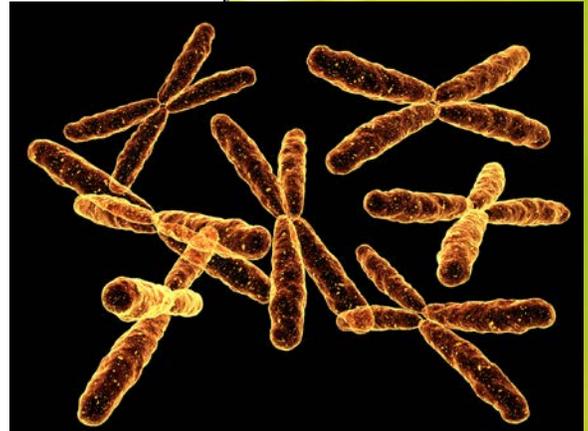


Genetic disorders are diseases or problems that are passed from a parent to a child. The child inherits the disorder. Humans have thousands of genes—about 30,000, in fact! These genes give humans specific traits. They control everything from eye color to freckles. These genes are arranged in our bodies on our *chromosomes*. Humans have 46 chromosomes in each of their cells. Twenty-three are from the mother and 23 are from the father. If either the mother or the father has a mutation in any of their genes, this mutation can be passed on to the child. These genetic mutations can cause problems that affect human growth and development.



Our bodies normally have 46 chromosomes.

There are many different genetic disorders, most of which can be classified into three different types. Let's take a closer look at the three types of genetic disorders and some examples of each.

Single-gene disorders

Genetic disorders, in the first category, **single-gene disorders**, are caused by an abnormality within a single gene. These disorders are surprisingly common. They occur in about 1 in every 200 births. Some single-gene disorders can be either mild or serious. There are over 6,000 different single-gene disorders.

One single-gene disorder is called *Huntington's disease*. This disease is characterized by a mutation in nerve cells in the brain. This mutation is caused by a disorder of a gene in the 4th chromosome. Instead of repeating just a few times in the chromosome, the gene repeats dozens of times. Huntington's disease is passed from parent to child. It can get worse in successive generations. The disease has several signs and symptoms. In the early stages of the disease, people may have trouble concentrating. Later, the disease causes people to shake or tremble. Some people may shake uncontrollably, and the shaking often gets worse over time. Huntington's disease can cause many problems throughout a person's life. The disease will often shorten the life of the affected person.

Multifactorial disorders

The second type of genetic disorder is called **multifactorial**, which means that many factors play a role. Multifactorial disorders can come from problems with many different genes. Lifestyle and environment can also play a role.

One common multifactorial disorder is heart disease. Doctors know that there usually isn't just one cause for heart disease. Often, people with heart disease have a family history of it. This means that genes are inherited that increase the likelihood of having heart disease. But that's not the only cause. Heart disease can also be brought on by lifestyle choices. Smoking, obesity, and high blood pressure can increase the risk.

Chromosomal abnormalities

The last type of inherited genetic disorder is caused by abnormalities in the chromosomes. Each chromosome contains thousands of different genes. If something is wrong with the DNA of one chromosome, many genes are impacted.

One chromosomal abnormality is *Down syndrome*. This disorder is caused by one chromosome, number 21, repeating three times. Down syndrome happens in about 1 of every 800 births. It can cause many growth and development problems. People with Down syndrome may have learning disabilities and developmental delays. Many people with Down syndrome live a much shorter life than average.

There are many other examples of genetic disorders. Although these disorders can cause health and developmental problems, many people with genetic disorders are able to live full and satisfying lives.



Many people with Down syndrome lead productive lives.