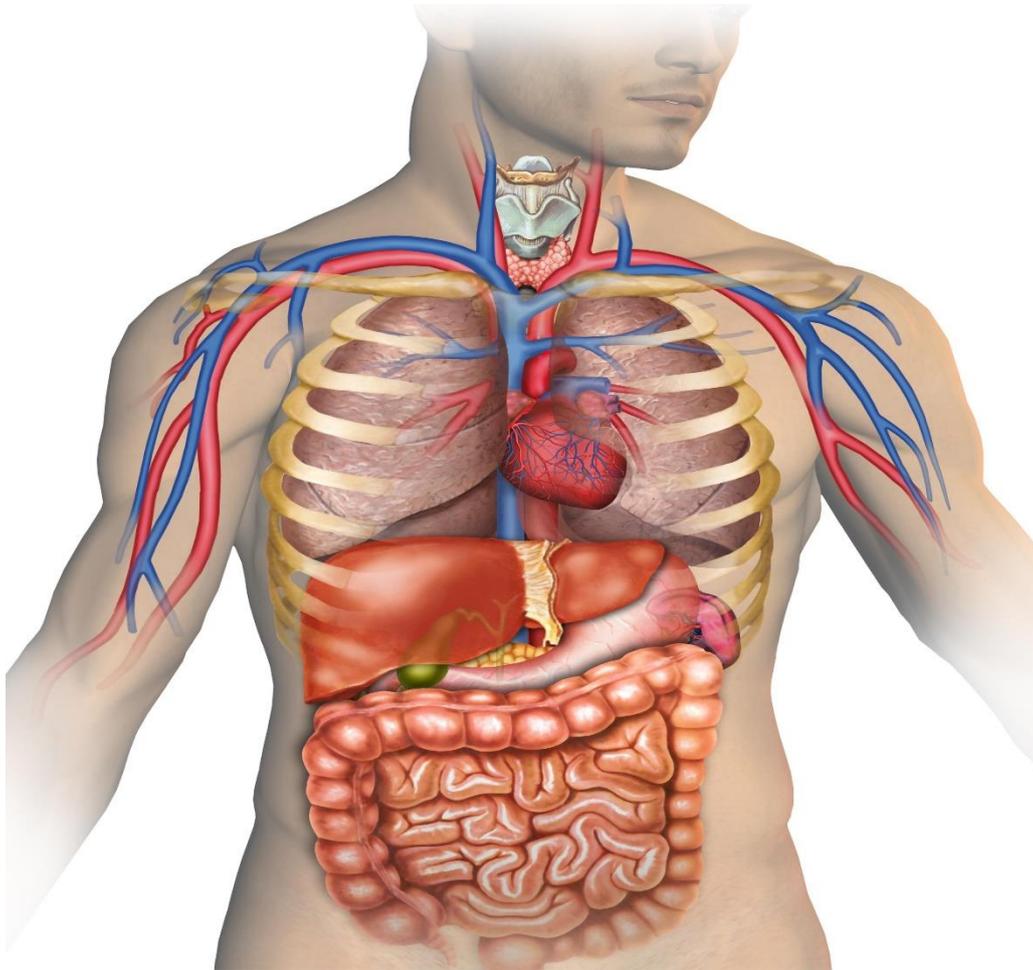


GULISTAN STATE UNIVERSITY

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HUMAN ANATOMY

Handbook for students Biology decipline



Gulistan 2022

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ANNOTATION

The handbook is written for students of discipline Biology and it is intended for university students, medical personal, and students of advanced training courses.

Content and language integrated learning (CLIL) is a way for learning content through an additional language (foreign or second) or language through some specific content, thus teaching the subject via the language.

The handbook provides authentic information on structural organization of human body, practical working, glossary and references. All information is illustrated with pictures, and using pictures is one of the best teaching methods to illuminate human anatomy.

As well as, reading comprehension passages with pre and post reading activities in order to consolidate student's reading, writing, speaking and listening comprehensions and improve language skills simultaneously integrating content and language learning. Pictures help students to observe material more deeply and consolidate their knowledge.

ANNOTATSIYA

Uslubiy qo'llanma Biologiya yo'nalishi talabalari uchun mo'ljallangan bo'lib, OO'Yu talabalari, medicina xodimlari va malakali kadrlar tayyorlash uchun mo'ljallangan.

CLIL bu, maxsus fanlarni, hamda maxsus fanlar qismlarini ingliz tilida o'qitishdagi vaziyatlarda qo'llaniladi, ya'ni maqsad fanni ikki tomonlama o'qitishdir: fanni o'rganish va bir vaqtda xorijiy tilni o'rganish hisoblanadi.

Uslubiy qo'llanmada odam organizmining tuzilishi, glossariy va foydalanilgan adabiyotlar bo'yicha autentik ma'lumotlar berilgan. Ma'lumotlarning barchasi rasmlar yordamida yoritilgan bo'lib, "Odam anatomiyasi" ta'limida rasmlardan foydalanish eng samarali usullardan hisoblanadi. Rasmlar talabalarga materialni chuqurroq o'zlashtirishga va bilimlarini mustahkamlashga ko'maklashadi. Shuningdek, o'qib va

tinglab tushunish, yozma va og‘zaki nutq ko‘nikma va malakalarini rivojlantirish hamda xorijiy til va maxsus fanga oid kontentni integrativ yondashuvini ta‘minlash maqsadida fanga oid autentik ma‘lumotlar, mustahkamlovchi mashqlar bilan berilgan.

АННОТАЦИЯ

Методическое пособие предназначено для студентов направления Биологии а также будет полезен студентам других специальностей, изучающим анатомию человека, и преподавателям вузов.

Контентно-языковое интегрированное обучение (CLIL) — это способ изучения контента через дополнительный язык (иностраный или второй) или языка через какой-то определенный контент, таким образом, преподавание предмета через язык.

Методическое пособие содержит аутентичные материалы о строение тела человека, глоссарий и список литератур. Вся информация подробно иллюстрирована оригинальными рисунками, что эффективно помогает в обучение и освоении материалов анатомии человека. Кроме того, методическое пособие обогащено упражнениями для закрепления полученных знаний и развития навыков чтения, аудирования, письменных и устных коммуникативных компетенций, одновременно интегрируя контент и изучение языка.

Introduction

Anatomy (from Ancient Greek *anatome* – ‘dissection’) is the branch of biology and natural sciences which studies classification of organisms, body structures, system of their joints and functions. This discipline studies the external and internal forms and proportions of a human, individual organs, their structure. Includes the following disciplines: normal anatomy (studies the structure of organs and tissues of a healthy person), topographic anatomy (studies the location of organs and their relationships), pathological anatomy (studies the structure of organs and tissues of a diseased organism). Important notice for, there is no exact “norm” in anatomy. There is no any norm in anatomy. It is difficult to agree on what is considered the norm. Along with this, the concept of "norm" is still very variable. The physiological norm is what a healthy organism should have in terms of the laws of its development, structure, and functions. The statistical norm is what is inherent in the majority, and the individual norm is the perceived deviations from the physiological and statistical norms. Anatomy is the basis for such sciences as anthropology, physiology, histology, embryology, comparative anatomy, paleontology, evolutionary doctrine. Physiology, histology and embryology emerged from anatomy. Human anatomy cannot be understood and properly studied without the anatomy of vertebrates. Comparative anatomy is close to paleontology - the science of extinct organisms.

SHORT HISTORY OF THE DEVELOPMENT OF ANATOMY

The origin of anatomy goes back to prehistoric times. Rock paintings of the Paleolithic era indicate that primitive hunters already knew about the position of vital organs (heart, liver, etc.). Among the first known anatomists to be named are:

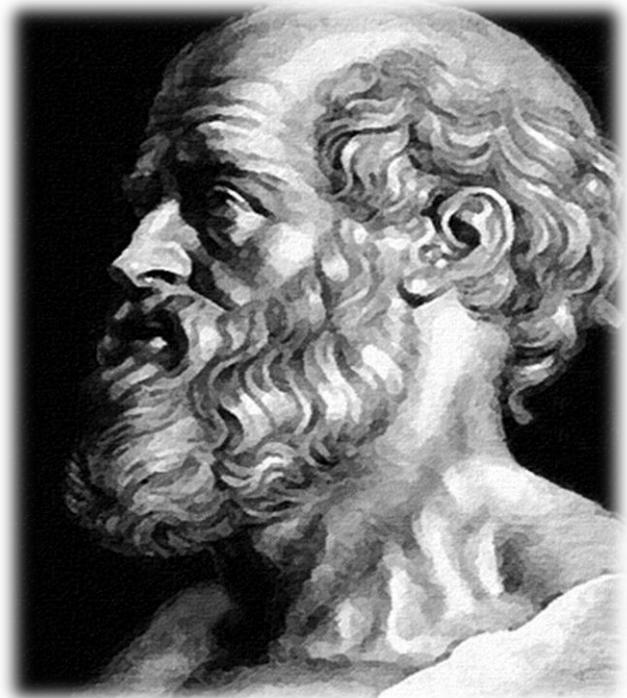
Pythagoras

(lived 590 BC). He mentioned everything is consisted of the seed and studied the origin of living matter.



Alcmaeon of Croton

(500 BC) He was the first who opened up the corpses of animals to study the structure of their bodies. His statement: the sense organs are directly connected with the brain and the perception of sensations depends on the brain.



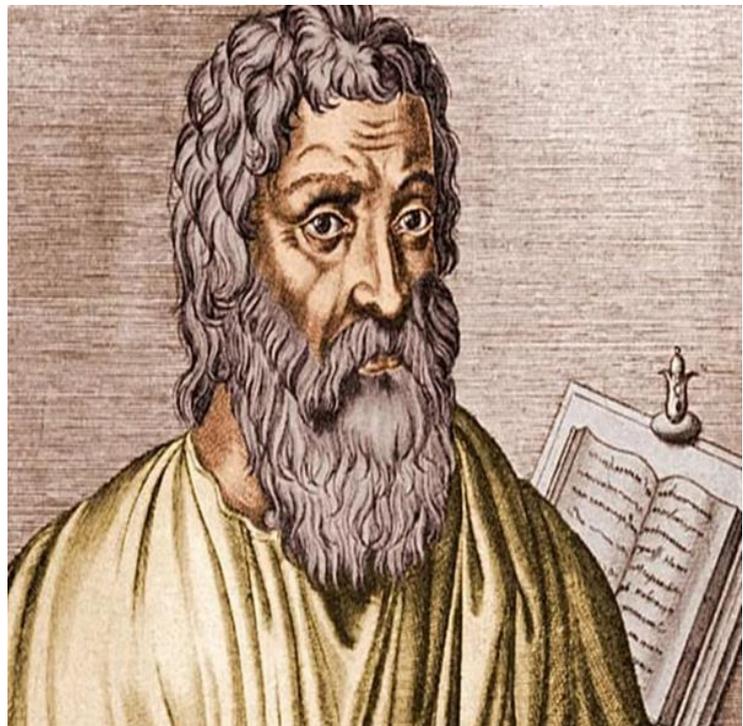


Aristotle

set out in his books a lot of facts about the structure of animal organisms, distinguished in animals, which he dissected, tendons and nerves, bones and cartilage. According to him, the most important organ is the heart. Aristotle gave the name "aorta", he was interested in the human

Hippocrates

one of the greatest ancient Greek physicians and anatomists, who is called the father of medicine, formulated the doctrine of four major parts of physique and temperament, collected in his books the information available at that time about the formation of the human body, described some bones of the skull roof, vertebrae, ribs, internal



An outstanding physician and encyclopedist of the Ancient World from Pergamum (131–201) summarized the anatomical knowledge available at that time, described a number of cranial nerves, connective tissue and nerves in the muscles of the eyes, some blood vessels, periosteum, and many ligaments. He was the first to become interested in the



However, Galen studied anatomy by dissecting pigs, dogs, sheep, monkeys, lions and was Galen's works for 14 centuries were the main sources of anatomical and medical knowledge and invariably enjoyed the patronage of the church. He was confident in the identity of human and animal body formation. He considered the structural organization human body as the implementation of predetermined goals from above, which is a teleological representation.



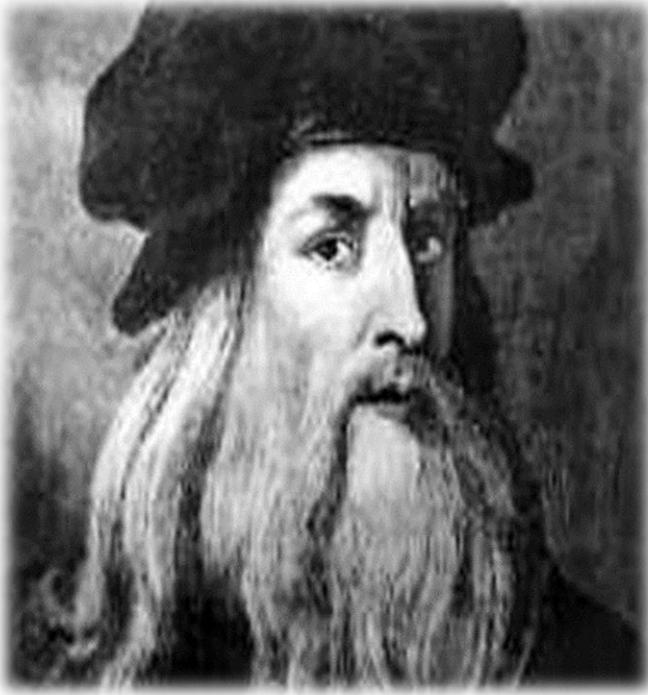
Herophilus

The father of medicine described some of the nerves facial. He invented the four main fluids: blood, mucus, bile, black bile. He said that the change of the amount of fluids causes various diseases. 72 of his scripts have been used

The great philosopher, scientist and physician of the East, Avicenna, wrote the encyclopedic work "The Canon of Medicine", which contained numerous information on anatomy and physiology, consonant with the ideas of Galen.



АВИЦЕННА
(Абу-Али ибн Сина)
ок. 980-1037



Leonardo da Vinci

The great artist, mathematician, engineer opened 30 corpses. Thanks to this, he made about 800 very accurate and original drawings of bones, muscles, hearts and other organs and scientifically described them. He studied the proportions of the human body, classified the muscles and made an attempt to explain their function in terms of the laws of mechanics, described a number of features of the child and senile organism.

Leonardo da Vinci was the first who studied the physiological anatomy of the motor apparatus. He was also interested in questions of comparative anatomy.

Andrew Vesalius

is the founder of descriptive anatomy. Based on the study of corpses, in 1543 he published the work “Structural Organization of the Human Body”, in which he scientifically described the structure of human organs and systems, pointed out the anatomical errors of many anatomists and openly opposed the erroneous views of Galen, which did not save the scientist from the persecution of the church .





Miguel Servet

He suggested the existence of joints between the least category of the pulmonary artery and pulmonary veins. The pulmonary circulation, the movement of blood from the right chamber to the left atrium described (1511–1553). For his discoveries in anatomy and materialistic convictions, M. Servet was burned at the stake along with his book.

Gabriele Fallopius

In "Anatomical Observations" for the first time he described in detail the structure of many bones, female genital organs, muscles, the organ of hearing, and vision.





Hieronymus Fabricius

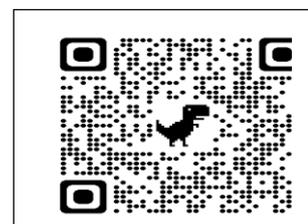
from Aquapendente studied the structure of the esophagus, larynx, eyes, described the venous valves and suggested that they promote blood flow to the heart and prevent its reverse movement. Fabricius is one of the founders of embryology and comparative anatomy.

William Harvey

In 1628, an English scientist (1578–1657), in his book *Anatomical Studies on the Movement of the Heart and Blood in Animals*, proved that blood moves in a vicious circle. In 1751, Harvey in his "Studies on the Origin of Animals" refuted Aristotle's doctrine of spontaneous generation and for the first time expressed the position "every living thing from an egg."



<https://www.youtube.com/watch?v=q2Lx-oTwuQA>



THE STRUCTURE OF THE CELL

The **human body** is consisted of organs and tissues. Cells are the main element of any tissue. A **cell** (Latin cellula; Greek kytos) is an elementary living system (self-regulating and self-renewable), which is the main building block, development and life of all animal and plant organisms. Human cells are differ: in shape; size; internal structure; functions.

The **cytoplasm** includes: a membrane (cytolemma) - separates the cell and ensures the constancy of its internal environment; organelles; hyaloplasm - the main substance of the cell; cytoplasmic inclusions.

The **endoplasmic** reticulum is a system of tubules for the transport of substances from the environment and inside the cell. Centrioles - there are often 2 of them, form a centrosome - a cell center involved in cell division;

Ribosomes are protein factories (specific for each type of cell);

Mitochondria - energy stations of cells (contain macroergic compounds);

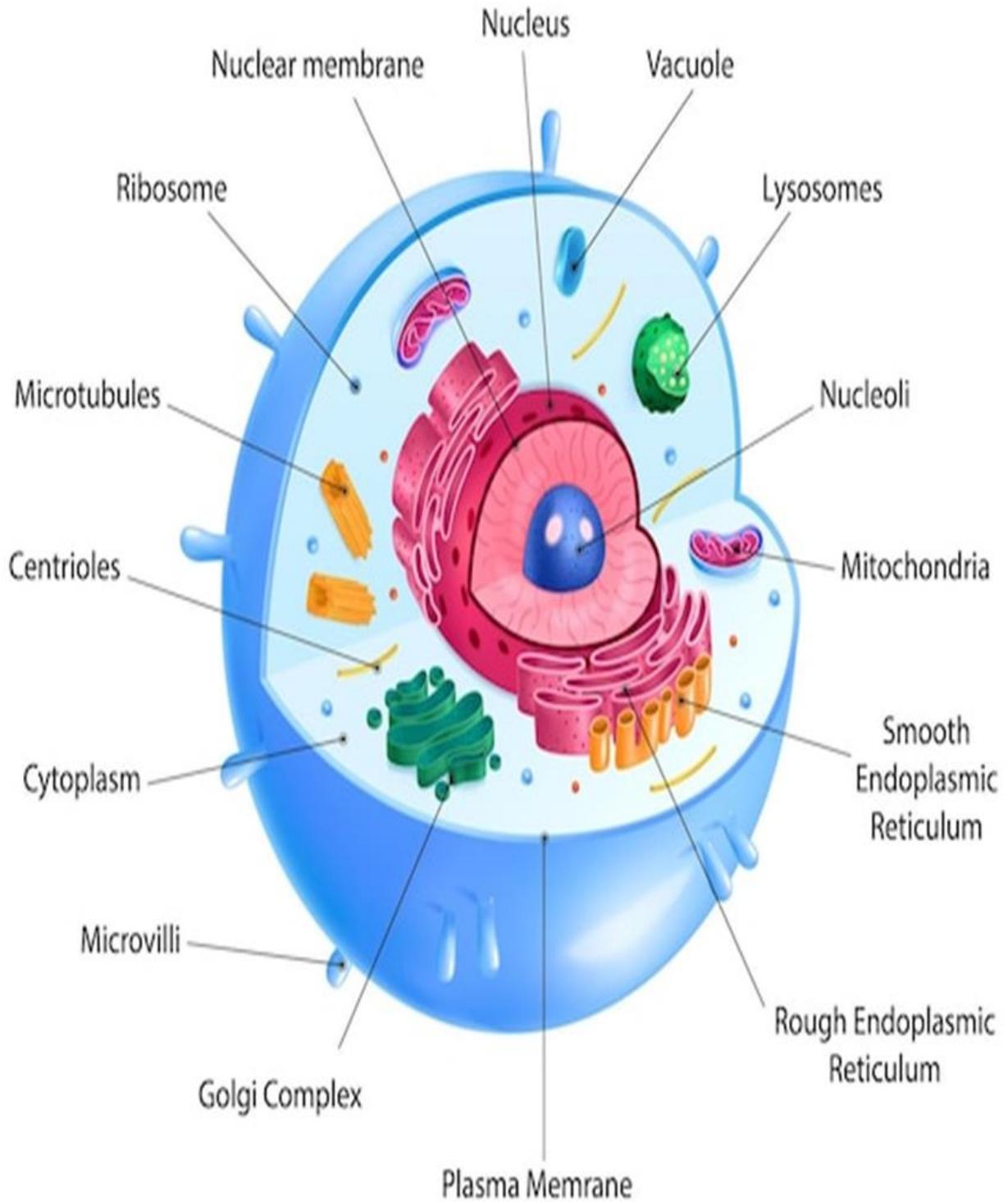
Lysosomes - contain enzymes for intracellular digestion;

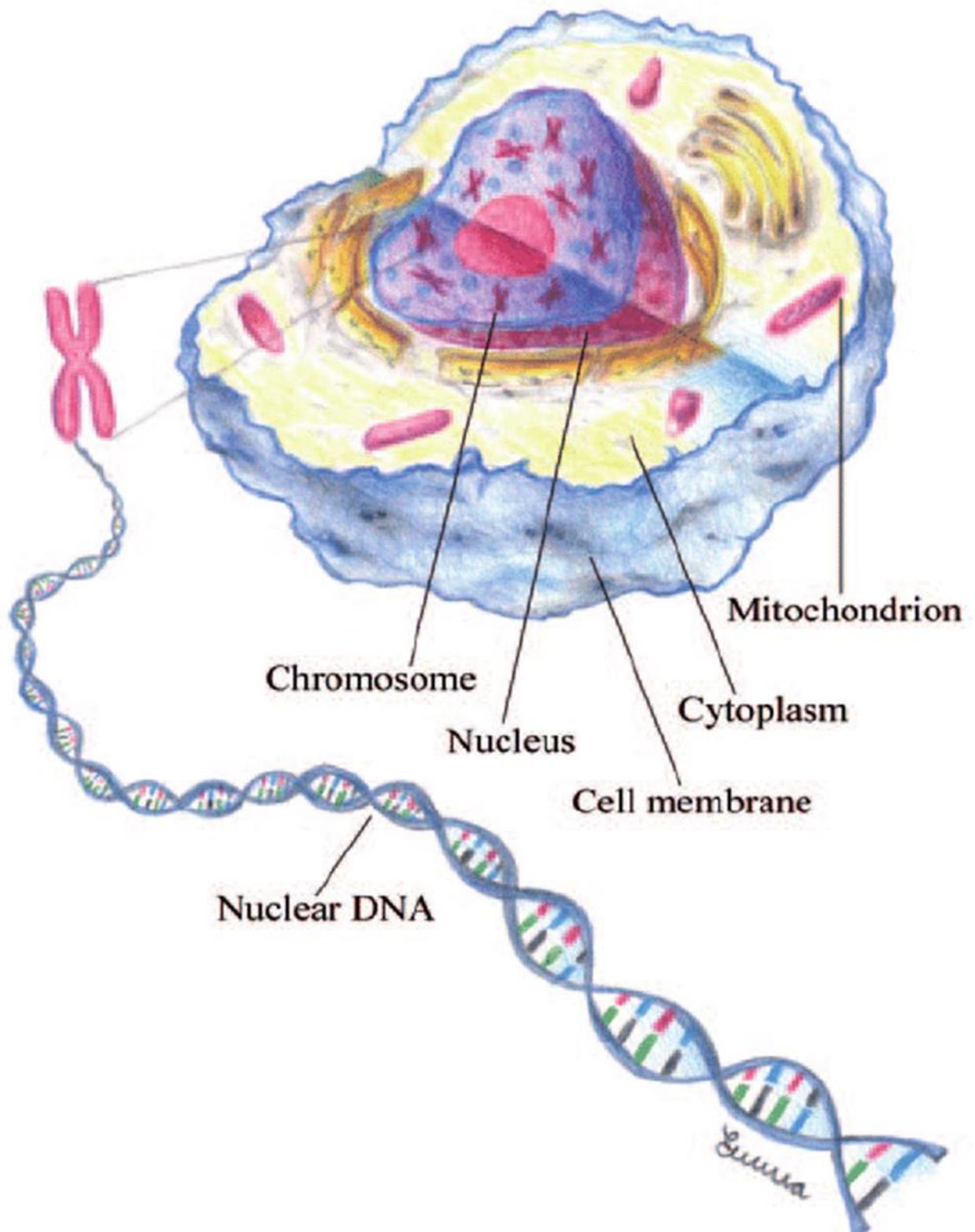
The **Golgi complex** is an internal mesh apparatus - tanks, tubules and vesicles for the accumulation of cell metabolic products (and subsequent excretion).

Cytoplasmic inclusions: protein, fat, pigment, secretory or excretory.

Nucleus is the second main part of the cell. Consists of the nuclear envelope; karyoplasm - protein synthesis occurs in it; nucleoli (one or two of them) - participate in metabolism; chromatin structures. They form chromosomes - carriers of DNA - hereditary information. A person has 23 pairs of chromosomes: 22 pairs of somatic chromosomes - autosomes and one pair of sex chromosomes: 46 XY - male; 46 XX - female. Human chromosomes contain about 100,000 genes. Cells reproduce by division: indirect - mitosis; direct - amitosis. During amitosis, the nucleus is first divided into 2 parts, then the cytoplasm, in which all organelles are evenly distributed. So 2 daughter cells are formed from the mother. Direct division is more common in pathological processes and in old cells. Mitosis (karyokinesis) - indirect division - is a

more complex process. There are 4 stages (phases): prophase; metaphase; anaphase; telophase.





Video information. <https://www.youtube.com/watch?v=URUJD5NEXC8>



THE TYPES OF BODY TISSUES

TISSUE - a historically established community of cells and extracellular substance, united by a common origin, structure and function.

Epithelial tissue performs: protective; suction; secretory; excretory function.

Protective - forms the outward layer of the skin - the epidermis and the inner lining of hollow organs. Absorption - food by the intestinal epithelium. Secretory - participation in the building of the glands of the digestive system, sweat, sebaceous, etc. Excretory - participation in the excretion of metabolic products (with urine and feces).

Connective tissue

- Proper connective tissue: formed and unformed - dense and loose;
- Cartilage tissue (hyaline, fibrous and elastic cartilage);
- Bone;
- The system of tissues of the internal environment (sometimes allocated to an independent group): adipose tissue, blood, lymph, reticular connect. tissue rich in pigment cells.

Blood. Together with lymph, it refers to the substance of the internal environment. Contains 80% water and 20% organic matter. Quantity: for men about 4.5 liters, for women - 4 liters.

Muscle tissue is a specific tissue established in animals which functions by compacting, applying forces to various parts of the body. Muscle tissue contains fibers of muscle cells associated together in sheets and fibers.

Proper joint tissue. Friable joint tissue: accompanies lymphatic vessels and cables; is between organs; in subcutaneous adipose tissue. Contains collagen and elastic fibers; Cells of this tissue: fibroblasts, histiocytes, leukocytes, fat and reticular cells. Performs a protective function.

Dense (fibrous) connective tissue - forms muscle tendons; ligaments; fasciae of internal organs.

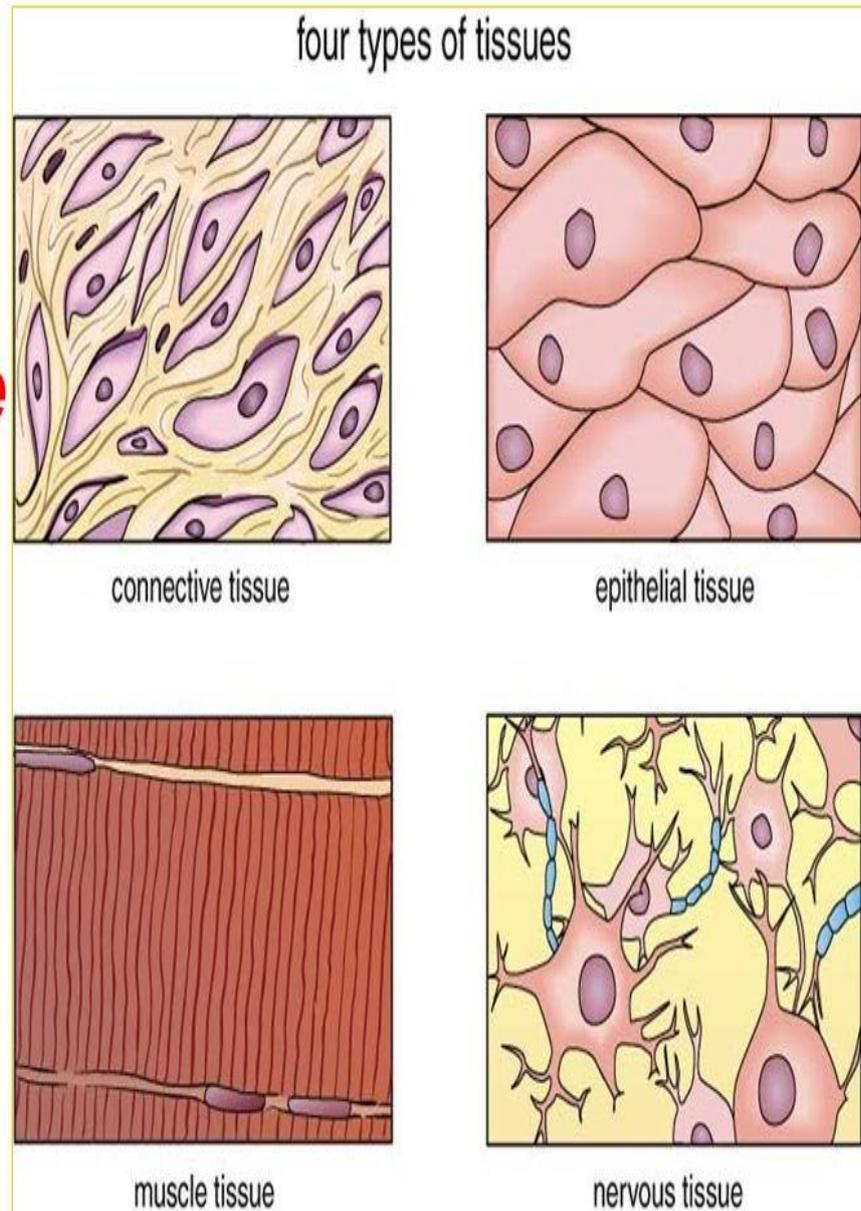
Cartilaginous tissue occurs in the form of hyaline cartilage - it covers the articular surfaces of bones; is in the trachea and bronchi; fibrocartilage - in the intervertebral fibrocartilage; fibroelastic cartilage - in the epiglottis and auricle.

- **Epithelial**

- **Connective**

- **Muscle**

- **Nervous**



Video information. <https://www.youtube.com/watch?v=O0ZvbPak4ck>



THE DOCTRINE OF THE BONES

General Osteology

The skeleton, (from the Greek. skeletos - dried, dried up) consists of more than 200 bones that perform mechanical (supporting, protective and locomotor) and biological functions (participation in mineral metabolism and hematopoiesis).

The skeleton is conditionally divided into axial (vertebral column and skull) and additional (appendicular skeleton).

Bones are represented by bone tissue, which refers to connective and consists of cells and a dense intercellular substance rich in collagen and mineral components that determine the physicochemical properties of bone tissue (hardness and elasticity). Bone tissue contains about 33% organic substances (collagen, glycoproteins, etc.) and 67% inorganic substances (salts, citrates, hydroxyapatite crystals, more than 30 trace elements).

