

xF+ Gene List

A non-invasive, liquid biopsy panel of 523 genes focused on oncogenic and resistance mutations in cell-free DNA (cfDNA). This panel is designed to capture clinically relevant biomarkers for solid tumors.

- SNVs (single nucleotide variants) and insertions and deletions (INDELs) are detected in all 523 genes, with 114 genes enhanced to a lower limit of detection (0.25 %VAF for SNVs).
- Copy Number Amplifications (CNAs), Copy Number Deletions (CNDs), and gene rearrangements (translocations) are detected in a subset of genes.
- DNA Sequencing Depth: >5,000x and >1,500x unique coverage for enhanced and additional regions, respectively.
- Specimen Requirements: Two Streck tubes of peripheral blood (8.5mL each).

The report includes genomic alterations in select genes, blood-based tumor mutational burden (bTMB), microsatellite instability high status (MSI) if detected, median variant allele fraction (mVAF), therapy options, and clinical trials matched to the patient's genomic profile and clinical history.

GENE REARRANGEMENTS

ALK, BRAF, FGFR1, FGFR2, FGFR3, NTRK1, NTRK2, NTRK3, RET, ROS1

COPY NUMBER GAINS

CCNE1, CD274 (PD-L1), EGFR, ERBB2 (HER2), MDM2, MET, MYC

COPY NUMBER LOSSES

BRCA1, BRCA2

xF+ provides insights into the clinically relevant biomarkers incorporated in OncoKB, NCCN and other oncology guidelines for:

- ✓ **Bladder cancer**
FGFR2, FGFR3
- ✓ **Breast cancer**
BRCA1, BRCA2, ERBB2 (HER2), ESR1, PIK3CA
- ✓ **Cholangiocarcinoma**
FGFR2, IDH1
- ✓ **Colorectal cancer**
BRAF, ERBB2 (HER2), KRAS, NRAS
- ✓ **Gastroesophageal adenocarcinoma**
ERBB2 (HER2)
- ✓ **Gastrointestinal stromal tumor**
KIT, PDGFRA
- ✓ **Melanoma**
BRAF, KIT, NRAS
- ✓ **Non-small cell lung cancer**
ALK, BRAF, EGFR, ERBB2 (HER2), KRAS, MET, RET, ROS1
- ✓ **Prostate cancer**
ATM, BARD1, BRCA1, BRCA2, BRIP1, CDK12, CHEK1, CHEK2, FANCL, PALB2, RAD51B, RAD51C, RAD51D, RAD54L
- ✓ **Tumor-agnostic**
NTRK1, NTRK2, NTRK3, MSI-H, bTMB

