

Microbiology / Active Lecture Questions

Chapter 4 – Functional Anatomy of Prokaryotic & Eukaryotic Cells

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2 Which of the following is *NOT* a distinguishing characteristic of prokaryotic cells?

- a. They usually have a single, circular chromosome.
- b. They lack membrane-enclosed organelles.
- c. They have cell walls containing peptidoglycan.
- d. Their DNA is not associated with histones.
- e. They lack a plasma membrane.

3 Which statement best describes what happens when a gram-positive bacterium is placed in a solution of distilled water and penicillin?

- a. No change will result; the solution is isotonic.
- b. Water will move into the cell.
- c. Water will move out of the cell.
- d. The cell will undergo osmotic lysis.
- e. Sucrose will move into the cell from an area of higher concentration to one of lower concentration.

4 Which statement best describes what happens when a gram-negative bacterium is placed in a solution of distilled water and penicillin?

- a. No change will result; the solution is isotonic.
- b. Water will move into the cell.
- c. Water will move out of the cell.
- d. The cell will undergo osmotic lysis.
- e. None of the above.

5 Which statement best describes what happens when a gram-positive bacterium is placed in an aqueous solution of lysozyme and 10% sucrose?

- a. No change will result; the solution is isotonic.
- b. Water will move into the cell.
- c. Water will move out of the cell.
- d. The cell will undergo osmotic lysis.
- e. Sucrose will move into the cell from an area of higher concentration to one of lower concentration.

6 Which of the following statements best describes what happens to a cell exposed to polymyxins that destroy phospholipids?

- a. In an isotonic solution, nothing will happen.
- b. In a hypotonic solution, the cell will lyse.
- c. Water will move into the cell.
- d. Intracellular contents will leak from the cell.
- e. Any of the above might happen.

7 Which of the following statements about fimbriae is *FALSE*?

- a. They are composed of protein.
- b. They may be used for attachment.

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- c. They are found on gram-negative cells.
- d. They are composed of pilin.
- e. They may be used for motility.

8 Which of the following pairs is mismatched?

- a. glycocalyx—adherence
- b. pili—reproduction
- c. cell wall—toxin
- d. cell wall—protection
- e. plasma membrane—transport

9 Which of the following pairs is mismatched?

- a. metachromatic granules—stored phosphates
- b. polysaccharide granules—stored starch
- c. lipid inclusions—poly-Beta-hydroxybutyric acid
- d. sulfur granules—energy reserve
- e. ribosomes—protein storage

10 You have isolated a motile, gram-positive cell with no visible nucleus.

You can assume this cell has

- a. ribosomes.
- b. mitochondria.
- c. an endoplasmic reticulum.
- d. a Golgi complex.
- e. all of the above

11 The antibiotic amphotericin B disrupts plasma membranes by combining with sterols; antibiotic amphotericin B will affect all of the following cells *EXCEPT*

- a. animal cells.
- b. bacterial cells.
- c. fungal cells.
- d. *Mycoplasma* cells.
- e. plant cells.

12 Bacteria reproduce by

- a. binary fission.
- b. spore formation.
- c. mitosis.
- d. budding.

13 Which of the following cell structures play a part in initiating disease?

- a. fimbriae
- b. cell membrane
- c. gram-positive cell wall
- d. lipid A

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14 Which of the following organelles resembles a prokaryotic cell?

- a. Golgi complex
- b. nucleus
- c. mitochondrion
- d. endoplasmic reticulum

15 What substance makes up the framework of the prokaryotic cell wall?

- a. cellulose
- b. glucan
- c. chitin
- d. peptidoglycan

16 The cell walls of gram-positive bacteria contain

- a. mannan.
- b. teichoic acid.
- c. cellulose.
- d. chitin.

17 Cell walls are found in

- a. L-forms.
- b. fungi.
- c. protoplasts.
- d. mycoplasmas.

18 Which structure protects pathogenic bacteria from phagocytosis?

- a. capsule
- b. endospore
- c. flagellum
- d. axial filament

19 Spirochetes move by means of

- a. axial filaments.
- b. flagella.
- c. pili.
- d. fimbriae.

20 Which of the following statements regarding capsules is *FALSE*?

- a. They promote virulence.
- b. They promote antigenicity.
- c. They can be called a slime layer.
- d. They can be stained using a negative stain.

21 Metachromatic granules are collectively known as

- a. carboxysomes.
- b. volutin.
- c. magnetosomes.

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d. polysaccharide granules.

22 Which of the following structures allow a cell to survive adverse environmental conditions?

- a. capsule
- b. carboxysome
- c. endospore
- d. gas vacuole

23 In the lab you have just isolated a motile, gram-positive cell with no visible nucleus. You can assume that the cell

- a. has a cell wall.
- b. has a nucleus.
- c. has a mitochondrion.
- d. has 9 pairs + 2 flagella.

24 A cell can transport a substance from a lower to a higher concentration by the physiological process of

- a. active transport.
- b. facilitated diffusion.
- c. osmosis.
- d. simple diffusion.

25 Which of the following substances in the eukaryotic plasma membrane serve as attachment sites for bacteria?

- a. phospholipids
- b. proteins
- c. carbohydrates
- d. sterols

26 Which organelle contains one or more enzymes that can oxidize various organic substances?

27 What is the best definition of osmotic pressure?

28 How do you tell the difference between a gram positive and gram negative cell wall?