

Партизанский филиал  
краевого государственного бюджетного  
профессионального образовательного учреждения  
«Владивостокский базовый медицинский колледж»  
(Партизанский филиал КГБПОУ «ВБМК»)

**МЕТОДИЧЕСКАЯ РАЗРАБОТКА**  
**теоретического и практического занятий**

**СГ.02 ИНОСТРАННЫЙ ЯЗЫК В ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ**

Тема: «Анатомия человека: основные системы организма»

Курс: 1

Специальность: 34.02.01 Сестринское дело

Составитель:

Яценко Елена Геннадьевна, преподаватель первой квалификационной категории

г.Партизанск

2025 год

## The bone structure of a person



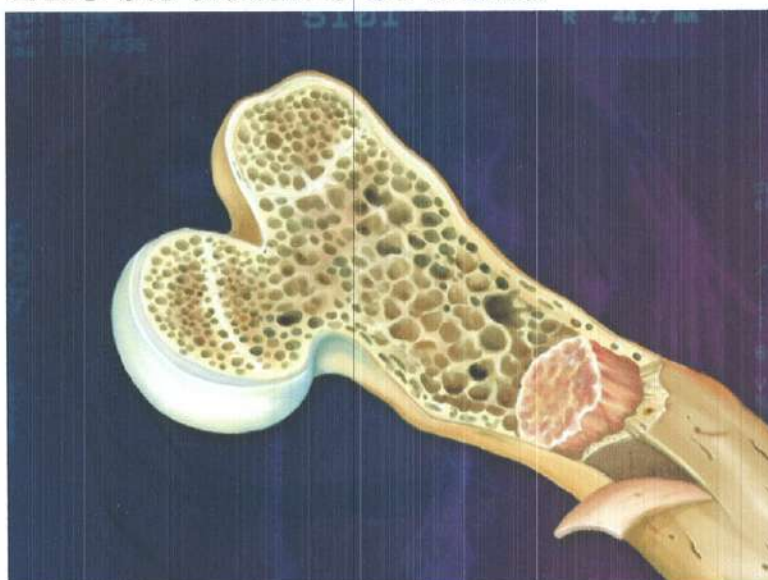
Bone is a complex element of the locomotor apparatus having a specific structure and form; each bone has its place and certain functions. Bone interacts with the body by means of penetrating into her nerves and vessels involved in metabolism and rebuilt in accordance with the development of the organism.

### The composition of bone

Healthy bone is half water, a quarter - organic substances (proteins and fats); the rest is inorganic components (mainly hydroxyapatite). Small amounts of bone can be detected also magnesium, sodium, fluorine, chlorine, potassium, nitrates, carbonates.

It is important to mention that in the bones of children organic substances is much larger, so they are stretchy and elastic. Older people, on the contrary, inorganic substances begin to dominate, and therefore, the bone becomes more fragile and more likely to break.

## The structure of bone



As already mentioned, the basis of bone is bone. Top bone has a dense shell - periosteum, consisting of outer (fibrous) and internal (germ) layers. In this shell a lot of blood and lymphatic vessels, and nerves.

In the center of the bone (bone marrow cavity and in the cells of the spongy substance) is the bone marrow. It is important to note that in the fetus and infants have red bone marrow, which is mainly involved in hematopoiesis. In adults it can be found only in flat bones (cells of the spongy substance). This is the area of the sternum, skull bone and iliac bone. Also red bone marrow is in short bones and epiphyses of tubular bones.

Furthermore, in the tubular bones has a yellow bone marrow, which consists of inclusions of fat and modified reticular stroma.

## Types of bones

Our skeleton consists of the bones of various kinds.

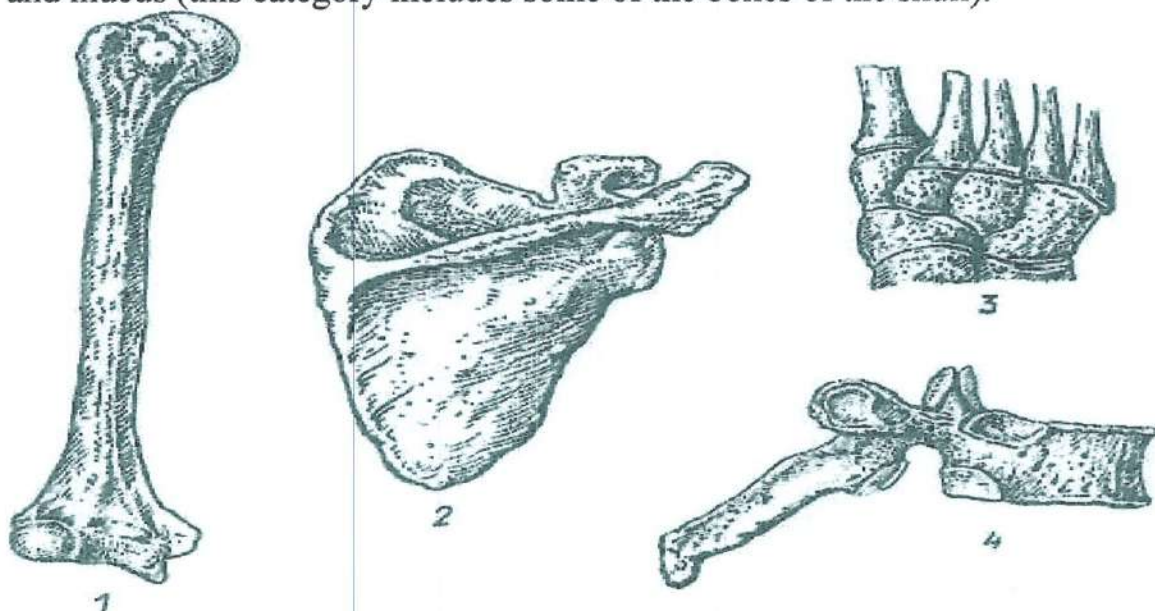
Bone is a kind of levers with which formed the skeleton of the limbs. Traditionally there are 1) long bones, including the femur, humerus, tibia and forearm, and 2) short tubular bones are the phalanges, metacarpal and metatarsal. These bones consist of diaphysis and epiphysis, which are separated by metamizol (distance between the middle and the wide part). On the wide sides is hyaline cartilage.

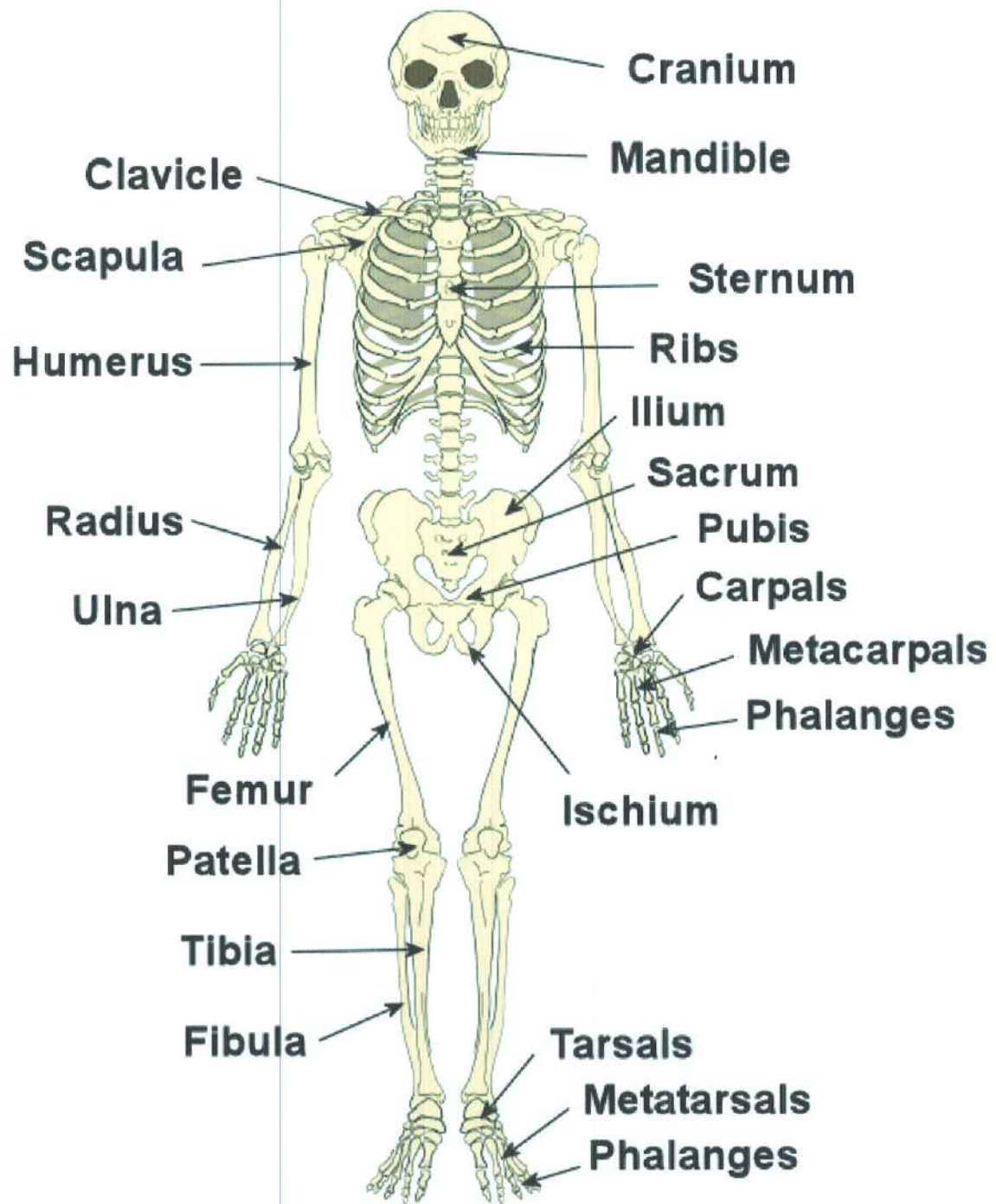
Spongy bone can be found where important durability and mobility, for example, wrist and vertebrae.

Flat bones are usually large bones (skull, chest, and pelvis).

Bones mixed type have the characteristics of other types of bones, different in structure and form (e.g., vertebrae).

There is also a pneumatic bones, respectively, they have the cavity filled with air and mucus (this category includes some of the bones of the skull).





**Human skeleton** - a collection of bones, the passive part of the musculoskeletal system. Serves to support soft tissue, the attachment point of the muscle lever system), receptacle and protection of internal organs. The skeleton develops from the mesenchyme.

The human skeleton consists of two hundred with a small separate bones, and almost all of them are connected in one piece with the help of joints, ligaments, and other compounds.

During the life of the skeleton is constantly changing. During fetal development of the cartilaginous skeleton of the fetus gradually replaced by bone. This process

continues for several years after birth. A newborn baby in the skeleton almost 270 bones, which is much more than adults. The adult human skeleton consists of 200-208 bones. This difference arose due to the fact that child skeleton contains a large number of small seeds, which grow in large bones only to a certain age. This is, for example, the bones of the skull, pelvis and spine. Sacral vertebrae, for example, fused into a single bone (the sacrum) only at the age of 18-25 years.

Directly to the skeleton does not include 6 special seed (three on each side) located in the middle ear; ear bones are connected only to each other and participate in the work of the organ of hearing, through the transmission of vibrations from the eardrum to the inner ear.

The hyoid bone is the only bone not directly associated with other, is topographically located in the neck, but traditionally refers to the bones of the facial Department of the skull. It is suspended from the muscles to the bones of the skull and is connected to the larynx.

The longest bone of the skeleton - thigh, and the smallest is the stapes in the middle ear.

### **Functions of the skeleton**

In addition to the mechanical functions to maintain the body shape, providing the possibility of movement and protection of internal organs, the skeleton is the site of hematopoiesis in the bone marrow is the formation of new blood cells. (One of the most common diseases affecting the bone marrow leukemia, often despite treatment leads to death.) In addition, the skeleton, as a repository of most of the calcium and phosphorus of the body, plays an important role in mineral metabolism.

### **Organization of the skeleton**

The human skeleton is arranged in common to all vertebrates. The bones of the skeleton are divided into two groups: the axial skeleton and the extension skeleton. To axial skeleton includes the bones, lying in the middle and forming a frame body; that all the bones of the head and neck, spine, ribs and sternum. Added skeleton consists of the clavicle, the scapula, the bone of the upper extremities, pelvis and bones of the lower extremities.

All bones of the skeleton are divided into subgroups:

#### **Axial skeleton**

- The skull is the bony framework of the head, is a vessel of brain and organs of sight, hearing and smell. The skull has two divisions: the brain and the face.

- Chest has the shape of a truncated compressed cone, bone is the basis of the chest and the container for the internal organs. Consists of 12 thoracic vertebrae, 12 pairs of ribs and the sternum.
- The spine, or vertebral column, is the main axis of the body, support the entire skeleton; inside the spinal canal spinal cord runs.

