

★ **HIGHER TIER ONLY** content is highlighted in blue. Foundation students — focus on the un-highlighted sections.

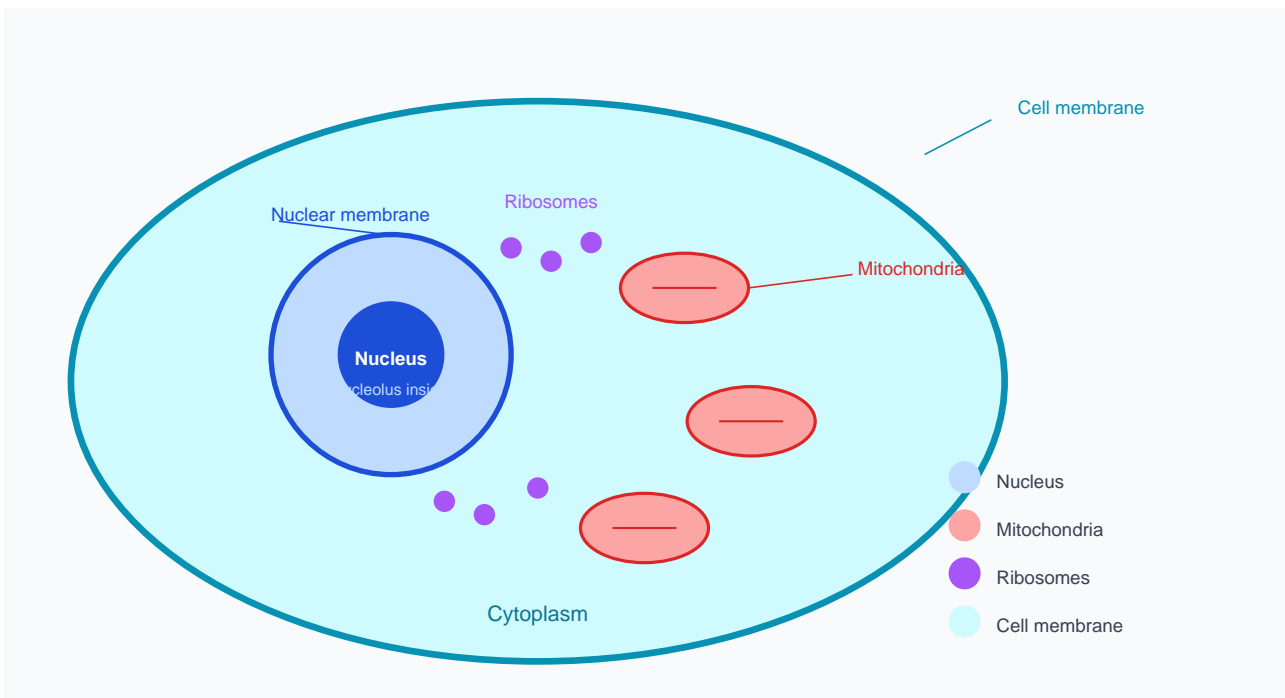


Fig 1: Structure of a typical animal cell

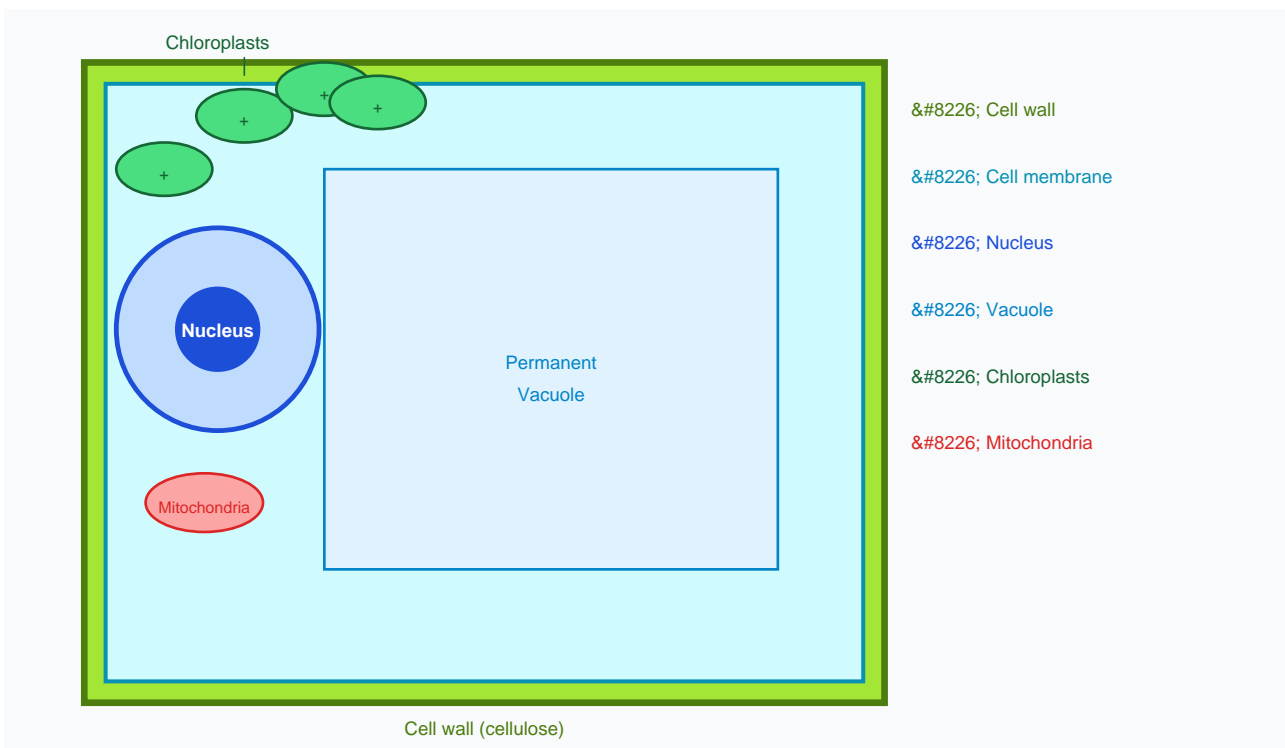


Fig 2: Structure of a typical plant cell

PROKARYOTIC CELL (e.g. bacterium) — NO nucleus, NO membrane-bound organelles

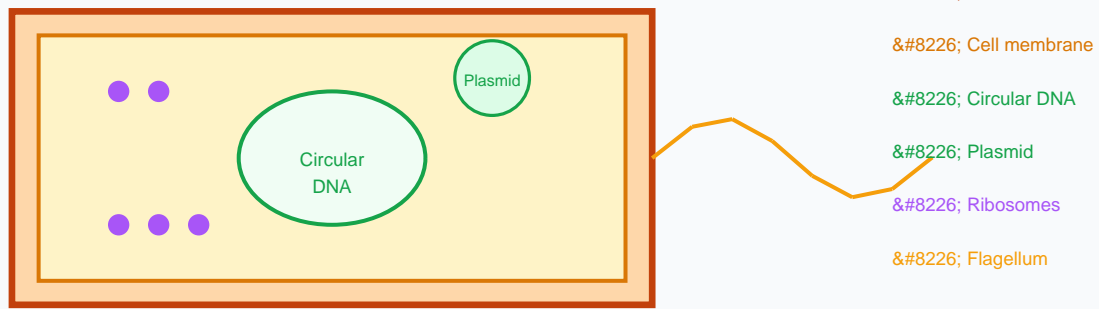


Fig 3: Structure of a bacterial (prokaryotic) cell

Cell Specialisation

Cell Type	Special Features	Function
Red blood cell	No nucleus, biconcave, haemoglobin	Carries oxygen
Sperm cell	Long tail, acrosome, many mitochondria	Fertilise egg
Root hair cell	Long extension (hair), large surface area	Absorb water & minerals
