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Opening extract from

50 Things You Should Know About the Human Body

Written by

Angela Royston

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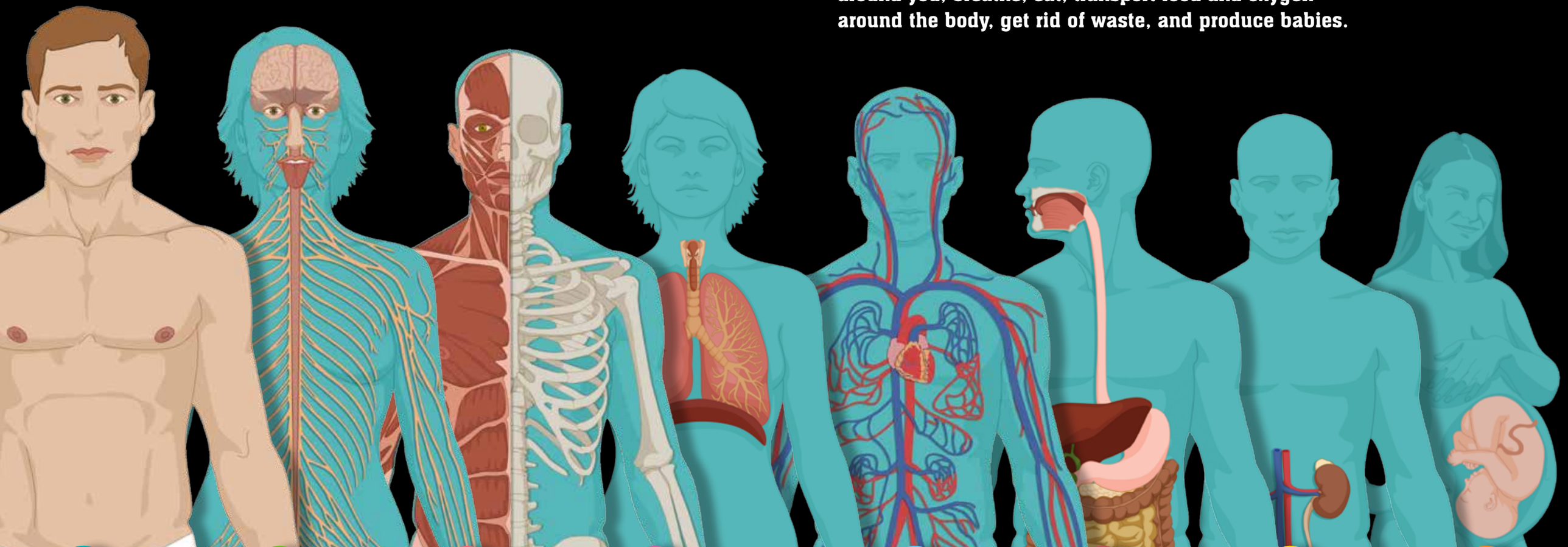
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Introduction

The human body is complicated and incredible! The many parts of the body form a network of systems that work together to keep you alive and active. Different systems allow you to move, be aware of what is happening around you, breathe, eat, transport food and oxygen around the body, get rid of waste, and produce babies.



THE OUTER BODY

Your skin, hair and nails protect your body from the outside world and help to keep it the right temperature.

THE NERVOUS SYSTEM

The nervous system consists of the brain, NERVES and senses. The brain is the body's control centre.

BONES AND MUSCLES

Bones form your skeleton, which supports and protects your ORGANS. Muscles make bones move.

THE BREATHING SYSTEM

Air is brought into your lungs, where oxygen gas moves into your blood.

THE HEART AND BLOOD

The heart, blood and BLOOD VESSELS make up the body's transport system. They carry oxygen, food and waste.

FOOD AND DIGESTION

The digestive system breaks down food into NUTRIENTS that the body can use to stay alive and healthy.

