

Neurons case study

Business



What is the function of the action potential in neurons? During an action potential, there is a brief reversal in membrane potential as the interior of the cell becomes positive (depolarization) and then returns to negative resting potential (repolarization). The action potential is the electrical signal generated by neurons that is used in long distance communication.

2. Describe the role of sodium ions and sodium channels in the action potential. When voltage gated sodium channels open, it leads to rapid diffusion of Na⁺ ions into the cell and down its concentration gradient.

When these positively charged ions enter the cell, the membrane potential depolarizes. At the peak of the action potential, the sodium ion channels inactivate. 3.

What would happen to a neuron if it were exposed to tetrodotoxin? Be specific regarding its effect on the ability of a neuron to communicate. When a neuron is exposed to tetrodotoxin, its ability to draw sodium into the cell is stopped. There is a guanidinium group attached to the tetrodotoxin that is drawn into the cell. These toxic molecules do not leave the sodium channel and block any sodium from entering the neuron.

It takes minutes for the toxin to leave the channel ND they are often drawn right back into the channel once they detach.

When an action potential tries to fire in a cell with blocked sodium channels, nothing happens. The membrane potential cannot be completed and the overall charge of the neuron remains negative, leading to paralysis. 4. Paralysis is a term

used to describe the loss of function of muscle. If deterioration's effect is on neurons, why did Dry. Westwood experience paralysis? Dry.

Westwood experienced paralysis because of the motor neurons that are located in the body.

The body sends nerve impulses from the brain to the spinal cord order to make body movements. During that impulse, if any of the nerves do not tire an action potential, the result will be paralysis. Since his neurons were being blocked from the deterioration's guanidine group, the neurons were unable to send impulses for his muscles to work properly and contract. 5. As you continued to experiment with higher concentrations of the toxin, you found cases when the cell could not reportorial at all, or if it began to reportorial, it would immediately deplorable again.