

X-linked recessive inheritance

Genes are inherited from our biological parents in specific ways. One of the basic patterns of inheritance of our genes is called X-linked recessive inheritance.

What is X-linked inheritance?

X-linked inheritance means that the gene causing the trait or the disorder is located on the X chromosome. Females have two X chromosomes; males have one X and one Y. Genes on the X chromosome can be recessive or dominant. Their expression in females and males is not the same. Genes on the Y chromosome do not exactly pair up with the genes on the X chromosome. X-linked recessive genes are expressed in females only if there are two copies of the gene (one on each X chromosome). However, for males, there needs to be only one copy of an X-linked recessive gene in order for the trait or disorder to be expressed. For example, a woman can carry a recessive gene on one of the X chromosomes unknowingly, and pass it on to a son, who will express the trait:

Genetic illustration demonstrating X-linked inheritance

There is a 50 percent chance that daughters carry the gene and can pass it to the next generation. There is a 50 percent chance that a daughter will not carry the gene and, therefore, cannot pass it on. There is a 50 percent chance that sons do not have the gene and will be healthy. However, there is a 50 percent chance that a son will have inherited the gene and will express the trait or disorder.

