

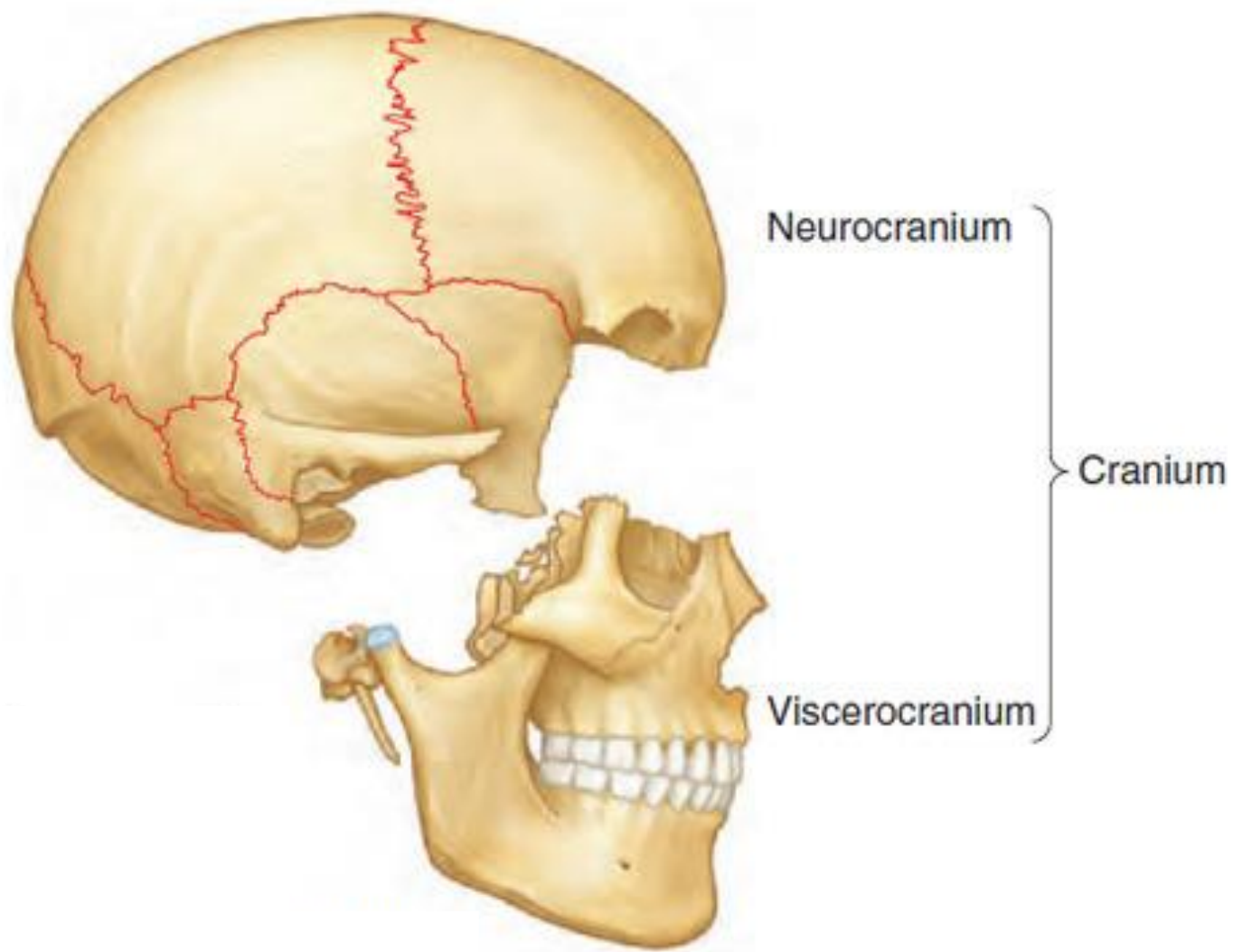
2. LECTURE

- **SKULL**
- **UPPER EXTEREMITY**
- **LOWER EXTREMITY**

Bones
Joints

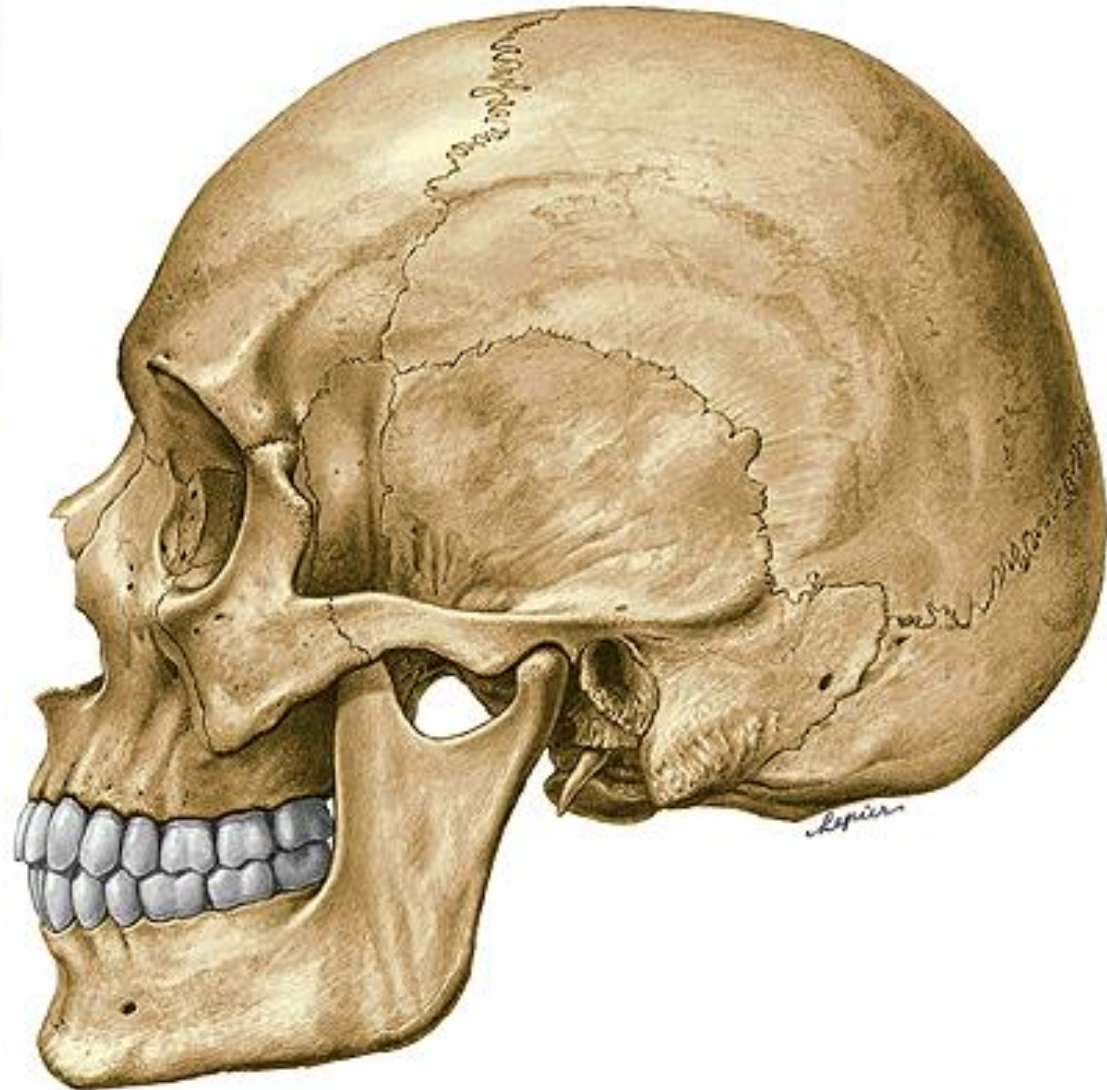
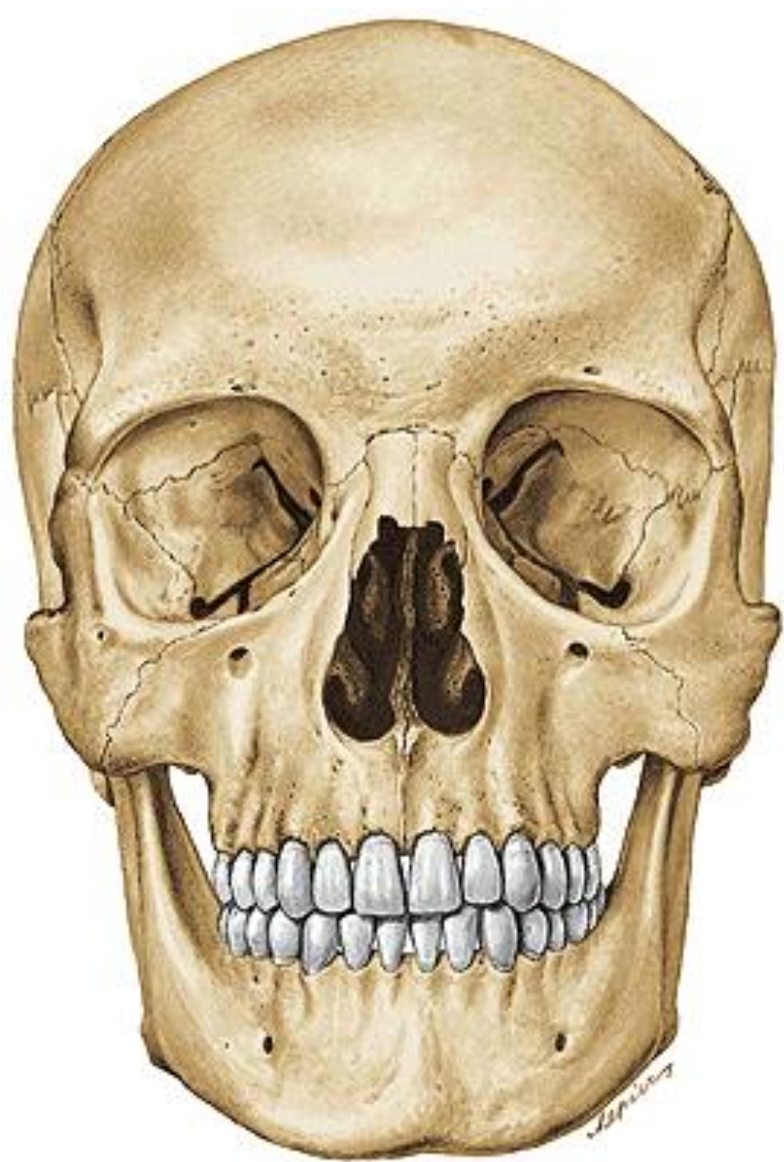
SKULL

bones
joints



Cranium - skull

- a) Neuro-cranium
- b) Splanchno-cranium



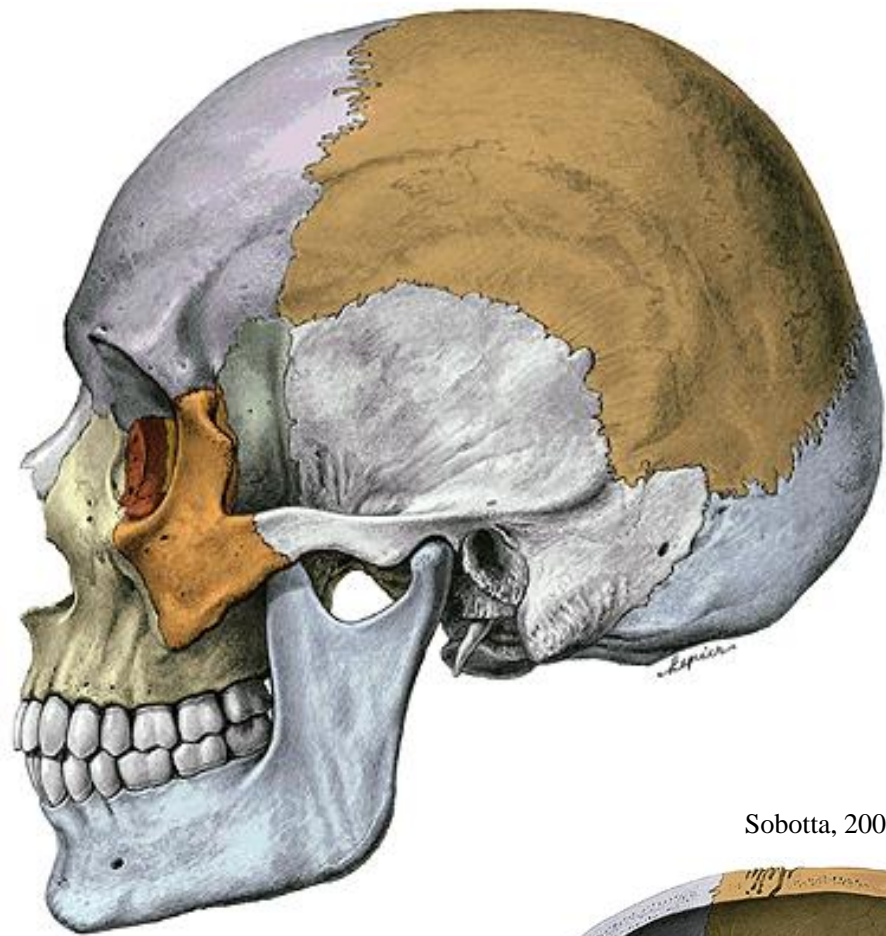
Frontal bone

Squama

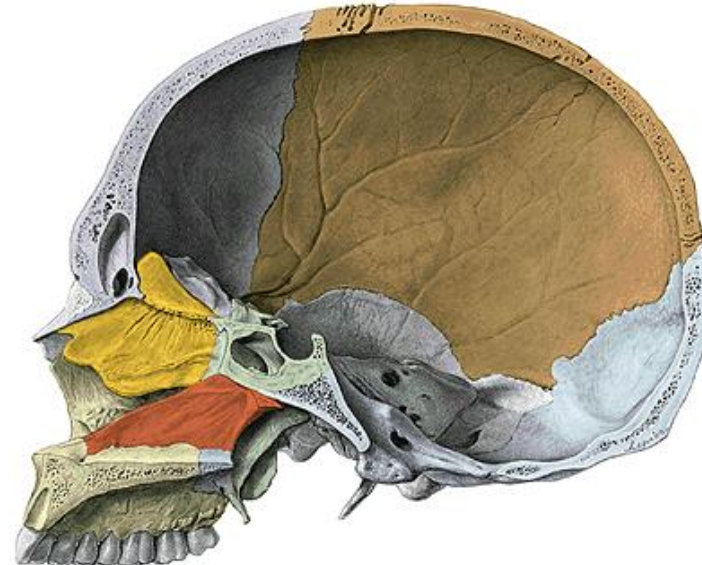
Orbital part

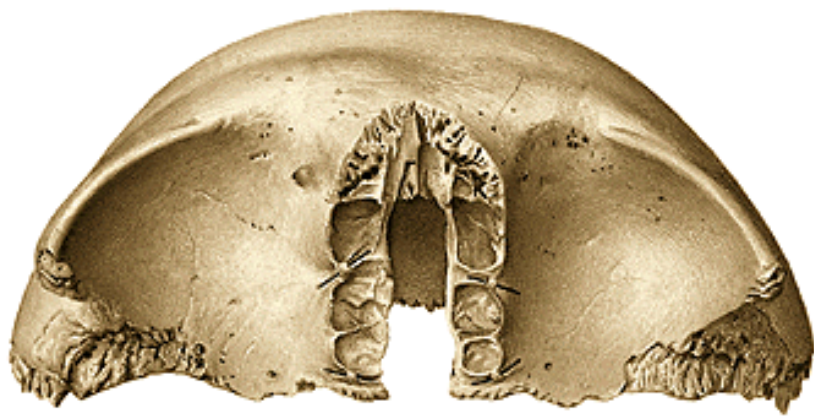
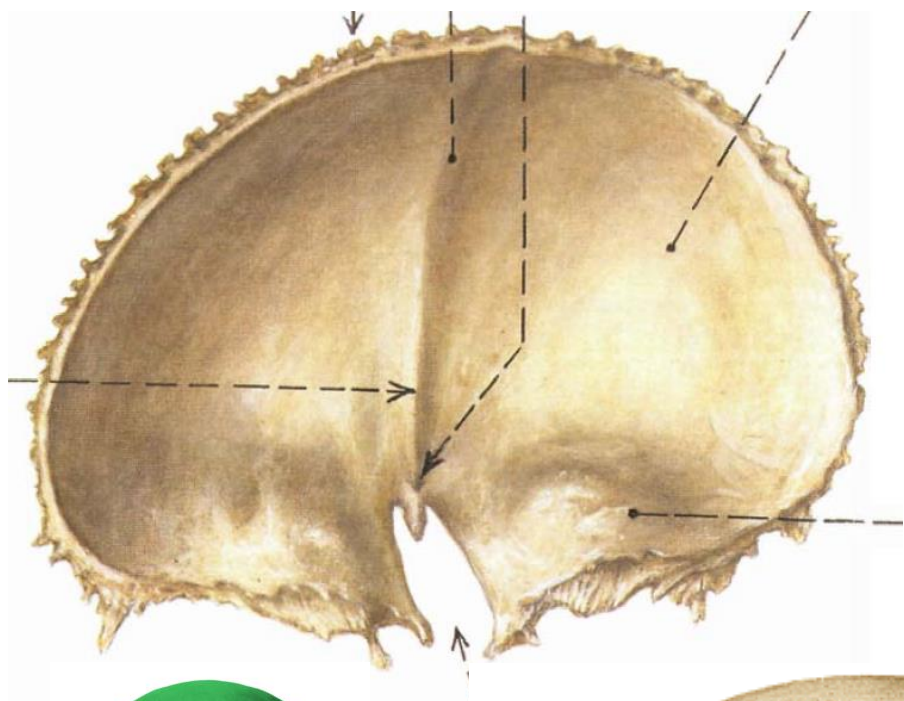
Nasal part

