

Table S1 Detectable tumor-associated somatic mutations with next-generation sequencing

ABCB1(MDR1)	CDC73	ERCC2	IDH2	MTOR	PRKACA	SOX14
ABCB4	CDH1	ERCC3	IFNG	MUTYH	PRKACG	SOX2
ABCC2(MRP2)	CDK10	ERCC4	IFNGR1	MYC	PRKAR1A	SOX21
ADH1A	CDK12	ERCC5	IGF1R	MYCL	PRKCI	SPOP
ADH1B	CDK4	ESR1	IGF2	MYCN	PRKDC	SPRY4
ADH1C	CDK6	ETV1	IKBKE	MYD88	PRSS1	SRC
AIP	CDK8	ETV4	IKZF1	MYH9	PRSS3	SRY
AKT1	CDKN1A	ETV6	IL7R	NAT1	PTCH1	STAG2
AKT2	CDKN1B	EWSR1	INPP4B	NBN	PTEN	STAT3
AKT3	CDKN1C	EXT1	IRF2	NCOR1	PTK2	STK11
ALDH2	CDKN2A	EXT2	JAK1	NF1	PTPN11	STMN1
ALK	CDKN2B	EZH2	JAK2	NF2	PTPN13	STT3A
AMER1	CDKN2C	FANCA	JAK3	NFE2L2	PTPRD	SUFU
APC	CEBPA	FANCC	JARID2	NFKBIA	QKI	TAP1
AR	CEP57	FANCD2	JUN	NKX2-1	RAC1	TAP2
ARAF	CHD4	FANCE	KDM5A	NKX2-4	RAC3	TEK
ARID1A	CHEK1	FANCF	KDM6A	NOTCH1	RAD50	TEKT4
ARID1B	CHEK2	FANCG	KDR(VEGFR2)	NOTCH2	RAD51	TERC
ARID2	CREBBP	FANCI	KEAP1	NOTCH3	RAD51B	TERT
ARID5B	CRKL	FANCL	KIF1B	NPM1	RAD51C	TET2
ASCL4	CSF1R	FANCM	KIF5B	NQO1	RAD51D	TGFBR2
ASXL1	CTCF	FAT1	KIT	NRAS	RAD54L	THADA
ATF1	CTLA4	FBXW7	KITLG	NRG1	RAF1	TMEM127
ATIC	CTNNB1	FGF19	KLLN	NSD1	RARA	TMPRSS2
ATM	CUL3	FGFR1	KMT2A(MLL)	NTRK1	RARG	TNFAIP3
ATR	CUX1	FGFR2	KMT2B	NTRK2	RASGEF1A	TNFRSF11A
ATRX	CXCR4	FGFR3	KMT2C	NTRK3	RB1	TNFRSF14
AURKA	CYLD	FGFR4	KMT2D(MLL2)	PAK3	RECQL4	TNFRSF19
AURKB	CYP19A1	FH	KRAS	PALB2	RELN	TNFSF11
AXIN2	CYP2A13	FLCN	LHCGR	PALLD	RET	TOP1
AXL	CYP2A6	FLT1(VEGFR1)	LMO1	PARK2	RHOA	TOP2A
B2M	CYP2A7	FLT3	LRP1B	PARP1	RICTOR	TP53
BAD	CYP2B6*6	FLT4	LYN	PARP2	RNF43	TP63
BAI3	CYP2C19*2	FOXA1	LZTR1	PAX5	ROS1	TPMT
BAK1	CYP2C9*3	FOXP1	MAP2K1(MEK1)	PBRM1	RPTOR	TSC1
BAP1	CYP2D6	FRG1	MAP2K2(MEK2)	PDCD1(PD1)	RRM1	TSC2
BARD1	CYP3A4*4	GATA1	MAP2K4	PDCD1LG2(PD-L2)	RUNX1	TSHR
BAX	CYP3A5	GATA2	MAP3K1	PDE11A	RUNX1T1	TTF1
BCL2	DAXX	GATA3	MAP3K4	PDGFRA	SBDS	TUBB3
BCL2L11(BIM)	DDR2	GATA4	MAP4K3	PDGFRB	SDC4	TUBB4A
BCR	DENND1A	GATA6	MAX	PDK1	SDHA	TUBB4B
BIRC3	DHFR	GNA11	MCL1	PGR	SDHB	TUBB6
BLM	DICER1	GNAQ	MDM2	PHOX2B	SDHC	TYMS
BMPR1A	DLL3	GNAS	MDM4	PIK3C3	SDHD	U2AF1
BRAF	DNMT3A	GRIN2A	MECOM	PIK3CA	SEPT9	UGT1A1
BRCA1	DPYD	GRM3	MED12	PIK3R1	SETBP1	VAMP2
BRCA2	DUSP2	GRM8	MEF2B	PIK3R2	SETD2	VEGFA
BRD4	EGFR	GSTM1	MEN1	PKHD1	SF3B1	VHL
BRIP1	EML4	GSTM4	MET	PLAG1	SGK1	WAS
BTG2	EP300	GSTM5	MGMT	PLK1	SLC34A2	WISP3
BTK	EPAS1	GSTP1	MITF	PMS1	SLC3A2	WRN
BUB1B	EPCAM	GSTT1	MLH1	PMS2	SLC7A8	WT1
