

Cancer Genetics

Cells are the basic units of life and are the building blocks for every part of our body. Genes are pieces of information within cells. Genes tell cells how to grow, divide, and make more cells. The body makes new and healthy cells on a continuous cycle. New cells are made as old cells die.

Cancer is caused when genes change (mutate) and tell cells to grow in an abnormal way.

Gene changes can happen for different reasons. Sometimes, cancer is caused by a gene change (mutation) that is passed down in families. Cancers may be considered sporadic, familial, or hereditary (inherited).

Sporadic Cancer

Most cancers are sporadic. In these cancers, the gene change that caused the cancer is not inherited and cannot be passed from a parent to their child. The risk for sporadic cancer increases with age. Environment, lifestyle, and medical factors also influence the risk for sporadic cancer. Because cancer is common, it is possible for a family to have more than one family member develop cancer by chance.

Familial Cancer

Cancers may occur in more than one member of the same family, but the gene change that causes the cancer is not due to an inherited change in one gene. These cancers are not hereditary. They are familial.

They may be the result of multiple influences including combinations of genes, lifestyle, and environment.

It is not possible to find the exact causes of familial cancers. We usually do not recommend genetic testing for patients with familial cancer.

Hereditary Cancer

Hereditary cancers are rare. Only 5-10% of cancers are hereditary. These cancers are caused by a gene change that is inherited (passed down in a family). Affected family members have the same gene change in their cells. The gene change is present in every cell of the body from birth. The change is usually passed from a parent to their child. Because of this, there is often a pattern of cancer on one side of the family.

Hereditary cancers are different from sporadic cancers. Sometimes there are patterns in families who have hereditary cancers which can include:

- Diagnosis at a younger age than sporadic cancers (often younger than age 50)
- Family members that have the same or related types of cancer
- Cancer is more likely to develop in multiple sites within the body
- Rare cancers may occur (such as male breast cancer)

Genetic Counseling

Genetic counseling is a process to help you understand your risk for hereditary cancer and make informed decisions about your care.

During your appointment, a genetic counselor may talk with you about:

1. Your medical history
2. Your family history of cancer
3. Your family history of other medical conditions

Your genetic counselor uses this information to estimate the chance of you having a hereditary condition that may cause a higher than usual risk for cancer. This is called a cancer risk assessment.

Your counselor may also talk with you about genetic testing, cancer screening, and cancer prevention options. He or she will help you understand your risk and help you make decisions that are best for you.

Who should have cancer genetic counseling?

Consider seeing a genetic counselor for a cancer risk assessment if your personal or family history includes signs of hereditary cancer. Hereditary cancers tend to differ from non-hereditary cancers.

Signs that cancer may be hereditary include:

- Cancer diagnoses occurs at a younger age than in the general population (often younger than age 50)
- Multiple people from the same side of the family have the same or related type of cancer.
- Cancer develops in more than one site within the body

You may also consider genetic counseling if you have any of the following:

- Breast or Ovarian cancer diagnoses with Ashkenazi Jewish ancestry (Eastern or Central European Jews)
- Polyposis (multiple polyps in the colon, stomach, or small intestine)
- Certain rare cancers such as Male breast cancer, Retinoblastoma, Medullary thyroid cancer, Pheochromocytoma, or a Paraganglioma
- A family member with a genetic test that confirms a hereditary cancer syndrome

Making an Appointment

Patients who are interested in making an appointment with a genetic counselor should ask their doctor for a referral to genetic counseling or contact 904-202-2992.

If possible, gather information about your family cancer history (including each family member's age of cancer diagnosis) before your appointment. This includes cancer history on your children, brothers and sisters, aunts and uncles, nieces and nephews, and grandparents.

More Information about Genetic Counseling

<http://www.nsgc.org>

National Society of Genetic Counselors (NSGC)

1-312-673-6972