### **Added skeleton**

- Belt upper extremities - provides attach the upper limbs to the axial skeleton. Consists of a pair of blades and collarbones.
- Upper limb - maximally adapted to perform a work activity. Limb consists of three departments: shoulder, forearm and hand.
- Belt of the lower extremities - provides connection of the lower limbs to the axial skeleton, and is also the receptacle, and a support for the digestive, urinary and reproductive systems.
- Lower extremity is adapted to move the body in space.

### **Sexual features of the skeleton**

Male and female skeleton as a whole is built on one type, and the fundamental differences between them are not. They are only in a slightly modified form or the size of individual bones and, respectively, including their structures. Here are some of the most obvious differences.

- The bones of the limbs and fingers men on average, longer and thicker.
- Women have a wider pelvis, and a narrower chest,
- Women have less angular jaw and weaker pronounced supraorbital and occipital Misaki.
- There are many smaller differences.

The once widespread belief that men have one fewer rib than women, is wrong. The biblical story about the creation of eve from Adam's rib has no reflection in reality happened because of an error in the translation of the Hebrew word "Celia" (Hebrew. צלע) having values as "rib" and "shadow". Skeleton and men and women has 24 ribs, or 12 pairs.

### **Disease**

There are many diseases of the skeletal system. Many of them are accompanied by limited mobility, and some can lead to complete immobilization of the person. Serious threat to life and health are malignant and benign tumors of the bone, often requiring radical surgical treatment; usually the affected limb amputated. In addition to often affects the bones and joints. Joint disease is often accompanied by substantial violation of mobility and severe pain. Osteoporosis increases the brittleness of the bones, the bones become fragile; it is a systemic disease of the skeleton is more likely to occur in the elderly and in women after menopause.

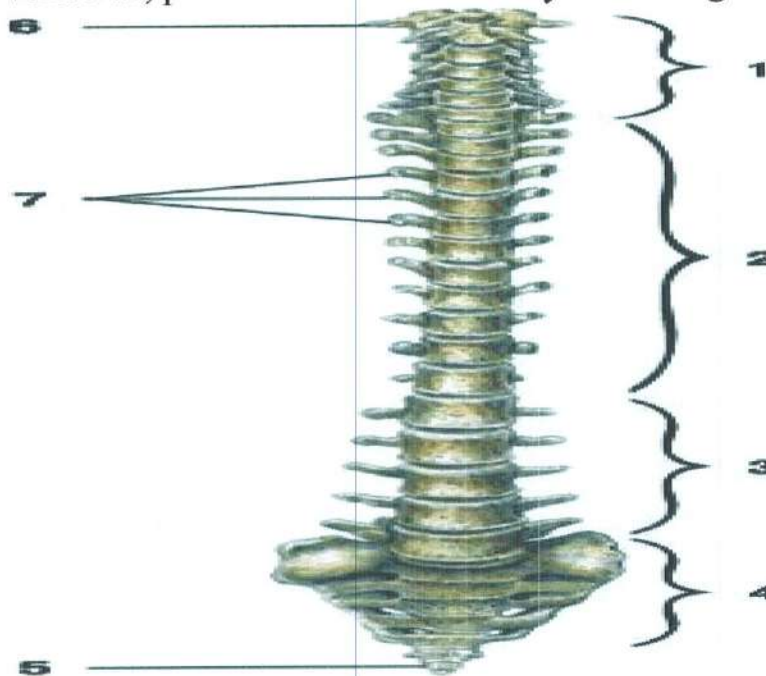
## Interesting facts about the skeleton

The individual parts of the skeleton can be discerned already in the 5-week embryo (the size of a pea), which is the most noticeable part is the spine, forming expressive arc. The skeleton of a newborn baby consists of more than three hundred bones, but due to the fact that many of them grow together in the process of maturation in the adult skeleton is only 206.

## The bones

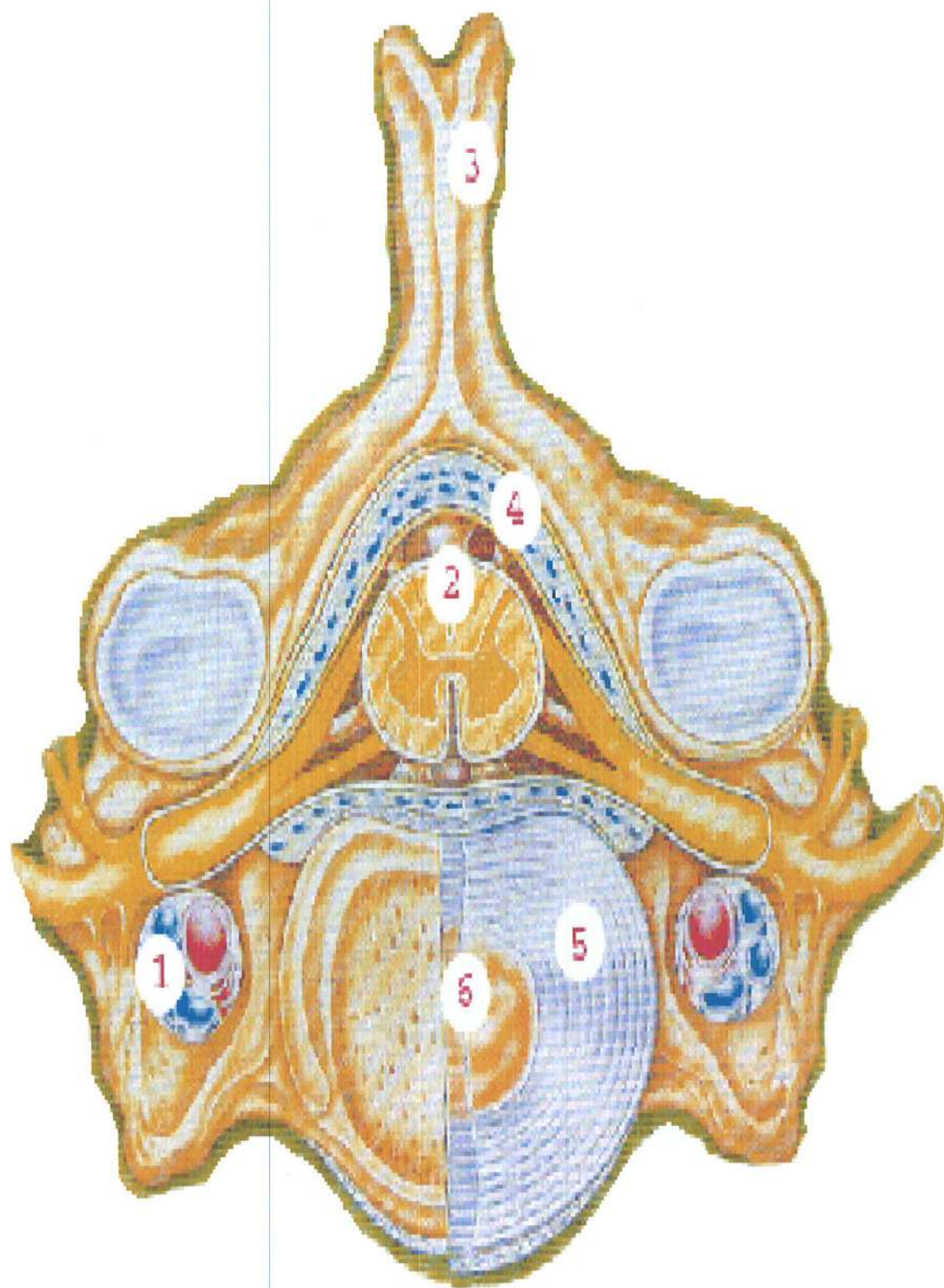
### Spine

The spinal column is the mechanical support of the whole body and consists of 32 - 34 interconnected spines. In the spine 5 departments: cervical -7(4), breast -12(12), lumbar -5(20), sacral -5 - fused (19), coccygeal -3 - 4 - fused (14). Join in the cervical and lumbar departments movable. In the thoracic and sacral - little mobile. The spine has 4 physiological curve. Cervical and lumbar curve facing forward (lordosis), and thoracic and sacral back (kyphosis). The dimensions of the vertebrae in the different departments vary and depend on the size of the load falling on a particular Department, as well as from muscle development. The maximum size reaches the lumbar and sacral spines. The role of shock absorber perform the intervertebral discs - they distribute the pressure between the vertebrae, provide sufficient mobility and strength.



### Vertebrae

The vertebrae have a round body and an arc, trailing vertebral hole and shoots, soci studies vertebrae together. Inside all vertebrates holes spinal cord runs. The tunnel formed by these holes, called recessed channel and is a reliable bone protection for the spinal cord. Vertebra consists of: blood vessels (1), spinal cord (2), bone thorn process (3) for connection with the muscles, protective membrane is the Dura mater (4). Incision of the intervertebral disc: the fibrous ring (5), biconvex gelatinous core (6).

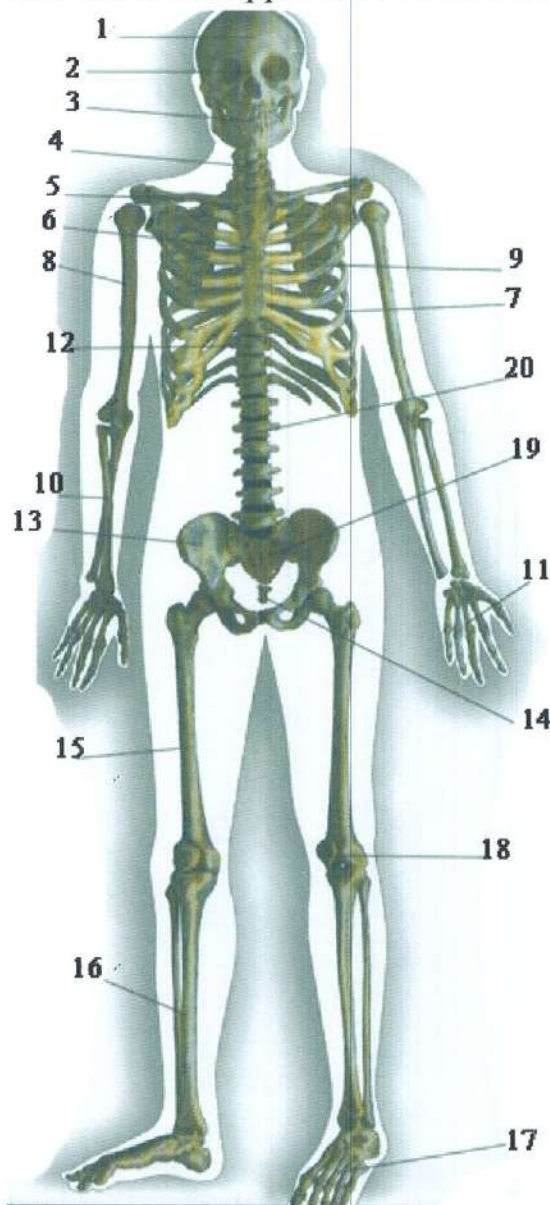


# Chest

Consists of the ribs (7), sternum (6) and the thoracic vertebrae. Sternum not steam bone length in adults from 16 to 23 see there are 3 parts: the upper (arm), middle (body) and the xiphoid process .

## Bones of the upper limb

The belt of the upper limb consists of the scapula (9) and the clavicle (5), it connects the skeleton of the trunk skeleton of the free upper limb.



## Arm bones

Consists of three sections: the Proximal - shoulder, mid - forearm , distal brush. The skeleton of the shoulder forms a shoulder bone (8). The bones of the forearm consists of ulnar and radial bones (10). The skeleton brushes include carpal bones, wrist and phalanges (11).

## The belt of the lower limb

Presents paired pelvic bones (13). From the front they are connected to each other in the back to the sacrum, forming a bony ring , which is the abode of a number of internal organs, provide support for the torso and upper extremities and to connect with the hip. The skeleton of the free lower limb consists of three sections: proximal femur fractures (15) and nadolinny Cup (18), mid - Shin bones - large tibia and small - and membrane between them (16), the distal bones of the foot (17). Large tibia lies on the medial side, a small Shin - located lateral, both bones for related interosseous membrane (membrane).

## The bones of the foot

The foot is divided into 3 parts: the Tarsus,

metatarsus and phalanges.