There are two different cell types of bone: **osteoblasts** are young bone cells that gradually differentiate into osteocytes, producing around themselves a bone matrix impregnated with calcium salts.

Osteocytes are mature multi-processed cells located in bone lacunae, immured in the bone matrix.

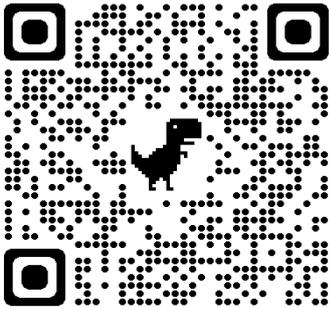
The bone "os, ossis" as an organ outside, except for the articular surfaces, is covered with a periosteum (periosteum), which is a thin and strong connective tissue plate rich in blood and lymphatic vessels, nerves. It is firmly fused with the bone with the help of perforating fibers penetrating deep into the bone. The outward layer of the periosteum is fibrous, the inner layer is osteogenic (bone-forming), adjacent to the bone, due to which the development, growth in thickness and regeneration of bones after damage occurs. There structure of bone tissue – reticula fibrous (coarse fibrous) and lamellar.

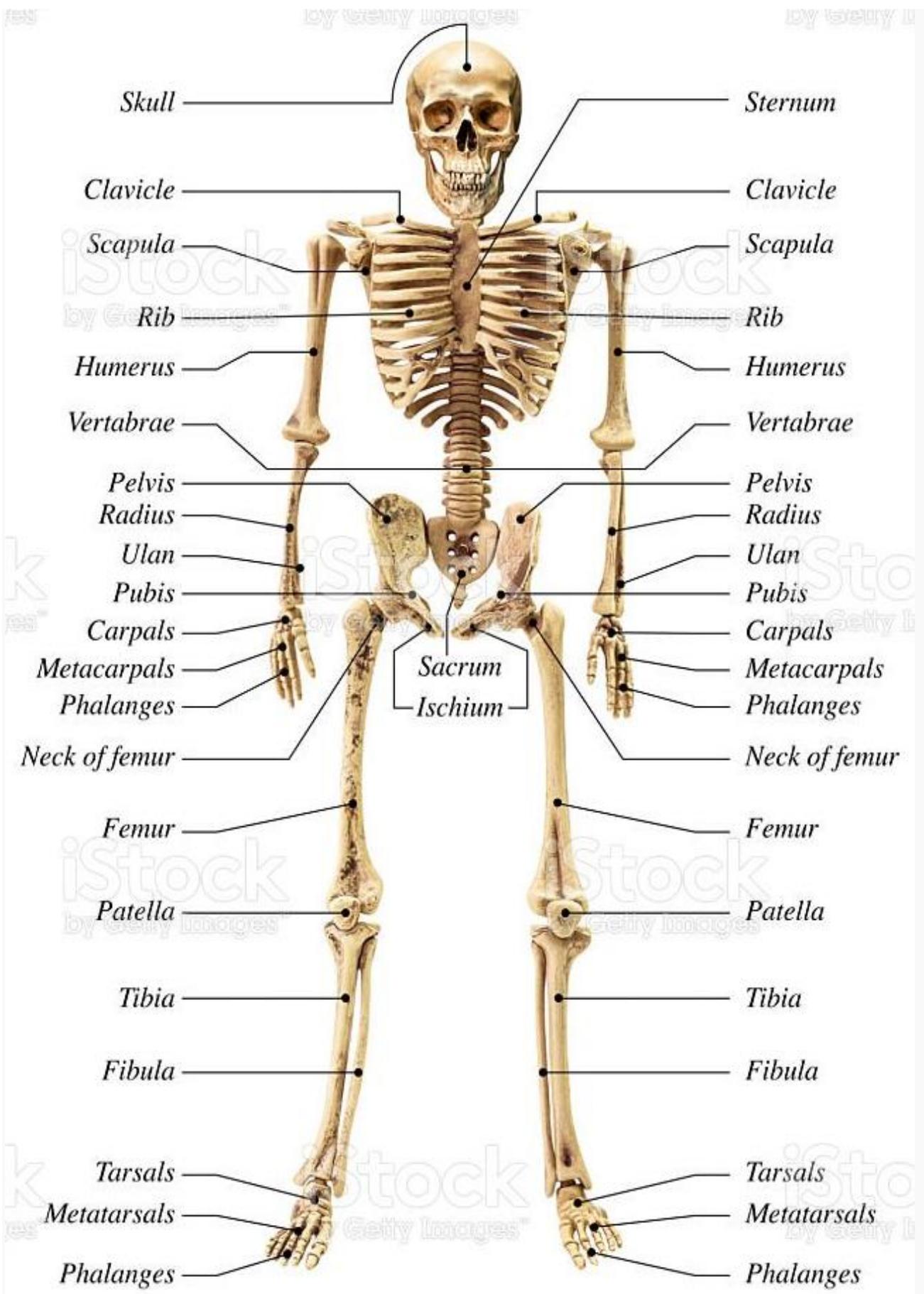
There is an international classification of bones.

1. Tubular bones

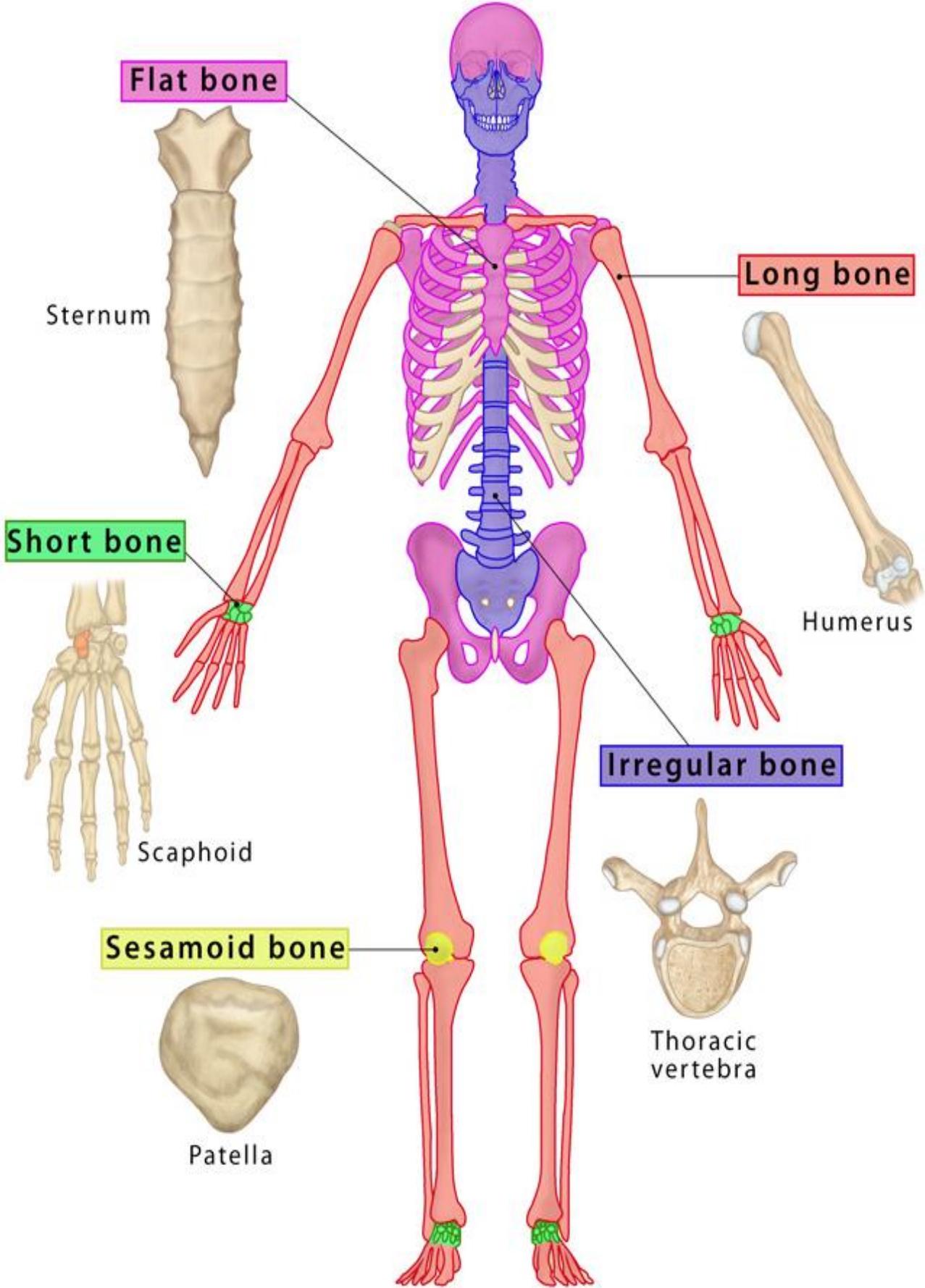
2. Spongy bones
3. Flat bones
4. Mixed bones

Video information. <https://www.youtube.com/watch?v=vWkg5fw90tY>





CLASSIFICATION OF BONES



The classification of bones takes into account: the form (structure), function and development. There are 5 types of bones in human body.

The long bones are hard, heavy and longer. Long bones, especially the thigh and shnbone, are subjected to most of the load during daily activities and they are crucial for skeletal mobility. The long bone category includes the thigh bone, shinbone, and calfbone of the legs; the humeri, radii, and ulnae of the arms; metacarpals and metatarsals of the hands and feet, the phalanges of the fingers and toes, and the clavicles or collar bones. The pipe bone of the human leg comprise nearly half of adult height. The other primary skeletal component of height are the vertebrae and skull.

Short bones are designated as those bones that are as wide as they are long. Their basic function is to gives support and stability with little to no movement. Examples of these bones include the tarsals in the foot and the carpals in the hand.

Flat bones are bones whose principal function is either extensive protection or the provision of broad surfaces for muscular attachment. These bones are expanded into broad, flat plates, as in the cranium (skull), the ilium (pelvis), sternum and the rib cage. The flat bones are: the occipital, parietal, frontal, nasal, lacrimal, vomer, hip bone (coxal bone), sternum, ribs, and scapulae.

The irregular bones are bones which, from their peculiar form, cannot be grouped as long, short, flat or sesamoid bones. Irregular bones serve various purposes in the human organism, like protection of nervous tissue (such as the vertebrae protect the spinal cord), affording multiple anchor points for skeletal muscle attachment (as with the sacrum), and maintaining pharynx and trachea support, and tongue attachment (Lingual bone). They consist of cancellous tissue enclosed within a thin layer of compact bone. Irregular bones can also be used for joining all parts of the vertebral column together. The spine is the place in the human body where the most irregular bones can be found. There are, in all, 33 irregular bones found here.

In anatomy, a **sesamoid bone** (/ˈsɛsəmoɪd/) is a bone embedded within a tendon or a muscle. Its name is derived from the Arabic word for 'sesame seed', indicating the small size of most sesamoids. Often, these bones form in response to strain, or can be present as a normal variant. The patella is the largest sesamoid bone in the body.

Sesamoids act like pulleys, providing a smooth surface for tendons to slide over, increasing the tendon's ability to transmit muscular forces.

Sesamoid bones can be found on joints throughout the body, including:

- In the knee - the patella (within the quadriceps tendon). This is the largest sesamoid bone.
- In the hand - two sesamoid bones are generally established in the farther part situation of the first metacarpal bone (within the tendons of adductor pollicis and flexor pollicis brevis). There is also commonly a sesamoid bone in distal portions of the second metacarpal bone.
- In the wrist - The pisiform of the wrist is a sesamoid bone (within the tendon of flexor carpi ulnaris). It begins to ossify in children ages 9–12.
- In the foot - the first metatarsus usually has two sesamoid bones at its connection to the big toe (both within the tendon of flexor hallucis brevis). One is established on the lateral part of the first metatarsus while the other is situated on the medial part. In some people, only a single sesamoid is found on the first metatarsal bone.

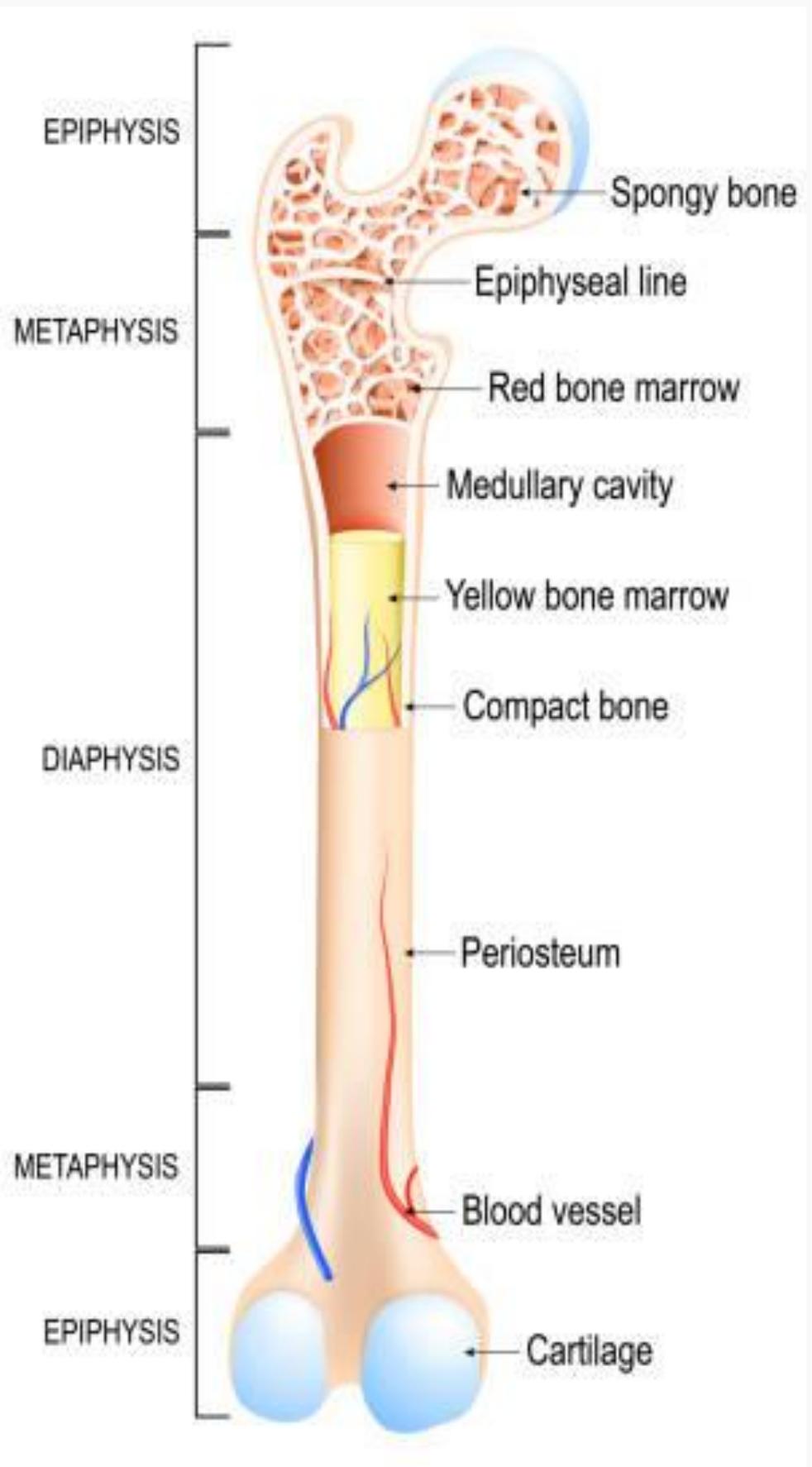
Bones maybe LIVING - contained 50% - water 28.15% - organic matter (15.75% fat) 21.85% - inorganic matter: Ca, P, Mg compounds.

DEAD - contained 1/3 - organic matter (ossein) 2/3 - inorganic matter.

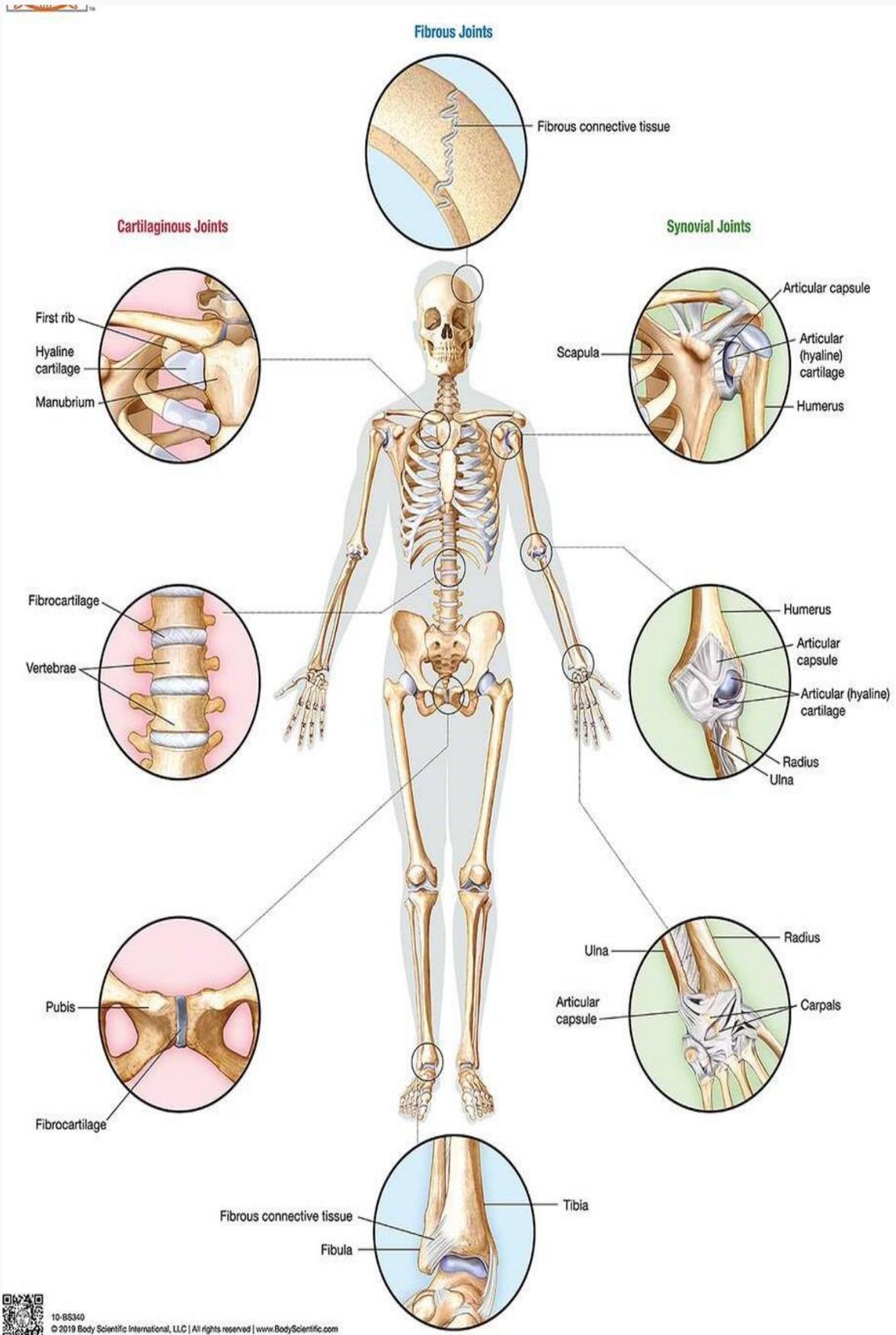
Video information. <https://www.youtube.com/watch?v=vDjW00S2910>



Bone anatomy



JOINT CLASSIFICATION



Bone joints. All bone connections in the human organism are divided into 2 groups:

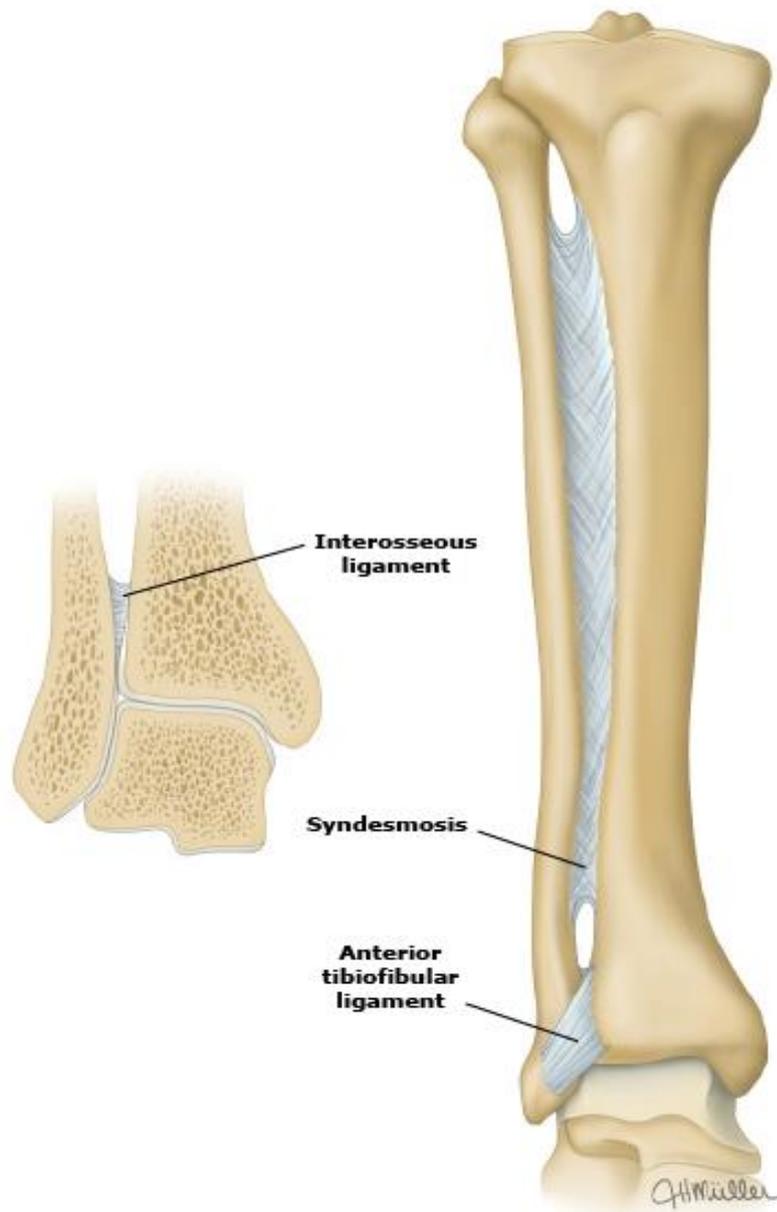
- continuous joints (synarthrosis) fixed joints;
- discontinuous (synovial) joints or mobile joints.

There is also an intermediate form of semi-movable joints **semi-joints**.

Continuous joints: fibrous; cartilaginous; fibrous compounds (syndesmoses):

- interosseous ligaments;
- interosseous membranes;
- seams;

Interosseous ligaments:



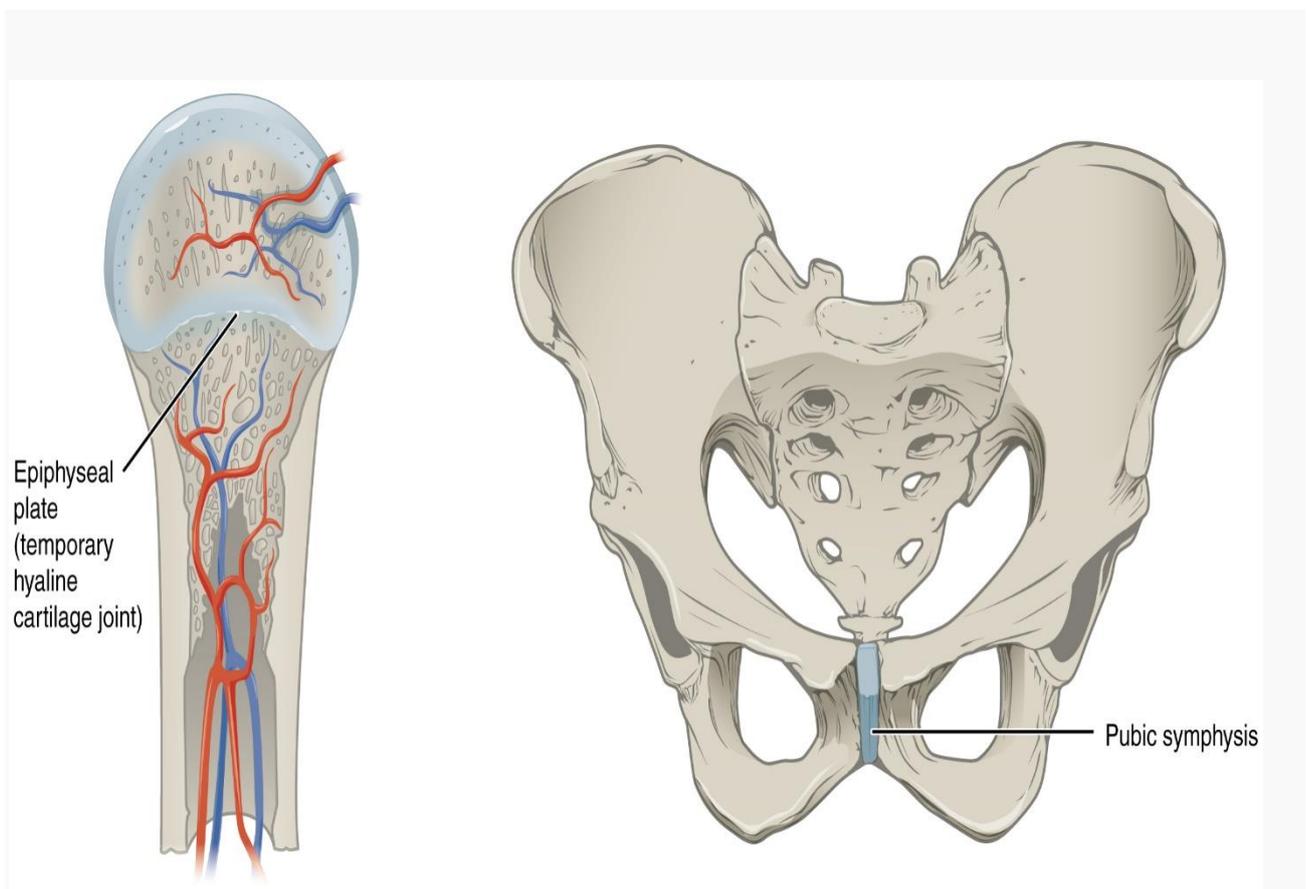
- consist mainly of collagen fibers, less often of elastic ones;
 - strengthen all joints; there are yellow ligaments between the arches of the vertebrae.
- Interosseous membranes are wide connective tissue plates for connecting two adjacent bones; increase the surface for muscle attachment;
- Seams - a small layer of joint tissue among the bones; characteristic of the cranial base.

Distinguish:

- jagged seams (between two parietal bones);
- scaly (between the temporal and parietal bones);
- flat seams (between the nasal bones).

Cartilage joint:

Cartilaginous joints (synchondrosis);

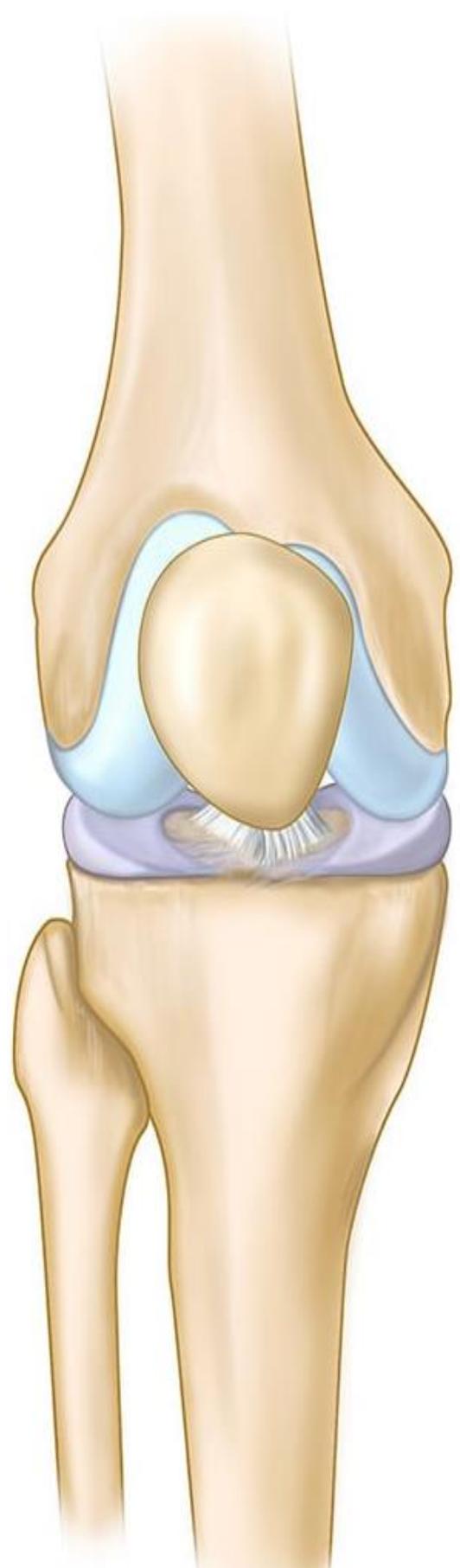


Adhesions or symphyses;

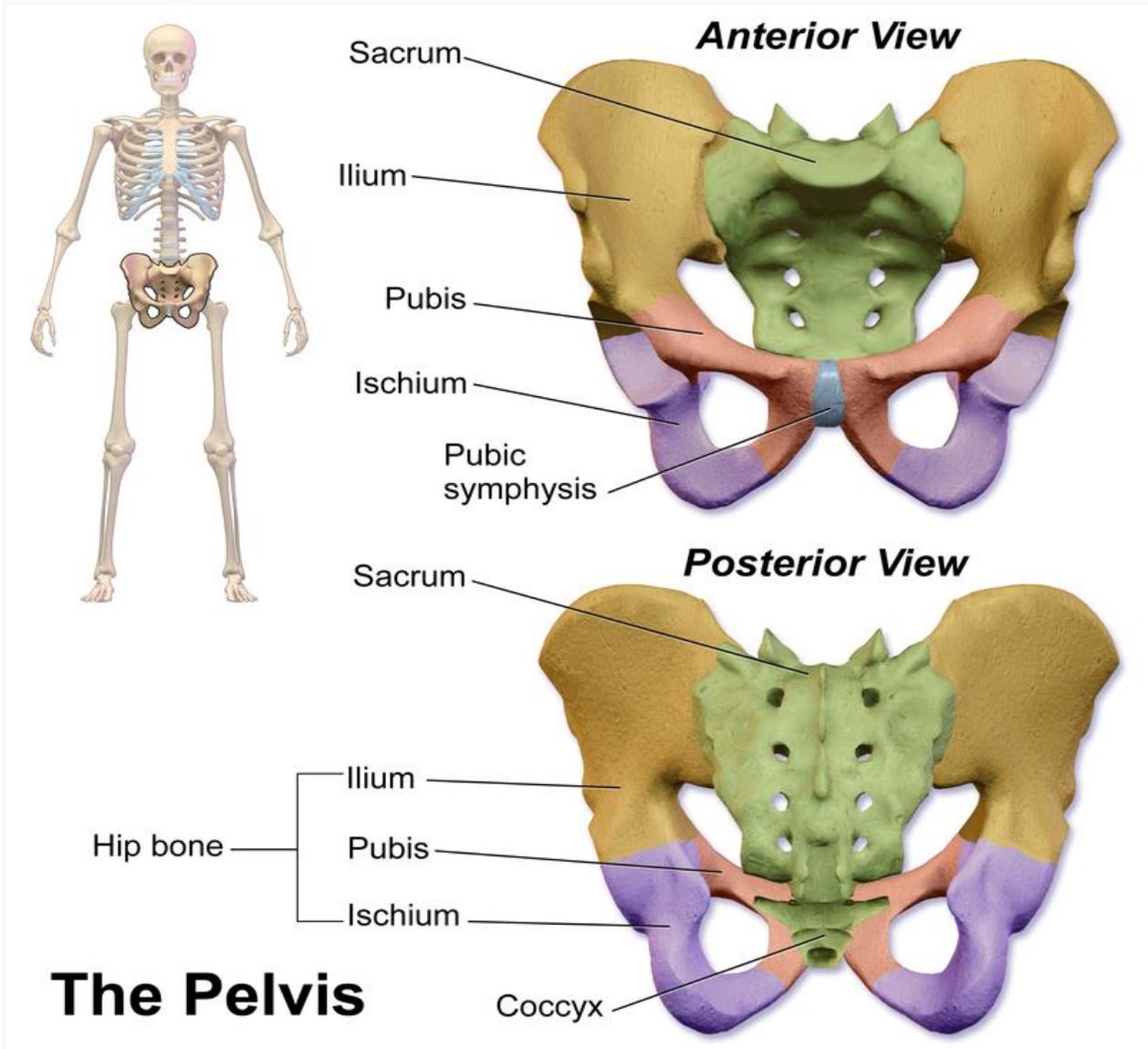
- strong and elastic cartilage layers between the bones:
- intervertebral discs (an example of a semi-movable joints - a half joint);
- metaphyseal cartilage of tubular bones.

