

ACT Drug[®] +

Actionable Insights for Timely Treatment Options



101 Genes

Assesses clinically relevant gene alterations aligned with FDA-approved and NCCN guideline-recommended targeted therapies, supporting informed first-line treatment decisions



Whole Coding-Region Design

Comprehensive variant detection and identification of clinically actionable alterations



Resistance Mutation Insight

Provides genomic insights into variants associated with treatment resistance



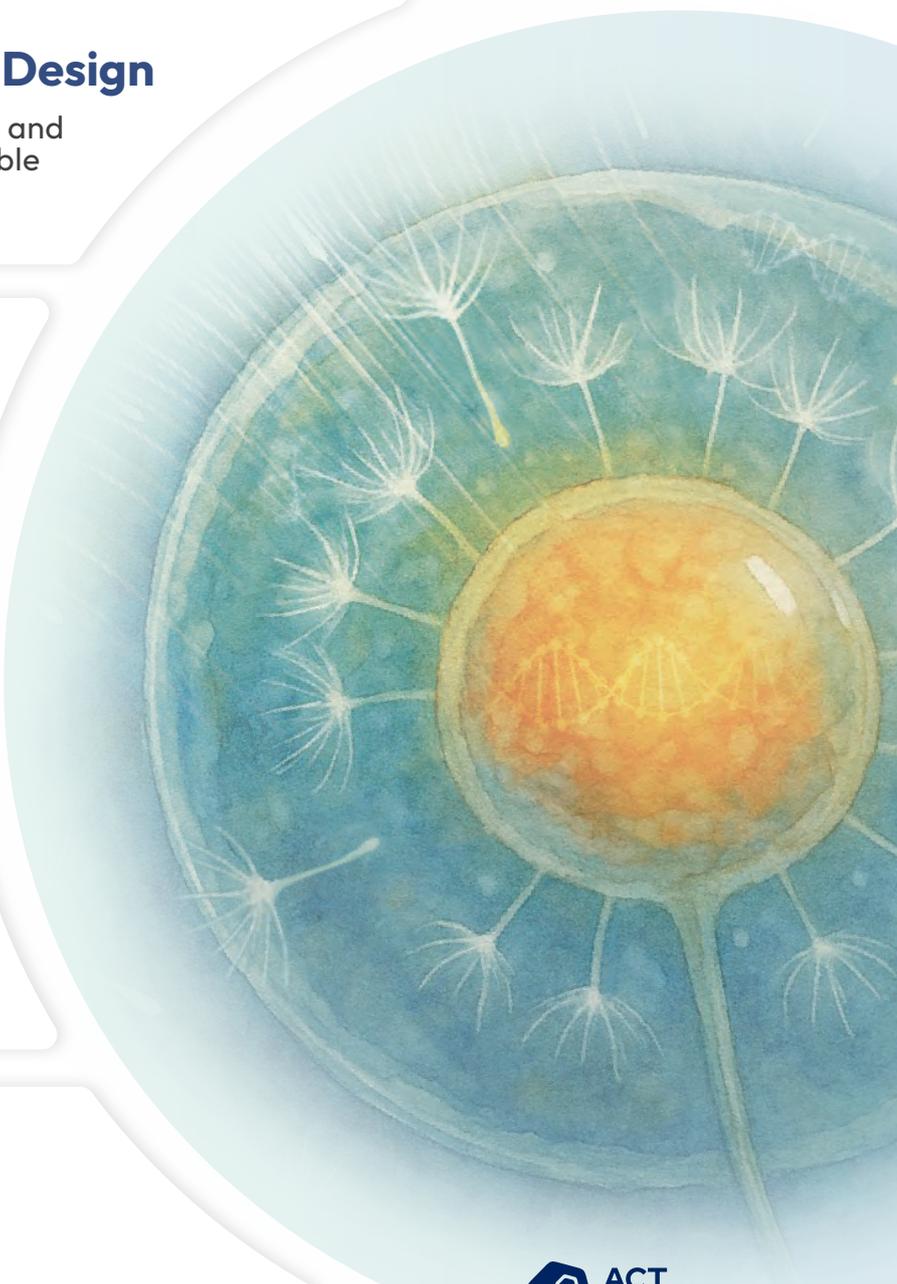
RNA-based NGS Fusion Detection

Enables assessment of known and novel gene fusion events, supporting identification of patients who may benefit from targeted therapy



