

Science Starters – Cell Membrane

For extended response questions, answers must be written in full sentences and the question must be restated. For multiple choice questions, first choose the right answer and then using complete sentences explain why you chose the answer you did.

Day 1

The cell membrane is a covering of the cell made out of lipids (fats) and proteins. It controls which substances enter and leave the cell. Which of the following functions is the cell membrane's most important role?

- A. The cell membrane is the control center of the cell.
- B. The cell membrane is the power house of the cell.
- C. The cell membrane protects the cell.
- D. The cell membrane carries out photosynthesis to provide food for the cell.

Day 2

A cell membrane separates the interior of the cell from the outside environment. Which of the following statement best describes the make up of a cell membrane? (Phospholipids are fats.)

- A. The cell membrane is made up of phospholipids with their **hydrophobic (water hating) tails** facing out.
- B. The cell membrane is made up of phospholipids with their **hydrophilic (water loving) heads** facing out.
- C. The cell membrane is made up of phospholipids which are **entirely hydrophobic (water hating)**.
- D. The cell membrane is made up of phospholipids which are **entirely hydrophilic (water loving)**.

Day 3

Substances such as oxygen, carbon dioxide, water, glucose and calcium move across the cell membrane to enter and leave the cell. Some of these substances can move through the cell membrane by using passive transport while other substances must use active transport. Which of the following statements below best describes the difference between passive and active transport?

- A. Active transport uses **osmosis**, while passive transport uses **diffusion**.
- B. Active transport only happens in **plant cells**, while passive transport only happens in **animal cells**.
- C. Active transport does **not use protein channels**, and passive transport **does use protein channels**.
- D. Active transport **requires** energy or work, while passive transport **does not require** energy or work.

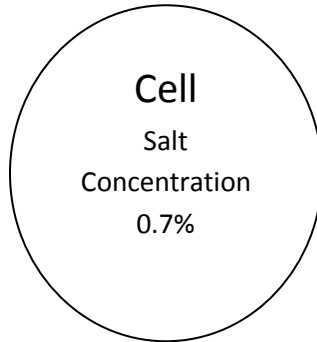
Day 4

Generally cells want to be isotonic with their surroundings. This means that cells tend to move to a state in which there is equal amount of solute (example: salt) and solvent (example: water) inside and outside of the cell. For each of the diagrams below, decide if the salt concentration in the cell would increase or decrease. Then tell why the salt concentration in the cell would change.

A.

Outside of Cell
Salt Concentration
0.9%

Increase
or
Decrease

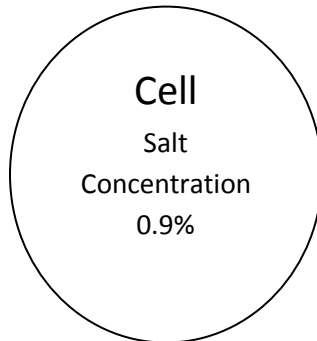


Explanation of Why the Salt Concentration Would Change

B.

Outside of Cell
Salt Concentration
0.8%

Increase
Or
Decrease



Explanation of Why the Salt Concentration Would Change

Day 5 (2 Questions)

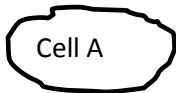
Question 1

The cell has its own membrane while other organelles (nucleus, mitochondria, lysosomes...) also have their own membranes. Which of the following statements best describes why some organelles have their own membrane?

- A. Some organelles have materials inside them that do not belong in other parts of the cell.
- B. There are materials in the cytoplasm that do not belong in different organelles.
- C. Both answer A and answer B are correct.
- D. The membranes around the organelles prevent the organelles from leaving the interior of the cell.

Question 2

Examine the 2 diagrams of the cells below. Cell A has a much larger cell membrane than Cell B. First circle the cell which could absorb water the quickest through its cell membrane. Second explain why this cell could absorb water quicker through its membrane.



Explanation:
