



# 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).

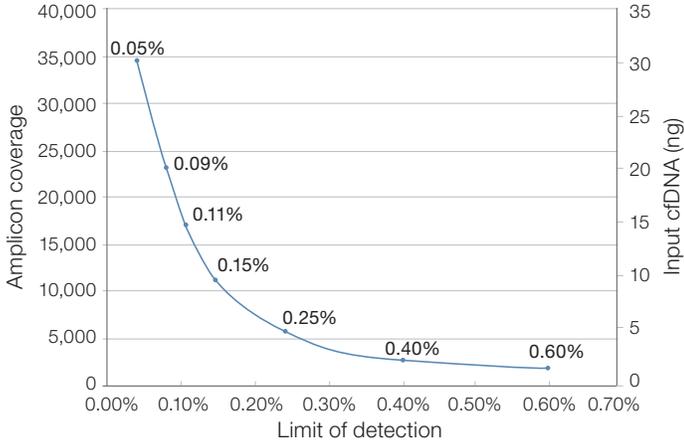


Figure 1. Amplicon coverage and input material determine limit of detection using Oncomine liquid biopsy assays. Data on file.

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

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/Indels						CNVs			Fusions	
<i>AKT1</i>	<i>CDKN2A</i>	<i>FGFR1</i>	<i>HRAS</i>	<i>MTOR</i>	<i>RAF1</i>	<i>ALK</i>	<i>FGFR1</i>	<i>ALK</i>	<i>FGFR3</i>	<i>RET</i>
<i>AKT2</i>	<i>CHEK2</i>	<i>FGFR2</i>	<i>IDH1</i>	<i>NRAS</i>	<i>RET</i>	<i>AR</i>	<i>FGFR2</i>	<i>AR</i>	<i>MET</i>	<i>ROS1</i>
<i>AKT3</i>	<i>CTNNB1</i>	<i>FGFR3</i>	<i>IDH2</i>	<i>NTRK1</i>	<i>ROS1</i>	<i>CD274</i>	<i>FGFR3</i>	<i>BRAF</i>	<i>NRG1</i>	<i>RSPO2</i>
<i>ALK</i>	<i>EGFR</i>	<i>FGFR4</i>	<i>KIT</i>	<i>NTRK2</i>	<i>SMO</i>	<i>CDKN2A</i>	<i>KRAS</i>	<i>EGFR</i>	<i>NTRK1</i>	<i>RSPO3</i>
<i>AR</i>	<i>ERBB2</i>	<i>FLT3</i>	<i>KRAS</i>	<i>NTRK3</i>	<i>TP53</i>	<i>EGFR</i>	<i>MET</i>	<i>ESR1</i>	<i>NTRK2</i>	
<i>ARAF</i>	<i>ERBB3</i>	<i>GNA11</i>	<i>MAP2K1</i>	<i>PDGFRA</i>		<i>ERBB2</i>	<i>PIK3CA</i>	<i>FGFR1</i>	<i>NTRK3</i>	
<i>BRAF</i>	<i>ERBB4</i>	<i>GNAQ</i>	<i>MAP2K2</i>	<i>PIK3CA</i>		<i>ERBB3</i>	<i>PTEN</i>	<i>FGFR2</i>	<i>NUTM1</i>	
<i>CDK4</i>	<i>ESR1</i>	<i>GNAS</i>	<i>MET</i>	<i>PTEN</i>						

