

Testing Options for Broad Molecular Profiling in Patients With Metastatic NSCLC

BIOMARKER TESTING AT DIAGNOSIS MAY HELP ENSURE PATIENTS WITH METASTATIC NSCLC RECEIVE APPROPRIATE FIRST-LINE TREATMENT¹

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines[®]) Recommendations¹

Molecular Biomarker Testing ^{a,b}	Immune Biomarker Testing ^b
<i>EGFR</i> mutations	PD-L1 expression levels of $\geq 1\%$
<i>ALK</i> rearrangements	
<i>ROS1</i> rearrangements	
<i>BRAF</i> mutations	
<i>NTRK</i> gene fusions	
<i>MET</i> exon 14 skipping mutations	
<i>RET</i> rearrangements	

- The NCCN NSCLC Panel recommends molecular testing and strongly advises broader molecular profiling with the goal of identifying rare driver mutations for which effective drugs may already be available or to appropriately counsel patients regarding the availability of clinical trials¹
- NCCN recommends that although PD-L1 expression can be elevated in patients with an oncogenic driver, targeted therapy for the oncogenic driver should take precedence over treatment with an immune checkpoint inhibitor¹
- Broad molecular profiling is a key component of the improvement of care for patients with metastatic NSCLC¹

^aIn general, the mutations/alterations described are seen in a nonoverlapping fashion, although between 1% and 3% of NSCLC may harbor concurrent alterations.

^bThe NCCN Guidelines[®] for NSCLC provide recommendations for individual biomarkers that should be tested and recommend testing techniques, but do not endorse any specific commercially available biomarker assays.

Check the NCCN Guidelines[®] regularly for updates.

MULTIPLE MOLECULAR TESTS ARE AVAILABLE TO IDENTIFY CLINICALLY ACTIONABLE MUTATIONS

Available tests and fundamental parameters may influence test selection. Please note that the list of tests below does not represent a comprehensive list of testing options.

Manufacturer	Test Name	Testing Method	Gene(s)	Turnaround Time	Sample Requirement	Contact Manufacturer
ARUP® Laboratories	Lung Cancer Panel^{2,a}	PCR/pyrosequencing, IHC	<i>EGFR, ALK, ROS1</i>	7-14 days	FFPE (block OR 13 unstained slides)	800.522.2787
Biodesix®	Biodesix Lung Reflex® (GeneStrat®)³	ddPCR	<i>EGFR, ALK, BRAF, KRAS, RET, and ROS1</i>	3 days	Blood	866.432.5930
Caris® Life Sciences	Molecular Intelligence® Comprehensive Tumor Profiling⁴⁻⁶	NGS	592 genes	8-14 days	FFPE (block OR 25 unstained slides)	888.979.8669
Foundation Medicine	FoundationOne® CDx^{7-9,b,c}	NGS	324 genes	<14 days	FFPE (block OR 10 unstained slides + 1 H&E slide)	888.988.3639
	FoundationOne® Liquid CDx^{10-12,b,d}	NGS	324 genes	<14 days	Blood (2 tubes, 8.5 mL each)	
Guardant Health	Guardant360® CDx^{13,14,b,e}	NGS	74 genes	7 days	Blood (Streck tubes, minimum of 5 mL)	guardant360cdx.com
LabCorp	NSCLC Therapeutic Profile II^{15,16}	SNaPshot multiplex PCR; <i>ALK</i> FISH	<i>EGFR, ALK, KRAS</i>	10-14 days	FFPE (block OR 14 unstained slides + 1 H&E slide)	www.labcorp.com/ contact-rep
Mayo Clinic Laboratories	Lung Panel with Rearrangement Tumor^{17,18}	NGS	12 genes	12-20 days	FFPE (block OR 10 unstained slides + 1 H&E slide)	800.533.1710
NeoGenomics	NeoTYPE® Lung Tumor Profile¹⁹	NGS/FISH, other molecular methods, and IHC	46 genes	14 days	FFPE (block)	866.776.5907
	InVisionFirst®-Lung^{20,21}	NGS	37 genes	7 days	Blood (2 tubes of whole blood)	
Quest Diagnostics™	cobas® EGFR Mutation Test v2^{22-24,b,f,g}	Real-time PCR	<i>EGFR</i>	5 days ^h	FFPE (10 unstained slides + 1 H&E slide) Plasma (4 mL)	www.questdiagnostics.com/home/contact.html
	Lung Cancer Mutation Panel^{22,25}	PCR: <i>EGFR</i> and <i>KRAS</i> FISH: <i>ALK</i>	<i>EGFR, ALK, KRAS</i>	9 days ^h	FFPE (block)	
Tempus	Tempus xT²⁶⁻²⁹	NGS	648 genes	9-14 days	FFPE (block OR 10 unstained slides + 1 H&E slide)	800.739.4137
	Tempus xF²⁶⁻³⁰	NGS	105 genes	9-14 days	Blood (2 Streck tubes, 8.5 mL each)	

^aThis test is approved by the New York State Department of Health.

^bFDA-approved companion diagnostic.

^cPlease see the FoundationOne® CDx label for intended use at https://info.foundationmedicine.com/hubs/FMI%20Labels/FoundationOne_CDx_Label_Technical_Info.pdf.

^dThe test analyzes 324 genes and is FDA-approved to detect and report substitutions, insertions and deletions (indels) in 311 genes, including rearrangements and copy number losses only in *BRCA1* and *BRCA2*.¹⁰ Please see the FoundationOne® Liquid CDx label for intended use at http://info.foundationmedicine.com/hubs/FMI%20Labels/FoundationOne_Liquid_CDx_Label_Technical_Info.pdf.

^eThe test analyzes 74 genes and is FDA-approved for the detection and reporting of single nucleotide variants (SNVs), insertions and deletions (indels) in 55 genes, copy number amplifications (CNAs) in 2 genes, and fusions in 4 genes.¹³ Please see the Guardant360® CDx label for intended use at <https://guardant360cdx.com/technicalinfo/>.

^fPlease note that cobas® EGFR Mutation Test v2 is also available through Laboratory Corporation of America.³¹

^gPlease see the cobas® EGFR Mutation Test v2 label for intended use at <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P120019s019>.

^hIn-house data.

Please check with each manufacturer customer service representative to understand tumor content requirement for each test.

ABBREVIATIONS

ALK, anaplastic lymphoma kinase; **BRAF**, v-Raf murine sarcoma viral oncogene homolog B; **CDx**, companion diagnostic; **ddPCR**, droplet digital polymerase chain reaction; **EGFR**, epidermal growth factor receptor; **FDA**, Food and Drug Administration; **FFPE**, formalin-fixed, paraffin-embedded; **FISH**, fluorescence in situ hybridization; **H&E**, hematoxylin and eosin; **IHC**, immunohistochemistry; **KRAS**, v-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog; **MET**, mesenchymal-epithelial transition; **MSI**, microsatellite instability; **NCCN**, National Comprehensive Cancer Network; **NGS**, next-generation sequencing; **NSCLC**, non-small cell lung cancer; **NTRK**, neurotrophic receptor tyrosine kinase; **PCR**, polymerase chain reaction; **PD-L1**, programmed death-ligand 1; **RET**, rearranged during transfection; **ROS1**, ROS1 proto oncogene 1, receptor tyrosine kinase; **TMB**, tumor mutation burden.

REFERENCES

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To stay informed on evolving biomarker testing options for metastatic NSCLC, contact your AstraZeneca Oncology Diagnostics Manager.