Exploring brain cells - answers

What is a cell?

All living things are made of cells. Cells are tiny building blocks, so small that you can't see them without a microscope.

They work together as a team to do different jobs in your body. Cells in your muscles help you move. Cells in your stomach help you break down food.

And cells in your brain are in charge of everything you think, feel, say and do.

Nerve cells

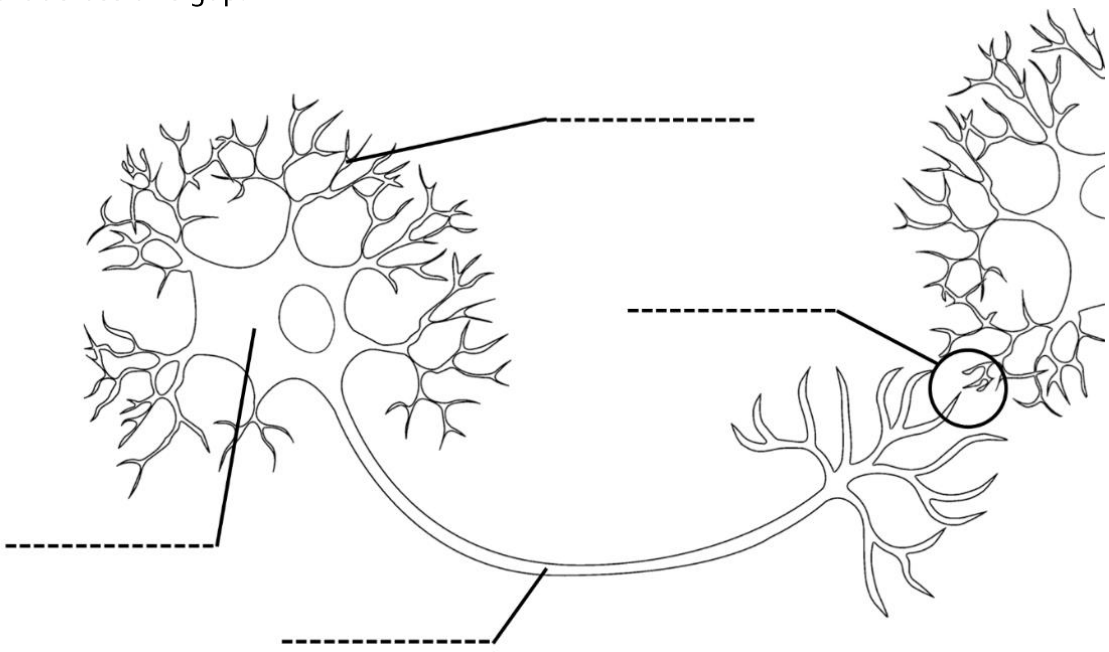
Nerve cells are a special type of cell that carry electrical messages around your body. Your brain is full of nerve cells, about 86 billion of them.

The nerve cells in your brain form networks, linking up with each other and passing messages between them. It is the nerve cells in your brain that hold information, and help you learn new things and remember.

Nerve cells have a special shape which helps them do their job. They have a control centre called the **cell body**, which has lots of spindly branches coming off it, called **dendrites**. The dendrites receive messages from other nerve cells.

The message then passes along a long stem called the **axon**, which carries the message away from the cell body. The axon splits off into tiny branches at the end, which connect up with the next nerve cell.

There is a tiny gap between nerve cells call a **synapse**, and the message is passed from one nerve cell to the next across this gap.



Activity - Can you label the nerve cell diagram?

Synapse **Dendrites** **Axon** **Cell body**

Brain support cells

Your brain is made up of more than just nerve cells. There are other cells called **glia**, and for a long time people though they just helped glue the nerve cells together (glia means 'glue' in Greek).

However, these different types of glia are important support cells. There are three main types of glia in the brain.

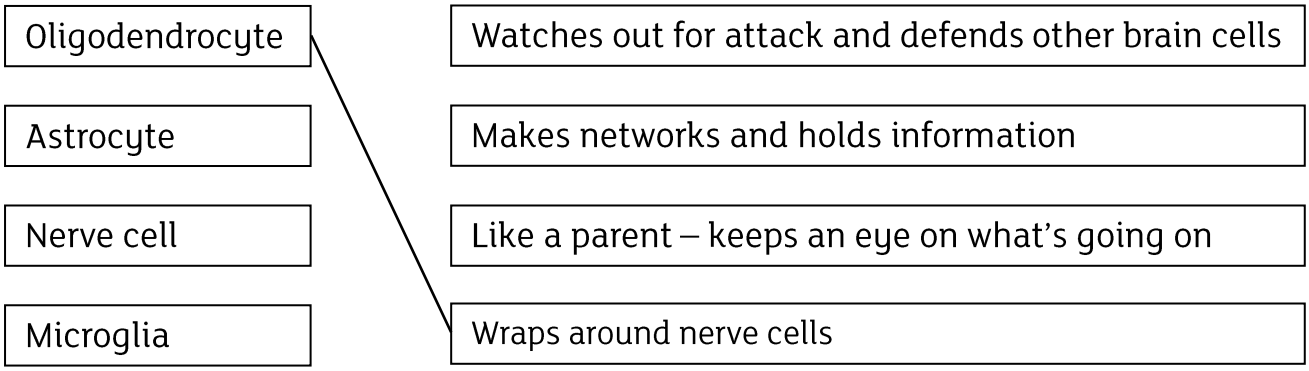
Astrocytes get their name from their star-like shape (astro = star). They are a bit like parents, and provide food for the busy nerve cells. Their long arms move around, checking on other cells and keeping an eye on what's going on in the brain.

Microglia work as defenders of the brain, and are part of the immune system which helps protect our body from germs. They are the soldiers in the immune system in the brain, and watch out for attack and spot any damage.

Oligodendrocytes wrap around the axons of nerve cells, a bit like plastic wrapping around electrical wires. This wrapping helps to speed up messages going along axons.

Activity

Can you match the cell with its job? Draw lines to show which cells do what.



Brain cells and dementia

Like all parts of the body, brains sometimes become ill. Dementia is caused by illnesses of the brain. People with dementia can have problems with remembering, thinking and speaking. This is because their brain cells aren't working properly.

When somebody has dementia, their nerve cells start having problems sending messages and talking to each other. Astrocytes and microglia can stop taking care and protecting the brain. They can also overreact and cause damage to other cells.

Scientists are trying to understand why this happens and find ways to slow down or stop the damaging changes happening in the brain in dementia.

You can find out more about dementia at alzres.uk/juniors_dementia

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Activity

Can you find all these words in the wordsearch?

Nerve
Cell body
Microglia
Synapse
Glia
Dementia
Axon
Dendrite
Astrocyte
Oligodendrocyte
Message
Brain

R M V D W N M P A P G L I A I P

S Y N A P S E O E Y T Q A X C D

N B T T A P S V A L N M N O B E

B L K J S V S P D Q V N T N F M

H G G B T Y A C E L L B O D Y E

V Z W S R J G A N W E P B R F N

O L I G O D E N D R O C Y T E T

M T K E C M I P R K X D L I H I

S B H F Y P F M I C R O G L I A

C O X P T Z N M T Z V A L W P R

N E R V E Y M C E C Y B R A I N

For the answers, visit alzres.uk/braincellsanswers