

Section 10–3 Regulating the Cell Cycle

(pages 250–252)

Key Concepts

- How is the cell cycle regulated?
- How are cancer cells different from other cells?

Controls on Cell Division (page 250)

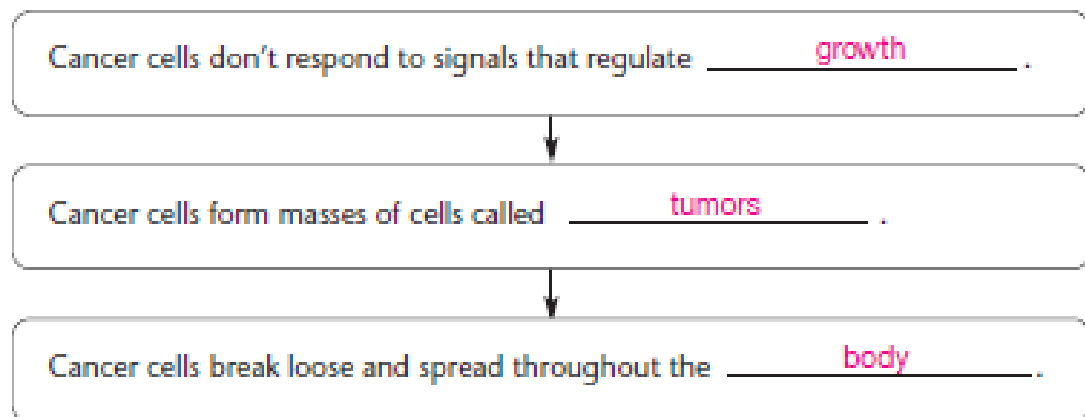
1. What happens to the cells at the edges of an injury when a cut in the skin or a break in a bone occurs? The cells at the edges of the injury are stimulated to divide rapidly.
2. What happens to the rapidly dividing cells when the healing process nears completion? The rate of cell division slows down, controls on growth are restored, and everything returns to normal.

Cell Cycle Regulators (page 251)

3. What do cyclins regulate? Cyclins regulate the timing of the cell cycle in eukaryotic cells.
4. What are internal regulators? They are proteins that respond to events inside the cell.
5. Circle the letter of each sentence that is true about external regulators.
 - a. They direct cells to speed up or slow down the cell cycle.
 - b. They prevent the cell from entering anaphase until all its chromosomes are attached to the mitotic spindle.
 - c. They include growth factors.
 - d. They prevent excessive cell growth and keep the tissues of the body from disrupting one another.

Uncontrolled Cell Growth (page 252)

6. What is cancer? Cancer is a disorder in which some of the body's own cells lose the ability to control growth.
7. Complete the flowchart about cancer.



8. Is the following sentence true or false? Cancer is a disease of the cell cycle.
true

Chapter 10 Cell Growth and Division

Section 10-3 Review Sheet

1. Cyclin regulates the timing of the cell cycle.
2. Internal regulators prevent a cell from entering mitosis until all chromosomes have been replicated.
3. External regulators direct cells to speed up or slow down the cell cycle.
4. The abnormal growth of cancer cells is caused by a failure to respond to signals that regulate growth.
5. No, all body cells do not have the same growth rate. For example, an injury to the skin will cause an increase in the growth rate.
6. *Answers will vary.* Scientists may have been interested in how much cyclin, or what types of cyclins are found in cancer cells.
7. Both internal and external regulators control the timing of the cell cycle. External regulators respond to stimuli outside the cell, such as contact with another cell, while internal regulators respond to signals within the cell, such as halting cell division until DNA repairs are complete.
8. A cut or injury is followed by a period of increased cell growth. After healing is complete, the cells return to a normal rate of growth.

Attachments

answers section 10-3 Regulating the Cell Cycle.pdf