Supplementary 2B

pathway name	member genes
acetylation and deacetylation of rela in nucleus	EP300,CREBBP,NFKBIA,RELA,HDAC3,EIF4E,OPN1LW,PRDX2,ARHGEF7,PAG1,PCBP4
visceral fat deposits and the metabolic syndrome	NR3C1,PPARG,RXRA,TNF,HSD11B1,ADIPOQ,RETN,LPL,LCP1
role of egf receptor transactivation by gpcrs in cardiac hypertrophy	RELA,NFKBIA,EGF,EGFR,GNA11,AGT,GNGT1,GNB1,AGTR2,EDN1,GRB2,SOS1,SHC1,RAF1,JUN,ADAM12,MYC,RPS6KA1,FOS,PLCG1,RHOA,MAP2K2,MAP2K1,HRAS,MAPK1,MAPK3,AGXT,DAG1,ROS1,ARHGEF7,DYT10,MTG1,PRRT2
role of parkin in ubiquitin-proteasomal pathway	SUMO1,GPR37,PARK2,UBE2L3,WDTC1,UBE2J1,ATP8A2
fmlp induced chemokine gene expression in hmc-1 cells	GNA15,GNGT1,GNB1,FPR1,RELA,NFKBIA,PPP3CA,PPP3CC,PPP3CB,ELK1,MAP2K3,PAK1,MAP2K6,NCF1,NCF2,MAP2K1,MAPK1,RAF1,MAPK14,RAC1,MAP2K2,MAPK3,PLCB1,HRAS,PIK3C2G,KRIT1,DAG1,PKN1,CAMK1,CAMKK2,KCNH4,DYT10,PRRT2,KCNH8
west nile virus	APAF1,CASP9,EEF1A1,CYCS,TIAL1,CASP7,CASP6,TIA1,CASP3
chromatin remodeling by hswi/snf atp-dependent complexes	NR3C1,NF1,GTF2F1,GTF2A1,GTF2B,POLR2A,GTF3A,GTF2E1,ACTB,SMARCB1,SMARCE1,SMARCC2,SMARCC1,SMARCD1,ARID1A,SMARCA4,TBP,POTEF
alk in cardiac myocytes	NKX2-5,GATA4,BMPR1A,BMPR2,ATF2,TGFBR2,TGFBR1,NOG,CHRD,MYL2,MEF2C,NPPB,RFC1,MAP3K7,SMAD6,NPPA,GDNF,SLC19A1
BARD1 signaling events	BARD1,BRCA1,FANCE,FANCA,FANCF,FANCC,FANCL,FANCG,CDK2,FANCD2,BACH1,TOPBP1,RAD50,CSTF1,RAD51,PCNA,NPM1,ATM,ATR,EWSR1,XRCC6,MRE11A,NBN,PRB3,RBBP8,TP53,UBE2D3,UBE2L3,XRCC5,NLRP2,BRIP1,ANTXR1,MMAB,SERPINA2P
cystic fibrosis transmembrane conductance regulator (cftr) and beta 2 adrenergic receptor (b2ar) pathway	SLC9A3R1,PRKAR1A,GNGT1,PRKACG,PRKAR2A,GNB1,PRKACB,ADRB2,PRKAR1B,PRKAR2B,GNAS,CFTR,ADCY1,CAMP,EZR,ATP8A2,MTG1,CHAMP1
IL5-mediated signaling events	STAT5A,IL5RA,IL5,CSF2RB,JAK2,LYN,GRB2,PIK3R1,CISH,PIM1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN11,STAT5B,LONP1,THOC1,SIRPA
Regulation of RAC1 activity	RHOA,CDC42,RAC1,EPS8,SOS1,ABI1,DOCK1,ELMO1,NME1,DEF6,VAV1,TIAM2,RALBP1,BCR,RASGRF2,RAP1GDS1,ARHGAP17,RASGRF1,PREX2,DOCK2,TIAM1,VAV3,ARHGAP9,KALRN,VAV2,DOCK6,TRIO,ABR,PREX1,ARHGEF2,PAK1,ARHGAP1,ARHGDIA,DEFA6,MCF2,PKN1,RMRP,NGEF,REPS1,MTG1,ARHGEF25,SPATA13
Signaling events mediated by the Hedgehog family	DISP1,SMO,PTCH1,LRPAP1,PIK3R1,BOC,HHIP,PTCH2,GAS1,GLI2,SHH,HHAT,AKT1,ADRBK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTHLH,PMEL,STIL,THOC1,CDON,SMOX,SIRPA
nfkb activation by nontypeable hemophilus influenzae	RELA,CREBBP,EP300,TGFBR2,TGFBR1,SMAD4,SMAD3,NFKBIA,NR3C1,MYD88,TLR2,TNF,IL1B,MUC5AC,MUC2,MAP3K7,MAP4K4,MAP2K6,MAP2K3,MAPK14,MAPK11,IL8,DUSP1,EIF4E,OPN1LW,ARHGEF7,DUSP12,PAG1,PCBP4
phosphatidylcholine biosynthesis pathway	PCYT1A,CEPT1,CHKA,DAG1,MATN1,SLC25A1,WDTC1,ATP8A2
ErbB4 signaling events	STAT5A,TAB2,NCOR1,ERBB4,ERBB2,GRB2,WWOX,HBEGF,STAT5B,FYN,JAK2,LRIG1,YAP1,NEDD4,GRIN2B,WWP1,ITCH,MDM2,CBFA2T3,DLG4,PIK3CA,PIK3CB,PIK3CD,PIK3CG,SHC1,ADAM17,THOC1,SIRPA
tpo signaling pathway	PIK3R1,PIK3CA,FOS,JUN,STAT3,STAT1,THPO,MPL,GRB2,SOS1,SHC1,CSNK2A1,MAP2K1,JAK2,ELK1,RAF1,RASA1,PLCG1,MAPK3,HRAS,TPO,CSNK2A2,DAG1,FOSB,JUNB,JUND,PIK3CB,PIK3CD,PIK3CG,STAT5A,STAT5B,SYNGAP1,KCNH4,DYT10,MTG1,PRRT2,KCNH8
Degradation of beta catenin	AXIN1,LRP6,FZD5,WNT3A,SKP1,CUL1,APC,AXIN2,DVL1,KITLG,PROC,DVL1P1
oxidative stress induced gene expression via nrf2	KEAP1,NFE2L2,GSTA2,AKR7A2,UGT1A6,CRYZ,POR,GABPA,ROS1,VDAC2,DYT10,PRRT2
HIF-1-alpha transcription factor network	JUNB,FOS,FOSB,JUND,JUN,ARNT,HIF1A,SMAD4,SMAD3,SP1,HDAC7,CITED2,ENO1,NDRG1,GCK,PKM,PGM1,LDHA,PGK1,ALDOA,CREB1,ETS1,ID2,HMOX1,PFKL,FURIN,NOS2,AKT1,FECH,ABCG2,ENG,HK2,EPO,TF,HK1,ADM,PFKFB3,CP,GATA2,DEC1,CXCL12,CXCR4,TERT,IGFBP1,TFF3,BNIP3,MCL1,NPM1,PLIN2,SLC25A6,CA9,CREBBP,EDN1,EIF4E,F3,FOSL2,HNF4A,KCNA4,KCNA5,KIF2A,NT5E,SERPINE1,SERPINB2,ABCB1,PSG1,MAP4K2,OPN1LW,SLC2A1,SLC2A3,TFRC,TIMP1,FOSL1,EPX,BHLHE40,HDAC9,NCOA2,RNASEH2A,COPS5,TBC1D9,HOOK2,HOOK1,EGLN1,PAG1,PCBP4,BHLHE41,EGLN3,DAND5,TAC4,NANOS2,MIA3

Regulation of nuclear beta catenin signaling and target gene transcription	PITX2,HDAC1,TNIK,TCF4,MYF5,HBP1,JUN,DVL3,TCF3,TERT,KLF4,BCL9,TLE2,LEF1,CDX1,APC,AR,TLE4,SKP1,TRRAP,CUL1,TLE1,MED12,AES,KCNIP4,ZCCHC12,SALL4,MITF,CDX4,CACNA1G,COX2,ID2,IL8,CYR61,DKK1,DKK4,SP5,FGF4,MYC,AXIN2,ADRA1D,AKR1B1,AREG,CDKN2A,CREBBP,VCAN,EIF4E,KITLG,PROC,PTGS2,OPN1LW,SNAI2,SMARCA4,TBL1X,HNF1A,TCF7L2,NCOA2,IGF2BP1,RUVBL2,PAG1,CTNNBIP1,PCBP4,TBL1XR1,TCF7L1,TBL1Y
Cellular roles of Anthrax toxin	CAMP,IL18,AMY2A,KRIT1,EPB42,IRF6,PRH1,MAP2K1,MAP2K2,MAP2K3,MAP2K6,MAP2K7,MAP2K4,BLOC1S6,ATP8A2,CHAMP1
EPHA forward signaling	CDC42,RAC1,PAK1,RHOA,EPHA4,EPHA8,EPHA3,CRK,CBL,CDK5,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,THOC1,NGEF,MTG1,SIRPA
bcr signaling pathway	FOS,JUN,LYN,CD79B,BLNK,BCR,BTK,CD79A,PPP3CA,PPP3CC,PPP3CB,GRB2,SOS1,SHC1,CSNK2A1,MAP2K1,VAV1,MAPK8,RAC1,ELK1,RAF1,SYK,PLCG1,MAPK3,MAP3K1,HRAS,MAPK14,KRIT1,CSNK2A2,DAG1,FOSB,JUNB,JUND,KCNH4,DYT10,MTG1,PRRT2,KCNH8
E-cadherin signaling in the nascent adherens junction	RHOA,PIK3R1,RAC1,TIAM1,ARF6,NME1,AP1M1,PIP5K1C,IQGAP1,CDC42,SRA1,ABI1,CRK,AKT1,VAV2,PAK1,DLG1,SRC,ADRA1D,RAPGEF1,IL8,NAP1L1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,RAP1A,RMRP,SOX9,TJP1,NAPSA,THOC1,ACTR2,WASF2,CHERP,NCKAP1,CYFIP1,ANGPTL2,KLHL20,C9orf156,TERF2IP,ENAH,AICDA,SCAF1,AZI2,NAA25,MTG1,SIRPA,TAB3
Signaling mediated by p38-gamma and p38-delta	SNTA1,EEF2K,MAPT,PKN1,MAP2K3,MAP2K6,PRRC2A,KIAA1549L,ZAK,CRYGEP
Fc-epsilon receptor I signaling in mast cells	SYK,LYN,JUN,FOS,KLRG1,PIK3R1,GAB2,LAT,GRB2,FYN,HRAS,RELA,SOS1,CBL,SPHK1,ITK,FER,AKT1,PLD2,VAV1,PAK2,BTK,RAF1,DAG1,DOK1,DUSP1,S1PR1,EEF1A2,HCLS1,INPP5D,LCP2,MAP3K1,NFATC2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN2,MAPK1,MAPK3,MAPK8,MAP2K1,MAP2K2,MAP2K7,PTK2,PTPN11,RASA1,MAP2K4,SHC1,WIPF1,LAT2,YWHAB,IKBKG,GRAP2,THOC1,YWHAQ,ORC3,DYT10,SPNS1,MTG1,PRRT2,SIRPA
il 3 signaling pathway	JAK2,IL3RA,CSF2RB,IL3,GRB2,SOS1,SHC1,FOS,PTPN6,HRAS,STAT5A,STAT5B
ErbB receptor signaling network	ERBB2,EGFR,ERBB4,ERBB3,HBEGF,EGF,TGFA
regulation of cell cycle progression by plk3	CCNB1,APAF1,CASP9,YWHAH,RASGRF1,ATM,TREX1,ATR,CYCS,BAX,TP53,PLK3,CHEK2,CHEK1,CASP7,CASP6,CASP3,ATRIP,CDK1,CDC25C,POLD1,PRRC2A,YWHAQ,KIAA1549L,ANTXR1,CRYGEP,MMAB,SERPINA2P
aspirin blocks signaling pathway involved in platelet activation	GNAI1,F2RL3,GNGT1,GNB1,F2R,TBXAS1,MAPK1,RAF1,MAPK3,PLA2G4A,PLCB1,HRAS,PTGS1,MAP2K1,DAG1,PAWR,NR1I2,DYT10,SLC52A2,MTG1,PRRT2,PWAR1,PWAR4
role of erbb2 in signal transduction and oncology	PIK3R1,PIK3CA,IL6R,ERBB2,LRPPRC,ERBB3,IL6,GRIP1,CARM1,ESR1,EP300,GRB2,SOS1,SHC1,MAPK1,MAPK3,RAF1,MAP2K2,MAP2K1,STAT3,PDPK1,AKT1,HRAS,SLC25A6,IL6ST,NM,PIK3CB,PIK3CD,PIK3CG,NCOA2,LGALS12,MTG1
phospholipase c signaling pathway	PIK3R1,PIK3CA,PLCB1,PDPK1,PLCG1,DAG1,PIK3CB,PIK3CD,PIK3CG
C-MYB transcription factor network	PAX5,LEF1,MYB,SIN3A,NCOR1,SKI,GATA1,MAF,HES1,PIM1,CDK6,TOM1,CEBPA,SLC25A3,ETS1,ETS2,WNT1,IQGAP1,COPA,SLC1A5,MAD1L1,CLTA,CSF1R,CEBPB,COL1A2,CA1,ADORA2B,SP1,MCM4,GATA3,LYZ,BCL2,KIT,GSTM1,CD34,ADA,PTCRA,MAT2A,HIPK2,PIAS3,MYC,SPI1,CD4,RAG2,NLK,ANPEP,BIRC3,ATP2B1,CDKN1B,CDKN2A,CREBBP,EIF4E,GPI,H2AFZ,HRAS,HSPA5,HSPA8,KITLG,MYF6,MYOD1,PPID,PRTN3,PSG1,PTGS2,OPN1LW,PMEL,SMARCA2,MAP3K7,NR2C2,UBE2I,PCAP,YEATS4,C21orf33,LONP1,SART3,TRIM28,TFEC,PAG1,PCBP4,ELAC2,CPEB1,MTG1,ZFPM1,DAND5
Regulation of cytoplasmic and nuclear SMAD2/3 signaling	SMAD3,SMAD4,SMAD2,NUP214,NUP153,PPM1A,KRIT1,MAP3K1,UBE2I,TGFBRAP1,TRAP1,PIAS4
PDGFR-beta signaling pathway	JUN,JUNB,FOS,FOSB,JUND,CDC42,STAT5A,SOS1,ABI1,EPS8,GAB1,PDGFB,PDGFRB,ARPC3,ARPC4,ARPC5,ARPC1B,ARPC2,RAC1,CBL,RAB4A,GRB2,RHOA,SRF,ELK1,BRAF,PPP2CA,PPP2R1A,PPP2R2B,RAF1,PTEN,GRB10,LRP1,SRA1,DOCK4,ARAP1,JAK2,STAT1,IQGAP1,PIN1,CRK,STAT3,PLA2G4A,PAG1,ACTA2,PAK1,VAV2,CSK,MYC,SPHK1,ADRA1D,ARHGDIA,DAG1,DOK1,S1PR1,FOSL2,RAPGEF1,IL8,NAP1L1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKLR,PPP2R4,PKN1,EIF2AK2,PTPN1,PTPN11,PTPRJ,RAB5A,RAP1A,RASA1,RPS6KA3,SLA,SOX9,STAT5B,TAGLN,SLMAP,FOSL1,KSR1,WASL,NAPSA,USP6NL,THOC1,ACTR3,ACTR2,WASF2,CNKSR1,C1D,BAIAP2,CHERP,RNASEH2A,NCKAP1,YWHAQ,PDZD2,CYFIP1,KCNH4,ANGPTL2,C9orf156,TERF2IP,AICDA,SCAF1,AZI2,NAA25,MTG1,PIGU,KCNH8,SIRPA,APOBEC3A,TAB3

no2-dependent il-12 pathway in nk cells	IL12RB2,IL12RB1,IFNG,STAT4,TYK2,JAK2,NOS2
Glucocorticoid receptor regulatory network	JUNB,FOS,FOSB,JUND,STAT5A,JUN,RELA,HDAC2,STAT1,SUV420H1,CDK5,CDK5R1,EGR1,FGG,IL5,IL4,IRF1,IL13,PBX1,TBP,IL2,IL6,ICAM1,IL8,HDAC1,VIPR1,CREB1,AKT1,POMC,MMP1,NR1I3,SGK1,BAX,MDM2,GATA3,AFP,TAT,TSG101,SUMO2,SPI1,CGA,CREBBP,EIF4E,FKBP4,FKBP5,FOSL2,NR3C1,NR4A1,KRT5,KRT14,KRT17,PCK2,MAPK8,OPN1LW,SELE,SMARCA4,SMARCC1,SMARCC2,SMARCD1,TP53,TRIM26,FOSL1,NCOA2,RNASEH2A,YWHAQ,PAG1,PCBP4,ATAT1
chaperones modulate interferon signaling pathway	IFNGR1,IFNG,DNAJA3,JAK2,HSPA1A,CNTN2,USH1C,TAX1BP3,LIN7A,RELA,NFKBIA,RB1,TP53,WT1,TXN,ARHGEF7,VAC14
cd40l signaling pathway	CD40,TRAF3,CD40LG,TRAF6,RELA,NFKBIA,MAP3K1,TNFAIP3,MAP4K4,ARHGEF7
platelet amyloid precursor protein pathway	COL4A1,COL4A3,COL4A2,COL4A5,COL4A6,COL4A4,PLAT,PLAU,F9,APP,SERPINE1,WDTC1
mechanisms of transcriptional repression by dna methylation	SAP30,SAP18,RBBP4,RBBP7,MECP2,HDAC2,HDAC1,MTA2,MBD2,MBD3,MBD1,DPEP1,HDAC9,DPEP2,DPEP3
activation of csk by camp-dependent protein kinase inhibits signaling through the t cell receptor	GNAS,GNB1,GNGT1,CD3E,CD3D,CD3G,HLA-DRB1,HLA-DRA,LCK,CD4,ZAP70,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,PTPRC,CSK,ADCY1,CREBBP,CAMP,CD247,TRA,TRB,ATP8A2,MTG1,CHAMP1,TARP
visual signal transduction	GNAT1,GNGT2,GNB1,ARRB1,PDE6A,PDE6B,PDE6G,GRK1,GUCA1A,SLC25A22,SLC25A18,RHO,RCVRN,NT5C2,MTG1
cadmium induces dna synthesis and proliferation in macrophages	RELA,NFKBIA,RAF1,FOS,MYC,JUN,CUZD1,TNF,PLCB1,MAP2K2,MAP2K1,HRAS,MAPK1,MAPK3,AIRE,CTLA4,DAG1,HLA-DQA1,ARHGEF7,DYT10,NOD2,MTG1,PRRT2,CELIAC2
rho-selective guanine exchange factor akap13 mediates stress fiber formation	GNA12,PRKACG,PRKAR2A,PRKAG1,PRKACB,PRKAR2B,AKAP13,RHOA,LPA,CAMP,MTG1,CHAMP1
Hedgehog signaling events mediated by Gli proteins	GLI1,SPOP,GLI3,RBBP7,SAP30,SIN3A,SIN3B,HDAC2,HDAC1,RBBP4,SAP18,SMO,GLI2,PIAS1,GNG2,GNB1,FOXA2,AKT1,RAB23,KIF3A,IFT172,PTCH1,CREBBP,EIF4E,KITLG,MAP2K1,OPN1LW,MTSS1,SMOX,PAG1,PCBP4,MTG1
adp-ribosylation factor	CLTB,COPA,ARF1,CLTA,COP,GPLD1,RASA1,ARHGEF2,RGS6,SLC2A4RG,MTG1,CARD16,ARF1P1
p53 signaling pathway	PCNA,CCNE1,CDK2,RB1,E2F1,CDK4,CCND1,MDM2,GADD45A,CDKN1A,BCL2,TIMP3,TP53,PAK3
Atypical NF-kappaB pathway	PIK3R1,BCL3,RELA,SRC,SYK,LCK,PIK3CA,PIK3CB,PIK3CD,PIK3CG,ARHGEF7,THOC1,SIRPA
regulation of eif2	EIF2S3,EIF2S2,EIF2S1,EIF2B5,EIF5,EIF2AK2,EIF2AK3,EIF2AK4,EIF2AK1,GSK3B,NPY4R,EIF2B4,EIF2B3
skeletal muscle hypertrophy is regulated via akt-mtor pathway	PIK3R1,PIK3CA,PABPC1,EIF4G1,EIF4A1,EIF4E,PSMC4,EIF4EBP1,EIF2S1,EIF2S3,EIF2S2,IGF1,IGF1R,MKNK1,PTEN,PDK2,PDPK1,RPS6,INPPL1,EIF2B5,RPS6KB1,AKT1,PPP2R5D,GSK3B,MTOR,PIK3CB,PIK3CD,PIK3CG,MTG1
lectin induced complement pathway	C6,C7,C8A,C8B,C9,C8G,MBL2,MASP2,MASP1,C3,C2,C5,C4B,C4A,AKR1C1,HNRNPC,CXCL10,PSMA7,IGLC7,MBL3P
Urokinase-type plasminogen activator (uPA) and uPAR-mediated signaling	RHOA,CDC42,RAC1,EGFR,STAT1,PDGFD,CRK,DOCK1,TYK2,TGFB1,HGF,PAK1,VLDLR,PDGFRB,MMP12,LRP1,SRC,ADRA1D,IL6,SERPINE1,SERPINB2,PLAU,PLAUR,PKN1,SOS1,C1D,MTG1,PRAP1
Arf6 trafficking events	RALA,ARF6,KLC1,ACAP1,ASAP2,TSHR,AGTR1,SCAMP2,VAMP3,PIP5K1C,NME1,ADRA1D,RMRP,SLC2A4,SPAG9,EXOC5,EXOC3,MAPK8IP3,EXOC7,EXOC6,EXOC1,EXOC2,EXOC4,MTG1,EXOC8
CXCR3-mediated signaling events	CXCR3,GNAI2,GNG2,GNB1,CXCL11,MTOR,RICTOR,CCL11,GNAI3,CXCL9,CXCL10,CXCL13,PDK1,AKT1,RAF1,DNM1,SRC,ADRA1D,PDPK1,PF4,PIK3CA,PIK3CB,PIK3CD,PIK3CG,THOC1,MLST8,MAPKAP1,MTG1,SIRPA
Glucocorticoid receptor signaling	
ras signaling pathway	PIK3R1,PIK3CA,RHOA,BCL2L1,RAF1,RALGDS,CHUK,AKT1,CASP9,CDC42,PDPK1,HRAS,RALBP1,PLD1,BAD,RAC1,RALA,FOXO4,PIK3CB,PIK3CD,PIK3CG,PRKCSH,REPS1
segmentation clock	LRP6,WNT1,FZD1,DLL1,KREMEN2,DKK2,PSEN1,DKK1,PROC,CTNNB1,AXIN1,CSNK2A1,HEY2,HES7,LFNG,GSK3B,WIF1,ADAM17,HES1,DVL1,APC,CSHL1,CSNK2A2,RBPJ,PSMB6,YY1,C21orf33,DVL1P1

proteasome complex	PSMD14,PSMA1,PSMA5,PSMA4,PSMA3,PSMA2,PSMD3,PSMD12,PSMB7,PSMD4,RPN2,PSMD11,PSMA7,PSMA6,PSMB2,PSMB1,PSMB4,PSMB3,PSMB6,PSMB5,RPN1,UBE2A,UBE3A,BCHE,DBT,PSMC4,PSMD2,SNORA62,SNORA73A,UBA1,WDTC1,CELA3B,SNORD12C,ATP8A2,ENOPH1
hypoxia and p53 in the cardiovascular system	TP53,HIF1A,UBE2A,NFKBIB,HIC1,RPA1,TAF1,EP300,MAPK8,ATM,HSPA1A,BAX,FHL2,GADD45A,ABCB1,CDKN1A,IGFBP3,AKT1,MDM2,DBT,HSP90AA1,HSP90AA2,PAK3,SNORA62,TBP,POLR1A,SNORD12C,DNAJB1P1
Class I PI3K signaling events	CDC42,ARF1,RAC1,RHOA,ARF5,ARF6,RAP1A,ARAP3,PDK1,SRC,PAK1,PTEN,SGK1,DAG1,FOXO3,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,CYTH3,CYTH2,THOC1,ADAP1,DAPP1,MTG1,SIRPA,ARF1P1
ucalpain and friends in cell spread	ITGB1,ITGA1,SPTAN1,PXN,TLN1,CAPN1,CAPNS1,PTK2,SRC,RHOA,RAC1,ACTA1,EZR,PXDN,MMRN1
ahr signal transduction pathway	AIP,AHR,ARNT,HSP90AA1,HSP90AA2,AURKAIP1,MIA3
bone remodeling	RELA,TNFSF11,TNFRSF11A,IFNAR1,IFNAR2,IFNB1,NFKBIA,FOSL1,FOSL2,TRAF6,MAPK8,FOS,ARHGEF7,IRF9
Noncanonical Wnt signaling pathway	RHOA,RAC1,CHD7,SETDB1,WNT5A,FZD2,PPARG,FZD7,ROR2,DVL2,CTHRC1,DAAM1,FLNA,CDC42,WNT1,PAK1,ROCK1,DVL1,GTF3A,NFATC2,PKN1,RORA,MAP3K7,NR2C2,DVL1P1,MTG1
thrombin signaling and protease-activated receptors	PIK3R1,PIK3CA,GNGT1,GNB1,GNAQ,GNAI1,F2RL3,F2R,RHOA,ROCK1,ADCY1,PPP1R12B,PTK2B,PLCB1,MAP3K7,DAG1,PAWR,PIK3CB,PIK3CD,PIK3CG,NR1I2,ARHGEF2,DYT10,SLC2A4RG,SLC52A2,MTG1,PRRT2,PWAR1,PWAR4
Plasma membrane estrogen receptor signaling	RAC1,PAK1,CDC42,PELP1,GNG2,GNB1,RHOA,SRC,GRB2,SOS1,PIK3R1,IGF1,ROCK2,AKT1,ATF6B,DAG1,DBT,DECR1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,SNORA62,THOC1,GNA13,SNORD12C,IGKV1D-39,MTG1,SIRPA
Osteopontin-mediated events	JUNB,FOS,FOSB,JUND,RHOA,CDC42,JUN,PIP5K1A,RAC1,PIK3R1,SRC,RELA,ROCK2,CD44,VAV3,PAK1,SYK,ILK,ADRA1D,PTK2B,FOSL2,MAP3K1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PLAU,PKN1,MAPK8,FOSL1,MAP3K14,MAP4K4,THOC1,RNASEH2A,WDTC1,ATP8A2,MTG1,PRAP1,SIRPA
Netrin-mediated signaling events	FYN,DCC,UNC5A,UNC5B,UNC5C,PIK3R1,RAC1,RHOA,NCK1,PAK1,CDC42,DOCK1,ELMO1,PITPNA,MAP1B,TRIO,DAPK1,DAG1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,WASL,THOC1,MTG1,SIRPA
Canonical NF-kappaB pathway	RELA,BCL10,MALT1,TRAF6,NOD2,RAN,ATM,TNF,CYLD,TNFAIP3,UBE2D3,IKBKG,RIPK2,ERC1,IGKV1-27,ARHGEF28,MTG1
S1P4 pathway	RHOA,RAC1,PAK1,CDC42,ATF6B,PKN1,S1PR4,MBTPS1,GNA13,S1PR5,MTG1
tgf beta signaling pathway	TGFBR2,TGFBR1,SMAD4,SKIL,SMAD3,SMAD2,PROC,CDH1,EP300,CREBBP,MAP3K7,NR2C2,MAP2K1,SMAD7,MAPK3,TAB1,APC,EIF4E,OPN1LW,ZFYVE9,FZR1,PAG1,PCBP4
EphrinA-EPHA pathway	EPHA2,EPHA8
Downstream signaling in naive CD8+ T cells	ELK1,FOS,JUN,JUNB,EGR1,EGR4,CD3E,CD3G,CD3D,CD8B,CD8A,IL2,STAT4,EOMES,BRAF,FASLG,RAF1,KRIT1,CD247,IL2RA,TNFRSF9,NFATC2,MAPK8,MAPK9,PTPN7,PTPRA,TNFRSF4,FOSL1,TNFRSF18,RNASEH2A,KCNH4,MTG1,KCNH8,TARP
control of skeletal myogenesis by hdac and calcium/calmodulin-dependent kinase (camk)	CREBBP,EP300,PIK3R1,PIK3CA,MYOD1,HDAC5,YWHAH,MAPK7,GRIP1,MAPK14,AVP,PDPK1,AKT1,CABIN1,KRIT1,EIF4E,IFNAR1,PIK3CB,PIK3CD,PIK3CG,OPN1LW,CAMK1,KAT2B,NCOA2,YWHAQ,PAG1,PCBP4,LGALS12,NLRP3
regulation of spermatogenesis by crem	FHL5,KIF17,CREM,FSHR,GNAS,GNGT1,GNB1,FSHB,ADCY1,XPO1,CAMP,ACT,SERPINA3,ACTG1,ACTG2,BRD2,STXBP2,ACOT7,ATP8A2,MTG1,CHAMP1,ACTBL2,POTEKP,POTEM
cell cycle: g2/m checkpoint	CCNB1,SFN,CDKN2D,MDM2,TP53,YWHAH,RASGRF1,CDC34,MYT1,GADD45A,CDKN1A,RPS6KA1,WEE1,PRKDC,BRCA1,CHEK2,ATM,ATR,CHEK1,EP300,CDK1,CDC25C,CDKN2A,F9,PAK3,PI4KA,POLD1,REG1A,PKMYT1,YWHAQ,REXO2,IL23A,ANTXR1,MMAB,SERPINA2P
Regulation of p38-alpha and p38-beta	TAB1,RAC1,OSM,TRAF6,DUSP8,DUSP1,AGFG1,IRF6,MAP3K3,MAP2K3,MAP2K6,RALA,MAP2K4,MAP3K12,RIPK1,DLK1,DUSP10,DUSP16,CCM2,RPAIN,MTG1
regulation of bad phosphorylation	PIK3R1,PIK3CA,CSF2RB,IL3RA,IL3,BAD,YWHAH,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,BAX,BCL2L1,IGF1,IGF1R,BCL2,KIT,KITLG,ADCY1,PDPK1,AKT1,CAMP,PIK3CB,PIK3CD,PIK3CG,YWHAQ,CHAMP1

