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choosing books easy and fun

opening extract from

The Icky, Sticky Snot and Blood Book

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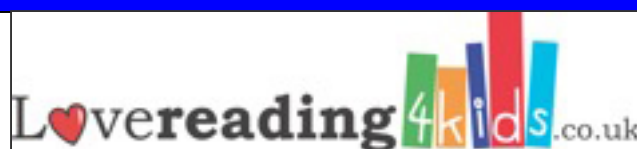
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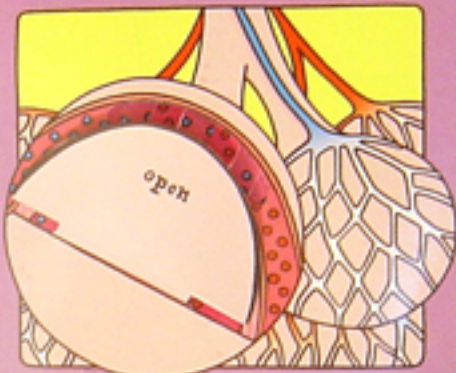
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please print off and read at your leisure.





Breathtaking
Mega-inflating
Lungs!



Oxygen for Energy

The air that has been warmed by your nose passes down your windpipe (trachea) and into your lungs. It spreads through all the branches of airways until it reaches the tiny bags (alveoli) at the ends. Here, the oxygen in the air dissolves in the thin layer of moisture that coats the inside of the alveoli. Once it is dissolved, it passes through the walls of the alveoli into the many tiny blood vessels on the other side. As oxygen moves one way, carbon dioxide moves from the blood into the alveoli – and out in your breath.

FOUL FACT

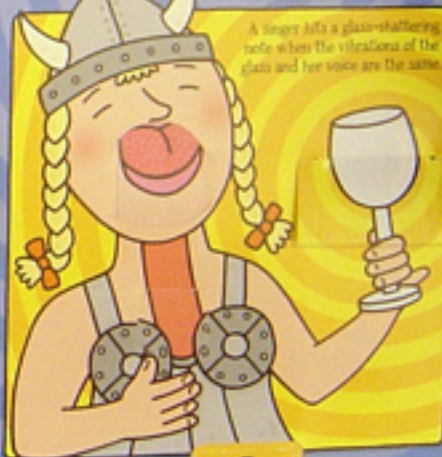
Cigarette smoke contains around 4000 different chemicals, 69 of which can cause cancer. Some of them are radioactive!



GUESS THE
GROSS
CLOSE-UP

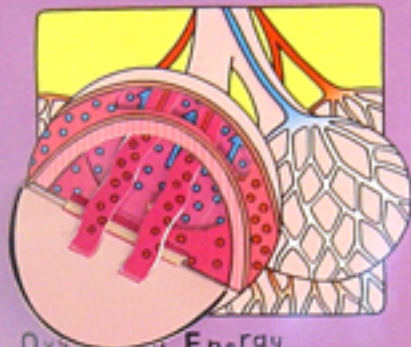
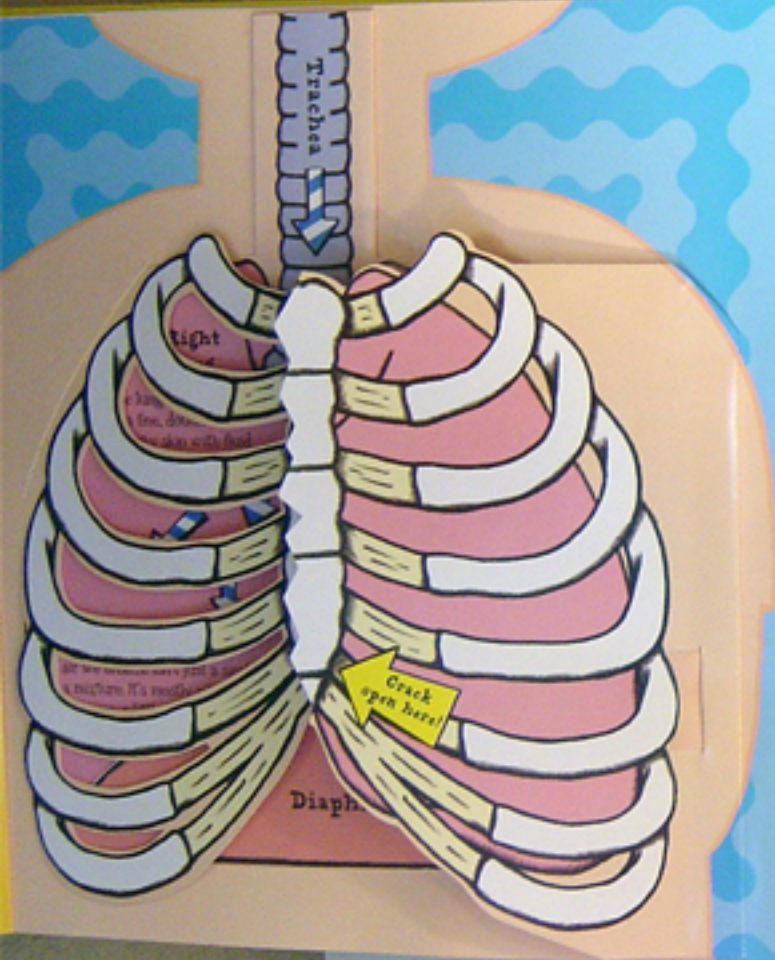
Shout ALOUD!