7 Working Days

Rapid turnaround time



The Specification of The New ACTDrug® +

ACTDrug® +	Number of Genes Tested	101
	Types of Gene Mutations Analyzed	<ul style="list-style-type: none"> • Single nucleotide variants (SNVs); Small insertions and deletions (InDels) • Copy number alterations (CNAs) and Fusion genes • Large genomic rearrangement (LGR) • Microsatellite Instability (MSI)
	Sensitivity*	SNV and Indels: 100%, CNAs: 95%, LGR (BRCA1/2): 100%, Fusion genes 100%, MSI: 100%
	Specificity*	SNV and Indels: 100%, CNAs: 100%, LGR (BRCA1/2): 94%, Fusion genes 100%, MSI: 94%
	Specimen Requirements	FFPE Tumor Tissue 5-20 unstained sections (5 µm/slide, surface area ≥ 125 mm ²) 1 H&E-stained slide (5 µm)
	Turnaround Time	7 Working Days (from receipt of qualified samples at our CAP-accredited laboratory)

*Analytical performance was established under defined validation conditions

Gene List

◆ SNV / InDel ■ CNA ● Fusion

AKT1 ◆■	AKT3 ●	ALK ◆■●	APC ◆■	AR ◆■●	ATM ◆■
ATR ◆■	ATRX ◆■	BARD1 ◆■	BRAF ◆■●	*BRCA1 ◆■	*BRCA2 ◆■
BRIP1 ◆■	CCND1 ◆■	CCNE1 ◆■	CDK12 ◆■	CDK4 ◆■	CDK6 ◆■
CDKN2A ◆■	CDKN2B ◆■	CHEK1 ◆■	CHEK2 ◆■	CTNNB1 ◆■	EGFR ◆■●
ERBB2 ◆■●	ERBB3 ◆■	ERBB4 ◆■●	ERG ●	ESR1 ◆■●	EZH2 ◆■
FANCA ◆■	FANCL ◆■	FBXW7 ◆■	FGFR1 ◆■●	FGFR2 ◆■●	FGFR3 ◆■●
H3F3A (H3-3A) ◆■	HDAC2 ◆■	HIST1H3B (H3C2) ◆■	HRAS ◆■	IDH1 ◆■	IDH2 ◆■
JAK1 ◆■	JAK2 ◆■	KEAP1 ◆■	KIT ◆■●	KRAS ◆■	MAP2K1 ◆■
MAP2K2 ◆■	MDM2 ◆■	MDM4 ◆■	MET ◆■●	MLH1 ◆■	MRE11 ◆■
MSH2 ◆■	MSH6 ◆■	MTAP ◆■	MTOR ◆■	MUTYH ◆■	MYC ◆■
MYCN ◆■	NBN ◆■	NF1 ◆■	NF2 ◆■	NRAS ◆■	NRG1 ●
NRG2 ●	NTRK1 ◆■●	NTRK2 ◆■●	NTRK3 ◆■●	NUTM1 ●	PALB2 ◆■
PAX8 ●	PDGFRA ◆■	PIK3CA ◆■●	PIK3R1 ◆■	PMS2 ◆■	POLD1 ◆■
POLE ◆■	PPARG ●	PPP2R1A ◆■	PTEN ◆■	RAD51B ◆■	RAD51C ◆■
RAD51D ◆■	RAD54L ◆■	RAF1 ●	RB1 ◆■	RET ◆■●	ROS1 ◆■●
RSPO2 ●	SMAD4 ◆■	SMARCB1 ◆■	STK11 ◆■	*TERT ◆■	TFE3 ●
TMPRSS2 ●	TP53 ◆■	TSC1 ◆■	TSC2 ◆■	VHL ◆■	