Signaling events mediated by Hepatocyte Growth Factor Receptor (c-Met)	APC,ARF6,GRB2,SOS1,RHOA,GAB1,EIF4E,MTOR,DEPTOR,CRKL,EPS15,MUC20,GAB2,CBL,RANBP9,RANBP10,RAC1,PIK3R1,HRAS,CRK,CDC42,NUMB,PAK4,MET,BAD,JUN,PAK1,PAK2,HGF,ETS1,EGR1,RIN2,HGS,RAF1,SRC,PDK1,ADRA1D,DAG1,EIF4EBP1,F2RL2,RAPGEF1,IL6,INPP5D,INPPL1,MAP3K1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PKN2,MAPK8,PROC,PTK2,PTPN1,PTPN11,PTPRJ,RAB5A,RAP1A,MAP2K4,SNAI1,RNMT,WASL,THOC1,ACTR2,ANGPTL2,SH3KBP1,ARHGEF4,PARD6A,TERF2IP,PARD3,AICDA,MLST8,AKT1S1,MTG1,PIGU,SIRPA
Paxillin-independent events mediated by a4b1 and a4b7	RHOA,CDC42,GIT1,CRKL,CBL,CRK,DOCK1,PIK3R1,RAC1,EPO,EPOR,VCAM1,MADCAM1,ARF6,CD44,SRC,PAK1,JAK2,ADRA1D,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,TIMP1,EPX,THOC1,MTG1,SIRPA
mapkinase signaling pathway	MAP3K7,MAP3K14,HRAS,FOS,MAP2K4,STAT1,RAC1,MAX,CEBPA,MAPK14,MYC,CREB1,SP1,ATF2,GCK,MAP4K3,MAP4K4,MAP4K5,MAP4K1,RPS6KA1,MAP2K3,MAP2K7,MAP2K2,MAP2K1,MAP3K11,MAP3K1,CHUK,IKBKB,MAP2K6,MAP3K4,MAP3K12,PAK1,PAK2,JUN,RAF1,MAPK9,MAPK10,MAP3K13,MAPK7,MAP2K5,MAP3K2,MAP3K3,MAP3K8,ELK1,MAPK11,MAPK13,ARAF,GDNF,MAP3K5,PKN1,PKN2,MAPK1,MAPK3,MAPK8,PSG1,MAP4K2,MAPK12,NR2C2,AIMP2,GRAP2,KCNH4,KCNH8,DAND5
cell to cell adhesion signaling	PTPN11,PECAM1,CTNNB1,ACTA1,VCL,CTNNA1,CSK,BCAR1,PXN,PTK2,SRC,PXDN
pdgf signaling pathway	PIK3R1,PIK3CA,FOS,JUN,STAT3,STAT1,SRF,ELK1,PDGFRA,PDGFA,GRB2,SOS1,SHC1,MAP2K1,MAP2K4,RAF1,MAPK8,MAP3K1,MAPK3,JAK1,PLCG1,CSNK2A1,HRAS,RASA1,CSNK2A2,DAG1,FOSB,JUNB,JUND,PIK3CB,PIK3CD,PIK3CG,SYNGAP1,KCNH4,DYT10,MTG1,PRRT2,KCNH8
Aurora B signaling	CDC42,RAC1,PAK1,INCENP,KLHL9,CUL3,KLHL13,RHOA,TACC1,EVI5,NSUN2,NPM1,SMC4,SMC2,BUB1,CENPA,MYLK,PEBP1,PPP2R4,PKN1,RASA1,PRRC2A,KIF23,KIF20A,NDC80,KIF2C,KIAA1549L,CDCA8,RAB33B,MYLK2,MYLK3,MTG1,CRYGEP
transcriptional activation of dbpb from mrna	PDGFB,PROCR,YBX1
role of ran in mitotic spindle regulation	RANGAP1,RANBP2,RANBP1,NUMA1,KIF15,TPX2,KPNB1,KPNA2,RAN,RCC1,AURKA,MTG1
IL8- and CXCR1-mediated signaling events	GNAI2,GNB1,GNG2,IL8,CXCR1,DNM1,CBL,GNA15,GNA14,PDK1,AKT1,PLD1,ADRBK1,DAG1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PRKCSH,RAB5A,THOC1,MTG1,SIRPA
internal ribosome entry pathway	EIF4G2,EIF4E,EIF4G3,EIF4G1,EIF4A1,PTBP1,EIF3A,PTBP2
mechanism of acetaminophen activity and toxicity	NR1I3,COX3,CYP2E1,CYP3A,CYP1A2,PTGS1,COX2,CASR,CXADR,CYP3A4,PRKAR1A,PTGS2,SPG7,TRIM13,CXADRP1
Alpha-synuclein signaling	UCHL1,BAD,PLD1,PLD2,TH,SYK,GRK5,MAOB,CSNK2A1,PTK2B,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,HSPA1A,PPP2R4,PRKCSH,SLC6A3,UBE2L3,STUB1,PARK7,DYT10,PRRT2
Role of Calcineurin-dependent NFAT signaling in lymphocytes	NRON,YWHAQ,BCL2,BAX,CHP1,CABIN1,MEF2D,NUP214,RAN,BAD,PIM1,KRIT1,MAP3K8,CREBBP,CSNK2A1,DAG1,RCAN1,EIF4E,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,NR4A1,KPNA2,MAP3K1,NFATC2,NFATC3,MAPK3,MAPK8,MAPK9,OPN1LW,LONP1,AKAP5,RCAN2,FKBP8,CHORDC1,CROT,PAG1,PCBP4
il-10 anti-inflammatory signaling pathway	IL10RA,IL10RB,JAK1,IL10,BLVRA,MAP3K5,IL1A,TNF,IL6,MAP2K6,HMOX1,MAPK14,C2
Ephrin B reverse signaling	RHOA,CDC42,EPHB4,PIK3R1,RAC1,NCK2,RGS3,TIAM1,CXCR4,PAK1,DNM1,ADRA1D,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAPK8,MAP2K4,MAP3K7,NR2C2,THOC1,MTG1,SIRPA
insulin signaling pathway	PIK3R1,PIK3CA,SOS1,GRB2,PTPN11,INS,INSR,SHC1,SLC2A14,IRS1,HRAS,PIK3CB,PIK3CD,PIK3CG
Proteoglycan syndecan-mediated signaling events	
polyadenylation of mrna	PAPOLA,CSTF1,CSTF2,CSTF3,PABPN1,ACPP,REG3A,ASAP2,MRPS30,PDAP1,TUSC2,WDTC1,ASAP1,ATP8A2
roles of beta arrestin dependent recruitment of src kinases in gpcr signaling	GNB1,GNGT1,ARRB1,GNAS,SRC,HCK,MAPK3,MAPK1,ADRBK1,MAP2K2,MAP2K1,DNM1,RAF1,HRAS,FZD4,LPAR3,LGR6,MTG1,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
EphrinB-EPHB pathway	EPHB1,EPHB3,EPHB2,EPHB4
Signaling mediated by p38-alpha and p38-beta	MAPKAPK3,MAPKAPK2,ATF2,GDI1,HBP1,MITF,USF1,CEBPB,NOS2,ATF6,KRT8,KRT19,MEF2A,MEF2C,EIF4E,ATF1,CREB1,DDIT3,DEFB4A,EIF4EBP1,ELK4,GDNF,HSPB1,HSPB2,PSAP,PTGS2,PTPRH,RAB5A,SLC9A1,TP53,MAPKAPK5,MKNK1,PPARGC1A,NANOS2

antisense pathway	SFPQ,MATR3,NONO,ADAR,IGFBP7
role of mef2d in t-cell apoptosis	HLA-DRB1,HLA-DRA,LCK,CD3D,CD3G,CD3E,CD4,ZAP70,PPP3CA,PPP3CB,PPP3CC,CABIN1,CAPN2,CAPNS1,MEF2D,HDAC2,HDAC1,EP300,PLCG1,PTPRC,NR4A1,FYN,LAT,KRIT1,CD247,DAG1,TRA,TRB,HDAC9,ORC3,DYT10,SPNS1,PRRT2,TARP
LKB1 signaling events	MTOR,TSC1,TSC2,SMAD4,CDC37,SIK3,SIK1,TFF1,MYC,CREB1,MST4,CRTC2,MAP2,BRSK1,MARK4,SIK2,BRSK2,MARK2,ETV4,STK11,TP53,PPFIA1,METAP2,LIAS,CAB39,CENPJ,MLST8,AKT1S1,STK11IP
pertussis toxin-insensitive ccr5 signaling in macrophage	CCR5,GNAQ,FOS,JUN,CXCR4,CCL4,CXCL12,PLCG1,DAG1,FOSB,ITIH4,JUNB,JUND,CCL2
PLK3 signaling events	ATM,CDC25C,PLK3,TP53,CHEK2
granzyme a mediated apoptosis pathway	DFFB,DFFA,APEX1,NME1,HMGB2,SET,ANP32A,GZMB,CREBBP,PRF1,GZMA,CASP3,CAD,RMRP,ZNF395,IRG1
tnfr2 signaling pathway	RIPK1,TANK,TRAF2,TRAF3,TRAF1,TNFRSF1B,LTA,RELA,NFKBIA,MAP3K14,MAP3K1,TNFAIP3,AGFG1,ARHGEF7,RPAIN
nitric oxide signaling pathway	DLG4,NOS1,PPP3CA,PPP3CC,PPP3CB,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,GRIN1,KRIT1,LLGL1,DYT10,PRRT2,GPRIN1,NANOS1
fas signaling pathway (cd95)	FADD,CASP10,FASLG,DAXX,FAS,FAF1,CFLAR,RIPK2,CASP8,PRKDC,MAP3K1,PTPN13,MAP2K4,MAPK8,MAP3K7,CASP3,RB1,PAK1,PAK2,CASP7,FASN,PKN1,PKN2,ARHGEF28
cdc25 and chk1 regulatory pathway in response to dna damage	YWHAH,RASGRF1,MYT1,ATM,CHEK1,WEE1,CDK1,CDC25C,POLD1,PKMYT1,YWHAQ
phospholipids as signalling intermediaries	PIK3R1,PIK3CA,GNAI1,GNGT1,GNB1,ITGAV,ITGB3,PDGFRA,PDGFA,GRB2,SOS1,SHC1,ASAH1,RAF1,RAC1,SPHK1,MAPK3,MAP2K2,MAP2K1,ADCY1,PTK2,PDPK1,PIK3C2G,HRAS,AKT1,SRC,MAPK1,S1PR1,PIK3CB,PIK3CD,PIK3CG,MBTPS1,HEXIM1,SNW1,PLEKHM2,DYT10,INPP5K,SPHKAP,MTG1,PRRT2
EGF receptor (ErbB1) signaling pathway	EGFR,EGF,SOS1,GRB2,GNAI1,GAB1,GNAI3,PIP5K1C,PAK1,STAT1,STAT3,SRC,DAG1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,PTPN1,PTPN6,PTPN11,RASA1,NR0B2,WASL,THOC1,MTG1,PIGU,SIRPA
neuroregulin receptor degredation protein-1 controls erbb3 receptor recycling	ERBB3,RNF41,UBE2D1
mtor signaling pathway	EIF4E,EIF4EBP1,PIK3R1,PIK3CA,RPS6,EIF4A1,EIF4G1,EIF4B,GH1,IRS1,TSC1,TSC2,FKBP1A,GHR,PDK2,PDPK1,RHEB,RPS6KB1,PTEN,MKNK1,AKT1,PPP2R5D,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,MTOR,PIK3CB,PIK3CD,PIK3CG,RHEBP1,EIF3A,GGH,MTG1
sonic hedgehog receptor ptc1 regulates cell cycle	CCNB1,SHH,CCNH,CDK7,MNAT1,XPO1,RASGRF1,DDR1,CDK1,POLD1,PTCH1
IL2 signaling events mediated by PI3K	RHOA,CDC42,JAK3,GAB2,LCK,SOS1,PIK3R1,GRB2,IL2,JAK1,TERT,MTOR,AKT1,RAC1,RELA,SMS,MYB,CAMP,E2F1,PAK1,MYC,BCL2,KRIT1,DAG1,FOXO3,GCLC,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTPN11,SHC1,SMPD1,UGCG,EIF3A,THOC1,RAI1,MTG1,SIRPA,H19,CHAMP1
cell cycle: g1/s check point	CDK4,CDK6,CCND1,TFDP1,E2F1,CDK2,CCNE1,SMAD4,SMAD3,RB1,HDAC1,ABL1,TGFB1,DHFR,CCNA1,GSK3B,ATR,ATM,CDC25A,TP53,CDKN2B,CDKN2A,CDKN1A,CDKN1B,SKP2,CDK1,MTTP,PAK3,POLD1,TKT,HDAC9,ANTXR1,MMAB,SERPINA2P
srebp control of lipid synthesis	SCAP,MBTPS2,MBTPS1,LDLR,HMGCS1,SH2D2A
effects of calcineurin in keratinocyte differentiation	MARCKS,PPP3CA,PPP3CC,PPP3CB,SP3,SP1,CDKN1A,GNAQ,PLCG1,AZF1,KRIT1,DAG1,PAK3,PSG1,DYT10,PRRT2,DAND5
intrinsic prothrombin activation pathway	PROS1,PROC,FGA,FGB,FGG,COL4A1,COL4A3,COL4A2,COL4A5,COL4A6,COL4A4,F2R,F9,F11,F12,F5,F8,F10,SERPING1,KNG1,ZFHX3,PCID2,FAM110A,ZNF160
metabolism of anandamide an endogenous cannabinoid	CNR1,CNR2,PLD2,BAAT,PLD3,PLD1,FAAH,PRKCSH,PCDHA@,PCDHA6,PCDHA4,FA2H
p75(NTR)-mediated signaling	PAK1,NGF,CDC42,RHOA,PIK3R1,PSEN1,NCSTN,APH1A,PSENEN,APH1B,E2F1,DIABLO,LINGO1,TRAF6,BEX1,RAC1,AKT1,BAD,MYD88,MMP7,FURIN,APAF1,ARHGDIA,GTF2H1,IRAK1,NTF4,NTRK1,NTRK2,NTRK3,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,SHC1,SMPD2,ADAM17,TP53,IKBKG,RIPK2,MAGED1,THOC1,BCL2L11,NGFRAP1,DCTN4,ARHGEF28,RTN4R,BEX2,MTG1,SIRPA

the co-stimulatory signal during t-cell activation	PIK3R1,PIK3CA,CTLA4,CD80,CD3E,CD3D,CD3G,CD28,CD86,HLA-DRB1,HLA-DRA,ICOS,ICOSLG,PTPN11,ITK,GRB2,LCK,CD247,PIK3CB,PIK3CD,PIK3CG,TRA,TRB,CD274,TARP
fc epsilon receptor i signaling in mast cells	PIK3R1,PIK3CA,LYN,FCER1G,SYK,MS4A2,FCER1A,GRB2,SOS1,SHC1,PAK2,RAF1,JUN,MAPK8,MAP2K4,FOS,ELK1,MAPK1,MAP2K7,MAP3K1,PLA2G1B,PLCG1,MAPK3,MAP2K2,MAP2K1,HRAS,BTK,VAV1,MS4A1,DAG1,PIK3CB,PIK3CD,PIK3CG,PRKCB,PKN2,KCNH4,KCNH8
ccr3 signaling in eosinophils	GNAS,CCL11,CCR3,GNB1,GNGT1,GNAQ,LIMK1,CFL1,PLCB1,DECR1,MAP2K1,MAPK3,MAPK1,ROCK2,RHOA,RAF1,PIK3C2G,PTK2,HRAS,MYL2,PPP1R12B,DAG1,ROS1,VPS72,DYT10,PRRT2
Signaling events mediated by TCPTP	STAT5A,PDGFRB,STAT1,PIAS1,EGFR,EGF,STAT3,STAT5B,CSF1R,CSF1,SOS1,GRB2,GAB1,RAB4A,STAT6,JAK1,JAK3,LMAN1,EIF2A,SRC,ATR,ADRA1D,CREBBP,EIF2S1,EIF4E,KDR,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKLR,PRB3,EIF2AK2,PTPN1,OPN1LW,SHC1,THOC1,PAG1,PCBP4,ANTXR1,MTG1,PIGU,SIRPA,MMAB,SERPINA2P
Syndecan-1-mediated signaling events	FGFR4,FGF1,FGF9,FGF16,FGF6,FGF8,FGF19,FGF17,FGF18,FGF2,FGF4,FGF3,FGF10,FGF5,FGF23,MET,HGF,CASK,TGFB1,MMP1,HPSE,MMP7,BSG,FGF13,IL6,CCL5,SOS1,RNMT
degradation of the rar and rxr by the proteasome	RXRA,RARA,RAB40B
S1P5 pathway	RAC1,PAK1,CDC42,RHOA,PKN1,MBTPS1,S1PR5,MTG1
phosphoinositides and their downstream targets	VAV2,LYN,GRASP,BTK,GTF3A,ARF1,GSK3A,PRKCZ,PRKCE,RPS6KB1,RAB5A,GSK3B,EEA1,PLCG1,RAC1,PDPK1,AKT1,BAD,PIP,DAG1,BPNT1,ARF1P1
Regulation of Telomerase	JUNB,FOS,FOSB,JUND,JUN,TERT,IRF1,MTOR,AKT1,HDAC2,SP1,SP3,BLM,POT1,TPP1,ATM,MYC,SMAD3,TGFB1,HUS1,RAD1,WRN,MAX,C2,SIN3A,RBBP7,SAP18,SIN3B,HDAC1,SAP30,RBBP4,PINX1,PARP2,RAD50,EGFR,EGF,E2F1,WT1,PIF1,IL2,NFX1,AMPD1,AZF1,CDKN1B,ERCC4,FOSL2,XRCC6,HNRNPC,MXD1,MRE11A,NBN,PSG1,RAD9A,RAP1A,RRAD,TERF1,TERF2,XRCC5,FOSL1,TBPL1,TECR,RNASEH2A,PTGES3,YWHAQ,SMG6,SMG5,TINF2,TERF2IP,NLRP2,DCLRE1B,ACD,DAND5
C-MYC pathway	MAX,MYC,HBP1,TAF10,TAF12,TAF9,TRRAP,PPP2CA,AXIN1,PIN1,PAK2,SKP2,USP28,CDKN2A,KAT2A,PKN2,ZBTB17,SUPT3H,RUVBL1,SUPT7L,KAT5,RUVBL2,PDZD2,SPTLC3
TGF-beta receptor signaling	TGFBR2,PPP2R2A,TGFBR1,SOS1,GRB2,SMAD4,SMAD7,PPP1CA,STRAP,BAMBI,OCLN,SMURF1,SMAD3,PML,SMAD2,SMURF2,DAB2,DAXX,XIAP,EIF2A,AXIN1,WWP1,RHOA,PDK1,CAV1,CTGF,PPP2CB,PPP2CA,ITCH,EIF2S1,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,PDPK1,SHC1,SPTBN1,MAP3K7,TGFB1,NR2C2,ZFYVE9,TGFBRAP1,ZFYVE16,TRAP1,YAP1,NEDD4L,PPP1R15A,PARD6A,RNF111,SRFBP1,DACT2
il 2 signaling pathway	JAK3,IL2RG,IL2,IL2RB,IL2RA,JAK1,SYK,LCK,GRB2,SOS1,SHC1,HRAS,STAT5A,STAT5B
mets affect on macrophage differentiation	ETS2,ETS1,CSF1R,CSF1,FOS,JUN,RBL1,E2F4,RBL2,E2F1,ETV3,NCOR2,HDAC2,DDX20,HRAS,FOSB,JUNB,JUND,NOLC1,RAB3GAP1,MTG1
Sphingosine 1-phosphate (S1P) pathway	ABCC1,ATF6B,S1PR1,S1PR3,S1PR4,MBTPS1,SPHK1,S1PR2,GNA13,S1PR5
control of gene expression by vitamin d receptor	CREBBP,EP300,NCOA2,NCOA3,NCOA1,TSC2,VDR,TOP2B,BAZ1B,SMARCE1,SMARCC2,SMARCC1,SMARCD1,RXRA,ARID1A,SMARCA4,ACTL6A,CHAF1A,SUPT16H,COPS2,HDAC1,NCOR1,CARM1,GRIP1,PRMT1,CYP27B1,EIF4E,OCA2,MED1,OPN1LW,SRC,TAF9,B3GALNT1,KAT2B,HDAC9,SNW1,PAG1,PCBP4,LGALS12
IL2-mediated signaling events	RAC1,PAK1,CDC42,STAT5A,SOCS3,LCK,SOCS2,JAK1,JAK3,GAB2,SOS1,PIK3R1,IL2,GRB2,SOCS1,CISH,RHOA,FYN,STAT1,SYK,STAT3,FOS,BCL2,RAF1,MYC,MAPKAPK2,JUN,CDK2,PTK2B,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PPP2R4,PRB3,PKN1,PTPN11,RASA1,SHC1,STAT5B,THOC1,IKZF3,MTG1,SIRPA
IL8- and CXCR2-mediated signaling events	IL8,CXCR2,GNAI2,GNB1,GNG2,DNM1,CBL,RAB11A,VASP,GNA15,ELMO1,DOCK2,GNA14,PPP2CA,PPP2R1A,RAC2,PLD2,AKT1,PDK1,DAG1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,RAB5A,TFAP2A,RAB7A,THOC1,MTG1,SIRPA,RAB7B
repression of pain sensation by the transcriptional regulator dream	OPRK1,CREB1,FOS,JUN,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,RPS6KA3,POLR2A,MAPK3,CREM,KCNIP3
Thromboxane A2 receptor signaling	RAC1,CDC42,GNG2,GNB1,GNAI2,TGM2,RHOA,ROCK1,EGFR,EGF,AKT1,SYK,DNM1,VCAM1,ICAM1,PAK1,DAG1,DECR1,DSP,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTGDR,PTGDS,PTGIR,SDHB,SELE,SRPR,IKBKG,SLC9A3R1,THOC1,HPGDS,IGKV1D-39,MTG1,ATPIF1,SIRPA

sumoylation by ranbp2 regulates transcriptional repression	HDAC6,SUMO1,HDAC9,RAN,MDM2,HDAC4,HDAC1,RANBP2,NUP62,NUP153,NUP214,NUP210,PIAS1,PIAS2,NPC1,MTG1
er associated degradation (erad) pathway	SAE1,FBXO2,CUL1,UBE2I,RBX1,SEC61A1,CANX,EDEM1,GANAB,SKP1,MAN1A1,RIT1,MOGS,UGGT1
tnfr1 signaling pathway	MADD,TRADD,TNF,RIPK1,TRAF2,BIRC3,TNFRSF1A,CRADD,LMNB1,LMNA,LMNB2,BAG4,FADD,CASP8,CASP3,MAP2K4,CASP2,ETFA,ETFB,ETFDH,AGFG1,TANK,SPANXC,RPAIN
Canonical Wnt signaling pathway	NKD2,FZD5,WNT3A,AXIN1,LRP6,KLHL12,CUL3,APC,RANBP3,PIP5K1B,PIP4K2A,DVL1,GSTP1,SERPINA1,PROC,DVL1P1
mechanism of protein import into the nucleus	RANGAP1,RANBP1,RANBP2,KPNA2,RAN,NUTF2,KPNB1,NUP62,NUP153,NUP214,NUP210,RCC1,NPC1,MTG1
Class I PI3K signaling events mediated by Akt	KPNA1,BAD,MTOR,RICTOR,YWHAZ,AKT2,PDK1,SRC,AKT1,RAF1,AKT3,CDKN1B,MAP3K5,PDPK1,PRB3,SLC2A4,TBC1D4,MLST8,MAPKAP1
IL27-mediated signaling events	STAT5A,STAT1,STAT4,TYK2,JAK2,IL12B,IL12A,IL27RA,EBI3,IL27,JAK1,STAT2,STAT3,IL18,TGFB1,GATA3,IL2,IL6,IL6ST,IL17A,NM,LRPPRC,IL17D,C19orf10
EPO signaling pathway	EPOR,EPO,JAK2,SOCS3,LYN,SOS1,GRB2,STAT1,GAB1,PIK3R1,CRKL,CBL,IRS2,TEC,VAV2,TRPC2,TRPC6,BTK,BCL2,HRAS,RAP1A,BCL2L1,DAG1,RAPGEF1,INPP5D,MAPK8,PTPN6,PTPN11,SHC1,STAT5A,STAT5B,TIMP1,TOC,NR4A3,EPX,NR0B2,SH2B3,MTG1,PIGU
Plasma membrane estrogen receptor signaling.1	CDC42,RAC1,PAK1,GRB2,SOS1,SRC,PELP1,RHOA,GNB1,GNG2,PIK3R1,IGF1,AKT1,ROCK2,ATF6B,DAG1,DBT,DECR1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,SNORA62,THOC1,GNA13,SNORD12C,IGKV1D-39,MTG1,SIRPA
Notch signaling pathway	SKP1,CUL1,NUMB,ITCH,RBPJ,HDAC1,DNM1,CNTN1,NCSTN,APH1A,PSENEN,APH1B,DNER,YY1,DLK1,MYCBP,ENO1,ADAM12,FURIN,DTX1,CBL,IL4,MARK2,NOTCH4,EPS15,NOTCH1,PTCRA,GATA3,ADAM10,MIB1,SKP2,MYC,KITLG,RBBP8,NEURL,SPEN,KDM1A,FBXW7,LNX1,MTG1
IL1-mediated signaling events	RELA,IL1RAP,PIK3R1,IL1R1,TAB1,TAB2,TRAF6,IRAK4,MYD88,IL1R2,IL1RN,TOLLIP,TICAM2,JUN,GTF2H1,IRAK1,MAP3K3,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK8,MAP2K6,MAP3K7,NR2C2,UBE2N,UBE2V1,IKBKG,THOC1,IRAK3,ERC1,DCTN4,SIRPA
Circadian rhythm pathway	ATR,CHEK1,TIMELESS,PER1,NONO,CRY2,CLOCK,WDR5,NPAS2,DEC1,NR1D1,AQP1,ARNTL,DECR1,BHLHE40,ANTXR1,PGAP3,MMAB,SERPINA2P
p38 mapk signaling pathway	CDC42,MAP3K5,MAX,ELK1,HMGN1,HSPB1,STAT1,MYC,MAPKAPK2,MAPKAPK5,MAP3K1,PLA2G1B,CREB1,MKNK1,ATF2,MAP2K4,RAC1,DDIT3,NR2C2,RPS6KA5,HRAS,MAP2K6,MAP3K9,MAPK14,GDNF,KCNH4,KCNH8
apoptotic signaling in response to dna damage	APAF1,CASP9,BCL2,BAX,BCL2L1,BID,ATM,CYCS,BAD,AKT1,TP53,CASP7,CASP6,CASP3
PLK2 and PLK4 events	PLK4,PLK2
Endothelins	RHOA,CDC42,HRAS,RAC1,CRK,SRC,JUN,FOS,PAK1,AKT1,JAK2,MMP1,COL3A1,COL1A2,TRPC6,RAF1,APC,DAG1,EDN1,EDN2,EDN3,EDNRA,EDNRB,PTK2B,GLUL,PKN1,MAPK8,SLC9A1,SLC9A3,CYSLTR1,CYSLTR2,MTG1
il 6 signaling pathway	IL6R,LRPPRC,SOS1,GRB2,PTPN11,IL6,SHC1,CEBPB,STAT3,HRAS,IL6ST,NM
VEGFR1 specific signals.1	GAB1,PIK3R1,CD2AP,CBL,NRP1,NCK1,NRP2,AKT1,HIF1A,PDK1,KRIT1,DAG1,DECR1,FLT1,NELL1,NELL2,PDPK1,PGF,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN11,RASA1,THOC1,IGKV1D-39,PIGU,SIRPA
cardiac protection against ros	GABRA4,GABRA5,GABRA6,GABRA2,GABRA1,GABRA3,PRKCE,GPX1,ROS1,SOD1,ATP8A2
integrin signaling pathway	BCAR1,ZYX,TNS1,PXN,VCL,ITGB1,CSK,CAPN1,ITGA1,ACTA1,PTK2,TLN1,CAV1,FYN,GRB2,SOS1,SHC1,MAPK8,LRPAP1,NOLC1,RAPGEF1,MLC1,CRKL,HRAS,BCR,RHOA,SRC,ROCK1,PPP1R12B,ALPP,ATHS,SLPI,PXDN,CCL27,MMRN1,ATRNL1,PDLIM3,NAT10,ASRGL1
Signaling events mediated by PRL	CDK2,SRC,EGR1,ROCK1,RHOA,RAC1,RHOC,PRB3,PTP4A1,PTP4A2,PTP4A3
Trk receptor signaling mediated by the MAPK pathway	CDK5,CDK5R1,ELK1,RIT1,SRF,EGR1,TRPV1,EHD4,FOS,MEF2C,CREB1,MAPKAPK2,RAF1,BRAF,MAPK7,MAP2K1,MAP2K5,RAP1A,RIT2,RPS6KA5,MAP3K2,KCNH4,RUSC1,TERF2IP,BCL11B,MTG1,KCNH8

