

What a nerve!
The longest neurone in your body extends from your big toe to the middle part of your spine and is about a metre long. A giraffe's longest nerve is at least two metres long!

SciFile

The brain: communication centre

Humans have a very large brain for their body size, compared with other animals. The human brain contains about 100 billion neurones, and has an average volume of 1200–1400 mL. The brain controls and regulates body functions. Without it you cannot survive. Amazing new medical imaging techniques can now look inside a living brain. MRI (magnetic resonance imaging), for example, uses strong magnetic fields to distinguish different types of body tissue (Figure 7.1.5). This is useful in diagnosing brain tumours and finding areas of brain injury. Damage to the brain is repaired slowly. Sometimes other parts of the brain take over the function of the damaged parts, but there are situations where brain damage is permanent.

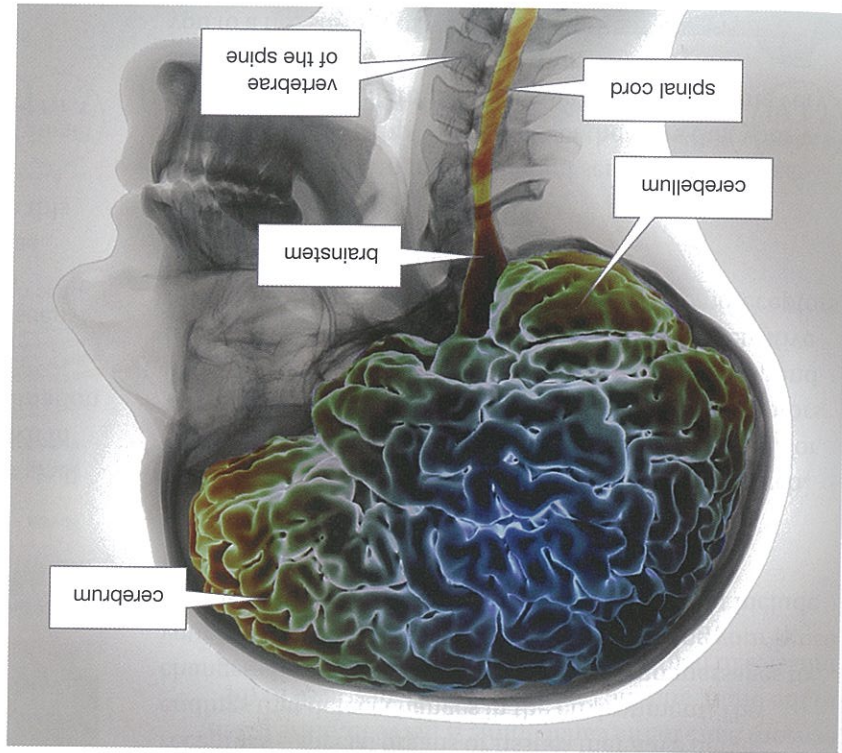


Figure 7.1.5

Computer-enhanced X-ray showing the external structure of a human brain.

The cerebrum
When you think of what a human brain looks like, you are probably thinking of the **cerebrum**. It occupies more than 80% of the brain and contains over 10 billion neurones. Its many folds increase its surface area by three times. It is here that the higher intellectual functions of humans take place. The cerebrum controls your conscious thoughts and the intentional (voluntary) movement of every body part. It also receives sensory messages from all body parts. The cerebrum is made up of two parts, called the right and left cerebral hemispheres. When it comes to intended actions such as walking or hitting a ball, the right hemisphere controls the left side of your body and the left hemisphere controls the right side of your body (Figure 7.1.6). Each half of the brain can work independently, but you use both cerebral hemispheres for most activities. One side usually dominates in a particular task. For example, in most people the left side has more control over language and logical thinking, such as mathematical ability. The right side is the more creative and emotional side. Musical and artistic ability depends on the right side of the brain.

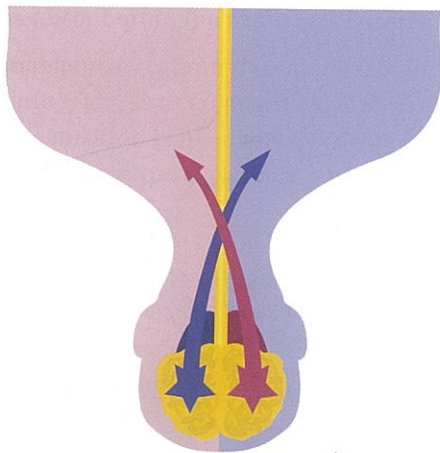


Figure 7.1.6

The right and left sides of the brain control the opposite sides of the body.