

# Experiment of zoology assignment



**ASSIGN  
BUSTER**

3. Why don't the terms depolarization and action potential mean the same thing? The terms depolarization and action potential differ because are excitable cells that communicate by transmitting electrical impulses that are capable of producing rapid electrical signals and depolarization in the interior surface of the membrane which becomes less negative and the exterior surface becomes less positive. Additionally, when depolarization reaches a certain threshold, an action potential is initiated and the polarity of the membrane reverses.

4. What is the difference between membrane irritability and membrane conductivity?

Membrane irritability is the ability to respond to stimuli and convert them into nerve impulses and conductivity is the ability to transmit an impulse (in this case, to take the neural impulse and pass it along the cell membrane).

5. Why does the nerve's action potential increase slightly when add 1.0 V to the threshold voltage and stimulate the nerve? The action potential increases slightly because the nerve consists of more than one neuron, therefore increasing the voltage increases the number of neurons that are stimulated causing depolarization of most of the neurons. If you were to spend a lot of time studying nerve physiology in the laboratory, what type of stimulus would use, and why? If I spent time studying nerve physiology in a lab, I would use electrical stimulus. Using electrical stimulus

7. Why does the addition of sodium chloride elicit an action potential? The addition of sodium chloride elicits an action potential because it increases the concentration of sodium outside of the cell which generates an active transport of sodium into the cell and potassium outside of the cell. . What was the effect of ether on elicitation and an action potential? Ether blocks

nerve transmissions, therefore suppressing the ability of the nerves to elicit an action potential. 9. Does the addition of ether to the nerve cause any permanent alteration in neural response? Ether does not cause any permanent alteration in neural response because as soon as the ether wears off normal cell activity resumes. However, prolonged use will result in permanent alteration in neural response. 10.

What was the effect of curate on eliciting an action potential? Curate is an alpha-toxin that binds to acetylcholine sites on the postsynaptic cell membrane, which ultimately prevents the acetylcholine from acting. 11.

Explain the reason for your answer to question 10. The effect of curate on eliciting an action potential causes the curate to block synaptic transmissions by preventing neural impulses to flow from neuron to neuron. Basically, it prevents acetylcholine from acting, thereby paralyzing the prey and or reducing mobility. 12.

What was the effect of lidocaine on eliciting an action potential? Lidocaine blocks the opening of voltage-gated sodium channels, therefore nerve impulses can not conduct passed the obstructed region preventing pain signals from reaching the central nervous system. 13. What is the relationship between size of a nerve and conduction velocity? The smaller the nerve larger the greater the conduction velocity occurs. 14. Keeping your answer to question 13 in mind, draw an analogy between the nerves in the human body and electrical wires?

In the human body the smaller the nerve the greater the conduction velocity and in electrical wires the smaller the wire the faster the electrical current

travels. 15. Hypothesize what types of animals would have the fastest conduction velocities. I think that smaller animals would have the fastest conduction velocities because they have smaller nerve size. 16. How does myelination affect nerve conduction velocity? Explain. Myelination greatly increases the speed of nerve impulse conduction. For example, by the time a baby starts to talk, most myelin sheaths are partially formed, but myelination continues into the teenage years.

An infants responses to stimuli are neither as rapid either or as coordinated as those of an older child or an adult, impart because myelination is still in progress during infancy. 17. In the nerve conduction velocity experiment, if any of the nerves used reversed in their placement of the stimulating and recording electrodes, would there be any differences seen in conduction velocity? No there would not be any difference seen in conduction velocity because the size of the nerve has not changed.