

Entire coding gene exons (225 genes)

ABL1	ABL2	ABRAXAS1	AKT1	AKT2	AKT3	ALK	APC	AR	ARAF	ARID1A	ARID1B	ARID2	ASXL1	ATM
ATR	ATRX	AURKA	AURKB	AURKC	AXIN1	AXL	BAP1	BARD1	BRAF	BRCA1	BRCA2	BRD2	BRD3	BRD4
BRIP1	CBFB	CCND1	CCND2	CCND3	CCNE1	CD274	CDH1	CDK12	CDK4	CDK6	CDKN1A	CDKN1B	CDKN2A	CDKN2B
CDKN2C	CEBPA	CHEK2	CREBBP	CSF1R	CTNNB1	DDR1	DDR2	DDX3X	DNMT3A	DOT1L	DPYD	EGFR	EPHA3	EPHB4
ERBB2	ERBB3	ERBB4	ERCC2	ERCC4	ERG	ERRFI1	ESR1	ETV1	ETV4	ETV5	ETV6	EWSR1	EZH2	FANCA
FANCB	FANCC	FANCD2	FANCE	FANCF	FANCG	FANCI	FANCL	FANCM	FBXW7	FGF19	FGF4	FGFR1	FGFR2	FGFR3
FGFR4	FLCN	FLT1	FLT3	FLT4	FOXL2	FUBP	GATA2	GEN1	GNA11	GNAQ	GNAS	H3F3A	HDAC9	HGF
HLA-A	HLA-B	HLA-C	HLA-DRB1	HNF1A	HRAS	IDH1	IDH2	IGF1R	IGF2	JAK1	JAK2	JAK3	KDR	KIT
KMT2A	KRAS	LRP1B	LTK	MAP2K1	MAP2K2	MAP2K4	MAP3K1	MAP3K4	MAPK1	MAPK3	MAPK8	MCL1	MDM2	MDM4
MED12	MEN1	MET	MITF	MLH1	MPL	MRE11	MSH2	MSH6	MTAP	MTOR	MYC	MYCN	NBN	NF1
NF2	NFKBIA	NKX2-1	NOTCH1	NOTCH2	NOTCH3	NOTCH4	NRAS	NTRK1	NTRK2	NTRK3	NUTM1	PALB2	PARP1	PBRM1
PDGFB	PDGFRA	PDGFRB	PIK3CA	PIK3CB	PIK3CD	PIK3R1	PIK3R2	PMS2	POLE	PPARG	PTCH1	PTCH2	PTEN	PTPN11
RAD50	RAD51	RAD51C	RAD51D	RAF1	RARA	RB1	RET	RICTOR	RNF43	ROS1	RSPO1	RSPO2	RUNX1	SDHA
SDHB	SDHC	SDHD	SETD2	SLX4	SMAD2	SMAD4	SMARCA4	SMARCB1	SMO	SOX2	SOX9	SPOP	SRC	STK11
SYK	TERT	TET2	TMPRSS2	TOP1	TOP2A	TP53	TSC1	TSC2	UBE2T	VHL	WT1	XPO1	XRCC2	ZNRF3

Yellow : Gene with entire coding exon and partial intron region

Green : Gene with entire coding exon and promoter region with low coverage

Partial exon and hot spot (98 genes)

A1BG	ABCC5	ACVR2A	ADAMTS18	ADNP	AKAP7	AP1S1	ARV1	ASH1L	BAX	BTK	CASD1	CBL	CBX4
CCDC73	CD3G	CDH26	CEBPZ	CENPV	CIC	CKAP2	CLOCK	COBLL1	CPEB2	CRIPAK	DLC1	DNAH12	DOCK3
DPAGT1	DYNC1I2	EBPL	EPPK1	FBXL3	FGFBP1	FMN2	FRG2B	FXR1	GRIN3B	GTPBP2	IFITM1	IFITM3	IMPA1
INO80E	IRS1	KCTD16	KLF4	KNSTRN	KRT32	LIPT1	MADCAM1	MAX	MFSD14A	MFSD4B	MVK	MYO1A	NFE2L2
NIPA2	NNAT	NOS3	NOTCH2NL	NUDT7	OR4M2	PABPC1	PCBP1	PCDHB16	PCMTD1	PPP2R1A	PREX2	PRIM2	RAC1
RASA4	RBBP8	RGS12	RHOA	RUFY2	SEC63	SF3B1	SLC23A2	SPRR3	SSTR4	TAMBPL1	STAT3	STAU2	SULT6B1
SYNJ2	TAS2R19	TAS2R31	TCF7L2	TEAD2	TMEM60	TMPRSS1	TPSD1	U2AF1	WDR55	WDR87	ZFP37	ZNF141	ZNF563

