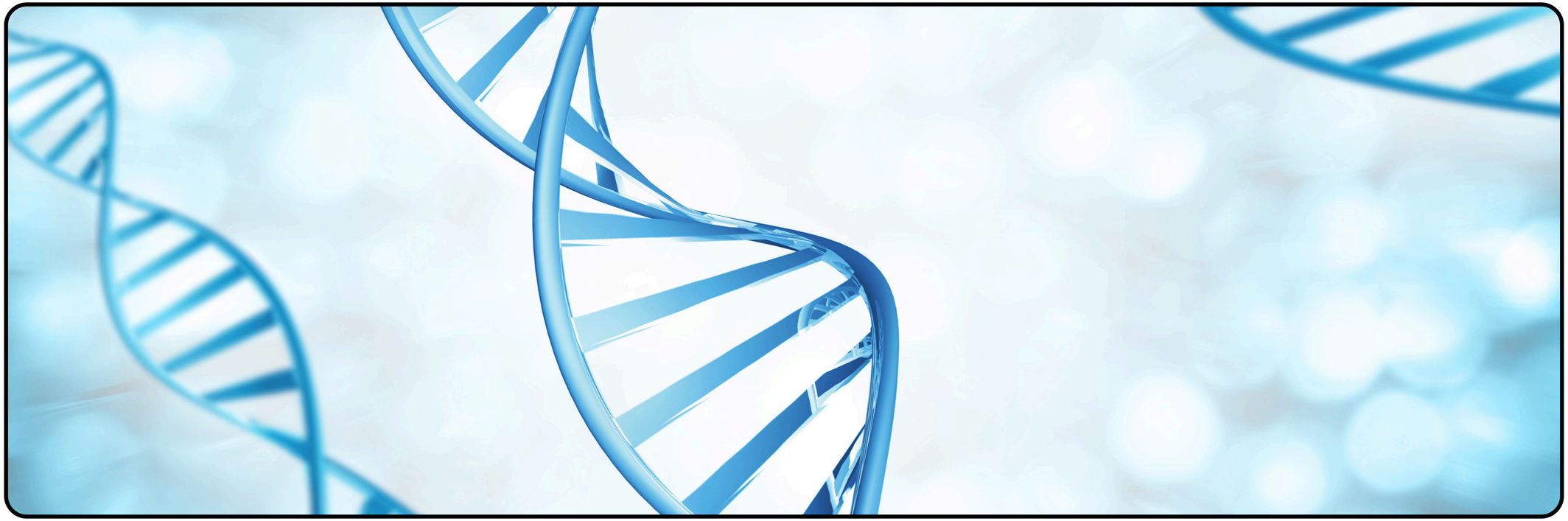
SEX-LINKED INHERITANCE AND MULTIPLE ALLELES



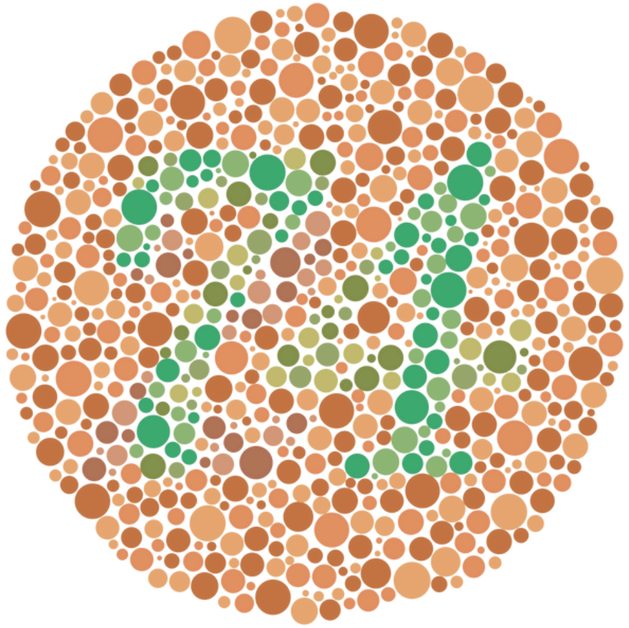
© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

