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Submission date: 31-Jul-2020 03:28AM (UTC+0530)

Submission ID: 1364143753

File name: SLO_2_template_psych_2.docx (195.1K)

Word count: 414

Character count: 2299

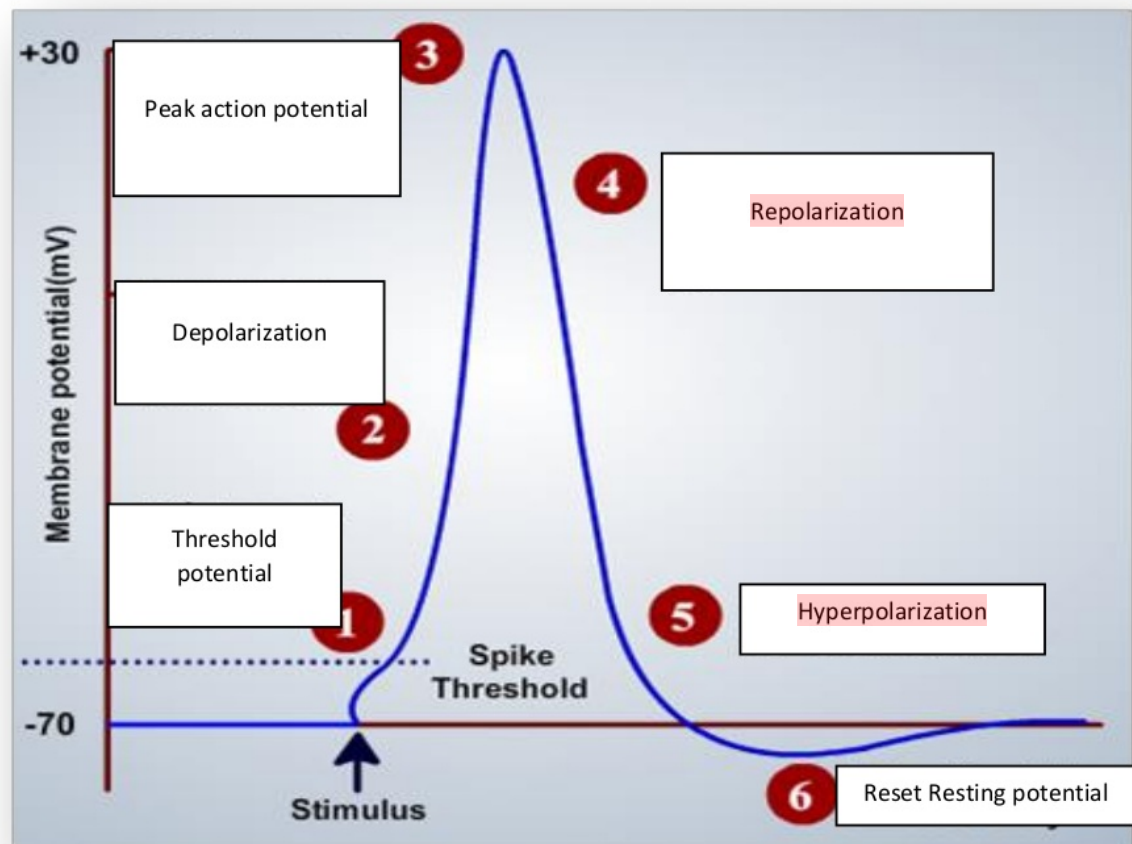
Phases of membrane potential

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Take a look at the diagrams below. Please describe what is happening at each point (1-6) in the process. What is the label or name for the phase and what is going on at that point in the action potential? The phase begins at resting potential and the numbers correspond to ¹the different parts of the action potential.

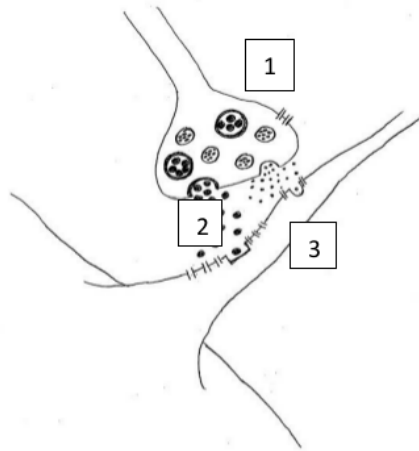


1). This is a threshold potential where depolarization of membrane potential occurs initiating the action potential with rapid rise and fall of particular cell location (Kerr, 2018).

- 2). This is depolarization where, there is quick opening of channels of voltage-gate sodium once depolarization occurs. The sodium finds its way to axon and relatively get electrically positive contrary to initial resting potential (Kerr, 2018).
- 3). Peak action potential- There is opening of potassium ions channels where these ions starts leaving the cell while channels for sodium ions closes(Kerr,2018).
- 4). Repolarization – the voltage-gated channels of sodium closes shortly once initial depolarization occurs. The channels of voltage-gated potassium opens which allows Potassium to efflux axon. This repolarizes the membrane making it more negative (Kerr, 2018).
- 5). Hyperpolarization- Here, potassium is still getting out of the axon. The membrane tend to dip below normal resting potential. The channels for sodium now get back to resting state and opens again provided that, membrane potential has exceeded the threshold potential(Kerr,2018).
- 6). Reset resting potential- Here the pump for sodium-potassium as well as the leak channels for potassium resets ions of both potassium and sodium. This then re-establishes membrane potential allowing for next action potential (Kerr, 2018).

Next, when the action potential makes its way down to the synaptic terminal, Please point out the processes that cause the neurotransmitter to be released (what steps take place

Once the action potential reaches its destination). There are 3 parts: what sets the process in motion, how is it released and what happens after release (1-3)?



1). Here the axon terminal is reached by action potential hence depolarizing the membrane. The sodium ions channels which are voltage gated opens to enter cells making further depolarization of presynaptic membrane (Kerr, 2018).

2). The calcium ions channels that are voltage-gated opens in presynaptic neuron to allow calcium ions into presynaptic neuron with the synapse.

3). The calcium ions that enters the presynaptic neuron cell. The influx of these ions triggers synaptic vesicle which then releases neurotransmitter (Kerr, 2018).

Reference

Kerr, S. (2018). Neurons and Glial Cells. Georgia Tech Biological Sciences.

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