THE URINARY SYSTEM

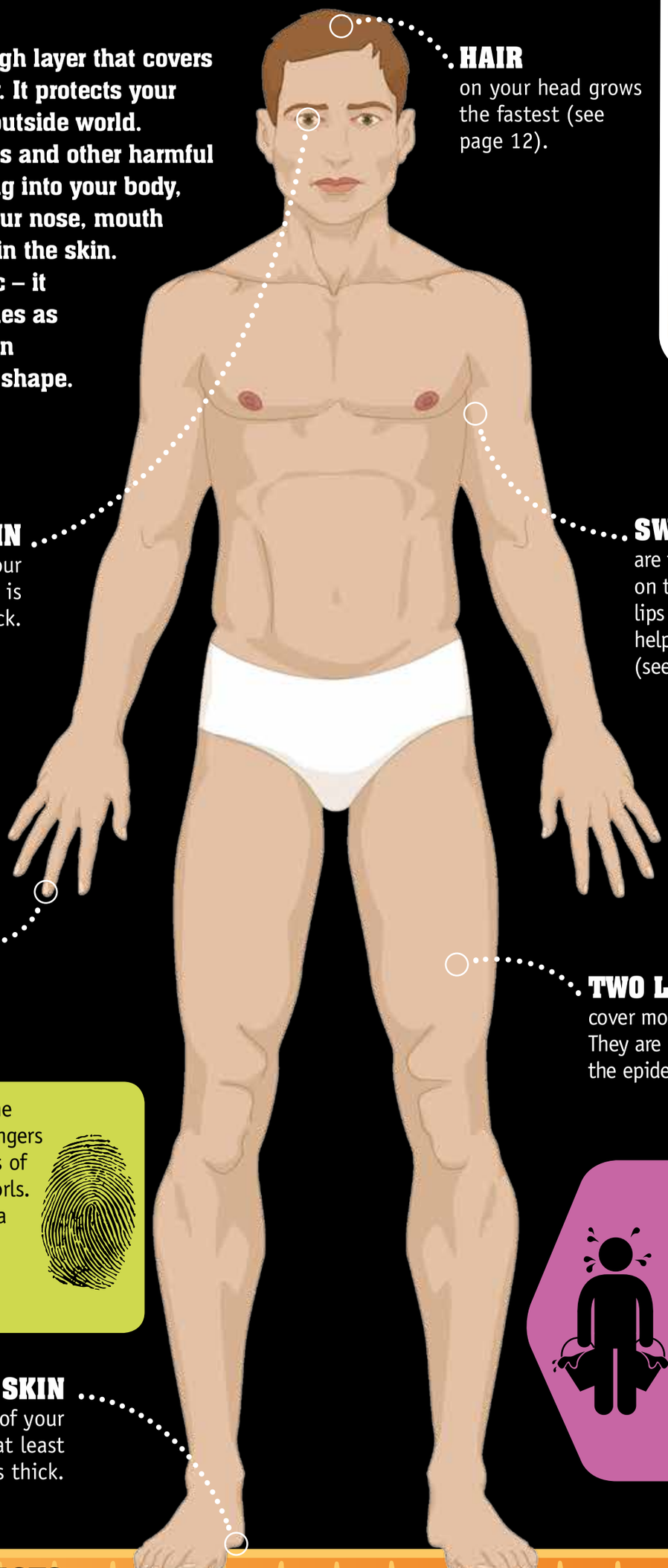
Kidneys separate waste and excess water from blood, making URINE. Urine trickles down to the bladder.

CHANGING BODIES

A baby develops from a single fertilized egg. Your body grows and changes throughout life.

2 THE OUTER BODY

Skin is a thin, tough layer that covers most of your body. It protects your insides from the outside world. It stops dirt, germs and other harmful things from getting into your body, except through your nose, mouth and other breaks in the skin. Skin is like elastic – it bends and stretches as you move and then springs back into shape.



HAIR on your head grows the fastest (see page 12).

THINNEST SKIN is found on your eyelids, where it is 1–2 millimetres thick.

SWEAT GLANDS are found almost everywhere on the body, apart from the lips and ear canal. Sweat helps to keep you cool (see page 11).

NAILS are hard and flat (see page 13).

TWO LAYERS OF SKIN cover most of your body. They are called the dermis and the epidermis (see page 10).

THICKEST SKIN is on the soles of your feet, where it is at least 5 millimetres thick.

WET SUIT

Much of the inside of your body – such as the stomach and lungs – is covered with MUCUS, making it a bit slimy. It needs to stay that way! Skin is watertight to stop the moisture inside your body drying out.



