

BMB/MICRB 252 – March 1, 2004 - Exam 1

Use #2 pencil. Answer all questions on the enclosed optical read form.

There is only one answer for each question.

Read the question carefully and choose the best answer.

Write your name and student I.D. number and fill in the corresponding oval.

Be sure that your TEST FORM letter matches you EXAM FORM letter.

This is EXAM FORM A

There are 33 questions. This exam ends at 11:00 am

1	Which directly controls the assembly of actin filaments? A. GTP B. ATP C. cAMP D. protein kinases E. myosin
2	Which is a molecular motor that moves along intermediate filaments? A. Kinesin B. Dynein C. Myosin D. None of these E. Tropomyosin
3	How does profilin enhance lamellipodia formation? A. It links microtubules to membrane vesicles B. It enhances actin monomer incorporation into actin filaments C. It enhances the action of thymosin D. It caps microtubules E. It mobilizes intermediate filaments
4	Which type of cytoskeleton is likely to be prevalent in skin cells? A. Vimentin B. Actin C. Keratin D. Neurofilaments E. Microtubules
5	Current events topic discussed in class: What does therapeutic cloning involve? A. Making human replicas B. Implantation of a blastocyst into a uterus C. Addition of exogenous growth hormones adult stem cells D. Production of stem cells from a blastocyst E. Fertilization of an enucleated egg
6	Which is not a step that actin and myosin engage in during muscle contraction? A. ATP binding B. Phosphate release C. ADP release D. Water uptake E. Phosphorylation
7	What directly controls the assembly/disassembly state of vimentin filaments? A. ATP B. GTP C. Phosphorylation D. Proteolysis E. cAMP

8	<p>Experimentally, how might you stop actin from treadmilling while still maintaining filament formation?</p> <p>A. Add a nonhydrolyzable nucleotide analog B. Add more actin subunits C. Add myosin D. Add dynein E. Add alpha-actinin</p>
9	<p>What keeps the golgi in the middle of the cell, and away from the periphery?</p> <p>A. Intermediate filaments B. Kinesin C. Spectrin D. Hurculin E. Dynein</p>
10	<p>Which is NOT a function of extracellular proteases?</p> <p>A. Path clearing B. Matrix phosphorylation C. Matrix activation D. Cell detachment E. Release of latent signaling molecules</p>
11	<p>Which is NOT a phase in the cell cycle?</p> <p>A. G1 B. G2 C. G3 D. S E. M</p>
12	<p>What is the function of cyclins?</p> <p>A. They control actin-myosin interactions B. They help move vesicles along microtubules C. They phosphorylate proteins involved in cell cycle progression D. They bind to the origin recognition complex (ORC) causing it to bind origins of replication. E. They bind to and activate certain kinases.</p>
13	<p>Which is NOT an advantage of using <i>Saccharomyces cerevisiae</i> as a model experimental organism?</p> <p>A. Small genome size B. Short life cycle C. Easy to manipulate genes D. Can be induced to differentiate into leukocytes, myoblasts, and osteoclasts E. Haploid genome</p>
14	<p>What role does the sarcoplasmic reticulum play in muscle contraction?</p> <p>A. It provides a rich source of ATP B. It stores calcium C. It propagates waves of depolarization generated from nerve impulses D. It stores actin and myosin, allowing them to interact when muscles contract E. It glycosylates myosin and transports it to the correct place in the muscle cells</p>
15	<p>How are Cdk's activated during the cell cycle?</p> <p>A. By phosphorylation B. By partial proteolysis C. By ubiquitination D. By cAMP E. By cGMP</p>

