

MODEL

HUMAN TORSO MODEL

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The Human Body

Did you know that the human body is the best machine in the world? There is no other machine that is capable of performing all the functions that your body is able to. Hard to believe, isn't it?

If you think that human beings are remarkable, then you are right. Millions of incredible things are performed in your body every day. Do you remember the last time you were walking down the street enjoying an ice cream cone? In fact you weren't really as relaxed as you thought. Your brain was actually busy giving instructions to your eyes, your tongue, your fingers, etc. and at the same time letting you have feelings of relaxation and pleasure. Your lungs were occupied with breathing while your stomach was getting ready for that next scoop of vanilla ice-cream. All this happens naturally, and after a couple of hours the ice-cream is digested and leaves the body as human excrements.

Nature is remarkable.

The more you try to understand it, the more unexpected surprises are encountered.

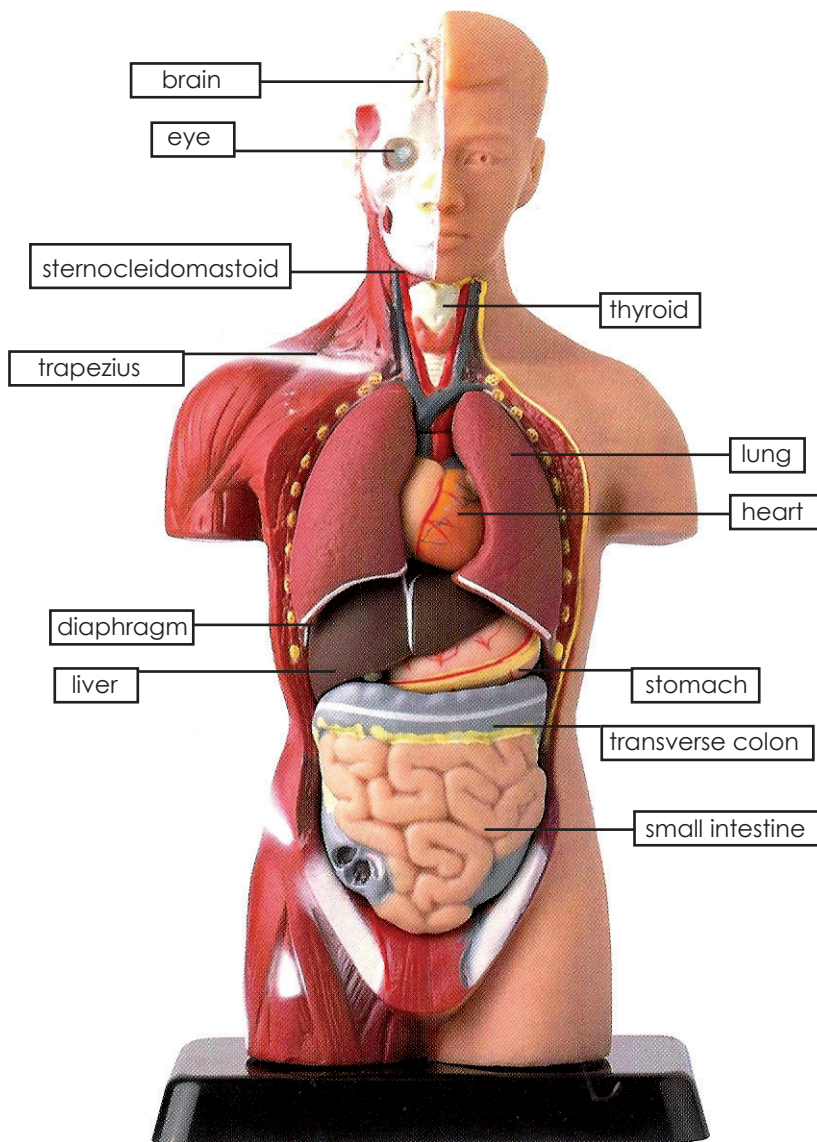
From now on try to learn more about nature by paying attention to your own body.

Remember that this booklet is only a basic guide. There are plenty of more interesting facts to be discovered.