Tier	Fusion Name	Tumor Type	Gene	Chr	Start	Stop	Gene	Chr	Start	Stop
I	NPM-ALK	Anaplastic Large Cell Lymphoma	NPM	5	170814120	170818803	ALK †	2	29415640	29446394
II	NPM-ALK	Cancer	NPM	5	170814120	170818803	ALK †	2	29415640	29446394
II	RANBP2-ALK	Inflammatory Myofibroblastic Tumor	RANBP2	2	109335937	109375004	ALK †	2	29415640	29446394
II	CLTC-ALK	Diffuse Large B-cell Lymphoma	CLTC	17	57697219	57768072	ALK †	2	29415640	29446394
II	EML4-ALK	Lung Acinar Adenocarcinoma	EML4	2	42396490	42522656	ALK †	2	29415640	29446394
II	EML4-ALK	Non-Small Cell Lung Cancer	EML4	2	42396490	42528380	ALK †	2	29415640	29446394
II	EML4-ALK	Non-Small Cell Lung Cancer	EML4	2	42396490	42522656	ALK †	2	29415640	29446394
II	EML4-ALK	Non-Small Cell Lung Cancer	EML4	2	42396490	42552694	ALK †	2	29415640	29446394
II	EML4-ALK	Non-Small Cell Lung Cancer	EML4	2	42396490	42491871	ALK †	2	29415640	29446394
II	EML4-ALK	Non-Small Cell Lung Cancer	EML4	2	42396490	42472827	ALK †	2	29415640	29446394
II	EML4-ALK	Renal Cell Carcinoma	EML4	2	42396490	42472827	ALK †	2	29415640	29446394
II	EML4-ALK	Cancer	EML4	2	42396490	42552694	ALK †	2	29415640	29446394
II	EGFR-PPARGC1A	Cutaneous Squamous Cell Carcinoma	EGFR †	7	55238867	55238867	PPARGC1A	4	55238867	55238867
II	EGFR-RAD51	Lung Non-small Cell Carcinoma	EGFR †	7	55268008	55268008	RAD51	15	55268008	55268008
II	LMNA-NTRK1	Colorectal Adenocarcinoma	LMNA	1	156084498	156108548	NTRK1 †	1	156844363	156851434
II	LMNA-NTRK1	Sarcoma	LMNA	1	156084498	156108548	NTRK1 †	1	156844363	156851434
II	TFG-ROS1	Inflammatory Myofibroblastic Tumor	TFG	3	100428269	100447702	ROS1 †	6	117609463	117642557
II	KIF5B-RET	Lung Adenocarcinoma	KIF5B	10	32306071	32345359	RET †	10	43609928	43625799

Tier	Fusion Name	Tumor Type	Gene	Chr	Start	Stop	Gene	Chr	Start	Stop
II	AGK-BRAF	Melanoma	AGK	7	141250989	141255367	BRAF†	7	140434279	140494267
I	AKAP9-BRAF	Thyroid Gland Papillary Carcinoma	AKAP9	7	91570181	91625114	BRAF†	7	140434279	140487384
II	KIAA1549-BRAF	Skin Melanoma	KIAA1549	7	138545885	138666064	BRAF†	7	140434279	140487384
II	PAPSS1-BRAF	Melanoma	PAPSS1	4	108603171	108641608	BRAF†	7	140434279	140487384
II	PPFIBP2-BRAF	Skin Melanoma	PPFIBP2	11	7535001	7586998	BRAF†	7	140434279	140481493
II	TRIM24-BRAF	Melanoma	TRIM24	7	138145079	138239711	BRAF†	7	140434279	140487384
II	TRIM24-BRAF	Skin Melanoma	TRIM24	7	138145079	138239711	BRAF†	7	140434279	140487384
II	ZKSCAN1-BRAF	Melanoma	ZKSCAN1	7	99613222	99627575	BRAF†	7	140434279	140482957
II	BRAF-CUL1	Ovarian Serous Carcinoma	BRAF†	7	140434279	140487384	CUL1	7	148395737	148457588
I	KIAA1549-BRAF	Pediatric Low-grade Glioma (PLGG)	KIAA1549	7	138545885	138666064	BRAF†	7	140434279	140487384
I	KIAA1549-BRAF	Pilocytic Astrocytoma	KIAA1549	7	138545885	138666064	BRAF†	7	140434279	140487384
II	KIAA1549-BRAF	Sarcoma	KIAA1549	7	138545885	138666064	BRAF†	7	140434279	140487384
I	CBFB-MYH11	Acute Myeloid Leukemia	CBFB†	16	67063148	67116211	MYH11	16	15797029	15820911
II	MEF2D-CSF1R	Acute Lymphoblastic Leukemia	MEF2D	1	156446804	156470620	CSF1R†	5	149433787	149441412
I	ETV6-NTRK3	Cancer	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
I	ETV6-NTRK3	Congenital Fibrosarcoma	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
I	ETV6-NTRK3	Thyroid Gland Papillary Carcinoma	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
II	ETV6-NTRK3	Acute Myeloid Leukemia	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
II	ETV6-NTRK3	B-cell Adult Acute Lymphocytic Leukemia	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
II	ETV6-NTRK3	Breast Secretory Carcinoma	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230
II	ETV6-NTRK3	Pediatric B-lymphoblastic Leukemia	ETV6†	12	11802788	12022903	NTRK3†	15	88483984	88418230

