

Genetic testing involves sending samples from your tumor and your blood to a lab. Results may help guide the treatment of your cancer. Talk to your doctor to learn more about this test.

1 Understanding Your Cancer

- Your body is made up of trillions of cells. Each cell contains genes that tell your body how to work.
- Genes are made of DNA. A strand of DNA is similar to a very long sentence that uses just four chemical letters: A, T, C and G.
- Over time, the order of letters within the DNA can sometimes change, resulting in a *somatic mutation*. Some of these mutations can cause cells to multiply nonstop. This is how cancer grows.
- Genetic testing reads DNA letter-by-letter to find these mutations.
- Somatic mutations are specific to your cancer cells. They are not from a parent and cannot be passed down to children.

2 Tumor-Normal Testing

- This test is done on two samples: one from your tumor tissue, and one from your blood.
- Your blood sample contains the genes you were born with, and is called the “normal” sample.
- Comparing the tumor tissue and normal sample helps the lab to know which mutations are found only in your cancer cells.
- This is important as it may identify mutations that can help guide your cancer treatment.
- Treatment options may include drugs only available on research studies.
- Mutations that are found in your cancer may or may not be found in your blood.
- Testing can sometimes reveal that you were born with a mutation that increases your risk for certain cancers.
- This test may also provide information about the risk of cancer for your family members. A genetic counselor can help you and your family understand and manage these risks.

3 Limitations of Tumor-Normal Testing

- Having this test does not mean that results will lead to a better outcome.
- It is possible that your cancer was caused by something that cannot be seen by this test.
- There is a small chance of testing errors, which could limit accuracy of the results.
- Sometimes testing finds mutations that do not yet have a specific treatment. However, we may be able to use this information if new drugs are developed in the future.
- This test does not provide information about conditions other than cancer.

4 The Testing Process

- If you agree to testing, your doctor will order the test. A member of the care team can talk with you about any potential costs.
- To test your cancer cells, your doctor will collect tumor tissue from a previous or future biopsy.
- To test your normal cells, a blood sample will be collected.
- Both your blood and tumor tissue will be sent to the testing lab.
- Test results will be sent to your doctor in about 2-3 weeks.
- Your care team will contact you with the results, and explain if the findings will affect your cancer treatment.
- Your doctor may also recommend additional testing based on your results.