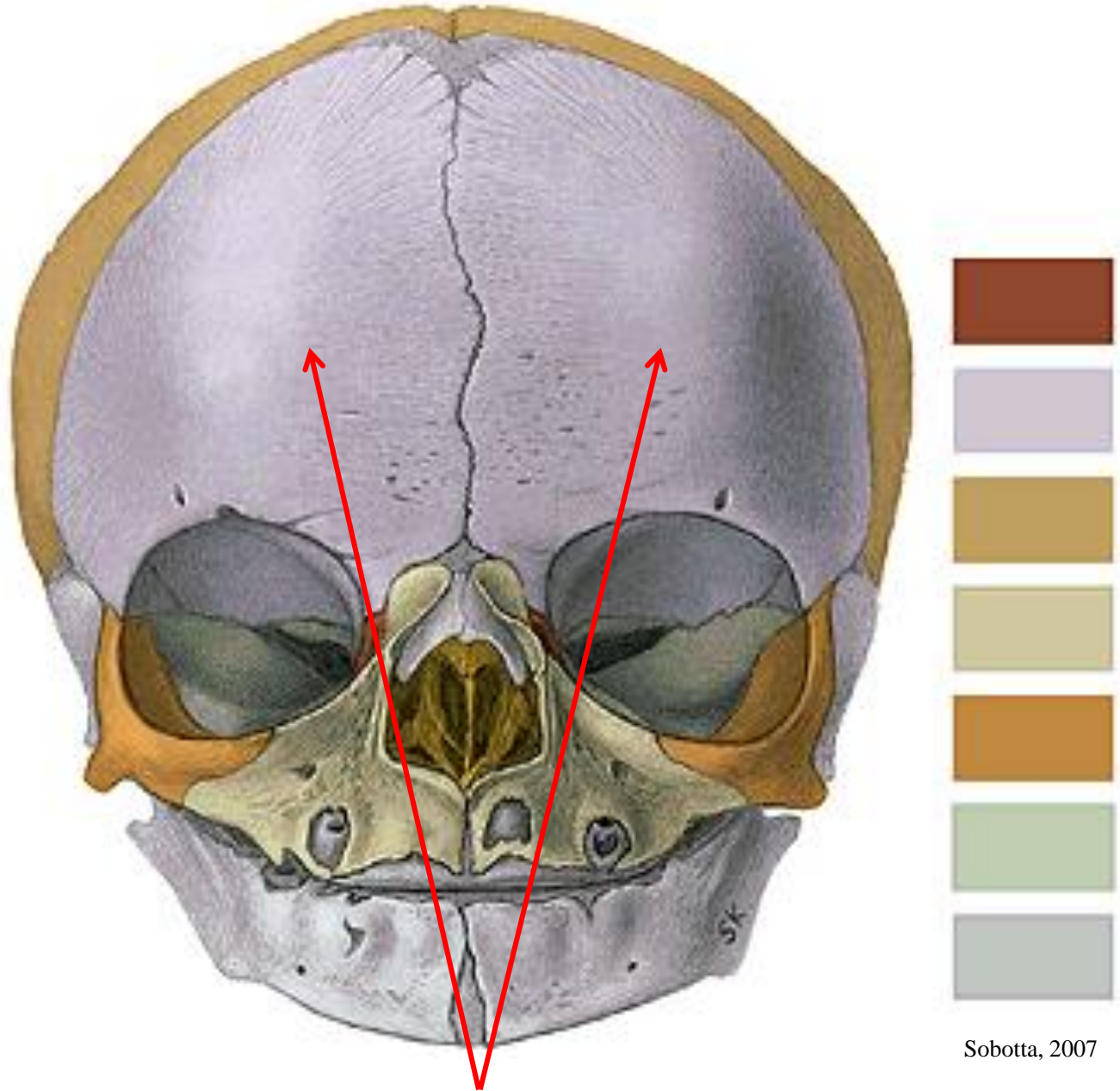
Coronal suture



Sobotta, 2007



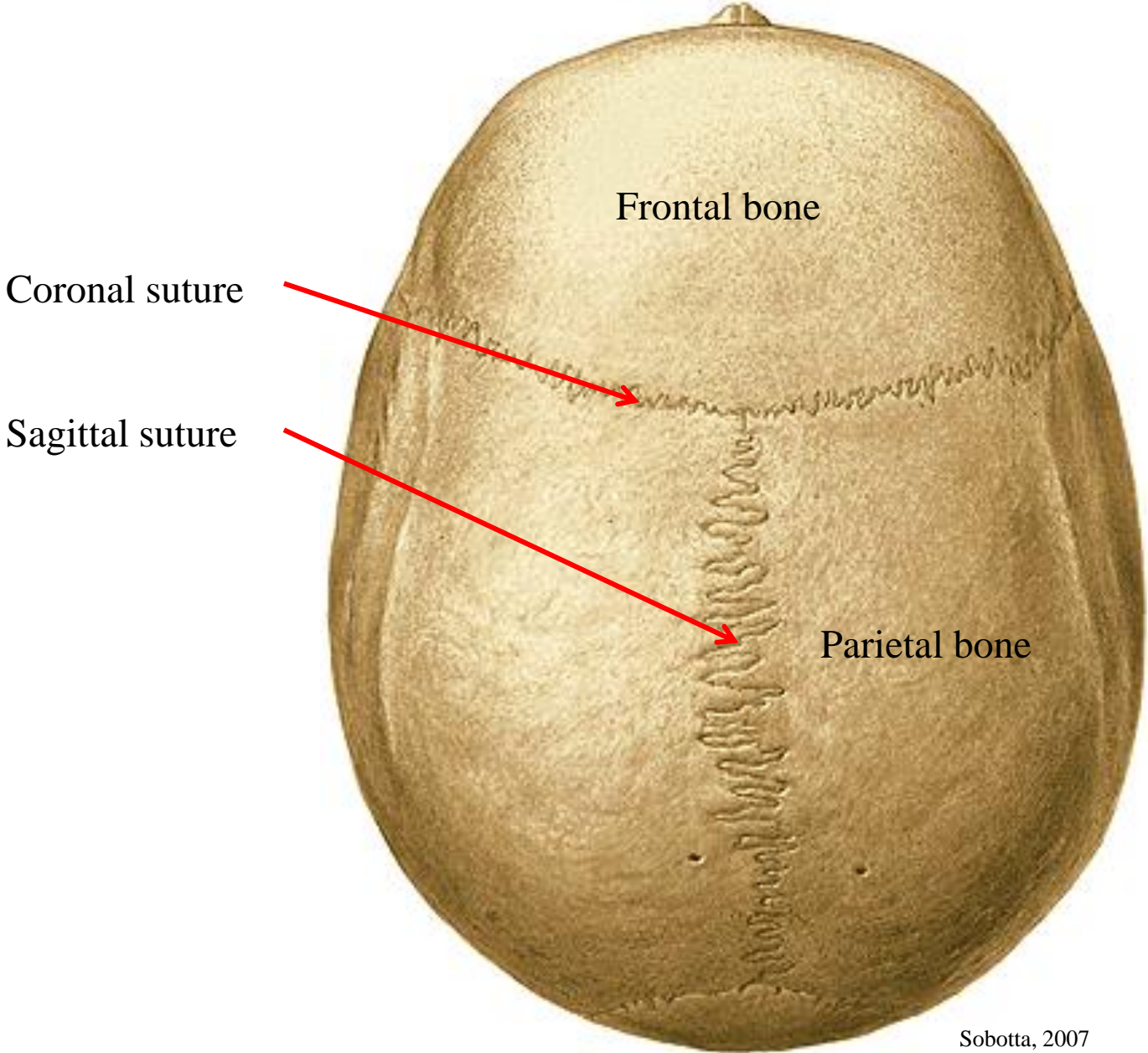


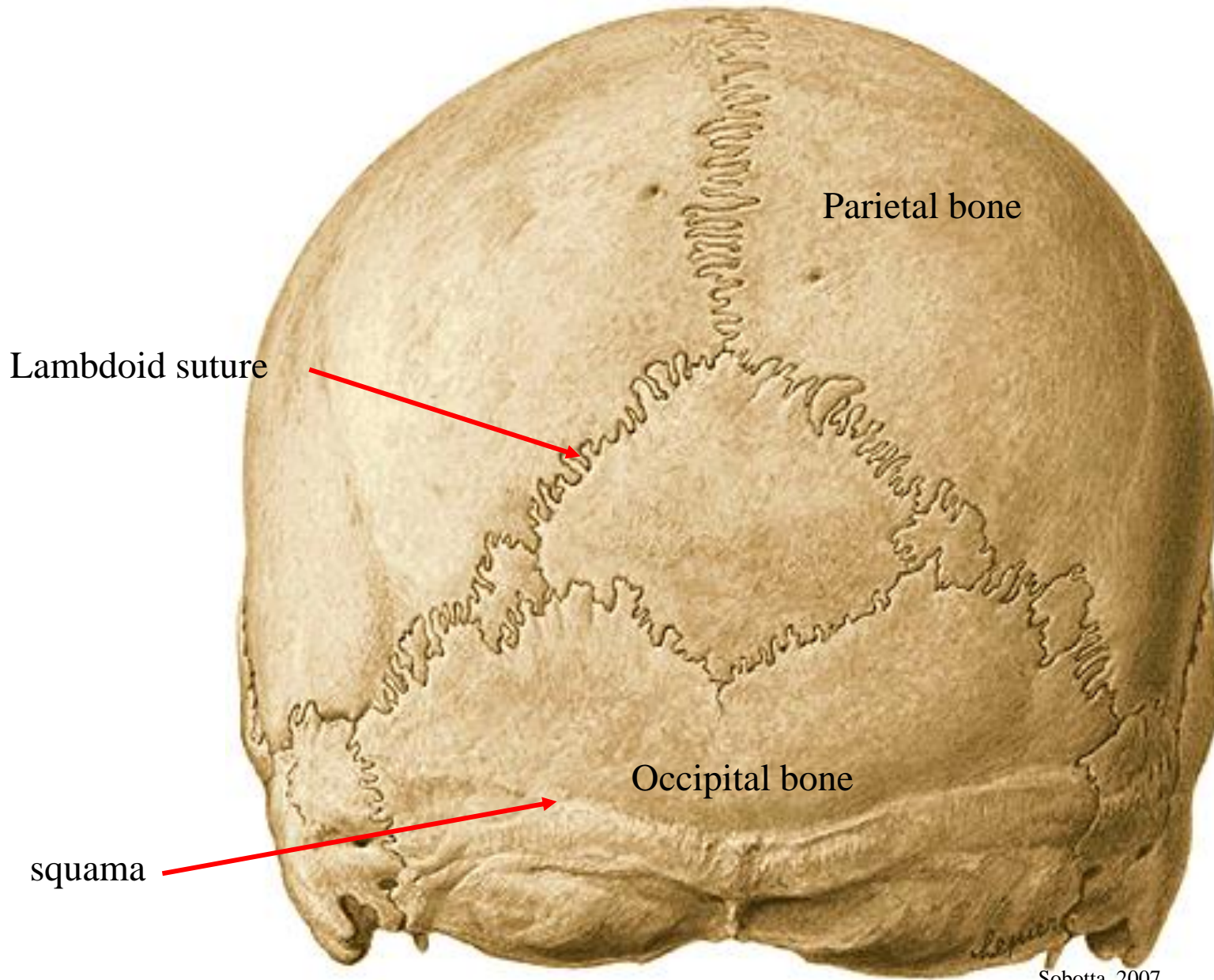


Sobotta, 2007

Paired frontal bone- newborn skull

Parietal bone





Parietal bone

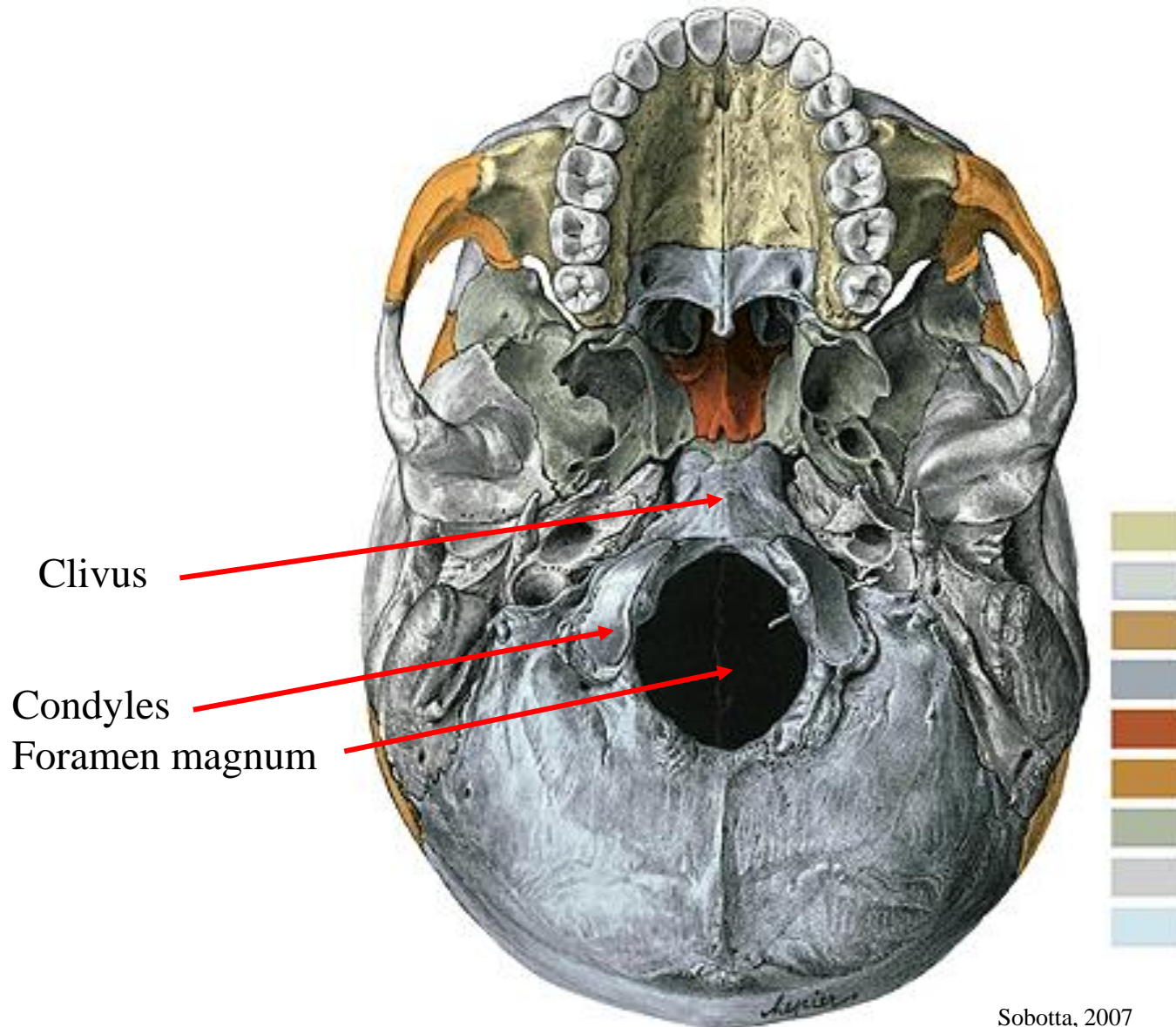
Lambdoid suture

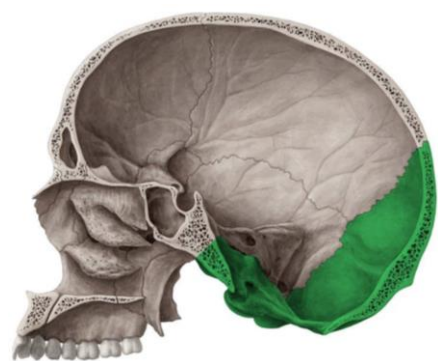
Occipital bone

squama

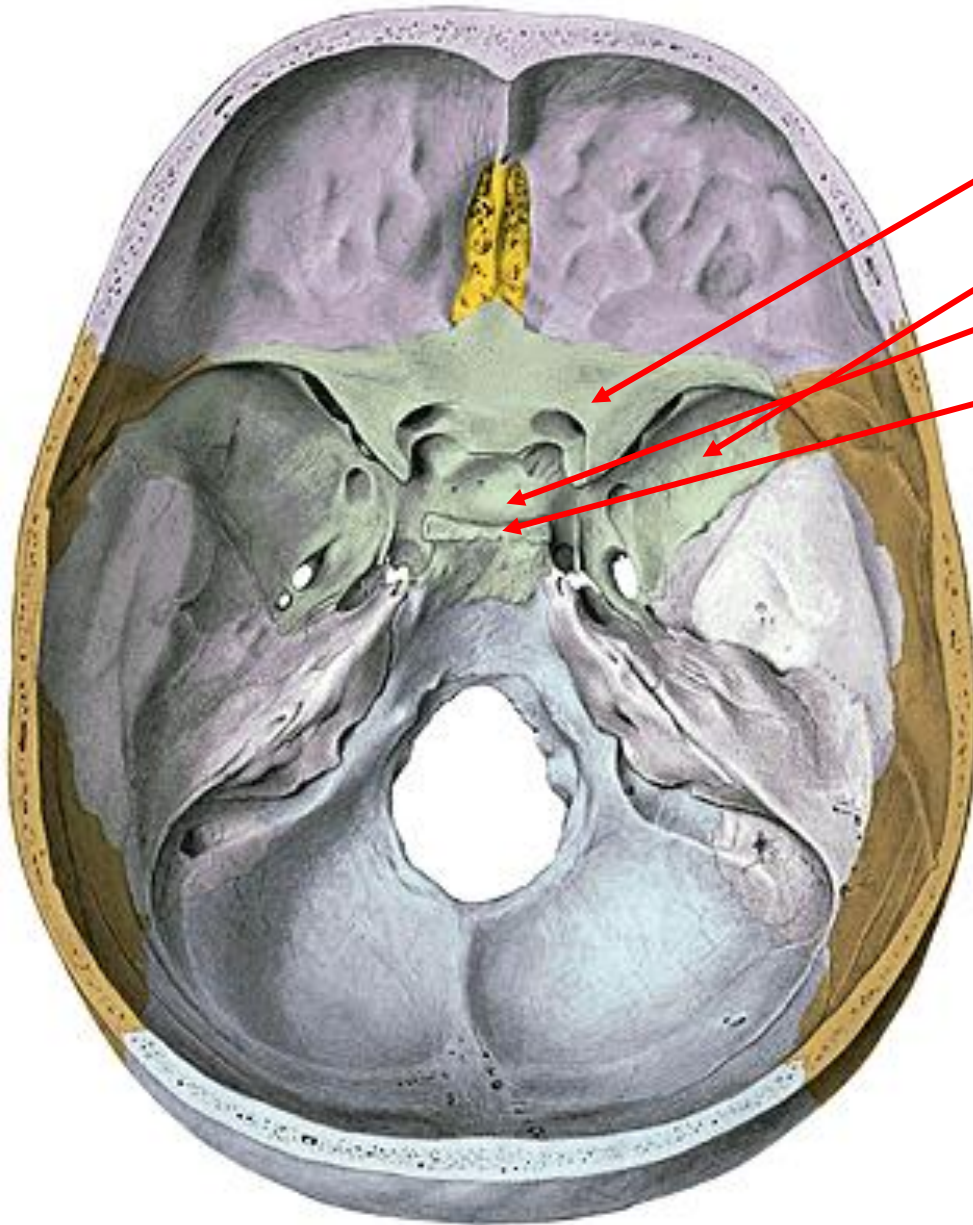


Occipital bone

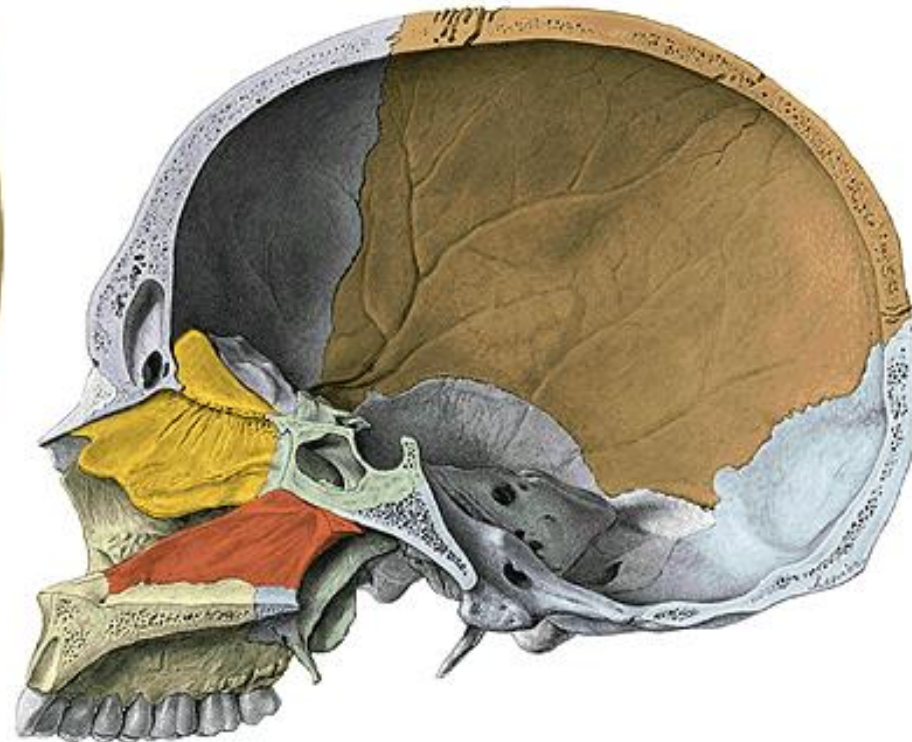


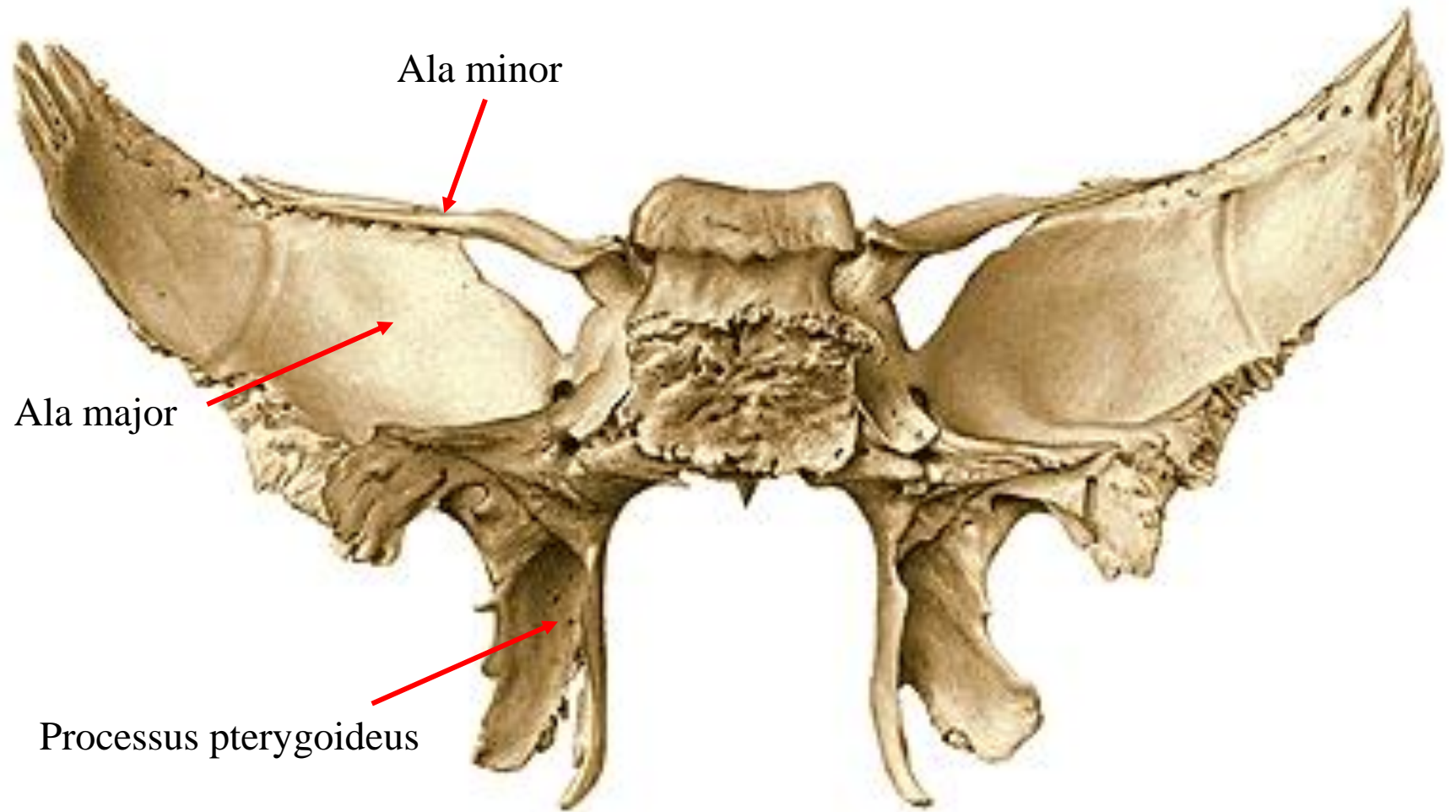


Sphenoid bone



Alaminor
major
corpus
+ fossa hypophyseos
Dorsum

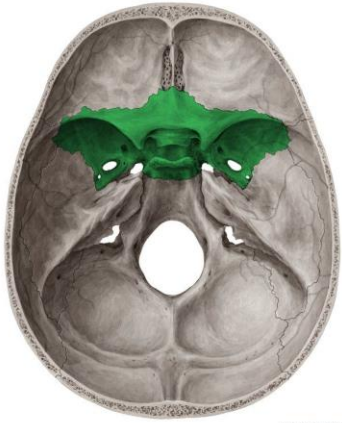




Ala minor

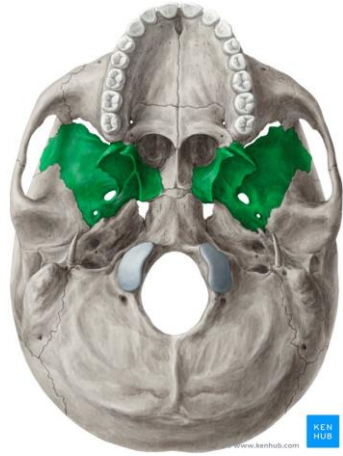
Ala major

Processus pterygoideus



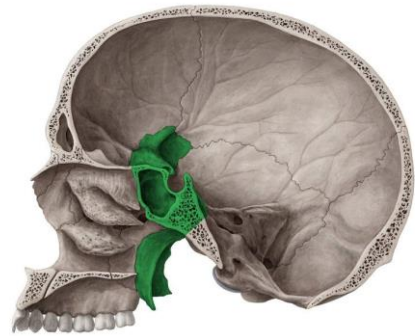
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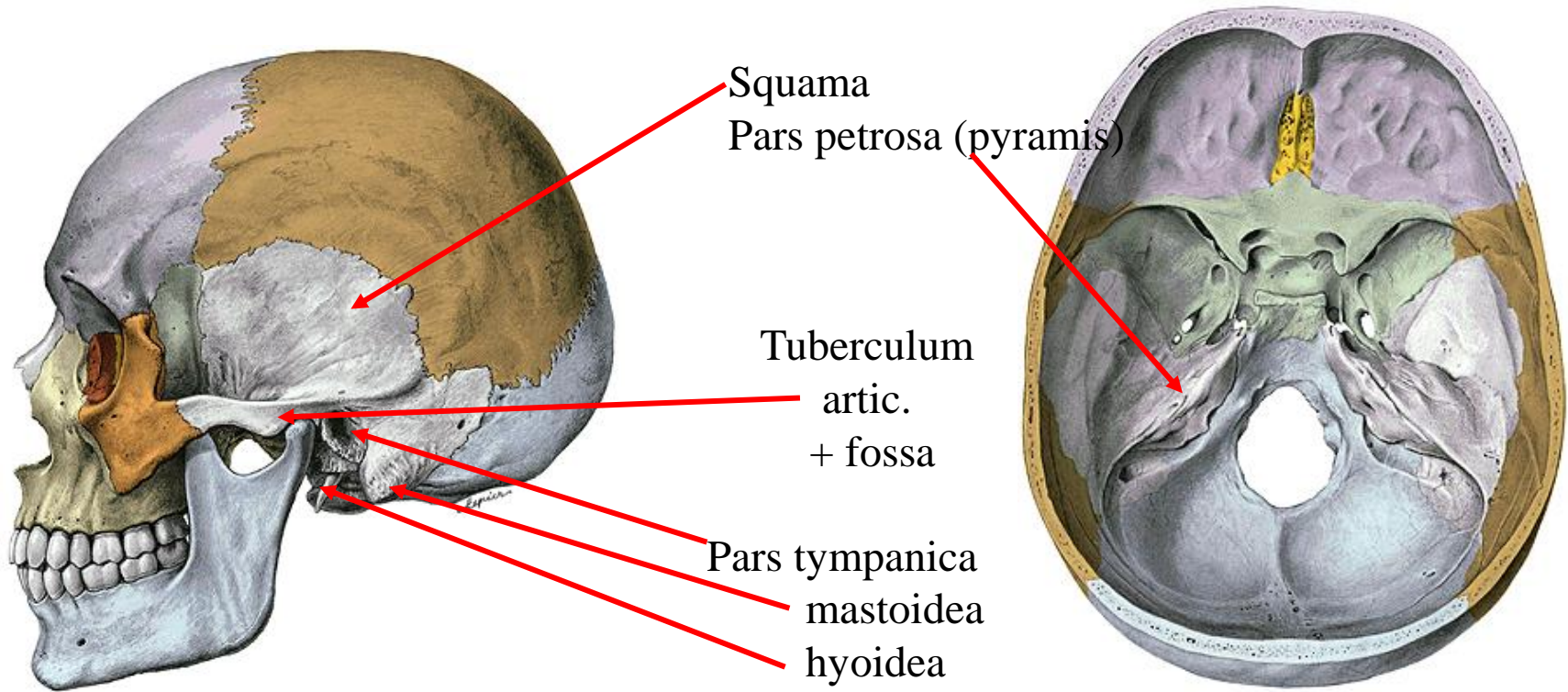
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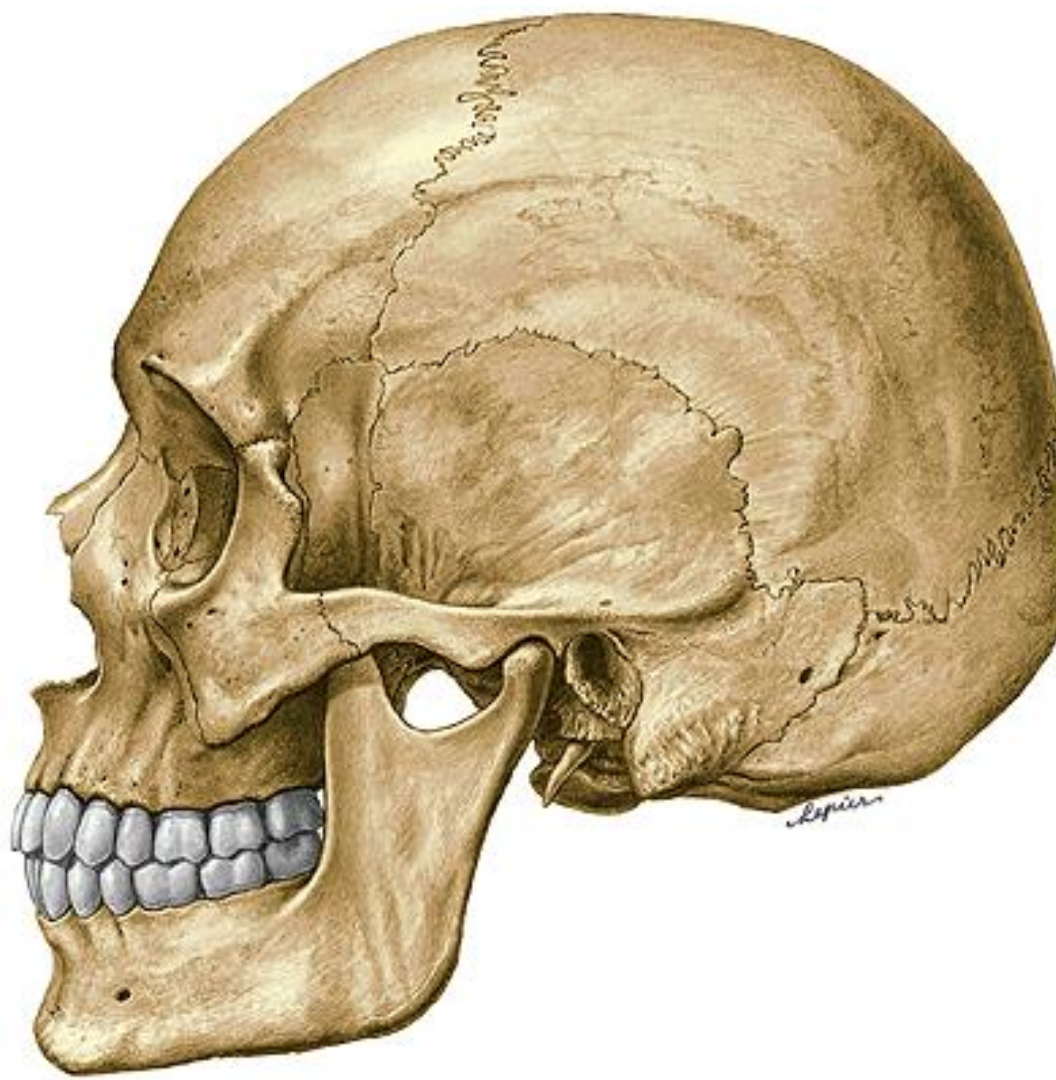


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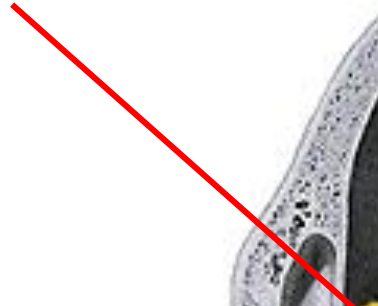
Temporal bone



