

Study Guide 5.2: Mitosis & Cytokinesis

KEY CONCEPT

Cells divide during mitosis and cytokinesis.

VOCABULARY

chromosome	centromere	metaphase
histone	telomere	anaphase
chromatin	prophase	telophase
chromatid		

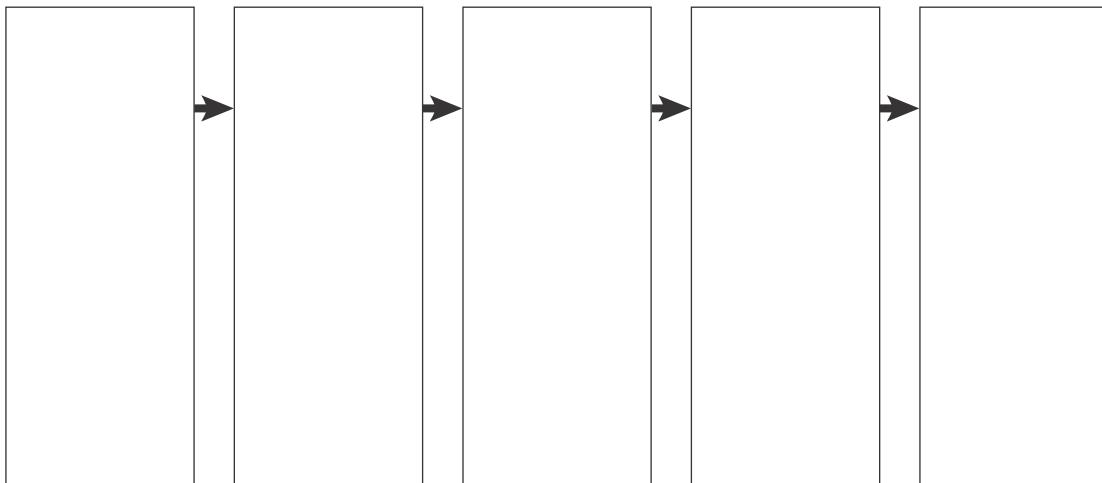
MAIN IDEA: Chromosomes condense at the start of mitosis.

1. What is a chromosome?

2. Why do chromosomes condense at the start of mitosis?

3. Why are chromosomes not condensed during all stages of the cell cycle?

Refer to Figure 2.2 to sketch how DNA goes from a long stringy form to a tightly condensed form. Label the parts of the condensed, duplicated chromosome.



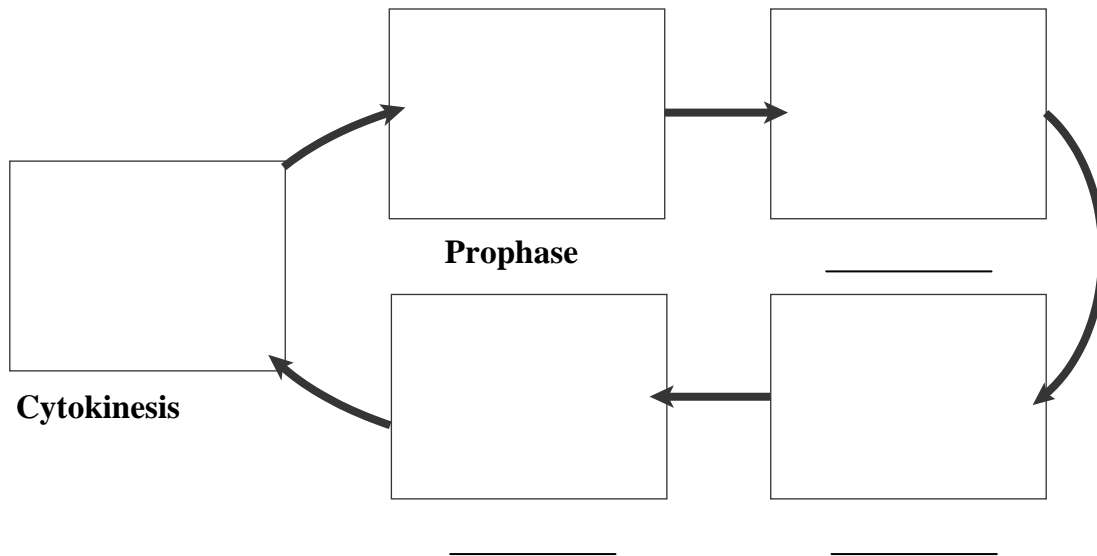
MAIN IDEA: Mitosis and cytokinesis produce two genetically identical daughter cells.

4. How does interphase prepare a cell to divide?

5. Mitosis occurs in what types of cells?

6. Develop a device, such as a short sentence or phrase, to help you remember the order of the steps of mitosis: prophase, metaphase, anaphase, telophase.

Complete the diagram illustrating the four phases of mitosis and one phase of cytokinesis.



7. How does cytokinesis differ between plant and animal cells?

Vocabulary Check

8. DNA wraps around organizing proteins called _____.

9. The suffix -tin indicates that something is stretched and thin. _____ is the loose combination of DNA and proteins that looks sort of like spaghetti.

10. Sister chromatids are held together at the _____, which looks pinched.

11. The ends of DNA molecules form structures called _____ that help prevent the loss of genes

SECTION QUIZ 5.2: Mitosis & Cytokinesis

Choose the letter of the best answer.

- _____ 1. The processes of mitosis and cytokinesis produce two identical
- a. daughter cells.
 - b. strands.
 - c. chromosomes.
 - d. chromatids.
- _____ 2. The process of organizing and condensing DNA into its compact form takes place at the start of
- a. interphase.
 - b. metaphase.
 - c. mitosis.
 - d. cytokinesis.
- _____ 3. Which is the term for the group of proteins that organizes and condenses long strands of DNA into tight coils?
- a. telomeres
 - b. centromeres
 - c. chromatids
 - d. histones
- _____ 4. During which phase of mitosis do sister chromatids separate from each other?
- a. prophase
 - b. metaphase
 - c. anaphase
 - d. telophase
- _____ 5. Which of the following statements is true of cytokinesis?
- a. takes place in plant cells only
 - b. completes the cell cycle
 - c. organizes DNA
 - d. occurs during prophase