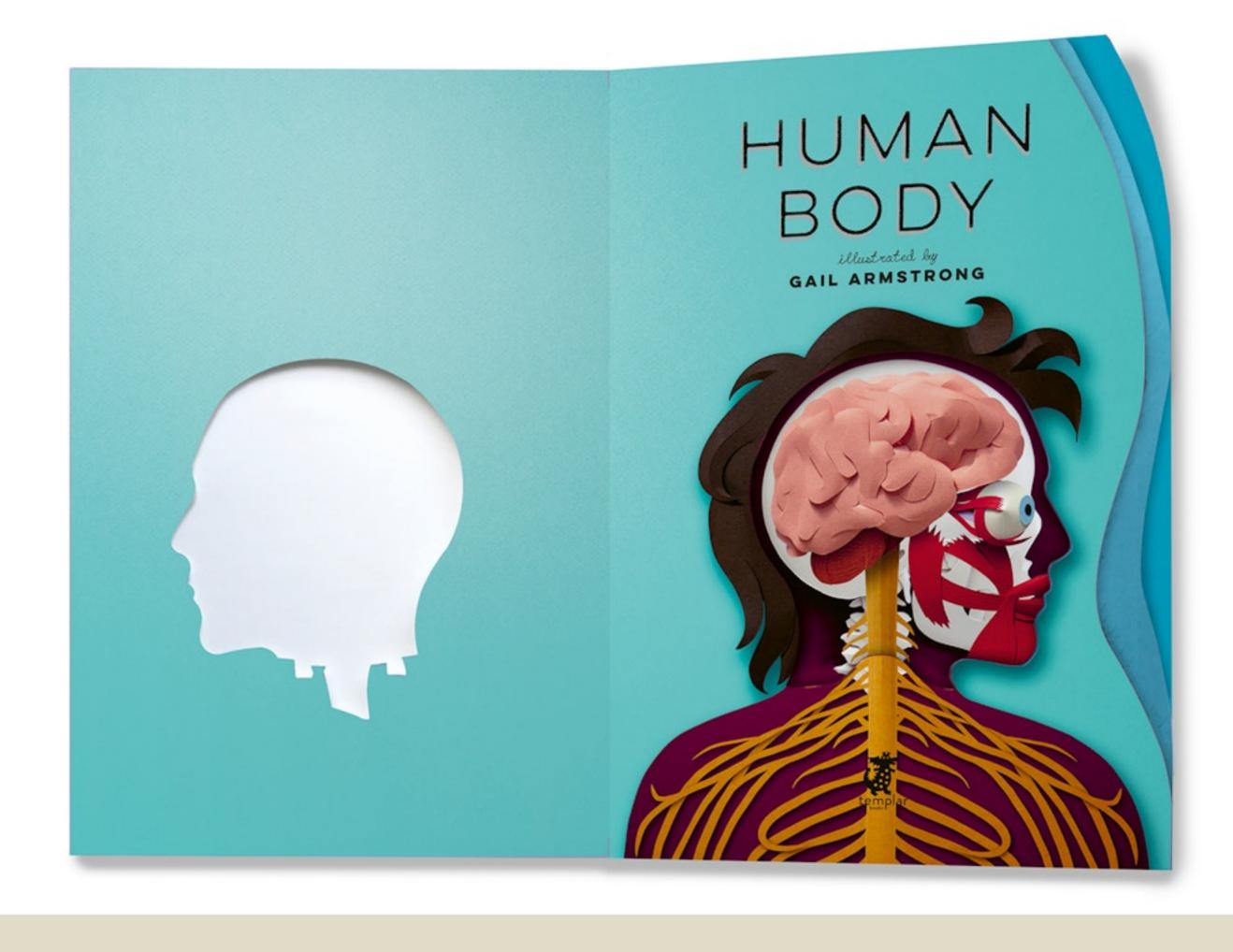


HUMAN BODY

Take a closer look at the body – with 40 flaps to lift!



illustrated by
GAIL ARMSTRONG



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Your body is incredible. It works right round the clock to keep you going. Even when you're fast asleep, your body is busy growing, breathing, pumping blood and finishing off that last meal you ate.

Inside this book you can turn the pages and lift the flaps to explore all the organs of the human body, revealing layer after layer of incredible facts.





ORGANS SYSTEMS

The human body is made up of many different parts, all working together to keep you moving, breathing and thinking. At any point during the day or night, it has dozens of jobs to perform. Each job is operated by a different system: a group

of body parts linked up like parts of a production line.

