

**S1 Table.** 1021 cancer-related gene list

Gene ID									
AKT1	ALK	APC	AR	BRAF	CDK4	CDKN2A	CREBBP	CTNNB1	EGFR
ERBB2	ERBB3	ESR1	FBXW7	FGFR2	FGFR3	FGFR4	GNA11	HRAS	IDH1
IDH2	JAK1	JAK2	KIT	KRAS	MAP2K1	MET	MTOR	NRAS	NTRK3
PDGFRA	PIK3CA	PIK3CB	PTEN	RAF1	RET	ROS1	TP53	NTRK1	ABL1
ACVR1B	AKT2	AKT3	ARAF	ARID1A	ARID1B	ARID2	ASXL1	ATM	ATR
ATRX	AURKA	AURKB	AXIN1	AXIN2	AXL	B2M	BAP1	BARD1	BCL2
BCL2L1	BCOR	BLM	BMPR1A	BRCA1	BRCA2	BRD4	BRIP1	BTK	CARD11
CASP8	CBFB	CBL	CCND1	CCND2	CCND3	CCNE1	CD274	CDC73	CDH1
CDK12	CDK6	CDK8	CDKN1A	CDKN1B	CDKN2B	CDKN2C	CEBPA	CHEK1	CHEK2
CIC	CRKL	CSF1R	CTCF	CTNNA1	CUL3	CYLD	DAXX	DDR1	DDR2
DICER1	DNMT3A	DOT1L	EIF1AX	C11orf30	EP300	EPAS1	EPCAM	EPHA2	EPHA3
EPHA5	EPHB1	EPHB6	ERBB4	ERCC1	ERCC3	ERCC4	ERCC5	ERG	ERRFI1
EXT1	EXT2	EZH2	FAM123B	FAM175A	FANCA	FANCC	FANCD2	FANCE	FANCF
FANCG	FANCL	FANCM	FAS	FAT1	FAT2	FGF19	FGF3	FGF4	FGFR1
FH	FLCN	FLT1	FLT3	FLT4	FOXA1	FOXL2	FOXP1	FUBP1	GALNT12
GATA3	GNAQ	GNAS	GRIN2A	GRM3	HDAC1	HGF	HNF1A	HOXB13	IFNG
IFNGR1	IGF1R	IKBKE	IKZF1	IL7R	INPP4B	IRF2	IRS2	JAK3	JUN
KDM5A	KDM5C	KDM6A	KDR	KEAP1	LRP1B	MAF	MAP2K2	MAP2K4	MAP3K1
MAPK1	MAX	MCL1	MDM2	MDM4	MED12	MEF2B	MEN1	MITF	MLH1
MLH3	MLL	MLL2	MLL3	MPL	MRE11A	MS4A1	MSH2	MSH3	MSH6
MST1R	MUTYH	MYC	MYCL1	MYCN	MYD88	NBN	NCOR1	NF1	NF2
NFE2L2	NFKBIA	NKX2-1	NOTCH1	NOTCH2	NOTCH3	NPM1	NSD1	NTHL1	NTRK2
PALB2	PARK2	PARP1	PAX5	PBRM1	PCK1	PDCD1	PDCD1LG2	PDGFRB	PDK1
PIK3CG	PIK3R1	PIK3R2	PMS1	PMS2	POLD1	POLE	POT1	PPP2R1A	PRDM1
PRKAR1A	PTCH1	PTCH2	PTPN11	PTPRD	RAC1	RAD50	RAD51	RAD51B	RAD51C
RAD51D	RAD52	RAD54L	RARA	RB1	RBM10	RECQL	RECQL4	RHOA	RICTOR
RINT1	RNF43	RPTOR	RUNX1	SDHA	SDHAF2	SDHB	SDHC	SDHD	SERPINB3
SERPINB4	SETD2	SF3B1	SLX4	SMAD2	SMAD3	SMAD4	SMARCA4	SMARCB1	SMO
SOCS1	SOX2	SOX9	SPOP	SRC	STAG2	STAT3	STK11	SUFU	SYK
TBX3	TCF7L2	TERC	TET2	TGFBR2	TMEM127	TMPRSS2	TNFAIP3	TNFRSF14	TOP1
TOP2A	TSC1	TSC2	TSHR	U2AF1	VEGFA	VHL	WRN	WT1	XPO1

XRCC2	ZMAT3	ABCA13	ABCB1	ABCC1	ABCC11	ABCC2	ABCG2	ABL2	ACACA
ACIN1	ACTB	ACTG1	ACTG2	ACVR2A	ACVRL1	ADAM29	ADAMTS5	ADCY1	AFF1