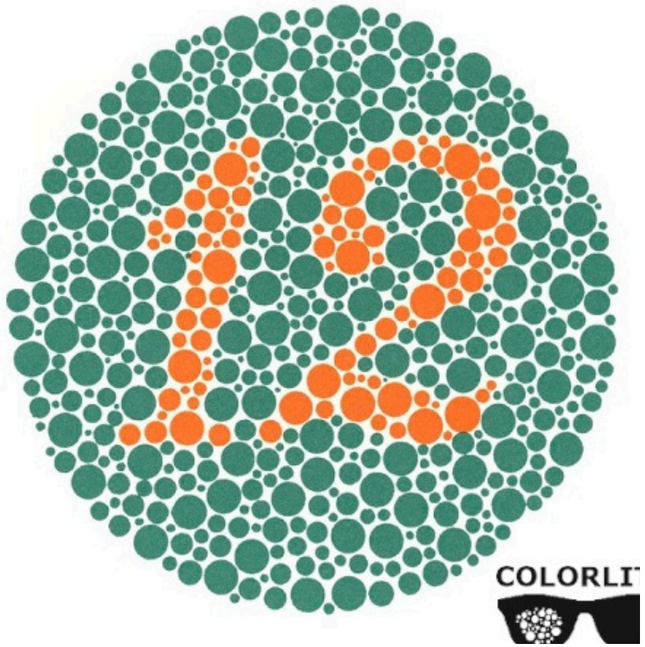
LEARNING OBJECTIVES

- APPLY SEX-LINKED INHERITANCE ON SOLVING PROBLEMS
- APPLY MULTIPLE ALLELES IN SOLVING PROBLEMS

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

ISHIHARA TEST

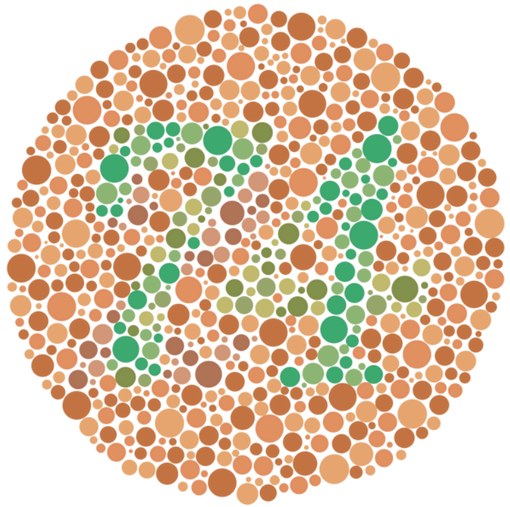




https://enchroma.com/pages/color-blind-test

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

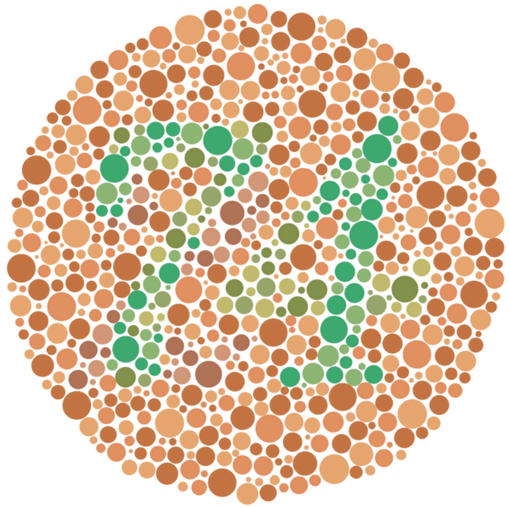
QUESTIONS



1) WHY ARE MEN MORE LIKELY TO BE COLORBLIND THAN WOMEN?

