

Nerve Impulse

Definition

Nerve impulse: It is an electrochemical signal transmitted through the nerves from sense organs to the central nervous system and to the responding organs.



States of nerve impulse

1/ Rest (polarization)

The axon of the neuron is electronegative inside as it has negative protein and chloride ions although it has K^+ ions with 3 times more inside than outside, but the amount of negative ions inside exceed them, the outer surface is electropositive, as they have about 10:15 times the positive sodium ions more than the ions inside, this unequal ion distribution leads to an electrical potential difference equaling $\ominus 70$ millivolt, this is because

- 1) The K^+ ions are 40 times more permeable than Na^+ ions. $\rightarrow$ only expresses direction
- 2) accumulation of protein ions inside, because it has a big size, so it can't exit the membrane
- 3) Sodium-Potassium ATPase pump which means the transferring of sodium ions from inside to outside by Active transport