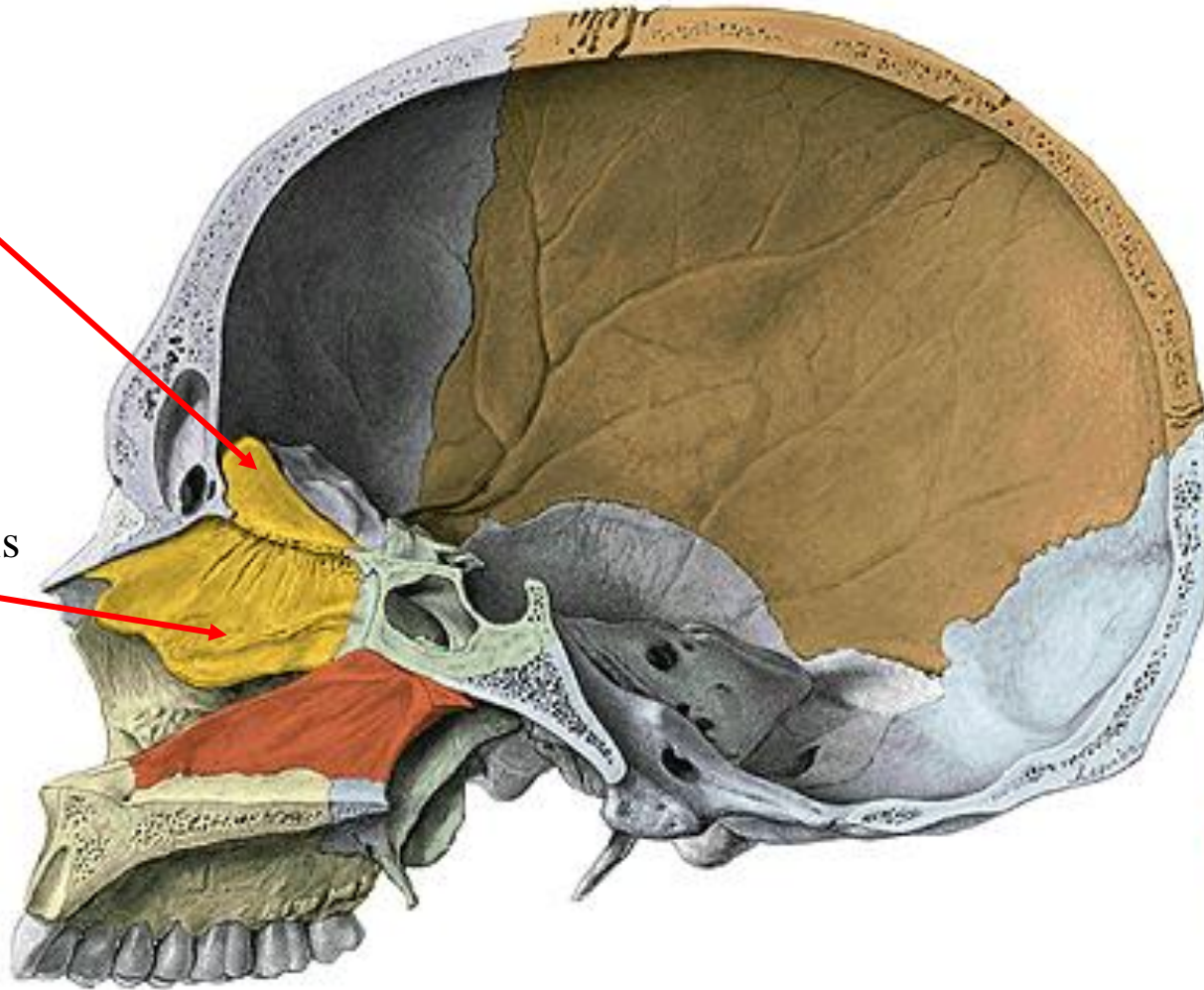


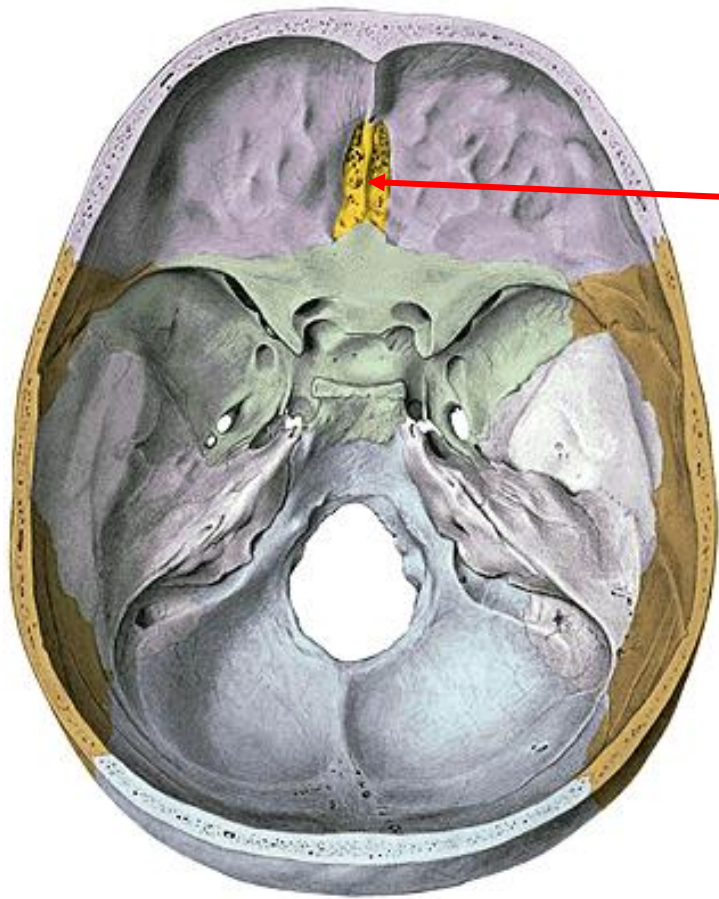
Ethmoidal bone

Crista galli



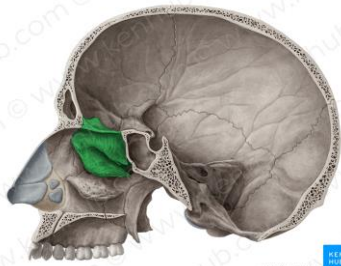
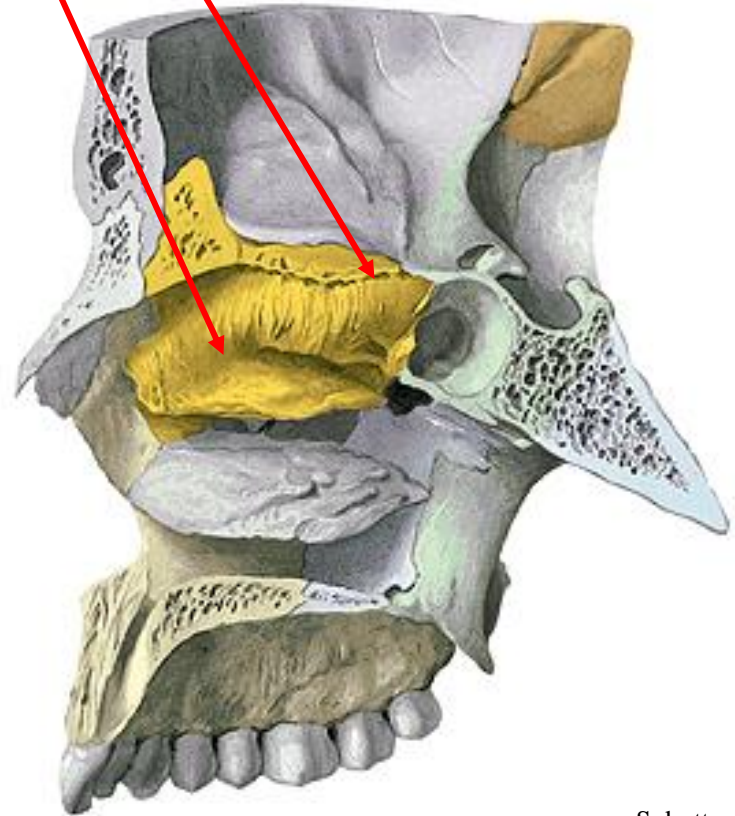
Lamina perpendicularis





Lamina cribrosa

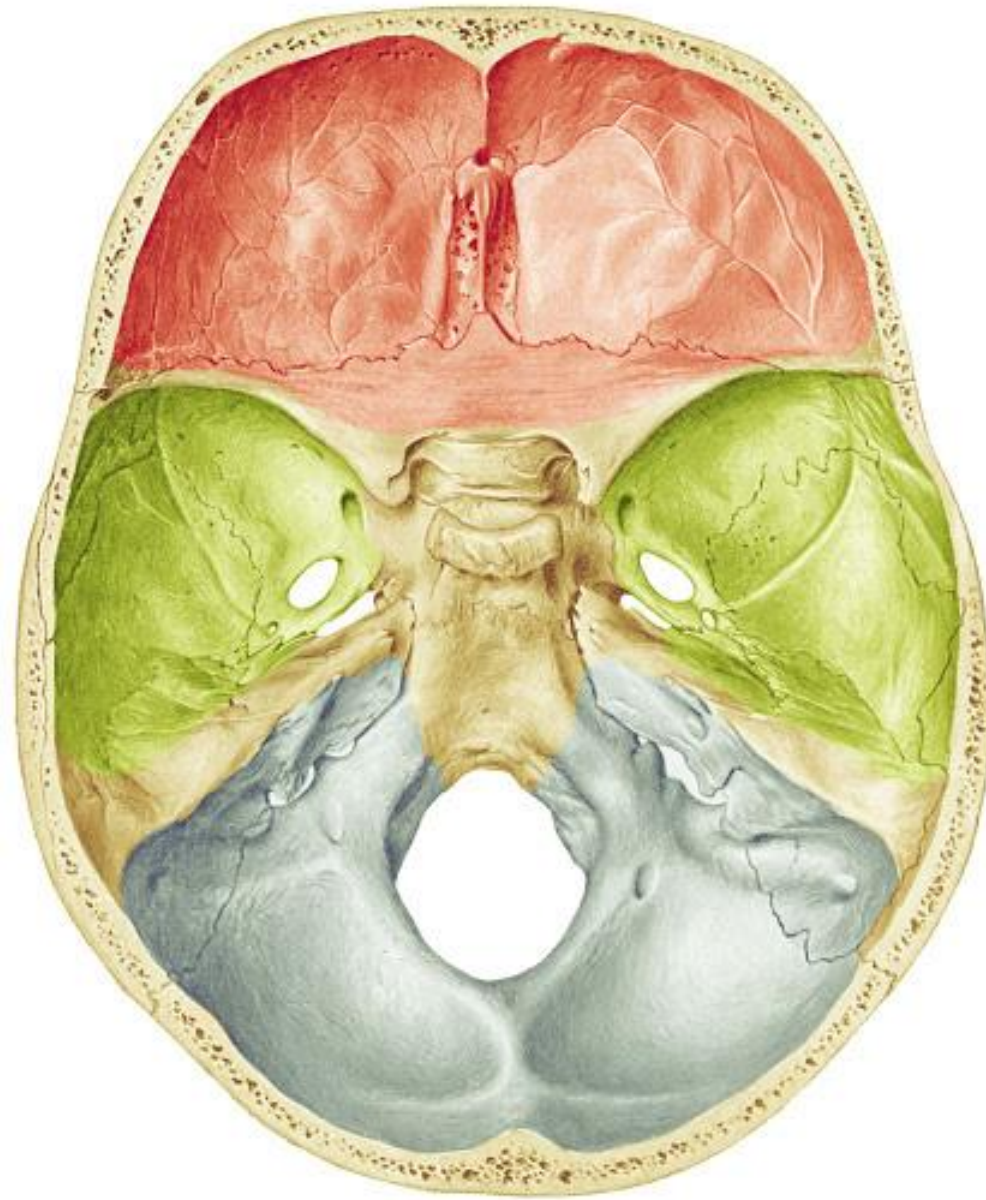
Conchae



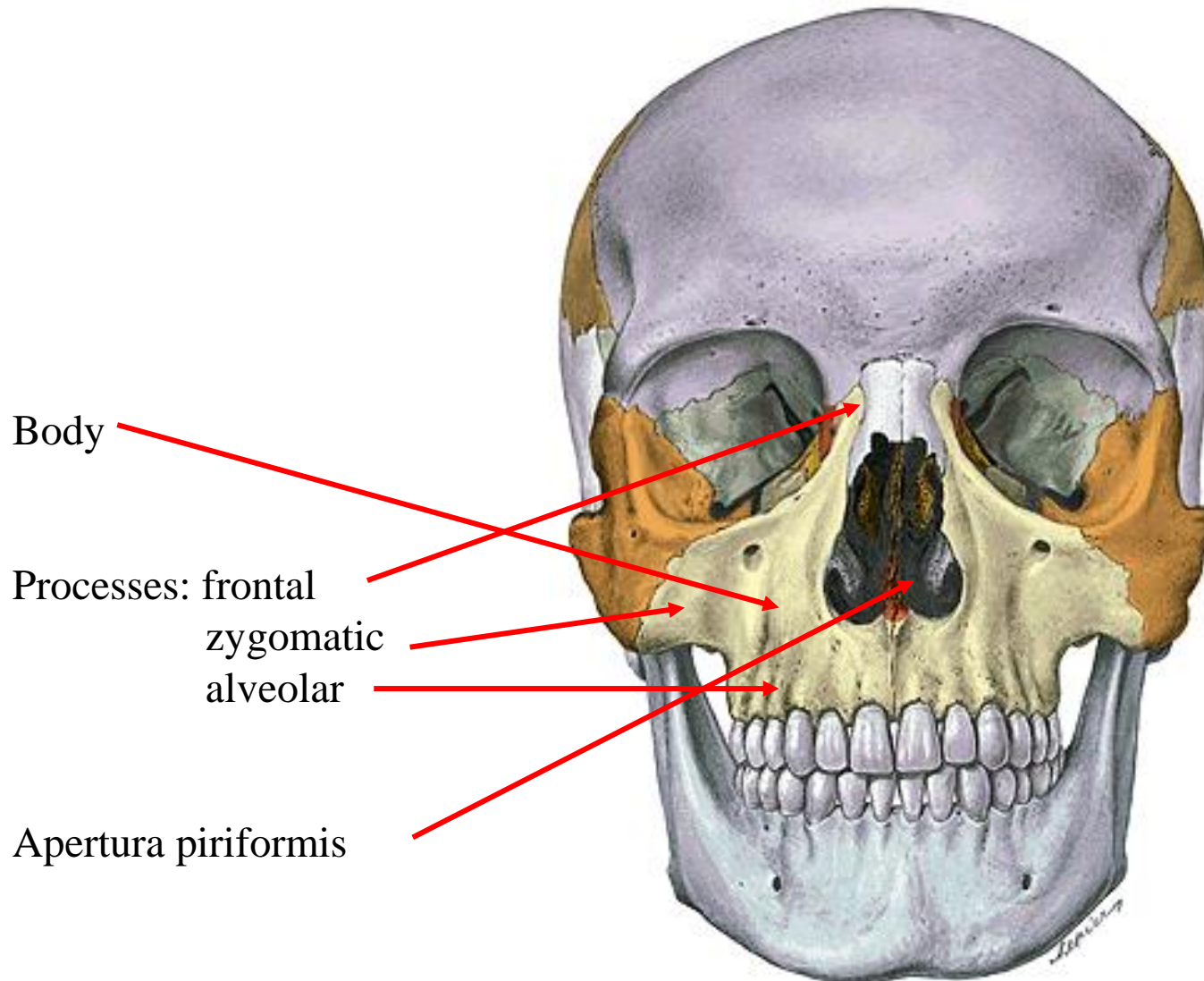
Anterior cranial fossa

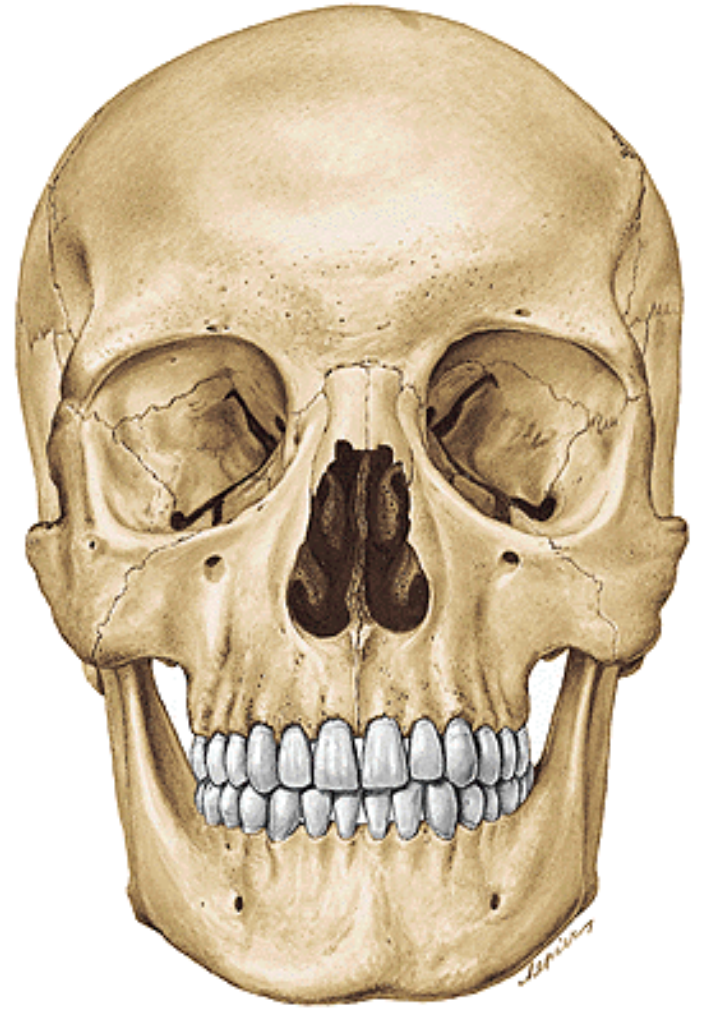
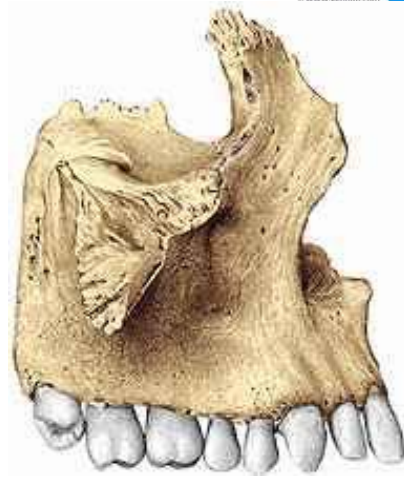
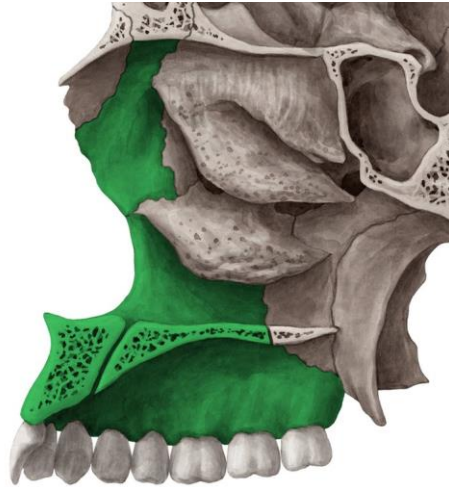
Middle cranial fossa

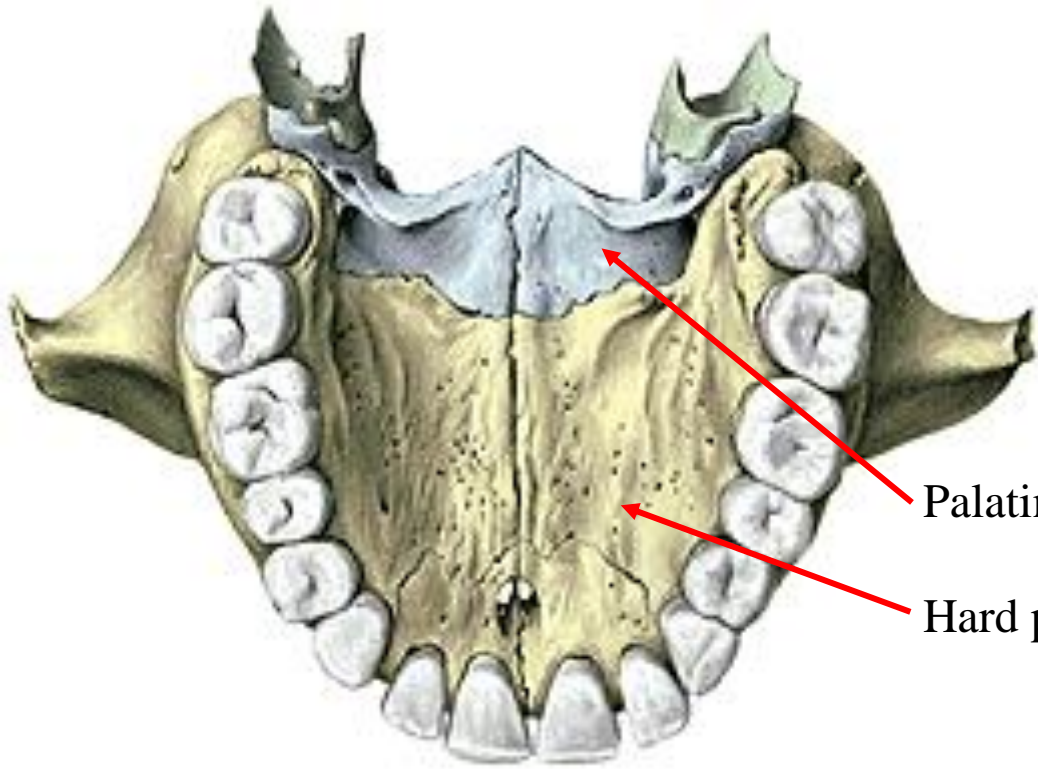
Posterior cranial fossa



Maxilla





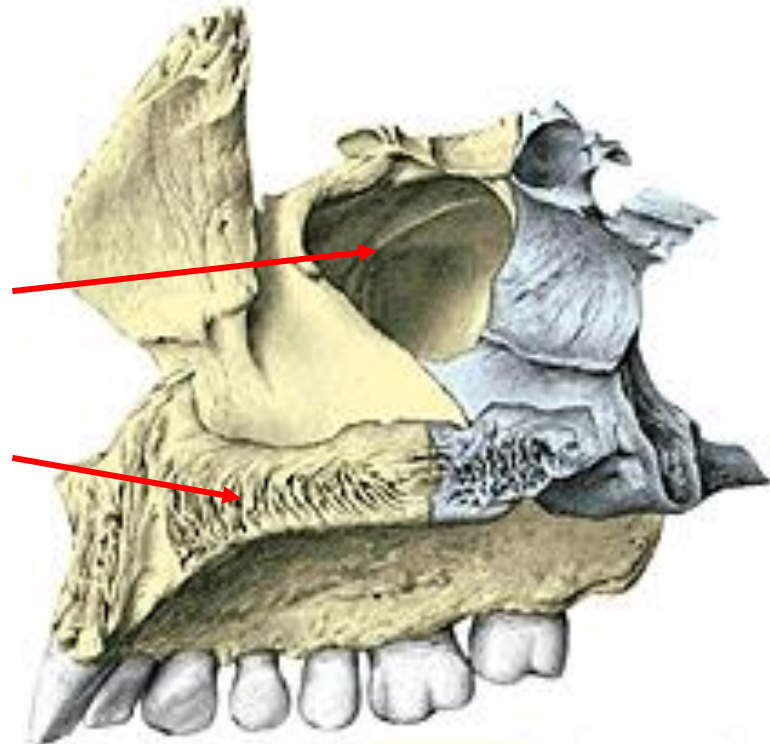


Palatine bone

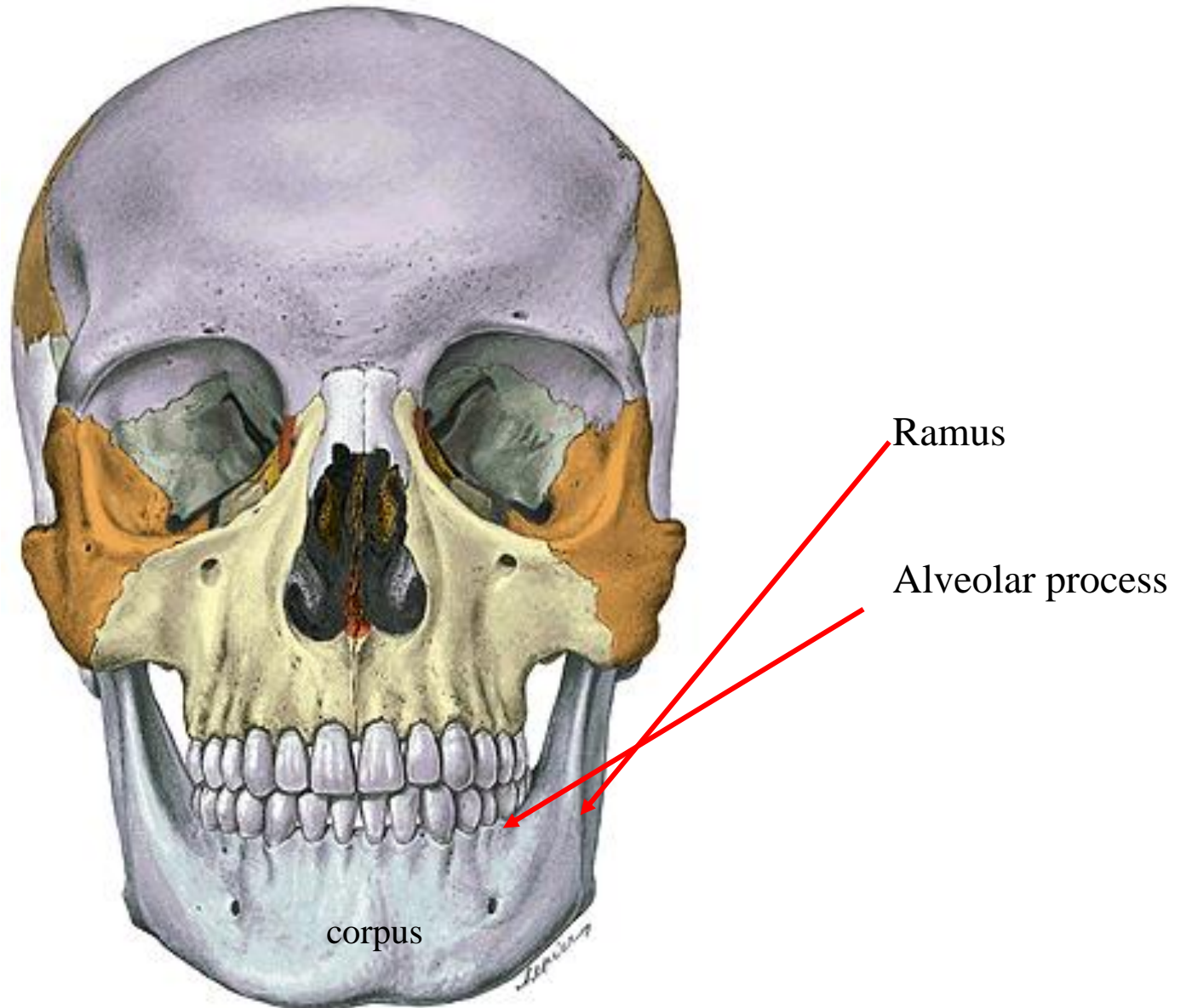
Hard palate

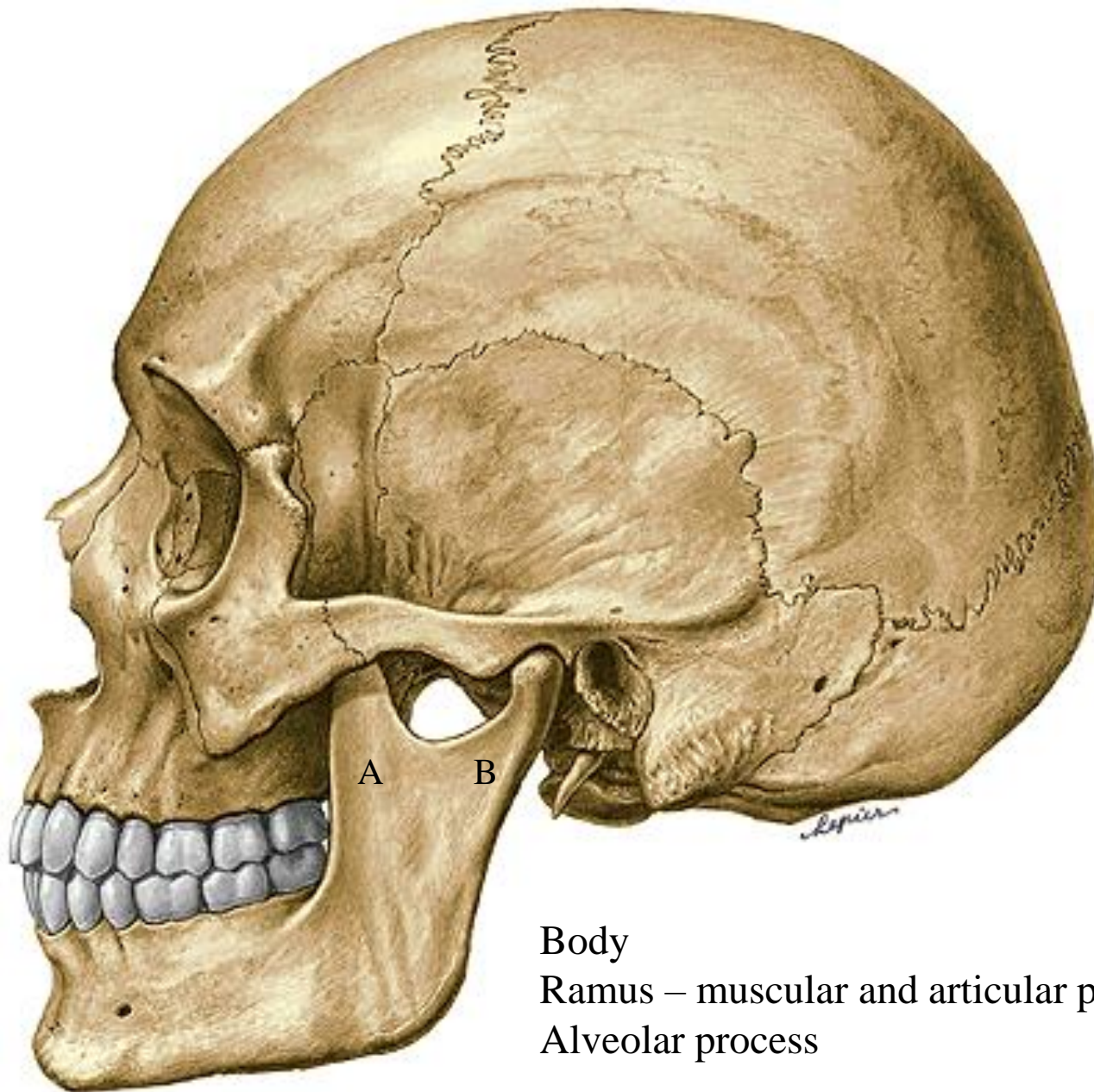
Sinus maxillaris

Palatine process



Mandible

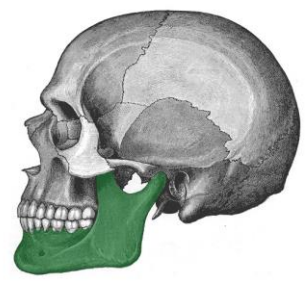
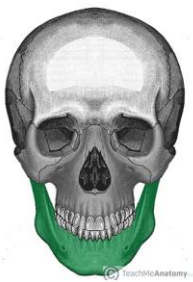




