



# TUMOR TESTING FOR LUNG CANCER

## A GUIDE FOR PATIENTS AND CAREGIVERS

When your doctors suspected you had cancer, they took a small portion of your tumor (a biopsy) to have it examined. A specialist, called a pathologist, looked at your tumor cells under the microscope and found out you had lung cancer. The pathologist should have been able to tell whether you have small cell lung cancer or non-small cell lung cancer (NSCLC).

If you have NSCLC, the pathologist can usually tell the subtype of your tumor based on histology. Adenocarcinoma and squamous cell carcinoma are the most common histology subtypes of NSCLC. The histology of your tumor can help determine your treatment options.

### WHAT IS TUMOR TESTING?

More detailed testing can be done on your tumor if your doctor requests it. These tests are sometimes called molecular testing or biomarker testing, and may involve:

- looking for changes (mutations) in the DNA of the tumor
- looking at levels of specific proteins present in the tumor

The mutations of lung cancers are usually not inherited and cannot be passed on to your children.



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## WHY SHOULD MY TUMOR BE TESTED?

Testing can help determine which treatments might be best for you.

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**Targeted Therapies** - When particular tumor characteristics are found through molecular testing, treatments that target these characteristics may be an option for you. Knowing if your tumor has one of these characteristics is important in helping you and your doctor make well-informed decisions about your treatment.

Characteristics that can be targeted with currently available treatments include:

- Epidermal Growth Factor Receptor (EGFR) mutations
- Anaplastic Lymphoma Kinase (ALK) gene rearrangement
- ROS1 gene rearrangement
- T790M mutation
- BRAF V600E mutation

## EGFR, ALK, ROS1 and BRAF Mutations

These mutations turn on processes that make cancer cells grow and divide uncontrollably. Targeted therapies work by turning off these processes.

Tumor testing for these mutations may be recommended if you have the adenocarcinoma subtype of NSCLC, though other subtypes can also have these mutations. Blood tests, sometimes called “liquid biopsies,” can also be used to test for certain EGFR mutations.

## T790M Mutation

Sometimes tumors can develop new mutations that cause targeted therapies to stop working (a process known as resistance). The most common mutation that causes resistance to EGFR-targeted drugs is called T790M. Your doctor might recommend another biopsy or a blood test to see if your tumor has the T790M mutation. You should talk to your doctor about whether your



tumor should be biopsied to test for T790M.

**Immunotherapy** - Immunotherapy is an exciting approach to treating lung cancer. Immunotherapies work by boosting your body's own natural defenses to fight cancer. Your doctor may recommend testing your tumor for the amount of a protein known as PD-L1 before prescribing an immunotherapy.

**Clinical Trials** - Even if your tumor is negative for EGFR, ALK, ROS1 and BRAF mutations, your tumor can still be tested for other biomarkers that may allow you to access treatment through a clinical trial.

## HOW DO I GET MY TUMOR TESTED?

If there is enough tissue from the original biopsy of your tumor, this tissue can be tested. If not, you may need a second biopsy to get enough tissue to test. Some doctors may also want a second biopsy to see if you have developed the

T790M mutation while taking an EGFR-targeted therapy. Results are usually sent back to your doctor 1 to 3 weeks later. A blood test might also be used to test for the T790M mutation.

A type of test called next generation sequencing (NGS) has been approved by the FDA. NGS can test a sample of your tumor for multiple mutations, including BRAF and EGFR mutations.

If your doctor doesn't recommend tumor testing for you, it is okay for you to ask "why not?" Testing may not be appropriate for all patients, but it is best for you to know as much as you can about your disease so you and your doctors can be full partners in your care. If you have questions about the response you get from your doctor, it is okay to ask for a second opinion from another doctor.

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**TO FIND CLINICAL TRIALS** for your cancer treatment, visit [freetobreathe.org/clinical-trials](https://freetobreathe.org/clinical-trials).



**Questions? Call the Free to Breathe Support Line**

**(844) 835-4325**

A FREE resource for patients with lung cancer and their caregivers

## WHERE CAN I GO TO GET MY TUMOR TESTED?

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Many major medical centers, including members of the Lung Cancer Mutation Consortium (LCMC), offer molecular testing for patients with lung cancer. If your medical center does not provide this testing, consider visiting an LCMC institution. **Visit [golcmc.com](http://golcmc.com) to find an LCMC institution near you.**

## WHAT WILL IT COST TO GET MY TUMOR TESTED?

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Most lung cancer tumor tests are covered by insurance. If you have concerns about whether your insurance will pay for tumor testing, talk with your nurse, social worker or insurance representative.

## WHAT IF MY TEST RESULTS DON'T QUALIFY ME FOR TARGETED TREATMENT?

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Even if your tumor does not have characteristics that can be matched to a targeted treatment that is available commercially or through a clinical trial, tumor testing can still help you and your doctor decide on the right treatment option for you. In these cases, the very best care will still be given to you.

### **FOR ADDITIONAL INFORMATION**

on lung cancer and tumor testing, please visit [freetobreathe.org](http://freetobreathe.org).