Types of cartilage

- Hyaline cartilage
- Elastic cartilage
- Fibrocartilage



- pubic symphysis



Bone joints (synostoses):

- ossification of the cranial sutures;
- ossification of the cartilaginous tissue between the sacral vertebrae;
- ossification of the cartilaginous layers between the three bones of the pelvis, etc.

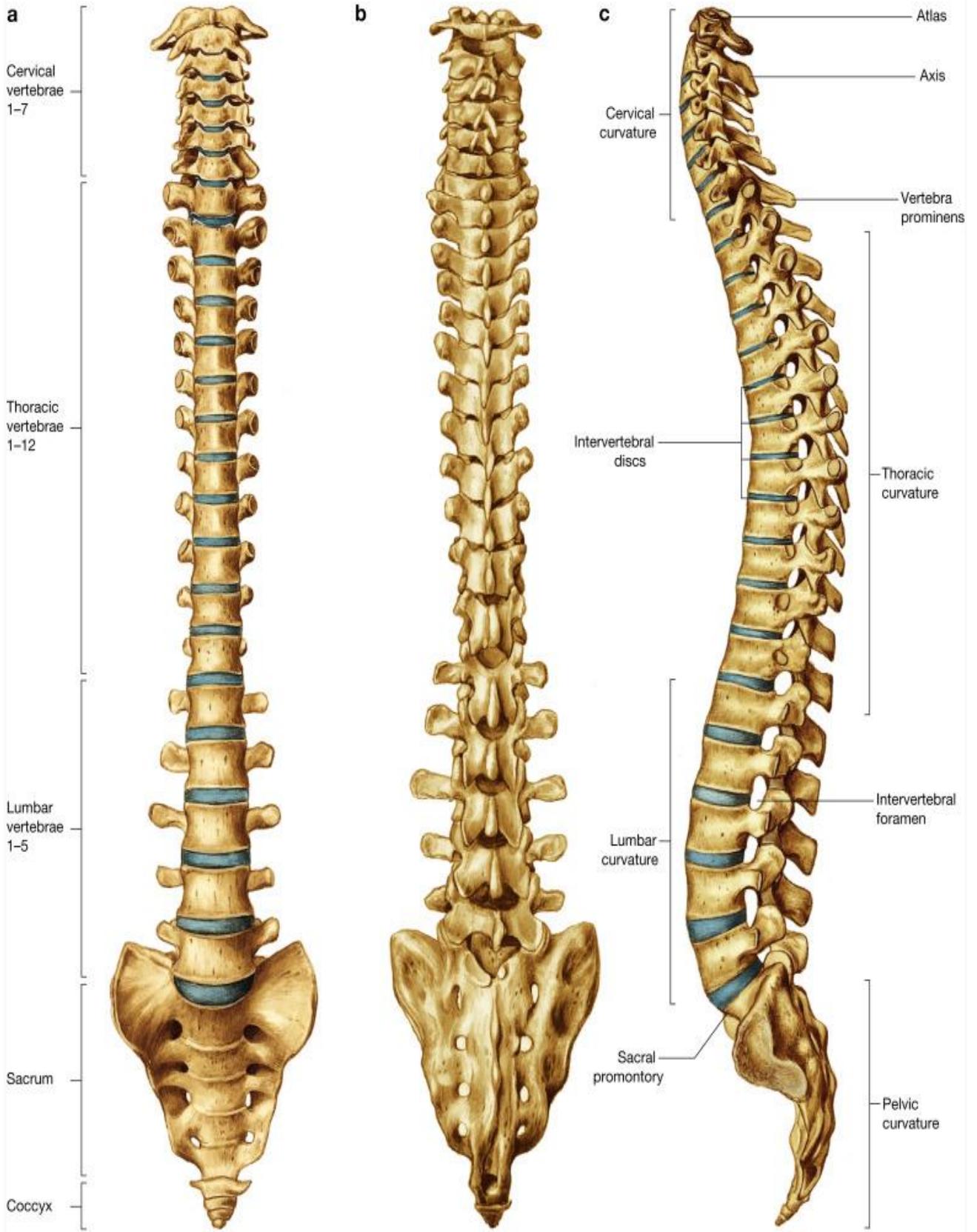
Video information. <https://www.youtube.com/watch?v=iGyflIHsFV8>



TORSO SKELETON

Human torso. The bones of the chest and upper back combine to form the strong, protective rib cage around the thorax such as the cardio – pulmanory arrest. The rib cage also anchors the bones of the scull, neck, shoulders, and arms to the portion of the human organism. Powerful muscles that controll head movement and arms attach to these bones as well. The bones of the chest and their joints also support the upper body’s weight.





Vertebral column the real basis of the skeleton, the support of the whole organism. The vertebral column is responsible for maintaining posture, serves as a support for tissues and organs, and also takes part in the building of the walls of the thoracic cavity, pelvis and abdominal cavity. Each of the vertebrae that make up the spinal column has a through vertebral foramen inside. The vertebral foramina constitute the spinal canal containing the spinal cord, which is thus reliably protected from external influences. In total, there are 32-34 vertebrae in the spinal column, separated by intervertebral discs and somewhat different in their structure. In accordance with the location and structural features in the spinal column, five types of vertebrae are distinguished: 7 cervical, 12 thoracic, 5 lumbar, 5 sacral and 3-5 coccygeal.

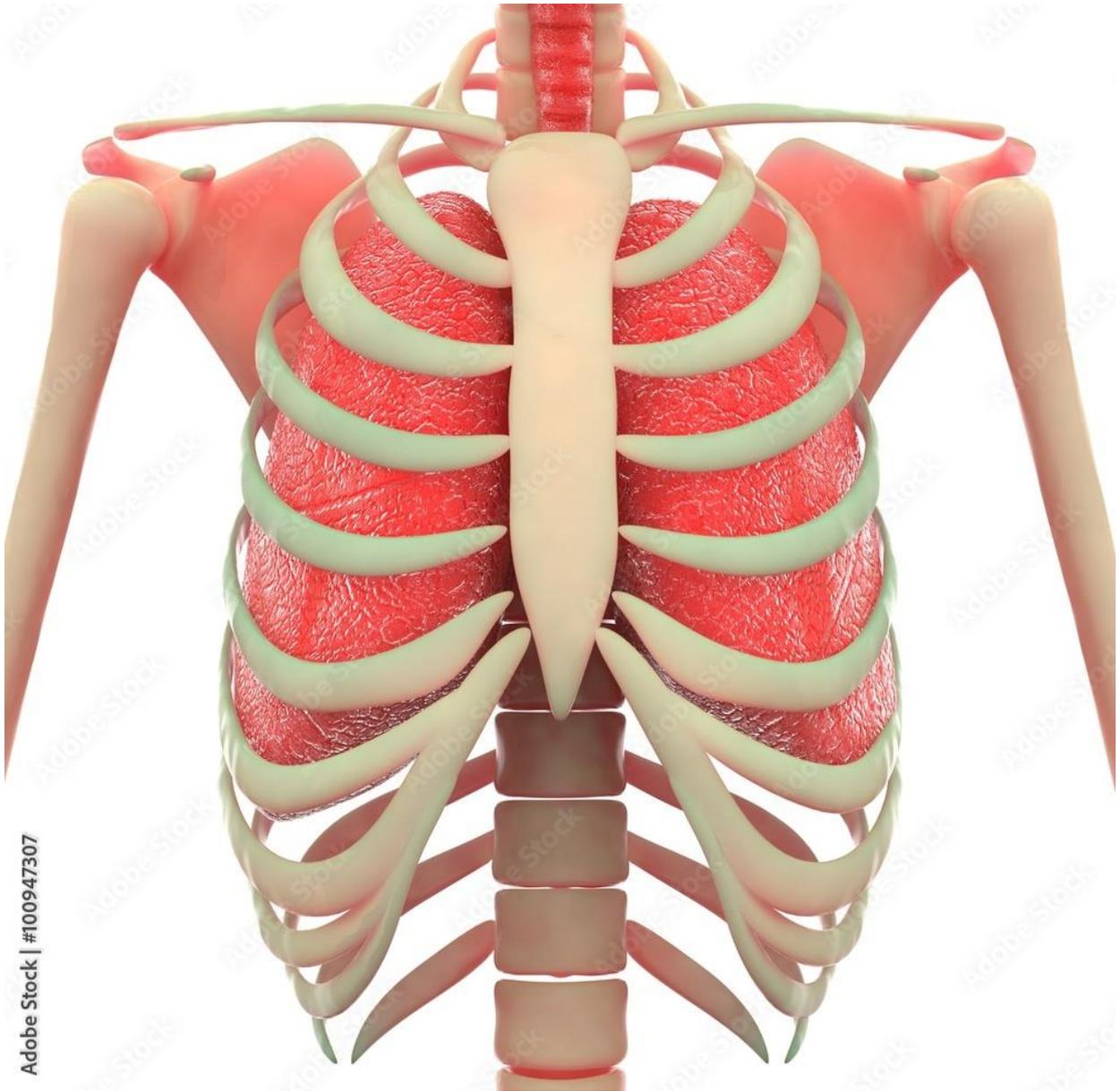
Cervical vertebrae are different from others. The cervical vertebra is relatively small, oval and elongated, it connects accordingly with the skull.

The thoracic vertebrae are different from the cervical vertebrae. The thoracic vertebrae have a costal fossa on their transverse process.

Lumbar vertebrae. Compared with the cervical and thoracic vertebrae, the lumbar vertebrae have a relatively small oval vertebral foramen.

The coccyx consists of 3-5 underdeveloped vertebrae in the form of oval bone bodies. The joints of the vertebrae in the spinal column must, in addition to high mechanical strength, provide the spine with flexibility and mobility. These tasks are solved with the help of surface joint of the vertebrae, as well as the situation of the fibrous connective tissue that strengthen these joints. Intervertebral discs are located between the vertebral bodies, consisting of a fibrous ring, which increase the stability of the spine to vertical loads and absorb mutual displacements of the vertebrae.

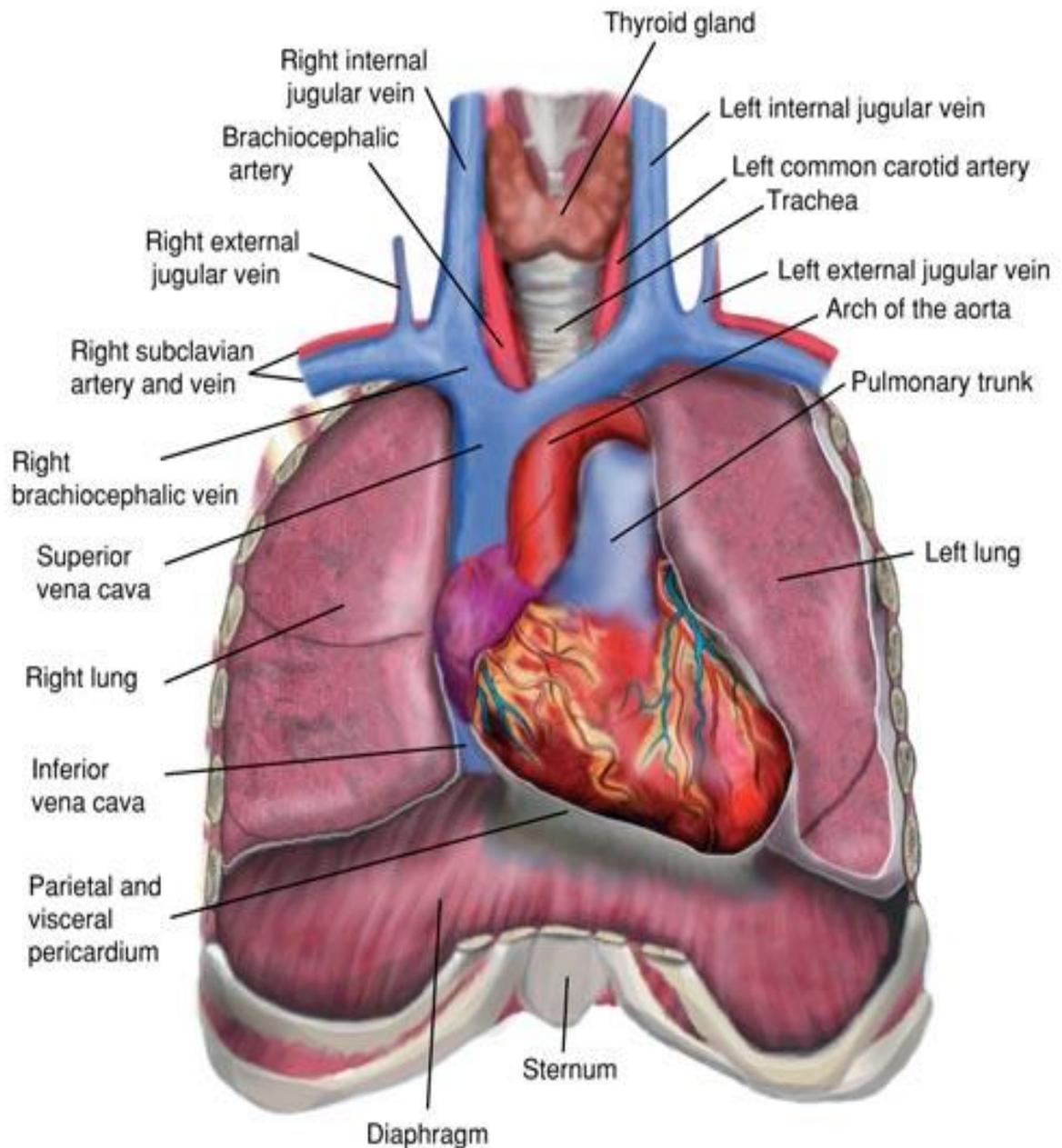
The thorax



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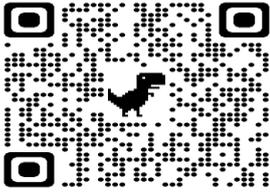
consists of ribs connected by the anterior ends to the sternum, and the posterior ends to the thoracic vertebrae.

The chest cavity, bounded below by the diaphragm, contains vital organs - the heart, lungs, large vessels and nerves.



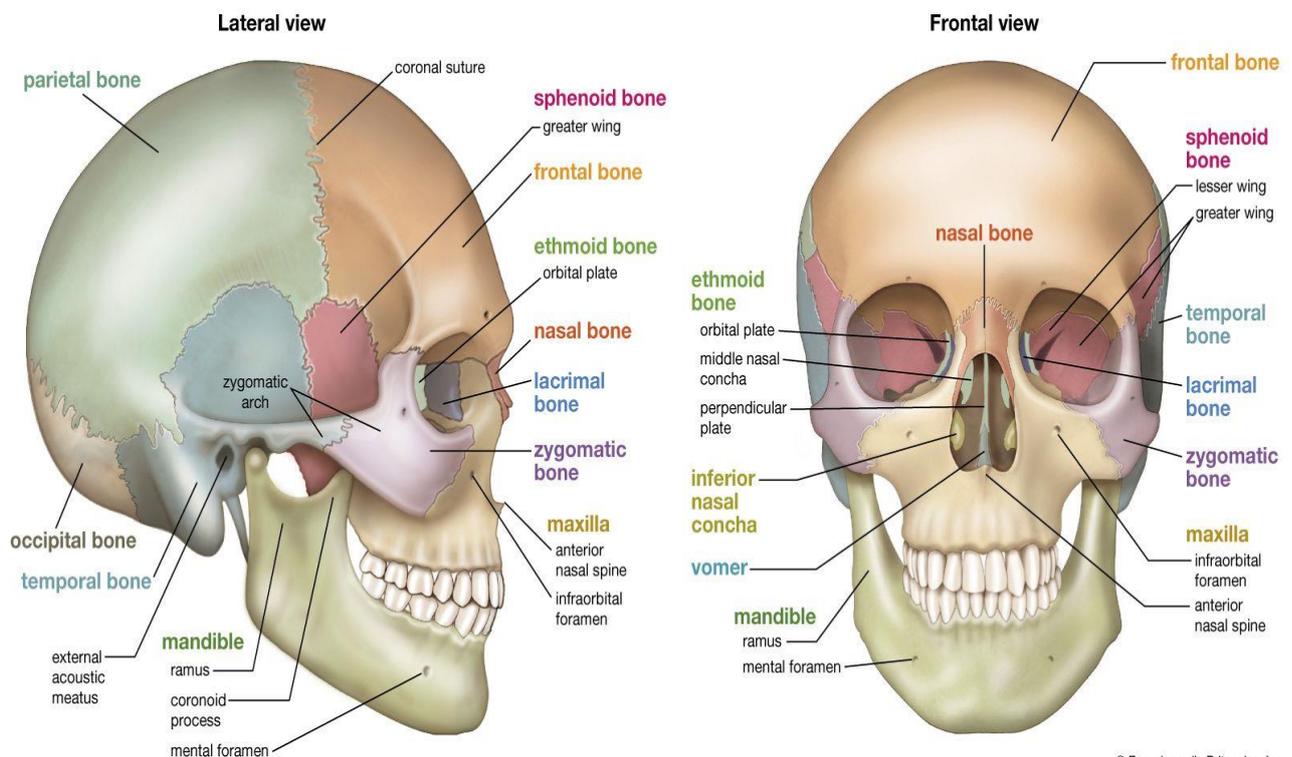
The area among the ribs that make up the chest are occupied by the intercostal muscles. Between the muscles there is a thin layer of loose fiber, in which the intercostal nerves and vessels pass. The chest contains of the thoracic spine, ribs (12 pairs) and the sternum. The shape of the chest is different for different people (flat, cylindrical or conical). The chest in men is longer, wider and more cone-shaped than in women. The shape of the chest also depends on age.

Video information. <https://www.youtube.com/watch?v=SiBzCpg6vu8>



SKULL STRUCTURE

Brain skull.



© Encyclopædia Britannica, Inc.

The skeleton of the head is represented by bones, which, tightly connected with sutures, protect the brain and sensory organs from mechanical influences.

It gives support to the face, the initial sections of the respiratory and digestive systems.

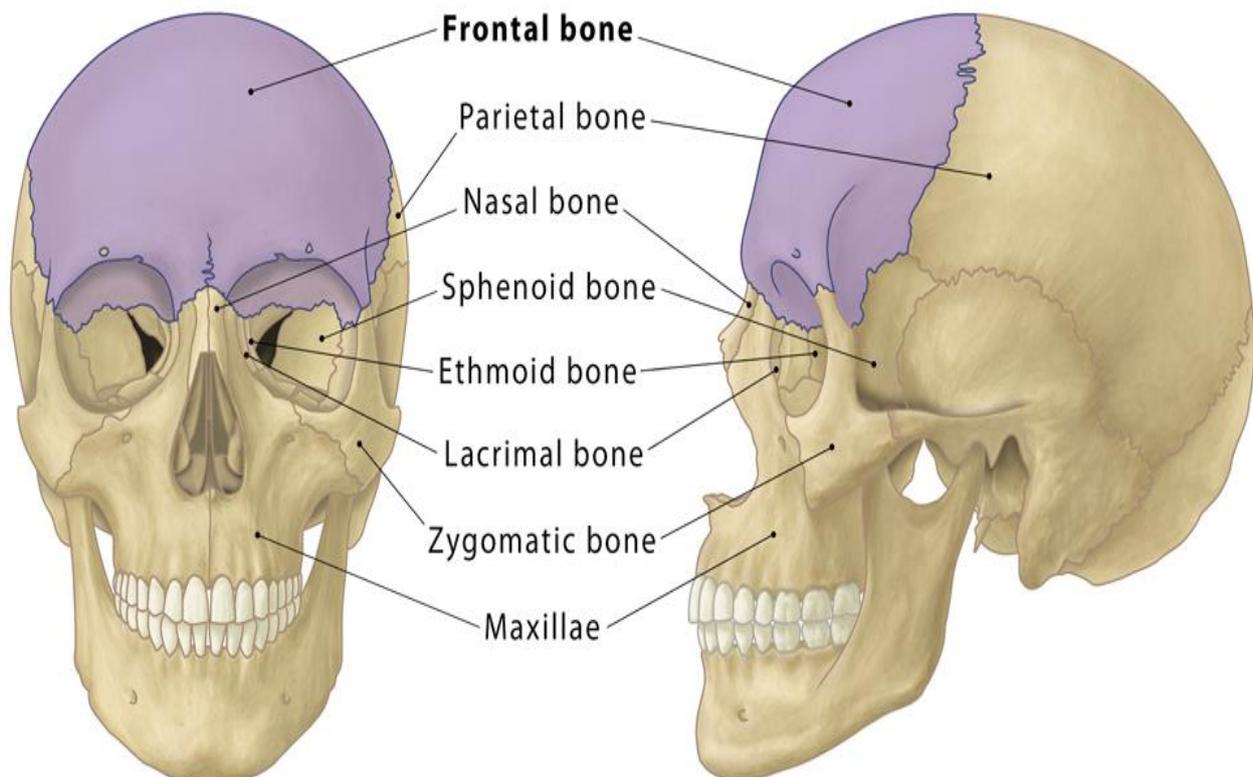
The skull (cranium) is divided into two sections - **cerebral** and **facial**.

The bones of the cerebral skull form a cavity for the brain and partly a cavity for the sense parts. The bones of the facial skull make up the bone basis of the face and the skeleton of the initial sections of the respiratory and digestive systems. Some bones of the skull have air-filled cavities inside and connect to the nasal cavity. This structure of the bones significantly reduces the mass of the skull and at one time

maintains its necessary strength. The bones of the skull include eight bones: two paired - temporal and parietal and four unpaired frontal, ethmoid, sphenoid and occipital. Part of the facial skeleton makes up the of the masticatory apparatus: a paired maxillary bone and an unpaired lower jaw. Other facial bones are smaller in size. These are paired bones: palatine, nasal, lacrimal, zygomatic, inferior nasal concha; unpaired bones include the vomer and hyoid bone. They are part of the cavities of the facial skull and determine its configuration.

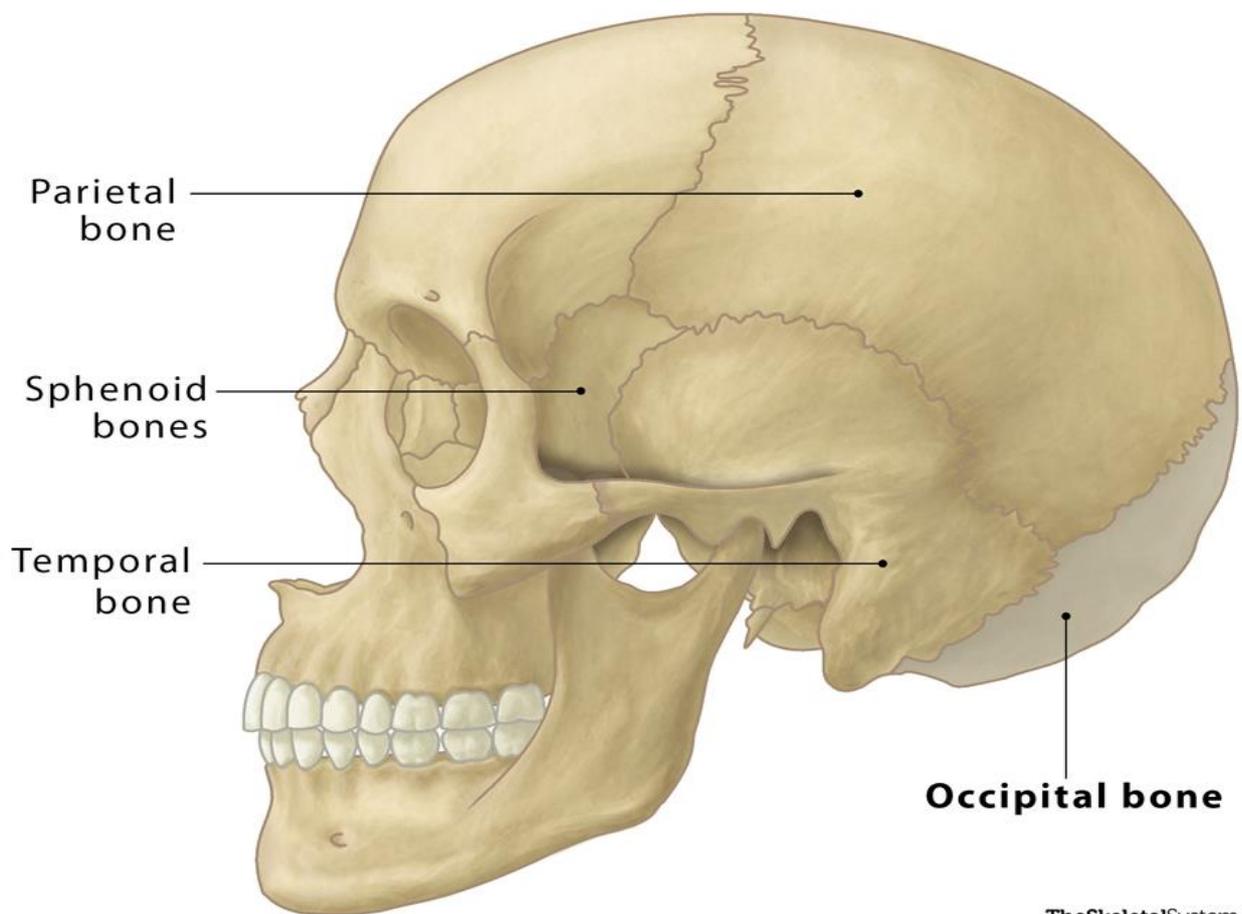
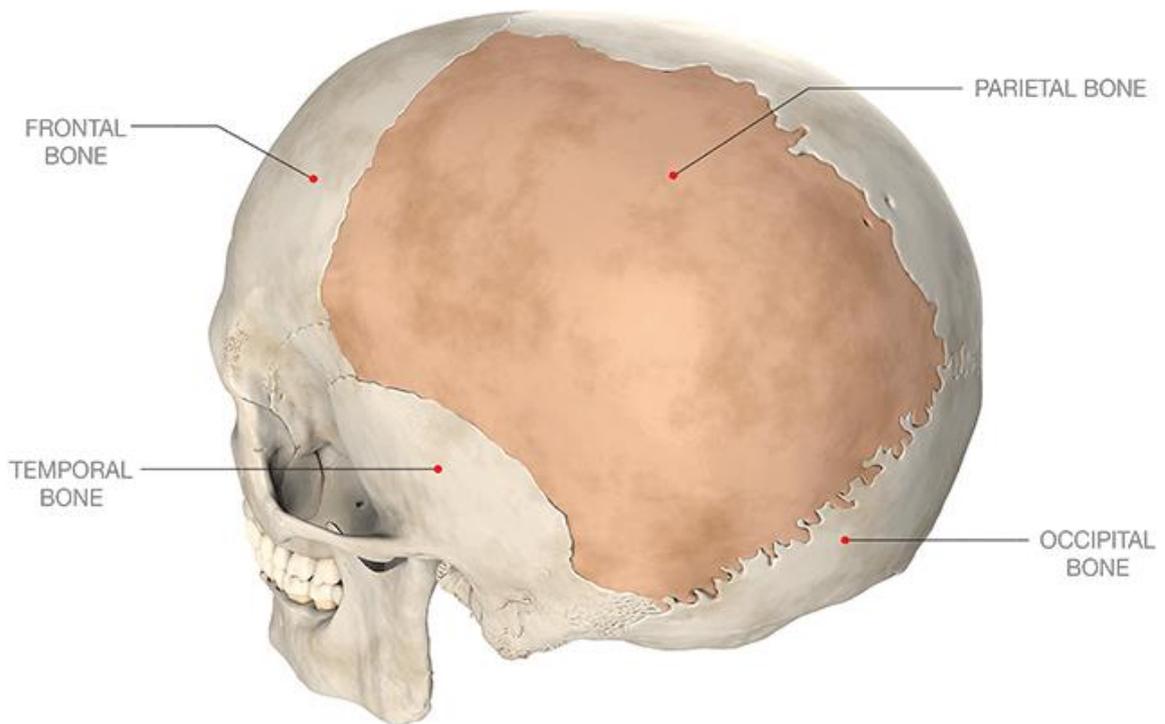
Bones of the cerebral part of the skull.

- The frontal bone consists of the frontal scales, orbital and nasal parts.



