oncoReveal® CDx

Pan-Cancer Solid Tumor IVD

Get More Patients on Therapy. Faster.

Faster Results For Your Patients Make a World of Difference

oncoReveal® CDx is an FDA PMA-approved, NGS-based companion diagnostic (CDx) kit providing comprehensive genomic results, covering 22 clinically relevant genes. oncoReveal CDx has a single-tube workflow that can be performed by any clinical laboratory, providing sample-to-clinical report in less than 48 hours.

oncoReveal CDx has been clinically and analytically validated across all major solid tumors. The assay kit is designed to provide clinically actionable information — both to consider appropriate CDx therapies in non-small cell lung cancer (NSCLC) and colorectal cancer (CRC), and to aid in the identification of other clinically significant genomic alterations for patients with solid tumors.

PILLAR BIOSCIENCES

Leaders in Decision Medicine™

One Simple Test
Broad Clinical Utility

- 22-gene FDA, CE and NMPA* approved kit-based IVD NGS companion diagnostic test to identify patients that may benefit from KRAS or EGFR targeted therapies
- FDA approved for general tumor profiling (GTP) for patients diagnosed with solid malignant neoplasms

Efficient Workflow
Faster Clinical Results

- Single-tube workflow with 3.5 hours of hands-on time
- Multiple optional stopping points during workflow enables flexible sample batching
- Sample to report in <48 hours

Scalable Testing
Less Tissue Required

- Process up to 46 clinical samples on a single Illumina MiSeq™Dx v3 run†
- Enables high-quality NGS results on low-input DNA samples‡
- High assay sensitivity on low DNA input clinical samples‡

Powerful Bioinformatics
Simple Reporting

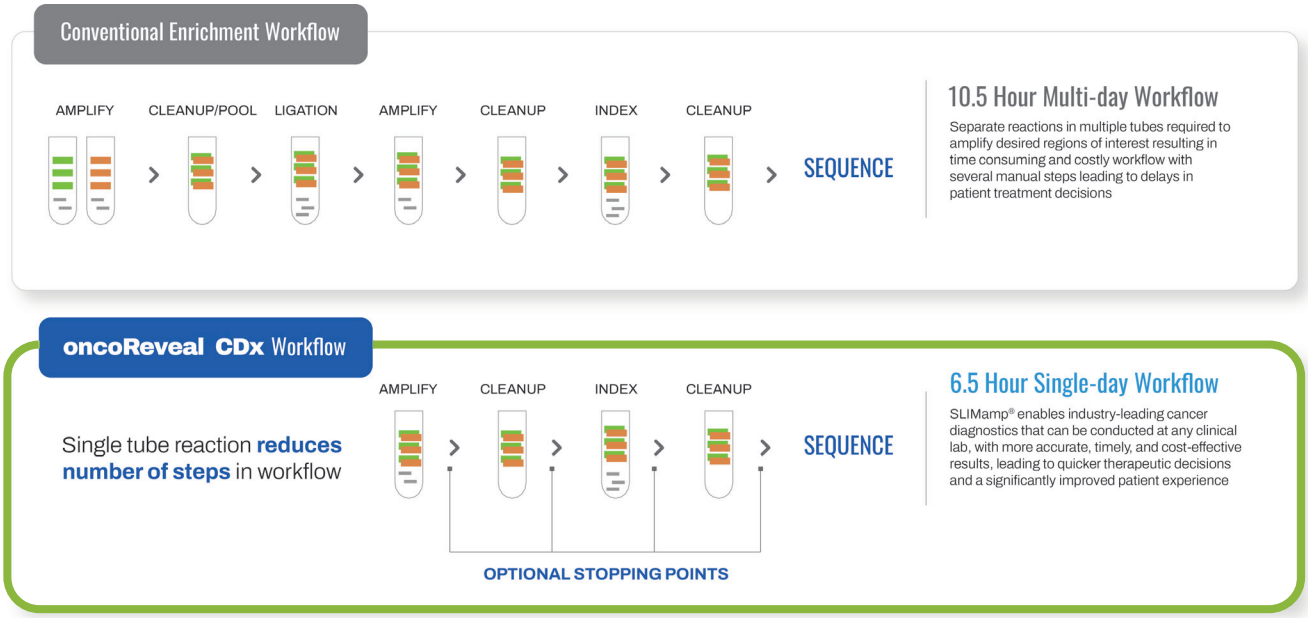
- Provides an integrated, easy-to-interpret clinical report
- Enables sensitive and confident detection of clinically relevant genomic variants
  - Detects CDx variants down to 1.5% variant allele frequency (VAF)
  - Detects non-CDx tumor profiling variants down to 1.4% VAF for SNVs, 2.2% VAF for insertions, 1.7% VAF for deletions

Sample to Report

*oncoReveal® CDx IVD currently FDA approved as a CDx for EGFR and KRAS for NSCLC and CRC, and for KRAS, BRAF and PIK3CA in China for CRC.
†Assumes use of MiSeq™Dx reagent kit v3.
‡The term "low-input" refers to samples with <40ng of input DNA.

