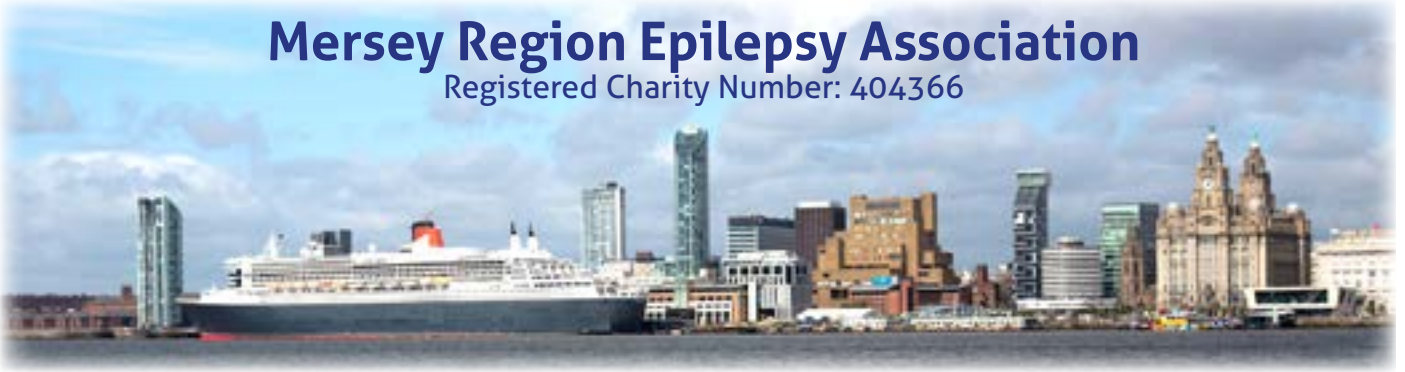


Mersey Region Epilepsy Association

Registered Charity Number: 404366



You have to have a brain to have epilepsy

Your brain controls every single action of your body. How clever you are, how you think, talk, hear, see, feel and move – all these things depend on your brain. It works 24 hours a day, every day!

The brain is made up of thousands of millions of cells called **neurons** (nerves). To give you an idea of how many neurons there are in the brain, imagine a container the size of a bath being full to the top with salt. There are still more neurons in your brain than there would be grains of salt in that bath!

As you get bigger, the number of cells in the rest of your body increases. This doesn't happen with neurons. Instead, each neuron just gets bigger and links up more and more with other neurons. In fact, as we get older the numbers of neurons actually gets smaller because a few die every day. This doesn't matter because there are so many to start with!

The links between neurons allow them to communicate with one another. They do this by sending tiny electrical signals to each other.

The number of connections possible between all the neurons in your brain is impossible to count, just because there are so many. It is these links which make your brain far more powerful than the biggest and best computers ever invented.

Like any complicated thing, however, the brain can develop faults. Sometimes the fault could be that the electrical signals, which constantly flash backwards and forwards between the neurons, become uncontrolled, and this can cause a **seizure**. Many people will have at least one seizure during their lives. If they have seizures regularly then doctors say that the person has **epilepsy**. The type of epileptic seizure depends on the sort of fault and where it is happening in the brain. This is because the brain is organised into different parts, with each part doing different jobs.



The most powerful computer in the world!



The hemispheres seen from above.

The human brain has 3 major parts – the cerebrum, the cerebellum and the brain stem.

The cerebrum, or the outside part of the brain, is divided into two halves called **hemispheres** by a deep groove. The left hemisphere controls what is happening down the right hand side of the body while the right hemisphere controls what is happening down the left hand side of the body. The two hemispheres take up $\frac{2}{3}$ of the total weight of the brain and each one is divided into four main areas called lobes – the frontal lobes, the parietal lobes, the temporal lobes and the occipital lobes.