Body

Ramus – muscular and articular processes

Alveolar process



ANTERIOR



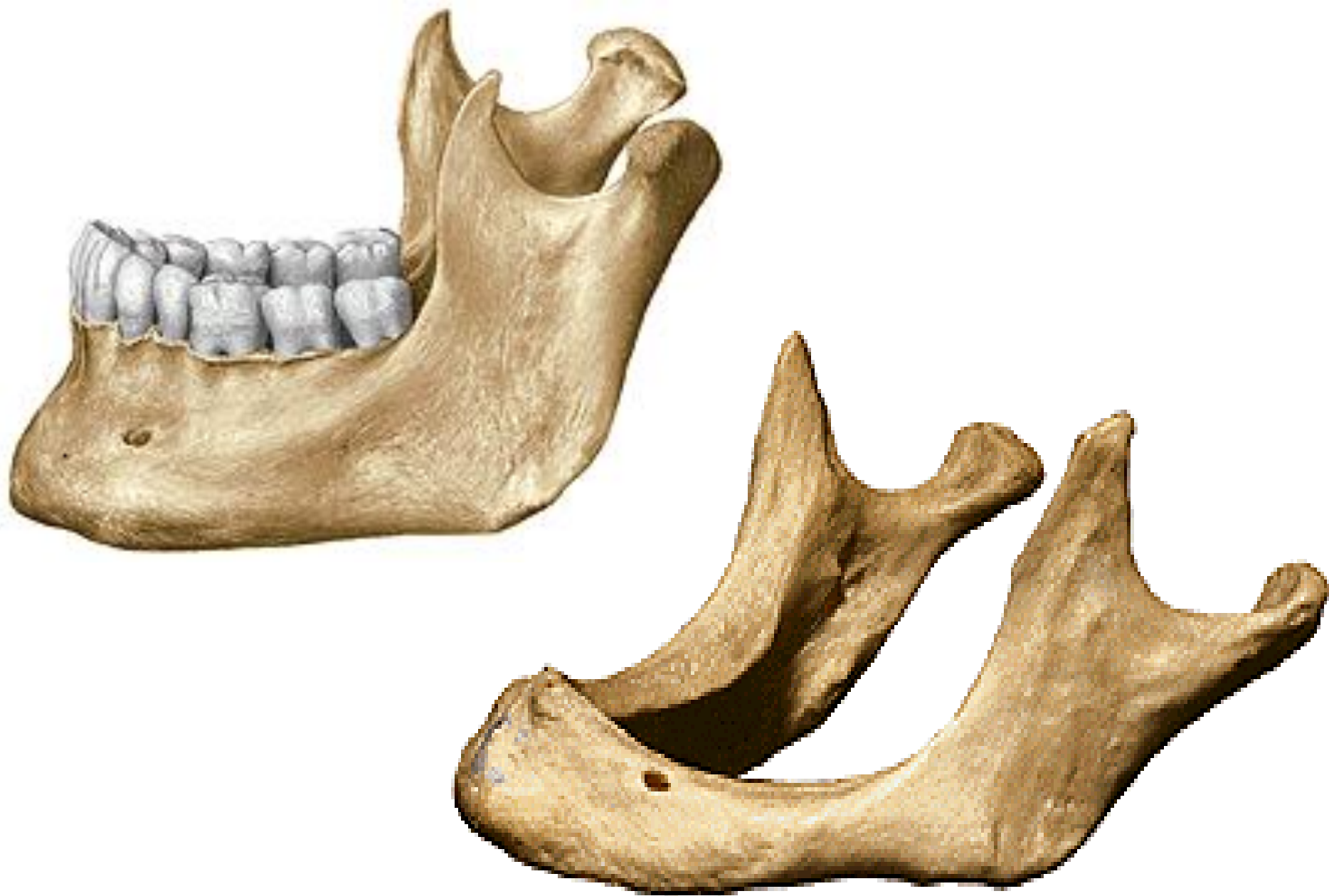
INFERIOR



LATERAL

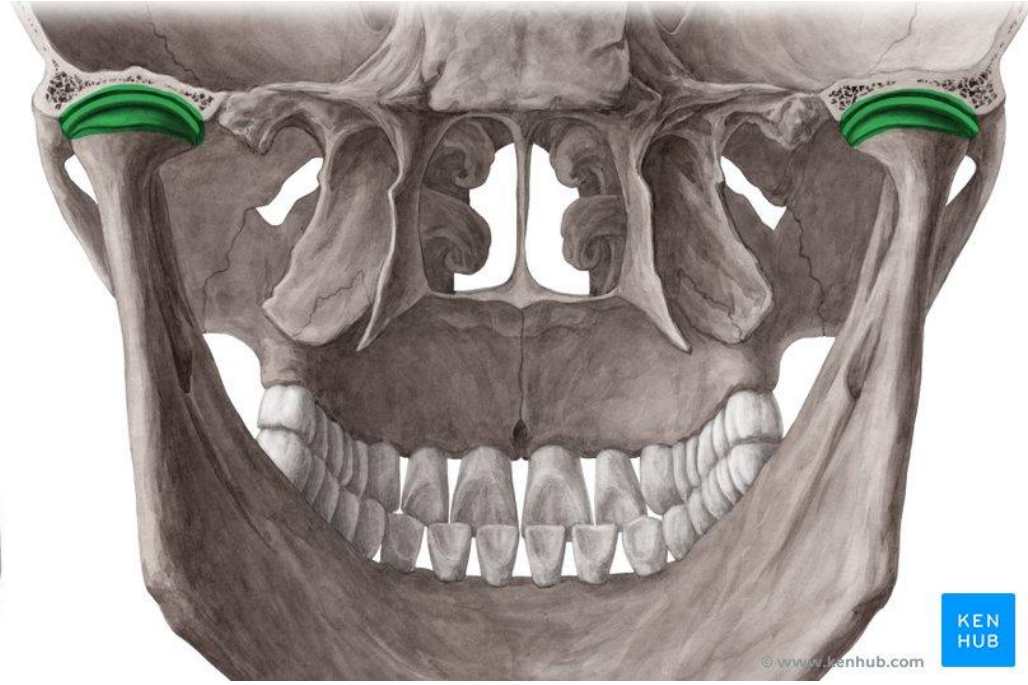
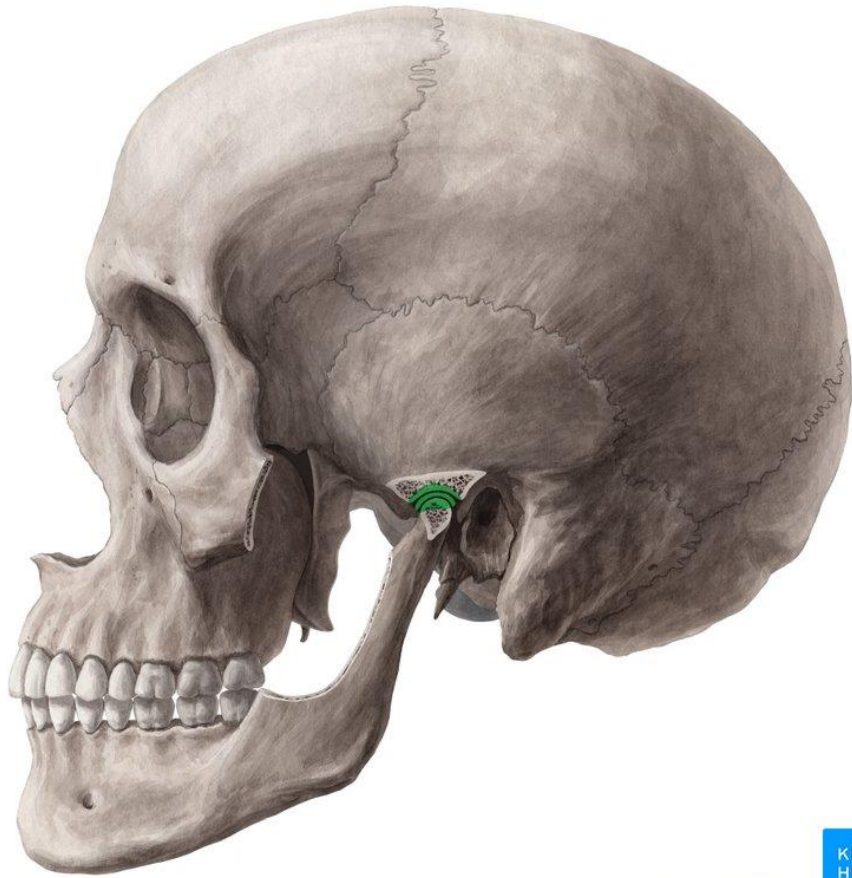