c11orf30	EPHA2	HDAC2	MLH3	POLD1	SMAD2	XPA
CASP8	EPHA3	HDAC9	MLLT1	POLD3	SMAD3	XPC
CBL	EPHA5	HGF	MLLT3	POLE	SMAD4	XRCC1
CBLB	EPHB2	HLA-A	MLLT4	POLH	SMAD7	YAP1
CCND1	ERBB2(HER2)	HNF1A	MPL	POT1	SMARCA4	ZNF2
CCNE1	ERBB2IP	HNF1B	MRE11A	PPARD	SMARCB1	ZNF217
CD274(PD-L1)	ERBB3	HRAS	MSH2	PPP2R1A	SMO	ZNF703
CD74	ERBB4	HSD3B1	MSH6	PRDM1	SOS1	
CDA	ERCC1	IDH1	MTHFR	PRF1	SOX1	

Table S2 The top 10 most frequently mutated genes by next-generation sequencing.

Patients	CIP	Gene	Exon	HGVS_C	HGVS_P	Mutation frequency
#1	yes	<i>TP53</i>	EX5	c.377A>G	p.Y126C	7.80%
#2	no	<i>TP53</i>	EX5	c.425_426insCTGCC	p.P142delinsPCP	13.80%
#3	no	<i>TP53</i>	EX4		c.368_375+14del	1.00%
#4	yes	<i>TP53</i>	EX7	c.743G>C	p.R248P	1.70%
#5	yes	<i>TP53</i>	EX6	c.646G>C	p.V216L	2.69%
#9	no	<i>TP53</i>	EX6	c.652_653delGTinsAG	p.V218R	30.90%
#10	no	<i>TP53</i>	EX8	c.C833T	p.P278L	41.40%
#13	yes	<i>TP53</i>	EX10	c.998dupG	p.G334Wfs*3	21.90%
#14	no	<i>TP53</i>	EX5	c.524G>A	p.Arg175His	52.62%
#16	no	<i>TP53</i>	EX7	c.747G>T	p.R249S	0.90%
#18	no	<i>TP53</i>	EX5	c.473G>T	p.R158L	3.70%
#19	no	<i>TP53</i>	EX5	c.430C>T	p.Q144*	20.70%
#20	no	<i>TP53</i>	EX5	c.538G>T	p.E180*	28.60%
#23	yes	<i>TP53</i>	EX4	c.102dupC	p.P36AfsX7	16.90%
#24	no	<i>TP53</i>	EX8	c.844C>T	p.R282W	10.50%
#28	no	<i>TP53</i>		c.463A>C	p.T155P	41.70%
#29	yes	<i>TP53</i>	EX5	c.G422A	p.C141Y	52.60%
#30	no	<i>TP53</i>	EX7	c.G733A	p.G245S	
#31	no	<i>TP53</i>	EX7	c.713G>A	p.C238Y	22.30%
#32	no	<i>TP53</i>	EX8	c.824G>T	p.C275F	3.00%
#33	no	<i>TP53</i>	EX7	c.701A>G	p.Y234C	28.70%
#35	no	<i>TP53</i>	EX42	c.906delG	p.S303AfsX42	15.40%
#36	no	<i>TP53</i>	EX5	c.517G>T	p.V173L	39.30%
#39	no	<i>TP53</i>	EX7	c.730G>T	p.G244C	24.40%
#40	no	<i>TP53</i>	EX4	c.294T[2>1]	p.S99Pfs*24	11.90%
#41	no	<i>TP53</i>	EX5	c.488A>G	p.Y163C	42.30%
#42	no	<i>TP53</i>	IVS4	c.376-2A>G		3.20%
#43	yes	<i>TP53</i>	EX6	c.646G>C	p.V216L	47.19%
#45	no	<i>TP53</i>	EX5	c.458_459dup	p.G154fs	3.15%
#47	no	<i>TP53</i>	EX8	c.844C>T	p.R282W	14.70%
#48	yes	<i>TP53</i>	EX4	c.312_313delinsTT	p.Q104_G105delinsHC	22.00%
#49	no	<i>TP53</i>	EX6	c.659A>C	p.Y220S	26.12%
#50	yes	<i>TP53</i>	EX6	c.646G>C	p.V216L	11.03%
#51	no	<i>TP53</i>	EX4	c.323_324insCTACGGCTACGG	p.G108_F109insYGYG	22.62%
#52	no	<i>TP53</i>	EX5	c.497C>A	p.S166*	30.10%
#53	no	<i>TP53</i>	EX4	c.375_375+1delinsTT	p.T125=	35.24%
