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Inheritance of Hearing Loss

Read this page to learn how hearing loss can be inherited.

The word “inherited” means that the hearing loss was passed down through the family. Other traits like blue eyes and curly hair are also inherited. Some diseases can be inherited, too.

The words inherited and genetic mean almost the same thing.

The word “genetic” means that the trait is passed through the family on genes. Genes are the instructions stored inside all the cells in your body. They tell your body what color hair you will have, how tall you will be, and lots of other things.

How a child inherits hearing loss

There are hundreds of genes that can cause hearing loss. Some of these genes can cause hearing loss if there is only one copy from one parent. Others can cause hearing loss only if there are two copies, one from each parent. Below we tell you how genes work. But first, here are the different kinds of genetic hearing loss a child could have. A geneticist may be able to figure out what type of hearing loss your child has based on who else in the family tree may have had hearing loss.

[Autosomal recessive inheritance](http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/recessive.jsp)

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The most common type of inherited hearing loss is when a child gets one copy of the gene for hearing loss from each parent. This is called **autosomal recessive hearing loss**.

- About 80% of non-syndromic genetic hearing loss is this type.
- The parents often do not have hearing loss. That is because they both only have one copy of the hearing loss gene. But remember, it takes 2 copies to have the hearing loss.
- A parent with hearing loss could also have the autosomal recessive type. Their children would only have hearing loss if they got the second copy of the gene from the other parent.

[Autosomal dominant inheritance](http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/dominant.jsp)

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When only one copy of the gene is needed to have the hearing loss, the gene is said to be “dominant.” For a child to get this type of hearing loss, at least one of his parents would also have to have a hearing loss. About 15-20% of non-syndromic genetic hearing loss is **autosomal dominant**.

[X-linked recessive hearing loss](http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp#xlinked)

(<http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp#xlinked>)

This is a less common type of hearing loss. It is only found in males. For a child to have this type of hearing loss, he would have gotten the gene from his mother. But she may not have hearing loss herself. Only about 1-3% of non-syndromic genetic hearing loss is this type.

[Mitochondrial hearing loss](http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp#mitochondria)

(<http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp#mitochondria>)

This is a type of inheritance that is passed only from mother to child. It is a less common as a cause for hearing loss. For a child to get this type of hearing loss, his mother might also have a hearing loss.

Read more about [other ways hearing loss can be inherited](http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp)

(<http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/others.jsp>).

How genes work

- Genes are made up of a chemical called DNA. A gene is a chain of DNA that tells the cells how to make a specific protein. Some genes make the proteins that the body uses to build working ears and nerves.
- Genes are bundled into things called chromosomes.
- Each cell in your body has 23 pairs of chromosomes.
 - One of each pair comes from your mother and one from your father.
 - 22 of these pairs have two chromosomes that are almost identical. They are called “autosomes.”
 - 1 of the pairs is called the “sex chromosomes.” They determine if a person is male for female. Females have two X chromosomes. Males have one X and one Y chromosome. The genes for X-linked traits are on the X chromosome.
- Genes also come in pairs.
 - Since people have 2 copies of each chromosome, they also have 2 copies of each gene. One is from mother and one is from father.
- When there is a change in a gene, it is called a **mutation**.
- Genes and mutations can be either dominant or recessive.
 - When only one copy of gene or mutation is needed to have a certain trait, it is called **dominant**.
 - When two copies of a gene or mutation are needed to have a certain trait, it is called **recessive**.

Learn more about genetics

To learn more about genetics, visit this website on [understanding genetics](http://ghr.nlm.nih.gov/ghr/page/understandGenetics;jsessionid=0452D12FB0E66D140E973EE1445953BF) (<http://ghr.nlm.nih.gov/ghr/page/understandGenetics;jsessionid=0452D12FB0E66D140E973EE1445953BF>).

This page was last edited on November 5, 2003.

You can find this page online at:

<http://www.raisingdeafkids.org/hearingloss/genetics/inheritance/>