

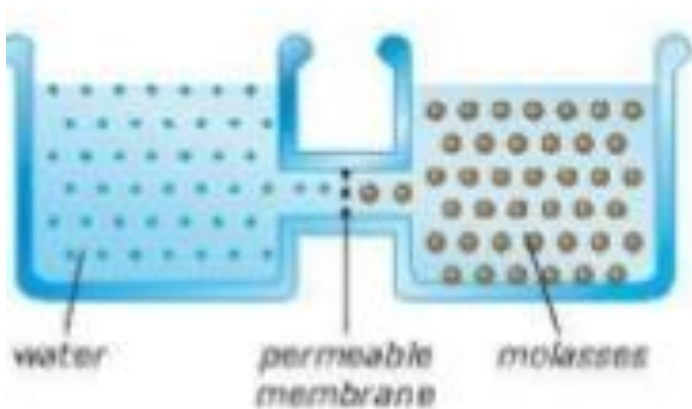
Cell Transport Study Guide

Name: _____ Period: _____ Date: _____

1. All organisms have basic needs including nutrients and water as well as removing wastes. How does the cell membrane allow the cell to transport these materials into and out of the cell? **Selectively permeable** allow it to **MAINTAIN HOMEOSTASIS**
2. Complete the following chart comparing the various methods of cell transport.

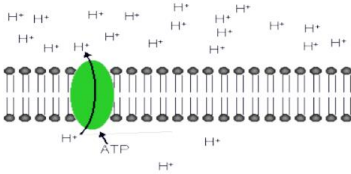
| Transport Method | Active or Passive | Uses ATP - Energy (Yes or No) | Transport Direction |
|-------------------|-------------------|-------------------------------|---------------------|
| Passive Transport | ----- | No | High to Low |
| Diffusion (gas) | Passive | No | High to Low |
| Osmosis (water) | Passive | No | High to Low |
| Active Transport | ----- | Yes | Low to High |
| Endocytosis | Active | Yes | Low to High |
| Exocytosis | Active | Yes | Low to High |

3. What material diffuses across the cell membrane during osmosis? _____ water _____
4. Draw a diagram showing how the containers will look after 5 minutes when the two containers are in a state of homeostasis. Explain your answer including a description of homeostasis. **Picture should show equal amount water on each side and equal amount of molasses (sugar) on each side. Homeostasis is maintained the cell wants to reach "dynamic equilibrium" which means it want to be balanced or "equally distributed"**



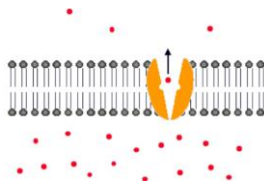
5. A human blood cell (1%) solute is placed in salt water (5%) solute. **Which means there is a (99% water on inside of cell, 95% of water in the salt water solution.**
 - a. Where is the water more concentrated? (circle one) - **inside** or outside
 - b. Which direction will the water move? (circle one) - into or **out of the cell**
 - c. What effect will this have on the cell? _____ **Shrink** _____

6. Look at the cross section of a cell membrane of a eukaryotic cell. H^+ ions are being pumped from a low concentration to a high concentration. How do you describe this type of transport across the cell membrane?



- a. active transport
- b. passive transport
- c. facilitated diffusion
- d. co-transport

7. Look at the diagram of a cross-section of a cell membrane below. The cell membrane controls movement of materials into and out of the cell. The following particles are moving from high concentration to low concentration and are using a carrier protein. How would you describe this type of movement across the membrane?



- a. simple osmosis
- b. active transport
- c. simple diffusion
- d. facilitated diffusion

8. A human blood cell (1%) solute is placed in distilled water (0%) solute. Which means the cell has 99% water and the distilled water is 100% water solution.

- a. Where is the water more concentrated? (circle one) - inside or outside
- b. Which direction will the water move? (circle one) - into or out of the cell
- c. What effect will this have on the cell? Swell

9. Identify the type of cell transport involved in each of the following descriptions. Use the key provided to indicate your answers.

| | |
|---------------------|----------------------|
| A. active transport | B. diffusion |
| C. exocytosis | D. passive transport |
| E. osmosis | F. endocytosis |

| | |
|---|---|
| E | Movement of water across a semipermeable membrane down its concentration gradient. |
| D | The movement of materials cross a semipermeable membrane down their concentration gradients with the assistance of carrier proteins. Facilitated diffusion |
| B | The movement of materials down their concentration gradients. (high to low) |
| A | Pumping of materials across a membrane against their concentration gradients through protein channels. |
| A | Intake of small droplets of liquid by endocytosis. |
| C | Occurs when a vesicle fuses with the cell membrane releasing the contents to the outside of the cell . |
| F | A white blood cell engulfs (swallows) a harmful bacterium. |
| E | Drinking sea water causes the loss of water from cells lining the stomach and intestines. |

10. Sally took the notes shown below while learning about cells. She forgot to write the name of the cell structure that her class was studying that day. What structure is described in her notes?