Neurotrophic factor-mediated Trk receptor signaling	SH2B1,RHOA,RHOG,DOCK1,ELMO1,GAB2,STAT3,FAIM,SOS1,GRB2,RAC1,PIK3R1,TIAM1,MATK,GAB1,CDC42,RIT1,KIDINS220,CRKL,PAK1,RASGRF1,EHD4,DNM1,NGF,RAPGEF1,GTF2H1,LRP2,NTF4,NTRK1,NTRK2,NTRK3,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAP2K1,PTPN11,RAP1A,RASA1,RIT2,SHC1,DNAJA3,MAGED1,ARHGAP32,THOC1,RGS19,GIPC1,MCF2L,NEDD4L,DCTN4,TERF2IP,BCL11B,MTG1,PIGU,COL26A1,SIRPA
hypoxia-inducible factor in the cardivascular system	UBE2A,VHL,HIF1A,CREB1,EP300,COPS5,ARNT,JUN,ASPH,NOS3,EPO,EDN1,LDHA,P4HB,DBT,HSP90AA1,HSP90AA2,SNORA62,TIMP1,VEGFA,EPX,SNORD12C,ATP8A2,NANOS3,MIA3
IGF1 pathway	IRS2,CRK,HRAS,IRS1,IGF1,SOS1,GRB2,NCK2,GRB10,YWHAZ,BAD,PIK3R1,RAF1,PDK1,AKT1,CRKL,IARS,NCK1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTK2,PTPN1,PTPN11,SHC1,THOC1,GNB2L1,YWHAQ,MTG1,SIRPA
brca1 dependent ub ligase activity	FANCD2,BRCA1,BARD1,FANCF,FANCA,FANCC,FANCE,FANCG
Class IB PI3K non-lipid kinase events	PDE3B,CAMP,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK1,MAP2K1,THOC1,SIRPA,CHAMP1
Caspase cascade in apoptosis	BAX,DFFB,DIABLO,PIDD,MADD,TRADD,TRAF2,BCL2,SREBF1,LIMK1,SATB1,BID,GAS2,PARP1,SLK,APAF1,BIRC3,DFFA,ETFA,ETFB,ETFDH,FYN,AGFG1,MAP3K1,NUMA1,PTK2,RIPK1,CRADD,TANK,RPAIN
epo signaling pathway	EPO,EPOR,GRB2,SOS1,SHC1,JAK2,PLCG1,PTPN6,HRAS,STAT5A,STAT5B,TIMP1,EPX
Validated transcriptional targets of AP1 family members Fra1 and Fra2	JUNB,FOS,FOSB,JUND,JUN,USF2,ATF4,SP1,DMTF1,CCL2,HMOX1,COL1A2,LIF,IL8,IL6,MMP1,MGP,CDKN2A,FOSL2,NFATC2,PLAU,PSG1,FOSL1,RNASEH2A,TXLNG,PRAP1,DAND5
EPHB forward signaling	RHOA,EPHB4,EPHB3,KALRN,EPHB2,EPHB1,RAC1,PIK3R1,SRC,HRAS,GRB7,GRB2,CDC42,SYNJ1,NCK1,TF,PAK1,RRAS,MAP4K4,DNM1,F3,GRIA1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAP2K1,PTK2,RAP1A,RASA1,WASL,THOC1,TERF2IP,MTG1,SIRPA
mcalpain and friends in cell motility	PXN,ACTA1,PTK2,TLN1,ITGB1,ITGA1,CAPN2,CAPNS1,MLC1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,GRB2,SOS1,SHC1,CAPN1,EGF,EGFR,CAST,MYLK,RAC1,MAPK1,MAPK3,MAP2K2,MAP2K1,HRAS,EZR,PXDN,CD3EAP,MMRN1,ERC2,MTG1
role of ppar-gamma coactivators in obesity and thermogenesis	CREBBP,PPARG,PPARGC1A,EP300,RXRA,NCOA1,NCOA2,LPL,DOCK3,EIF4E,LCP1,PEBP1,PKD1,MED1,PPBP,OPN1LW,SRC,PAG1,PCBP4
Angiopoietin receptor Tie2-mediated signaling	RHOA,CDC42,STAT5A,NCK1,PIK3R1,RAC1,AGTR1,CRK,PAK1,GRB2,GRB14,RELA,GRB7,FYN,FGF2,FOXO1,ETS1,ELK1,ELF1,FES,BMX,AKT1,ADRA1D,ANGPT1,ANGPT2,VPS51,DECR1,FGF13,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAPK8,PTK2,PTPN11,RASA1,ROS1,SHC1,STAT5B,TEK,TM7SF2,THOC1,KCNH4,IGKV1D-39,TNIP2,ELOF1,MTG1,KCNH8,SIRPA
tumor suppressor arf inhibits ribosomal biogenesis	PIK3R1,PIK3CA,TP53,NFKBIB,UBE2A,POLR1A,POLR1C,POLR1B,POLR1D,RAC1,TBX2,TWIST1,E2F1,ABL1,MYC,ATM,HSPA1A,RB1,AKT1,MDM2,CDKN2A,DBT,HSP90AA1,HSP90AA2,PIK3CB,PIK3CD,PIK3CG,SNORA62,SNORD12C,DNAJB1P1
signaling pathway from g-protein families	GNAI1,GNGT1,GNB1,GNAS,PPP3CA,PPP3CC,PPP3CB,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,MAP2K1,RAF1,GNAQ,HRAS,ELK1,MAPK3,RPS6KA3,CREB1,PLCG1,CAMP,ASAH1,KRIT1,DAG1,KCNH4,DYT10,ATP8A2,PRRT2,KCNH8,CHAMP1
phospholipase c delta in phospholipid associated cell signaling	ADRA1B,PLCD1,TGM2,DLC1,DAG1,DYNLL1,DLEC1
Hypoxic and oxygen homeostasis regulation of HIF-1-alpha	OS9,TCEB1,TCEB2,ARNT,HIF1A,CUL2,VHL,RBX1,TRIM23,CASR,CDKN2A,PPP1R8,TP53,NAA10,GNB2L1,COPS5,HIF3A,MIA3
hemoglobins chaperone	HBB,ALAS1,ALAS2,ALAD,HMBS,UROS,UROD,FECH,CPOX,GATA1,HBA1,HBA2,SCN2A,IGKV1D-39,AHSP,KRT124P,KRT123P
sprouty regulation of tyrosine kinase signals	SRC,EGFR,EGF,GRB2,SOS1,SHC1,SH3KBP1,MAPK1,MAPK3,PTPRB,CBL,RAF1,MAP2K2,MAP2K1,HRAS,RASA1,ENG,SYNGAP1,MTG1
Signaling by Aurora kinases	
Regulation of CDC42 activity	RAC1,RHOA,PAK1,APC,CDC42,GIT1,DOCK11,DOCK9,ARHGAP10,ARHGAP17,FGD1,RALBP1,DOCK10,VAV3,VAV2,ARHGEF9,DOCK6,NME1,ARHGAP1,ARHGDIA,LRP2,MCF2,PKN1,PROC,RMRP,FARP2,MCF2L,DNMBP,NGEF,ARHGAP21,REPS1,MTG1,ARHGEF25,SPATA13
rna polymerase iii transcription	GTF3C3,NR3C1,BDP1,GTF3C1,GTF3C5,BRF1,GTF3C4,SSB,ZFP36L1,PTPN18

Posttranslational regulation of adherens junction stability and dissassembly	FGFR4,FGF1,FGF9,FGF16,FGF6,FGF8,FGF19,FGF17,FGF18,FGF2,FGF4,RHOA,FGF23,NGF,FGF3,CDC42,FGF10,FGF5,EGF,EGFR,ARF6,IGF2,RET,GDNF,RAC1,HRAS,IQGAP1,ADAM10,FYN,HGS,MEP1B,NME1,RIN2,TIAM1,SNX1,PAK1,MMP7,SRC,ADRA1D,CREBBP,CTNND1,EIF4E,FGF13,NTF4,NTRK1,NTRK2,NTRK3,PKN1,PTPN1,PTPN6,RAB5A,OPN1LW,RMRP,RAB7A,NR0B2,PAG1,PCBP4,CBLL1,CABLES1,MTG1,RAB7B
Ceramide signaling pathway	BAG4,RELA,MADD,TRADD,TRAF2,FADD,PDGFA,BAX,BAD,SPHK2,IGF1,EGF,MYC,RB1,BCL2,RAF1,AKT1,MAP4K4,EIF2A,RAX,BID,BIRC3,EIF2S1,ETFA,ETFB,ETFDH,AGFG1,MAP3K1,PAWR,PKLR,MAPK1,MAPK3,MAPK8,MAP2K1,MAP2K2,EIF2AK2,MAP2K4,NSMAF,PRKRA,RIPK1,CRADD,KSR1,F2RL3,AIFM1,TANK,CNKSR1,CNTRL,RPAIN,GRDX,PWAR4
calcium signaling by hbx of hepatitis b virus	SRC,PTK2B,CREB1,FOS,JUN,GRB2,SOS1,SHC1,CSNK2A1,MAP2K1,RAF1,MAPK3,HRAS,KRIT1,CSNK2A2,FOSB,JUNB,JUND,LAMTOR5,MTG1
ifn gamma signaling pathway	JAK1,IFNGR1,JAK2,IFNG,STAT1
sodd/tnfr1 signaling pathway	BAG4,TNF,MADD,TRADD,RIPK1,TRAF2,BIRC3,CRADD,ETFA,ETFB,ETFDH,AGFG1,TANK,RPAIN
tnf/stress related signaling	TRADD,RIPK1,TANK,TRAF2,CASP2,TNFRSF1A,TNF,CRADD,BAG4,CHUK,IKBKB,IKBKG,ATF1,JUN,MAPK8,MAP4K2,MAP4K4,MAP3K1,MAPK14,GDNF,AGFG1,MAP2K3,MAP2K6,MAP2K7,MAP2K4,RPAIN
attenuation of gpcr signaling	GNAS,GNGT1,GNB1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,ARRB1,GRK4,NT5E,NTS,FZD4,LPAR3,DYT10,LGR6,PRRT2,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
ALK2 signaling events	SMAD4,BMPR2,BMP7,TLX2,ACVR1,AMH,AMHR2,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4
ifn alpha signaling pathway	IFNAR2,IFNA1,IFNAR1,JAK1,TYK2,IFNB1,STAT2,ST13,STAT1
Syndecan-4-mediated signaling events	RHOA,CDC42,CXCR4,CXCL12,FZD7,RAC1,ADAM12,FGF2,FGFR1,TFPI,PAK1,ADRA1D,FGF13,PKN1,PTK2,CCL5,GIPC1,TNFRSF13B,MTG1
growth hormone signaling pathway	JAK2,GHR,PIK3R1,PIK3CA,GH1,SRF,INSR,INS,GRB2,SOS1,SHC1,CISH,PLCG1,PTPN6,RPS6KA1,IRS1,SLC2A14,DAG1,HNF4A,PIK3CB,PIK3CD,PIK3CG,STAT5A,STAT5B,HNF1A,GGH,DYT10,PRRT2
inhibition of cellular proliferation by gleevec	PIK3R1,PIK3CA,GRB2,SOS1,MAP2K1,MAPK8,RAF1,MAP2K4,BCL2,MAP3K1,JUN,JAK2,CRKL,MAPK3,HRAS,BCR,MYC,AKT1,STAT1,FOS,PIK3CB,PIK3CD,PIK3CG,STAT5A,STAT5B
rac1 cell motility signaling pathway	PIK3R1,PIK3CA,CDK5R1,CDK5,PPP1R12B,LIMK1,MAP3K1,RPS6KB1,WASF1,PAK1,PLD1,MYL2,CFL1,PDGFRA,ARFIP2,RAC1,MYLK,FCN2,GCHFR,IL12A,PIK3CB,PIK3CD,PIK3CG,PKN1,PRKCSH,RASA1,VPS72,RGS6,CADM1,UPK3B
RXR and RAR heterodimerization with other nuclear receptor	VDR,RARS,BCL2,MED1,TH,TGFB1,ABCA1,CYP27B1,NR4A1,PPARA,MBD4,NCOR2,NR1H4,HEATR6,FAM120B
downregulated of mta-3 in er-negative breast tumors	ESR1,MTA3,HDAC1,MBD3,HSPB1,PDZK1,GREB1,CTSD,ALDOA,CDH1,GAPDH,SNAI1,HDAC9,FZR1,DPEP3
role of beta-arrestins in the activation and targeting of map kinases	GNAS,GNGT1,GNB1,ARRB1,RAF1,MAPK1,MAP2K1,MAP2K2,MAPK3,DNM1,ADRBK1,FZD4,LPAR3,LGR6,MTG1,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
wnt lrp6 signalling	FZD1,LRP6,KREMEN2,DKK2,DKK1
atm signaling pathway	BRCA1,RBBP8,MDM2,TP53,RELA,NFKBIA,ATM,TREX1,ATR,JUN,RPA1,TP73,CHEK2,CHEK1,GADD45A,MAPK8,RAD51,ABL1,ATRIP,ARHGEF7,POLR1A,ANTXR1,MMAB,SERPINA2P
anthrax toxin mechanism of action	MAP2K2,MAP2K1,CAMP,AMY2A,EPB42,PRH1,BLOC1S6,ATP8A2,CHAMP1
Nongenotropic Androgen signaling	AR,GNG2,GNB1,SRC,PELP1,PIK3R1,HRAS,SHBG,RAF1,AKT1,FOS,CREB1,AKR1B1,AREG,DAG1,GNRH1,HSPG2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK1,PTK2,THOC1,MTG1,SIRPA
Alternative NF-kappaB pathway	RELB,MAP3K14,MAP4K4
FoxO family signaling	FOXO1,RAN,SIRT1,SKP2,FOXO4,G6PC,PLK1,BCL6,CAT,FOXO6,CDK2,FASLG,GADD45A,AKT1,USP7,SGK1,CDKN1B,CREBBP,EIF4E,FOXO3,MSMB,MST1,RALA,RBL2,OPN1LW,SOD2,ZFAND5,KAT2B,NOLC1,BCL2L11,GLYAT,YWHAQ,RAB3GAP1,PAG1,PCBP4,TMPRSS13,LMLN,MTG1
Polo-like kinase signaling events in the cell cycle	PLK3,PLK2,PLK1,PLK4

akap95 role in mitosis and chromosome dynamics	CCNB1,PRKACB,PRKAR2B,PRKAG1,PRKAR2A,PRKACG,AKAP8,DDX5,PPP2R5D,CDK1,POLD1,NPY4R,NCAPD2,CEP250
btg family proteins and cell cycle regulation	CHAF1B,CHAF1A,TP53,HOXB9,CCND1,RB1,BTG2,BTG1,PRMT1,PRB3,CNOT8,CNOT7
Thrombin/protease-activated receptor (PAR) pathway	
trka receptor signaling pathway	PIK3R1,PIK3CA,NTRK1,GRB2,SOS1,SHC1,AKT1,PDPK1,HRAS,PLCG1,NGF,DAG1,PIK3CB,PIK3CD,PIK3CG,DYT10,PRRT2
signal dependent regulation of myogenesis by corepressor mitr	MYOD1,HDAC9,YWHAH,MEF2C,KRIT1,CAMK1,YWHAQ
the igf-1 receptor and longevity	PIK3R1,PIK3CA,IRS1,IGF1R,IGF1,GRB2,SOS1,SHC1,CAT,HRAS,PDPK1,AKT1,FOXO3,PIK3CB,PIK3CD,PIK3CG,ROS1,SOD1,GLYAT,MTG1
gamma-aminobutyric acid receptor life cycle pathway	UBQLN1,GABRA2,GABRA6,GABRA4,GABRA1,GABRA3,GABRA5,NSF,GABARAP,GPHN,SRC,DNM1,UBE3A,UBE2A,UBA1
toll-like receptor pathway	IRAK1,TLR9,MYD88,TLR2,CD14,TLR6,EIF2AK2,TLR4,TIRAP,LY96,TOLLIP,TLR3,FOS,JUN,MAP3K7,RELA,NFKBIA,TLR7,CHUK,IKBKB,IKBKG,PGLYRP1,PPARA,ELK1,MAP3K1,MAP2K6,MAPK14,MAPK8,MAP3K14,MAP2K4,TRAF6,MAP2K3,TAB1,TAB2,FOSB,IRF6,JUNB,JUND,NDUFA2,PKLR,SPG7,NR2C2,ARHGEF7,KCNH4,ECSIT,KCNH8
IL3-mediated signaling events	STAT5A,CSF2RB,IL3RA,IL3,JAK2,CEBPB,GAB2,GRB2,PIK3R1,YWHAZ,HDAC1,CISH,YWHAG,SRP9,OSM,PIM1,ID1,INPP5D,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN11,SHC1,STAT5B,KSR1,LONP1,THOC1,CNKSR1,CCM2,SIRPA
ionomycin and phorbal ester signaling pathway	P2RY2,PRKCA,PLCG1,DAG1,PRKCB
erk1/erk2 mapk signaling pathway	NGFR,GRB2,SOS1,SHC1,RAF1,PTPRR,ELK1,STAT3,TERT,PPP2R5D,MYC,MKNK2,MKNK1,RPS6KA1,MAP2K2,MAP2K1,SRC,HRAS,MAPK3,MAPK1,NGF,RPS6KA5,KCNH4,KCNH8
p53 pathway	PPP2R4,RPL11,RPL23,MDM2,RPL5,DAXX,USP7,CDK2,NEDD8,SKP2,PIN1,YY1,STRAP,PRMT5,FBXO11,AKT1,DYRK2,ATR,E4F1,CSE1L,HIPK2,SMYD2,ATM,MDM4,CDKN2A,CDKN3,CREBBP,EIF4E,PPM1A,PPP2CA,PRB3,OPN1LW,RPL17,MRPL23,TP53,UBE2D1,PPM1D,KAT2B,HUWE1,TRIM28,KAT5,PPP1R13L,RASSF1,CHEK2,PDZD2,RCHY1,PAG1,PCBP4,SETD8P1,TP53AIP1,RFWD2,SETD7,ANTXR1,CARD16,SRFBP1,MMAB,SETD8,SERPINA2P
opposing roles of aif in apoptosis and cell survival	BCL2L1,PARP1,AIFM1
E-cadherin signaling in keratinocytes	CDC42,PIK3R1,RAC1,RHOA,EGFR,PAK1,FYN,SRC,AJUBA,VASP,CASR,PIP5K1A,ADRA1D,DAG1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,THOC1,MTG1,SIRPA
Calcineurin-regulated NFAT-dependent transcription in lymphocytes	JUN,FOS,FOXP3,JUNB,EGR1,PPARG,EGR4,IRF4,MAF,CD40LG,CDK4,PTPRK,GBP3,DGKA,CTLA4,IL8,IL5,EGR2,FASLG,EGR3,E2F1,ITCH,GATA3,IL2,IL4,KRIT1,IL3,NFATC2,PTGS2,PTPN1,SLC3A2,TLE4,FOSL1,SLC7A5,IKZF1,RNASEH2A,ATL1,RNF128
Signaling events mediated by HDAC Class I	NUP153,NUP62,NUP210,NUP214,STAT3,HDAC1,HDAC2,RBBP7,RBBP4,YY1,SAP30,CHD4,MBD3,CHD3,GATA1,MTA2,SIN3A,SAP18,SIN3B,HDAC3,GATA2,SUMO1,RANGAP1,RANBP2,SMAD7,RAN,MAX,RELA,MBD3L2,MBD2,PRMT5,NCOR1,HDAC8,PPARG,SMURF1,AMPD1,CREBBP,EIF4E,FKBP3,MXD1,NPC1,OPN1LW,TFCP2,NR2C1,UBE2I,CCDC6,HIST2H2AA3,HIST2H2AC,HIST2H2BE,HIST1H4F,HIST2H4A,TNFSF14,TNFRSF14,KAT2B,PAG1,PCBP4,HRH4,DPEP2,DPEP3,WDR77,TAS1R2,DEPDC7,MTG1,TXNRD3,RLN3,HIST2H3C,ZFPM1
Signaling events regulated by Ret tyrosine kinase	RHOA,CDC42,GDNF,GAB1,GRB2,CRK,IRS1,RAP1A,SOS1,FRS2,RAC1,PIK3R1,SHANK3,DOK4,DOK6,HRAS,GRB7,NCK1,DOK5,GRB10,IRS2,JUN,SRC,CREB1,DOK1,PAK1,ART4,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAPK8,PTK2,PTPN11,RASA1,RET,SHC1,THOC1,MTG1,PIGU,SIRPA
Nephrin/Neph1 signaling in the kidney podocyte	RHOA,CDC42,GRB2,CD2AP,RAC1,JUN,TRPC6,PAK1,FYN,BAD,AKT1,DAG1,F2RL2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAP2K4,TJP1,WASL,THOC1,PARD6A,KIRREL,PARD3,MTG1,SIRPA
agrin in postsynaptic differentiation	ACTA1,DMD,CTTN,SRC,PTK2,ITGB1,PXN,GIT2,ITGA1,DAG1,EGFR,MUSK,DVL1,RAPSN,UTRN,MAPK8,MAPK3,SP1,CDC42,JUN,RAC1,MAPK1,PKLR,PSG1,PXDN,DVL1P1,MTG1,DAND5
angiotensin ii mediated activation of jnk pathway via pyk2 dependent signaling	SRC,PTK2B,BCAR1,CRKL,AGT,GNAQ,AGTR1,ATF2,JUN,GRB2,SOS1,SHC1,RAF1,MAP2K4,RAC1,FOS,EGFR,MAPK1,MAPK3,ELK1,MAPK8,MAP3K1,PLCG1,PAK1,MAP2K2,MAP2K1,HRAS,AGXT,KRIT1,DAG1,GDNF,PKN1,KCNH4,DYT10,MTG1,PRRT2,KCNH8

cyclins and cell cycle regulation	TFDP1,E2F1,CCNB1,CDK2,CCNE1,CCNA1,CCNH,CDK7,RB1,CCND3,CDK6,RBL1,CDK4,CCND2,CCND1,CDKN2D,CDKN2C,CDKN1A,CDKN2A,CDKN2B,CDKN1B,CDC25A,CDK1,PAK3,POLD1
d4gdi signaling pathway	RHOA,ARHGDIB,JUN,CASP1,CASP3,ARHGAP5,RHO
ALK1 signaling events	TGFBR2,ACVR2A,INHBA,TGFBR1,PPP1CA,TGFB1,BMPR2,SMAD4,TGFB3,ACTR2,CAV1,TLX2,SMAD7,ID1,ACVR1,ACVRL1,CSNK2B,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,GDF2,SLPI
ErbB2/ErbB3 signaling events	SOS1,GRB2,ERBB3,ERBB2,STAT3,DOCK7,MTOR,FOS,CHRNA1,RAF1,BAD,CHRNE,AKT1,NFATC4,USP8,CAMP,SRC,JAK2,JUN,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK8,PTPN11,SHC1,THOC1,RNF41,MTG1,SIRPA,CHAMP1
akt signaling pathway	PIK3R1,PIK3CA,AKT1,YWHAH,RELA,NFKBIA,GHR,GH1,PPP2CA,FASLG,CASP9,CHUK,PDPK1,BAD,HSP90AA1,HSP90AA2,PIK3CB,PIK3CD,PIK3CG,GGH,ARHGEF7,YWHAQ
Trk receptor signaling mediated by PI3K and PLC-gamma	NGF,STAT5A,GAB1,SOS1,PIK3R1,GRB2,TRPV1,EGR1,CREB1,SRC,BAD,PDK1,AKT1,TRPC3,DAG1,EPB41L1,FOXO3,NTF4,NTRK1,NTRK2,NTRK3,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,SHC1,THOC1,MTG1,AGAP2,PIGU,SIRPA
stat3 signaling pathway	STAT3,TYK2,MAPK1,MAPK3,MTOR
role of mal in rho-mediated activation of srf	SRF,MAL,ACTA1,RAC1,RHOA,RAF1,MAPK8,MAPK1,MAP2K2,MAP2K1,MAP4K2,LIMK1,DIAPH1,ROCK1,HRAS,MAP3K1,MAPK3,CDC42,CD8A,HNF4A,HNF1A,MKL1
Nectin adhesion pathway	RHOA,CDC42,IQGAP1,RAC1,PIK3R1,PDGFRB,CLDN1,CRK,VAV2,PTPRM,SRC,PAK1,PIP5K1C,ADRA1D,RAPGEF1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,RAP1A,FARP2,THOC1,PVRL3,TERF2IP,MTG1,SIRPA
the 41bb-dependent immune response	TNFRSF9,TRAF2,TNFSF9,RELA,IL4,IL2,IFNG,JUN,ATF2,MAP3K5,MAPK14,GDNF,MAP2K3,MAP2K6,TANK
Effects of Botulinum toxin	STX1A,VAMP2,STXBP1,RAB3GAP2,UNC13B,RIMS1,SNAP25,CHRNA1,FGFR3
ATF-2 transcription factor network	JUN,FOS,ATF2,JUND,BRCA1,JDP2,CREB1,JUNB,HES1,CDK4,DUSP5,RB1,NOS2,ATF3,COL24A1,CSRP2,BCL2,IL6,IL23A,TH,GADD45A,PDGFRA,DUSP8,ARG1,SOCS3,ACHE,CUL3,IL8,DDIT3,DUSP1,GDNF,PLAU,MAPK8,MAPK9,SELE,C21orf33,HRK,KAT5,RNASEH2A,RUVBL2,PPARGC1A,DUSP10,TINAGL1,PRAP1,NANOS2
Calcium signaling in the CD4+ TCR pathway	JUN,FOS,CHP1,JUNB,CABIN1,CD40LG,FASLG,IL4,IL2,KRIT1,RCAN1,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,IL3,PTGS2,FOSL1,AKAP5,RCAN2,RNASEH2A,CHORDC1
erk and pi-3 kinase are necessary for collagen binding in corneal epithelia	PFN1,DIAPH1,PIK3R1,PIK3CA,BCAR1,ZYX,TNS1,PXN,VCL,ITGB1,CSK,CAPN1,ITGA1,ACTA1,PTK2,TLN1,GSN,RHOA,PLCG1,MLC1,ARHGAP5,SRC,MAPK3,MAPK1,MYLK,ROCK1,MAP2K1,ALPP,ATHS,DAG1,PIK3CB,PIK3CD,PIK3CG,PRF1,SLPI,PXDN,CCL27,MMRN1,ATRNL1,PDLIM3,NAT10,ASRGL1
the prc2 complex sets long-term gene silencing through modification of histone tails	RBBP4,RBBP7,YY1,EED,SUZ12,EZH2,HDAC2,HDAC1,CBX4,RING1,PHC1,PRC1,BMI1
caspase cascade in apoptosis	LMNB1,LMNA,LMNB2,APAF1,CASP9,DFFB,DFFA,BIRC3,BIRC2,CASP2,CASP6,PRF1,CASP8,CASP4,PARP1,SREBF1,CASP1,GZMB,CASP10,ARHGDIB,CASP3,CASP7,XIAP,CAD,ZNF395,SPANXC,IRG1
cyclin e destruction pathway	CCNE1,TFDP1,E2F1,CDK2,RB1,CDC34,CUL1,FBXW7,SKP1
ErbB1 downstream signaling	FOS,RHOA,STAT1,STAT3,ABI1,RALA,MTOR,RICTOR,RIN1,ARPC3,ARPC4,ARPC5,ARPC1B,ARPC2,RAC1,EGF,EGFR,YWHAZ,KSR1,RAF1,BRAF,PPP2R1A,PPP2CA,PPP2R2A,SRF,ELK1,EPS8,SOS1,CDC42,BAD,ARF4,SRA1,AKT1,GAB1,RALGDS,CREB1,ATF1,EGR1,ZFP36,MEF2C,SMAD1,SRC,ATF2,JUN,PAK1,IQGAP1,PLD1,GRB2,PLD2,PDK1,VAV2,KRIT1,DAG1,DUSP1,DUSP6,F2RL2,GARS,GDNF,IL8,MAP3K1,NAP1L1,PEBP1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PRKCSH,MAPK7,MAP2K1,MAP2K2,MAP2K5,RAB5A,RPS6KA3,MAP2K4,SLC9A1,SOX9,WASL,SH2D2A,NAPSA,USP6NL,THOC1,ACTR3,ACTR2,WASF2,CNKSR1,BAIAP2,CHERP,MAP3K2,NCKAP1,YWHAQ,CYFIP1,KCNH4,ANGPTL2,C9orf156,PARD3,AICDA,SCAF1,MLST8,AZI2,MAPKAP1,NAA25,MTG1,PIGU,KCNH8,SIRPA,APOBEC3A,HEPACAM,TAB3
trefoil factors initiate mucosal healing	PIK3R1,PIK3CA,RELA,APAF1,CASP9,ERBB2,EGFR,NFKBIA,GRB2,SOS1,SHC1,GHR,GH1,RAF1,CASP7,CASP6,CASP3,MUC2,CYCS,RPS6KA1,MAPK1,MAPK3,RHOA,MAP2K2,MAP2K1,CTNNB1,PDPK1,HRAS,AKT1,BAD,PIK3CB,PIK3CD,PIK3CG,GGH,ARHGEF7,MTG1
e2f1 destruction pathway	CCNA1,CDK2,TFDP1,E2F1,CCNE1,RB1,CDC34,SKP2,CUL1,SKP1

eicosanoid metabolism	PTGER3,PTGER4,CYSLTR1,PTGFR,PTGER2,CYSLTR2,PTGIR,PTGER1,MPO,TBXA2R,PTGIS,PTGES,TBXAS1,ALOX5AP,PLA2G1B,CYP2J2,PLCB1,ALOX5,COX8A,DAG1,FPR1,PTGDS,COX5A,HPGDS
FOXA1 transcription factor network	JUNB,FOS,JUND,FOSB,JUN,AR,FOXA1,SP1,BRCA1,SFTPD,SHH,FOXA2,C4BPB,SOD1,COL18A1,AP1B1,PRDM15,NDUFV3,PISD,ATP5J,TFF1,CEBPB,DSCAM,NRIP1,GCG,XBP1,APOB,AKR1B1,KLK3,AREG,CDKN1B,CREBBP,CYP2C18,DBT,EIF4E,FOSL2,NFIC,NKX3-1,SERPINA1,PLAG1,PROS1,PSG1,OPN1LW,SNORA62,SCGB1A1,XBP1P1,FOSL1,NCOA3,NPEPPS,SFI1,RNASEH2A,ERAL1,SNORD12C,PSAT1,PAG1,PCBP4,ANIB1,DAND5
IL8-mediated signaling events	IL8
transcription regulation by methyltransferase of carm1	CREBBP,EP300,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,RARA,RXRA,CARM1,NCOA3,CREB1,BCL2,SST,EIF4E,OPN1LW,RAB40B,PAG1,PCBP4
cxcr4 signaling pathway	PIK3R1,PIK3CA,GNAQ,CXCR4,CXCL12,GNB1,GNGT1,GNAI1,HRAS,PIK3C2G,PLCG1,DAG1,ITIH4,PIK3CB,PIK3CD,PIK3CG
p38 signaling mediated by MAPKAP kinases	RAF1,YWHAZ,TSC2,MAPKAPK2,TCF3,MAPKAPK3,CDC25B,CREB1,SRF,LSP1,TH,ALOX5,ETV1,HSPB1,HSPB2,PRRC2A,KIAA1549L,TCF7L1,CRYGEP
Signaling events mediated by focal adhesion kinase	CDC42,RRAS,GRB7,PAK1,RAC1,PIK3R1,SRC,SOS1,GRB2,RHOA,ELMO1,CRK,DOCK1,ASAP1,KLF8,JUN,ETS1,BRAF,BMX,ROCK2,RAF1,ADRA1D,RAPGEF1,MMP14,MYLK,NCK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKLR,PKN1,MAPK1,MAP2K1,PTK2,RAP1A,RASA1,MAP2K4,WASL,THOC1,PTPN21,ARHGAP26,MAPK8IP3,TERF2IP,MYLK2,MYLK3,MTG1,SIRPA
pten dependent cell cycle arrest and apoptosis	PIK3R1,PIK3CA,ITGB1,GRB2,SOS1,SHC1,FASLG,PTEN,PTK2,CDKN1B,AKT1,PDK2,ILK,BCAR1,FOXO3,PIK3CB,PIK3CD,PIK3CG
Insulin-mediated glucose transport	VAMP2,ASIP,AKT2,AKT1,KRIT1,IL1RN,LNPEP,PPP1CC,SLC2A4,TRIP10,TBC1D4,YWHAQ,RHOQ,PARD3,MTG1
erythropoietin mediated neuroprotection through nf-kb	RELA,NFKBIA,HIF1A,CREB1,EP300,COPS5,ARNT,JUN,EPO,JAK2,EPOR,SOD2,CDKN1A,PAK3,ROS1,TIMP1,EPX,ARHGEF7,MIA3
TCR signaling in nave CD4+ T cells	RHOA,RAC1,NCK1,LAT,VAV1,GRAP2,CDC42,CD28,SOS1,GRB2,CD3G,CD4,CD3D,CD3E,RAP1A,FYN,LCK,CBL,FLNA,GAB2,ITK,AKT1,PDK1,PAG1,CSK,BCL10,CARD11,TRAF6,MALT1,PTEN,ORAI1,STIM1,RASGRP1,CD247,MAP3K8,CRAT,DAG1,FYB,INPP5D,LCP2,PDPK1,PTPN6,PTPN11,PTPRC,SH3BP2,SHC1,WAS,ZAP70,NR0B2,IKBKG,MAP3K14,MAP4K4,RASGRP2,MAP4K1,ORC3,STK39,DBNL,CROT,TRPV6,RASSF5,SPNS1,SLA2,MTG1,TARP
gata3 participate in activating the th2 cytokine genes expression	PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,ADCY1,GNAS,MAP2K6,MAP2K3,IL5,MAPK14,IL13,IL4,GATA3,JUNB,MAF,CAMP,ASAH1,RNASEH2A,ATP8A2,CHAMP1
inhibition of matrix metalloproteinases	TIMP2,MMP14,TIMP1,TIMP3,TIMP4,RECK,MMRN1
alternative complement pathway	C3,C6,C5,C7,C8A,C8B,C9,C8G,CFB,AKR1C1,CFD,CXCL10,CFP,PSMA7,ATP5S,IGLC7
Validated targets of C-MYC transcriptional repression	DLEU2,DLEU1,MIR23B,MIR34A,MIR146A,MIR22,MIR26A1,MIR26A2,MIR26B,MIRLET7G,MAX,NFYA,NFYB,MYC,NFYC,SMAD4,SP1,HDAC3,GFI1,DNMT3A,PPP2R4,GTF2H2,SFXN3,ALDH9A1,TMEM126A,CSDE1,CREB1,TMEFF2,TBP,ID2,COL1A2,SFRP1,DKK1,FTH1,ERBB2,DNTT,CEBPA,ZFP36L1,NDRG2,NDRG1,BRCA1,CEBPD,BCL2,IRF8,SPI1,HMGCS2,TSC2,GADD45A,PDGFRB,WNT5A,HDAC1,CDKN1B,DDIT3,FOXO3,PSG1,CCL5,SLC11A1,ZBTB17,TJP2,MXD4,DAND5
Validated targets of C-MYC transcriptional activation	MIR17,MIR338,MIR200A,MIR429,MIR9-3,MIR141,MAX,PIM1,MYC,TAF10,TAF12,TAF9,TRRAP,RPL11,SMAD3,SMAD4,DDX18,BCAT1,BAX,RCC1,CDC25A,ENO1,PFKM,GAPDH,E2F3,PEG10,BMI1,MYCT1,SERPINI1,PDCD10,KIR3DL1,TAF4B,EIF4G1,EIF4A1,MTA1,ID2,LIN28B,SNAI1,NPM1,NME2,LDHA,TK1,EIF4E,SHMT1,PRDX3,EIF2A,CAD,PTMA,NME1,CDK4,TERT,CREBBP,DFFB,EIF2S1,KAT2A,HMGA1,HSPD1,IREB2,NBN,ODC1,PMAIP1,PPAT,PTMAP4,OPN1LW,RMRP,SLC2A1,TFRC,TP53,UBTF,FOSL1,SUPT3H,RUVBL1,LONP1,SUPT7L,KAT5,RUVBL2,SPTLC3,NLRP2,PAG1,PCBP4,GPAM,CDCA7,MINA,SLC25A21,MTDH,PAPPA-AS1,IRG1

