DOWN THE HATCH!

MUSH IT UP!

Your digestive system begins with your mouth, which is a grinding, drooling and mushing machine. It transforms your food from crunchy or chewy morsels into a soft, gloopy mess, ready to be swallowed. To do this, all the parts of your mouth work together.

Your teeth crush and break up food into tiny bits.

Your mouth releases saliva, or spit, which mixes with the food, softens it and starts to **dissolve** it.

Salivary gland

Tongue

Epiglottis

Throat

To swallow your food, muscles in your throat squeeze the food balls into the oesophagus, which leads to the stomach.

Oesophagus

Windpipe

Food ball

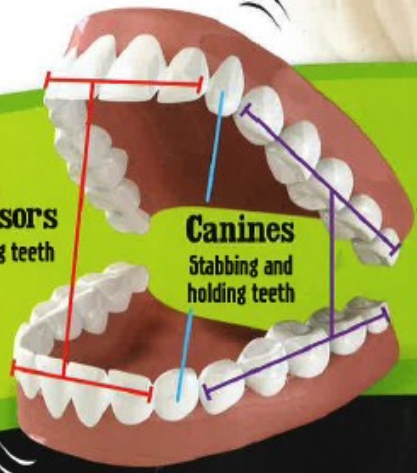
Your tongue moves food around to make sure that every bit gets properly chewed. Then it rolls lumps of food into balls and pushes them to the back of your mouth.

SLOBBERY MOUTH

We think of saliva as something quite disgusting, but it's incredibly useful stuff. Besides making food soft and mushy, it contains germ-killing chemicals. It is also very slippery, and helps food to slide down your throat. Every day, the saliva glands in your mouth gush out about one LITRE of the stuff – enough to fill a large juice carton!

Babies often dribble lots of saliva, but when you're older this is considered very rude!

OPEN WIDE!



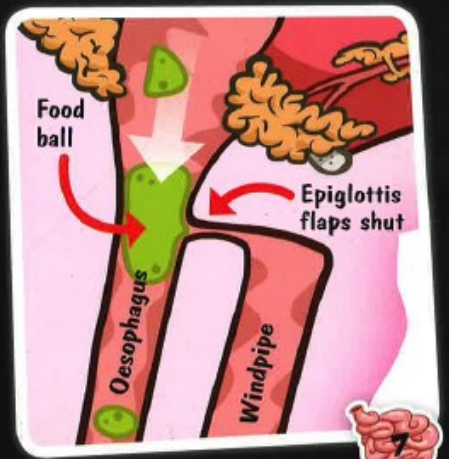
Incisors
Cutting teeth

Canines
Stabbing and holding teeth

Molars and pre-molars
Grinding and chewing teeth

CHOKING

Food or liquid sometimes 'goes down the wrong way'. This happens because your oesophagus is right next to your windpipe, the tube you use to breathe air. Normally, when you swallow, a flap called the epiglottis closes off the top of the windpipe. But if you try to eat while breathing in, or while laughing, food can slip down your windpipe by accident. If this happens, it makes you choke so that you cough the food back up.



