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

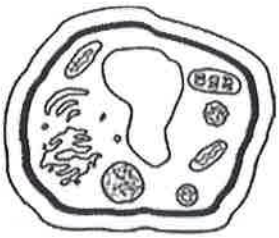


FIG. 3.1

28. Describe the function of the mitochondria. convert chemical energy to ATP (useable enagy)

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)

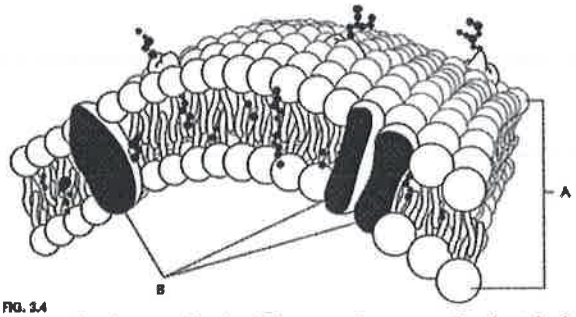
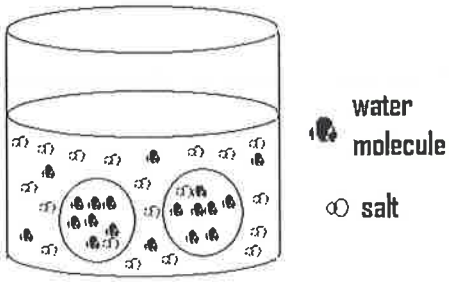


FIG. 3.4

34. What is shown in the Figure above and what is it's 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.



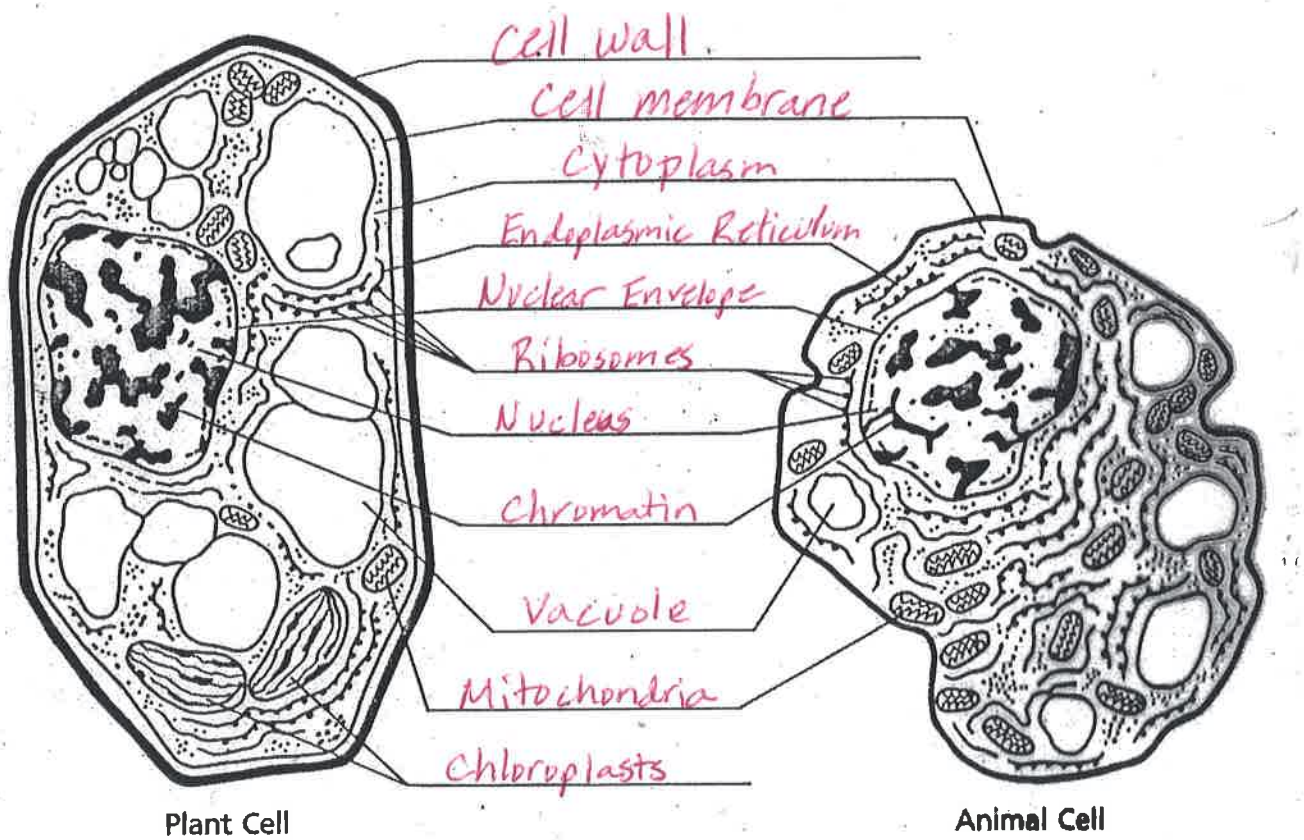
36. Where is the highest concentration of **water** in the picture above -- inside the cells or outside the cells?

