Neuron Simulation

Go to https://bit.ly/3pI1rVu

This is a simulation of the axon of a neuron. Let's figure out how nerve signals travel down the length of the axon.

1. Slide towards the + to zoom in a little on the neuron.
   What protein structures are imbedded in the membrane?

2. What main protein is missing? _____

3. a. What substance is there more of outside the neuron? _____ What about inside? _____
   (Click "Show - Concentrations" if you are unsure).
   b. Why does this occur?

4. a. Click "Show - Charge" What charge is shown inside the cell? _____
   b. What charge is shown outside the cell? _____
   c. If K+ and Na+ are both positive, how might a negative charge come about?

5. Select "slow motion". Click "**Stimulate neuron**".
   a. Which way did Na+ move? _____ Through what did it move to get there? _____
   b. Which way did K+ move? _____ Through what did it move to get there? _____
   c. What was the "wave" that moved down the neuron? _____
   d. Why did the K+ and Na+ move? _____
   e. Describe what happens to the charge on the inside and outside after the wave passes.
      Inside: _____
      Outside: _____

6. Can you stimulate the neuron again right after firing it? Try. _____ Explain?

7. Click the button "**Potential chart**" Select "Normal" speed. Stimulate the neuron and sketch the resulting graph below.

   a) What does this graph show?

   b) Label "threshold", "stimulus", "resting potential" "depolarization" "repolarization" and "hyperpolarization" on your graph. Make the title "Action Potential"

8. a. Is there a way to make the signal any stronger (change the shape of the graph)? Try. _____
   b. Is there a way to make it stronger in an actual neuron? _____ Explain?