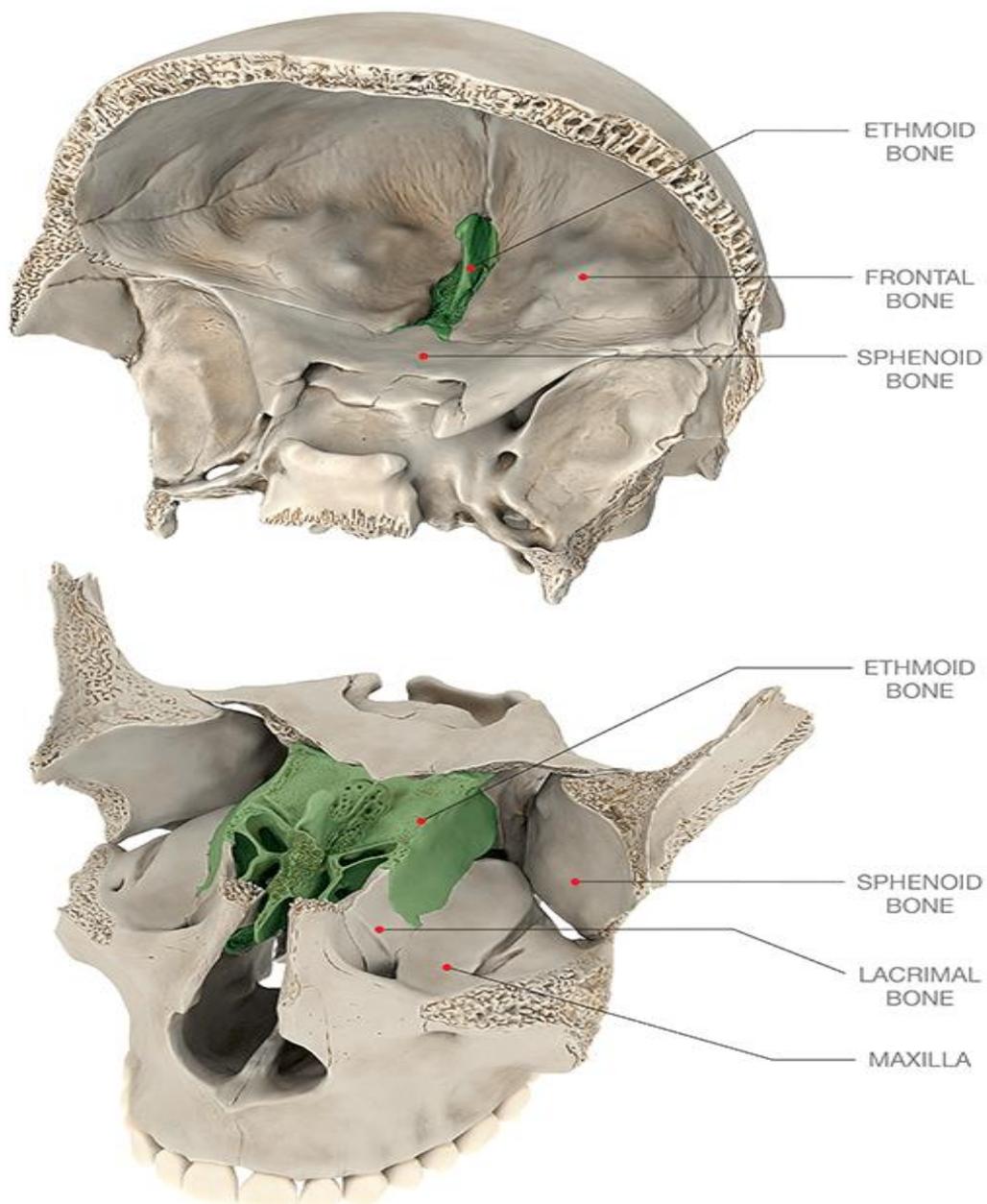
- **The parietal bone** (os parietale) is a paired plate that forms the middle part of the cranial vault. It has a convex (outer) and concave (inner) surface, four edges and four corners. The upper (sagittal) edge connects with the opposite

parietal bone, the anterior (frontal) and posterior (occipital) - respectively with the frontal and occipital bones.

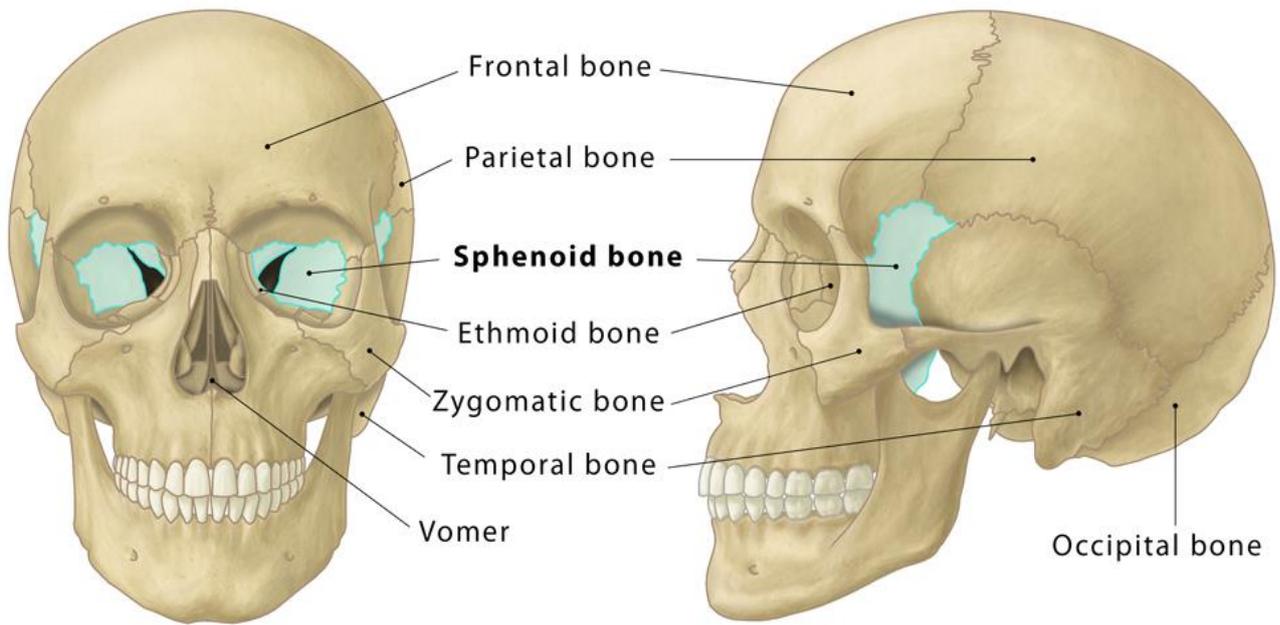


The c (os occipital) consists of the basilar and two lateral parts.

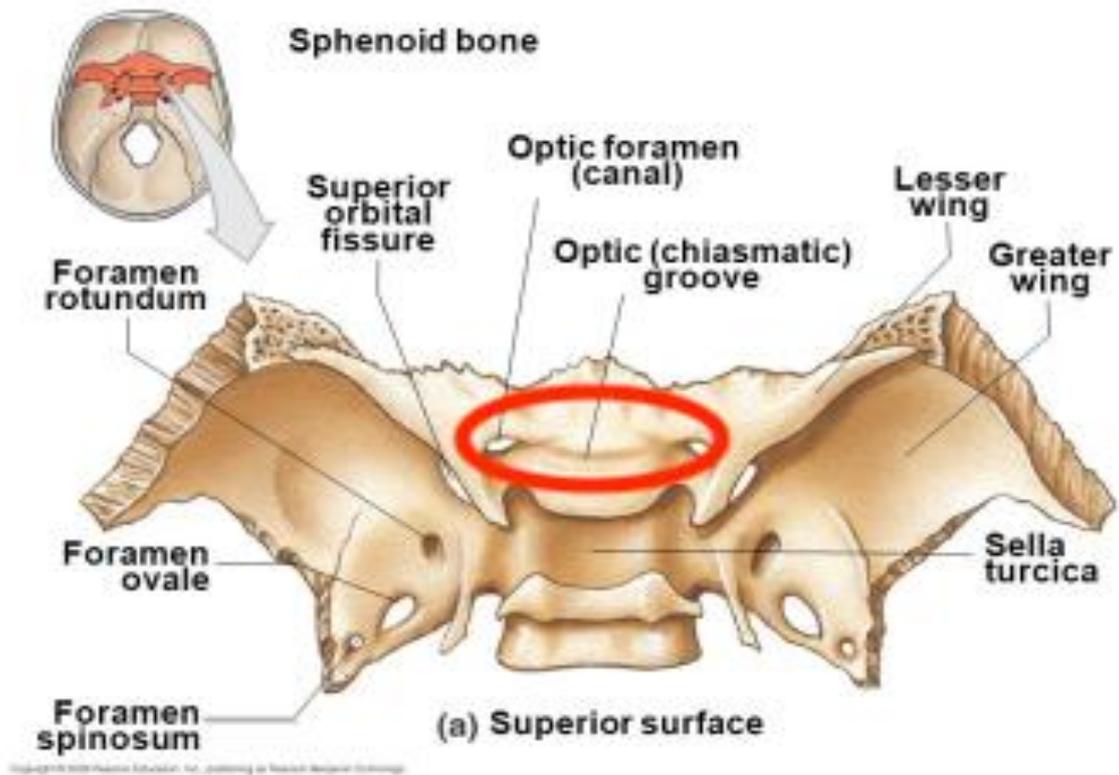
The **ethmoid bone** (ethmoidale) together with other bones takes part in the building of the anterior cranial fossa, is the part of skull cranium: walls of the eye sockets, and the nasal passages of the facial area of the skull. The bone contains of a horizontal lamina, from which a vertical plate extends downward, which participates in the building of the septum of the nasal passages. There are three pairs of ethmoid sinuses that joints to the nasal passage: front, middle, and back.



The sphenoid bone (os sphenoidale) is situated among the anterior and cranial bones which are located in the heart of the cranial base.

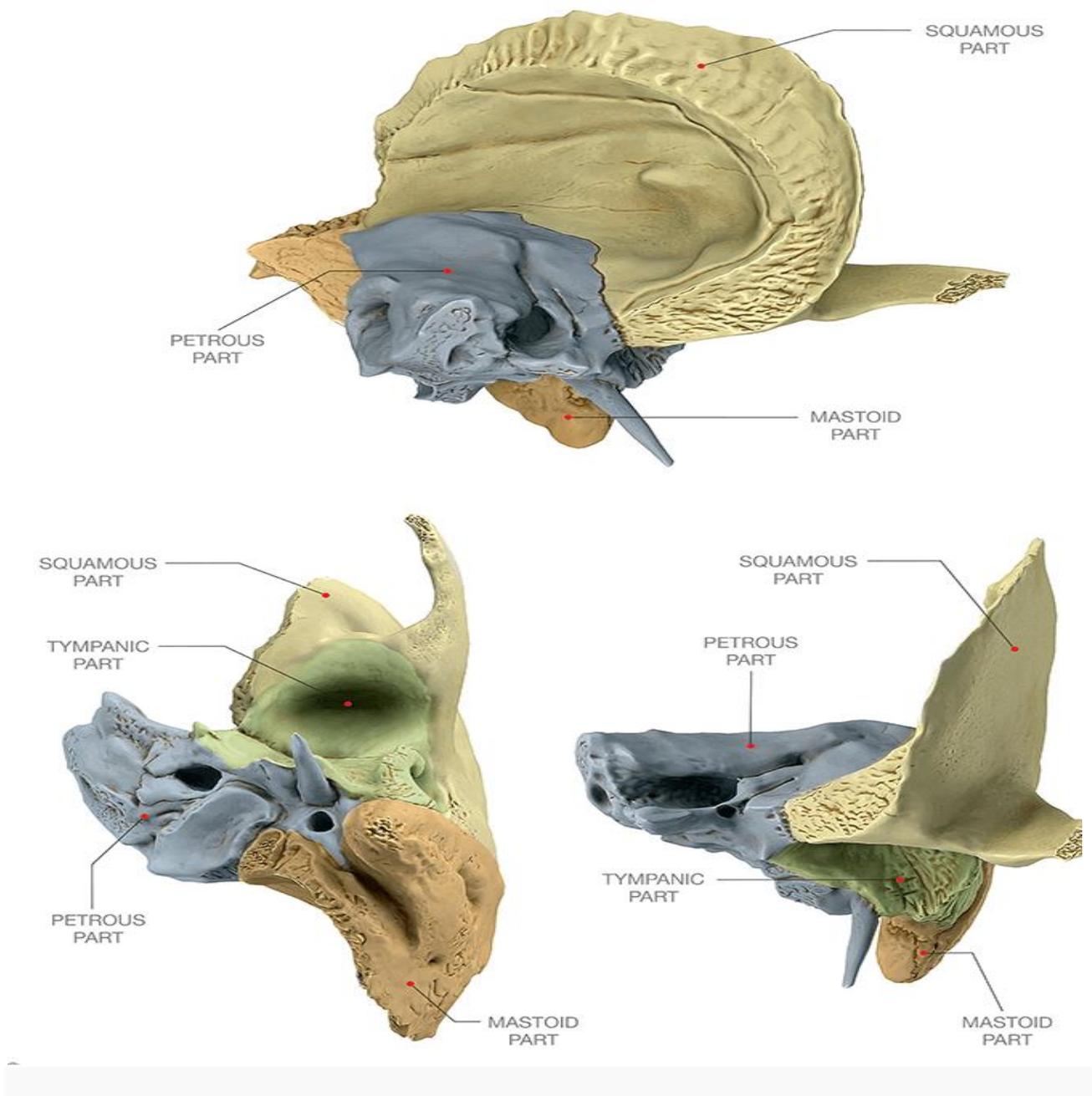


Sphenoid bon



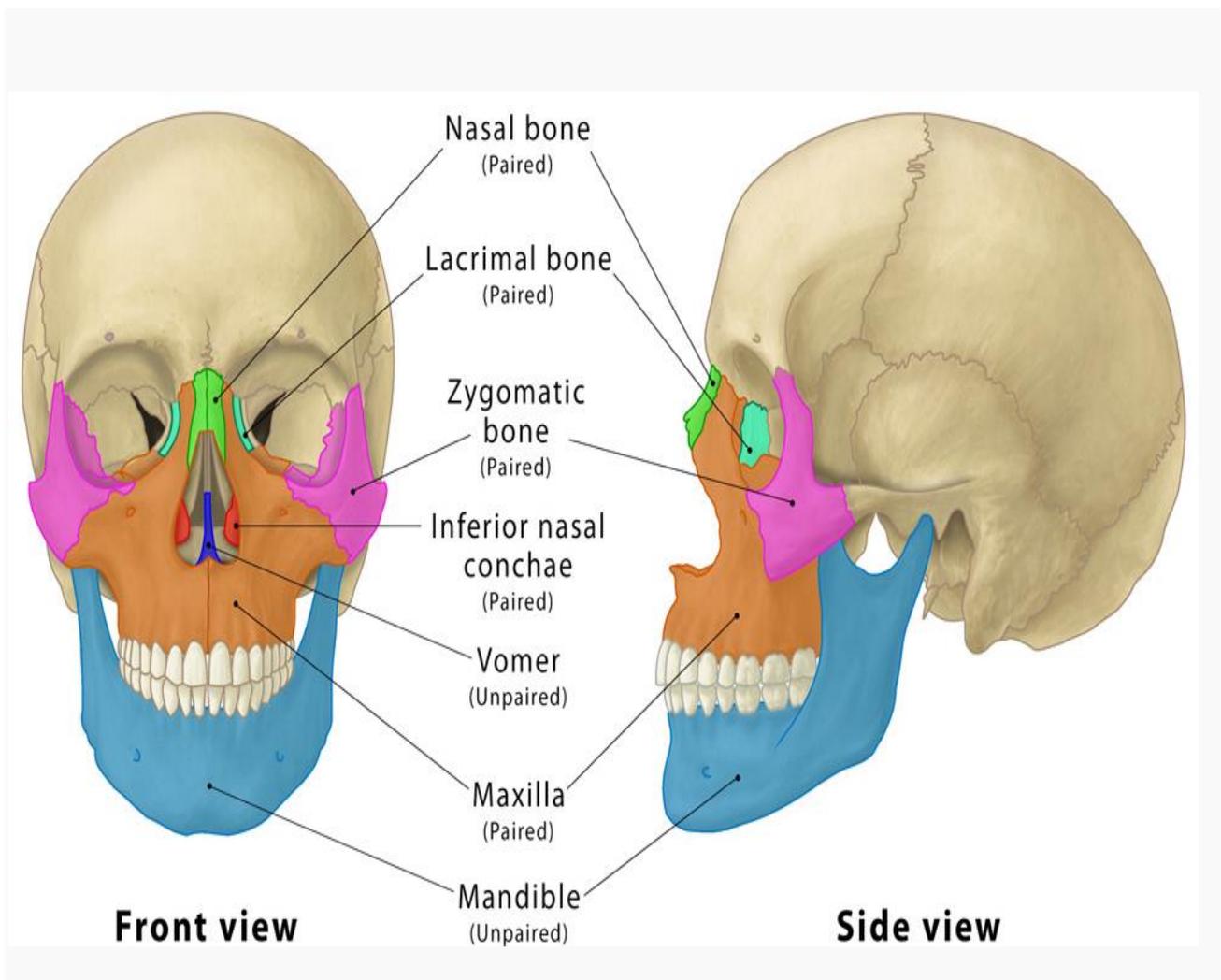
The form of this bone resembles a butterfly. It contains of a body and three paired processes: large and small wings and pterygoid plates. On the upper side of the human body skeleton there is a break, in which situated the major thyroid gland of the hypophysis. This bone joints to the nasal passage. Two small wings extend from the unpaired bone to the sides, at the base of each there is a large opening of the cylindrical canal, through which the optic nerve passes into the eye area. Between the small and large wings there is the cleft, through which pass the cranial, sensory and lateral plantar nerves.

Temporal bone

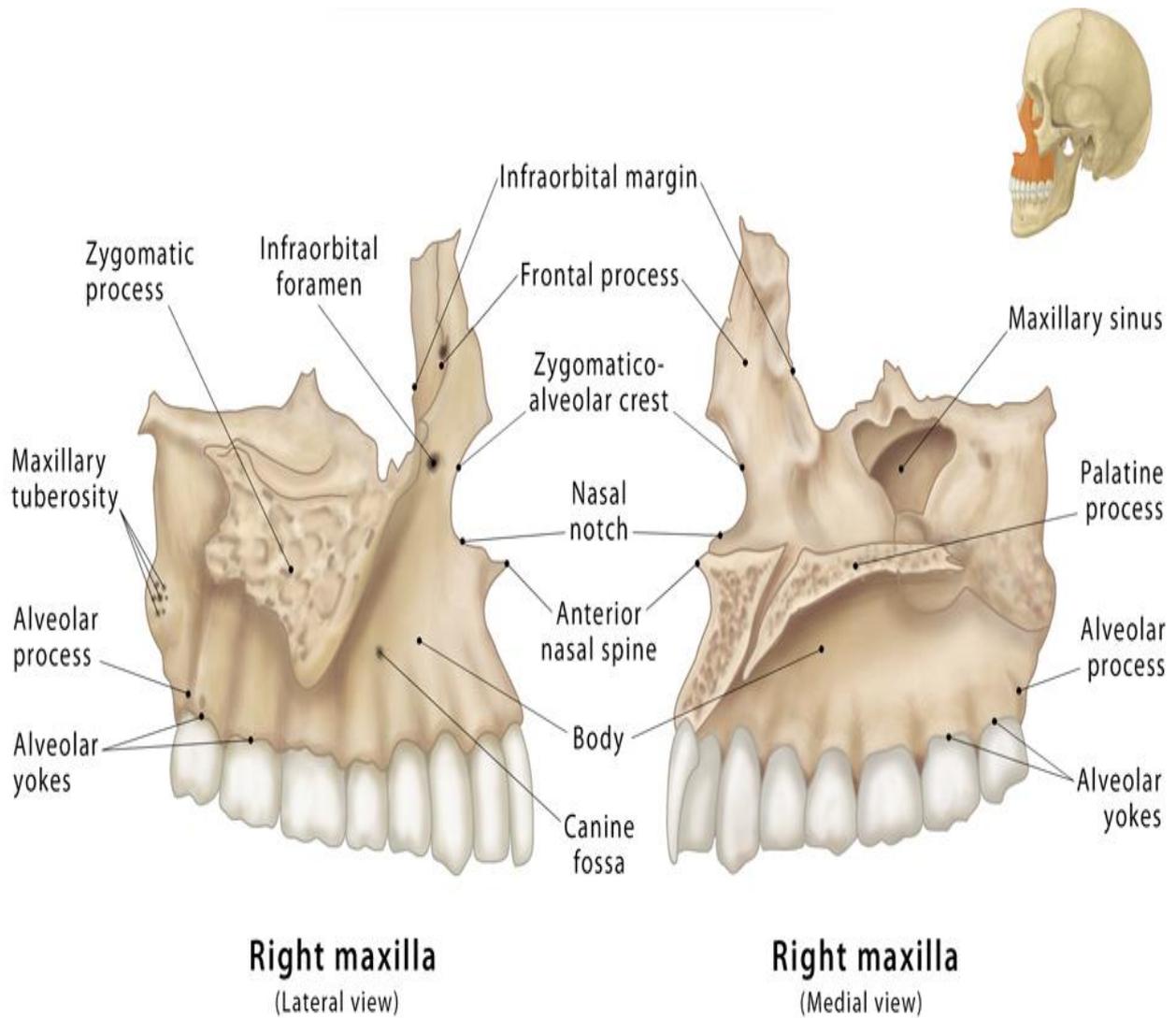


The temporal bone has a trihedral form. It has an law, back and inferior parts. The law part of the pyramid is involved in the constitution of the middle cranial base, the back part is the back cranial base, and the lower side is part of the outer base of the skull. The carotids and facial canals pass the pyramid of the temporal bone, in which are situated the vessels, nerves and muscles.

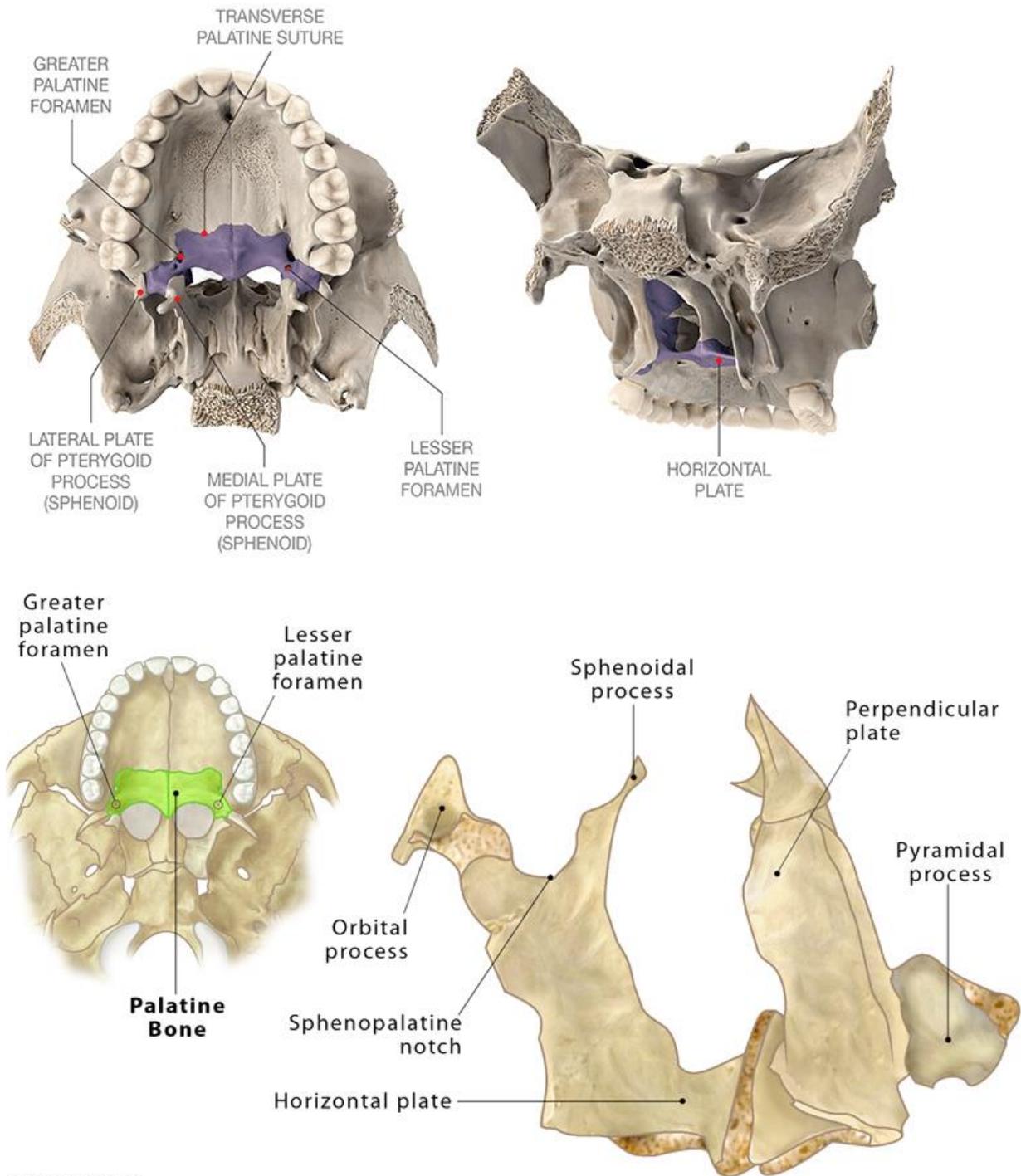
The bones of the facial section of the skull are represented by paired bones (upper jaw, palatine, malar bone, nasal, lacrimal and nasal turbinal) and unpaired bones (jowbone, hyoid bone and vomer).



The upper jaw (maxilla) contained from four processes parts: frontal, zygomatic, palatine and alveolar. It distinguishes four surfaces: anterior, infratemporal, orbital and nasal. The upper jaw, a rather large maxillary (maxillary) sinus stands out. The upper jaw is involved in the building of the nasal cavity, orbit, oral cavity, infratemporal and pterygopalatine fossae. The alveolar process has cells for the eight upper teeth.

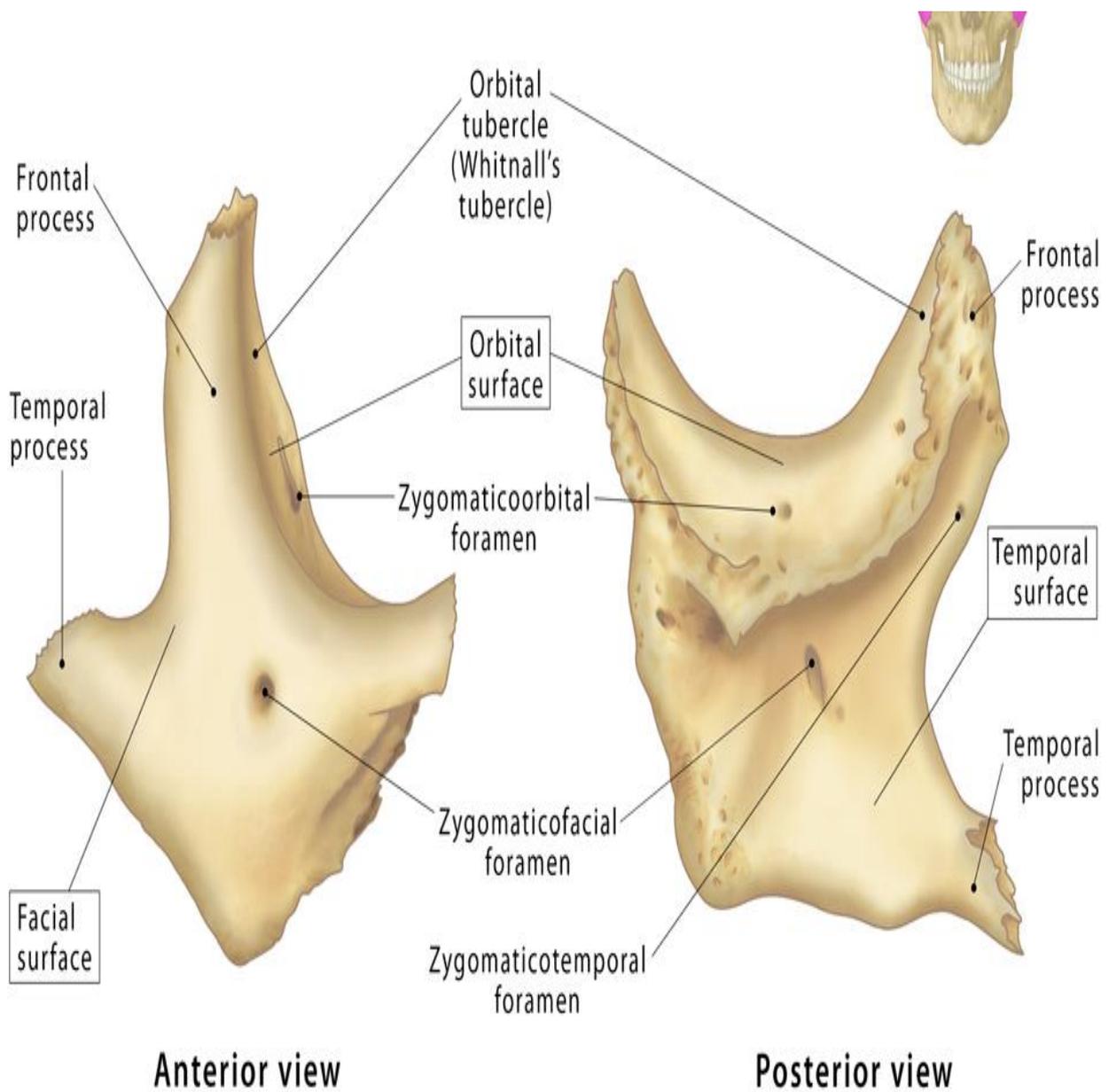


The palatine bone (os palatinum) is paired, consists of two bone plates - perpendicular and horizontal, which form part of the wall of the nasal cavity and the hard palate.