## The bones of the skull

Frontal bone (1), the nasal bone (2), the parietal bone on the side above the temporal bone at the side below the occipital bone, the zygomatic bone, the upper and mandibular bones and teeth (3)

Restore

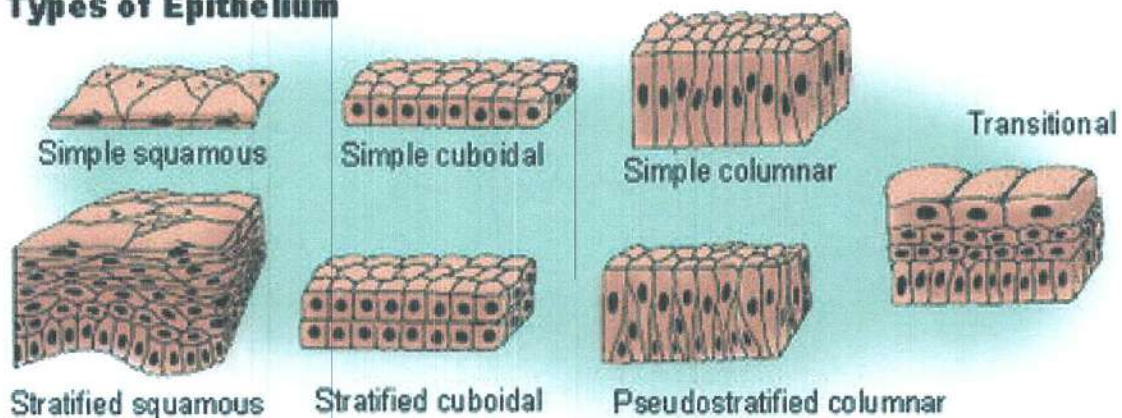
Minimize

## Tissues, their structure and functions.

The human body is a complex holistic self-regulating and simultaneously system, consisting of a large number of cells. On the cellular level occur all of the important processes; metabolism, growth, development and reproduction. Cells and non-cellular structure of tissues, organs, organ systems and the whole organism.

Fabric is a collection of cells and non-cellular structures (non-cellular substances) that are similar in origin, structure and function. There are four main groups of tissues: epithelial, muscular, connective, and nervous.

### Types of Epithelium



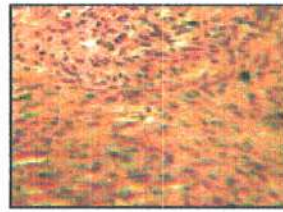
(Fig.1)

Epithelial tissue (Fig.1), are the edge, as it covers the body from the outside and lined on the inside of hollow organs and the walls of the cavities of the body. A special type of epithelial tissue is glandular epithelium forms the most glands (thyroid, sweat, liver, etc.), the cells which produce a particular secret. Epithelial tissue have the following features: their cells closely adjacent each other forming a layer of intercellular substance very few cells have the ability to restoration (regeneration).

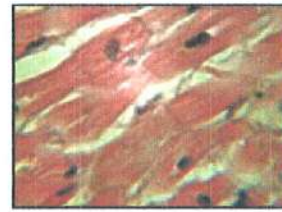
Epithelial cells form can be flat, cylindrical, cubic. The number of layers of the epithelium are single-layer and multilayer. Examples of epithelium: single layer of flat lining the thoracic and abdominal cavity of the body; stratified squamous forms the outer layer of skin (the epidermis); single-layer cylindrical covers a large part of the intestinal tract; multi-layer cylindrical - cavity of the upper respiratory tract); single cubic forms tubules of the nephrons of the kidneys. Functions of epithelial tissues; protective, secretory, suction.



Skeletal muscle



Smooth muscle



Cardiac muscle

(Fig.2)

Muscle tissue cause all kinds of motor processes inside the body, and the movement of the body and its parts in space. This is due to the special properties of the muscle cell excitability and contractility. All the muscle tissue cells contain the finest contractile fibrils - myofibrils, educated linear molecules of proteins - actin and myosin. When sliding them relative to each other changes the length of the muscle cells.

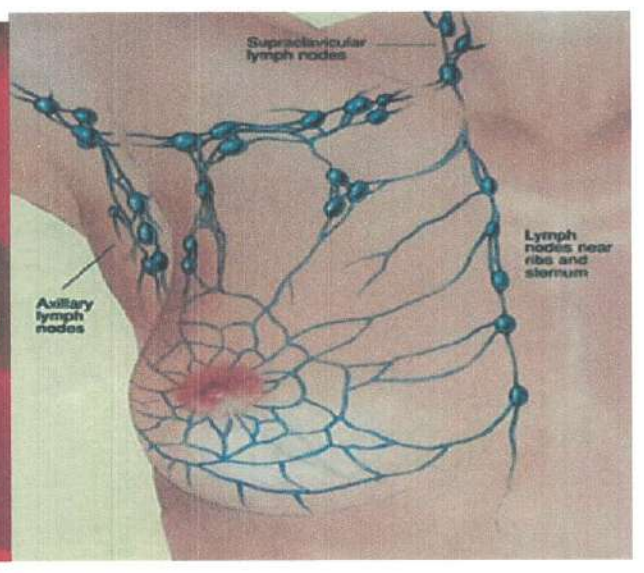
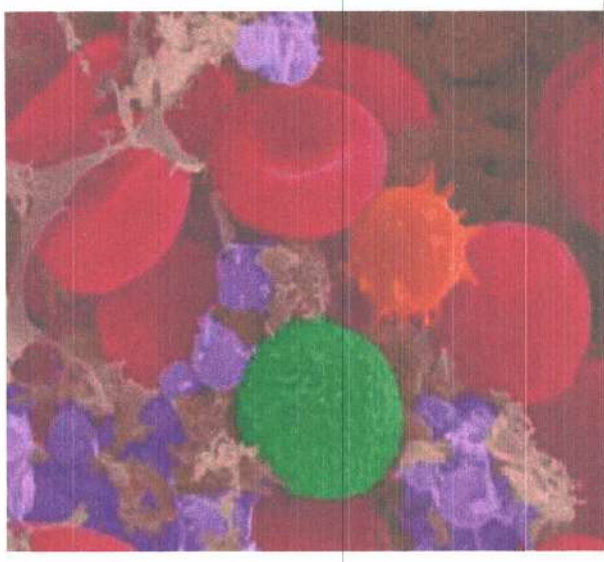
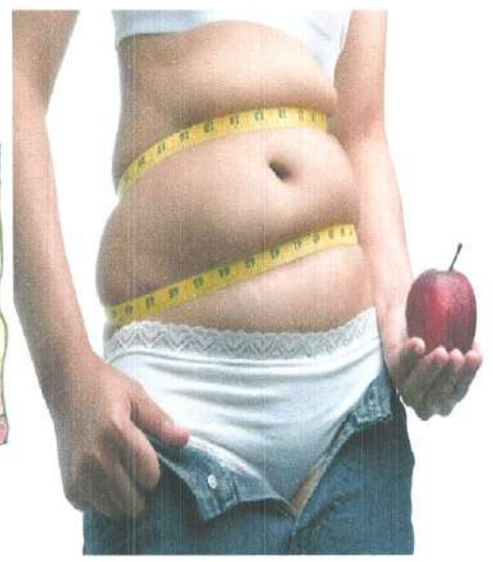
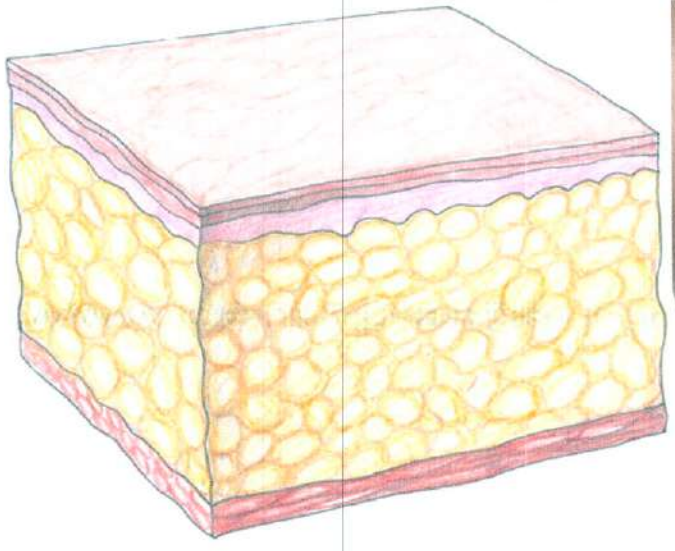
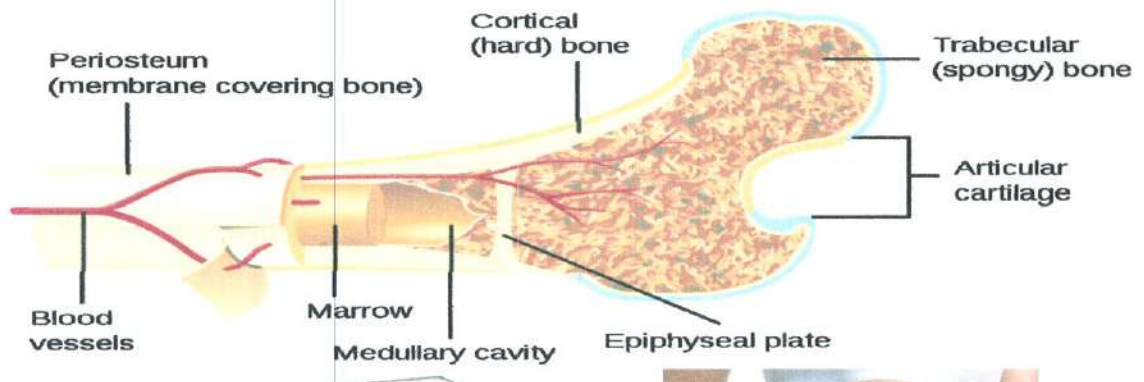
There are three types of muscle tissue: striated, smooth and cardiac (Fig.2).

Striated (skeletal) muscle tissue is built from the set of multi-bolognapadova cell length 1-12 see the Presence of myofibrils with light and dark areas, different refractive light (when examining them under a microscope), gives the cell characteristic cross-striations, which determined the name of this type of fabric. It built all the skeletal muscles, the muscles of the tongue, the walls of the oral cavity, pharynx, larynx, the upper part of the esophagus, facial, aperture. Features of striated muscle: the speed and randomness (i.e. reducing dependence on the will, the desires of the individual), the consumption of large amounts of energy and oxygen, fatigue.

Cardiac tissue is composed of transversely striated mononuclear muscle cells, but has other properties. Cells are not parallel beam, as skeletal and branched, forming a single network. Thanks to a multitude of cellular contacts incoming nerve impulse is transmitted from one cell to another, providing simultaneous contraction and then relaxation of the heart muscle, allowing it to perform a pumping function.

The cells of the smooth muscle tissue do not have transverse IP-certenoli, they are spindle-shaped, single core, their length is about 0.1 mm. This kind of tissue is involved in the formation of the walls trubka-shaped internal organs and blood vessels (digestive tract, uterus, bladder, blood and lymph vessels). Features smooth muscle tissue: netproizvolunet and small power reductions, the ability for prolonged tonic contraction, less fatigue, small energy demand and oxygen.

Connective tissue (internal environment) combine groups of tissues of mesodermal origin, very different in structure and function. Types of connective tissue: bone, cartilage, subcutaneous adipose tissue, ligaments, tendons, blood, lymph, etc. General feature of the structure of these tissues is a loose arrangement of cells, separated from each other well marked intercellular substance, which is formed of various protein fibers (collagen, elastin) and basic amorphous substance.



Each type of connective tissue to the specific structure of the intercellular substance, and hence different associated functions. For example, in the intercellular substance of bone tissue are crystals of salts (mainly calcium salts) that give bone a particular strength. Therefore, the bone tissue is protective and supporting functions.

Blood - a type of connective tissue, which intercellular substance liquid (plasma), so that one of the main functions of blood is to transport (transports gases, nutrients, hormones, the end products of cell activity, etc.).

Intercellular substance of loose fibrous connective tissue, located in the strata between the bodies, and connects the skin with muscles, consists of amorphous material and freely located in different directions of elastic fibers. Due to this structure of the intercellular substance, the skin flexible. This fabric performs supporting, protective and nourishing functions.

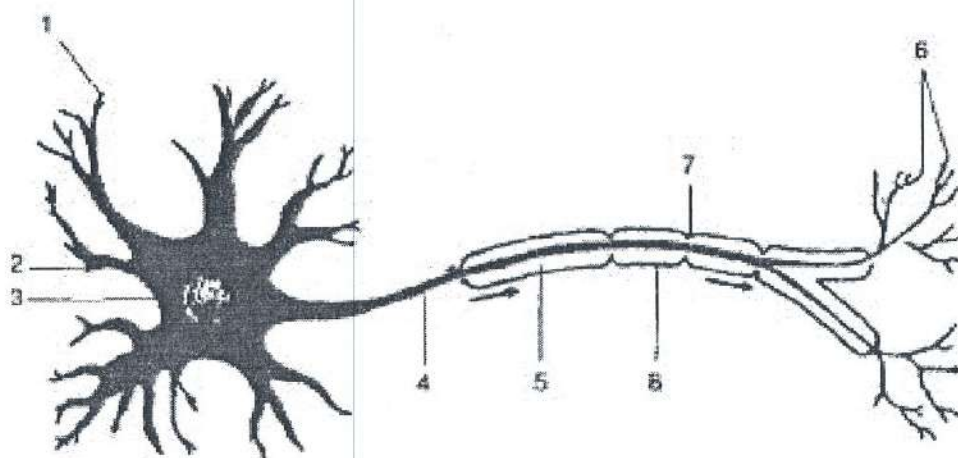
The nervous tissue, which built the brain and spinal cord, ganglia and plexus, peripheral nerves, performs the functions of perception, processing, storage and transfer in-

formation, coming both from the environment and from the organs of the body. The nervous system provides the body's reaction to different stimuli, regulation and coordination of work of all its organs.