Get ready for the adventurous journey through your body!

WARNING!

Not suitable for children under the age of three years. This product contains small parts. Danger of suffocation. Recommended use for children from 8 years and older.



Torso (frontal view)

Eyes

The eyes receive information through rays of light. These are either absorbed or reflected. When you look at an object, the reflected light off of it travels to the eyes. Incoming light rays are refracted by the cornea. They meet the lens after passing through a space filled with clear liquid called the aqueous humor and the pupil. The iris regulates the amount of light that enters the eye. Images are focused onto the retina by light passing through the lens and the vitreous body and thereby turning the image upside down. Light-sensitive cells send the image to the brain for processing with the help of electrical impulses.

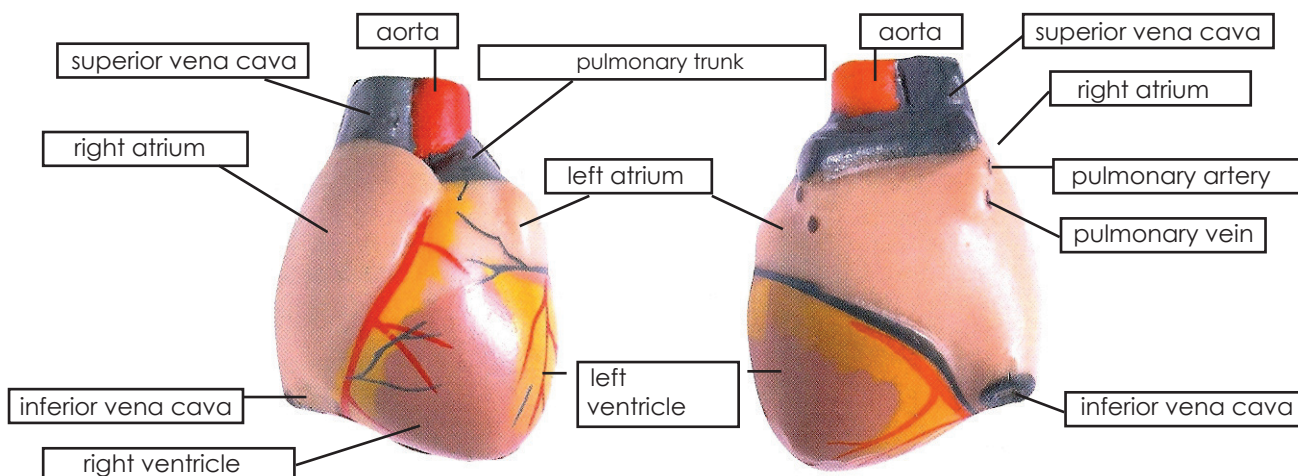
Gallbladder

The main purpose of the gallbladder is to concentrate and store bile produced by the liver. It also is responsible for releasing bile into the small intestine through the common bile duct to help the digestive process. The gallbladder is a blue-green organ about 7.5 cm long and located under the liver. Bile consists of bile salts and pigments.

The gallbladder is not a vital part for a human being and can therefore be removed without causing any major secondary injury. Bile stored in the gallbladder may crystallize and form gallstones, which in most cases require a surgical intervention.

Heart

The heart is located between the lungs in the middle of the chest. It is responsible for blood circulation and supplies oxygen and other nutrients to all body parts. The heart is surrounded by a pouch of connective tissue which is connected to the breastbone by fibers. The apex of the heart (the rounded point at the lowest tip of the heart) rests on the diaphragmatic surface and is pointed slightly to the left. Heartbeats emerge from the apex. An adult's heart is about the size of a fist: about 12.5 cm in length and 9 cm wide. It weighs less than 500 grams.



Heart (frontal view)

Heart (rear view)

Lung

The main purpose of the respiratory system in our body is to deliver oxygen to the red blood cells and remove the waste product consisting mainly of carbon dioxide.

