

BSCS Biology Chapter 6 Study Guide

1. Name the instrument that was needed to understand cell theory.
2. Define: cell
3. Name the two parts of cell theory.
4. Name the microscope that will most likely to show the greatest detail of cells.
5. Name the individual who first described cells.
6. Name the individual(s) who were given credit for advancing cell theory.
7. Who discovered microorganisms?
8. List the two basic types of cells. Provide an example of each.

9. An organism with a membrane enclosed nucleus would apply to which of the following?

- animal kingdom
- plant kingdom
- Monera Kingdom
- protist kingdom

10. In a prokaryotic cell where is the chromosome attached?

11. True/False:

- Prokaryotic organisms all have cell walls and most are harmful to humans.
- Prokaryotic organisms all harmful to humans and most have no true nucleus.
- Prokaryotic organisms all lack cytoplasm and most are unicellular.
- Prokaryotic organisms all have a plasma membrane and most are beneficial to humans.

12. The following questions describe the characteristics of specific organism. On the basis of the stated characteristics determine whether each resembles an animal or plant cell.

- Bacterium has no nuclear membrane rather its nuclear material is scattered about the cell.
- A cell wall surrounds bacteria.
- An Amoeba has no cell wall and does have a flexible cell membrane.
- A cyanobacterium contains chlorophyll.
- A nuclear membrane surrounds the nucleus of an amoeba.
- The single chromosome of bacterium is located in the nucleoid.

13. Name the three different shapes of bacteria.

14. Eukaryotic cells are divided into small functional parts called _____.

15. Name and describe the parts of animal cell and plant cell.

Animal:

Plant:

16. Name the organelle in which proteins move from one area to another area within the cell.

17. Which of these terms show the same relationship as skeleton: cell wall?

- fence: gate
- nucleus: nucleolus
- centriole: chloroplast
- digestive tract: lysosome

18. What generally distinguishes a plant cell from an animal cell?

19. Name the organelle used in digestion>

20. What is the function of ribosomes?

21. Which of the following cell structures would be affected by a poison interfering with the formation of proteins?

- chloroplasts
- centromeres
- mitochondria
- ribosomes

22. What is the primary function of the thick walled cell in the stem of a plant?

23. Abnormal mitochondria would be more likely correlated with a disturbance in a cell's _____ supply.

24. You cut cells so $\frac{1}{2}$ of the cell fragment contains a nucleus and the other $\frac{1}{2}$ does not. Those fragments with a nucleus are separated from those without a nucleus. You take 100 fragments and place them in containers under identical situations. The results are listed below.

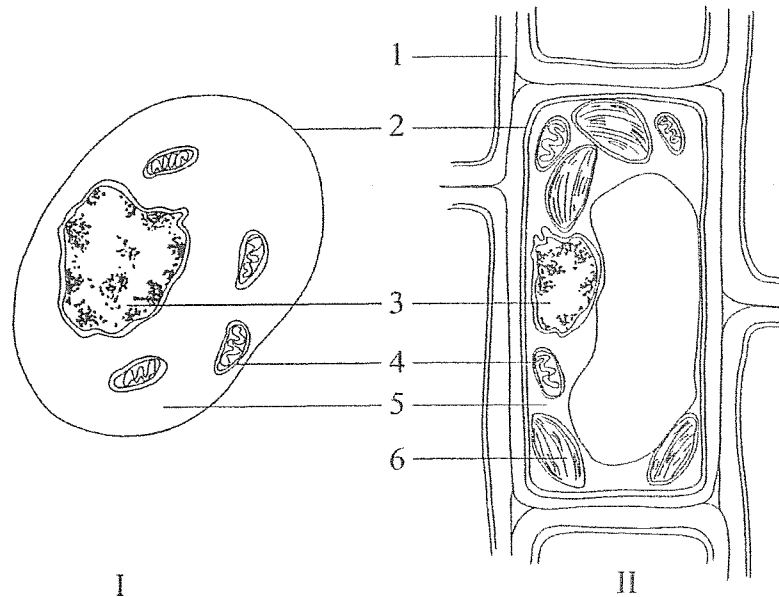
	Number of nonnucleated fragments	Number of nucleated fragments
Initial sample	100	100
Surviving 1 day	80	79
Surviving 2 days	60	74
Surviving 3 days	30	72
Surviving 4 days	3	72

- a. Provide a hypothesis for what is being tested.
- b. Which one of the following statements must be an assumption made for this experiment?
 - The fragments without a nucleus will grow a nucleus.
 - The materials in the cytoplasm are the same for *all* fragments.
- c. What do the results show about the survival of the type of fragments?