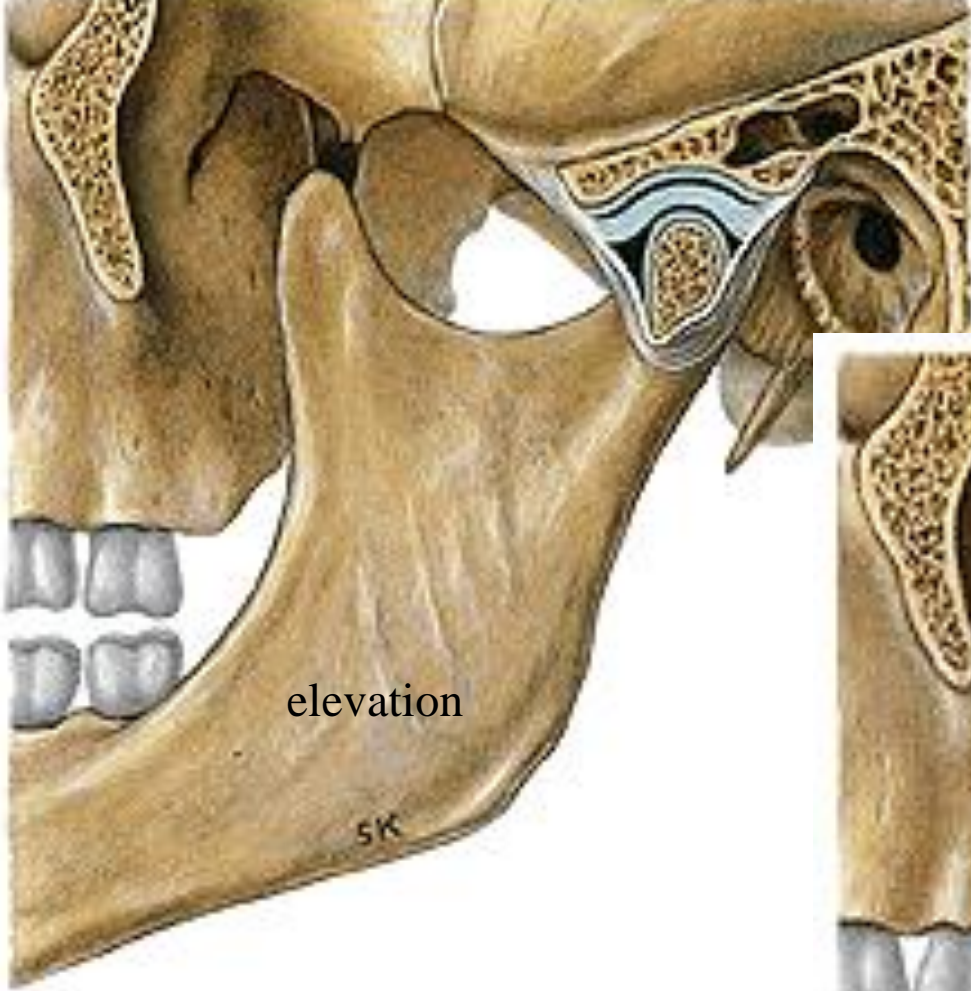
MEDIAN SAGGITAL SECTION



Resorption of alveolar process in old people

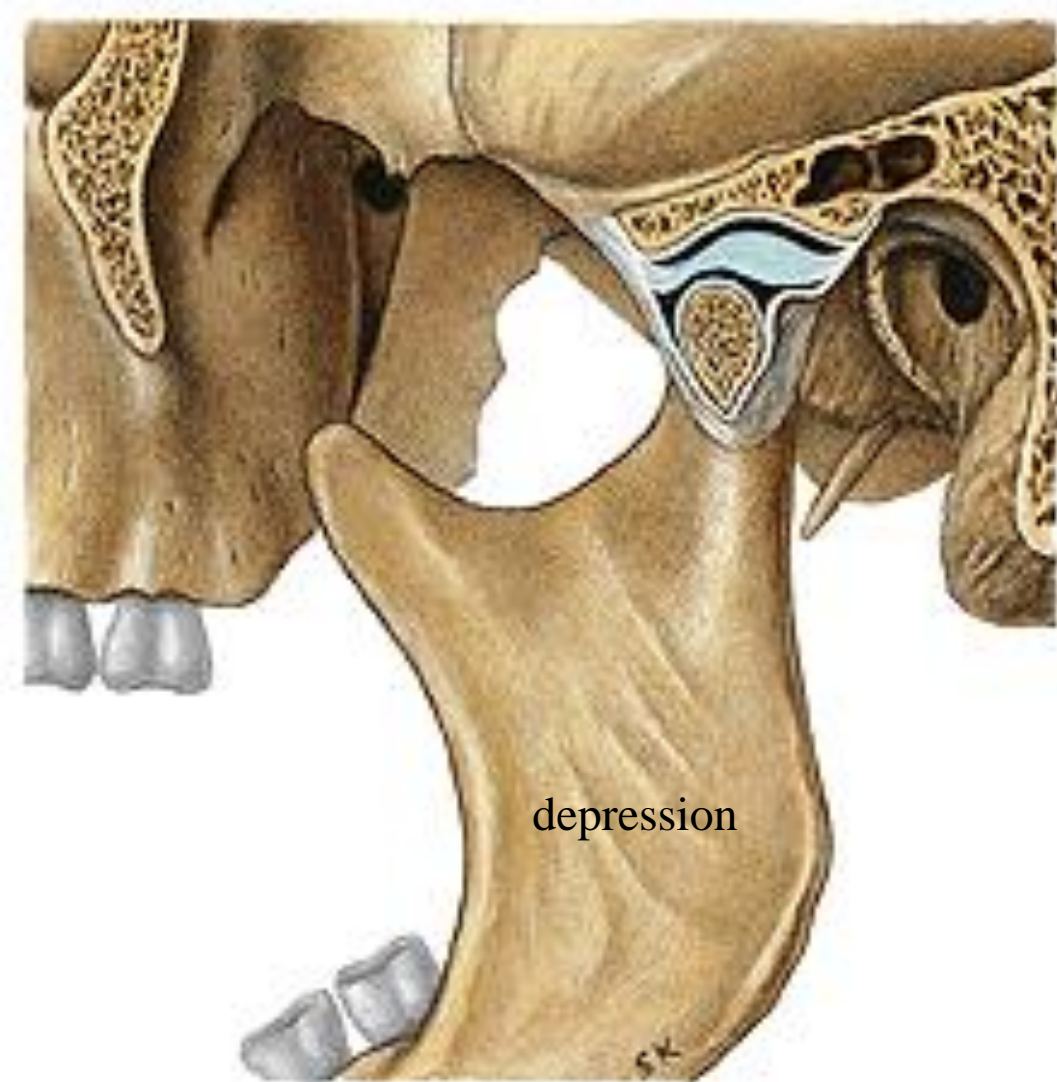
Temporomandibular joint





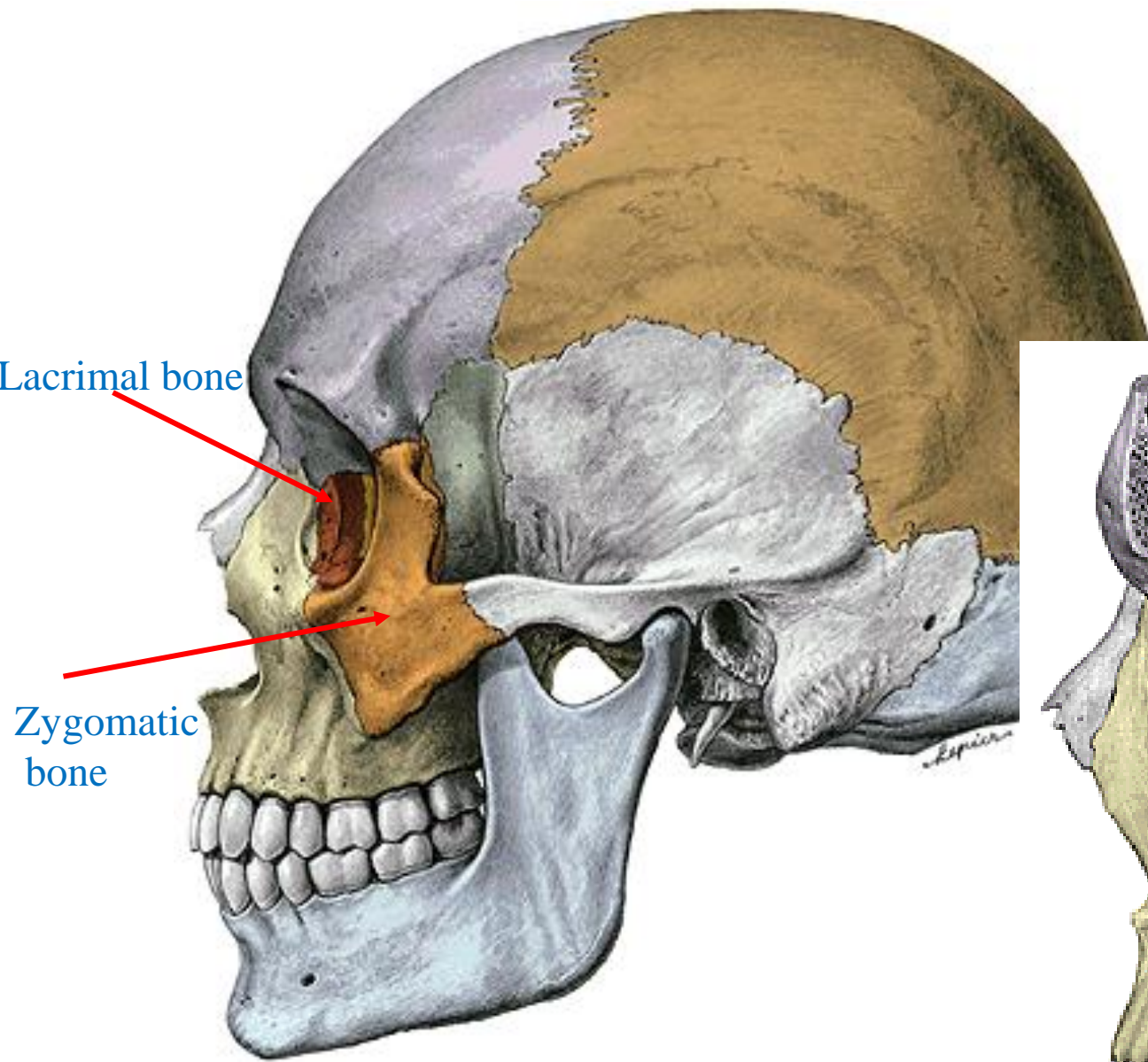
elevation

SK



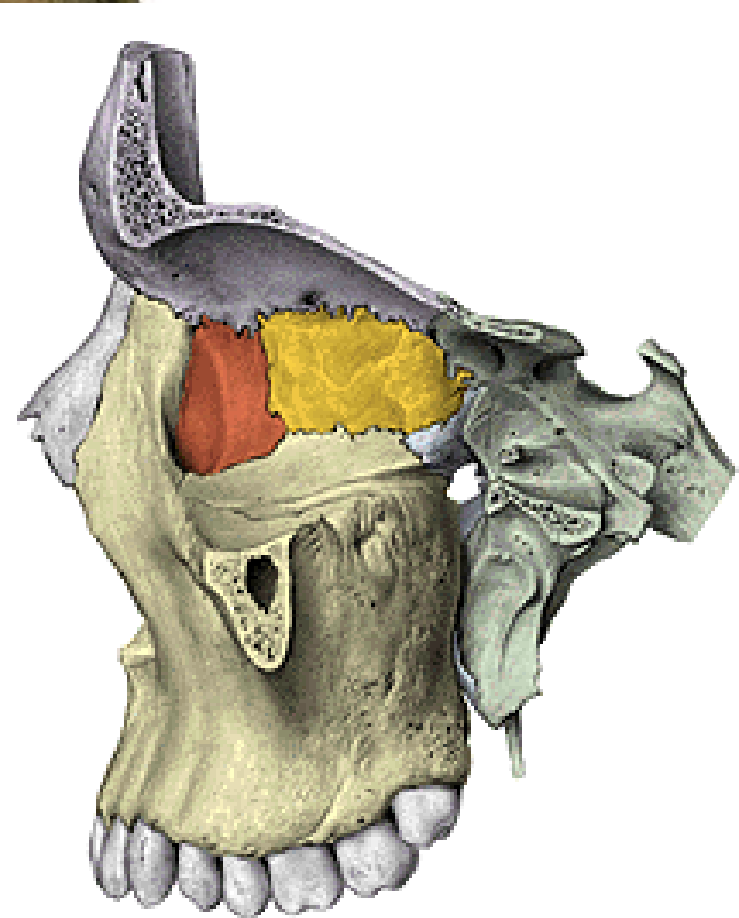
depression

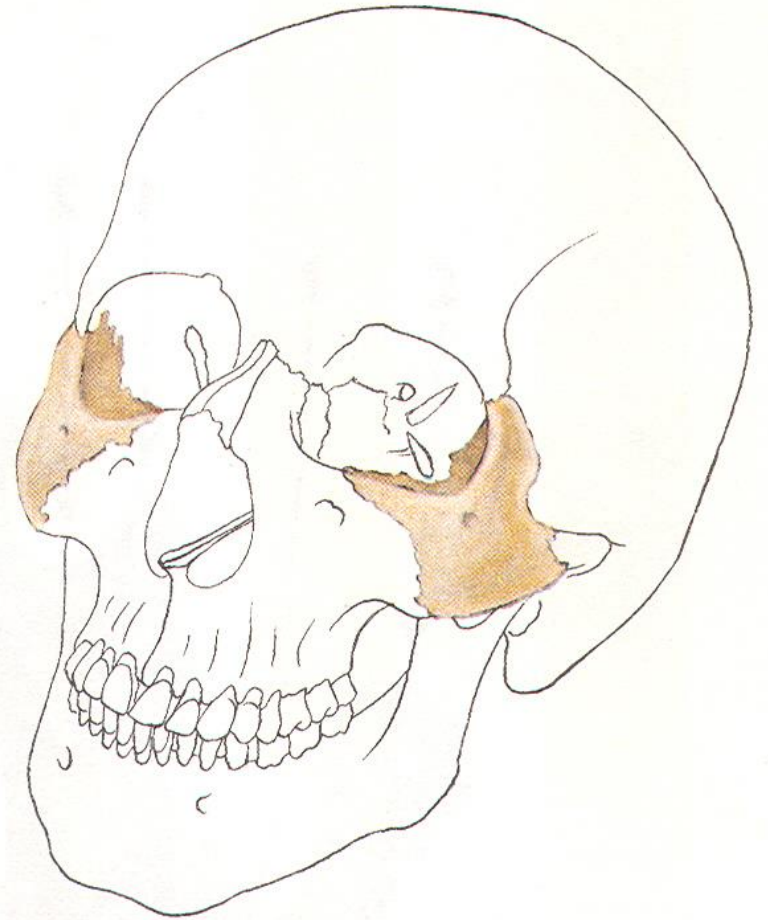
SK



Lacrimal bone

Zygomatic bone





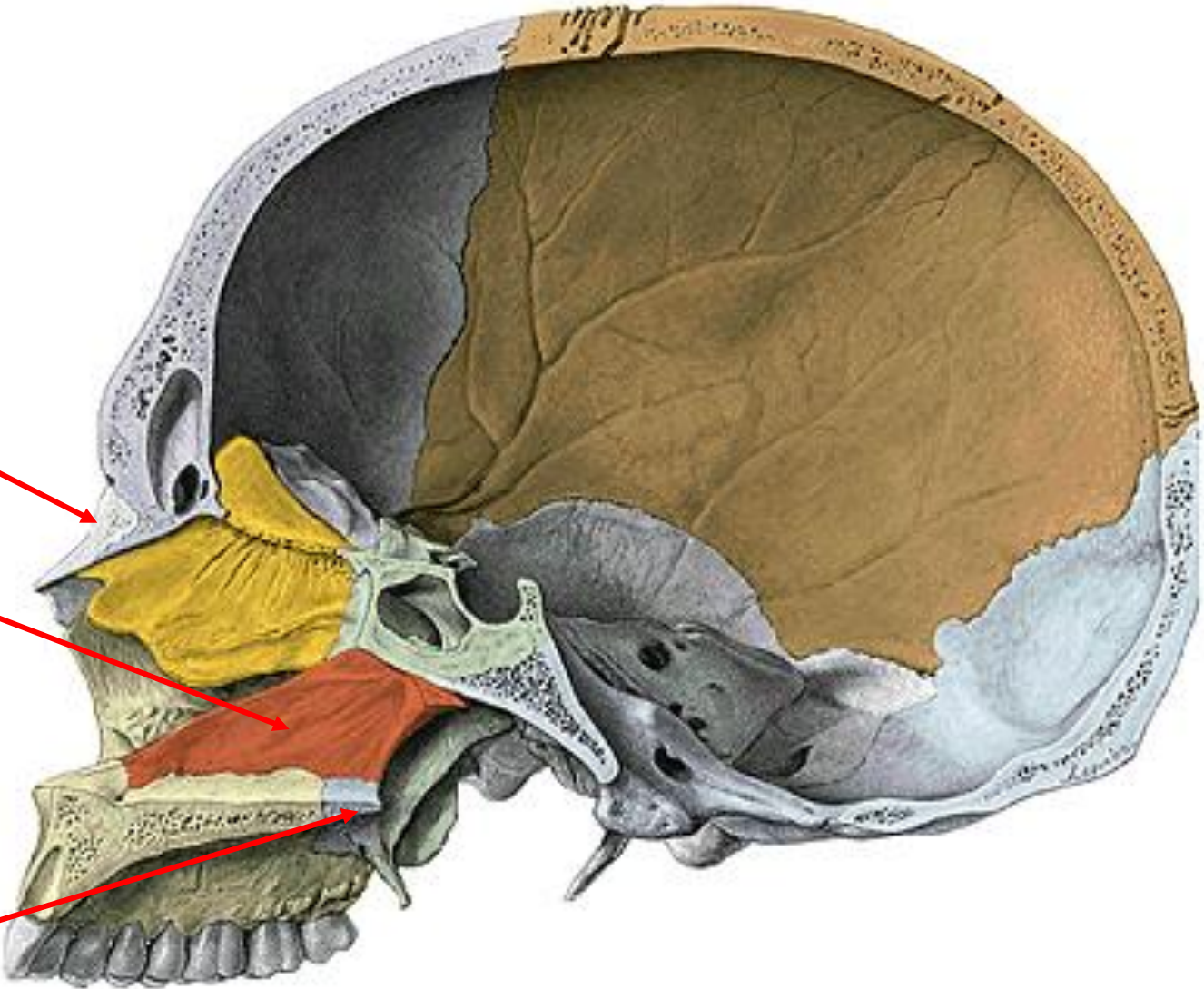
Nasal bone



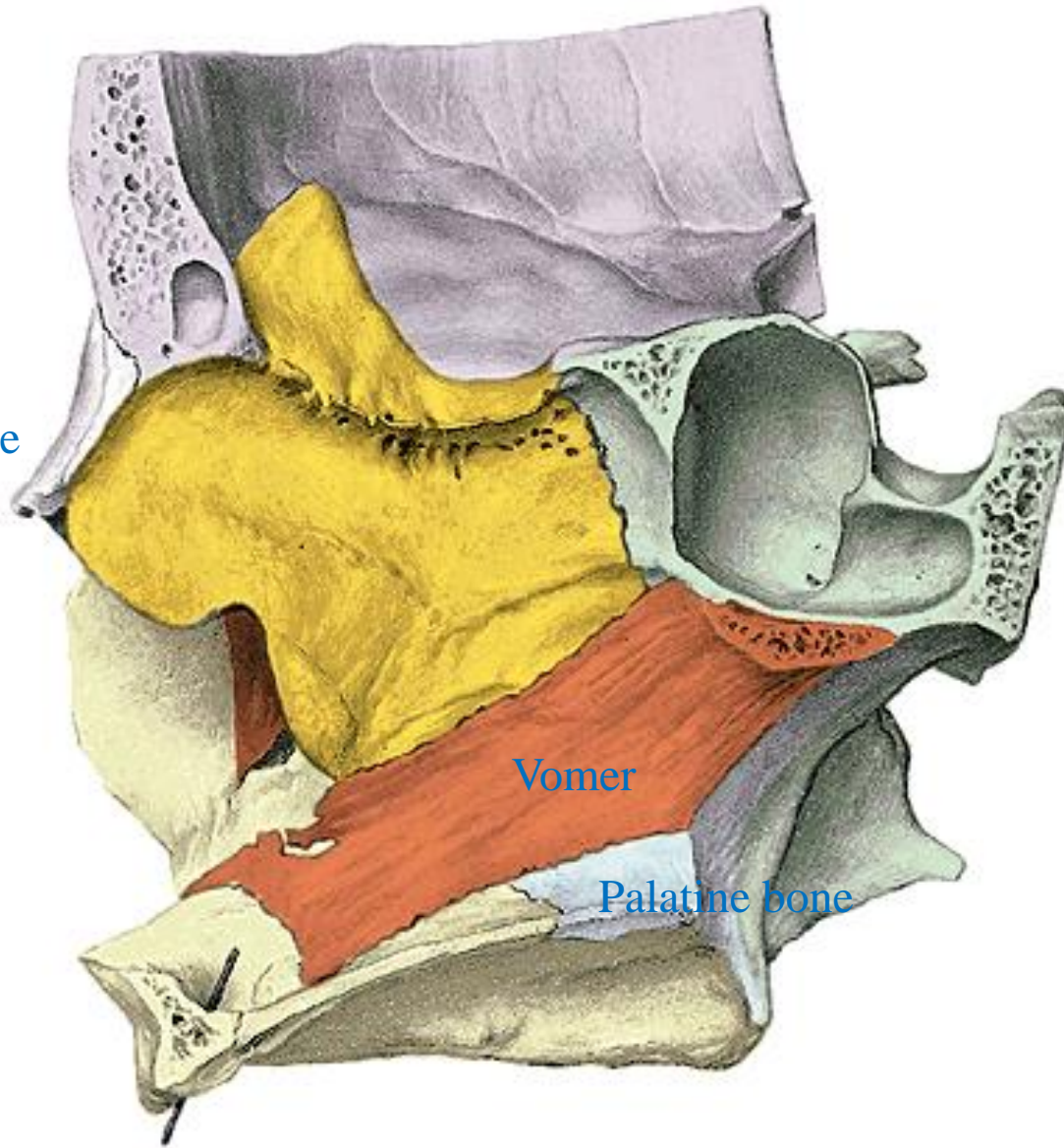
Vomer



Palatine bone



Nasal bone

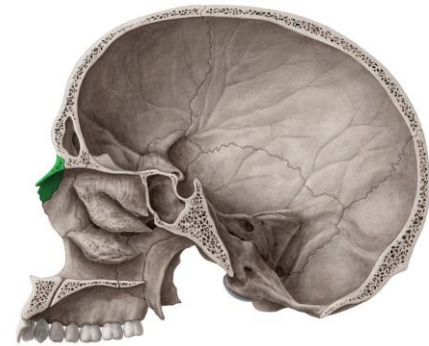


Vomer

Palatine bone

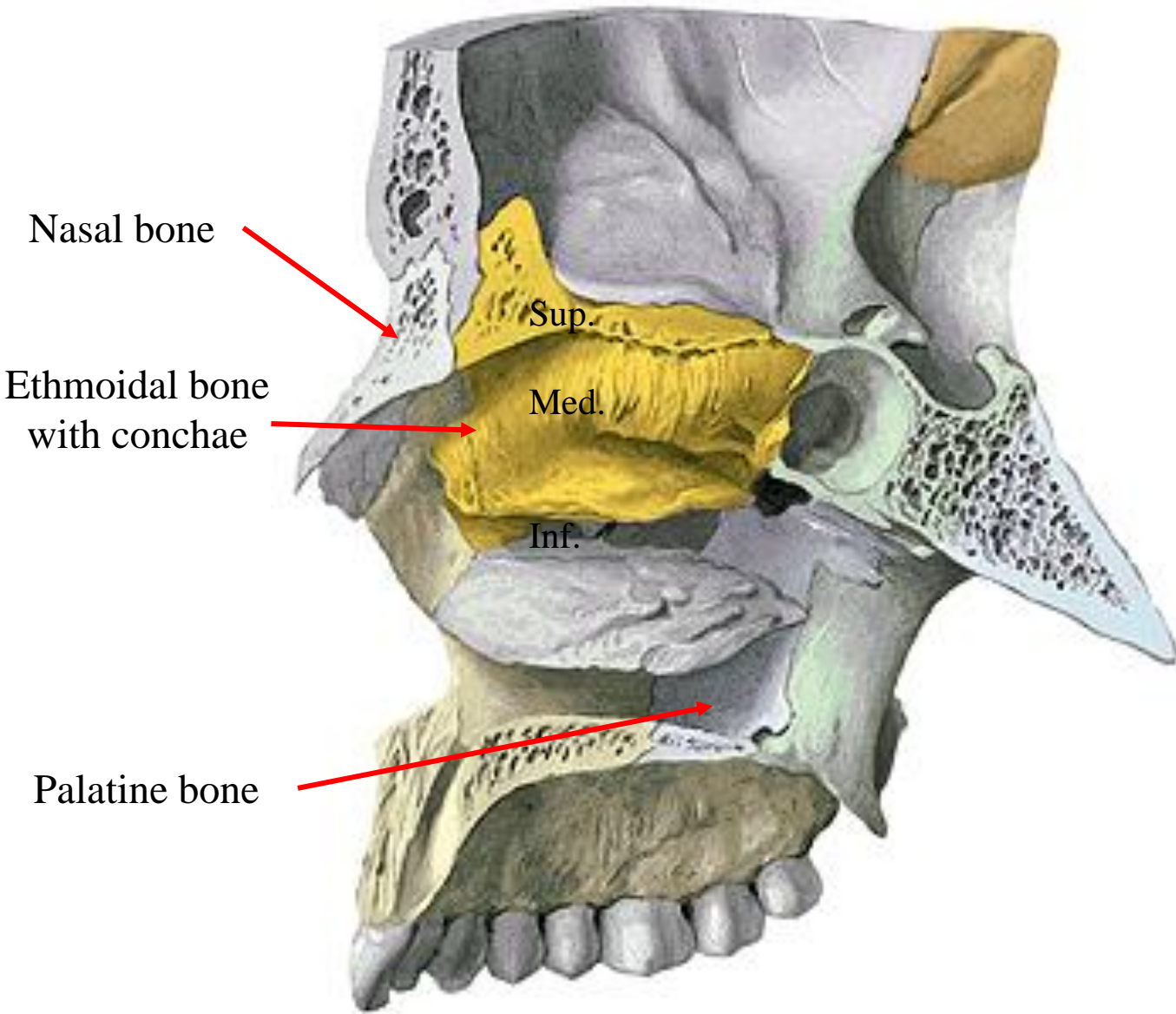


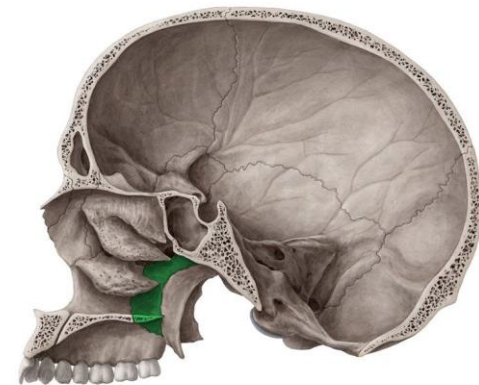
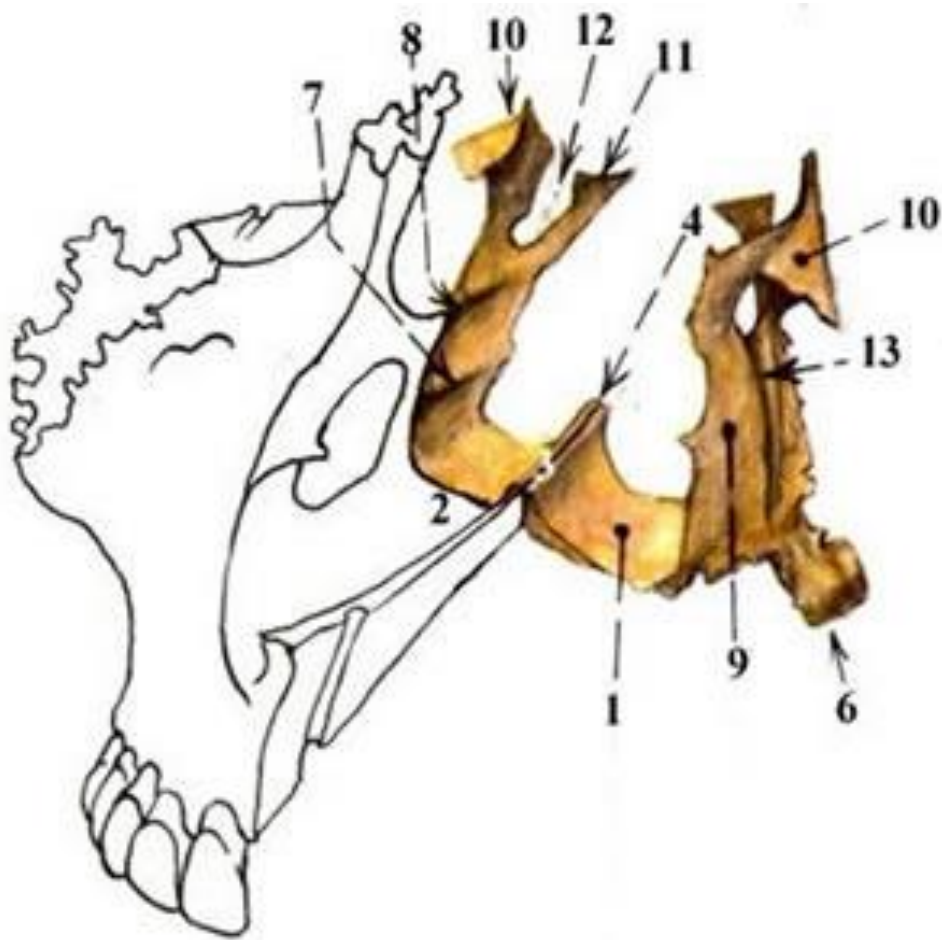
KEN HUB
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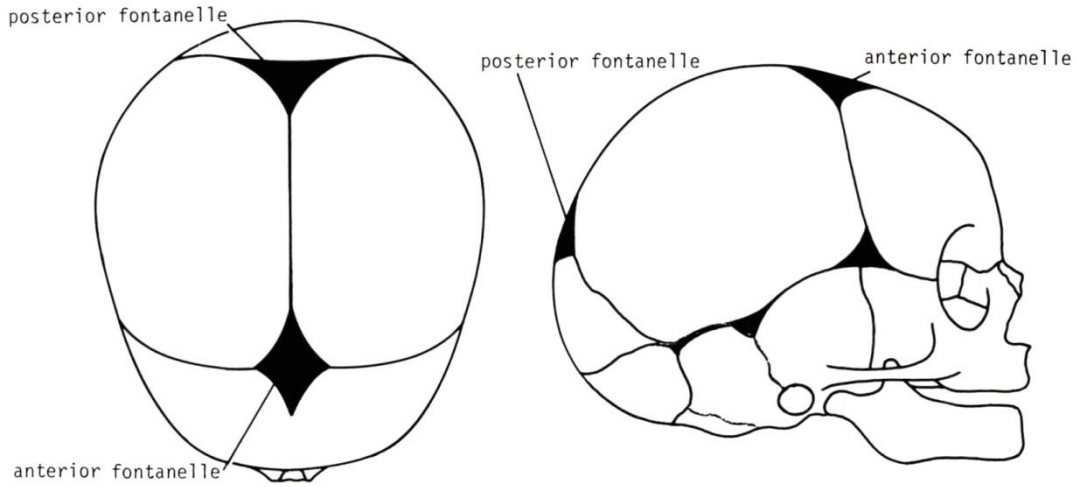
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Nasal cavity





Newborn's skull – fontanelles



Fonticulus major

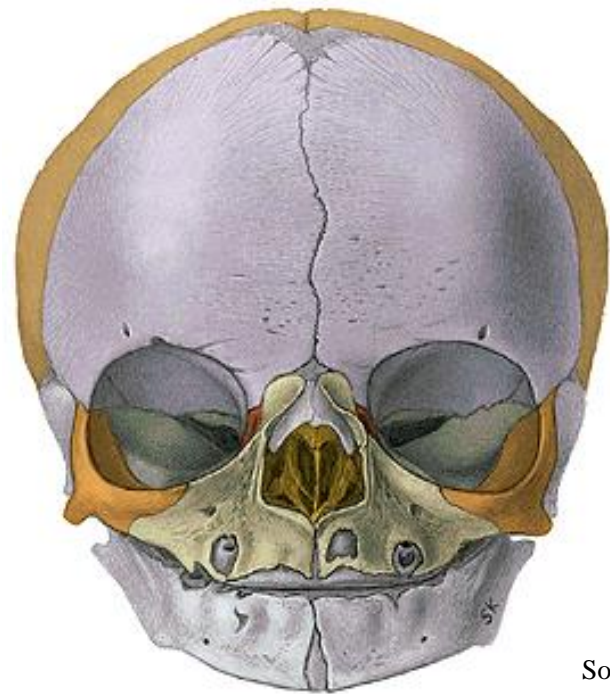
Fonticulus minor

Fonticulus sphenoidalis

Fonticulus mastoideus

Sutura frontalis
(sutura metopica)

Anulus tympanicus



UPPER EXTREMITY

bones

joints

I. Girdle bones

Clavicle (*clavicula*)

Shoulder blade (*scapula*)

II. Bones of free upper extremity

Humerus

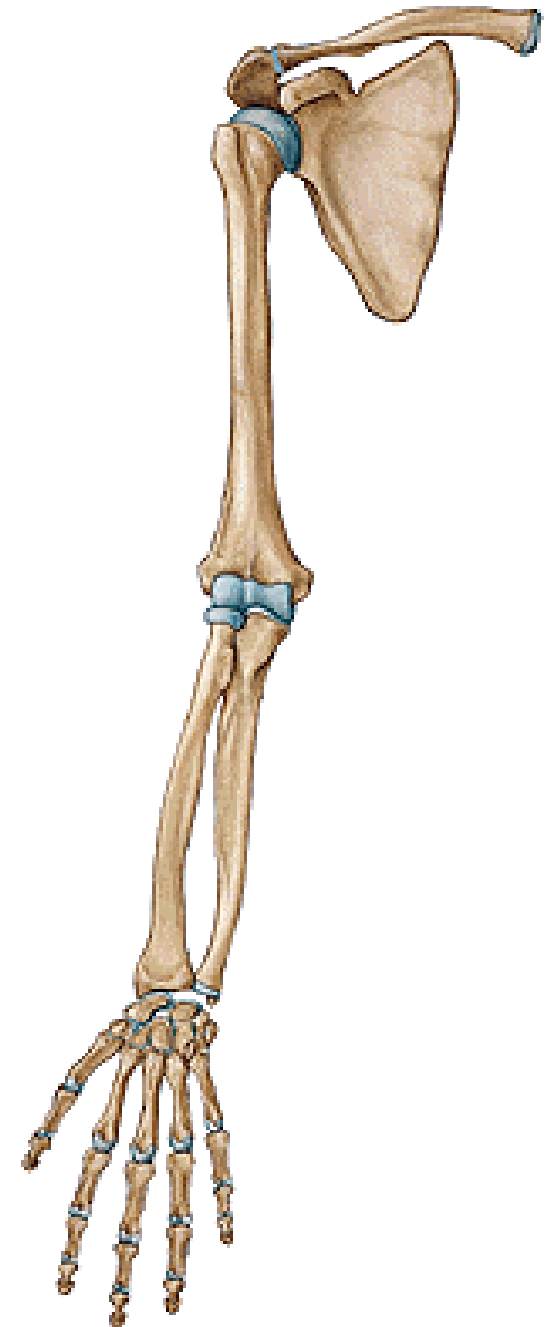
Radius

Ulna

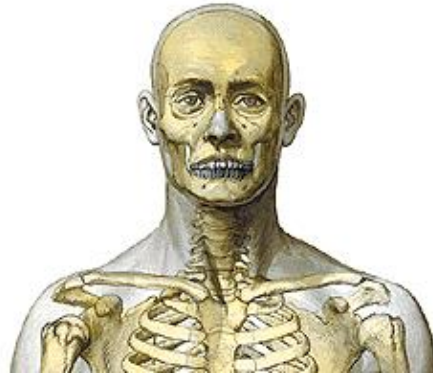
Carpal bones

Metacarpal bones

Phalanges



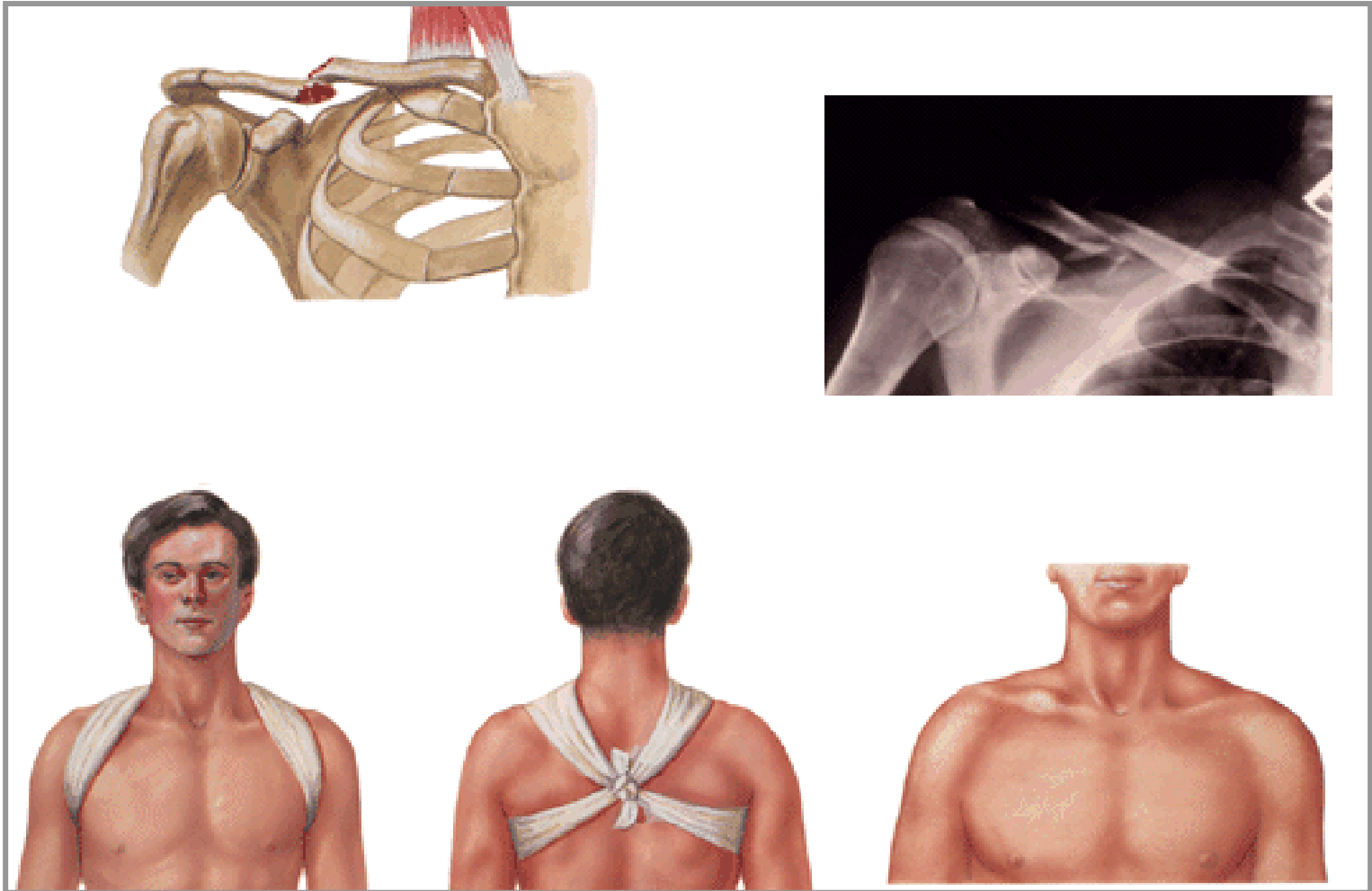
Clavicle (*clavicula*)