Improved Efficiency and Flexibility Compared to Conventional Workflows

Single-tube, one-day workflow drives more accurate, timely and cost-effective results to get patients on the right therapy faster.



FDA Cleared on Illumina MiSeq™DX to Enable Localized NGS Testing

The oncoReveal CDx Pan-Cancer Solid Tumor IVD assay is intended to be sequenced on a MiSeq™Dx instrument* installed with a Pillar LRM module†. Up to 48 libraries (2 controls and 46 patient samples) can be sequenced on a single MiSeq™Dx Reagent Kit v3‡, enabling clinical labs to bring clinical NGS testing in-house.

*MiSeq™Dx instrument: Illumina Cat. No. DX-410-1001.
†The Pillar LRM Module is a custom software tool designed for the MiSeq™Dx by Illumina to interface with collaborator assays.
‡MiSeq™Dx Reagent Kit v3: Illumina Cat. No. 20037124.

Assay Details

Table 1. **Approved companion diagnostic and tumor-profiling indications**

TUMOR TYPES	BIOMARKERS	FDA APPROVED TARGETED THERAPY
Non-Small Cell Lung Cancer (NSCLC)	EGFR Exon 19 in Frame Deletions and Exon 21 L858R Substitution Mutations	All EGFR Tyrosine Kinase Inhibitors approved by FDA
Colorectal Cancer (CRC)	KRAS wild-type (absence of mutations in codons 12 and 13)	Erbitux® (cetuximab), or Vectibix® (panitumumab)
Pan-Cancer Solid Tumor (NSCLC, CRC, Breast, Melanoma, Ovarian, Endometrial, Renal, Liver, Bladder, Thyroid, Pancreatic, Brain, other)	General tumor mutation profiling to be used by qualified health care professionals in accordance with professional guidelines in oncology for cancer patients with solid malignant neoplasms.	

Table 2. **oncoReveal® CDx gene list***

AKT1	ALK	BRAF	CTNNB1	DDR2	EGFR	ERBB2	ERBB4
FBXW7	FGFR1	FGFR2	FGFR3	KRAS	MAP2K1	MET	NOTCH1
NRAS	PIK3CA	PTEN	SMAD4	STK11	TP53		

*Genes with CDx claims noted in green.

Table 3. **Commonly mutated, clinically significant variants**

The table below lists common variants in EGFR, KRAS, PTEN, AKT1, PIK3CA, BRAF, and FGFR3 that are reported by the oncoReveal® CDx assay. Additional variants found within these genes, as well as the genes listed in Table 2, were also used to evaluate oncoReveal® CDx for tumor profiling purposes.

GENE	VARIANT ID	GENE	VARIANT ID
EGFR	T790M; G719A; G719C; G719D; G719S; Exon 20 In-frame Insertions	PIK3CA	N345I; N345T; N345K; E542Q; E542K; E542V, E545K; E545Q; E545A; E545G; E545D H1047Y; H1047L; H1047R; R88Q; R88L
KRAS	A59E; A59G; A59T; A59S; Q61E; Q61H; Q61K; Q61L; Q61R K117N; A146T; A146P; A146V	BRAF	V600E; V600K
PTEN	R130Q; R130L; R130P; R130G; R130*; T319del	FGFR3	R248C; S249C; G370C; Y373C
AKT1	E17K		

Test Report

The oncoReveal CDx report, which incorporates relevant patient and sample information, is automatically generated as a PDF for immediate clinical use. The diagnostic test results are presented in three parts:

- Companion diagnostic biomarker results with associated therapy indications
- Mutations with evidence of clinical or potential clinical significance
- Pertinent no calls, highlighting clinically relevant gene regions that were not sufficiently assessed in the patient sample

MUTATION(S) DETECTED FOR THERAPEUTIC USE

Companion Diagnostic (CDx) Associated Findings (Table 1 in Information About Assay section)

Gene	Exon	Nucleotide Change	Amino Acid Change	FDA-Approved Therapeutic Options
EGFR	21	c.2573T>G	p.Leu858Arg	Response to EGFR Tyrosine Kinase Inhibitors approved by FDA*

* see the following Table 1

Mutations in CDx biomarkers that were detected in the patient sample.

