

# Genetic Testing for Brain Tumors Frequently Asked Questions

*With Margarita Raygada, PhD, oncology genetic counselor and  
geneticist at the National Cancer Institute, National Institutes of Health*

## **What is genetic testing?**

Genetic testing is a medical test that uses cells or tissue from a person to look for changes in chromosomes or genes. For people with cancer, genetic testing can be done on tumor tissue, blood samples, or saliva samples. Genetic testing can help health care providers diagnose cancer, plan treatment, or find out how well treatment is working. It can also help determine a person's risk for developing a specific condition or disease, such as other cancers. And find out if the cancer is hereditary (passed down from parent to child).

## **If I have a brain tumor, what can I learn from genetic testing?**

Cancer is caused by mutations (changes) in genes. Although most cancers are not hereditary, in some situations, genetic testing may identify gene variants so patients can learn more about their diagnosis, treatment options, risk for developing other cancers or conditions, and if their cancer is hereditary.

Genetic testing results are considered positive if a variant is discovered that informs or changes their treatment plan, could increase their risk for other cancers, or could be hereditary. Positive results may help create a treatment plan or management plan for cancer screenings and prevention. Genetic testing also provides an opportunity for family members of patients to learn about their own cancer risks.

A negative test can also be informative as it may provide peace of mind to people with brain cancer that a harmful gene variant is not hereditary. Genetic information also helps researchers better understand brain tumors to develop treatments and improve care.

## **What are the different types of genetic tests?**

There are many different types of genetic tests that are used for various reasons. Genetic testing for people with cancer may be done in two ways:

- Somatic genetic testing is performed on tumor tissue to see if there are mutations in the tumor that may contribute to the formation and treatment of the cancer.
- Germline genetic testing is performed on blood or saliva and is used to see if there are alterations that contribute to susceptibility to developing cancer.

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Genetic testing for people with brain tumors may be done for these reasons:

- Diagnostic testing of the tumor confirms the brain tumor type and possible tumor subtypes.
- Predictive or pre-symptomatic genetic testing of blood or saliva is used when certain types of cancer run in a family and a gene variant is suspected.
- Carrier screening of blood or saliva determines if an individual is a carrier for certain genetic diseases.

It is important to remember that a genetic counselor helps you learn if genetic testing is beneficial for you or a family member. A genetic counselor will also help you understand the results of genetic testing (Read Genetic Counseling FAQ).

### **Can genetic testing tell me if I will develop a brain tumor or if brain tumors run in my family?**

Very few brain tumors are hereditary or passed from parent to child. A genetic counselor is a medical professional who will assess the risk for hereditary cancer based on your family history and other factors. Genetic testing can help you find out if you have a gene variant that may be causing the pattern of cancer in your family. This is known as hereditary cancer syndrome.

Genetic testing can also help you find out if you have a genetic variant that increases your risk for a certain disease, such as cancer. This is called a predisposing genetic mutation. If you have hereditary cancer syndrome or a predisposing genetic mutation, your genetic counselor will help analyze and calculate the risk for your family members and provide testing.

### **How do I decide if I should get genetic testing?**

You should meet with a genetic counselor to find out if genetic testing is right for you and your family. A genetic counselor is a medical professional who will access your personal and family medical history and review your medical records. Meeting with a genetic counselor is a very important part of the genetic testing process.

### **Do insurance companies pay for genetic testing?**

The National Institutes of Health is the nation's medical research agency. At NIH, all medical testing, including genetic testing, is provided at no charge to patients who are participating in a clinical trial or study. Other medical facilities in the United States contract with different insurance companies and coverage will depend on the type of testing, condition, and other factors. In general, most insurance companies cover most genetic tests.

## **Genetic Counseling Frequently Asked Questions**

### **What is a genetic counselor?**

A genetic counselor is a medical professional who gives you information about how genetic conditions might affect you or your family. A genetic counselor helps you understand genetic testing. They'll help you decide if it is right for you, the best types of tests, and how to interpret and cope with the results.

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### **If I have or had a brain tumor, should my family and I see a genetic counselor?**

A genetic counselor will ask you about your personal and medical family history and review your medical records. A genetic counselor then discusses genetic testing options with you. These include:

- Diagnostic testing to confirm rare tumor type and possible tumor subtypes.
- Predictive or pre-symptomatic genetic testing to determine when certain types of cancer run in a family and a gene mutation is suspected.
- Carrier screening to determine if an individual is a carrier for certain genetic diseases.

### **If a family member has had a brain tumor, should I see a genetic counselor?**

Very few brain tumors are hereditary and passed down from parent to child. A genetic counselor will assess your personal and family medical history and discuss genetic testing options with you.

### **If I go to a genetic counselor, should I share the results with my relatives?**

A genetic counselor will help you understand your genetic testing results, the implications, and how to share the results if you choose to. A genetic counselor can also provide educational resources and additional support services.

### **Are there certain people or populations that are at higher risk of getting a brain tumor who should go to genetic counselors?**

Genetic testing can help you find out if you have a gene variant that may be causing a pattern of cancer in your family, known as hereditary cancer syndrome. There are many hereditary cancer syndromes that have been identified. There are also certain populations at increased risk for certain genetic variants and diseases. A genetic counselor can help tailor genetic tests for a particular family or individual based on their family and personal medical history.

### **How can I find a genetic counselor that is familiar with brain tumors?**

Your healthcare provider should be able to connect you with a genetic counselor. Most medical centers have genetic counselors. You can also visit the [National Society of Genetic Counselors \(NSGC\) website](#) to search for a genetic counselor by location and specialty.

For more information on genetic testing and counseling, read [Genetic Counselor Helps Patients Understand Cancer Care](#).