

Table S4. Significantly enriched functional groups for 174 hypermethylated genes in Ingenuity Pathway Analysis

Diseases or Functions Annotation	p-Value	Gene num	Genes
Cell Death			
cell death of immune cells	1.37E-08	25	ADAM8, ARRB1, BCL2L11, CD300A, CD7, DAPK1, DLL1, FCER1G, GSN, IRF8, IRS2, ITGAM, LEF1, MVP, MX1, NFATC1, PAWR, PCTP, PTPN6, PYCARD, TNFRSF18, TNFRSF4, TNFSF11, TWSG1, ZBTB16
necrosis	4.84E-06	51	ADAM8, ADAMTS1, ARRB1, ASNS, BCL2L11, CD300A, CD7, CTBP2, CTH, CYB5A, DAPK1, DDX3X, DLL1, FCER1G, GAS1, GNLY, GPX7, GSN, HIC1, IGF1R, INPP5A, IRF8, IRS2, ITGAM, ITGAV, LEF1, MSRB2, MVP, MX1, MYO6, NACC2, NEK6, NFATC1, PAWR, PCTP, PDE4B, PIK3IP1, PLAC8, PLK2, PRDX2, PTCH1, PTPN6, PYCARD, RGS3, TMCC3, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, TWSG1, ZBTB16
cell death	3.30E-05	59	ADAM8, ADAMTS1, ARRB1, ASNS, BCL2L11, CD300A, CD7, CTBP2, CTH, CYB5A, DAPK1, DDX3X, DLL1, FCER1G, GAS1, GNLY, GPHN, GPX7, GSN, HIC1, HPGD, IGF1R, IL12RB2, INPP5A, IRF8, IRS2, ITGAM, ITGAV, KLF11, KLRF1, LEF1, MAF, MSRB2, MVP, MX1, MYO6, NACC2, NEK6, NFATC1, PAWR, PCTP, PDE4B, PIK3IP1, PLAC8, PLK2, PRDX2, PTCH1, PTPN6, PYCARD, RGS3, RNF130, TMCC3, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, TSPO, TWSG1, ZBTB16
Cell Activation			
activation of T lymphocytes	4.75E-07	16	BCL2L11, C3AR1, CD7, CRY1, DLL1, FCER1G, IL12RB2, IRF8, ITGAM, ITGAV, NEDD4, PTPN6, PYCARD, TNFRSF18, TNFRSF4, TNFSF11
activation of leukocytes	1.25E-05	20	BCL2L11, C3AR1, CD300A, CD7, CRY1, DLL1, FCER1G, GNLY, IL12RB2, IRF8, ITGAM, ITGAV, KLRF1, MAF, NEDD4, PTPN6, PYCARD, TNFRSF18, TNFRSF4, TNFSF11
cell-surface receptor-linked signal transduction	8.84E-05	10	ADAMTS1, AKAP7, DOK2, FCER1G, GAS1, IL12RB2, ITGAV, PTCH1, PTPN6, TNFSF11
protein kinase cascade	9.55E-04	12	DAPK1, DDX3X, DOK2, IGF1R, ITGAV, NEK6, PLK2, PTPN6, PYCARD, SOCS6, TLE1, TNFSF11
Homeostasis and Differentiation			
cellular homeostasis	5.73E-09	40	ADAMTS1, ARRB1, BCL2L11, C3AR1, CAMK1, CD300A, CD52, CD7, CYB5A, DAPK1, DLL1, DOK2, FCER1G, GNA15, GNLY, GSN, IGF1R, IL12RB2, IRF8, IRS2, ITGAV, LEF1, LXN, MAF, MSRB2, NEDD4, NFATC1, PAWR, PDE4B, PRDX2, PTCH1, PTPN6, PYCARD, TESPA1, THEMIS2, TNFRSF4, TNFSF11, TWSG1, ULK2, ZBTB16
T cell development	1.08E-07	20	ARRB1, BCL2L11, C3AR1, DLL1, DOK2, FCER1G, IGF1R, IL12RB2, IRF8, LEF1, MAF, NFATC1, PRDX2, PTPN6, TESPA1, THEMIS2, TNFRSF4, TNFSF11, TWSG1, ZBTB16
homeostasis of leukocytes	1.12E-07	21	ARRB1, BCL2L11, C3AR1, DLL1, DOK2, FCER1G, IGF1R, IL12RB2, IRF8, LEF1, MAF, NFATC1, PDE4B, PRDX2, PTPN6, TESPA1, THEMIS2, TNFRSF4, TNFSF11, TWSG1, ZBTB16
Proliferation and Cancer			
proliferation of lymphocytes	1.19E-06	23	BCL2L11, CTH, DOK2, FCER1G, IL12RB2, IRF8, IRS2, ITGAM, LEF1, MVP, NFATC1, PAWR, PLEKHA1, PRDX2, PTPN6, PYCARD, SH2B3, TESPA1, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, ZBTB16

