

Movement into and out of cells

Diffusion

Net movement down gradient

High to low concentration Random movement

Energy: kinetic energy

Molecules and ions No cell energy

Through cell membrane

Gases Solutes

Importance

Oxygen for respiration Carbon dioxide for photosynthesis
Food absorption Urea removal

Factors

Surface area Temperature Concentration gradient
Distance

Osmosis

Water as a solvent

Digestion Excretion Transport

Osmosis of water

Partially permeable membrane Cell membrane

Investigations

Dialysis tubing Potato cylinders
Percentage change in mass

Plant support

Water presses on cell wall

Water potential **Supplement**

High to low Dilute to concentrated

Plant cells in solutions **Supplement**

Turgid Turgor pressure Flaccid Plasmolysis

Active transport

Against concentration gradient

Low to high

Energy from respiration

Mitochondria

Ion uptake by root hairs **Supplement**

Mineral ions Nitrate

Protein carriers **Supplement**

Bind Change shape Release