

BIOMARKERS AND THE TREATMENT OF CANCER

Biomarkers are signals the body can give about its condition. Some of these are simple, like heart rate, blood pressure or the results of blood or urine tests. Some are more complex, requiring the examination of cells and molecules in the body. These biomarkers can provide vital information about the presence of cancer, potential treatment options and more.

WHAT ARE BIOMARKERS?

Our bodies produce and use many kinds of molecules. These include DNA and proteins, which help the body perform many tasks. As biomarkers, these molecules can tell us whether normal or abnormal processes are taking place. They can be found in blood, urine, stool, body tissues or other bodily fluids. There also are biomarkers for conditions other than cancer, such as heart disease.

There is a link between a person's genetics and cancer, and some cancer biomarkers can be genetic in nature. However, most people who are diagnosed with cancer do not have any of the "cancer genes" researchers have identified so far.

The study of biomarkers is an emerging field, and the language around it is still developing. You may hear other terms that refer to the same thing. These include molecular testing, tumor profiling, genetic testing, genomic testing and germline testing. To reduce confusion, CancerCare—along with other cancer organizations—now uses the term "biomarker testing" to refer to tests that identify characteristics of cancerous cells within the body.

WHAT DO BIOMARKERS TELL US?

The information biomarkers give us depends on the diagnosis and other factors. Not every type of cancer has biomarkers that produce results that doctors can use. Also, different types of cancer are associated with different biomarkers.



Depending on the type of biomarker, biomarker testing results can inform doctors about the following:

- **Diagnosis.** Detects or confirms whether a disease or medical condition is present.
- **Risk.** Tells the likelihood of whether an individual will develop a disease or medical condition in the future.
- **Disease status.** Shows whether a disease or medical condition has progressed (gotten worse), stayed the same or has improved.
- **Prognosis.** Identifies the chance that a disease or medical condition might occur, get worse or recur (happen again).

Biomarkers can also help determine how a person might react to certain forms of treatment or track how treatment is progressing. Your results may help your doctor determine whether a targeted therapy drug is right for your cancer type and stage.

HOW ARE BIOMARKERS TESTED?

Your doctor will take a sample of the tissue of the tumor or bodily fluid in order to test whether biomarkers are present. The type of test depends on what kind of cancer is suspected. They will send this material to a lab in order to conduct a series of tests. The lab will match the results with the latest in research on that type of cancer.

Your doctor will explain what the test results show. Together, you can plan the next course of action.

BIOMARKERS AND CANCER TYPE

Every cancer has a genetic makeup that is different than the surrounding cells. At this time, not every form of cancer has biomarkers that doctors are able to test and respond to. Research is needed to further our understanding of biomarkers.

This process involves discovering what the biomarker is on a molecular level and what kind of information it provides. It must then undergo extensive testing before being approved by the U.S. Food and Drug Administration (FDA).

Among the most well-known biomarkers at this time involve breast cancer. These include the BRCA1/2 and HER2 mutations, which can show the risk of developing breast cancer or whether it is present.

Other cancer types that have currently useful biomarkers include cervical, colorectal, endometrial, lung, ovarian, pancreatic, prostate, melanoma and certain blood cancers. Each biomarker gives certain information about its cancer type that does not automatically apply to other forms of cancer or treatment. Generally, they only present a certain type of information about that form of cancer. Details can be provided by your health care team.

THE VALUE OF CLINICAL TRIALS

Clinical trials play a vital role in cancer treatment. They are based on treatment methods that have become standard for their forms of cancer. After researchers have discovered possible improvements to these standard forms of care, a clinical trial will be created to try these improvements. Many advancements in cancer care have come in this way.

Biomarkers have become more prominent in learning about individual types of cancer and their treatment. Biomarkers are used across all areas of development to help increase the safety, efficiency and discovery of new drugs and other approaches.

Often, people who take part in clinical trials gain access to new and potentially valuable treatments. Your doctor can provide more information about these possibilities. They can inform you about the risks and benefits of the trial, including possible side effects.

CancerCare® Can Help

Founded in 1944, CancerCare is the leading national organization providing free support services and information to help people manage the emotional, practical and financial challenges of cancer. Our comprehensive services include case management, counseling and support groups over the phone, online and in-person, educational workshops, publications and financial and co-payment assistance. All CancerCare services are provided by master's-prepared oncology social workers and world-leading cancer experts.

To learn more, visit www.cancercares.org or call **800-813-HOPE (4673)**.

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Edited by Mark G. Kris, MD

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National Office • 275 Seventh Avenue • New York, NY 10001

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