FOXA2 and FOXA3 transcription factor networks	HNF1A,HNF1B,AKT1,PCK1,BDH1,ALB,ALDOB,TTR,FOXF1,AFP,FOXA3,SP1,LPL,APOA1,PDX1,TAT,FOXA1,PKLR,UCP2,GCK,IGFBP1,CREB1,G6PC,TTF1,FOXA2,ACADM,ACADVL,ALAS1,SLC25A6,CDH15,CEBPA,CPT1A,CPT2,NR3C1,HADH,HMGCS1,HNF4A,KCNJ11,LCP1,PSG1,MAP4K2,SLC2A2,ABCC8,TFRC,NKX2-1,TRIM26,PDHX,DLK1,CHPT1,CPEB1,ATAT1,DAND5
induction of apoptosis through dr3 and dr4/5 death receptors	CASP8,CASP10,TNFSF10,RIPK1,TRAF2,TNFRSF25,FADD,TRADD,TNFSF12,DFFB,DFFA,MAP3K14,CASP6,SPTAN1,ACTA1,GAS2,LMNA,CASP7,PARP1,BID,CASP3,CAD,HLA-DRB4,AGFG1,TNFRSF10A,TANK,RPAIN,IRG1
Stabilization and expansion of the E-cadherin adherens junction	RAC1,PAK1,CDC42,MET,HGF,EGF,EGFR,IGF1,GIT1,NCK1,EPHA2,ARF6,RHOA,MYL2,SRA1,ABI1,LPP,PIP5K1C,VASP,KIF3C,DIAPH1,MGAT3,ROCK1,PLEKHA7,ADRA1D,IL6,IL8,NAP1L1,PKN1,SOS1,SOX9,RNMT,NAPSA,CHERP,NCKAP1,EXOC3,CYFIP1,LIMA1,C9orf156,ENAH,CAMSAP3,SCAF1,EXOC4,AZI2,NAA25,MTG1,TAB3,MOGAT3
a6b1 and a6b4 Integrin signaling	PIK3R1,MET,CD9,HRAS,GRB2,EGFR,EGF,ERBB2,ERBB3,AKT1,ADRA1D,COL17A1,MSMB,MST1,MST1R,PIK3CA,PIK3CB,PIK3CD,PIK3CG,SHC1,RNMT,THOC1,YWHAQ,TMPRSS13,LMLN,MTG1,SIRPA
fibrinolysis pathway	FGA,FGB,FGG,UBE2A,F2R,CPB2,SERPINE1,SERPINB2,PLAT,PLAU,ZFHX3,ATP2A2,AKR1C2,UBA1
regulation of pgc-1a	CAMK4,HDAC5,PPARGC1A,PPP3CA,PPP3CC,PPP3CB,PPARA,YWHAH,ESRRA,SLC2A14,KRIT1,CAMK1,CAMKK2,YWHAQ
S1P1 pathway	CDC42,RHOA,RAC1,PDGFRB,PDGFB,SPHK1,PAK1,ABCC1,ADRA1D,S1PR1,KDR,PKN1,PTGS2,MBTPS1,DYT10,MTG1,PRRT2
extrinsic prothrombin activation pathway	PROS1,PROC,FGA,FGB,FGG,F2R,F3,F5,F10,F7,TFPI,TF,ZFHX3,CNTN1,PCID2,FAM110A
antigen processing and presentation	HLA-DRB1,HLA-DRA,HLA-A,B2M,CD74,KLK3,TAP2,TAP1,GCNT2,KLKB1,TCN2,VIPR1,SEC14L2,TAF8,SEC14L3
Ephrin A reverse signaling	EPHA5,FYN
y branching of actin filaments	ABL2,NCKAP1,NCK1,PIR,ARPC3,ACTR3,ACTR2,ARPC2,ARPC1A,ARPC4,ARPC1B,WASL,PSMA7,RAC1,CDC42,SLC25A6,WAS,ANGPTL2,CTNNBL1,AICDA
signal transduction through il1r	RELA,FOS,JUN,MAP3K7,IL1RAP,MYD88,IL1R1,TOLLIP,IL1A,CHUK,IKBKB,IKBKG,NFKBIA,IL1B,MAP4K4,IL1RN,MAPK8,IFNB1,IL6,TNF,IFNA1,TRAF6,MAP3K1,MAP2K3,MAP2K6,MAPK14,TAB1,TAB2,DOCK3,FOSB,JUNB,JUND,PEBP1,PKD1,MED1,PPBP,NR2C2,ARHGEF7,ECSIT
overview of telomerase rna component gene hterc transcriptional regulation	NFYB,NFYA,NFYC,SP3,SP1,RB1,AZF1,PSG1,DAND5
hiv-1 nef: negative effector of fas and tnf	BAG4,DFFB,DFFA,TNF,FADD,TRADD,RIPK1,TRAF2,BIRC3,CASP2,TRAF1,MAP3K5,CRADD,CASP8,FAS,FASLG,DAXX,APAF1,CASP9,RELA,NFKBIA,CHUK,BCL2,MAPK8,MAP3K14,CYCS,BID,CFLAR,MAP2K7,CASP6,CASP7,CASP3,CAD,ALPI,CD47,FASN,AGFG1,IAPP,ARHGEF7,TANK,MAGT1,RPAIN,IRG1
ras-independent pathway in nk cell-mediated cytotoxicity	PIK3R1,PIK3CA,KLRC4,KLRC3,KLRC2,KLRD1,KLRC1,HLA-A,B2M,IL18,MAPK3,PTPN6,MAP2K1,PAK1,RAC1,LAT,SYK,VAV1,PIK3CB,PIK3CD,PIK3CG,PKN1,ORC3,SPNS1
fosb gene expression and drug abuse	JUND,FOSB,PPP1R1B,CDK5,GRIA2
Regulation of retinoblastoma protein	MYL1,RB1,SKP2,HDAC3,RBBP4,PPARG,CDK2,PPP2CA,HDAC1,DNMT1,GSC,SPI1,ID2,JUN,E2F4,ELF1,SUV39H1,TBP,RUNX2,RBP2,MDM2,MITF,TAF1,SIRT1,CKM,MET,BRD2,MEF2C,RAF1,ATF2,SFTPD,PAX3,CDKN1B,CDKN2A,CEBPA,CREBBP,DSP,EIF4E,GDNF,MYOD1,PRB3,MAPK9,PTGDR,KDM5A,OPN1LW,SMARCA4,SMARCB1,SRPR,TFDP1,UBTF,PCAP,REEP5,RNMT,ATF7,RIMBP2,AATF,PAG1,PCBP4,ELAC2,CPEB1,ELOF1
igf-1 signaling pathway	PIK3R1,PIK3CA,SOS1,GRB2,PTPN11,FOS,JUN,SRF,ELK1,IRS1,IGF1R,IGF1,SHC1,CSNK2A1,RAF1,MAPK3,MAPK8,RASA1,MAP2K1,HRAS,CSNK2A2,FOSB,JUNB,JUND,PIK3CB,PIK3CD,PIK3CG,SYNGAP1,KCNH4,KCNH8
hop pathway in cardiac development	SRF,NKX2-5,GATA4,ST13,STIP1,HOPX
mechanism of gene regulation by peroxisome proliferators via ppara	PPARA,RXRA
Visual signal transduction: Cones	GNB3,GNGT2,GNAT2,CNGB3,CNGA3,PDE6C,PDE6H,GRK1,RPE65,RDH5,RDH12,GRK7,DECR1,OLFM4,WDTC1,ATP8A2,SLC25A22,SLC25A18,MTG1,RGS9BP

p38 MAPK signaling pathway	OSM,RAC1,TRAF6,TRAF2,TAB2,ATM,KRIT1,GADD45A,IRF6,MAP3K1,MAP3K3,MAP3K4,MAP3K5,MAP3K10,MAP2K3,MAP2K6,MAP3K7,NR2C2,TXN,MAP3K6,TANK,VAC14,CCM2
cbl mediated ligand-induced downregulation of egf receptors pathway	SRC,EGFR,EGF,SH3KBP1,GRB2,CBL,ENG,DYT10,PRRT2
estrogen responsive protein efp controls cell cycle and breast tumors growth	SFN,ESR1,SMURF1,TRIM25,TP53,SLC25A6,REXO2
FOXA transcription factor networks	FOXA3,FOXA2,FOXA1
regulation of ck1/cdk5 by type 1 glutamate receptors	ADRBK1,DRD2,DRD1,GNGT1,GNB1,GNAS,GRM1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,CDK5R1,CDK5,PPP1R1B,PPP1CA,PPP2R5D,PLCB1,ADCY1,PPP3CA,CSNK1D,CAMP,KRIT1,DAG1,DIO2,FCN2,GCHFR,IL12A,NCS1,LMOD1,BBS9,IGHD2-15,ATP8A2,UPK3B,MTG1,CHAMP1
E-cadherin signaling events	ADRA1D
influence of ras and rho proteins on g1 to s transition	PIK3R1,PIK3CA,CDK4,CDK6,CCND1,RELA,TFDP1,E2F1,CDK2,CCNE1,RB1,NFKBIA,RAC1,CDKN1A,RAF1,MAPK1,MAPK3,RHOA,CDKN1B,MAP2K2,MAP2K1,PAK1,PDPK1,HRAS,AKT1,PAK3,PIK3CB,PIK3CD,PIK3CG,PRB3,PKN1,ARHGEF7
regulation of p27 phosphorylation during cell cycle progression	TFDP1,E2F1,SKP2,NEDD8,CUL1,UBE2M,CKS1B,RBX1,CDK2,CCNE1,RB1,CDKN1B,SKP1,IFI27,RIT1
melanocyte development and pigmentation pathway	EP300,MITF,KIT,KITLG,BCL2,MAP2K2,MAP2K1,RPS6KA1,MAPK1,MAPK3,HRAS,RAF1,CREB1,MTG1
regulation of transcriptional activity by pml	SP100,DAXX,PML,RB1,SUMO1,UBE2I,TP53,PRAM1,SIRT1,CREBBP,PAX3
BCR signaling pathway	CARD11,BCL10,MALT1,BCR,LYN,JUN,FOS,SOS1,GRB2,CSK,BLNK,SYK,RELA,PAG1,CD72,CD19,PIK3R1,BTK,HRAS,RAF1,IBTK,BCL2A1,TRAF6,VAV2,ETS1,RAC1,PTEN,CD22,AKT1,ELK1,PDK1,CAMK2G,KRIT1,CSNK2A1,DAG1,DOK1,INPP5D,MAP3K1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,POU2F2,MAPK3,MAPK8,MAP2K1,PTPN6,PTPRC,RASA1,SHC1,SLC22A2,MAP3K7,NR2C2,NR0B2,IKBKG,SH3BP5,THOC1,MAP4K1,KCNH4,DAPP1,DYT10,PHF11,MTG1,PRRT2,PIK3AP1,KCNH8,SIRPA
multi-step regulation of transcription by pitx2	KREMEN2,LRP6,DKK2,DKK1,CREBBP,PITX2,EP300,HDAC1,PROC,CTNNB1,AXIN1,TRRAP,WNT1,FZD1,LEF1,LDB1,CSNK2A1,CCND2,PPP2R5D,GSK3B,WIF1,DVL1,FRAT1,APC,CSNK2A2,EIF4E,MED1,OPN1LW,DVL1P1,LDB2,HDAC9,KAT5,PAG1,PCBP4
PLK1 signaling events	CDC42,PAK1,PLK1,CDK1,SPC24,RHOA,BORA,APC,CDC20,PPP2CA,PPP2R1A,PPP1CB,ECT2,CDC25B,INCENP,BUB1,CDC25C,TPX2,CDC14B,CENPE,KIF2A,ROCK2,NUDC,WEE1,BUB1B,GOLGA2,MAD2L1,MXI1,PPP1R12A,PKN1,PROC,RAB1A,TPT1,PRRC2A,KIF20A,NDC80,STAG2,NINL,KIAA1549L,FBXO5,FZR1,ERCC6L,SPANXC,GORASP1,MLF1IP,MTG1,ZNF367,CRYGEP
JNK signaling in the CD4+ TCR pathway	GRAP2,LAT,JUN,MAP3K8,LCP2,MAP3K1,MAPK8,MAP2K4,MAP3K7,NR2C2,MAP4K1,ORC3,DBNL,CROT,SPNS1
human cytomegalovirus and map kinase pathways	PIK3R1,PIK3CA,RELA,MAP2K6,MAP3K1,RB1,MAP2K3,CREB1,SP1,MAPK14,MAP2K2,PDPK1,MAP2K1,AKT1,MAPK1,MAPK3,PIK3CB,PIK3CD,PIK3CG,PSG1,DAND5
Insulin Pathway	HRAS,IRS1,GRB2,NCK2,CBL,PIK3R1,NCK1,GRB10,SOS1,PDK1,GRB14,AKT2,CAMP,AKT1,SGK1,KLK3,CTAA1,DOK1,EIF4EBP1,F2RL2,FOXO3,RAPGEF1,INPP5D,RPSA,LNPEP,LRP1,PDPK1,SERPINB6,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN1,PTPN11,PTPRA,RASA1,SHC1,PTPLA,TRIP10,MVP,THOC1,CAP1,SORBS1,SH2B2,EXOC5,EXOC3,EXOC7,RHOQ,BRD4,PARD6A,EXOC6,EXOC1,EXOC2,PARD3,EXOC4,MTG1,SIRPA,EXOC8,CHAMP1
actions of nitric oxide in the heart	PIK3R1,PIK3CA,GNB1,GNAQ,GNGT1,PDE3B,PDE3A,BDKRB2,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,CAV1,NOS3,SLC7A1,PLN,TNNI1,PDE2A,PDPK1,PLCG1,AKT1,RYR2,APRT,KRIT1,DAG1,FGFR3,HSP90AA1,HSP90AA2,PIK3CB,PIK3CD,PIK3CG,PRKG1,VEGFA,MTG1,NANOS3
pkc-catalyzed phosphorylation of inhibitory phosphoprotein of myosin phosphatase	GNA12,GNAQ,GNA13,GNB1,GNGT1,ARHGAP5,MYLK,MYL2,PPP1R14A,PLCB1,PKN1,ROCK1,PPP1R12B,KRIT1,DAG1,FZD4,LPAR3,DYT10,LGR6,PRRT2,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
AP-1 transcription factor network	JUNB,FOS,JUND,JUN,CRTC1,TRIP6,FOSB,ATF2,GATA2,CREB1,MAF,MAFG,ATF3,TCF4,BAG1,HIF1A,EGR1,MYC,MYB,DMP1,DMTF1,SP1,CDK1,ELF1,CCL2,CYR61,COL1A2,TIMP1,PTEN,ETS1,TH,IL2,IL6,IL8,IL5,IL4,IL10,MT2A,TGFB1,MMP1,CDKN1B,CDKN2A,DUSP1,EDN1,FABP4,FOSL2,GDNF,NR3C1,NPPA,PLAU,PSG1,TCF7L2,TP53,FOSL1,HESX1,BCL2L11,RNASEH2A,COPS5,ELOF1,PRAP1,RNF187,DAND5

ion channels and their functional role in vascular endothelium	GNAS,GNGT1,GNB1,BDKRB2,CAV1,NOS3,AKT1,ADCY1,CAMP,KRIT1,HSP90AA1,HSP90AA2,PRKG1,SGCB,FZD4,LPAR3,ATP8A2,LGR6,UBXN11,MTG1,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,CHAMP1,NANOS3,VN1R17P,GPR166P
apoptotic dna-fragmentation and tissue homeostasis	HMGB1,HMGB2,DFFA,DFFB,CASP3,CASP7,GZMB,ENDOG,CAD,IRG1
IL23-mediated signaling events	STAT5A,TYK2,IL23R,JAK2,IL12B,IL23A,PIK3R1,STAT4,STAT3,STAT1,SOCS3,RELA,IL18,IL18R1,IL19,IL24,IL6,IL17F,IL2,CXCL1,NOS2,CD4,CXCL9,CD3E,CCL2,ALOX12B,IL17A,PIK3CA,PIK3CB,PIK3CD,PIK3CG,THOC1,SIRPA,NANOS2
regulation of map kinase pathways through dual specificity phosphatases	DSP,DSPP
Retinoic acid receptors-mediated signaling	VDR,RARS,NRIP1,CDK7,HDAC3,HDAC1,CDK1,AKT1,CREBBP,CYP27B1,EIF4E,ERCC3,GTF2H1,GTF2H2,GTF2H3,GTF2H4,MNAT1,MAPK3,MAPK8,RBP1,OPN1LW,NCOA3,PEA15,KAT2B,NCOA2,PAG1,PCBP4,ANIB1,GTF2H5
Internalization of ErbB1	RHOA,RAC1,PAK1,GRB2,CBL,EGFR,EGF,SOS1,DNM1,CDC42,RAF1,SRC,SYNJ1,LRIG1,TSG101,EPS15,HGS,USP8,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,RAB5A,THOC1,STAMBP,SH3KBP1,CHMP3,ZFYVE28,MTG1,SIRPA
Glypican 3 network	PTCH1,GPC3,FURIN,BMP4,FGF7
Signaling events mediated by VEGFR1 and VEGFR2	PAK1,NCK1,GRB2,FRS2,SOS1,GAB1,PIK3R1,NRP1,NRP2,HRAS,RHOA,ROCK1,RAC1,IQGAP1,ARNT,HIF1A,SHB,SRC,FYN,GRB10,NEDD4,VHL,VEGFB,FES,PDK1,AKT1,RHO,CDC42,ADRA1D,KRIT1,DAG1,DECR1,S1PR1,EPAS1,PTK2B,FLT1,FLT4,HSPB1,HSPB2,KDR,NELL1,NELL2,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAP2K3,PTK2,PTPN6,PTPN11,SHC1,VEGFA,NR0B2,SH2D2A,MAP3K13,THOC1,SHC2,IGKV1D-39,MTG1,PIGU,SIRPA,MIA3
amb2 Integrin signaling	RAC1,PAK1,CDC42,HMGB1,CYR61,CTGF,APOB,JAM3,JAM2,HCK,RHOA,LRP1,ICAM1,THY1,AKT1,ROCK1,IL6,ADRA1D,AGER,RPSA,MSMB,MST1,MST1R,PLAT,PLAU,PLAUR,PKN1,PTPRA,MOK,RAP1A,SELPLG,MVP,C1D,TERF2IP,TMPRSS13,LMLN,MTG1,PRAP1,LINC00914
how does salmonella hijack a cell	ACTR2,ARPC4,ARPC3,ARPC2,ARPC1A,ACTR3,ARPC1B,WASF1,WASL,CDC42,RAC1,SLC25A6,ANGPTL2,AICDA,MTG1
basic mechanism of action of ppara pparb(d) and pparg and effects on gene expression	PPARA,RXRA,PPARD,PPARG
Arf6 signaling events	IPCEF1,MET,HGF,GNAQ,EGF,EGFR,KIF13B,ARF6,LHCGR,GIT1,ACAP1,EPHA2,NCK1,ARAP2,FBXO8,KIF3B,TRE17,SRC,TSHR,ACAP2,AGTR1,ADRA1D,IL6,PSD,SOS1,RNMT,USP6,CYTH3,CYTH2,IQSEC1,ADAP1,GULP1,MTG1
a4b1 and a4b7 Integrin signaling	ADRA1D
endocytotic role of ndk phosphins and dynamin	BIN1,BIN2,EPN1,AP2A1,PICALM,EPS15,AP2M1,DNM1,PPP3CA,PPP3CC,PPP3CB,NME1,NME2,AMPH,SLC25A6,KRIT1,GTF3A,RMRP,SNAP91,WDTC1,ATP8A2
pelp1 modulation of estrogen receptor activity	PELP1,ESR1,CREBBP,EP300,SRC,EIF4E,OPN1LW,PAG1,PCBP4
Signaling events mediated by HDAC Class III	HOXA10,SIRT2,SIRT1,SIRT7,HDAC4,MEF2D,BAX,FHL2,FOXO1,FOXO4,SIRT3,CREBBP,EIF4E,FOXO3,XRCC6,MYOD1,OPN1LW,TP53,KAT2B,PPARGC1A,PAG1,PCBP4,ACSS1
vegf hypoxia and angiogenesis	PIK3R1,PIK3CA,CSK,BCAR1,PXN,PTK2,SRC,ACTA1,BDKRB2,GRB2,SOS1,SHC1,CAV1,NOS3,HIF1A,ARNT,PLCG1,HRAS,PDPK1,AKT1,VHL,KRIT1,DAG1,HSP90AA1,HSP90AA2,PIK3CB,PIK3CD,PIK3CG,VEGFA,PXDN,DYT10,MTG1,PRRT2,NANOS3,MIA3
transcription factor creb and its extracellular signals	PIK3R1,PIK3CA,GNAS,CREB1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,GRB2,SOS1,SHC1,AKT1,RPS6KA1,HRAS,PDPK1,MAPK14,CAMP,ASAH1,KRIT1,DAG1,NT5E,NTS,PIK3CB,PIK3CD,PIK3CG,MAPK1,MAPK3,FZD4,RPS6KA5,LPAR3,DYT10,ATP8A2,LGR6,MTG1,PRRT2,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,CHAMP1,VN1R17P,GPR166P
telomeres telomerase cellular aging and immortality	TEP1,TERT,XRCC6,TERF1,XRCC5,RB1,TP53,AKT1,PPP2R5D,BCL2,MYC,TNKS,KRAS,POLR2A,PRKCA,PTEN
multi-drug resistance factors	ABCC1,ABCB11,ABCB4,GSTP1,ABCC3,ABCB1

CDC42 signaling events	RHOA,CDC42,IQGAP1,SEPT2,ARPC3,ARPC4,ARPC5,ARPC1B,ARPC2,RAC1,PIK3R1,HRAS,PAK1,EPS8,MYL2,APC,DLG1,CBL,TIAM1,ATF2,PAX6,HES5,PAK4,RASGRF1,LIMK1,VAV2,MTOR,PLD1,LIMK2,JUN,MAP3K11,IQGAP3,ADRA1D,ARHGDIA,F2RL2,GDNF,MAP3K1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PRKCSH,MAPK8,MAPK9,MAP2K7,PROC,MAP2K4,CDC42BPA,WASL,THOC1,ACTR3,ACTR2,TNK2,BAIAP2,SEPT6,EXOC7,ANGPTL2,PARD6A,ENAH,PARD3,AICDA,MTG1,SIRPA,APOBEC3A
ca-calmodulin-dependent protein kinase activation	CAMK4,CREB1,KRIT1,CAMK1,CAMKK2
IL4-mediated signaling events	STAT5A,JAK3,JAK1,IL4R,IL4,IRS2,FES,JAK2,IL13RA1,PIK3R1,STAT6,PARP14,IRF4,BCL6,IRS1,GRB2,ETS1,OPRM1,IL13RA2,ARG1,ALOX15,SP1,SOCS5,COL1A1,TFF3,PIGR,COL1A2,CCL11,CCL26,EGR2,IL10,THY1,IGHG3,GTF3A,IGHG4,FCER2,IL5,SPI1,SOCS3,CCL17,CD40LG,CBL,SOCS1,MTOR,AKT1,CEBPB,HMGA1,INPP5D,LTA,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PSG1,PTPN6,SELP,SHC1,STAT5B,NR0B2,THOC1,AICDA,TINAGL1,RETNLB,SIRPA,DAND5
eukaryotic protein translation	EIF2S1,EIF2S2,EIF2S3,EIF4G2,EIF4G1,EIF4A1,EIF4E,EIF4A2,EIF4G3,EIF5B,EIF1,EIF1AX,EIF5,EIF6,EIF3A
t cell receptor signaling pathway	PIK3R1,PIK3CA,RELA,HLA-DRB1,HLA-DRA,LCK,CD3D,CD3G,CD3E,CD4,ZAP70,PPP3CA,PPP3CC,PPP3CB,NFKBIA,FOS,JUN,GRB2,SOS1,SHC1,MAP2K1,MAPK8,RAC1,MAP2K4,ELK1,PTPN7,RAF1,MAP3K1,MAPK3,PLCG1,PTPRC,HRAS,FYN,VAV1,LAT,KRIT1,CD247,DAG1,FOSB,JUNB,JUND,PIK3CB,PIK3CD,PIK3CG,RASA1,TRA,TRB,ARHGEF7,RGS6,KCNH4,ORC3,DYT10,SPNS1,MTG1,PRRT2,KCNH8,TARP
CD40/CD40L signaling	STAT5A,CD40,JAK3,TRAF2,C4BPA,TRAF3,RELA,TRAF1,TRAF6,JUN,MYC,AKT1,IL4,BIRC3,CD40LG,MAP3K1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAP2K4,TNFAIP3,MAP3K14,MAP4K4,THOC1,TANK,IGKV1-27,TDP2,SIRPA
S1P2 pathway	PIK3R1,JUNB,FOS,RHOA,FOSB,JUND,CDC42,JUN,RAC1,PAK1,ELK1,IRS1,ATF6B,FOSL2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAPK8,FOSL1,MBTPS1,S1PR2,RNASEH2A,GNA13,KCNH4,MTG1,KCNH8
BMP receptor signaling	SMAD4,SKI,SMAD5,BMP6,SMAD1,SMURF2,BMPR2,BMP7,CHRD,SMURF1,SMAD6,NOG,CER1,GREM1,XIAP,PPP1CA,SMAD7,BAMBI,CHRDL1,NUP214,PPM1A,AHSG,GARS,SMAD9,MAPK1,MAP3K7,NR2C2,ZFYVE16,FST,PPP1R15A,C3CER1,SOSTDC1,GBGT1,RGMA
IL12-mediated signaling events	STAT5A,CD4,CD3G,CD3D,CD3E,TYK2,IL12A,IL12B,JAK2,STAT1,IL2,SOCS1,RELB,SPHK2,STAT3,CD8B,CD8A,IL18,IL18R1,STAT4,RELA,EOMES,IL4,FOS,CCR5,LCK,STAT6,NOS2,ATF2,MTOR,FASLG,GADD45B,GADD45G,CD247,GDNF,HLX,IL1R1,IL1RN,IL2RA,CCL3,CCL4,RAB7A,RIPK2,ARHGEF28,RAB7B,NANOS2,TARP
deregulation of cdk5 in alzheimers disease	CDK5,CDK5R1,PPP2R5D,MAPT,CAPN1,GSK3B,FCN2,GCHFR,IL12A,UPK3B
PAR1-mediated thrombin signaling events	CDC42,RAC1,PAK1,RHOA,MYL2,GNB1,GNG2,PIK3R1,SNX1,SNX2,TRPC6,GRK5,AKAP13,VASP,ADRBK2,ARHGDIA,ATF6B,DAG1,F2R,F2RL2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,NR1I2,THOC1,GNA13,PARD3,SLC52A2,MTG1,SIRPA,PWAR1
EPHA2 forward signaling	CDC42,RHOA,TIAM1,EPHA2,GRB2,PIK3R1,RAC1,SRC,CBL,PAK1,INPPL1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,MBTPS1,THOC1,MTG1,SIRPA
role of erk5 in neuronal survival pathway	PIK3R1,PIK3CA,NTRK1,GRB2,SOS1,SHC1,CREB1,RAF1,MAP2K2,MAP2K1,PDPK1,HRAS,AKT1,PLCG1,MAPK1,MAPK3,RPS6KA1,MAPK7,MAP2K5,PIK3CB,PIK3CD,PIK3CG,MTG1
activation of camp-dependent protein kinase pka	GNAS,GNB1,GNGT1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,ADCY1,CAMP,ATP8A2,MTG1,CHAMP1
ceramide signaling pathway	RELA,MADD,TRADD,RIPK1,TNF,TRAF2,BIRC3,CRADD,BAG4,NFKBIA,FADD,CASP8,RAF1,MAPK8,MAPK1,MAPK3,NSMAF,SMPD1,MAP4K4,CYCS,MAP2K4,MAP3K1,BCL2,MAP2K2,MAP2K1,BAX,BAD,ETFA,ETFB,ETFDH,AGFG1,KSR1,ARHGEF7,AIFM1,TANK,CNKSR1,RPAIN
Syndecan-2-mediated signaling events	FGFR4,FGF1,FGF9,FGF16,FGF6,FGF8,FGF19,FGF17,FGF18,FGF2,FGF4,FGF23,FGF3,FGF10,FGF5,CASK,SRC,HRAS,IL8,TGFB1,EPHB2,RHOA,BAX,MMP2,ADRA1D,FGF13,MAPK8,RASA1,GNB2L1,TNFRSF13B,DYT10,TRAPPC4,PRRT2
Paxillin-dependent events mediated by a4b1	RHOA,CDC42,GIT1,CRKL,CBL,CRK,DOCK1,PIK3R1,RAC1,ARF6,VCAM1,PAK1,ADRA1D,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,THOC1,MTG1,SIRPA
Glypican pathway	GPC3,GPC2,GPC1