The very smallest parts of the

body are cells - these are the basic building blocks of all living

things. Cells of a similar type group together to make tissues,

such as muscle tissue. And tissues group together to form organs, such as the heart, lungs and brain.

A system is made of tissues and

organs linked together.

Water everywhere

About 70 per cent of the human body is water. That's why it's so important that you drink plenty of water to keep hydrated!

What is an organ? An organ is part of the body that does a particular job. For example, your heart pumps blood around the body.

Biggest organ Incredibly, the largest organ in the body is the skin. An adult's skin weighs about 3.5kg and would be more than 2 square metres if you spread it out.

How many systems?

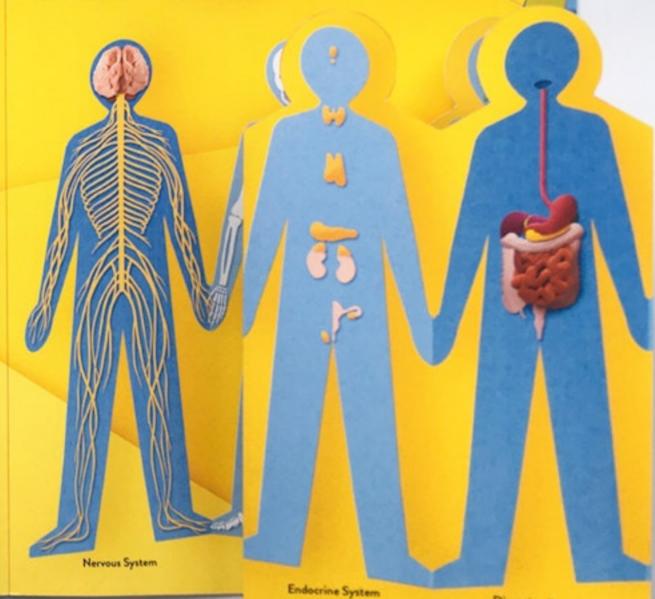
There are many different systems in the body - just open the paper chain to see! Each one is made up of organs and tissues. For example, the nervous system consists of nerves (tissues) all linking up to the brain (an organ).

Every part of your body is made up of tiny building blocks called cells. They are too small to see with the naked eye. But if you were to look at one under the microscope, you would see they all have different shapes, depending on the job they do. Here is a typical human cell, along with its most important parts.

A unique wonder!

We all have the same basic body parts, but every person on this planet is totally unique – inside and out! That's because everyone has a unique set of genes (except for identical twins). And every individual has their own very very different experiencess as they grow up.

Digestive System













DIGESTIVE feel president the body with all the energy it needs feet process are some on our enough in new a support of the said and bashing that first it has to be had been by by the car to should into to bioricant. To procee takes picce in the sale pringer that make up the dispersive spotters. all safegines in journey in the mouth. Here, it since of cubelly be been, costed in slavy also religible towards the back of the mouth. The beam for Species track and begins its This hard, yellowish layer makes up most of the tooth. increased to correct The pink gums make a seal around the teeth. The root of each tooth goes down into the gum line.

Nerves and blood vessels flow in and out of each tooth

しんかいいんのいっついっついっつののしゃっこ

The crown The crown

of the tooth is

the part you can see above

the gums.

