Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**TEST:** Monday 11/4

**Unit 3A Test Cell Organelles and Transport Study Guide**

**I. Cell Organelles**

**1.** What are the 3 components of the cell theory?

 1. All living things are made up of cells

 2. All new cells come from pre-existing cells

 3. \_Cells are the simplest unit of structure and function

**2. Matching**

A. Nucleus

B. Ribosome

C. Vesicle

D. Rough Endoplasmic Reticulum

E. Smooth Endoplasmic Reticulum

F. Vacuole

G. Lysosome

H. Golgi Apparatus

I. Mitochondria

J. Chloroplast

K. Cell Membrane

L. Cell Wall

**G** 1. Breaks down unwanted parts of the cell

**K** 2. Surrounds all cells providing protection, regulation and structure

**D** 3. Membrane structure that is covered in ribosomes

**B** 4. Makes proteins that will stay in the cell

**E** 5. Makes lipids and detoxifies alcohol/drugs

**F** 6. Membrane-bound sac used for **storage**

**C** 7. Membrane-bound sac used for **transportation**

**H** 8. Modifies, sorts and packages proteins to leave the cell

**A** 9. Contains the DNA, surrounded by the nuclear envelope

**J** 10. Location of photosynthesis, only found in plants/algae

**I** 11. Location of cellular respiration, found in ALL eukaryotic cells

L 12. Provides the rigidity and structure of plant/fungi cells

**3**. Cells that produce a lot of energy would likely have a large amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, while cells that produce a lot of proteins would have a large amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

|  |  |
| --- | --- |
| A. Ribosomes, lysosomes | **C. Mitochondria, Ribosomes** |
| B. Mitochondria, smooth rough endoplasmic reticulum | D. Lysosomes , vacuoles |

**4.** Which of the following is an organelle that is NOT found in all cells?

|  |  |
| --- | --- |
| A. Ribosome | C. Cytoplasm |
| B. Cell Membrane | **D. Vacuole** |

**5.** True or False? Prokaryotic cells have a nucleus and membrane-bound organelles FALSE!

**6.** True or False? The pictures to the right are prokaryotic cells FALSE

**7.** Define and provide an example of a prokaryotic cell:

* Simple, small that does NOT have a nucleus or membrane-bound organelles
* Example: bacteria

**8.** Define and provide an example of a eukaryotic cell:

* Larger, complex, does have a nucleus and membrane-bound organelles
* Example: animals/plants

**9**. What are 2 organelles that are found in ALL living things?

1. Cell membrane and nucleus
2. Mitochondria and chloroplast
3. **Cell membrane and ribosome**
4. Ribosome and nucleus

**II. Cell Transport**

**1.** There are 2 types of transport; Active and Passive Transport. Passive transport **does not** require energy and moves from a **HIGH** concentration to a **LOW** concentration. Active transport **does** require energy and moves form **LOW** concentration to a **HIGH** concentration.

**2.** What are the 3 types of passive transport, and what is the difference between each type?

 1. **Simple Diffusion:** movement from high 🡪 low concentration without energy. Small, nonpolar molecule uses simple diffusion to move through the membrane without any assistance.

 2. **Facilitated Diffusion:** movement from high 🡪 low concentration without energy with the help of carrier/channel proteins. Small polar molecular use this to move through the membrane

 3. **Osmosis:** movement of WATER through the cell membrane. Water always move to where there is MORE solute concentration.

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**3.** Explain what type of transport is being shown in the diagram to the right.

Endocytosis: a large molecule is entering the cell.

 Is energy being used? Yes, this is a type of active transport

**4.** If a fish egg contains 5% salt in its cells and it is placed in a freshwater tank, what will happen to the fish egg?

The surrounding tank has 0% salt (freshwater). Therefore water will enter the cells and cause them to grow (likely burst!)

**5.** If a cell contains 8% salt and it is placed in a solution that also contains 8% salt, what will happen to the cell?

Nothing will happen to the cell – it is in an isotonic solution (no NET movement of water)

**6.** Label each of the following as hypotonic, hypertonic or isotonic solutions. Label what will happen to the cell.



Solution: \_\_\_\_\_Isotonic\_\_\_\_\_\_\_ \_\_\_\_\_\_\_Hypotonic\_\_\_\_\_\_\_ \_\_\_\_\_Hypertonic\_\_\_\_\_\_

Happen to cell: \_\_\_\_No net change\_\_\_\_\_\_\_ \_\_\_\_\_\_Grow\_\_\_\_\_ \_\_\_\_\_\_\_\_Shrink\_\_\_\_\_

**7.** What type of transport occurs when molecules move against the concentration gradient? Active Transport

 Move down the concentration gradient? Passive Transport

**8.** Draw a phospholipid bilayer and label the nonpolar / polar regions and hydrophilic / hydrophobic regions

Hydrophobic = nonpolar

Hydrophilic = polar

**9**. What are 3 additional structures that could be found in the cell membrane and list their function.

1. **Carbohydrates:** act as ID tags for the cell

2.**Proteins:** help move molecules across the cell membrane (channels or carriers)

3. **Cholesterol:** helps keep the membrane fluid!

**10**. Can a small nonpolar molecule pass though the membrane by simple diffusion? YES because most of the membrane is made of the nonpolar hydrophobic tails!