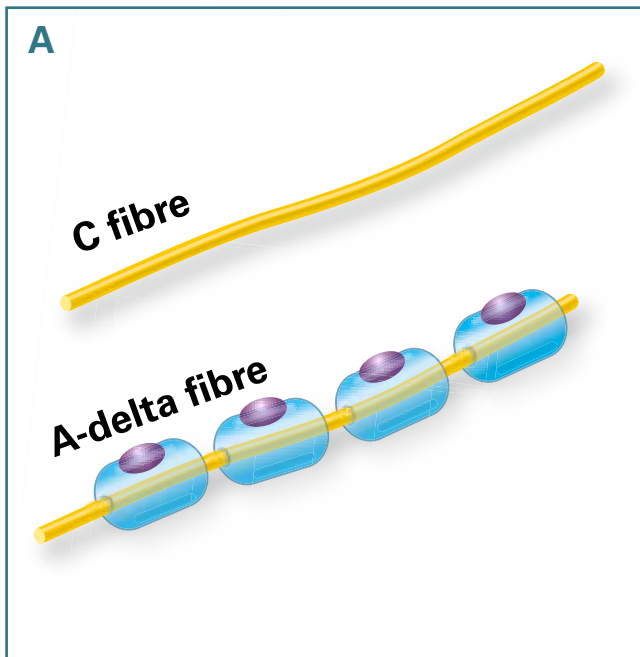
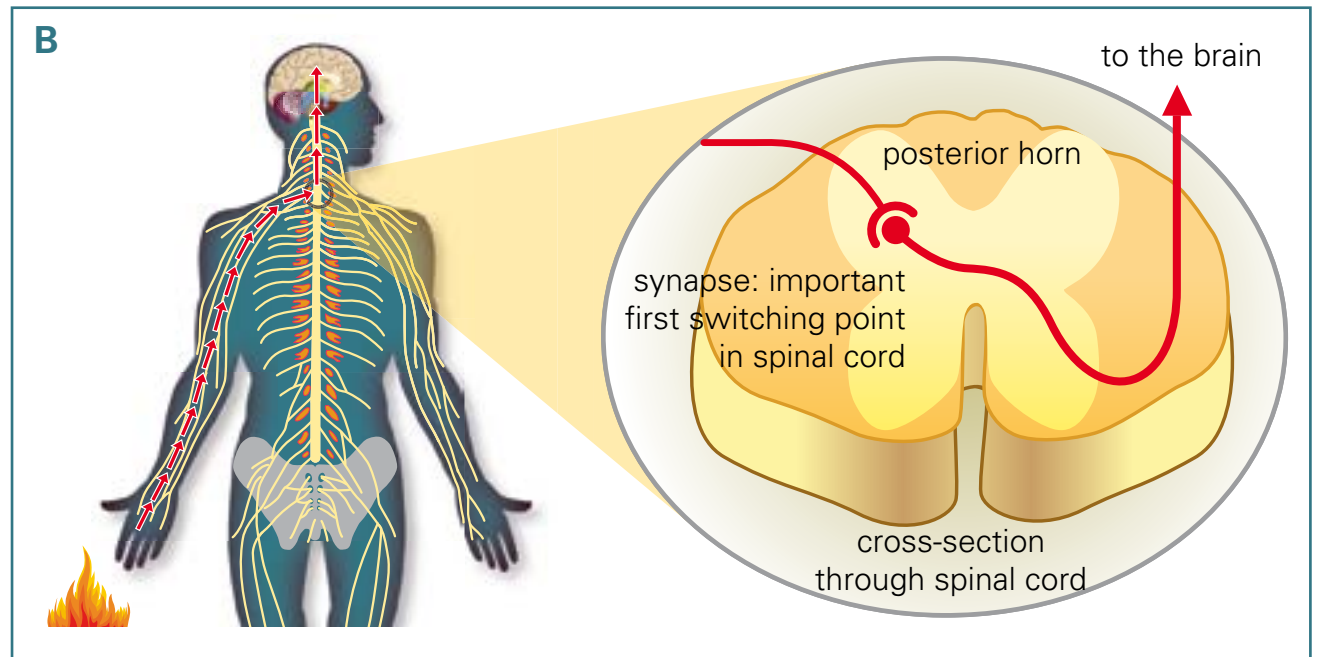


How is the pain impulse conducted to the brain?

