GENETRON

ANSWERS FOR CANCER

ONCO SONAR

RUO

Molecular Profiling of Tumor-Derived cfDNA

Onco SonarTM is a pan-cancer advanced solid tumor NGS (next generation sequencing) liquid biopsy (cfDNA from plasma) kit that identifies key genomic alterations and biomarkers reported in published database. This is a qualitative NGS-based assay that uses targeted high throughput hybridization-based capture technology for detection of variants in 172 genes.

Note: Automated data analysis and reporting in MegaBOLT/Z-BOLT

Highlights

More cost effective

Cover the latest and most comprehensive biomarkers

- Covering 172 genes from biomarkers reported in published database and guideline-recommended biomarkers and massive international studies, including bMSI.

Best-in-class

Highly accurate variant detection

- >30,000 × sequencing depth, UMI-based error correction and precisely measuring locus specific noise level.
- GENETRON BayVarC algorithm has lower false positive rate.

Non-invasive sampling

More accessible and enable multiple testing on the same subject

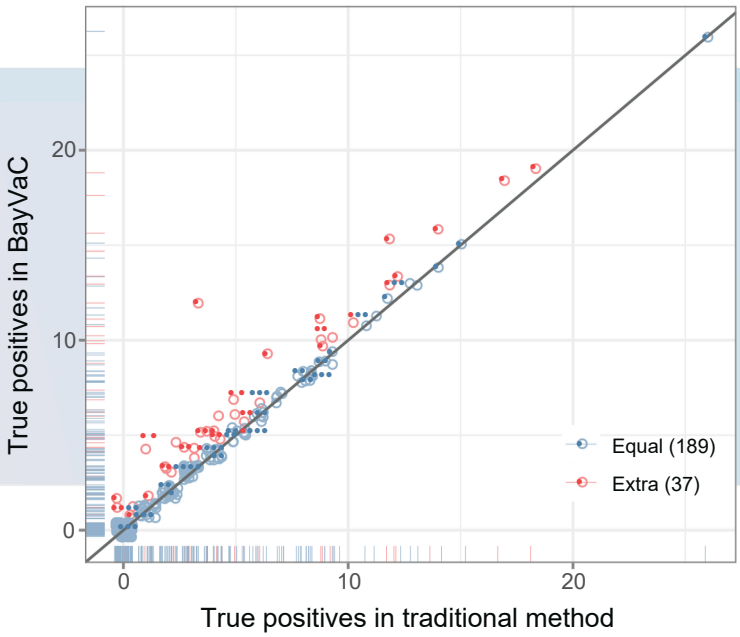
- Detecting genomic variations in plasma cell-free DNA (cfDNA) samples, cerebrospinal fluid cfDNA samples, and pleural effusion cfDNA from samples associated with solid tumor research using NGS-based liquid biopsy.

Performance Specifications

Variant Type	Sequencing Depth	Recommended Input/ng	Variant detection threshold	Limit of Detection at 95% Sensitivity
SNV	Hotspot > 30,000× noHotspot > 20,000×	30	VAF ≥ 0.05%	0.1%
Indel			VAF ≥ 0.05%	0.1%
CNV			CN ≥ 2.3	CN 2.4
SV			VAF ≥ 0.05%	0.18%
bMSI			bMSI detected	0.1%

Technical Features

Our Bayesian method （BayVarC）improves detection power by precisely measuring locus specific noise level, **the specificity can reach 0.9995**, sensitivity is also increased **(detected 37 additional variants out of 226 positive cfDNA samples compared to traditional algorithms)**.