MUTATION(S) WITH EVIDENCE OF CLINICAL SIGNIFICANCE

Gene	Exon	Nucleotide Change	Amino Acid Change
KRAS	2	c.34G>T	p.Gly12Cys

Mutations detected in biomarkers with evidence of clinical significance OR potential clinical significance.

MUTATION(S) WITH POTENTIAL CLINICAL SIGNIFICANCE

Gene	Exon	Nucleotide Change	Amino Acid Change
TP53	8	c.910_911del	p.Thr304Ter

PERTINENT NO CALLS

The following clinically relevant genetic regions were not sufficiently assessed in this sample.

Gene	Codon(s)
PTEN	276-301

Highlighting clinically relevant gene regions that were not sufficiently assessed in patient sample.

Analytical Performance

Concordance of the oncoReveal CDx assay with validated reference methods based on PCR or NGS was established for all CDx biomarkers and general tumor profiling.

General Tumor Profiling Concordance Studies

Comparator (A). Concordance of variant calls between Pillar Biosciences' oncoReveal® CDx (oRCDx) and Thermo Fisher Scientific, Inc. Oncomine™ Focus Assay (OFA). 257 valid sample results represented by 10 tumor types were evaluated across 15 overlapping genes between oRCDx/OFA.

VARIANT TYPE	PPA*	NPA†
SNV	99.3%	100.0%
MNV	100.0%	100.0%
Insertion	100.0%	100.0%
Deletion	100.0%	100.0%

Comparator (B). Concordance of variant calls between Pillar Biosciences' oncoReveal® CDx (oRCDx) and the New York State Department of Health validated Columbia Solid Tumor Panel (CSTP). 190 valid sample results represented by 10 tumor types were evaluated across 21 overlapping genes between oRCDx/CSTP.

VARIANT TYPE	PPA*	NPA†
SNV	98.7%	100.0%
MNV	100.0%	100.0%
Insertion	90.9%	100.0%
Deletion	100.0%	100.0%

Sample level agreement analysis of oncoReveal CDx with Comparator assays OFA and CSTP

COMPARATOR	SAMPLES	% AGREEMENT (95% CI)
Oncomine™ Focus Assay (OFA)	257	95.7% (92.5%,97.6%)
Columbia Solid Tumor Panel (CSTP)	187	89.8% (84.7%,93.4%)

*PPA (positive percentage agreement) is calculated by dividing the number of samples with the mutation according to the oncoReveal® CDx assay by the number of samples with the mutation according to the comparator.

†NPA (negative percentage agreement) is calculated by dividing the number of samples identified as wild-type according to the oncoReveal® CDx assay by the number of samples identified as wild-type according to the comparator.

Companion Diagnostic Concordance Studies

An external concordance study was conducted to assess the concordance between oncoReveal CDx and an FDA-approved CDx comparator. A non-inferiority study was performed against the Qiagen therascreen® KRAS PCR kit for KRAS in CRC, and the Roche cobas® EGFR Mutation Test v2 for EGFR in NSCLC. It was concluded that the agreement between oncoReveal CDx and the comparator is non-inferior to the agreement between two replicates of comparator results by a margin of 5% in CRC KRAS and 4% in NSCLC EGFR.

CDx TARGET	COMPARATOR (CCD)	PPA*	NPA†
KRAS G12X	therascreen® KRAS	>95.7%	97.7%
EGFR Exon19 del EGFR L858R	Roche cobas® EGFR	100.0%	98.3%

oncoReveal CDx Technical Specifications

Enrichment chemistry	Multiplex PCR using tiled amplicons
Number of pools	1 pool
Number of genes/amplicons	22/103
Number of targets	>1800 hotspots covering >3600 DNA variants
Variant types	SNVs/Indels
Recommended DNA input	30 – 80 ng
% Tumor Nuclei Required	≥ 30% tumor nuclei
Sample type	DNA from FFPE
Validated NGS platform	Illumina MiSeq™Dx

Ordering Information

ITEM	PART NUMBER
oncoReveal® CDx 48 reaction kit	HDA-LC-2001-48
Cyber secure oncoReveal® CDx PiVAT® workstation	SFW-2012
Pillar MiSeq™Dx LRM Module	SFW-2008

TO ORDER OR LEARN MORE

pillarbiosci.com

For In Vitro Diagnostic Use.

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