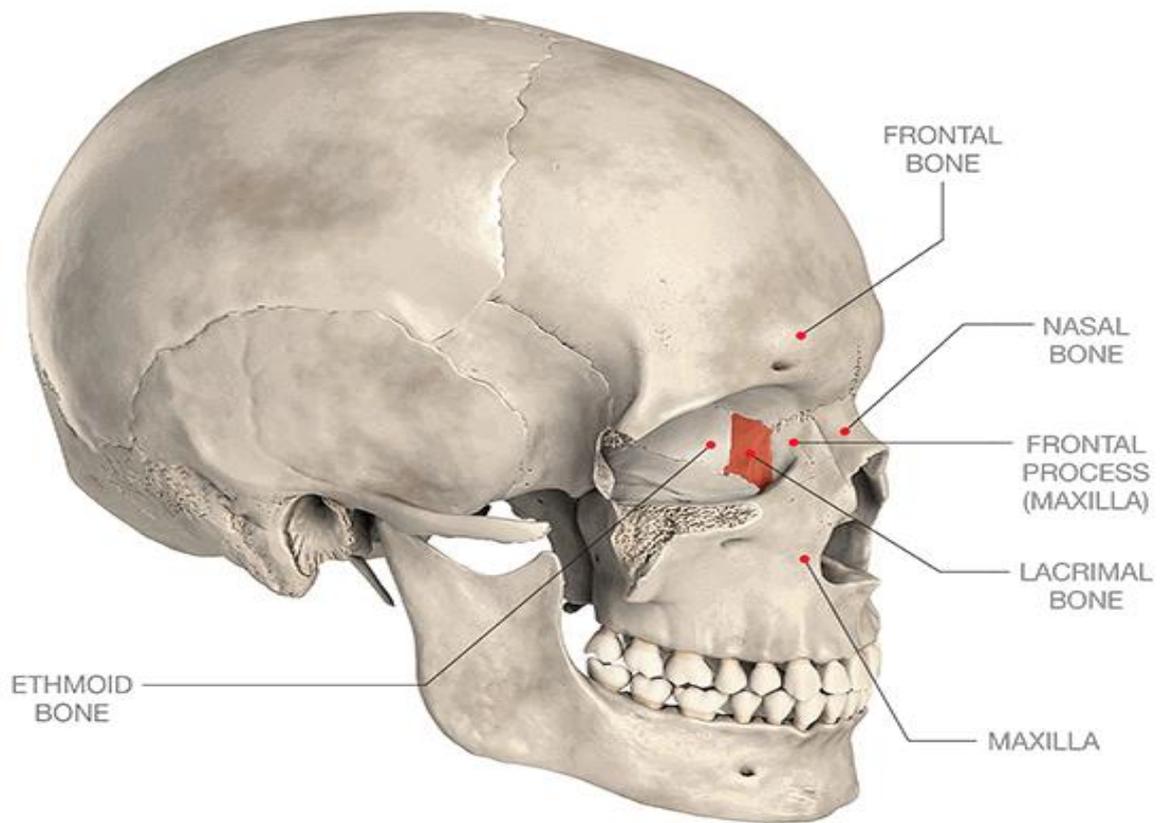
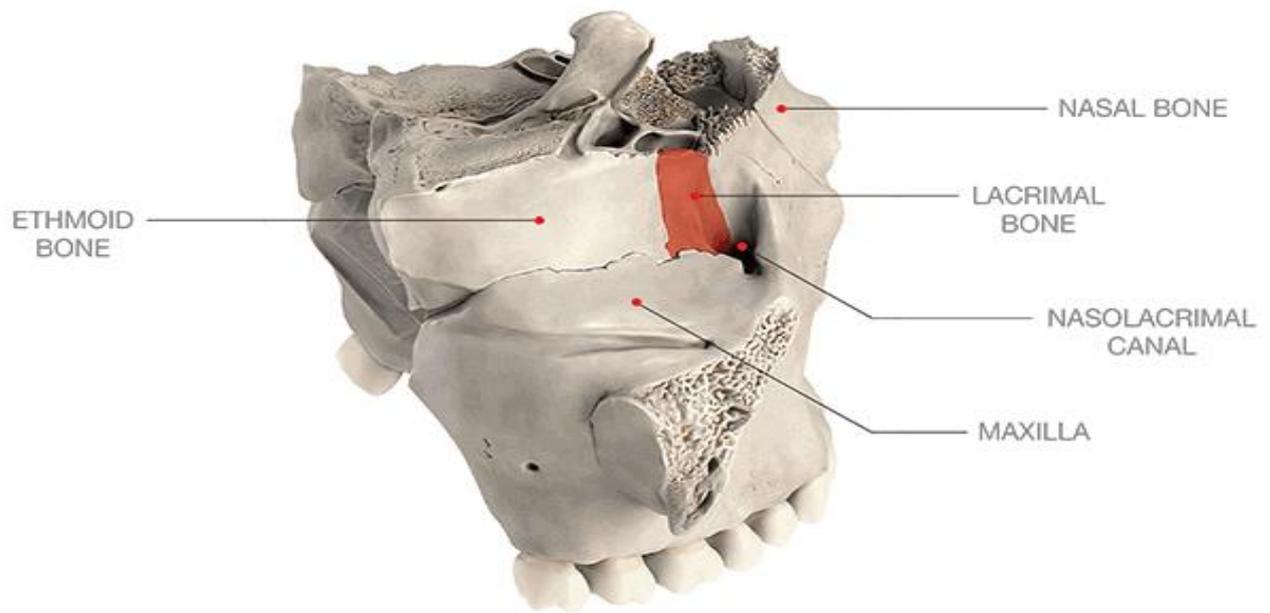


TheSkeletalSystem

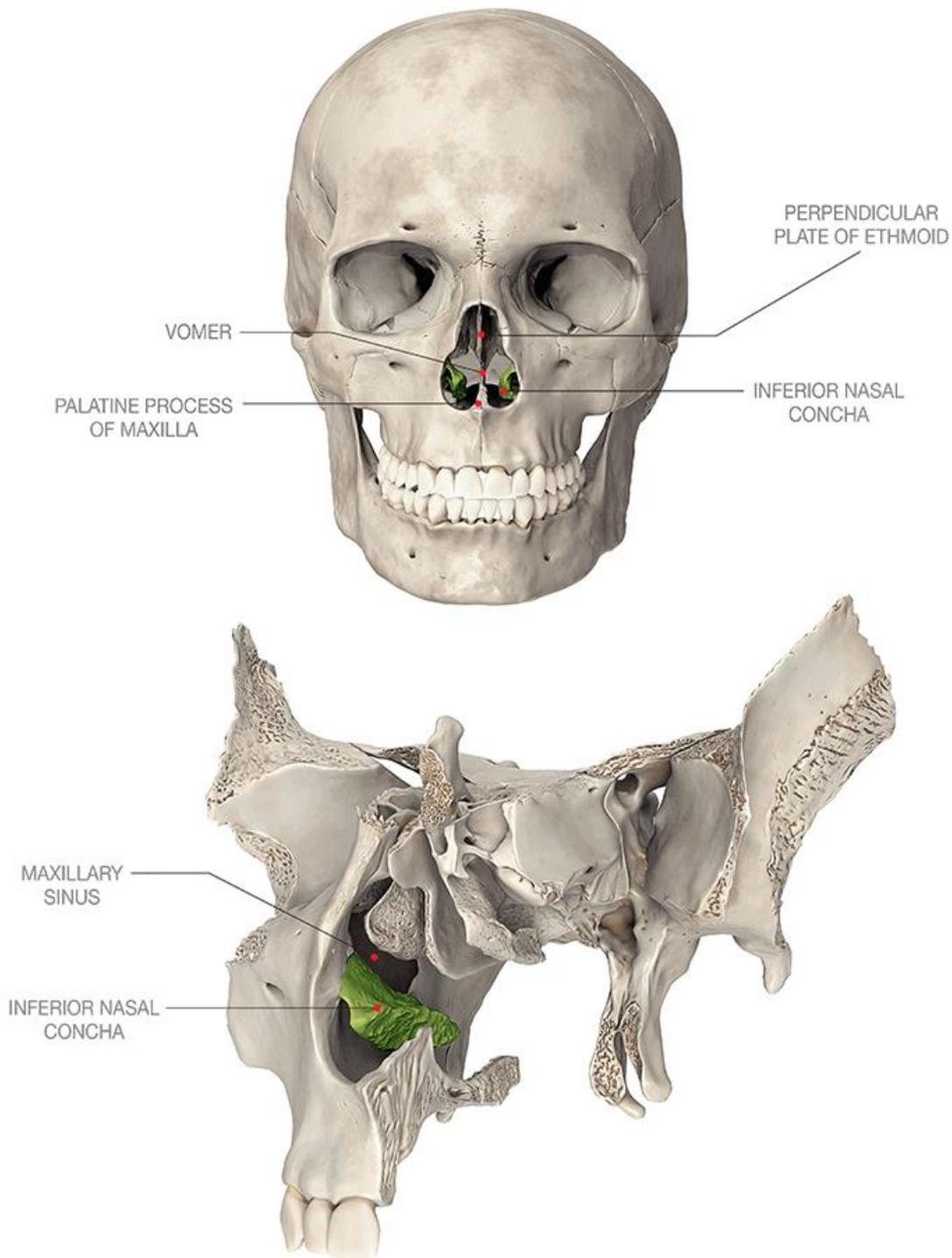
The zygomatic bone (os zygomaticum) is paired, has lateral, temporal, orbital surfaces, frontal and temporal processes. With its size, this spine determines the width and shape of the face.



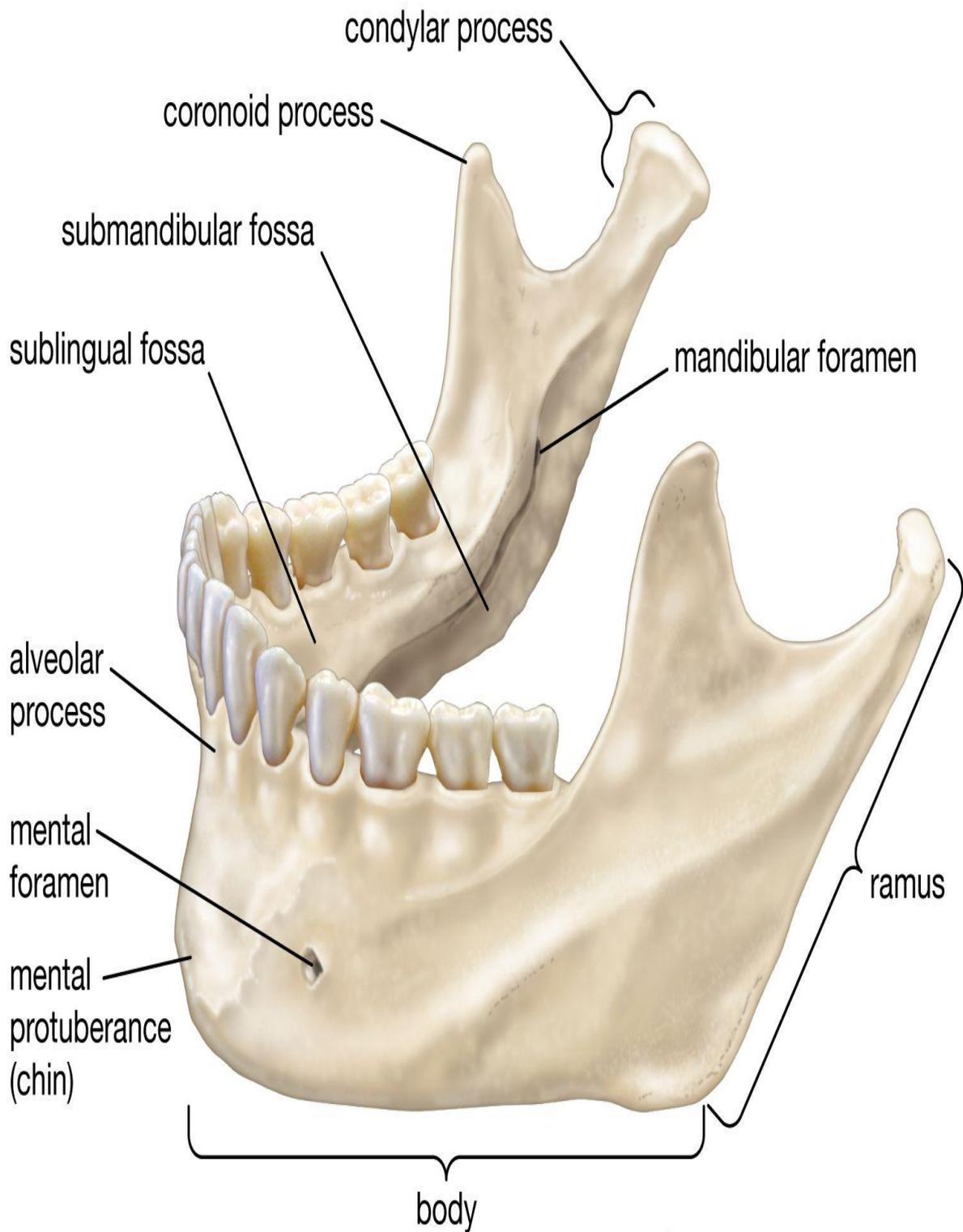
The lacrimal bone (os lacrimale) is steam room, participates in the building of the inner wall of the orbit and limits the fossa of the tear gland.



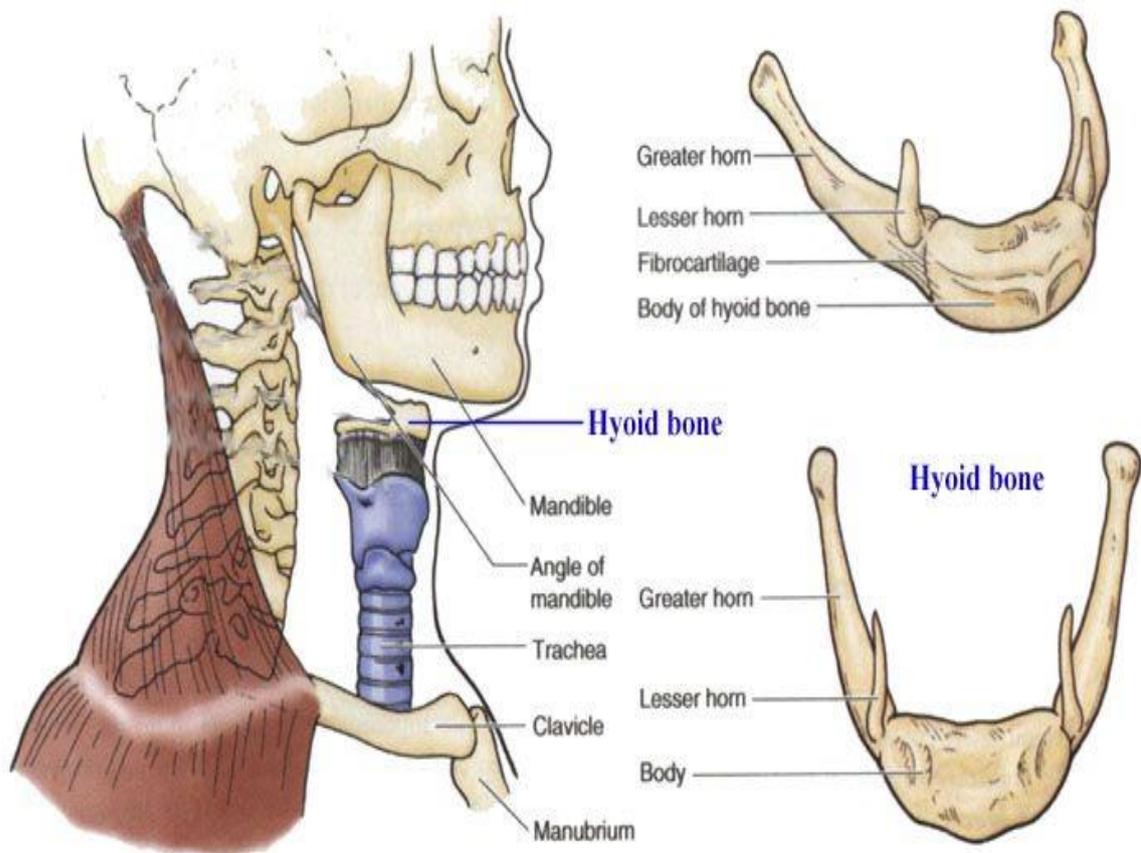
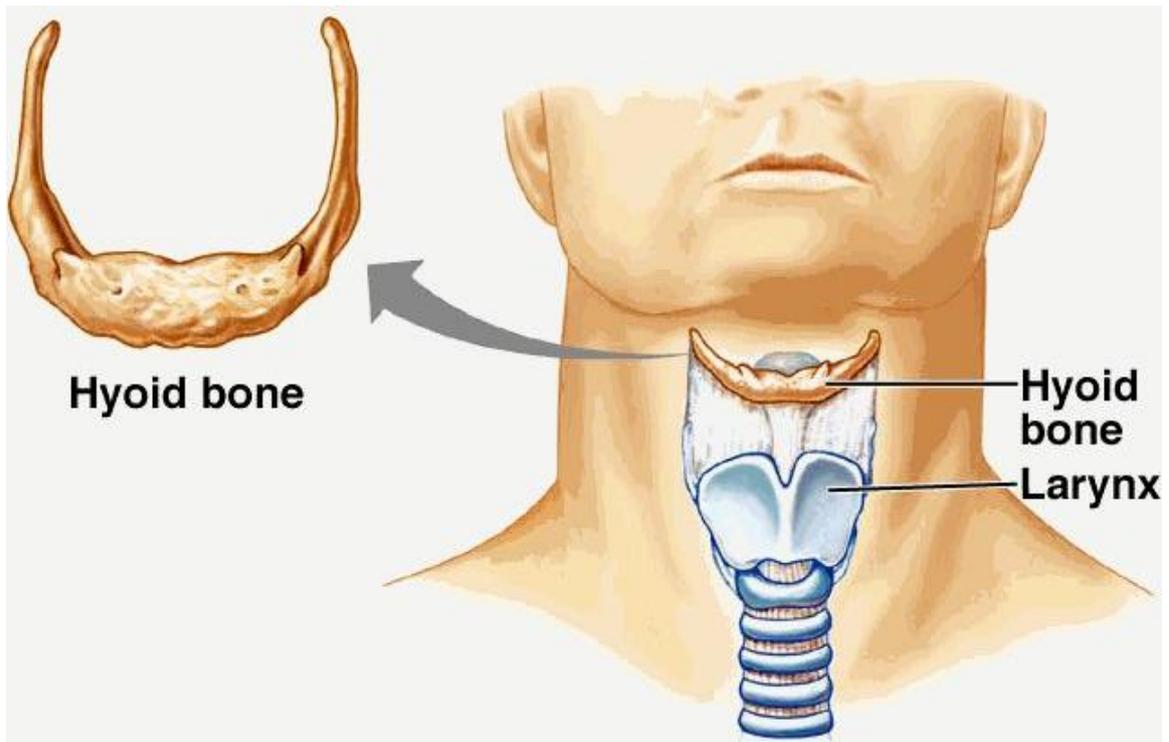
The inferior nasal concha (concha nasalis inferior) is a paired bone. With one edge, it connects with the upper jaw and palatine bone, and with the other it hangs down into the nasal cavity, limiting the lower nasal passage.



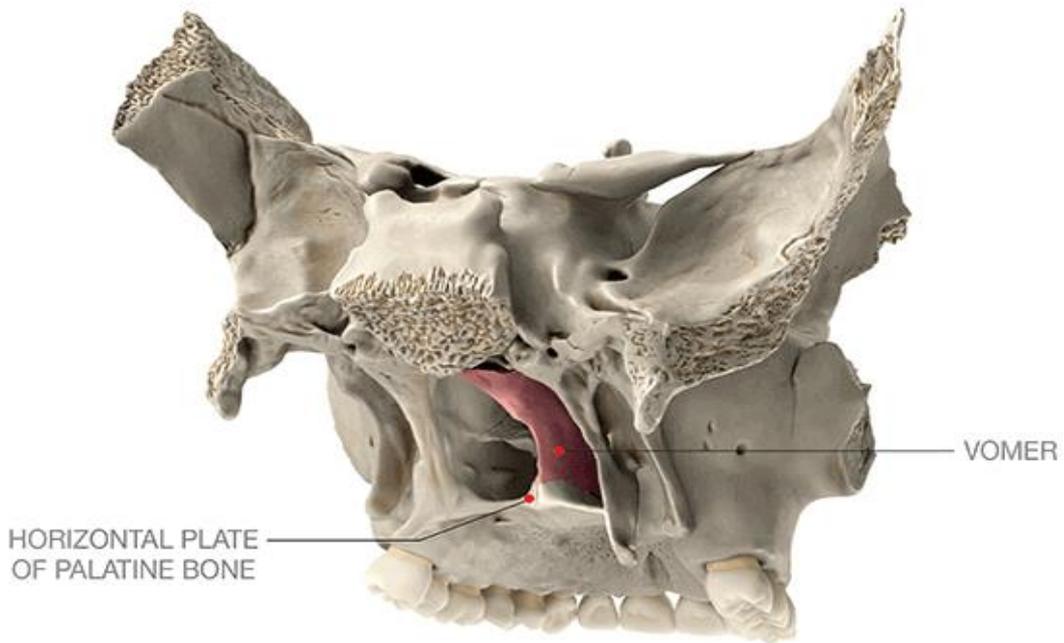
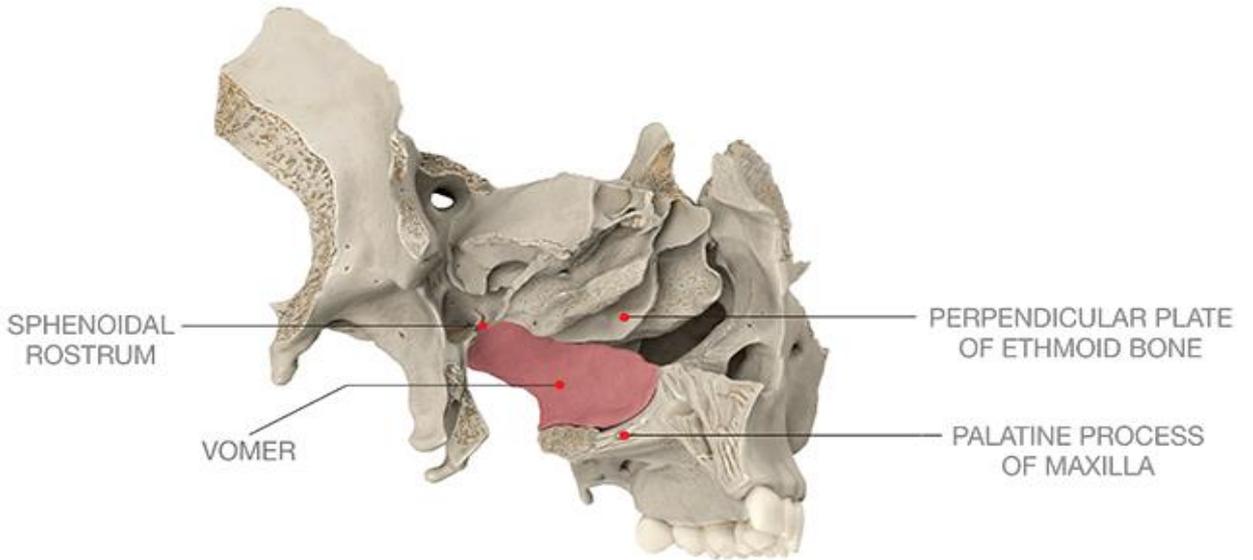
The lower jaw (mandibula) is the only movable bone in the human skull, consists of a body and two branches. Dental alveoli are located on the lower jaw.



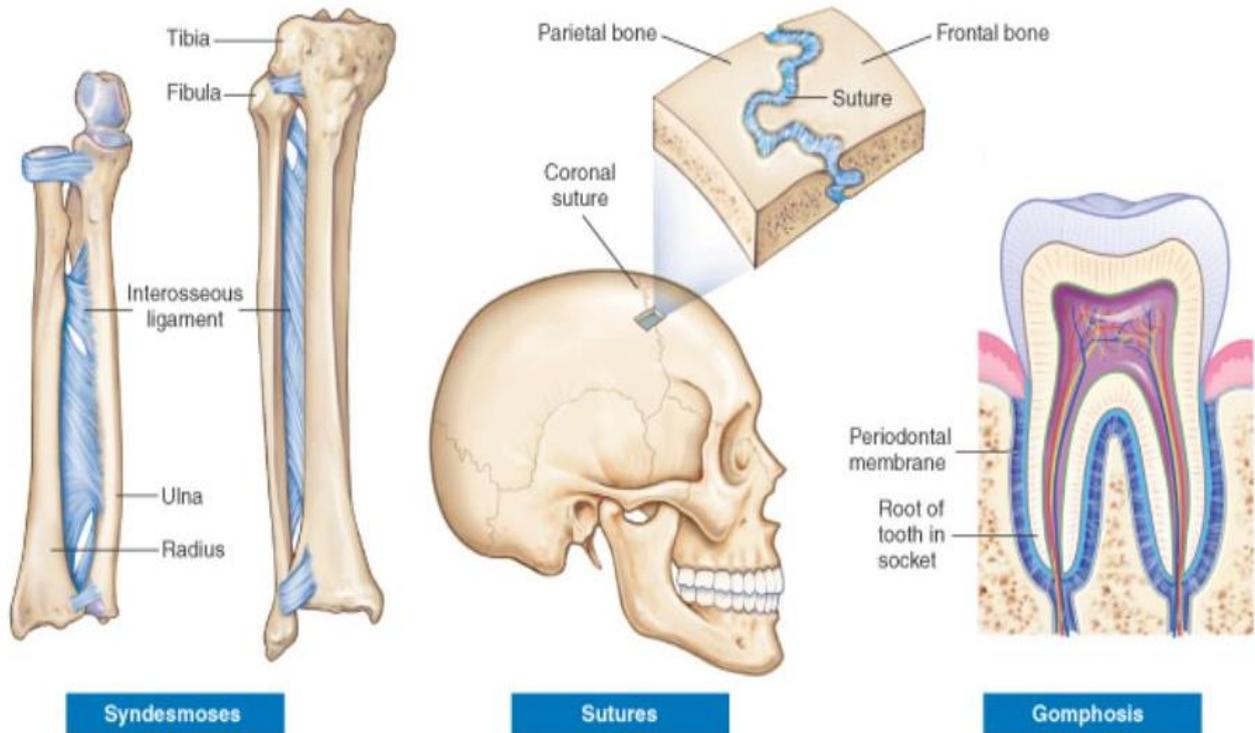
The hyoid bone (os hyoideum) contains of the pair of large and a pair of small horns and is situated in the neck, among the lower jaw and the larynx.



The vomer (vomer), connecting with the ethmoid bone, takes part in the structure of the nasal septum, separates the paired exit holes from the nasal cavity - the choanae.



The bones of the skull are connected to each other with the help of continuous connections - **synarthrosis**.

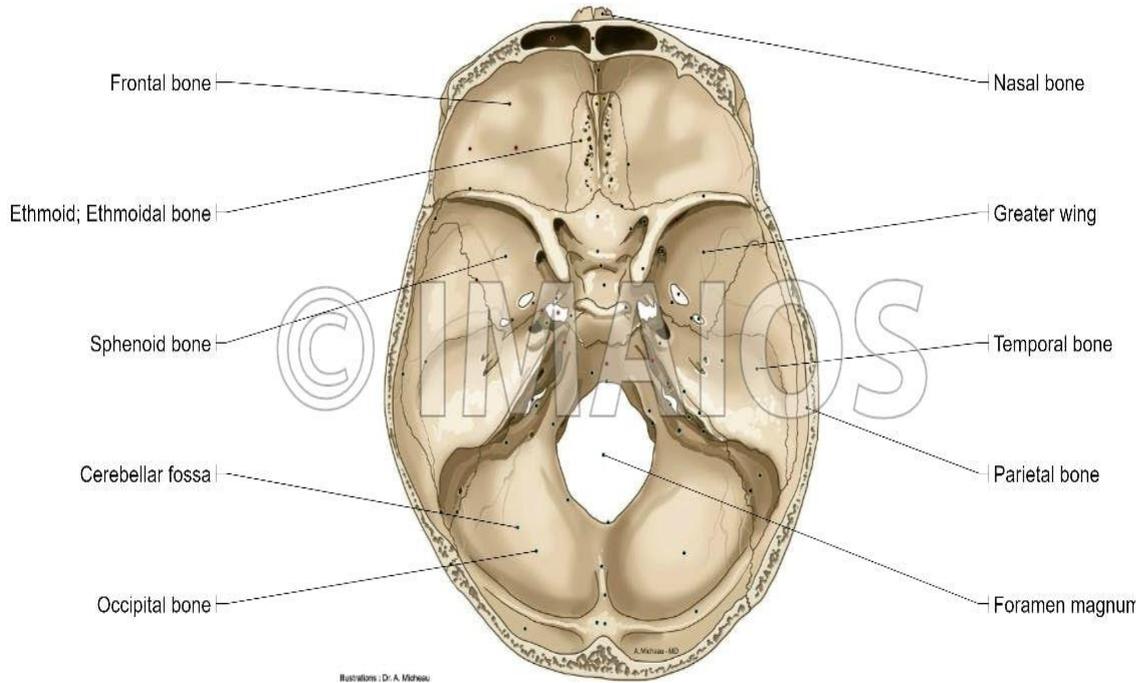


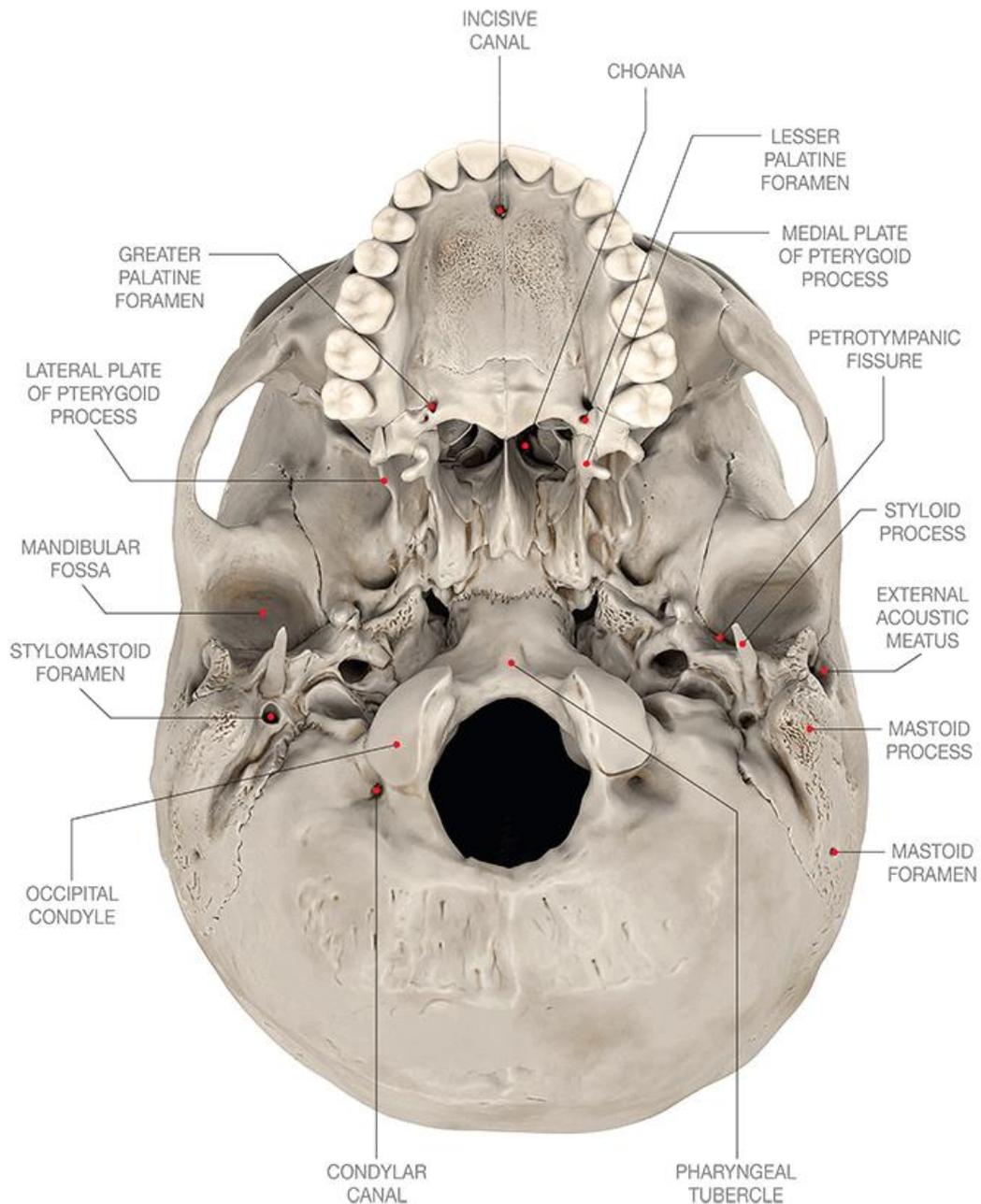
Video information. <https://www.youtube.com/watch?v=XfJegfGctaw>



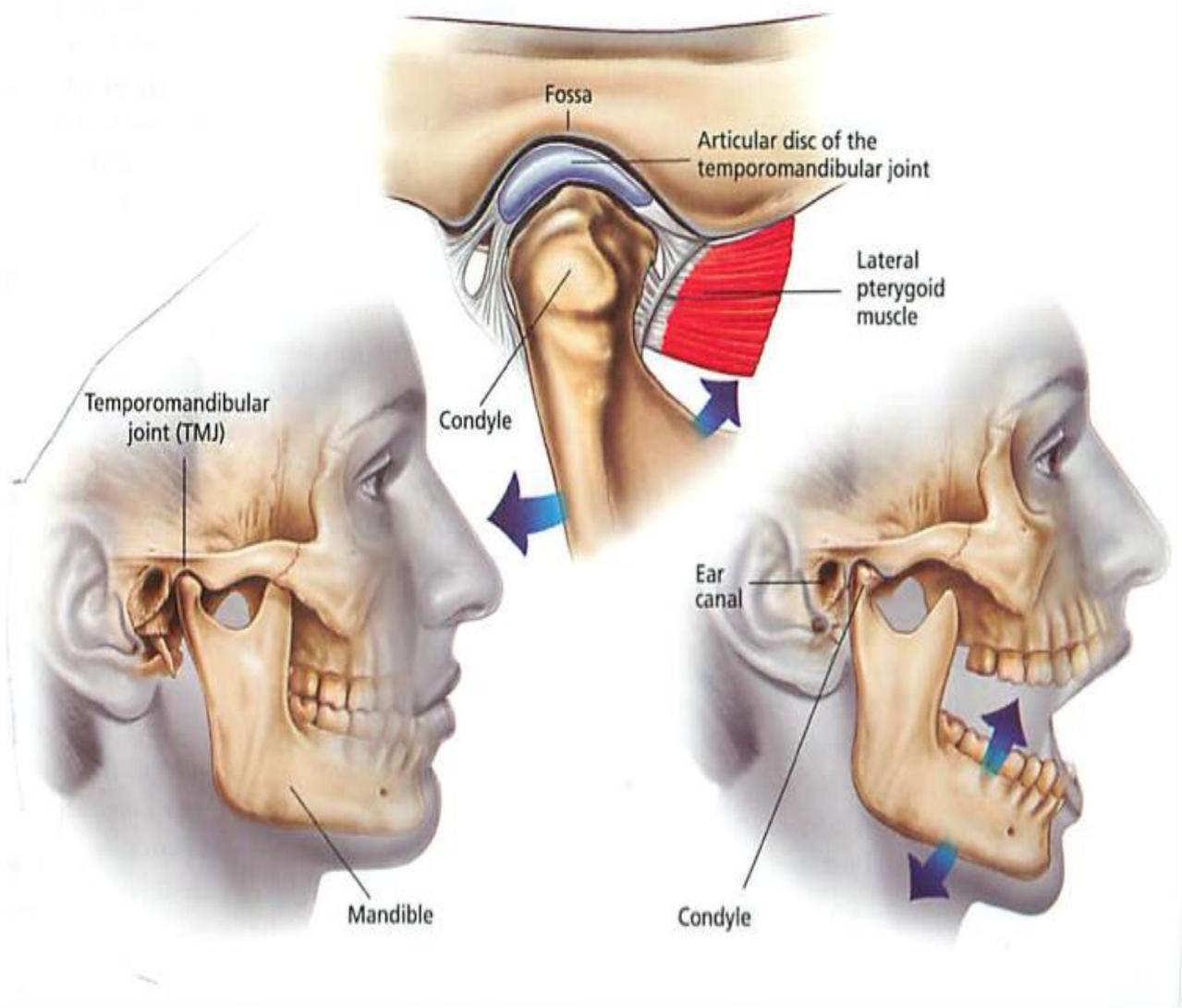
SKULL IN GENERAL

The skeleton of the skull is conditionally divided into a **vault**, or **roof**, and a **base**. The **cranial vault** is formed by the scaly parts of the frontal, temporal, occipital bones and parietal bones. **The base of the skull** consists of the frontal, ethmoid, sphenoid, temporal, and occipital bones.