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

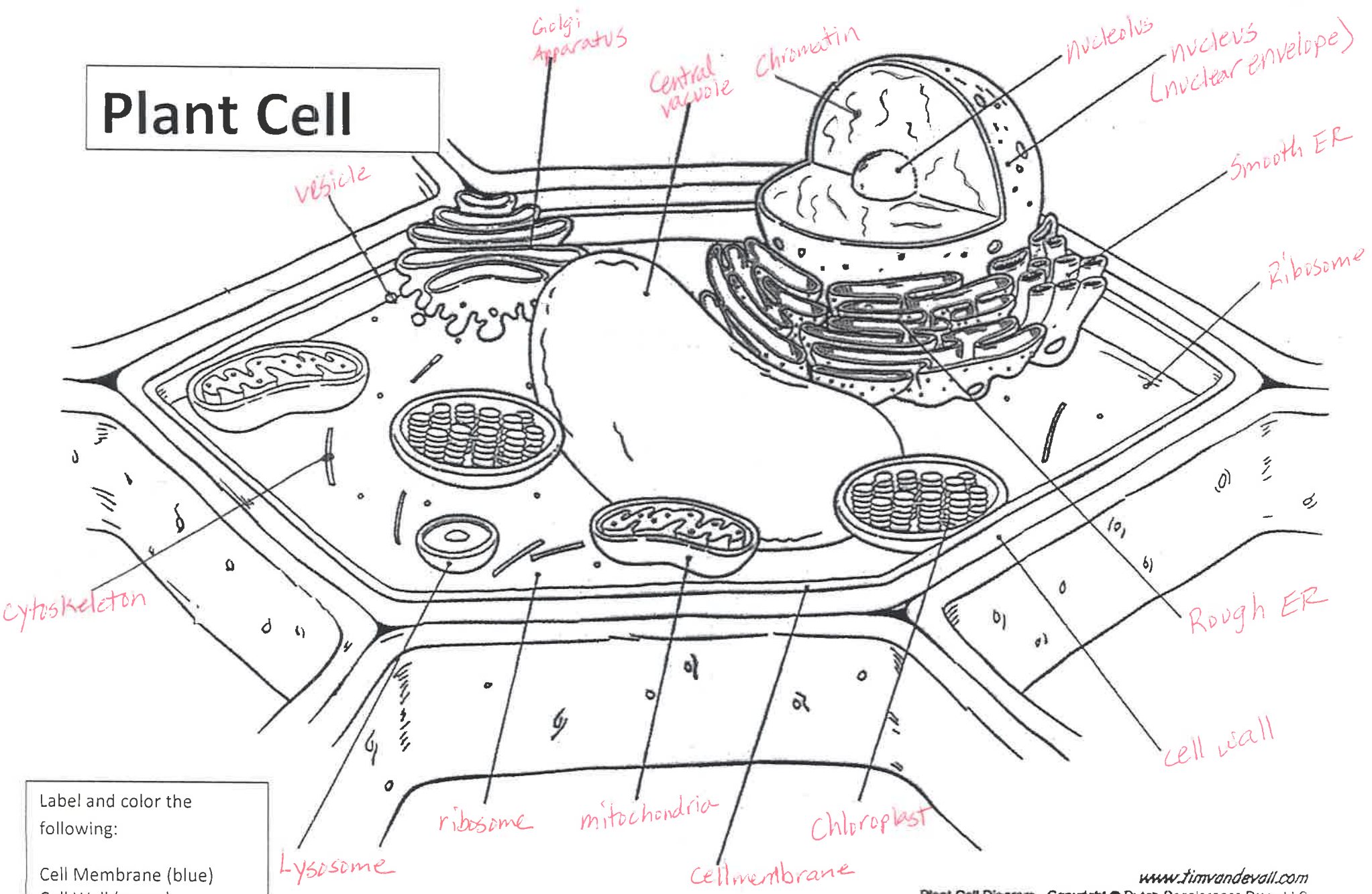
43. Which cell(s), if any, is (are) an animal cell?
absence of cell wall & chloroplasts

