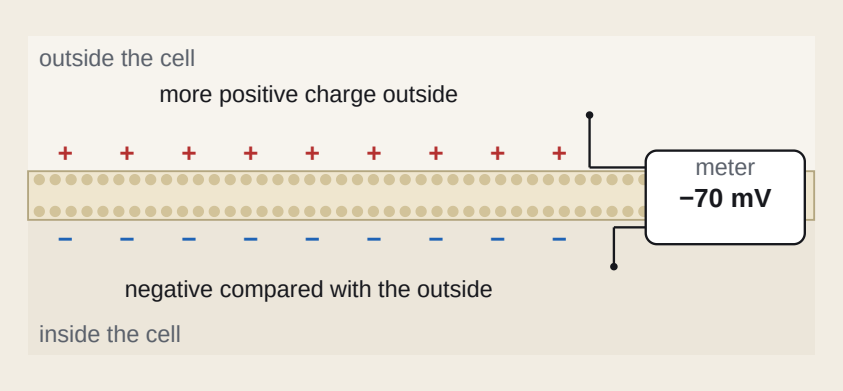
A2 · The resting neuron · Notes

Goals: Say what a polarized membrane is, and state the resting potential. Say where sodium ions and potassium ions are in a resting neuron. Explain why the inside of a resting neuron is negative. Describe what the sodium-potassium pump does.

Name: _____ Date: _____

Slide 1 of 4 · A charge across the membrane

In lesson A1, a nerve impulse travelled along the axon of a neuron. Today you look at the axon before a nerve impulse arrives.



Key ideas

A membrane with a different charge on each side is _____.

The difference in charge is the _____. It is measured in _____.

In a resting neuron it is −70 mV. This is the _____.

Example

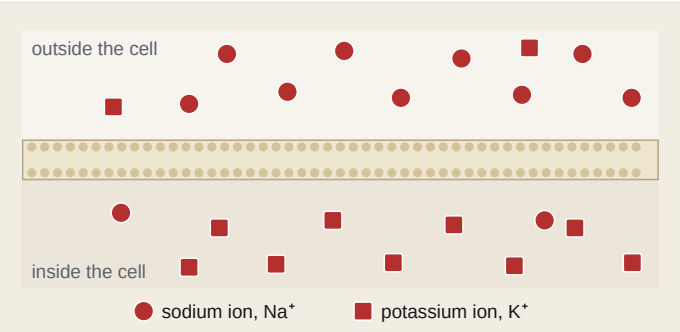
State the resting potential of a neuron. Say which side of the membrane is negative.

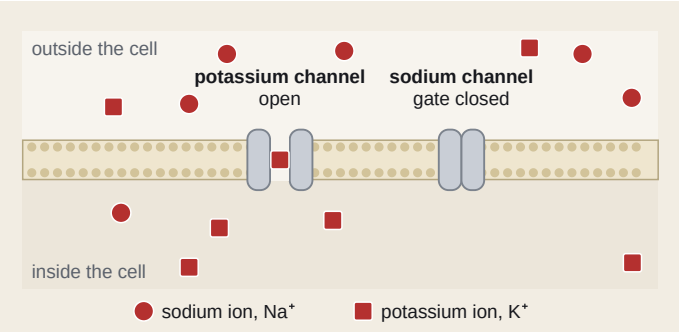
Try it

Explain what "polarized" means for the membrane of a neuron.

Slide 2 of 4 · Where the ions are

On the last slide, the inside of a resting neuron was negative. To see why, you first need to know where the ions are.





Key ideas

Outside the cell there are many _____ ions.

Inside the cell there are many _____ ions.

Ions cross the membrane only through _____.

Ions move through an open channel by _____, from more to less.

Example

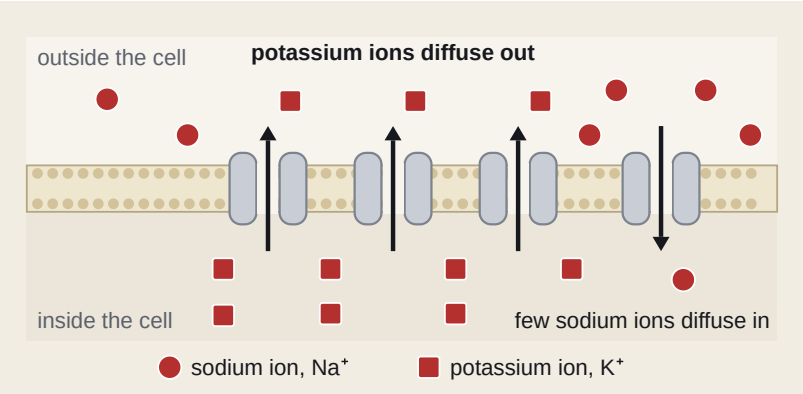
A potassium channel opens. Predict which way potassium ions move, and say why.

Try it

A sodium channel opens. Predict which way sodium ions move, and say why.

Slide 3 of 4 · Why the inside is negative

On the last slide, sodium ions were mostly outside and potassium ions mostly inside. Both ions are positive. So why is the inside negative?



Key ideas

A resting neuron has many more _____ than sodium channels.

So more potassium ions diffuse _____ than sodium ions diffuse in.

Negative ions cannot cross the membrane. They _____ inside.

So the inside is _____ compared with the outside.

Example

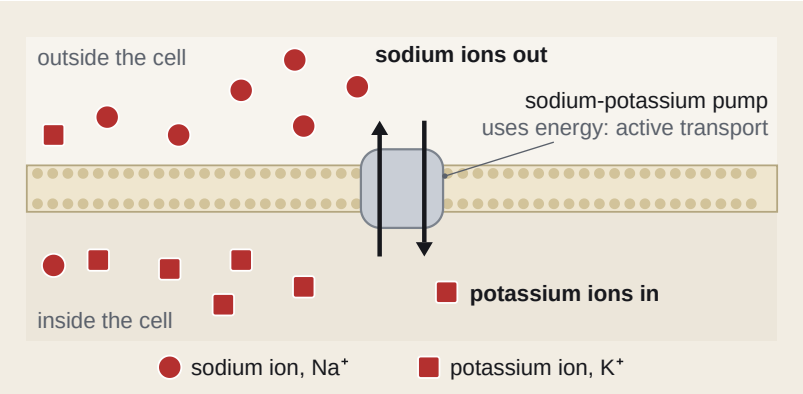
Explain why the inside of a resting neuron is negative.

Try it

State which ion leaves a resting neuron in the larger amount. Name what it carries out.

Slide 4 of 4 · The sodium-potassium pump

On the last slide, potassium ions leaked out of the cell. A few sodium ions leaked in. If that went on, the two sides would become the same.



Key ideas

The _____ moves sodium ions out and potassium ions in.

It moves each ion to the side that already has _____.

This uses _____. It is _____.

Example

Sort into diffusion or active transport: potassium ions leave through a channel.

Try it

Sort into diffusion or active transport: the pump moves sodium ions out of the cell.