Gums



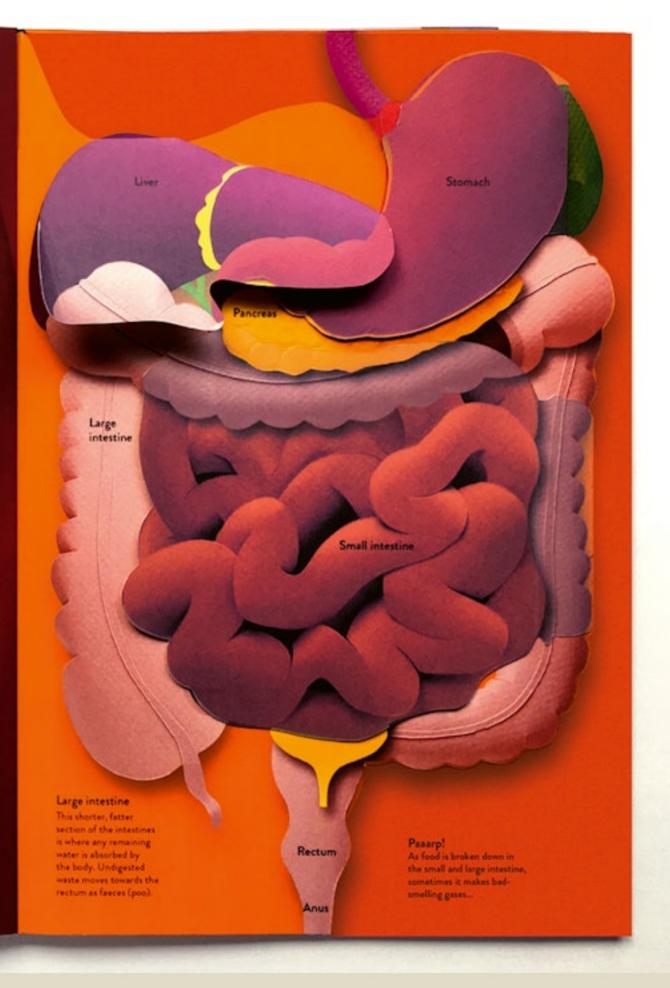
DIGESTIVE

Most of the digestive organs are held in the abdomen, or helly - all folded to fit beside each other. Some organs break food down physically, by squashing and mixing it like a blender. Others produce special chemicals called enzymes, which break down food chemically.

Together they turn the meal you are into a soupy mixture of water and tiny molecules that the body can absorb into its bloodstream. Most of these are absorbed in the small intestine, where around 90 per cent of digestion takes place. Any waste or toxins not absorbed then pass through the body to become facces (poo).



How long?
Stretch out the digestive organs and they are almost 9 metres long. That's about the length of a bus





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Priore long?
Security and the digestion regard and they are above 9 metrics long. That's about the longth of a box

Liver

The liver processes nutrients, filtering toxes (posoons) from the blood. It also makes a yellowish-green liquid called bile, which helps to break down proteins, carbohydrates and fets in our food.

Colorador.

Gall bladde

food is thoroughly mixed. The stomach's wall is stretchy anough to expand if you est a big mas! Pancreas

This organ makes entrymes, which break down sugars and fats so they can pass into the bloodstream.

Large intestine

Kidneys

Once depetion has taken place, these two learn-shaped organs filter the blood, removing wester and turning them into unine. They also produce important chemicals called hormones. Unine is stored in the bloody. The kidneys are part of the uninery system.

Small intestine

After it has left the stomach, food enters the small intestine. Despite its name, it is actually formed of around 5 metres of narrow, looping tubes.

Stemach
The stomach is a stretchy, muscular bag misers food in mushed and churmed. It contains a mix of stomach saids, which kill bacteria, and anymes, which break food down. Layers of muscles in the stomach's walls work in different directions to ansure

Thy finger-like projections called will make the intestines' surface area even larger. Nativents and water pass through the vill's lining to blood vessels that then carry them away.



Bladder

Large intestine

This sharter, fatter section of the intestimes is where any remaining mater is absorbed by the body. Undigested waste moves sowerfather rectum as fances (post).

Rectum

Pasarp!
As food is broken down in the small and large intectine, sometimes it makes had-smalling gates...