*genes provide large genomic rearrangement (LGR) information
#TERT promoter is also covered in the ACTDrug+ panel

Actionable and Emerging Biomarkers

Cancer Type	Clinically actionable biomarkers with FDA-approved therapies and NCCN guideline support	Potential biomarkers
Pan-Solid Tumor	<i>BRAF V600E, NTRK1/2/3 fusions, RET fusions, MSI</i>	
Lung Cancer	<i>ALK, BRAF, EGFR, ERBB2, FGFR1/2/3, KRAS, MET, NRG1, ROS1</i>	<i>KEAP1, MTAP, PIK3CA, RB1, STK11, TP53</i>
Breast Cancer	<i>AKT1, BRCA1/2, ERBB2, ESR1, FGFR1/2/3, PALB2, PIK3CA, PTEN</i>	<i>ATM, BRIP1, BRAD1, CCND1, CCNE1, CHECK2, HRAS, KRAS, MYC, NRAS, RB1, TP53</i>
Colorectal	<i>BRAF, ERBB2, HRAS, KRAS, NRAS, PIK3CA, POLE, POLD1</i>	<i>APC, ALK, HER2, MET, MLH1, MSH2, MSH6, MUTYH, PMS2, PTEN, ROS1, SMAD4, STK11, TP53</i>
Gastric	<i>ERBB2</i>	<i>ATM, ATR, EGFR, FGFR2, MET, MLH1, MSH2, MSH6, PIK3CA, PMS2, POLE, TP53</i>
Biliary Tract	<i>ERBB2, FGFR2, IDH1, KRAS</i>	<i>FGFR1, FGFR3, IDH2, MDM2, MET, MTAP, PIK3CA, PTEN, TP53</i>
GIST	<i>KIT, FGFR1/2/3, NF1, PDGFRA</i>	<i>KRAS, PIK3CA</i>
Thyroid	<i>ALK, HRAS, KRAS, NRAS, PAX8, TERT</i>	<i>ATM, FGFR3, PIK3CA, PTEN, TP53</i>
Brain	<i>ATRX, CDKN2A/B, IDH1/2, EGFR, H3-3A, H3C2, TERT</i>	<i>ALK, CDK4/6, FGFR1/2/3, MET, TSC1/2, MDM2, MTAP, NF1, PIK3CA, POLE, PTEN, PDGFRA, ROS1</i>

NCCN Clinical Practice Guidelines in Oncology, Non-Small Cell Lung Cancer Version 3.2026; Breast Cancer Version 5. 2025; Colon Cancer Version 5. 2025, Gastric Cancer Version 1. 2026, Biliary Tract Cancer Version 2. 2025; Thyroid Carcinoma Version 1. 2025; Central Nervous System Cancers Version 3. 2025; Oncologist. 2025 Mar 10;30(3):oyae357; Hum Pathol. 2025 Aug;162:105881; Cancer Discov. 2020 August ; 10(8): 1174–1193.; Genes (Basel). 2023 Jun 28;14(7):1364.; Cancers (Basel). 2024 Nov 19;16(22):3870; Clin Oncol (R Coll Radiol). 2025 Jan;37:103661; J Cancer Res Clin Oncol. 2023 Jan;149(1):467-481; Trends Mol Med. 2025 Dec;31(12):1089-1102.; Am J Pathol. 2025 Mar;195(3):437-452.; ESMO Open. 2022 Jun 10;7(3):100505.; ESMO Open. 2018 Apr 6;3(3):e000335.; Eur Thyroid J. 2025 Jul 7;14(4):e250024.; Neuro Oncol. 2024 Oct 10;27(2):331-337. Nat Med. 2024 Mar;30(3):730-739