The larynx is located at the top of the trachea. The lower end of the trachea splits into two main bronchi, which continue onward toward the left and right lung. Once inside the lobes of the lung the bronchi continue to divide and become very narrow bronchial tubes letting inhaled air pass all the way to the functional part of the lungs: the alveolar sacs. In these thousands and thousands of small alveoli is where the gas exchange occurs. Through very thin walls (membrane) oxygen is passed to the blood cells and carbon dioxide is transferred from the blood back to the alveolar space.

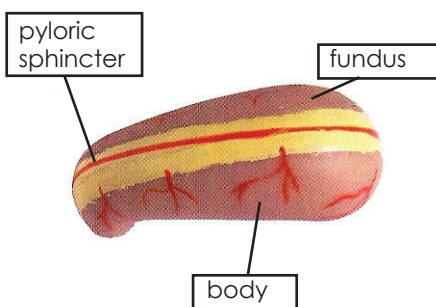
Stomach

The stomach is a very important organ for our digestive system. It is located in the center of the abdominal cavity between the lower part of the esophagus and the small intestine (duodenum).

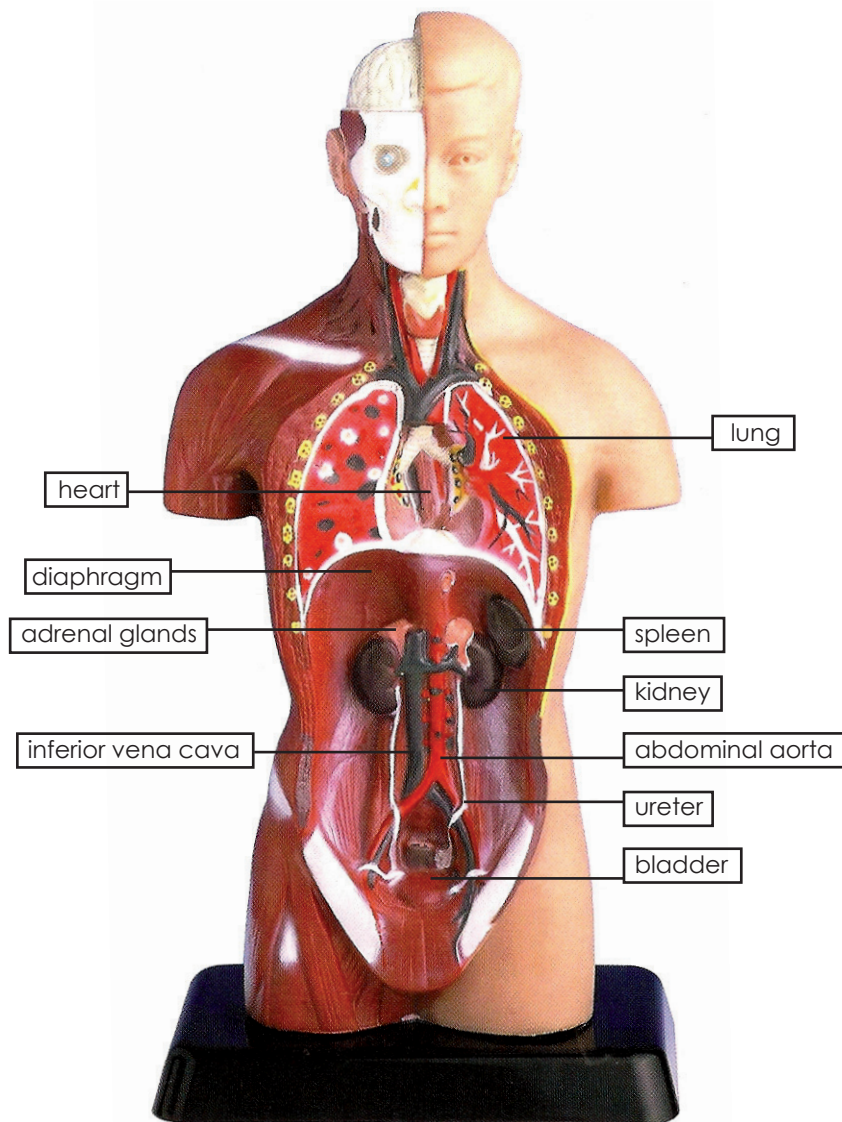
Once chewed food is swallowed, peristaltic motion of the esophagus passes it on to the stomach.