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

QUESTIONS

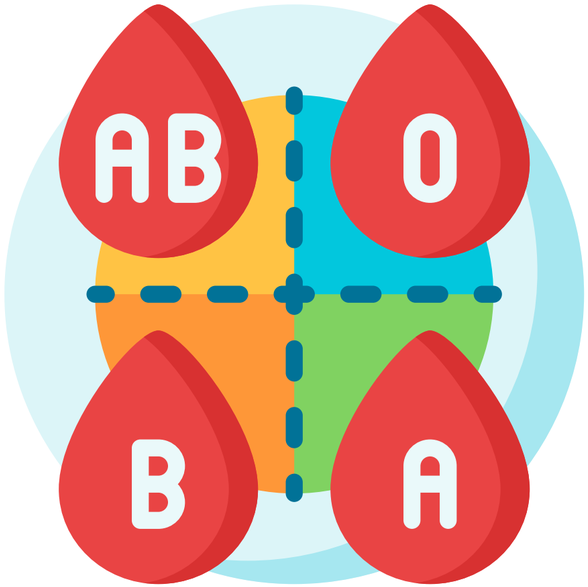


1) WHY ARE MEN MORE LIKELY TO BE COLORBLIND THAN WOMEN?

MEN ARE MORE LIKELY TO BE COLORBLIND BECAUSE THE GENE FOR COLORBLINDNESS IS LOCATED **ON THE X CHROMOSOME**, AND MEN HAVE ONLY ONE X CHROMOSOME. WOMEN HAVE TWO X CHROMOSOMES, SO A NORMAL GENE ON ONE CAN COMPENSATE FOR A DEFECTIVE ONE.

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

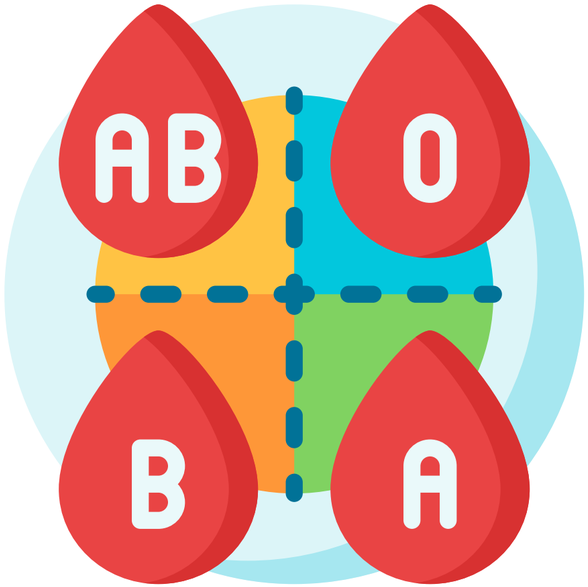
QUESTIONS



2) IF ONE PARENT HAS BLOOD TYPE A AND THE OTHER HAS BLOOD TYPE B, COULD THEIR CHILD HAVE BLOOD TYPE O?

