ACT Drug® +

Actionable Insights for Timely Treatment Options

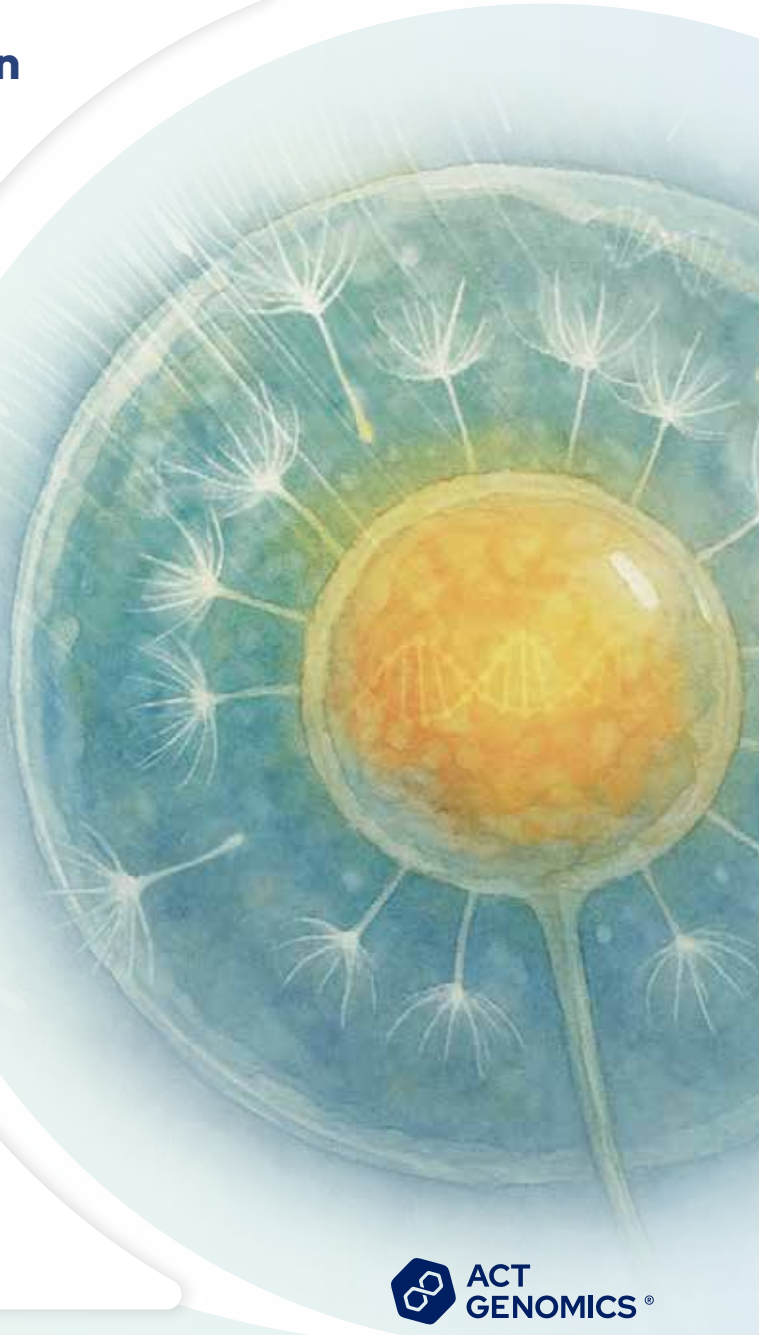
101 Genes
Assesses clinically relevant gene alterations aligned with FDA-approved and NCCN guideline-recommended targeted therapies, supporting informed first-line treatment decisions

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



ACT GENOMICS®

The Specification of The New ACTDrug® +

ACTDrug® +

Number of Genes Tested	101
Types of Gene Mutations Analyzed	• 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	*BRAF V600E, NTRK1/2/3 fusions, RET fusions, MSI*	
Lung Cancer	*ALK, BRAF, EGFR, ERBB2, FGFR1/2/3, KRAS, MET, NRG1, ROS1*	*KEAP1, MTAP, PIK3CA, RB1, STK11, TP53*
Breast Cancer	*AKT1, BRCA1/2, ERBB2, ESR1, FGFR1/2/3, PALB2, PIK3CA, PTEN*	*ATM, BRIP1, BRAD1, CCND1, CCNE1, CHECK2, HRAS, KRAS, MYC, NRAS, RB1, TP53*
Colorectal	*BRAF, ERBB2, HRAS, KRAS, NRAS, PIK3CA, POLE, POLD1*	*APC, ALK, HER2, MET, MLH1, MSH2, MSH6, MUTYH, PMS2, PTEN, ROS1, SMAD4, STK11, TP53*
Gastric	*ERBB2*	*ATM, ATR, EGFR, FGFR2, MET, MLH1, MSH2, MSH6, PIK3CA, PMS2, POLE, TP53*
Biliary Tract	*ERBB2, FGFR2, IDH1, KRAS*	*FGFR1, FGFR3, IDH2, MDM2, MET, MTAP, PIK3CA, PTEN, TP53*
GIST	*KIT, FGFR1/2/3, NF1, PDGFRA*	*KRAS, PIK3CA*
Pancreatic	*ALK, BRCA1, BRCA2, ERBB2, FGFR2, KRAS, NRG1, PALB2, ROS1*	*ATM, ATR, CDKN2A,CHEK1, CHEK2, FANCA, MET, MTAP, PIK3CA, RAD51C, RAD51D, SMAD4, TP53*
Thyroid	*ALK, HRAS, KRAS, NRAS, PAX8, TERT*	*ATM, FGFR3, PIK3CA, PTEN, TP53*
Brain	*ATRX, CDKN2A/B, IDH1/2, EGFR, H3-3A, H3C2, TERT*	*ALK, CDK4/6, FGFR1/2/3, MET, TSC1/2, MDM2, MTAP, NF1, PIK3CA, POLE, PTEN, PDGFRA, ROS1*

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 Version1. 2026, Biliary Tract Cancer Version 2. 2025; Thyroid Carcinoma Version 1. 2025; Central Nervous System Cancers Version3. 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

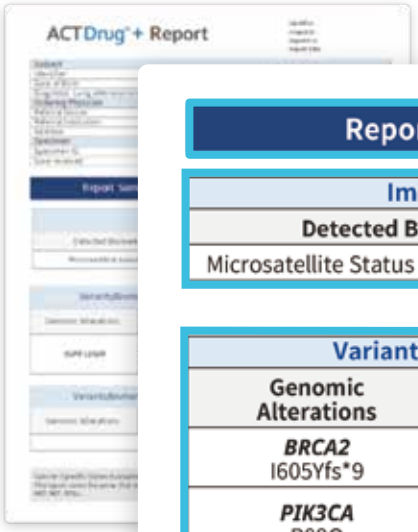
6~7 Working Days Turnaround Time

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	-

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: *AKT1, BRCA1, BRCA2, ERBB2, ESR1, PIK3CA, PTEN.*

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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