You have two strong string-like pieces of skin at the base of your voice box (larynx). These are your **vocal cords** which allow you to make sounds. When you speak or make a noise you use the passing air to make them vibrate. The speed of vibration is changed if the cords are pulled or lengthened.



A singer hits a glass-shattering note when the vibrations of the glass and her voice are the same.





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The black holes are spots of pollution in a lung. The lungs have not been able to remove all the smoke and bad air that have been breathed in. This damage inside the lung is incurable.

Respiration

People often use the words respiration and breathing as if they mean the same thing. In fact, respiration is the name for the chemical reaction that turns the glucose from digested food and oxygen into energy. And breathing is well, moving air in and out of your lungs!

The food we eat and...



It's a Wheeze!

Asthma is an allergic reaction to a lot of things – even exercise can be a trigger that makes the airways tight and narrow. Their lining becomes inflamed and swells. This makes it very difficult to breathe but can be helped by inhalers and special medicines.

Hic!



The diaphragm is a flat muscle under your lungs – sometimes it twitches. When this happens, air rushes into your lungs, making the epiglottis pop. That's a hiccup!

Bloody Bits!

Pulse – feeling the heartbeat in the artery.

...eady seen, your ... from your lungs ... And

of your body, from your head to the tips of your toes. To get the oxygen-rich blood to these far-flung places, you have a network of pipes – blood vessels – throughout your body. Some of these pipes – the arteries – deliver blood with oxygen from your lungs. Some of them – the veins – bring blood back for more oxygen. And the tiniest pipes – the capillaries – make sure it gets to every cell.

OPEN



Uphill Struggle

It's important that blood flows the right way – out to your organs when it is fresh and full of oxygen, then back to the lungs when it has done its job and needs to lose carbon dioxide. Gravity is trying to make it all run down to your feet, so to keep this circular, one-way system going, your blood vessels have valves. As long as blood is pumped the right way, the valves stay open. If it tries to flow the wrong way, the valves are forced shut.



Blood and Bones!

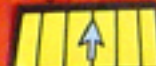
The cells in your blood are made in your bone marrow, marrow is the stuff that fills the spaces inside your bones. When you are young, almost every bone in your body makes blood cells. When you get older, it's made only in the long bones, like those in your legs. After about 120 days, your red blood cells get old and worn out. They have to be replaced by the new ones that are constantly being made.



GUESS THE GROSS CLOSE-UP

Not My Type!

If you have a bad accident and lose lots of blood, somebody else's blood can be used to top you back up. This is called a transfusion. It's important to use the right type for you because your red blood cells recognize only the ones belonging to the same group and reject any other. There are four blood groups – A, B, AB and O. Do you know which one is your type?



One drop of blood is made up of...

Vile Blood!

Just over half (54%) of your blood is plasma. The rest is almost all red blood cells, white blood cells and platelets, although incredibly important, are much smaller and rarer, so take up hardly any space. Finally, there are also tiny amounts of protein, fat and glucose.

Bits!

ve already seen, you get oxygen from your lungs and energy. And your body... head to the tips of your toes. To get the oxygen from the lungs to the far-flung places of your body, you have a network of pipes — blood vessels — throughout your body. Some of these pipes — the arteries — deliver blood with oxygen from your lungs. Some of them — the veins — bring blood back for more oxygen. And the smallest pipes — the capillaries — make sure it gets to every cell.



ows the right way — out to your organs when it is fresh and the lungs when it has done its job and needs to lose carbon dioxide. It all runs down to your feet, so to keep this circular, one-way system going, blood vessels have **valves**. As long as blood is pumped the right way, it tries to flow the wrong way, the valves are forced shut.

COOL FACT

You pulled all the blood vessels apart, they stretch to 100 times their original length.

Blood and Bones!

The cells in your blood are made in your bone marrow, marrow is the stuff that fills the spaces inside your bones. When you are young, almost every bone in your body makes blood cells. When you get older, it's made only in the long bones, like those in your legs. After about 120 days, your red blood cells get old and worn out. They have to be replaced by the new ones that are constantly being made.



The orange splotch is a weakened bacterium from a vaccination that has been absorbed and killed by a white blood cell, here coloured pink so that you can see it! The immune system now knows to kill any similar bacteria.



Capillaries, the smallest blood vessels, are tiny and easily broken. If you get a bump, they can burst and release blood just under your skin.

This becomes a bruise. Chemicals are released to clear away the blood and they make the bruise go from purple through green to yellow.

about a to get dy in That's part of a cover after to

prevent dirt and bugs getting through the hole in your skin. Antiseptic cream can kill any germs that do get in.



Why do we bleed?



Here, Pus!

Blood might just look red and runny, but it's actually a very clever mixture of cells and chemicals. The red blood cells give it colour, but there are also a bunch of hard-working cells. White blood cells protect your body when things go wrong. There are several different types. Some clear away rubbish like dead or damaged cells and germs. Others recognize things that shouldn't be in your body, like bacteria and viruses. These white cells gather to destroy the invaders. Lots of dead white cells and bacteria together form a creamy goo called **pus**.



Red Blood Cells

These red cells carry oxygen to your organs and take carbon dioxide away. They are the most numerous cells in your blood.

Platelets

Platelets are a bit like red blood cells, but they don't carry oxygen. Instead, when they come across a wound, they stick together to form a clot and stop the bleeding.

Plasma

Plasma is the liquid part of your blood. It carries the red and white blood cells and the nutrients they need to stay healthy. It also carries away waste products.