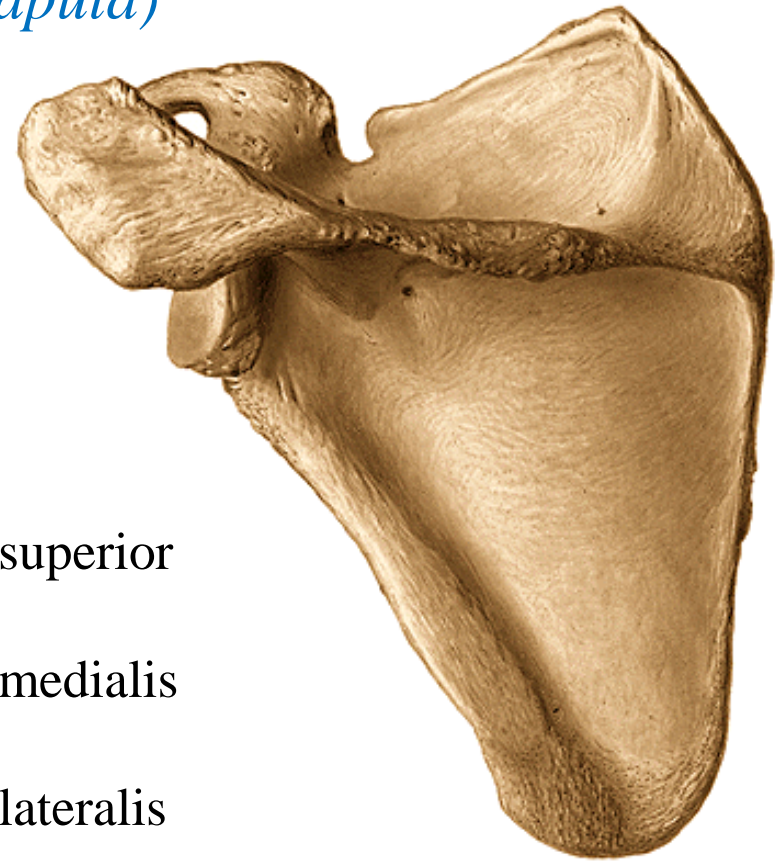
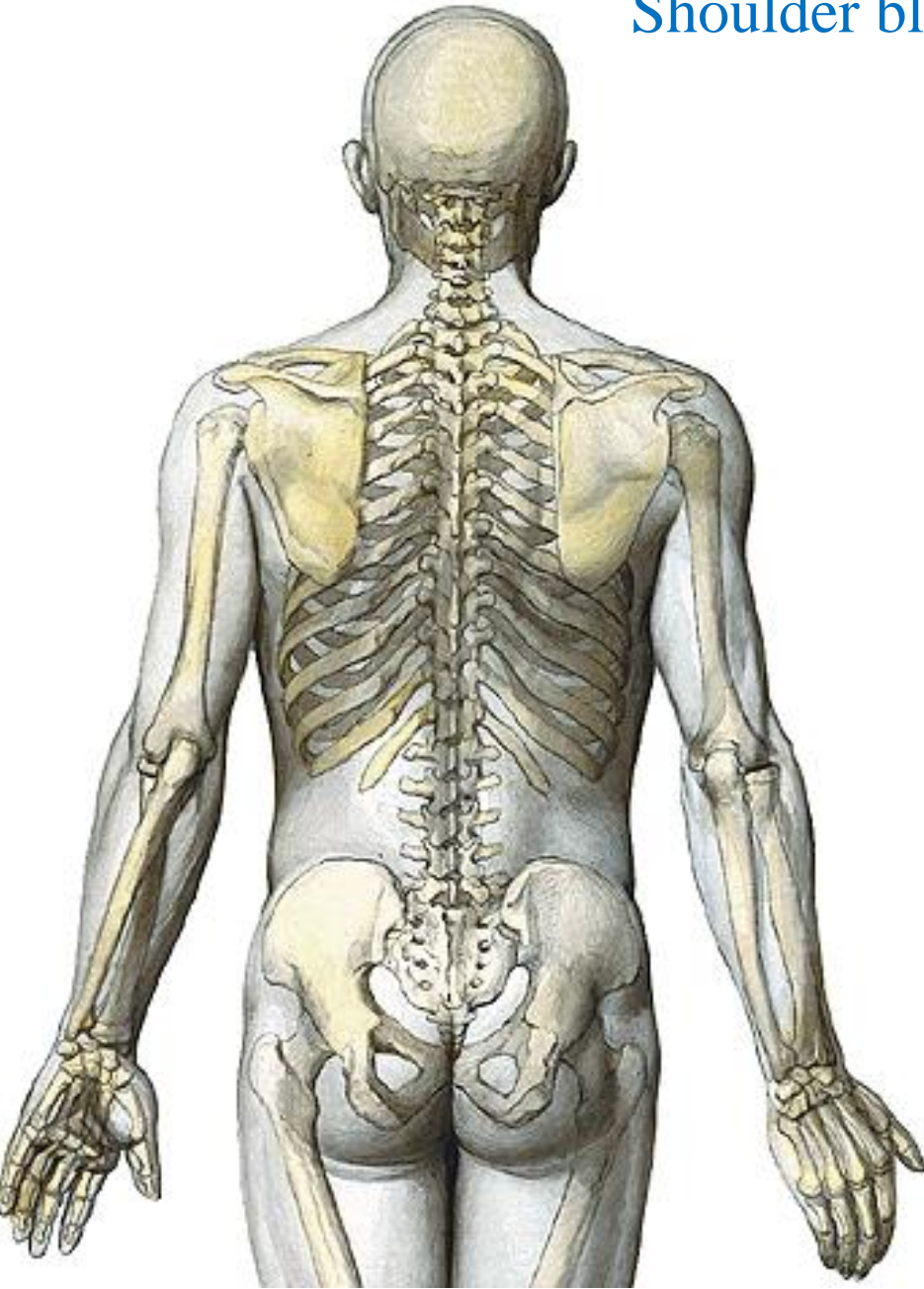
Joins upper extremity to trunk

Connected with shoulder blade and sternum

Fractures



Shoulder blade (*scapula*)



margo superior

margo medialis

margo lateralis

angulus: superior, inferior, lateralis

facies: costalis, dorsalis

Facies costalis scapulae



Processus coracoideus

Cavitas glenoidalis



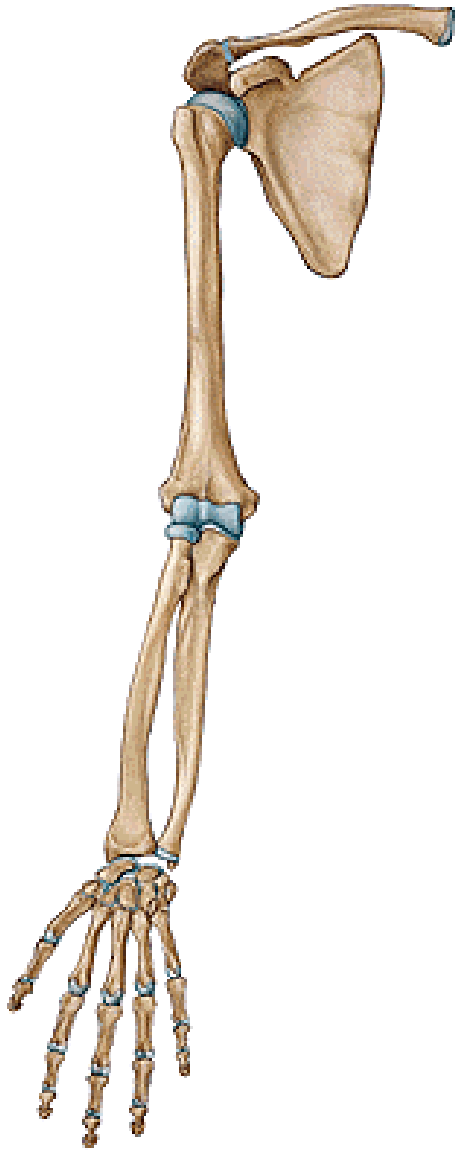
Facies dorsalis scapulae



spina scapulae

acromion

Humerus



Background of arm

Joined with scapula and bones of forearm

Proximal epiphysis

Body

Distal epiphysis



Proximal epiphysis:

caput humeri

collum anatomicum

collum chirurgicum

tuberculum majus

tuberculum minus

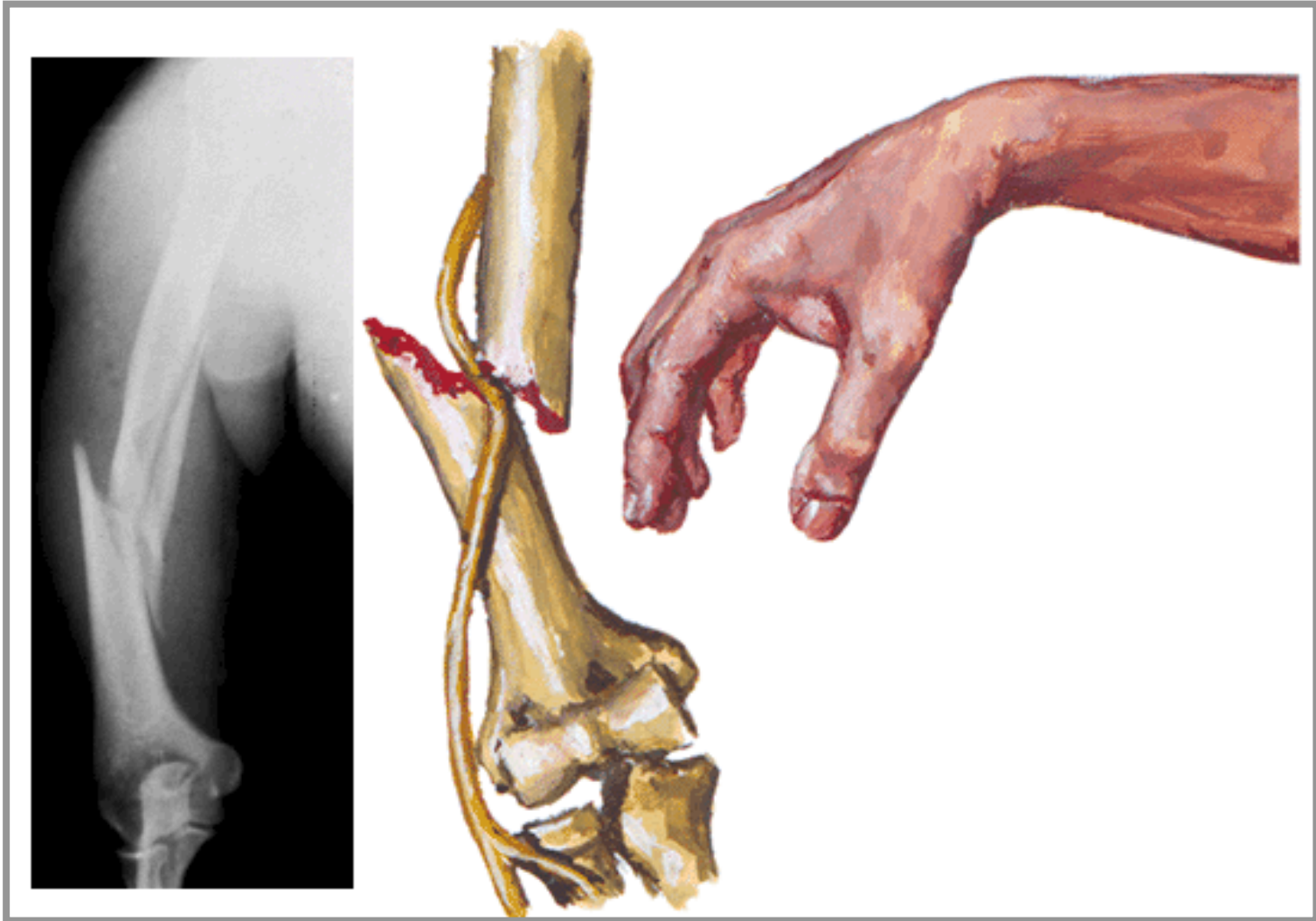


Body

tuberositas deltoidea

sulcus nervi radialis
(nervus radialis)

Fracture of body of humerus (nervus radialis can be damaged)





Distal epiphysis:

epicondylus medialis

sulcus nervi ulnaris

epicondylus lateralis

trochlea humeri

capitulum humeri

Radius

Lateral side of forearm

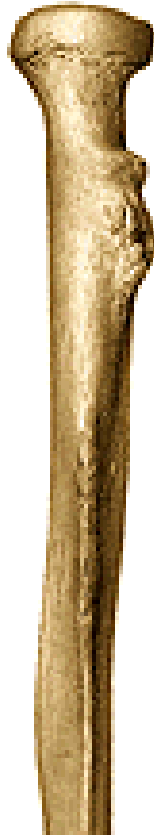
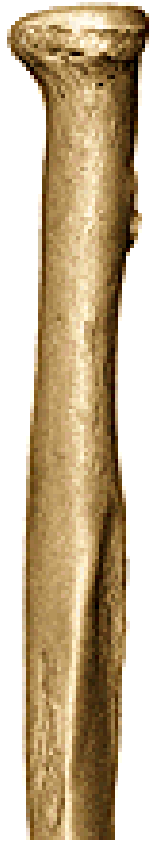
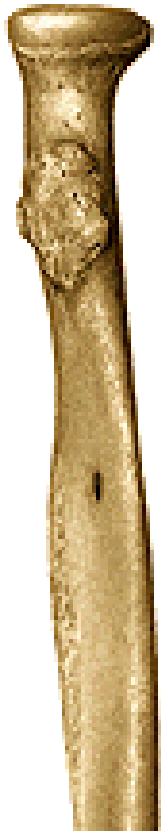
Connected with humerus, ulna and carpal bones

Proximal epiphysis

Body

Distal epiphysis





Proximal epiphysis:

caput radii

fovea capitis radii

circumferentia articularis capitis radii

collum radii

Body

tuberositas radii



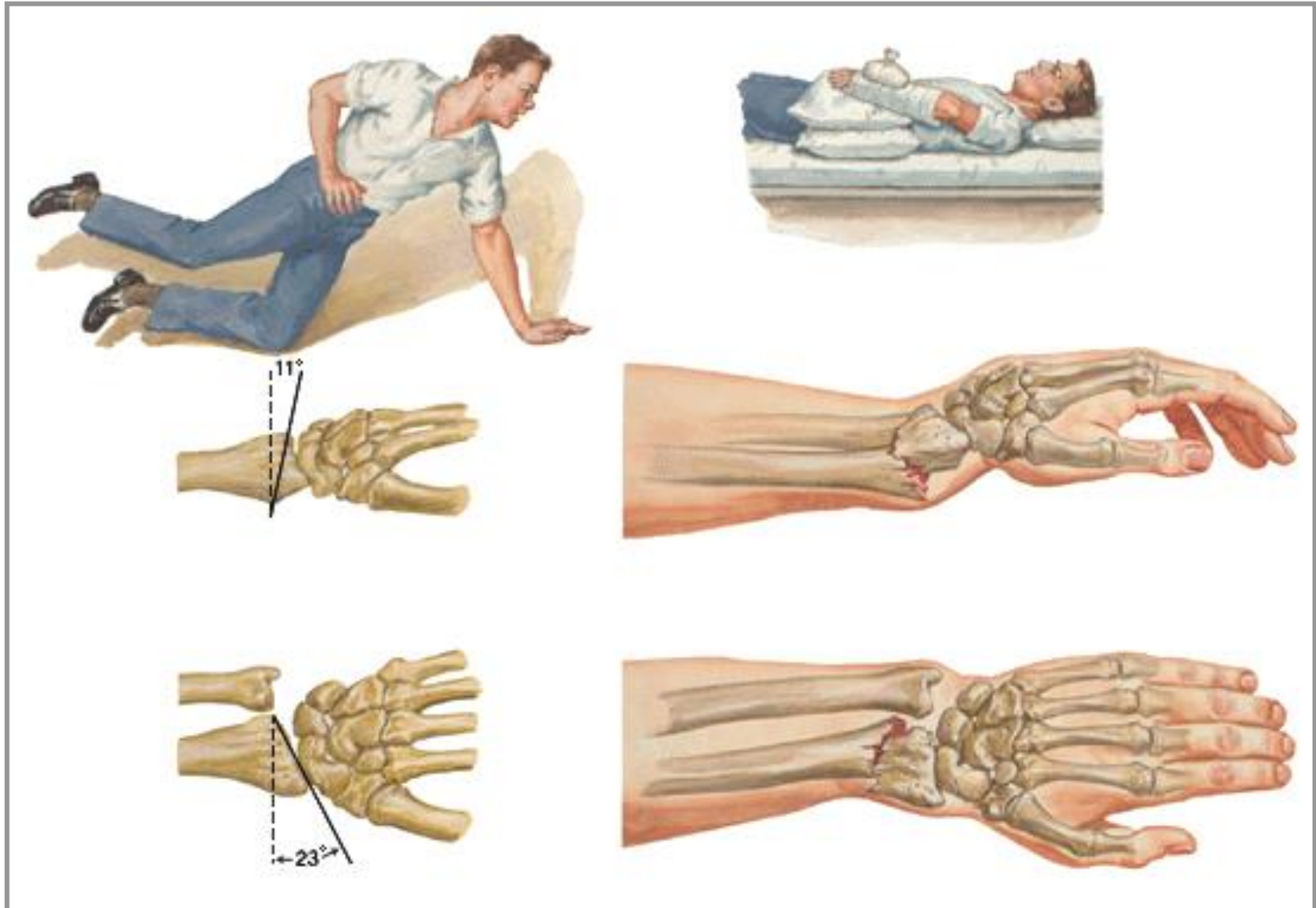
Distal epiphysis:

processus styloideus radii

facies articularis carpea radii

incisura ulnaris radii

Fracture of distal epiphysis of radius (Fracture of Colles)



Ulna

Medial side of forearm

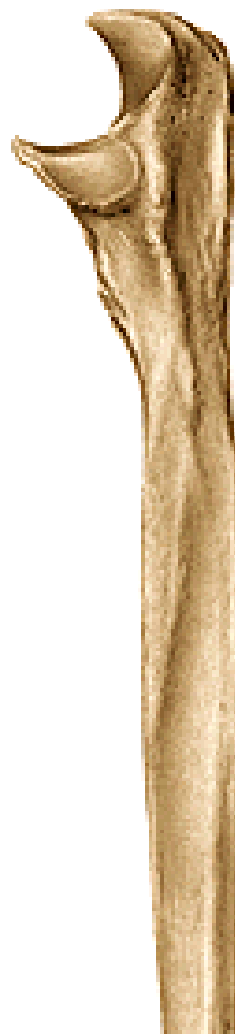
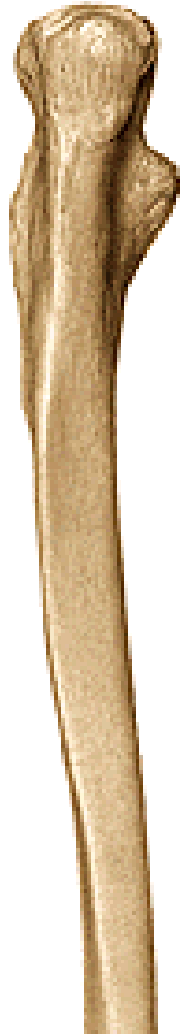
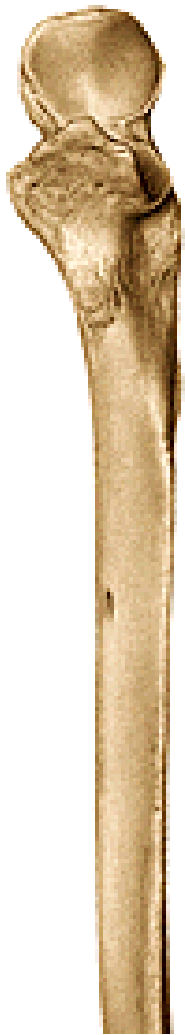
Connected with humerus and radius

Proximal epiphysis

Body

Distal epiphysis





Proximal epiphysis:

olecranon ulnae

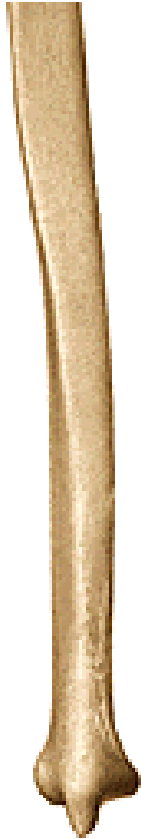
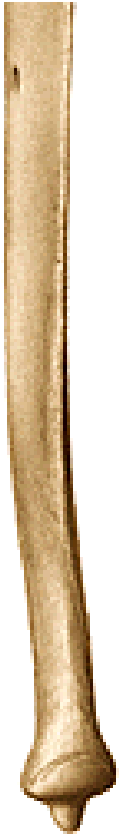
incisura trochlearis

processus coronoideus

incisura radialis ulnae

Body:

tuberositas ulnae

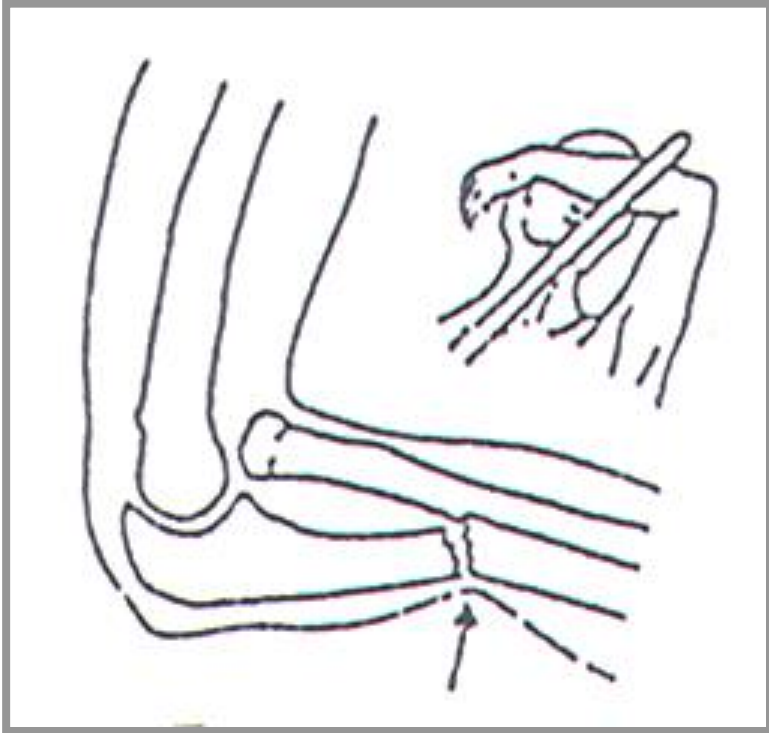


Distal epiphysis:

