

Competition for World Anatomy Day !!!

Опубліковано: 05 Жовтня 2020 Перегляди: 14



The Department of Anatomy and Pathological Physiology announces the competition «**Best Anatomical Video 2020**» and «**Best Anatomical Drawing 2020**» for students of NSC "Institute of Biology and Medicine" for the World

Anatomy Day - October 15. The deadline for submission of videos and drawings is **13.10.2020 (Tuesday)**.

The results of the competition will be announced on 15.10.2020 (Thursday).

Prizes for the winners: an individual master class in a virtual reality room.

We wish you success!

Video requirements:

1. Video duration no more than 3 minutes.
2. The video should contain a complete description of the selected anatomical structure.
3. All names must be in Latin.
4. The sound on the video must not contain extraneous noise.

Send the finished videos to the link

<https://drive.google.com/drive/folders/1gYD5MsvPbG9pu&usp=sharing>

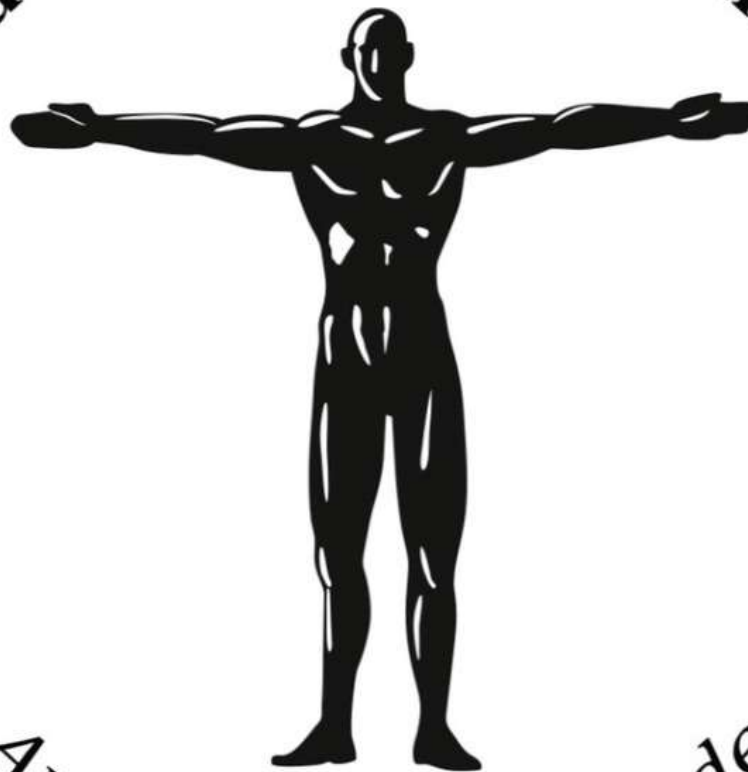
Requirements for drawings:

1. Creative presentation of anatomical structures.
2. The picture should contain information about the authors (name, course)
3. The original drawing is provided to the department until 13.10.2020.

Send scanned images marked "Best Anatomical Image 2020" to the mailbox: iprybytko@gmail.com

<https://biology.univ.kiev.ua>

анатом.укр & anatom.ua



Aut disce, aut discede

PLAN

1. Locomotor apparatus
2. Skeleton
3. Bone as an organ
4. Functions of the skeleton
5. Classification of bones
6. Types of bone ossification
7. Development of bones

<https://anatom.ua/nomina-anatomica/>

<i>Anatomia systemica</i>	<i>Системна анатомія</i>	<i>Систематическая анатомия</i>	<i>Systemic anatomy</i>
1. <i>Ossa</i> ; <i>Systema skeletale</i>	<i>Кістки</i> ; <i>Система скелета</i>	<i>Кости</i> ; <i>Система скелета</i>	<i>Bones</i> ; <i>Skeletal system</i>
2. <i>Juncturae</i> ; <i>Systema articulare</i>	<i>З'єднання</i> ; <i>Система з'єднань</i>	<i>Соединения</i> ; <i>Система соединений</i>	<i>Joints</i> ; <i>Articular system</i>
3. <i>Musculi</i> ; <i>Systema musculare</i>	<i>М'язи</i> ; <i>М'язова система</i>	<i>Мышцы</i> ; <i>Мышечная система</i>	<i>Muscles</i> ; <i>Muscular system</i>
4. <i>Systema digestorium</i>	Травна система	Пищеварительная система	Alimentary system
5. <i>Systema respiratorium</i>	Дихальна система	Дыхательная система	Respiratory system
6. <i>Systema urinarium</i>	Сечова система	Мочевая система	Urinary system
7. <i>Systemata genitalia</i> (<i>Feminina / Masculina</i>)	Статеві системи (Жіноча / Чоловіча)	Половые системы (Женская / Мужская)	Genital systems (Female / Male)
8. <i>Glandulae endocrinae</i>	Залози внутрішньої секреції; Ендокринні залози	Эндокринные железы	Endocrine glands
9. <i>Systema cardiovasculare</i>	Серцево-судинна система	Сердечно-сосудистая система	Cardiovascular system
10. <i>Systema lymphoideum</i>	Лімфатична система	Лимфоидная система	Lymphoid system
11. <i>Systema nervorum</i> (<i>PC+PP</i>)	Нервова система (ЦНС+ПНС)	Нервная система (ЦНС+ПНС)	Nervous system (CNS+PNS)
12. <i>Organa sensuum</i>	Органи чуття	Органы чувств	Sense organs

Ignoratis terminis ignoratur et ars /
Without knowledge of the terms, science itself is unknown

PART 1

•Ch. 1 Anatomia generalis

•

PART 2 – SYSTEMATA MUSCULOSKELETALIA

•Ch. 2 Ossa

•Ch. 3 Juncturae

•Ch. 4 Musculi

•

PART 3 – SYSTEMATA VISCERALIA

•Ch. 5 Systema digestorium

•Ch. 6 Systema respiratorium

•Ch. 7 Cavitas thoracis

•Ch. 8 Systema urinarium

•Ch. 9 Systemata genitalia

•Ch. 10 Cavitas abdominopelvica

•

PART 4 – SYSTEMATA INTEGRANTIA I

•Ch. 11 Glandulae endocrinae

•Ch. 12 Systema cardiovasculare

•Ch. 13 Organa lymphoidea

•

PART 5 – SYSTEMATA INTEGRANTIA II

•Ch. 14 Systema nervosum

•Ch. 15 Organa sensuum

•Ch. 16 Integumentum commune

<https://fipat.library.dal.ca/ta2/>



1. <i>Ossa;</i> <i>Systema skeletale</i>	<i>Кістки;</i> <i>Система скелета</i>	<i>Кости;</i> <i>Система скелета</i>	<i>Bones;</i> <i>Skeletal system</i>
2. <i>Juncturae;</i> <i>Systema articulare</i>	<i>З'єднання;</i> <i>Система з'єднань</i>	<i>Соединения;</i> <i>Система соединений</i>	<i>Joints;</i> <i>Articular system</i>
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$1+2+3=$ **MUSCULOSKELETAL APPARATUS**

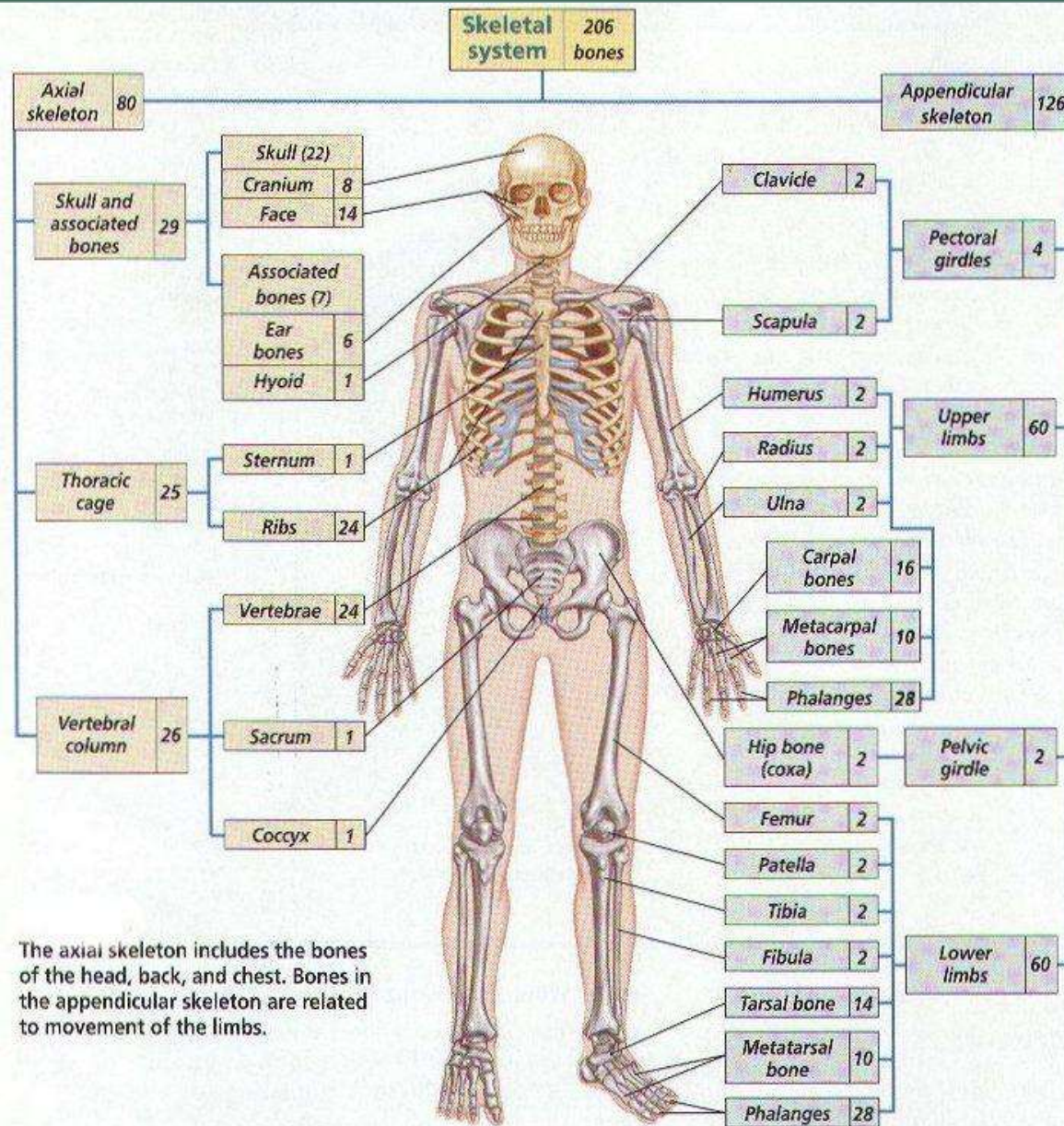


~~THE MUSCULOSKELETAL SYSTEM~~

Bones and **joints** are the passive parts of the **LOCOMOTOR APPARATUS**, **Muscles** are active.

OSTEOLOGIA (Bones)
ARTHROLOGIA (Joints)
MYOLOGIA (Muscles)





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anatomy_dept

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298 публикаций 547 подписчиков 675 подписок

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Подписаны pro_vary_md, marymakosnikova, sumanth_kshatriya и ещё 212

Anatomy♥...

our students

Highlights

NB

Physiology




VR

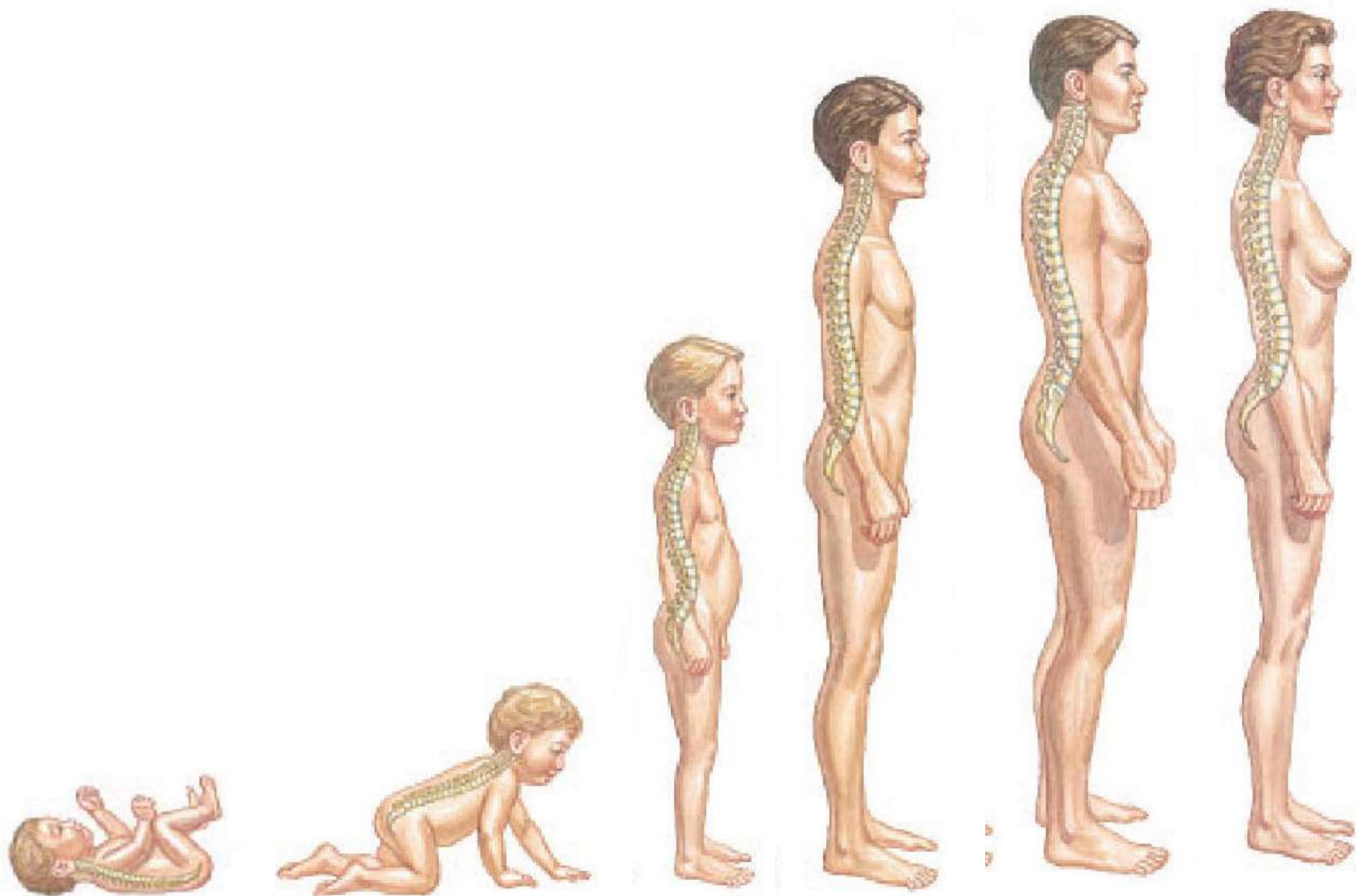
TV

ПУБЛИКАЦИИ

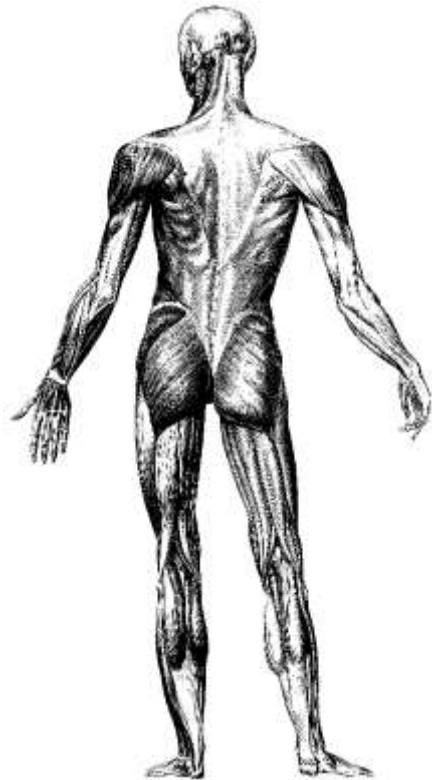
IGTV

ОТМЕТКИ



LOCOMOTOR APPARATUS



Bones (ossa)
Skeleton
(osteology)

Joints
(arthrology)



Passive part

Active part

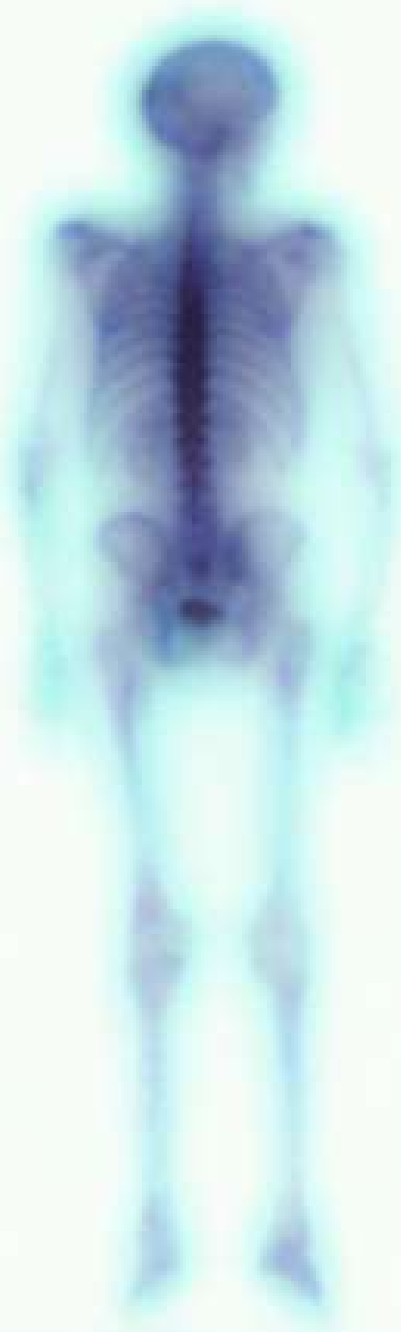
Muscles
(miology)



FUNCTIONS OF THE SKELETON

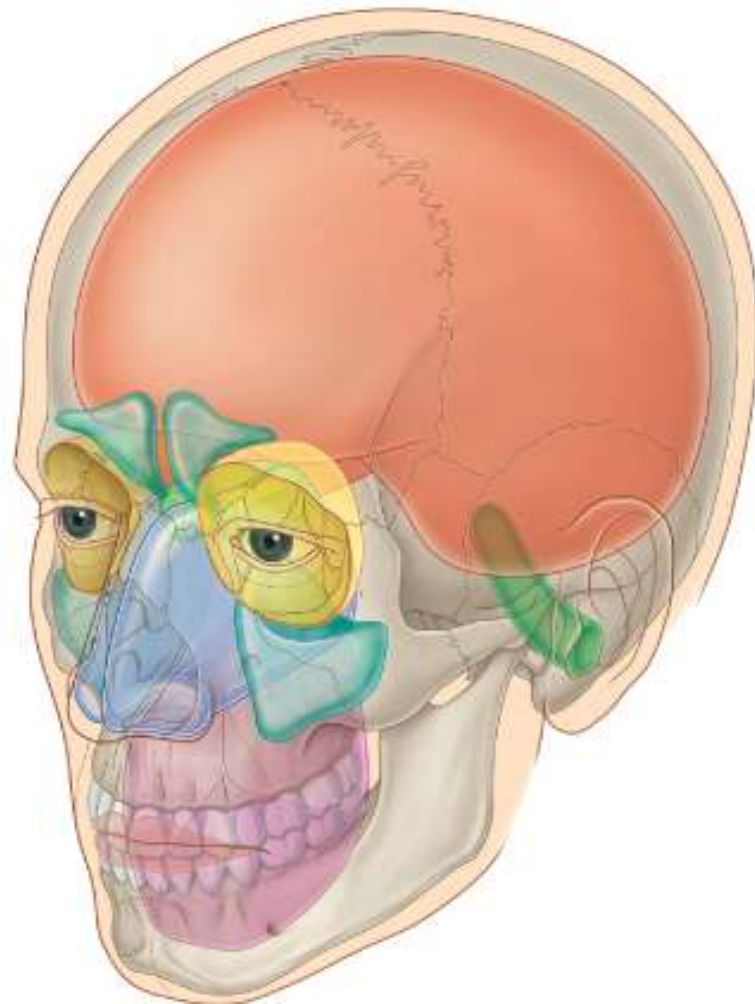
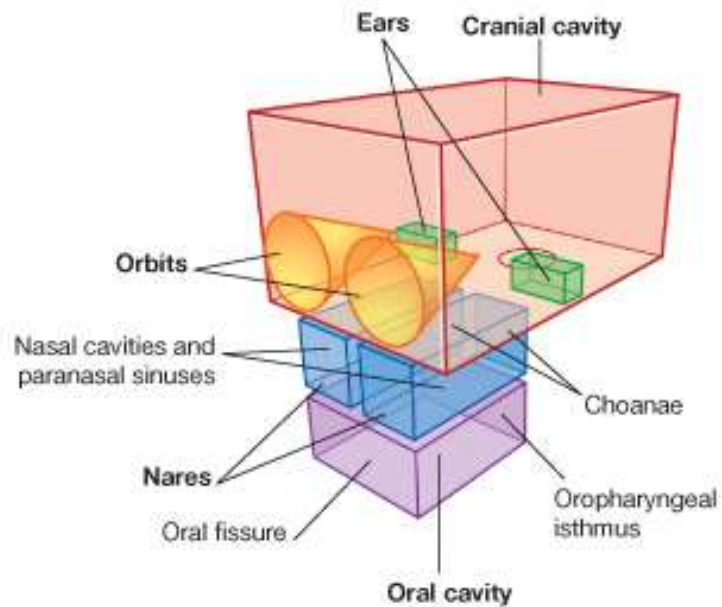
- **Biological functions**
- **Mechanical functions**

Locomotion – movement in space



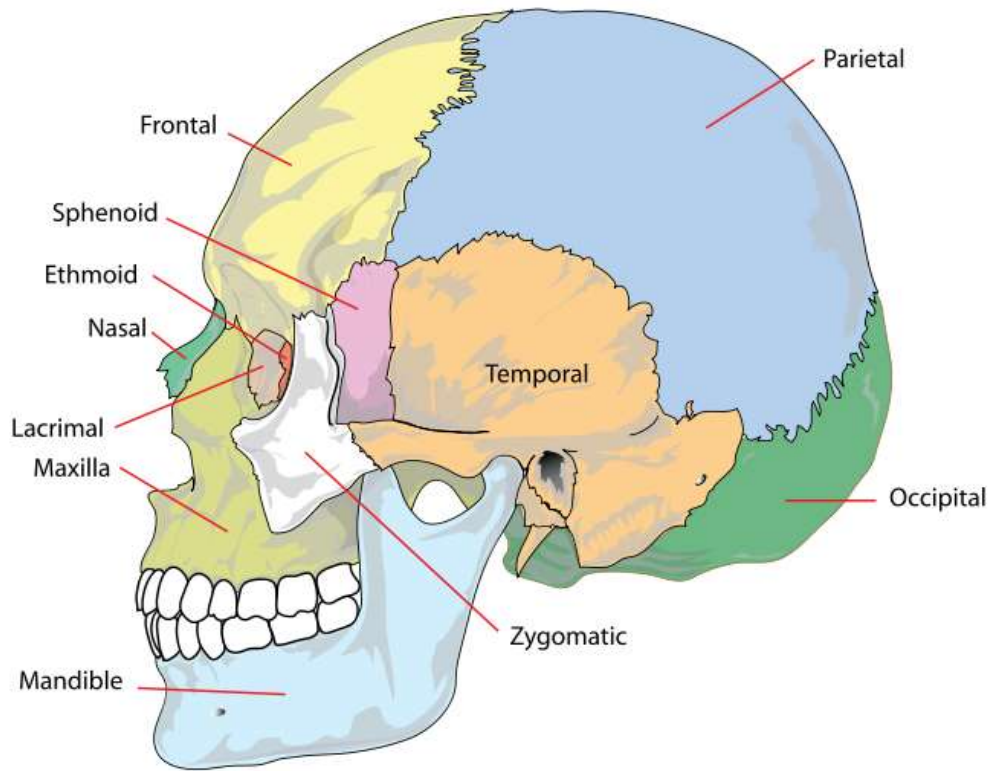
BONES

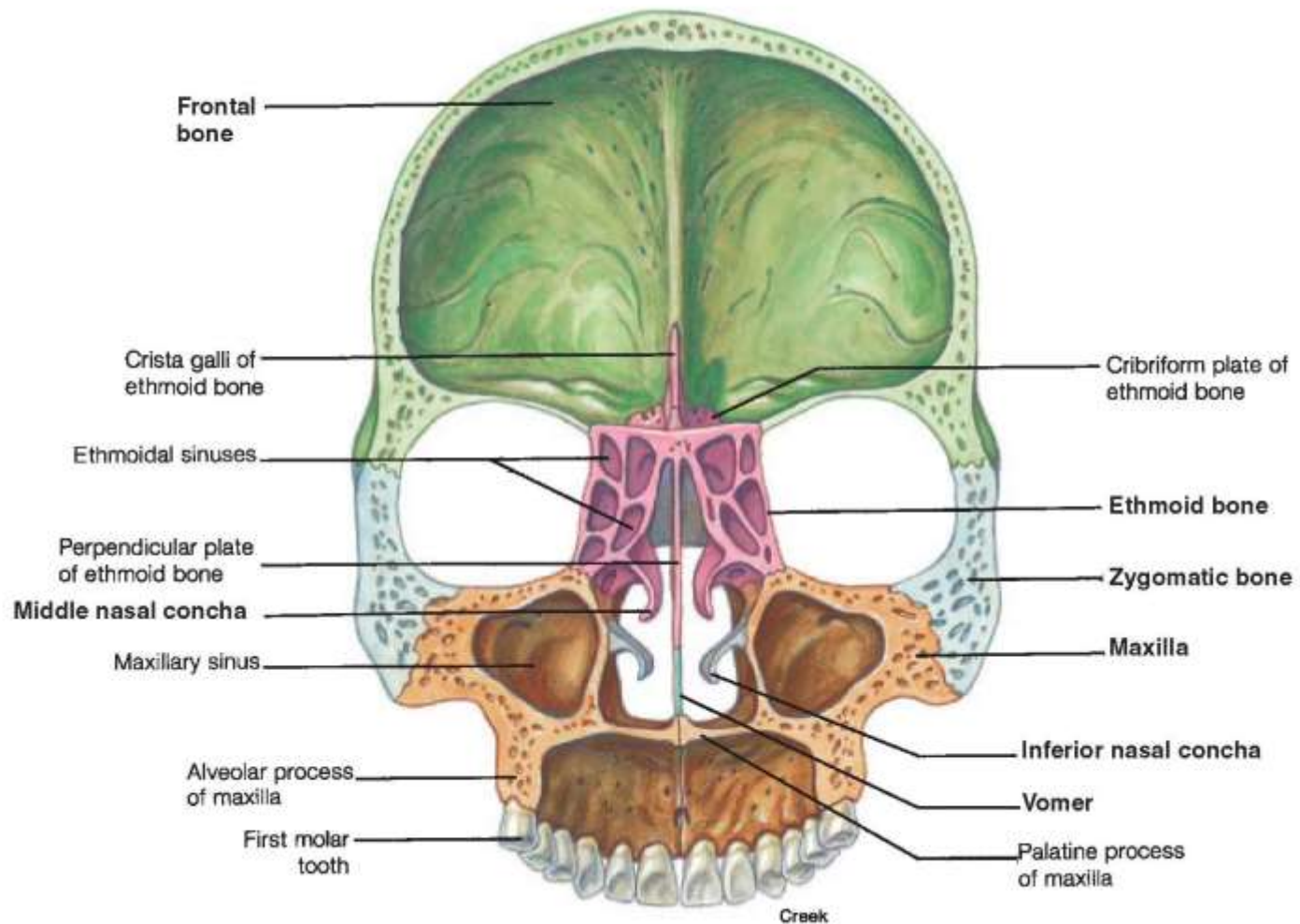
- FORM THE SKELETON
- PROVIDE LEVER FOR THE MUSCLES (FRAMEWORK),
- PROTECT THE ORGANS (E.G. HEART, BRAIN, LUNG),
- STORE MINERALS SUCH AS CALCIUM AND PHOSPHATE IONS,
- PRODUCE BLOOD CELLS BY MEANS OF BONE MARROW.









