

### The Intestines

Anything that passes through the frog's stomach will first go through the small intestine. This is where digestion really gets underway. Food here is broken down in a very similar way to how it takes place in mammals. Enzymes begin to break the food down into nutrients that the body can absorb and use. The food will pass through into the large intestine and then once all the nutrients have been removed the waste passes out of the body. In frogs solid and liquid waste is passed out at the same place – the cloacal vent.

The other main digestive glands, the liver, pancreas and gall bladder are attached to the intestines by ducts.

### The Liver

You can see that the model frog has a very big liver, in fact it is the largest organ in a frog. Attached to it is a smaller green "ball". This is the gall bladder.

The liver plays an important part in the digestion process of a frog. It produces the liquid that breaks down the food that a frog eats. The gall bladder is where this liquid is stored.

### The Kidneys

The kidneys are where the frog's blood gets cleaned. All the waste substances in the blood are filtered out in the kidneys and then passed out of the frog's body. The kidneys also balance lots of other things in the blood such as the levels of water and minerals.

### Bladder

The bladder is a membranous sac that serves as the receptacle for liquid waste before it is passed through the cloaca.

### Fat bodies

The remaining two removable parts of your model are both fat bodies. Like in humans, when a frog eats more food than it needs, the energy is stored in fat. This energy can then be used when the frog has trouble finding food. Some frogs can go a very long time without food (some frogs can go for over a month) and in these times they live on the energy supplies they have stored as fat.

## FROGS IN DANGER!

All amphibians are very sensitive to changes in their surroundings because of their thin and sensitive skin. They are especially vulnerable to pollution and temperature changes.

The biggest ever study of the world's frogs was published in 2004.

The scientists that took part in the study found that frogs are having a very difficult time. They found that frogs were disappearing from lots of environments because of pollution and also environmental changes.

The study found that up to a third of the world's frogs are threatened with extinction. There are around 6,000 different types of frogs in the world, and around 2,000 types are endangered.

This is because they are far more sensitive to pollution and environmental changes than nearly all other animals. Today there is more pollution and there are more toxic chemicals in the environment than ever before, and the frogs feel the effects of these far more than humans do.

Skin diseases in frogs are also on the increase, and humans are moving more and more into places where frogs live.

This all adds up to a big problem for the world's frogs.

Now that you know what is going on inside of a frog, have fun exploring.

## INTRODUCTION :

All animals are incredible things.

To understand how an animal works we need to study its body, inside and outside, looking at how all the different body parts fit together and finding out what the relationships are between them.

When people cut a dead animal's body apart in a scientific way we say that they are "dissecting" it.

Your frog model can show you exactly what is going on inside a frog. You can see how all the organs and body parts relate to each other. And you can do it all without taking a real frog apart!

## WHAT IS A FROG?

Frogs are amphibians. The word "amphibian" comes from Greek – "amphi" meaning both, and "bios" meaning life, which refers to the fact that amphibians can live both on land and in water.

There are around 6,000 different types of frog in the world, but all follow the same cycle of life. They all begin their lives in or around water as eggs that hatch into tiny tadpoles. At first a tadpole has no proper shape, and no tail. Tadpoles stay in the water all the time, so like fish they breathe through gills. They feed only on plants and as they grow their head develops a big round mouth and they get a flat tail. They look a lot more like fish than frogs!

Tadpoles then undergo an incredible transformation called metamorphosis (again from Greek – "meta" meaning change, and "morphé" meaning form). This is where they develop lungs and legs, and begin to eat insects and other small animals.

When a frog is fully developed it loses its tail, and will usually live somewhere near fresh water. Frogs have delicate skin, and if a frog dries out it will soon die so it is important that frogs live somewhere damp.

## THE BODY PARTS AND WHAT THEY DO.

Your dissecting frog comes with eleven removable parts – the four legs, part of the mouth, and six parts from inside the chest of the frog.

### The Legs:

You can see that the frog's back legs are much larger than its front legs. The back legs have much more muscle (the pink area) than the front legs.

A frog usually moves around on land by jumping or hopping. In the water it uses its back legs to paddle through the water. To jump, hop and swim the frog needs big, strong muscles in its back legs.

