADD45GIP1,H2AW,ACVR1C,MRPL21,KIF24
R-HSA-8953854	Reactome Gene Sets	Metabolism of RNA	82	-13.3	CCNH,ETF1,GTF2F1,GTF2H3,HSPA1B,MAGOH,MNAT1,CNOT2,NUP98,PCBP1,EXOSC9,POLR2L,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,RPL22,RPS13,SET,SRSF3,SRSF7,SNRPA1,SNRPB2,SNRPF,PABPN1,DHX16,SRSF9,DDX21,WDR46,SNRNP40,NUP155,EIF4A3,LCMT2,PQBP1,RCL1,PSME3,MPHOSPH6,CWC27,PPIH,CHERP,WDR3,SNRNP35,NUP42,WBP4,XPOT,U2AF2,XRN2,EXOSC7,SMG6,PPWD1,GSPT2,PRPF6,NOL11,TFB1M,TRMT112,TRMT6,SF3B6,PUS7,DDX49,TRIT1,THG1L,TYW1,RIOK2,ZMAT5,DHX37,NOL6,WDR77,NOL12,GEMIN6,THOC7,EDC3,PUS1,SARNP,TGS1,NT5C3B,TRMT61A,NUP35,LSM11,DCP1B,PATL1
GO:0001816	GO Biological Processes	cytokine production	90	-12.84	ATF4,AXL,BST2,RUNX1,CD2,CD3E,CD6,CD86,CD40,CEBPG,CHRNA7,CHUK,CMKLR1,EPHA2,F2RL1,FN1,ACKR1,XRCC6,GATA3,GBA,GBP1,GHSR,HMOX1,HSPA1B,IFNG,IFNGR1,RBPJ,IL10,IL12A,IL12RB2,INHA,INHBB,IRF4,ITGB6,KIT,LCP2,LGALS9,LYN,MC1R,CD46,MYB,PCSK5,POLR2L,PRKCZ,PTPRS,S100A12,SLAMF1,PPP1R11,TLR3,TLR4,TNFRSF4,WNT5A,RIPK2,RP

					S6KA4,NMI,DDX21,AIM2,EIF2AK3,POLR1C,SOCS5,PUM1,PQBP1,RASGRP1,POLR3G,CD226,GLMN,SULF1,PLCB1,DDX58,KPNA6,CRCP,DDX41,HDAC7,TREM2,SASH3,RNF216,RNF125,FERMT1,SPHK2,DHX33,TWSG1,IFIH1,NLRC5,RNF135,CARD11,HAVCR2,TNFRSF13C,CCDC88B,NRROS,USP17L2
GO:0051640	GO Biological Processes	organelle localization	82	-12.24	BICD1,CDH2,CENPE,HMOX1,KIF5C,KIT,KIFC1,KIF22,LGALS9,LLGL1,LYN,RAB8A,NPM1,NUP98,PAFAH1B1,PRKACA,PRKCZ,RAB3A,RAC2,TRAPPC2,AURKA,VAMP1,VAMP2,SYP,DYNLT1,UCHL1,WNT7A,MKKS,SSNA1,STX11,BECN1,SNX4,GBF1,SYNJ1,DGKI,VAMP3,KIF3B,STX8,VPS4B,ESPL1,SEC16A,HDAC6,RASGRP1,LRPPRC,SPRY2,BET1,SEC23A,UNC13B,KIF1C,SEC24A,KIF2C,FGFR1OP,PDCD10,ATG14,KIFAP3,RRS1,SCFD1,ARFGAP3,VPS4A,SAR1B,TRAPPC4,EXOC6,HAUS6,CENPQ,RIOK2,CENPJ,PARD3,SPHK2,KIF13A,TRAK2,KIF18A,NUF2,BRSK1,FBXL20,TMEM67,CHMP4C,STX1B,CDCA5,CEP120,TSNARE1,KIF24,RAB15
