

Name: _____

Date: _____



Reading Passages:

Understanding Inheritance



Task: Read the passages with your group. Highlight key terms and discuss what they mean. Then, apply what you learned to answer the questions on the next page.

1 What Are Alleles?

Alleles are different forms of the same gene that determine specific characteristics. Every person inherits two alleles for each trait — one from their mother and one from their father. These alleles can be the same or different. For example, the gene for tongue rolling has two alleles:

- **R** = can roll tongue (dominant)
- **r** = cannot roll tongue (recessive)

If someone has the genotype **RR** or **Rr**, they can roll their tongue. But people with **rr** cannot.

2 Dominant vs. Recessive

A **dominant allele** shows its effect even if there is only one copy (e.g., **Rr**).

A **recessive allele** only shows its effect if both alleles are recessive (e.g., **rr**).

So, **Rr** results in rolling the tongue (because **R** is dominant), while **rr** does not.

3 Homozygous and Heterozygous

If someone has **two of the same allele**, they are **homozygous**:

- **RR** (homozygous dominant)
- **rr** (homozygous recessive)

If someone has **two different alleles**, they are **heterozygous**:

- **Rr**

4 Blood Type and Multiple Alleles

The gene that determines blood type has three alleles: **A**, **B**, and **O**.

- **A** and **B** are **codominant** (both show up)
- **O** is **recessive**

Possible combinations:

- **AA** or **AO** = Blood Type A
- **BB** or **BO** = Blood Type B
- **AB** = Blood Type AB
- **OO** = Blood Type O



5 Sex-Linked Traits

Some traits are carried on the **X chromosome**, such as colorblindness.

- Males have one X and one Y chromosome (**XY**)
- Females have two X chromosomes (**XX**)

Because males have only one X, if they inherit the gene for colorblindness on that X, they will be colorblind. Females must have the gene on **both X chromosomes** to be colorblind. If they have it on just one, they are **carriers** but not colorblind themselves.

Reading task Questions

i. Define the following in your own words:

a) **Allele** _____

b) **Dominant and Recessive**

c) **Homozygous and Heterozygous**

ii. A woman cannot roll her tongue, but her husband can. Their child can roll their tongue.

a) What are the possible genotypes of the parents?

b) What is the likely genotype of the child?

iii. A father has blood type AB and the mother has blood type O.

a) What are the possible blood types of their children?

b) Explain your reasoning.

iv. A boy is colorblind. His mother and father are not.

a) Who passed the gene for colorblindness to the boy?

b) What must the mother's genotype be?