Cancer Genetics Overview

Cells are the basic units of life and they are the building blocks for every part of our body. Genes are pieces of information in cells. Normally, genes tell cells how to grow, divide and make more cells. Cells are made only as the body needs them to stay healthy.

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

Most gene changes that cause cancer cannot be passed from a parent to their child. These cancers are called sporadic (non-hereditary). Some families seem to have cancer that looks like it is being passed down, but there is no inherited gene change. These cancers are called “familial”. Some people have a gene change that can pass to their children. These cancers are inherited (hereditary).

Sporadic Cancer

Most cancers (75-80%) are sporadic. In these cancers, the gene change that caused the cancer is not inherited. 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 relative develop cancer by chance.

For more information, see MD Anderson’s Cancer Screening Guidelines on www.mdanderson.org.

Familial Cancer

Cancers may occur in more than one member of the same family, but do not seem to be caused by a change in one gene. These cancers are not hereditary. They are familial.

They may be the result of multiple influences including combinations of genes, diet and exercise.

It is not possible to find the exact causes of familial cancers. Genetic testing is not typically recommended.

Inherited Cancer

Only 5-10% of cancers are inherited. These cancers are caused when the gene change that caused the cancer was present from birth and is in every cell of the body. Usually, the change was passed from a parent to their child. Because of this, there is usually 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 inherited cancers, which can include:
• Diagnosis at a younger age than sporadic cancers (often younger than age 50).
• Family members have the same or related types of cancer.
• Cancer is more likely to develop in more than one site in the body.
• Rare cancers may occur (such as male breast cancer).

**Genetic Testing for Inherited Cancer**

Genetic testing is a special blood test that can help determine if there is a gene change causing cancer to be inherited in a family. Genetic testing is best when done in a person who has already had cancer. If an inherited gene change is found:

• It can predict if that person has a higher risk to develop another type of cancer.
• Other family members could have the same gene change.
• Often there are cancer screenings or surgeries that your doctor may recommend to reduce cancer risk.

Your health care team can discuss genetic testing, cancer screening and prevention services for families with a hereditary cancer.

To make an appointment, call the Clinical Cancer Genetics Program at 713-745-7391.