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

QUESTIONS

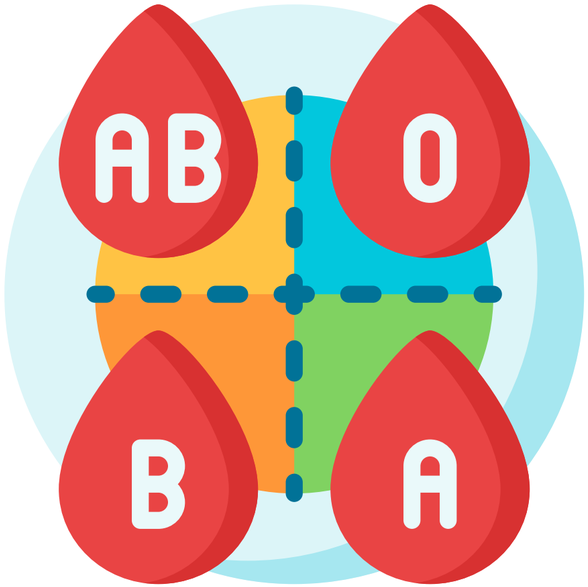


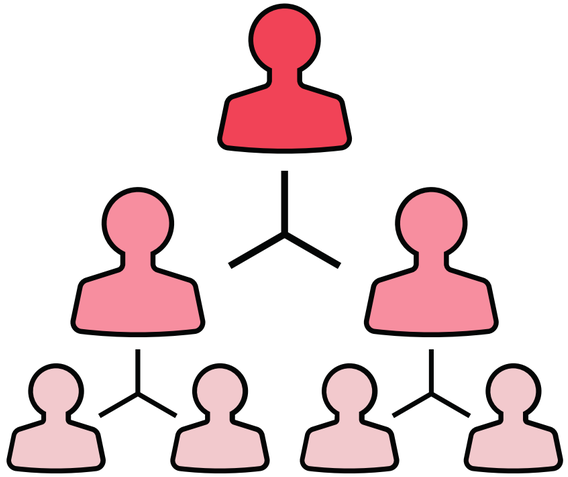
2) IF ONE PARENT HAS BLOOD TYPE A AND THE OTHER HAS BLOOD TYPE B, COULD THEIR CHILD HAVE BLOOD TYPE O?

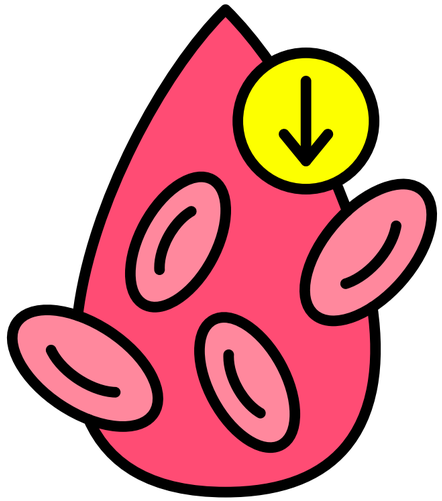
YES

© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

EXPLORE: GROUP WORK







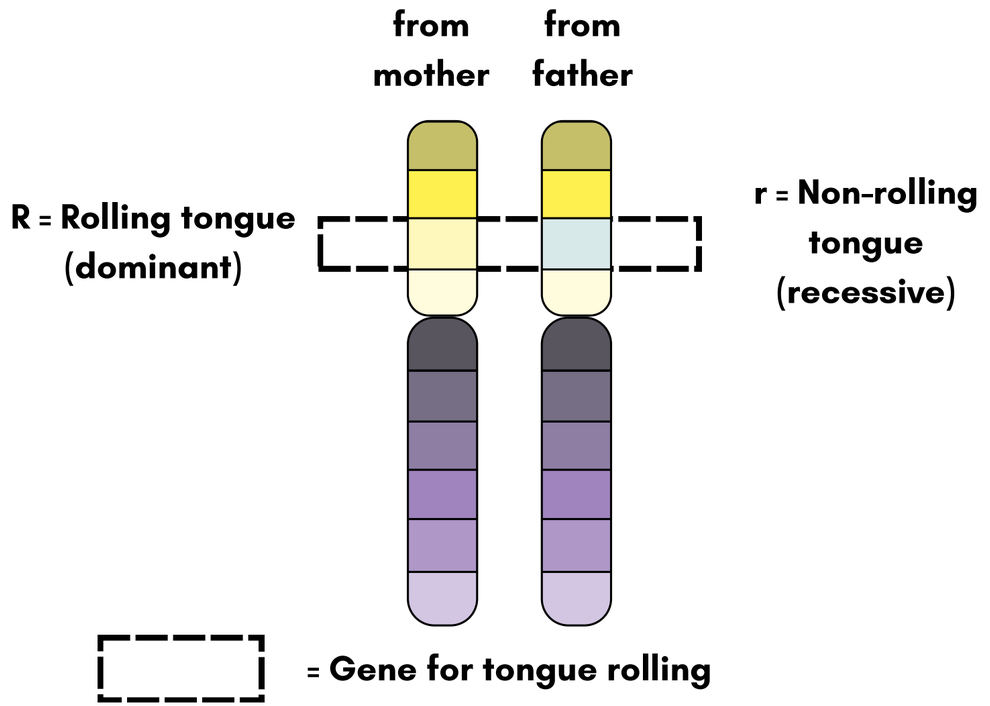
© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.

