

# THE BRAIN



Your brain is the organ in your body that controls everything that you do – what you see, smell, hear, taste, feel, think and do.

**We're going to look at how your brain works.**



Brain cells, or neurones, are what makes our brains work. The brain is full of brain cells, and they pass messages between each other from one end of the brain to the other.

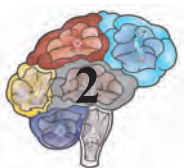


***How many brain cells do we have in our brain?***

The average adult human brain has 100 billion brain cells.

100 billion is 100,000,000,000.

But that doesn't tell us what 100 billion looks like.....



If you had to count from one to 100 billion,  
it would take you about 171 years.

If you had 100 billion jellybeans, you would be able to:

- fill 165 Olympic-size swimming pools, or
- fill the MCG from the ground up to  $\frac{1}{4}$  of its height.



The 100 billion brain cells pass messages to each other  
by sending electrical impulses from one cell to another,  
and another, and another.....



The brain cells communicate with each other by linking with neurotransmitters. Neurotransmitters are chemicals that circulate through the brain, helping the brain cells to talk with each other.

**The three main neurotransmitters in our brain are:**

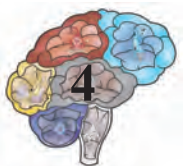
Serotonin - **Sarah Tonin**



Noradrenaline - **Norah Drenaline**



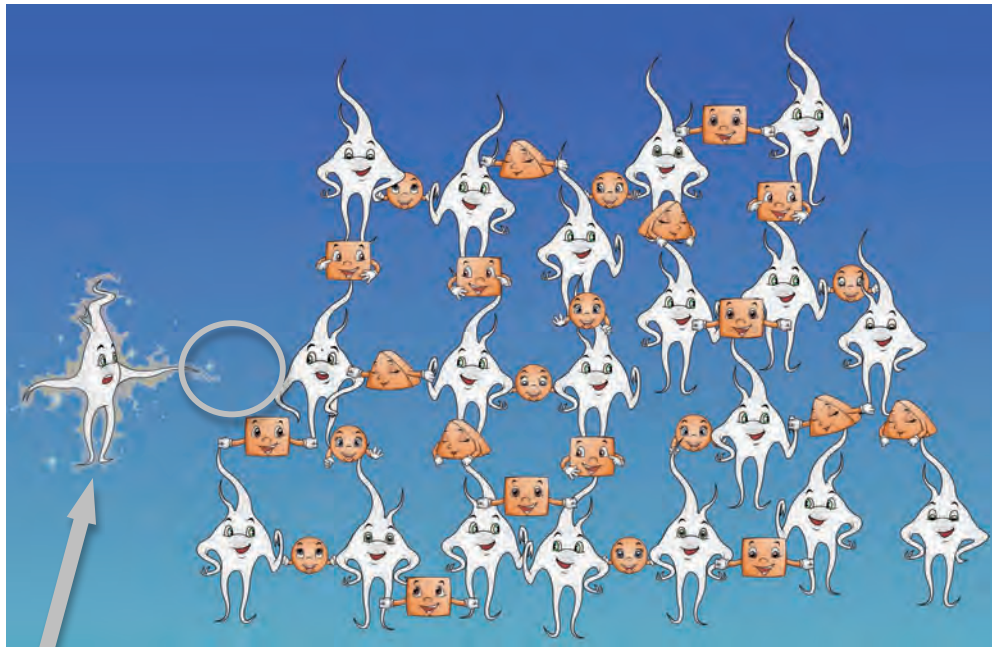
Dopamine - **Dopey Meane**





This is how Sarah, Norah and Dopey help the brain cells to communicate with each other.

They make links between the cells to allow the electrical impulse to pass from one cell to another.



This brain cell has a message to pass to the other cells. It doesn't have a Sarah, Norah or Dopey to pass it on to the next cell.

When Sarah arrives, the message gets communicated.



Everyone has a big factory in his or her body that makes lots and lots of Sarah, Norah and Dopey neurotransmitters.



The factory is kept very busy making sure that enough neurotransmitters are made every day, and sent to the right part of the brain.