Basic properties of nerve cells-neurons that form the nervous tissue, are the excitability and conductivity. Excitability is the ability of neural tissue in response to the irritation of coming to a state of excitation, and the conductivity - the ability to transmit excitation in the form of a nerve impulse to another cell (neural, muscular, glandular). Due to these properties of nervous tissue is the perception, holding and shaping the response of an organism to the action of external and internal stimuli.

Nerve cell, or neuron, is composed of body and appendages of the two species (Fig.3). The body of the neuron is represented by a core and a surrounding region of the cytoplasm. It is the metabolic center of the nerve cells; at its destruction she dies. Body neurons are located primarily in the brain and spinal cord, i.e. in the Central nervous system (CNS), where they form clusters of gray matter of the brain. The accumulation of bodies of nerve cells outside the Central nervous system form the nerve centers or ganglia.

A short, tree-like branching processes extending from the body of the neuron, called dendrites. They perform the functions of perception of irritation and transfer of excitation in the body of the neuron.



(Fig.3)

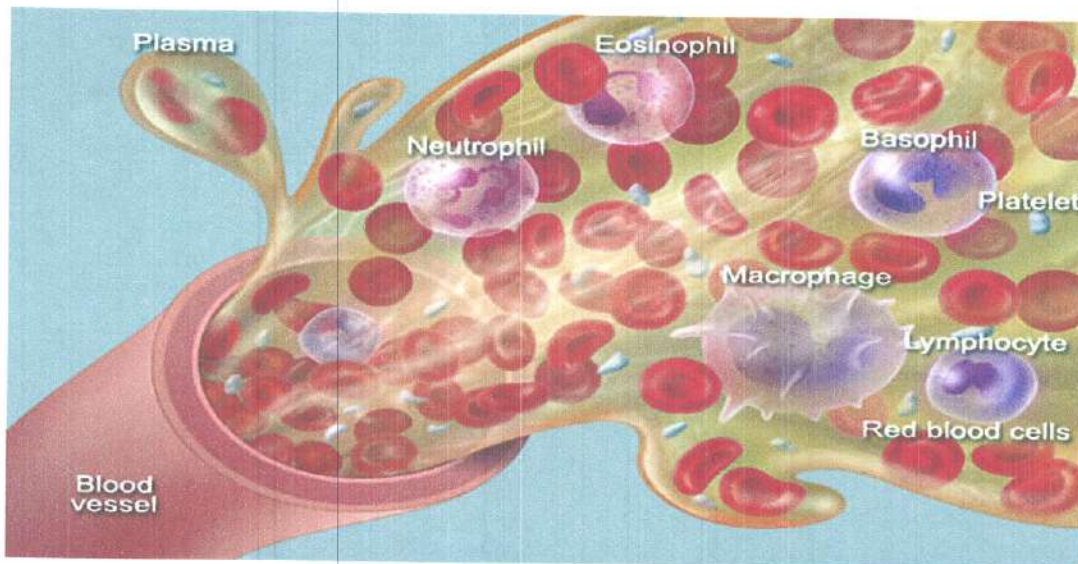
**Fig.3. The structure of a neuron: 1 - dendrites; 2 - cell body; 3 core; 4 - axon; 5 - myelin sheath; 6 - axon branches; 7 - intercept; 8 - neurilemma.**

The most powerful and long (up to 1 m) unbranched appendage called the axon, or nerve fiber. Its function is to conduct the excitation from the nerve cell body to the end of the axon. It is covered with a special white lipid sheath (myelin) that performs the role of protection, power and insulation of the nerve fibers from each other. Clusters of axons in the Central nervous system form the white matter of the brain. Hundreds and thousands of nerve fibers outside the Central nervous system, by means of the connective tissue are combined into bundles of nerves, giving numerous branches to all organs.

From the ends of the axons leave the side branches ending in extensions - accompany endings, or terminalname. This area of contact with other nerve, muscle or glandular labels. It is called a synapse, the function of which is to transfer excitation. One neuron through synapses can connect with hundreds of other cells.

According to the functions distinguish the three types of neurons. Sensitive (centripetal) neurons perceive irritation from receptors, excited under the influence of stimuli from the external environment or from the human body, and in the form of a nerve impulse transfer the excitation from the periphery to the CNS. Motor (centrifugal) neurons send nerve signals from the CNS to muscles, glands, i.e. at the periphery. Nerve cells, the receiving excitation from other neurons and transmit its also the nerve cell is inserted neurons, or interneurons. They are located in the CNS. Nerves, consisting of both susceptible and motor fibers are called mixed.

## Blood and its elements.



Blood is a connective tissue of the body, which consists of a liquid - plasma and suspended in her cells, formed elements: cells leukocytes and post cellular structures (cells, and platelets). Circulates through the blood vessels under the force twitch rhythmically heart and not communicated directly with other body tissues due to the presence of blood-tissue interfaces barriers. The average mass fraction of blood to the total mass of the body is 6.5-7 %. In vertebrates, the blood has a red color (from pale to dark red). Themselves erythrocytes yellow-green and only in aggregate form a red color due to the presence of hemoglobin. Some mollusks and arthropods blood has a blue color due to the presence of hemocyanin.

Blood consists of plasma (intercellular substance) and corpuscles ( leukocytes, erythrocytes, platelets).

Erythrocytes (red blood cells) are the most numerous of the formed elements.

Mature red blood cells do not contain nuclei and are in the shape of a biconcave disk. Circulate for 120 days and destroyed in the liver and spleen. In red blood cells contain iron-containing protein hemoglobin. It provides the main function of red blood cells - transport of gases, primarily oxygen. It is the hemoglobin gives blood red color. In the lungs, the hemoglobin binds oxygen, turning into ox hemoglobin, which has a light red color. In the tissue ox hemoglobin releases oxygen, again forming hemoglobin, and blood darkens. In addition to oxygen, the hemoglobin in the form of garbage man moves from the tissues to the lungs carbon dioxide.

Thrombocytes (blood platelets) are limited cell membrane fragments of the cytoplasm of the giant cells in the bone marrow (megakaryocytic). Together with plasma proteins (e.g. fibrinogen) they provide the coagulation of blood, resulting from a damaged vessel, leading to bleeding stop and thereby protecting the organism from blood loss.

Leukocytes (white blood cells) are part of the immune system. They are able to go beyond the blood flow in the tissue. The main function of leukocytes - protection

against foreign objects and connections. They participate in immune reactions, while highlighting T-cells that recognize viruses and all sorts of harmful substances; b-cells that produce antibodies, macrophages, which destroy these substances. Normal white blood cell count is much smaller than the other elements. The blood refers to the rapidly renewing tissues. Physiological regeneration of blood cells is due to the destruction of old cells and the formation of new blood-forming organs. The main of them in humans and other mammals is the bone marrow. In humans, red, or blood, bone marrow is located mainly in the pelvic bones and in the long tubular bones. The main filter blood is spleen (red pulp), which including immunological control (white pulp).

Blood is continuously circulated in a closed system of blood vessels and performs in the body for various functions such as :

Transport - the movement of blood; it identified a number of sub functions:

Respiratory - oxygen transfer from lungs to tissues and carbon dioxide from the tissues to the lungs

Nutrient - transports nutrients to the cells of the tissue;

Excretory (urinary) - transport waste products of metabolism to the lungs and the kidneys for excretion (removal) from the body;

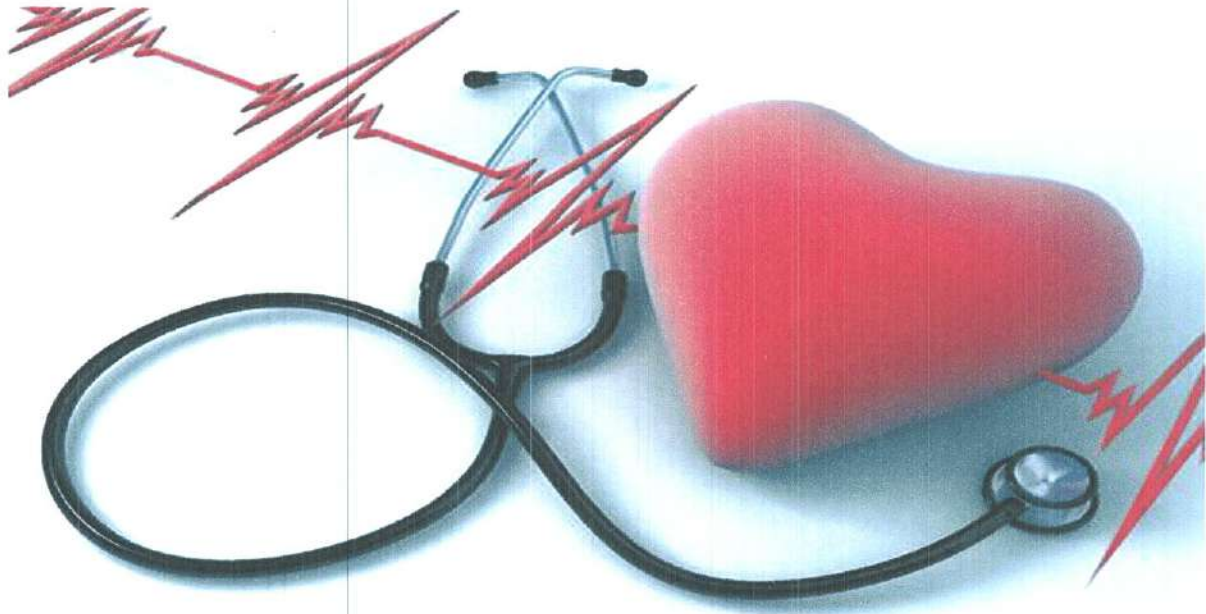
Thermostatic - regulates body temperature.

Regulatory - links the various organs and systems, transferring signaling substances(hormones) that they produce.

Protective - providing cellular and humoral protection against foreign agents;

Homeostasis - the maintenance of homeostasis (constant internal environment of the body) - acid-base balance, water and electrolyte balance, etc.

Mechanical - giving turgid voltage bodies due to a rush of blood.



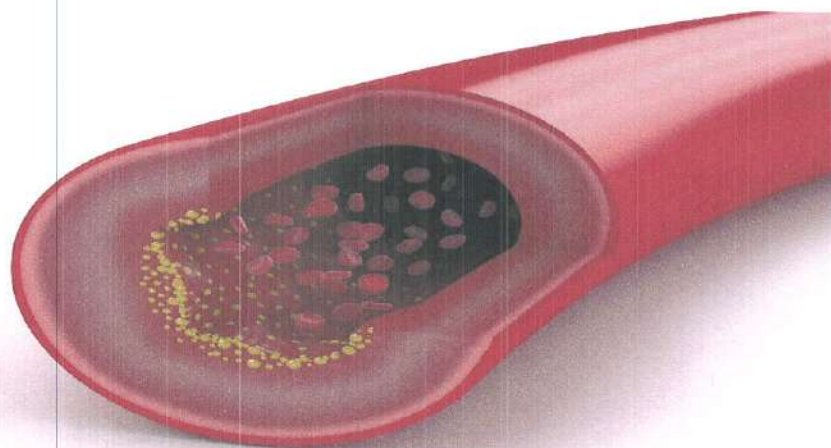
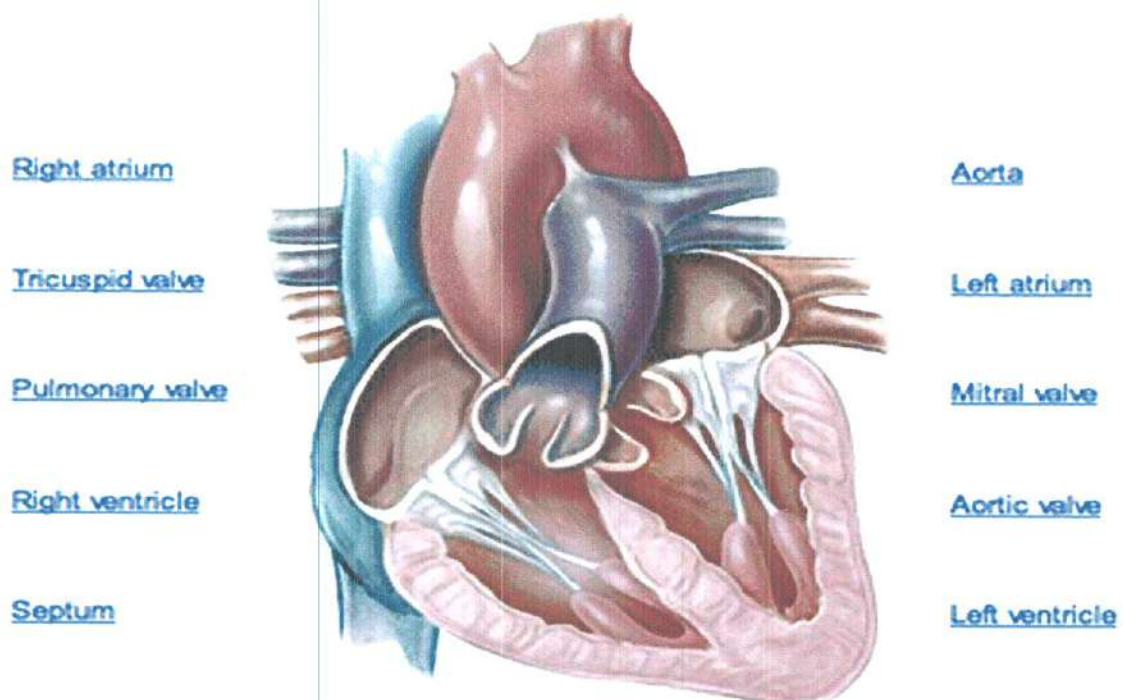
## **Cardio-vascular system.**