WHAT ARE ALLELES?

- Alleles are different forms of a gene.
- Each person has two alleles for every characteristic: one from their mother and one from their father.
- The combination of these alleles determines the characteristic a person will show.

Example: For tongue rolling, there are two alleles:

- R = Rolling tongue (dominant)
- r = Non-rolling tongue (recessive)

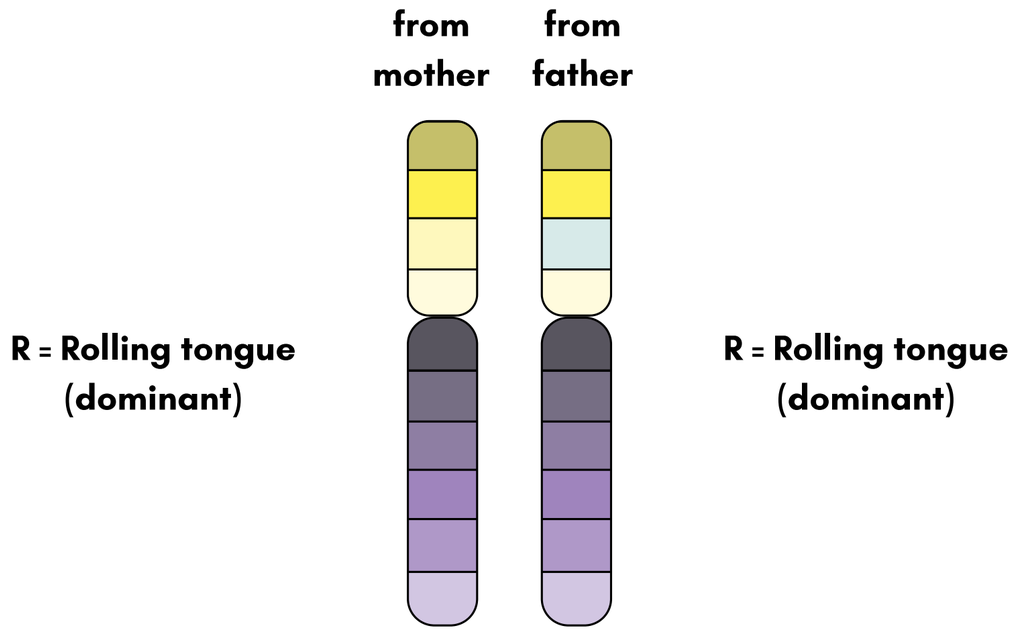


DOMINANT AND RECESSIVE ALLELES

Two **dominant alleles** show the effect.

Example:

RR = Rolling tongue (dominant)



DOMINANT AND RECESSIVE ALLELES

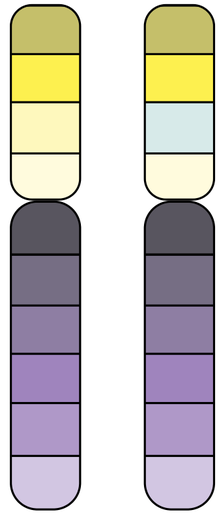
A **recessive allele** only shows its effect if both alleles are recessive.

Example:

rr = Non-rolling tongue (because both alleles are recessive)

from mother **from father**

r = Non-rolling tongue (recessive)



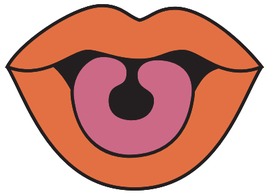
r = Non-rolling tongue (recessive)

HOMOZYGOUS AND HETEROZYGOUS

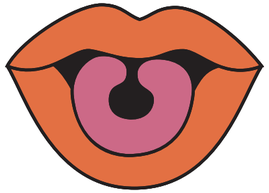
- If a person has **two identical alleles** for a characteristic, they are **homozygous** (e.g., RR or rr).
- If a person has **two different alleles**, they are **heterozygous** (e.g., Rr).