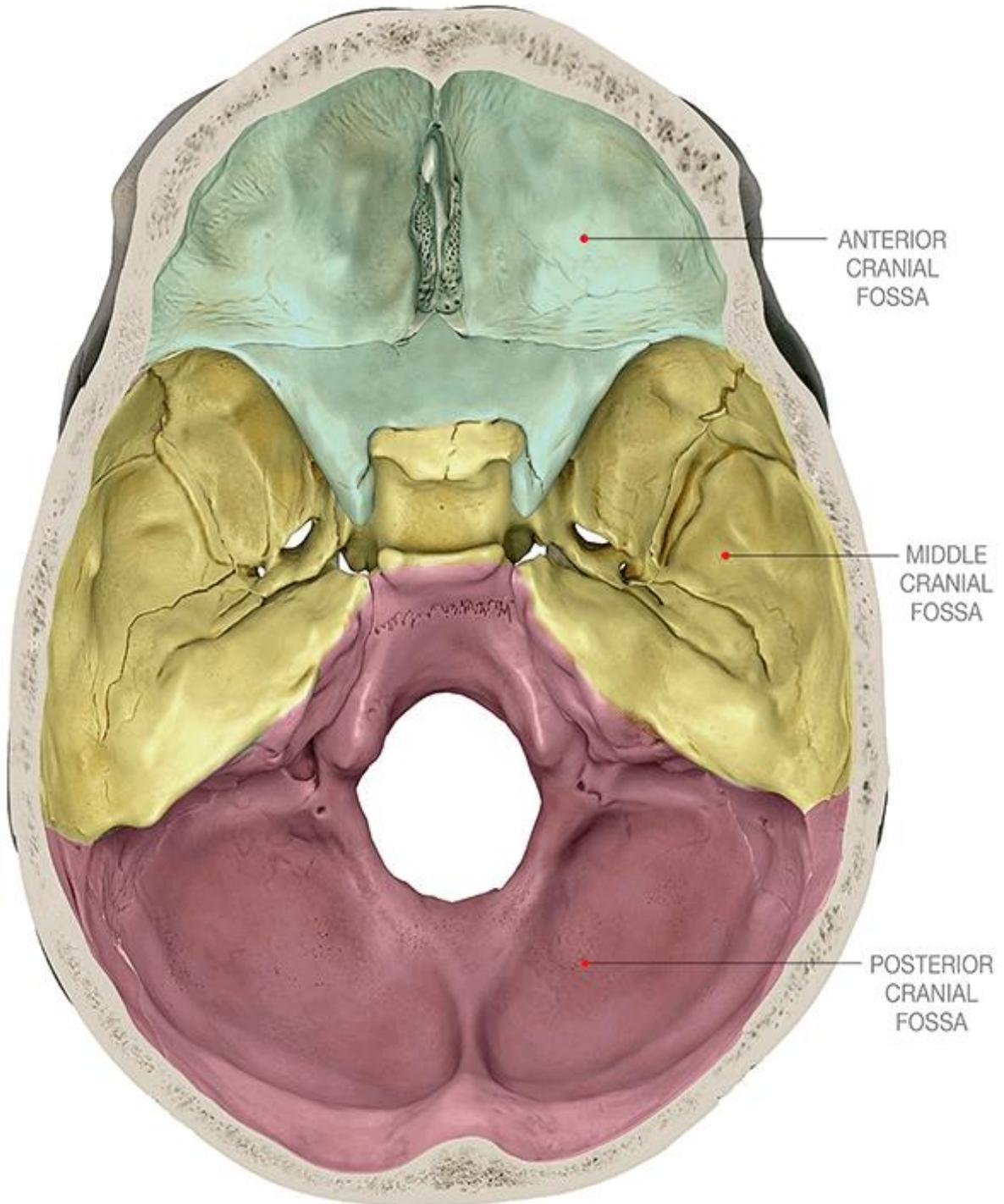




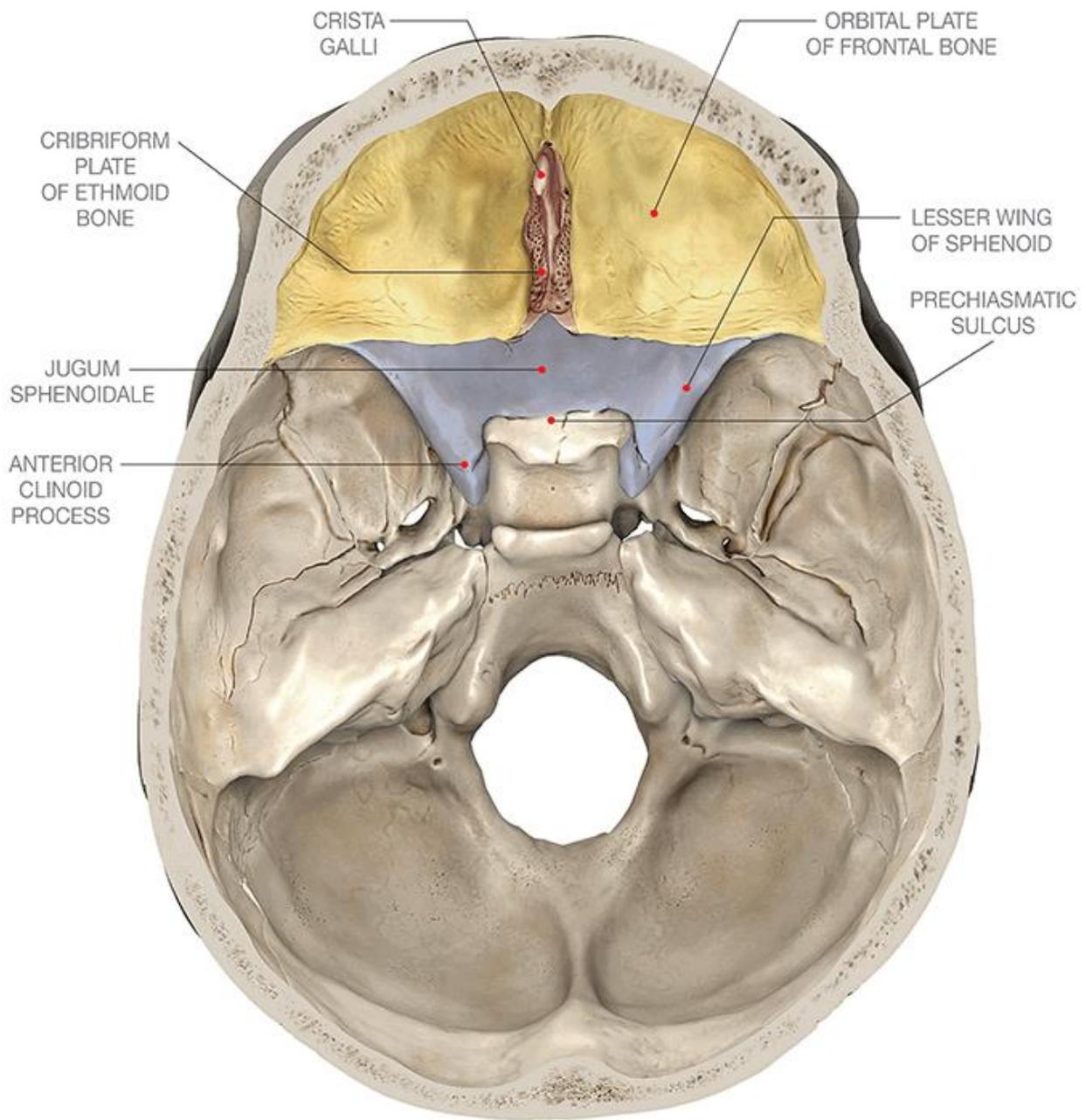
The temporomandibular joint (articulation temporo-mandibularis) is paired, complex in structure, elliptical in shape. Inside the joint are the articular disc, which divides the joint cavity into two floors: upper and lower, isolated from each other. Two temporomandibular joints function together (movement in one of the joints sets in motion the other) and are considered as a single combined joint. In the joint, lowering and raising the lower jaw, lateral movements (to the right and left) and pushing it forward and backward are possible.



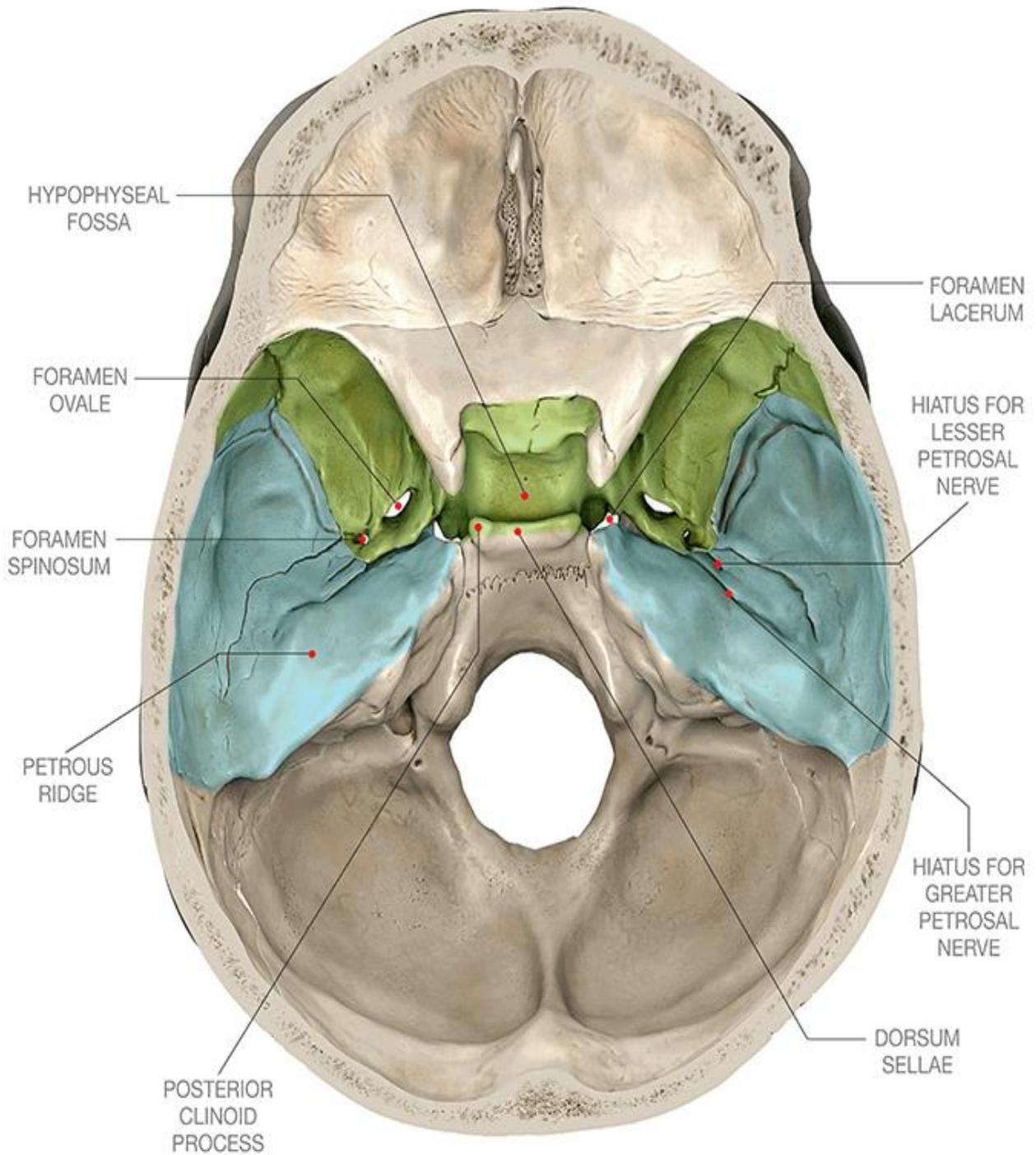
The internal base of the skull (basis cranii interna) has three cranial fossae:
anterior, middle and posterior.



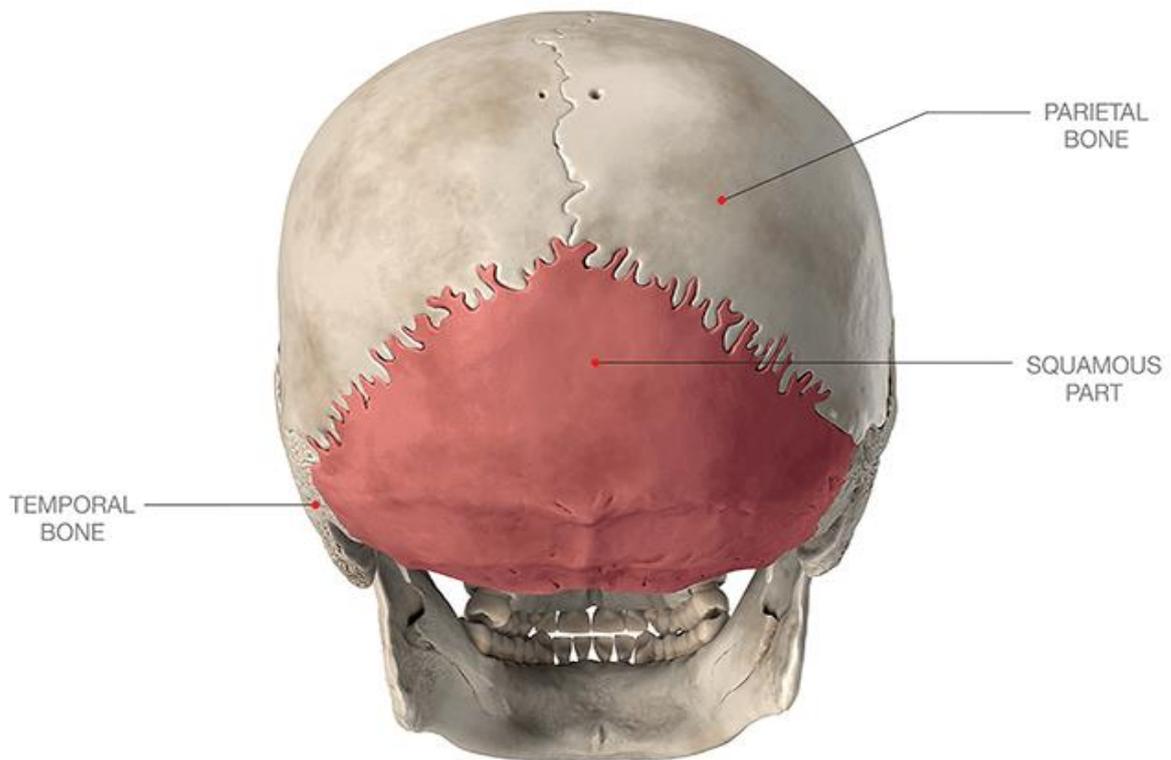
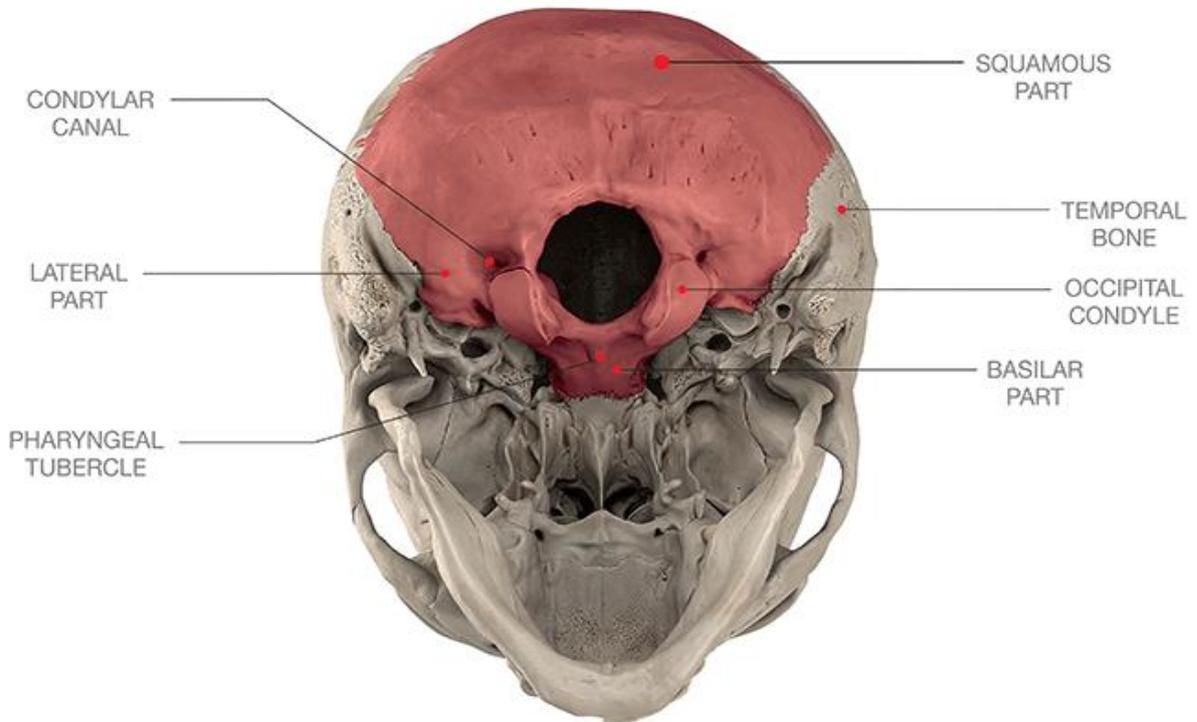
The anterior cranial fossa is formed by the orbital part of the frontal bone, the ethmoid bone (ethmoid plate) and the lesser wings of the sphenoid bone and communicates with the nasal cavity through holes in the cribriform plate. These openings serve as the passageway for the olfactory nerves.



The walls of the middle cranial fossa are formed by the body and large wings of the sphenoid bone, the anterior surface of the pyramids, and the squamous part of the temporal bones. From this fossa, the optic nerve, ophthalmic artery, and vein pass through the optic canal into the cavity of the orbit.



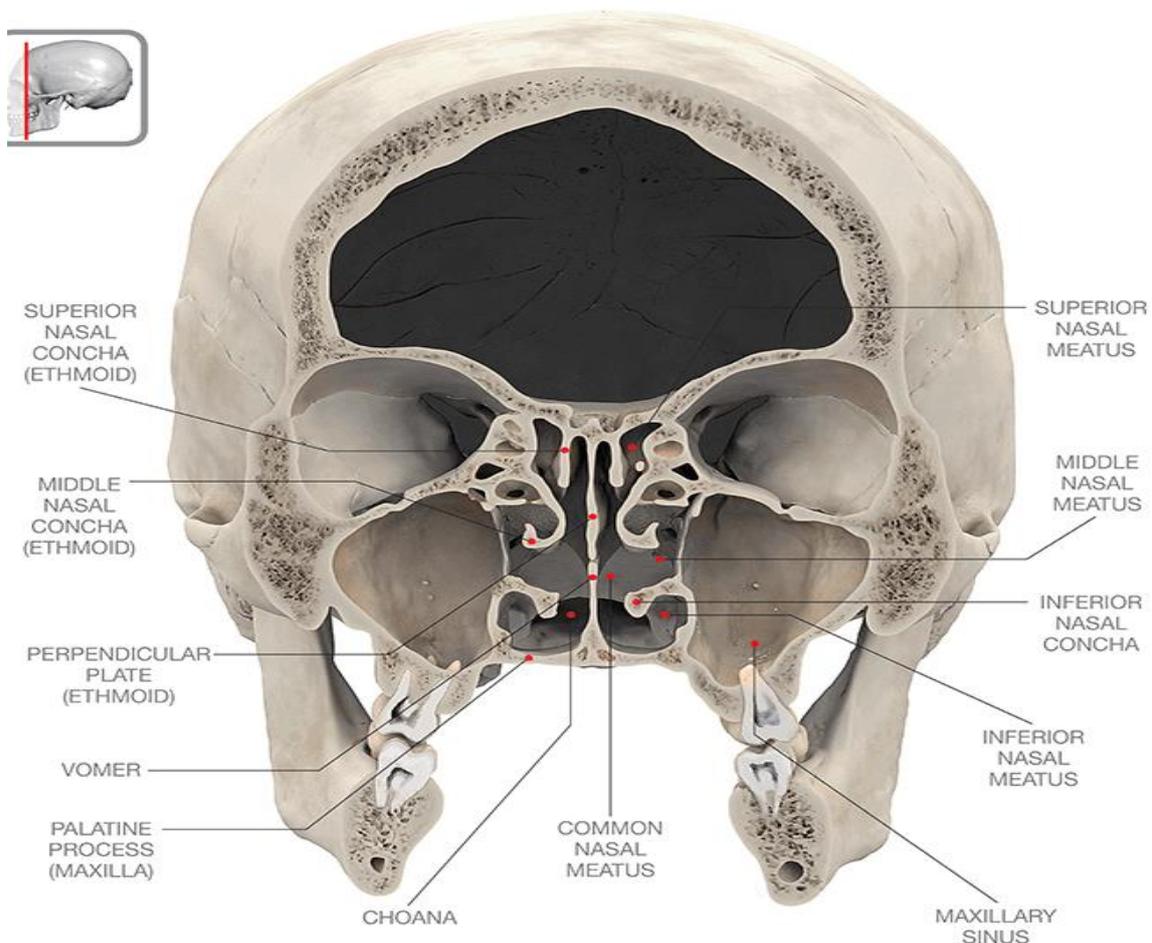
The occipital bone, **the posterior surfaces** of the pyramids, and the temporal bones take part in the formation of the posterior cranial fossa. The internal auditory (right and left) foramen opens into the posterior cranial fossa, from which the vestibular cochlear nerve emerges, and the facial nerve exits from the canal of the facial nerve.



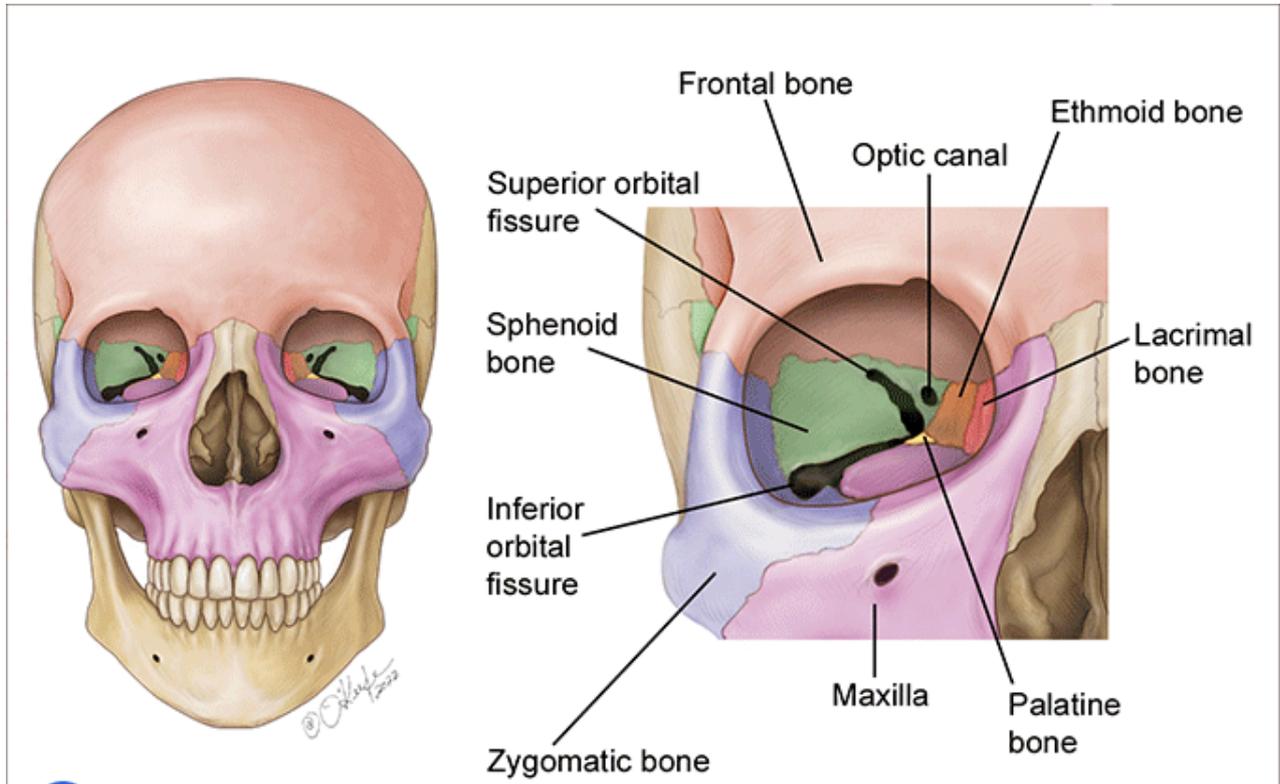
The outer base of the skull (basis cranii externa) in its anterior section is closed by the facial bones (there is a bony palate bounded in front by the alveolar process of the upper jaw and teeth), and the posterior section is formed by the outer surfaces of the sphenoid, occipital and temporal bones. In this area there are a great deal of holes through which the vessels and nerves pass, providing blood supply to the brain.

In the skeleton of the facial skull, the central place is occupied by the nasal cavity, eye sockets and oral cavity.

