

Name:

Lab:

## Cell Study Guide

A. Cell History: Explain each individual's contribution to the evolution of cell knowledge.

1. Robert Hooke:
2. Anton von Leeuwenhoeke
3. Schleiden and Schwann
4. Rudolf Virchow
5. State the Cell Theory:

B. Cell Organelles: Fill-in the appropriate organelle with the given description

| Description   | Organelle | Two-Word Definition |
|---|-----------|---------------------|
| Located on rough ER or "floating" in cytoplasm                            |           |                     |
| Double membrane, contains genetic information                             |           |                     |
| Network channel of membranes throughout cell, two kinds: rough and smooth |           |                     |
| Flattened stack of membranes, makes lysosomes                             |           |                     |
| Filled with hydrolytic enzymes  |           |                     |
| Membrane sack filled with non-green pigments                              |           |                     |
| Made of cellulose   |           |                     |
| Liquid environment of the cell  |           |                     |
| Made of DNA and protein   |           |                     |
| Short, 9+2 arrangement of microtubules                                    |           |                     |
| Long 9+2 arrangement of microtubules                                      |           |                     |
| Located inside nucleus, makes ribosomes                                   |           |                     |
| 9x3 arrangement of microtubules   |           |                     |

C. Using a Venn diagram, compare and contrast Procaryotic and Eucaryotic cells

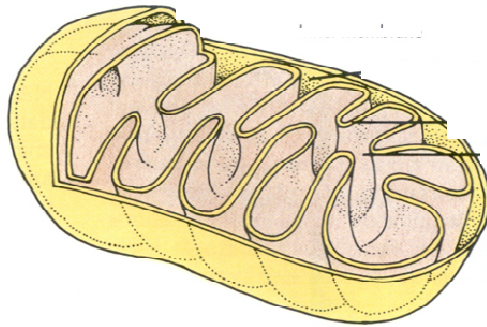
D. Describe the structure and function of the following plant organelles

1. Chloroplast (draw a picture of the interior of the chloroplast and label the regions)
2. Chromoplast
3. Leucoplast

E. Identify and explain the role of two polysaccharides in the structure and organization of a plant cell.

- 1.
- 2.

F. Label the two regions of the mitochondria and describe their structure



- a. What metabolic process takes place in the mitochondria?
- b. What molecule is made as a result of the above process?

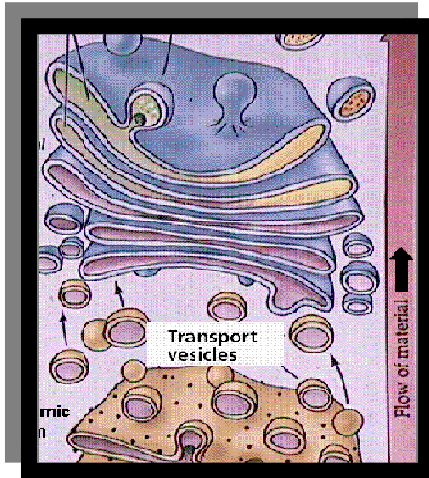
G. Characterize the following microscopes as to advantages and disadvantages

- a. light microscope
- b. transmission electron microscope
- c. scanning electron microscope

H. Draw a diagram comparing the microtubule arrangement of a cilia vs. a centriole

I. Describe the different states DNA exists in during the life of a cell. (use a diagram if necessary)

J. Explain the diagram below identifying the pictured organelles and their function in the processing of proteins (To receive full credit answer must be in complete sentences)



Answer:

K. You are a happy little one cell creature known as a paramecium. Explain how you “eat”. In your explanation be sure to include all involved organelles. (hint: talk about “eating” process and the cell membrane function, vacuoles, and lysosomes.)

L. Fill-in the blanks with either eukaryote or prokaryote

- i. \_\_\_\_\_ cells are generally larger than \_\_\_\_\_ cells.
- ii. A membrane bound nucleus can be found in \_\_\_\_\_ cells but not \_\_\_\_\_ cells
- iii. Animals, plants, protozoans, and fungi are made of \_\_\_\_\_ cells
- iv. Bacteria and blue-green algae are made of \_\_\_\_\_ cells

M. Fill-in the appropriate prefix and suffix for the following

- |                 |                     |
|-----------------|---------------------|
| 2. cyto _____   | 10. hydro _____     |
| 3. plasm _____  | 11. poly _____      |
| 4. uni _____    | 12. synthesis _____ |
| 5. leuco _____  | 13. endo _____      |
| 6. chloro _____ | 14. karyon _____    |
| 7. chromo _____ | 15. eu _____        |
| 8. some _____   |                     |
| 9. mono _____   |                     |
| 10. lysis _____ |                     |

N. Characterize the following and provide examples of each.

i. unicellular organism

ii. colonial

iii. multi-cellular

O. Give the hierarchy organization of this “cute” excuse of a dog and provide examples for each level of organization.

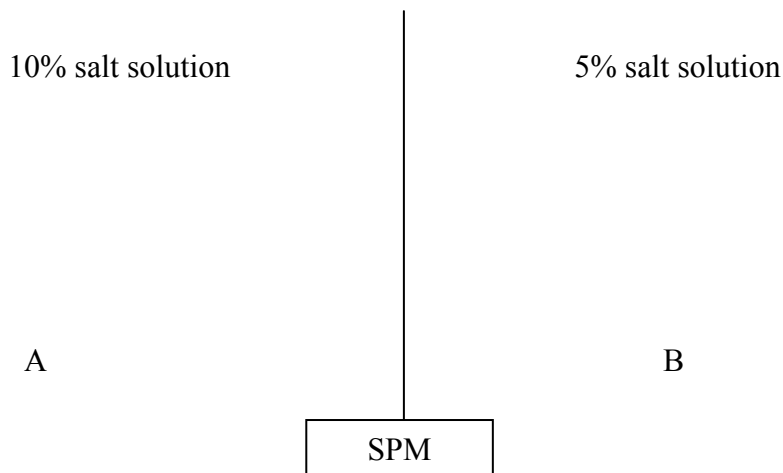


## *Cell Transport*

A. Define the following and present a cellular example:

1. diffusion:
2. osmosis:
3. active transport

B. Answer the following questions pertaining to the following diagram:



1. Side A is (hypertonic / hypotonic) to side B: circle answer
2. Water will move from side \_\_\_\_\_ to side \_\_\_\_\_ until \_\_\_\_\_ is reached.
3. Salt will move from side \_\_\_\_\_ to side \_\_\_\_\_ until \_\_\_\_\_ is reached.
4. Define equilibrium:
5. Draw a system similar to the one above only at equilibrium and use the appropriate "tonic" term to describe the system

C. Fill-in-the-blanks

1. The process when cells ingest large particles is called \_\_\_\_\_.
2. The process when cells bring in small molecules that land on the membrane is called \_\_\_\_\_.
3. Sucrase is an enzyme secreted by specialized small intestinal cells, the process by which the enzyme leaves the cell is called \_\_\_\_\_.

D. **Putting it all together:** Referring to the last question, trace the origins of the enzyme sucrase in the cell. Incorporate all the organelles involved in the production, packaging and transport of this enzyme. Be sure to explain how each function of the organelle serves the purpose of producing this enzyme and releasing it into the small intestine lumen or cavity.









