

Chapter 4 Test

Objective Questions

- e
Recall
1. Which of the following is *not* a distinguishing characteristic of procaryotic cells?
- Their DNA is not enclosed within a membrane.
 - They lack membrane-enclosed organelles.
 - They have cell walls containing peptidoglycan.
 - Their DNA is not associated with histones.
 - None of the above.
- c
Analysis
2. Which of the following is *not* true about a gram-positive cell wall?
- It maintains the shape of the cell.
 - It is sensitive to lysozyme.
 - It protects the cell in a hypertonic environment.
 - It contains teichoic acids.
 - None of the above.
- c
Understanding
3. Which of the following best describes what happens when a bacterial cell is placed in a solution containing 5% NaCl?
- Sucrose will move into the cell from a higher to a lower concentration.
 - The cell will undergo osmotic lysis.
 - Water will move out of the cell.
 - Water will move into the cell.
 - No change will result; the solution is isotonic.
- b
Understanding
4. The best definition of osmotic pressure is
- The movement of solute molecules from a higher to a lower concentration.
 - The force with which a solvent moves across a semi-permeable membrane from a higher to a lower concentration.
 - The movement of a substance across a semi-permeable membrane from a higher to a lower concentration.
 - The active transport of a substance out of a cell to maintain equilibrium.
 - The movement of solute molecules from a lower to a higher concentration across a semi-permeable membrane.
- c
Analysis
5. By which of the following mechanisms can a cell transport a substance from a lower to a higher concentration?
- Simple diffusion
 - Facilitated diffusion
 - Active transport
 - Extracellular enzymes
 - Any of the above

a
Analysis

6. Which of the following is *not* a characteristic of the plasma membrane?
- Maintains cell shape
 - Composed of a phospholipid bilayer
 - Contains proteins
 - The site of cell wall formation
 - Selectively permeable

b
Recall

7. All of the following are lacking a cell wall *except*
- Protoplasts.
 - Fungi.
 - L-forms.
 - Mycoplasmas.
 - Animal cells.

b
Recall

8. Which of the following statements is true?
- Endospores are for reproduction.
 - Endospores allow a cell to survive environmental changes.
 - Endospores are easily stained in a Gram stain.
 - A cell produces one endospore and keeps growing.
 - A cell can produce many endospores.

d
Recall

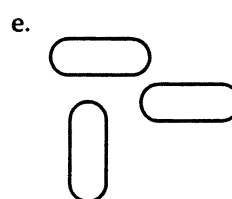
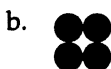
9. Which of the following pairs is mismatched?
- Endoplasmic reticulum—internal transport
 - Golgi complex—secretion
 - Mitochondria—ATP production
 - Centrosome—food storage
 - Lysosome—digestive enzymes

b
Analysis

10. Which of the following organelles most closely resembles a procaryotic cell?
- Nucleus
 - Mitochondrion
 - Golgi complex
 - Vacuole
 - Cell wall

Recall

Match the following drawings to the descriptions in questions 11 through 14. Choices may be used once, more than once, or not at all.



b

11. Tetrad

a

12. Possesses an axial filament

- c 13. Streptococci
- e 14. Bacilli
- c
Recall 15. Which of the following is generally *not* true of procaryotic cells?
a. They have a semirigid cell wall.
b. They are motile by means of flagella.
c. They possess 80S ribosomes.
d. They reproduce by binary fission.
e. None of the above.
- d
Analysis 16. Which of the following is *not* true about gram-negative cell walls?
a. They protect the cell in a hypotonic environment.
b. They have an extra outer layer composed of lipoproteins, lipopolysaccharides, and phospholipids.
c. They are toxic to humans.
d. They are sensitive to penicillin.
e. Their Gram reaction is due to the outer membrane.
- c
Recall 17. Which of the following is *not* a structure found in procaryotic cells?
a. Flagella
b. Axial filament
c. Cilia
d. Pili
e. Peritrichous flagella
- e
Analysis 18. Which of the following is *not* true about the glycocalyx?
a. It may be composed of polysaccharide.
b. It may be composed of polypeptide.
c. It may be responsible for virulence.
d. It is used to adhere to surfaces.
e. None of the above.
- a
Analysis 19. Which of the following is *not* a chemical component of a bacterial cell wall?
a. Cellulose
b. Peptidoglycan
c. Teichoic acids
d. Peptide chains
e. N-acetylmuramic acid
- d
Analysis 20. Which of the following is *not* part of the active transport process?
a. Plasma membrane
b. Carrier proteins
c. ATP
d. Cell wall
e. None of the above

c
Recall

21. Which of the following terms best describes this cell?



- a. Peritrichous flagella
- b. Amphitrichous flagella
- c. Lophotrichous flagella
- d. Monotrichous flagella
- e. Axial filament

c
Recall

22. In bacteria, photosynthesis pigments are found in

- a. Chloroplasts.
- b. Cytoplasm.
- c. Chromatophores.
- d. Mesosomes.
- e. None of the above.