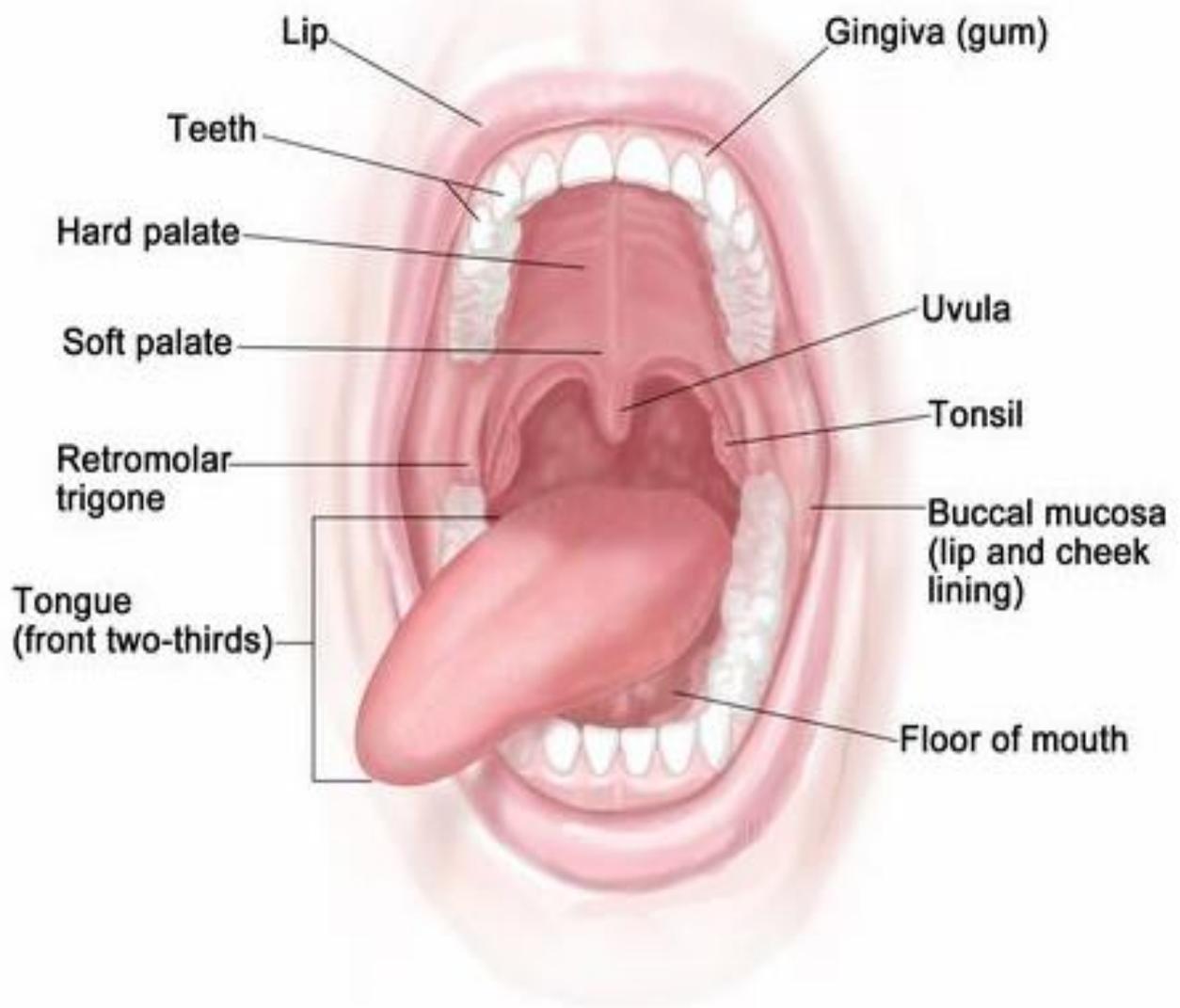
The nasal cavity (cavitas nasi) is the initial section of the respiratory tract, contains the organ of smell. It has one pear-shaped inlet and two outlets - choanae. The nasal cavity is divided into two halves by a bone plate. In the nasal cavity, the upper, lower and lateral (lateral) walls are distinguished. The upper wall is formed by the nasal bones. The lower wall is represented by the upper palatine processes of the upper jaw and the horizontal plates of the bones of the palate. The lateral wall consists of the frontal process of the maxilla, the lacrimal bone, and the plate of the palatine bone.



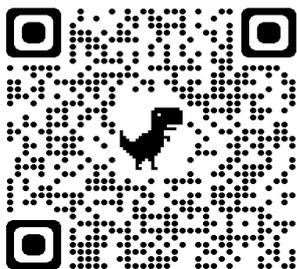
The orbit (orbita) is a paired cavity, has the shape of a tetrahedral pyramid with rounded edges, the top of which is directed backward and medially. The optic canal passes through this area. In the cavity of the orbit are the eyeball with muscles, the lacrimal gland and other formations. It has an entrance and four walls: upper, lower, medial and lateral.



The oral cavity is contained of hard and soft palates, the palatine processes of the right and left upper jaws and the horizontal plates of the palatine bones; the lateral and anterior walls are formed by the alveolar processes of the upper jaws, which together builds the upper alveolar arch. Hard and soft palate serves as a solid basis for the upper wall of the oral cavity. The upper and lower alveolar arches, together with the teeth and the lower jaw, constitute the skeleton of the front and lateral walls of the oral cavity.



Video information. <https://www.youtube.com/watch?v=M8RAjn0riko>



HUMAN ANATOMY QUIZZES

Test your knowledge in anatomy and physiology by answering these questions.

Test

1) Which of the following terms describes the body's ability to maintain its normal state?

- (A) Anabolism
- (B) Catabolism
- (C) Tolerance
- (D) Homeostasis
- (E) Metabolism

2) Which of the following best describes the human body's defense mechanism against environmental bacteria?

- (A) Hair in the nose
- (B) Mucous membranes
- (C) Osteoblasts
- (D) Saliva
- (E) Tears

3) Which cells in the blood do not have a nucleus?

- (A) Lymphocyte
- (B) Monocyte
- (C) Erythrocyte
- (D) Basophil
- (E) Neutrophil

4) Which of the following is flexible connective tissue that is attached to bones at the joints?

- (A) Adipose
- (B) Cartilage
- (C) Epithelial
- (D) Muscle
- (E) Nerve

5) Which of the following allows air to pass into the lungs?

- (A) Aorta
- (B) Esophagus
- (C) Heart
- (D) Pancreas
- (E) Trachea

- 6) Which of the following is the body cavity that contains the pituitary gland?
- (A) Abdominal
 - (B) Cranial
 - (C) Pleural
 - (D) Spinal
 - (E) Thoracic
- 7) Which of the following closes and seals off the lower airway during swallowing?
- (A) Alveoli
 - (B) Epiglottis
 - (C) Larynx
 - (D) Uvula
 - (E) Vocal cords
- 8) Which of the following is located beneath the diaphragm in the left upper quadrant of the abdominal cavity?
- (A) Appendix
 - (B) Duodenum
 - (C) Gallbladder
 - (D) Pancreas
 - (E) Spleen
- 9) Which of the following anatomical regions of abdomen lies just distal to the sternum?
- (A) Epigastric
 - (B) Hypochondriac
 - (C) Hypogastric
 - (D) Lumbar
 - (E) Umbilical
- 10) Which of the following cavities are separated by the diaphragm?
- (A) Abdominal and pelvic
 - (B) Cranial and spinal
 - (C) Dorsal and ventral
 - (D) Pericardial and pleural
 - (E) Thoracic and abdominal
- 11) Which of the following terms describes the motion of bending the forearm toward the body?
- (A) Abduction
 - (B) Eversion
 - (C) Flexion

- (D) Pronation
- (E) Supination

12) In which of the following positions does a patient lie face down?

- (A) Dorsal
- (B) Erect
- (C) Lateral
- (D) Prone
- (E) Supine

13) If the foot is abducted, it is moved in which direction?

- (A) Inward
- (B) Outward
- (C) Upward
- (D) Downward

14) The anatomic location of the spinal canal is

- (A) caudal
- (B) dorsal
- (C) frontal
- (D) transverse
- (E) ventral

15) Which of the following is a structural, fibrous protein found in the dermis?

- (A) Collagen
- (B) Heparin
- (C) Lipocyte
- (D) Melanin
- (E) Sebum

16) A patient has a fracture in which the radius is bent but not displaced, and the skin is intact. This type of fracture is known as which of the following?

- (A) Closed, greenstick
- (B) Complex, comminuted
- (C) Compound, transverse
- (D) Open, spiral
- (E) Simple, pathologic

17) Which of the following is the large bone found superior to the patella and inferior to the ischium?

- (A) Calcaneus
- (B) Femur
- (C) Symphysis pubis

- (D) Tibia
- (E) Ulna

18) The physician directs the medical assistant to complete a request form for an X-ray study of the fibula. The procedure will be performed on which of the following structures?

- (A) Heel
- (B) Lower leg
- (C) Toes
- (D) Thigh
- (E) Pelvis

19) Which of the following is a disorder characterized by uncontrollable episodes of falling asleep during the day?

- (A) Dyslexia
- (B) Epilepsy
- (C) Hydrocephalus
- (D) Narcolepsy
- (E) Shingles

20) Which of the following is the point at which an impulse is transmitted from one neuron to another neuron?

- (A) Dendrite
- (B) Glial cell
- (C) Nerve center
- (D) Synapse
- (E) Terminal plate

21) Which of the following controls body temperature, sleep, and appetite?

- (A) Adrenal glands
- (B) Hypothalamus
- (C) Pancreas
- (D) Thalamus
- (E) Thyroid gland

22) Which of the following cranial nerves is related to the sense of smell?

- (A) Abducens
- (B) Hypoglossal
- (C) Olfactory
- (D) Trochlear
- (E) Vagus

23) Which of the following is a substance that aids the transmission of nerve impulses to the muscles?

- (A) Acetylcholine
- (B) Cholecystokinin
- (C) Deoxyribose
- (D) Oxytocin
- (E) Prolactin

24) Which of the following best describes the location where the carotid pulse can be found?

- (A) In front of the ears and just above eye level
- (B) In the antecubital space
- (C) In the middle of the groin
- (D) On the anterior side of the neck
- (E) On the medial aspect of the wrist

25) A patient sustains severe blunt trauma to the left upper abdomen and requires surgery. Which one of the following organs is most likely to be involved?

- (A) Appendix
- (B) Gallbladder
- (C) Pancreas
- (D) Urinary bladder
- (E) Spleen

26) Where is the sinoatrial node located?

- (A) Between the left atrium and the left ventricle
- (B) Between the right atrium and the right ventricle
- (C) In the interventricular septum
- (D) In the upper wall of the left ventricle
- (E) In the upper wall of the right atrium

27) Blood flows from the right ventricle of the heart into which of the following structures?

- (A) Inferior vena cava
- (B) Left ventricle
- (C) Pulmonary arteries
- (D) Pulmonary veins
- (E) Right atrium

28) Oxygenated blood is carried to the heart by which of the following structures?

- (A) Aorta
- (B) Carotid arteries
- (C) Inferior vena cava
- (D) Pulmonary veins
- (E) Superior vena cava

29) The thoracic cage is a structural unit important for which of the following functions?

- (A) Alimentation
- (B) Menstruation
- (C) Mentation
- (D) Respiration
- (E) Urination

30) Which of the following substances is found in greater quantity in exhaled air?

- (A) Carbon dioxide
- (B) Carbon monoxide
- (C) Nitrogen
- (D) Oxygen
- (E) Ozone

31) Which of the following allows gas exchange in the lungs?

- (A) Alveoli
- (B) Bronchi
- (C) Bronchioles
- (D) Capillaries
- (E) Pleurae

32) At which of the following locations does bile enter the digestive tract?

- (A) Gastroesophageal sphincter
- (B) Duodenum
- (C) Ileocecum
- (D) Jejunum
- (E) Pyloric sphincter

33) Which of the following structures is part of the small intestine?

- (A) Ascending colon
- (B) Cecum
- (C) Ileum
- (D) Sigmoid colon
- (E) Transverse colon

34) Which of the following conditions is characterized by incompetence of the esophageal sphincter?

- (A) Crohn's disease
- (B) Esophageal varices
- (C) Gastroesophageal reflux disease
- (D) Pyloric stenosis
- (E) Stomatitis

35) Which of the following organs removes bilirubin from the blood, manufactures plasma proteins, and is involved with the production of prothrombin and fibrinogen?

- (A) Gallbladder
- (B) Kidney
- (C) Liver
- (D) Spleen
- (E) Stomach

36) Which of the following is an accessory organ of the gastrointestinal system that is responsible for secreting insulin?

- (A) Adrenal gland
- (B) Gallbladder
- (C) Liver
- (D) Pancreas
- (E) Spleen

37) Which of the following is the lymphoid organ that is a reservoir for red blood cells and filters organisms from the blood?

- (A) Appendix
- (B) Gallbladder
- (C) Pancreas
- (D) Spleen
- (E) Thymus

38) Which of the following best describes the process whereby the stomach muscles contract to propel food through the digestive tract?

- (A) Absorption
- (B) Emulsion
- (C) Peristalsis
- (D) Regurgitation
- (E) Secretion

39) Saliva contains an enzyme that acts upon which of the following nutrients?

- (A) Starches
- (B) Proteins
- (C) Fats
- (D) Minerals
- (E) Vitamins

40) In men, specimens for gonococcal cultures are most commonly obtained from which of the following structures?

- (A) Anus
- (B) Bladder
- (C) Skin
- (D) Testicle
- (E) Urethra

41) Which of the following describes the cluster of blood capillaries found in each nephron in the kidney?

- (A) Afferent arteriole
- (B) Glomerulus
- (C) Loop of Henle
- (D) Renal pelvis
- (E) Renal tubule

42) Which of the following conditions is characterized by the presence of kidney stones (renal calculi)?

- (A) Glomerulonephritis
- (B) Interstitial nephritis
- (C) Nephrolithiasis
- (D) Polycystic kidney
- (E) Pyelonephritis

43) Which of the following best describes the structure that collects urine in the body?

- (A) Bladder
- (B) Kidney
- (C) Ureter
- (D) Urethra
- (E) Urethral meatus

44) In men, which of the following structures is located at the neck of the bladder and surrounds the urethra?

- (A) Epididymis
- (B) Prostate
- (C) Scrotum
- (D) Seminal vesicle
- (E) Vas deferens

45) Male hormones are produced by which of the following?

- (A) Glans penis
- (B) Prepuce
- (C) Prostate
- (D) Testes
- (E) Vas deferens

46) Which of the following are mucus-producing glands located on each side of the vaginal opening?

- (A) Adrenal
- (B) Bartholin's
- (C) Bulbourethral
- (D) Corpus luteum
- (E) Parotid

47) Fertilization of an ovum by a spermatozoon occurs in which of the following structures?

- (A) Cervix
- (B) Fallopian tube
- (C) Ovary
- (D) Uterus
- (E) Vagina

48) Calcium, potassium, and sodium are classified as which of the following?

- (A) Androgens
- (B) Catecholamines
- (C) Electrolytes
- (D) Estrogens
- (E) Prostaglandins

49) Which of the following is the master gland of the endocrine system?

- (A) Adrenal
- (B) Pancreas
- (C) Pineal
- (D) Pituitary
- (E) Thyroid

50) Patients with which of the following diseases are treated with injections of vitamin B-12?

- (A) Bell's palsy
- (B) Crohn's disease
- (C) Diabetes mellitus
- (D) Graves' disease
- (E) Pernicious anemia

Answers: 1) D 2) B 3) C 4) B 5) E 6) B 7) B 8) E 9) A 10) E 11) C 12) D 13) B 14) B 15) A 16) A 17) B 18) B 19) D 20) D 21) B 22) C 23) A 24) D 25) E 26) E 27) C 28) D 29) D 30) C 31) A 32) B 33) C 34) C 35) C 36) D 37) D 38) C 39) A 40) E 41) B 42) C 43) A 44) B 45) D 46) B 47) B 48) C 49) D 50) E

ONLINE SYSTEM QUIZZES

<https://www.getbodysmart.com/system-quizzes/>



<https://www.britannica.com/quiz/the-human-body-fact-or-fiction>



The Human Body: Fact or Fiction?

<https://www.proprofs.com/quiz-school/topic/human-anatomy>



Human Anatomy Quizzes & Trivia

<https://practiceanatomy.com/>



Practice medical anatomy with personalized questions.

HUMAN ANATOMY ACTIVITIES

Reading comprehension passages

1. Fill the gaps.

Paleontology, Hippocrates, Avicenna, Leonardo da Vinci, descriptive anatomy, 1543, venous valves, Anatomical Observations, XVII-XIX, Galen

Comparative anatomy is close to 2., one of the greatest ancient Greek physicians and anatomists, who is called the father of medicine. 3., wrote the encyclopedic work "The Canon of Medicine". 4. was the first to study the functional anatomy of the motor apparatus. 5. Andrew Vesalius is the founder of 6. The work "On the Structure of the Human Body", of Andrew Vesalius was published in 7. I. Fabricius from Aquapendente described the and suggested that they promote blood flow to the heart and prevent its reverse movement. 8. G. Fallopius in "....." for the first time described in detail the structure of many bones, female genital organs, muscles, the organ of hearing, and vision. 9. In the centuries anatomy was enriched with more and more new facts. 10. "The Canon of Medicine", was contained with numerous information on anatomy and physiology, consonant with the ideas of

Fill the gaps. *cells, bacteria, protozoa, multicellular organism, microscope, environments, nerve cells, brick-shaped plant cells, muscle cells*

What Is a Cell?

Trees in a forest, fish in a river, horseflies on a farm, lemurs in the jungle, reeds in a pond, worms in the soil — all these plants and animals are made of the building blocks we call Like these examples, many living things consist of vast numbers of cells working in concert with one another. Other forms of life, however, are made of only a single cell, such as the many species of and Cells, whether living on their own or as part of a, are usually too small to be seen without a light

Cells share many common features, yet they can look wildly different. In fact, cells have adapted over billions of years to a wide array of and functional roles., for example, have long, thin extensions that can reach for meters and serve to transmit signals rapidly. Closely fitting, have a rigid outer layer that helps provide the structural support that trees and other plants require. Long, tapered have an intrinsic stretchiness that allows them to change length within contracting and relaxing biceps. Still, as different as these cells are, they all rely on the same basic strategies to keep the outside out, allow necessary substances in and permit others to leave, maintain their health, and replicate themselves. In fact, these traits are precisely what make a cell a cell.

Read and decide if the statements are true (T) or false (F).

What Defines a Cell?

Cells are contains the major part of life, because they come in discrete and easily recognizable packages. That's why all cells are surrounded by a structure called the **cell membrane** — which, like the walls of a house, serves as a clear boundary among the cell's internal and external environments. The cell membrane is also referred to as the **plasma membrane**.

Cell membranes are related on a framework of fat-based molecules called **phospholipids**, which physically prevent water-loving, or hydrophilic, substances from entering or escaping the cell. These membranes are also studded with proteins that serve different functions. Some of these proteins act as gatekeepers, determining what substances can and cannot cross the membrane. Others function as markers, identifying the cell as part of the same organism or as foreign. Still others work like fasteners, binding cells together so they can function as a unit. Yet other membrane proteins serve as communicators, sending and receiving signals from neighboring cells and the environment — whether friendly or alarming.

Within this membrane, a cell's interior environment is water based. Called **cytoplasm**, this liquid environment is packed full of cellular machinery and structural elements. In fact, the concentrations of proteins inside a cell far outnumber those on the outside — whether the outside is ocean water (as in the case of a single-celled alga) or blood serum (as in the case of a red blood cell). Although cell membranes form natural barriers in watery environments, a cell must nonetheless expend quite a bit of energy to maintain the high concentrations of intracellular constituents necessary for its survival. Indeed, cells may use as much as 30 percent of their energy just to maintain the composition of their cytoplasm.

What Other Components Do Cells Have?

As previously mentioned, a cell's cytoplasm is home to numerous functional and structural elements. These elements exist in the form of molecules and organelles — picture them as the tools, appliances, and inner rooms of the cell. Major classes of intracellular organic molecules include nucleic acids, proteins, carbohydrates, and lipids, all of which are essential to the cell's functions.

Nucleic acids are the molecules that contain and help express a cell's genetic code. There are two major classes of nucleic acids: **deoxyribonucleic acid (DNA)** and **ribonucleic acid (RNA)**. DNA is the molecule that contains all of the information required to build and maintain the cell; RNA has several roles associated with expression of the information stored in DNA. Of course, nucleic acids alone

aren't responsible for the preservation and expression of genetic material: Cells also use proteins to help replicate the genome and accomplish the profound structural changes that underlie **cell division**.

Proteins are a second type of intracellular organic molecule. These substances are made from chains of smaller molecules called **amino acids**, and they serve a variety of functions in the cell, both **catalytic** and structural. For example, proteins called **enzymes** convert cellular molecules (whether proteins, carbohydrates, lipids, or nucleic acids) into other forms that might help a cell meet its energy needs, build support structures, or pump out wastes.

Carbohydrates, the starches and sugars in cells, are another important type of organic molecule. **Simple carbohydrates** are used for the cell's immediate energy demands, whereas **complex carbohydrates** serve as intracellular energy stores. Complex carbohydrates are also found on a cell's surface, where they play a crucial role in cell recognition.

Finally, **lipids** or fat molecules are components of cell membranes — both the plasma membrane and various intracellular membranes. They are also involved in energy storage, as well as relaying signals within cells and from the bloodstream to a cell's interior.

Some cells also feature orderly arrangements of molecules called **organelles**. Similar to the rooms in a house, these structures are partitioned off from the rest of a cell's interior by their own intracellular membrane. Organelles contain highly technical equipment required for specific jobs within the cell. One example is the **mitochondrion** — commonly known as the cell's "power plant" — which is the organelle that holds and maintains the machinery involved in energy-producing chemical reactions.

STATEMENTS

1

Cells are the not main element of any tissue.

2

The cytoplasm includes: a membrane (cytolemma) - separates the cell and ensures the constancy of its internal environment; organelles; hyaloplasm - the main substance of the cell; cytoplasmic inclusions

3

The endoplasmic reticulum is a system of tubules for the transport of substances from the environment and inside the cell.

4

Ribosomes are protein factories (specific for each type of cell);

5

Nucleus is the fifth main part of the cell.

6

A person has 30 pairs of chromosomes: 44 pairs of somatic chromosomes - autosomes and one pair of sex chromosomes: 50 XY - male; 46 50- female. Human chromosomes contain about 300,000 genes.

7

Epithelial tissue performs: protective; suction; secretory; excretory function.

8

Cartilaginous tissue occurs in the form of hyaline cartilage - it covers the articular surfaces of bones; is in the trachea and bronchi; fibrocartilage - in the intervertebral discs; elastic cartilage - in the epiglottis and auricle.

9

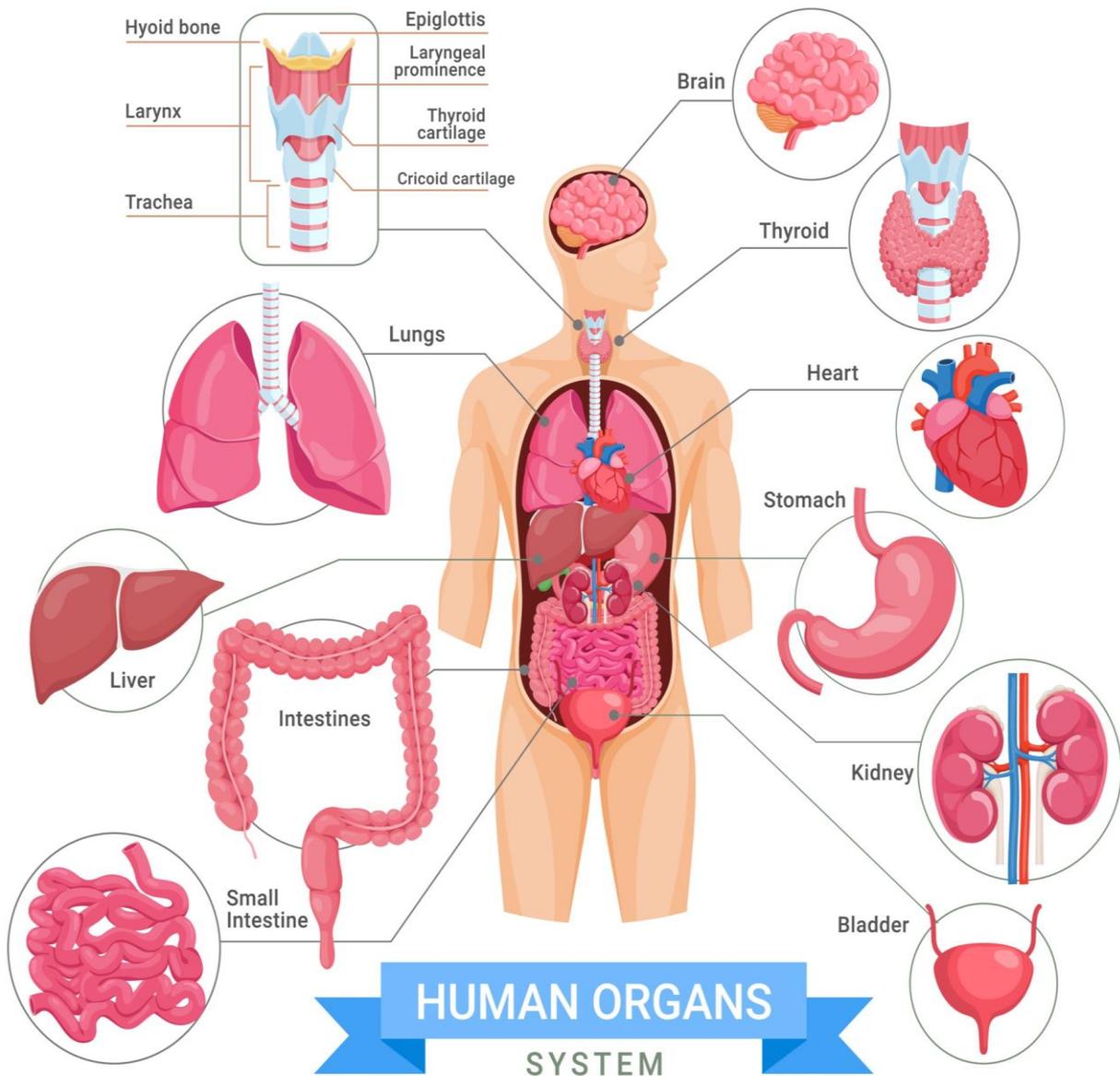
Dense (fibrous) connective tissue - forms muscle tendons; ligaments; fasciae of internal organs.

10

Loose connective tissue: accompanies blood vessels and nerves; is between organs; in subcutaneous adipose tissue.

Working on Glossary of terms.

2. Look at the picture and give information about Human organs system.



3. Watch the video attentively and continue the sentences below.

<https://www.youtube.com/watch?v=kv6v2lOmhtI>



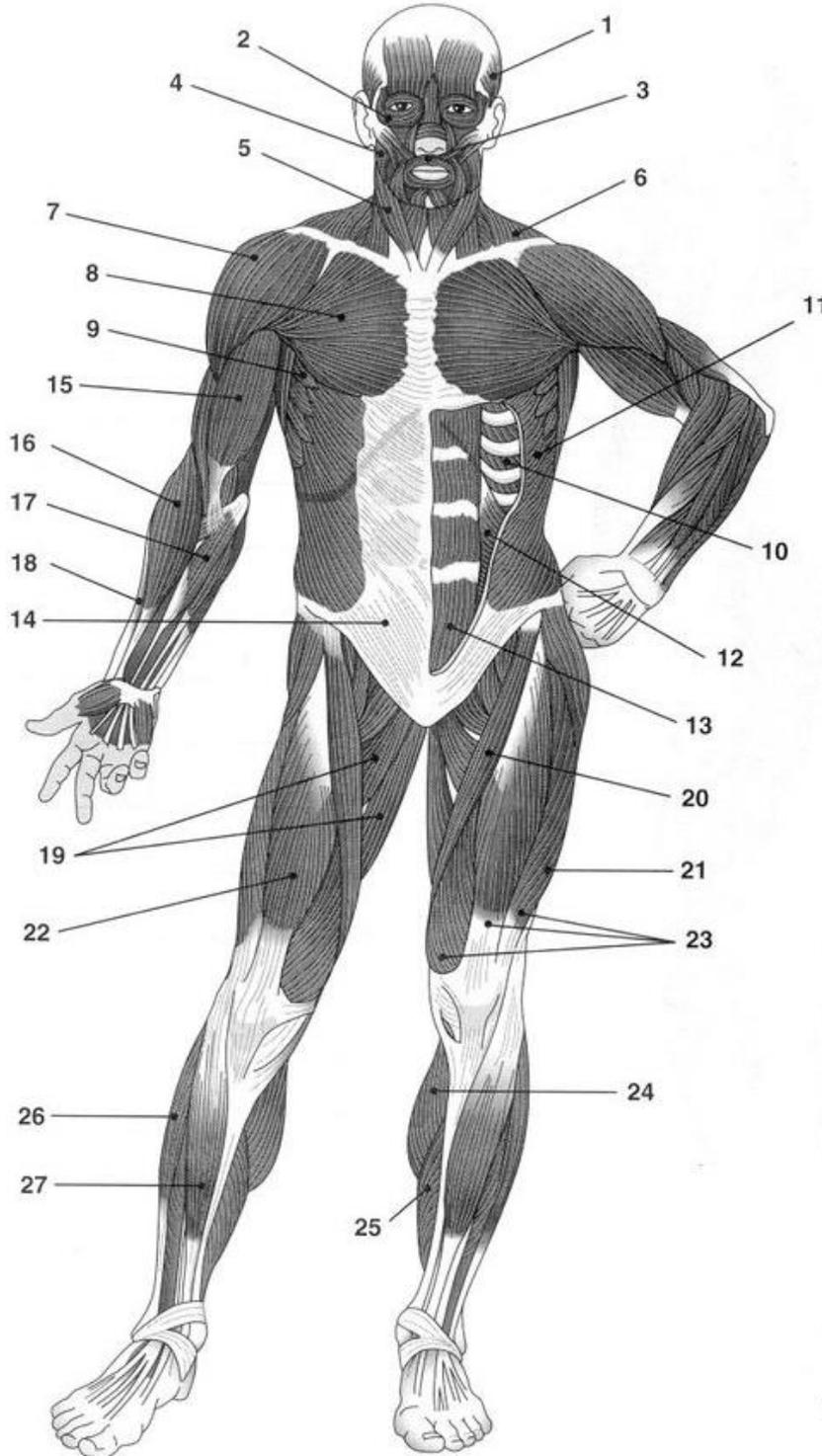
1. Functions of the skeleton are _____
2. Shape and structure _____
3. Bones also protect major organs _____
4. Muscle attachment _____
5. Blood cell production _____
6. Mineral Storage _____
7. Your own opinion _____

4. *Distal, anterior, posterior, medial, lateral, superficial, deep, superior, inferior*

1. The head is _____ to the neck.
2. The scalp is _____ to the skull.
3. The wrist is _____ to the hand.
4. The ears are _____ to the nose.
5. The underlying skin is _____ to the finger nail.
6. The nose is _____ to the back of the head.
7. The toes are _____ to the ankle.
8. The vertebral column is _____ to the trachea.
9. The kneecap is _____ to the knee joint.
10. The neck is _____ to the eyes.