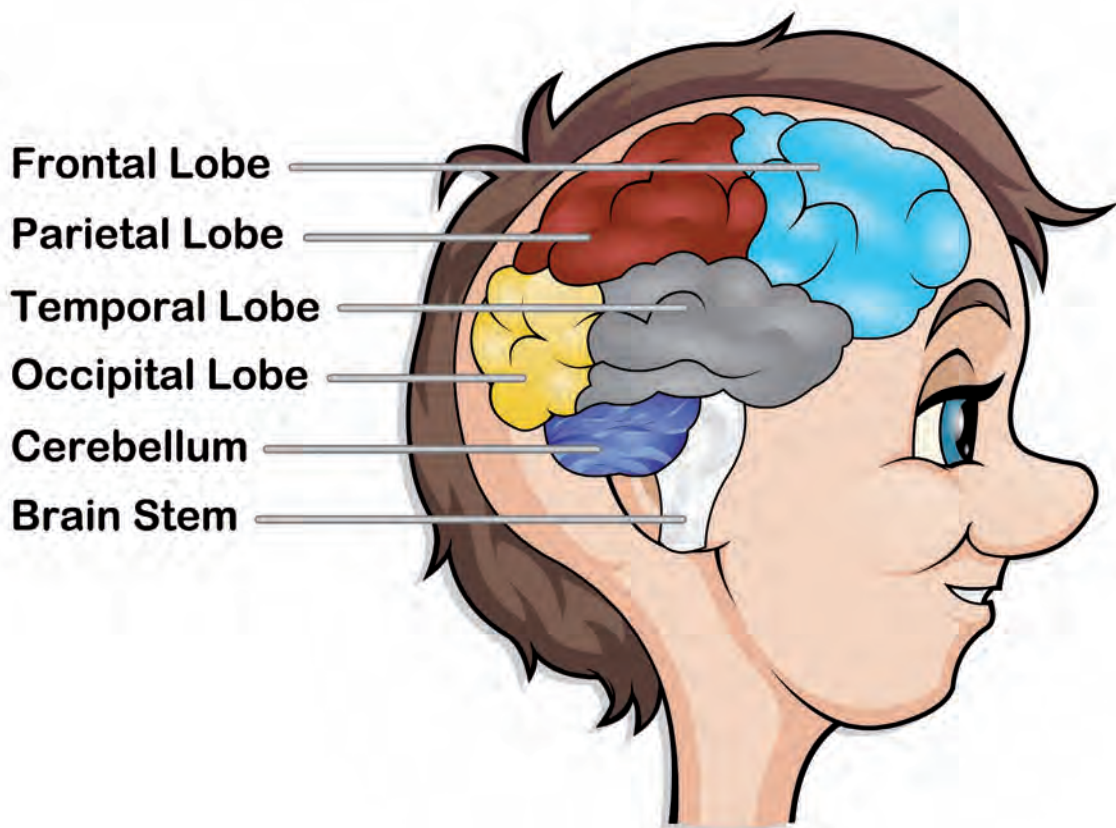
If the factory doesn't do this well, the brain cells that are waiting on Sarah, Norah and Dopey can't send messages to each other.

**When this happens, some of our thoughts get mixed up.**

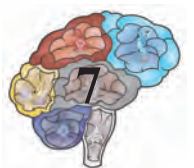




**The brain is split into many sections – each with its own particular role.**



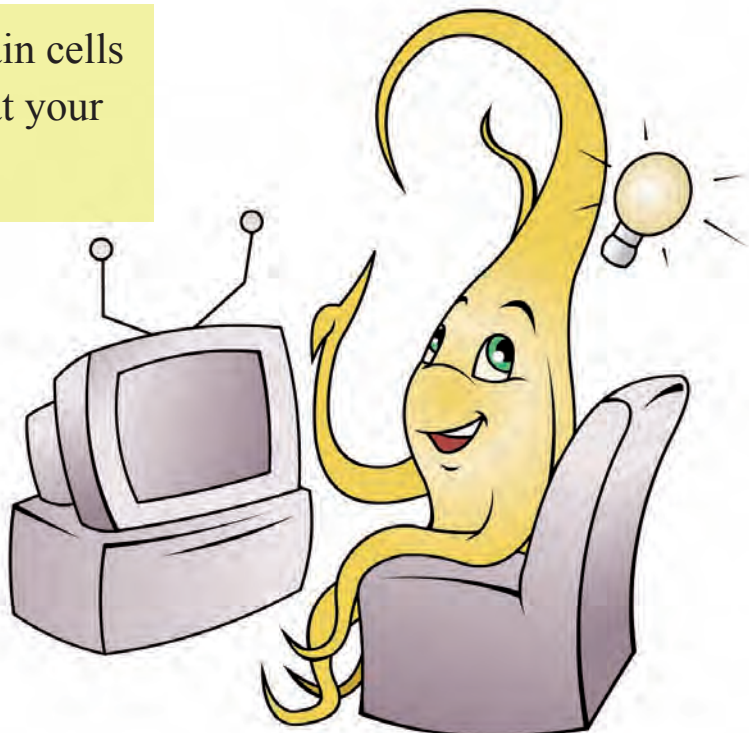
The brain cells that live in the Frontal Lobe are busy helping you to think, work things out, and decide how to fix problems. They also send messages to the body to move your arms, legs, hands and feet.



