Autosomal Recessive Traits and Disorders

by Sophia

WHAT'S COVERED

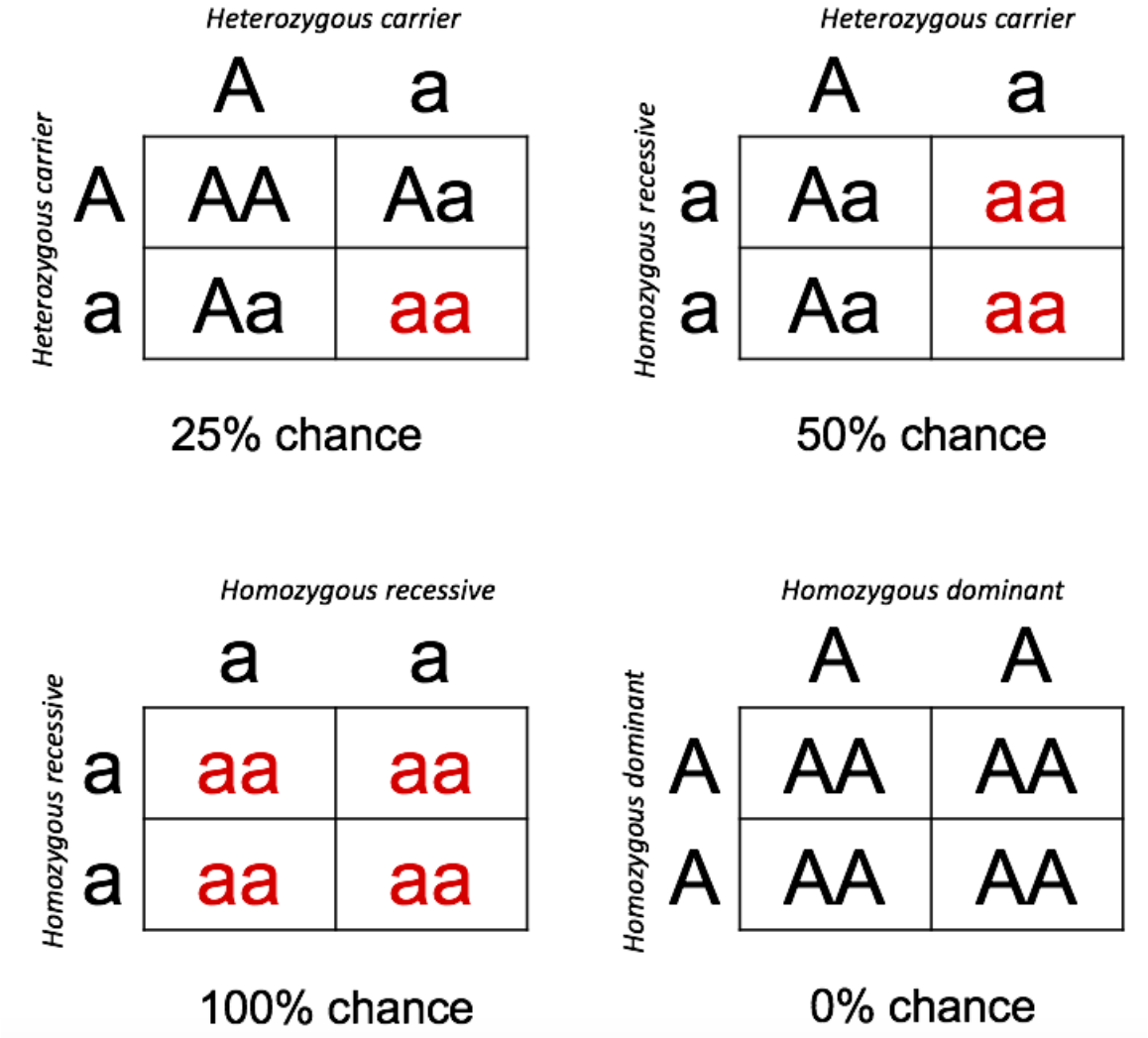
In this lesson, you will learn about autosomal recessive traits and disorders. Specifically, this lesson will cover:

1. Autosomal Recessive

Autosomal recessive traits and disorders are caused by the inheritance of recessive traits on autosomes. Autosomes are all the chromosomes in your body, excluding the sex chromosomes.

In order for a person to inherit an autosomal recessive trait or disorder, both parents must contribute recessive alleles. A person with an autosomal recessive trait or disorder has a genotype with two recessive alleles. They would be homozygous recessive.

What are the odds certain parents would end up with offspring that are homozygous recessive? Punnett squares can be used to help find out the chances:



The first square shows the odds two people who are both heterozygous (carriers) for a particular trait of having an offspring that is homozygous recessive. A capital letter indicates that the trait is dominant, and the lower case letter shows the recessive trait.

The second square shows a parent that is heterozygous (a carrier) for a trait with someone who is homozygous recessive (someone whose phenotype shows the recessive trait).

The third square shows two people that are homozygous recessive.

There really is no need to make a square for two people that are both homozygous dominant because they will always produce children with the dominant gene.

It is important to note that someone who is heterozygous for a trait is a carrier for the recessive trait. They won't display the characteristics of it because they display the dominant trait, but they can still pass the recessive allele on to their offspring.

TERM TO KNOW

Autosomal Recessive

A trait or disorder caused by the inheritance of two recessive alleles on an autosome.

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2. Autosomal Recessive Disorders

Cystic fibrosis is a type of autosomal recessive disorder in which mucus will build up in the lungs along with other different symptoms.

Phenylketonuria (PKU) is another autosomal recessive disorder in which the buildup of a certain amino acid will get too high in a person's body. If they get too much of this certain amino acid built up in their body, it can cause mental retardation. Diet can help lower the specific amino acid and help prevent symptoms of this disorder.

TERMS TO KNOW

Cystic Fibrosis
An autosomal recessive disorder that results in buildup of mucus in the lungs.

Phenylketonuria (PKU)
An autosomal recessive disorder that results in the buildup of phenylalanine (an amino acid) in the body that can lead to mental retardation if levels exceed a certain point.

SUMMARY

Autosomal recessive traits and disorders are caused by inheritance of recessive traits on the autosomes. Autosomes are all the chromosomes in your body besides your sex chromosomes. For a recessive trait to express in a person's phenotype, they must inherit recessive genes from both of their parents. Some **autosomal recessive disorders** include cystic fibrosis and phenylketonuria.

Keep up the learning and have a great day!

Source: This work is adapted from Sophia Author Amanda Soderlind

TERMS TO KNOW

Autosomal Recessive
A trait or disorder caused by the inheritance of two recessive alleles on an autosome.

Cystic Fibrosis
An autosomal recessive disorder that results in build-up of mucus in the lungs.

Phenylketonuria (PKU)
An autosomal recessive disorder that results in the build-up of phenylalanine (an amino acid). This build-up can lead to mental retardation if levels exceed a certain point.