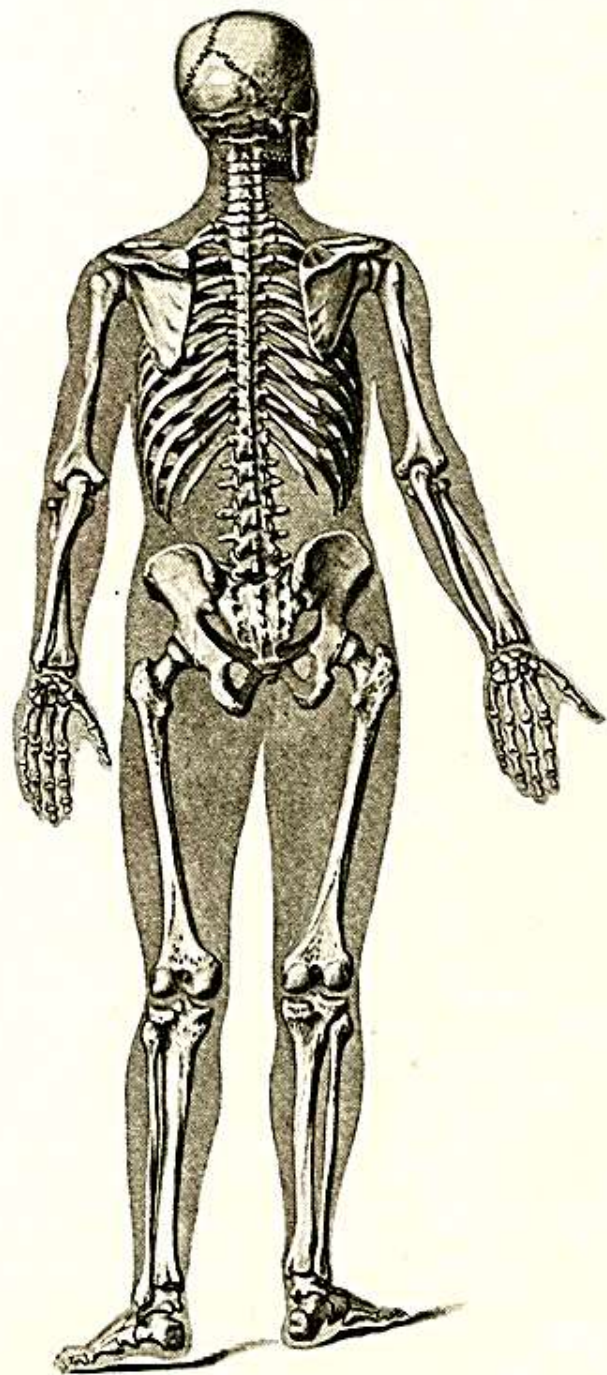
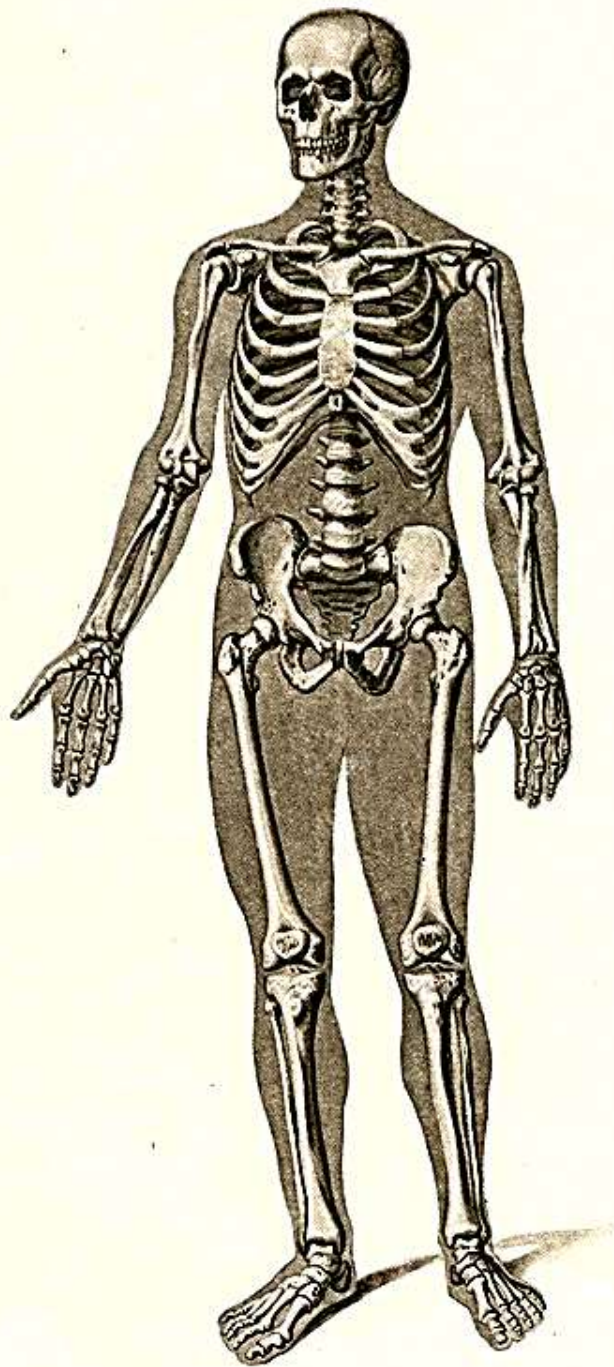





ALL THE BONES OF AN ORGANISM UNITED IN BONE SYSTEM (**SKELETON** OR **SYSTEMA SKELETALE**), WHICH IS USUALLY CALLED **SKELETON**.


THE TERM SKELETON COMES FROM A GREEK WORD MEANING “DRIED UP”.

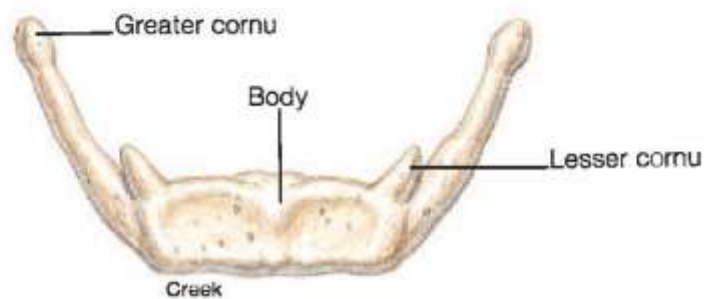
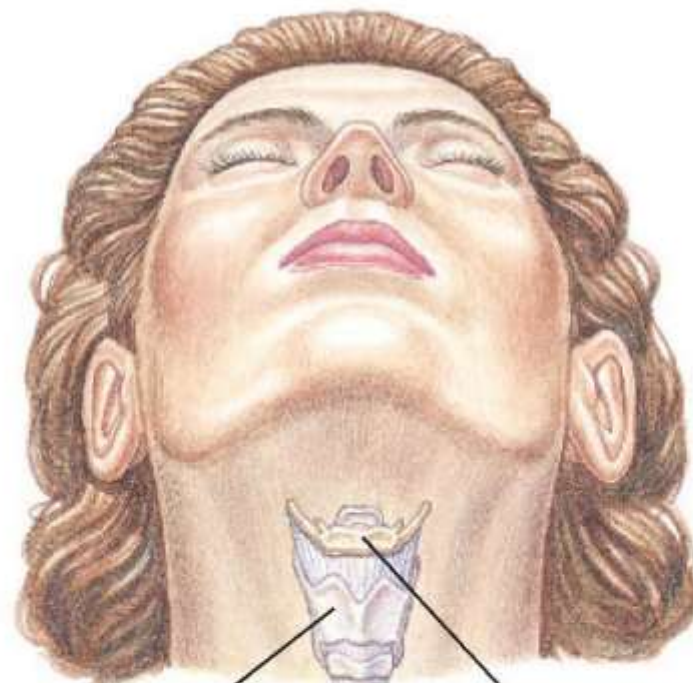




The Bones of the Adult Skeletal System

DIVISION OF THE SKELETON	STRUCTURE	NUMBER OF BONES
Axial Skeleton		
	Skull	
	Cranium	8
	Face	14
	Hyoid	1
	Auditory ossicles	6
	Vertebral column	26
	Thorax	
	Sternum	1
	Ribs	<u>24</u>
	Subtotal =	80

DIVISION OF THE SKELETON	STRUCTURE	NUMBER OF BONES
Appendicular Skeleton		
	Pectoral (shoulder) girdles	
	Clavicle	2
	Scapula	2
	Upper limbs	
	Humerus	2
	Ulna	2
	Radius	2
	Carpals	16
	Metacarpals	10
	Phalanges	28
	Pelvic (hip) girdle	
	Hip, pelvic, or coxal bone	2
	Lower limbs	
	Femur	2
	Patella	2
	Fibula	2
	Tibia	2
	Tarsals	14
	Metatarsals	10
	Phalanges	<u>28</u>
	Subtotal =	126
	Total in an adult skeleton =	206



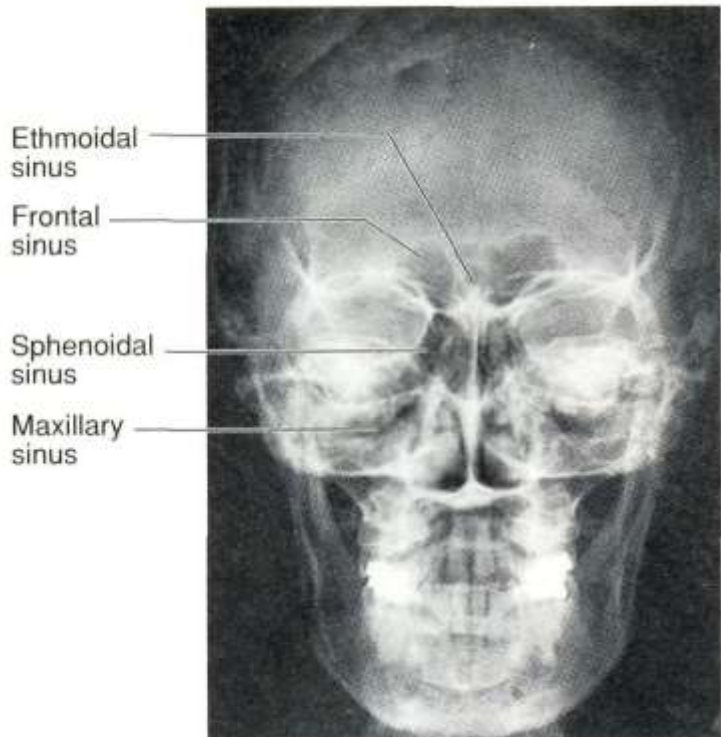


А

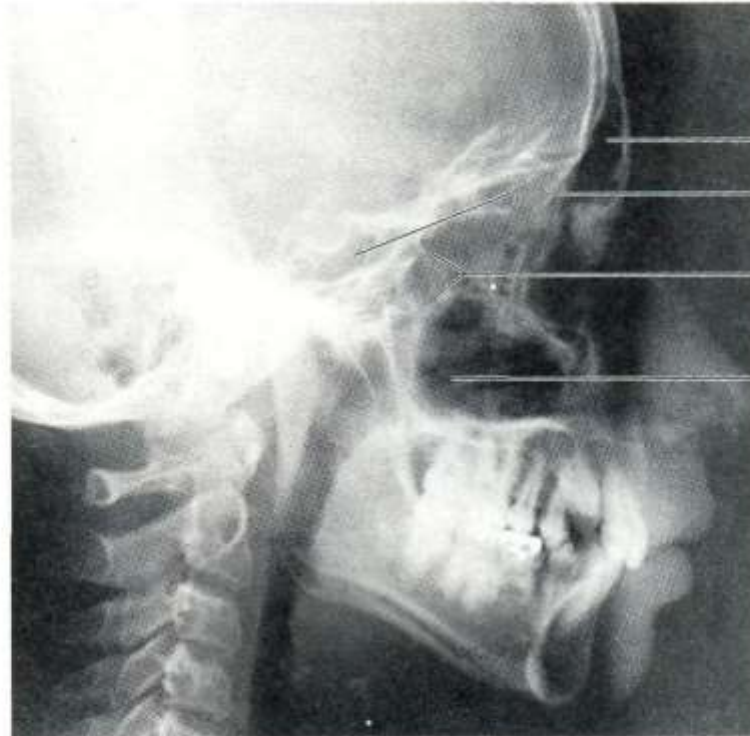


Б

X-RAY of the SKULL

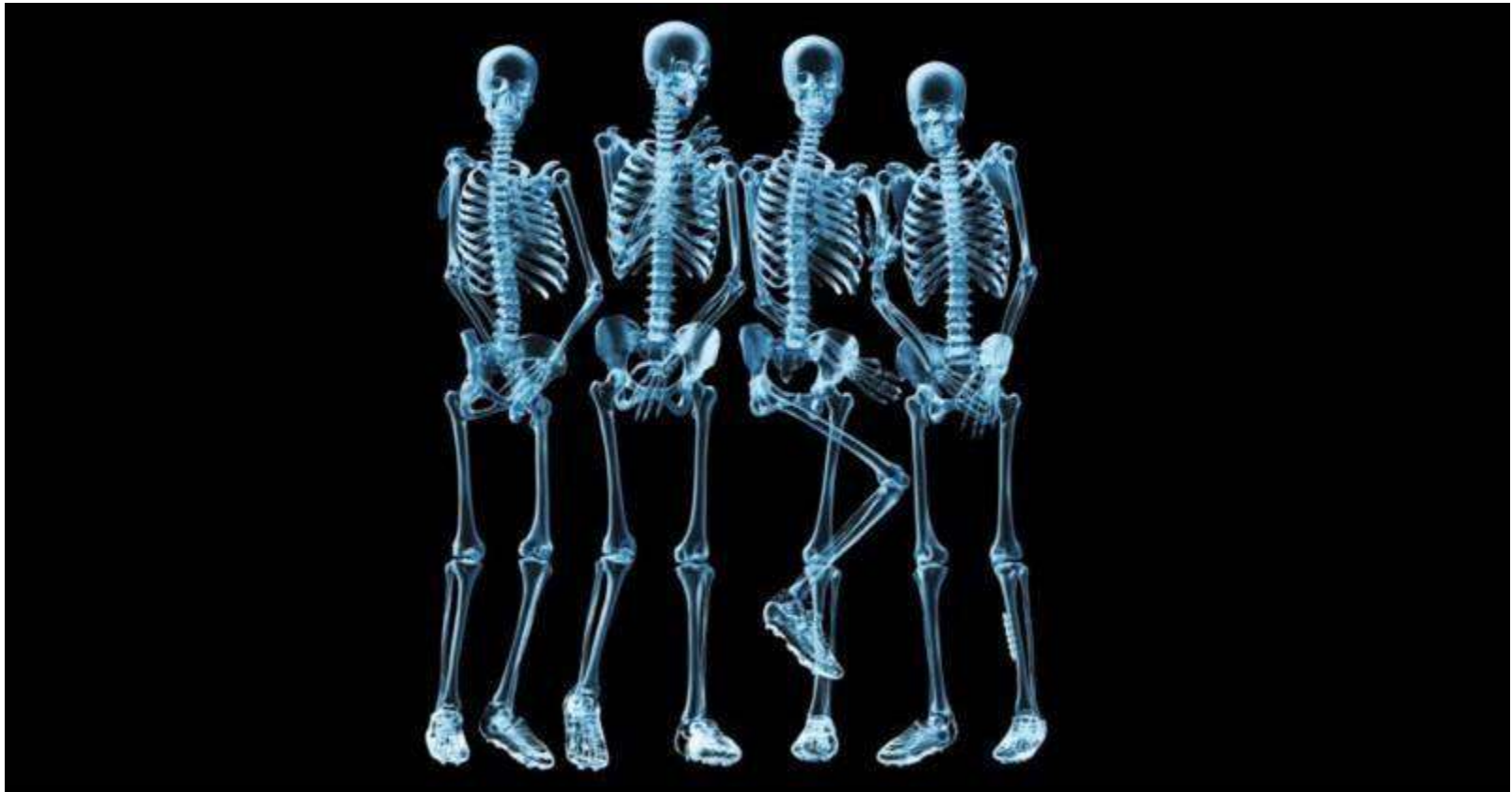


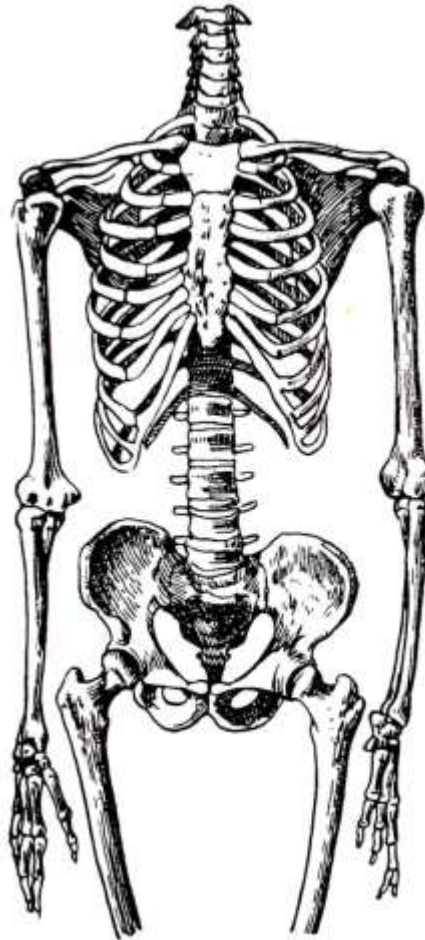
(a)



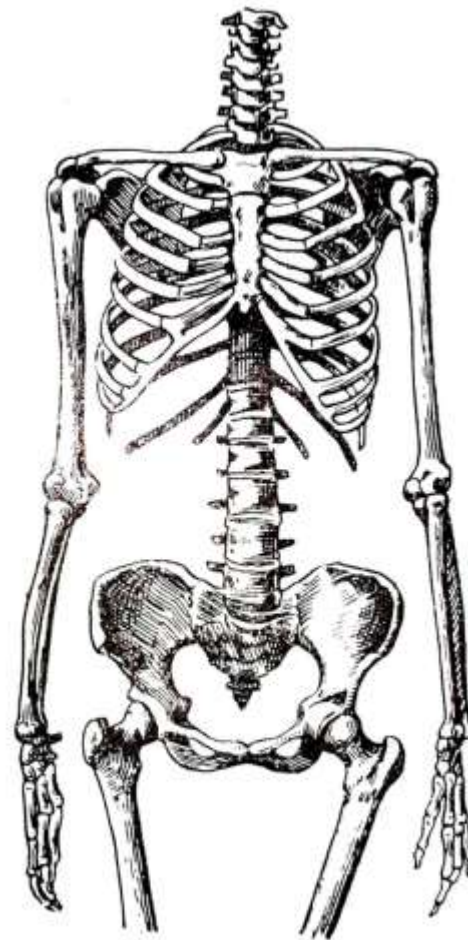
(b)

<https://anatom.ua/basis/x-ray/>

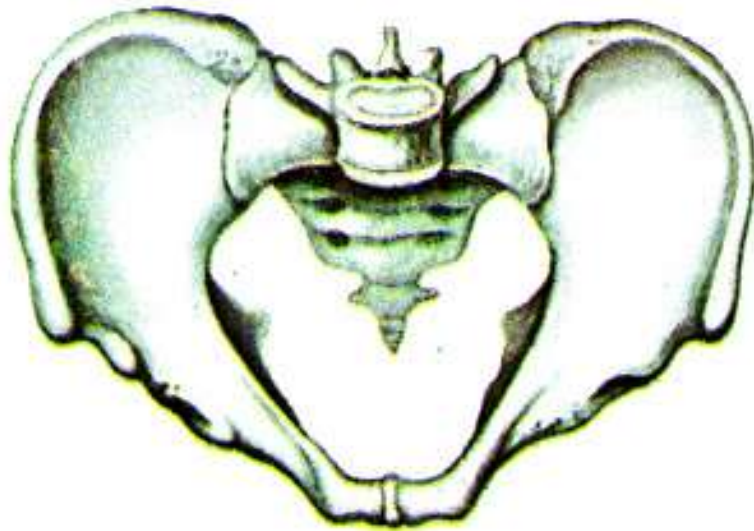




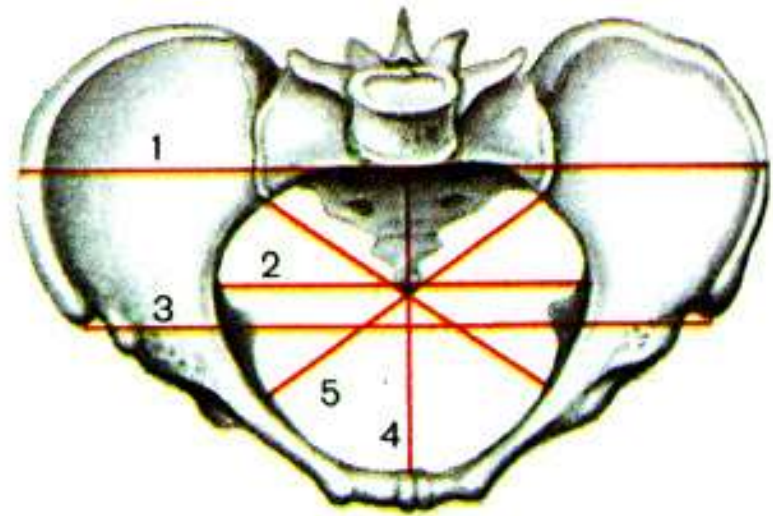
A



B

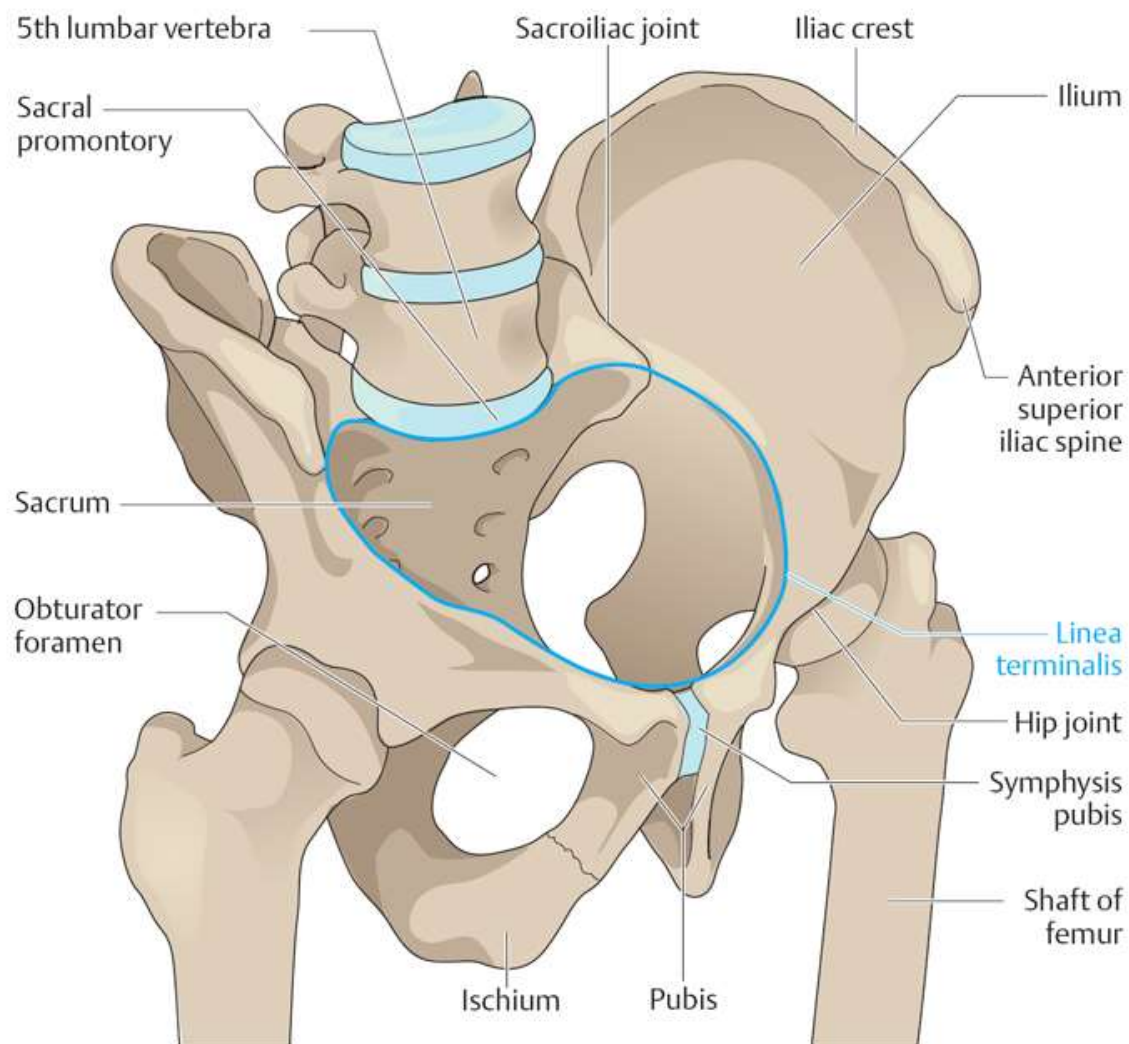


A

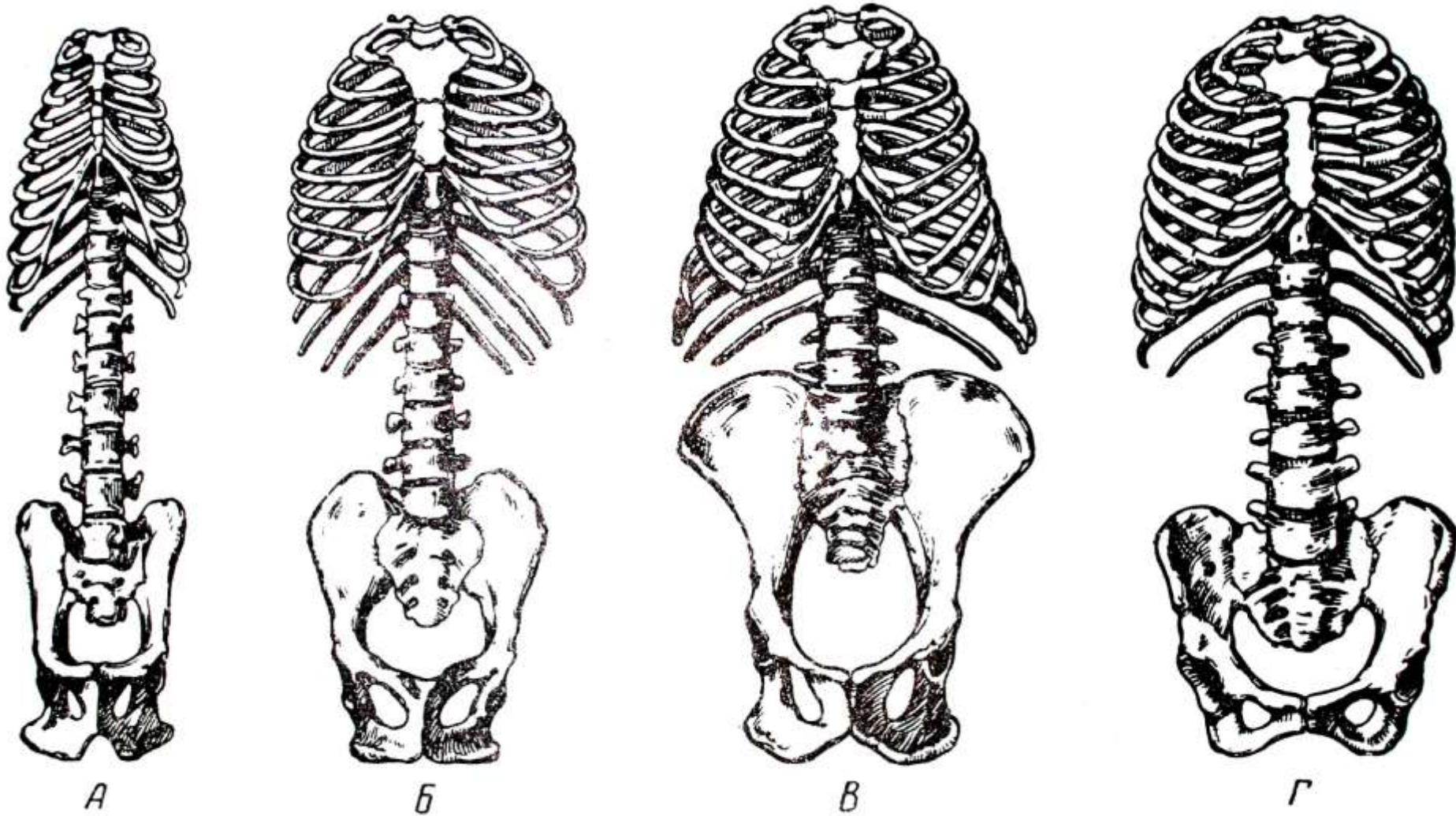


B

- 1 – distantia cristarum;
- 2 – diameter transversa;
- 3 – distantia spinarum;
- 4 – conjugata vera;
- 5 – diameter obliqua.



