

Checklist

What you should know

After studying this subtopic you should be able to:

- Describe the structure of a neuron having a cell body with elongated nerve fibres of varying length projecting from it.
- Describe the axon as a long single fibre helping in the conduction of electrical impulse and dendrites as multiple shorter fibres receiving and processing incoming signals.
- Describe how energy from ATP drives the sodium-potassium pump during resting potential.
- Explain the concept of membrane polarisation and membrane potential and the reasons for resting potential being negative.
- Compare the speed in myelinated and non-myelinated fibres.
- Explain the role of synapses in communication between neurons.
- Compare and contrast the mechanisms of neurotransmitter release in different types of synapses.
- Analyse the factors that affect the magnitude and duration of EPSPs.

Higher level (HL)

- Describe the process of depolarisation and repolarisation during an action potential.
- Evaluate the importance of action potential propagation in neural communication and information processing.
- Interpret and analyse oscilloscope traces of resting potentials and action potentials.
- Describe the process of saltatory conduction in myelinated fibres.
- Describe the effects of exogenous chemicals on synaptic transmission, including drugs and toxins.
- Analyse the factors that affect the magnitude and duration of inhibitory postsynaptic potentials.
- Describe how multiple presynaptic neurons interact with all-or-nothing consequences in terms of postsynaptic depolarisation.
- Describe perception of pain.

- Explain that consciousness is another example of the consequences of interaction.