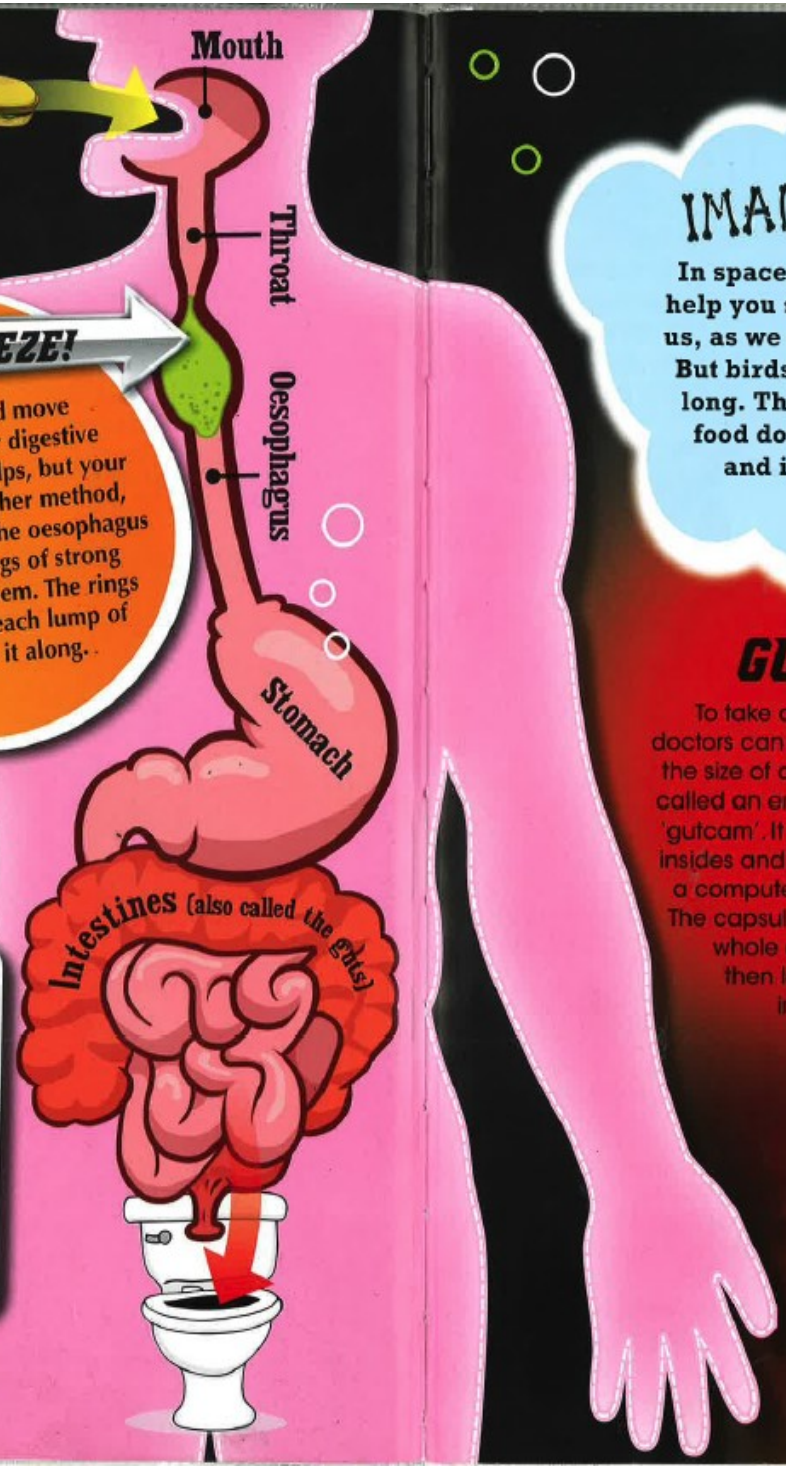
WHAT ARE GUTS FOR?

Have you ever thought about exactly what happens to your food? When you munch a mouthful of pizza or slurp on an ice cream, it's just the start of an amazing journey.

Whatever you eat is squeezed through a long series of tubes, chambers and narrow gaps that lead all the way through your body. Together, they are called the **digestive system.**

Food processing

Along the route, food gets squished and mashed until it has been **digested**. This means that it is broken down into the different chemicals your body needs. Your digestive system soaks up the chemicals and sends them around your body. They might be used to give you energy for moving around, to heal cuts and scrapes, to keep you warm or to do any of thousands of other jobs.



SQUEE-EEZE!

How does food move along inside your digestive system? Gravity helps, but your body also has another method, called 'peristalsis'. The oesophagus and guts have rings of strong **muscle** around them. The rings squeeze behind each lump of food to push it along.

IMAGINE THIS...

In space, there is no gravity to help you swallow. That's fine for us, as we can rely on peristalsis. But birds would not survive for long. They need gravity to get food down their oesophagus and into their stomach.

GUTCAM

To take a look at your guts, doctors can give you a tiny device the size of a pill to swallow. This is called an endoscopic capsule, or 'gutcam'. It takes pictures of your insides and beams them back to a computer outside your body. The capsule travels through the whole digestive system, then leaves the body in your poo.