- Forms boundary between a cell and the outside environment
- Controls the movement of materials into and out of the cell
- Consists of double layer of phospholipids

a. endoplasmic reticulum **b. cell membrane** c. cell wall d. nucleus

11. The cell membrane of the red blood cell will allow water, oxygen, and carbon dioxide to pass through. Because other substances are blocked from entering, this membrane is called...

a. perforated **b. semi-permeable** c. non-conductive d. permeable

12. If a cell's lysosomes were damaged, which of the following would most likely occur?

- a. The cell would produce more proteins than it needs.
- b. The cell would have chloroplasts that appear yellow rather than green.
- c. The cell would be less able to break down molecules in its cytoplasm.**
- d. The cell would be less able to regulate the amount of fluid in its cytoplasm.

13. Check the box to show whether each statement is true or false.

| T | F | |
|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1. <u>Photosynthesis</u> is the process in which cells use oxygen to break down food and release stored energy. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. A <u>molecule</u> is made up of atoms that are joined together. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 3. A <u>eukaryote</u> has cells that do not contain a nucleus, whereas a <u>prokaryote</u> has cells that have a nucleus. |

14. Which of the following substances must animal cells take in from the environment to maintain homeostasis?

- A. DNA
- B. oxygen**
- C. chlorophyll
- D. carbon dioxide

15. Which method of material exchange uses up energy?

- a. osmosis
- b. active transport**
- c. diffusion
- d. passive transport

16. The following diagram shows a common cell organelle. **Mitochondria**. What process takes place in the organelle shown?

- a. Photosynthesis
- b. cellular respiration**
- c. protein synthesis
- d. packaging of proteins



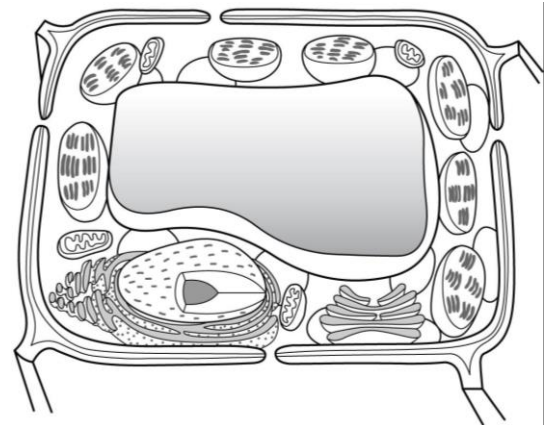
17. Which statement correctly tells why the cells of unicellular and multicellular organisms divide?

- a. The cells of unicellular organisms divide to reproduce; those of multicellular organisms divide to replace cells and to grow.
- b. The cells of unicellular organisms divide to replace cells and to grow; those of multicellular organisms divide to reproduce.
- c. The cells of both kinds of organisms divide to reproduce.
- d. The cells of both kinds of organisms divide to replace cells and to grow.

18. The following diagram shows a cell that Dimitri saw on his microscope slide.

Dimitri's teacher gave him an unlabeled slide of some cells and asked him to identify whether the cells were plant cells or animal cells. Dimitri examined the slide under a microscope and concluded that the cells were plant cells. How did Dimitri reach his conclusion? **Cell has a rectangular shape, cell has a large central vacuole, and cell has chloroplasts** Is his conclusion correct? **yes** What life process can these cells carry out that a cell from another kind of multicellular organism cannot?

Photosynthesis



19. The following picture shows the process of photosynthesis.

- a) In which plant organ and organelle does photosynthesis take place? **chloroplasts** One of the products of photosynthesis is missing from the diagram. b) What is this missing product? **glucose**
- c) Describe the role of this substance in cells. **glucose is the source of energy for the cell** d) How do animals get this substance? **Animals eat food(plants) and get energy.**