R-HSA-109582	Reactome Gene Sets	Hemostasis	75	-12.07	ANGPT2,ATP1B2,CALM2,CD2,CENPE,CXADR,DOCK2,DOCK3,FN1,GATA3,GNA15,GNG11,GUCY1A1,HBD,ITGA6,ITGA1,ITGA3,ITGAM,KCNMB1,KIFC1,KIF22,KRAS,LCP2,LGALS3BP,LYN,MYB,PDE2A,PIK3CA,PLA2G4A,PLAT,PLAU,PPP2R5D,PRKACA,PRKCH,PRKCZ,RAC2,RAD51B,SLC3A2,TIMP3,VAV1,SLC7A5,DGKD,TNFRSF10B,F2RL3,DGKI,KIF3B,DOCK4,RASGRP1,FAM3C,GNA13,KIF1C,PDE10A,KIF2C,RAPGEF4,KIFAP3,KDM1A,SLC7A11,KIF26A,BRPF3,GP6,GNG13,TREM1,GNG2,KIF26B,KIF16B,CDC37L1,DOCK6,TUBAL3,KIF18A,TUBB6,KLC4,KIFC2,DGKH,NHLRC2,H3C13
hsa04151	KEGG Pathway	PI3K-Akt signaling pathway	51	-11.74	ANGPT2,ATP1B2,CALM2,CD2,CENPE,CXADR,DOCK2,DOCK3,FN1,GATA3,GNA15,GNG11,GUCY1A1,HBD,ITGA6,ITGA1,ITGA3,ITGAM,KCNMB1,KIFC1,KIF22,KRAS,LCP2,LGALS3BP,LYN,MYB,PDE2A,PIK3C

					A,PLA2G4A,PLAT,PLAU,PPP2R5D,PRKACA,PRKCH,PRKCZ,RAC2,RAD51B,SLC3A2,TIMP3,VAV1,SLC7A5,DGKD,TNFRSF10B,F2RL3,DGKI,KIF3B,DOCK4,RASGRP1,FAM3C,GNA13,KIF1C,PDE10A,KIF2C,RAPGEF4,KIFAP3,KDM1A,SLC7A11,KIF26A,BRPF3,GP6,GNG13,TREM1,GNG2,KIF26B,KIF16B,CDC37L1,DOCK6,TUBAL3,KIF18A,TUBB6,KLC4,KIFC2,DGKH,NHLRC2,H3C13
GO:0046649	GO Biological Processes	lymphocyte activation	83	-11.7	AXL,BST2,RUNX1,CD2,CD3D,CD3E,CD6,CD7,CD27,CD86,CD40,CEBPG,CXADR,DOCK2,DPP4,GPR183,EFNB1,F2RL1,GATA3,HMGB3,HPRT1,IFNG,IGFBP2,RBPJ,IL2RA,IL10,IL12A,IMPDH2,INHA,IRF4,KIT,LGALS9,LMO1,CD180,LYL1,LYN,CD46,MICB,MSH2,MYB,PIK3CA,PRKCZ,RAC2,RPL22,CCL2,SLAMF1,SUPT6H,VAMP2,PRDX2,TGFBR2,TLR4,TNFRSF4,VAV1,FZD7,FZD9,NCK2,TNFSF9,RIPK2,RNF8,SOCS5,TOX,MAFB,PARP3,RASGRP1,RNF41,GLMN,NCSTN,BLNK,CD209,IL21R,SASH3,LRRC8A,CYP26B1,TWSG1,BCL11B,TNIP2,ATAD5,ULBP1,CARD11,HAVCR2,TNFRSF13C,BTLA,CCDC88B
GO:0019221	GO Biological Processes	cytokine-mediated signaling pathway	87	-11.44	AXL,BST2,CASP4,RUNX1,CD27,CD86,CD40,CHUK,CCR8,CMKLR1,CSF1,S1PR1,EDN2,F2RL1,FOXO1,FN1,ACKR1,IFI6,GATA3,GBP1,CXCR3,CXCL1,HMOX1,HSPA1B,IFIT2,IFIT1,IFNAR2,IFNG,IFNGR1,IFNGR2,IKBKB,IL2RA,IL2RB,IL2RG,IL10,IL12A,IL12RB2,IL13RA1,IL16,IRF4,IRS1,ITGAM,KIT,KRAS,MMP2,OAS1,PAFAH1B1,PIK3CA,PITPNA,PRKACA,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,CCL2,CCL8,CCL22,SNRPA1,TRAF1,TNFRSF4,VAV1,WNT5A,MKKS,CUL1,OASL,TNFSF9,RIPK2,BTRC,RPS6KA4,SOCS3,NMI,AIM2,SOCS5,PSME3,IRF9,PLCB1,CLIP3,IL21R,TREM2,RNF31,TRIM68,TNIP2,NLRC5,TNFRSF13C,H3C13
GO:1903706	GO Biological Processes	regulation of hemopoiesis	61	-10.96	AXL,CA2,RUNX1,CD2,CD27,CD86,CSF1,FBN1,GATA3,HCLS1,HMGB3,HSPA1B,IFNG,IL2RA,IL12A,INHA,IRF4,LGALS9,LMO