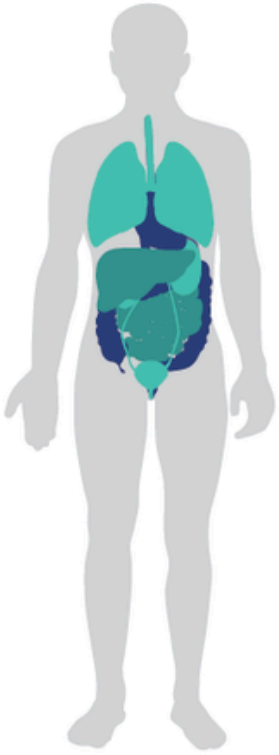


Gene List: 172 Genes Including bMSI with Solid Tumors

Point Mutations (SNVs) and Deletion Variants (Indels) (167 Genes), All Exons 29 Genes*											
ABCB4	ACVR2A	AGO2	AKT1	AKT2	AKT3	ALK	APC	AR	ARAF	ARID1A	ARID2
ATM*	ATR	B2M	BAI1	BAI3	BRAF	BRCA1*	BRCA2*	BRD7	BRIP1*	CARD11	CCND1*
CCNE1*	CD274	CDH1	CDK4*	CDK6*	CDKN1B	CDKN2A*	CDKN2B	CHEK1	CHEK2*	CREBBP	CTNNB1
DDR2	DNMT3B	EGFR*	EPHA2	EPHA3	EPHA5	EPHB6	ERBB2*	ERBB3	ERBB4	ERCC3	ERCC4
ESR1	EZH2	FAM135B	FANCA*	FAT1	FAT3	FBXW7	FGF19*	FGFR1*	FGFR2*	FGFR3*	FGFR4
FLT1	FLT3	FLT4	FOXL2	GATA3	GNA11	GNAQ	GNAS	HDAC2*	HDAC9	HRAS	IDH1
IDH2	IKZF1	JAK1	JAK2	KDM6A	KDR	KEAP1	KIT*	KMT2B	KMT2D	KRAS*	LRP1B
MAP2K1	MAP2K2	MAP2K3	MAP2K4	MAPK1	MAPK3	MAX	MDM2*	MED12	MET*	MLH1	MLH3
MRE11A	MSH2	MSH3	MSH6	MST1	MTOR	MYC*	NEGR1	NF1	NF2	NFE2L2	NOTCH1
NOTCH2	NOTCH3	NOTCH4	NRAS	NRG1	NRG3	NTRK1	NTRK2	NTRK3	NUTM1	PALB2*	PDGFRA
PDGFRB	PHF20L1	PIK3CA*	PIK3R1	PMS1	PMS2	POLD1	POLE	PREX2	PTEN*	PTPRD	PTPRT
RAF1	RB1*	RBM10	RET	RHOA	RICTOR	RNF43	ROBO1	ROS1	RUNX1T1	SEMA3A	SETD2
SF3B1	SLIT2	SMAD2	SMAD3	SMAD4	SMARCA4	SPTA1	STK11*	TCF7L2	TERT	TGFBR2	TMPRSS13
TP53*	TSC1	TSC2	U2AF1	UBR5	VEGFA	VEGFB	VHL	WT1	ZNF814	MUC16	
Amplifications (16 Genes)											
CCND1	CCNE1	CDK4	CDK6	EGFR	ERBB2	FGF19	FGFR1	FGFR2	FGFR3	KIT	KRAS
MDM2	MET	MYC	PIK3CA								
Fusions (16 Genes)											
ALK	CD74	EGFR	EML4	ETV6	FGFR1	FGFR2	FGFR3	LTK	NTRK1	NTRK2	NTRK3
RAF1	RET	ROS1	SDC4								
Chemotherapy Associated Variants											
DPYD	UGT1A1										

*ETV6 is a common rearrangement partner for NTRK3; EML4 is a common rearrangement partner for ALK; CD74 and SDC4 are common rearrangement partners for NRG1 and ROS1.

Applicable Solid Tumor



Cover nearly all major solid tumor types except brain and thyroid

Lung
ALK, BRAF, EGFR, ERBB2, KRAS, MET, NTRK1, NTRK2, NTRK3, NRG1, RET, ROS1, RB1, STK11

Breast
AKT1, BRCA1, BRCA2, ERBB2, ESR1, NTRK1, NTRK2, NTRK3, PALB2, PIK3CA, PTEN, RET, CCND1, MSI

Gastric
ERBB2, NTRK1, NTRK2, NTRK3, MSI, UGT1A1, VEGFR, KRAS, AR

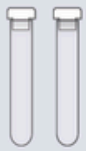
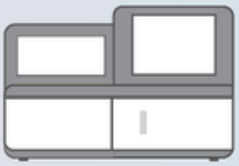
Liver
TERT, CTNNB1, CDKN2A, PIK2CA, MET, CCND1, CCNE1, FGF19, NTRK1, NTRK2, NTRK3

Colorectal
BRAF, ERBB2, KRAS, NRAS, NTRK1, NTRK2, NTRK3, POLD1, POLE, RET, MSI

Prostate
ATM, BRCA1, BRCA2, PALB2, FANCA, BRIP1, CHEK2, HDAC2, AR, TP53, MLH1, MSH2, MSH6, PMS1, PTEN, MSI

Esophageal | Gallbladder | Pancreatic | Kidney | Endometrium | Ovarian

Workflow

Sample preparation	Library Preparation	Sequencing	Data analysation	Report generation
				
Cell-free DNA extracted from liquid biopsy samples	Onco Sonar Mutation profiling Liquid kit	Mainstream Sequencing Platform	Bioanalysis and variants calling	Report generation

Assay Specifications

Parameter	Details	Parameter	Details
Panel size	380kb	Sequencing Depth	30,000×
Sample type	Blood: 6–37℃, cfDNA tube Plasma: Dry ice transport	Sequencing data	18Gb(recommended)/9Gb
Transport requirement	Blood:20ml (recommended) /10ml Plasma:8ml (recommended) / 4ml	Sequence strategy	PE150
DNA input	10–30ng (recommended) cfDNA	Analytical Specificity	99.95%
Sequencing platform	Illumina、MGI、Genemind	Kit size	48 tests