LPA receptor mediated events	JUNB,FOS,FOSB,JUND,CDC42,JUN,LPA,PIK3R1,GNB1,GNG2,RAC1,EGFR,TRIP6,CRK,RELA,HRAS,RHOA,GAB1,SRC,AKT1,LYN,TIAM1,IL8,IL6,PAK1,CAMP,ATF6B,DAG1,LPAR1,PTK2B,FOSL2,LPAR4,MAPT,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PRKD1,PTK2,FOSL1,LPAR2,SLC9A3R2,THOC1,RNASEH2A,GNA13,LPAR3,MTG1,PIGU,SIRPA,MAGI3,CHAMP1
VEGFR3 signaling in lymphatic endothelium	COL1A2,COL1A1,PIK3R1,SOS1,GRB2,CRK,AKT1,CREB1,ADRA1D,FIGF,FLT4,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAP2K4,SHC1,THOC1,DYT10,PRRT2,SIRPA
RhoA signaling pathway	PAK1,CDC42,RHOA,MAL,JUN,ATF2,SRF,MYL2,PTEN,FOS,CYR61,PKN2,CD8A,CDKN1B,DIAPH2,F2RL2,GDNF,LIF,PPP1R12A,PKN1,MAPK8,MAP2K4,SLC9A1,SLC9A3,PARD6A,PARD3,MKL1,MTG1
sumoylation as a mechanism to modulate ctbp-dependent gene responses	CTBP1,NOS1,SUMO1,UBE2A,CDH1,UBE3A,ZEB1,UBA1,FZR1,ATP8A2,NANOS1
IFN-gamma pathway	STAT1,JAK2,JAK1,IFNGR1,SOCS1,PIK3R1,CRKL,CBL,PIAS1,CEBPB,PTGES2,STAT3,MAP3K11,SMAD7,IRF1,DAPK1,IRF9,MTOR,AKT1,KRIT1,CREBBP,EIF4E,RAPGEF1,MAP3K1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAP2K1,PTPN2,PTPN11,RAP1A,OPN1LW,THOC1,PIAS4,TERF2IP,PAG1,PCBP4,MTG1,SIRPA
regulation of eif-4e and p70s6 kinase	PIK3R1,PIK3CA,PABPC1,EIF4G1,EIF4A1,EIF4E,PSMC4,EIF4EBP1,GH1,IRS1,GHR,MAPK14,PTEN,PDPK1,MAPK3,MAPK1,PDK2,AKT1,PPP2CA,MKNK1,RPS6KB1,MTOR,PIK3CB,PIK3CD,PIK3CG,RPS6,GGH,DYT10,PRRT2
S1P3 pathway	CDC42,RHOA,PDGFRB,RAC1,AKT1,PAK1,AKT3,SRC,CXCR4,JAK2,ADRA1D,ATF6B,S1PR1,S1PR3,FLT1,PKN1,MBTPS1,S1PR2,GNA13,MTG1
hiv-1 defeats host-mediated resistance by cem15	HCK,CXCR4,CD4,APOBEC3G,ERVW-1
inhibition of huntingtons disease neurodegeneration by histone deacetylase inhibitors	CREBBP,CREB1,HDAC1,EIF4E,HTT,OPN1LW,PRDX2,PAG1,PCBP4
PDGFR-alpha signaling pathway	JUND,JUNB,JUN,FOS,FOSB,PDGFRA,CRK,PIK3R1,GRB2,SOS1,SHB,CRKL,ELK1,SRF,SHF,JAK1,CSNK2A1,DAG1,FOSL2,RAPGEF1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,SHC1,FOSL1,THOC1,RNASEH2A,KCNH4,DYT10,PRRT2,KCNH8,SIRPA
multiple antiapoptotic pathways from igf-1r signaling lead to bad phosphorylation	PIK3R1,PIK3CA,GRB2,SOS1,SHC1,IGF1R,IGF1,YWHAH,IRS1,MAPK3,HRAS,BAD,RAF1,PIK3CB,PIK3CD,PIK3CG,YWHAQ
Reelin signaling pathway	DAB1,RELN,FYN,LRP8,VLDLR,PIK3R1,GRIN2B,GRIN2A,ARHGEF2,MAPK8IP1,MAP3K11,LRPAP1,CRKL,CDK5,CDK5R1,NCK2,RAP1A,MAP1B,CBL,AKT1,ADRA1D,RAPGEF1,MAPT,NPY6R,PAFAH1B1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK8,MAP2K7,THOC1,OMA1,SIRPA,DNAAF3
Visual signal transduction: Rods	GNGT1,GNAT1,GNB1,RHO,CNGB1,CNGA1,PDE6B,PDE6A,PDE6G,GRK1,RDH12,RPE65,RDH5,SLC24A1,OLFM4,WDTC1,ATP8A2,SLC25A22,SLC25A18,MTG1,RGS9BP
basic mechanisms of sumoylation	SUMO1,SUMO2,SUMO3,SAE1,UBA2,UBE2I,SLC25A6,APRT,RBBP8,ATP8A2
role of mitochondria in apoptotic signaling	CASP9,APAF1,BAX,BCL2,BCL2L1,BAK1,BIK,BID,DIABLO,CYCS,ALPI,CD47,IAPP,VDAC1,AIFM1,MAGT1
spliceosomal assembly	SNRPA,SNRPC,SNRPA1,SNRPB2,U2AF2,U2AF1,HNRNPC,SRSF2,SNRNP70
IL6-mediated signaling events	JUNB,FOS,FOSB,JUND,RHOA,CDC42,JUN,GRB2,SOS1,HCK,JAK1,LMO4,IL6,PIK3R1,RAC1,TYK2,SOCS3,FOXO1,STAT3,JAK2,PIAS3,MITF,STAT1,PIAS1,HSP90B1,CEBPD,TIMP1,LBP,CRP,FGG,MCL1,PAK1,VAV1,CEBPB,A2M,MYC,IRF1,AKT1,CSRP1,EHHADH,FOSL2,IL6R,IL6ST,RPSA,NM,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAP2K6,PTPN11,MAP2K4,CSRP3,FOSL1,TNFSF11,THOC1,LRPPRC,RNASEH2A,MTG1,SIRPA,PPIAP10
Arf6 downstream pathway	CDC42,ARF1,RHOA,RAC1,ARF6,TIAM1,NME1,RAB11A,RAB11FIP3,PIP5K1A,KALRN,PAK1,PKN1,RMRP,MTG1,ARF1P1
Regulation of Androgen receptor activity	AR,SRC,CARM1,HOXB13,PDE9A,TMPRSS2,EGR1,HDAC7,MDM2,KLK2,HDAC1,GATA2,CEBPA,SENP1,FOXO1,SRY,SIRT1,JUN,NR0B1,AKR1B1,KLK3,AREG,CREBBP,EIF4E,NR3C1,DNAJA1,PLAG1,PKN1,MAPK8,MAP2K6,PROS1,OPN1LW,MAP2K4,SMARCA2,SMARCC1,SMARCE1,NR2C1,NR2C2,TNFSF14,TNFRSF14,TRIM24,KAT2B,NPEPPS,HDAC9,GNB2L1,NCOA2,APPBP2,KAT5,EHMT2,KAT7,SPDEF,RCHY1,PSAT1,PAG1,PCBP4,TAS1R2,DEPDC7,TXNRD3,SLC36A1
inactivation of gsk3 by akt causes accumulation of b-catenin in alveolar macrophages	PIK3R1,PIK3CA,RELA,KREMEN2,LRP6,DKK2,NFKBIA,DKK1,PROC,CTNNB1,AXIN1,WNT1,FZD1,MYD88,TIRAP,TLR4,CD14,TOLLIP,LY96,IRAK1,EHHADH,EIF2AK2,BTRC,LEF1,FRAT1,GSK3B,CSNK2A1,DVL1,GJA1,CCND1,WIF1,PDPK1,AKT1,PPP2R5D,LBP,APC,CSNK2A2,IRF6,RPSA,NDUFA2,PIK3CB,PIK3CD,PIK3CG,PKLR,DVL1P1,ARHGEF7

classical complement pathway	C6,C1QA,C1QB,C1S,C1R,C7,C8A,C8B,C9,C8G,C3,C2,C5,C4B,C1QC,C4A,AKR1C1,HNRNPC,CXCL10,PSMA7,IGLC7
phospholipase c-epsilon pathway	PTGER1,GNAS,ADRB2,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,RAPGEF3,PLCE1,RAP2B,CAMP,ASAH1,DAG1,ATP8A2,CHAMP1
lck and fyn tyrosine kinases in initiation of tcr activation	HLA-DRB1,HLA-DRA,LCK,CD3D,CD3G,CD3E,CD4,ZAP70,FYN,PTPRC,CD247,TRA,TRB,TARP
il22 soluble receptor signaling pathway	IL22,IL22RA2,JAK1,IL22RA1,TYK2,IL10RA,SOCS3,IL17D
the information processing pathway at the ifn beta enhancer	RELA,HMGB1,ATF2,JUN,CREBBP,ACTB,SMARCB1,SMARCE1,SMARCC2,SMARCC1,SMARCD1,ARID1A,SMARCA4,GTF2F1,GTF2A1,GTF2B,NR3C1,POLR2A,GTF3A,GTF2E1,IFNB1,TBP,EIF4E,GDNF,OPN1LW,KAT2B,ARHGEF7,PAG1,PCBP4,TRIM63,POTEF
il 4 signaling pathway	HLA-DRB1,HLA-DRA,IL2RG,JAK1,IL4R,JAK3,IL4,STAT6,GRB2,RPS6KB1,SHC1,IGHE,FCER2,AKT1,HMGA1,IRS1,SLC25A6
rb tumor suppressor/checkpoint signaling in response to dna damage	RB1,E2F1,YWHAH,RASGRF1,MYT1,CDK2,CDKN1A,TP53,CHEK1,WEE1,CDK4,ATM,CDK1,CDC25C,PAK3,POLD1,PKMYT1,YWHAQ
Signaling events mediated by PTP1B	JAK2,PIK3R1,AKT1,CRK,CSF1R,CSF1,GRB2,IRS1,PDGFRB,EGFR,EGF,STAT3,FER,LAT,SRC,RHOA,CSK,TYK2,SOCS3,STAT5A,STAT5B,NOX4,ADRA1D,CRAT,DECR1,DOK1,YBX1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN1,SHC1,THOC1,ORC3,TRPV6,SPNS1,SIRPA
N-cadherin signaling events	CDC42,RHOA,AXIN1,LRP5,MYL2,GAP43,FER,RAC1,PIK3R1,KIF5B,PIP5K1C,ROCK1,PAK1,FGFR1,CAMK2G,KRIT1,DAG1,GRIA2,GRM2,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,MAPK8,PTPN1,PTPN11,COX7A2L,THOC1,MAPRE2,MAPRE1,ANKS1B,MTG1,SIRPA
bioactive peptide induced signaling pathway	PIK3R1,PIK3CA,AGTR2,GNA11,AGT,GNB1,GNGT1,GNAI1,MYLK,GRB2,SOS1,SHC1,MAPK1,MAPK3,JAK2,FYN,CDK5,MAPK14,HRAS,PTK2B,MAPT,PRKCA,MAPK8,PLCG1,AGXT,KRIT1,DAG1,PIK3CB,PIK3CD,PIK3CG,PRKCB,MYLK2,MYLK3,MTG1
PAR4-mediated thrombin signaling events	RAC1,PAK1,CDC42,RHOA,MYL2,GNB1,GNG2,ATF6B,DAG1,F2RL2,PAWR,PKN1,F2RL3,GNA13,PARD3,MTG1,PWAR4
proteolysis and signaling pathway of notch	DLL1,PSEN1,NOTCH1,FURIN,ADAM17,CSHL1,RBPJ,PSMB6,YY1
generation of amyloid b-peptide by ps1	PSEN1,APP,BACE1,ADAM10
Signaling events mediated by HDAC Class II	NUP214,NUP62,NUP210,NUP153,HDAC6,HDAC4,SUMO1,RANBP2,HDAC3,HDAC7,RANGAP1,BCOR,BCL6,HDAC5,HDAC11,GATA1,GNG2,GNB1,GATA2,ANKRA2,RFXANK,RAN,SRF,YWHAB,MEF2C,HDAC9,HDAC10,ADRBK1,NR3C1,NPC1,UBE2I,CCDC6,HIST2H2AA3,HIST2H2AC,HIST2H2BE,HIST1H4F,HIST2H4A,HRH4,MTG1,RLN3,HIST2H3C
FAS (CD95) signaling pathway	BTK,FASLG,FAS,FADD,CFLAR,SYK,SRC,RFC1,CASP8,CASP10,BID,AKT1,PDK1,FASN,AGFG1,MAP3K1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAP2K6,MAP2K7,SLC19A1,SMPD1,IKBKG,RIPK1,THOC1,FAIM2,RPAIN,SIRPA,H19
nuclear receptors coordinate the activities of chromatin remodeling complexes and coactivators to facilitate initiation of transcription in carcinoma cells	NCOA2,NCOA3,NCOA1,RXRA,RARA,GTF2F1,GTF2A1,GTF2B,NR3C1,POLR2A,GTF3A,GTF2E1,NCOR2,HDAC3,TBP,GRIP1,OCA2,SRC,TAF9,B3GALNT1,KAT2B,RAB40B,LGALS12
prion pathway	RPSA,DNAJB6,GFAP,PRNP,BCL2,HSPA5,DNAJB1P1
Endogenous TLR signaling	CDC42,RAC1,PAK1,TIRAP,MYD88,RHOA,TLR4,BGN,TLR2,TLR1,S100A9,S100A8,HMGB1,TLR3,SFTPA1,SAA1,VCAN,IRAK2,IRAK4,TLR6,CD14,HSPD1,IRAK1,NDUFA2,PKN1,ABCC8,IKBKG,LY96,ABCC11,MTG1,TICAM1
Regulation of nuclear SMAD2/3 signaling	JUNB,FOS,FOSB,JUND,JUN,NCOR1,HDAC1,SAP18,SAP30,SMAD2,RBBP4,SIN3A,SIN3B,SMAD4,RBBP7,HDAC2,PIAS3,SMAD3,AR,SP1,MYC,DLX1,ATF2,ATF3,CEBPB,FOXH1,GATA3,RUNX2,SNIP1,TCF3,TFE3,NKX2-5,SKI,TGIF2,MEF2C,VDR,IRF7,MAX,FOXG1,CREB1,COL1A2,IL5,IL10,SMAD7,AKT1,GSC,AKR1B1,AREG,CREBBP,CYP27B1,EIF4E,FOSL2,KAT2A,GDNF,NR3C1,HNF4A,HSPA8,IFNB1,CITED1,MYOD1,SERPINE1,SERPINB2,PSG1,PTGDR,OPN1LW,TFDP1,TGIF1,ZBTB17,REEP5,FOSL1,KAT2B,NCOA2,RNASEH2A,MED15,PIAS4,DCP1A,PAG1,PCBP4,TCF7L1,DAND5
ALK1 pathway	ACVR1,ACVRL1,FKBP1A,FKBP1AP1,FKBP1AP2,FKBP1AP3,FKBP1AP4,SLPI
map kinase inactivation of smrt corepressor	GRB2,SOS1,SHC1,RARA,RXRA,EGF,EGFR,MAPK14,RAC1,MAP2K4,MAP2K1,ZBTB16,NCOR2,HRAS,MAP3K1,RAB40B,MTG1

Coregulation of Androgen receptor activity	AR,CDK6,CARM1,SNURF,MAK,SCP2,MED1,AKT1,KLK2,VAV3,TMPRSS2,PIAS1,SRF,UBA3,HIP1,TCF4,LATS2,NRIP1,FHL2,PELP1,HNRNPA1,PIAS3,BRCA1,AKR1B1,KLK3,AREG,CDKN2A,PTK2B,FKBP4,XRCC6,IL10,NKX3-1,PA2G4,PRDX1,PAWR,PLAG1,PRRX1,PROS1,RNF4,RPS6KA3,SYCP1,TCF7L2,TGFB1I1,TGIF1,UBE2I,XRCC5,NCOA4,MBD4,F2RL3,NPEPPS,RANBP9,CTDSP2,SYCP2,NCOA2,KDM1A,NCOA6,KDM4C,PATZ1,ZNF318,APPL1,PSAT1,PIAS4,KDM3A,ALPK3,CTDSP1,PYDC1,PWAR4
stress induction of hsp regulation	CYCS,HSPB1,APAF1,CASP9,ACTA1,FASLG,FAS,DAXX,MAPKAPK2,BCL2,TNF,IL1A,MAPKAPK3,CASP3,FASN,HSPB2,ROS1
b cell survival pathway	PIK3R1,PIK3CA,ITGB1,ITGA1,ZBTB7A,CCT4,PDPK1,AKT1,CASP3,BIRC5,CASP7,DPF2,MTOR,PIK3CB,PIK3CD,PIK3CG,MMRN1
protein kinase a at the centrosome	PRKAR2B,PRKACB,PRKAR2A,PKN1,PPP2R5D,AKAP9,PRKAG1,PPP1CA,PRKCE,PRKACG,RHOA,CDK1,POLD1,PPP2R4
Arf1 pathway	COP,ARHGAP10,CD4,CLTA,COPA,ARF1,CLTB,GGA3,GBF1,PIP5K1A,ASAP1,PLD2,ACPP,AKT1,SLC25A6,DAG1,GTF3A,REG3A,USO1,ASAP2,CYTH2,ACTR2,ARFGEF1,MRPS30,PAPOLA,PDAP1,TUSC2,ANGPTL2,ATP8A2,AICDA,ARHGAP21,PTGES2,MTG1,CARD16,ARF1P1
VEGFR1 specific signals	NCK1,NRP2,NRP1,PIK3R1,CD2AP,CBL,GAB1,PDK1,HIF1A,AKT1,KRIT1,DAG1,DECR1,FLT1,NELL1,NELL2,PDPK1,PGF,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN11,RASA1,THOC1,IGKV1D-39,PIGU,SIRPA
TRAIL signaling pathway	TRAF2,FADD,TRADD,DAP3,AGFG1,MAP3K1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK8,MAP2K4,SMPD1,IKBKG,RIPK1,TNFSF10,TNFRSF10D,TNFRSF10C,TNFRSF10B,TNFRSF10A,THOC1,TANK,DLGAP3,RPAIN,MTG1,SIRPA,H19
RAC1 signaling pathway	RHOA,CDC42,RAC1,CRK,IQGAP1,STAT5A,ARPC3,ARPC4,ARPC5,ARPC1B,ARPC2,PAK1,STAT3,NOXO1,NOX1,NOXA1,SRA1,ABI2,ABI1,PIP5K1B,PIP5K1C,JUN,ATF2,MAP3K11,PIP5K1A,LIMK1,PAK2,IQGAP3,ADRA1D,ARHGDIA,GDNF,IL8,MAP3K1,NAP1L1,PKN1,PKN2,MAPK8,MAPK9,MAP2K7,MAP2K4,SOX9,WASF1,NAPSA,ACTR3,ACTR2,WASF2,BAIAP2,CHERP,NCKAP1,CYFIP1,ANGPTL2,C9orf156,AICDA,SCAF1,AZI2,NAA25,MTG1,APOBEC3A,TAB3
alpha-synuclein and parkin-mediated proteolysis in parkinson`s disease	SNCA,PARK2
phosphorylation of mek1 by cdk5/p35 down regulates the map kinase pathway	NGFR,GRB2,SHC1,SOS1,CDK5R1,CDK5,EGR1,MAP2K2,HRAS,RAF1,MAP2K1,MAPK3,MAPK1,NGF,FCN2,GCHFR,IL12A,UPK3B
E2F transcription factor network	CDK2,E2F5,E2F6,E2F3,TFE3,RB1,E2F1,TOPBP1,E2F4,TRRAP,RYBP,YY1,E2F2,CEBPA,HDAC1,RBBP4,E2F7,CDKN2C,MCM3,BRCA1,HBP1,MCL1,PRMT5,CDC6,CDC25A,CDK1,XRCC1,SIRT1,TK1,HIC1,RANBP1,DHFR,MYC,SP1,ATM,APAF1,APC,CACNA1C,CDKN1B,CDKN2A,CDKN3,CREBBP,DSP,EIF4E,FGF4,KAT2A,GCY,MAD2L1,MXI1,MYBL2,ORC1,SERPINE1,SERPINB2,PLAU,POLA1,PRB3,PSG1,PTGDR,RBBP8,OPN1LW,RRM1,RRM2,SMARCA2,SRPR,SULT2A1,TBXAS1,TFDP1,TFDP2,TP73,TYMS,REEP5,PRRC2A,UXT,KAT2B,WASF1,TRIM28,PTGDR2,KIAA1549L,PAG1,PCBP4,PRAP1,DAND5,CRYGEP
beta-arrestins in gpcr desensitization	GNAS,GNGT1,GNB1,AP2A1,AP2M1,ARRB1,DNM1,PPARA,ADRBK1,GTF3A,FZD4,LPAR3,LGR6,MTG1,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
il12 and stat4 dependent signaling pathway in th1 development	TYK2,IL12RB1,JAK2,IL12RB2,JUN,ETV5,MAP2K6,MAPK8,MAPK14,CCR5,IFNG,IL18R1,STAT4
nf-kb signaling pathway	TLR4,MYD88,TRAF6,IRAK1,IL1R1,FADD,TRADD,TNF,RIPK1,IL1A,RELA,NFKB1,MAP3K7,MAP4K4,MAP3K1,CHUK,NFKBIA,IKBKB,IKBKG,TAB1,CDH13,AGFG1,IL1B,IRF6,NR2C2,ARHGEF7,MAP3K14,SCYL1,RPAIN
tsp-1 induced apoptosis in microvascular endothelial cell	FOS,JUN,CD36,FYN,GZMA,CASP3,MAPK14,FOSB,JUNB,JUND,THBS1
nfat and hypertrophy of the heart	PIK3R1,PIK3CA,CAMK4,GATA4,MEF2C,HDAC5,CALR,ELSPBP1,NKX2-5,HAND2,HAND1,CREBBP,PPP3CA,PPP3CC,PPP3CB,HDAC9,YWHAH,GRB2,SOS1,SHC1,RPS6KB1,GSK3B,MYL2,ACTA1,ADSS,HRAS,PDPK1,AKT1,MAPK8,EDN1,TNF,CALCR,KRIT1,EIF4E,PIK3CB,PIK3CD,PIK3CG,OPN1LW,SLC6A8,CAMK1,CAMKK2,YWHAQ,PAG1,PCBP4,MTG1

TCR signaling in naive CD8+ T cells	PDK1,GRB2,SOS1,CD28,CD3E,CD3G,CD3D,RAP1A,VAV1,GRAP2,LAT,CBL,CD8B,LCK,CD8A,FYN,AKT1,PAG1,CSK,BCL10,CARD11,TRAF6,MALT1,RASGRP1,ORAI1,STIM1,CD247,MAP3K8,CRAT,DAG1,LCP2,PDPK1,PTPN6,PTPRC,SHC1,ZAP70,NR0B2,IKBKG,MAP3K14,MAP4K4,RASGRP2,ORC3,CROT,TRPV6,RASSF5,SPNS1,MTG1,TARP
role of brca1 brca2 and atr in cancer susceptibility	RAD50,MRE11A,NBN,RAD17,RAD9A,RAD1,HUS1,BRCA2,RAD51,FANCD2,FANCA,FANCF,FANCG,FANCC,FANCE,ATM,TREX1,ATR,BRCA1,CHEK2,CHEK1,TP53,ATRIP,ERCC4,RRAD,ARTN,NLRP2,ANTXR1,MMAB,SERPINA2P
dicer pathway	DICER1,AGO2,SCPEP1
Aurora A signaling	TPX2,GADD45A,TACC3,NDEL1,AJUBA,TRAP,TACC1,PAK1,GIT1,BRCA1,MDM2,APC,AURKAIP1,CDC25B,AKT1,ACP5,CD40LG,CENPA,PPP2R4,PKN1,PROC,RASA1,TP53,TRAF2,PRRC2A,DLGAP5,CKAP5,TDRD7,KIAA1549L,FZR1,SCYL1,CPEB1,SPANXC,CRYGEP
il-7 signal transduction	PIK3R1,PIK3CA,NMI,CREBBP,EP300,IL7R,JAK1,ITGA2B,IL2RG,JAK3,BCL2,PTK2B,LCK,FYN,EIF4E,IL7,MYO1C,PIK3CB,PIK3CD,PIK3CG,OPN1LW,STAT5A,STAT5B,PAG1,PCBP4
Lissencephaly gene (LIS1) in neuronal migration and development	IQGAP1,NDEL1,MAP1B,CDK5,CDK5R1,NUDC,RELN,VLDLR,DAB1,PAFAH1B3,PAFAH1B2,LRP8,LRPAP1,DCX,RHOA,CDC42,RAC1,KRIT1,CSNK2A1,FCN2,GCHFR,IL12A,PAFAH1B1,PPA1,PPP2R4,NPY4R,CLIP1,PLA2G7,CDK5R2,ATP6V0D1,UPK3B,OMA1,DNAAF3
GMCSF-mediated signaling events	STAT5A,CSF2RB,SYK,LYN,YWHAZ,JAK2,GRB2,SOS1,PIK3R1,GAB2,PIM1,CCL2,FOS,CISH,OSM,RAF1,CSF2,IRF8,INPP5D,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PTPN11,SHC1,STAT5B,LONP1,THOC1,CCM2,MTG1,SIRPA
regulation of splicing through sam68	RASA1,KHDRBS1,SRC,MAP2K2,MAP2K1,HRAS,RAF1,MAPK1,MAPK3,CDK1,POLD1,SYNGAP1
TNF receptor signaling pathway	RELA,MADD,TRAF1,TRAF2,TRADD,FADD,BAG4,STAT1,RFFL,CYLD,BIRC3,ETFA,ETFB,ETFDH,GTF2H1,AGFG1,MAP3K1,MAP3K3,MAP3K5,MAP2K3,MAP2K7,SMPD1,SMPD2,ADAM17,MAP3K7,TNFAIP3,TNFRSF1B,NR2C2,TXN,NSMAF,IKBKG,RIPK1,TANK,GNB2L1,CNTRL,IGKV1-27,DCTN4,VAC14,RPAIN,H19
Androgen-mediated signaling	
ctcf: first multivalent nuclear factor	PIK3R1,PIK3CA,CD79B,BCR,CD79A,TGFBR1,TGFBR2,CDKN1B,CDKN2A,PTEN,RPS6KB1,CTCF,MYC,MDM2,PPP2R5D,MTOR,PIK3CB,PIK3CD,PIK3CG
PDGFR-alpha signaling pathway.1	JUNB,FOS,FOSB,JUND,JUN,PDGFRA,CRKL,CRK,SHB,PIK3R1,SRF,ELK1,SOS1,GRB2,SHF,JAK1,CSNK2A1,DAG1,FOSL2,RAPGEF1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,SHC1,FOSL1,THOC1,RNASEH2A,KCNH4,DYT10,PRRT2,KCNH8,SIRPA
Class I PI3K signaling events.1	CDC42,RHOA,ARAP3,RAP1A,PDK1,SRC,ARF1,RAC1,ARF6,ARF5,SGK1,PAK1,PTEN,DAG1,FOXO3,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,CYTH3,CYTH2,THOC1,ADAP1,DAPP1,MTG1,SIRPA,ARF1P1
stathmin and breast cancer resistance to antimicrotubule agents	CAMK4,CCNB1,TUBB1,STMN1,CD2,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,MAPK13,KRIT1,CD247,CDK1,POLD1,MTG1,TUBB
Glypican 1 network	TGFBR2,APP,GPC1,SLIT2,FGFR1,FGF2,TGFBR1,PLA2G2A,NRG1,SMAD2,SERPINC1,FGF13,FLT1,TDGF1,TDGF1P3,TGFB1
g-protein signaling through tubby proteins	GNGT1,GNB1,TUB,GNAQ,FZD4,LPAR3,LGR6,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
Aurora C signaling	INCENP
Integrins in angiogenesis	RHOA,CDC42,CBL,CSF1R,ANGPTL3,CD47,TGFBR2,RAC1,PIK3R1,IRS1,IGF1,SRC,PAK1,AKT1,PIK3C2A,VAV3,FGF2,RHO,ILK,ADRA1D,CDKN1B,CSE1L,CTNND1,PTK2B,FGF13,KDR,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PI4KA,PKN1,PTK2,PTPN11,VEGFA,BCAR1,THOC1,EDIL3,MTG1,SIRPA
CXCR4-mediated signaling events	CXCR4,MTOR,RICTOR,CD3D,CD4,CD3G,CD3E,LCK,GNB1,GNG2,RAP1B,JAK2,DNM1,RALB,PAG1,CSK,CRK,VAV1,RGS1,STAT2,PDK1,GRK6,PTEN,FOXO1,BAD,ITCH,HGS,PAK1,LIMK1,AKT1,ADRA1D,ADRBK1,CD247,ATF6B,DAG1,PTK2B,INPP5D,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PKN1,PTK2,PTPRC,CXCL12,THOC1,GNB2L1,GNA13,VPS4A,UBQLN1,SSH1,MLST8,MAPKAP1,MTG1,SIRPA,TARP
nerve growth factor pathway (ngf)	PIK3R1,PIK3CA,FOS,JUN,NGFR,GRB2,SOS1,SHC1,ELK1,MAP2K1,MAPK8,CSNK2A1,RAF1,PLCG1,MAPK3,HRAS,NGF,CSNK2A2,DAG1,FOSB,JUNB,JUND,PIK3CB,PIK3CD,PIK3CG,KCNH4,MTG1,KCNH8
EGFR-dependent Endothelin signaling events	HRAS,SOS1,GRB2,EGFR,EGF,MTOR,EDN1,EDNRA,SHC1,MTG1