AFF2	AFF3	AHNAK	AKAP9	ALB	AMOT	ANGPT1	ANK3	ANKRD11	ANKRD30A
ANKRD30B	APEX1	APOBEC3B	ARAP3	ARFGEF1	ARFGEF2	ARHGAP29	ARHGAP35	ARID4B	ARID5B
ARNT	ASCL4	ASH1L	ASMTL	ASPM	ASTN1	ASXL2	ATIC	ATP11B	ATP12A
ATP1A1	ATP2B3	BAZ2B	BBC3	BBS9	BCAS1	BCL10	BCL11A	BCL11B	BCL2A1
BCL2L11	BCL3	BCL6	BCL9	BCORL1	BCR	BIRC3	BMPR2	BNC2	BPTF
SHH	SI	BRSK1	BRWD1	BTLA	BUB1	C15orf23	C15orf55	C1QA	C1S
C3orf70	C7orf53	C8orf34	CACNA1E	CADM2	CALR	CAMTA1	CASP1	CASQ2	CBLB
CBR1	CBR3	CCDC168	CCNA1	CCNB3	CCT3	CCT5	CCT6B	CD22	CD33
CD5L	CD74	CDA	CDH11	CDH18	SUCLG1	CDK13	CHD1	CHD1L	CHD4
CHD6	CHD8	CHD9	CHFR	CHI3L1	CHN1	CIITA	CLDN18	CLP1	CLSPN
CLTC	CNOT3	CNOT4	CNTN1	CNTN5	CNTNAP1	CNTNAP5	COL1A1	COL2A1	COL5A1
COL5A2	COL5A3	COPS2	CPS1	CRIPAK	CRLF2	CRNKL1	CRTC1	CSF1	CSF3R
CSMD1	CSMD3	CSNK1A1	CSNK1G3	CTLA4	CTNNA2	CTNND1	CUX1	CXCR4	CYBA
CYP19A1	CYP1A1	CYP1B1	CYP2A13	CYP2C8	TTF1	CYP3A4	CYP3A5	DCC	DDX3X
DDX5	DEK	DHX35	DHX9	DIAPH1	DIS3L2	DLC1	DMD	DNAH6	DNAJB1
DNM2	DNMT1	DNMT3B	DOCK2	DOCK7	DPYD	DRGX	DTX1	DUSP22	DYSF
E2F3	EBF1	ECT2L	EED	EEF1A1	EGFL7	EGR3	EIF2AK3	EIF2C3	EIF3A
EIF4A2	EIF4G3	ELAC2	ELF1	ELF3	ELMO1	ELN	ZNF521	ZNF638	ZNF750
ZNF804B	EME2	EMID2	EML4	EPC1	EPHA1	EPHA4	EPHA7	EPHB2	EPHB4
EPOR	EPPK1	EPS15	ERBB2IP	ERCC2	ESR2	ETS1	ETV1	ETV5	ETV6
EWSR1	EZR	F8	FAM131B	FAM135B	FAM157B	FAM46C	FAM5C	FAP	FASLG
FAT3	FAT4	FCGR1A	FCGR2A	FCGR2B	FCGR3A	FCRL4	FGF10	FGF12	FGF14
FGF23	FGF6	FLG	FLI1	FLNC	FMN2	FN1	FNDC4	FOXA2	FOXO1
FOXO3	FOXQ1	FRMPD4	FUS	FXR1	FYN	FZD1	G3BP1	G3BP2	GAB2
GABRA6	GATA1	GATA2	GFRAL	GIGYF1	GKN2	GLB1L3	GLI1	GLI2	GLI3
GMPS	GNA13	GNG2	GPC3	GPR124	GPS2	GPX1	GRB7	GSK3B	GSTM5
GSTP1	GUSB	H3F3A	H3F3B	H3F3C	HCLS1	HCN1	HDAC4	HDAC9	HECW1
HEY1	HIST1H1C	HIST1H1D	HIST1H1E	HIST1H2AC	HIST1H2AG	HIST1H2AL	HIST1H2AM	HIST1H2BC	HIST1H2BD
HIST1H2BJ	HIST1H2BK	HIST1H2BO	HIST1H3B	HIST1H3C	HIST1H3D	HIST1H3F	HIST1H3G	HIST1H3H	HIST1H3I
HIST1H4I	HIST3H3	HLA-A	HLA-B	HLA-C	HLF	HMCN1	HNF1B	HNRPD	HOXA11
HOXA13	HOXA3	HOXA9	HOXC13	HOXD11	HOXD13	HSD3B1	HSP90AA1	HSP90AB1	HSPA8
HSPD1	HSPH1	ICK	ICOSLG	ID3	IFITM3	IGF1	IGF2	IGF2R	IGLL5

IKZF2	IKZF3	IL10	IL1RAPL1	IL21R	IL6	IL6ST	IMPG1	ING1	INHBA