#9	no	<i>KRAS</i>	EX2	c.34G>T	p.G12C	45.80%
#22	no	<i>KRAS</i>	EX2	c.34G>T	p.G12C	32.00%
#27	no	<i>KRAS</i>	EX2	c.35G>T	p.G12V	25.20%
#36	no	<i>KRAS</i>	EX2	c.34G>T	p.G12C	21.50%
#39	no	<i>KRAS</i>	EX2	c.35G>T	p.G12V	30.60%
#40	no	<i>KRAS</i>	EX2	c.38G>A	p.G13D	10%
#46	no	<i>KRAS</i>	EX2	c.35G>A	p.G12D	48.71%
#48	yes	<i>KRAS</i>	EX3	c.183A>T	p.Q61H	18.93%
#50	yes	<i>KRAS</i>	EX3	c.183A>C	p.Q61H	15.87%
#56	yes	<i>KRAS</i>	EX2	c.35G>T	p.G12V	1.00%
#5	yes	<i>EGFR</i>	EX21	c.T2573G	p.L858R	33.10%
#11	no	<i>EGFR</i>	EX18	c.2120T>G	p.L707W	1.00%
#16	no	<i>EGFR</i>	EX20	c.2300_2308dupCCAGCGTGG	p.A767_V769d	1.70%
#26	no	<i>EGFR</i>	EX19	c.2239_2248delinsC	p.L747_A750delinsP	2.70%
#33	no	<i>EGFR</i>	p.V843I	c.2527G>A	p.V843I	28.80%
#37	no	<i>EGFR</i>	EX21	c.2573T>G	p.L858R	17.10%
#49	no	<i>EGFR</i>	EX20	c.2320G>T	p.V774L	14.87%
#54	no	<i>EGFR</i>	EX19	c.2248_2276delinsTCATC	p.Ala750_Ile759delinsSerSer	0.07%
#57	yes	<i>EGFR</i>	EX21		p.L858R	15.63%
#1	yes	<i>FAT1</i>	EX13	c.9417G>C	p.E3139D	3.70%
#1	yes	<i>LRP1B</i>	EX25	c.4064A>T	p.N1355I	3.50%
#2	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#3	no	<i>DPYD</i>	/	c.C85T	p.R29C	/
#3	no	<i>DPYD</i>	/	c.A1627G	p.I543V	/
#3	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#3	no	<i>NQO1</i>	/	c.C559T	p.P187S	/
#4	yes	<i>ERCC1</i>	/	c.354T>C	p.N118=	/
#4	yes	<i>NQO1</i>	/	c.559C>T	p.P187S	/
#5	yes	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#10	no	<i>FAT1</i>	EX23	c.G12238T	p.G4080X	1.30%
#10	no	<i>SMARCA4</i>	EX10	c.A1744T	p.K582X	2.50%
#10	no	<i>DPYD</i>	/	c.C85T	p.R29C	/
#10	no	<i>DPYD</i>	/	c.A496G	p.M166V	/
#10	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#10	no	<i>NQO1</i>	/	c.C559T	p.P187S	/
#11	no	<i>SMARCA4</i>	IVS34	c.49122A>C	-	1.00%
#12	no	<i>FAT1</i>	EX10	c.5630_5631delCT	p.P1877fs	/
#12	no	<i>DPYD</i>	/	c.C85T	p.R29C	/
#12	no	<i>DPYD</i>	/	c.A1627G	p.I543V	/
#12	no	<i>DPYD</i>	/	c.A496G	p.M166V	/
#12	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#12	no	<i>NQO1</i>	/	c.C559T	p.P187S	/
#13	yes	<i>PTEN</i>	EX8	c.837C>A	p.F279L	16.50%
#13	yes	<i>PTEN</i>	EX8	c.860C>G	p.S287*	12.50%
#14	no	<i>PTEN</i>	EX8	c.955_958del	p.Thr319fs	34.67%
#14	no	<i>PTEN</i>	EX8	c.955_958delACTT	p.T319*	35.80%
#14	no	<i>DPYD</i>	/	c.1627A>G	p.I543V	/
#14	no	<i>ERCC1</i>	/	c.354T>C	p.N118=	/