You can also see that the "toes" on the frog's back legs have flaps of skin, called "webs", between them. These help the frog when it is swimming.

Inside all of the legs you can see the bone (the small white area in the middle of each leg) an artery (the red circle that carries blood to the muscles) and a vein (the blue circle that carries blood back to the heart).

### The Mouth:

Just like in humans the mouth is where a frog's food enters its body.

A frog does have teeth, but they are very small and are not much use for catching or chewing food – you can see the small white line in the top of the mouth.

Most frogs catch their food (usually passing insects) using special sticky tongues that curl up in their mouths. They flick out their tongues out very quickly and drag what they catch back into their mouths.

The food is quickly swallowed and passes down the frog's throat into its stomach. This means that the food will usually end up in the frog's stomach in one piece.

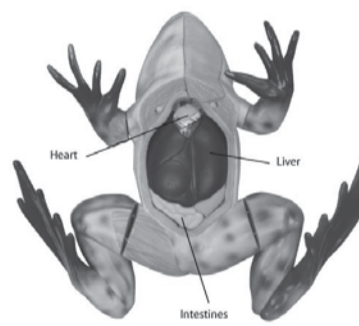


# SIMULATED FROG DISSECTION KIT

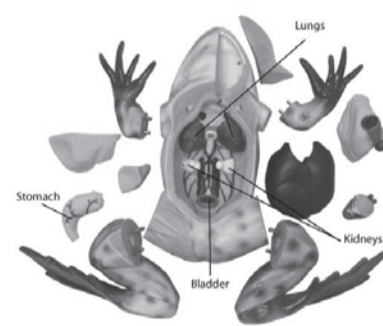
## An anatomically correct model



**WARNING!** NOT RECOMMENDED FOR CHILDREN UNDER 8 YEARS OF AGE. NOT SUITABLE FOR CHILDREN UNDER 3 YEARS OF AGE DUE TO SMALL PART. THIS SET CONTAINS FUNCTIONAL SHARP EDGES AND SHARP POINTS.



Dissecting Frog (Anterior View)



Dissecting Frog (Anterior View with Organs Removed)

### The Organs:

Inside the chest of the frog are some important body parts. We call these "organs". If you were dissecting a real frog, you would have to turn it so it was lying on its back. Then to get to these organs you would have to cut open the chest of the frog.

#### The Heart

The Heart is the organ that pumps blood through the frog's body and it is split into three parts or "chambers" - the left atrium, the right atrium and the ventricle.

Like in other animals, the frog heart's job is to pump blood to the lungs where the blood becomes rich in oxygen. This oxygen rich blood then flows back to the heart where it is pumped out again, this time around the body through the arteries where the oxygen is used up. Finally, this oxygen poor blood returns to the heart through the veins, where the circle starts again and it is sent to the lungs.

The chambers in the heart keep the oxygen rich and the oxygen poor blood apart.

A frog's heart has just 3 chambers, while a human heart has 4. The frogs' heart has a special design that means that oxygen rich and oxygen poor blood cannot mix, even though they meet in the same chamber.

#### The Lungs

Once a tadpole begins to change into a frog it starts to develop lungs. The lungs are like two little sacks located high up above the heart. Just like when humans breathe, air enters the body through the frog's nose or mouth. It then passes through the windpipe, and into the lungs.

Humans use their chest muscles and diaphragm to breathe, but frogs don't have ribs or a diaphragm, and it doesn't use its chest muscles for breathing. You have probably seen that when a frog sits still its neck seems to blow in and out like a small balloon. This puffing in and out is what forces air in and out of the lungs.

The frog's heart and lungs work in a similar way to those in mammals. The oxygen comes into the blood by breathing air through the nose or mouth. But frogs are special! They can also breathe underwater.

Frogs have very soft, thin and moist skin with lots of blood vessels. When a frog goes underwater it can get oxygen directly into its blood stream through these blood vessels as its skin is so thin. A frog can actually breathe through its skin!

#### The Stomach

Food does begin to get broken down in the stomach, but most digestion takes place later when the food goes from the stomach to the intestines.