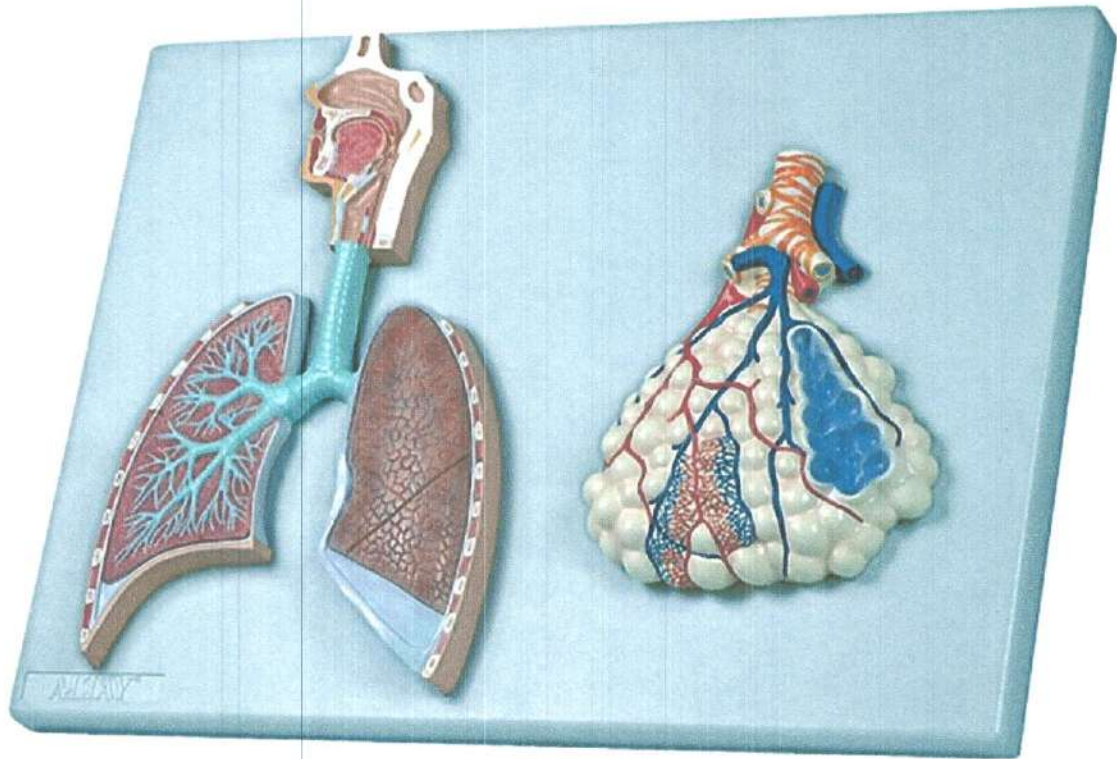
The cardiovascular system is a complex anatomical and physiological structures, providing the directed movement of blood and lymph in the body of humans and animals necessary for the implementation in the tissues of the transport gas, food substrates and their metabolites in the process of exchange of matter and energy between organisms and the environment.

The composition of the cardiovascular system includes the heart, blood vessels (circulatory system) and the lymphatic system. The Central organ of the cardiovascular system is the heart that pumps blood into the arteries which, according to their distance from the hearts become smaller, passing in the arterioles and capillaries forming bodies in the network. From networks of capillaries begin postkapillárnye venules, forming with their merger larger venules and then veins carry blood to the heart. Along with the blood capillaries in the tissues represented by a network of lymphatic capillaries, which begin lymphatic vessels, efferent lymph from the authorities to the regional lymph nodes, then the lymphatic trunks in thoracic duct and right lymphatic duct, which flows into the veins at the junction of the internal jugular and subclavian veins. The entire circulation path is divided into two circles: large, or bodily, deliver blood to the organs and back to the heart, and the small, or lung through which blood from the heart goes to the lungs, where gas exchange occurs between the blood and the air that fills the alveoli, and then returns to the left atrium.

The functions of all parts of the cardiovascular system strictly coordinated through the neuro-reflex regulation that allows you to maintain homeostasis in a changing external environment. Nervous regulation of the size of the lumen of blood vessels ensures a balance between the capacity of the circulatory system and the volume contained in her blood at the required height blood pressure and blood flow velocity. Products of tissue metabolism, hormones (epinephrine, vasopressin, and

other vasoactive substances circulating in the blood (histamine, acetylcholine, etc.), can directly influence the vascular wall. Of great importance in the movement of blood and lymph in the bodies are the vessels of the microvasculature, which, along with the transport function are involved in the provision of transcapillary exchange. The function of the cardiovascular system has the closest connection with the work of the whole organism, the activity of the respiratory system, the excretory organs. The functional state of the cardiovascular system can be described next hemodynamic parameters, most important of which are the systolic and cardiac output, blood pressure, heart rate, vascular tone, blood volume, speed of blood circulation, the value of the venous pressure, blood flow velocity, blood flow in the capillaries.





## Respiratory system.

Respiratory system - the totality of the bodies providing the function of external breathing (gas exchange between the inhaled air and circulating in the small circle of blood circulation).

Gas exchange is accomplished in the alveoli of the lungs, and the norm is aimed at the capture of the inhaled oxygen and the selection of the external environment formed in the body of carbon dioxide.

To the system the respiratory system includes the external nose, nasal cavity, pharynx, larynx, trachea, bronchi and lungs (Fig. 68). All of these organs other than the lungs are pneumatic to the ways in which air enters the main body of this system in the lungs. The lungs and pulmonary parenchyma form the respiratory part of that exchange of gases between the inhaled air and the blood.

Airway are connected in series cavities and tubes. The mucous membrane of the pneumatic paths covered with ciliated epithelium. The cilia of these cells their movements cast out along with the trapped mucus in the respiratory tract foreign particles.

Nose. Begin airway outer nose. The nose consists of the bridge of the nose that goes into the top of it. The wings of the nose (side part) fortified cartilaginous plates. Cartilaginous septum of the nose, complemented by a bony plate that divides the nasal cavity into right and left halves.

The nasal cavity through the holes hoani communicates with the upper part of the throat - the throat. On the lateral walls of the nasal cavity formed by the maxillary

bone and a trellised labyrinth of the ethmoid bone, there are three nasal turbinate's, hanging in the nasal cavity: the upper, middle and lower. Between them, the gaps nasal passages: the upper, middle and lower ). The upper part of the nasal cavity called the olfactory region, the middle and lower - respiratory.

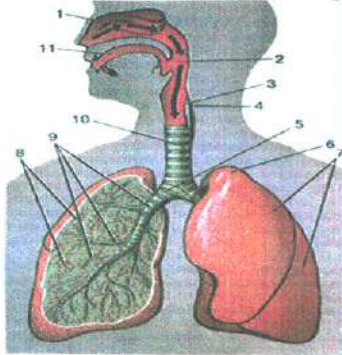
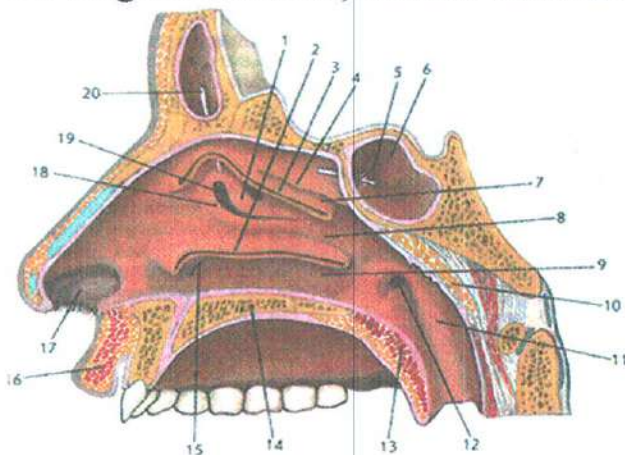


Diagram of the structure of the respiratory organs:

1 - the nasal cavity, 2 - SIP 3 - larynx (the cartilage of the larynx), 4 - tube, 5 - main bronchi, 6 - apex of the left lung, 7 - upper and lower lobe of the left lung, 8 - pulmonary vesicles, 9 - bronchial tree of the right lung, 10 - trachea, 11 the oral cavity.

In the mucosa of the respiratory region has a large number of goblet glandular cells that produce mucus. Cilia ciliated epithelium their movements cast of nasal mucus and trapped foreign particles. The detention of these particles contribute hairs present in the nasal cavity. The mucous membrane moistens the air you breathe. In the mucous membrane and beneath the mucous basis of many blood vessels, through which the inhaled air is warmed to body temperature. At the same time when the irritation or damage to the mucous membranes easily occur nosebleeds. The mucous membrane of the olfactory region contains a large number of olfactory receptors that perceive different smells.

In the nasal cavity open pneumatic sinuses. This sinus maxillary bone (maxillary sinus), frontal, sphenoid and ethmoid bones. Pneumatic par nasal sinuses, reduce the weight of the skull, and also serve as resonators sounds of voices.



The nasal cavity. Nasal turbinate's and nasal passages:

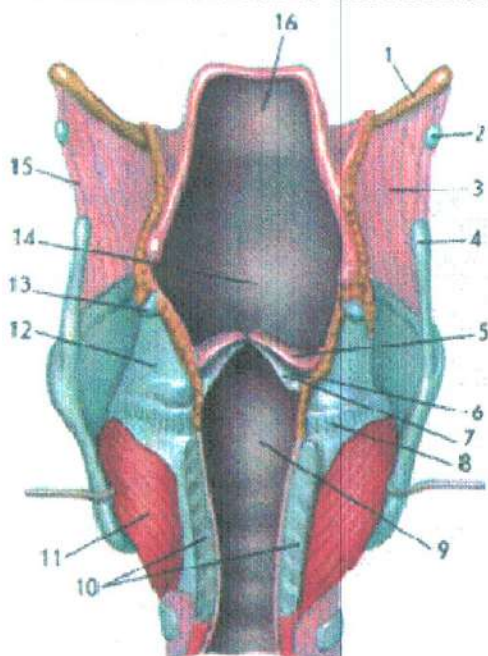
1 - big bubble lattice, 2 - inferior nasal Conch (cut), 3 - middle nasal Conch (cut), 4 - upper nasal Conch, 5 - aperture sphenoid sinus, 6 - sphenoid sinus, 7 - top of the bow, 8 - average of the bow, 9 - lower nasal passage, 10 - pharyngeal (adenoid), the amygdale, 11 - roller, 12 - pharyngeal opening of auditory tube, 13 - soft palate, 14 - hard palate, 15 - nasolacrimal duct 16 - upper lip, 17 - the eve of the

nasal cavity, 18 - hooked process, 19 - lattice funnel, 20 - the frontal sinus and the probe in its aperture.

From the nose inhaled the air through hoani enters the nasopharynx, and then, passing through the oral part of the pharynx, larynx. In the oral part of the pharynx enters the air when breathing through the mouth.