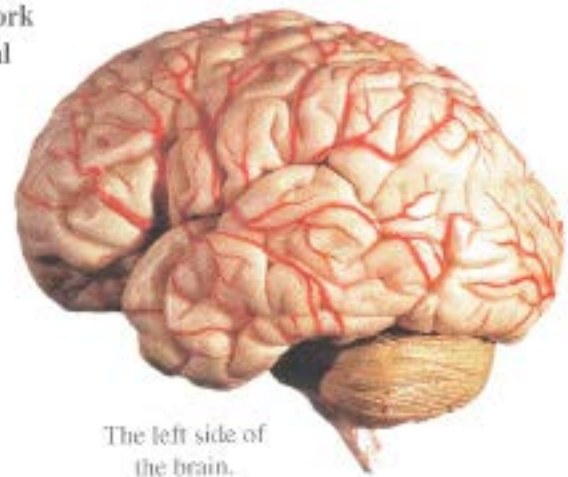
Although there is still a lot to be found out about the work done by the different lobes it is thought that the frontal lobes control voluntary movement; the parietal lobes control such things as touch and involuntary movement; the temporal lobes control such things as speech and hearing; and the occipital lobes control vision.

The cerebellum, which is just underneath the back of the hemispheres, makes sure that all the jobs are organised properly and that everything works together in the correct way and at the right time. It is particularly important for how we balance on our feet.

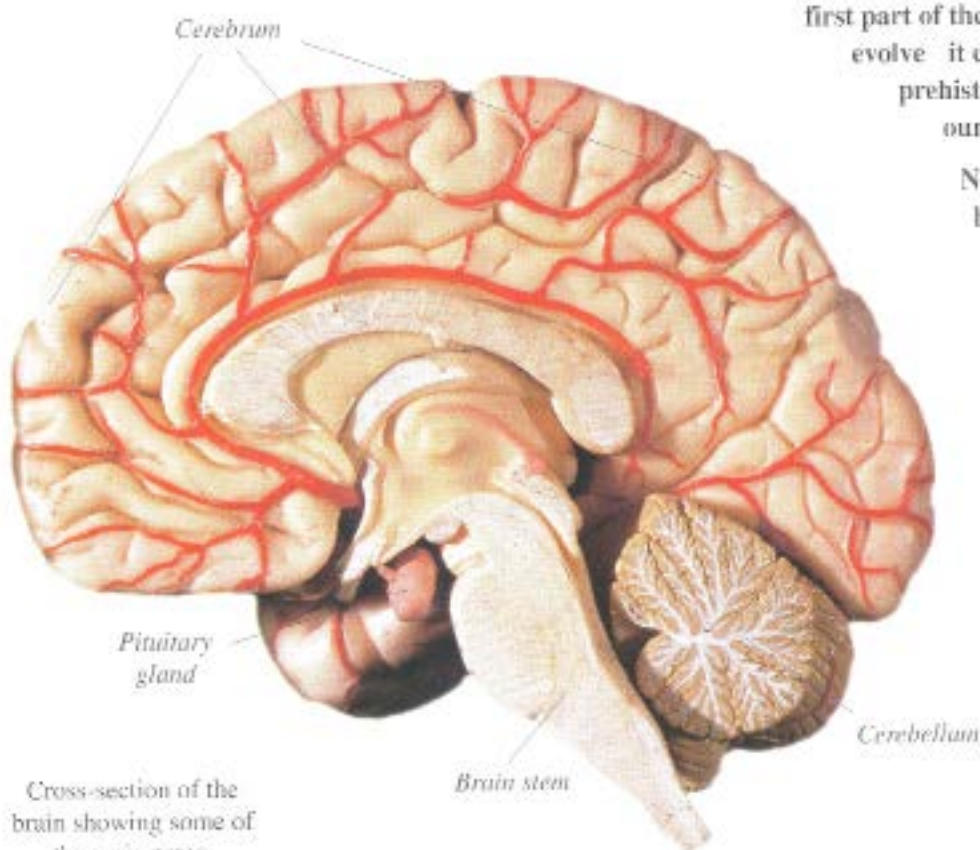
Right underneath the hemispheres is the

brain stem which controls important jobs like breathing and heartbeat. It also 'joins' the brain with the spinal cord. The brain stem was the first part of the brain to develop or evolve - it existed even in the prehistoric apes, which are our distant ancestors.

No one part of the brain is entirely responsible for any one job. All the parts are interconnected and share each others work. The human brain is still the most wonderful and complicated thing that we know about in the whole universe.



The left side of the brain.



Cross-section of the brain showing some of the main areas.