Oncomine Pan-Cancer Cell-Free Assay										
SNVs/Indels						CNVs			Fusions	
<i>AKT1</i>	<i>CTNNB1</i>	<i>FGFR1</i>	<i>GNAS</i>	<i>MAP2K2</i>	<i>PIK3CA</i>	<i>SMO</i>	<i>CCND1</i>	<i>FGFR1</i>	<i>ALK</i>	<i>MET</i>
<i>ALK</i>	<i>DDR2</i>	<i>FGFR2</i>	<i>HRAS</i>	<i>MET</i>	<i>PTEN</i>	<i>TP53*</i>	<i>CCND2</i>	<i>FGFR2</i>	<i>BRAF</i>	<i>NTRK1</i>
<i>APC</i>	<i>EGFR</i>	<i>FGFR3</i>	<i>IDH1</i>	<i>MTOR</i>	<i>RAF1</i>		<i>CCND3</i>	<i>FGFR3</i>	<i>ERG</i>	<i>NTRK3</i>
<i>AR</i>	<i>ERBB2</i>	<i>FGFR4</i>	<i>IDH2</i>	<i>NRAS</i>	<i>RET</i>		<i>CDK4</i>	<i>MET</i>	<i>ETV1</i>	<i>RET</i>
<i>ARAF</i>	<i>ERBB3</i>	<i>FLT3</i>	<i>KIT</i>	<i>NTRK1</i>	<i>ROS1</i>		<i>CDK6</i>	<i>MYC</i>	<i>FGFR1</i>	<i>ROS1</i>
<i>BRAF</i>	<i>ESR1</i>	<i>GNA11</i>	<i>KRAS</i>	<i>NTRK3</i>	<i>SF3B1</i>		<i>EGFR</i>		<i>FGFR2</i>	
<i>CHEK2</i>	<i>FBXW7</i>	<i>GNAQ</i>	<i>MAP2K1</i>	<i>PDGFRA</i>	<i>SMAD4</i>		<i>ERBB2</i>		<i>FGFR3</i>	

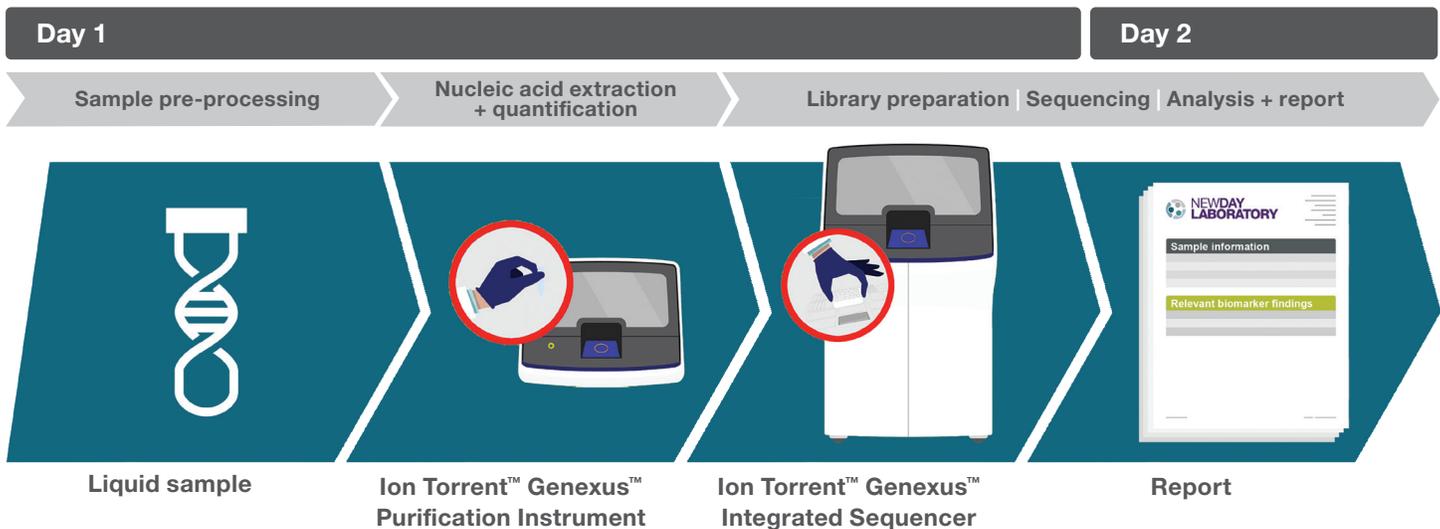
\* Full-length gene

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

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 two-instrument 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 pan-cancer 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

“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

“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.
<b>Liquid biopsy solutions on Ion Torrent Genexus System</b>	
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
<b>Liquid biopsy solutions on Ion GeneStudio S5 Systems</b>	
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
Ion 510 & Ion 520 & Ion 530 Kit-Chef	A34461
<b>Oncomine informatics</b>	
Ion Reporter Server System	4487118

 Find out more at [thermofisher.com/oncomine-liquid](https://thermofisher.com/oncomine-liquid)

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