Example:

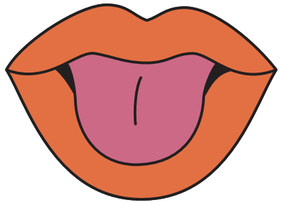
Homozygous dominant (RR): Rolling tongue



Heterozygous (Rr): Rolling tongue (because of the dominant allele)



Homozygous recessive (rr): Non-rolling tongue



GLOSSARY

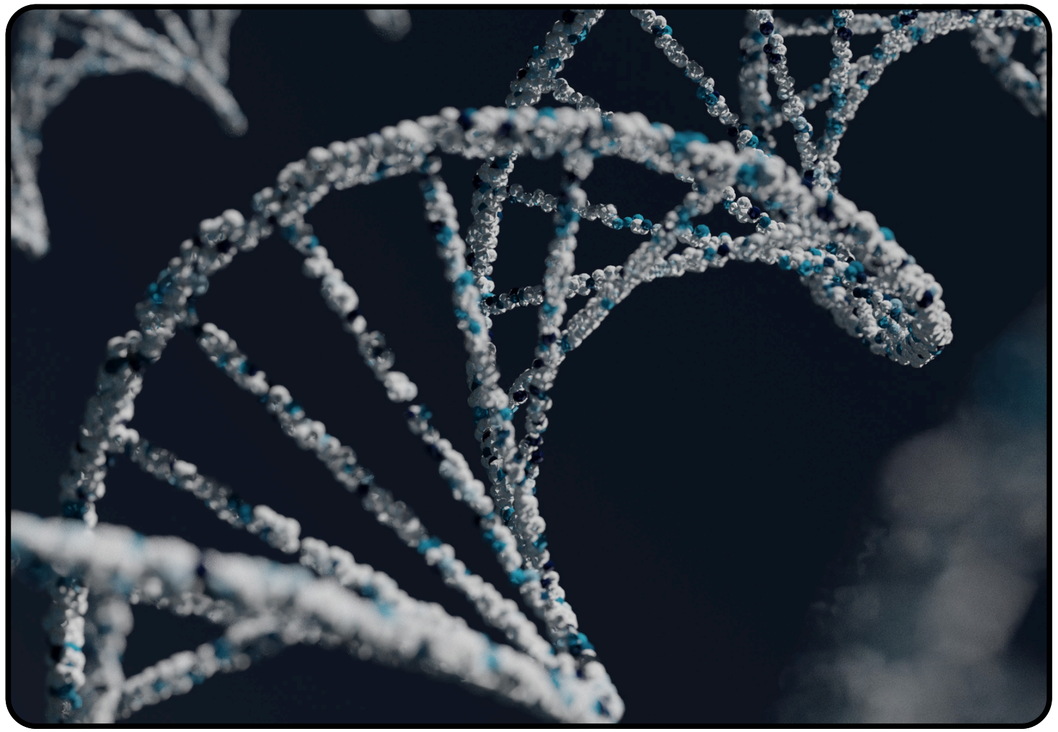
- **Alleles:** Different forms of a gene that determine specific characteristics. Each person inherits one allele from each parent.
- **Dominant:** An allele that shows its effect even if only one copy is present. It “dominates” over the recessive allele.
- **Gene:** A section of DNA that controls a specific characteristic.
- **Heterozygous:** When an individual has two different alleles for a characteristic (e.g., Rr).
- **Homozygous:** When an individual has two identical alleles for a characteristic (e.g., RR or rr).
- **Inheritance:** The process by which characteristics are passed down from parents to offspring.
- **Phenotype:** The physical appearance or expression of a characteristic, such as rolling your tongue or having attached earlobes.
- **Recessive:** An allele that only shows its effect if both copies are the same (homozygous). If a dominant allele is present, the recessive one is “hidden.

WHAT DID I LEARN TODAY?

1. Define the terms alleles, homozygous, and heterozygous.

2. Explain the difference between dominant and recessive characteristics.

3. Explore how these alleles combine to produce different characteristics in offspring.



© 2025 [biocompassedu.com]. All rights reserved. This resource is for personal and classroom use only. Do not distribute, sell, or upload to other websites.