



ASL Cancer Genetics

Module 3 Video

English Transcript

So far we know that **5 to 10 percent of breast, ovarian, colon and uterine cancers are inherited**. Here we will discuss how cancer can be inherited.

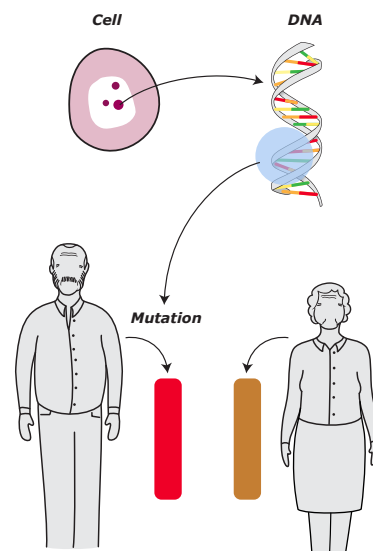
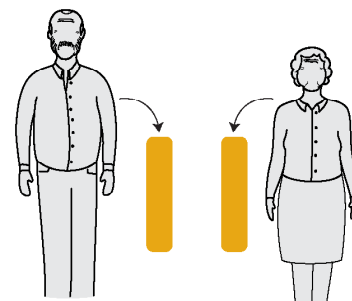
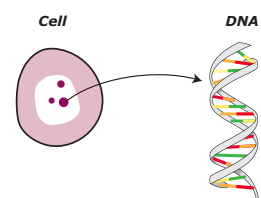
As you know, our bodies are made of cells. Inside those cells are genes which are part of our DNA. The DNA in the picture looks like a helix and is like a blueprint filled with information.

All people have genes. We inherit genes from our mother and from our father. This means genes come in pairs. The two yellow bars in this picture show a pair of genes, one from father and one from mother.

Suppose a gene in the DNA has been changed. Something is missing or different about it. This is called a mutation. This is not normal. Inherited cancers appear because of a mutation in a gene. In this picture the blue circle is where a gene mutation appeared.

In the picture, the mother carries a yellow gene. In this example, yellow represents a normal gene. But the father carries a red gene. Red shows that there is a gene mutation.

This gene mutation can be inherited and can cause inherited cancer.



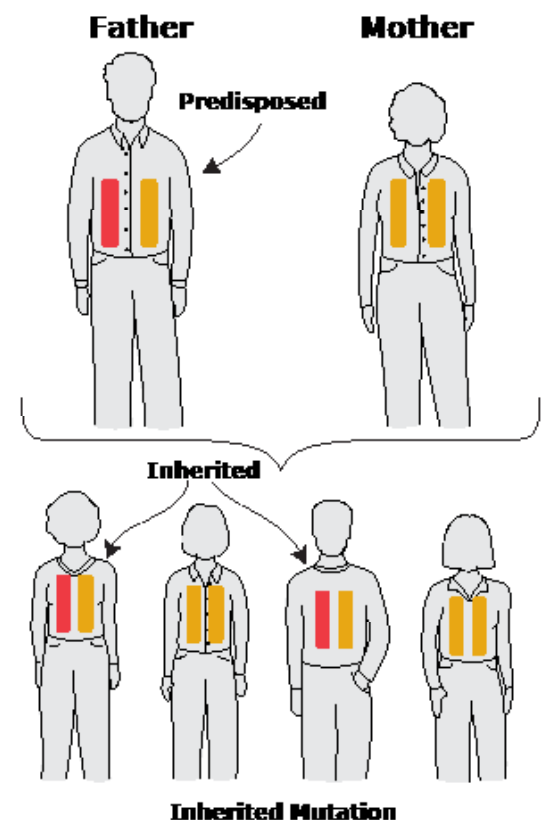
Here is a picture of their son and his wife. They are parents too. In this picture, the mother has two yellow genes, but the father inherited the red gene from his father and the yellow gene from his mother. Remember that the **red gene has a mutation**. This increases the risk for inherited cancer. **This is called a genetic predisposition.**

A gene mutation can be passed down through the family. In our example, the father has a genetic predisposition- one red and one yellow gene. The mother does not have a genetic predisposition.

This couple has four children.

For each of their children the chance of inheriting the genetic predisposition is **50/50**. It is like a flip of a coin, you either inherit it or you do not.

Of these four children, both the second and fourth child inherited two yellow genes. This means they do not have a gene mutation. But the first and third child each have one red gene and one yellow gene. This means that they inherited a gene mutation. Both of these children have an increased risk for cancer.



Remember, about **1/3 of the population is at risk for cancer**. However, those with inherited cancer in the family have a greater risk.

If a person did not inherit a genetic mutation does it mean they won't get cancer? No. They still have a risk for cancer, but their risk is the same as the rest of the population.

There are many genes that can increase your risk for developing cancer. You need genetic testing to find specific genes. For example, breast and ovarian cancer are caused by genes called **BRCA1** and **BRCA2**. Colon and uterine cancer can be caused by a gene called **MLH1** and other genes. These are examples of specific cancer genes.

Many people think that a gene mutation for breast or ovarian cancer can only be passed down in the family by mothers. This is not true. These cancers can be inherited from both parents, from the mother or father. That is why **it is important to collect information from BOTH sides of the family.**

After studying her family tree Anna thinks she might have a gene mutation for inherited cancer. What should she do? Genetics can be complicated. Anna should meet with a genetic counselor or doctor to get more information and discuss her next steps.

In the next module Anna will meet with a genetic counselor.

Now, let's get started!