

X linked recessive inheritance

Information for patients



leeds children's
hospital

caring about children

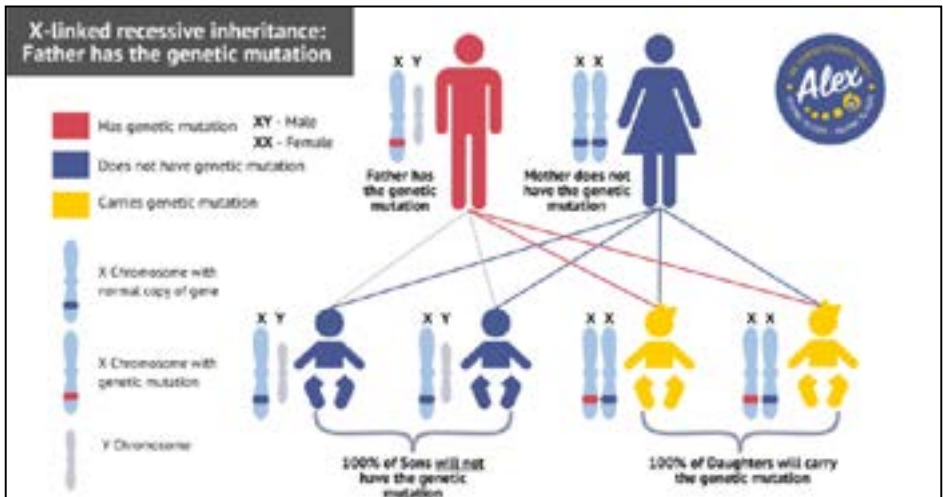
Our DNA and genetic disorders

Genetic conditions occur due to variants or spelling mistakes in our DNA. Every one of us will have spelling mistakes and sometimes these run in families. For most of us these cause no problems. It is when the spelling mistake is an important gene which has an important job in the body that it causes abnormal copies of genes known as variants.

X- linked recessive inheritance

Father has the genetic variant

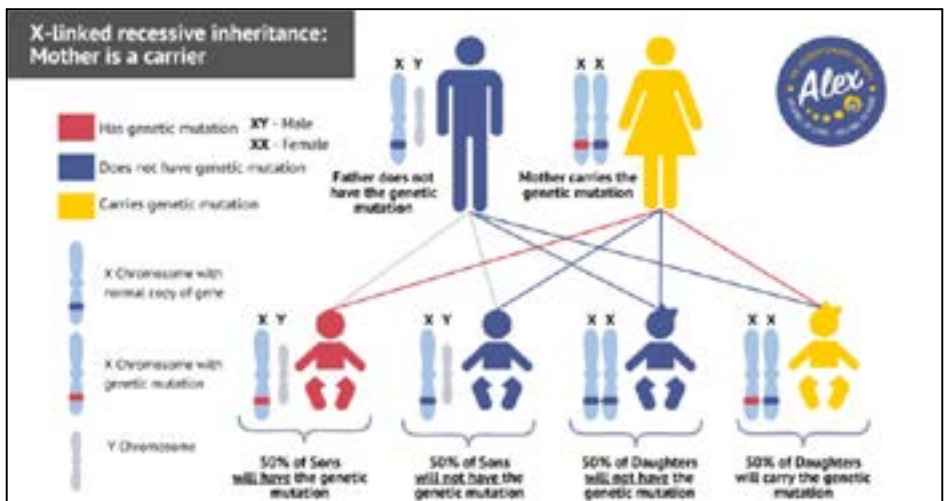
X- linked recessive disorders usually affect males. There are some conditions where girls can be affected but this is often a milder form of the disease. Men have one X and one Y chromosome while women have two X chromosomes. A male with an affected gene on their X chromosome will be affected as they only have one copy of the gene. Men will always pass the gene to their daughter as men only have one X and not pass it to their sons as they pass on the Y to their sons.



This image shows the inheritance of genes from parents to their children and the resulting combination of genes the child will have. Red represents the genetic variant, blue represents the normal copy of the gene, grey represents the Y gene that determines male sex. The line from each parent shows which gene they pass on to their child. The colours of the individuals tell the effect of the genes they have, red means they will have the genetic variant, blue means they will not have the genetic variant, and yellow means they will carry the genetic variant.

Mother is a carrier

Women have two X chromosomes. A female with an affected gene on one X chromosome will be less affected because they have one working copy of the gene to compensate for the affected X chromosome. A mother has a 50% chance of passing the disorder onto each son – making 50% of sons affected. 50% of daughter will be carriers.



This image shows the inheritance of genes from parents to their children and the resulting combination of genes the child will have. Red represents the genetic variant, blue represents the normal copy of the gene, grey represents the Y gene that determines male sex. The line from each parent shows which gene they pass on to their child. The colours of the individuals tell the effect of the genes they have, red means they will have the genetic variant, blue means they will not have the genetic variant, and yellow means they will carry the genetic variant.

Alex, The Leukodystrophy charity (Alex TLC)

A charity that provides invaluable support and information to people affected by leukodystrophy. Established in 2004 we are an internationally recognised centre of excellence and the only UK charity providing support and information to people affected by any of the leukodystrophy conditions worldwide. We are here to support you and your family throughout your leukodystrophy journey. We provide a range of support services. This includes one to one support, counselling, our peer support and grant programmes. To get in touch please contact Alex, The leukodystrophy charity (Alex TLC) on **020 7701 4388** or email info@alextlc.org.



For further information please refer to the website at www.alextlc.org

*Images used with kind permission from Alex,
The Leukodystrophy Charity*



What did you think of your care?

Visit: www.leedsth.nhs.uk/patients/support/feedback-complaints/friends-family-test/

Scan or click the QR code - Your views matter



© The Leeds Teaching Hospitals NHS Trust • 1st Edition Version 1
Developed by: Hannah Geldart, Inherited White Matter Disorders Nurse
Specialist
Produced by: Medical Illustration Services • MID code: M20251105_010/BP

LN006126
Publication date
10/2026
Review date
10/2029