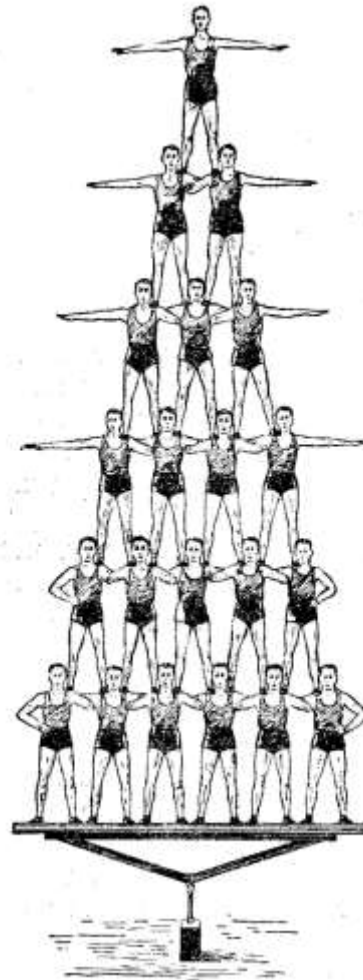
THE SKELETON OF THE TORSO OF VARIOUS MONKEYS AND HUMANS



Classification of The Bones

- The number of bones; Dog:320, Cat:250, Pig:216, Cattle:207, Human:206
- The longest bone is the femur and the smallest is the stapes.

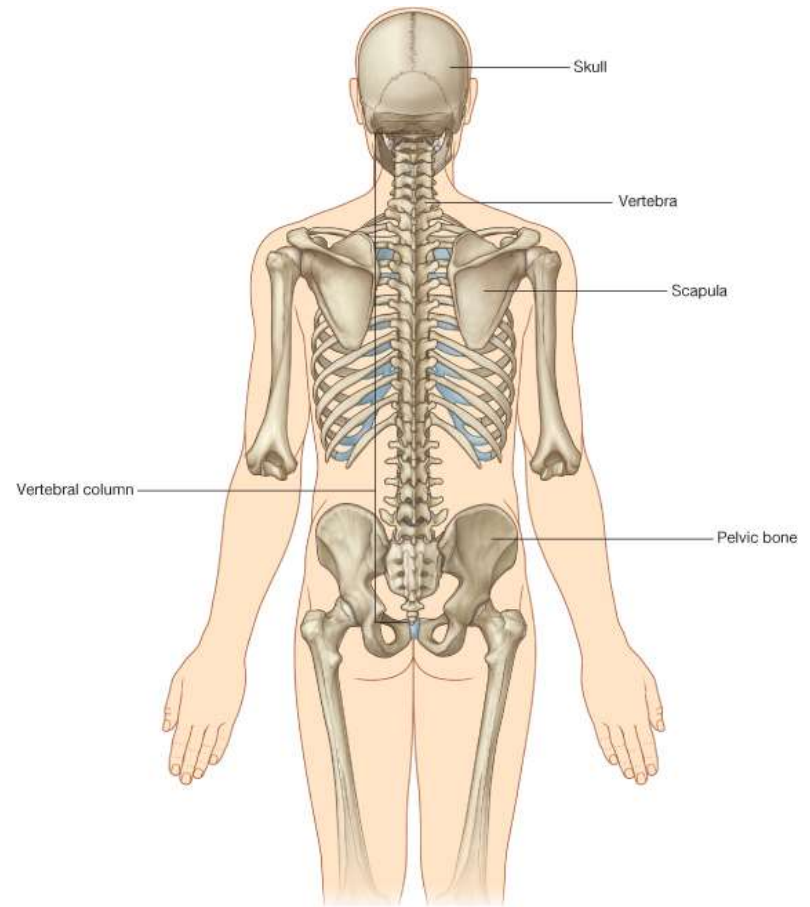
Os longum	Os breves	Os planum	Os irregulare	Os pneumaticum
Humerus	Ossa carpi	Scapula	Sacrum	Os frontale
Radius	Ossa tarsi	Costae	Coxae	Os ethmoidale
Ulna	Vertebrae	Os occipitale	Os hyoideum	Os sphenoidale
Femur		Os parietale	Mandibula	Maxilla
Tibia		Os temporale	Os lacrimale	
Fibula			Os zygomaticum	
Ossa metacarpi			Vomer	
Ossa metatarsi			Ossicula auditus	
Ossa digitorum				



Tibia
1650 kg

THE SKELETON

- For the convenience of study, the skeleton is divided into *axial* and *appendicular* parts.



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DIVISIONS OF THE SKELETON

- **Axial Skeleton**

- Skull
- Spine
- Rib cage

- **Appendicular Skeleton**

- Upper limbs
- Lower limbs
- Shoulder girdle
- Pelvic girdle



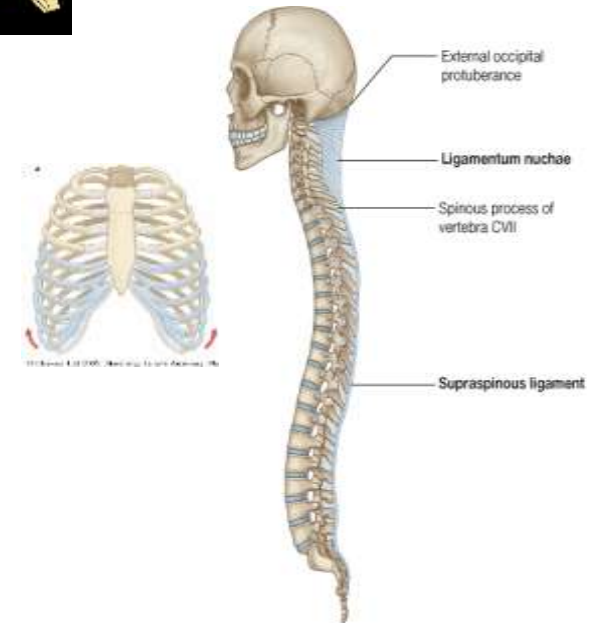
MOTION IS LIFE!



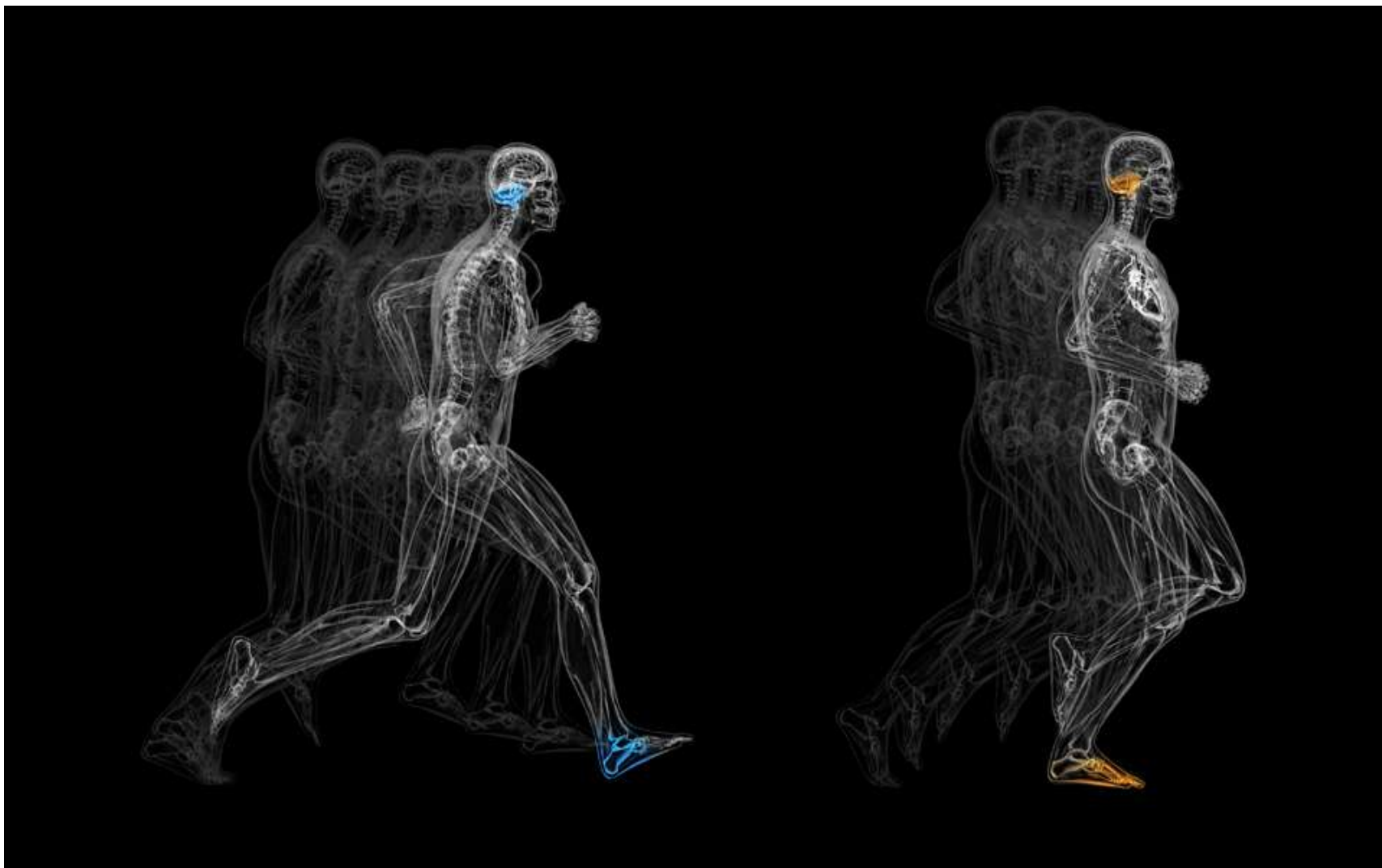
THE AXIAL SKELETON

The **axial skeleton** consists of **80 bones** that form the axis of the body and which supports and protects the organs of the head, neck, and trunk.

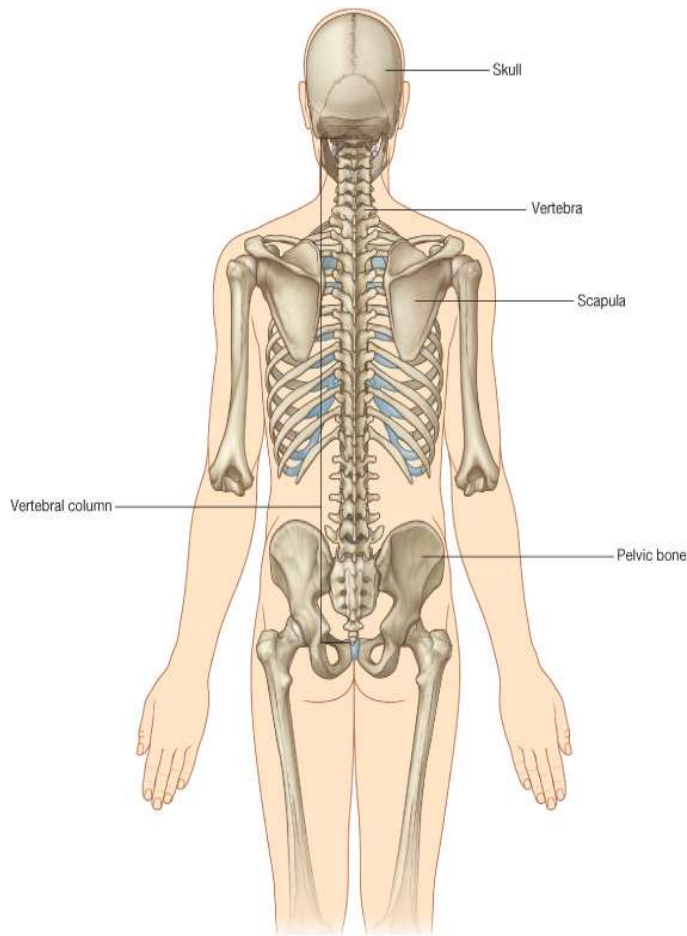
- Skull
- Auditory ossicles
- Hyoid bone
- Vertebral column
- Thoracic cage



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THE APPENDICULAR SKELETON



The *appendicular skeleton* is composed of 126 bones of the upper and lower limbs and the bony girdles, which anchor the appendages to the axial skeleton.

- **The shoulder girdle** (the scapula and clavicle)
- **The upper limb** (the humerus, ulna, radius and bones of the hand)
- **The pelvic girdle** (the hip bone)
- **The lower limb** (the femur, tibia, fibula and bones of the foot)

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BONE AS AN ORGAN

STRUCTURE OF A BONE AND STRUCTURE OF THE PERIOSTEUM

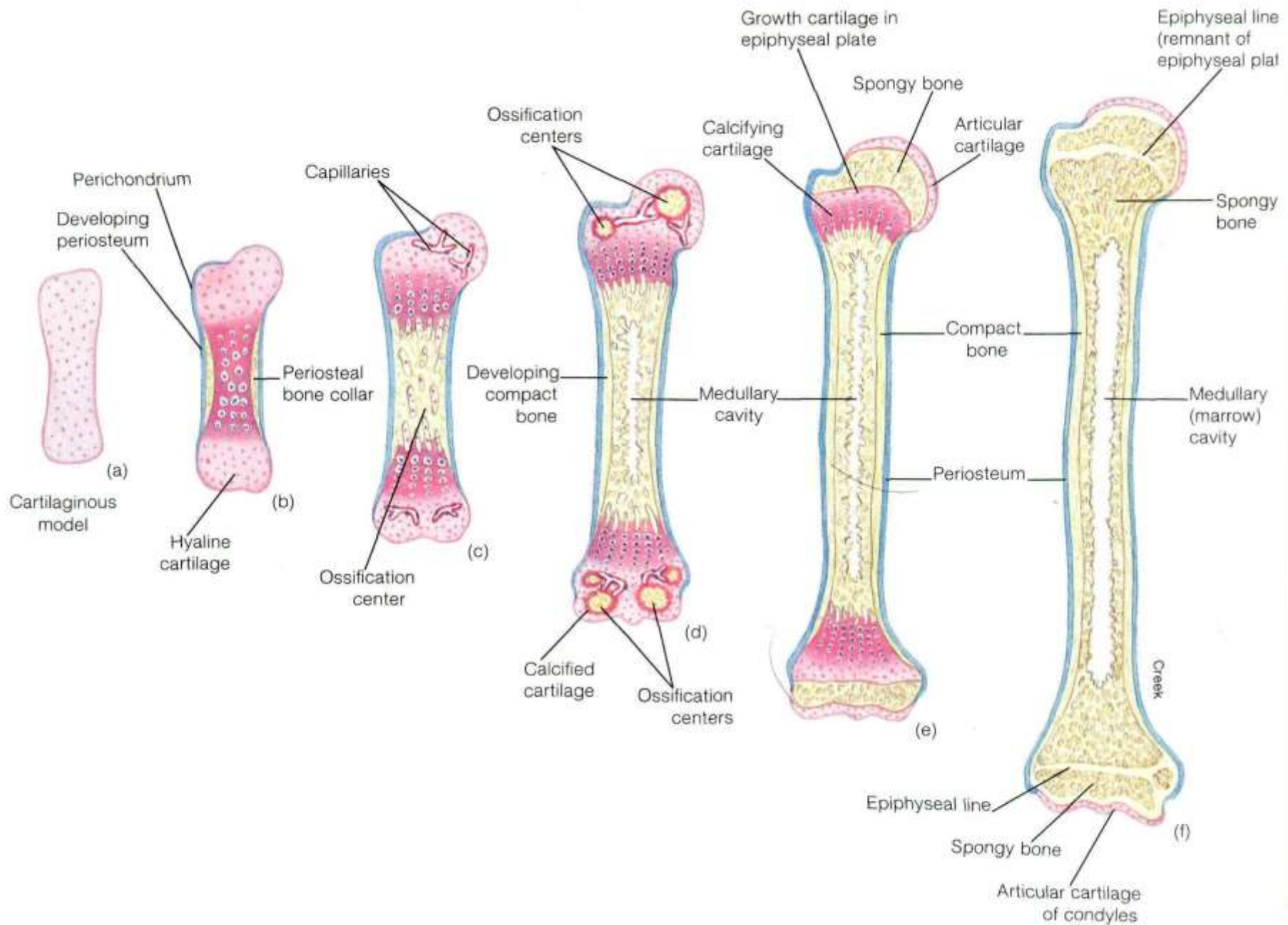
- **Bone** (os) is one of the hardest structures of the body. It possesses also a certain degree of toughness and elasticity. Its color, in a fresh state, is pinkish-white externally, and red within.

STAGES OF THE DEVELOPMENT OF THE SKELETON:

1.CONNECTIVE-TISSUE (MEMBRANOUSE)

2.CARTILAGINOUS

3.BONY

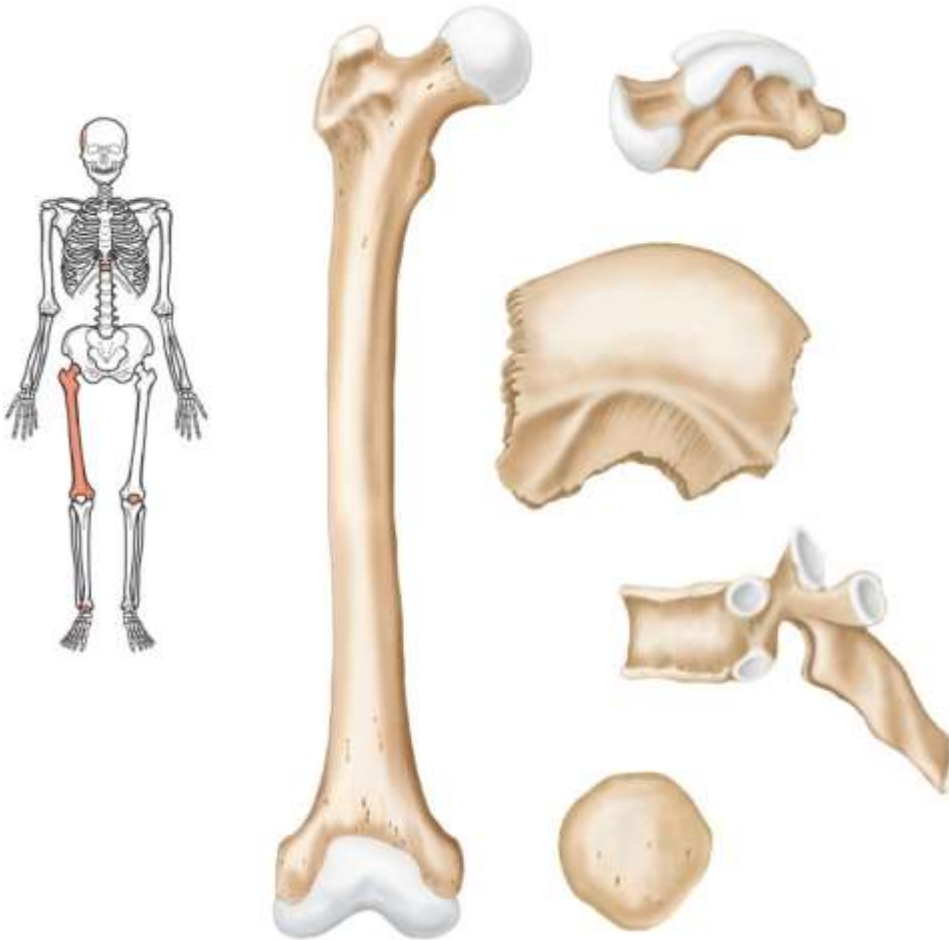


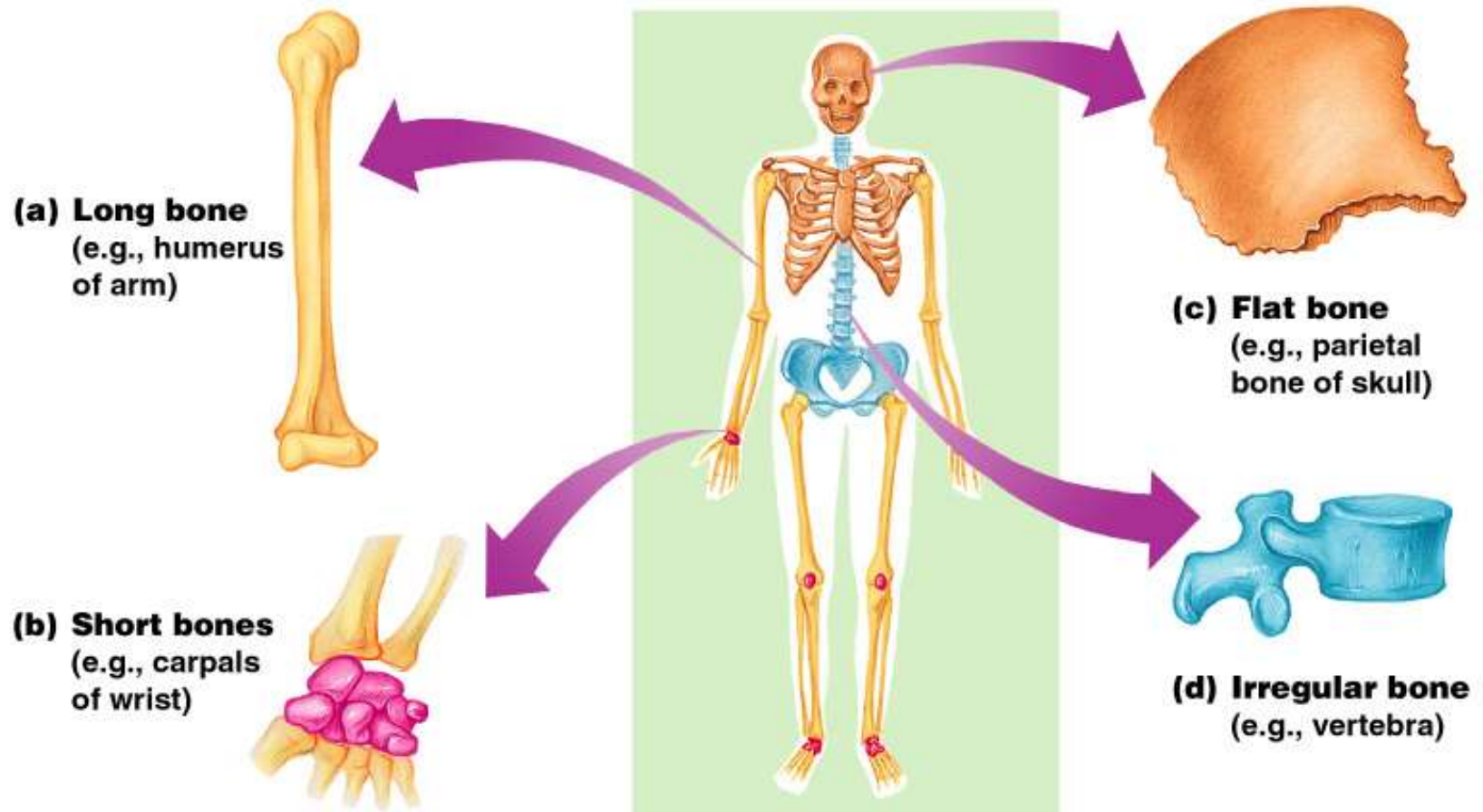
THE BONES, WHICH GO
THROUGH THESE THREE
DEVELOPMENTAL STAGES,
CALLED SECONDARY BONE.

THE BONES, WHICH ARE FORMED DIRECTLY FROM CONNECTIVE TISSUE WITHOUT GOING THROUGH THE STAGE OF THE CARTILAGE, CALLED PRIMARY BONE.

- Bone Classification:

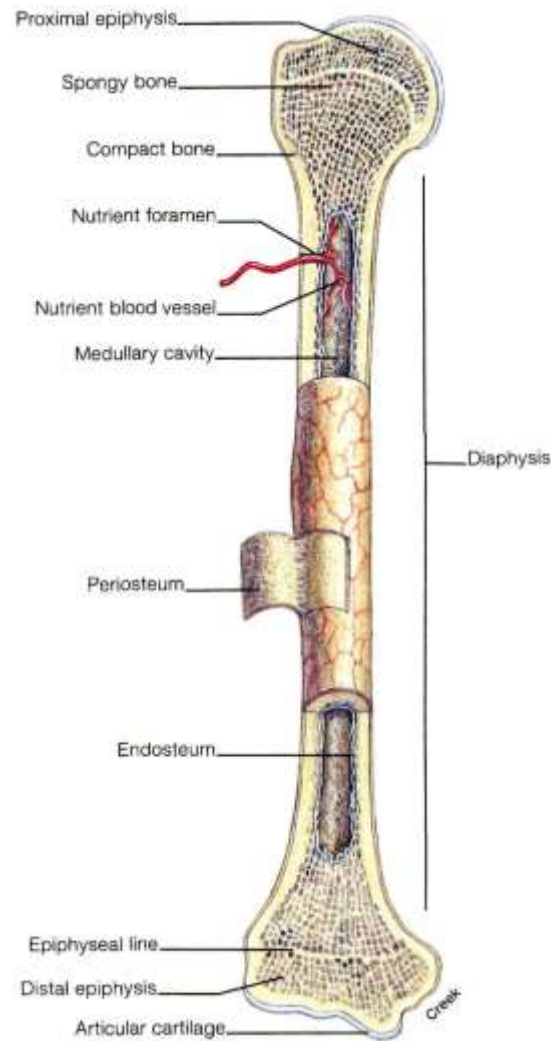
- Long Bones
- Short Bones
- Sesamoid Bones
- Flat Bones
- Irregular Bones
- Wormian Bones (sutural)





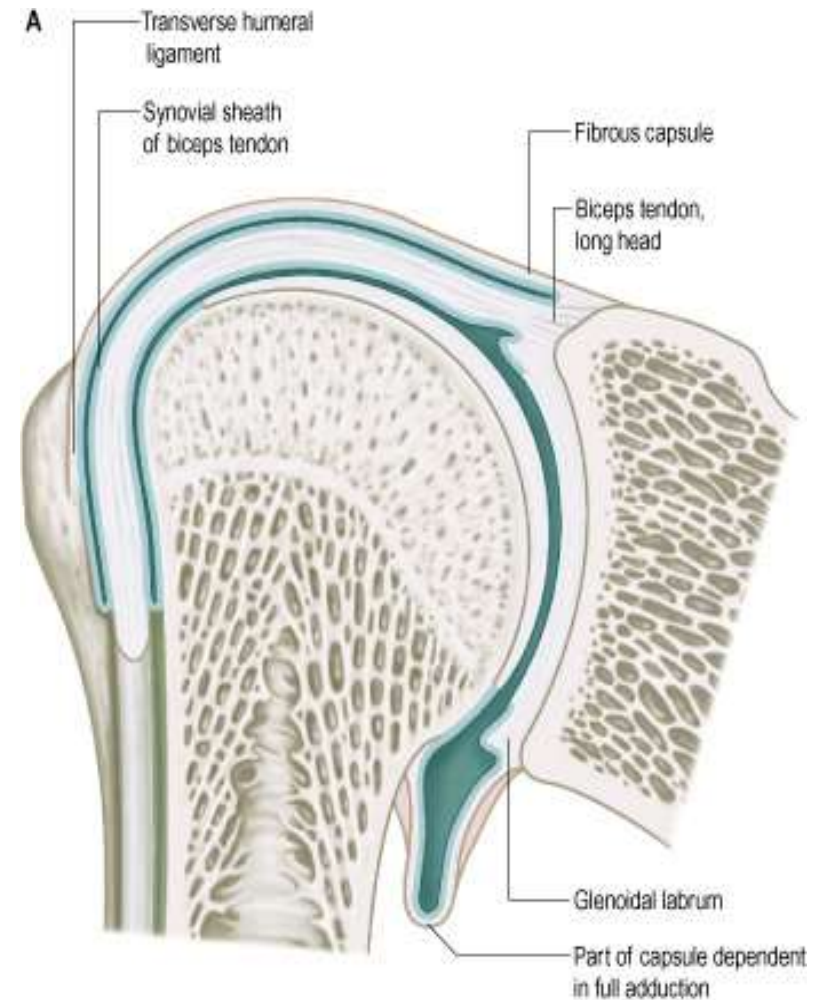
AS A ORGAN BONE:

- 1. bone tissue: compact tissue
spongy tissue**
- 2. bone marrow**
- 3. periosteum**
- 4. epiphyseal cartilage**
- 5. vessels and nerve**

