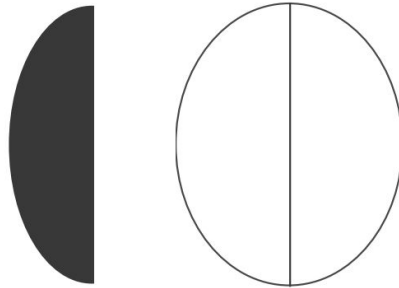


Today we are going to build a brain out of clay. To do this, we will need to make the different parts of a brain. The first part is called a **hemisphere**. The Earth has two hemispheres. So does the brain. Make one side of your hemisphere flat, so that your hemispheres fit together like the picture below.

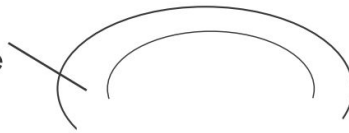


Two Hemispheres

Hemisphere is a Greek word that means half (hemi) of a round shape (sphere). Scientists use Greek and Latin words to describe different shapes and structures. These are very old languages that scientists like to use to describe things they discover or observe.

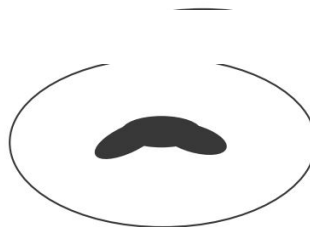
After you make one hemisphere, make another one the same size. The outside of the hemisphere is called the **cortex**. The cortex protects the inside of the brain, and helps with such things as thinking, movement, sight, hearing and the sense of touch. The right hemisphere controls the left side of the body, and the left hemisphere controls the right. Each hemisphere has separate jobs.

The cortex is the outer layer of the hemisphere.



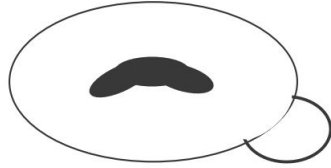
This is a Latin word that means "bark", like the bark of a tree. The cortex protects the inside of the brain the way that bark protects the inside of a tree.

A bridge called the **corpus callosum** connects the two hemispheres. These strange sounding words mean "hard body" in Latin. Put a small piece of clay, shaped like a "C", in the middle of one of your hemispheres before you press them together.



Now we need to make the **cerebellum**. The cerebellum is made up of the two rounded shapes that look like a little brain at the back of the cortex.

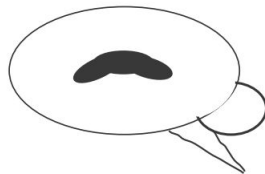
Roll up two smaller balls of clay. Squish them together a little, because unlike the hemispheres, the cerebellum is not made up of two separate pieces. Choose which end of the brain will be the back, and attach the cerebellum to the back of the brain, underneath the hemispheres (refer to the model). The cerebellum helps us with balance and coordination.



Cerebellum means 'little brain' in Latin.

Next we'll make a **brain stem**. The brain stem connects the brain to the spinal cord. The brain stem controls body processes that we don't think about such as breathing, blinking and heartbeat.

The brain stem connects to the bottom of the brain. Pinch the clay so it attaches well, underneath the brain and in front of the cerebellum. Look at the model if you are not sure where to put your brain stem. In your body, the brain stem connects to the spinal cord.



Gyrus is a Latin word that means 'roll' or 'fold'.

Shapes that look like wads of gum cover the outside of the cortex. Just one of these wads is called a **gyrus**. Two or more are called gyri. Between the gyri are lines or grooves. Our final step is to make gyri. Roll up clay "snakes" and press them onto each hemisphere. *Remember*, the hemispheres are connected only at the corpus colosum, so be sure the gyri stay on one hemisphere and do not cross over. In these clay brains, we are making gyri as a separate feature, but really the cortex is entirely made up of gyri.

## How to Build a Brain: Summary



### STEPS

Start with three or four colors of clay or play dough.



Create two equal sized hemispheres, each about an inch in diameter. Mold them into an egg shape.



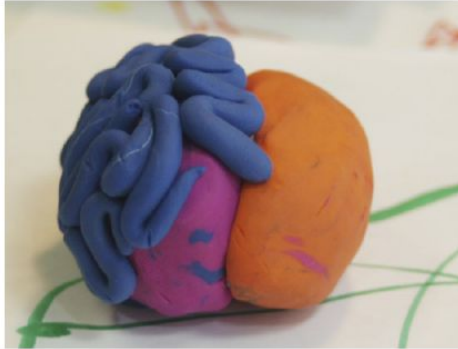
Press each egg shape into the desk to flatten one side. Form them so they fit together. Do not press so hard that they stick. Open them apart again.



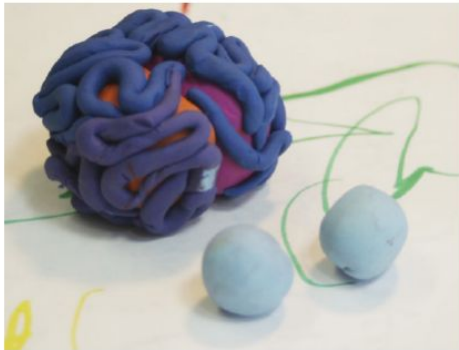
Make a small curved cylinder with pointed ends and add it between the hemispheres. This is the corpus collosum. It acts as a bridge between the hemispheres.



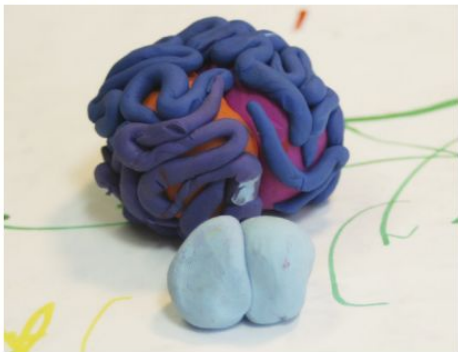
Add the corpus collosum to the model. The corpuscollosum is the “hard body” which connects the left and right hemispheres helping them communicate.



The gyri (blue rolls) can be added now or after the cerebellum. Roll and mold long “worms” to wrap onto the cortex as gyri; the sulci are the grooves between the gyri.



The cerebellum is now added to the hind, lower part of the brain. The cerebellum coordinates messages in and out of the brain, and helps with balance and motor coordination.



The cerebellum has two hemispheres. They appear connected and should be pressed together until they fuse. The long, thin horizontal folds can be carved in with a toothpick.



Lastly, add the brainstem. The brainstem helps with automatic functions of heartbeat, breathing and coordination..