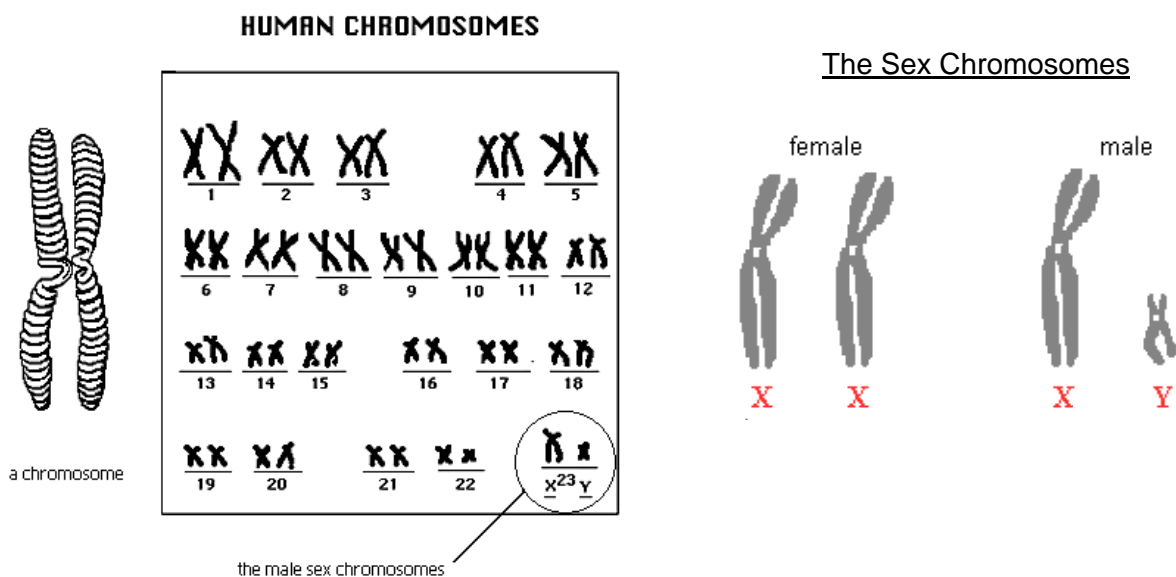


X-linked Inheritance

Genes are instructions that control the way that we grow and develop. We have many thousands of genes and have two copies of nearly every gene. Normally we inherit one copy from each parent and pass one copy onto each child. We all have several genes that have a misprint in them, but usually these are paired with a normal gene and so we are not aware of them. Sometimes these altered genes are passed from a parent to a child; sometimes they develop within an individual as a result of a copying mistake when cells divide. In the laboratory we are not yet able to test very many genes though the number of available tests is growing fast.

Genes are arranged along little threadlike particles called chromosomes. Each chromosome contains many hundreds of genes.

As chromosomes are so much bigger than genes we can see them down a microscope. Normally we have 46 chromosomes, 44 of these are in matching pairs, numbered 1 to 22. These numbered pairs are the same in males and females. The last two chromosomes determine what sex we will be. Females have two X chromosomes and males have one X and one Y chromosome. Girls inherit an X chromosome from each parent, whereas boys inherit an X chromosome from their mother and a Y chromosome from their father. The Y chromosome contains the genes that make a child develop into a male.



X-linked means that the gene causing the problem is found on the X chromosome. Girls have two X chromosomes, so if a girl has an altered gene on her X chromosome, it is less likely to affect her because she has a normal copy of the same gene on her other X chromosome. Boys only have one X chromosome, so if he has an altered gene on his X chromosome it will affect him.

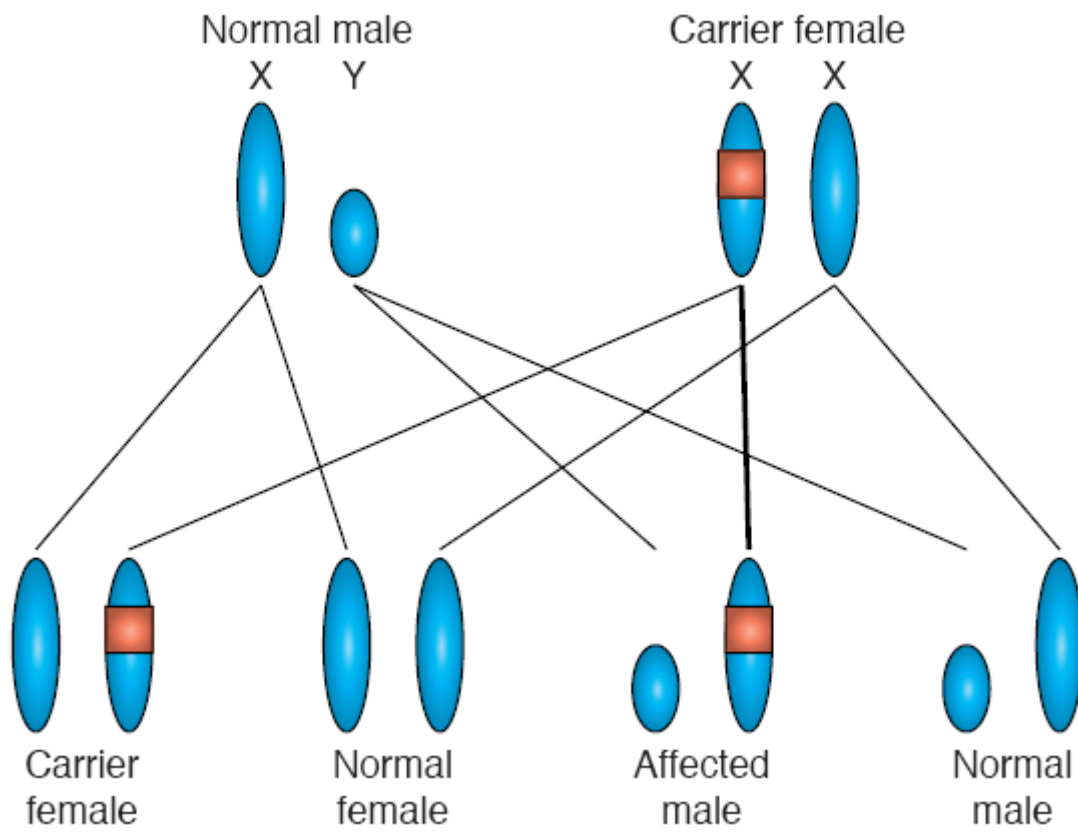
Girls with a copy of the altered gene are known as carriers. They have one normal and one altered gene. Each time they have a child there will be a 50:50 chance of passing on either gene. If a mother passes the altered gene to a boy, he will have the problem, if she passes the altered gene to a girl, she will be a carrier like herself. If a mother passes the normal gene to a boy or a girl they will not have the problem and will not pass it on to their own children.

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X-linked Recessive Inheritance



 = Altered gene