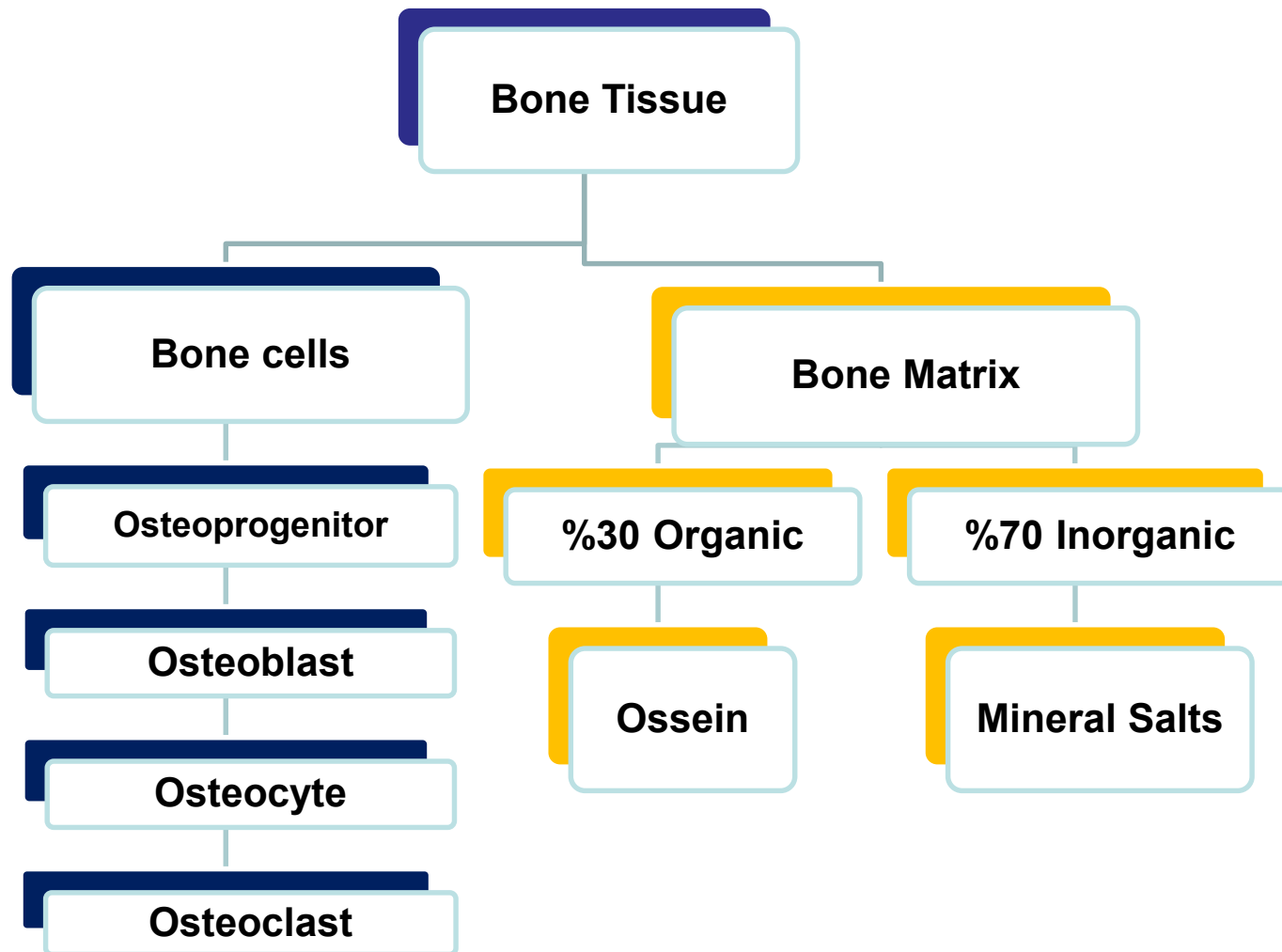


Structure of bone

- BONY TISSUE:
- **Compact tissue**
- **Cancellous tissue**

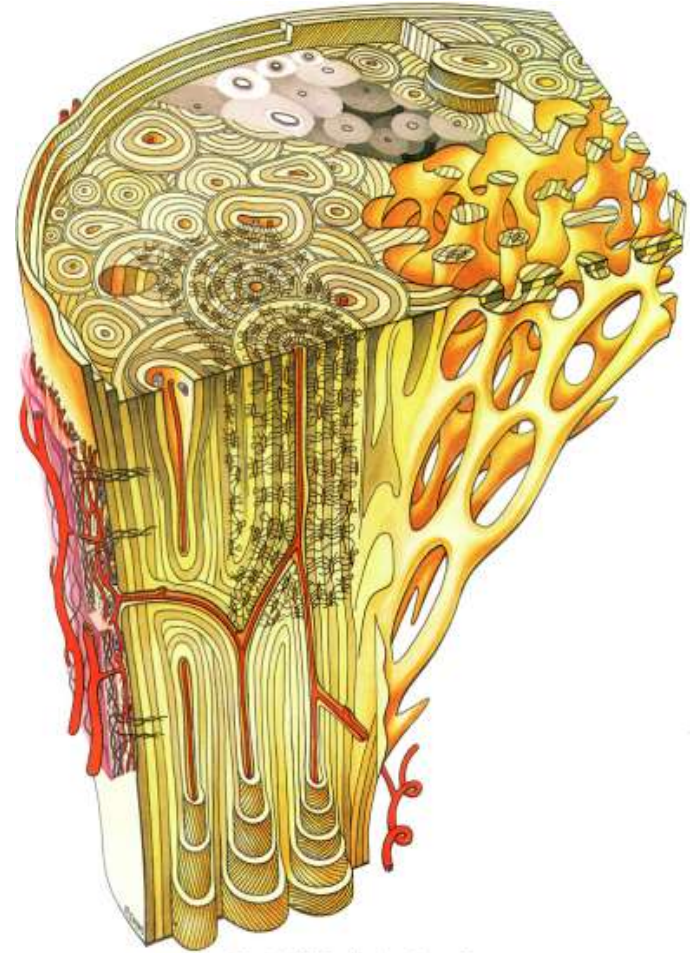


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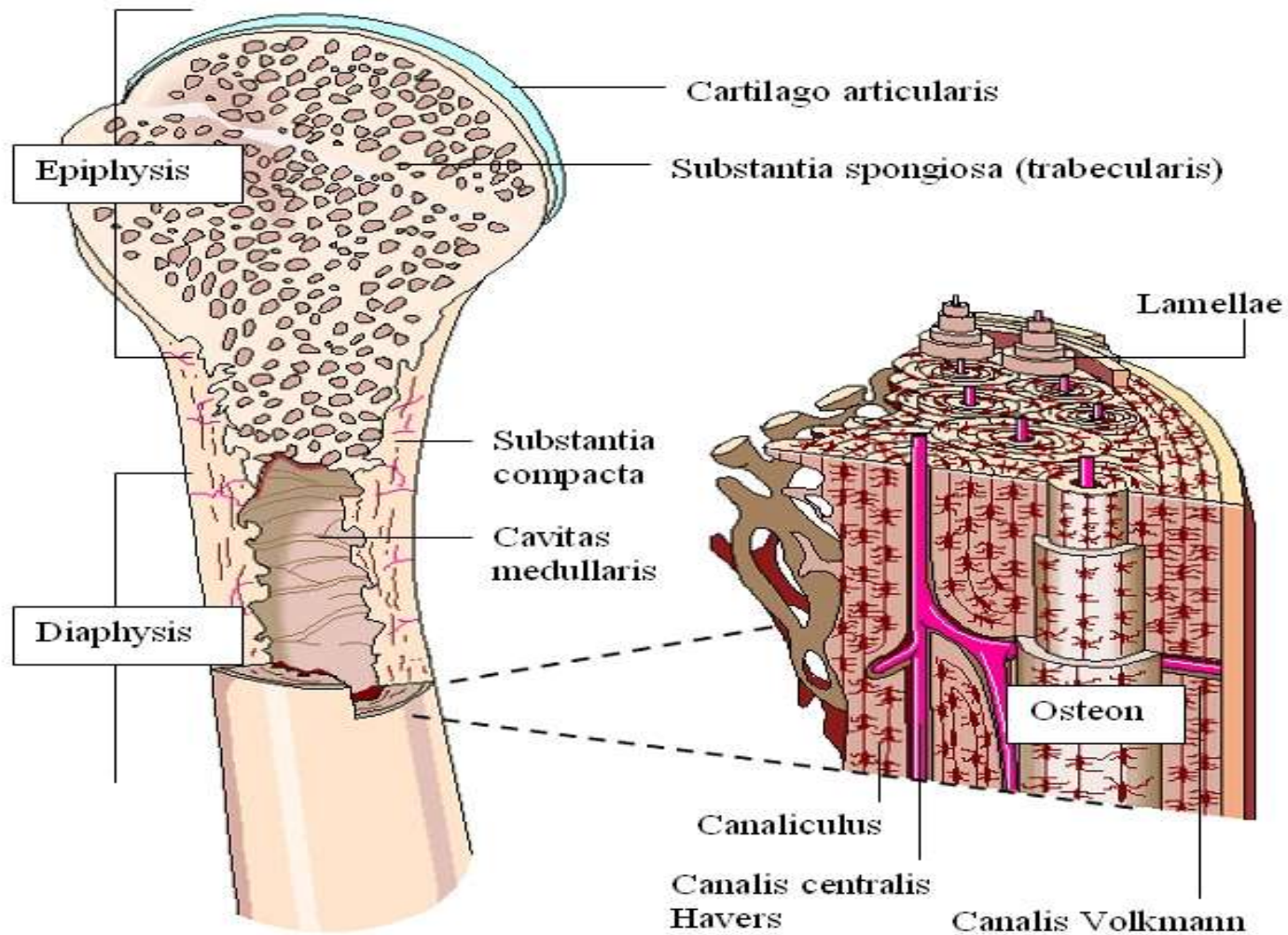


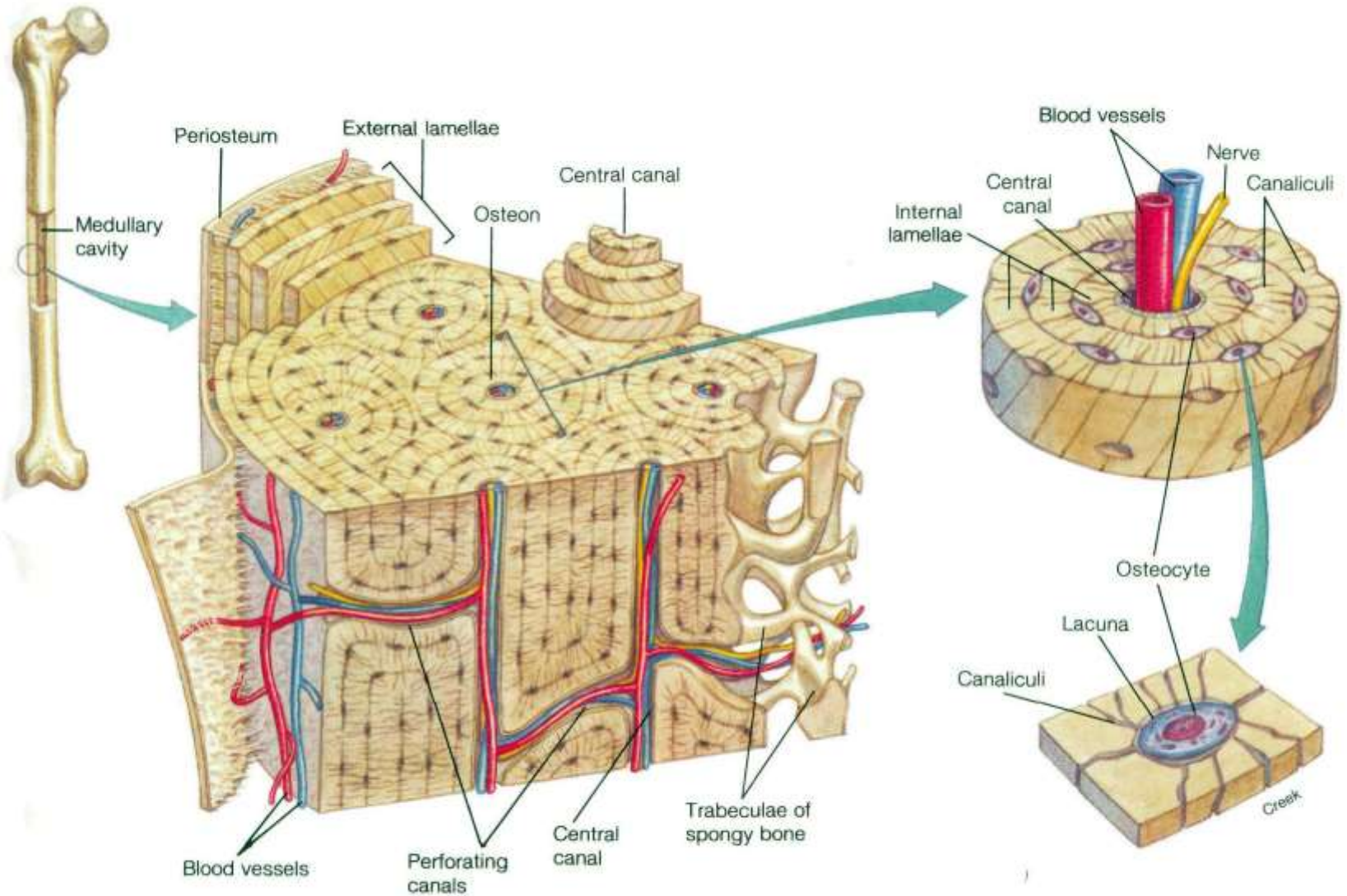
MACROMICROSCOPIC STRUCTURE OF BONE

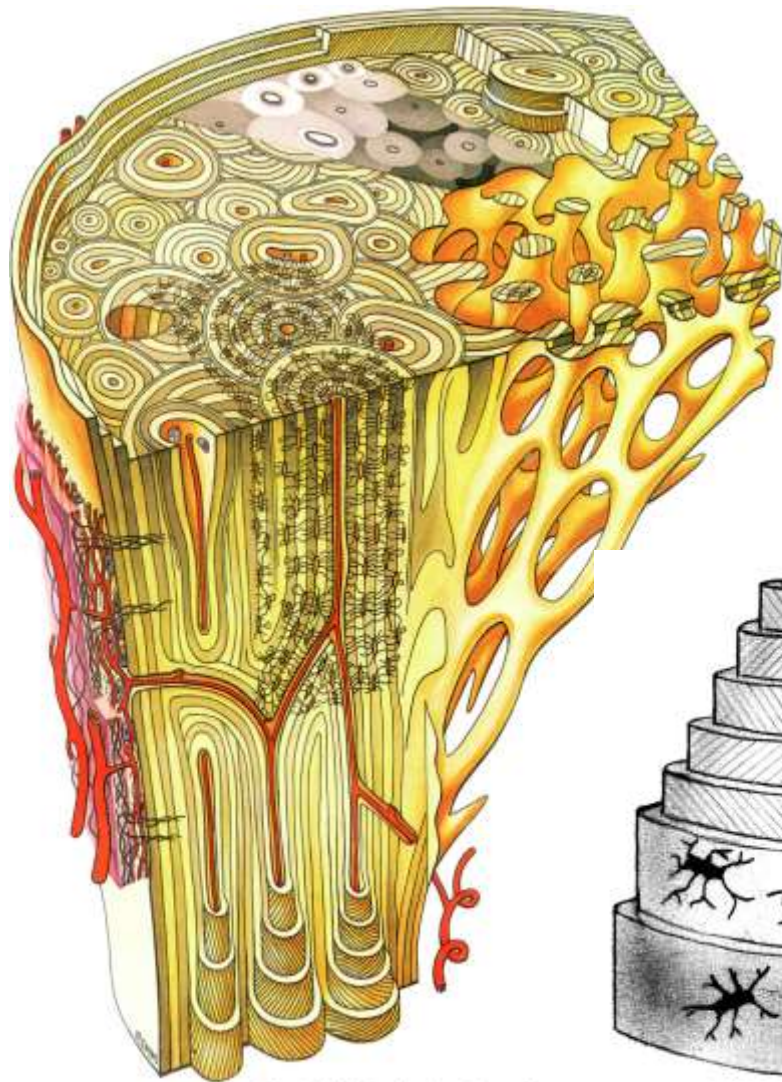
- THE **MORPHOFUNCTIONAL UNIT** OF THE BONE IS THE **OSTEON**, OR **HAVERSIAN SYSTEM**.
- THE OSTEON CONSISTS OF A SYSTEM OF BONY LAMELLAE ARRANGED CONCENTRICALLY AROUND A CANAL, WHICH IS CALLED **HAVERSIAN CANAL** AND THIS CANAL CONTAINS NERVES AND VESSELS. THE BONE LAMELLAE CONSIST OF OSTEOCYTES, THEIR LACUNAE, AND INTERCONNECTING CANALICULI AND MATRIX.



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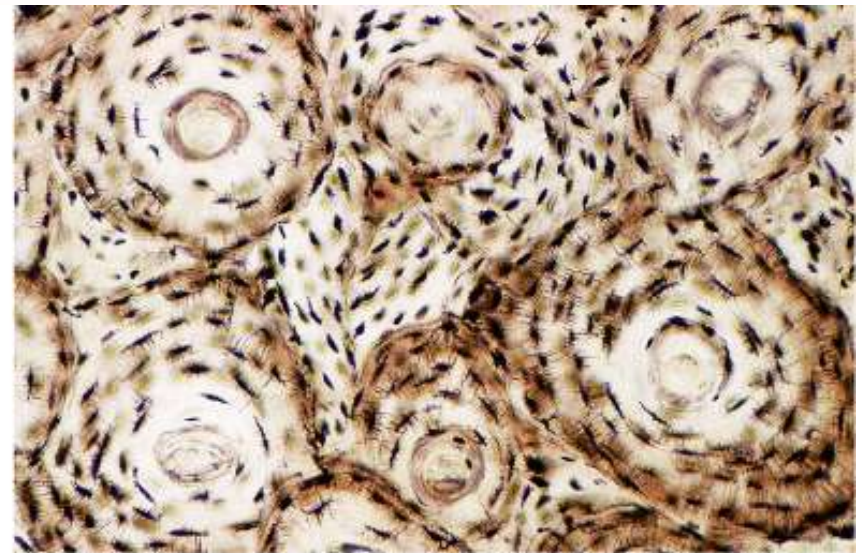




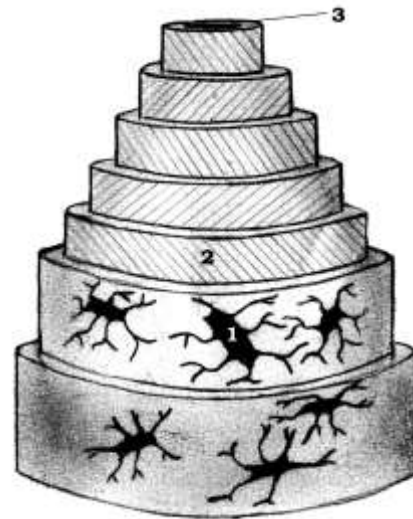


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A



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B



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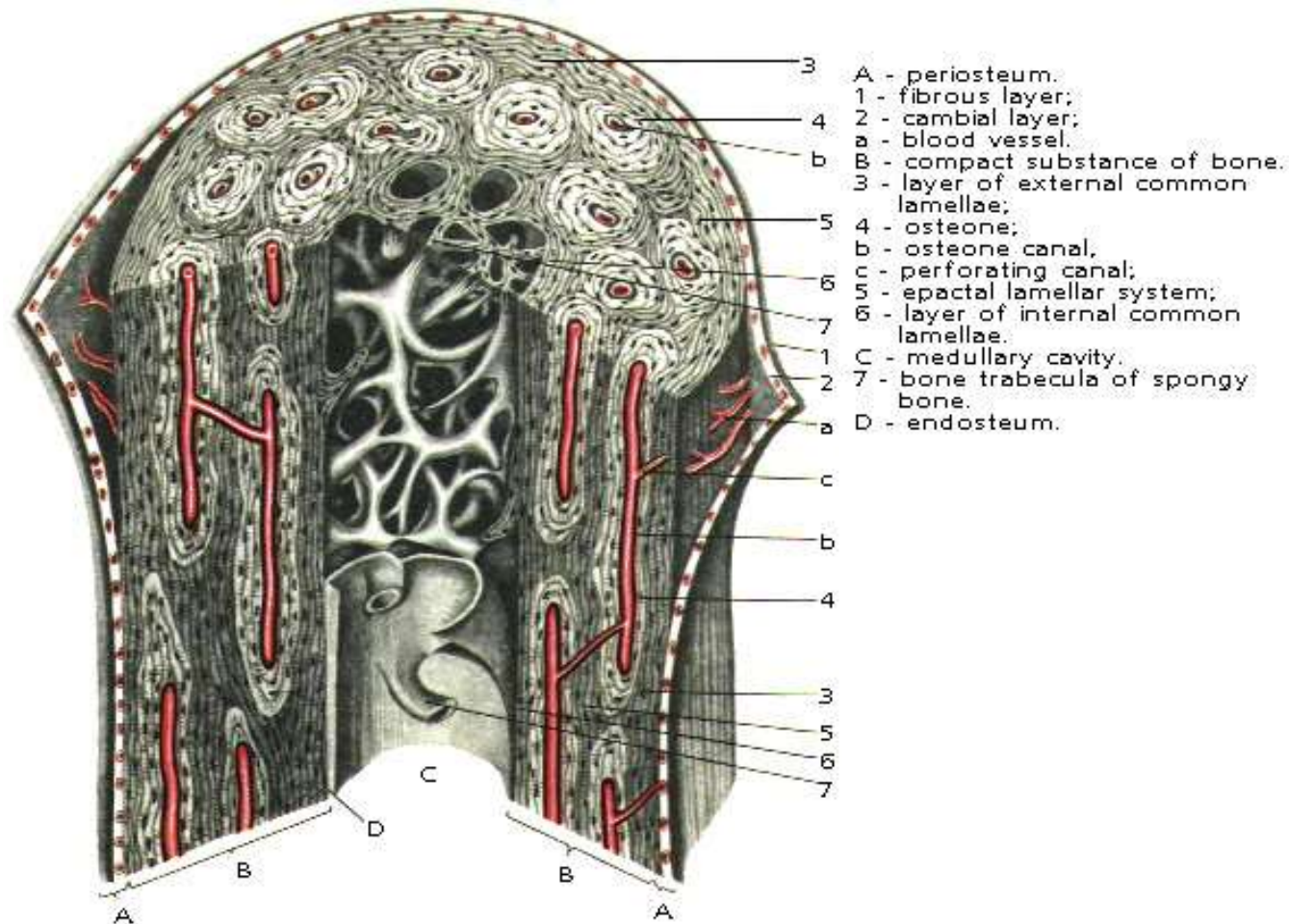


Canaliculi
(каналъці)

Osteocyte
(остеоцит)

Lacuna
(затока)

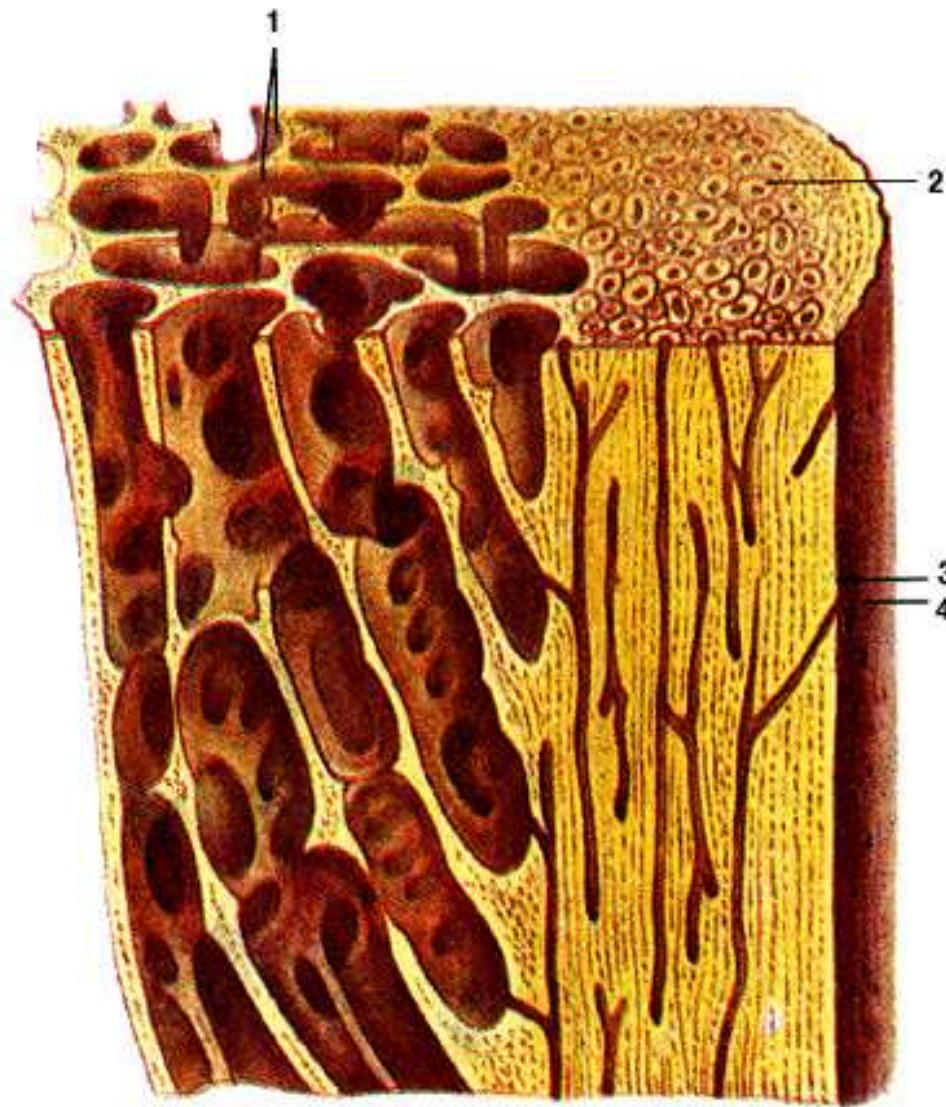
The structure of bone



OSTEON – IS A STRUCTURING UNIT
COMPACT TISSUE OF THE BONE.
THIS IS A SYSTEM OF BONE
LAMELLAS, WHICH ARE SITUATED
AROUND THE HAVESON (Haversian)
CANAL, WHERE VESSELS AND
NERVES ARE GOING THROUGH.

GROUP OF OSTEONS FORM THE TRABECULE.

SUBSTANTIA SPONGIOSA (TRABECULARIS) IS FORMED BY THE MANY TRABECULES, WHICH ARE SITUATED CRUMBLY. THERE ARE A LOT OF LACUNAE.



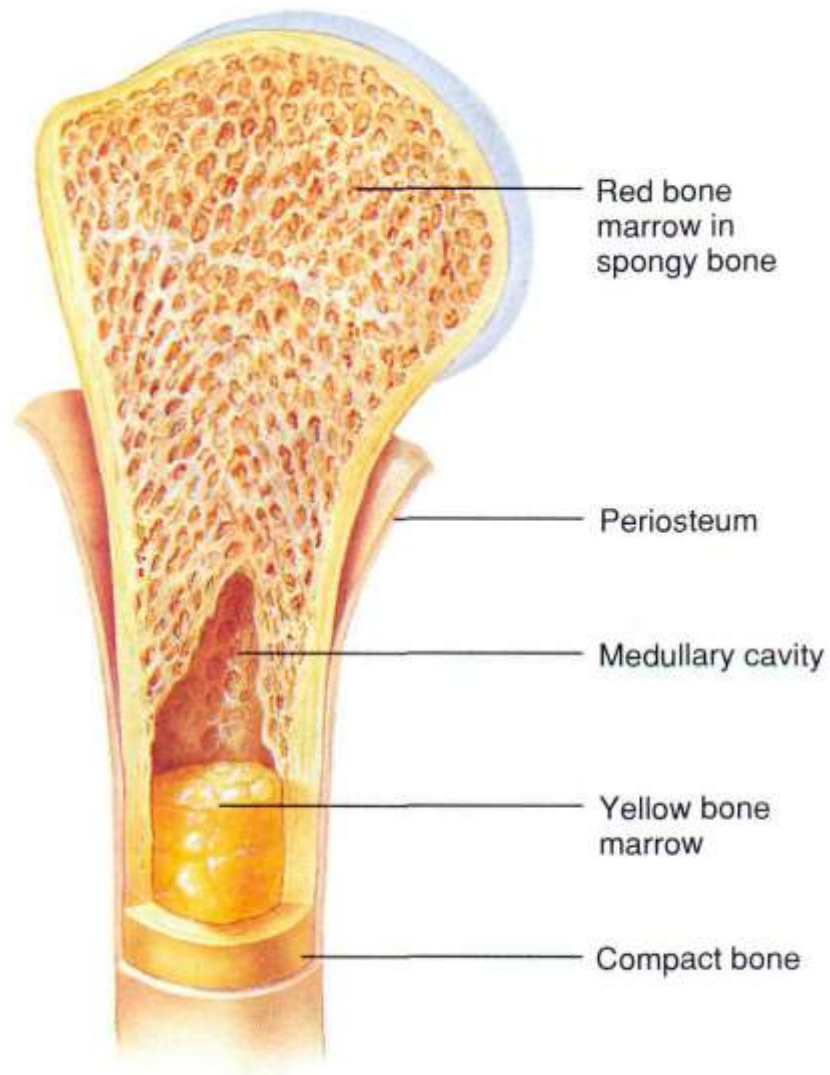
- 1 – substantia.spongiosa (trabecularis);
- 2 – substantia compacta;
- 3 – canalis nutriens;
- 4 – for. nutriens.

