

# Chapter 3 Study Guide Answers

## Cell Structure and Function

2. Explain the difference between eukaryotic cells and prokaryotic cells. *→ has a nucleus* *→ no nucleus*
3. What is the term for the jellylike substance that is contained inside the cell membrane? *cytoplasm*
4. Unlike a eukaryotic cell, a prokaryotic cell does not have what? *nucleus*
5. What are the specialized structures that work together inside a cell are called? *organelles*
6. What is the main function of the Golgi apparatus? *modify and package proteins*
7. Where are ribosomes found, and what is their function? *cytoplasm, rough ER; make proteins*
8. What are the main differences between plant and animal cells? *chloroplasts and cell wall in plants*
10. Describe what it means to be selectively permeability. *only some materials pass through*
11. Describe passive transport. *movement across a membrane from high concentration to low*
12. Water moves into a cell when what type of solution surrounds the cell? Hypertonic, hypotonic, isotonic?
13. Unlike passive transport, what does active transport require? *energy*
14. What process uses proteins to pump molecules across the cell membrane? *active transport*
15. Explain the function of active transport proteins in the cell membrane. *pump molecules from low concentration to high concentration*
16. What organelle is described as a membrane-bound sac (bag) used to transport substances into and out of cells? *vessicle*
17. Prokaryotes can move by the use of what structures? *cilia, flagella*
18. What is the basic unit of structure and function in all living things? *cells*
19. The movement of water through a selectively permeable membrane is known as what? *osmosis*
20. Why is a cell membrane described as selectively permeable? *it lets some materials through, but not others*
22. The structure most responsible for maintaining homeostasis of the cell is the *nucleus*
23. Which organelle is the storehouse for most of a cell's genetic information? *nucleus*
24. Describe rough ER and explain its function. *outside is bumpy with ribosomes; makes & packages proteins*
25. Which organelles contain enzymes that break down old cell parts? *lysosomes*
27. How is the cell shown in Figure 3.1 different from a prokaryotic cell? *it has a nucleus*

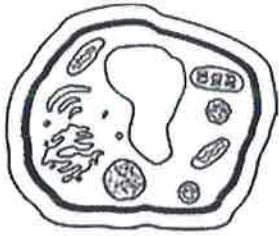


FIG. 3.1

28. Describe the function of the mitochondria. *convert chemical energy to ATP (useable energy)*
29. Which features are unique to plant cells? *chloroplasts, cell wall*
30. In terms of energy, mitochondria and chloroplasts have what in common? *they convert energy*
31. Describe active transport. Describe the different types of active transport.

*movement across a membrane that requires energy; substances go from a low concentration to a high concentration (against the concentration gradient)*

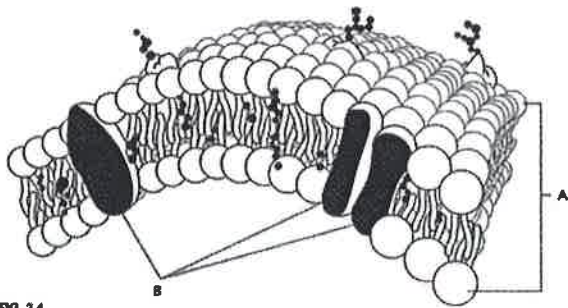
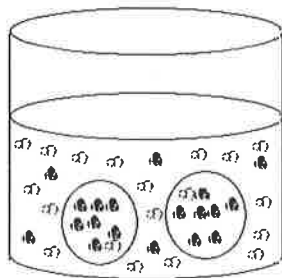




FIG. 3.4

34. What is shown in the Figure above and what is its function?  
*cell membrane - cell signaling, cell structure, selective transport, excretion of wastes*
35. What are the functions of the molecules (B) that are embedded in the layers of part A?  
*transport materials*