INPP4A	INPPL1	INSR	IRF4	IRF6	IRS1	ITGB3	ITK	ITSN1	JARID2
KALRN	KAT6A	KAT6B	KCNJ5	KCNQ2	KDM2B	KEL	KIF5B	KLF4	KLHL6
KLK1	KRTAP5-5	L3MBTL1	LAMA2	LATS1	LATS2	LCP1	LEF1	LGALS8	LIFR
LPHN2	LPP	LRP2	LRP4	LRP5	LRP6	LRRC7	LRRK2	LYN	LZTS1
MACF1	MAD1L1	MAGI2	MAML2	MAML3	MAP3K13	MAPK3	MCC	MCM3	MDC1
MECOM	MEF2C	MGA	MIB1	MIOS	MKL1	MLL4	MLLT3	MMP11	MMP2
MN1	MNDA	MNX1	MSH4	MSN	MSR1	MTHFR	MTRR	MUC5B	MYH11
MYH14	MYH9	MYO3A	MYOD1	NAP1L1	NAV3	NCAM2	NCF2	NCF4	NCK1
NCOA3	NCOA4	NCOR2	NCSTN	NDUFA13	NFATC4	NFE2L3	NKX3-1	NLRC3	NOD1
NOS3	NOTCH4	NQO1	NR1H2	NR2F2	NR4A2	NRG1	NRP2	NRXN1	NTM
NUMA1	NUP107	NUP210	NUP93	NUP98	OBSCN	OGDH	OMD	OPCML	OR11G2
OR2T4	OR4A15	OR4C6	OR5L2	OR6F1	P2RY8	P4HB	PABPC1	PABPC3	PAG1
PAK1	PAK3	PASK	PAX3	PAX7	PC	PCDH18	PCSK6	PCSK7	PDCD11
PDE4DIP	PDGFB	PDILT	PER1	PGR	PHF1	PHF6	PIK3C2A	PIK3C2B	PIK3C2G
PIK3C3	PIM1	PKD1L2	PKHD1	PLAG1	PLCB1	PLCG1	PLCG2	PLK1	PLXNA1
PLXNB2	PNRC1	POLQ	POM121	POM121L12	POU2AF1	PPM1D	PPP1R17	PPP6C	PRDM16
PREX2	PRF1	PRKAA1	PRKCB	PRKCI	PRKDC	PRRX1	PRX	PSG2	PSIP1
PSMB1	PSMB5	PTGS1	PTGS2	PTPN13	PTPN2	PTPRB	PTPRK	PTPRO	PTPRS
PTPRT	PTPRU	RAB35	RAC2	RAD21	RAD54B	RANBP2	RASA1	RASGRP1	RBL1
REL	RELN	RFC1	RGS3	RHEB	RHOH	RHOT1	RIT1	RNASEL	ROBO1
ROBO2	ROBO3	ROCK1	RPGR	RPS6KB1	RPS6KB2	RSPO2	RSPO3	RUNX1T1	RUNX2
RXRA	RYR1	RYR2	SBDS	SCUBE2	SDC4	SEC31A	SEMA3A	SEMA3E	SEMA6A
SERPINA7	SETBP1	SETDB1	SF1	SF3A1	SFPQ	SGCZ	SGK1	SH2B3	SH2D1A
SH3PXD2A	BRD2	BRD3	SIN3A	SLC16A1	SLC1A2	SLC22A16	SLC22A18	SLC22A2	SLC22A3
SLC34A2	SLCO1B3	SLIT1	SLIT2	SMARCD1	SMARCE1	SMC1A	SMC1B	SNCAIP	SNTG1
SNX29	SOD2	SOS1	SOX10	SOX17	SPEN	SPRR3	SPSB4	SPTA1	SRD5A2
SRGAP1	SRGAP3	SRSF2	SRSF7	STAG1	STAT1	CDH23	SUCLG2	SULT1A1	SUZ12
SVEP1	SYNCRIP	SYNE1	TAF1	TAF15	TAF1L	TAL1	TBL1XR1	TBX15	TBX22
TCEB1	TCF12	TCF3	TCF4	TCL1A	TEC	TENM3	TERT	TET1	TFDP1
TFDP2	TFE3	TGFBR1	THBS2	TJP1	TLE1	TLL2	TLR4	TLX3	TMEM132D
TNFSF11	TNN	TP53BP1	TP63	TP73	TPM3	TPR	TRAF2	TRAF7	TRIM24
TRIM58	TRIO	TRPC5	TRRAP	TSHZ2	TSHZ3	CYP2D6	TUBA3C	TUBB3	TUSC3
TXNIP	TYMS	TYR	UBE2D2	UBR5	UGT1A1	UMPS	UPF3B	USH2A	USP6