THE BONE LACUNARS OF THE SPONGY TISSUE AND BONES CANAL OF TUBULAR BONES CONTAIN BONE MARROW. THESE LACUNARS OF THE SPONGY BONES IS CALLED BONE-MEDULLARY CAVITY. THIS CANAL OF BONES IS CALLED BONE-MEDULLARY CANAL.

THE BONE MARROW ARE DIVIDED
ON RED BONE MARROW AND
YELLOW BONE MARROW.

THE FUNCTION OF RED BONE
MARROW IS HEMOPOESIS.

THE YELLOW BONE MARROW
CONSIST OF FAT CELLS.

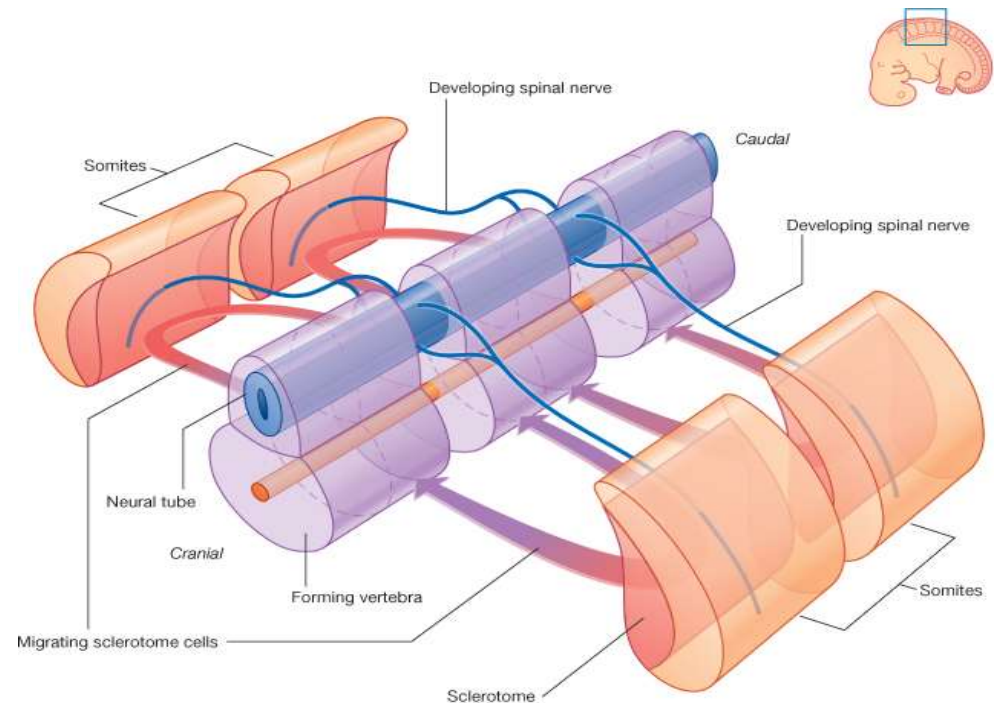


CLASSIFICATION OF BONES DEPENDENT ON THEIR DEVELOPMENT

- a) Desmal** (tegumentary, or primary bones)
- b) Condral** (secondary bone)
- c) Condro-desmal** bone (the vertebrae, the bones of the base of the skull, the clavicle)

GENERAL NOTIONS CONCERNING DEVELOPMENT OF BONES AND THEIR ABNORMALITIES

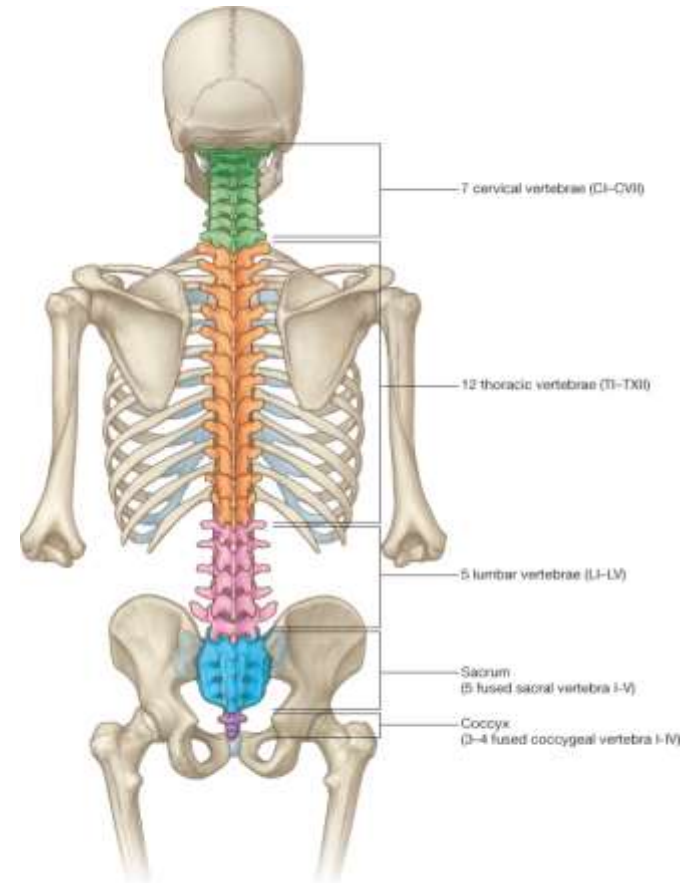
- THE **SCLEROTOME** DERIVES FROM THE **PARAXIAL MESODERM**.
- AT THE END OF THE FOURTH WEEK THE **SCLEROTOME** GIVE RISE TO THE **MESENCHYME**, OR EMBRYONIC CONNECTIVE TISSUE. THE MESENCHYMAL CELLS MIGRATE AND DIFFERENTIATE IN MANY WAYS. THEY MAY BECOME **FIBROBLASTS**, **CHONDROBLASTS**, OR **OSTEOBLASTS** (BONE-FORMING CELLS).



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DERIVATIVES OF THE LATERAL PLATE MESODERM

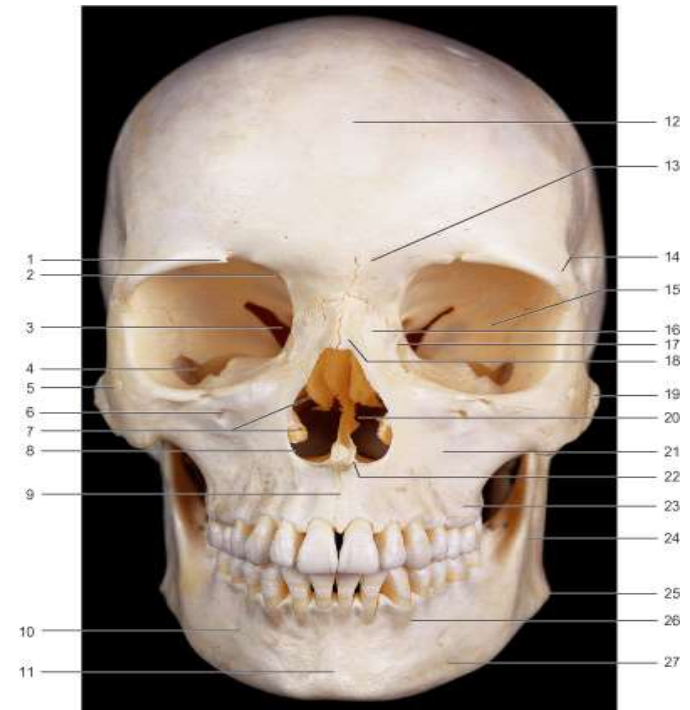
- **Lateral plate mesoderm** forms the pelvic and shoulder girdles, and long bones of the upper and lower limbs.



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DERIVATIVES OF THE NEURAL CRESTS IN THE HEAD REGION

- **Neural crests in the head region** differentiate into mesenchyme and participate in formation of bones of the face and skull.

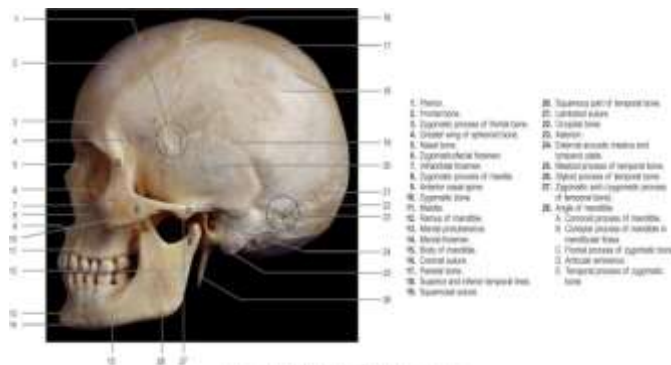


- | | |
|--|---------------------------------------|
| 1. Supraorbital notch. | 15. Greater wing of sphenoid bone. |
| 2. Frontal notch. | 16. Frontal process of maxilla. |
| 3. Superior orbital fissure. | 17. Lacrimal bone. |
| 4. Inferior orbital fissure. | 18. Nasal bone. |
| 5. Zygomaticofacial foramen. | 19. Zygomatic bone. |
| 6. Infraorbital foramen. | 20. Nasal septum. |
| 7. Nasal conchae. | 21. Body of maxilla. |
| 8. Anterior nasal aperture. | 22. Anterior nasal spine. |
| 9. Intermaxillary suture. | 23. Alveolus of maxilla (upper jaw). |
| 10. Mental foramen. | 24. Ramus of mandible. |
| 11. Mental protuberance. | 25. Angle of mandible. |
| 12. Frontal bone. | 26. Alveolus of mandible (lower jaw). |
| 13. Glabella. | 27. Body of mandible. |
| 14. Zygomatic process of frontal bone. | |

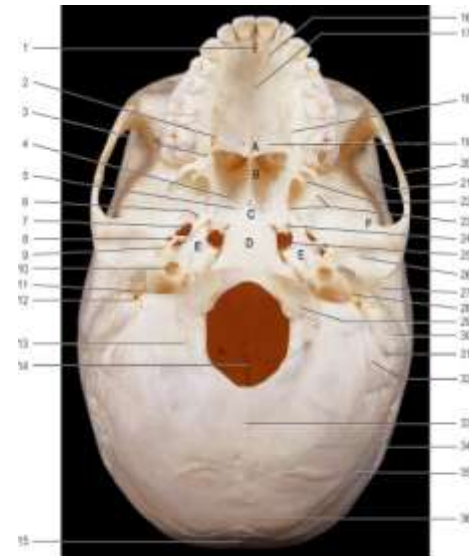
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DERIVATIVES OF THE OCCIPITAL SOMITES AND SOMITOMERES

- **Occipital somites and somitomeres** contribute to formation of the cranial vault and base of the skull.



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1. Anterior fontanelle
2. Sphenoid bone
3. Lesser sphenoid foramen
4. Foramen ovale
5. Foramen spinosum
6. Foramen transversum
7. Foramen transversum
8. Foramen transversum
9. Foramen transversum
10. Foramen transversum
11. Foramen transversum
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29. Foramen transversum
30. Foramen transversum
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32. Foramen transversum
33. Foramen transversum
34. Foramen transversum
35. Foramen transversum
36. Foramen transversum

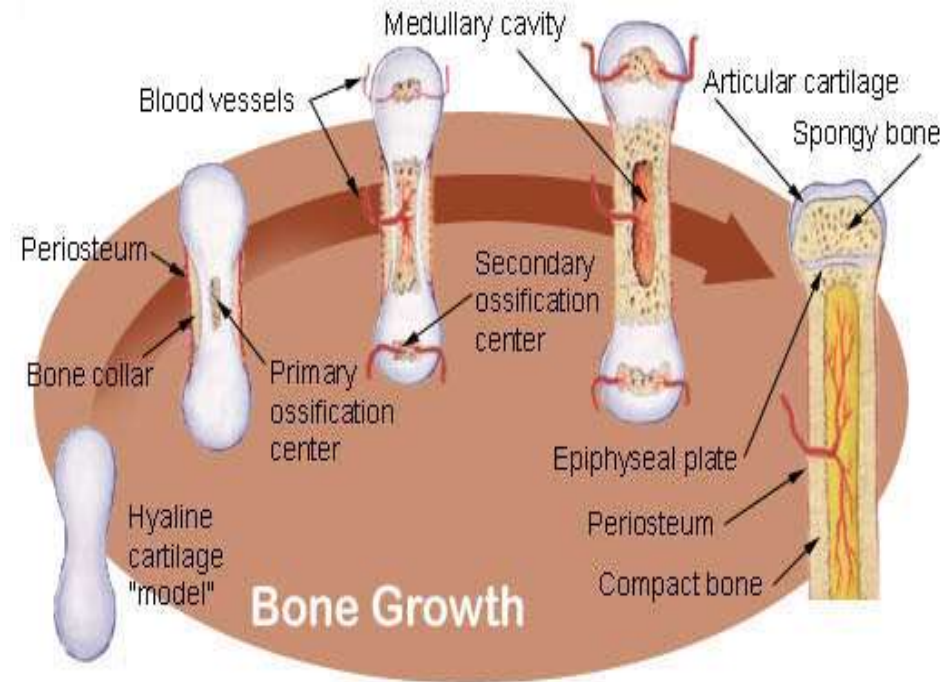
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STAGES OF DEVELOPMENT OF THE HUMAN SKELETON

- Bone formation, or **ossification**, begins at about the fourth week of embryonic development, but ossification centers cannot be readily observed until about the tenth week.
- **Three stages** of development of the human skeleton are encountered:
 - **Connective-tissue** (membranous)
 - **Cartilaginous**
 - **Bony**

PRIMARY CENTERS OF OSSIFICATION

- In the second month of the intrauterine life, the **primary points** of ossification appear first, in the shafts, or *diaphyses* of tubular bones, and in the *metaphyses*.
- They ossify by **perichondral** and **enchondral** osteogenesis.



SECONDARY AND ACCESSORY POINTS OF OSSIFICATION

- The **secondary points** of ossification appear shortly before birth or during the first years after birth and they develop by **encondral osteogenesis**.
- The **accessory points** of ossification appear in children, adolescents, and even adults in the apophyses of bones (e.g. tubercles, trochanters, the accessory processes of the lumbar vertebrae).



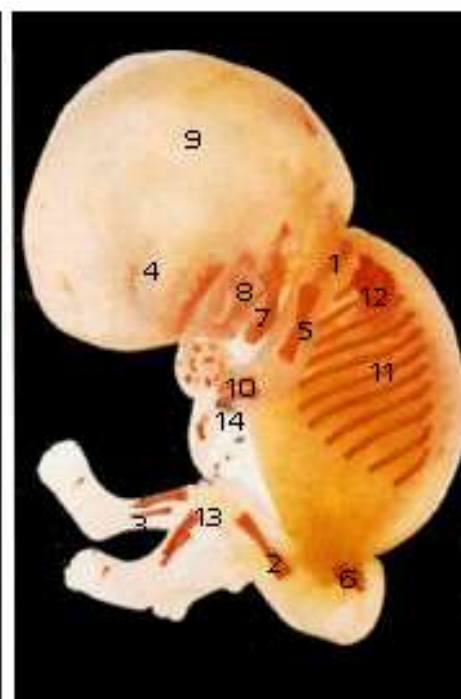
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Horizon XVIII
(Day 36-38).



Horizon XXII
(Day 44-46).



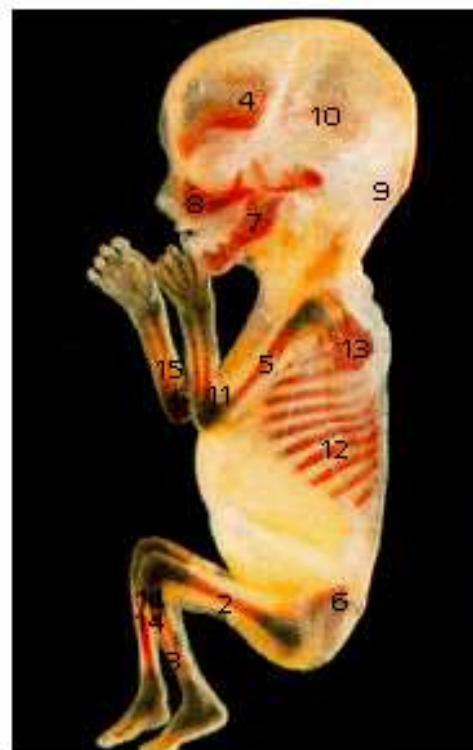
Week 8.



Week 11.

- 1. clavicle
- 2. femur
- 3. fibula
- 4. frontal
- 5. humerus
- 6. ilium
- 7. mandible

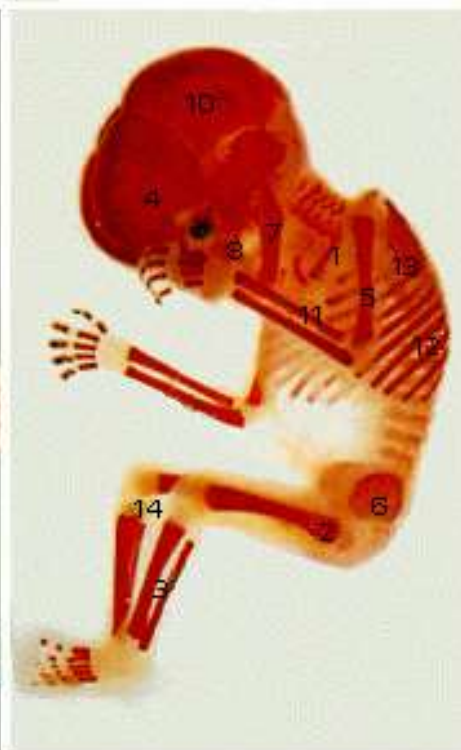
- 8. maxilla
- 9. parietal
- 10. radius
- 11. ribs
- 12. scapula
- 13. tibia
- 14. ulna



Week 13.



Week 15.



Week 16.

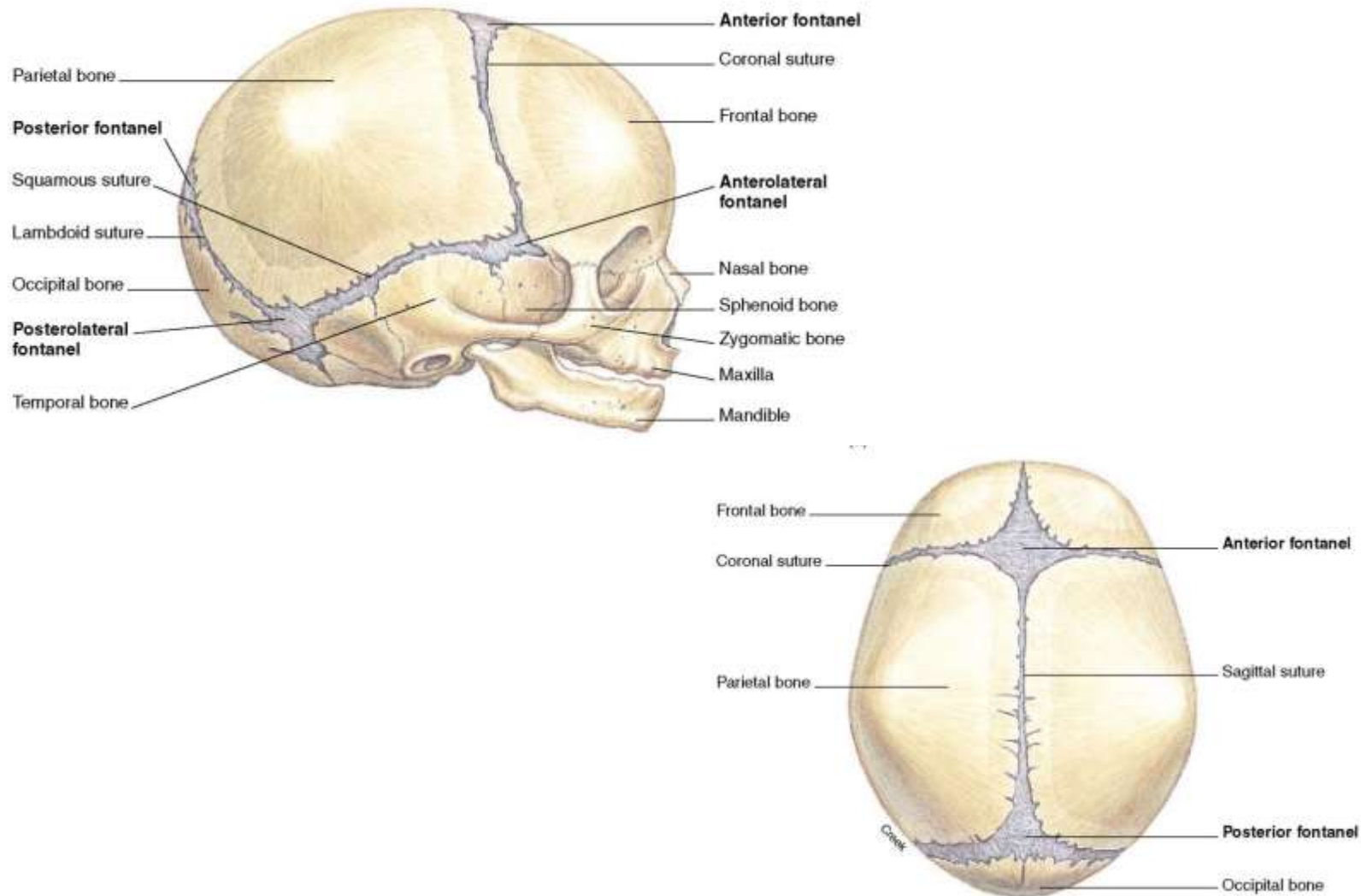


Week 18.

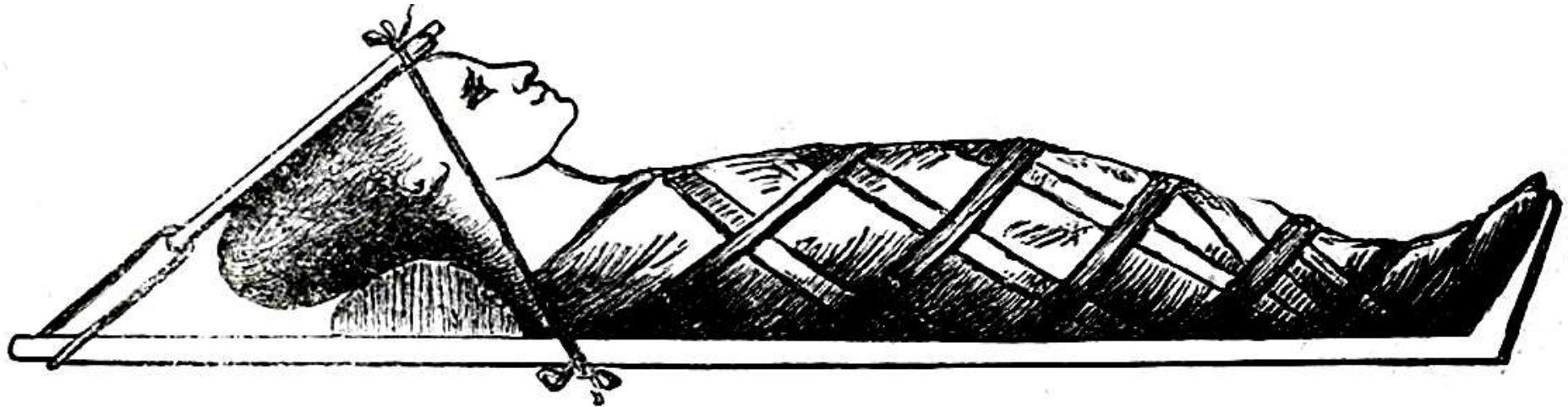
- 1. clavicle
- 2. femur
- 3. fibula
- 4. frontal
- 5. humerus
- 6. ilium
- 7. mandible
- 8. maxilla

- 9. occipital
- 10. parietal
- 11. radius
- 12. ribs
- 13. scapula
- 14. tibia
- 15. ulna
- 16. phalanges

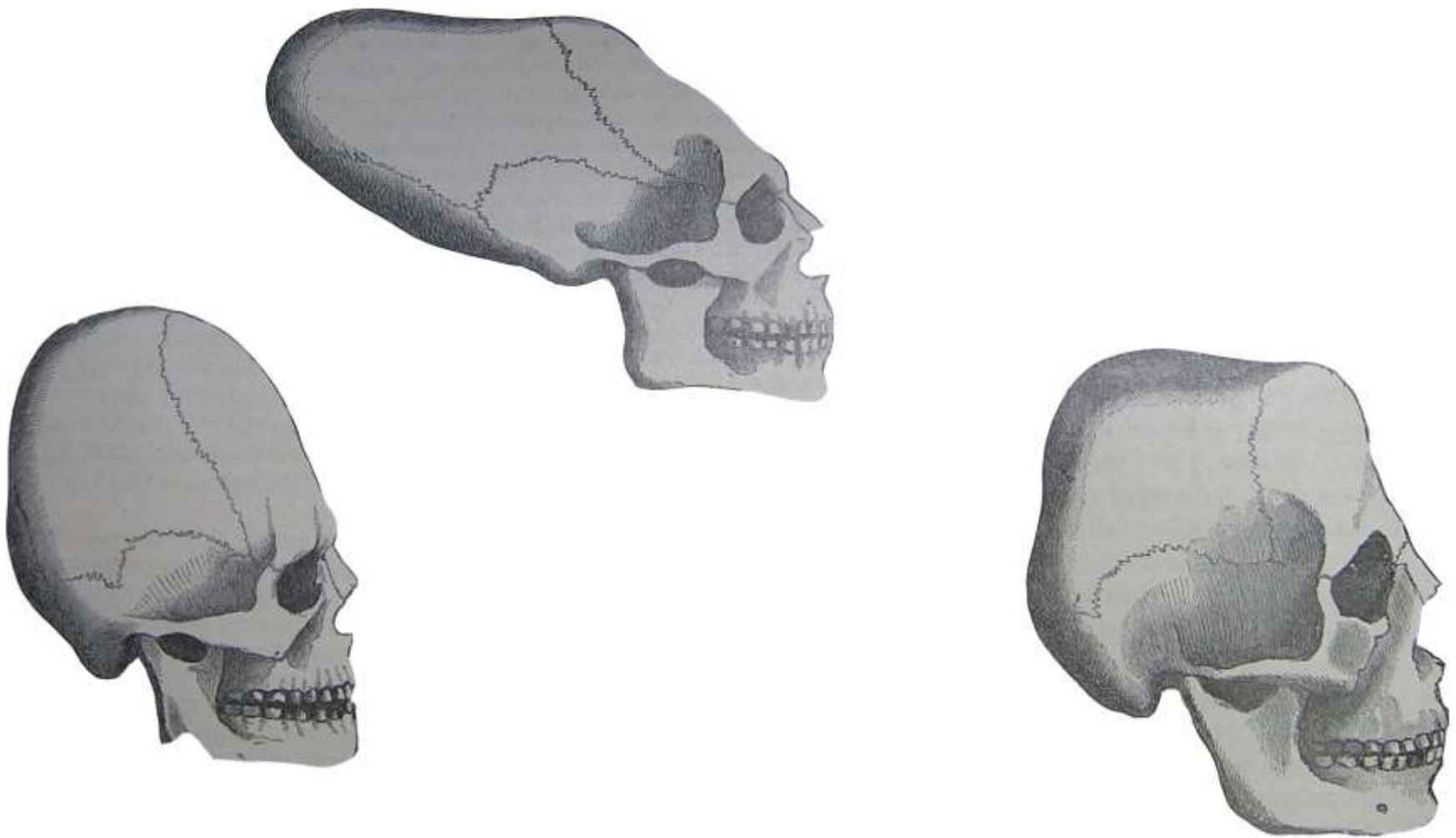




THE BONE DOES NOT HAVE A STABLE, BUT A VARIABLE STRUCTURE, THE ORGANIZATION OF WHICH IS DETERMINED ON THE ONE SIDE BY DATA OF HEREDITY, ON THE OTHER BY THE CONDITIONS OF WORK. THAT IS WHY THERE ARE SEX, AGE, PROFESSIONAL DIFFERENCES IN BONE STRUCTURE.



A CHILD WITH A HEAD PRESS (IN ANCIENT PERU).







After
Fossile.

Child wearing a "Bandeau"



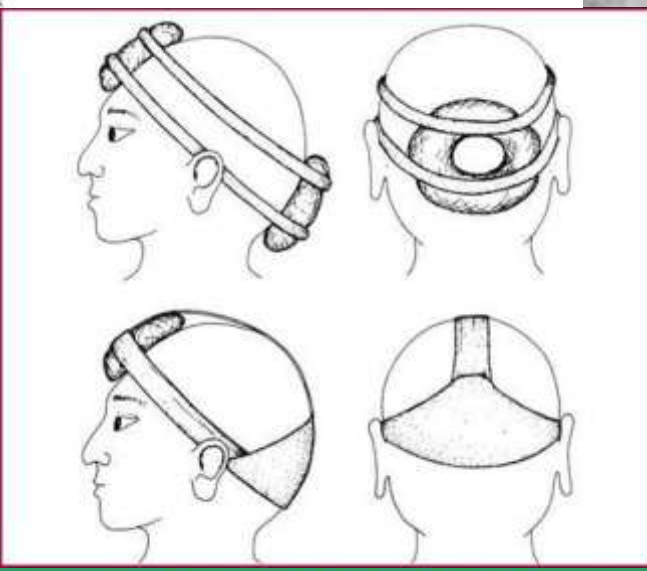
After
Fossile.