Gastric glands at the very beginning of the stomach entrance are activated as soon as food enters the stomach. Gastric acid and digestive enzymes like pepsin, amylase and lipase are produced to help break down and digest carbohydrates, proteins and fat.

The stomach has a special coating that protects it from harmful gastric acids and prevents self-digestion.



Stomach



Torso (frontal view - parts removed)

Kidneys

The main function of the kidneys is to filter toxic substances, waste, water and mineral salts out of the blood. Furthermore they are responsible for the balance of body acid by eliminating alkali salts if necessary. Kidneys are two bean-shaped organs that are located in the upper abdominal area (underneath the diaphragm and behind the stomach). The adrenal glands are found on top of each kidney. In short, blood circulating in the kidneys is filtered and cleaned from soluble waste by the nephrons (basic unit of the kidney). The resulting fluid with leftover waste is called urine. This continues straight on through the ureter to your bladder and is eventually excreted from the body.

Adrenal Glands

The adrenal glands are located in the abdominal cavity on top of the kidneys. These matching pairs of glands are influenced and activated by impulses of the vegetative nervous system. They produce hormones that respond to stress. As soon as the nervous system is confronted with powerful emotions, large amounts of hormones are released. The body responds with high blood pressure and dilated pupils. The blood supply to the muscles and all vital organs is increased. Furthermore, the adrenal cortex also releases stress reducing hormones and is therefore extremely important for the body.

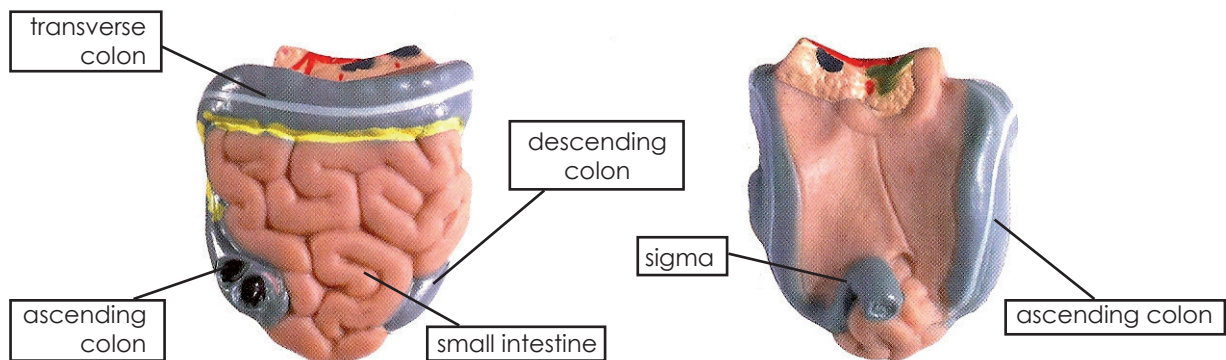
Spleen

The spleen is connected to the blood circulation and is part of the lymphatic system. It is located in the upper left part of the abdomen under the diaphragm and behind the stomach.

The spleen is relevant for maintaining a normal blood pressure, it produces special blood cells and cleans out old blood cells from the blood and recycles them. It also helps fight infections by removing bacteria out of the bloodstream.

Alimentary Tract (Intestines)

The small intestine is where much of the digestion takes place and where nutrients are absorbed by the blood and lymphatic system. It extends from the duodenum to the ileocecal sphincter (also known as the Bauhin's valve). Through this valve predigested food components and semifluid remains of the digestion pass into the colon (large intestine). The colon is the final part of the alimentary tract. Water is reabsorbed here and the remaining waste material is stored as feces before being removed by defecation via the anus.