Nerve cell	Very long, dendrites, myelin sheath	Carry electrical signals
Guard cell	Kidney-shaped, controls stomata	Regulate gas exchange in leaves

Colourful comparison of specialised cells

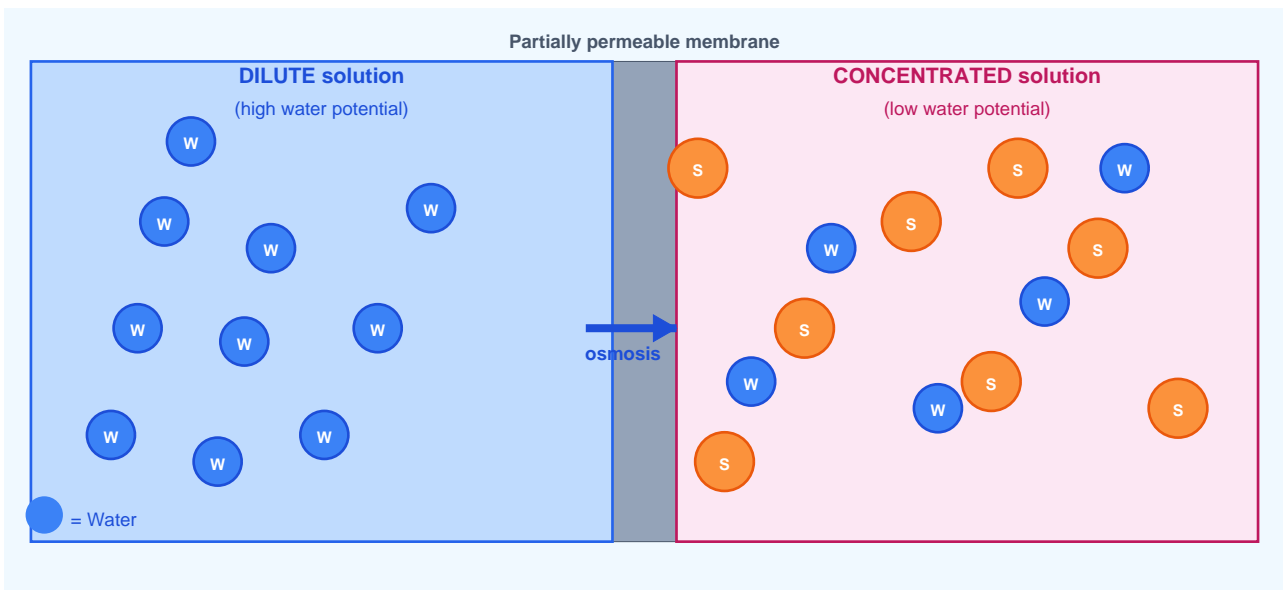


Fig: Osmosis — water moves from high to low water potential

■ **Exam Tip:** Osmosis is just diffusion of WATER only — and it always goes from dilute (lots of water) to concentrated (less water).

Diffusion	Passive movement from HIGH to LOW concentration — no energy needed
Osmosis	Diffusion of WATER through a partially permeable membrane
Active transport	Movement AGAINST the concentration gradient — requires ENERGY (ATP)