

15 The nerve impulse – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
resting potential	静息电位	_____
action potential	动作电位	_____
myelin sheath	髓鞘	_____
saltatory conduction	跳跃式传导	_____

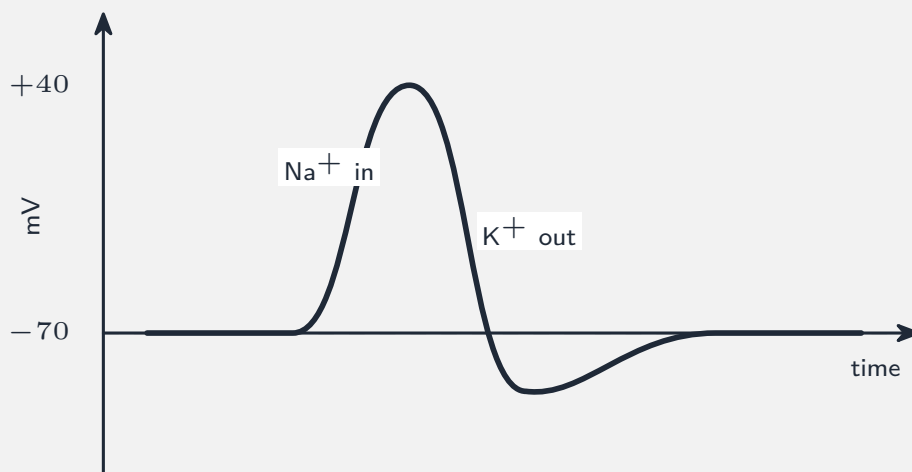
Recall

A nerve impulse is a quick change in the voltage across a neurone's membrane.

New ideas

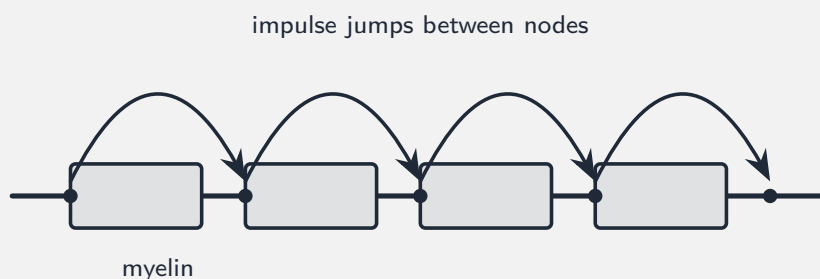
Read these first, then do the Practice.

■ 1 The action potential



- at the **resting potential** 静息电位 the inside is negative (about -70 mV);
- in an **action potential** 动作电位, sodium rushes in and the inside briefly goes positive ($+40$ mV), then potassium leaves and it returns to negative.

■ 2 Faster impulses



Some neurones have a fatty **myelin sheath** 髓鞘. The impulse jumps from gap to gap —**saltatory conduction** 跳跃式传导—which makes it travel much faster.

Watch out: in an action potential *sodium* rushes *in* (inside swings from -70 mV up to $+40$ mV), then *potassium* leaves to restore the resting potential. Myelin makes the impulse *jump* between gaps, which speeds it up.

Practice

Try these in order.

15.6 At the *resting potential*, is the inside positive or negative?

[1]

15.7 Which ion rushes *in* to start an *action potential*? [1]

15.8 What roughly is the peak voltage of an action potential? [1]

15.9 What is the fatty layer around some neurones called? [1]

15.10 What is the name for the impulse jumping between gaps? [1]

15.11 Challenge. A myelinated neurone carries impulses much faster than an unmyelinated one. Explain why, using saltatory conduction. [2]