FINGERPRINTS

The skin on the tips of your fingers forms patterns of loops and whorls. Everyone has a unique set of fingerprints.

SWEAT IT OUT

You are not usually aware of sweating unless you are very hot. Nevertheless, your skin has 2,500,000 sweat glands, which release sweat all the time. Sweat is salty because it contains waste chemicals, including salt.

OUTER BODY FACTS

MADE OF KERATIN

Hair, nails and the outer layer of skin all contain KERATIN. This substance also forms animal horns and hooves.

HAIRY SKIN

Women have as many hairs on their body as men – but hairs on men are usually longer and thicker.

NAIL COLOUR

A nail looks pink where it is attached to the skin below it, and white where it is separate.

LOTS OF COLOURS

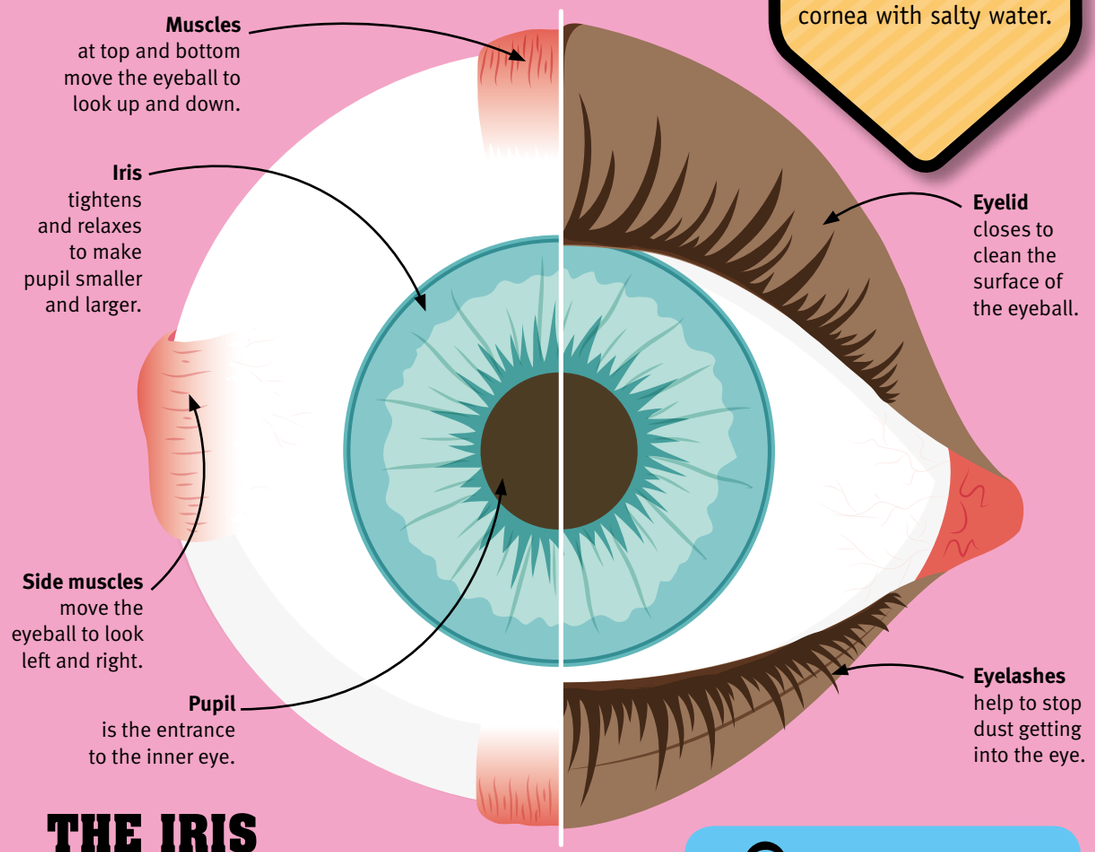
The colours of your hair, eyes and skin depend on the amount of melanin they contain.

Eyes are like a video camera making pictures of what we look at.

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How we see

We see because light enters our eyes. The light goes through the pupils, the dark hole at the centre of each eye. Most of the eye is hidden behind the pupil, but the whole eye is delicate and easily harmed. Much of the outer eye is designed to protect the inner eye.



