

# Heredity | Science

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## What You Need to Know About Heredity | Science

What do you know about your genes and traits? Heredity, a high emphasis topic on the [TASC Test Assessing Secondary Completion™ Science subtest](#), is linked to each of these biological terms.

So what is heredity? According to the University of Utah's [Genetic Science Learning Center](#), **heredity refers to the inheritance of traits**. Let's break this topic down and discuss important terms and the history of heredity.

### Heredity Terms

- **Gene** – The basic unit of heredity that makes up our DNA. Genes are transferred from parent to offspring.
- **Trait** – A genetically determined physical feature, including but not limited to: eye color, food preferences, weight, body disposition.
- **Natural Selection** – An evolutionary process stating that organisms who better adapted to their environment tend to survive and produce more offspring.
- **Dominant Trait** – A genetic trait that is sufficient to produce an outward display.
- **Recessive Trait** – A genetic trait only seen in the absence of a dominant trait.

### The History of Heredity

Early scientists guessed that human traits were similar among family members. Many scientists believed that a child's traits were a blend of a father's and a mother's traits.

In 1858, the theory of natural selection was made known by Charles Darwin and Alfred Russell Wallace. It was Charles Darwin who warned against overpopulation and what that would mean for mankind. According to [LiveScience.com](#), Darwin saw that people were reproducing more offspring than was necessary to replace themselves. If this trend continued, Darwin theorized people would have to compete for resources and the population would eventually collapse.

We see heredity come into play in Darwin's theory of natural selection when he stated that no two individuals are exactly alike, but possess similar traits. Darwin stated, according to [LiveScience.com](#), that **if an individual exhibits traits that allow him or her a greater advantage in obtaining resources and securing a reproductive partner, his or her offspring**

**will likely be born with the same favorable traits.** This would cause his or her bloodline to live on.

If an individual exhibits traits that cause him or her a disadvantage in obtaining resources and a reproductive partner (he or she cannot adapt to the environment), he or she may never reproduce and die from starvation and dehydration. This would cause his or her bloodline to die off.

## How do humans inherit traits?

Gregor Mendel, a monk from Europe known as the Father of Modern Genetics, conducted cross-breeding experiments on generations of pea plants and uncovered the basic principles of heredity. Mendel discovered that **both parents must pass traits on to their offspring at conception, but the inherited traits are not a complete blend of a father's and a mother's traits.**

The dominant form of opposing traits will be expressed in the offspring. Recessive traits are still a part of the offspring's genetic makeup but may not be expressed.

## Example of Inherited Traits

Suppose a child has a parent with brown hair and a parent with red hair. These two physical factors (traits) are opposing – you cannot have two different hair colors. Therefore, when a child inherits the two opposing forms of the same trait, the dominant form of the trait (hair color) will be expressed.

The child will have brown hair. Red hair, in this example, is the recessive trait. However, the recessive trait is still a part of the child's genetic makeup, and it may be passed on to the child's offspring and expressed in future generations.

Take a look back at our [cellular structure](#) blog post and boost your life science knowledge for the TASC test.