

Action Potential Propagation Key Information

Action potential propagation is the process by which an electrical impulse travels along a neurone. When an action potential is triggered at one section of the axon, it causes local depolarisation, which opens voltage-gated sodium channels in the adjacent region. This leads to a wave of depolarisation moving down the axon. In **myelinated neurones**, the impulse jumps between the **nodes of Ranvier** in a process called **saltatory conduction**, which speeds up transmission. In **unmyelinated neurones**, the action potential moves in a continuous wave along the axon. The original region repolarises and enters a refractory period to prevent the impulse from travelling backward.

Key words & definitions

| Key word | Key information |
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| Propagation | The movement of an electrical impulse along the length of a neurone. |
| Depolarisation | A change in membrane potential where the inside of the neurone becomes less negative due to the influx of sodium ions. |
| Voltage-Gated Sodium Channels | Protein channels in the neurone membrane that open in response to a change in voltage, allowing sodium ions (Na^+) to enter the cell. |
| Myelinated Neurone | A neurone whose axon is wrapped in a fatty myelin sheath, which insulates the axon and speeds up impulse transmission. |
| Nodes of Ranvier | Gaps between segments of the myelin sheath where the axon membrane is exposed and action potentials are regenerated. |
| Saltatory Conduction | The process by which the action potential appears to jump from one node of Ranvier to the next, increasing conduction speed. |
| Unmyelinated Neurone | A neurone without a myelin sheath, where the action potential moves in a slower, continuous wave along the axon. |