The brain cells in your Parietal Lobe do lots of things. They can help you to work out what things mean, how to move your hand to catch a ball, and how to do puzzles.



The Occipital Lobe brain cells let you understand what your eyes are seeing.

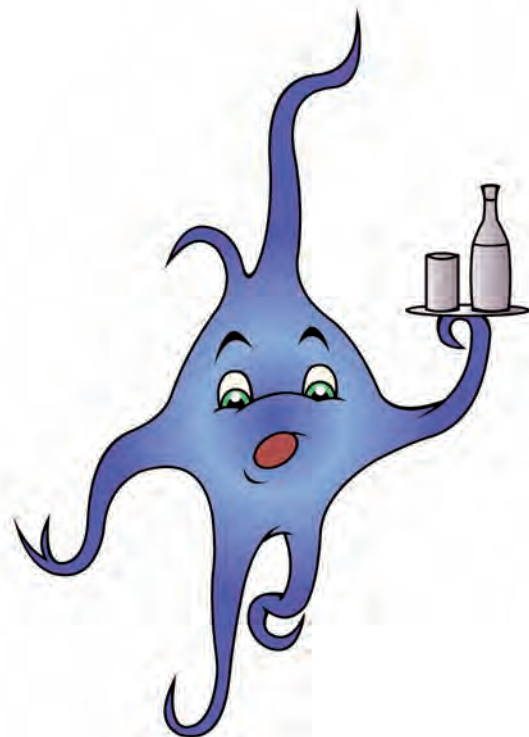




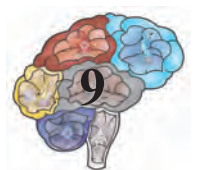


Your Temporal Lobe brain cells help you to remember things that have happened. They also take in the information from your nose, tongue and ears.

The brain cells in your Cerebellum help you to balance and make some complex movements.