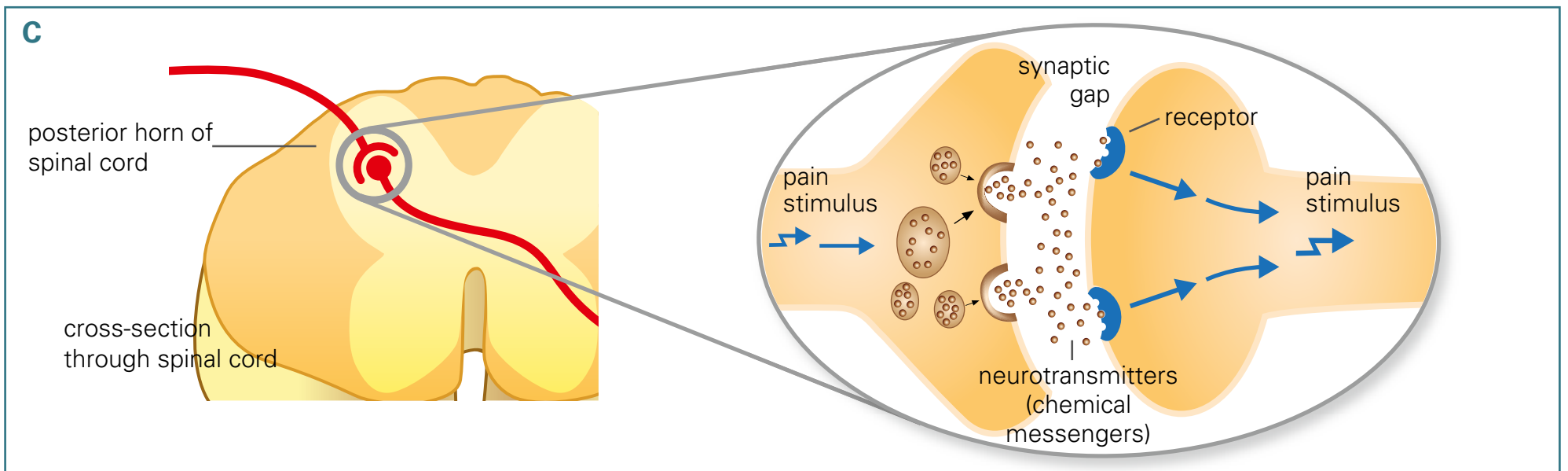
Pain-conducting nerve fibres



Spinal cord switching point



Synapse in posterior horn of spinal cord



How is the pain impulse conducted to the brain?

A Pain-conducting nerve fibres

There are “thick” and “thin” nerve fibres.

Thick, for example A-delta, fibres conduct stimuli rapidly and give rise to an immediate sharp, first pain; for example, in the case of a needle prick or knocked leg.

Thin, for example C, fibres conduct slowly and lead to a dull, persistent second pain.

B Spinal cord switching point

The pain signal is **stronger or weaker** depending on the tissue damage and the degree of sensitisation.

It is first conducted to the spinal cord, where the nerve fibre ends in the posterior horn and is linked to the next fibre through what is known as a **synapse**.

This then transmits the pain signal to the brain.

Synapses are highly complex, important nerve switching points that are regulated by a wide range of influences.

Incoming signals can be transmitted or stopped, strengthened or weakened.

C Synapse in posterior horn of spinal cord

How a synapse works: An incoming signal leads to the secretion of **neurotransmitters** (chemical messengers) into the synaptic gap (space between two nerve endings).

On the other side of the synaptic gap, the neurotransmitters encounter receptors of a second nerve cell, which trigger various biochemical processes and therefore transmit the signal.