The larynx is located at the front of the neck, below the hyoid bone at the level of IV - VI of the cervical vertebrae. Ahead of the larynx are located on the surface of the neck muscles, back of throat, her guttural part. The larynx by means of the muscles and ligaments movably connected with the hyoid bone. Swallowing and talking larynx slightly shifted up and down. At the top of the throat communicates with the throat, below goes into the trachea.

The front and sides to the roof adjacent the thyroid gland.



The cavity of the larynx:

1 - great horn of the hyoid bone, 2 - granular cartilage, 3 - metapolybia membrane, 4 - upper horn of the thyroid cartilage, 5 - fold threshold, 6 - ventricle of the larynx, 7 - voice-fold, 8 - participatory joint, 9 - podgolosnaya cavity, 10 - plate of the cricoid cartilage, 11 - rear partecipata muscle, 12 - charalabidis cartilage, 13 - Rozhko, a prominent cartilage, 14 - eve of the larynx, 15 - lateral metapolybia link, 16 - epiglottis.

The skeleton of the larynx are the cartilages connected by joints and ligaments: thyroid, cricoids, charalabidis and the epiglottis (Fig. 70). The thyroid cartilage is the largest, consists of two four-rejuvaline plates, ahead of United at right angles. This angle comes forward, forming an elevated, well-expressed in men (Adam's Apple). Down is the cricoids cartilage, United thyroid cartilage by means of two joints. On the back plate of the cricoids cartilage are two movable harpalini cartilage, and above them is a miniature pair roscovitine and cuneiform cartilages. The entrance to the larynx by the throat closes elastic epiglottis. The inner surface of the larynx is lined with mucous membrane.

The cavity of the larynx is divided into three sections: upper, middle and lower. The top tapering downwards is the vestibule of the larynx. The middle division is between the threshold (false) folds at the top and voice (true) folds at the bottom.

The right and left walls of the larynx between the folds of the vocal cords - the ventricles of the larynx. Lower division under voice-cord cavity located below the vocal cords, extends downward and passes into the trachea.

Vocal fold is formed by the vocal cords and vocal muscles, strained between the thyroid cartilage in front and cricoid cartilage from behind. They are covered with mucous membrane. The narrow slit between the vocal cords is called the glottis. With the passage of exhaled air through the glottis vocal fold oscillate, vibrate and produce sound. The tension of the vocal cords, the width of the glottis during breathing and phonation regulates a number of muscles. Voice and ring-thyroid muscles pull the vocal cords, side participative narrowing the glottis, rear participative extend the glottis.

The lower voice in men depends on more than women and children, the length of the vocal cords. In the formation of articulate speech also participate lips, tongue, the oral cavity and the nasal cavity with its paranasal sinuses.

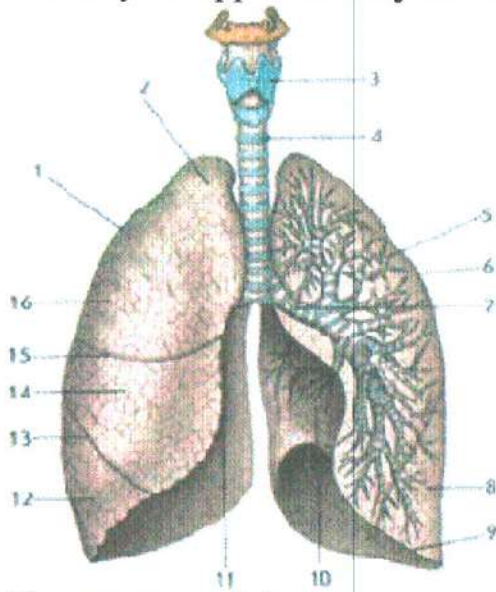
The trachea and bronchi. The larynx goes directly into the trachea, which is located at the bottom edge of VI cervical vertebra to the upper edge of the V thoracic vertebra. The trachea has a fairly rigid skeleton in the form of 16 - 20 semi rings that are not closed at the rear and connected to the annular ligament. The rear wall of the trachea adjacent to the esophagus, webbed, built of connective tissue, contains muscle cells. The mucous membrane of the trachea is covered with ciliated epithelium, has many glands and lymphoid nodules.

At the level of thoracic vertebra, the trachea divides into two main bronchi: the right and left. The right main bronchus is shorter and wider than the left, is a continuation of the trachea. The walls of the main bronchi have the same structure as the trachea. Their skeleton is formed cartilage semi rings. At the gate of the lungs the main bronchi divide into tertiary: three in the right lung and two in the left. Lobar bronchi divide, in turn, segmental, which form each light 22 - 23 order response-compliance. Thus is formed the bronchial tree. In the walls of bronchi average diameter of the hyaline cartilage is replaced by alveolar cartilaginous plates. The small bronchial cartilage is absent.

Light. Right and left lungs are in the chest cavity, left, and right from the heart. Covered with light serous membrane - pleura. Pleura forms around each lung closed pleural bag - pleural cavity, containing a small amount of pleural fluid. Form easy resembles a cone with a flattened on one side, rounded apex and base facing the diaphragm. On the flattened medial side are the gates of light, that light consists of a main bronchus, pulmonary artery, nerves, and out of the lung pulmonary veins and lymphatic vessels. Bronchi, vessels, nerves form the root of the lung.

Each lung is divided into shares furrows: right - into three parts, the left two. The share of high segments (10 in each lung), the boundaries between them on the surface of the lung is not visible. The segments are divided into lobules, which in

one segment about 80. In ver-jusqu slices is proportional bronchi, which branches into 3 - 7 terminal bronchioles. Terminal bronchioles are divided, in turn, on the respiratory bronchioles. Respiratory bronchioles become al-violate moves on the walls of which are microscopic bubble-key alveoli. Their walls are formed by a single layer of epithelial cells. One terminal bronchiole with its ramifications - respiratory bronchioles, alveolar passages and alveoli is called by the respiratory tree or pulmonary acinosa (a bunch). Acinus is a structural unit of the lung. It is the gas exchange between flowing through the capillaries the blood and the air of the alveoli. In both the human lung has a 600 - 700 million alveoli, respiratory surface which rye is approximately 120 m2.

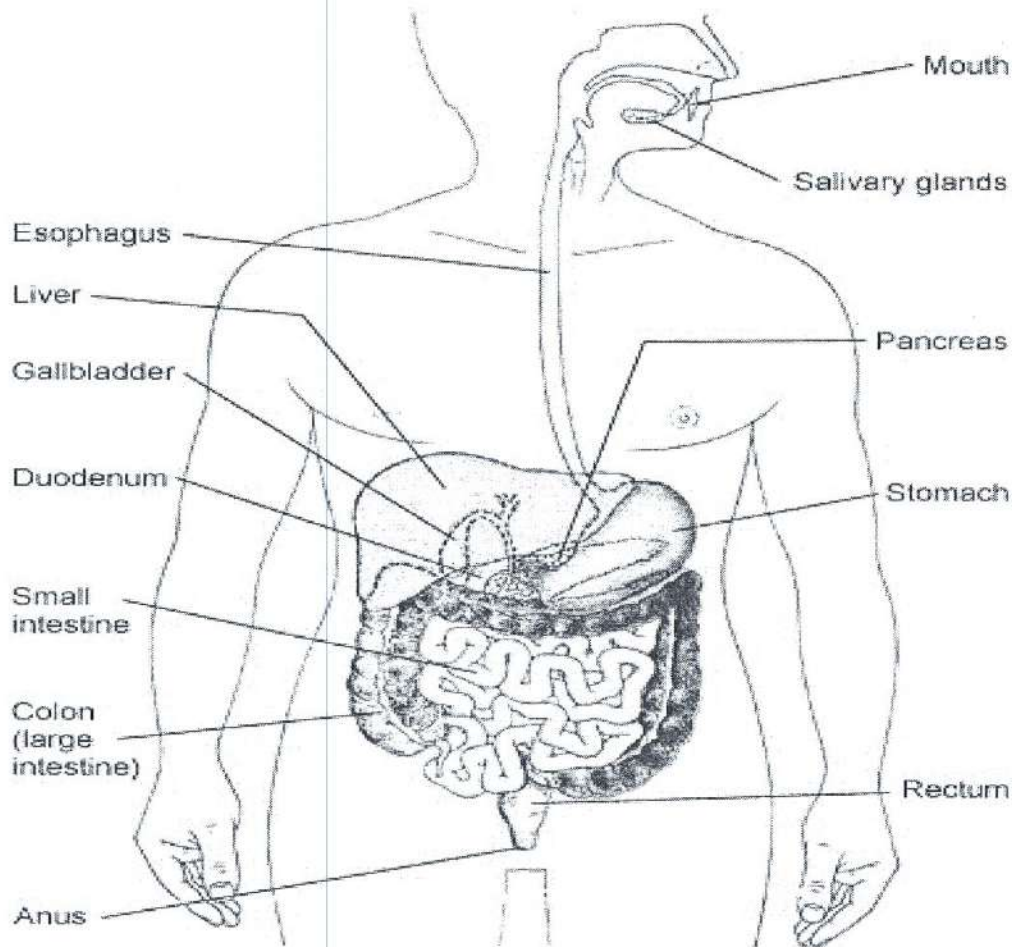


The structure of the lungs:

1 - the right lung, 2 - top of my lung, 3 - larynx, 4 - trachea, 5 - left lung, 6 - upper portion 7 to the main bronchus of the left lung, 8 - lower lobe of the left lung, 9 - lower edge of the left lung, 10 - heart of the tenderloin, 11 - medial border of the right lung, 12 the lower portion of the right lung, 13 - slanting crack 14 - average share of the right lung, 15 - horizontal slit 16 to the upper portion of the right lung.

# The human digestive system.

## Digestive System



The digestive system begins with the mouth, followed by the pharynx, the esophagus and then, finally, the cornerstone of the digestive system - gastrointestinal tract.

The oral cavity is the first division of the digestive system, so how good and right it is leaving all the processes for initial processing of food, depends on the rest of the digestive process. It is in the oral cavity is determined by the taste of food, here it is chewed and moistened with saliva.

SIP follows the oral cavity and is a funnel-shaped channel, lined with mucous membrane. It crossed the respiratory and digestive path, the activity of which should be clearly regulated by the body (no wonder they say, when a person is choking, what's food got "the wrong way").

The esophagus is a cylindrical tube that is located between the throat and stomach. According to it, the food enters the stomach. The esophagus and pharynx, lined with mucous membrane, in which there are special glands which produce secret

hydrating food during its passage through the esophagus into the stomach. The total length of the esophagus is about 25 cm. In the quiescent condition of the esophagus has a folded shape, but he has the ability to lengthen.

The stomach is one of the main components of the digestive tract. The size of the stomach depends on its fullness and is approximately 1 to 1.5 L. It performs several important functions, which include: directly digestive, protective, secretory. In addition, in the stomach of the processes associated with the formation of hemoglobin. It is lined with mucous membrane, which focuses the weight of the digestive glands secrete gastric juice. Here the food mass is impregnated with gastric juice and crushed, or rather, the intensive process of its digestion.

The main components of gastric juice are: enzymes, hydrochloric acid, and mucus. In the stomach received solid food can be up to 5 hours, the liquid - to 2 hours. Components of gastric juice produced chemical processing of food entering the stomach, turning it into a partially digested semi-fluid mass, which then enters the duodenum.

The duodenum is an upper or first part of the small intestine. The length of this part of the small intestine is the length of the stacked twelve fingers (hence the name). It connects directly to the stomach. Here, in the duodenum, receives bile from the gallbladder and pancreatic juice. In the walls of the duodenum is also quite a large number of glands that produce rich mucus alkaline secret that protect the duodenum from the effects of falling into it acidic gastric juice.

The small intestine, except duodenum, are skinny and iliac. The small intestine has a length of about 5-6 m. In the small intestine occur almost all the main processes of digestion (digestion and absorption). On the inside of the small intestine has a finger-like outgrowths, by which its surface is greatly increased. In humans, the digestive process ends in the small intestine, which is also lined with mucous membrane, is very rich in glands secrete intestinal juice, which includes a sufficiently large number of enzymes. The enzymes in the intestinal juice finish the process of breakdown of proteins, fats and carbohydrates. The mass located in the small intestine, mixed by peristalsis. Chyme is slowly coming to the small intestine, small portions entering the large intestine.

The colon is approximately twice as thick as thin. It consists of the cecum and vermiform Appendix - the Appendix, colon and rectum. Here, in the large intestine, is the accumulation of undigested food, and the digestive processes are virtually absent. In the colon occur two main processes: the absorption of water and the formation of feces. The rectum serves as a place of accumulation of fecal matter, which in the process of defecation is removed from the body.