					1,LOX,LYN,CD46,KITLG,KMT2A,MYB,NF1,PRKCZ,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,TAL1,PRDX2,TGFBR2,TLR3,TLR4,H4C2,TNFSF9,RIPK2,SOCS5,SETD1A,TOX,MAFB,RASGRP1,RNF41,PSME3,MYL9,TREM2,SASH3,PUS7,PRMT6,CYP26B1,CARD11,LEO1,PPARGC1B,TMEM64,AGO4,FLCN,H3C13
GO:0007169	GO Biological Processes	transmembrane receptor protein tyrosine kinase signaling pathway	80	-10.9	ANGPT2,APC,ATP6V1B2,ATP6V1C1,AXL,BTC,CD3E,CD7,CHN1,COL4A5,CSF1,EFNA4,EFNB1,EPHA2,EPHA1,EPS15,FGF5,FGF7,FOXO1,FLT1,IFI6,GATA3,GHSR,GTF2F1,IGF1R,IGFBP2,RBPJ,IRS1,ITGA1,KIT,LCP2,LOX,LYN,MMP2,MYO1E,NKX3-1,PIK3CA,PLAT,POLR2L,PRKAA1,PRKCZ,PTPN3,ROS1,SMARCC1,SOX9,TSC2,VAV1,WNT5A,STAM,SHOC2,NCK2,DGKD,FGF18,FGF17,SOCS3,NOG,EIF2AK3,SOCS5,LRIG2,SPRY3,SPRY2,STAM2,ARPC1A,SETX,SULF1,PLCB1,NCSTN,ATP6V0A2,NGEF,PTPN18,BLNK,ATP6V1D,ATP6V1H,SHC3,KIF16B,FAT4,SHCBP1,ARAP1,ATP6V1C2,TRIM72
R-HSA-449147	Reactome Gene Sets	Signaling by Interleukins	73	-10.77	BTC,CALM2,CD86,CHUK,CSF1,S1PR1,FGF5,FGF7,FOXO1,FN1,GATA3,GRIN2D,CXCL1,HMOX1,IFNG,IKBKB,IL2RA,IL2RB,IL2RG,IL10,IL12A,IL12RB2,IL13RA1,IL16,IRF4,IRS1,ITGAM,KIT,KRAS,LGALS9,LYN,KITLG,MAP3K11,MMP2,NF1,PIK3CA,PITPNA,PPP2R5D,PRKACA,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,RPS6KA1,S100A12,CCL2,CCL22,SNRPA1,VAMP2,VAV1,CUL1,RIPK2,FGF18,FGF17,BTRC,SOCS3,RASAL2,SOCS5,RASGRP1,RASA4,PSME3,RASGRP3,PTPN18,BLNK,PIK3R4,IL21R,SHC3,TRIB3,TNIP2,HAVCR2,H3C13
GO:0051345	GO Biological Processes	positive regulation of hydrolase activity	83	-10.65	ADRB1,ARHGAP1,ATP1B2,CALM2,CASP4,CASP10,CD40,CHN1,CTSD,DOCK2,S1PR1,EPHA2,EIF5,EPHA1,F2RL1,FLT1,FN1,GNA15,GNAT1,DNAJB2,IFNG,ITGA6,ITGA1,KIT,LGALS9,LLGL1,LYN,MSH2,MYL4,NEDD9,NF1,NKX3-1,PRKCZ,RAB3A,RAB4A,RGS2,CCL2,CCL8,CCL22,SIPA1,TSC2,VAV1,WNT5A,GPR

					65,RGS20,RIPK2,RGS11,TNFRSF10B,ARHGEF1,AIM2,EIF2AK3,RASAL2,RIN1,DOCK4,STARD8,DNAJB6,RASGRP1,RASA4,PSME3,SEC23A,GNA13,RAB11FIP2,PLCB1,RASGRP3,ARFGAP3,PCOLCE2,ELMOD1,RGS18,ARAP3,RGPD5,PPP1R15B,ACAP3,ARAP1,AGAP2,AGAP3,AGAP4,DNAJC24,ACVR1C,PPARGC1B,STXBP5,FLCN,ARHGAP30,USP17L2
