

Cell Transport

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Explain how oxygen gets into a respiring muscle cell. (3 marks)

Step 1 · Name the process

Diffusion.

Step 2 · Describe the gradient

Oxygen concentration is higher in the blood than inside the cell, because the cell uses oxygen in respiration.

Step 3 · Direction

Oxygen moves down its concentration gradient, through the partially permeable membrane, into the cell.

Answer: Diffusion from high concentration in blood to low concentration in the cell

Check: No energy from the cell is needed: diffusion is passive.

2. Now try one with the steps

Explain why a plant cell placed in pure water does not burst, but a red blood cell does. (3 marks)

Step 1 · Both cells

Step 2 · Plant cell

Step 3 · Red blood cell

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Define diffusion. [2]

2. Define osmosis. [2]

3. Give two substances that move by diffusion in the body. [2]

4. State two factors that increase the rate of diffusion. [2]

5. Give two differences between active transport and diffusion. [2]

6. Describe what happens to a plant cell placed in a concentrated sugar solution. [3]

7. Explain why glucose can be absorbed from the gut into the blood by active transport even when blood glucose is higher. [2]

8. A piece of carrot goes from 4.0 g to 4.6 g in water. Calculate the percentage change in mass. [2]

9. A potato chip changes from 5.0 g to 4.1 g. Calculate the percentage change in mass. [2]

10. Explain why percentage change in mass is calculated rather than just the change in mass. [1]

11. Explain why plants wilt if the soil is very dry. [3]

12. Explain why cells carrying out a lot of active transport stop absorbing ions if they are given a respiratory poison. [2]

13. Explain why a hospital drip contains salt solution at the same concentration plasma, not pure water. [3]

14. Explain why the rate of diffusion of oxygen into a cell stays high when the cell is respiring rapidly. [2]

4. Before you hand it in

"In osmosis, salt moves into the cell."

The solute (salt or sugar) stays put; water moves across the membrane from the dilute side to the concentrated side.

"Water moves from a high concentration solution to a low concentration solution."

Say 'from a dilute solution to a more concentrated solution' — that is from high WATER concentration to low WATER concentration.

"Active transport is fast diffusion."

Active transport goes AGAINST the gradient and needs energy from respiration. Diffusion only goes down a gradient.

Dividing the change in mass by the final mass

Percentage change = $(\text{final} - \text{initial}) \div \text{INITIAL} \times 100$.