16	<p>Which one of the following internal structures is mostly likely to be used by a leukocyte to chase an infectious bacterium?</p> <p>A. Actin filaments B. Keratin filaments C. Microtubules D. Collagen filaments E. Intermediate filaments</p>
17	<p>Current events: In class we discussed a newly discovered form of communication among cells. What was it?</p> <p>A. Micro gap junctions B. cGMP signaling molecules C. Tunneling nanotubes D. Pili formation E. Axonal innervation</p>
18	<p>Where do collagens get assembled into the fibrils?</p> <p>A. Endoplasmic reticulum B. Cytoplasm of fibroblasts C. Extracellular matrix D. Cytoskeleton of chondroblasts E. Within extracellular membrane folds</p>
19	<p>Which statement is true?</p> <p>A. Two kinesin heads coordinate ATP hydrolysis, while myosin heads do not B. Myosin heads hydrolyze ATP, while Kinesin heads hydrolyze GTP C. Myosin heads hydrolyze GTP, while Kinesin heads hydrolyze ATP D. Myosin head/stalk regions undergo major conformational changes, whereas Kinesin heads do not. E. Myosin requires actin cofactors, whereas Kinesin uses dynein</p>
20	<p>Fibroblast are most likely to use which of the following to crawl through the extracellular matrix?</p> <p>A. Integrins B. Cadherins C. Selectins D. Gap junctions E. Desmosomes</p>
21	<p>Which one of the following is often required for proper cell adhesion protein function?</p> <p>A. ATP B. Calcium C. GTP D. Profilin E. Inositol triphosphate</p>
22	<p>The extracellular matrix found in knee joints has what main property?</p> <p>A. Strong due to collagen B. Elastic due to elastin C. Calcified due to osteoblasts D. Spongy due to glycosaminoglycans E. Sticky due to fibronectin</p>
23	<p>Current events from class: Erbitux is what?</p> <p>A. A type of cell adhesion molecule B. A protease of the extracellular matrix C. A monoclonal antibody D. A stabilize of actin filaments E. A regulator of the cell cycle</p>

24	Where might you expect to find relatively high levels of elastin? A. Walls of blood vessels B. Knee joints C. Heart muscle D. Fibroblasts E. Nails and hair
25	Which is not a major tissue type in your body/ A. Lymphoid B. Connective C. Blood D. Epithelial E. Nasal
26	During mitosis what force-generating motor is responsible for pulling chromosomes toward the centrosomes? A. Kinesin B. Myosin C. Helicases D. Dynein E. Chromatin
27	The critical rate-limiting step in establishing stable microtubules is what? A. Propagation through monomer addition B. Dynamic instability C. Treadmilling D. Filamentation E. Nucleation
28	Epithelial cells that line your small intestines are likely to be expressing which protein more so than a leukocyte? A. Selectins B. Claudins C. Integrins D. Actin E. Arps
29	Caspases are responsible for what? A. Calcium-dependent cell-cell adhesion B. Inducing leukocyte movement C. Carrying out apoptosis D. Reabsorption of calcium into internal membrane compartments E. Chromosomal segregation
30	How does taxol help treat cancer? A. It causes actin filaments to depolymerize, thereby preventing metastasis B. It destabilizes intermediate filaments, allowing cells to move C. It prevents integrin expression, which causes cells to 'round up' D. It stabilizes microtubules E. It causes myosin to 'lock' onto actin.
31	How might you monitor the distribution of cofilin in a leukocyte crawling along the surface. A. Electron microscopy after treatment with colloidal gold B. Treat cells with phalloidin and track by fluorescence microscopy C. Clone and express the cofilin gene using an HA tag D. Use fluorescently labeled anti-cofilin antibodies and fluorescence microscopy E. Treat cells with phalloidin and track by Nomarski optics microscopy

32	Cadherins are largely responsible for what? A. Linking microtubules to adherens junctions B. Forming gap junctions C. Making cell-cell contacts D. Regulation of G1 transition into S phase E. Interacting with collagen fibrils
33	Which is directly responsible for sister chromatid separation during mitosis? A. Phosphorylation B. Proteolysis C. Ubiquitination D. cAMP E. Actin-myosin