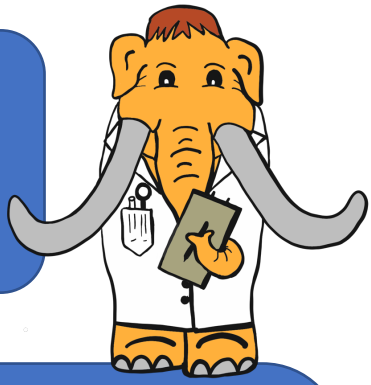
Science Saturday @ Home
Genetic Traits



Gathering Supplies:

Mirror
Paper and Pencil (If you want to record your traits)

How To Steps:

Every person is unique in how they look and act! The different characteristics that make you YOU are called traits. Some traits are passed down from parent to child. This passing of traits from one generation to the next is called heredity. Some traits that you can see are connected to the genetic material, or genes, that you got from your parents.

1. Look through the different genetic traits on the following page.

   Each one comes with some information on how that trait connects to the genes your get from your parents. Dominant trait means it is a trait likely to show up even if you have other versions of that gene present. Recessive traits mean that you have to get that same version of the gene from both parents for the trait to be seen.

2. Use a mirror when you need to. Also try comparing traits to family members. Have some fun with it!

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Genetic Traits You Can Look For

Handedness - Are you a Lefty or Righty?

Handedness is used to describe if you prefer to use your left or right hand for activities. Only about 10% of people are left-handed but that number varies in different parts of the world. Handedness is controlled by many different genes. Some studies have shown that maybe 30 to 100 different genes, including ones linked to brain development, affect handedness, although the environment also plays a role. in different cultures and at different periods in history left-handedness has been discouraged.

Earlobe Attachment - What do your earlobes look like?

If your ear lobe at the bottom of your ear hangs free, like in the picture, then you have unattached lobes. If the bottom part of your ear connects directly to the sides of your head, then you have attached ear lobes. This is a continuous trait, meaning most ear lobes fall into one of these two categories but some can be in between. It was thought that unattached earlobes were the dominant gene over attached earlobes but again as we learn more about genetics, scientist believe it is likely that many genes from your parents interact together to give you your earlobe attachment and shape.

Dimples - Do you have dimples on your cheeks when you smile?

Dimples are highly heritable, so parents that have dimples likely have kids with dimples. If you have dimples it is probably because of one certain gene, with some small influence from other genes. So the dimples may be on only one side or disappear as you get older.

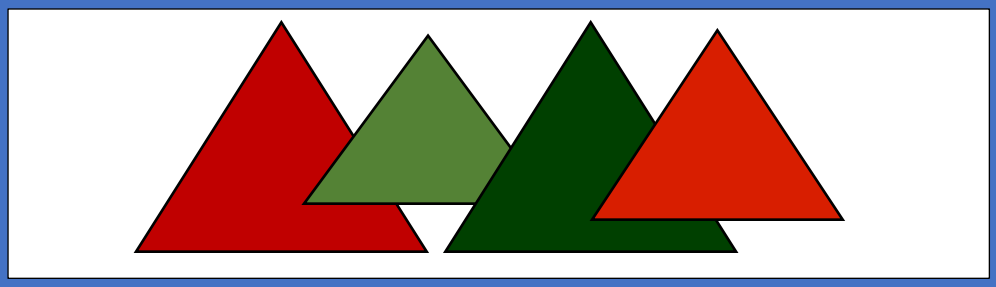
Freckles - Do you have freckles?

Freckles are small spots of skin pigment called melanin. There is one gene that mainly controls if you have freckles. That gene is called MC1R and it is considered a dominant inherited trait. That means if your parents have it, you are very likely to have it too. Your environment, like how much time out in the sun, can affect the color or size of your freckles.

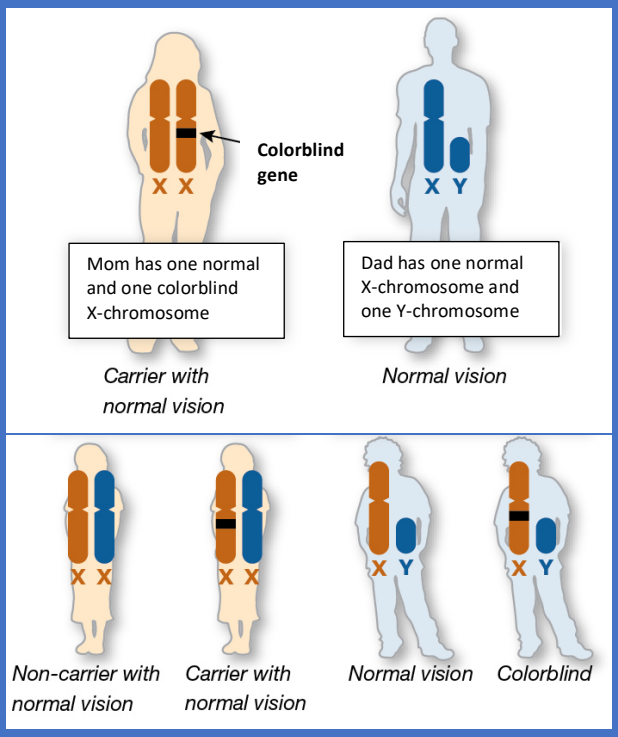
Hairline Shape - Do you have a widow's peak or a straight hairline?

See if your hairline forms a point at the center of your forehead. If it does then you have a widow's peak. Your hairline and widow's peak is controlled by genes that you inherit, not from you environment. The widow's peak is considered a dominant trait controlled by one gene but the hairline trait does seem to be continuous. This means that some people may have only a slight peak while others will have a more obvious widow's peak.

Red/Green Colorblindness - What Colors can you see?



There is a single gene on the X-chromosome that causes red-green colorblindness. In most cases the gene codes for a protein in the eye that detects certain colors of light but sometimes there can be different versions of the gene that creates proteins that cannot see red and green color differences. Since this gene is located on the X-chromosome, this condition is more common in boys (1 in 12) than in girls (1 in 250). This is because boys only have one copy of the X-chromosome and so if they have the color-blind version of the gene, that will be the version of the protein that is created.



Graphic and info from https://learn.genetics.utah.edu/content/basics/observable

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Did You Know?

Wondering how genetic traits get passed on from parent to child?

Some traits are controlled by genes that are in the cells that make up our bodies. These genes contain DNA. DNA (or Deoxyribonucleic Acid) is considered the building blocks of life. It is the DNA that is the code for who or what we are. DNA is present in genes which make up chromosomes. Humans have 23 pairs of chromosomes in each cell, 46 chromosomes total. 23 of the chromosomes are from our mom and 23 from our dad.

The combination of chromosomes in you help determine your genetic traits; like hair and eye color, how tall you are, or if you have freckles, along with many other traits. Many of the traits that make you unique are because of multiple genes interacting with each other along with outside forces, such as the environment you live in and activities that you do.

Because of the way the chromosomes combine in different generations some traits may "skip" a generation. The genetic code may still be there for that trait but it may not be expressed, or seen, because it is a recessive trait or other genes may cause the trait to be changed slightly.

You may have genes from your parents but they combined in a way to make you uniquely you in so many ways!