



# What is the Role of PD-L1 in Cancer?

## WHAT IS A BIOMARKER?

Biomarkers are things about cancer cells that make them different from normal cells. They can be measured in your blood, tissue, or bodily fluid. In cancer, biomarkers are often used to help choose the best treatment for you. These biomarkers can be proteins, genes, or gene changes called mutations.

Biomarkers are often referred to by a 3- or 4-letter abbreviation, such as ALK or PD-L1.

Biomarkers tell your doctor the subtype of the cancer you have. They are sometimes called molecular markers, cancer markers, or tumor markers. Ask your doctor about **comprehensive biomarker testing**. If possible, ask to be tested before you start treatment. This testing should include PD-L1 testing.

If your tumor tests positive for the PD-L1 biomarker, you have PD-L1 positive (PD-L1+) cancer. This fact sheet explains what this means and how it may affect cancer treatment.

## WHAT IS PD-L1?

PD-L1 (programmed cell death ligand 1) is a protein that plays a role in the body's immune system. It can bind to another protein called PD-1. When this happens, the two proteins act like a "force field" to block the immune system from killing cancer cells. Many of the effective immunotherapy drugs break down this force field and help the immune system do its job.

## WHAT DO THE RESULTS OF A PD-L1 TEST MEAN?

A test for PD-L1 will show the level of PD-L1 found on tumor cells or sometimes on immune cells. The result will be a percentage ranging from 0 to 100%. This number reflects the percent of cells in the tumor with PD-L1. Doctors sometimes refer to this as PD-L1 expression. A tumor with a higher PD-L1 level may be more likely to respond to anti-PD-L1 or anti-PD-1 treatment. A high level also may be called "PD-L1 positive."

## RESULTS FOR PD-L1 TESTS COME BACK FROM THE LAB QUICKLY

PD-L1 tests are easier to run than many other biomarker tests. The results usually come back faster. Depending on the type and stage of cancer you have, you may be tested for other biomarkers too. Patients who test positive for biomarkers that match with most targeted therapy drugs should try those first, even if they have a high level of PD-L1.



Anti-PD-L1 or anti-PD-1 drugs are a form of immunotherapy. They may be used if targeted therapy does not work or stops working. Because of this, you may need to wait until all of your biomarker results return before starting treatment. This may delay your treatment for a few weeks. But it will ensure that you get the best possible treatment for you in the best order.

## HOW DO DOCTORS TREAT CANCERS WITH HIGH PD-L1 LEVELS?

Doctors decide whether to treat cancers with anti-PD-L1 or anti-PD-1 drugs based on the level of PD-L1 in the tumor. They will also look at your other treatment options. Drugs that treat PD-L1+ cancers are a form of immunotherapy known as checkpoint inhibitors. They are antibodies, not chemicals. Immunotherapy works by allowing your own immune system to fight cancer better. These drugs block PD1 and PD-L1 from binding. This allows the immune system to kill more cancer cells.

The U.S. Food and Drug Administration has approved a number of drugs for cancers that are PD-L1+. Some are used even when PD-L1 levels are negative. They are given through a vein. These drugs may be combined with other treatments such as chemotherapy. If the first drug you try does not work or stops working, ask your doctor about trying another. These drugs may be used if targeted therapy does not work or stops working. In some cases, they are considered unsafe following targeted therapy and are not an option. Clinical trials continue to test more and better ways to use these drugs to treat cancer.

The following are common side effects of these drugs. **It is very important to report new side effects and changes in side effects to your health care team right away. Most side effects can be managed if they are treated early.** In rare cases, they may lead to more serious conditions.

- Constipation
- Cough
- Diarrhea
- Fatigue
- Flu-like symptoms (chills, fever, headache, nausea)
- Loss of appetite
- Low blood pressure
- Pain or soreness
- Rashes, redness, or itching

### Rare but serious side effects may include:

- Hepatitis
- Colitis
- Swelling in the lungs (shortness of breath)
- Severe infections
- Severe skin problems
- Problems in the kidneys, hormone glands, liver, or other organs

## FOR MORE INFORMATION ON COPING WITH SIDE EFFECTS, VISIT:

[www.CancerSupportCommunity.org/SideEffects](http://www.CancerSupportCommunity.org/SideEffects)

# Cancer Information, Survivorship, and Support

**Cancer Support Community** • 888-793-9355 • [www.CancerSupportCommunity.org](http://www.CancerSupportCommunity.org)

**American Cancer Society** • 800-227-2345 • [www.cancer.org](http://www.cancer.org)

**CancerCare** • 800-813-4673 • [www.cancer.org](http://www.cancer.org)

**Cancer.net** • 888-651-3038 • [www.cancer.net](http://www.cancer.net)

**National Cancer Institute (NCI)** • 800-422-6237 • [www.cancer.gov](http://www.cancer.gov)

**NCI Clinical Trial Information** • 800-422-6237 • [www.cancer.gov/ClinicalTrials](http://www.cancer.gov/ClinicalTrials)

**Patient Advocate Foundation** • 800-532-5274 • [www.patientadvocate.org](http://www.patientadvocate.org)

## Cancer Support Community Resources

**Cancer Support Helpline®** — Have questions, concerns or looking for resources? Call CSC's toll-free Cancer Support Helpline (888-793-9355), available in 200 languages Mon - Fri 9am - 9pm ET.

**Open to Options®** — Need help making a cancer treatment decision? Our trained specialists can help you create a list of questions to share with your doctor. Make an appointment by calling 888-793-9355 or by contacting your local CSC or Gilda's Club.

**Frankly Speaking About Cancer®** — Trusted information for cancer patients and their loved ones is available through publications, online, and in-person programs at

[www.CancerSupportCommunity.org/FranklySpeakingAboutCancer](http://www.CancerSupportCommunity.org/FranklySpeakingAboutCancer).

**Services at Local CSCs and Gilda's Clubs** — With the help of 170 locations, CSC and Gilda's Club affiliates provide services free of charge to people touched by cancer. Attend support groups, educational sessions, wellness programs, and more at a location near you.

[www.CancerSupportCommunity.org/FindLocation](http://www.CancerSupportCommunity.org/FindLocation)

**Cancer Experience Registry®** — Help others by sharing your cancer patient or cancer caregiver experience via survey at [www.CancerExperienceRegistry.org](http://www.CancerExperienceRegistry.org).

**MyLifeLine** — CSC's private, online community allows patients and caregivers to easily connect with friends and family to receive social, emotional, and practical support throughout the cancer journey and beyond. Sign up at [www.MyLifeLine.org](http://www.MyLifeLine.org).

**Grassroots Network** — Make sure your voice is heard by federal and state policy makers on issues affecting cancer patients and survivors by joining our Network at [www.CancerSupportCommunity.org/become-advocate](http://www.CancerSupportCommunity.org/become-advocate).

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This booklet is available to download and print at [www.CancerSupportCommunity.org/biomarkers](http://www.CancerSupportCommunity.org/biomarkers). For print copies of this booklet or other information about coping with cancer, visit [Orders.CancerSupportCommunity.org](http://Orders.CancerSupportCommunity.org).

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