

## Action Potentials Key Information

An action potential is a rapid, temporary change in the membrane potential of a neurone that allows electrical impulses to travel along the nerve cell. It begins when the membrane is depolarised past a certain threshold, usually due to a generator potential. Voltage-gated sodium channels open, allowing  $\text{Na}^+$  ions to flood into the cell, making the inside more positive. This is followed by repolarisation, where potassium channels open and  $\text{K}^+$  ions leave the cell, restoring the negative resting potential. The action potential is an all-or-nothing response and travels along the axon without decreasing in size, ensuring consistent signal transmission.

## Key words & definitions

Key word	Key information
<b>Action Potential</b>	A rapid, temporary reversal of membrane potential that allows electrical impulses to travel along a neurone.
Membrane Potential	The electrical charge difference across a cell membrane, resulting from the distribution of ions.
Depolarisation	The process during which the inside of a neurone becomes less negative (more positive) due to the influx of sodium ions.
Threshold	The minimum membrane potential that must be reached to trigger an action potential.
Generator Potential	A small, graded depolarisation in a sensory receptor that may lead to an action potential if the threshold is reached.
Voltage-Gated Sodium Channels	Protein channels in the neurone membrane that open in response to changes in voltage, allowing $\text{Na}^+$ ions to enter the cell.
Repolarisation	The return of the membrane potential to a negative value after depolarisation, due to the efflux of $\text{K}^+$ ions.