xF+ Gene Panel

ABCC3 ²	BIRC3 ²	CREBBP ²	ERBB4 ²	FLT1 ²	ID3 ²	KRAS ¹	MYB ²	PHLPP2 ²	RAD51C ¹	SMARCB1 ²	TSC1 ¹
ABL1 ¹	BLM ²	CRKL ¹	ERCC2 ²	FLT3 ¹	IDH1 ¹	LATS1 ²	MYC ^{1,4}	PIAS4 ²	RAD51D ²	SMC1A ²	TSC2 ¹
ABL2 ²	BMPRI1A ²	CSF1R ²	ERCC3 ²	FLT4 ²	IDH2 ¹	LCK ²	MYCL ²	PIK3C2B ²	RAD52 ²	SMC3 ²	TSHR ²
ABRAXAS1 ²	BRAF ^{1,3}	CSF3R ²	ERCC4 ²	FOLH1 ²	IFNA21 ²	LMO1 ²	MYCN ¹	PIK3C2G ²	RAD54L ²	SMO ¹	TYMS ²
ACVR1 ²	BRCA1 ^{1,4}	CTC1 ²	ERCC6 ²	FOXA1 ²	IFNAR1 ²	LRP1B ²	MYD88 ¹	PIK3CA ¹	RAF1 ¹	SNCAIP ²	TYRO3 ²
ACVR1B ²	BRCA2 ^{1,4}	CTCF ²	ERG ²	FOXL2 ¹	IFNAR2 ²	LTK ²	NBN ²	PIK3CB ²	RARA ²	SOCS1 ²	U2AF1 ²
AJUBA ²	BRD4 ²	CTLA4 ²	ERRFI1 ¹	FOXO1 ²	IFNG ²	LYN ²	NCOA2 ²	PIK3CD ²	RASA1 ²	SOS1 ²	UGT1A1 ²
AKT1 ¹	BRIP1 ²	CTNNA1 ²	ESR1 ¹	FOXO3 ²	IFNGR1 ²	LZTR1 ²	NCOR1 ²	PIK3CG ²	RB1 ¹	SOX2 ²	VEGFA ¹
AKT2 ¹	BTG1 ²	CTNNB1 ¹	ETNK1 ²	FOXP1 ²	IFNGR2 ²	MAF ²	NF1 ¹	PIK3R1 ¹	RBM10 ²	SOX9 ²	VHL ¹
AKT3 ²	BTG2 ²	CUL3 ²	ETV1 ²	FRS2 ²	IFNW1 ²	MALT1 ²	NF2 ¹	PIK3R2 ²	RECQL4 ²	SPEN ²	VSIR ²
ALK ^{1,3}	BTK ¹	CUL4A ²	ETV4 ²	FUBP1 ²	IGF1 ²	MAP2K1 ¹	NFE2L2 ¹	PIM1 ²	REL ²	SPOP ¹	WEE1 ²
ALOX12B ²	CALR ²	CUX1 ²	ETV5 ²	GABRA6 ²	IGF1R ²	MAP2K2 ¹	NFKBIA ²	PLCG1 ²	RET ^{1,3}	SRC ²	WNK1 ²
AMER1 ²	CARD11 ²	CXCR4 ²	ETV6 ²	GALNT12 ²	IKBKE ²	MAP2K4 ²	NKX2-1 ²	PLCG2 ²	RHEB ¹	SRSF2 ²	WRN ²
APC ¹	CARM1 ²	CYLD ²	EWSR1 ²	GATA1 ²	IKZF1 ²	MAP3K1 ²	NOTCH1 ¹	PMS1 ²	RHOA ¹	STAG2 ²	WT1 ²
APLNR ²	CASP8 ²	CYP17A1 ²	EZH2 ¹	GATA3 ¹	IL10RA ²	MAP3K13 ²	NOTCH2 ²	PMS2 ¹	RICTOR ²	STAT3 ²	XBP1 ²
AR ¹	CBFB ²	CYSLTR2 ²	EZR ²	GATA4 ²	IL32 ²	MAP3K21 ²	NOTCH3 ²	POLA1 ²	RIT1 ¹	STAT5B ²	XPA ²
ARAF ¹	CBL ²	DAXX ²	FAM46C ²	GATA6 ²	IL6R ²	MAP3K7 ²	NOTCH4 ²	POLD1 ²	RNF43 ¹	STAT6 ²	XPC ²
ARFRP1 ²	CCND1 ¹	DDB2 ²	FANCA ²	GID4 ²	IL7R ²	MAPK1 ¹	NPM1 ¹	POLE ²	ROS1 ^{1,3}	STK11 ¹	XPO1 ²
ARID1A ¹	CCND2 ¹	DDR1 ²	FANCC ²	GLI2 ²	IMPDH1 ²	MAPK3 ¹	NQO1 ²	POLQ ²	RPS6KB1 ²	SUFU ²	XRCC1 ²
ARID1B ²	CCND3 ¹	DDR2 ¹	FANCD2 ²	GNAI1 ¹	ING1 ²	MAX ²	NRAS ¹	POT1 ²	RPTOR ²	SUZ12 ²	XRCC2 ²
ARID2 ²	CCNE1 ^{1,4}	DDX3X ²	FANCE ²	GNAI3 ²	INPP4B ²	MC1R ²	NRG1 ²	PPARG ²	RRM1 ²	SYK ²	YEATS4 ²
ASNS ²	CD22 ²	DDX41 ²	FANCG ²	GNAQ ¹	INSR ²	MCL1 ²	NSD1 ²	PPM1D ²	RSF1 ²	TBX3 ²	ZFH3 ²
