

Name _____ Date _____ Class _____

GRS 4.1

Genetics: The Science of Heredity ■ Guided Reading and Study

Mendel's Work

This section describes how Gregor Mendel identified the method by

Introduction

1. Gregor Mendel experimented with hundreds of pea plants to understand the process of _____.

Match the term with its definition.

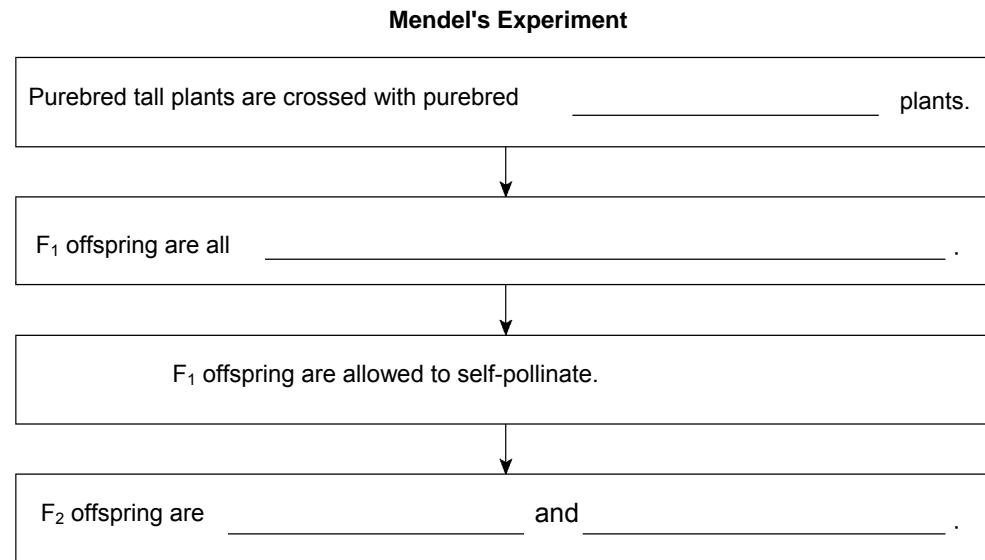
Term	Definition
_____ 2. heredity	a. The scientific study of heredity
_____ 3. genetics	b. Physical characteristics
_____ 4. traits	c. The passing of traits from parents to offspring

Mendel's Experiments

5. In a flower, the female sex cells, or eggs, are produced by the _____.
Pollen, which contains the male sex cells, is produced by the _____.

6. What are purebred organisms?

7. Complete the flowchart below, which summarizes Mendel's first experiment with pea plants.



8. Circle the letter of other traits in garden peas that Mendel studied.
- a. seed size, seed shape, seed color
 - b. seed color, pod color, flower shape
 - c. flower size, pod shape, seed coat color
 - d. pod color, seed shape, flower position
9. Two forms of the trait of seed shape in pea plants are _____ and _____

Dominant and Recessive Alleles

10. Circle the letter of each sentence that is true about alleles.
- a. Recessive alleles are never present when dominant alleles are present.
 - b. Alleles are different forms of a gene.
 - c. Dominant alleles always show up in the organism when the allele is present.
 - d. Recessive alleles hide dominant alleles.
11. Is the following sentence true or false? Only pea plants that have two recessive alleles for short stems will be short. _____

Match the pea plant with its combination of alleles.

Pea Plant	Combination of Alleles
_____ 12. purebred short	a. Two alleles for tall stems
_____ 13. purebred tall	b. One allele for tall stems and one allele for short stems
_____ 14. hybrid tall	c. Two alleles for short stems
15. A dominant allele is represented by a(n) _____ letter.	
16. A recessive allele is represented by a(n) _____ letter.	

17. How would a geneticist write the alleles to show that a tall pea plant has one allele for tall stems and one allele for short stems?

18. Is the following sentence true or false? Some scientists during Mendel's time thought Mendel should be called the Father of Genetics.

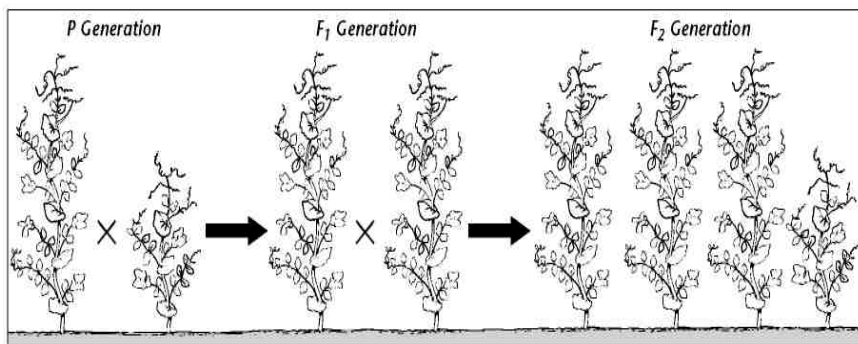
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Genetics: The Science of Heredity ■ *Review and Reinforce*

Mendel's Work

Understanding Main Ideas

Study the diagram. Then answer the following questions.



1. What trait in pea plants is being studied in the cross above?
2. What are the two alleles of this trait?
3. Which allele is the dominant allele? Explain how you know.
4. Which allele is the recessive allele? Explain.

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5. What alleles do the F_1 offspring have? Explain which allele was inherited from which parent.

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition on the line beside the term.

- | | |
|---------------------------|---|
| _____ 6. genetics | a. the passing of traits from parents to offspring |
| _____ 7. alleles | b. an organism with two different alleles for a trait |
| _____ 8. traits | c. factors that control traits |
| _____ 9. recessive allele | d. physical characteristics of organisms |
| _____ 10. genes | e. an allele whose trait always shows up in the organism |
| _____ 11. hybrid | f. the different forms of a gene |
| _____ 12. heredity | g. the scientific study of heredity |
| _____ 13. dominant allele | h. an allele whose trait is masked in the presence of a dominant allele |