

DISCLOSED !!!

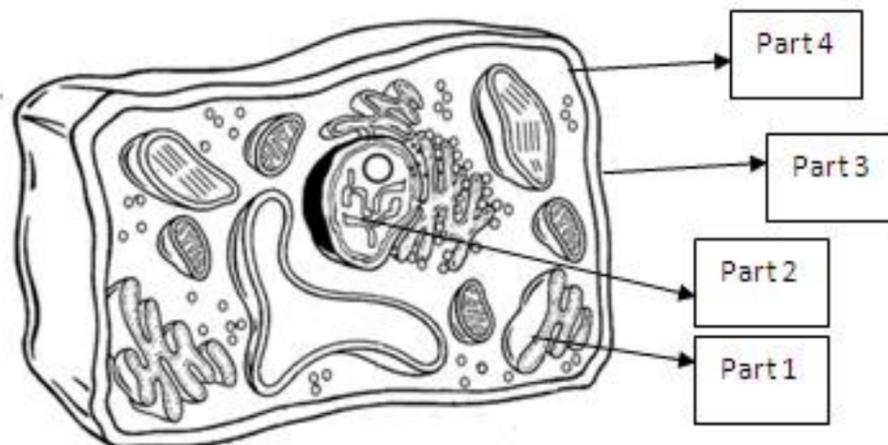
WEEKLY PRIZED SCIENCE HUB CHALLENGE (Part 3) ANSWERS

One day Rita was going to arrange a Thanksgiving dinner with her classmates in her house. She then decided to make Thousand Island Salad à la Rita Chef as appetizer to accompany the main courses.

At 12pm she started cutting off various vegetables and put them in a big glass container. Next, she applied the Thousand Island mayonnaise as salad dressing on top of the vegetables. She covered the top of the container with plastic wrap and kept the salad in the fridge. After that, she started cooking the main courses.

At 3pm she took out the salad out of the fridge and she is astonished. The leaves of vegetables wilted and looked not so fresh. She remembered that she just bought the leaves at 11pm and she put them properly in the fridge before she made it.

(a) Leaves are constructed by plant cells shown below.



- (i) Which part of the plant cell is able to control the substances which can enter and exit the cell? State its name.

ANSWER

Part 4. It is the cell membrane.

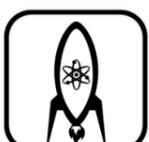
- (ii) What is the property of part shown in (i) which enables it to control the substances that can enter and exit of the cell?

ANSWER

Part 4 is partially-permeable (semi-permeable). Hence, it only allows certain substances to enter and to exit the cell.

COMMON MISTAKE

Part 3 is the cell wall. It is fully-permeable. Hence, it allows all substances to pass through and unable to control the substances which can enter and exit the plant cells.



(b) Which one has higher water content, the leaves of vegetables or the salad dressing?

ANSWER

The leaves of vegetables.

(c) Explain why the leaves of vegetables in the salad wilted after being coated by the salad dressing. *(Hint : Relate the answer with the previous two questions. Source engine might help you to get the scientific process happening to the leaves. The process name consists of 7 letters.)*

ANSWER

Since there was **higher water content in the leaves of vegetables than in the salad dressing**, water moved out of the **semi-permeable cell membrane** of leaves to where the salad dressing was **through a process called OSMOSIS**.

As a result, the **amount of water in the vacuoles of leaves decreased** causing the **leaves to wilt**.

