

# A suite of solutions for liquid biopsy testing in your own lab

Choose the solution best suited for your clinical research

Oncomine next-generation sequencing (NGS) solutions for liquid biopsy research can provide detailed insights with precision and speed, from just a single tube of blood.

Oncomine Cell-Free Nucleic Acid (cfNA) liquid biopsy assays are highly sensitive, multi-biomarker NGS assays that enable molecular insights into tumor evolution and detection of primary driver and resistance mutations for clinical research. With a single tube of blood, you can go from sample to complete variant report in days, not weeks. Oncomine cfNA assays enable you to deliver a relevant genomic profile even if a tissue sample is unavailable, or complement tissue testing to understand tumor heterogeneity.

## Key features and benefits

- DNA + RNA targets across relevant genes—More relevant biomarker profiles
- Reliable results from multiple sample sources— Such as ctNA from blood, bile, cerebro-spinal fluid, and urine
- Fast turnaround time of 1-3 days—Fast and informed decisions by combining NGS and single-gene testing results into one complete profile
- Automated end-to-end workflow—Helps improve laboratory efficiency, simplifies analysis and reporting, and minimizes hands-on time
- Limit of detection (LOD) down to 0.1% allelic fraction—Detects relevant variants at very low levels

### The family of Oncomine cfNA liquid biopsy assays

Oncomine cfNA liquid biopsy assays enable research studies on tumor heterogeneity and recurrence, from minimal sample input (Figure 1). The assays achieve high correlation between variants called in FFPE samples and in cell-free DNA (cfDNA) from plasma (Table 1).



Figure 1. Amplicon coverage and input material determine limit of detection using Oncomine liquid biopsy assays. Data on file.

Built on proprietary, amplification-based technology, Oncomine cfNA liquid biopsy assays enable detection of driver and resistance mutations from cell-free nucleic acids, down to 0.1%. Select from focused, tumor type–specific assays predesigned with key gene content, or two broad multi-cancer assays that cover all classes of mutations across multiple cancer types (Figure 2).

# Table 1. Allelic Fraction correlation between results from FFPE and matched plasma samples (late-stage lung cancer samples). Data on file.

Sample	Variant	FFPE	Plasma
1	<i>EGFR</i> -p.L858R	71.42%	2.62%
2	<i>TP53-</i> p.R158L	51.89%	4.32%
3	<i>MET</i> -p.T1010I	43.87%	51.75%
	KRAS-p.G12C	34.62%	0.28%
4	EGFR-p.L858R	58.44%	7.28%
	<i>MET</i> -p.T1010I	41.93%	48.72%
	<i>TP</i> 53-p.Y220C	35.54%	1.93%
5	<i>TP53-</i> p.R158L	10.19%	1.26%

Values in boldface indicate somatic mutations; values not in boldface indicate germline mutations. As expected, there is a higher fraction of somatic mutations in FFPE samples than in plasma samples. Germline variants are seen at the expected levels of ~50% in both sample types.

🛞 Multi-cancer										
Oncomine Precision Assay										
SNVs/Inde	els					CNVs		Fusions		
AKT1	CDKN2A	FGFR1	HRAS	MTOR	RAF1	ALK	FGFR1	ALK	FGFR3	RET
AKT2	CHEK2	FGFR2	IDH1	NRAS	RET	AR	FGFR2	AR	MET	ROS1
AKT3	CTNNB1	FGFR3	IDH2	NTRK1	ROS1	CD274	FGFR3	BRAF	NRG1	RSPO2
ALK	EGFR	FGFR4	KIT	NTRK2	SMO	CDKN2A	KRAS	EGFR	NTRK1	RSPO3
AR	ERBB2	FLT3	KRAS	NTRK3	TP53	EGFR	MET	ESR1	NTRK2	
ARAF	ERBB3	GNA11	MAP2K1	PDGFRA		ERBB2	PIK3CA	FGFR1	NTRK3	
BRAF	ERBB4	GNAQ	MAP2K2	PIK3CA		ERBB3	PTEN	FGFR2	NUTM1	
CDK4	ESR1	GNAS	MET	PTEN						
				Oncomine	Pan-Cancer	Cell-Free A	Issay			
SNVs/Inde	els						CNVs		Fusions	
AKT1	CTNNB1	FGFR1	GNAS	MAP2K2	PIK3CA	SMO	CCND1	FGFR1	ALK	MET
ALK	DDR2	FGFR2	HRAS	MET	PTEN*	TP53*	CCND2	FGFR2	BRAF	NTRK1
APC*	EGFR	FGFR3	IDH1	MTOR	RAF1		CCND3	FGFR3	ERG	NTRK3
AR	ERBB2	FGFR4	IDH2	NRAS	RET		CDK4	MET	ETV1	RET
ARAF	ERBB3	FLT3	KIT	NTRK1	ROS1		CDK6	MYC	FGFR1	ROS1
BRAF	ESR1	GNA11	KRAS	NTRK3	SF3B1		EGFR		FGFR2	
CHEK2	FBXW7*	GNAQ	MAP2K1	PDGFRA	SMAD4		ERBB2		FGFR3	

\* Full-length gene

Concomine cfTNA Assay				Breast Oncomine Breast cfDNA Assay v2			Colon Oncomine Colon cfDNA Assay		
			Onco						
ALK	KRAS	PIK3CA	AKT1	ERBB3	KRAS	AKT1	ERBB2	NRAS	
BRAF	MAP2K1	RET	CCND1	ESR1	PIK3CA	APC	FBXW7	PIK3CA	
EGFR	MET	ROS1	EGFR	FBXW7	SF3B1	BRAF	GNAS	SMAD4	
ERBB2	NRAS	TP53	ERBB2	FGFR1	TP53	CTNNB1	KRAS	TP53	
						EGFR	MAP2K1		

Figure 2. Gene content of Oncomine cfNA liquid biopsy assays. (A) Gene lists for two multi-cancer assays, Oncomine Precision Assay and Oncomine Pan-Cancer Cell-Free Assay (B) Gene lists for assays that target relevant genes for colon, and lung cancer.

# Featured solution: Liquid biopsy analysis in as little as 24 hours with Oncomine Precision Assay on the Ion Torrent Genexus System

The Ion Torrent Genexus System is a twoinstrument next-generation sequencing (NGS) platform that automates the main steps in the NGS workflow, including sample purification and quantification, library preparation, sequencing, bioinformatics analysis, and reporting. The Oncomine Precision Assay, a 50-gene pancancer panel, is available on the Genexus System and can detect key biomarkers such as EGFR, ALK, BRAF, ROS1, NTRK, RET, or ERBB2 from formalin-fixed paraffin-embedded (FFPE) tissue or liquid biopsy specimens in one day. This automated system reduces manual steps and facilitates quality data and quick reports, making in-house NGS testing accessible to more researchers regardless of experience and without the requirement to hire or train additional staff.





## **Customer quotes**

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"The Oncomine Precision Assay, is novel...in that it also looks at circulating cell-free tumor derived RNA to detect fusions as opposed to most of the commercially available assays, which are looking only at DNA."

—Dr. Brandon Sheffield, MD Pathologist, W. Osler Health System, Brampton, Ontario

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"Genomic heterogeneity after anti-EGFR therapy was successfully detected in 94% of the metastatic colorectal cancer research samples using a next-generation sequencing multibiomarker approach. The Oncomine Colon cfDNA Assay enabled detection of somatic mutations with MAF >0.1%."

—Beatriz Bellosillo, PhD Hospital del Mar, Spain ,,,

# **Ordering information**

Product	Cat. No.
Liquid biopsy solutions on Ion Torrent Genexus System	
Oncomine Precision Assay GX	A46291
Ion Torrent Genexus System	A45727
Ion Torrent Genexus GX5 and Coupler	A40269
Ion Torrent Genexus GX5 Starter Pack-AS	A40279
Liquid biopsy solutions on Ion GeneStudio S5 Systems	
Oncomine Pan-Cancer Cell-Free Assay	A37664
Oncomine Lung Cell-Free Total Nucleic Acid Assay	A35864
Oncomine Breast cfDNA Assay v2	A35865
Oncomine Colon cfDNA Assay	A31182
Tag Sequencing Barcode Set 1-24	A31830
Tag Sequencing Barcode Set 25-48	A31847
Ion GeneStudio S5 Prime System	A38196
Ion GeneStudio S5 Plus System	A38195
Ion GeneStudio S5 System	A38194
Ion 550 Chip Kit	A34538
Ion 540 Chip Kit	A27766
Ion 530 Chip Kit	A27764
Ion Chef System	4484177
Ion 550 Kit-Chef	A34541
Ion 540 Kit-Chef	A30011
lon 510 & lon 520 & lon 530 Kit-Chef	A34461
Oncomine informatics	
Ion Reporter Server System	4487118

# Find out more at thermofisher.com/oncomine-liquid

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