caput ulnae

processus styloideus ulnae

„Parry fracture“



Skeleton of the hand

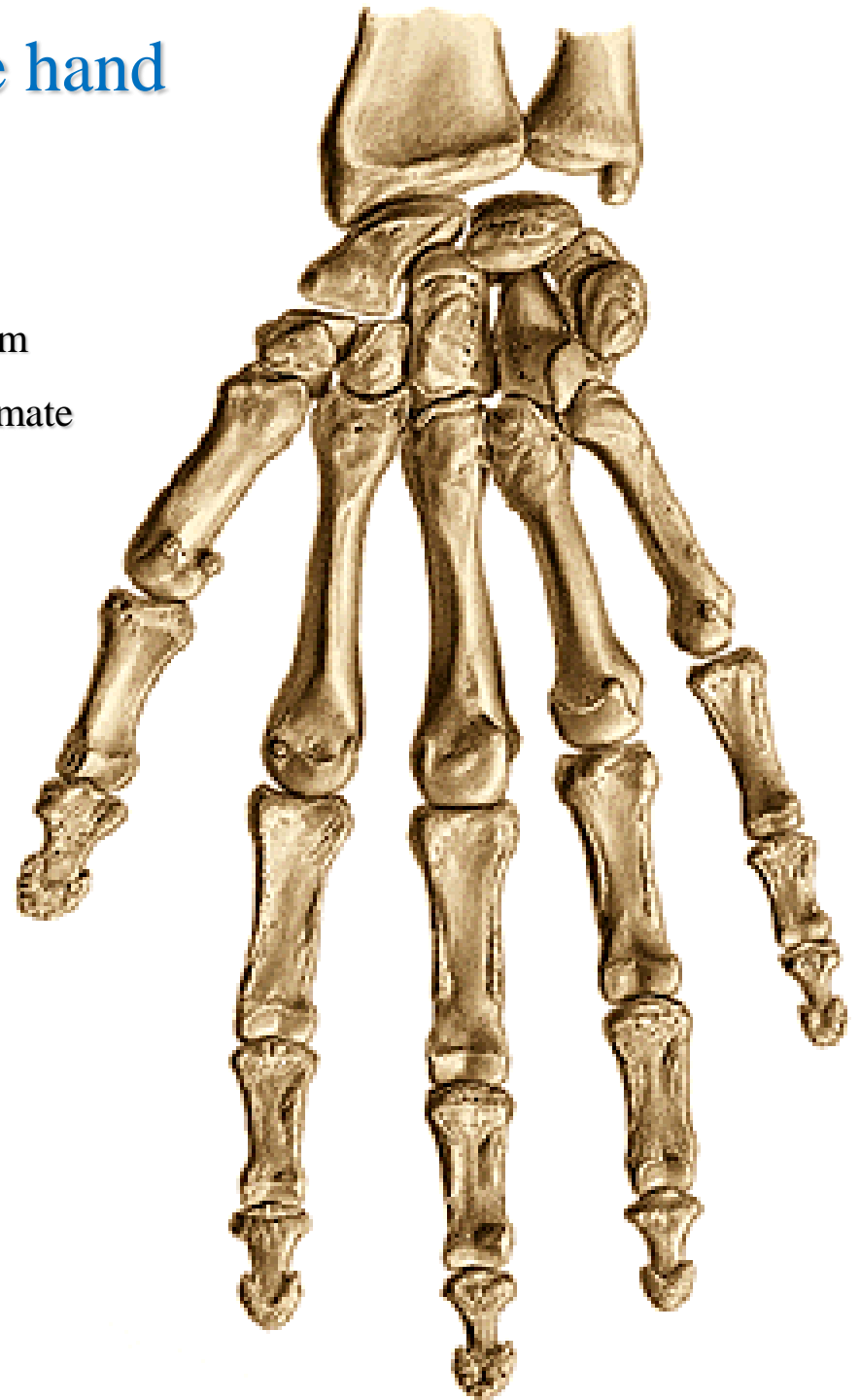
Carpal bone – 8 in 2 rows

Proximal row: scaphoid, lunate, triquetral, pisiform

Distal row: trapezium, trapezoidium, capitate, hamate

Metacarpal bones - 5

Phalanges - 14

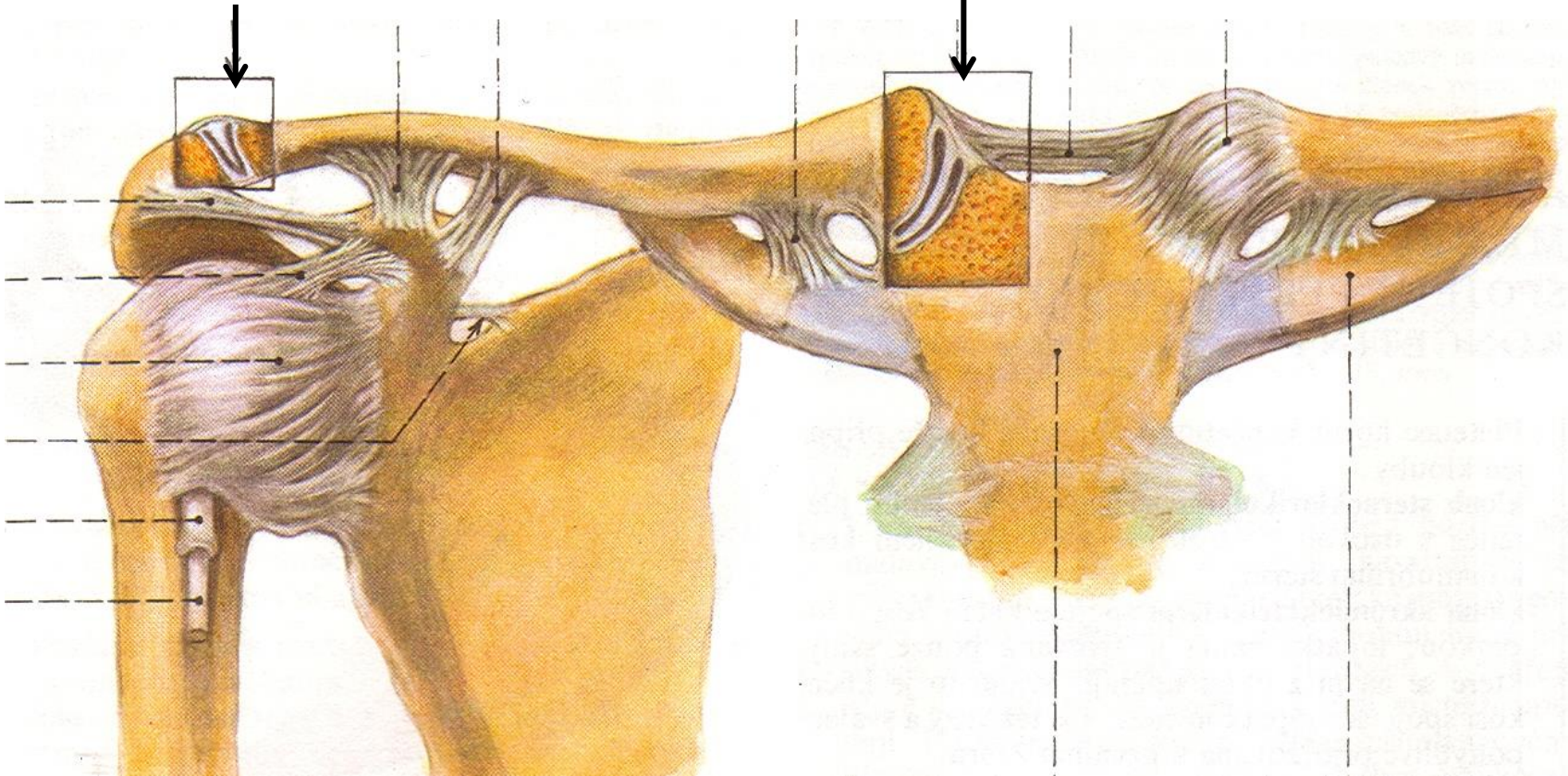


JOINTS

Joints of the girdle bones

Articulatio acromioclavicularis

Articulatio sternoclavicularis



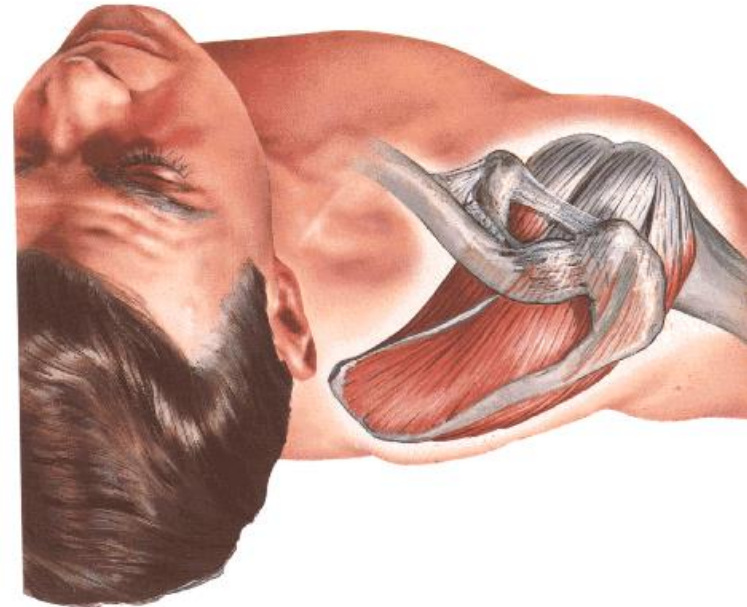
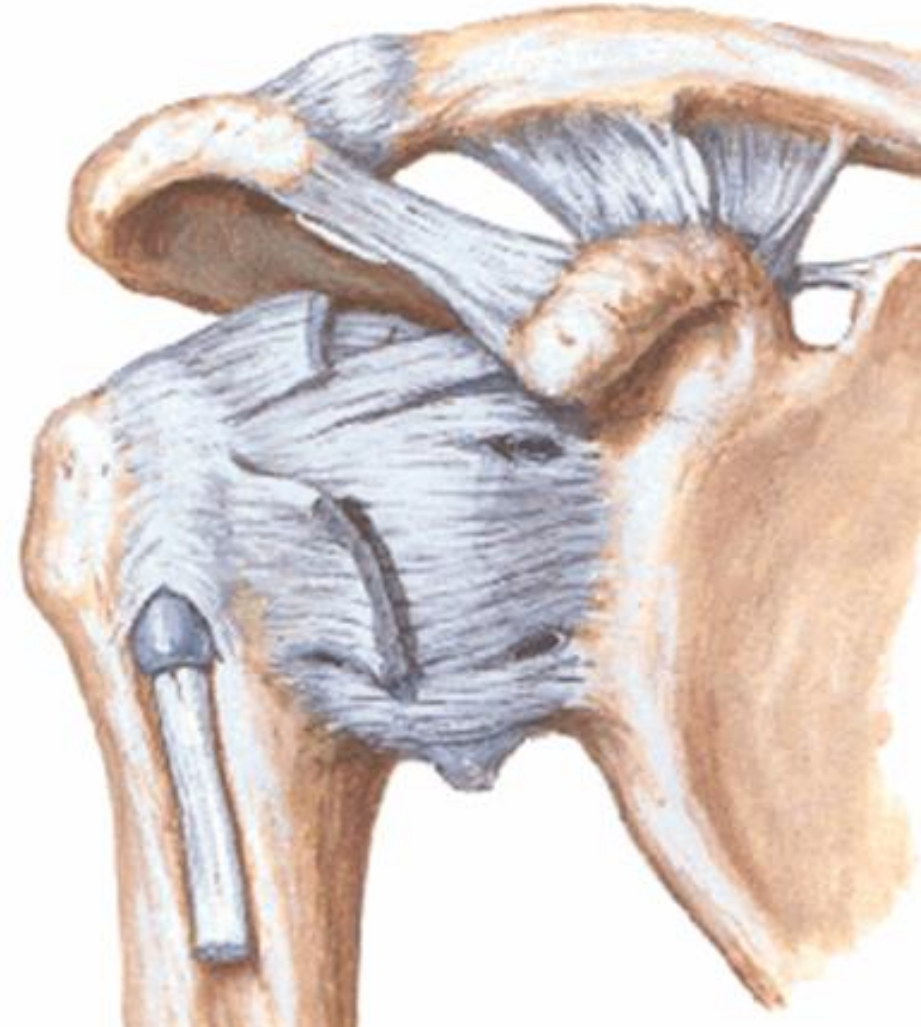
Joints of the bones of free extremity

Shoulder joint (*articulatio humeri*)

Head of humerus, *cavitas glenoidalis*

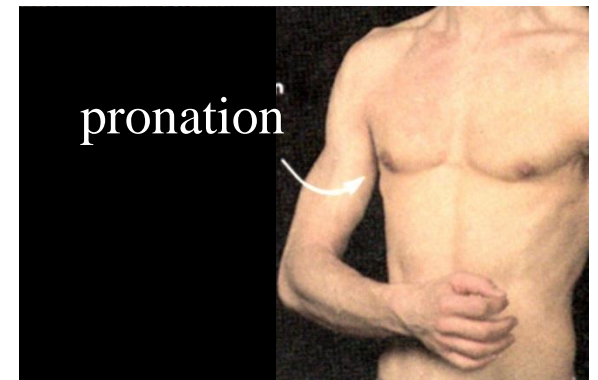
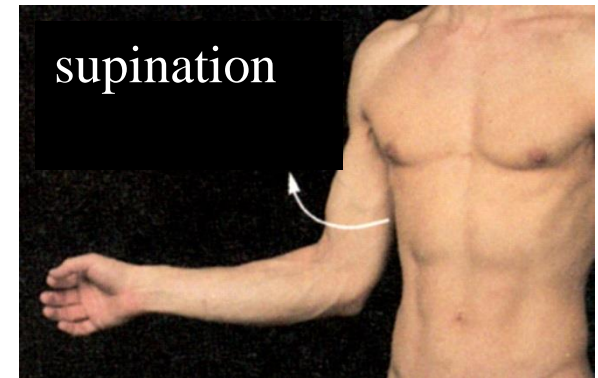
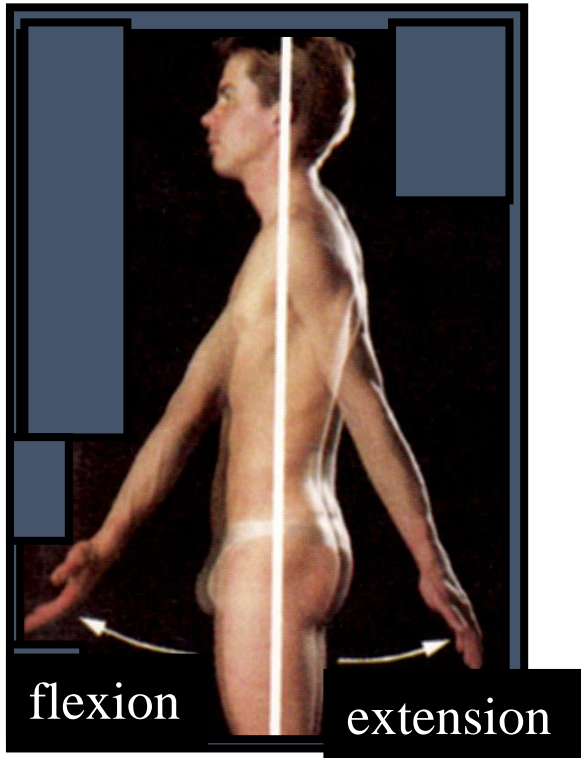
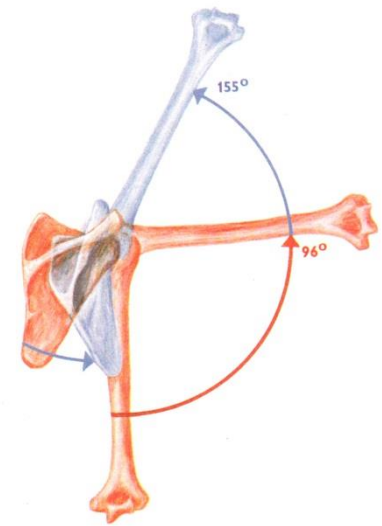
labrum glenoidale

Firmed by tendons of scapulohumeral
muscles
(„rotator cuff“)



Type: spherical

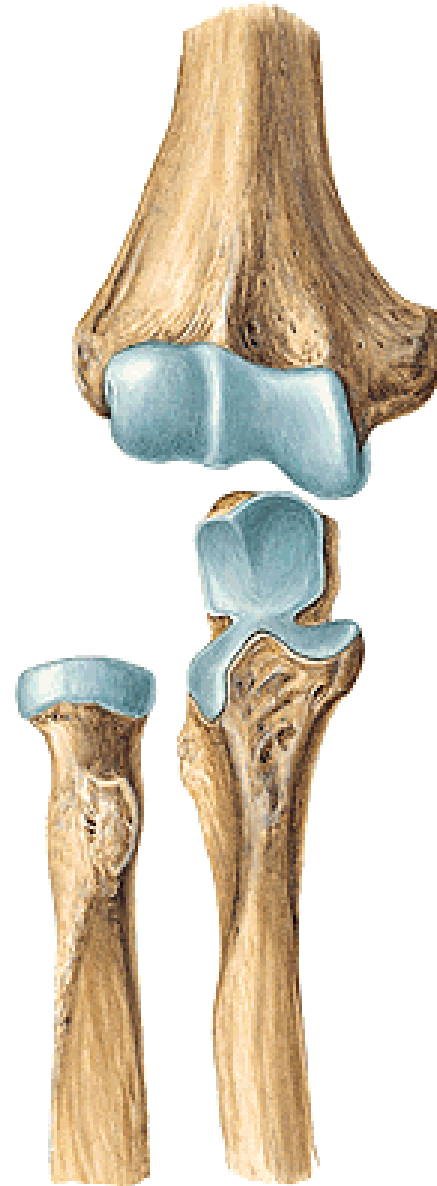
Movements: three axial joint



Elbow joint (*articulatio cubiti*)

Articulatio composita:

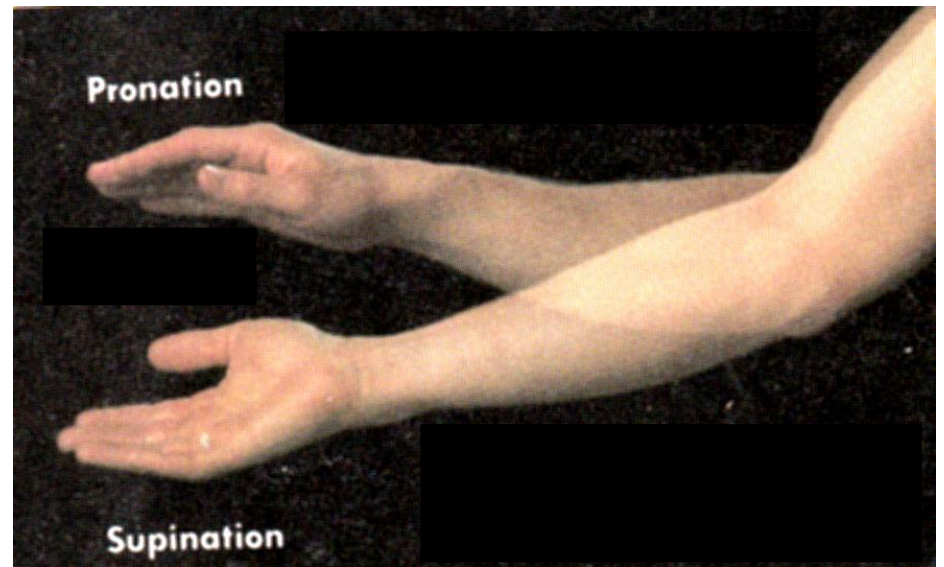
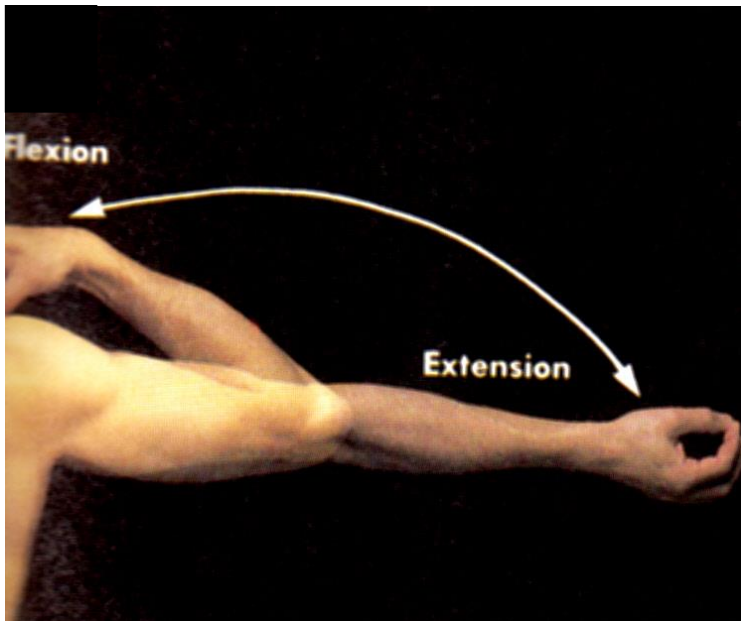
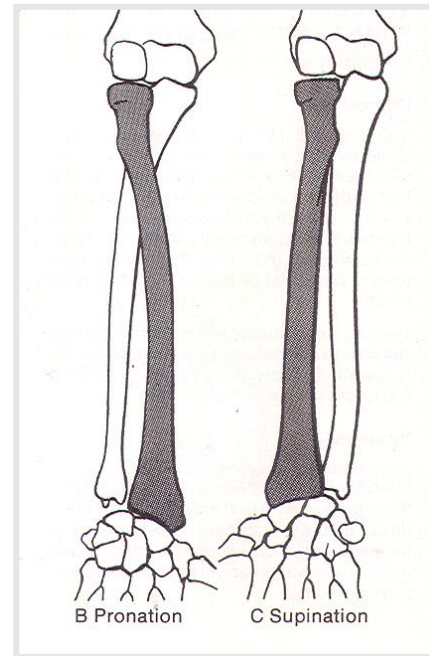
1. Articulatio humeroradialis
2. Articulatio humeroulnaris
3. Articulatio radioulnaris proximalis



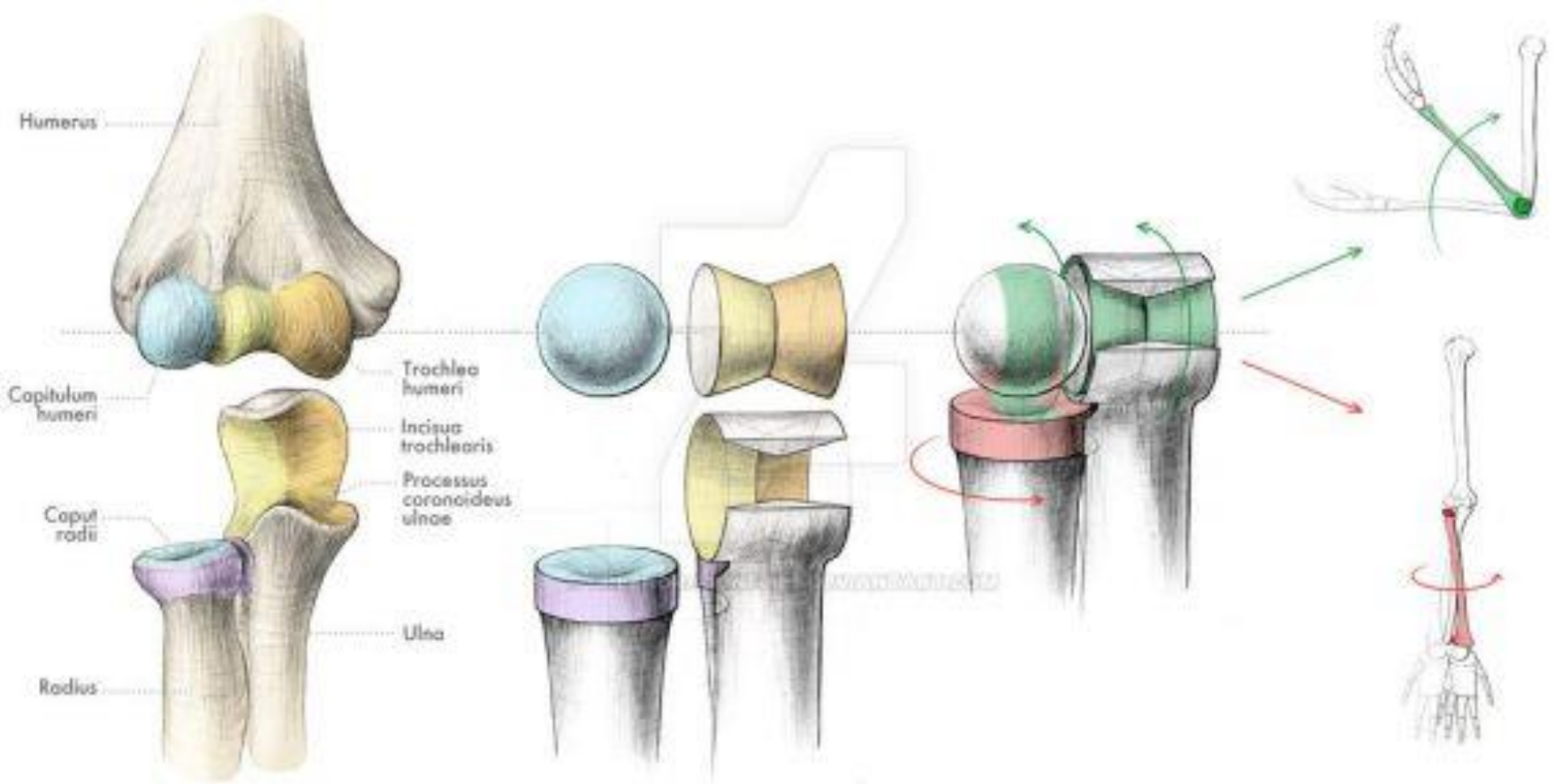
Elbow joint - movements

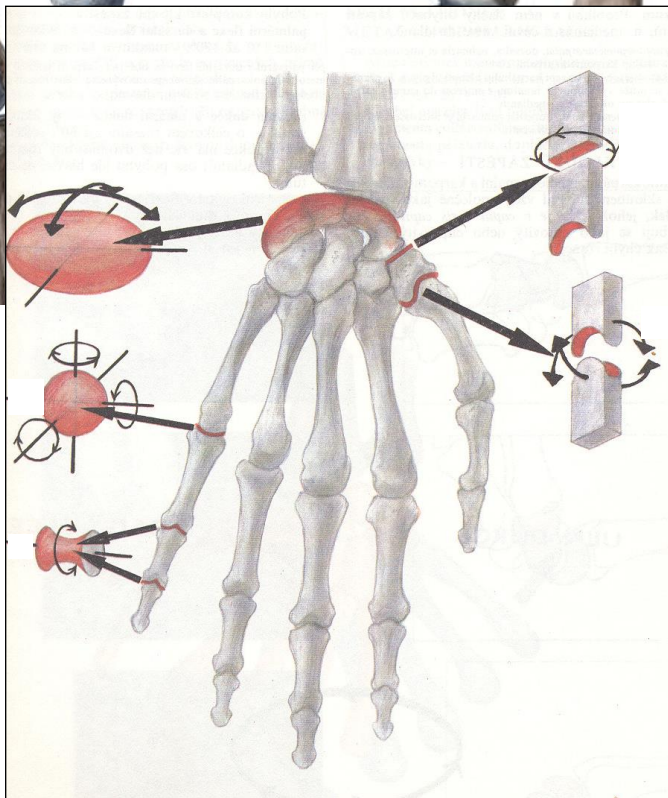
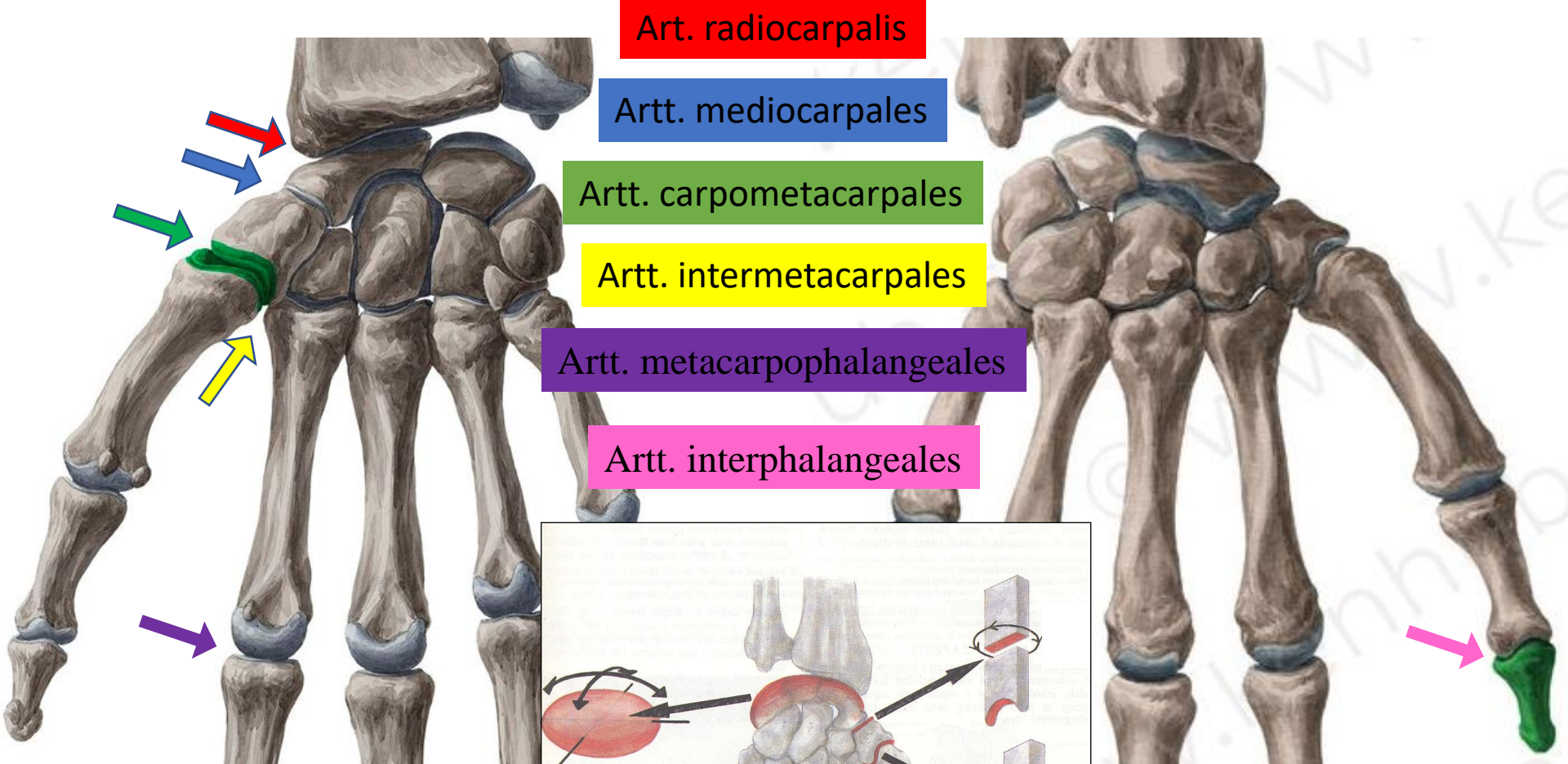
flexion and extension

pronation and supination of forearm



Articulatio cubiti





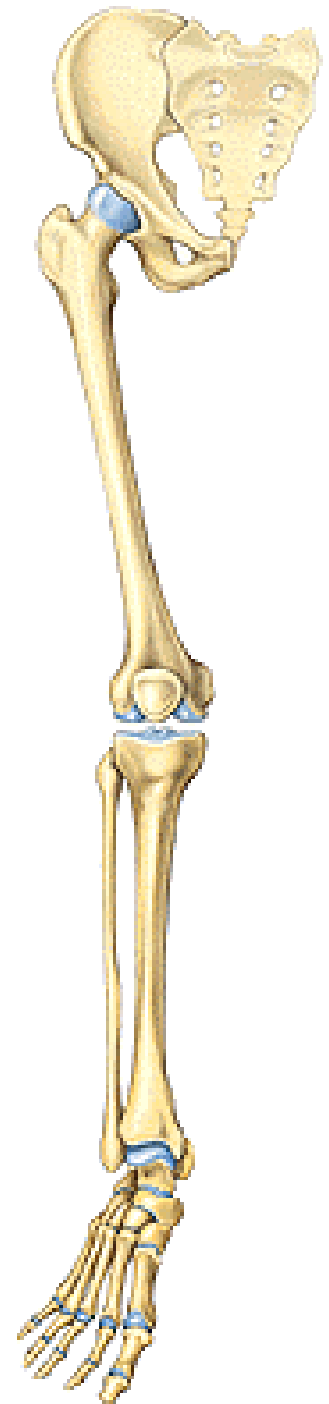
LOWER EXTREMITY

bones

joints

Skeleton of lower extremity

- organ of locomotion
- comparing to upper extremity bones and muscles are stronger and heavier than on the upper extremity
- reduced movements
- pelvis and vertebral column form functional unit
- the most evident developmental changes are found on foot



