

Movement of substances into and out of cells

Define diffusion.

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Define osmosis.

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Define active transport.

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Which of diffusion, osmosis and active transport are passive?

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Give an example of active transport in plants.

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Name four factors affecting rate of movement into and out of cells.

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How do you calculate surface area : volume ratio?

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How do distance and concentration gradient affect the rate of diffusion?

The diffusion of water from a dilute solution to a more concentrated solution through a partially permeable membrane.

The net movement of particles from an area of higher concentration to an area of lower concentration.

Diffusion and osmosis. They do not need energy from respiration.

Movement of substances against a concentration gradient (low to high), using energy from respiration.

Surface area to volume ratio, distance, temperature and concentration gradient.

Root hair cells take in mineral ions from the soil against the concentration gradient.

A shorter distance and a steeper concentration gradient both make diffusion faster.

Surface area $\div$ volume. For a cube, surface area is $6 \times \text{side}^2$, volume is side^3 .

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Equation for percentage change in mass?

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In the potato practical, what does a mass increase show?

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Why can glucose but not starch pass through Visking tubing?

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How do agar cubes show surface area : volume ratio?

The solution was more dilute than the cell contents, so water moved in by osmosis.

$$(\text{final mass} - \text{initial mass}) \div \text{initial mass} \times 100.$$

Small cubes, with a larger ratio and shorter distance to the centre, turn completely colourless sooner when placed in acid.

Visking tubing is partially permeable. Glucose molecules are small enough to pass through its pores, starch molecules are too large.