

Chapter 11 Introduction to Genetics

Section 11–1 The Work of Gregor Mendel (pages 263–266)

This section describes how Gregor Mendel studied the inheritance of traits in garden peas and what his conclusions were.

Introduction (page 263)

1. The scientific study of heredity is called _____.

Gregor Mendel’s Peas (pages 263–264)

2. Circle the letter of each sentence that is true about Gregor Mendel’s peas.
 - a. The male parts of pea flowers produce eggs.
 - b. When pollen fertilizes an egg cell, a seed for a new plant is formed.
 - c. Pea plants normally reproduce by self-pollination.
 - d. Seeds that are produced by self-pollination inherit their characteristics from two different plants.
3. What does it mean when pea plants are described as being true-breeding?

4. To perform his experiments, how did Mendel prevent pea flowers from self-pollinating and control their cross-pollination? _____

Genes and Dominance (pages 264–265)

Match the term with its definition.

| Definitions | Terms |
|--|------------|
| _____ 5. Specific characteristics that vary from one individual to another | a. genes |
| _____ 6. The offspring of crosses between parents with different traits | b. hybrids |
| _____ 7. Chemical factors that determine traits | c. traits |
| _____ 8. The different forms of a gene | d. alleles |

9. State the principle of dominance. _____

10. Is the following sentence true or false? An organism with a recessive allele for a particular form of a trait will always exhibit that form. _____

Chapter 11, Introduction to Genetics (continued)

11. Circle the letters of the traits controlled by dominant alleles in Mendel's pea plants.
 a. tall b. short c. yellow d. green

Segregation (pages 265–266)

12. How did Mendel find out whether the recessive alleles were still present in the F₁ plants? _____

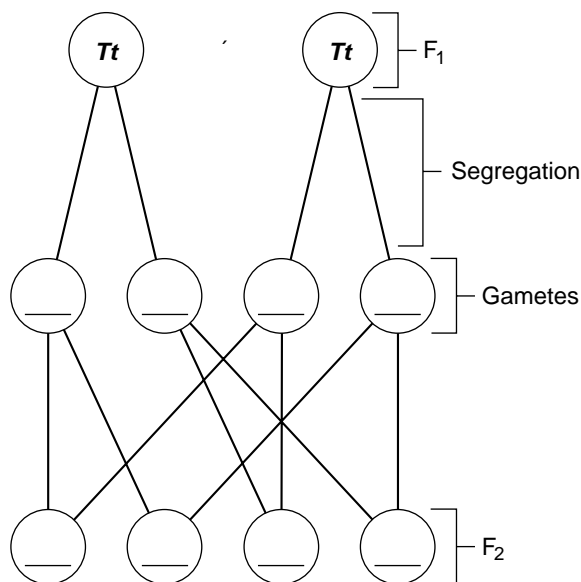
13. About one fourth of the F₂ plants from Mendel's F₁ crosses showed the trait controlled by the _____ allele.

14. Circle the letter of each sentence that is true about Mendel's explanation of the results from his F₁ cross.

- a. Mendel assumed that a dominant allele had masked the corresponding recessive allele in the F₁ generation.
- b. The trait controlled by the recessive allele never showed up in any F₂ plants.
- c. The allele for shortness was always inherited with the allele for tallness.
- d. At some point, the allele for shortness was segregated, or separated, from the allele for tallness.

15. What are gametes? _____

16. Complete the following diagram to show how alleles segregate during the formation of gametes.



17. In the diagram above, the dominant allele is represented by _____ and the recessive allele is represented by _____.