

Name:

Date:



## Introduction to Genetics

Genetics is the study of how living things inherit traits from their parents. Traits are characteristics like eye color, hair color, and height. Genetics helps us understand why we look like our family members and why we are unique.

Genes are the basic units of heredity. They are made up of DNA, which is a molecule that contains all the instructions for how an organism develops and functions. Humans have thousands of genes, and each gene carries information that determines specific traits. Genes are located on structures called chromosomes. Humans have 46 chromosomes, arranged in 23 pairs, in almost every cell in their body.

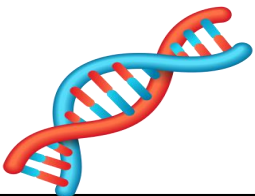
Genes come in different versions called alleles. For example, a gene for eye color might have an allele for blue eyes and another for brown eyes. Each person gets two alleles for each gene, one from each parent. The combination of these alleles determines the traits a person will have.

Some traits are dominant, meaning they will show up if at least one allele for that trait is present. Other traits are recessive and will only show up if both alleles for that trait are the same. For example, the allele for brown eyes is dominant, while the allele for blue eyes is recessive. If you have one brown eye allele and one blue eye allele, you will have brown eyes.

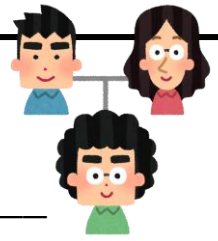
Gregor Mendel is known as the father of genetics. He was a scientist who studied how traits are passed from parents to offspring using pea plants. Mendel discovered the basic principles of genetics by observing how traits like flower color and seed shape were inherited in different generations of pea plants.

Understanding genetics helps us learn about the diversity of life and the processes that contribute to it. It also helps scientists research genetic diseases and find ways to treat or prevent them. As we continue to study genetics, we uncover more about how living things grow, develop, and interact with their environment.

In summary, genetics is the science of heredity, involving the study of genes, alleles, and chromosomes. It explains how traits are passed from parents to offspring and why each individual is unique. Through the work of scientists like Gregor Mendel, we have learned the fundamental principles of genetics that shape all living organisms.



# Questions



1. What are genes made of?

---

2. How many chromosomes do humans have in each cell?

---

3. Who is known as the father of genetics?

---

4. Why do children often look like their parents but are still unique?

---

---

---

---

5. Why is it important for scientists to study genetics?

---

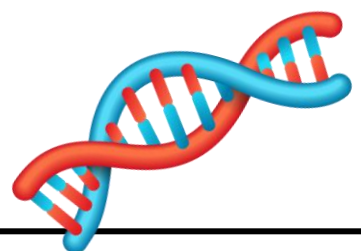
---

---

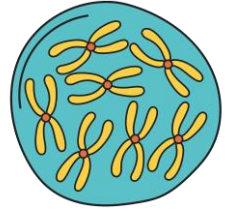
---

---

---



**1. What are genes made of?** Genes are made of DNA.



**2. How many chromosomes do humans have in each cell?**

Humans have 46 chromosomes in each cell.

**3. Who is known as the father of genetics?** Gregor Mendel is known as the father of genetics.

**4. Why do children often look like their parents but are still unique?**

Children often look like their parents because they inherit genes from both of them. Each parent contributes one allele for each gene, so the child gets a mix of traits. However, the specific combination of alleles is unique for each child, which is why siblings can look different from each other and why each child is unique, even though they share some similarities with their parents.



**5. Why is it important for scientists to study genetics?**

It is important for scientists to study genetics because it helps us understand how traits are passed from one generation to the next, explaining the diversity of life. It also allows scientists to research genetic disorders, develop treatments, and find ways to prevent diseases. Understanding genetics can lead to advances in medicine, agriculture, and many other fields, ultimately improving our quality of life and helping solve critical problems.