Intestines (frontal view)

Intestines (rear view)

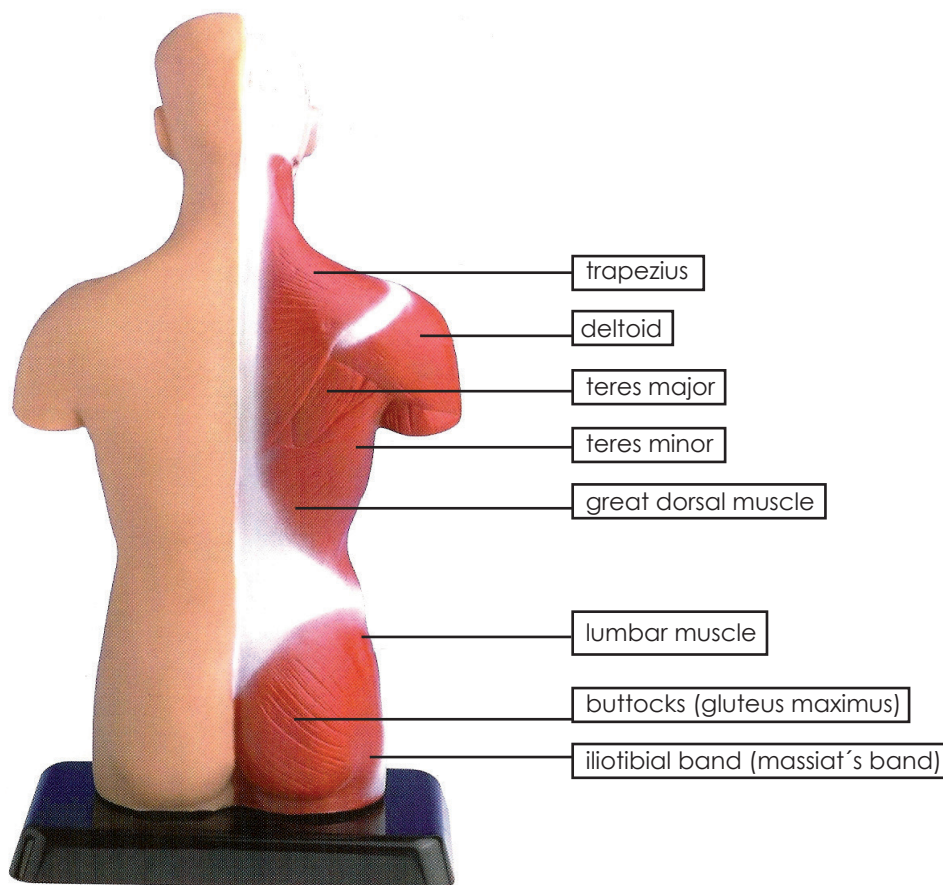
Diaphragm

The diaphragm is the most important muscle of respiration. It is very delicate and is shaped like a dome. During inhalation, the diaphragm contracts and flattens, thus enlarging the thoracic cavity and causing pressure in the abdomen. The enlarging cavity creates suction that draws air into the lungs. When the diaphragm relaxes it returns to its original shape. The lungs contract and air is exhaled.

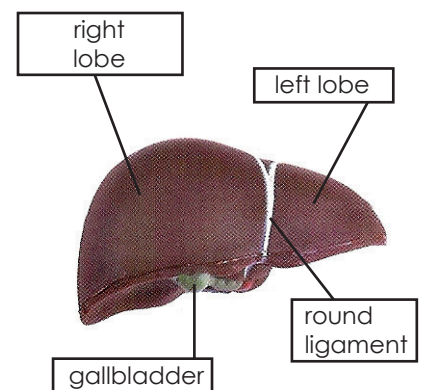
Although internal intercostal muscles (muscles between ribcage and abdomen) are also partly responsible for breathing during sleep, this mainly happens by contraction of the diaphragm.

Liver

The liver is the largest duct of the body. It is a red-brown organ and weighs about 1.5 kg. It has a very strong supply of blood, which gives it the dark color. The most part of the liver lies on the right side of the abdominal cavity, directly above the duodenum. Bile is produced by the liver to help break down dietary fats. The liver changes ammonia (a toxic by-product of protein metabolism) into urea and produces blood clotting factors. In addition, the liver stores glycogen (starch), supports the metabolic process, stores vitamins and also produces protecting and detoxifying substances.



Torso (rear view)



Liver