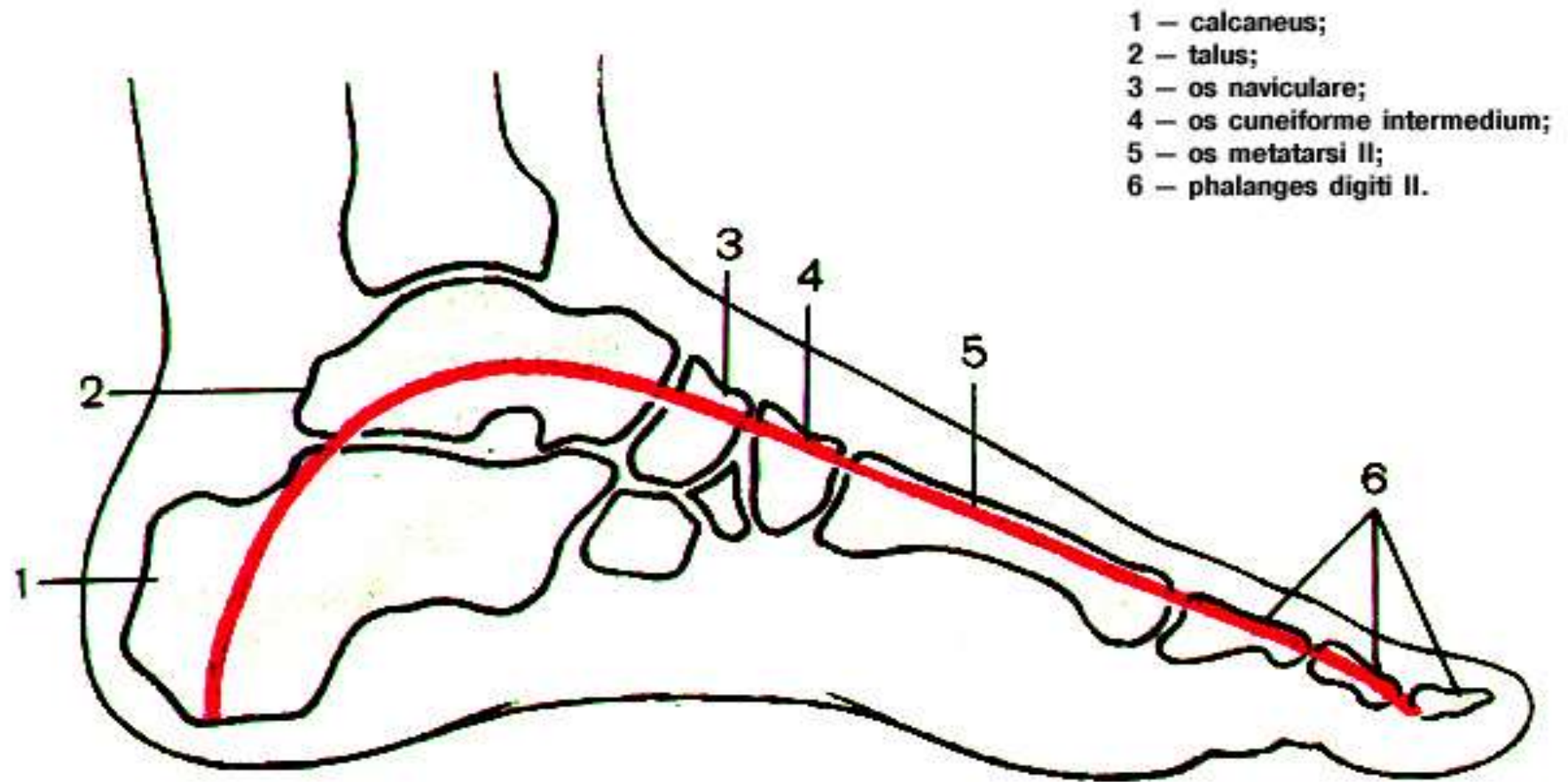
Deformed Head due to Bandaging.

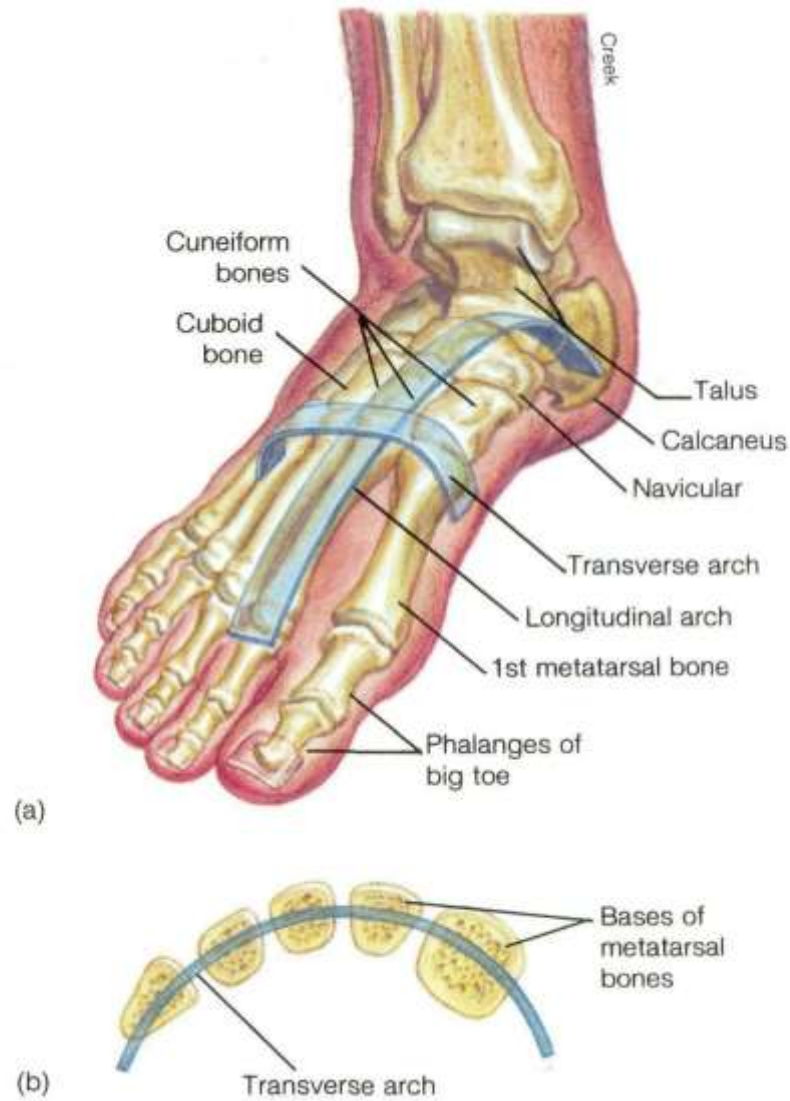


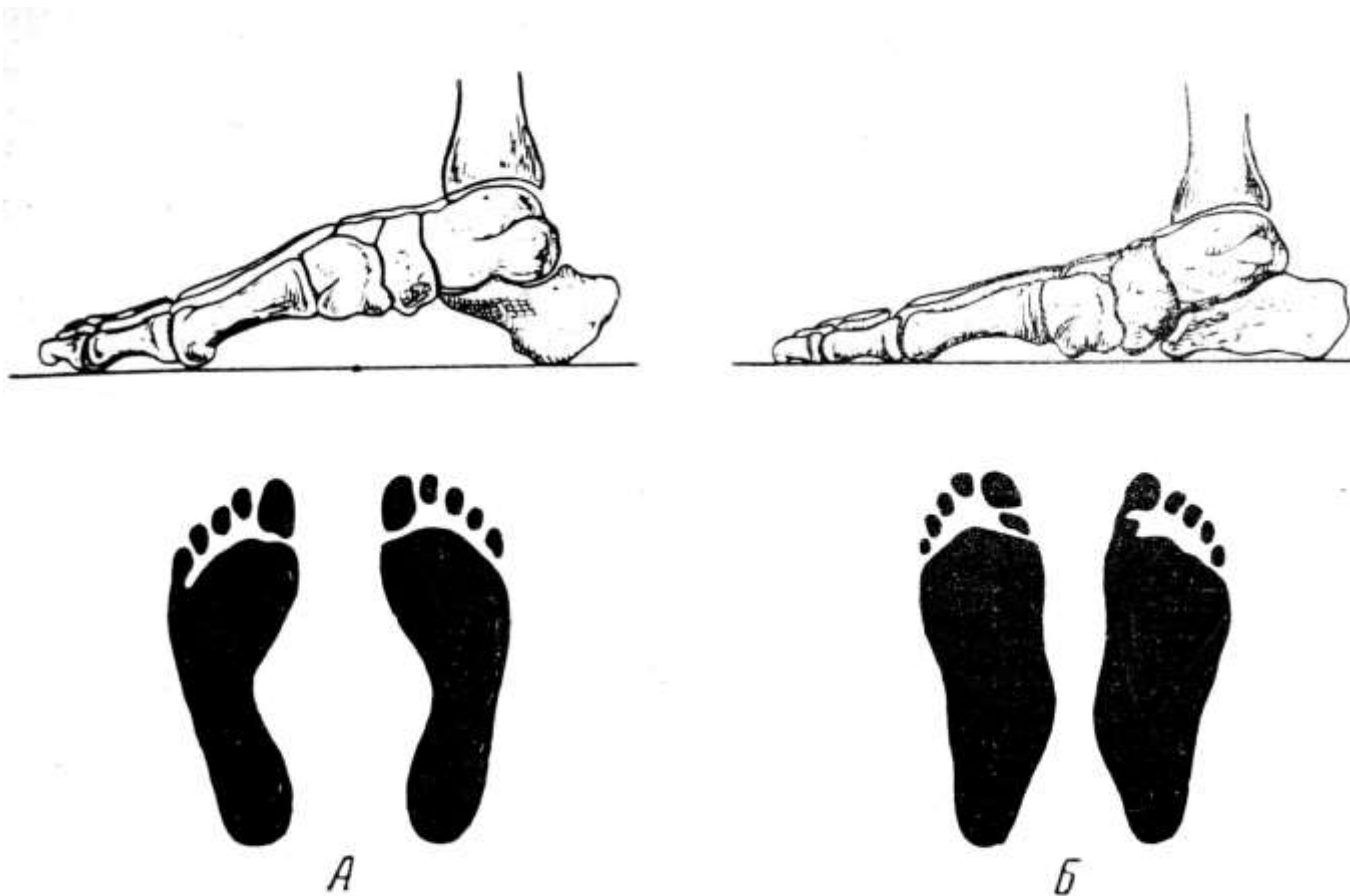
After
Fossile.

Deformed Head due to Bandaging.



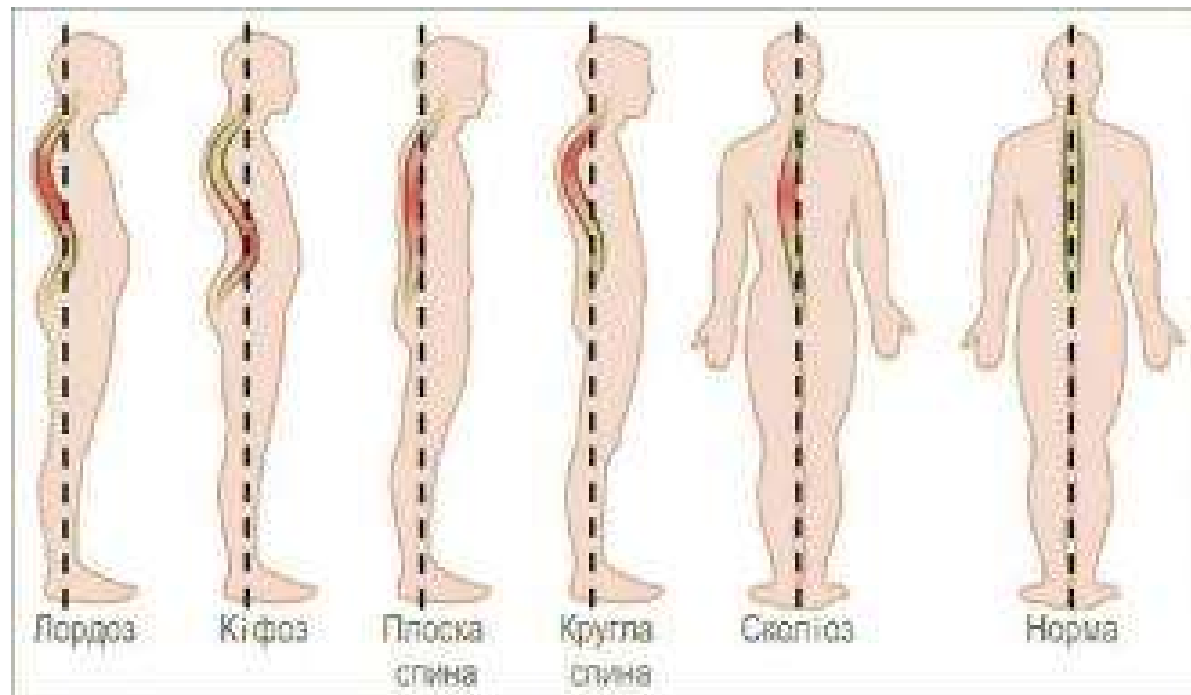
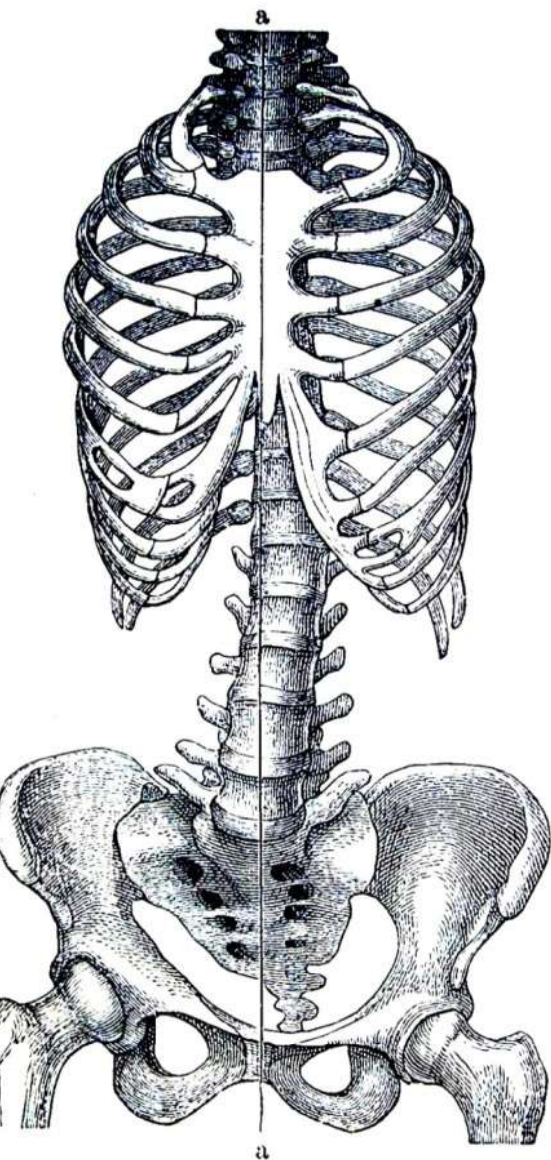


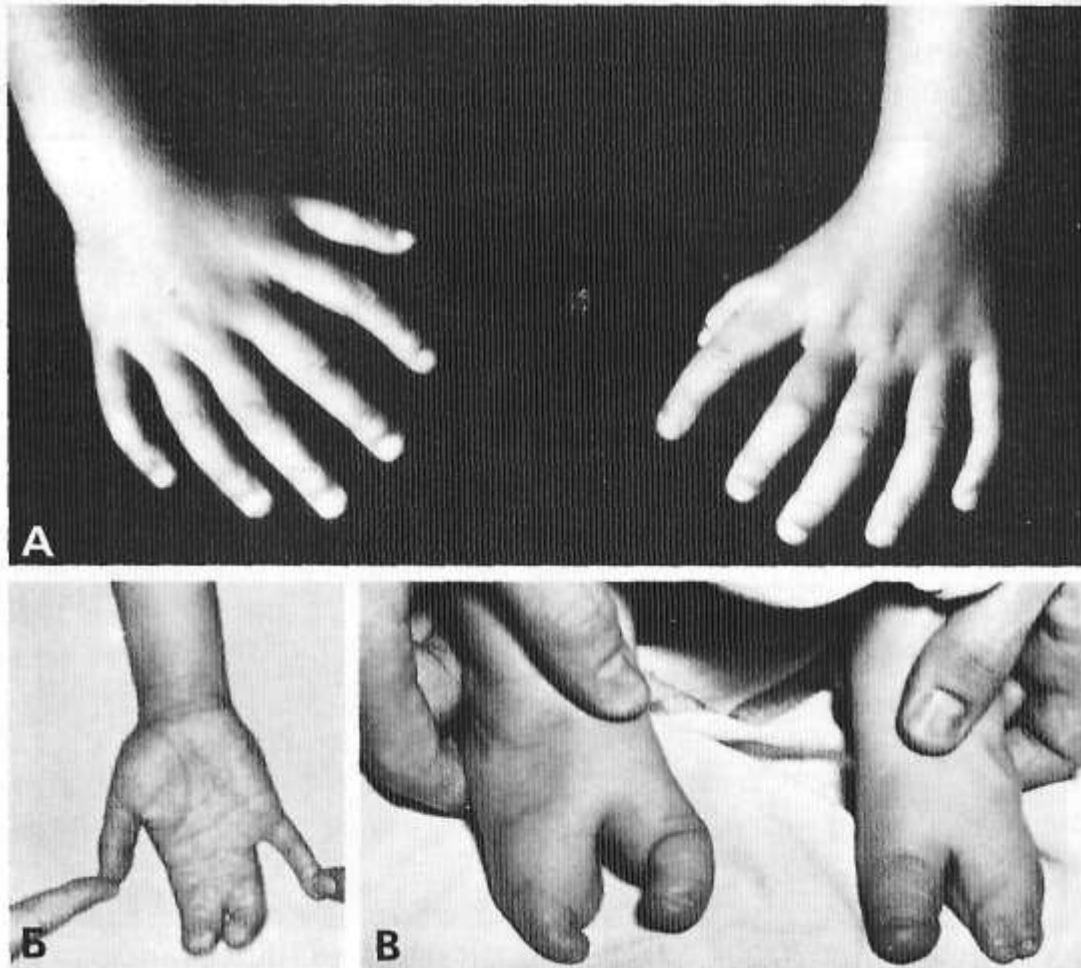




VARIETIES OF HUMAN FEET:

A - NORMAL FOOT, B - FLAT FOOT



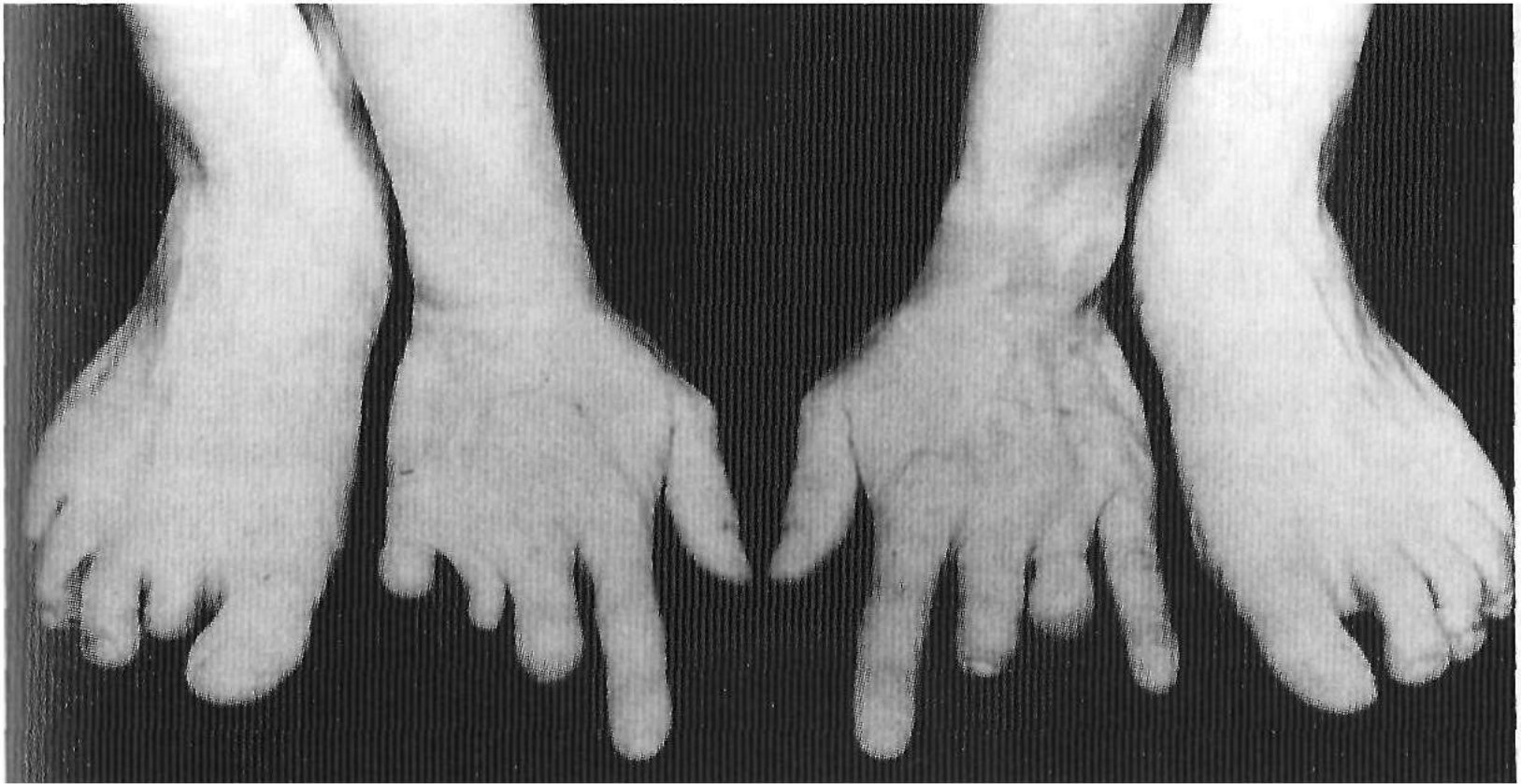


VARIANTS OF FINGER ANOMALIES:

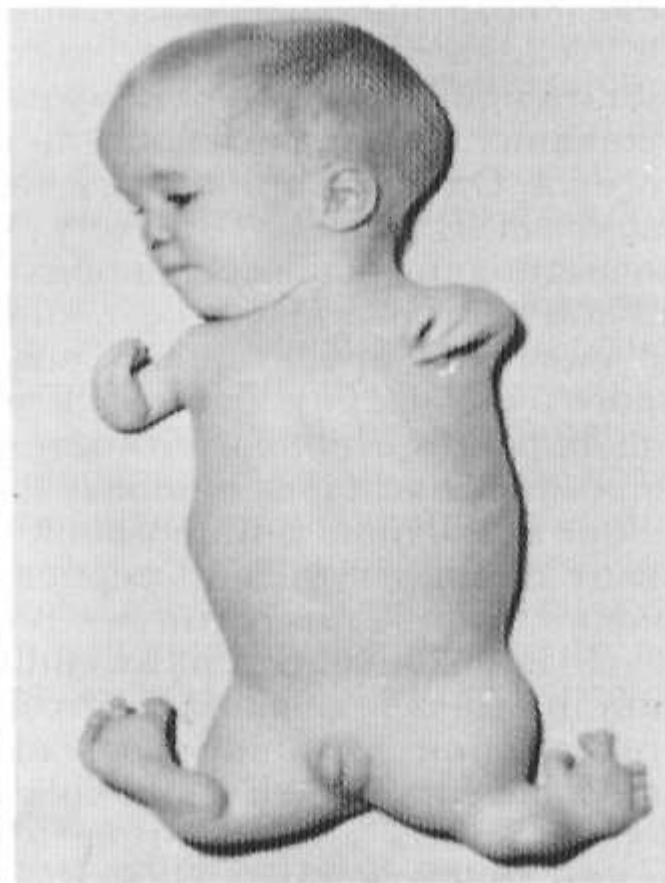
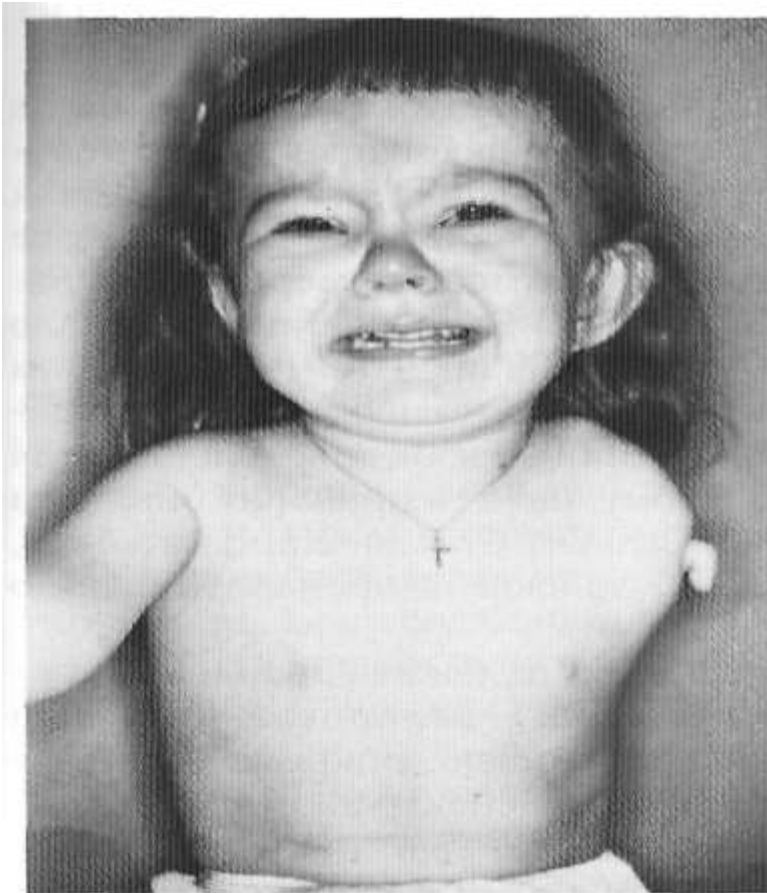
A - POLYDACTYLIA (SUPPLEMENTAL FINGERS),

B - SYNDACTYLIA (FINGERED FINGERS),

B - SPLIT FOOT LIKE CANCER.