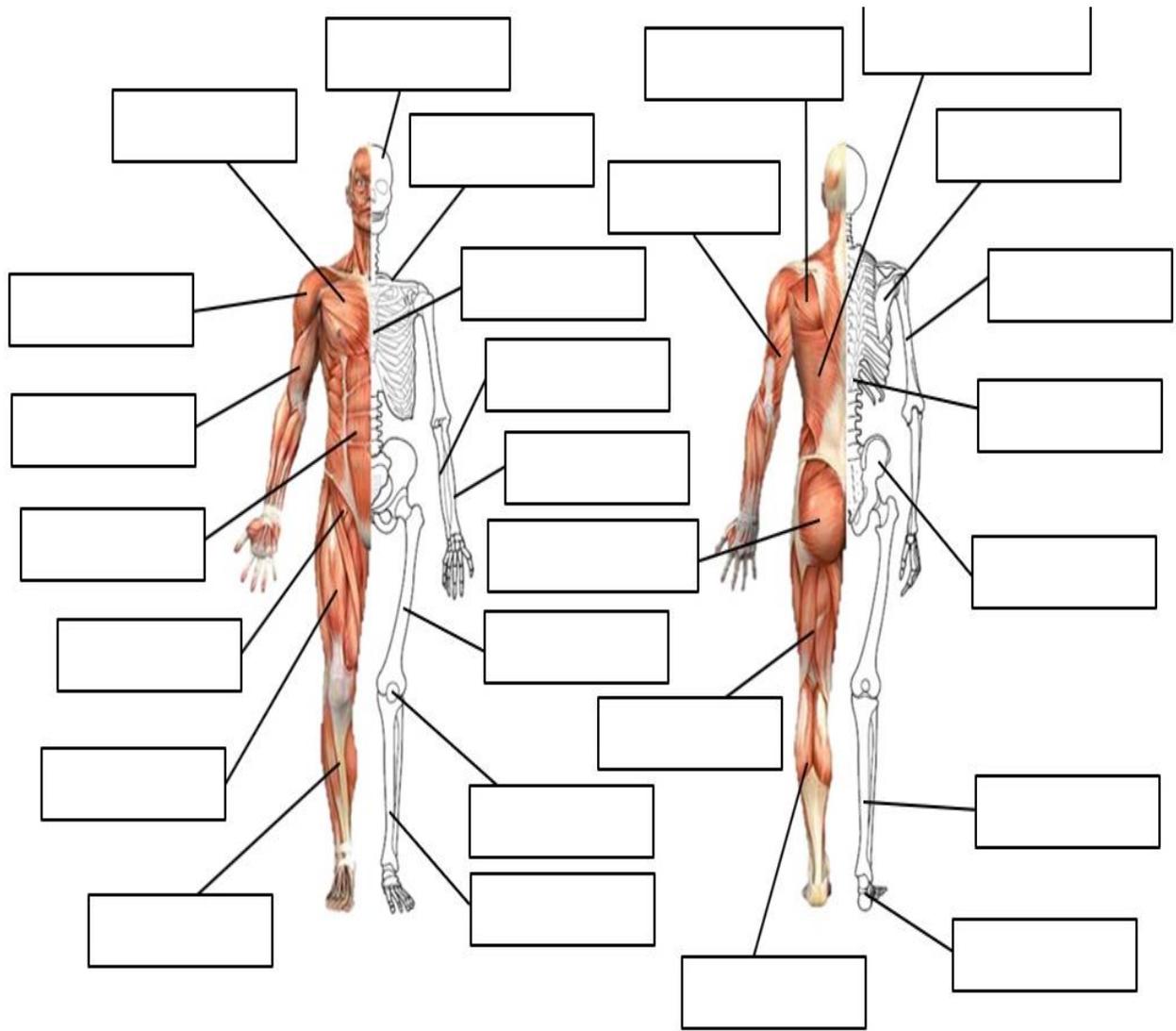
5. Watch the video and write the names of Major Muscles of the Human Body

<https://www.youtube.com/watch?v=z7psWfRLXFY>

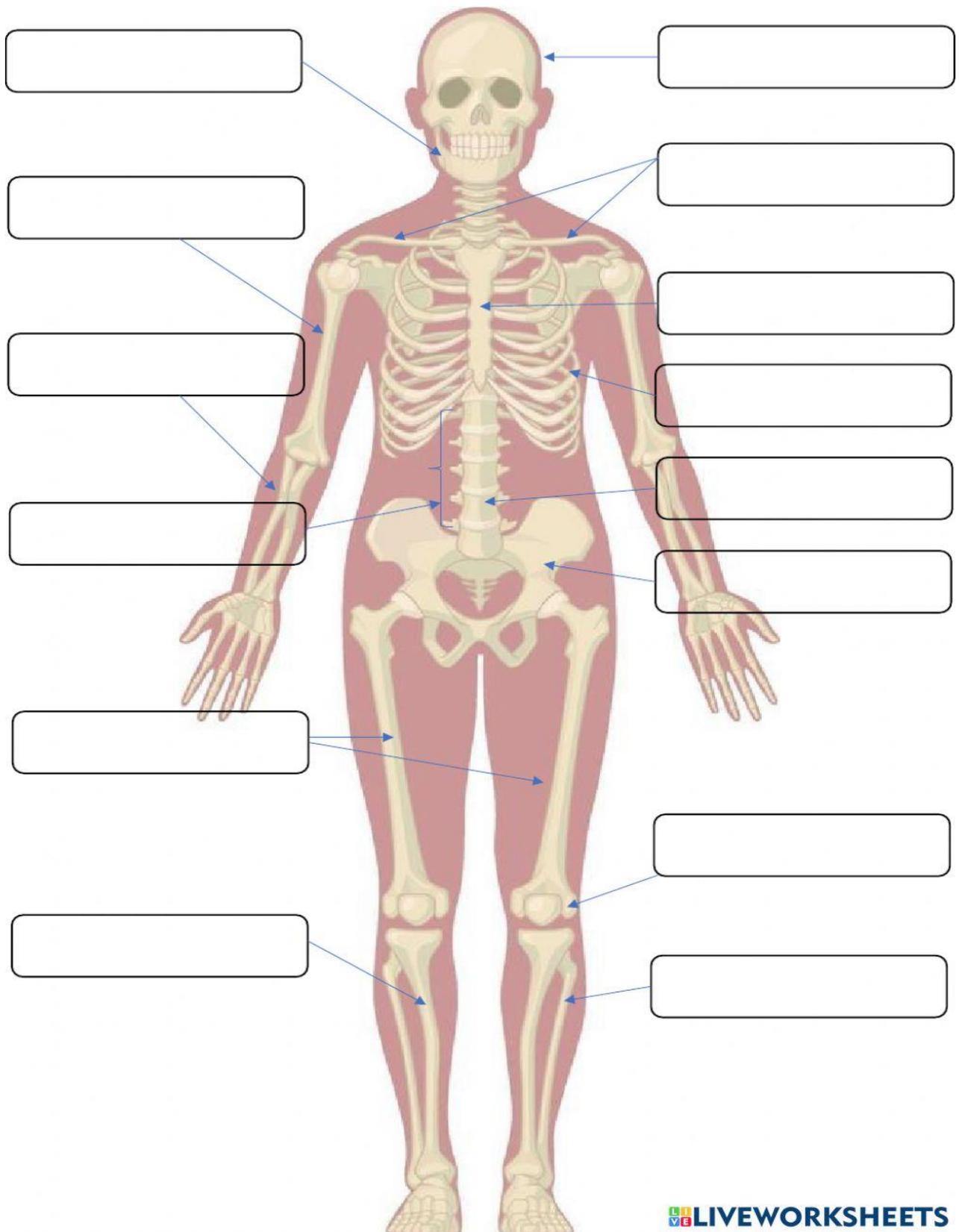


1. _____
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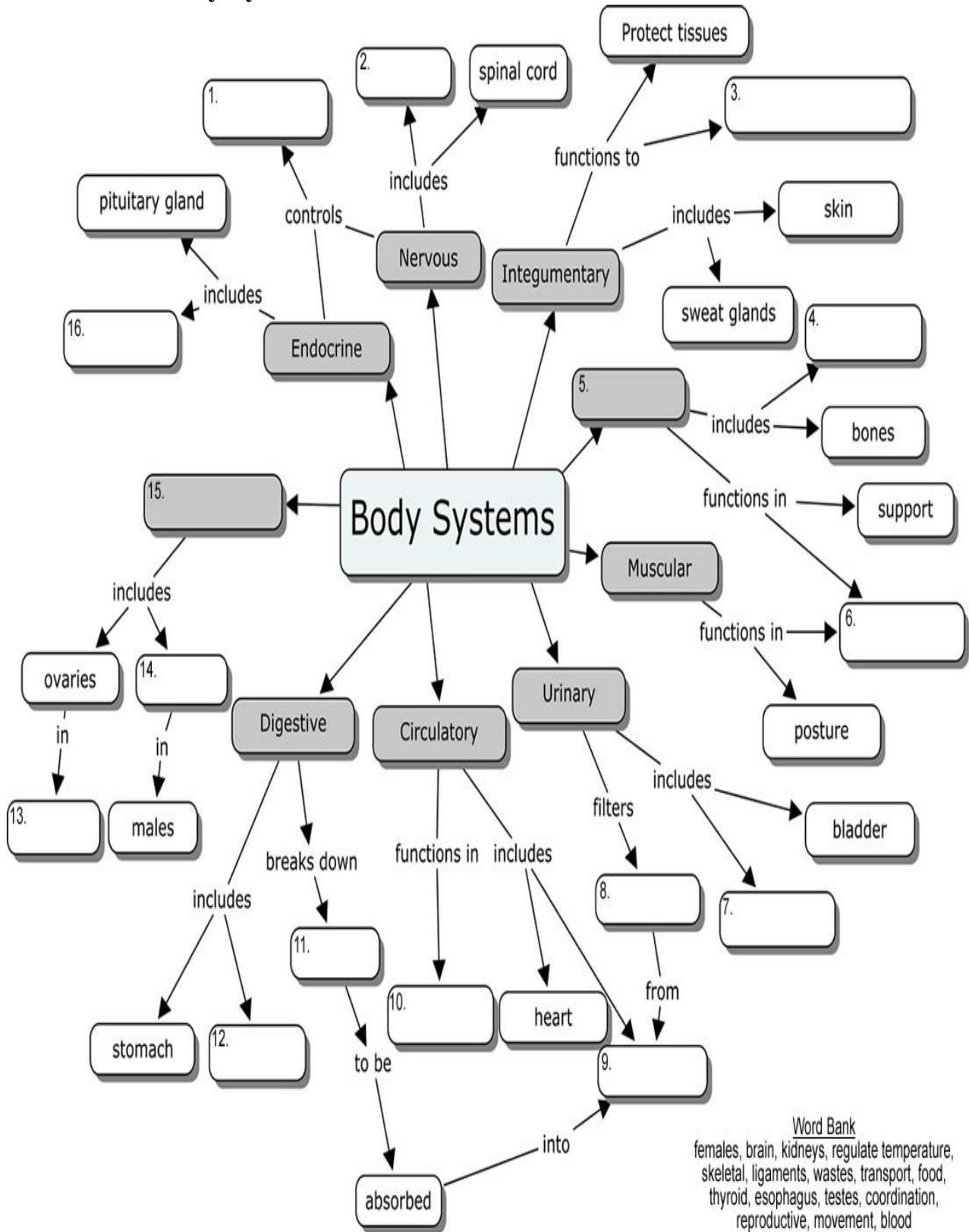
6. Fill in the blanks with names of human bones and muscles.



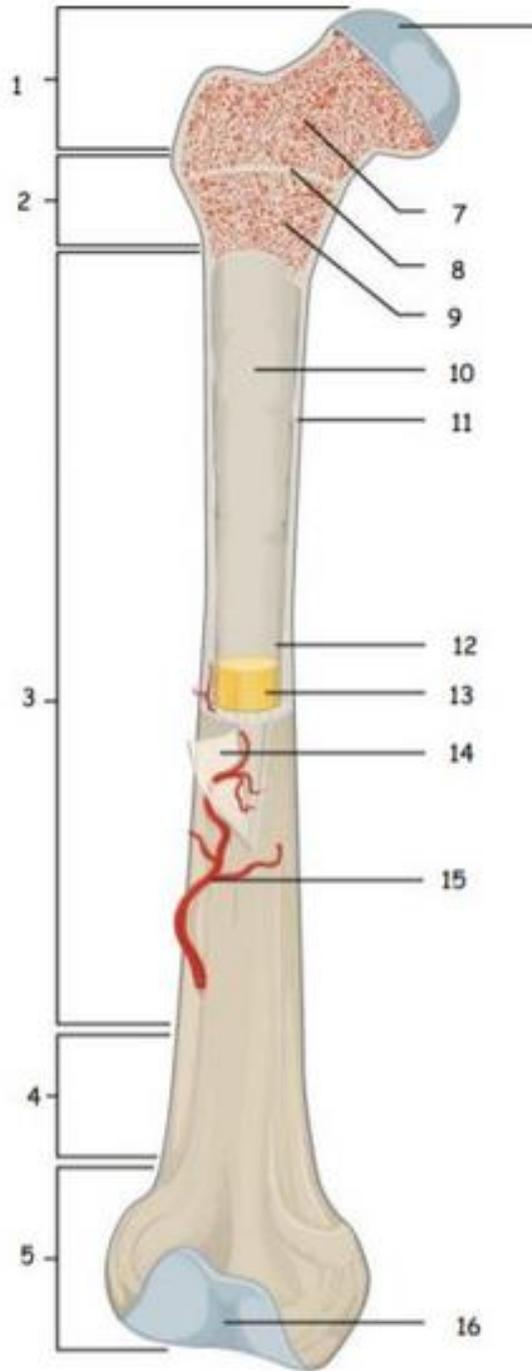
Fill in the blanks with the names of human bones.



7. Body System. Fill the Blanks.



8. Write the Long bone anatomy.



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

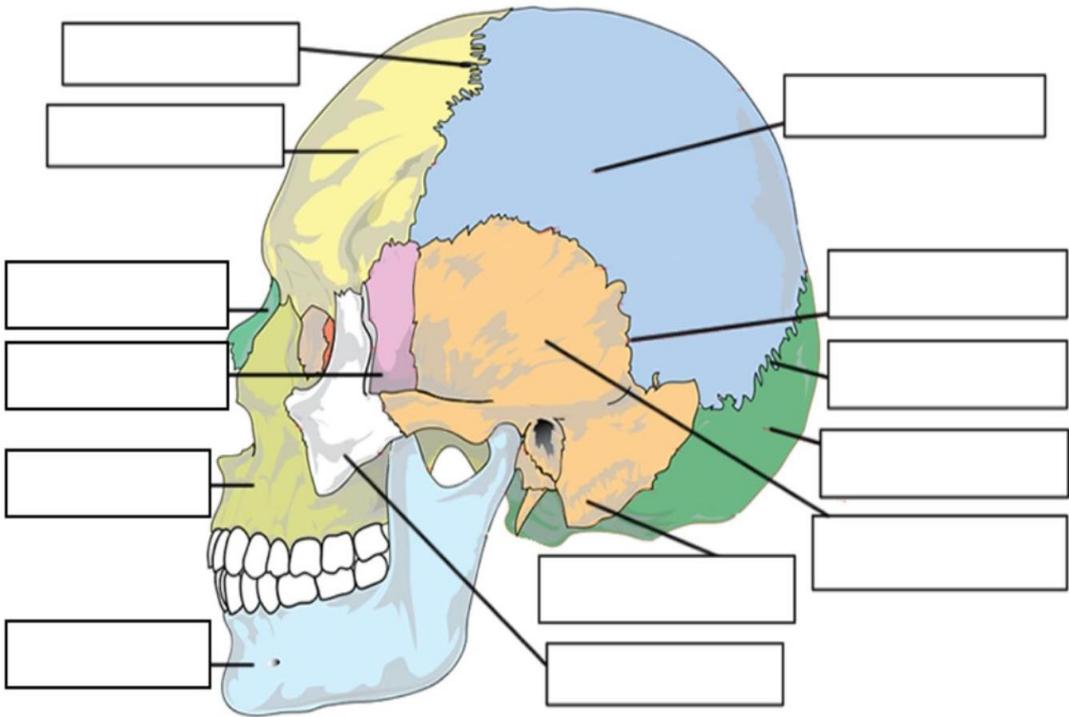
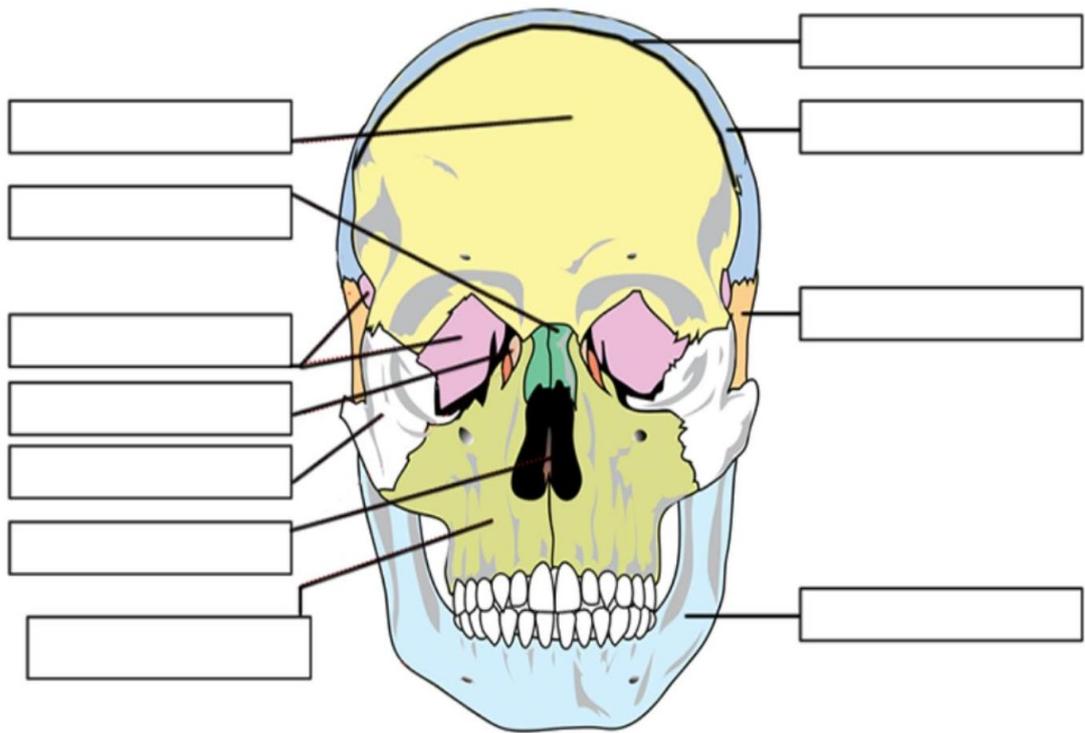
11. _____

12. _____

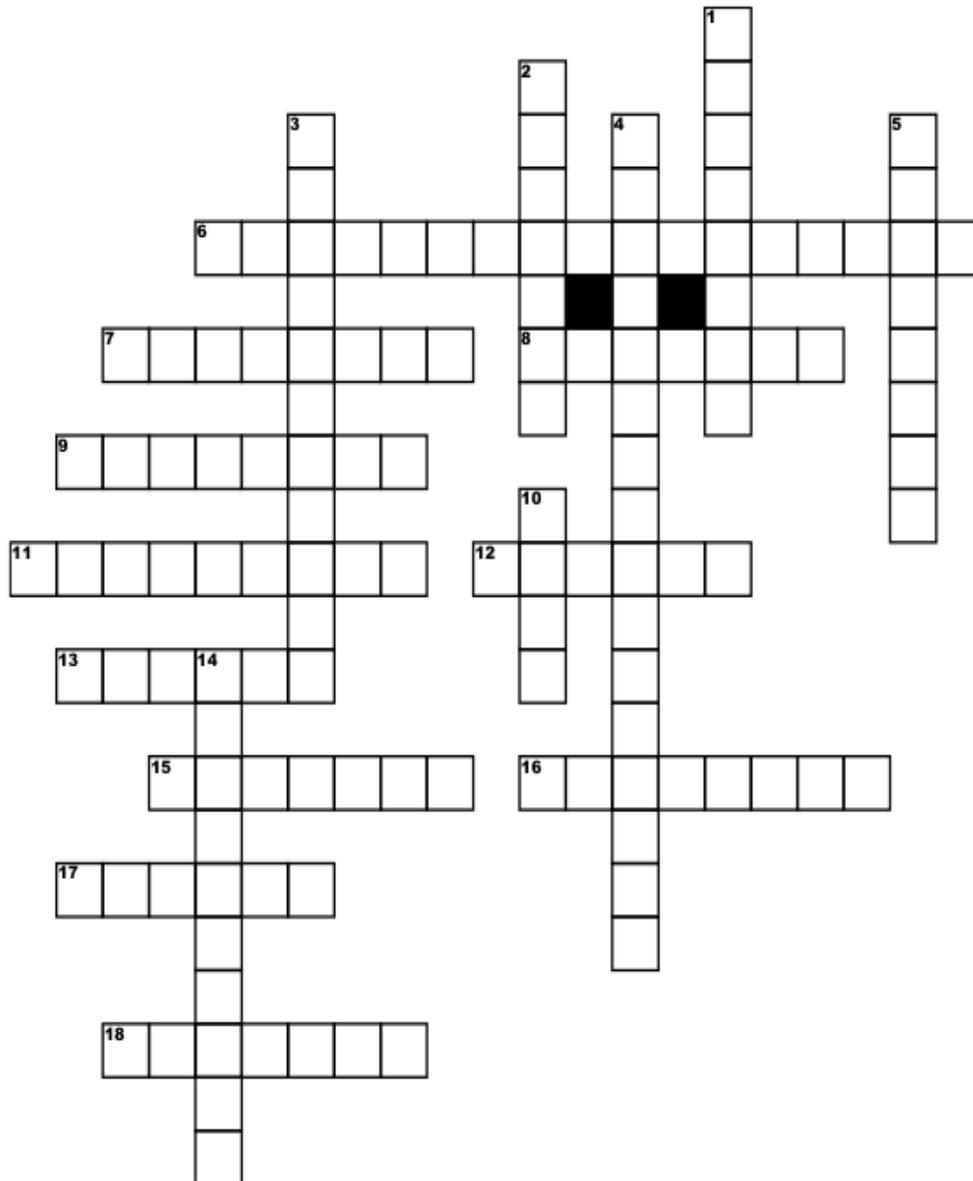
13. _____

14. _____

9. Fill in the blanks.



Puzzle activity



Across

- 6.** Lower middle portion
- 7.** toward the front
- 8.** Science dealing with the structures of humans/animals and dissections and the separation of parts
- 9.** a part is below another part, or toward the feet
- 11.** towards the back
- 12.** toward the midline of the body

13. part that is further from the trunk than another point

15. toward the side of the midline

16. Plane that divides the body into right and left portions

17. back side

18. Plane that divides the body into anterior and posterior portions

Down

1. a part is above another part, or closer to the head

2. the belly side

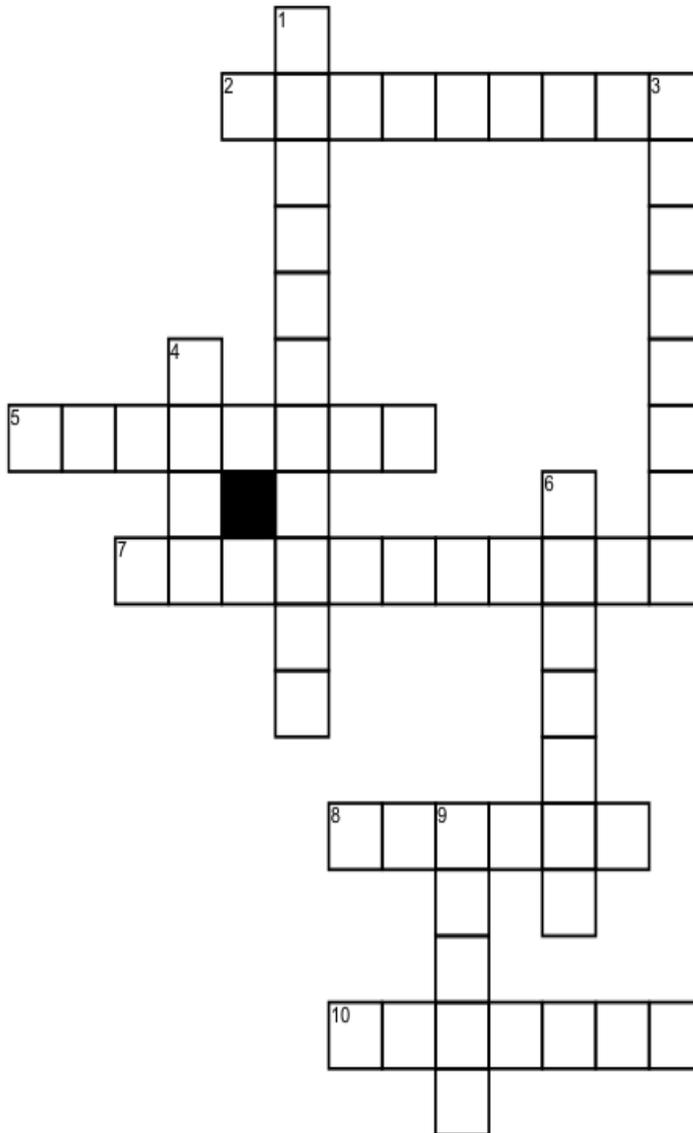
3. in the outside

4. Upper middle portion

5. a part that is closer to the trunk than another point

10. in the inside

14. Planes that divides the body into superior and inferior portions

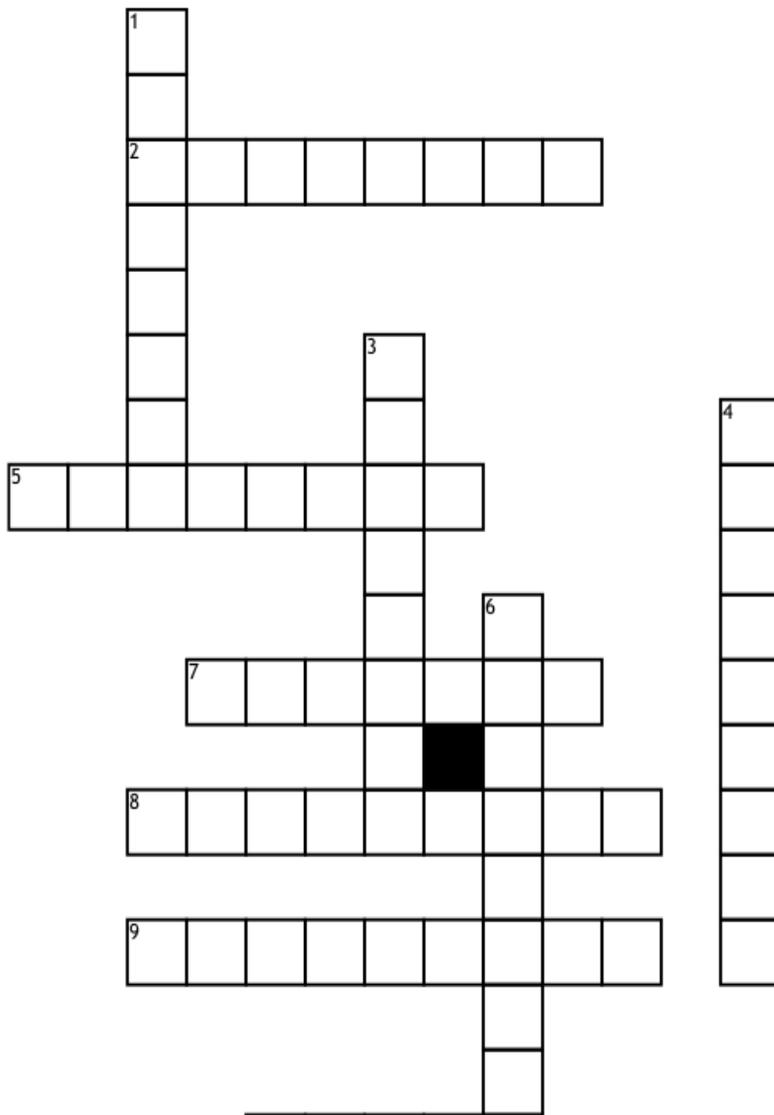


Across

- 2. The body can be divided into four...
- 5. Towards the front of the body
- 7. Describes parts of the body on the same side
- 8. Towards the midline
- 10. Away from the midline

Down

- 1. Nearer to the surface of the body
- 3. Vertical plane which divides the body into left and right sides
- 4. Further from the surface of the body
- 6. The plane which divides the body between front and back
- 9. Used to describe a body part further from the source (or body centre)



Across

- 2. Armpit
- 5. Point of shoulder
- 7. Fingers, toes
- 8. Navel
- 9. Anterior body trunk inferior to ribs
- 10. Posterior surface of leg

Down

- 1. Shoulder blade region
- 3. Arm
- 4. Posterior surface of head or base of skull
- 6. Heel of foot

Find and circule Human Anatomy terms

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y | A | S | E | N | O | B | A | O | R | T | A | Y | S |
| A | K | R | E | D | D | A | L | B | L | L | A | G | O |
| L | S | I | S | A | E | T | O | N | G | U | E | H | T |
| S | E | D | D | A | B | R | S | T | C | T | S | G | I |
| R | L | A | E | N | E | R | T | R | A | E | H | R | S |
| I | D | M | R | V | E | A | A | A | L | U | B | I | F |
| E | R | P | I | S | B | Y | R | I | H | E | R | H | R |
| A | M | L | I | C | F | A | S | R | N | T | B | E | E |
| A | T | I | B | I | A | S | S | R | E | B | I | F | N |
| U | M | U | I | N | A | R | C | H | I | P | S | R | A |
| P | A | N | C | R | E | A | S | T | S | E | T | V | C |
| R | A | E | Y | E | S | E | V | R | E | N | N | F | I |
| U | I | N | F | E | M | U | R | H | T | E | E | T | S |
| R | A | O | Y | S | U | I | D | A | R | S | T | O | S |

- FIBULA
- NERVES
- TEETH
- KIDNEYS
- TIBIA
- TONGUE
- LIVER
- HIPS
- GALL BLADDER
- AORTA
- HEART
- PANCREAS
- CRANIUM
- RADIUS
- EARS
- EYES
- BONES
- BRAIN
- FIBERS
- FEMUR

Z O U R W G J S C S U E Y C K K Y
 W A R Q K A R W C U P E K Z B I Z
 M M O N X L I I A P Z K J X U N Q
 L R I J C S B N Y E Q P U C N L I
 A C R Y P E T R A R N T E J R I N
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 H G S I C Q S Q O C D W T O P D R
 P S O X R T F J R I D Q Y I I T I
 I R P U A P M W V A E F F R I X O
 R W Q L Q B S T I L S Y S E M R R
 E T P R O X I M A L T C W P T U G
 P H P I S P W T F W E V E U O Z I
 G F B H A U D K Q O C J T S N A A
 X C I N N D N E X L A I D E M Z N
 U C W J T J Q L E N K P W K D H U
 L A R E T A L G Q P T E L Q N X Y

SUPERFICIAL

PERIPHERAL

POSTERIOR

ANTERIOR

PROXIMAL

DISTAL

LATERAL

MEDIAL

INFERIOR

SUPERIOR

DEEP

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | S | A | C | R | U | M | S | P | E | H | D | K | R |
| L | P | U | H | T | R | U | M | I | E | E | I | I | U |
| C | L | R | O | H | A | I | I | T | D | A | A | D | N |
| I | E | E | R | O | D | D | M | U | E | R | P | N | E |
| V | U | T | M | R | I | R | P | I | R | T | H | E | E |
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| L | A | R | N | C | S | C | L | A | I | R | A | P | P |
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| C | E | R | V | I | C | A | L | U | E | U | A | P | T |
| R | D | O | O | L | B | R | U | D | I | L | D | H | U |
| R | I | S | A | E | R | C | N | A | P | A | E | P | N |

- CERVICAL
- INTEGUMENTARY
- BLOOD
- PITUITARY
- URETER
- HORMONES
- HEART
- PANCREAS
- SPLEEN
- FEMUR
- RADIUS
- MYOCARDIUM
- PLEURA
- DIAPHRAGM
- DERMIS
- KIDNEY
- SCAPULA
- THORACIC
- IMPULSE
- CLAVICLE
- UTERUS
- ULNA
- LYMPH
- SACRUM

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