ASXL1 ²	CD274 (PD-L1) ^{1,4}	DEPTOR ²	FANCI ²	GNAS ¹	IRF1 ²	MDM2 ^{1,4}	NSD2 ²	PPP2R1A ²	RSP02 ²	TCF7L2 ²	ZMYM3 ²
ATM ¹	CD70 ²	DICER1 ²	FANCL ²	GPC3 ²	IRF2 ²	MDM4 ²	NSD3 ²	PPP2R2A ²	RUNX1 ²	TEK ²	ZNF217 ²
ATR ¹	CD74 ²	DIS3 ²	FANCM ²	GPS2 ²	IRF4 ²	MED12 ²	NT5C2 ²	PPP6C ²	RXRA ²	TERC ²	ZNF703 ²
ATRX ²	CD79A ²	DNMT1 ²	FAS ²	GREM1 ²	IRS2 ²	MEF2B ²	NTRK1 ^{1,3}	PRDM1 ²	SDC4 ²	TERT ¹	ZNF750 ²
AURKA ²	CD79B ²	DNMT3A ²	FAT1 ²	GRIN2A ²	JAK1 ¹	MEN1 ²	NTRK2 ^{1,3}	PREX2 ²	SDHA ¹	TET2 ²	ZNRF3 ²
AURKB ²	CDC73 ²	DOT1L ²	FBXW7 ¹	GRM3 ²	JAK2 ¹	MERTK ²	NTRK3 ^{1,3}	PRKACA ²	SDHAF2 ²	TFEB ²	ZRSR2 ²
AURKC ²	CDH1 ¹	DPYD ²	FCGR2A ²	GSK3B ²	JAK3 ¹	MET ^{1,4}	NUTM1 ²	PRKAR1A ²	SDHB ²	TGFB1 ²	
AXIN1 ²	CDK12 ¹	EBF1 ²	FCGR3A ²	GSTP1 ²	JUN ²	MITF ²	P2RY8 ²	PRKCI ²	SDHC ²	TGFBRI ²	
AXIN2 ²	CDK4 ¹	EED ²	FGF10 ²	H3F3A ²	KAT6A ²	MKKNK1 ²	PAK1 ²	PRKN ²	SDHD ²	TGFBRI2 ²	
AXL ²	CDK6 ¹	EEF2 ²	FGF12 ²	HAVCR2 ²	KDM5A ²	MLH1 ¹	PALB2 ¹	PTCH1 ¹	SETBP1 ²	TIGIT ²	
B2M ¹	CDK8 ²	EGFR ^{1,4}	FGF14 ²	HDAC1 ²	KDM5C ²	MLH3 ²	PALLD ²	PTEN ¹	SETD2 ²	TIPARP ²	
BAP1 ¹	CDK9 ²	EGLN1 ²	FGF19 ²	HDAC2 ²	KDM5D ²	MPL ¹	PARP1 ²	PTK2 ²	SF3B1 ²	TMEM127 ²	
BARD1 ²	CDKN1A ²	EIF1AX ²	FGF23 ²	HGF ²	KDM6A ²	MRE11 ²	PARP2 ²	PTPN11 ¹	SGK1 ²	TMPRSS2 ²	
BAX ²	CDKN1B ²	ELF3 ²	FGF3 ²	HIF1A ²	KDR ¹	MS4A1 ²	PARP3 ²	PTPN13 ²	SIRPA ²	TNFAIP3 ²	
BCL2 ²	CDKN2A ¹	EMSY ²	FGF4 ²	HIST1H3B ²	KEAP1 ¹	MSH2 ¹	PAX5 ²	PTPRD ²	SLC34A2 ²	TNFRSF14 ²	
BCL2L1 ²	CDKN2B ²	EP300 ²	FGF6 ²	HLA-B ²	KEL ²	MSH3 ¹	PBRM1 ¹	PTPRO ²	SLC9A3R1 ²	TNFRSF17 ²	
BCL2L11 ²	CDKN2C ²	EPCAM ²	FGFR1 ^{1,3}	HNF1A ¹	KIT ¹	MSH6 ¹	PDCD1 ²	PTPRT ²	SLFN11 ²	TOP1 ²	
BCL2L2 ²	CEBPA ²	EPHA2 ²	FGFR2 ^{1,3}	HNF1B ²	KLF4 ²	MST1R ²	PDCD1LG2 ¹	QKI ²	SLIT2 ²	TOP2A ²	
BCL6 ²	CHD4 ²	EPHA3 ²	FGFR3 ^{1,3}	HOXB13 ²	KLHL6 ²	MTAP ²	PDGFRA ¹	RAC1 ²	SMAD2 ²	TP53 ¹	
BCLAF1 ²	CHEK1 ²	EPHB1 ²	FGFR4 ¹	HRAS ¹	KLLN ²	MTHFR ²	PDGFRB ¹	RAD21 ²	SMAD3 ²	TP53BP1 ²	
BCOR ²	CHEK2 ¹	EPHB4 ²	FH1 ²	HSD3B1 ²	KMT2A ¹	MTOR ¹	PDK1 ²	RAD50 ²	SMAD4 ¹	TP63 ²	
BCORL1 ²	CIC ²	ERBB2 (HER2) ^{1,4}	FHIT ²	HSP90AA1 ²	KMT2C ²	MUC16 ²	PHGDH ²	RAD51 ²	SMARCA2 ²	TRAF3 ²	
BCR ²	CKS1B ²	ERBB3 ¹	FLCN ²	HSPH1 ²	KMT2D ²	MUTYH ²	PHLPP1 ²	RAD51B ²	SMARCA4 ²	TRAF7 ²	

1 Enhanced SNV/Indel

3 Fusion

2 Non-Enhanced SNV/Indel

4 CNV