For the remaining questions choose the statement that would apply the best.

- It is a restatement of the results.
 - It is a logical interpretation of the data.
 - The data alone show that the statement is false.
 - It is an illogical interpretation of the data.
- d. Nuclei of the fragments that died in the first 2 days had been injured.
 - e. The amount of cytoplasm of the nucleated fragments dying in the first 2 days was too small to support the life of the cell fragments.
 - f. As soon as the nucleus was removed the cell or cell fragments dies.
 - g. All of the fragments without a nucleus would have died by day 6.
 - h. The percent of fragments without a nucleus which died increased daily.
 - i. The percent of fragments with a nucleus which died increased after day 1
 - j. If the nutrient medium in which the cells with a nuclei were living were adequate, then the fragments probably would become complete cells, live and divide normally.
 - k. Generally, the nucleus is a necessity for the life of the cell to continue.
 - l. Fragments of cells with a nucleus cannot live more than 10 days.

25. Use the figure below to answer the next set of questions.



- Without structure 3 the cell could not _____.
- If an organism has structure 11 it would not be able to _____.
- Structure 6 is green which means the presence of this structure allows the organism to _____.
- When the cell divides some of the material of structure 3 would become visible as _____.
- Early cell theory assumed that all cells have structures # _____ and # _____.
- Name the structure where light energy is “trapped” and changed to chemical energy.
- Name the structure which would be made of cellulose.
- What type of cell would Cell II be?

25. Which organelle would allow some eukaryotic cells the ability to move?

26. True/False: (with regard to cooperation between cells)

- Unicellular bacteria are sometimes found in cluster
- The cells of *Volvox* all move their flagella in unison.
- The cells of a *Volvox* colony are held together by gelatin.
- Two different species of unicellular bacteria may compete for the same food.

27. A *Volvox* cell is removed from its colony and round off slightly into the shape of a teardrop. This *Volvox* cell would closely resemble the protist *Chlamydomonas*, except the cell cannot produce.
- a. A *Volvox* cell in a colony is less or more specialized than one removed from the colony.
28. What is the evidence for the coordinated activity of the cell sin a *Volvox* colony?
29. True/False: All multicellular organisms exhibit division of labor, and most have tissues.
30. Is less energy necessary per cell in a colony an advantage or disadvantage of a *Volvox* colony when compared to *Chlamydomonas*?
31. Is the coordination of flagella which makes better movement possible an advantage or a disadvantage of a *Volvox* colony compared to *Chlamydomonas*?
32. If cells in a colony have less independence is that an advantage or disadvantage of a *Volvox* colony compared to *Chlamydomonas*?
33. Is the fact that large size eliminates many smaller organisms as natural enemies an advantage or disadvantage of a *Volvox* colony compared to *Chlamydomonas*?
34. True/False: The fact both colonies and single cells can reproduce is either an advantage or disadvantage of a *Volvox* colony compared to *Chlamydomonas*.
35. Why is biofilm different from other colonies?
36. Would a rosebush be an organism or an organ system?
37. Define: tissue.
38. The human brain is an _____.
39. The leaf of a plant is a _____.

40. What does the principle of division of labor in multicellular organisms involve?

41. Why do you think organ systems are necessary in large organism?

42. Which of the following organisms would need a transport system?

- A small, flat, thin moss by a swamp
- A flattened tapeworm in your intestinal tract
- An earthworm with a tubular body and thick outer "skin"
- A long, thin seaweed

Please note:

You will have 8 matching items associated with the parts of the cell

You will have 7 questions associated with this question: What processes favor division of labor in *Volvox* against the tendencies for each cell to be independent like those of *Chlamydomonas*?

Samples:

Refer to the information above. A single-celled organism must carry on all life functions itself in order to survive.

The statement is a(n)

- logical hypothesis.
- illogical hypothesis.
- logical hypothesis but unrelated to the problem stated above.
- not a hypothesis but an observation.

Refer to the information above. Both unicellular and multicellular organisms must be adapted to their environments.

The statement is a(n)

- logical hypothesis.
- illogical hypothesis.
- logical hypothesis but unrelated to the problem stated above.
- not a hypothesis but an observation.