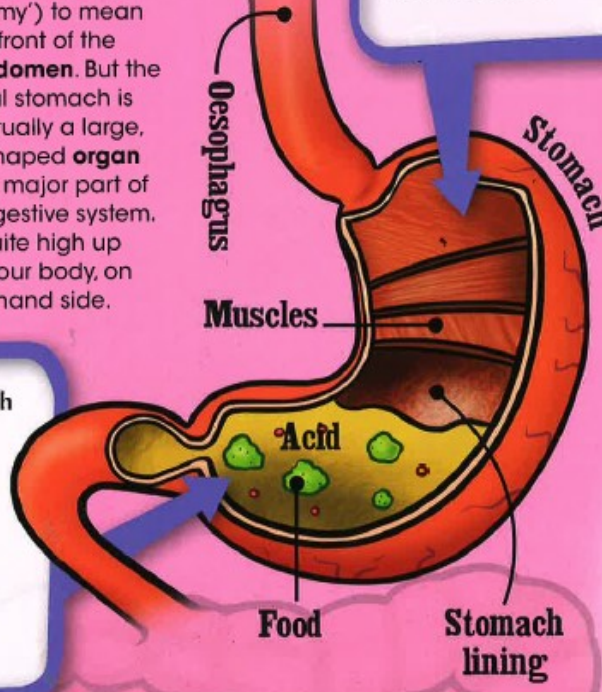
Endoscopic capsule travelling through the intestine.

THE STRETCHY, SQUISHY STOMACH

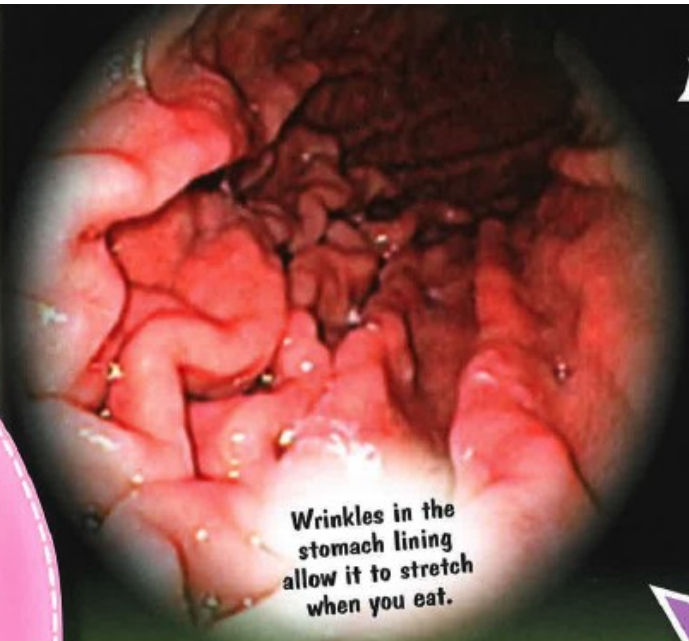
When food reaches the bottom of your oesophagus, it moves into your stomach.

People often use the word 'stomach' (or 'tummy') to mean the front of the **abdomen**. But the real stomach is actually a large, bag-shaped **organ** that's a major part of your digestive system. It sits quite high up inside your body, on the left-hand side.

Strong muscles squeeze, churn and roll food around. This helps to mix it with the juices made in the stomach.



The juices in the stomach contain strong acid – a type of chemical that is good at dissolving other substances. As chunks and lumps of food sit in the acid, they gradually dissolve and turn into a liquid.



Wrinkles in the stomach lining allow it to stretch when you eat.

FULL UP!