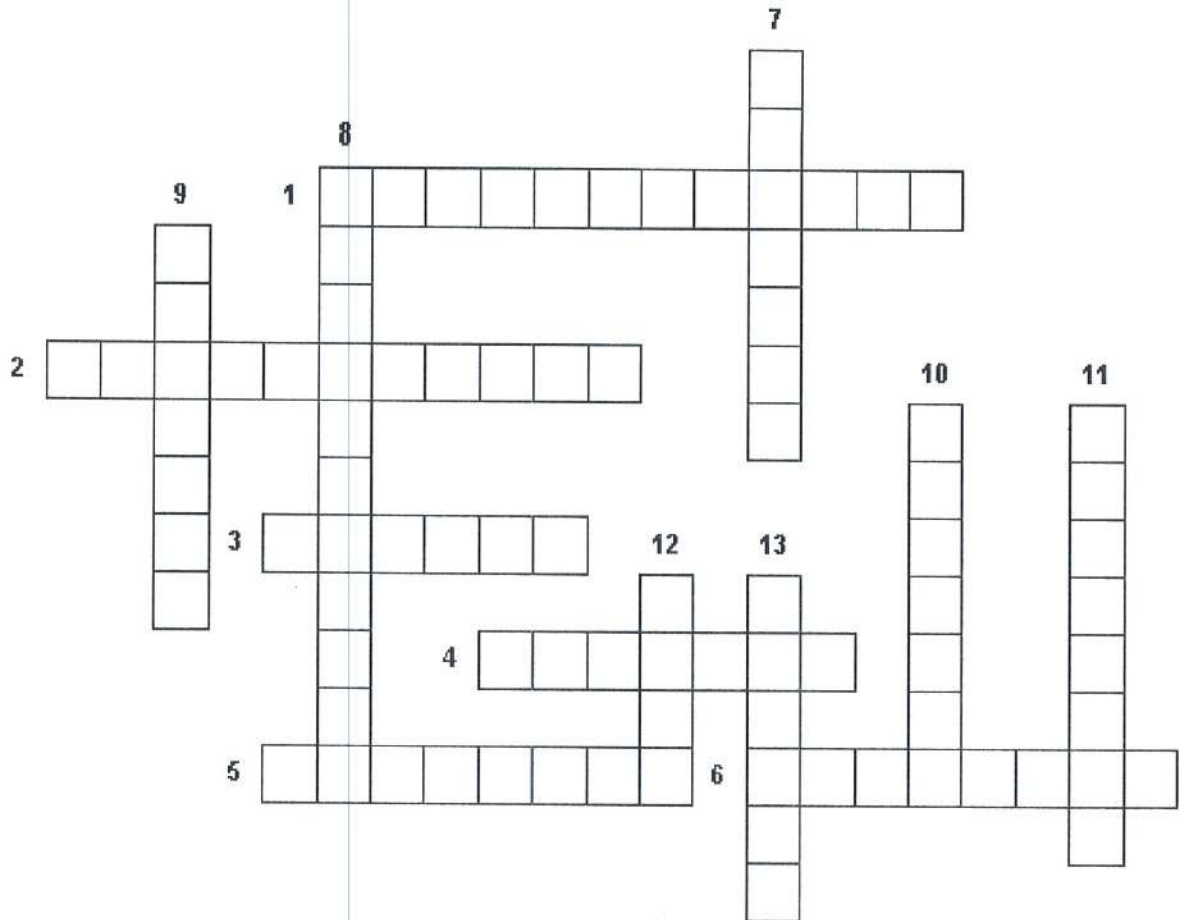
The Appendix, as we have said, is part of the large intestine and is a short and thin appendage of the cecum length of about 7-10 cm. Its features, and also causes inflammation, physicians are still not clearly clear. According to current data and the opinion of some scholars, the Appendix, in the wall of which is numerous lymphoid nodules, is one of the organs of the immune system.

But the digestive system, as would have been arranged correctly its individual organs, could not work without certain substances - enzymes, which are produced in special glands in the body. Triggering mechanisms for the digestive system. Digestive enzymes are representing proteins that provide the breakdown of large molecules of food into smaller ones. The activity of the enzymes in our body in the process of digestion is directed to substances such as proteins, fats and carbohydrates, and minerals, water and vitamins are absorbed practically unchanged.

For splitting each group of substances has its own specific enzymes: protein - protease, for fats lipase, for carbohydrates - carbohydrate. The main glands that produce digestive enzymes are salivary glands of the mouth (salivary glands), pancreas of the stomach and small intestine, pancreas and liver. The main role is played by the pancreas, which produces not only digestive enzymes, and hormones such as insulin and glucagon, involved in the regulation of protein, carbohydrate and lipid metabolism.

Cells that produce digestive enzymes in the pancreas, quite a lot. They form a special clusters, from which depart small ducts; it moves secreted by the pancreatic juice, which is a kind of cocktail of different enzymes.

Also important and salivary glands of the small intestine where digestion of most foods.



1. Prevention of the disease?
2. The set of all processes (mechanical, chemical, mainly enzyme) that breaks down and converts food to a state suitable for the absorption, assimilation and participation in metabolism which demanded excellent food in the body?
3. Part of the digestive tract located between the cavity and esophagus, as well as a portion of the breathing tube conducting air from the nasal cavity to the larynx?
4. Widened section of the digestive tract following the esophagus?
5. Biologically active specific proteins that speed up (catalyze) chemical reactions in the metabolic process and energy?
6. Section of the digestive tract, starting from the stomach and ending at the anus.
7. Cavity, which begins the digestive tract. Here the food is moistened with saliva, crushed and determined on palatability.
8. Substances necessary for the body.

9. Part of the digestive tract, the continuation of the pharynx, the tube length of about 25 cm.
10. Salivary gland, the secret of which participates in the first stage of digestion.
11. Complex reflex act, which is the conversion of food from the mouth into the throat and further movement in the esophagus and the esophagus.
12. The organs in the oral cavity chopping food, good digestion and assimilation.
13. The intestine, which occupies the longest part of the digestive tube. It is the final digestion of food supply and absorption of nutrients in the blood and lymph.

## The digestive system.

The digestive system performs the functions of mechanical and chemical processing of food, absorption of recycled substances in the blood and lymph and allocation is not digestible substances. The digestive system includes the mouth forming its organs, throat, esophagus, stomach, small and large intestine, and salivary glands, liver and pancreas, whose ducts open into the hollow lumen of the digestive organs.

The oral cavity. The oral cavity is divided into two parts: the vestibule of the mouth and the oral cavity.

The vestibule of mouth is narrow slit between the lips and cheeks on the outside of your teeth and gums from the inside. The actual oral cavity extends from the front teeth to the throat, restricting the entrance to the throat. Front and side walls of the oral cavity is formed by the upper and lower teeth and gums, upper wall presents the hard and soft palate, and the lower muscles of the diaphragm mouth. Hard and soft palate separates the oral cavity from the nasal cavity and from the upper part of the throat (Fig. 60). The rear part of the soft palate ends with elongated tongue, swallowing provides a barrier upper part of the throat (nasopharynx from the or pharynx).

On the lower wall of the oral cavity, diaphragm, is the language involved in the process of chewing, pushing food down his throat, and in articulation of speech. The tongue is the organ of taste. The language distinguish the tip (top), the body and the root. The mucous membrane of the tongue forms numerous different shapes and sizes papillae (mushroom, filiform, foliate, globularia). These papillae have receptor cells, perceiving taste irritation (salty, sweet, sour, bitter). In the mucous membrane of the tongue is speaking, the amygdale is related to the organs of the immune system.

In the mouth in the dental alveoli of the lower and upper jaws are clenched teeth. Each tooth consists of three parts: crown, neck and root.

The crown is massive Department of tooth protruding above the gum. Not much narrowed neck is located on the border between the root and crown coy. The root of the tooth firmly adherent to the tooth extraction socket using its over-the same as the periodontium.

Inside the tooth has a cavity occupied by the pulp of the tooth is the pulp, which from the root apex of the tooth to penetrate the nerves and blood vessels.

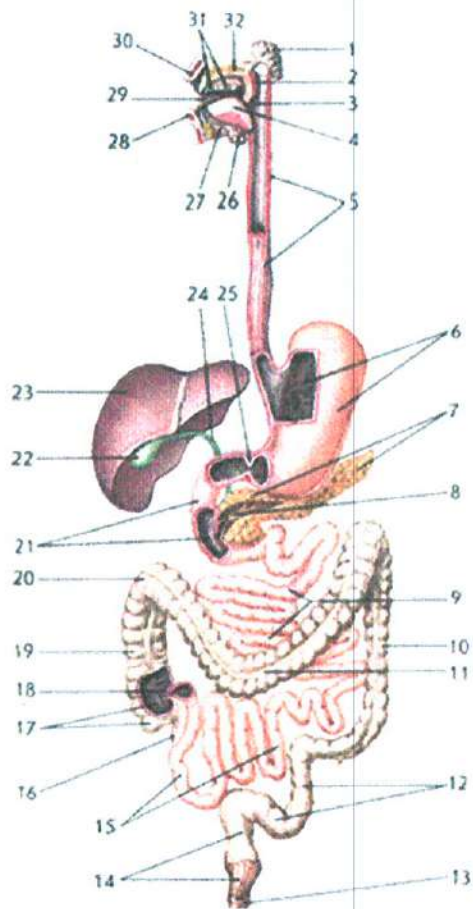
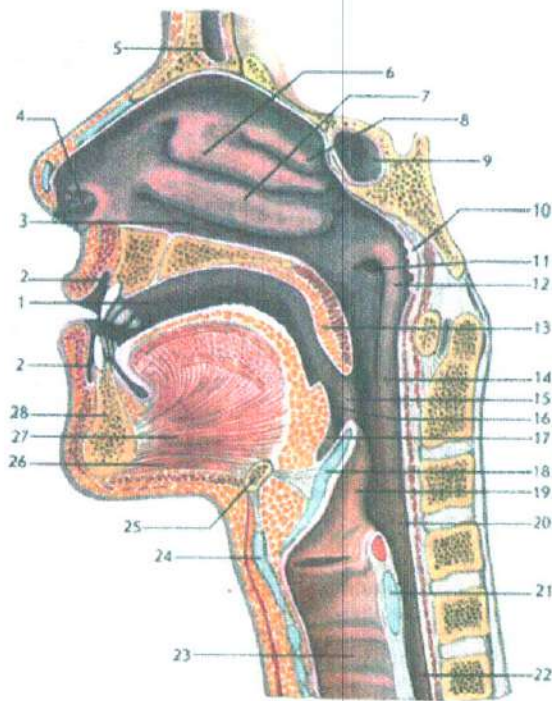


Diagram of the structure of the digestive system: 1

- parotid gland, 2 - soft sky, 3 - SIP, 4 - language 5 - esophagus 6 stomach 7 - pancreas, 8 - pancreatic duct, 9 - jejunum, 10 - descending colon, 11 - transverse colon, 12 - sigmoid colon, 13 - external sphincter of the anus, 14 - rectum, 15 - the ileum, 16 - vermiform Appendix (Appendix), 17 - cesium, 18 - valve (ilio-slepochnye), 19 - ascending colon, 20 - right bending colon (liver), 21 - duodenum, 22 - gall bladder, 23 - liver, 24 - common bile duct, 25 - pyloric sphincter of the stomach, the 26 - submandibular gland, 27 - sublingual gland, 28 - lower lip, 29 - mouth, 30 - upper lip, 31 - teeth, a 32 - the hard palate.

The shape of the crown and the location of the teeth are divided into incisors, canines, small and large molars. The last molar tooth is called the wisdom tooth. Only in the adult human has 32 permanent teeth. On each jaw on one side of 8 teeth: 2 incisors, 1 canine, 2 small molar teeth, 3 large molar teeth. The incisors, canines and small molars have one root, large molars - 2 - 3 root.

Change milk (temporary) permanent teeth occurs in childhood. Baby teeth begin to appear at the child of 7 months. To 3 years to grow all their teeth. The child has 20 primary teeth: 2 incisors, 1 small molar tooth and 2 large molar teeth on each side of the jaw. After 6 years the replacement starts to permanent teeth, which ends at 12 - 13 years. The last tooth wisdom tooth appears in 18 - 30 years. Distinguish small and large salivary glands.



The oral cavity and oral pharynx: 1 - the actual oral cavity, 2 - vestibule of mouth, 3 - bottom of the bow, 4 - the eve of the nasal cavity, 5 - frontal sinus, 6 - middle nasal Conch, 7 - inferior nasal Concha, 8 - upper nasal Conch, 9 - sphenoid sinus, 10 - pharyngeal (adenoid), the amygdala, 11 - pharyngeal opening of auditory tube, 12 - tube roller, 13 - soft palate, 14 - oral part of the pharynx, 15 - palatal almond, 16 - isthmus throat, 17 - the root of the tongue (lingual tonsil), 18 - epiglottis, 19 - drew Nagarjuna fold, 20 - laryngeal part pharynx, 21 - cricoid cartilage, the 22 - esophagus, 23 - trachea, 24 - thyroid cartilage, 25 - hyoid bone, 26 - chin-hyoid muscle, 27 - chin-lingual muscle 28 - the lower jaw.