II	ETV6-NTRK3	Salivary Gland Carcinoma	ETV6 †	12	11802788	12022903	NTRK3 †	15	88483984	88418230
II	EWSR1-DDIT3	Myxoid Liposarcoma	EWSR1 †	22	29664307	29687588	DDIT3	12	57910376	57911536
I	EWSR1-ERG	Ewing Sarcoma	EWSR1 †	22	29664007	29683123	ERG †	21	39751949	39755845
I	EWSR1-FLI1	Ewing Sarcoma Of Bone	EWSR1 †	22	29664307	29688158	FLI1	11	128638013	128683162
I	EWSR1-FLI1	Ewing Sarcoma	EWSR1 †	22	29664007	29683123	FLI1	11	128651853	128683162
I	TMPRSS2-ERG	Prostate Carcinoma	TMPRSS2 †	21	42879877	42879992	ERG †	21	39751949	39817544
I	FGFR2-AHCYL1	Cholangiocarcinoma	FGFR2 †	10	123239371	123357917	AHCYL1	1	110554984	110566357
I	FGFR2-BICC1	Cholangiocarcinoma	FGFR2 †	10	123239371	123357917	BICC1	10	60461834	60591195
II	FGFR2-BICC1	Endometrial Cancer	FGFR2 †	10	123239371	123357917	BICC1	10	60461834	60591195
II	FGFR2-BICC1	Urothelial Carcinoma	FGFR2 †	10	123239371	123357917	BICC1	10	60461834	60591195
II	FGFR2-MGEA5	Cholangiocarcinoma	FGFR2 †	10	123243212	123357917	MGEA5	10	103544209	103552700
II	FGFR2-TACC3	Cholangiocarcinoma	FGFR2 †	4	123243212	123357598	TACC3	4	1723266	1741505
II	FGFR3-BAIAP2L1	Bladder Carcinoma	FGFR3 †	4	1795039	1810599	BAIAP2L1	7	97991744	97920963
I	FGFR3-TACC3	Cancer	FGFR3 †	4	1795039	1808661	TACC3	4	1741429	1746898
I	FGFR3-TACC3	Urothelial Carcinoma	FGFR3 †	4	1795039	1808661	TACC3	4	1741429	1746898
II	EBF1-PDGFRB	Acute Lymphoblastic Leukemia	EBF1	5	158134987	158526769	PDGFRB †	5	149493400	149505140
II	EBF1-PDGFRB	B-lymphoblastic Leukemia/lymphoma, BCR-ABL1 like	EBF1	5	158134987	158526769	PDGFRB †	5	149493400	149505140
II	EBF1-PDGFRB	Childhood B-cell Acute Lymphoblastic Leukemia	EBF1	5	158134987	158526769	PDGFRB †	5	149493400	149505140
II	EBF1-PDGFRB	Pediatric B-lymphoblastic Leukemia	EBF1	5	158134987	158526769	PDGFRB †	5	149493400	149505140
I	FIP1L1-PDGFRB	Myeloid And Lymphoid Neoplasms With Eosinophilia And Abnormalities Of PDGFRA, PDGFRB, And FGFR1	FIP1L1	4	54243812	54294350	PDGFRA †	4	55141008	55164414

II	FIP1L1-PDGFRA	Acute Myeloid Leukemia	FIP1L1	4	54243812	54294350	PDGFRA †	4	55141008	55164414
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S3 Fig. Gene list for single-nucleotide variant, insertions and deletion, copy number variation, and fusion.