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

Plant Cell



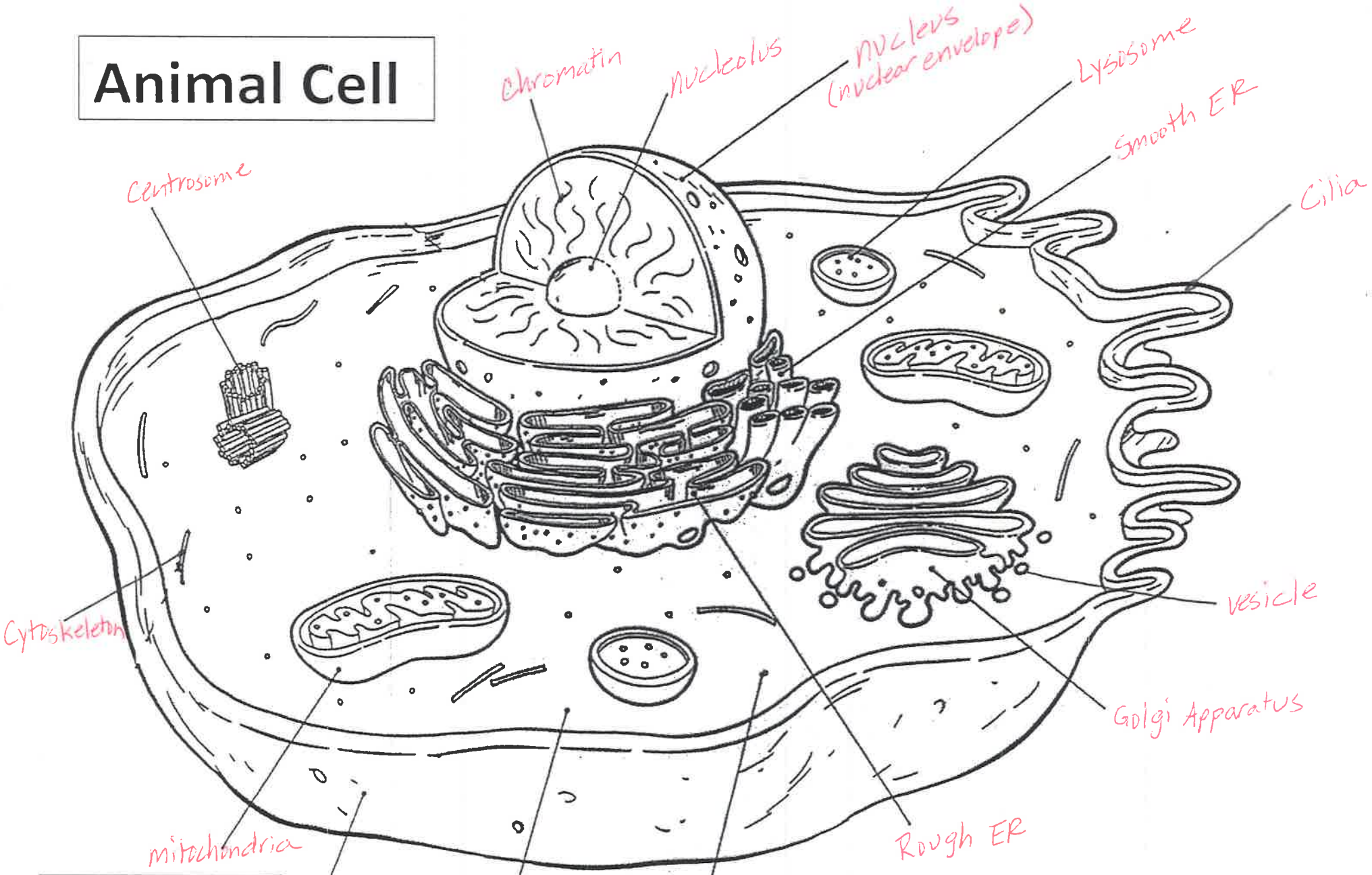
Label and color the following:

Cell Membrane (blue)
Cell Wall (green)
Chloroplast (light green)
Cytoplasm (white)
Golgi Apparatus (purple)
Mitochondrion (red)
Nucleolus (brown)

Nucleus (yellow)
Ribosome (black)
Rough Endoplasmic Reticulum (red-orange)
Smooth Endoplasmic Reticulum (orange)
Vacuole (light blue)

chromatin (dark brown)
cytoskeleton (dark green)
vessicle (dark blue)

Animal Cell



Label and color the following:

Cell Membrane (blue)
Centrioles (light green)
Cytoplasm (white)
Golgi Apparatus (purple)

Lysosome (green)
Mitochondrion (red)
Nucleolus (brown)
Nucleus (yellow)

Ribosome (black)
Rough Endoplasmic Reticulum (red-orange)
Smooth Endoplasmic Reticulum (orange)
Vacuole (light blue)

chromatin (dark brown)
cytoskeleton (dark green)
vesicle (dark blue)
cilia (blue green)