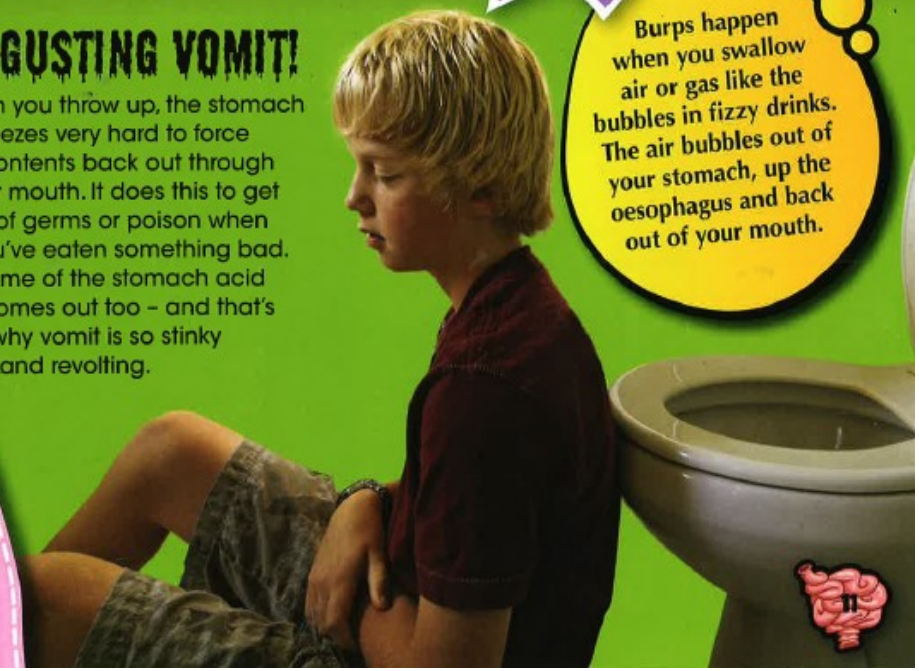
When you've just eaten a massive meal, how do you still have space for pudding? The answer is that the stomach is super-stretchy. It gets bigger as you stuff more food into it. The wrinkles in the lining of the stomach can stretch out, which allows it to expand from the size of a fist when empty to bigger than a melon when completely full.

BUUURP!

Burps happen when you swallow air or gas like the bubbles in fizzy drinks. The air bubbles out of your stomach, up the oesophagus and back out of your mouth.

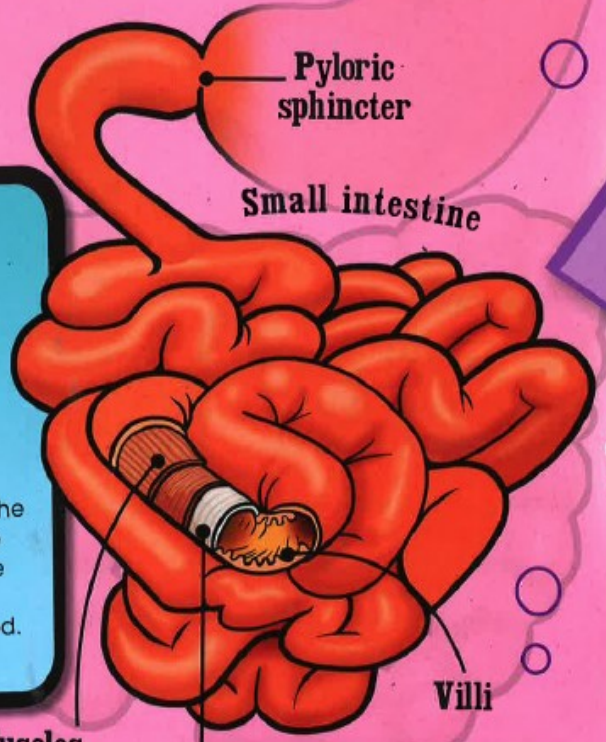
DISGUSTING VOMIT!

When you throw up, the stomach squeezes very hard to force its contents back out through your mouth. It does this to get rid of germs or poison when you've eaten something bad. Some of the stomach acid comes out too – and that's why vomit is so stinky and revolting.



THE SMALL INTESTINE

At the bottom end of your stomach is a narrow ring of muscle called the pyloric sphincter. Once food in the stomach has been turned into a mushy liquid, it squirts through this sphincter, and on to the next stage of its journey – your small intestine.



What's it for?

