

## Unit 5 Quiz

1. Which type of filaments form a network that provides mechanical support to a cell?

- A. Actin filaments
- B. Intermediate filaments
- C. Tubulin filaments
- D. Extracellular matrix filaments

2. How do actin monomers polymerize to form actin filaments?

- A. Each actin monomer binds with one other monomer to form a linear sequence of monomers.
- B. Actin is phosphorylated, which induces filament formation.
- C. There is assembly of monomers in head-to-tail interactions.
- D. Monomers assemble in amphipathic fashion to form filaments.

3. What is the definition of treadmilling?

- A. Walking for miles on a machine without going anywhere
- B. A net dissociation of actin monomers from the minus end, balanced by the addition of actin monomers to the plus end of a filament
- C. The interactin of cofilin and profilin to initiate turnover of a filament
- D. Process by which microtubules undergo rapid cycles of assembly and disassembly

4. Dynamic instability is critical for remodeling of the cytoskeleton that occurs during mitosis. Dynamic instability occurs for which reason?

- A. Treadmilling of actin filaments
- B. Antagonism between cofilin and profilin
- C. The hydrolysis of GTP bound to  $\beta$ -tubulin
- D. All of the above

5. Why is taxol used as a cancer chemotherapeutic?

- A. Taxol stabilizes microtubules, so mitosis cannot be completed.
- B. Taxol promotes microtubule disassembly, which is necessary in mitosis.
- C. Taxol inhibits microtubule disassembly, which selectively kills cancer cells.
- D. Taxol activates actin polymerization, which disrupts mitosis processes.

6. What is the main function of intermediate filaments in the cytoskeleton?

- A. To assist in cell motility
- B. To assist in mitosis
- C. To determine cell shape
- D. To provide mechanical strength to cells



7. Match the type of intermediate filament with the correct site of expression.

- A. Acidic keratins
- B. Vimentin
- C. Neurofilament proteins
- D. Nuclear lamins
- E. Nestin

- \_\_\_\_\_ Neurons
- \_\_\_\_\_ Stem cells of the nervous system
- \_\_\_\_\_ Fibroblasts
- \_\_\_\_\_ Epithelial cells
- \_\_\_\_\_ White blood cells
- \_\_\_\_\_ Nuclear envelope

8. Identify the correct sequence order for movements of cells that crawl.

- I. Attachment of the leading edge to the substratum
- II. Extension of the leading edge
- III. Retraction of the rear of the cell into the cell body

- A. I, II, III
- B. II, III, I
- C. III, I, II
- D. II, I, III

9. Which of the following molecules is NOT associated with muscle contraction?

- A. Actin
- B. Intermediate filaments
- C. Myosin
- D. Nebulin

10. Choose the best answer to fill in the blanks. Kinesin and dynein are two transport proteins, which function to move organelles around the cell. Kinesin moves organelles in the \_\_\_\_\_ direction, which means the organelles move towards the \_\_\_\_\_ of the cell.

- A. Positive, periphery
- B. Positive, center
- C. Negative, periphery
- D. Negative, center