The ducts of the salivary glands open into the mouth. Numerous minor salivary glands, lip, buccal, Palatine, lingual - located in the lining of the walls of the oral cavity. To a large salivary glands include the paired parotid, submandibular and sublingual glands.

Parotid gland lies anterior to and below the ear in the maxillary fosse. Its duct passes through the buccal muscle, and opens into the vestibule of the mouth at the level of the top of the second root of the tooth .Submandibular gland lies on the side under the lower jaw. Its duct goes up and falls into the cavity of the mouth to the papilla under the tongue. The sublingual gland lies at the aperture of the mouth under the tongue. Several of its excretory ducts open into the mouth next to the language.

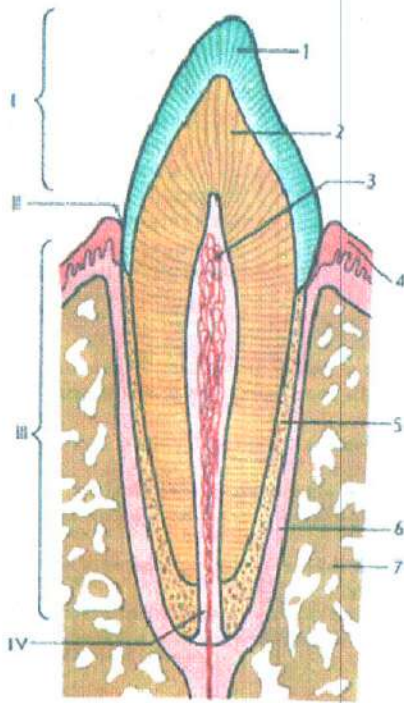


Diagram of the structure of the tooth: 1 - enamel 2 - dentin, 3 - pulp, 4 - jaw, 5 - cement, 6 - periodontal, 7 - bone; I - the crown of the tooth, II - the neck of the tooth, III - the root of the tooth, IV - a root canal of a tooth.

SIP is located behind the mouth and nasal cavity (under the base of the skull). On the border between the sixth and seventh cervical vertebrae, it enters the esophagus. The length of the pharynx in the adult 12 - 14 cm. In the throat there are three divisions: the nasal, oral and laryngeal. Nasal Department (nasopharynx) is above the soft palate, behind the nasal cavity, which throat is communicated via holes choanae. The oral Department (oropharynx) lies behind the oral cavity, from which it is separated by a hole, called the "mouth". Below the mouth of the Department behind the larynx is located is assumed laryngeal part of the pharynx, soamsawali with the entrance to the larynx and passing into the esophagus at the level of the lower edge of the larynx. In the oral Department of the pharynx is the intersection of the digestive and respiratory tracts.

In the mucous membrane of the pharynx is located six tonsils - large accumulations of lymphoid tissue, forming the so-called pharyngeal lymphoid ring of Pirogov - Waldeyer. It is the organs of the immune system. Two Palatine tonsils lie on each side of the pharynx. Two tubal tonsils are located near the right and left of the pharyngeal openings of the auditory tube, which tells the cavity of the pharynx to the tympanic cavity of the middle ear. One the pharyngeal tonsil is located at the top of the throat and one speaking on the bottom, in the mucous membrane of the tongue.

In the walls of the pharynx is well expressed muscular layer, consisting of striated muscle fibers. When it reduce the communication received from the mouth the food lump quickly protalk is provided in the esophagus and then into the stomach. The esophagus is a long, narrow tube. It starts at the border between the sixth and seventh cervical vertebrae, and ends at the confluence of the stomach. The length of the esophagus in adults is 25 - 30 cm of the Esophagus has three narrow: the

first is the beginning, the second is between the fourth and fifth thoracic vertebrae, the third - level hiatal. The inner mucosa of the esophagus is covered by rugose multilayered epithelium. It forms longitudinal folds that allow the esophagus to expand while passing through him food.

Muscular layer in the upper third of the esophagus is formed of striated muscle fibers, and in its lower sections of smooth muscle cells. Covers the esophagus outer sheath adventitia represented by loose fibrous connective tissue.

## The history of medicine.

The beginnings of medical and hygienic knowledge born from observations and experience at the earliest stages of human existence and entrenched in the customs and methods of treatment and protection from diseases, amounting to folk medicine and hygiene. A significant role among the preventative and treatment measures are played using the forces of nature (sun, water, air), empirically found drugs of vegetable and animal origin.

Initially the disease was seen as foreign and hostile to man a living being, penetrating into the body and causing a painful condition. Helplessness before the forces of nature, the incomprehension of the world led to the emergence of ideas about evil spirits, entering into man, and the application of several magical tools and techniques of treatment (spells, incantations, prayers, and more), containing in itself the germs of psychotherapy. Developed sorcery, shamanism; there was the priest, temple M.

Written monuments of the Ancient East (ancient Egyptian medical papyri; Hammurabi laws; Manu laws and Ayurveda in India and others) indicate that in ancient States through legislation regulates the conditions of service of doctors until the fees for the treatment and establish different degrees of responsibility for damage to the patient.

Doctors and priests, along with the mystical, magical forms of healing, used rational therapeutic techniques and medicinal folk M Large emphasis was placed on the dietetics, hygiene regulations, massages, water treatments, gymnastics. Applied surgical techniques: craniotomy, in cases of difficult birth - caesarean section and embryotomy and so on. Ancient Chinese M used more than 2,000 drugs, among which a special place is occupied ginseng, mercury, rhubarb, camphor and others. Several millennia has a peculiar method of acupuncture. Extensive details about M of the peoples who lived in the 1st century BC on the territory of Central Asia, Iran, Azerbaijan and Afghanistan, contains "Avesta" (9th century BC-3rd century A.D.) is the Holy book of Zoroastrianism. At the time there was the first idea about anatomy and physiology. An important place was given to disease prevention ("tear out the disease before he touches you"), followed by many orders of hygiene issues, including nutrition, family life, the relationship between pregnant women and nursing mothers, about the prohibition to drink intoxicating drinks and more.

M. Ancient Greece used the accumulated ancient peoples information.

The trend towards differentiation of knowledge is reflected in the cults of deified physician Asclepius and his daughters: Hygeia (khranitel'nitsy health (hence hygiene) and Panacea - patroness of medical Affairs (hence the panacea). The treatment was performed in the temple "asclepeion and home institutions. Training of physicians was held by type of craft apprenticeship. Differed doctors home (the nobility) and itinerant (served tradesmen and artisans). There were so-called public doctors for the gratuitous treatment of the poor citizens and carrying out measures against epidemics.

Before the others had formed Croton medical school, whose representative of Alcmeon Croton (late 6th - early 5th centuries BC) developed the doctrine of the pathogenesis of diseases was based on the idea of the body as a unity of opposites: health harmony, the disease is disharmony of the body and its inherent properties. Treatment principle in this school - "the opposite Leche opposite" - formed the basis of therapeutic beliefs subsequent medical schools. The doctrine of the pathogenesis has been further developed in the school of Cnidus (1st half of the 5th century BC), who developed one of the options humeral (from Latin humor - liquid) doctrine, according to which the essence of disease is a disorder of the correct mixing of body fluids under the influence of one or other external causes. Different variants of the humoral doctrine emerged in the M States of the Ancient East, but most clearly formulated by Hippocrates, for many centuries determined the direction M. Hippocrates has allocated M. as the science of natural philosophy, has made the observation at the bedside of the patient in their own healing method studies have pointed to the importance of lifestyle and the role of the external environment in the etiology of diseases, teaching about the basic types of physique and temperament of the people justified individual approach to diagnosis and treatment of the patient.

A successful attempt to lay the Foundation of the science of the structure and functions of the human body has taken over the 3 century BC Alexandrian physicians Herophilus, and then Arbitrat that led to the first experimental evidence that the brain was the organ of thought, established the differences between sensory and motor nerves, described shell gyrus and the ventricles of the brain and so on.

Exceptional impact on the development of M had a native of Asia Minor, the doctor of Pergamum and Rome K. Galen. In the 2nd century A.D. he summarized information on anatomy, physiology, pathology, pharmacology and pharmacognosy (glenavy drugs, therapy, obstetrics, occupational health, in each of these industries M

made a lot of new and tried to build a scientific system of healing art. Galen was the first to introduce in M vivisectional experiment on animals for the purpose of systematic study of relationships between structure and functions of organs and systems of the human body. He showed that the knowledge of anatomy and physiology is the scientific basis of diagnostic, therapeutic and surgical treatment and hygienic measures. Teleological orientation of the writings of Galen contributed to the fact that his legacy transformed ("galenism") has received the support of the Church and were dominated by M. of East and West for many centuries.

Elements of sanitation and public hygiene, available in all the States of the Ancient world, reached at the Rome high level, as evidenced by the remains of the water, sewer and baths. In Rome first came sanitary and military medical organizations, as well as special service urban doctors, had health legislation.

In the Byzantine Empire during this period resulted in large hospitals for the civilian population. Devastating epidemics and wars led to the establishment in Europe of quarantines, monastic hospitals and infirmaries.

In ancient feudal state, along with the monastic M, continued to develop national M Common cures, contained a number of rational guidance for the treatment of diseases and consumer health, herbalists (silniki) - description of medicinal plants. Among traditional practitioners was specialization: "manual therapists", "full-time" and "kilenyi" (hernia) healers, "carnesecca", "Kamchiya" (for the treatment of aches, rheumatism), "pochechuynogo" (hemorrhoids), "Capucine" (venereal diseases) healers, midwives-grandmother, grandmother - the healer of children and others.

Important role in the development of M played physicians East: al-Razi (known in Europe under the name Rises); Ibn Sina (Avicenna) - the author of "Canon of medical science", encyclopedia of the code of medical knowledge, and Ismail Jurjani (12th century), reflecting the achievements of the Khorezm M.; Armenian doctor M. Geraci and others. The medical faculties of the universities that emerged in Europe in the 11th-12th centuries, could not contribute to the rapid progress Meters, as they were in the power of scholasticism, the impact of which has been affected less in the universities of Salerno, Padua, Bologna (Italy), Krakow, Prague and in Montpellier (France). Against scholasticism, experiential knowledge were fighting the Spanish doctor Arnaldo de Vilanova (13th-14th century) and many others.

## **Medical scientists and their contributions to medicine.**

Ilya Ilyich Mechnikov( 1846-1916) Russian scientist ; author phagocyte theory of immunity, in 1908. awarded the Nobel prize for the discovery of phagocytosis.

Edward Jenner (1749-1823), English village doctor , for the first time was vaccinated against smallpox in 1776.

Louis Pasteur ( 1822-1895), French scientist, Nobel prize winner, proved that infectious diseases are caused by the ingestion of microbes. Developed methods of preventive vaccination(had).

Burdenko N. N. Russian surgeon military surgery, the founder of neurosurgery.

BEKHTEREV Vladimir Mikhailovich (1857-1927), Russian neurologist, psychiatrist and psychologist, founder of the scientific school. The founder of reflexology.

Ivan Petrovich Pavlov(1849-1936) Russian physiologist, classic contribution on the physiology of blood circulation and digestion.

Nikolai Ivanovich Pirogov base anesthesia, the development of anatomy and surgery, the use of plaster bandages.

Charles Darwin developed the theory of sexual selection .

And many other scientists.

## **Health of the Russian Federation.**

Health protection of citizens in Russia is a set of measures of political, economic, legal, social, cultural, scientific, medical, sanitary-hygienic and anti-epidemic measures to preserve and strengthen the physical and mental health of every person maintaining his long active life, providing him with medical assistance in case of loss of health. After the collapse of the Soviet Union simultaneously with the decentralization of power in the country was and decentralization of the health system. In November 1991 the Ministry of health of the USSR was abolished. Operated by the Ministry of health of the Russian Federation (up to 1991 RSFSR). In 1993 a law was passed "Fundamentals of legislation of the Russian Federation on health protection of citizens", which has become the main guiding document. In January 1994 was formed by the Ministry of health and medical industry of the Russian Federation. In fact, it just combined the two ministries - the Ministry of health of the USSR and RSFSR.

In August 1996, the Ministry of health and medical industry was reorganized into the Ministry of health of the Russian Federation. The medical industry transferred to the Ministry of industry of the Russian Federation.

In March 2004, the Ministry of health and Ministry of labor and social development of the Russian Federation was formed by the Ministry of health and social development of the Russian Federation.

In November 2011 enacted Federal law of 21.11.2011 No. 323-FZ "About the fundamentals of health protection of citizens in the Russian Federation".

In may 2012, the Ministry of health and social development of the Russian Federation was transformed into the Ministry of health of the Russian Federation and the Ministry of labor and social protection of the Russian Federation.

From November 2014 began mass protests across the territory of the Russian Federation, in connection with the reduction of funding of medicine and firing a huge number of medical workers.