ACTDrug® Breast

Number of Genes Tested

16

Turnaround Time

6 working days

Types of gene Mutations Analyzed

SNV/ InDels, CNAs (including BRCA1/2 LGR), Fusion genes, MSI

Gene List

◆ SNV / InDel ■ CNA ● Fusion

AKT1 ◆■

#BRAF ◆■●

*BRCA1 ◆■

*BRCA2 ◆■

ERBB2 ◆■●

ESR1 ◆■●

FGFR1 ◆■●

FGFR2 ◆■●

FGFR3 ◆■●

NTRK1 ◆■●

NTRK2 ◆■●

NTRK3 ◆■●

PALB2 ◆■

PIK3CA ◆■●

PTEN ◆■

RET ◆■●

*Indicates genes with large genomic rearrangement (LGR) coverage.
#genes also provide exon-skipping alteration information

ACTDrug® GI

Number of Genes Tested

20

Turnaround Time

6 working days

Types of gene Mutations Analyzed

SNV/ InDels, CNAs, Fusion genes, MSI

Gene List

◆ SNV / InDel ■ CNA ● Fusion

#BRAF ◆■●

ERBB2 ◆■●

FGFR1 ◆■●

FGFR2 ◆■●

FGFR3 ◆■●

HRAS ◆■

IDH1 ◆■

IDH2 ◆■

KIT ◆■●

KRAS ◆■

NF1 ◆■

NRAS ◆■

NTRK1 ◆■●

NTRK2 ◆■●

NTRK3 ◆■●

PDGFRA ◆■

PIK3CA ◆■●

POLD1 ◆■

POLE ◆■

RET ◆■●

#genes also provide exon-skipping alteration information



**Newly Diagnosed
Advanced/ Meta-
Static Patients**



**Biomarker
Associated
Drug
Information**



**6~7 Working
Days
Turnaround
Time**



**Bioinformatic
Analysis
Based on Curated
International
Databases**



**Easy-to-
Interpret
Medical
Report**

CAP

**Quality
Assured
Testing**

ACTDrug[®] + Report

1

Actionable summary of the detected variant and associated therapies

2

MSI status reported to support clinical decision-making related to immunotherapy

Report Summary for Actionable Variants/Biomarkers

Immune Checkpoint Inhibitor (ICI) Related Biomarkers

Detected Biomarker Status	Corresponding Therapies
Microsatellite Status (MSI): Microsatellite stable	-

Legend: S Sensitive R Resistant

Variants/Biomarkers with Clinical Significance (Target Therapy)

Genomic Alterations	Evidence Level 1, 2 (FDA-approved, NCCN guideline)	Evidence Level 3A, 3B, 4 (Others)
BRCA2 I605Yfs*9	S Olaparib, Talazoparib	S Niraparib, Rucaparib
PIK3CA R88Q	S Alpelisib, Capivasertib, Inavolisib	S Everolimus
PIK3CA Amplification	-	S Everolimus

Variants/Biomarkers with Clinical Significance (Hormone Therapy)

Genomic Alterations	Evidence Level 1, 2 (FDA-approved, NCCN guideline)	Evidence Level 3A, 3B, 4 (Others)
Not detected		

Cancer-specific genes evaluated
FDA-Approved Biomarkers Assessed by this Assay: *ALK, BRAF, EGFR, ERBB2, KRAS, MET, RET, ROS1.*

3

Variant reporting and classification are based on levels of evidence, prioritizing treatment-related evidence supported by international publications and guidelines. List out the cancer-specific genes according to the patient's cancer type and clinical guidelines.

5

Highlight FDA-approved biomarkers assessed by this assay to enable clear and rapid interpretation for clinical decision-making.

4

Icons are used to indicate drug sensitivity or resistance for faster interpretation.

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