Gene changes in acute myeloid leukaemia (AML)

People with AML have genetic changes in their leukaemia cells. These genetic changes stop the cells working as they should, leading to abnormal cell growth and cancer. Knowing exactly what genetic changes are in your leukaemia cells can help your haematology team work out the best treatments for you.

Video: https://www.youtube.com/watch?v=tqkqkRbU4Jk

Download our booklet on gene changes in AML
Download our factsheet on gene changes in AML
Download our factsheet on AML genetics for family members

Genes and cancer

Certain genes tell our cells how and when to grow. If there are changes that stop these genes working properly, the cells can become abnormal and grow out of control. This leads to a cancer.

People with acute myeloid leukaemia (AML) have genetic changes in their leukaemia cells. These genetic changes stop the cells working as they should, leading to abnormal cell growth and cancer. Genetic changes can affect either individual genes or whole chromosomes. Changes can affect more than one gene.



A gene is a section of DNA that tells your cells how to make a protein.



Chromosomes are long, coiled strands of DNA that contain lots of different genes.

Back to top

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Why genetic changes happen

Most of the genetic changes in the cancer cells of people with AML occur by chance. These genetic changes happen during your lifetime. You do not inherit them from your parents, and you cannot pass them on to any children. They are not due to anything you have done.

Less commonly, some people with AML have genetic changes they inherited from their parents. These changes can be passed on to children. AML due to inherited genetic changes is called familial AML.

> **People with familial AML do not inherit AML directly. They inherit a changed gene that can increase their chance of getting it in the future. It does not mean they will definitely get AML. It means they may develop AML later in life.**

Back to top

Importance of genetic changes

Different genetic changes can make your leukaemia cells behave differently.

Knowing the genetic changes you have can help your haematology team work out the best treatments for you. It can also help them predict how well your AML is likely to respond to treatment.

To find out what genetic changes you have in your leukaemia cells, your haematologist should send your blood or bone marrow samples for testing. The results can be complicated and use a lot of technical terms. Your haematology team will talk to you about what your results mean.

Back to top

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If you have an inherited genetic change

If your initial test results show that you might have an inherited gene change, your haematologist may recommend more tests to confirm this. This usually involves taking a small sample of your skin.

- If the extra tests show your genetic change is inherited, other close members of your family might also have it. This means they may have a higher chance of getting AML than people without the genetic change. It does not mean they will definitely get AML.
- You should be offered genetic counselling to learn more about what this means for you and your family.
- You may be advised to tell close family members such as parents, adult children, brothers and sisters. They should also be offered genetic counselling to help them decide if they want to be tested for the genetic change.

Back to top

Sources we used to develop this information

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