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## Cytoskeleton

Exam — Cell Organelles

Pre-Med practice questions about microtubules, microfilaments, and intermediate filaments

9 items — Printable Exam

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**1 Which cytoskeletal element is correctly matched with one of its primary functions?**

- A** Microtubules - forming the contractile ring during cytokinesis.
- B** Microfilaments (actin) - providing tracks for intracellular transport of vesicles by kinesin and dynein.
- C** Intermediate filaments - providing mechanical strength and resisting stretching of cells.
- D** Microtubules - forming the core of microvilli.
- E** Intermediate filaments - powering muscle contraction by sliding past myosin.



**2 The mitotic spindle that segregates chromosomes during mitosis is primarily composed of:**

- A** Actin microfilaments.
- B** Intermediate filaments.
- C** Microtubules.
- D** Collagen fibers.
- E** Elastic fibers.



**3 Cilia and eukaryotic flagella share which structural feature?**

- A** A core of actin filaments arranged in a 13-protofilament pattern.
- B** A 9+2 arrangement of microtubules.
- C** A single central microtubule surrounded by 10 peripheral microtubules.
- D** An entirely intermediate-filament-based core.
- E** Absence of any motor proteins.





**4** Which structure contains a core bundle of actin microfilaments rather than microtubules?



- A** Mitotic spindle.
- B** Cilia of respiratory epithelium.
- C** Eukaryotic flagellum.
- D** Intestinal microvillus.
- E** Centrosome.

**5** Kinesin and dynein are motor proteins that primarily move along:



- A** Intermediate filaments, using ATP.
- B** Actin filaments, using ATP.
- C** Microtubules, using ATP.
- D** Collagen fibers, using GTP.
- E** The nuclear lamina, using ATP.

**6** Depolymerization of microtubules by a drug such as colchicine would most directly interfere with:



- A** Formation of the mitotic spindle.
- B** Assembly of the contractile ring during cytokinesis.
- C** Maintenance of intestinal microvilli.
- D** Formation of the nuclear lamina.
- E** Primary structure of collagen.





**7** During directed cell migration, a fibroblast extends a lamellipodium at its leading edge. Which cytoskeletal process is most directly responsible for pushing the plasma membrane forward in this region?



- A** Depolymerization of actin filaments at the leading edge.
- B** Polymerization of actin filaments at their plus ends near the plasma membrane.
- C** Dynein-mediated sliding of microtubules.
- D** Contraction of intermediate filaments.
- E** Depolymerization of microtubules at their minus ends.

**8** Which type of cell junction connects intermediate filaments of one epithelial cell to those of a neighbouring cell, thereby helping epithelial sheets resist mechanical stress?



- A** Tight junction.
- B** Gap junction.
- C** Desmosome.
- D** Hemidesmosome.
- E** Adherens junction.

**9** In a polarized secretory cell, vesicles carrying cargo from the Golgi apparatus to the plasma membrane move predominantly toward the cell periphery along microtubules. Which statement best describes this movement?



- A** Kinesin motors move vesicles toward the plus ends of microtubules oriented toward the cell periphery.
- B** Dynein motors move vesicles toward the minus ends of microtubules located near the cell





cortex.

- C Kinesin motors move vesicles toward the minus ends of microtubules at the centrosome.
- D Myosin II motors move vesicles along intermediate filaments without using ATP.
- E Vesicle movement along microtubules is independent of ATP hydrolysis.





#	Ans	Answer Text
1	C	Intermediate filaments - providing mechanical strength and resisting str...
2	C	Microtubules.
3	B	A 9+2 arrangement of microtubules.
4	D	Intestinal microvillus.
5	C	Microtubules, using ATP.
6	A	Formation of the mitotic spindle.
7	B	Polymerization of actin filaments at their plus ends near the plasma mem...
8	C	Desmosome.
9	A	Kinesin motors move vesicles toward the plus ends of microtubules orient...