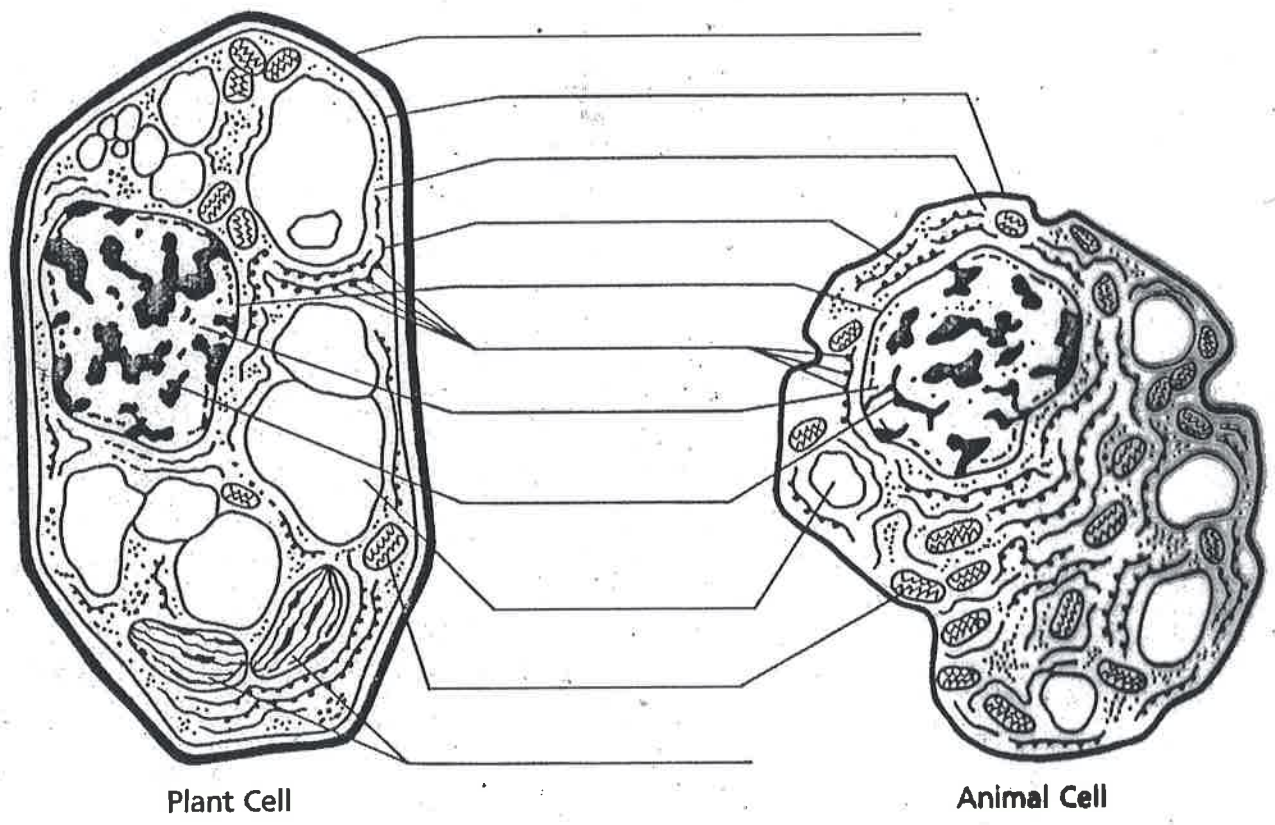
Use the picture below of two cells in a saltwater solution to answer the following questions.



 water molecule  
 salt

- 36. Where is the highest concentration of **water** in the picture above -- inside the cells or outside the cells?
- 37. What is the direction of water flow -- into the cells or out of the cells?
- 38. Will the cells swell or shrink in this solution?
- 39. What type of solution are the cells in -- hypotonic, hypertonic, or isotonic?

## Structures of Living Cells



- 42. Which cell(s), if any, is (are) a plant cell?  
*look for cell wall, chloroplast*
- 43. Which cell(s), if any, is (are) an animal cell?  
*absence of cell wall & chloroplasts*
- 44. Which cell(s), if any, is (are) a eukaryotic cell?  
*both*
- 45. Which cell(s), if any, is (are) a prokaryotic cell?  
*neither*
- 46. Which labeled structure is the site of photosynthesis?  
*Chloroplasts*

