

# Molecular Testing in Lung Cancer

## Myths & Facts

Molecular profiling uses an individual's disease profile to identify whether he or she is eligible for a biomarker-driven treatment option. In recent years, biomarker-driven therapies have become an important part of treatment planning for patients with non-small cell lung cancer (NSCLC) and are often prescribed after a molecular test is conducted and a patient's tumor is determined to exhibit certain biomarkers. Unfortunately, myths surrounding this treatment approach can sometimes stop lung cancer patients from benefiting from it. Below are the myths and facts about molecular testing and biomarker-driven therapies that every lung cancer patient should know.

### Myths

### Facts

**All lung cancer tumors are the same, and should be treated as such.**

Lung cancer used to be thought of as one singular disease, but doctors now understand that there are different types of lung cancer. The two major kinds of lung cancer are non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). NSCLC is also divided into a number of subtypes.<sup>1</sup> Lung cancer is hard to detect in its early stages, which is one of the reasons it is difficult to treat. Despite advancements made in the management of this disease there continues to be a need for improved treatment options.

**Biomarker-driven therapies have not yet shown to be helpful for NSCLC patients.**

Researchers have found that some lung cancer patients have specific genetic mutations that help tumors grow and have used this knowledge to develop treatments targeting these mutations.<sup>2</sup> Currently, biomarker-driven therapies are approved in many countries and discoveries are continually being made to identify new therapeutic targets, immunotherapies and vaccines.

**You can only receive a biomarker-driven therapy at the time of a NSCLC diagnosis.**

In order to determine if you are a candidate for a biomarker-driven therapy, your tumor must be tested for molecular biomarkers<sup>3</sup> or gene mutations inside tumor cells that may cause them to be cancerous. This process is often referred to as molecular testing. Although your doctor may decide to conduct the test at diagnosis, you may be tested at any time during your treatment journey. If you were not tested at diagnosis, talk to your doctor and ask if molecular testing is right for you.

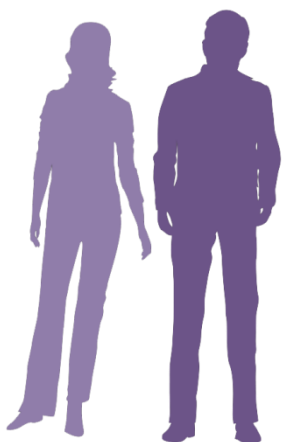
**If I get my lung cancer tumor tested, I will be able to take a treatment that is specifically developed for me.**

Some patients will test positive for a mutation that may make them eligible for an approved biomarker-driven therapy or a clinical trial. If your tests do not show a biomarker, the result may still help your doctor narrow down treatment options. For more information about lung cancer clinical trials please visit [www.clinicaltrials.gov](http://www.clinicaltrials.gov) and talk to your doctor.

**Molecular testing is not appropriate for the majority of patients with NSCLC.**

More than half of adenocarcinoma cases (the most common type of NSCLC<sup>1</sup>) have an identifiable molecular driver causing the cancer to grow.<sup>4,5</sup> Molecular testing is the first step in determining if a patient is eligible for an approved biomarker-driven therapy or a clinical trial.

**Now that I have the facts, how do I find out if molecular testing is an option for me?**



**It starts with a question:  
Ask your doctor if molecular testing is right for you. If appropriate, your doctor may order tests for one or more biomarkers, which can help inform your treatment plan.**

1 American Cancer Society. "What is non-small cell lung cancer?" Available at: <http://www.cancer.org/cancer/lungcancer-non-smallcell/detailedguide/non-small-cell-lung-cancer-what-is-non-small-cell-lung-cancer>. Accessed June 30, 2014.

- 2 Gandara DR, Li T, Lara PN Jr, et al. Algorithm for codevelopment of new drug-predictive biomarker combinations: accounting for inter- and inpatient tumor heterogeneity. *Clin Lung Cancer*. 2012;13(5):321-325.
- 3 Sequist LV, Heist RS, Shaw AT, et al. Implementing multiplexed genotyping of non-small-cell lung cancers into routine clinical practice. *Ann Oncol*. 2011;22(12):2616-2624.
- 4 Paik PK, Johnson ML, et al. Driver Mutations Determine Survival in Smokers and Never-Smokers With Stage IIIB/IV Lung Adenocarcinomas. *Cancer*. 2012. 10.1002/cncr.27637.
- 5 Kris MG, Johnson BE, Kwiatkowski DJ, et al. Identification of driver mutations in tumor specimens from 1,000 patients with lung adenocarcinoma: The NCI's Lung Cancer Mutation Consortium (LCMC). *J Clin Oncol* 29: 2011 (suppl; abstr CRA7506).