IL2 signaling events mediated by STAT5	STAT5A,JAK3,GAB2,PIK3R1,SOS1,GRB2,IL2,LCK,JAK1,SP1,FASLG,FOXP3,IL4,ELF1,CDK6,BCL2,MYC,LTA,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PRB3,PSG1,PTPN11,SHC1,ELOF1,DAND5
keratinocyte differentiation	RELA,RIPK1,TRAF2,MAP3K5,TNF,FASLG,DAXX,FAS,NFKBIA,SP1,CEBPA,FOS,JUN,GRB2,SOS1,SHC1,EGF,EGFR,BCL2,RAF1,PPP2R5D,MAP2K4,MAPK8,MAPK3,MAP3K1,BIRC3,BIRC2,TRAF1,HOXA7,MAPK13,MAPK14,MAP2K6,MAP2K3,MAPK1,MAP4K4,MAP2K2,MAP2K1,HRAS,PLAT,MAP2K7,FASN,FOSB,AGFG1,JUNB,JUND,PSG1,ARHGEF7,TANK,SPANXC,RPAIN,MTG1,DAND5
FGF signaling pathway	FGFR4,FGF1,FGF9,FGF16,FGF6,FGF8,FGF17,FGF18,FGF2,FGF4,JUN,JUNB,FOS,FOSB,JUND,FGF3,FGF10,FGF5,GRB2,PAK4,FGF19,FGF23,SRC,CBL,FRS2,FGFR1,FGFR2,SOS1,MET,HGF,PIK3R1,GAB1,STAT5B,AKT1,PDK1,STAT1,RUNX2,A1BG,ADRA1D,CTNND1,DAG1,PTK2B,FGF13,FOSL2,IL6,NCAM1,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,PLAU,PTPN11,SHC1,TFCP2,FOSL1,RNMT,THOC1,RNASEH2A,ATP8A2,IL17RD,PRAP1,PIGU,SIRPA
Presenilin action in Notch and Wnt signaling	JUNB,FOS,FOSB,JUND,JUN,APC,AXIN1,PSEN1,NCSTN,APH1A,PSENEN,APH1B,DVL1,LRP6,FZD1,WNT1,DKK2,TLE1,AES,DKK1,FRAT1,NEDD4,TAB1,ADAM10,HDAC1,SMAD4,MYC,CREBBP,CSNK2A1,EIF4E,FOSL2,RBPJ,PPP2R4,MAPK1,MAPK3,PROC,OPN1LW,MAP3K7,HNF1A,NR2C2,FOSL1,DVL1P1,RNASEH2A,PAG1,PCBP4
FOXM1 transcription factor network	RB1,SP1,CDK1,CDK4,HIST1H2BA,FOS,MYC,CENPF,PLK1,GAS1,NEK2,CDC25B,XRCC1,BRCA2,GSK3A,TGFA,FOXM1,SKP2,CDKN2A,CENPA,CKS1B,CREBBP,EIF4E,ETV5,ONECUT1,HSPA1A,NFATC3,MAP2K1,PSG1,OPN1LW,PRRC2A,CHEK2,KIAA1549L,PAG1,PCBP4,CKS1BP7,DAND5,CRYGEP
lissencephaly gene (lis1) in neuronal migration and development	NDEL1,LRP8,RELN,CDK5R1,CDK5,CSNK2A1,DCX,ABL1,CSNK2A2,FCN2,GCHFR,IL12A,PAFAH1B1,CLIP1,UPK3B
overview of telomerase protein component gene htert transcriptional regulation	SP1,HDAC1,MXD1,MAX,MYC,ESR1,TP53,WT1,TERT,AMPD1,PSG1,MZF1,HDAC9,DAND5
cdk regulation of dna replication	CDK2,CCNE1,CDT1,CDC6,MCM2,MCM6,MCM7,MCM3,MCM5,MCM4,KITLG,CDKN1B,IFI27,ORC1,ORC2,ORC4,ORC5,ORC6,ORC3
reversal of insulin resistance by leptin	PRKAG1,PRKAG2,PRKAA1,PRKAA2,PRKAB1,PRKAB2,LEP,LEPR,ACACA,CPT1A,LEPROT
role of nicotinic acetylcholine receptors in the regulation of apoptosis	PIK3R1,PIK3CA,SRC,RAPSN,MUSK,CHRNB1,CHRNG,YWHAH,FASLG,BAD,PTK2B,PTK2,TERT,PDPK1,AKT1,FOXO3,PIK3CB,PIK3CD,PIK3CG,YWHAQ
IL12 signaling mediated by STAT4	STAT4,JUN,CD28,CD4,CD3E,CD3G,CD3D,FOS,IL18R1,IL18,STAT3,TGFB1,IRF1,IL2,IL13,CD247,CREBBP,EIF4E,ETV5,OPN1LW,PAG1,PCBP4,TARP
Glypican 2 network	GPC2
double stranded rna induced gene expression	RELA,EIF2S1,EIF2S3,EIF2S2,NFKBIA,DNAJC3,IFNA1,IFNB1,TP53,MAP4K4,EIF2AK2,ARHGEF7
HIF-2-alpha transcription factor network	ARNT,TCEB2,VHL,TCEB1,SIRT1,SP1,ELK1,ABCG2,DEC1,ADORA2A,PGK1,TWIST1,CITED2,EPO,ETS1,FXN,APEX1,CASR,CREBBP,DMRT1,EIF4E,EPAS1,FLT1,EIF3E,KDR,MMP14,SLC11A2,SERPINE1,SERPINB2,POU5F1,PSG1,OPN1LW,SLC2A1,TEAD1,TIMP1,TFPI2,EPX,BHLHE40,KCNH4,CHMP2B,INTS6,PAG1,PCBP4,KCNH8,DAND5,MIA3
wnt signaling pathway	LRP6,WNT1,FZD1,CTNNB1,BTRC,TLE1,CREBBP,SMAD4,CTBP1,KREMEN2,DKK2,DKK1,PROC,AXIN1,CSNK2A1,MAP3K7,PPP2R5D,HDAC1,GSK3B,WIF1,MYC,PPARD,CCND1,DVL1,FRAT1,NLK,APC,CSNK2A2,EIF4E,GPI,HNF4A,OPN1LW,HNF1A,DVL1P1,TAB1,PAG1,PCBP4
Regulation of RhoA activity	RAC1,PAK1,CDC42,RHOA,ARHGAP8,OBSCN,VAV3,ARHGAP9,ARAP3,TRIO,DEF6,VAV1,DLC1,VAV2,ARHGAP4,ARAP1,ARHGEF3,SRGAP1,ARHGEF12,ARHGEF17,NET1,ABR,ECT2,ARHGEF2,ARHGEF5,AKAP13,ARHGAP6,ARHGEF10,ARHGEF18,BCR,ARHGDIA,CDKN1B,DEFA6,LRP2,MCF2,PKN1,SLC6A2,DYNLL1,SLC6A5,ARHGAP32,DLEC1,TSPAN1,FARP1,MCF2L,NGEF,PRPF38B,MTG1,ARHGEF25
g-secretase mediated erbb4 signaling pathway	ERBB4,PSEN1,ADAM17,DYT10,PRRT2
egf signaling pathway	PIK3R1,PIK3CA,EGF,EGFR,STAT3,STAT1,GRB2,SOS1,SHC1,ELK1,JAK1,MAP2K1,PLCG1,MAP3K1,MAPK8,RASA1,HRAS,MAP2K4,DAG1,PIK3CB,PIK3CD,PIK3CG,SYNGAP1,KCNH4,DYT10,PRRT2,KCNH8
corticosteroids and cardioprotection	PIK3R1,PIK3CA,RELA,NR3C1,GNB1,GNGT1,ADRB2,GNAS,BDKRB2,CAV1,NOS3,CORIN,PDPK1,ANXA1,AKT1,KRIT1,HSP90AA1,HSP90AA2,PIK3CB,PIK3CD,PIK3CG,ARHGEF7,MTG1,NANOS3

HIV-1 Nef: Negative effector of Fas and TNF-alpha	FAS,DAXX,FADD,FASLG,BAG4,DFFB,RELA,TRAF1,TRAF2,TRADD,BCL2,BID,APAF1,BIRC3,CD247,DFFA,FASN,AGFG1,MAP3K5,MAPK8,MAP2K7,S100B,RIPK1,CRADD,MAP3K14,MAP4K4,TANK,RPAIN
how progesterone initiates the oocyte maturation	GNAI1,GNGT1,GNB1,PAQR5,CCNB1,PGR,SRC,PIN1,MYT1,GNAS,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,MAPK1,CAP1,CDC25C,HRAS,MAPK3,ADCY1,CAMP,CDK1,POLD1,PRSS8,TRAF3,PKMYT1,PGRMC1,PDZD2,ATP8A2,MTG1,CHAMP1
LPA4-mediated signaling events	LPA,CREB1,CAMP,DAG1,LPAR4,RPS6KA5,CHAMP1
Direct p53 effectors	MIR34A,MCL1,PRMT1,CARM1,SP1,TAF9,NFYA,NFYB,NFYC,DGCR8,DROSHA,JMY,RPS27L,EGFR,EPHA2,HGF,HIC1,POU4F2,PPM1J,DUSP5,FOXA1,TGFA,SCN3B,VDR,TAP1,TYRP1,S100A2,PML,BCL6,MAP4K4,PERP,BID,NDRG1,BTG2,BNIP3L,MET,IRF5,PIDD,IGFBP3,ATF3,COL18A1,RB1,PTEN,TSC2,PLK3,GPX1,PRKAB1,TRRAP,MDM2,LIF,FAS,BAX,JUN,HTT,PCNA,POU4F1,DDB2,DKK1,FDXR,APC,HDAC2,BCL2,AFP,MSH2,MLH1,PMS2,GADD45A,CSE1L,APAF1,APCS,STS,BAK1,BDKRB2,PRDM1,CREBBP,VCAN,CYP27B1,DBT,ARID3A,DSP,DUSP1,EDN2,EIF4E,FASN,HSPA1A,IL6,CD82,SH2D1A,SERPINE1,SERPINB2,PMAIP1,PROC,PSG1,PTGDR,OPN1LW,SNORA62,SLC6A4,SNAI2,SMARCA4,SOS1,SRPR,TFDP1,TP53,TP73,TRIM26,REEP5,PRRC2A,RNMT,TNFRSF10D,TNFRSF10C,TNFRSF10B,TNFRSF10A,GDF15,TP53I3,CEBPZ,POLD3,SEC14L2,KIAA1549L,RCHY1,ZNF385A,SNORD12C,BBC3,SESN1,RGCC,PYCARD,RRM2B,TRIAP1,DDIT4,STEAP3,PAG1,PCBP4,C12orf5,NLRC4,RFWD2,BCL2L14,RNF39,AIFM2,TADA2B,CARD16,DAND5,CRYGEP
rho cell motility signaling pathway	PFN1,DIAPH1,GSN,VCL,TLN1,PIP5K1B,PIP5K1A,PPP1R12B,MYL2,CFL1,LIMK1,ROCK1,RHOA,MYLK,PRF1,RASA1,VPS72,RGS6
activation of pkc through g-protein coupled receptors	GNAQ,PLCB1,PPP1R14A,DAG1,FZD4,LPAR3,DYT10,LGR6,PRRT2,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
Ras signaling in the CD4+ TCR pathway	ELK1,RAF1,FOS,BRAF,MAP3K8,MAP2K1,PTPN7,PTPRA,KCNH4,CROT,MTG1,KCNH8
mTOR signaling pathway	CDC42,RHOA,RICTOR,MTOR,TSC1,TSC2,CDK2,DEPTOR,PDCD4,EIF4E,ATG13,RAC1,RHEB,YY1,BNIP3,PML,PAK1,AKT1,EEF2,EEF2K,PDK1,SGK1,IRS1,EIF4B,EIF4A1,EIF4A2,EIF4EBP1,PDPK1,PKN1,RHEBP1,CLIP1,SREBF1,EIF3A,RB1CC1,PPARGC1A,DDIT4,RRN3,PRR5,MLST8,MAPKAP1,POLDIP3,AKT1S1,MTG1
chrebp regulation by carbohydrates and camp	PRKAG1,PRKAG2,PRKAA1,PRKAA2,PRKAB1,PRKAB2,GNAS,GNGT1,GNB1,PRKAR2B,PRKACB,PRKAR2A,PRKAR1B,PRKAR1A,PRKACG,PKLR,ADCY1,PPP2R5D,CAMP,APRT,FZD4,LPAR3,MLXIPL,ATP8A2,LGR6,MTG1,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,CHAMP1,VN1R17P,GPR166P
Sumoylation by RanBP2 regulates transcriptional repression	NUP62,NUP153,NUP214,NUP210,SUMO1,RANGAP1,RANBP2,MDM2,HDAC4,RAN,HDAC1,PIAS1,NPC1,UBE2I,MTG1
Signaling events mediated by Stem cell factor receptor (c-Kit)	STAT5A,STAT1,VAV1,SOCS1,GRB2,CBL,CRKL,KIT,LYN,TEC,STAP1,PIK3R1,SPRED1,HRAS,SPRED2,SOS1,STAT3,EPO,EPOR,GRAP2,PTPRO,BCL2,MITF,BAD,FER,JAK2,MATK,PDK1,GRB10,RAF1,PTEN,GAB1,AKT1,KLK3,CREBBP,DOK1,EIF4E,FOXO3,KITLG,PDPK1,PIK3CA,PIK3CB,PIK3CD,PIK3CG,MAPK3,MAPK8,MAP2K1,MAP2K2,PTPN6,PTPN11,OPN1LW,SHC1,SNAI2,TIMP1,TOC,NR4A3,EPX,UXT,NR0B2,THOC1,SH2B3,PTPRU,SH2B2,MAP4K1,DYT10,PAG1,PCBP4,MTG1,PRRT2,PIGU,SIRPA
Notch-mediated HES/HEY network	GATA1,HES1,MYB,RUNX2,RB1,PARP1,TLE1,PTF1A,AR,TCF3,HEY1,ARNT,HIF1A,HEY2,RBPJ,HES6,HDAC1,GATA6,GATA4,JAK2,GAA,PTGDS,GHR,TWIST1,YY1,CD4,ID1,E2F1,STAT3,AKR1B1,AREG,ASCL1,CDKN1B,CREBBP,RCAN1,EIF4E,KDR,MYOD1,RBBP8,OPN1LW,C21orf33,SPEN,KDM1A,PAG1,PCBP4,TCF7L1,MIA3
yaci and bcma stimulation of b cell immune responses	TRAF6,TRAF3,TRAF5,TNFRSF17,TNFSF13B,TRAF2,TNFRSF13B,TNFSF13,TANK,ANP32B
Syndecan-3-mediated signaling events	FGFR4,FGF1,FGF9,FGF16,FGF6,FGF8,FGF19,FGF17,FGF18,FGF2,FGF4,FGF3,FGF10,FGF5,FGF23,SRC,PSEN1,NCSTN,APH1A,PSENEN,APH1B,AGRP,MC4R,CASK,IL8,FYN,EGFR,FGF13,DYT10,PRRT2
cycling of ran in nucleocytoplasmic transport	RAN,RANGAP1,RANBP1,RANBP2,NUP62,NUP153,NUP214,NUP210,RCC1,NPC1,MTG1
carm1 and regulation of the estrogen receptor	GRIP1,CARM1,EP300,ESR1,CREBBP,GTF2F1,GTF2A1,NR3C1,GTF3A,POLR2A,GTF2E1,MEF2C,TBP,EIF4E,OPN1LW,NCOA2,PAG1,PCBP4,LGALS12
Rapid glucocorticoid signaling	GNB1,GNG2,CRH,MTG1

il-2 receptor beta chain in t cell activation	PIK3R1,PIK3CA,NMI,TFDP1,E2F1,JAK3,IL2RG,IL2,IL2RB,IL2RA,JAK1,RB1,GRB2,SOS1,SHC1,RAF1,BCL2,PPIA,FASLG,FAS,FOS,MYC,PCNA,RPS6KB1,MAPK3,MAPK1,BCL2L1,MAP2K2,MAP2K1,PDPK1,HRAS,AKT1,SOCS3,SOCS1,PTPN6,BAD,CRKL,CBL,IRS1,FASN,MYO1C,PIK3CB,PIK3CD,PIK3CG,STAT5A,STAT5B,IKZF3,MTG1
regulators of bone mineralization	ALPL,ENPP1,IBSP,COL4A1,COL4A3,COL4A2,COL4A5,COL4A6,COL4A4,SPP1,ANKH,TNAP,APRT,GSTP1,SERPINA1,CXXC1,ATP8A2
links between pyk2 and map kinases	SRC,PTK2B,GNAQ,GRB2,SOS1,BCAR1,CRKL,SHC1,JUN,RAF1,MAP2K1,MAPK1,MAP2K4,MAPK8,MAP3K1,PAK1,PLCG1,MAPK3,MAP2K3,HRAS,RAC1,MAP2K2,MAPK14,KRIT1,DAG1,PKN1,FZD4,LPAR3,DYT10,LGR6,PRRT2,MRGPRX3,MRGPRX4,GPR151,OXER1,GPRC6A,MRGPRX1,VN1R17P,GPR166P
role of pi3k subunit p85 in regulation of actin organization and cell migration	PIK3R1,PIK3CA,ACTR2,ARPC4,ARPC3,ARPC2,ARPC1A,ACTR3,ARPC1B,PDGFA,PDGFRA,RAC1,PAK1,RHOA,WASL,CDC42,SLC25A6,PIK3CB,PIK3CD,PIK3CG,PKN1,ANGPTL2,AICDA
CIN	CENPA,DLGAP5,MELK,BUB1,KIF2C,KIF20A,KIF4A,CCNA2,CCNB2,NCAPG
MES	COL5A2,VCAN,SPARC,THBS2,FBN1,COL1A2,COL5A1,FAP,AEBP1,CTSK
LYM	PTPRC,CD53,LCP2,LAPTM5,DOCK2,IL10RA,CYBB,CD48,ITGB2,EVI2B
ER	AGR3,CA12,FOXA1,GATA3,MLPH,AGR2,ESR1,TBC1D9
HER2	ERBB2,PGAP3,STARD3,MIEN1,GRB7,PSMD3,GSDMB
Adipocyte	ADIPOQ,ADH1B,FABP4,PLIN1,RBP4,PLIN4,G0S2,GPD1,CD36,AOC3
Chr8q24.3	EXOSC4,PUF60,BOP1,SLC52A2,SHARPIN,HSF1,FBXL6,CYC1,SCRIB,GPAA1
Chr7p11.2	MRPS17,LANCL2,SEC61G,CCT6A,CHCHD2,EGFR
ZMYND10	ZMYND10,LRRC48,CASC1
FGD3-SUSD3	FGD3,SUSD3
PGR-RAI2	PGR,RAI2
Chr15q26.1	PRC1,BLM,FANCI
hotnet 1	HIF3A,RPS6KA1,EPAS1,PHF17,VBP1,PPP1R3A,TOB2,NR4A3,TCEB1,HIF1A,VHL,POLR2G,RNF139,USP33,CUL2
hotnet 2	NRG1,NRG3,NRG2,ERBB4
hotnet 3	FGFR2,FGFR4,CDH2,FGF3,FGF2
hotnet 4	ARID1A,SMARCA4,MLLT1,PBRM1
hotnet 5	EPHA6,EFNA4
hotnet 6	PTPRN2,SPTBN4,CKAP5
hotnet 7	DST,CELSR3,KIAA1549,KRT5,COL17A1
hotnet 8	NUDC,PAFAH1B1
hotnet 9	NR1I3,NR0B2,NR5A2
hotnet 10	RARA,NSD1,ZNF496,THRA
hotnet 11	MFAP5,FBN2,MFAP2,LTBP1,FBN1
hotnet 12	MAX,MAGEA11,MXD3
hotnet 13	SEC13,SEC16B,SEC31A
hotnet 14	C3orf10,NCKAP1
hotnet 15	TESC,SLC9A1,MAP4K4
hotnet 16	DHDDS,LOX
hotnet 17	COL4A3,USH2A
hotnet 18	TRAPPC2,CLIC2
hotnet 19	PCSK6,FLG
hotnet 20	SFN,CHST1
hotnet 21	PTPRD,PPFIA2,PPFIA3,MTSS1,PPFIA1
hotnet 22	CIC,SETD2
hotnet 23	XPO5,ZNF346,ILF3
hotnet 24	ACE2,GHRL
hotnet 25	PKHD1,CAMLG
BIOCARTA_RELA_PATHWAY	IKBKG,CHUK,EP300,RELA,TNF,IKBKB,TNFRSF1B,HDAC3,TNFRSF1A,TRAF6,FADD,CREBBP,RIPK1,NFKB1,NFKBIA,TRADD
BIOCARTA_NO1_PATHWAY	PDE3B,CALM2,ACTA1,LOC124827,CALM1,PRKAR2B,KNG1,RYR2,CHRM1,VEGFA,HSP90AA1,SLC7A1,PDE3A,PDE2A,BDKRB2,LOC147908,CYCSP35,NOS3,CHRNA1,FLT1,KDR,PRKACB,TNNI1,PRKACG,FLT4,CAV1,AKT1,PRKAR1A,PRKAR2A,PRKAR1B,CALM3,PRKG1,PRKG2

BIOCARTA_CSK_PATHWAY	ZAP70,CSK,CD4,PRKAR2B,PRKACB,CD3D,PRKACG,CD3E,CD3G,GNAS,GNGT1,TRB@,GNB1,TRA@,PRKAR1A,PRKAR2A,CD247,CREBBP,PRKAR1B,ADCY1,LCK,PTPRC,HLA-DRB1,HLA-DRA
BIOCARTA_SRCRPTP_PATHWAY	CSK,SRC,CDC25B,CDC25C,PRKCB,GRB2,CDC25A,PRKCA,CCNB1,PTPRA,CDK1
BIOCARTA_AMI_PATHWAY	F10,TFPI,F2,COL4A1,F2R,COL4A2,COL4A3,COL4A4,PROS1,FGG,PROC,FGA,PLG,SERPINC1,FGB,PLAT,COL4A6,AHSP,COL4A5,F7
BIOCARTA_GRANULOCYTES_PATHWAY	PECAM1,TNF,IL1A,ITGAL,ITGAM,ICAM1,SELL,SELP,IFNG,SELPLG,C5,ITGB2,CSF3,IL8
BIOCARTA_LYM_PATHWAY	SELL,VCAM1,ITGA4,ITGB1,ITGB2,PECAM1,IL1A,ITGAL,CD34,IL8,ICAM1
BIOCARTA_ARAP_PATHWAY	ASAP2,CYTH3,CYTH2,CYTH1,ARFGAP1,ARFGAP3,COPA,COP,CYTH4,KDELR3,GBF1,KDELR1,ARF1,ARFGEF2,CLTB,KDELR2,ARFGEF1,GPLD1
BIOCARTA_AGR_PATHWAY	JUN,MAPK8,PAK3,ACTA1,EGFR,NRG1,RAPSN,DAG1,CHRM1,PAK2,LAMA3,LAMA2,PAK4,UTRN,PXN,NRG3,PAK7,DMD,CTTN,SRC,PTK2,ITGA1,CHRNA1,PAK1,SP1,GIT2,DVL1,NRG2,MUSK,ITGB1,MAPK3,LAMA4,RAC1,PAK6,CDC42,MAPK1
BIOCARTA_AKAP95_PATHWAY	PRKAG1,PPP2CA,PRKAR2A,PPP1CA,PRKAR2B,DDX5,PRKACB,PRKACG,CCNB1,AKAP8,NCAPD2,CDK1
BIOCARTA_AKT_PATHWAY	CASP9,IKBKG,FOXO4,CHUK,FOXO1,FOXO3,RELA,PDPK1,GHR,IKBKB,AKT1,PIK3CA,GH1,PPP2CA,FASLG,HSP90AA1,YWHAH,BAD,NFKB1,PIK3CG,PIK3R1,NFKBIA
BIOCARTA_ALK_PATHWAY	MEF2C,WNT1,NPPB,NPPA,NOG,GSK3B,GATA4,CTNNB1,TGFB2,CHRD,HNF1A,MYL2,TGFB1,FZD1,ATF2,SMAD5,TGFBR3,TGFBR2,TGFBR1,NKX2-5,TGFB3,SMAD6,BMPR2,BMPR1A,ACVR1,RFC1,BMP4,APC,BMP2,MAP3K7,BMP7,DVL1,BMP5,BMP10,AXIN1,SMAD4,SMAD1
BIOCARTA_AT1R_PATHWAY	JUN,MEF2C,MEF2D,HRAS,CALM2,MAPK8,MEF2BNB-MEF2B,RAF1,LOC124827,PRKCB,MEF2A,SHC1,EGFR,ELK1,PRKCA,CALM1,MAP2K4,ATF2,LOC147908,CYCSP35,SRC,PTK2,MAP2K2,MAP3K1,MAP2K1,GNAQ,PAK1,AGT,GRB2,AGTR1,MAPK3,CALM3,PTK2B,RAC1,SOS1,MAPK1
BIOCARTA_ACE2_PATHWAY	ACE2,COL4A1,COL4A2,REN,COL4A3,COL4A4,CMA1,AGT,AGTR1,ACE,AGTR2,COL4A6,COL4A5
BIOCARTA_ASBCELL_PATHWAY	CD40LG,CD40,CD4,FAS,CD80,FASLG,CD28,IL4,IL10,HLA-DRB1,HLA-DRA,IL2
BIOCARTA_DNAFRAGMENT_PATHWAY	DFFA,DFFB,CASP7,HMGB2,HMGB1,GZMB,TOP2B,ENDOG,TOP2A,CASP3
BIOCARTA_CHEMICAL_PATHWAY	CASP9,PTK2,BCL2,CASP7,BID,PRKCB,BCL2L1,STAT1,PRKCA,APAF1,BAX,EIF2S1,CASP6,AKT1,TP53,CASP3,CYCS,ATM,TLN1,BAD,PXN,PARP1
BIOCARTA_SPPA_PATHWAY	SRC,HRAS,PTK2,F2,ITGA1,PLCB1,RAF1,PRKCB,F2R,PLA2G4A,PRKCA,PTGS1,MAP2K1,GNAI1,GNGT1,ITGB1,GNB1,SYK,TBXAS1,F2RL3,MAPK3,MAPK1
BIOCARTA_ATM_PATHWAY	JUN,CHEK2,MAPK8,MRE11A,BRCA1,NBN,RELA,CHEK1,MDM2,ABL1,CDKN1A,TP53,GADD45A,ATM,RAD51,TP73,RAD50,NFKB1,NFKBIA,RBBP8
BIOCARTA_AGPCR_PATHWAY	PRKCB,PRKCA,PRKAR2B,PRKACB,PRKACG,GNAS,ARRB1,GNGT1,GNB1,PRKAR1A,PRKAR2A,PRKAR1B,GRK4
BIOCARTA_BCELLSURVIVAL_PATHWAY	CASP7,ITGA1,BIRC5,XIAP,AKT1,CASP3,JUND,MTOR,CCT4,DPF2,PIK3CA,ITGB1,ZBTB7A,FOS,PIK3CG,PIK3R1
BIOCARTA_BLYMPHOCYTE_PATHWAY	CD40,CD80,ITGB2,CR1,ITGAL,PTPRC,HLA-DRB1,CR2,HLA-DRA,ICAM1,FCGR2B
BIOCARTA_BCR_PATHWAY	JUN,HRAS,CALM2,MAPK8,NFATC4,RAF1,LOC124827,MAPK14,PRKCB,SHC1,ELK1,PRKCA,CALM1,NFATC3,PPP3CC,SYK,LOC147908,CYCSP35,BTK,BLNK,MAP3K1,MAP2K1,VAV1,CD79A,PPP3CB,CD79B,PPP3CA,PLCG1,GRB2,MAPK3,CALM3,NFATC2,FOS,NFATC1,LYN,RAC1,SOS1
BIOCARTA_BIOPEPTIDES_PATHWAY	HRAS,F2,CALM2,MAPK8,STAT3,RAF1,LOC124827,STAT4,PRKCB,MAPK14,STAT1,SHC1,PRKCA,STAT2,CALM1,KNG1,GNA11,GNAI1,GNGT1,MYLK,LOC147908,CYCSP35,MAP2K2,CAMK2A,MAPT,CAMK2B,CAMK2D,MAP2K1,CAMK2G,JAK2,CDK5,GNB1,PLCG1,AGT,GRB2,AGTR2,STAT5B,MAPK3,STAT5A,FYN,CALM3,PTK2B,STAT6,SOS1,MAPK1
BIOCARTA_NEUROTRANSMITTERS_PATHWAY	GAD1,TH,HDC,DBH,PNMT,TPH1
BIOCARTA_RANKL_PATHWAY	MAPK8,FOSL2,RELA,IRF9,EIF2AK2,FOSL1,TRAF6,IFNB1,TNFRSF11A,IFNAR1,IFNAR2,NFKB1,FOS,TNFSF11
BIOCARTA_CACAM_PATHWAY	CAMK1G,CAMK4,CALM2,CAMK2A,LOC124827,CAMK2B,CAMK2D,CAMK2G,CALM1,CREB1,CALM3,CAMK1,CAMKK1,CAMKK2,LOC147908,CYCSP35
BIOCARTA_CDMAC_PATHWAY	JUN,HRAS,PLCB1,RAF1,PRKCB,PRKCA,RELA,MAP2K1,TNF,CUZD1,MAPK3,NFKB1,FOS,NFKBIA,MYC,MAPK1