PROTECTING THE EYE

The eyelids close automatically whenever something comes dangerously close to the eye. The eye's surface is also protected by a transparent shield called the cornea. The cornea needs to be kept moist and this is also the job of the eyelids. Every time you blink, the eyelid washes the cornea with salty water.

THE IRIS

The pupil is surrounded by a coloured ring, called the iris. The iris is a muscle which controls the size of the pupil. In dim light the pupil opens to let in more light, and in bright light it becomes smaller.

You blink automatically every few seconds.

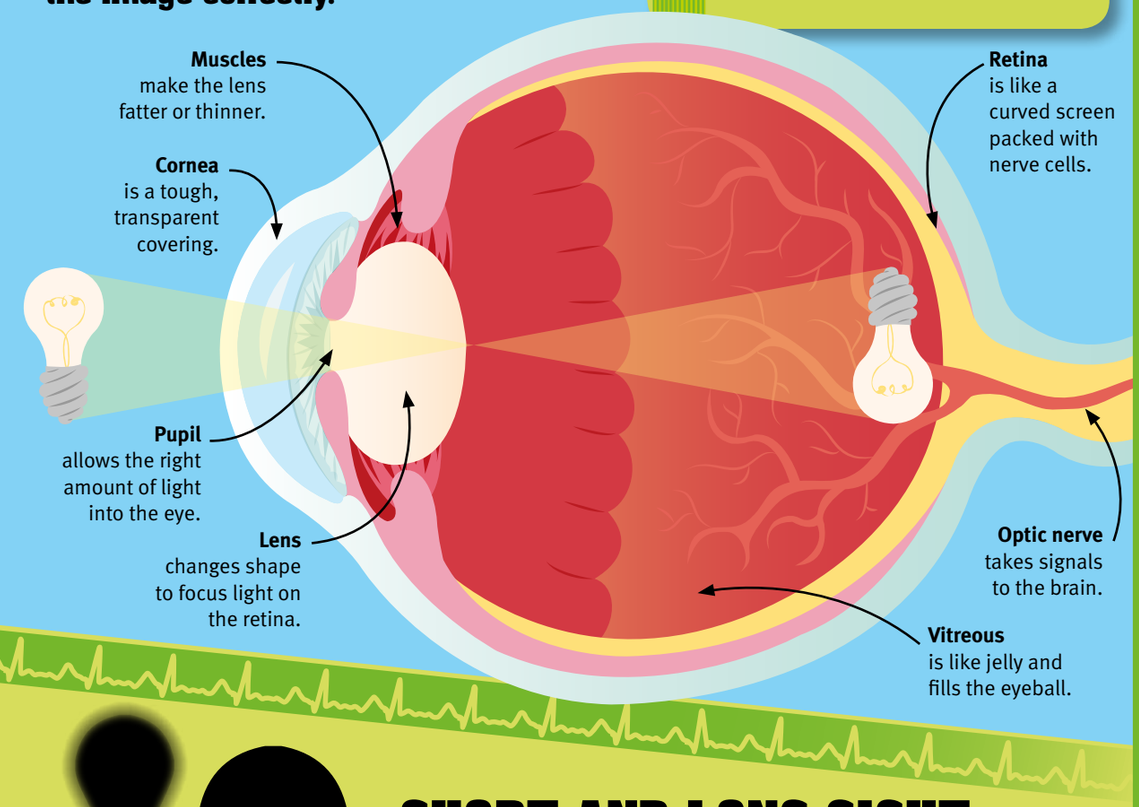
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Seeing clearly

Inside the eye is a lens, which focuses the light to make a picture on a layer at the back of the eyeball called the retina. The picture, however, is upside down! The retina contains nerve cells, which send signals to the brain along the optic nerve. The brain then 'sees' the image correctly.

SEEING COLOUR

The retina contains two types of cells – rods and cones. Rods detect light and dark, while cones detect colour. Cones only work in bright light, so in dim light we rely on the rods, which show things in shades of grey.





SHORT AND LONG SIGHT

Some people need glasses to help their eyes focus the light to give a clear picture on the retina. People with short sight have glasses that make things far away look clearer. People with long sight have glasses that make things close to them look clear.

The retina contains about 126 million cells that react to light.