

Supplementary Material 3:

Details of the significantly enriched GSEA-KEGG pathways in high-risk patients

KEGG Pathways	NES	P value	FDR	Core enriched genes
PATHWAYS_IN_CANCER	1.88	<0.001	0.012	MSH2,DVL3,TPR,CCNE2,TRAF1,MAX,TGFBF1,GLI1,HSP90AA1,SOS2,E2F3,RHOA,PIAS2,PIK3CB,NFKB2,NFKB1,FZD7,TRAF6,RASSF5,TCF7,GRB2,BRCA2,CDKN2A,CTBP1,PTK2,HIF1A,RALGDS,SMAD4,ELOC,CEBPA,NRAS,CUL2,TFG,SMAD3,EGLN3,PIAS1,BID,PTCH1,FADD,PIK3CD,TPM3,MAPK1,GSK3B,RAF1,SKP2,SUFU,XIAP,LEF1,FZD1,FGFR1,VHL,APPL1,MSH6,FZD6,MAPK8,BIRC2,E2F1,CSF2RA,WNT5A,CXCL8,E2F2,CDC42,ITGAV,VEGFA,PRKCA,RALBP1,JAK1,MAP2K2,BIRC3,FGF11,CDK4,SMAD2,TRAF2,KITLG,PIK3CA,FZD3,MDM2,RALB,HRAS,SOS1,STK4,TRAF5,MAPK9,CKS1B,ITGB1,LAMB1,ITGA3,DAPK3,CSF3R,RXRB,RAD51,DVL2,ABL1,BRAF,CASP3,CBLB,PPARD,FN1,TP53,ITGA6,CASP8,AXIN1,ARNT2,RELA,EP300,EGF,DVL1,RB1,LAMA4,RAC2,CDK2,MAPK3,STK36,LAMC1,RUNX1,BAX,CHUK,SP11,FZD2,TGFB2,RALA,CCDC6,CDKN2B,PIAS4,IKBKB,LAMA5,TGFB1,STAT5B,APC,AKT2,HDAC2,CBL,PLCG1,CTNNA1,CREBBP,MECOM,BCR,CTNNB1,CTBP2,VEGFB,RASSF1,MLH1,CRKL,SLC2A1,RBX1,IGF1R,KRAS,BCL2L1,FZD5,ARNT,BIRC5,HSP90AB1,HDAC1,PML,ITGA2,TRAF4,FGFR3,MAP2K1,PPARG,MTOR,PIAS3,TRAF3,RAC1
MTOR_SIGNALING_PATHWAY	1.88	<0.001	0.011	STRADA,MAPK1,RHEB,RPS6KB1,RPTOR,TSC1,MAPK3,RICTOR,EIF4E,PIK3CB,VEGFA,CAB39,RPS6KA3,BRAF,MLST8,PIK3CA,HIF1A,PRKAA2,PRKAA1,RPS6KA1,ULK1,EIF4E2,EIF4B,EIF4EBP1,TSC2,CAB39L,RPS6,PIK3CD,STK11,AKT2,VEGFB,PDPK1,MTOR
P53_SIGNALING_PATHWAY	1.88	<0.001	0.011	GTSE1,CCNB1,CDK1,CHEK1,CCNB2,RRM2,CDK4,CASP8,CDK2,ATR,CDKN2A,APAF1,PPM1D,PIDD1,CCNE2,ATM,CCNG2,CASP3,RCHY1,BAX,TP73,COP1,BID,MDM4,PMAIP1,MDM2,IGFBP3,SFN,SIH1,CCND3,BBC3,PERP,TSC2,TP53,SHISA5,TNFRSF10B,CHEK2,RRM2B
NOTCH_SIGNALING_PATHWAY	1.87	0.002	0.012	HDAC2,DVL3,DTX2,MAML1,KAT2A,DVL2,ADAM17,NCOR2,RBPJ,HDAC1,NCSTN,CTBP1,NOTCH1,NUMBL,EP300,CREBBP,DTX3,CIR1,APH1A,NOTCH2,SNW1,JAG1,DVL1,MAML3,PSENEN,CTBP2,JAG2,MAML2,PSEN1,DTX3L,DLL3,PSEN2,LFNG,DTX4
REGULATION_OF_AUTOPHAGY	1.86	<0.001	0.012	ATG7,ATG3,BECN1,ATG4B,PIK3C3,ATG5,PRKAA2,ATG12,ATG4C,PRKAA1,ULK1,PIK3R4,BECN2
WNT_SIGNALING_PATHWAY	1.85	<0.001	0.014	TBL1XR1,RUVBL1,MAP3K7,DVL3,RHOA,CSNK2A1,CACYBP,PPP3CB,PLCB1,SMAD2,DVL2,AXIN1,VANGL1,CHD8,PLCB3,GSK3B,MAPK9,CSNK1E,NLK,PPP2CA,RAC1,CTBP1,CSNK2A2,SMAD3,FZD6,PPP2R5D,PRKACB,CAMK2G,CUL1,MAPK8,PRKCA,BTRC,EP300,CREBBP,RBX1,NFATC2,ROCK1,FBXW11,FZD3,ROCK2,PPP2R5E,PPP2R5B,PPP3R1,FZD7,CSNK1A1,PPP3CA,PPARD,PRKX,DVL1,SIH1,CCND3,SMAD4,LEF1,FRAT2,VANGL2,CTNNB1,NFATC3,NFAT5,SEN2,FZD1,WNT5A,PORCN,TP53,FZD2,PPP2R1A,APC,CTBP2,FZD5,CTNNBIP1,TCF7,CAMK2D,RAC2,PSEN1,PPP2CB,MMP7,AXIN2,SFRP5,DKK1,PLCB2,CSNK2B,TBL1X,PRKCB,MYC,APC2,PRKCG,NFATC1