The small intestine is one of the most important parts of the digestive system. It contains substances called **enzymes** that break food down into useful **nutrients**, or food chemicals. As the nutrients flow along the small intestine, they are soaked up through its walls and into the blood.

FOOD FINGERS

The small intestine is lined with millions of tiny finger shapes, called villi. Nutrients pass through the thin walls of the villi into **blood vessels** inside them. The blood carries the nutrients around the body to the places where they are needed.

LONG AND LOOPY

The 'small' intestine is a strange name for this body part, as it's actually very long. It's a narrow tube about 3 cm wide, but in a typical adult, it measures around 6 m in length. The small intestine has to be long to give it enough time to do its job. By the time food finally gets to the end, most of the useful nutrients in it have been digested. If the small intestine were shorter, it wouldn't have time to catch all the nutrients.

To fit inside your body, the small intestine is coiled up into a series of folds and loops, as shown in this X-ray.

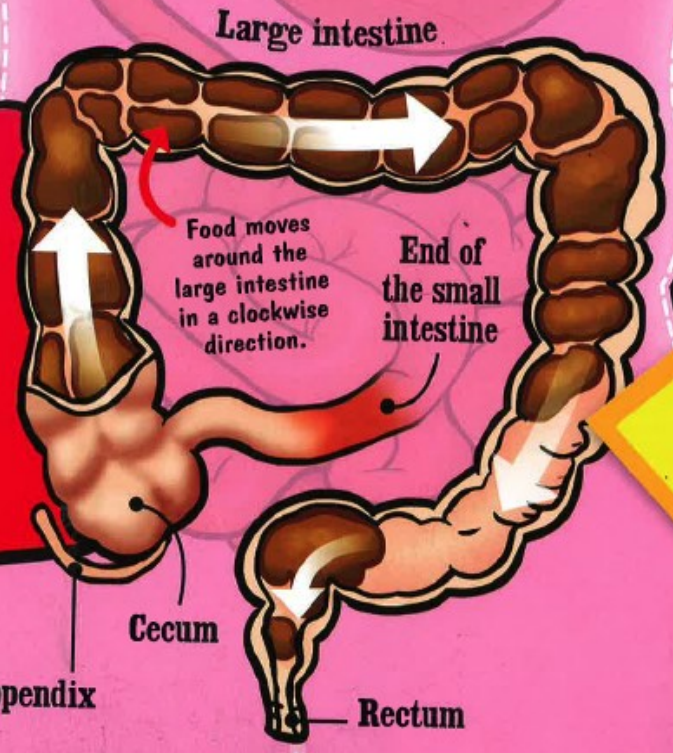
IMAGINE THIS...

A typical adult has about 4 million villi in their small intestine. The villi stick out, and this increases the surface area inside the intestine. If the whole surface could be flattened out, it would be the size of a tennis court!

THE LARGE INTESTINE

Your large intestine follows on from your small intestine. It's much shorter than the small intestine, but also wider and chunkier, which is why it's called the 'large' intestine.

The large intestine loops around the abdomen, surrounding the neatly coiled-up small intestine. It looks like a big, brown lumpy sausage.



What's it made of?

The large intestine is basically a big, rubbery tube of muscle. It has a slippery lining on the inside that allows food to move smoothly through it.

The worm-shaped appendix sticks out from the cecum at the start of the large intestine.

STORAGE AREA

Near the start of the large intestine is a strange little finger-sized tube called the appendix. Scientists once thought the appendix had no use. They now think it might be a storage place for helpful **bacteria** and chemicals that help the body to fight diseases.

THE LARGE INTESTINE'S JOB

Food sludge squeezes into the large intestine from the small intestine. The large intestine sucks water out of it, along with some salty chemicals, and carries them away into your blood. This is a slow job, and food spends 12 hours or more trundling through the large intestine.

LUMPY LEFTOVERS

The large intestine collects leftover food that your body can't digest – such as vegetable skins, seeds and pips. This is called dietary fibre. Your body can't break it down to use, but it's still important as it sweeps through your guts and keeps them clean. As the leftovers dry, they form into solid lumps – your poo!