THE SENSES

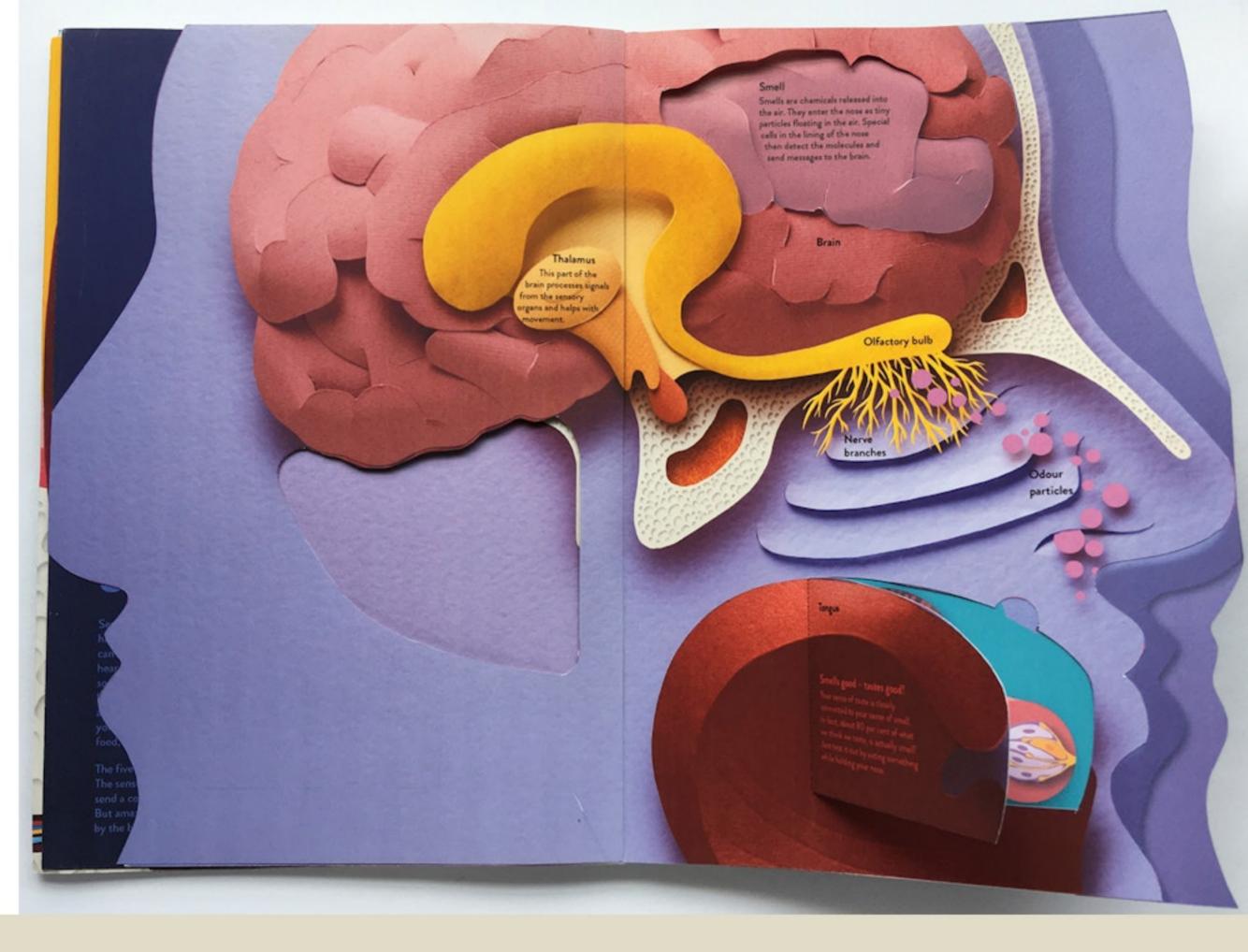
Senses are the body's way of understanding what's happening in the world around us. They mean you can smell a beautiful flower, taste a delicious meal, hear music, see where you're walking and tell whether something is hard or soft. More importantly, the senses keep us safe. If you hear or see danger, you know to run away from it. If you touch something sharp, you can pull your hand away before it cuts you. And if you smell bad food, you know not to eat it!

The five main senses are sight, hearing, touch, taste and smell. The sensory organs of the eyes, ears, nose, tongue and skin send a constant flow of information to the brain for processing. But amazingly, around two-thirds of the information processed by the brain comes from the eyes alone!





Extraocular muscles Seven muscles attach to the eye and eyelid. They control their movement, eyend. They control their movement, swireling your eyes up and down and side to side. Your eye lide blink to keep the eye clean and moist and protect it At the front of the eye are the parts you can see if you look in a mirror: the white sclera, the coloured iris and the dark pupil. A transparent dome called the from bright light. carnea sits over the iris and pupil and focuses light as it enters the eye. Smuscles that of light How we see Light passes into eye through the pupil (1). The lens focuses it (2) and projects an upcide-down image onto the retina at the back of the eye (3). Light-detecting cells send messages down the optic nerve (4) to the brain, and the brain flips the image back to the right way around. THE SENSES Tongue Senses are the body's way of understanding what's happening in the world around us. They mean you keep us safe. If you hear or see danger, you know to run away from it. If you touch something sharp, you can pull your hand away before it cuts you. And if you smell bad food, you know not to eat it!





The brain is the control centre for the whole human body. It works round the clock, receiving signals and sending messages, and is responsible for every single thing you do, from walking and talking, down to digesting food and making the heart pump. The largest part of the brain is the wrinkled cerebrum, where all thoughts take place. It is divided into different areas, which control different functions.