#14	no	<i>NQO1</i>	/	c.559C>T	p.P187S	/
#15	no	<i>DPYD</i>	/	c.A1627G	p.I543V	/
#15	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#15	no	<i>NQO1</i>	/	c.C559T	p.P187S	/
#15	no	<i>NQO1</i>	/	c.C415T	p.R139W	/
#18	no	<i>FAT1</i>	EX10	c.7105delAinsCC	p.T2369Pfs*5	3.10%
#18	no	<i>FAT1</i>	EX10	c.7461G>T	p.L2487F	1.90%
#19	no	<i>DPYD</i>	EX18	c.2293G>T	p.V765L	10.30%
#20	no	<i>FAT1</i>	EX19	c.10909G>T	p.E3637*	33.90%
#20	no	<i>SMARCA4</i>	IVS32	c.46361G>A .		12.80%
#21	no	<i>DPYD</i>	/	c.G2194A	p.V732I	/
#21	no	<i>ERCC1</i>	/	c.T354C	p.N118N	/
#21	no	<i>NQO1</i>	/	c.C559T	p.P187S	/
#22	no	<i>DPYD</i>	/	c.1627A>G	p.I543V	/
#22	no	<i>NQO1</i>	/	c.559C>T	p.P187S	/
#23	yes	<i>LRP1B</i>	EX85	c.13026T>A	p.S4342R	6.80%
#23	yes	<i>DPYD</i>	/	c.1627A>G	p.I543V	/
#23	yes	<i>NQO1</i>	/	c.559C>T	p.P187S	/
#24	no	<i>PTEN</i>	EX5	c.388C>G	p.R130G	5.00%
#24	no	<i>DPYD</i>	/	c.1627A>G	p.I543V	/
#28	no	<i>FAT1</i>	/	c.11776G>T	p.V3926F	25.30%
#28	no	<i>FAT1</i>	EX18	c.10351-29_10357del		13.70%
#28	no	<i>LRP1B</i>	EX18	c.4169G>T	p.G1390V	26.90%
#28	no	<i>SMARCA4</i>	EX6	c.990_1003delCCAGTCCCCGGGC	p.Q331AfsX51	34.30%
#29	yes	<i>FAT1</i>	EX10	c.5630_5631delCT	p.P1877fs	17.00%
#31	no	<i>SMARCA4</i>	EX15	c.2272C>T	p.Q758*	16.50%
#37	no	<i>SMARCA4</i>	EX25	c.3475G[6>5]	p.L1161Sfs*3	15.10%
#37	no	<i>PTEN</i>	EX8	c.951ACTT[2>1]	p.T319fs*1	7.00%
#37	no	<i>SMARCA4</i>	EX16	c.2357C>T	p.T786I	0.90%
#37	no	<i>SMARCA4</i>	EX26	c.3575G>A	p.R1192H	0.80%
#38	no	<i>SMARCA4</i>	IVS34	c.4912-2A>C		4.50%
#38	no	<i>LRP1B</i>	EX39	c.6265G>T	p.V2089F	0.80%
#41	no	<i>LRP1B</i>	EX2	c.121G>C	p.D41H	28.50%
#42	no	<i>LRP1B</i>	IVS53	c.8521+1G>T		3.80%
#42	no	<i>LRP1B</i>	EX77	c.11831G>T	p.G3944V	3.10%
#43	yes	<i>PTEN</i>	EX7	c.638C>G	p.P213R	39.77%
#46	no	<i>ERCC1</i>	/	c.T354C	p.N118N	3.51
#49	no	<i>LRP1B</i>	EX43	c.7165A>T	p.R2389W	18.97%
#49	no	<i>LRP1B</i>	EX72	c.11088G>C	p.E3696D	11.35%
#49	no	<i>LRP1B</i>	EX43	c.7165A>T	p.R2389W	15.45%
#49	no	<i>LRP1B</i>	EX41	c.6688G>T	p.D2230Y	7.46%
#49	no	<i>LRP1B</i>	EX26	c.4217C>T	p.S1406F	13.75%
#52	no	<i>PTEN</i>	EX5	c.469G>T	p.E157*	31.32%
#52	no	<i>LRP1B</i>	EX71	c.10946G>A	p.R3649K	31.98%
#52	no	<i>LRP1B</i>	EX17	c.2753C>A	p.S918Y	10.21%
#53	no	<i>LRP1B</i>	EX44	c.7304_7317del	p.T2435fs	7.18%
#56	yes	<i>SMARCA4</i>	EX9	c.1513G>C	p.A505P	0.40%