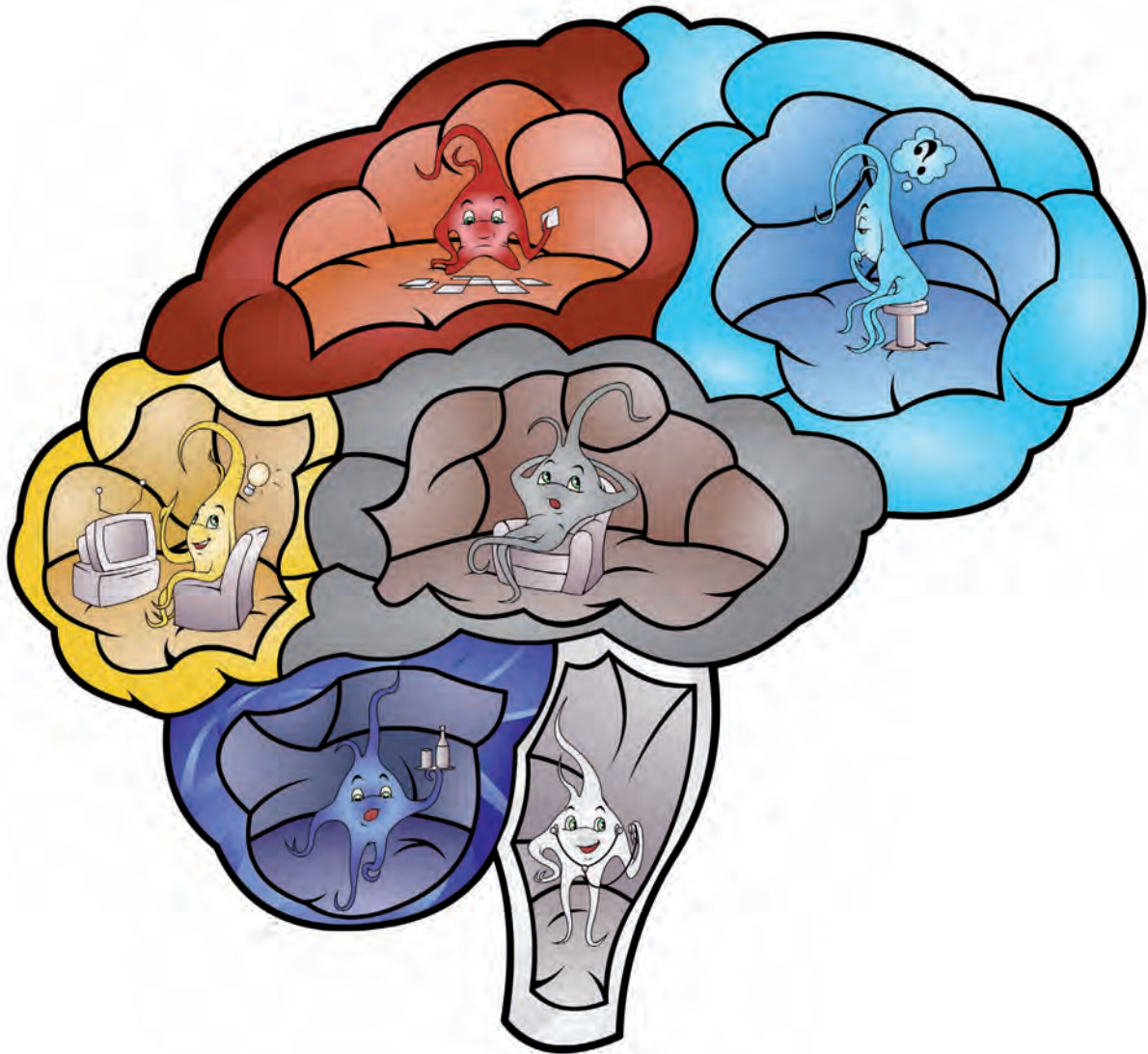


The brain cells in your Brain Stem keep your heart beating at the right speed, tell you what speed to breathe at, and when to go to sleep.



**This is what happens inside your brain when the brain cells are waiting for messages.**

These messages can come from other brain cells and lobes; or they can also be sent from outside the brain.



When the different areas, or lobes of the brain talk to each other, we can manage really complex things.

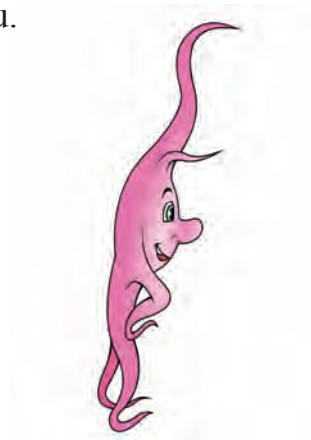
We can listen to a list of directions, remember those directions and use those directions to find our way home.

We need our brain cells, as well as Sarah, Norah and Dopey, to be working well in all lobes of our brain for this to happen.

There are some other nerve cells that send messages from outside your brain, to tell you what's happening around you.



There are nerve cells behind your eyes that let your brain know what the eyes are seeing.



There are nerve cells in your nose that let your brain know what things smell like.



There are nerve cells in your ears that let your brain know what sounds you are hearing.



There are nerve cells on your tongue that let your brain know what things taste like.

These nerve cells communicate with the billions of brain cells.

This allows us to make decisions, understand what's happening around us, enjoy watching movies, listening to music and tasting our food.





## When you're at school, your ears hear a ringing noise.

- Message from your ear, to the Temporal Lobe – “Ringing noise coming in”
- Message from your ‘Hearing Sensor’ in your Temporal Lobe, to ‘Memory’ in your Temporal Lobe – “What kind of ringing is that: Is it a fire alarm, or start of class bell?”
- Message from your ‘Memory’ in your Temporal Lobe, to ‘Problem Solving’ in the Frontal Lobe – “Sounds like start of class bell”
- Message from ‘Problem Solving’ in the Frontal Lobe, to ‘Motor Activity’ in the Frontal Lobe – “Time to go back to class; let’s get moving”

This communication requires an enormous number of cells to have the right amount of Sarah, Norah and Dopey neurotransmitters available.