Messages from the brain are sent to the rest of the body via the nervous system – a vast network that stretches through the body like electric cables. Billions of messages travel through the system every second, moving as tiny pulses of electricity.

Cerebrum

The large wrinkly part of the brain is where all conscious thoughts take place: about movement, speaking, and feelings. It is wrinkled so that your big brain can fit inside your small skull. If you laid it out, it would be as big as a newspaper!

Spinal cord

The spinal cord is like a telephone wire that messages travel along between the brain and the rest of the body. It runs all the way down the back, protected by the bones of the spine. Together the brain and spinal cord form the central nervous system.

This part of the brain controls the movement of your muscles.

Brainstem

Brainstem This links the brain

to the spinal cord.

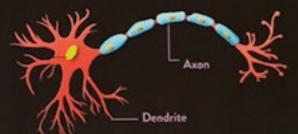
It controls automatic processes, including breathing and digestion, which the body does

without you having to think about them.

Spinal cord

Nerv

The nervous system is made up of billions of nerve cells, called neurons. They look a bit like an octopus, with one long 'arm' called the axon that carries outgoing signals, and several smaller arms called dendrites, that carry incoming signals. Each neuron can carry about 500 signals a second.





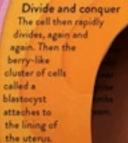




GROWTH OF A BABY

Eggs and sperm contain all the information needed to grow a whole new life. The joined cells divide over and over again to make a ball-shaped clump, which fixes itself to the walls of the womb. The growing baby is now known as an embryo. By the time it is eight weeks old, it has all of its main body parts and looks like a tiny person. For the next seven months, it grows quickly and is known as a foetus.

A growing baby takes everything it needs from its mother, receiving nutrients and oxygen through the placents. After 40 weeks of pregnancy, the mother gives birth. The walls of the uterus contract and the baby is pushed out. It is entirely dependent on its mother for warmth, food and care.





Checking in After about 6 weeks, a haby's heart can usually e detected. Doctors and midwives regularly check the heartbeat to monitor the health of



Trimesters Pregnancy usually lasts for 9 months, sometimes divided into three periods called 'trimesters'. The first trimester is when all of the baby's main organs and limbs grow.



Growing up

A human grows more in the first year

babies are dependent on their parents

for everything. They can only eat milk,

and only communicate by crying-



Pregnancy A woman's body goes through many changes during pregnancy. Her breasts will swell, in preparation for feeding the beby with milk after birth. Her hips will slightly relax and widen to allow the passage of the baby during birth. She may also find things smell or taste different. Some women experience cravings for unusual foods!





On the move By the time they are 6-9 months, most By a year, some habits will be taking of life than at any other time. Newborn babies can crawl or roll. They will start to their first steps. They will be able to say eat some solids. They will also be making words like 'mama' and 'dada and use some noises to communicate, and will recognise different adults.



simple gestures, such as waving goodbye.

GLOSSARY

Artery

A blood vessel that takes blood away from the heart.

Carbon dioxide

A waste gas made by the body as a result of respiration.

Cartilage

A strong, flexible tissue that covers the end of bones and makes up some body parts, such as the nose.

Cell

The basic building-block of all life. Cells make up all the tissues in the body.

Gene

A set of instructions which tell each cell how they should be built. Genes are passed down from parents to children, and determine some characteristics, such as eye and hair colour.

Gland

An organ that makes a substance the body needs, such as sweat or tears.

Hormone

A chemical messenger carried in the blood.

Ligament

A strong, flexible band that connects two bones together at a joint.

Neuron

An individual nerve cell. A bundle of neurons is known as a nerve.

Organ

A working part such as the heart, brain or lungs, made up of different tissues all working to perform one task in the body. Groups of organs are called systems.

Oxygen

A gas present in the air, and vital to human life.

Pulse

The rhythmic throbbing of blood vessels as blood from the heart is pushed through them.

Respiration

The process of bringing oxygen into the body and releasing carbon dioxide.

Saliva

A watery liquid made by glands in the mouth. It makes food easier to swallow and starts the process of digestion.

Tendor

A strong cord attaching a muscle to a bone.

Valv

A door-like mechanism inside the heart and in larger veins, which shuts to stop blood flowing backwards.

Vein

A blood vessel that carries blood towards the heart.

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