Name:

**The Cell and Body Systems Study Guide**

1. An organism that is made of just one cell is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Complex organisms made of multiple cells are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Create a time line for the history of the microscope (similar to the time line we created as a bell ringer) Include the last name of the individual and a general idea of what they did that was important.

3) Cell Theory has 3 main components:

 1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Cells can’t be too large. Cells want to maximize their volume to surface area ration. Why is it important that they don’t become so large?

5)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells do not have either membrane bound organelles or a nucleus, while \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells have both membrane bound organelles and a nucleus.

6) Eukaryote organisms are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Prokaryotic organisms are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) Give the purpose/job of each organelle:

a) Mitochondria

b) Nucleus

c) Ribosome

d) Golgi apparatus

e) Cytoplasm

f) Chloroplasts

g) Vacuole

h) Lysosome

i) Endoplasmic Reticulum

j) Cell Wall

8) The Cell membrane is a very complex part of the cell. What are the three main functions of the cell membrane?

 A)

B)

C)

9) Label the image below: You may use the word bank given:

*exterior of cell, phospholipid, Cholesterol, Glycolipid, Carbohydrate, transmembrane (intergral) protein, glycoprotein, Peripheral Protein, Interior of cell, hydrophobic head, hydrophilic tail*



10) A gated Channel opens and closes for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while a carrier molecule aids in the moment of materials through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are used to move water in and out of the cell with speed.

11) The cell membrane is always in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Particles are constantly moving and bumping into each other. In general there are only two ways to move across the cell membrane. You can either use energy in the form of ATP, which is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Or no energy needs to be used and molecules can flow through the membrane by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transport. Active Transport is defined as the movement of molecules from an area of \_\_\_\_\_\_\_\_\_\_\_ concentration to an area of \_\_\_\_\_\_\_\_\_\_\_\_\_ concentration which requires energy.

12) Describe what happens in the sodium potassium pump:

13) The sodium-potassium pump is important because it creates an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gradient across the cell membrane. This is important for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and resulting movement.

14) Passive transport is divided up into two separate categories. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when a carrier molecule can allow a specific molecule to pass through the membrane. This protein may open and close for this specific molecule. Diffusion on the other hand is the movement of molecules from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ until they become evenly distributed. Neither form of movement requires energy to occur.

15) The movement of water across the membrane is given a special name. It is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

16) Endocytosis is when the cell membrane slowly wraps around a molecule and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. White blood cells do this to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Endocytosis can occur to solids and when that happens it is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When liquids undergo endocytosis this is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Exocytosis is the movement of molecules from the golgi body to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17) If molecules are too big to enter the cell they will be broken down through the process \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Once inside the cell, these molecules can be reconstructed through the process \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18) Some proteins in the cell can receive chemical messages from other cells, these molecules that receive signals are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Chemicals that travel through the body produced by the endocrine glands are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Both chemical and electrical impulses are extremely important because they help to support \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is an internal balance within the body.

19) Be able to list the differences and similarities between plant and animal cells.

20) Create a flow chart that shows the increase in complexity starting with the cell and ending with organisms.

21) Give a brief overview of the purpose of the body systems below:

a) Digestive System

b)Respiratory System

c) Circulatory System

d) Excretory System

f) Movement

g) Coordination

h) Immunity

i) Reproductive System

22) Complete the following chart:

|  |  |  |
| --- | --- | --- |
| Function | Single Cell | Multicellular Organism |
| Gas Exchange |  |  |
| Transport of Substances |  |  |
| Nutrition |  |  |
| Excretion |  |  |