BIOCARTA_CARM_ER_PATHWAY	MEF2C,PELP1,PPARGC1A,EP300,ERCC3,ESR1,HDAC3,NR0B1,NRIP1,HDAC8,HDAC5,SPEN,HDAC11,SRA1,GRIP1,TBP,CREBBP,HDAC6,GTF2A1,CCND1,HDAC7,NCOR2,HIST2H3C,BRCA1,HDAC9,HDAC4,MED1,CARM1,GTF2F1,GTF2E1,HDAC1,POLR2A,HDAC2,PHB2,HDAC10
BIOCARTA_CASPASE_PATHWAY	CASP10,CASP9,CASP8,CASP7,BIRC2,APAF1,CASP4,BIRC3,XIAP,CASP6,CASP1,LMNA,CASP3,LMNB1,CASP2,PRF1,DFFA,CYCS,DFFB,GZMB,ARHGDIB,LMNB2,PARP1
BIOCARTA_CBL_PATHWAY	CSF1R,SRC,PDGFRA,PRKCB,EGFR,PRKCA,SH3GLB1,CBL,EGF,SH3KBP1,GRB2,MET,SH3GLB2
BIOCARTA_CCR3_PATHWAY	NOX1,HRAS,PTK2,PPP1R12B,PLCB1,RAF1,PRKCB,PRKCA,MAP2K1,GNAQ,GNAS,CFL1,CCR3,LIMK1,MYL2,GNGT1,GNB1,RHOA,CCL11,MAPK3,PIK3C2G,ROCK2,MAPK1
BIOCARTA_CD40_PATHWAY	CD40LG,CD40,IKBKG,CHUK,IKBKAP,MAP3K1,RELA,IKBKB,DUSP1,TRAF6,TRAF3,TNFAIP3,MAP3K14,NFKB1,NFKBIA
BIOCARTA_MCM_PATHWAY	ORC6,MCM4,MCM3,MCM6,CDT1,MCM5,MCM7,CDK2,CDKN1B,MCM2,ORC1,ORC2,ORC4,KITLG,ORC5,CDC6,CCNE1,ORC3
BIOCARTA_G1_PATHWAY	E2F1,TFDP1,GSK3B,CDKN2A,CDKN1B,CDKN1A,CDK1,TGFB2,CCNA1,CDKN2B,TGFB1,TGFB3,CCND1,CDK2,CDK4,ABL1,RB1,SKP2,TP53,CDK6,DHFR,CDC25A,ATM,ATR,HDAC1,SMAD3,SMAD4,CCNE1
BIOCARTA_G2_PATHWAY	YWHAQ,MYT1,CHEK2,EP300,BRCA1,CHEK1,WEE1,MDM2,CDKN1A,TP53,CDK1,CDKN2D,CDC34,CDC25B,CDC25C,GADD45A,CDC25A,PLK1,ATR,ATM,YWHAH,CCNB1,PRKDC,RPS6KA1
BIOCARTA_CELL2CELL_PATHWAY	CSK,PTK2,SRC,PECAM1,VCL,BCAR1,CTNNA2,CTNNB1,CTNNA3,ACTN1,CTNNA1,PXN,ACTN2,ACTN3
BIOCARTA_LAIR_PATHWAY	TNF,KNG1,IL1A,ITGAL,ICAM1,VCAM1,SELP,C6,ITGA4,SELPLG,ITGB1,C3,C5,ITGB2,C7,IL6,IL8
BIOCARTA_CERAMIDE_PATHWAY	CASP8,NSMAF,BCL2,MAPK8,RAF1,MAP3K1,RELA,BAX,MAP2K1,TNFRSF1A,MAP2K4,SMPD1,CYCS,TRAF2,FADD,RIPK1,MAPK3,BAD,NFKB1,TRADD,AIFM1,MAPK1
BIOCARTA_TID_PATHWAY	HSPA1A,RELA,TNF,IKBKB,RB1,TNFRSF1B,DNAJA3,IFNGR2,WT1,TP53,TNFRSF1A,JAK2,TAX1BP3,USH1C,LIN7A,IFNG,IFNGR1,NFKB1,NFKBIA
BIOCARTA_CLASSIC_PATHWAY	C9,C2,C1S,C6,C3,C5,C1QB,C1QA,C1R,C1QC,C4B,C4A,C8A,C7
BIOCARTA_COMP_PATHWAY	MASP1,C9,C2,C1S,C6,C3,C5,C1QB,CFD,C1QA,C1R,C1QC,MBL2,C4B,C4A,MASP2,C8A,C7,CFB
BIOCARTA_VDR_PATHWAY	NCOA2,CARM1,NCOA1,NCOR1,KAT2B,EP300,CREBBP,TSC2,HDAC1,RXRA,NCOA3,MED1
BIOCARTA_HDAC_PATHWAY	MEF2C,MEF2D,CALM2,CAMK1G,MEF2BNB-MEF2B,LOC124827,MAPK14,MEF2A,CALM1,IGF1,PPP3CC,HDAC5,IGF1R,INS,LOC147908,CYCSP35,MYOD1,CABIN1,MAP2K6,AKT1,PPP3CB,PPP3CA,PIK3CA,YWHAH,CALM3,INSR,CAMK1,NFATC2,MAPK7,NFATC1,PIK3CG,PIK3R1
BIOCARTA_GCR_PATHWAY	CALM2,NOS3,LOC124827,ANXA1,NPPA,RELA,NR3C1,CALM1,CORIN,GNAS,AKT1,ADRB2,PIK3CA,GNGT1,GNB1,HSP90AA1,CALM3,NFKB1,PIK3CG,LOC147908,PIK3R1,CYCSP35
BIOCARTA_CTCF_PATHWAY	PTEN,CDKN2A,MDM2,CDKN1B,CD79A,TP53,CD79B,MTOR,TGFB2,PIK3CA,TGFB1,RPS6KB1,PPP2CA,SMAD5,TGFBR3,SMAD4,TGFBR2,TGFBR1,PIK3CG,PIK3R1,MYC,SMAD1,TGFB3
BIOCARTA_CTL_PATHWAY	CD3D,CD3E,CD3G,ITGAL,ICAM1,PRF1,FAS,TRB@,TRA@,FASLG,ITGB2,CD247,GZMB,B2M,HLA-A
BIOCARTA_CXCR4_PATHWAY	HRAS,PTK2,RAF1,PRKCB,PRKCA,RELA,MAP2K1,BCAR1,GNAQ,CRK,GNAI1,PIK3CA,CXCL12,GNGT1,GNB1,PLCG1,MAPK3,CXCR4,PTK2B,PIK3C2G,NFKB1,PIK3R1,PXN,MAPK1
BIOCARTA_CELLCYCLE_PATHWAY	CCND1,E2F1,TFDP1,CDK2,CDKN2A,CDK4,RB1,CDKN1B,CDKN1A,CDK1,CDKN2D,CCNA1,CDKN2B,CDK6,CDKN2C,CDK7,CDC25A,RBL1,CCND2,CCNB1,CCNE1,CCNH,CCND3
BIOCARTA_CFTR_PATHWAY	EZR,CFTR,SLC9A3R1,PRKAR1A,PRKAR2A,PRKAR2B,PRKAR1B,ADCY1,PRKACB,PRKACG,GNAS,ADRB2
BIOCARTA_CYTOKINE_PATHWAY	IL12B,LTA,IL13,IL14,IL3,IL12A,IL17A,IL18,TNF,IL16,IL1A,IL15,IFNG,IFNB1,IFNA1,IL4,IL5,IL10,IL9,IL6,IL8,IL2
BIOCARTA_INFLAM_PATHWAY	CSF2,CD4,CSF1,LTA,IL3,TNF,IL15,TGFB2,TGFB1,IFNG,IFNB1,IFNA1,CSF3,TGFB3,IL2,IL8,IL12B,IL13,PDGFA,IL12A,IL7,IL1A,IL4,IL5,IL10,IL6,HLA-DRB1,IL11,HLA-DRA

BIOCARTA_D4GDI_PATHWAY	CASP10,JUN,CASP9,CASP8,APAF1,ARHGAP5,CASP1,CASP3,PRF1,CYCS,GZMB,ARHGDIB,PARP1
BIOCARTA_DC_PATHWAY	CSF2,IL12B,CD40,IL13,IL3,IL12A,CD2,CD33,TLR9,ANPEP,CD7,CD5,IFNG,ITGAX,IFNB1,TLR4,IFNA1,IL4,TLR7,TLR2,IL5,IL10
BIOCARTA_P35ALZHEIMERS_PATHWAY	CDK5,CDK5R1,CAPN1,MAPT,CSNK1D,PPP2CA,CSNK1A1,CAPNS1,GSK3B,CAPNS2,APP
BIOCARTA_RNA_PATHWAY	CHUK,RELA,MAP3K14,EIF2S2,EIF2S1,NFKB1,DNAJC3,NFKBIA,EIF2AK2,TP53
BIOCARTA_MTA3_PATHWAY	TUBA4B,TUBA1A,PDZK1,ALDOA,ESR1,SNAI2,MTA3,MBD3,HSPB1,HSPB2,TUBA3C,TUBA4A,GAPDH,MTA1,HDAC1,TUBA1C,CTSD,SNAI1,CDH1
BIOCARTA_SKP2E2F_PATHWAY	CCNA1,CDC34,E2F1,CUL1,TFDP1,CDK2,RB1,SKP2,CCNE1,SKP1
BIOCARTA_CALCINEURIN_PATHWAY	CALM2,NFATC4,LOC124827,PRKCB,PRKCA,CALM1,NFATC3,GNAQ,SP1,CDKN1A,PPP3CB,PPP3CC,PPP3CA,MARCKS,PLCG1,SP3,CALM3,NFATC2,NFATC1,LOC147908,CYCSP35
BIOCARTA_EGF_PATHWAY	JUN,CSNK2A1,SRF,HRAS,MAPK8,STAT3,RAF1,PRKCB,STAT4,EGFR,ELK1,PRKCA,SHC1,STAT1,STAT2,EGF,MAP2K4,MAP3K1,MAP2K1,JAK1,RASA1,PIK3CA,PLCG1,GRB2,STAT5B,MAPK3,STAT5A,FOS,STAT6,PIK3R1,SOS1
BIOCARTA_ETC_PATHWAY	CYCS,SDHA,SDHD,SDHB,SDHC,SLC25A6,COX1,NDUFA1,ATP5A1,UQCRC1,SLC25A4,GPD2
BIOCARTA_NDKDYNAMIN_PATHWAY	SYNJ2,CALM2,LOC124827,EPS15,CALM1,PPP3CB,DNM1,PPP3CC,BIN1,PPP3CA,AMPH,PICALM,NME1,NME2,AP2A1,CALM3,SYNJ1,LOC147908,CYCSP35,AP2M1,EPN1
BIOCARTA_EPHA4_PATHWAY	SELP,ITGB1,ITGA1,RAP1B,ACTA1,EPHA4,FYN,EPHB1,LYN,L1CAM
BIOCARTA_EPO_PATHWAY	CSNK2A1,JUN,HRAS,EPO,MAPK8,RAF1,ELK1,SHC1,MAP2K1,JAK2,PLCG1,GRB2,STAT5B,MAPK3,STAT5A,FOS,PTPN6,SOS1,EPOR
BIOCARTA_ECM_PATHWAY	ROCK1,SRC,HRAS,PTK2,ITGA1,RAF1,SHC1,GSN,ARHGAP5,MAP2K1,PIK3CA,MYL2,ITGB1,DIAPH1,MYLK,RHOA,TLN1,MAPK3,FYN,PIK3CG,PIK3R1,PXN,PFN1,MAPK1
BIOCARTA_ERK_PATHWAY	HRAS,STAT3,RAF1,EGFR,ELK1,SHC1,MKNK2,MKNK1,IGF1R,PTPRR,GNGT1,NGF,PPP2CA,NGFR,SRC,MAP2K2,PDGFRA,RPS6KA5,MAP2K1,GNAS,ITGB1,GNB1,GRB2,MAPK3,MYC,SOS1,MAPK1,RPS6KA1
BIOCARTA_ERYTH_PATHWAY	CSF2,EPO,IL3,FLT3,IGF1,CCL3,IL1A,TGFB2,TGFB1,KITLG,CSF3,IL6,IL9,TGFB3,IL11
BIOCARTA_EPONFKB_PATHWAY	GRIN1,EPO,SOD2,ARNT,RELA,HIF1A,NFKB1,CDKN1A,NFKBIA,JAK2,EPOR
BIOCARTA_EIF_PATHWAY	EEF2,EIF1,EIF2S3,EIF2S1,EIF3A,EIF1AX,EIF6,EIF4G3,EIF4G2,EIF5,EEF2K,EIF4G1,EIF4A1,EIF4A2,EIF4E,EIF2S2
BIOCARTA_EXTRINSIC_PATHWAY	F10,TFPI,F2,F2R,FGG,PROS1,PROC,FGA,SERPINC1,FGB,F3,F5,F7
BIOCARTA_FAS_PATHWAY	CASP10,JUN,PTPN13,CASP8,CASP7,MAPK8,RIPK2,PAK2,SPTAN1,LMNA,LMNB1,MAP2K4,FADD,CFLAR,LMNB2,MAP3K1,PAK1,RB1,CASP6,MAP3K7,CASP3,DAXX,FAS,DFFA,DFFB,FASLG,ARHGDIB,FAF1,PRKDC,PARP1
BIOCARTA_FCER1_PATHWAY	JUN,HRAS,MAPK8,CALM2,NFATC4,RAF1,LOC124827,PRKCB,SHC1,ELK1,CALM1,NFATC3,PAK2,PPP3CC,MAP2K4,SYK,FCER1G,FCER1A,LOC147908,CYCSP35,BTK,PLA2G4A,MAP3K1,MAP2K1,VAV1,MAP2K7,PPP3CB,PPP3CA,PIK3CA,PLCG1,GRB2,MAPK3,CALM3,NFATC2,FOS,NFATC1,PIK3CG,LYN,PIK3R1,SOS1,MAPK1
BIOCARTA_FEEDER_PATHWAY	MPI,HK1,KHK,TREH,PGM1,LCT,TPI1,PYGM,PYGL
BIOCARTA_FIBRINOLYSIS_PATHWAY	F2,CPB2,F2R,FGB,PLAT,FGG,F13A1,SERPINE1,FGA,SERPINB2,PLAU,PLG
BIOCARTA_FMLP_PATHWAY	HRAS,PLCB1,CALM2,CAMK1G,FPR1,NFATC4,RAF1,LOC124827,MAPK14,ELK1,RELA,GNA15,CALM1,NFATC3,PPP3CC,GNGT1,PIK3C2G,LOC147908,CYCSP35,MAP2K2,MAP2K3,MAP3K1,NCF2,MAP2K1,NCF1C,PAK1,MAP2K6,PPP3CB,PPP3CA,GNB1,MAPK3,CALM3,CAMK1,NFATC2,NFKB1,NFATC1,RAC1,NFKBIA,MAPK1
BIOCARTA_FREE_PATHWAY	NOX1,SOD1,GSR,XDH,GSS,GPX1,RELA,TNF,NFKB1,IL8
BIOCARTA_GABA_PATHWAY	GPHN,SRC,GABRA5,GABRA6,GABRA3,GABRA4,GABRA1,GABRA2,GABARAP,DNM1
BIOCARTA_GATA3_PATHWAY	IL13,GATA3,MAPK14,MAP2K3,PRKAR2B,PRKACB,PRKACG,JUNB,PRKAR1A,PRKAR2A,PRKAR1B,IL4,NFATC2,IL5,NFATC1,MAF
BIOCARTA_GLYCOLYSIS_PATHWAY	HK1,PGAM1,TPI1,PGK1,GAPDH,PKLR,ALDOB,ENO1,GPI,PFKL
BIOCARTA_SET_PATHWAY	PRF1,DFFA,DFFB,HMGB2,NME1,APEX1,GZMB,CREBBP,SET,GZMA,ANP32A
BIOCARTA_GH_PATHWAY	SRF,HRAS,RAF1,PRKCB,PRKCA,SHC1,SLC2A4,SOCS1,HNF1A,INS,PTPN6,MAP2K1,GHR,JAK2,PIK3CA,GH1,PLCG1,GRB2,MAPK3,IRS1,STAT5B,STAT5A,INSR,PIK3CG,PIK3R1,SOS1,MAPK1,RPS6KA1
BIOCARTA_AHSP_PATHWAY	ALAS1,ALAS2,HBA1,ALAD,GATA1,CPOX,FECH,UROS,HBA2,AHSP,HMBS,UROD,HBB
BIOCARTA_TCAPOPTOSIS_PATHWAY	CD4,FAS,CCR5,TRB@,TRA@,FASLG,CD247,CD28,CD3D,CD3E,CD3G

BIOCARTA_HIVNEF_PATHWAY	CASP9,CASP8,CASP7,CHUK,TNF,BIRC3,XIAP,PAK2,CDK11B,LMNA,LMNB1,CRADD,FADD,NUMA1,CFLAR,RIPK1,LMNB2,PRKCD,MAP3K5,PTK2,BID,MAP3K1,MAP2K7,MDM2,CASP6,RB1,TNFRSF1B,CASP3,TNFRSF1A,CASP2,RASA1,DAXX,ACTG1,NFKB1,PRKDC,NFKBIA,BAG4,MAPK8,GSN,RELA,APAF1,PSEN2,PSEN1,SPTAN1,TRAF2,MAP3K14,TRAF1,TRADD,BCL2,BIRC2,FAS,DFFA,CYCS,DFFB,FASLG,ARHGDIB,CDK11A,PARP1
BIOCARTA_SALMONELLA_PATHWAY	ACTA1,WASL,WASF1,ARPC4,ARPC5,ARPC1A,ACTR2,ACTR3,ARPC1B,ARPC3,ARPC2,RAC1,CDC42
BIOCARTA_MPR_PATHWAY	HRAS,MYT1,ACTA1,PRKAR2B,CDK1,GNAI1,GNGT1,CAP1,ADCY1,PAQR5,SRC,PIN1,PGR,PRKACB,PRKACG,GNAS,PAQR7,ARPC4,ARPC5,CDC25C,ARPC1A,GNB1,ACTR2,PRKAR1A,ACTR3,PRKAR2A,ARPC1B,PRKAR1B,ARPC3,MAPK3,CCNB1,ARPC2,RPS6KA1,MAPK1
BIOCARTA_HCMV_PATHWAY	MAP2K2,MAPK14,MAP2K3,MAP3K1,RELA,MAP2K1,RB1,CREB1,MAP2K6,SP1,AKT1,PIK3CA,MAPK3,NFKB1,PIK3CG,PIK3R1,MAPK1
BIOCARTA_P53HYPOXIA_PATHWAY	MAPK8,CSNK1D,ABCB1,CSNK1A1,EP300,HSPA1A,BAX,DNAJB1P1,HIF1A,HIC1,MDM2,TAF1,CDKN1A,AKT1,TP53,NQO1,FHL2,GADD45A,HSP90AA1,IGFBP3,ATM,RPA1,NFKBIB
BIOCARTA_HIF_PATHWAY	JUN,EPO,NOS3,EP300,HIF1A,VHL,CREB1,P4HB,COPS5,EDN1,ASPH,VEGFA,ARNT,LDHA,HSP90AA1
BIOCARTA_IGF1_PATHWAY	CSNK2A1,JUN,SRF,HRAS,MAPK8,PTPN11,RAF1,SHC1,ELK1,MAP2K1,IGF1,RASA1,PIK3CA,IGF1R,GRB2,IRS1,MAPK3,FOS,PIK3CG,PIK3R1,SOS1
BIOCARTA_IL17_PATHWAY	CD4,IL3,IL17A,CD58,CD2,CD3D,CD3E,CD8A,CD3G,CD34,TRB@,KITLG,TRA@,CD247,CSF3,IL6,IL8
BIOCARTA_IL2_PATHWAY	CSNK2A1,JUN,HRAS,MAPK8,RAF1,SHC1,ELK1,IL2RG,MAP2K1,IL2RB,JAK1,JAK3,SYK,GRB2,STAT5B,MAPK3,STAT5A,FOS,IL2RA,LCK,SOS1,IL2
BIOCARTA_IL3_PATHWAY	HRAS,IL3RA,RAF1,IL3,SHC1,MAP2K1,CSF2RB,JAK2,GRB2,MAPK3,STAT5B,STAT5A,FOS,PTPN6,SOS1
BIOCARTA_IL4_PATHWAY	RPS6KB1,GRB2,SHC1,IL2RG,IRS1,IL4,IL4R,STAT6,JAK1,AKT1,JAK3
BIOCARTA_IL5_PATHWAY	CCR3,CD4,CCL11,IL4,IL1B,IL5,IL5RA,IL6,HLA-DRB1,HLA-DRA
BIOCARTA_IL6_PATHWAY	CSNK2A1,JUN,SRF,HRAS,IL6R,STAT3,PTPN11,IL6ST,RAF1,SHC1,ELK1,MAP2K1,TYK2,JAK1,JAK3,JAK2,CEBPB,GRB2,MAPK3,FOS,IL6,SOS1
BIOCARTA_IL10_PATHWAY	STAT3,STAT4,STAT1,STAT2,TNF,BLVRA,BLVRB,IL1A,JAK1,HMOX1,STAT5B,STAT5A,STAT6,IL10,IL10RA,IL6,IL10RB
BIOCARTA_IL12_PATHWAY	JUN,IL12RB1,IL12B,MAPK8,IL12RB2,STAT4,MAPK14,IL12A,IL18,CD3D,CD3E,TYK2,MAP2K6,CD3G,JAK2,CCR5,IFNG,TRB@,TRA@,CD247,IL18R1,CXCR3,ETV5
BIOCARTA_IL2RB_PATHWAY	HRAS,E2F1,RAF1,SHC1,IL2RG,IL2RB,CBL,SOCS1,PPIA,SYK,CFLAR,SOCS3,BAD,IL2RA,IKZF3,PTPN6,BCL2,BCL2L1,JAK1,AKT1,JAK3,PIK3CA,FAS,RPS6KB1,CRKL,GRB2,FASLG,NMI,STAT5B,IRS1,MAPK3,STAT5A,FOS,PIK3CG,PIK3R1,MYC,SOS1,MAPK1
BIOCARTA_IL22BP_PATHWAY	IL22RA2,STAT3,STAT4,STAT1,STAT2,TYK2,IL22,JAK1,JAK3,JAK2,STAT5B,STAT5A,SOCS3,STAT6,IL10RA,IL22RA1
BIOCARTA_IL7_PATHWAY	BCL2,EP300,IL2RG,IL7,JAK1,JAK3,PIK3CA,CREBBP,NMI,STAT5B,STAT5A,FYN,PTK2B,PIK3CG,PIK3R1,LCK,IL7R
BIOCARTA_GSK3_PATHWAY	WNT1,TIRAP,RELA,GSK3B,EIF2AK2,CTNNB1,GNAI1,GJA1,MYD88,FZD1,LBP,TOLLIP,PPP2CA,LEF1,IRAK1,CCND1,APC,PDPK1,LY96,DVL1,AKT1,PIK3CA,CD14,TLR4,AXIN1,NFKB1,PIK3R1
BIOCARTA_DEATH_PATHWAY	CASP10,CASP9,GAS2,CASP8,CASP7,CHUK,RELA,APAF1,TNFSF12,TNFSF10,BIRC3,XIAP,LMNA,SPTAN1,TNFRSF10A,TRAF2,FADD,CFLAR,TNFRSF10B,RIPK1,MAP3K14,TRADD,TNFRSF25,BCL2,BID,BIRC2,CASP6,CASP3,CYCS,DFFA,DFFB,NFKB1,NFKBIA
BIOCARTA_RACCYCD_PATHWAY	IKBKG,HRAS,E2F1,CHUK,RAF1,TFDP1,RELA,CDKN1B,CDKN1A,RHOA,CCND1,CDK2,IKBKB,CDK4,PAK1,RB1,AKT1,PIK3CA,CDK6,MAPK3,NFKB1,CCNE1,NFKBIA,PIK3R1,RAC1,MAPK1
BIOCARTA_GLEEVEC_PATHWAY	JUN,HRAS,MAPK8,RAF1,MAP3K1,STAT1,MAP2K1,AKT1,JAK2,PIK3CA,MAP2K4,CRKL,GRB2,STAT5B,MAPK3,STAT5A,BCR,BAD,FOS,PIK3CG,PIK3R1,MYC,SOS1
BIOCARTA_INSULIN_PATHWAY	CSNK2A1,JUN,SRF,HRAS,MAPK8,PTPN11,RAF1,SHC1,ELK1,MAP2K1,SLC2A4,RASA1,PIK3CA,GRB2,IRS1,MAPK3,INS,INSR,FOS,PIK3CG,PIK3R1,SOS1

BIOCARTA_INTEGRIN_PATHWAY	JUN,HRAS,CAPN1,MAPK8,PPP1R12B,ACTA1,RAF1,SHC1,CAPNS1,VCL,ZYX,TNS1,RHOA,CAPNS2,ACTN1,PXN,ROCK1,CSK,SRC,RAP1A,PTK2,ITGA1,MAP2K2,MAP2K1,BCAR1,CAV1,RAPGEF1,ITGB1,CRKL,GRB2,TLN1,MAPK3,FYN,BCR,SOS1,ACTN2,ACTN3,MAPK1
BIOCARTA_INTRINSIC_PATHWAY	F10,F9,F8,F2,COL4A1,F2R,COL4A2,COL4A3,COL4A4,KNG1,PROS1,FGG,PROC,KLKB1,FGA,SERPINC1,FGB,F12,COL4A6,SERPING1,F11,COL4A5,F5
BIOCARTA_KERATINOCYTE_PATHWAY	JUN,HRAS,MAPK8,CHUK,RAF1,PRKCB,MAPK14,PRKCA,EGFR,RELA,TNF,EGF,CEBPA,MAP2K4,TRAF2,PPP2CA,RIPK1,MAP3K14,PRKCG,PRKCH,PRKCD,PRKCE,MAP3K5,HOXA7,BCL2,PRKCQ,MAP2K3,MAP3K1,MAPK13,MAP2K1,MAP2K7,IKBKB,MAP2K6,TNFRSF1B,SP1,TNFRSF1A,DAXX,FAS,FASLG,MAPK3,ETS1,ETS2,FOS,NFKB1,NFKBIA,MAPK1
BIOCARTA_TCRA_PATHWAY	ZAP70,CD4,CD3D,CD3E,CD3G,TRB@,TRA@,CD247,FYN,LCK,HLA-DRB1,PTPRC,HLA-DRA
BIOCARTA_LECTIN_PATHWAY	C9,C2,C6,C5,C3,MBL2,C4B,C4A,MASP2,C8A,C7,MASP1
BIOCARTA_PYK2_PATHWAY	JUN,HRAS,MAPK8,CALM2,RAF1,MAPK14,PRKCB,LOC124827,PRKCA,SHC1,CALM1,MAP2K4,LOC147908,CYCSP35,SRC,MAP2K2,MAP2K3,MAP3K1,MAP2K1,GNAQ,BCAR1,PAK1,CRKL,PLCG1,GRB2,MAPK3,CALM3,PTK2B,RAC1,SOS1,MAPK1
BIOCARTA_EGFR_SMRTE_PATHWAY	NCOR2,ZBTB16,MAP3K1,MAPK14,EGFR,MAP2K1,THRB,THRA,RARA,RXRA,EGF
BIOCARTA_MAPK_PATHWAY	MEF2C,JUN,MEF2D,MAX,MEF2BNB-MEF2B,CHUK,RAF1,MEF2A,STAT1,SHC1,ELK1,PAK2,CEBPA,MKNK1,MAP2K4,RIPK1,ATF2,RAPGEF2,MAPK9,MAP3K5,MAP4K3,MAPK10,MAPK11,MAP2K2,MAP4K4,BRAF,RPS6KA5,MAP2K3,MAP3K1,MAPK13,MAP3K3,MAP2K1,MAP3K4,MAP2K7,MAP3K10,MAP3K9,IKBKB,MAP2K5,MAP3K11,CREB1,MAP2K6,MAP3K7,MAP3K8,MAP3K12,MAP3K6,MAP4K1,MAP4K5,RPS6KA2,RPS6KA3,DAXX,RPS6KB1,RPS6KB2,GRB2,MAPK3,MAPK4,RPS6KA4,MAPK6,NFKB1,MAPK7,RAC1,NFKBIA,MYC,RPS6KA1,MAPK1,MAPKAPK3,HRAS,MAP4K2,MAPK8,MAPKAPK5,MAPK14,MAPK12,RELA,MAPKAPK2,TGFB2,MKNK2,TGFB1,TRAF2,ARAF,MAP3K14,TGFBR1,TRADD,TGFB3,PAK1,SP1,MAP3K13,FOS,MAP3K2
BIOCARTA_MCALPAIN_PATHWAY	CAPN2,HRAS,CAPN1,ACTA1,EGFR,CAPNS1,PRKAR2B,EGF,MYL2,MYLK,CAPNS2,PXN,CXCR3,PTK2,ITGA1,PRKACB,PRKACG,EZR,ITGB1,PRKAR1A,PRKAR2A,PRKAR1B,MAPK3,TLN1,MAPK1
BIOCARTA_PPARA_PATHWAY	JUN,NR2F1,PPARGC1A,PRKCB,PRKCA,PRKAR2B,TNF,APOA2,APOA1,CD36,FAT1,CREBBP,INS,NR1H3,ME1,NCOR2,NCOR1,NOS2,HSPA1A,PTGS2,HSD17B4,RXRA,RB1,DUT,CITED2,CPT1B,MRPL11,STAT5B,MAPK3,STAT5A,NFKBIA,MYC,MAPK1,FRA8B,LPL,FABP1,EP300,RELA,NRIP1,DUSP1,PPARA,NCOA1,SRA1,HSP90AA1,PDGFA,EHHADH,PRKACB,PRKACG,SP1,MED1,PIK3CA,PRKAR1A,PRKAR2A,PRKAR1B,ACOX1,NR0B2,PIK3CG,PIK3R1
BIOCARTA_ETS_PATHWAY	JUN,CSF1R,NCOR2,HRAS,CSF1,SIN3A,E2F1,DDX20,E2F4,HDAC5,SIN3B,RBL2,ETS1,HDAC2,RBL1,ETS2,FOS,ETV3
BIOCARTA_MONOCYTE_PATHWAY	SELL,SELP,ITGA4,ITGB1,ITGB2,PECAM1,SELE,ITGAL,CD44,ITGAM,ICAM1
BIOCARTA_MTOR_PATHWAY	PTEN,PDK2,TSC2,PDPK1,EIF3A,EIF4G3,AKT1,MTOR,PIK3CA,EIF4G2,MKNK1,RPS6KB1,FKBP1A,EIF4G1,TSC1,EIF4A1,PPP2CA,EIF4A2,EIF4B,EIF4E,EIF4EBP1,PIK3R1,RPS6
BIOCARTA_IGF1R_PATHWAY	HRAS,RAF1,SHC1,PRKAR2B,MAP2K1,PRKACB,PRKACG,AKT1,PIK3CA,IGF1R,GRB2,PRKAR1A,PRKAR2A,PRKAR1B,ADCY1,IRS1,MAPK3,YWHAH,BAD,PIK3R1,SOS1,RPS6KA1,MAPK1
BIOCARTA_PITX2_PATHWAY	WNT1,EP300,LDB1,GSK3B,APC,DVL1,CTNNB1,MED1,FZD1,AXIN1,CREBBP,LEF1,HDAC1,PITX2,TRRAP
BIOCARTA_NGF_PATHWAY	CSNK2A1,JUN,HRAS,MAPK8,RAF1,SHC1,ELK1,MAP2K1,PIK3CA,PLCG1,GRB2,NGF,MAPK3,NGFR,FOS,PIK3CG,PIK3R1,SOS1
BIOCARTA_VIP_PATHWAY	EGR2,CALM2,CHUK,LOC124827,RELA,CALM1,PRKAR2B,PPP3CC,CYCSP35,LOC147908,MAP3K1,GNAQ,PRKACB,PRKACG,PPP3CB,EGR3,PPP3CA,PLCG1,VIPR2,PRKAR1A,PRKAR2A,VIP,PRKAR1B,CALM3,NFATC2,NFKB1,NFATC1,NFKBIA,MYC

