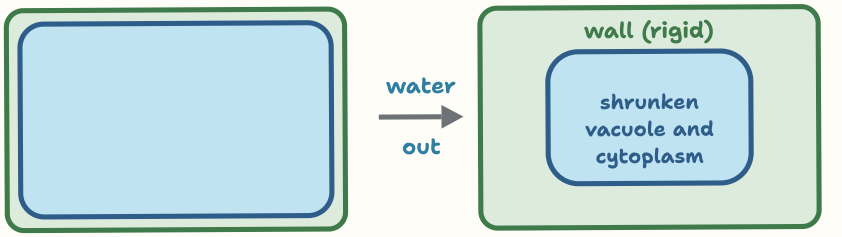
Osmosis and Water Potential Explained

Water moves by osmosis from higher to lower water potential across a partially permeable membrane.

Plant cell in a more concentrated solution: plasmolysis



turgid: membrane pressed against the cell wall

plasmolysed: membrane pulled away from the cell wall

Solution has LOWER water potential than the cell, so water leaves by osmosis

through the partially permeable membrane

Key terms

osmosis	the net movement of water from a region of higher to lower water potential across a partially permeable membrane.
water potential	the tendency of water to move; pure water is 0, solutions are negative.
partially permeable membrane	lets water (and small molecules) through but not all solutes.
turgid	a plant cell full of water, with the membrane pressed against the cell wall.
plasmolysed	a cell that has lost water so the membrane pulls away from the cell wall.
hypotonic / isotonic / hypertonic	a solution with higher / equal / lower water potential than the cell.

I can...

- [ ] Osmosis explained in terms of water potential

EXAM TRAP

Never say water moves from "high water concentration to low": use water potential. A plant cell does not just "shrink" or burst: the protoplast shrinks and the membrane pulls away from the rigid wall.

4 marks: what earns them

1. The solution has a lower (more negative) water potential than the cell, so water moves out of the cell by osmosis, down the water potential gradient
   Not: water moves from high water concentration to low; water moves out with no reference to water potential
2. Water crosses the partially permeable (cell surface) membrane
   Not: semi-permeable alone is tolerated only if the rest is correct; water diffuses through the cell wall only
3. The vacuole and cytoplasm shrink / volume of the cell contents decreases
   Not: the cell shrinks, with no mention of contents (the wall is rigid)
4. The membrane pulls away from the cell wall, so the cell is plasmolysed
   Not: the cell bursts; cell becomes turgid

Remember

Water: higher to lower water potential.
Partially permeable membrane.
Shrinks, pulls away: plasmolysed.

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