



# Sensational skin

The skin is your body's largest organ and one of its most important.

Skin may seem as if it is just the wrapping paper on the outside of your body – there to make you look presentable and stop your internal organs falling out – but it plays a vital role in your health. Skin prevents harmful germs and chemicals entering your body and, if the weather gets too hot or too cold, it helps you maintain a constant body temperature. Skin also nourishes you by converting

sunlight into vitamin D, which helps your body absorb the calcium that is essential for your bones to grow. Without skin you would not be able to move freely, nor feel or touch things and experience the world around you. If you had no skin, you would evaporate because all the fluids in your body would escape into the air in the form of gases as they are heated by the Sun.

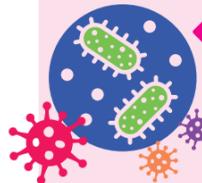
## Skin in numbers

**0.5 millimetres**



The thickness of skin on eyelids, compared to around four millimetres on the soles of your feet.

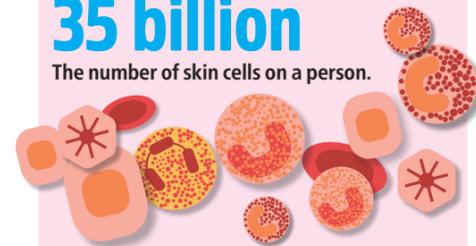
**1,000**



The number of bacteria species on your skin.

**35 billion**

The number of skin cells on a person.



**4 kilograms**

The weight of dead skin that a person sheds in one year.



**2 square metres**

The area covered by an average adult's skin.



## How you feel things



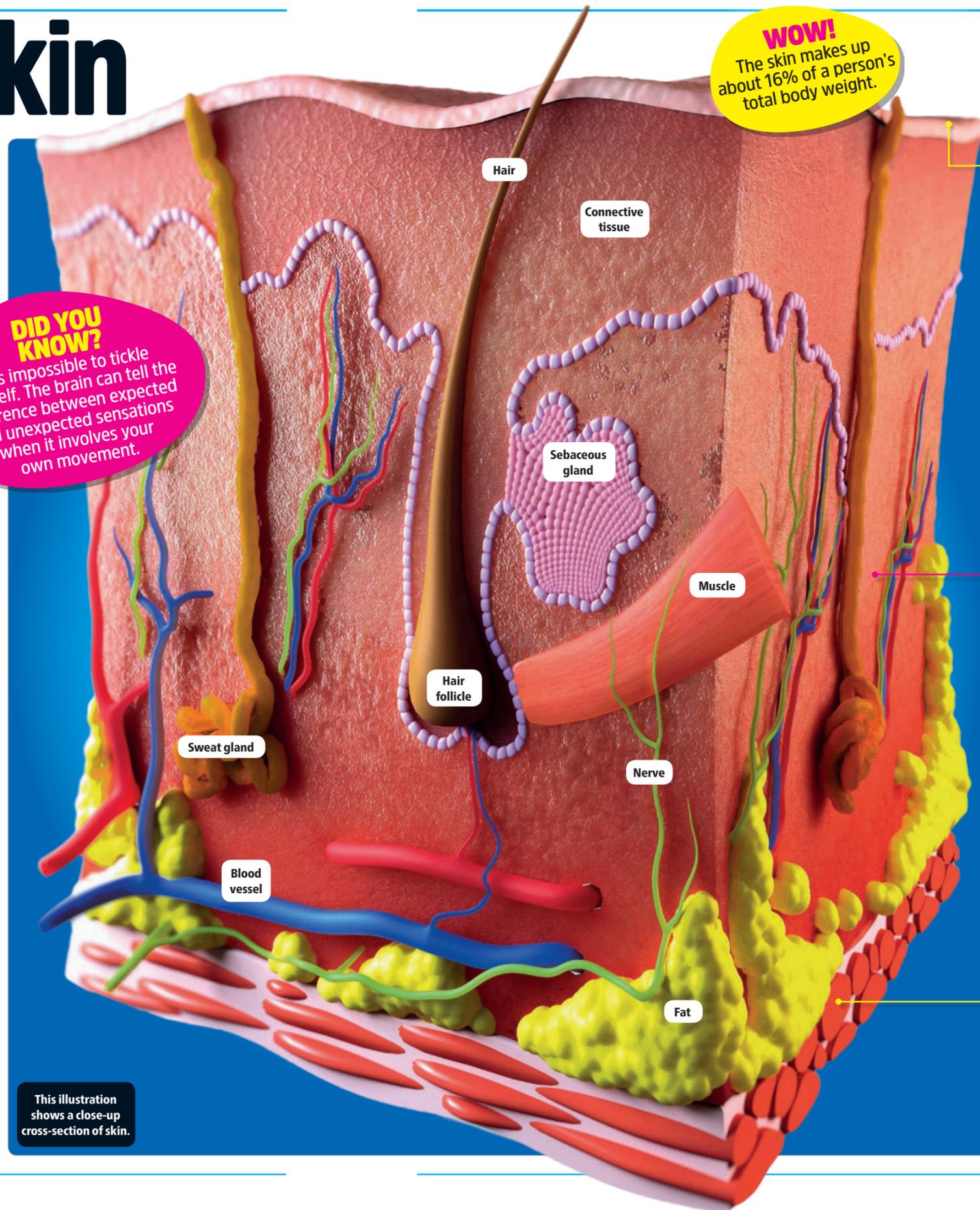
Your skin contains millions of sensory receptors that allow your body to sense and respond to the environment around you. These sensory receptors are made up of nerves that detect changes in pressure, temperature, texture, pain and movement and send information from your body to the sensory cortex in the brain. Here the information is processed and the brain identifies what you feel. The most sensitive areas of skin include lips, tongue and fingertips. This is because the nerves in these parts of the body are closer to the surface of your skin. The skin contains around 45 miles of nerves, which, if laid out in a straight line, would stretch from London to Brighton.