BIOCARTA_NFAT_PATHWAY	MEF2C,CAMK1G,CALM2,F2,RAF1,LOC124827,CALM1,PRKAR2B,IGF1,PPP3CC,FGF2,CREBBP,LOC147908,CYCSP35,NKX2-5,CTF1,MAP2K1,AKT1,EDN1,RPS6KB1,MAPK3,CAMK1,MAPK1,HRAS,MAPK8,ACTA1,NFATC4,CSNK1A1,MAPK14,NPPA,NFATC3,GSK3B,GATA4,CALR,CAMK4,HAND1,PRKACB,PRKACG,ELSPBP1,PPP3CB,PPP3CA,PIK3CA,MYH2,FKBP1A,LIF,AGT,PRKAR1A,PRKAR2A,PRKAR1B,HBEGF,CALM3,NFATC2,NFATC1,PIK3CG,HAND2,PIK3R1
BIOCARTA_NTHI_PATHWAY	MAPK11,CHUK,MAPK14,MAP2K3,EP300,RELA,NR3C1,TNF,IKBKB,MAP2K6,MAP3K7,DUSP1,MYD88,CREBBP,SMAD3,SMAD4,MAP3K14,TGFBR2,IL1B,TLR2,NFKB1,TGFBR1,NFKBIA,IL8
BIOCARTA_NFKB_PATHWAY	IKBKG,CHUK,MAP3K1,RELA,TNF,IKBKB,IL1A,MAP3K7,TNFRSF1B,TNFRSF1A,TRAF6,MYD88,FADD,TLR4,RIPK1,TNFAIP3,TAB1,MAP3K14,IL1R1,NFKB1,IRAK1,TRADD,NFKBIA
BIOCARTA_NOS1_PATHWAY	GRIN1,GRIN2A,CALM2,GRIN2B,GRIN2C,LOC124827,DLG4,GRIN2D,PRKCB,PRKCA,PRKAR2B,CALM1,NOS1,PRKACB,PRKACG,PPP3CB,PPP3CC,PPP3CA,PRKAR1A,PRKAR2A,PRKAR1B,CALM3,LOC147908,CYCSP35
BIOCARTA_NO2IL12_PATHWAY	IL12RB1,CD4,IL12B,IL12RB2,STAT4,NOS2,IL12A,CD2,CD3D,CD3E,TYK2,CD3G,JAK2,CCR5,IFNG,CD247,CXCR3
BIOCARTA_RARRXR_PATHWAY	NCOR2,KAT2B,ERCC3,RARA,RXRA,HDAC3,NCOA3,NCOA2,NCOA1,GTF2F1,TBP,GTF2E1,GTF2A1,POLR2A,GTF2B
BIOCARTA_NUCLEARRS_PATHWAY	CYP2E1,ABCB4,ABCB1,RARA,PPARG,PPARD,PPARA,ABCB11,NR0B2,NR1I3,ABCC3,NR1H4,CYP1A2,NR1H3,IDDM11
BIOCARTA_ARENRF2_PATHWAY	JUN,MAPK8,MAPK14,PRKCB,PRKCA,MAFK,FXYD2,KEAP1,CREB1,MAFG,MAFF,FOS,MAPK1
BIOCARTA_P38MAPK_PATHWAY	MEF2C,MAX,MEF2D,HRAS,MEF2BNB-MEF2B,MAPK14,MAPKAPK5,MEF2A,STAT1,SHC1,ELK1,MAPKAPK2,HSPB1,HSPB2,TGFB2,MAP2K4,MKNK1,TGFB1,TRAF2,RIPK1,DDIT3,ATF2,TGFBR1,TRADD,RAPGEF2,HMGN1,TGFB3,MAP3K5,RPS6KA5,PLA2G4A,MAP3K1,MAP3K9,CREB1,MAP2K6,MAP3K7,DAXX,GRB2,RAC1,MYC,CDC42
BIOCARTA_P53_PATHWAY	CCND1,BCL2,E2F1,APAF1,BAX,CDK2,CDK4,MDM2,RB1,CDKN1A,TP53,GADD45A,ATM,TIMP3,PCNA,CCNE1
BIOCARTA_PDGF_PATHWAY	JUN,CSNK2A1,SRF,HRAS,MAPK8,STAT3,RAF1,PRKCB,STAT4,ELK1,PRKCA,SHC1,STAT1,STAT2,MAP2K4,PDGFA,MAP3K1,PDGFRA,MAP2K1,JAK1,RASA1,PIK3CA,PLCG1,GRB2,STAT5B,MAPK3,STAT5A,FOS,STAT6,PIK3CG,PIK3R1,SOS1
BIOCARTA_CCR5_PATHWAY	JUN,CALM2,MAPK8,LOC124827,PRKCB,MAPK14,PRKCA,CALM1,GNAQ,CCL2,CXCL12,CCL4,CCR5,PLCG1,CALM3,CXCR4,PTK2B,FOS,LOC147908,CYCSP35
BIOCARTA_PTDINS_PATHWAY	BTK,GSK3B,PDPK1,GSK3A,AKT1,PFKM,PFKL,RPS6KB1,ARHGEF2,VAV2,PRKCZ,JAG1,PLCG1,ARF1,AP2A1,BAD,EEA1,RAB5A,PFKP,LYN,RAC1,AP2M1,PRKCE
BIOCARTA_PLCE_PATHWAY	PLCE1,PRKAR1A,PTGER1,PRKAR2A,PRKAR2B,PRKAR1B,ADCY1,PRKACB,PRKACG,RAP2B,GNAS,ADRB2
BIOCARTA_EDG1_PATHWAY	PLCB1,PRKCB,PRKCA,SPHKAP,GNAI1,GNGT1,RHOA,ADCY1,SPHK1,SRC,PTK2,PDGFA,PDGFRA,SMPD2,S1PR1,ITGB3,AKT1,PIK3CA,ASAH1,ITGAV,SMPD1,GNB1,MAPK3,PIK3CG,PIK3R1,RAC1,MAPK1
BIOCARTA_CDK5_PATHWAY	CDK5,HRAS,CDK5R1,MAP2K2,EGR1,RAF1,NGF,MAP2K1,MAPK3,NGFR,MAPK1
BIOCARTA_MYOSIN_PATHWAY	PLCB1,PPP1R12B,PRKCB,PRKCA,ARHGEF6,ARHGEF4,GNA12,ARHGEF17,GNA13,ARHGEF11,ARHGEF3,ARHGEF18,MYL2,ARHGEF15,GNGT1,ARHGEF16,MYLK,PKN1,ROCK1,ARHGEF10,MYL7,ARHGEF7,ARHGAP5,ARHGEF12,GNAQ,ARHGEF9,ARHGEF2,GNB1,ARHGEF1,ARHGEF5,ARHGEF19
BIOCARTA_PLATELETAPP_PATHWAY	F9,F2,COL4A1,COL4A2,COL4A3,COL4A4,SERPINE1,APP,PLG,PLAT,COL4A6,F11,COL4A5,PLAU
BIOCARTA_PS1_PATHWAY	WNT1,NOTCH1,GSK3B,APC,BTRC,PSEN1,DVL1,CTNNB1,HNF1A,DLL1,FZD1,ADAM17,RBPJ,AXIN1
BIOCARTA_PROTEASOME_PATHWAY	PSMD14,RPN1,PSMC3,PSMD12,PSMA1,PSMD6,PSMA5,RPN2,PSMA4,PSMA3,PSMA2,PSMC2,PSMB3,UBA1,PSMB2,PSMB5,PSMB4,PSMD11,PSMB7,PSMB6,UBE2A,UBE3A,PSMA6,PSMA7,PSMB1,PSMD8,PSMC4,PSMC6
BIOCARTA_AKAPCENTROSOME_PATHWAY	PCNT,PRKAR2B,PRKACB,PRKACG,NUP85,CDK1,PRKAG1,RHOA,PPP2CA,PRKAR2A,PPP1CA,MAP2,PKN1,AKAP9,PRKCE

BIOCARTA_PTEN_PATHWAY	PTK2,PTEN,PDK2,SHC1,FOXO3,PDPK1,BCAR1,CDKN1B,ILK,AKT1,PIK3CA,ITGB1,FASLG,GRB2,MAPK3,PIK3R1,SOS1,MAPK1
BIOCARTA_RAB_PATHWAY	RAB27A,RAB8A,RAB9A,RAB2A,RAB6A,RAB1A,ACTA1,RAB4A,RAB5A,RAB7A,RAB3A,RAB11A
BIOCARTA_RAC1_PATHWAY	CDK5R1,PPP1R12B,PDGFRA,MAP3K1,NCF2,ARFIP2,VAV1,WASF1,PAK1,RALBP1,CHN1,CFL1,PIK3CA,CDK5,LIMK1,MYL2,RPS6KB1,MYLK,PLD1,PIK3CG,TRIO,RAC1,PIK3R1
BIOCARTA_RAS_PATHWAY	CASP9,HRAS,FOXO4,CHUK,RALA,RAF1,BCL2L1,ELK1,RELA,MAP2K1,RALBP1,RALGDS,AKT1,PIK3CA,RHOA,PLD1,MAPK3,BAD,NFKB1,PIK3CG,RAC1,PIK3R1,CDC42
BIOCARTA_NKCELLS_PATHWAY	KLRC3,KLRD1,KLRC1,IL18,KLRC2,MAP2K1,VAV1,PAK1,LAT,PIK3CA,KLRC4,ITGB1,SYK,MAPK3,PTK2B,B2M,PTPN6,RAC1,PIK3R1,HLA-A
BIOCARTA_RB_PATHWAY	MYT1,MAPK14,CHEK1,CDK2,CDK4,WEE1,RB1,TP53,CDK1,CDC25B,CDC25C,ATM,YWHAH
BIOCARTA_CHREBP2_PATHWAY	YWHAQ,GCK,PRKAR2B,PPP2R2D,PPP2R2A,PPP2R2B,MLX,MLXIPL,FASN,PRKAB2,PPP2CB,PRKAB1,PPP2CA,PRKAA2,PPP2R1A,PRKAA1,PPP2R1B,PRKAG2,YWHAB,PRKACA,PRKACB,PRKACG,PRKAG3,PPP2R5A,PPP2R4,PPP2R3A,PPP2R2C,PRKAG1,PPP2R5E,PPP2R5D,PRKAR1A,PPP2R5C,PRKAR2A,PPP2R5B,ACACA,PRKAR1B,PPP2R3B,YWHAZ,YWHAH,PKLR,YWHAG,YWHAE
BIOCARTA_BAD_PATHWAY	IL3RA,IL3,PRKAR2B,IGF1,CSF2RB,IGF1R,KITLG,ADCY1,BAD,BCL2,BCL2L1,BAX,KIT,PRKACB,PRKACG,AKT1,PIK3CA,PRKAR1A,PRKAR2A,PRKAR1B,MAPK3,YWHAH,PIK3CG,PIK3R1,MAPK1,RPS6KA1
BIOCARTA_CK1_PATHWAY	CDK5R1,PLCB1,CSNK1D,PRKAR2B,PRKACB,PRKACG,GRM1,PPP3CA,CDK5,PPP2CA,PRKAR1A,PRKAR2A,PPP1CA,PRKAR1B,DRD1,DRD2,PPP1R1B
BIOCARTA_EIF2_PATHWAY	EIF5,EIF2AK1,PPP1CA,EIF2S3,GSK3B,EIF2S2,EIF2S1,EIF2B5,EIF2AK2,EIF2AK3,EIF2AK4
BIOCARTA_EIF4_PATHWAY	PTEN,PDK2,PRKCB,MAPK14,PRKCA,PDPK1,GHR,EIF4G3,AKT1,MTOR,PIK3CA,EIF4G2,MKNK1,RPS6KB1,EIF4G1,EIF4A1,EIF4A2,MAPK3,EIF4E,IRS1,EIF4EBP1,PIK3R1,PABPC1,MAPK1
BIOCARTA_STEM_PATHWAY	CSF2,CD4,CSF1,EPO,IL3,IL7,CD8A,CSF3,IL4,IL5,IL9,IL6,IL8,IL11,IL2
BIOCARTA_P27_PATHWAY	E2F1,TFDP1,NEDD8,CDK2,CDKN1B,RB1,SKP2,SKP1,CUL1,RBX1,UBE2M,CKS1B,CCNE1
BIOCARTA_PGC1A_PATHWAY	MEF2C,MEF2D,CALM2,CAMK1G,MEF2BNB-MEF2B,MEF2A,PPARGC1A,LOC124827,CALM1,SLC2A4,PPP3CC,HDAC5,PPARA,ESRRA,CYCSP35,LOC147908,CAMK4,CAMK2A,CAMK2B,CAMK2D,CAMK2G,PPP3CB,PPP3CA,YWHAH,CALM3,CAMK1
BIOCARTA_PML_PATHWAY	HRAS,PAX3,PRAM1,TNF,RARA,PML,RB1,TNFRSF1B,TP53,TNFRSF1A,DAXX,FAS,FASLG,CREBBP,SUMO1,SP100,SIRT1
BIOCARTA_DREAM_PATHWAY	JUN,PRKAR2B,PRKACB,PRKACG,CREB1,CREM,OPRK1,PRKAR1A,PRKAR2A,PRKAR1B,MAPK3,POLR2A,FOS,KCNIP3
BIOCARTA_LEPTIN_PATHWAY	LEPR,PRKAG1,PRKAB2,CPT1A,PRKAB1,PRKAA2,LEP,PRKAA1,ACACA,PRKAG3,PRKAG2
BIOCARTA_RHO_PATHWAY	PPP1R12B,GSN,VCL,ARHGEF11,CFL1,LIMK1,MYL2,DIAPH1,MYLK,RHOA,OPHN1,ROCK1,SRC,ARHGAP4,ARHGAP1,ARHGAP6,ARHGAP5,PIP5K1A,PIP5K1B,ARPC4,ARPC5,ARPC1A,BAIAP2,ACTR2,ACTR3,ARHGEF1,ARPC1B,ARHGEF5,ARPC3,TLN1,ARPC2,PFN1
BIOCARTA_AKAP13_PATHWAY	PRKAG1,LPAR2,RHOA,PRKAR2A,PRKAR2B,AKAP13,GNA12,PRKACB,GNA13,PRKACG,LPAR1,LPAR3
BIOCARTA_ATRBRCA_PATHWAY	CHEK2,TREX1,BRCA2,MRE11A,RAD17,NBN,BRCA1,RAD9A,FANCE,CHEK1,FANCG,TP53,HUS1,RAD1,ATR,ATM,RAD51,FANCF,RAD50,FANCC,FANCD2
BIOCARTA_CARDIACEGF_PATHWAY	JUN,EDNRB,HRAS,PRKCB,EGFR,PRKCA,RELA,ADAM12,EGF,EDN1,EDNRA,AGT,PLCG1,RHOA,AGTR1,FOS,NFKB1,MYC
BIOCARTA_HER2_PATHWAY	ERBB4,HRAS,IL6R,ERBB3,STAT3,IL6ST,RAF1,SHC1,EP300,EGFR,MAP2K1,ESR1,PIK3CA,CARM1,GRIP1,GRB2,MAPK3,PIK3CG,PIK3R1,IL6,SOS1,MAPK1
BIOCARTA_ERK5_PATHWAY	MEF2C,MEF2D,HRAS,MEF2BNB-MEF2B,MEF2A,SHC1,CREB1,AKT1,PIK3CA,PLCG1,GRB2,MAPK3,MAPK7,PIK3CG,NTRK1,PIK3R1,RPS6KA1,MAPK1

BIOCARTA_MAL_PATHWAY	ROCK1,SRF,HRAS,MAP4K2,MAPK8,ACTA1,MAP2K2,RAF1,MAP3K1,MAP2K1,MAL,HNF1A,LIMK1,DIAPH1,RHOA,MAPK3,RAC1,CDC42,MAPK1
BIOCARTA_MEF2D_PATHWAY	CAPN2,MEF2D,CABIN1,CALM2,LOC124827,PRKCB,PRKCA,CAPNS1,EP300,CALM1,PPP3CB,PPP3CC,PPP3CA,TRB@,TRA@,HDAC1,CALM3,HDAC2,NFATC2,NFATC1,CAPNS2,LOC147908,CYCSP35
BIOCARTA_MITOCHONDRIA_PATHWAY	CASP9,CASP8,CASP7,BCL2,BID,BIK,BCL2L1,BIRC2,APAF1,BAX,BIRC3,XIAP,CASP6,CASP3,DFFA,DIABLO,CYCS,DFFB,ENDOG,BAK1,AIFM1
BIOCARTA_ACH_PATHWAY	SRC,PTK2,TERT,CHRNG,FOXO3,RAPSN,AKT1,PIK3CA,MUSK,FASLG,CHRNB1,YWHAH,BAD,PTK2B,PIK3CG,PIK3R1
BIOCARTA_PARKIN_PATHWAY	LOC93486,SNCA,SEPT5,SNCAIP,UBE2G2,UBE2G1,UBE2L6,PARK2,GPR37,UBE2L3,UBE2E2,SUMO1,UBE2F
BIOCARTA_CDC42RAC_PATHWAY	WASL,PDGFRA,PAK1,ARPC4,PIK3CA,ARPC5,ARPC1A,ACTR2,RHOA,ACTR3,ARPC1B,ARPC3,ARPC2,RAC1,PIK3R1,CDC42
BIOCARTA_RANMS_PATHWAY	RANGAP1,KIF15,NUMA1,KPNB1,KPNA2,RCC1,TPX2,RAN,RANBP1,AURKA
BIOCARTA_BARR_MAPK_PATHWAY	ARRB1,GNGT1,PLCB1,GNB1,MAP2K2,RAF1,MAP2K1,ADCY1,MAPK3,GNAS,DNM1,MAPK1
BIOCARTA_TOB1_PATHWAY	TOB1,CD28,CD3D,CD3E,CD3G,TGFB2,TGFB1,TOB2,IFNG,TRB@,TRA@,CD247,SMAD3,TGFBR3,IL4,SMAD4,TGFBR2,TGFBR1,IL2RA,TGFB3,IL2
BIOCARTA_BARRESTIN_SRC_PATHWAY	SRC,HRAS,PLCB1,MAP2K2,RAF1,MAP2K1,GNAS,DNM1,ARRB1,GNGT1,GNB1,ADCY1,MAPK3,HCK,MAPK1
BIOCARTA_NKT_PATHWAY	CSF2,CD4,CD28,CCR2,CCR1,CCL3,IFNGR2,TGFB2,TGFB1,CCL4,IFNG,IFNGR1,CXCR4,TGFB3,CXCR3,IL2,CD40LG,IL12RB1,IL12B,IL12RB2,IL12A,CCR3,CCR4,CCR5,CCR7,IL4,IL4R,IL5,IL18R1
BIOCARTA_IL1R_PATHWAY	JUN,MAPK8,CHUK,MAPK14,RELA,TNF,TGFB2,TRAF6,MYD88,TGFB1,TOLLIP,IFNB1,IFNA1,ECSIT,IL1RAP,MAP3K14,IRAK2,IL1B,IL1R1,IRAK1,IL1RN,TGFB3,MAP2K3,MAP3K1,IRAK3,IKBKB,IL1A,MAP2K6,MAP3K7,TAB1,NFKB1,NFKBIA,IL6
BIOCARTA_MET_PATHWAY	JUN,HRAS,MAPK8,STAT3,ACTA1,PTPN11,RAF1,ELK1,HGF,MET,PXN,SRC,RAP1A,PTEN,PTK2,ITGA1,RAP1B,MAP2K2,MAP2K1,PAK1,DOCK1,MAP4K1,RASA1,CRK,PIK3CA,RAPGEF1,ITGB1,CRKL,GAB1,GRB2,MAPK3,PTK2B,FOS,PIK3CG,PIK3R1,SOS1,MAPK1
BIOCARTA_GPCR_PATHWAY	JUN,HRAS,CALM2,NFATC4,RAF1,LOC124827,PRKCB,ELK1,PRKCA,PRKAR2B,CALM1,NFATC3,PPP3CC,GNAI1,GNGT1,ADCY1,LOC147908,CYCSP35,MAP2K1,GNAQ,PRKACB,PRKACG,GNAS,CREB1,PPP3CB,PPP3CA,RPS6KA3,GNB1,PLCG1,PRKAR1A,PRKAR2A,PRKAR1B,MAPK3,CALM3,NFATC2,FOS,NFATC1
BIOCARTA_IGF1MTOR_PATHWAY	PTEN,PDK2,EIF2S3,GSK3B,PDPK1,EIF2S1,IGF1,AKT1,MTOR,PIK3CA,IGF1R,RPS6KB1,PPP2CA,EIF4E,EIF4EBP1,EIF2S2,EIF2B5,INPPL1,PIK3R1,RPS6
BIOCARTA_SODD_PATHWAY	BAG4,CASP8,TRAF2,FADD,RIPK1,TNF,BIRC3,TNFRSF1B,TRADD,TNFRSF1A
BIOCARTA_SHH_PATHWAY	DYRK1A,SHH,GLI1,PRKAR2B,GSK3B,SUFU,PRKACB,PRKACG,GLI2,GLI3,PTCH1,SMO,PRKAR1A,PRKAR2A,PRKAR1B,DYRK1B
BIOCARTA_PTC1_PATHWAY	MNAT1,CDC25B,SHH,CDK7,CDC25C,XPO1,CDC25A,CCNB1,PTCH1,CCNH,CDK1
BIOCARTA_SPRY_PATHWAY	SRC,HRAS,SPRY2,RAF1,SPRY1,EGFR,SHC1,MAP2K1,CBL,SPRY4,EGF,RASA1,GRB2,MAPK3,SPRY3,PTPRB,SOS1,MAPK1
BIOCARTA_BARRESTIN_PATHWAY	PPARA,ARRB1,GNGT1,PLCB1,GNB1,ADCY1,AP2A1,GNAS,DNM1,AP2M1
BIOCARTA_STATHMIN_PATHWAY	CAMK4,CAMK2A,CAMK2B,CAMK2D,MAPK13,PRKAR2B,CAMK2G,CD2,PRKACB,CD3D,PRKACG,CD3E,CD3G,CDK1,PRKAR1A,PRKAR2A,CD247,PRKAR1B,CCNB1
BIOCARTA_HSP27_PATHWAY	MAPKAPK3,CASP9,BCL2,ACTA1,APAF1,TNF,MAPKAPK2,IL1A,CASP3,HSPB1,HSPB2,DAXX,CYCS,FAS,FASLG
BIOCARTA_TCR_PATHWAY	JUN,ZAP70,CALM2,PRKCB,LOC124827,RAF1,ELK1,PRKCA,SHC1,CALM1,PPP3CC,MAP2K4,CYCSP35,PTPN7,LOC147908,MAP3K1,MAP2K1,VAV1,RASA1,GRB2,MAPK3,NFKB1,NFKBIA,RAC1,SOS1,HRAS,MAPK8,NFATC4,NFATC3,RELA,LAT,CD247,CD3D,CD3E,CD3G,PPP3CB,PPP3CA,PIK3CA,TRB@,PLCG1,TRA@,CALM3,FYN,NFATC2,NFATC1,FOS,PIK3CG,LCK,PIK3R1
BIOCARTA_TCYTOTOXIC_PATHWAY	CD28,CD2,CD3D,CD3E,CD8A,CD3G,ITGAL,ICAM1,THY1,TRB@,ITGB2,TRA@,CD247,PTPRC
BIOCARTA_THELPER_PATHWAY	CD4,CD28,CD2,CD3D,CD3E,CD3G,ITGAL,ICAM1,THY1,TRB@,ITGB2,TRA@,CD247,PTPRC
BIOCARTA_TALL1_PATHWAY	TNFRSF13C,MAPK8,CHUK,MAPK14,RELA,TNFSF13,TNFSF13B,TNFRSF13B,TRAF6,TRAF5,TRAF3,TRAF2,TNFRSF17,MAP3K14,NFKB1

BIOCARTA_TEL_PATHWAY	BCL2,TERT,TERF1,EGFR,PRKCA,TEP1,KRAS,RB1,AKT1,TP53,IGF1R,TNKS,HSP90AA1,PPP2CA,XRCC5,POLR2A,XRCC6,MYC
BIOCARTA_TGFB_PATHWAY	EP300,MAP2K1,APC,MAP3K7,ZFYVE9,TGFB2,TGFB1,CREBBP,MAPK3,TAB1,SMAD3,SMAD4,TGFBR2,SKIL,TGFBR1,SMAD7,TGFB3,CDH1,SMAD2
BIOCARTA_TH1TH2_PATHWAY	CD40LG,IL12RB1,CD40,IL12B,IL12RB2,CD86,IL12A,CD28,IL18,IFNGR2,IFNG,IFNGR1,IL4,IL4R,IL2RA,HLA-DRB1,HLA-DRA,IL2,IL18R1
BIOCARTA_41BB_PATHWAY	JUN,MAP3K5,MAPK8,CHUK,MAPK14,MAP3K1,RELA,TNFRSF9,IKBKB,MAP4K5,IFNG,TRAF2,ATF2,IL4,NFKB1,NFKBIA,IL2
BIOCARTA_KREB_PATHWAY	FH,SDHA,OGDH,SUCLA2,CS,ACO2,IDH2,MDH1
BIOCARTA_CTLA4_PATHWAY	PTPN11,CD80,CD86,CD28,CD3D,CD3E,CD3G,ITK,PIK3CA,ICOSLG,TRB@,TRA@,GRB2,CD247,ICOS,PIK3R1,LCK,HLA-DRB1,HLA-DRA,CTLA4,IL2
BIOCARTA_LONGEVITY_PATHWAY	HRAS,SOD1,SOD2,SOD3,FOXO3,SHC1,GHR,IGF1,CAT,AKT1,PIK3CA,IGF1R,GH1,PIK3CG,PIK3R1
BIOCARTA_SARS_PATHWAY	LDHC,CKM,FBL,LDHA,GPT,MAPK14,EIF4E,NCL,ANPEP,LDHB
BIOCARTA_PAR1_PATHWAY	F2,PLCB1,PPP1R12B,F2R,PRKCB,PRKCA,ARHGEF6,ARHGEF4,ARHGEF17,GNA12,GNA13,ARHGEF11,ARHGEF3,GNAI1,ARHGEF18,ARHGEF15,GNGT1,ARHGEF16,RHOA,ADCY1,F2RL3,ROCK1,ARHGEF10,ARHGEF7,ARHGEF12,GNAQ,MAP3K7,ARHGEF9,PIK3CA,ARHGEF2,GNB1,ARHGEF1,ARHGEF5,ARHGEF19,PTK2B,PIK3CG,PIK3R1
BIOCARTA_STRESS_PATHWAY	JUN,LTA,IKBKG,MAP4K2,MAPK8,CHUK,MAPK14,RELA,TNF,MAP2K4,CRADD,TRAF2,TANK,RIPK1,MAP3K14,TRADD,MAP2K3,MAP3K1,IKBKB,MAP2K6,CASP2,TNFRSF1A,ATF1,NFKB1,NFKBIA
BIOCARTA_TNFR1_PATHWAY	JUN,BAG4,CASP8,MAPK8,TNF,PAK2,LMNA,SPTAN1,LMNB1,CRADD,MAP2K4,TRAF2,FADD,RIPK1,TRADD,LMNB2,MADD,MAP3K1,PAK1,MAP3K7,RB1,CASP3,TNFRSF1A,CASP2,DFFA,DFFB,ARHGDIB,PRKDC,PARP1
BIOCARTA_TNFR2_PATHWAY	IKBKG,LTA,CHUK,IKBKAP,MAP3K1,RELA,IKBKB,TNFRSF1B,DUSP1,TRAF3,TRAF2,TANK,RIPK1,TNFAIP3,MAP3K14,NFKB1,TRAF1,NFKBIA
BIOCARTA_TOLL_PATHWAY	JUN,IKBKG,TLR10,MAPK8,TIRAP,CHUK,MAPK14,ELK1,RELA,TLR9,EIF2AK2,TRAF6,PPARA,MAP2K4,MYD88,TOLLIP,ECSIT,TAB2,PGLYRP1,MAP3K14,IRAK1,TLR6,MAP2K3,MAP3K1,LY96,IKBKB,MAP2K6,MAP3K7,CD14,TLR3,TLR4,TAB1,TLR7,FOS,TLR2,NFKB1,NFKBIA
BIOCARTA_TPO_PATHWAY	CSNK2A1,JUN,HRAS,STAT3,RAF1,PRKCB,STAT1,SHC1,PRKCA,MAP2K1,MPL,RASA1,JAK2,PIK3CA,PLCG1,GRB2,STAT5B,MAPK3,STAT5A,THPO,FOS,PIK3CG,PIK3R1,SOS1
BIOCARTA_CREB_PATHWAY	HRAS,MAPK14,PRKCB,PRKCA,PRKAR2B,ADCY1,CAMK2A,CAMK2B,RPS6KA5,CAMK2D,CAMK2G,PRKACB,PRKACG,GNAS,CREB1,AKT1,PIK3CA,GRB2,PRKAR1A,PRKAR2A,PRKAR1B,MAPK3,PIK3R1,RAC1,SOS1,MAPK1,RPS6KA1
BIOCARTA_CARM1_PATHWAY	EP300,PRKAR2B,PRKACB,RARA,PRKACG,CREB1,RXRA,NCOA3,CARM1,PRKAR1A,CREBBP,PRKAR2A,PRKAR1B
BIOCARTA_TFF_PATHWAY	CASP9,HRAS,PTK2,SHC1,EGFR,APAF1,GHR,AKT1,CTNNB1,PIK3CA,CYCS,ITGB1,GH1,RHOA,GRB2,MAPK3,BAD,PIK3CG,PIK3R1,SOS1,MAPK1
BIOCARTA_TRKA_PATHWAY	PIK3CA,HRAS,PLCG1,PRKCB,NGF,GRB2,SHC1,PRKCA,AKT1,PIK3R1,NTRK1,SOS1
BIOCARTA_ARF_PATHWAY	TWIST1,E2F1,POLR1C,CDKN2A,MDM2,ABL1,RB1,TP53,POLR1D,PIK3CA,TBX2,POLR1A,POLR1B,PIK3CG,PIK3R1,RAC1,MYC
BIOCARTA_UCALPAIN_PATHWAY	SRC,PTK2,CAPN1,ITGA1,ACTA1,CAPNS1,ITGB3,SPTAN1,EZR,ITGB1,RHOA,TLN1,CAPNS2,RAC1,ACTN1,PXN,ACTN2,ACTN3
BIOCARTA_VEGF_PATHWAY	HRAS,PRKCB,SHC1,EIF1,PRKCA,VEGFA,EIF2B4,ELAVL1,EIF2B2,EIF2B3,EIF2S2,EIF2B5,PXN,PTK2,NOS3,EIF2B1,EIF2S3,FLT1,HIF1A,VHL,KDR,EIF2S1,EIF1AX,FLT4,PIK3CA,ARNT,PLCG1,PIK3CG,PIK3R1
BIOCARTA_VITCB_PATHWAY	COL4A1,COL4A2,COL4A3,COL4A4,COL4A6,COL4A5,P4HB,SLC2A3,SLC23A2,SLC23A1,SLC2A1
BIOCARTA_WNT_PATHWAY	CSNK2A1,WNT1,CSNK1D,CSNK1A1,GSK3B,BTRC,WIF1,CTNNB1,FZD1,PPP2CA,CREBBP,LEF1,TLE1,CCND1,CTBP1,NLK,APC,MAP3K7,DVL1,PPARD,FRAT1,AXIN1,HDAC1,TAB1,SMAD4,MYC
BIOCARTA_ACTINY_PATHWAY	ABI2,WASF2,WASL,ACTA1,PIR,WASF1,ARPC4,PSMA7,ARPC5,ARPC1A,ACTR2,ACTR3,ARPC1B,ARPC3,NCKAP1,WASF3,ARPC2,RAC1,NTRK1,NCK1