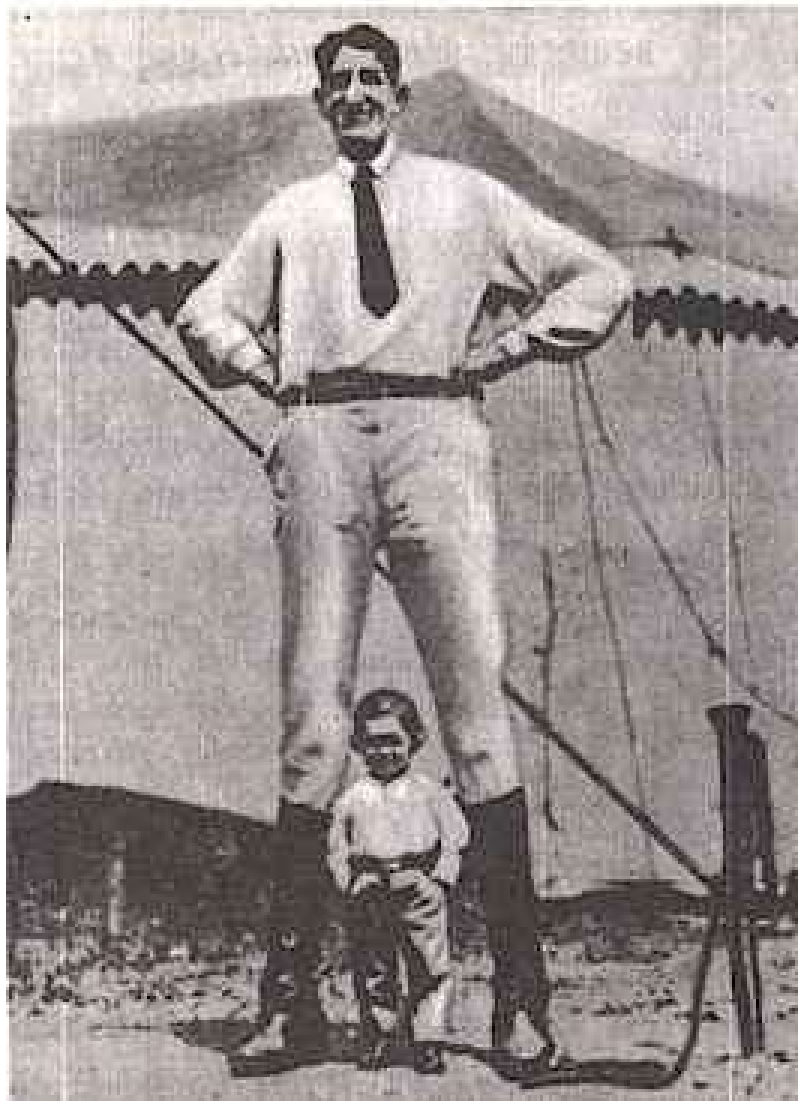


FINGER AMPUTATIONS

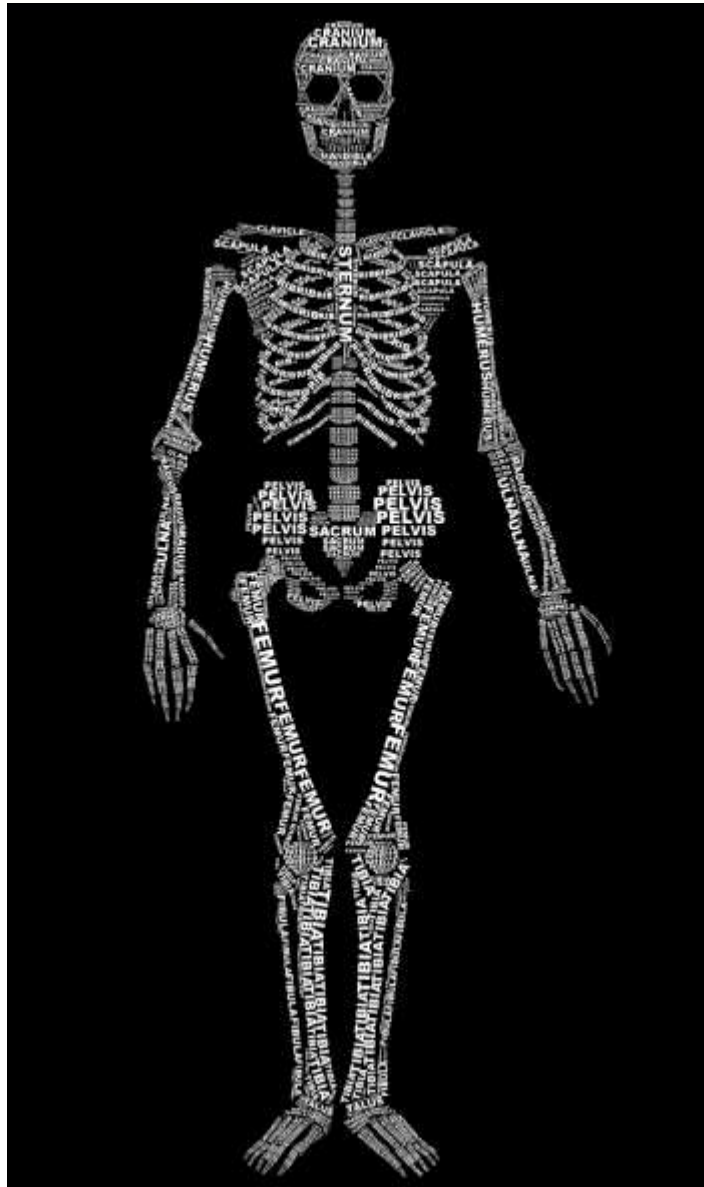


CHILD WITH UNILATERAL AMELIA. CHILD WITH MEROMELIA.

GIGANTISM AND DWARFISM





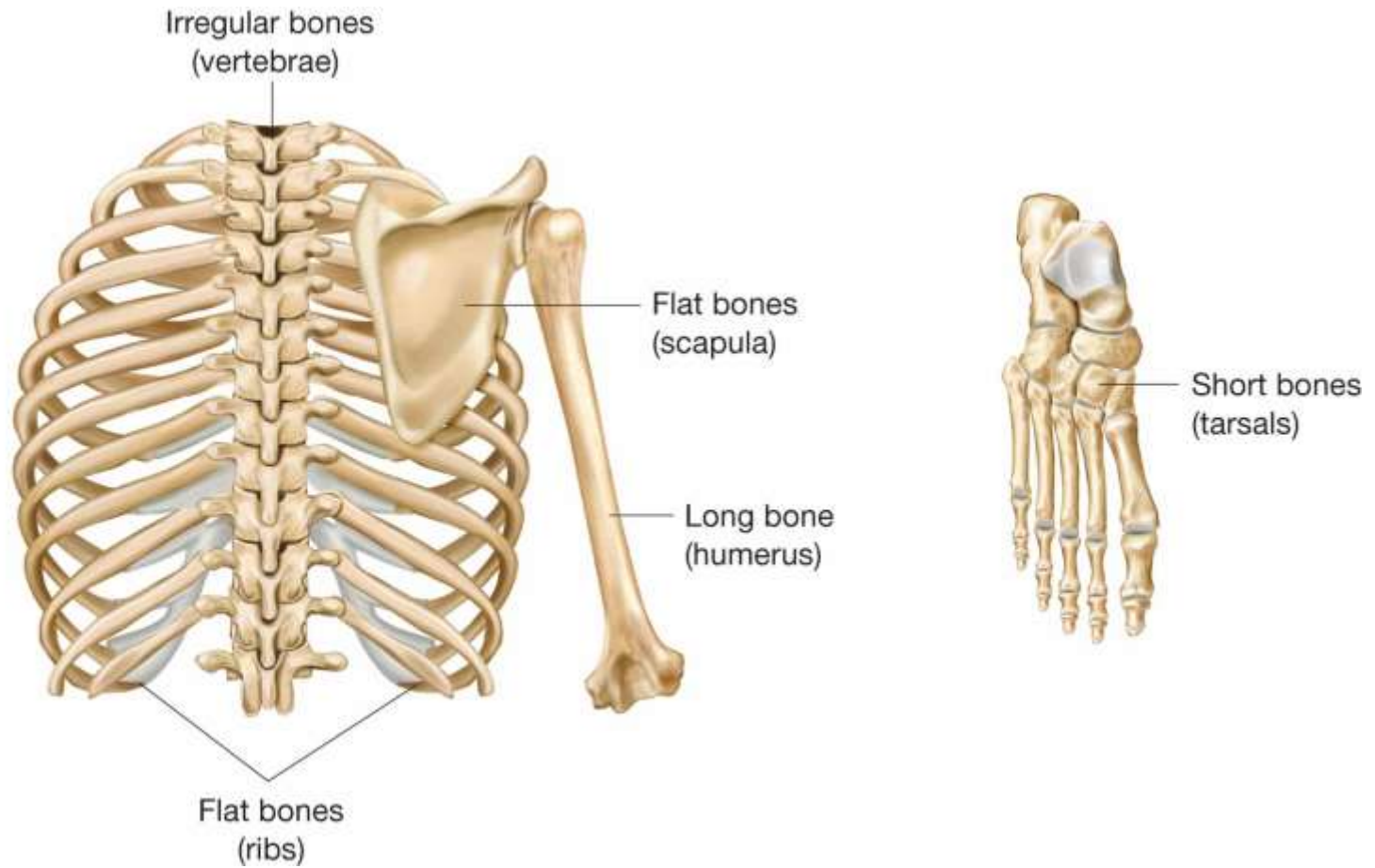


SKELETON PERFORMS FUNCTIONS:

- **SUPPORT**
- **PROTECTION**
- **BODY MOVEMENT**
- **HEMOPOESIS**
- **MINERAL STORAGE**

FOUR SHAPES OF BONES

Long bones	Short bones	Flat bones	Irregular bones
Longer than wide	Roughly as long as wide	Plate-shaped	Shape very irregular
<u>Example:</u> <ul style="list-style-type: none">● femur● humerus	<u>Example:</u> <ul style="list-style-type: none">● carpals● tarsals	<u>Example:</u> <ul style="list-style-type: none">● sternum● scapula● pelvis	<u>Example:</u> <ul style="list-style-type: none">● vertebrae



Classification of bones by shape.

LONG BONES

- MAJORITY OF BONES IN BODY
- DIVIDED INTO:
 - **DIAPHYSIS**
 - **EPIPHYSIS**



DIAPHYSIS

- CENTRAL SHAFT
- **MEDULLARY CAVITY**
 - OPEN CANAL WITHIN DIAPHYSIS
 - CONTAINS **YELLOW BONE MARROW**
 - MOSTLY FAT



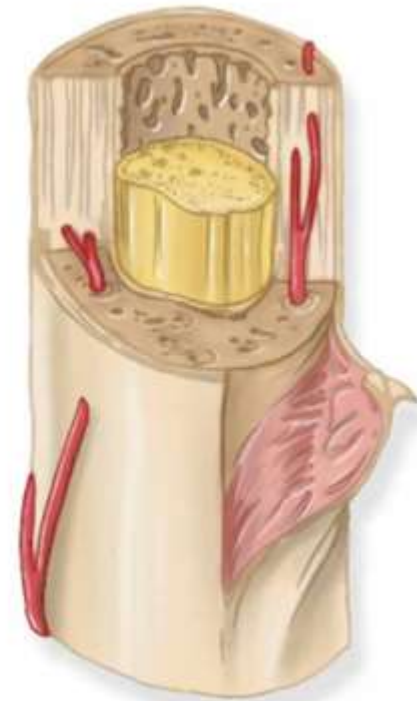
EPIPHYSIS

- WIDE ENDS OF LONG BONE
 - DISTAL EPIPHYSIS
 - PROXIMAL EPIPHYSIS
- ARTICULAR CARTILAGE
 - COVERS EPIPHYSIS
 - PREVENTS BONE RUBBING ON BONE



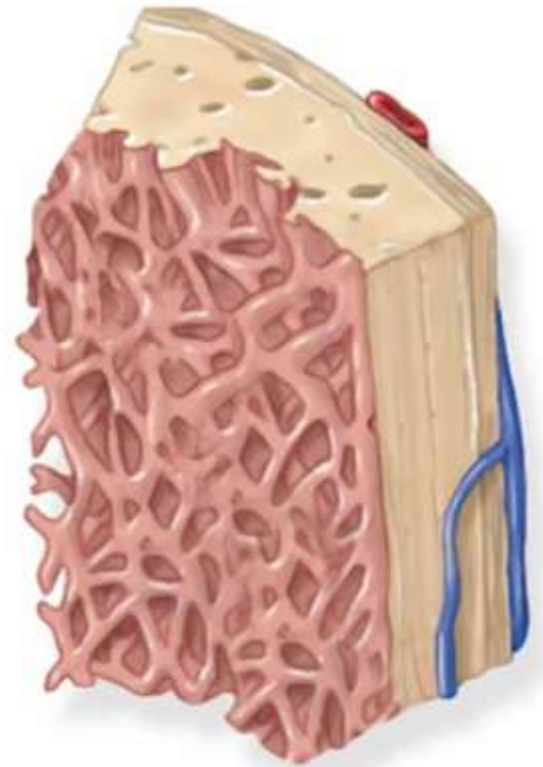
PERIOSTEUM

- COVERS SURFACE OF BONE NOT COVERED BY ARTICULAR CARTILAGE
- THIN CONNECTIVE TISSUE MEMBRANE
- CONTAINS NUMEROUS NERVE AND LYMPHATIC VESSELS



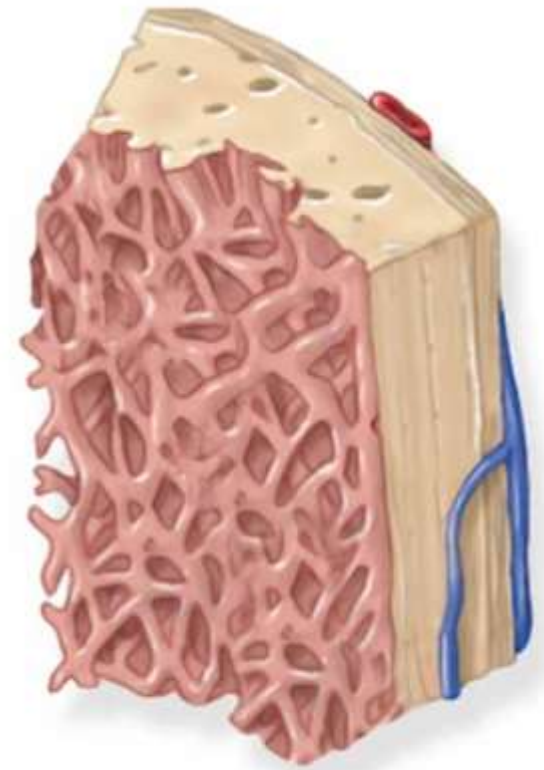
COMPACT BONE

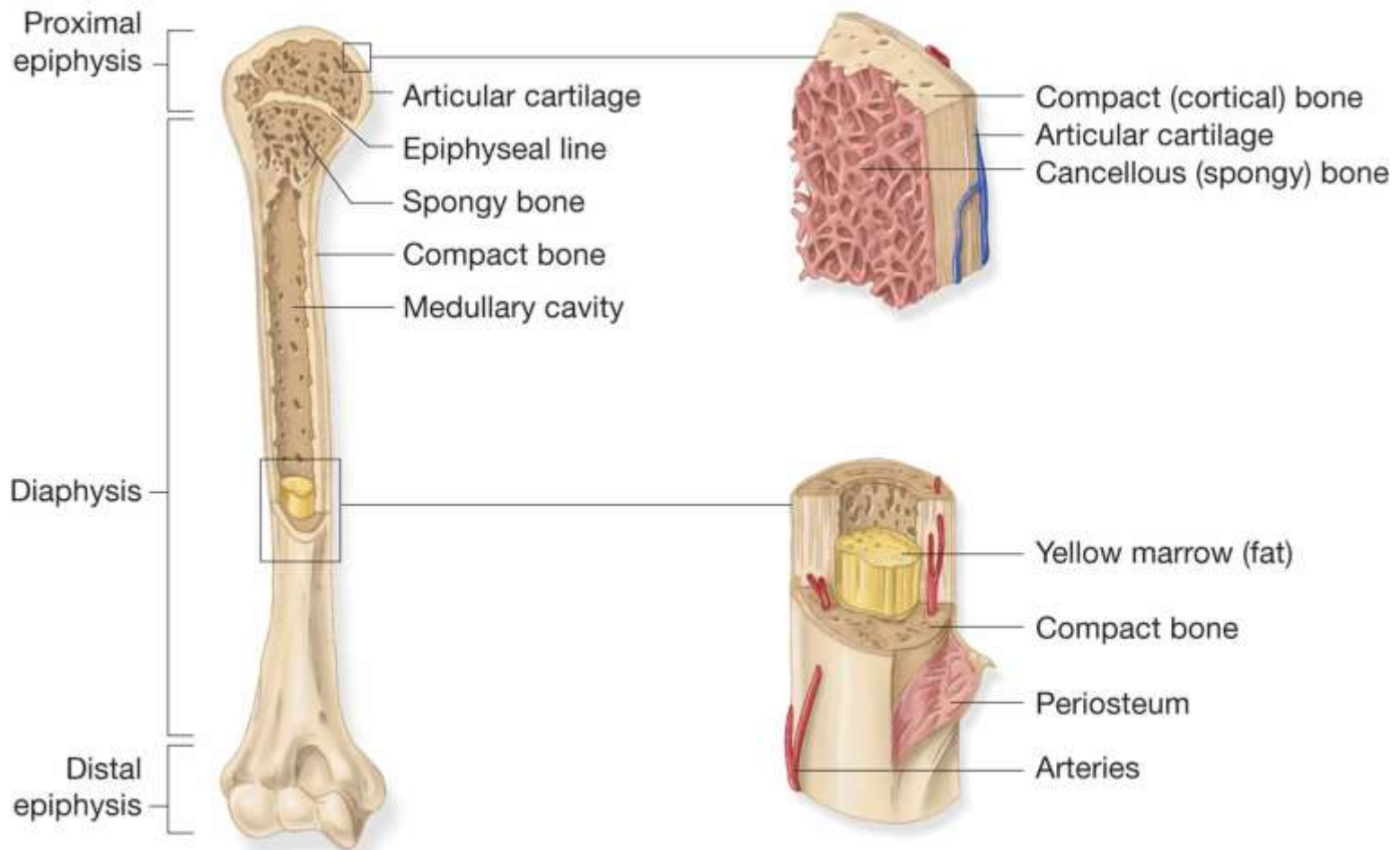
- ALSO CALLED CORTICAL BONE
- VERY DENSE AND HARD
- OUTER LAYER OF BONE
- FOUND IN BOTH EPIPHYSIS AND DIAPHYSIS



CANCELLOUS BONE

- ALSO CALLED SPONGY BONE
- FOUND INSIDE BONE
- HAS SPACES CONTAINING RED BONE MARROW
 - MANUFACTURES BLOOD CELLS

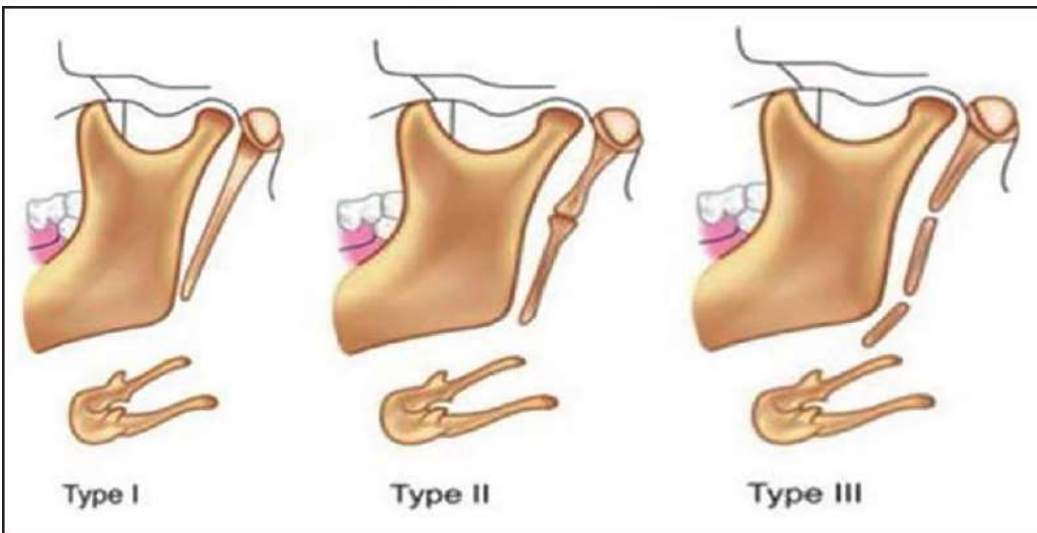




COMPONENTS OF A LONG BONE.

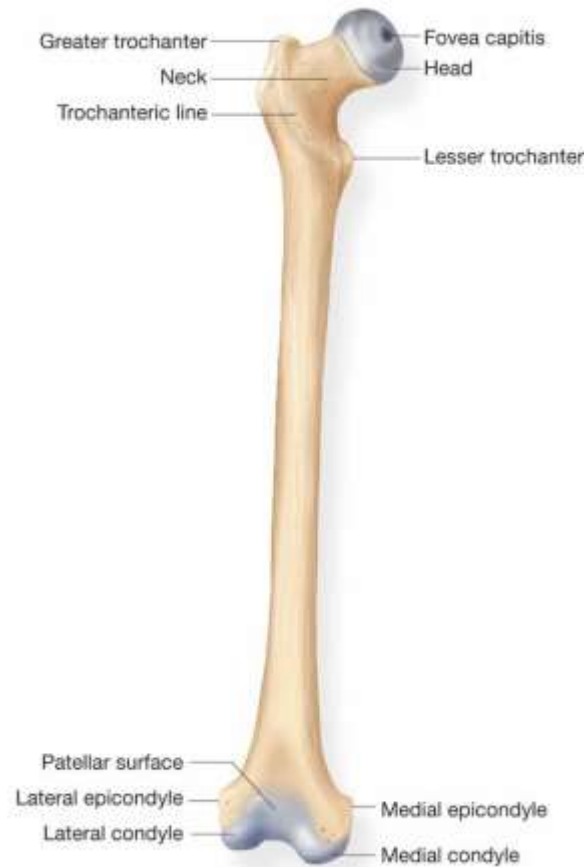
BONY PROCESSES

- PROJECTION FROM THE SURFACE OF A BONE
- ROUGH PROCESSES PROVIDE PLACE FOR MUSCLE ATTACHMENT
- SMOOTH ROUNDED PROCESSES ARTICULATE WITH ANOTHER BONE IN A JOINT
- NAMED FOR SHAPE AND LOCATION



COMMON BONY PROCESSES

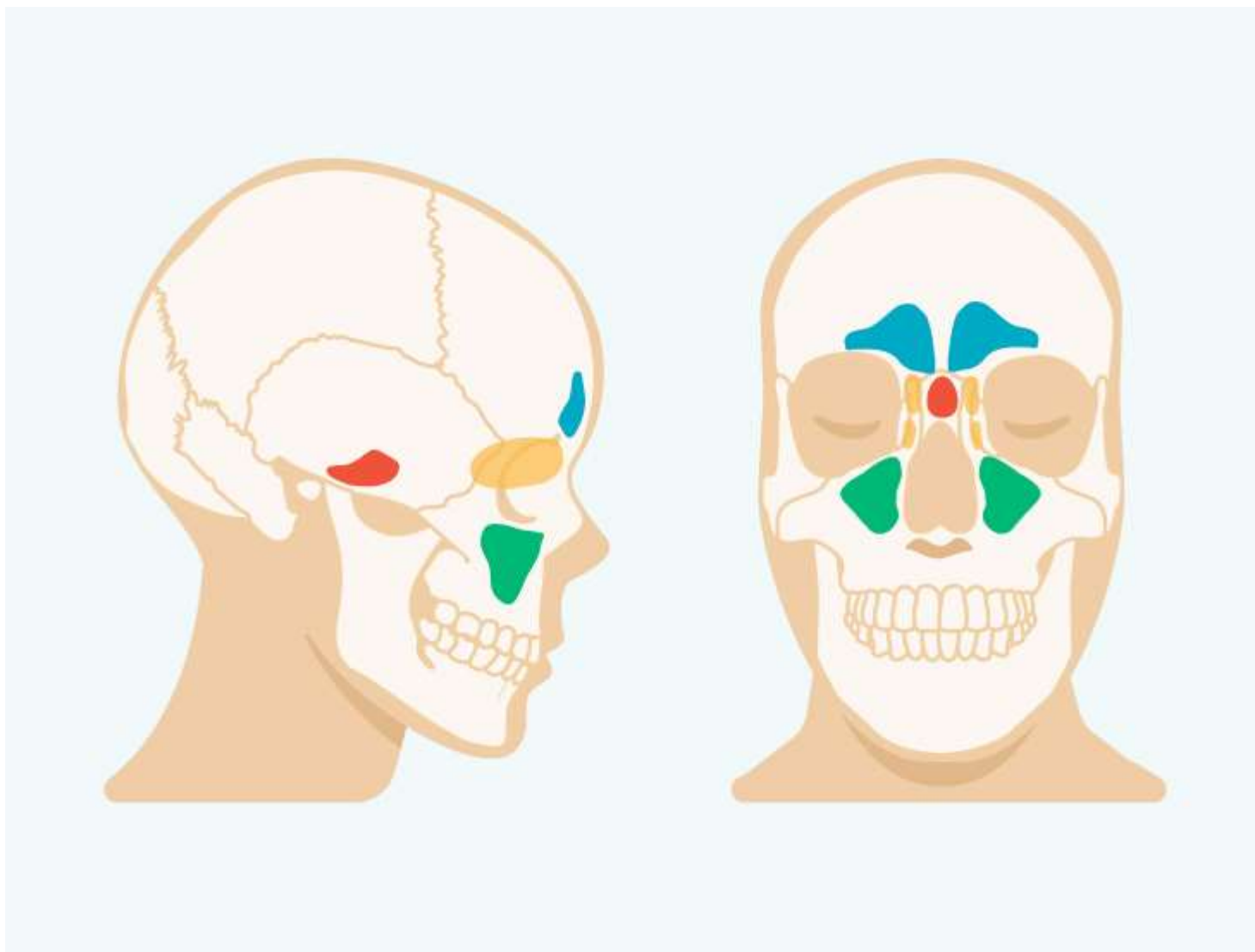
HEAD	LARGE SMOOTH BALL-SHAPED END OF A LONG BONE
CONDYLE	SMOOTH ROUNDED PORTION AT END OF BONE
EPICONDYLE	PROJECTION ABOVE OR ON A CONDYLE
TROCHANTER	LARGE ROUGH PROCESS
TUBERCLE	SMALL ROUGH PROCESS
TUBEROSITY	LARGE ROUGH PROCESS

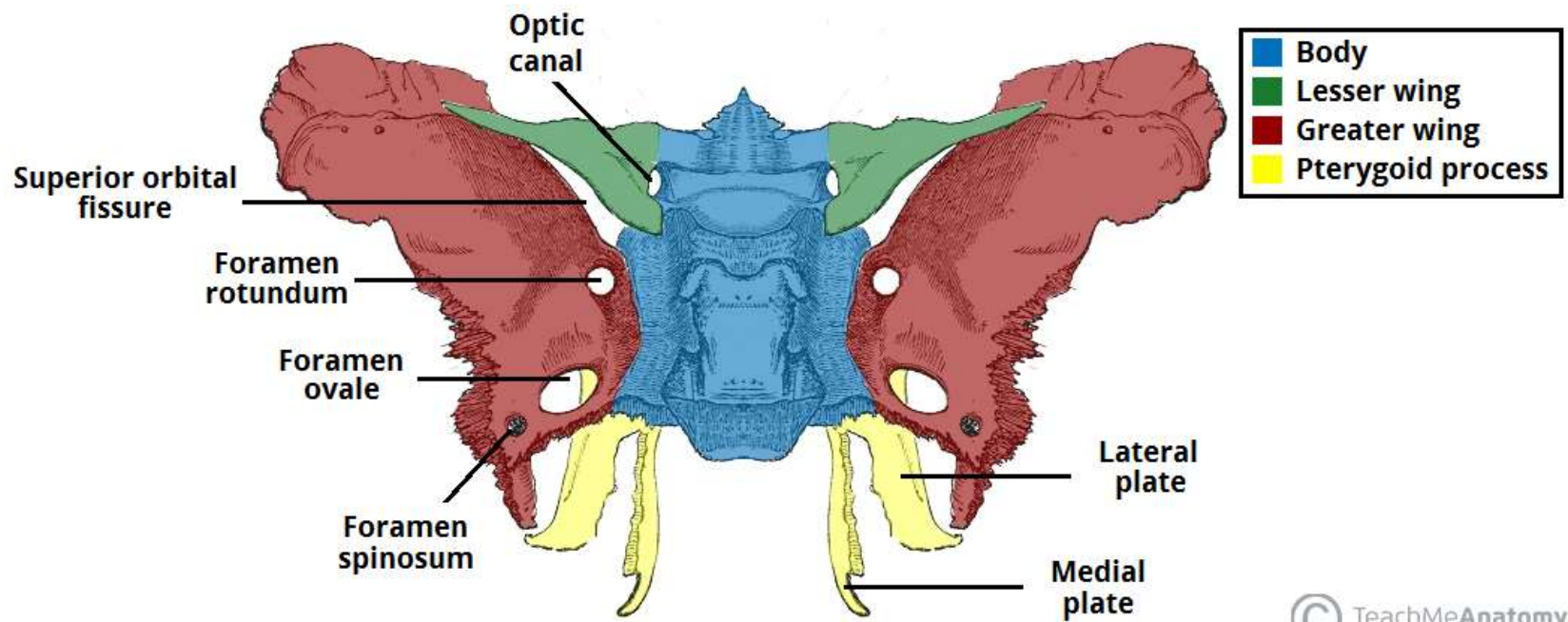


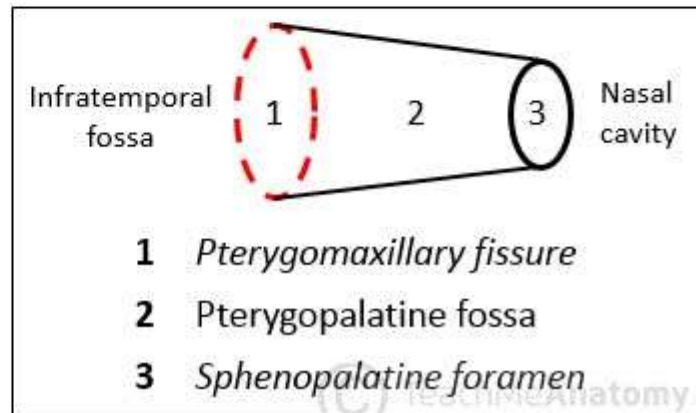
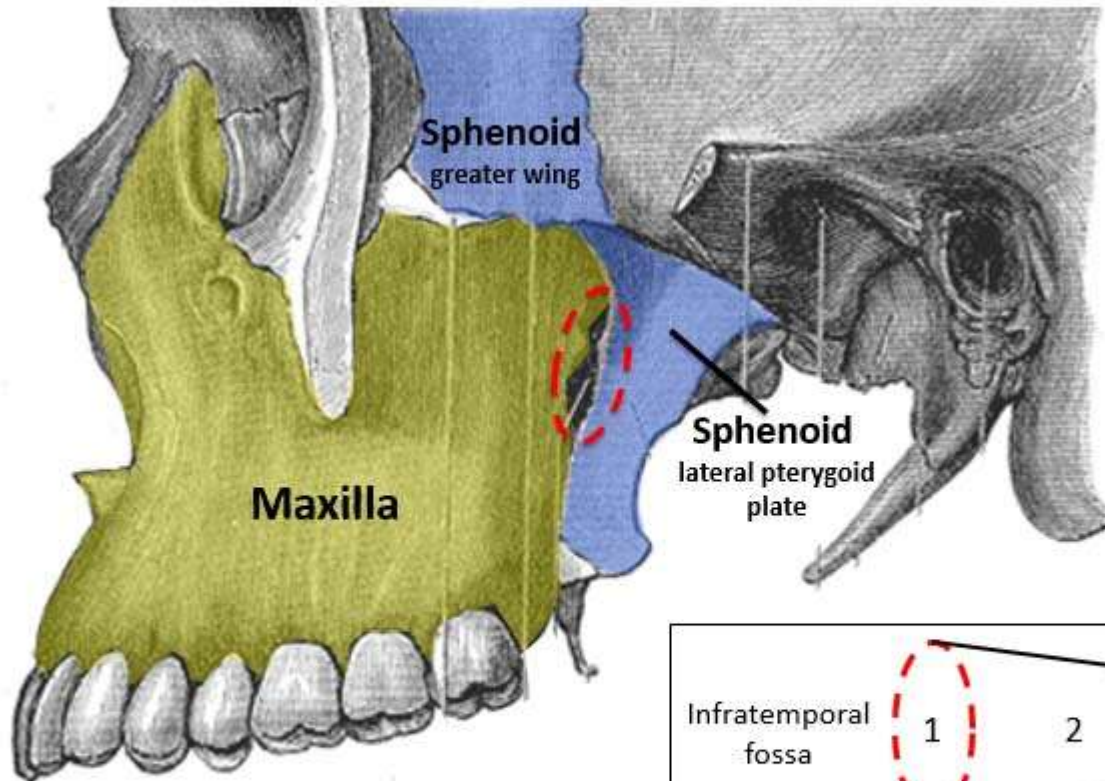
BONY PROCESSES FOUND ON THE FEMUR