d
Analysis

23. The difference between simple diffusion and facilitated diffusion is that facilitated diffusion

- a. Can move materials from a higher to a lower concentration.
- b. Can move materials from a lower to a higher concentration.
- c. Requires ATP.
- d. Requires permease.
- e. Doesn't require ATP.

a
Recall

24. Possible functions of magnetosomes include all of the following *except*

- a. Get cells to the North Pole.
- b. Protect cells from hydrogen peroxide accumulation.
- c. Synthesize ATP.
- d. Locate suitable environments.
- e. None of the above.

d
Recall

25. Which of the following cell structures has a role in the initiation of disease?

- a. Gram-positive cell wall
- b. Lipid A
- c. Cell membrane
- d. Fimbriae
- e. All of the above

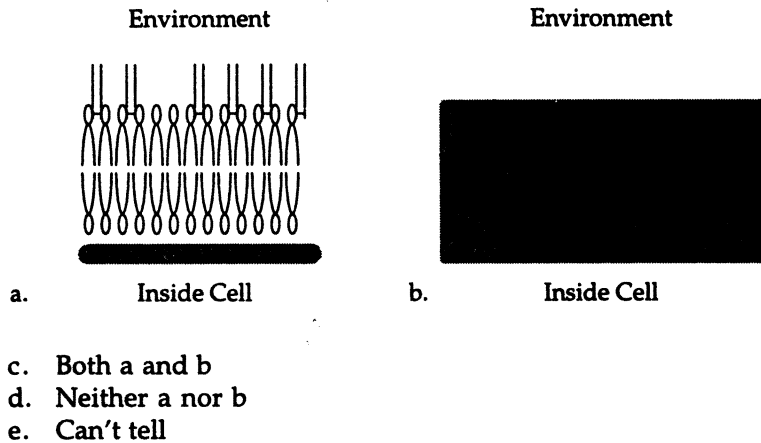
c
Recall

26. Fimbriae and pili differ in that pili

- a. Are composed of pilin.
- b. Are composed of flagellin.
- c. Are used to transfer DNA.
- d. Are used for asexual reproduction.
- e. Are used for attachment.

Analysis

Use the following diagrams to answer questions 27 through 33. Choices may be used once, more than once, or not at all.



- a 27. A gram-negative cell wall.
- a 28. A toxic cell wall.
- c 29. A wall that protects against osmotic lysis.
- a 30. Decolorized by acetone-alcohol.
- a 31. Resistant to many antibiotics (e.g., penicillin)
- b 32. Contains teichoic acids.
- a 33. Contains porins.

Understanding

Use the following choices to answer questions 34 and 35. Choices may be used once, more than once, or not at all.

- a. Cell wall
b. Around organelles
c. Plasma membrane
d. Ribosomes
e. b and c
- c 34. Where are phospholipids most likely found in a procaryotic cell?
- e 35. Where are phospholipids most likely found in a eucaryotic cell?

- Understanding Use the following choices to answer questions 36 through 38. Choices may be used once, more than once, or not at all.
- Pseudomurein
 - Sterol-rich cell membranes
 - Peptidoglycan
 - Nucleus
 - a and c
- c 36. Found in gram-positive bacteria.
- a 37. Found in archaea.
- b 38. Found in mycoplasmas.
- c 39. You have isolated a motile, gram-positive cell with no visible nucleus. You can safely assume that the cell
- Analysis
- Has 9 pairs + 2 flagella.
 - Has a mitochondrion.
 - Has a cell wall.
 - Lives in an extreme environment.
 - Has a nucleus.
- b 40. What will happen if a bacterial cell is placed in distilled water with lysozyme?
- Analysis
- The cell will plasmolyze.
 - The cell will undergo osmotic lysis.
 - Water will leave the cell.
 - Lysozyme will diffuse into the cell.
 - No change will result; the solution is isotonic.
- a 41. What will happen if a bacterial cell is placed in 10% NaCl with penicillin?
- Analysis
- The cell will plasmolyze.
 - The cell will undergo osmotic lysis.
 - Water will enter the cell.
 - Penicillin will diffuse into the cell.
 - No change will result; the solution is isotonic.
- c 42. Which one of the following pairs is *not* correctly matched?
- Analysis
- Metachromatic granules—phosphate storage
 - Lipid inclusions—energy reserve
 - Ribosomes—protein storage
 - Sulfur granules—energy reserve
 - Gas vacuoles—flotation
- a 43. All of the following are energy reserves *except*
- Recall
- Carboxysomes.
 - Polysaccharide granules.
 - Lipid inclusions.
 - Sulfur granules.
 - Metachromatic granules.