GO:0045088	GO Biological Processes	regulation of innate immune response	57	-9.96	CHUK,CTSK,F2RL1,XRCC6,HMGB3,HSPA1B,IFNAR2,IFNG,IFNGR1,IFNGR2,IKBKB,IL12A,IRF4,ITGAM,KRAS,LGALS9,LYN,MICB,SERPINB9,PRKACA,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,PTPRS,TLR3,TLR4,VAV1,WNT5A,CUL1,RIPK2,BTRC,SOCS3,NMI,AIM2,PUM1,PQBP1,RASGRP1,PSME3,POLR3G,CD226,RAB11FIP2,DDX58,CD209,PIK3R4,TREM2,RNF125,IFIH1,TNIP2,ULBP1,NLRC5,RNF135,CARD11,HAVCR2,USP17L2
hsa05168	KEGG Pathway	Herpes simplex infection	32	-9.24	CDC34,CHUK,CSNK2A2,HLA-DMA,HLA-DOB,IFIT1,IFNAR2,IFNG,IFNGR1,IFNGR2,IKBKB,IL12A,OAS1,CFP,PPP1CA,CCL2,SRSF3,SRSF7,TAF5,TLR3,TRAF1,USP7,CUL1,SRSF9,SOCS3,EIF2AK3,GTF2IRD1,IRF9,DDX58,UBE2R2,NXF3,IFIH1
hsa04144	KEGG Pathway	Endocytosis	39	-9.2	ADRB1,DAB2,EPS15,FLT1,GRK5,HSPA1B,IGF1R,IL2RA,IL2RB,IL2RG,KIF5C,KIT,RAB8A,PRKCZ,RAB4A,TGFBR2,STAM,SNX4,GBF1,CYTH3,CYTH2,CYTH1,VPS4B,RNF41,STAM2,ARPC1A,RAB11FIP2,LDLRAP1,ARFGAP3,VPS4A,VTA1,PARD3,ARAP3,PARD6B,CHMP4C,ACAP3,ARAP1,AGAP2,AGAP3
GO:0007346	GO Biological Processes	regulation of mitotic cell cycle	71	-9.14	APC,BTC,CDKN2B,CENPE,GADD45A,ARID3A,FAP,HSPA1B,HUS1,IL10,MSH2,NKX3-1,CNOT2,PAFAH1B1,PPP1R10,PRKACA,PKN2,PSMA1,PSMA3,PSMA5,PSMB4,PSMC4,PSMD2,PTPN3,RAD51B,RBL2,CCL2,AURKA,TAL1,TFDP1,CDC45,CUL1,SSNA1,TNKS,BECN1,GBF1,BTRC,ADAMTS1,VPS4B,MDC1,ESPL1,KNTC1,PARP3,TOM1L1,PSME3,CTDSPL,TACC3,NEK6,FGFR1OP,

					PLCB1,VPS4A,GPR132,GTSE1,HAUS6,THAP1,RIOK2,CENPJ,PDXP,CTDSP1,CLSPN,DCLRE1B,ATAD5,DBF4B,BRSK1,GADD45GIP1,ZNF830,CHMP4C,CDCA5,LSM11,SIK1,USP17L2
GO:0002699	GO Biological Processes	positive regulation of immune effector process	35	-9.08	CD86,CD40,F2RL1,GATA3,HMOX1,IFNG,IL12A,ITGAM,LGALS9,LYN,CD46,MICB,MSH2,MYB,PRKCZ,RAC2,VAMP2,TLR4,TNFRSF4,VAV1,WNT5A,SNX4,RIPK2,DDX21,VAMP3,SOCS5,PUM1,RASGRP1,CD226,DDX58,SASH3,SPHK2,ATAD5,ULBP1,USP17L2
hsa00230	KEGG Pathway	Purine metabolism	30	-8.67	ADCY6,ADSS2,ENTPD6,ENTPD5,GMPR,GUCY1A1,HPRT1,IMPDH2,ITPA,NME3,NT5E,PDE2A,PDE3A,PDE6D,POLR2L,PRPS1,PAPSS2,POLR1C,PAICS,POLR3G,PDE10A,NUDT5,ENPP4,PDE7B,RRM2B,POLR1D,POLE4,NTPCR,NT5C3B,ADCY4