BONY DEPRESSIONS

- **SINUS**
 - HOLLOW CAVITY WITHIN BONE
- **FORAMEN**
 - SMOOTH OPENING FOR NERVES AND BLOOD VESSELS
- **FOSSA**
 - SHALLOW CAVITY OR DEPRESSION WITHIN A BONE
- **FISSURE**
 - DEEP GROOVE OR SLIT-LIKE OPENING







SKULL



The Skull

- Is divided into two parts
 - **Cranium**
 - **Facial bones**
- Protects brain, eyes, ears, nasal cavity, and oral cavity
- Attachment for muscles of chewing and turning the head

Cranium

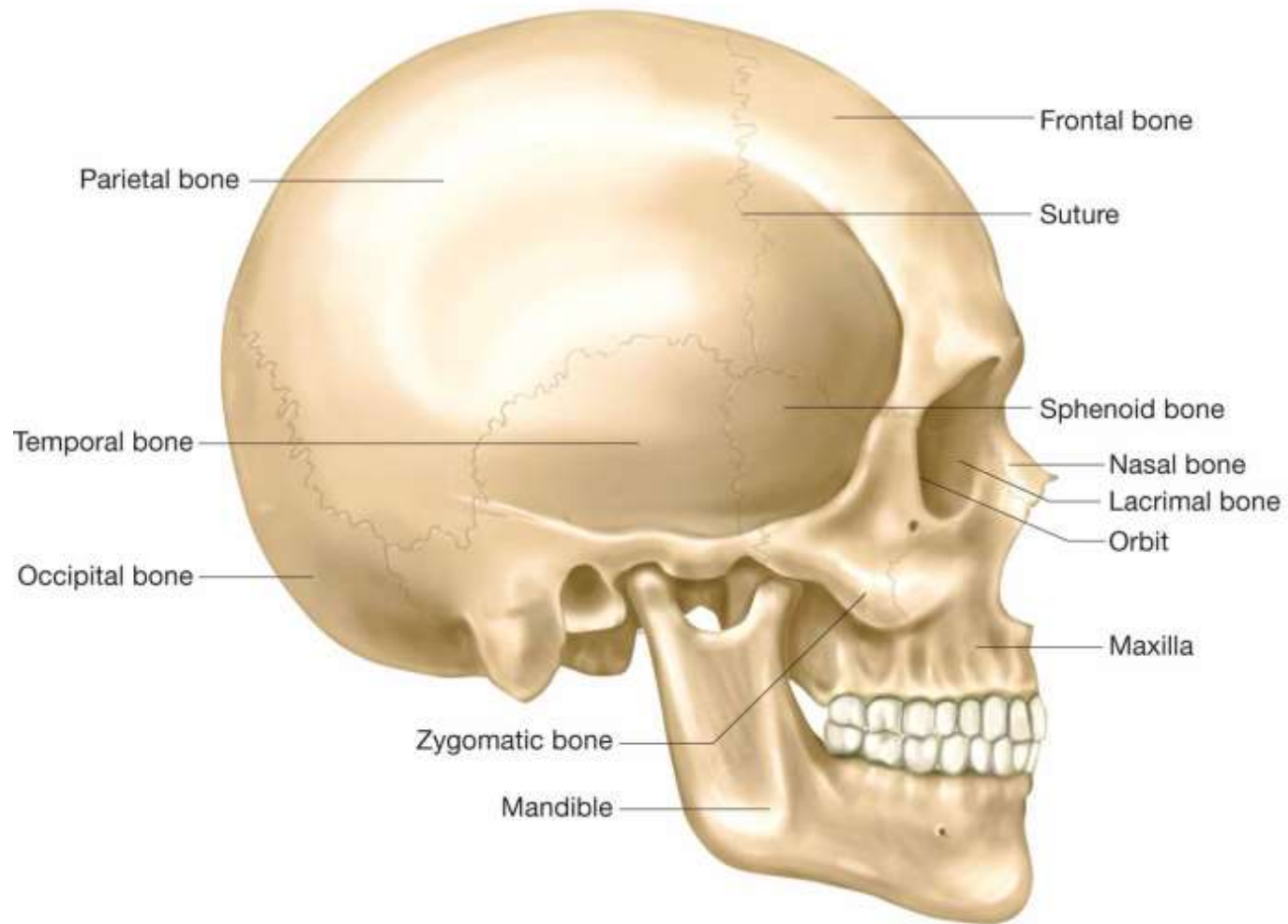
- **Frontal** – 1
 - Forehead
- **Parietal** – 2
 - Upper sides and roof of skull
- **Temporal** – 2
 - Sides & base of skull



Cranium

- **Ethmoid** – 1
 - Part of eye orbit, nos & floor of skull
- **Sphenoid** – 1
 - Part of floor of skull
- **Occipital** – 1
 - Back & base of skull





Bones of the skull.

Facial Bones

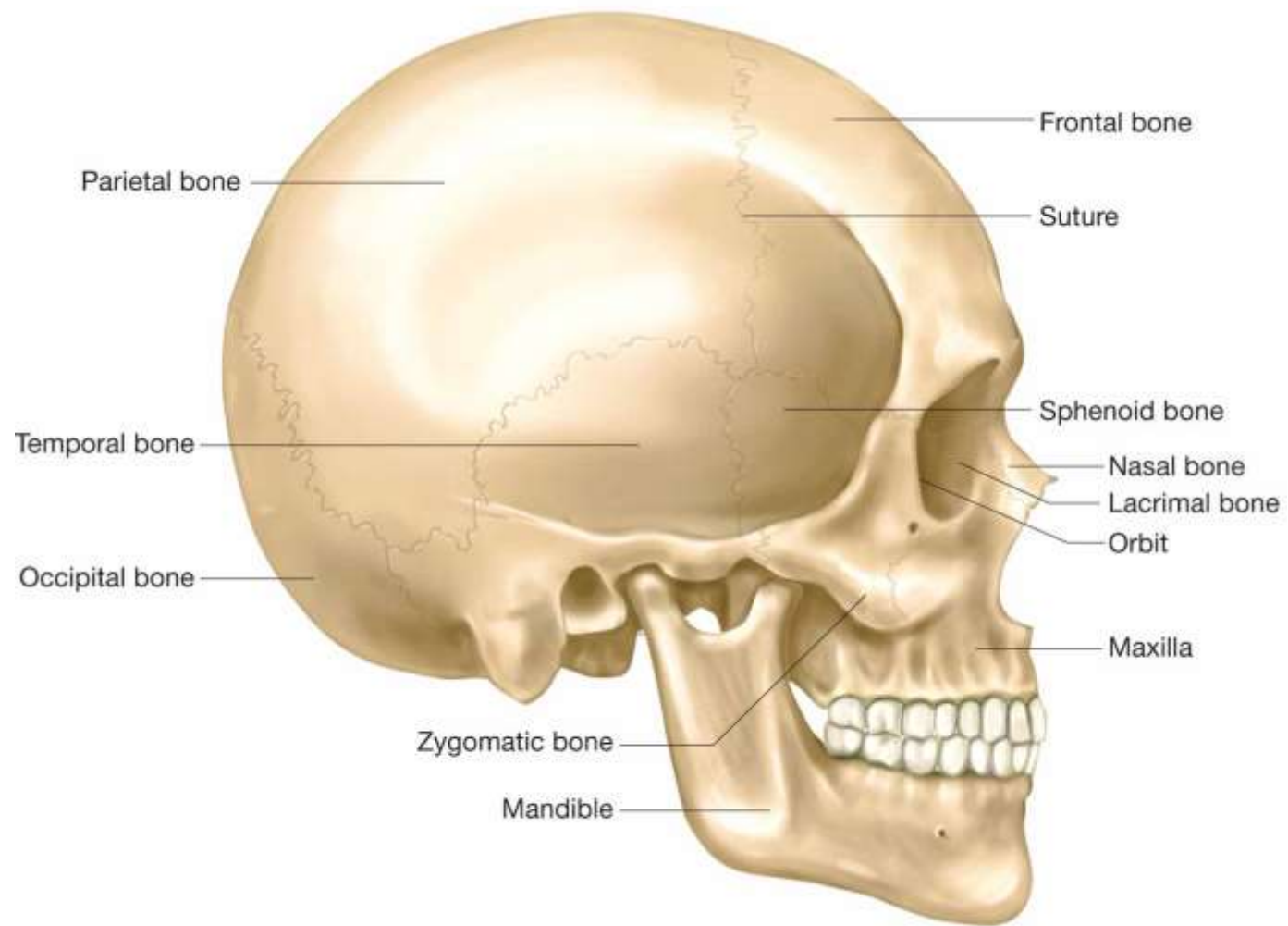
- **Mandible** – 1
 - Lower jawbone
- **Maxilla** – 1
 - Upper jawbone
- **Zygomatic** – 2
 - Cheek bones
- **Vomer** – 1
 - Part of nasal septum



Facial Bones

- **Palatine** – 1
 - Hard palate and floor of nose
- **Nasal** – 2
 - Part of nasal septum and bridge of nose
- **Lacrimal** – 2
 - Inner corner of eye





Bones of the skull.

Hyoid Bone

- Single U-shaped bone
- In neck between mandible and larynx
- Attachment point for swallowing and speech muscles

The Trunk

- **Vertebral column**
- **Sternum**
- **Rib cage**



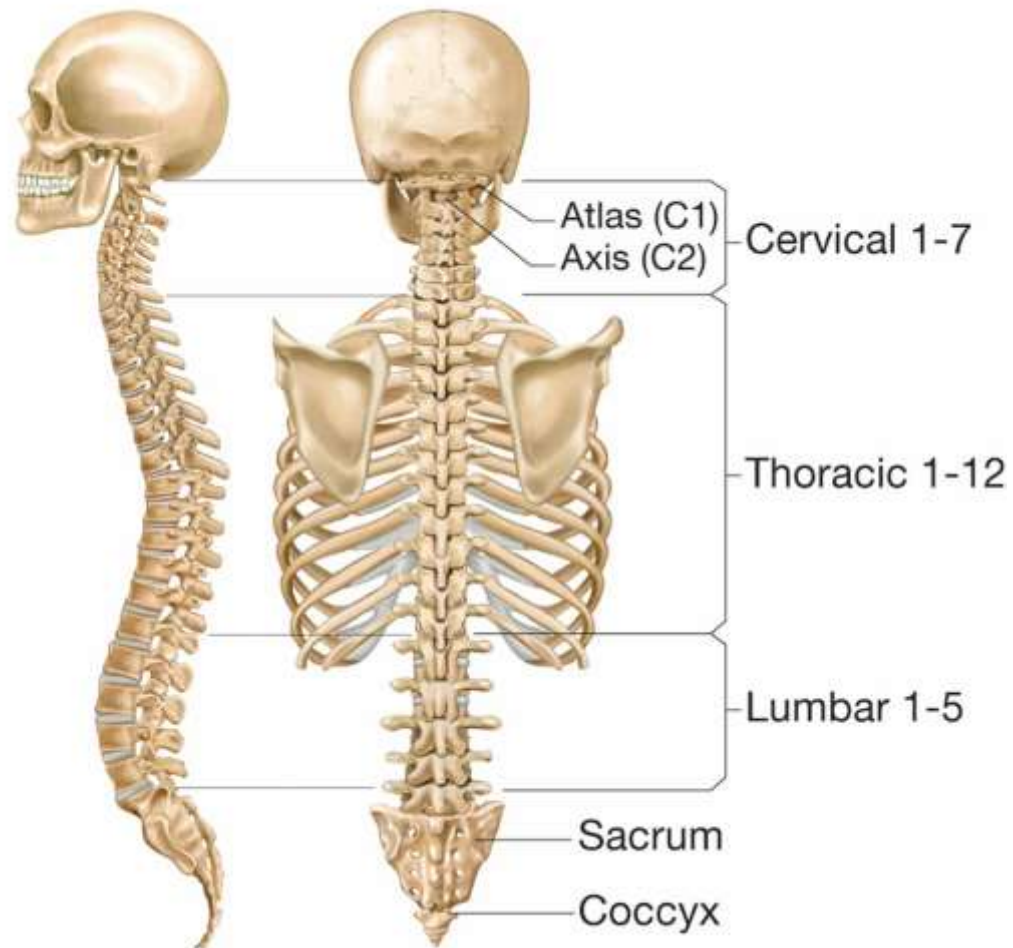
The Vertebral Column

- Divided into five sections
 - **Cervical**
 - **Thoracic**
 - **Lumbar**
 - **Sacrum**
 - **Coccyx**



The Vertebral Column

- Cervical
 - 7 vertebrae of neck
- Thoracic
 - 12 vertebrae of chest
- Lumbar
 - 5 vertebrae of low back
- Sacrum
 - 5 fused vertebrae at base of spine
- Coccyx
 - 3–5 small vertebrae attached to sacrum



Divisions of the vertebral column.

The Rib Cage

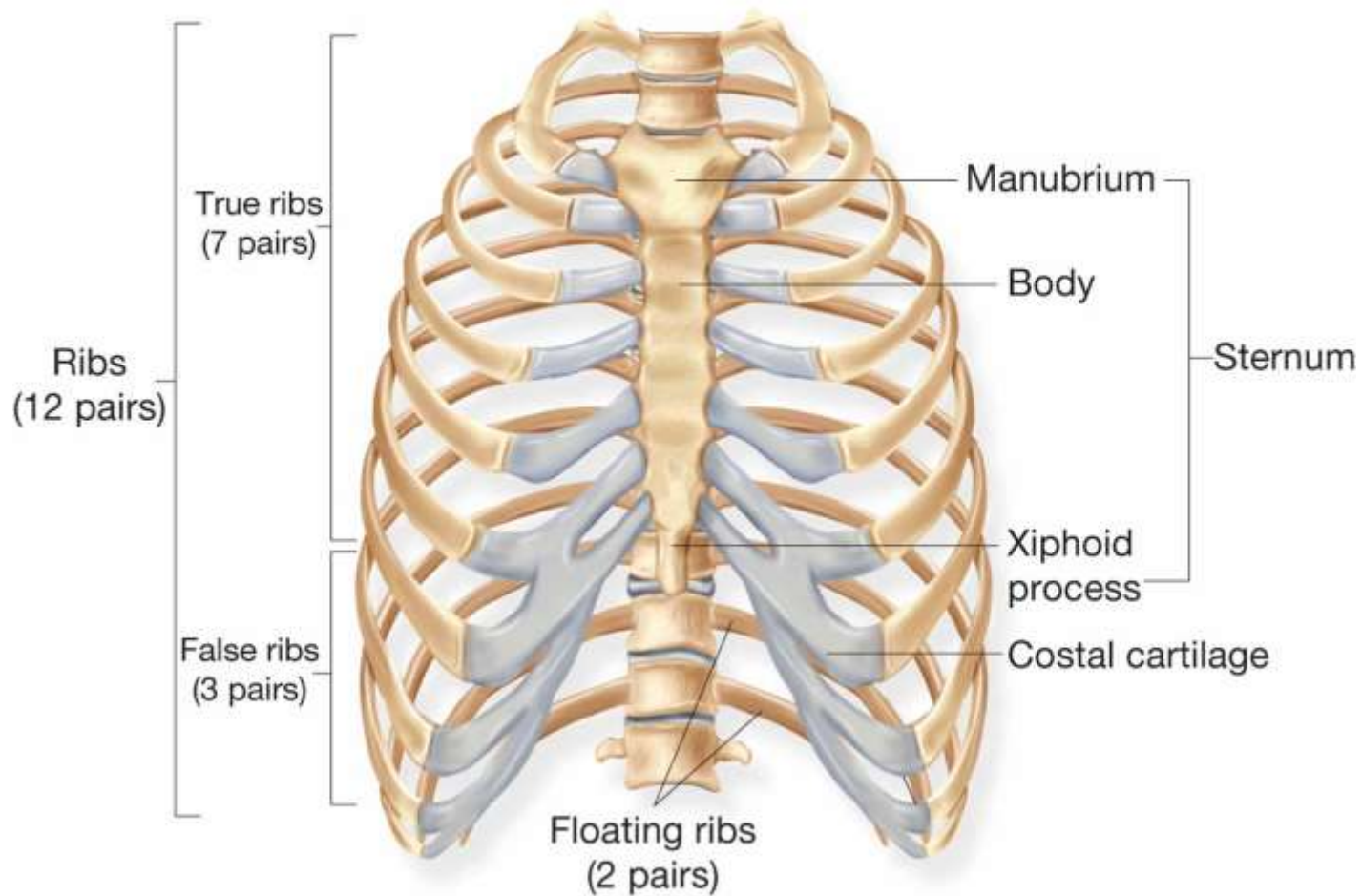
- 12 pairs of ribs
- Attached to vertebral column at back
- Provides support for organs, such as heart and lungs



The Rib Cage

- **True ribs**
 - 10 pairs attached to sternum in front
- **Floating ribs**
 - Inferior 2 pairs
 - No attachment in front





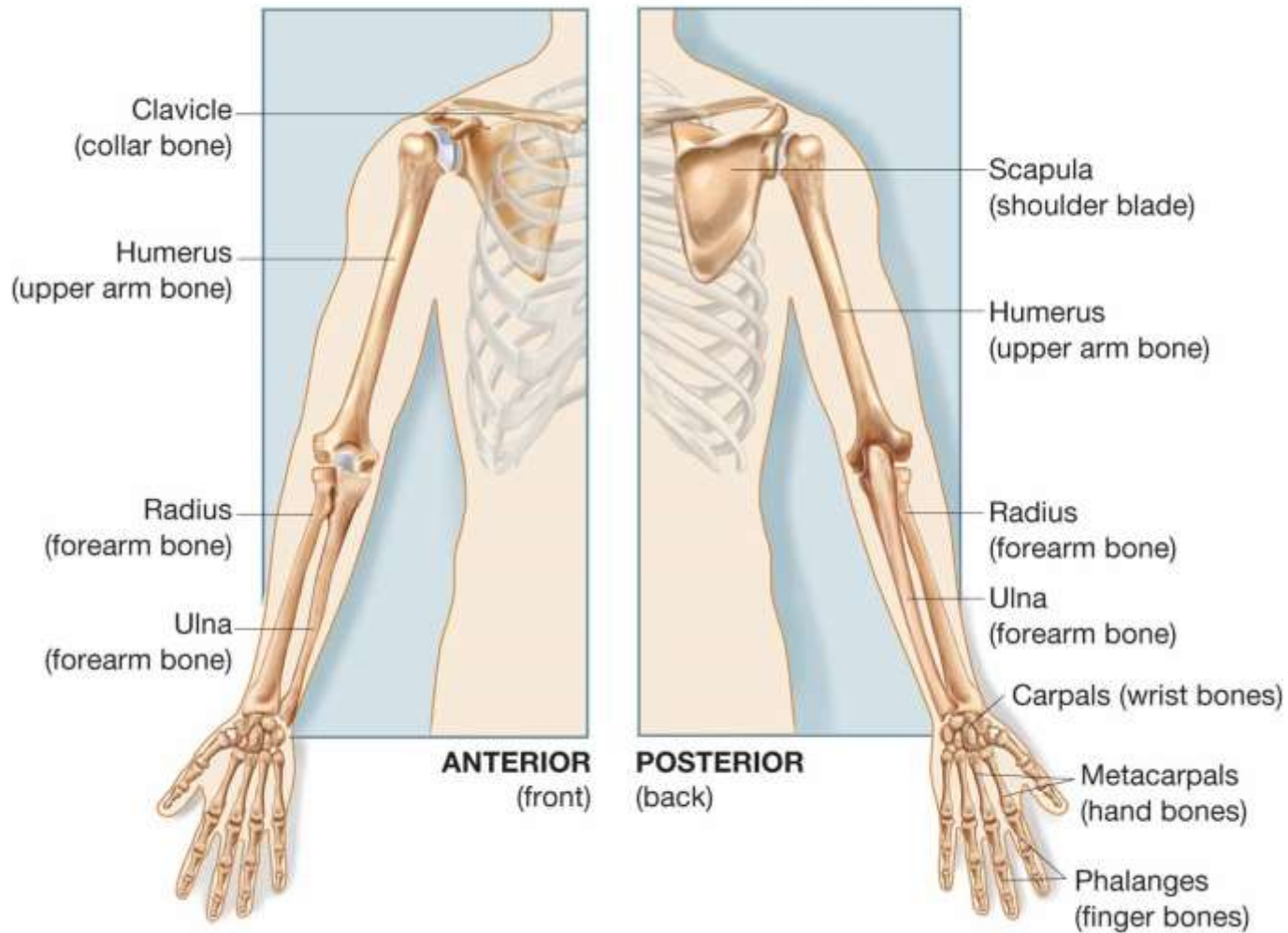
The structure of the rib cage.

Pectoral Girdle

- Attaches upper extremity to axial skeleton
- Articulates with:
 - Sternum anteriorly
 - Vertebral column posteriorly
- Consists of:
 - **Clavicle** – collar bone
 - **Scapula** – shoulder blade

Upper Extremity

- Arm
- Consists of:
 - **Humerus** – upper arm
 - **Ulna** – part of forearm
 - **Radius** – part of forearm
 - **Carpals** – wrist bones
 - **Metacarpals** – hand bones
 - **Phalanges** – finger bones



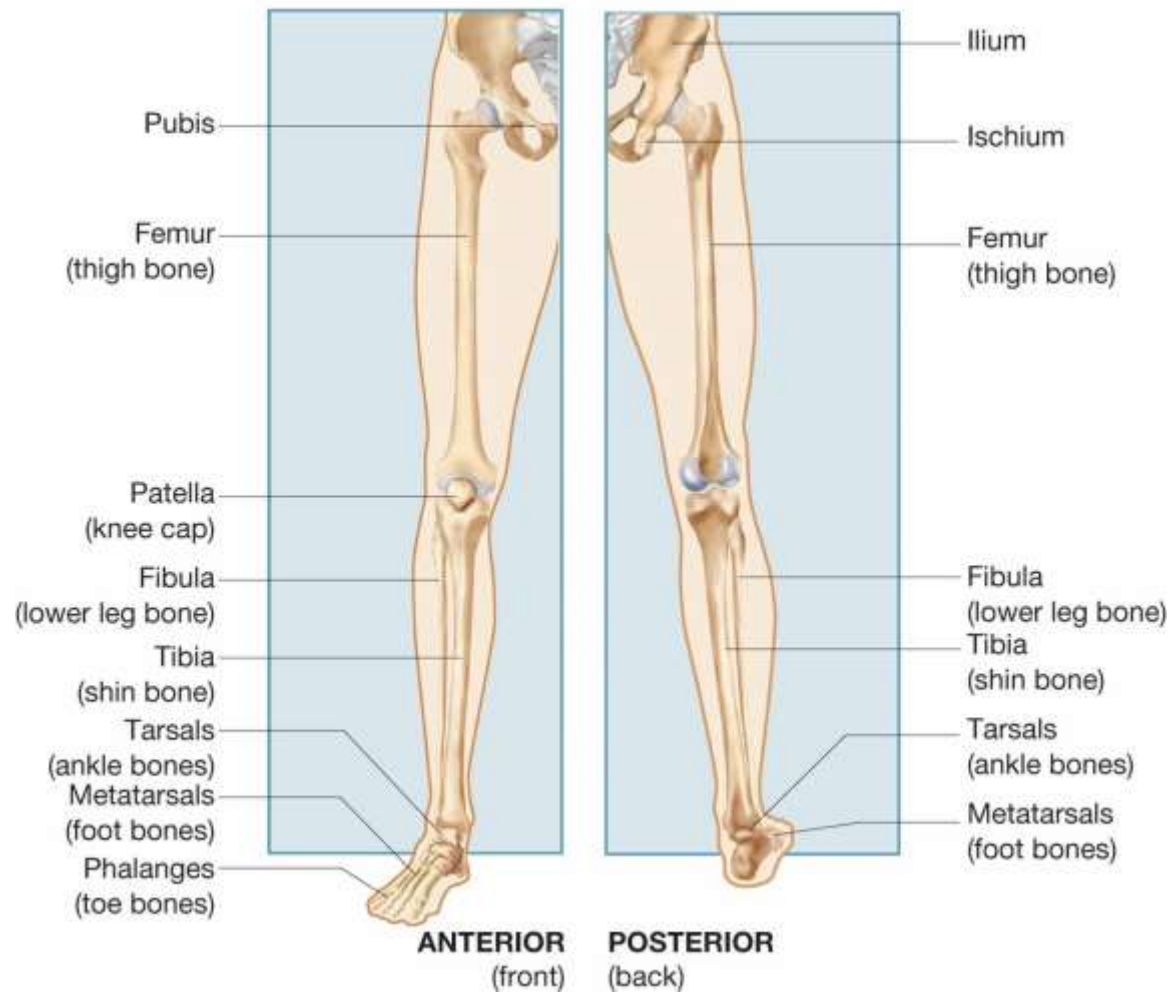
Anatomical and common names for the pectoral girdle and upper extremity.

Pelvic Girdle

- Also called **os coxae**, **innominate bone**, or **hipbone**
- Attaches lower extremity to axial skeleton
- Articulates with sacrum posteriorly
- Consists of:
 - **Ilium**
 - **Ischium**
 - **Pubis**

Lower Extremity

- Leg
- Consists of:
 - **Femur** – thigh bone
 - **Patella** – knee cap
 - **Tibia** – shin bone
 - **Fibula** – lower leg bone
 - **Tarsals** – ankle bones
 - **Metatarsals** – foot bones
 - **Phalanges** – toe bones



Anatomical and common names for the pelvic girdle and lower extremity.

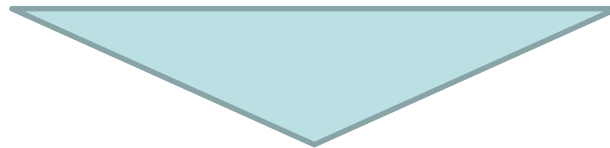
Thank You



KEEP YOUR BALANCE

The END.

Questions???



kovalchuk@anatom.ua

Competition for World Anatomy Day !!!



Опубліковано: 05 Жовтня 2020



Перегляди: 14



The Department of Anatomy and Pathological Physiology announces the competition «**Best Anatomical Video 2020**» and «**Best Anatomical Drawing 2020**» for students of NSC "Institute of Biology and Medicine" for the World

Anatomy Day - October 15. The deadline for submission of videos and drawings is **13.10.2020 (Tuesday)**.

The results of the competition will be announced on 15.10.2020 (Thursday).

Prizes for the winners: an individual master class in a virtual reality room.

We wish you success!