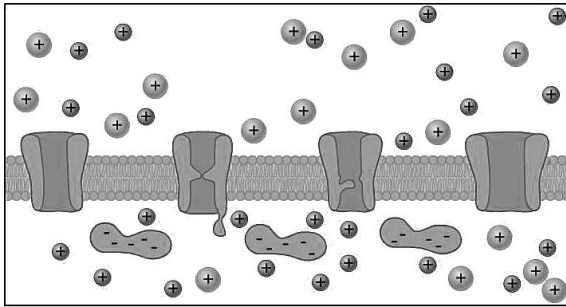


How the Neuron Works

Group: ____ - ____

Members: _____



A nerve cell or _____ is composed of the _____, which contains the nucleus and other organelles, and extensions on either end. The _____ on one end receive signals from sensors or other neurons. The long extension on the other end called the _____ carries the signal to the target, which could be another _____, a _____, or _____.

At rest the distribution of _____ on either side of the axon's cell membrane is unequal, resulting in a charge difference, with the inside of the axon being _____ charged when compared to the outside. This charge difference is called the _____. It is set up and maintained by the actions of two components of the cell membranes, both of which are made of proteins. The _____, which is _____ running, transports _____ ions (abbreviated $+$) out of the cell for every _____ ions (abbreviated $+$) into the cell via _____ transport, which uses ATP. The _____, is an example of _____ transport, and is always open. It allows potassium ions to diffuse in _____ direction, which adjusts the _____ ion concentrations resulting in the _____ charge inside. As a result there are more _____ ions inside the cell at rest and more _____ ions outside the cell.

When a stimulus triggers _____ to open, _____ diffuses in, following its _____ and _____ gradients, rapidly causing the inside of the axon to become less _____ and eventually more _____ charged. The _____ then close and the _____ open. _____ can no longer diffuse in, but _____ rapidly diffuses out, causing the inside of the axon to become less _____ and eventually more _____ charged. The _____ gates then close. The change of charge at each point along the axon triggers adjacent sodium channels to open creating a wave of _____ (the signal) along the axon. Once all gates are closed, the _____ is able to re-establish the sodium and potassium _____ that characterize the _____ potential, with more _____ ions outside and more _____ ions inside.