

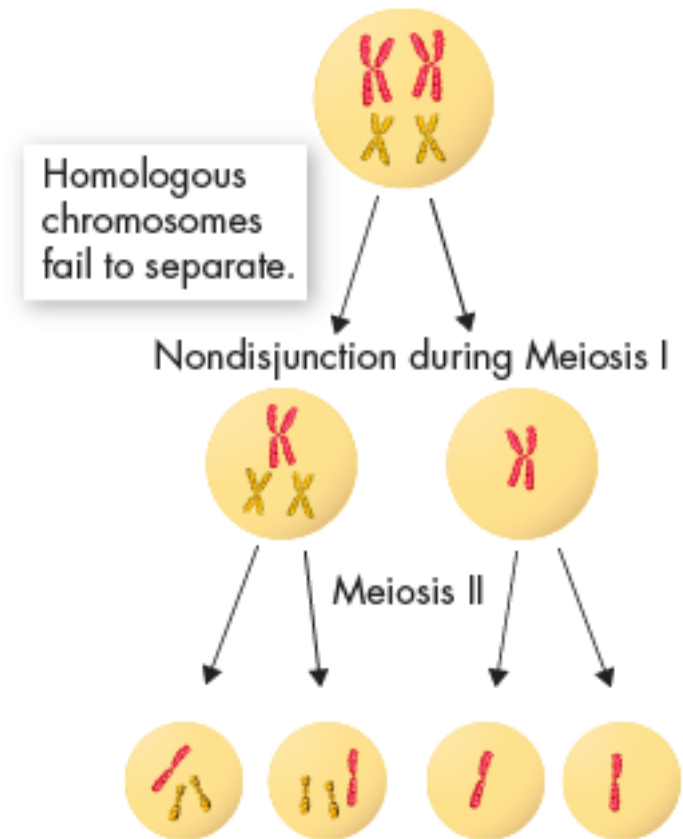
Lesson Overview

14.2 Human
Genetic Disorders

Chromosomal Disorders

The most common error in meiosis occurs when homologous chromosomes fail to separate. This mistake is known as **nondisjunction**, which means “not coming apart.”

Nondisjunction may result in gametes with an abnormal number of chromosomes, which can lead to a disorder of chromosome numbers.



Chromosomal Disorders

If two copies of an autosomal chromosome fail to separate during meiosis, an individual may be born with three copies of that chromosome.

This condition is known as a trisomy, meaning “three bodies.”

The most common form of trisomy, involving three copies of chromosome 21, is Down syndrome, which is often characterized by mild to severe mental retardation and a high frequency of certain birth defects.

Chromosomal Disorders

Nondisjunction of the X chromosomes can lead to a disorder known as Turner's syndrome.

A female with Turner's syndrome usually inherits only one X chromosome.

Women with Turner's syndrome are sterile, which means that they are unable to reproduce. Their sex organs do not develop properly at puberty.

Chromosomal Disorders

In males, nondisjunction may cause Klinefelter's syndrome, resulting from the inheritance of an extra X chromosome, which interferes with meiosis and usually prevents these individuals from reproducing.

There have been no reported instances of babies being born without an X chromosome, indicating that this chromosome contains genes that are vital for the survival and development of the embryo.