proliferation of cells	7.71E-06	64	ADAMTS1, ARHGAP5, ARRB1, ASCL2, ASNS, BCL2L11, C3AR1, CRY1, CTBP2, CTH, DAPK1, DDX3X, DLL1, DOK2, EIF5A2, FCER1G, FHL1, GAS1, GBP2, GNA15, GNLY, GSN, HHEX, HIC1, HPGD, IGF1R, IL12RB2, IRF8, IRS2, ITGAM, ITGAV, KLF11, LEF1, LTBP3, LXN, MVP, MX1, MYH10, NACC2, NFATC1, NREP, NRIP1, PAWR, PCYOX1, PIK3IP1, PLAC8, PLEKHA1, PLK2, PRDX2, PTCH1, PTPN6, PYCARD, SH2B3, SOCS6, TESPA1, TLE1, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, TSPO, ZBTB16, ZFH3, ZSCAN18
cell cycle progression	1.72E-05	26	ARRB1, ASNS, BCL2L11, CEP192, GAS1, GBP2, HHEX, HPGD, IGF1R, IRS2, LEF1, MAP9, MYH10, NEK6, NFATC1, PAWR, PCYOX1, PER3, PLK2, PTCH1, PTPN6, TNFRSF18, TNFSF11, TP53INP1, ZBTB16, ZFH3
hyperplasia	1.26E-04	16	BCL2L11, DOK2, GNA15, GPX7, IGF1R, IL12RB2, IRF8, IRS2, MX1, PAWR, PTCH1, SH2B3, TNFRSF18, TNFRSF4, TNFSF11, ZBTB16
Cancer	8.53E-03	126	ADAM8, ADAMTS1, AKAP7, ALDH5A1, ARHGAP5, ARRB1, ASCL2, ASNS, B3GALNT1, BCL2L11, C3AR1, CAMK1, CD300A, CD52, CEP192, CRY1, CTBP2, CTH, DAPK1, DCBLD1, DDX3X, DLL1, DOCK5, DOK2, DPEP2, ENPP4, FHL1, FILIP1L, GALNT11, GAS1, GBP2, GNA15, GNB4, GNLY, GPHN, GPR114, GPR125, GPR137B, GPX7, GSN, HIC1, HIST2H2BE, HPGD, HSD17B11, IGF1R, IL12RB2, INPP5A, IRF8, IRS2, ITGAM, ITGAV, KIF16B, KLF11, KLRF1, LEF1, LLGL2, LPAR6, LRP12, MAF, MAP9, MSRB2, MVP, MX1, MYH10, MYO6, NAPEPLD, NEDD4, NEK6, NFATC1, NREP, NRIP1, PAM, PATL2, PAWR, PCYOX1, PDE4B, PER3, PIK3IP1, PLEKHA1, PLK2, PRDX2, PSTPIP2, PTCH1, PTPN6, PYCARD, RAB37, RGS3, RHOBTB3, RNF130, RREB1, SBF2, SCRIN1, SERPINB6, SFMBT2, SH2B3, SH3TC1, SLC25A13, SLCO3A1, SLFN12, SOCS6, SPOCK2, SRSF11, SYTL2, TCEAL3, TESPA1, TET2, THEMIS2, TLE1, TMCC3, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, TRIM44, ULK2, ZBTB16, ZFH3, ZFP3, ZNF280D, ZNF300, ZNF32, ZNF395, ZNF518A, ZNF518B, ZNF605, ZSCAN18
Motility			
cell movement	5.76E-06	43	ADAM8, ADAMTS1, ARHGAP5, ARRB1, ASNS, C3AR1, CAMK1, CRY1, CTBP2, DDX3X, DLL1, DOK2, FCER1G, FHL1, GNLY, GSN, HHEX, HIC1, HPGD, IGF1R, IRF8, IRS2, ITGAM, ITGAV, LEF1, MX1, MYH10, NEDD4, NFATC1, NREP, PDE4B, PIK3IP1, PRDX2, PTPN6, PYCARD, RGS3, SH2B3, TNFRSF18, TNFRSF4, TNFSF11, TP53INP1, TSPO, ZBTB16
chemotaxis	2.43E-04	15	ARRB1, C3AR1, FCER1G, GNLY, GSN, IGF1R, ITGAM, ITGAV, LEF1, MYH10, NEDD4, PDE4B, PTPN6, RGS3, TNFSF11
leukocyte migration	1.84E-03	19	ADAM8, ARRB1, C3AR1, CAMK1, FCER1G, GNLY, GSN, ITGAM, ITGAV, NFATC1, PDE4B, PTPN6, PYCARD, RGS3, SH2B3, TNFRSF18, TNFRSF4, TNFSF11, ZBTB16
Regulation of transcription			
activation of DNA endogenous promoter	5.07E-04	22	ARRB1, ASCL2, CRY1, DDX3X, DLL1, HHEX, HIC1, IRF8, KLF11, LEF1, MAF, MYO6, NFATC1, NRIP1, PAWR, PER3, PTCH1, RREB1, TLE1, TNFSF11, ZBTB16, ZFH3
expression of RNA	7.20E-03	33	ARRB1, ASCL2, CRY1, CTBP2, DAPK1, DDX3X, DLL1, HHEX, HIC1, IGF2BP2, IRF8, ITGAM, KLF11, LEF1, MAF, MSRB2, MYO6, NEK6, NFATC1, NRIP1, PAWR, PER3, PLK2, PSTPIP2, PTCH1, PTPN6, RREB1, SH2B3, TLE1, TNFRSF4, TNFSF11, ZBTB16, ZFH3