**YUCK!**  
By the time you finish reading this sentence, more than 2,000 dead skin cells will have fallen off you.

## DID YOU KNOW?

It is impossible to tickle yourself. The brain can tell the difference between expected and unexpected sensations when it involves your own movement.

This illustration shows a close-up cross-section of skin.



**WOW!**  
The skin makes up about 16% of a person's total body weight.

## Your skin is made of three layers:

The epidermis (the outer layer), the dermis (middle layer) and subcutis (the bottom layer).

### Epidermis

The epidermis is the outer layer of skin. It acts as a waterproof barrier and protects the insides of your body against extreme temperatures and harmful substances. It is mostly made up of layers of cells called keratinocytes, which are made from a tough body tissue called keratin, which is also found in hair and nails. The epidermis is also formed of melanocyte cells that make melanin. Melanin is the chemical that gives your skin its colour. The more melanin you have in the skin, the darker it will be. Melanin protects the skin from the Sun's harmful ultraviolet rays and absorbs heat. The epidermis is constantly growing; new cells start on the inside of the body and move towards the outer layer of skin. The outer layer then dies and peels off, and is replaced by a new layer every 30 days or so.

### Dermis

Below the epidermis is the dermis. This layer is thicker and contains blood vessels, nerves and connective tissue, which maintains the body's shape and supports the internal organs. The nerves here are sensitive to heat, cold, pain and pressure. The blood vessels help to regulate the body's temperature by expanding or shrinking. When they expand, they allow more warm blood to flow near the surface of the skin, where heat can escape more easily and so cool down the body. This is why you have a red face when you are hot. If it's cold, the blood vessels shrink so the body keeps more heat. The dermis is where hair is formed. Hair follicles are sacs from which hair grows and into which the sebaceous glands open. The sebaceous glands produce oil that protects hair and skin. Sweat is produced in the dermis layer by sweat glands; these release water that travels to the skin's surface to cool the body.

### Subcutis

Below the dermis is the subcutis layer (also known as the hypodermis). It is mostly made up of fat, which supplies nutrients to the epidermis and the dermis above. The fat also helps to insulate the body and keep it warm. The subcutis cushions and protects the rest of the body from knocks and falls.