

Resting Potential Key Information

A **resting potential** is the electrical potential difference across the membrane of a neurone when it is not actively transmitting an impulse. It is typically around **-70 mV**, with the inside of the neurone being more negative than the outside. This is maintained by the **sodium-potassium pump**, which actively transports **3 Na⁺ ions out** of the cell and **2 K⁺ ions in**, and by **leak channels** that allow more potassium ions to diffuse out than sodium ions in. This creates and maintains the **electrochemical gradient**, making the neurone ready to fire an action potential when stimulated.

Key words & definitions

Key word	Key information
Resting Potential	The stable, negative electrical charge across the membrane of a neurone when it is not sending a signal, typically around -70 mV.
Sodium-Potassium Pump	A membrane protein that uses ATP to actively transport 3 Na ⁺ ions out of the neurone and 2 K ⁺ ions in, helping to maintain the resting potential.
Na ⁺ (Sodium Ion)	A positively charged ion that is actively pumped out of the neurone to maintain the negative internal charge.
K ⁺ (Potassium Ion)	A positively charged ion that is pumped into the neurone but can leak out through channels, affecting the membrane potential.
Leak Channels	Passive protein channels in the cell membrane that allow potassium ions to diffuse out more easily than sodium ions can enter.
Electrochemical Gradient	The combined effect of concentration and electrical gradients that drive ion movement across membranes, crucial for maintaining resting potential.
Membrane Potential	The difference in electrical charge between the inside and outside of a neurone's membrane.