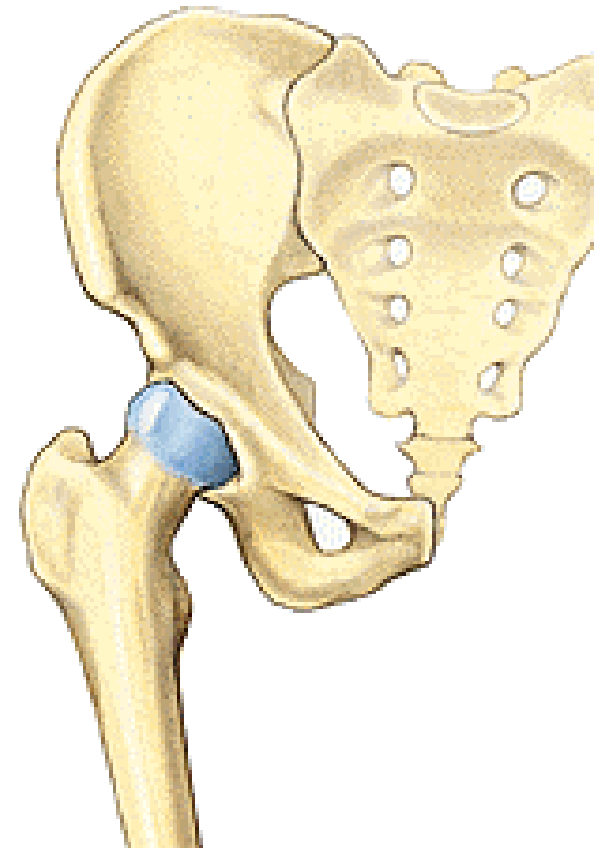
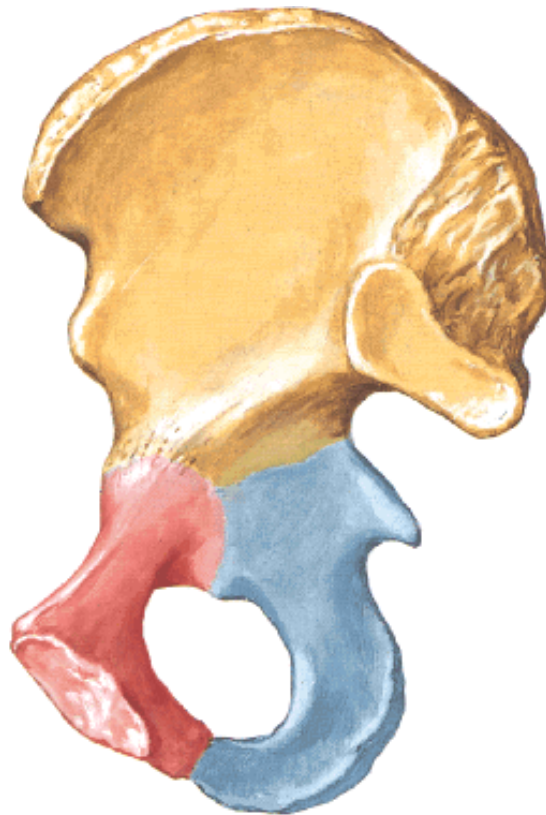
Lower extremity girdle bones

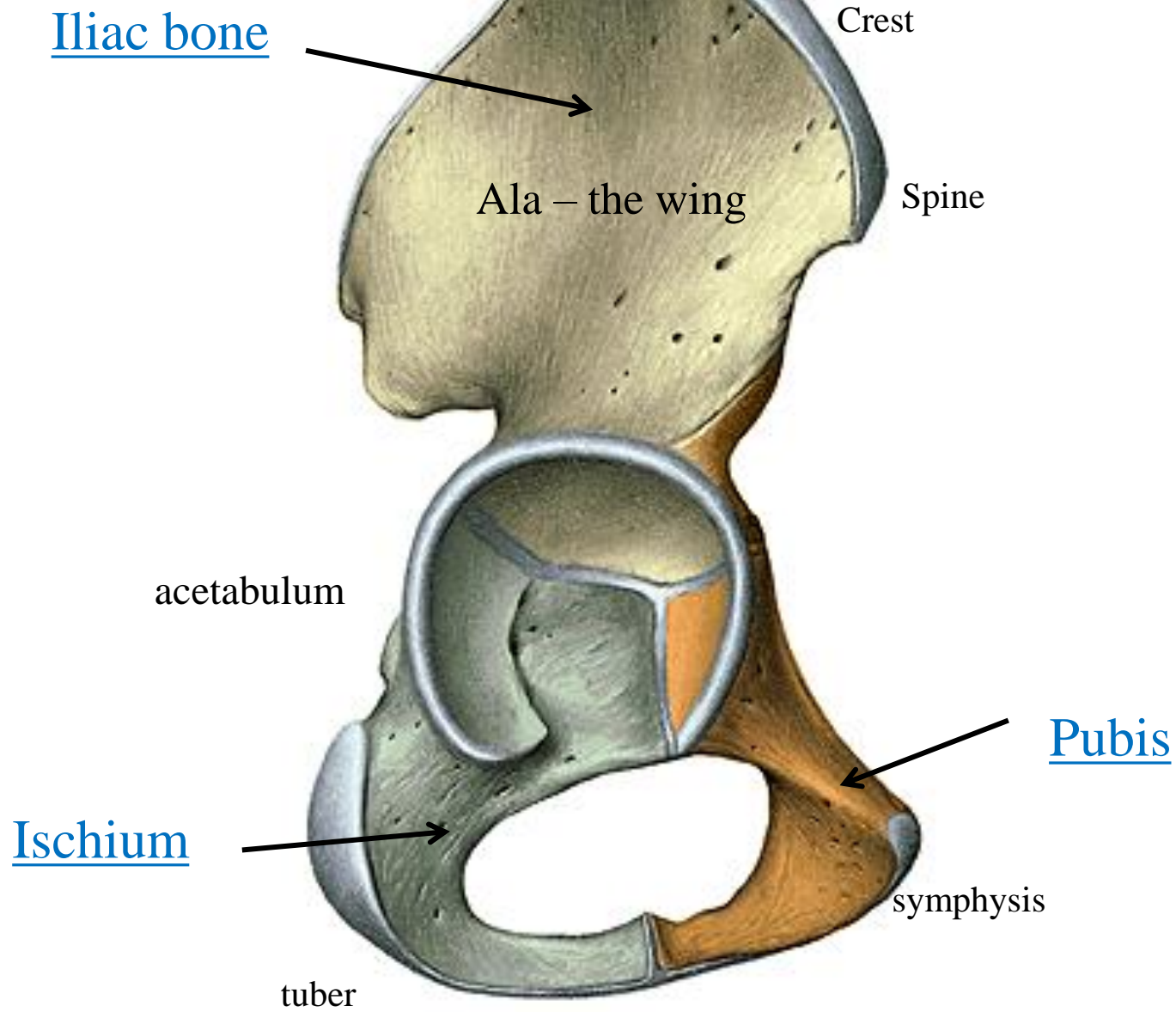
Os coxae (hip bone)

Iliac bone

Ischium

Pubis





Pelvis

Connection of right and left hip bone and sacral bone



Skeleton of free extremity

Femur (thigh bone)

Patella

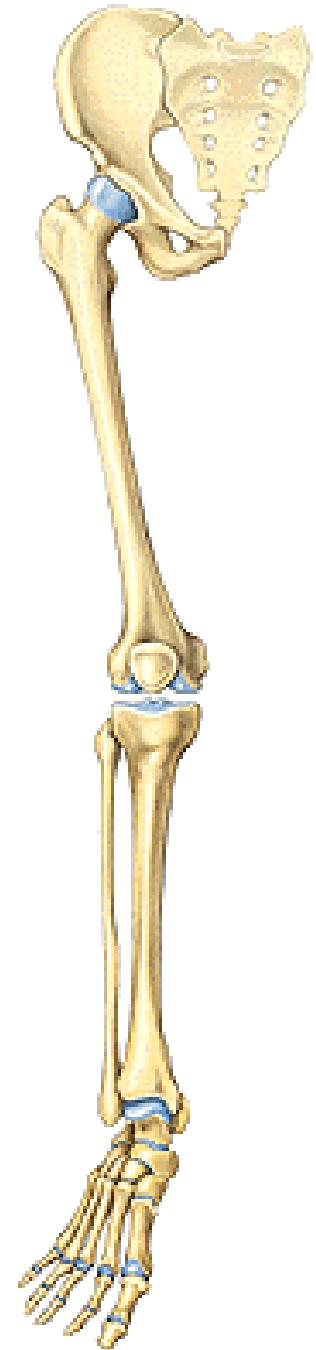
Tibia (shin bone)

Fibula (calf bone)

Tarsal bones

Metatarsal bones

Phalanges



Femur – thigh bone

proximal epiphysis



body



distal epiphysis

Proximal epiphysis

caput femoris

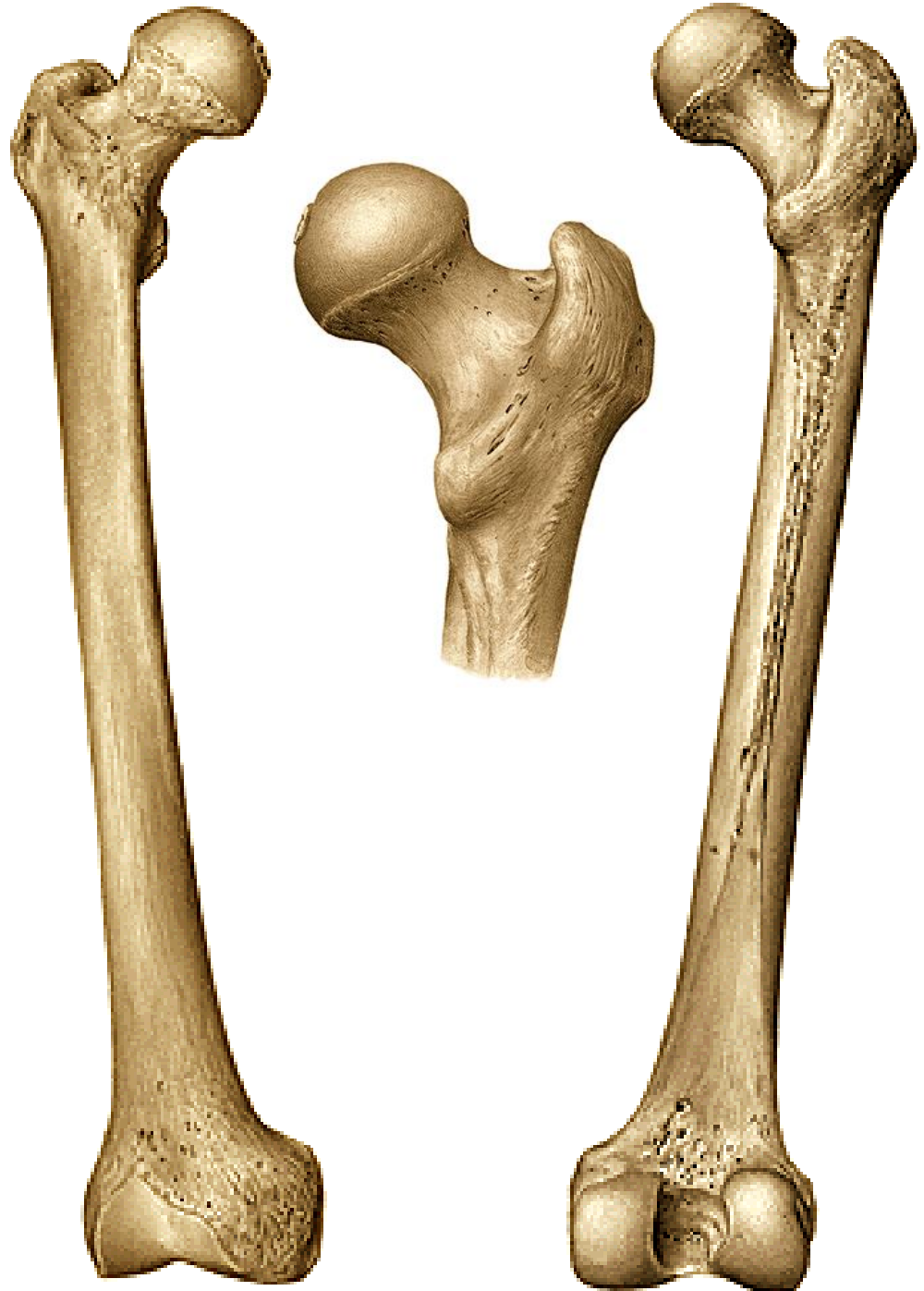
fovea capitis femoris



corpus femoris

collum femoris

trochanter major et minor



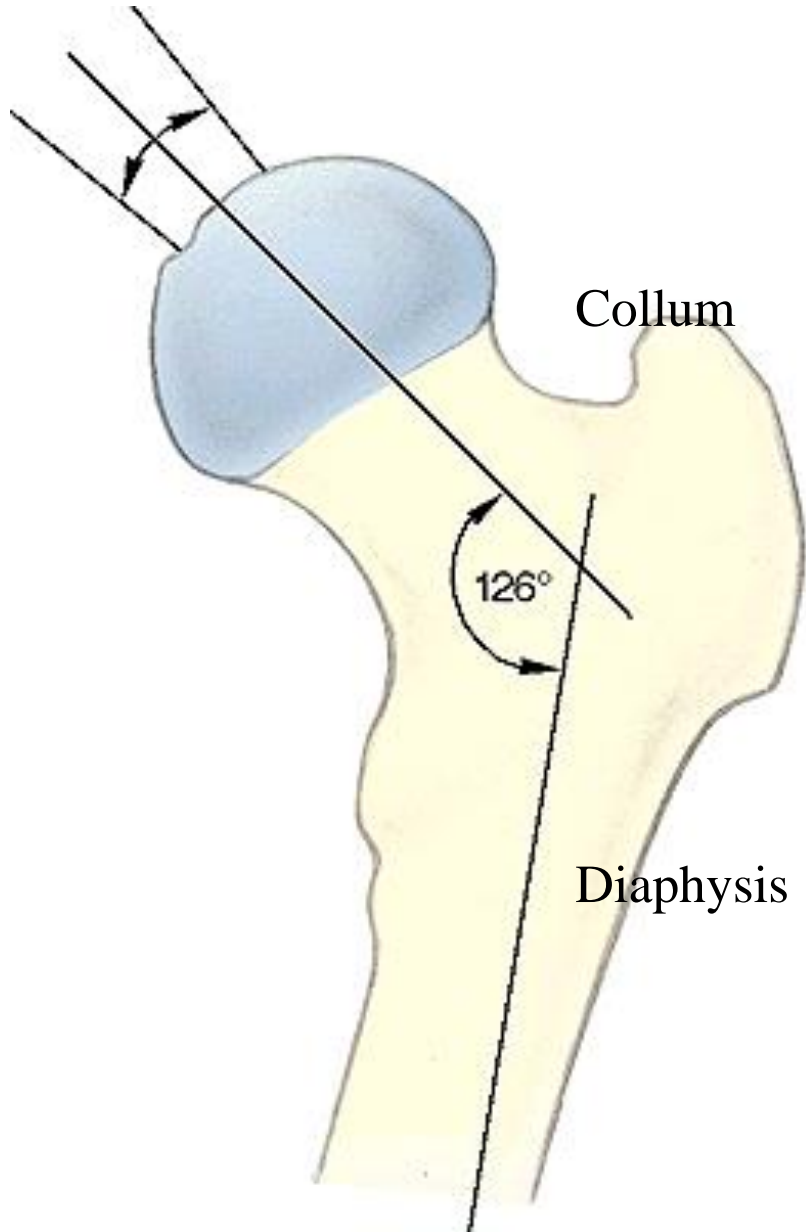
Distal epiphysis

condylus medialis

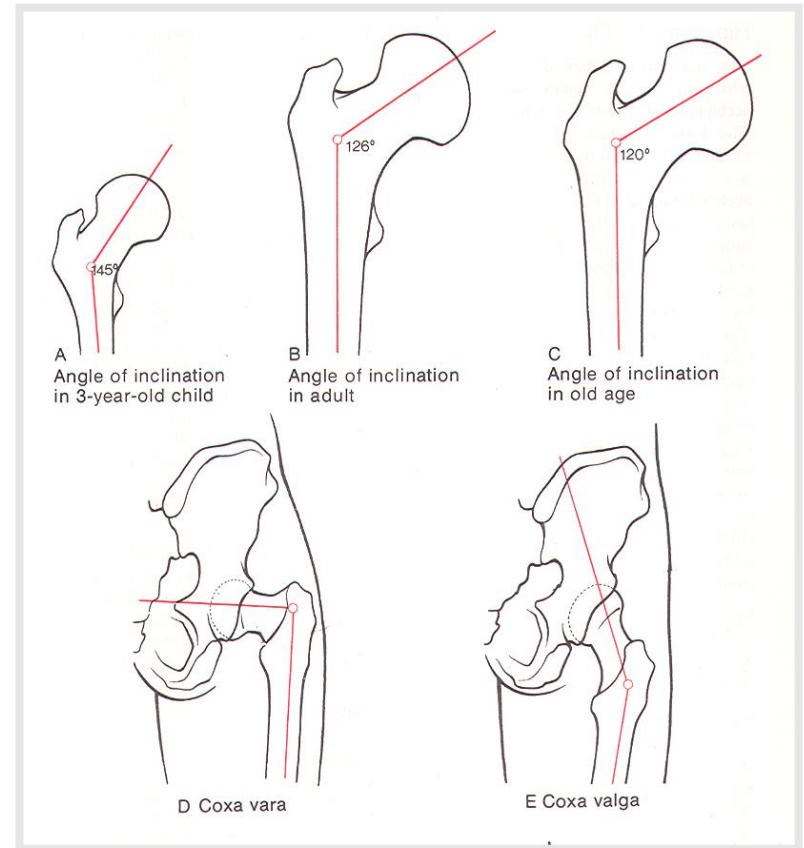
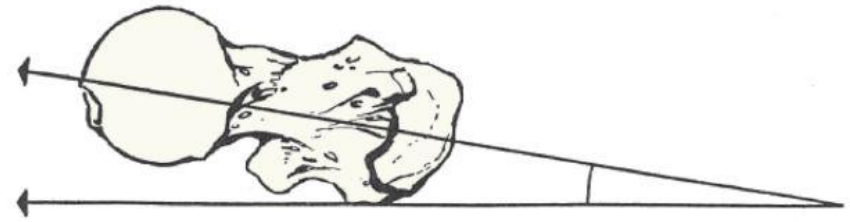
condylus lateralis



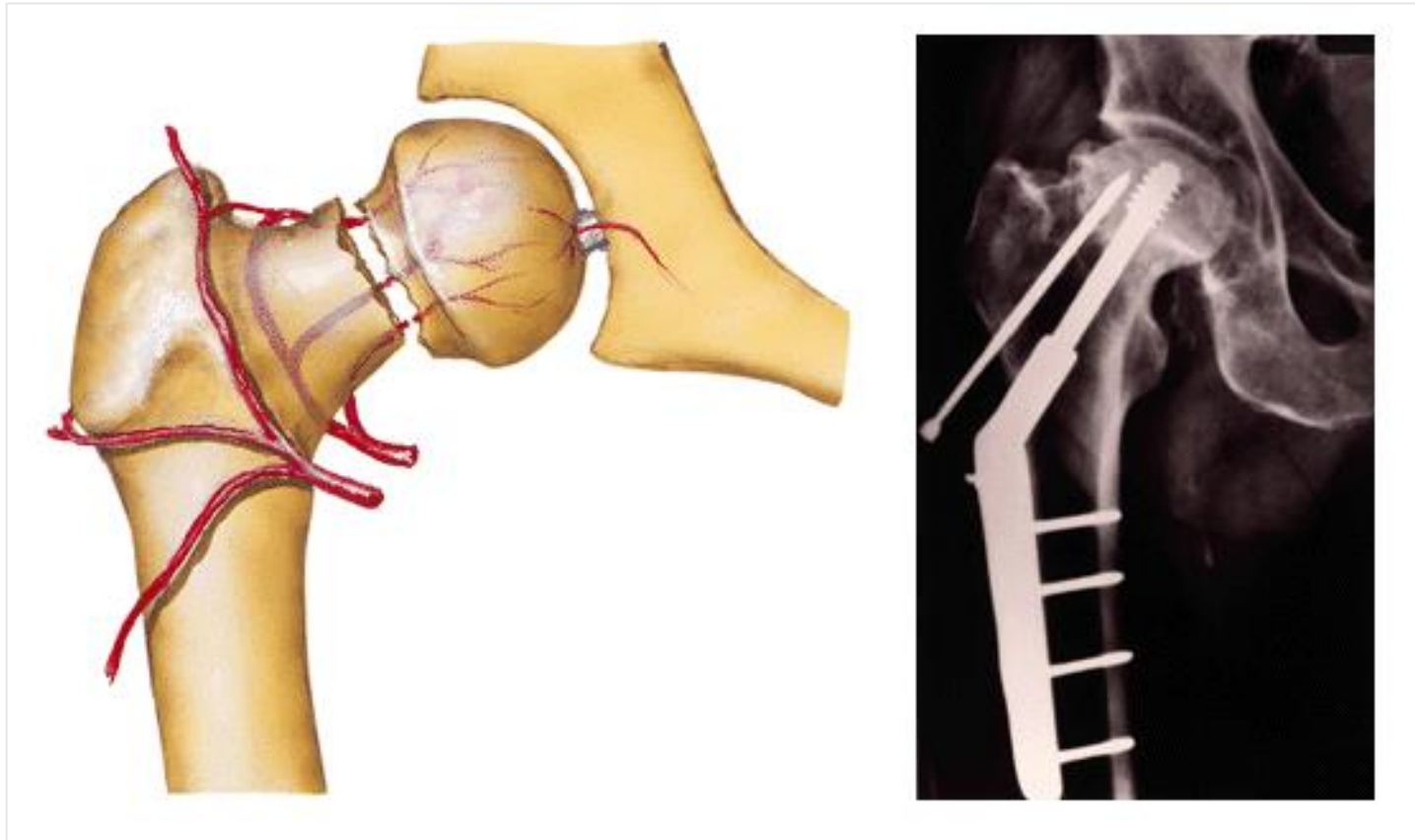
Colodiaphysal angle



Torsion angle

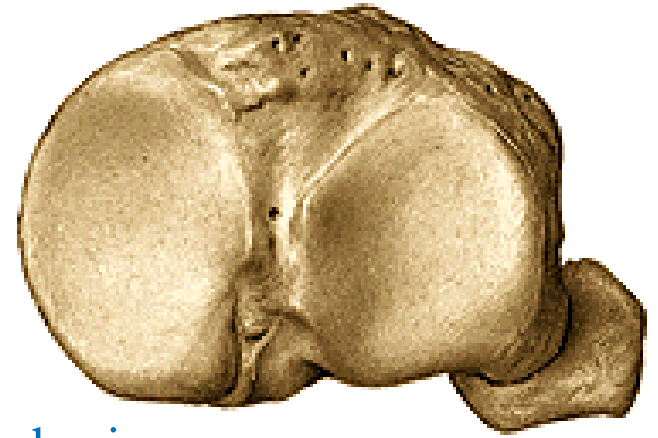


Fracture of collum femoris



Tibia (shin bone)

proximal and distal epiphyses, body



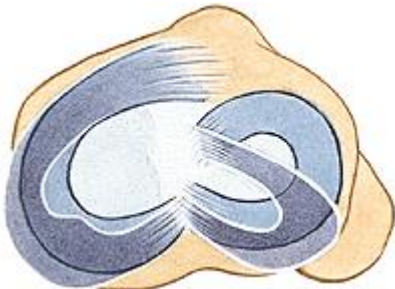
Proximal epiphysis

condylus medialis et lateralis

facies articularis superior medialis, lateralis

area intercondylaris anterior et posterior

facies articularis fibularis



Body

tuberositas tibiae – insertion of
quadriceps



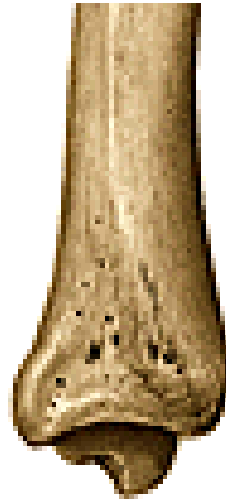


Distal epiphysis

malleolus medialis

incisura fibularis tibiae

facies articularis inferior tibiae



Fibula – (calf bone)

Proximal epiphysis

caput fibulae

facies articularis capitis fibulae

apex capitis fibulae

Distal epiphysis

malleolus lateralis



Skeleton of the foot

Phalanges - 14

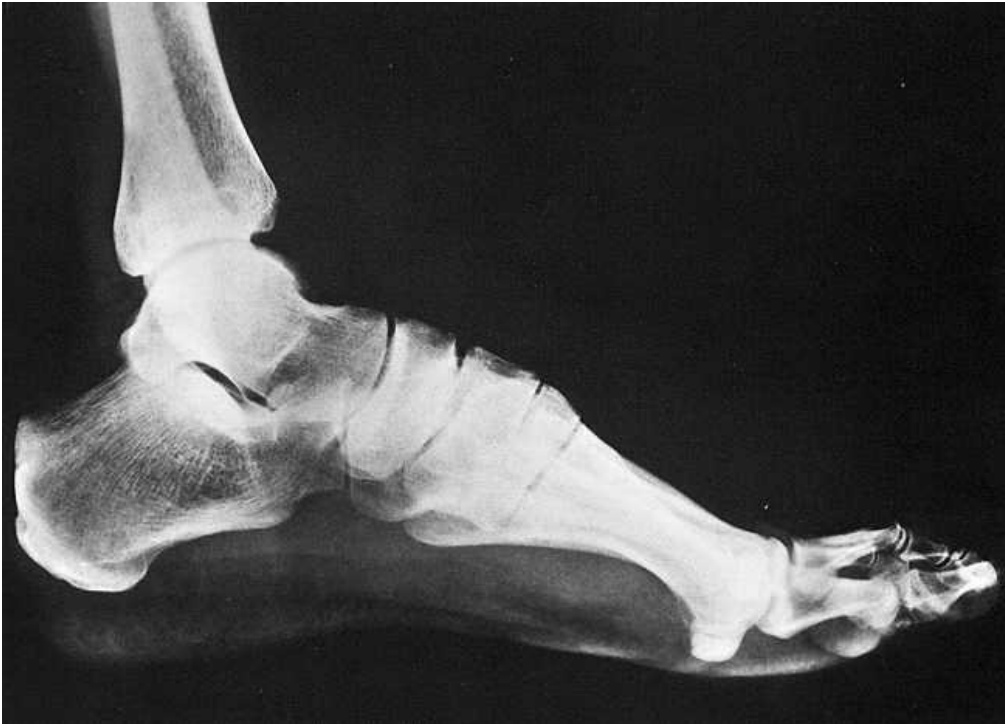
Metatarsal bones - 5

Tarsal bones – 7 (talus, calcaneus, cuboid bone, navicular bone, cuneiform bones (3))



Foot vault

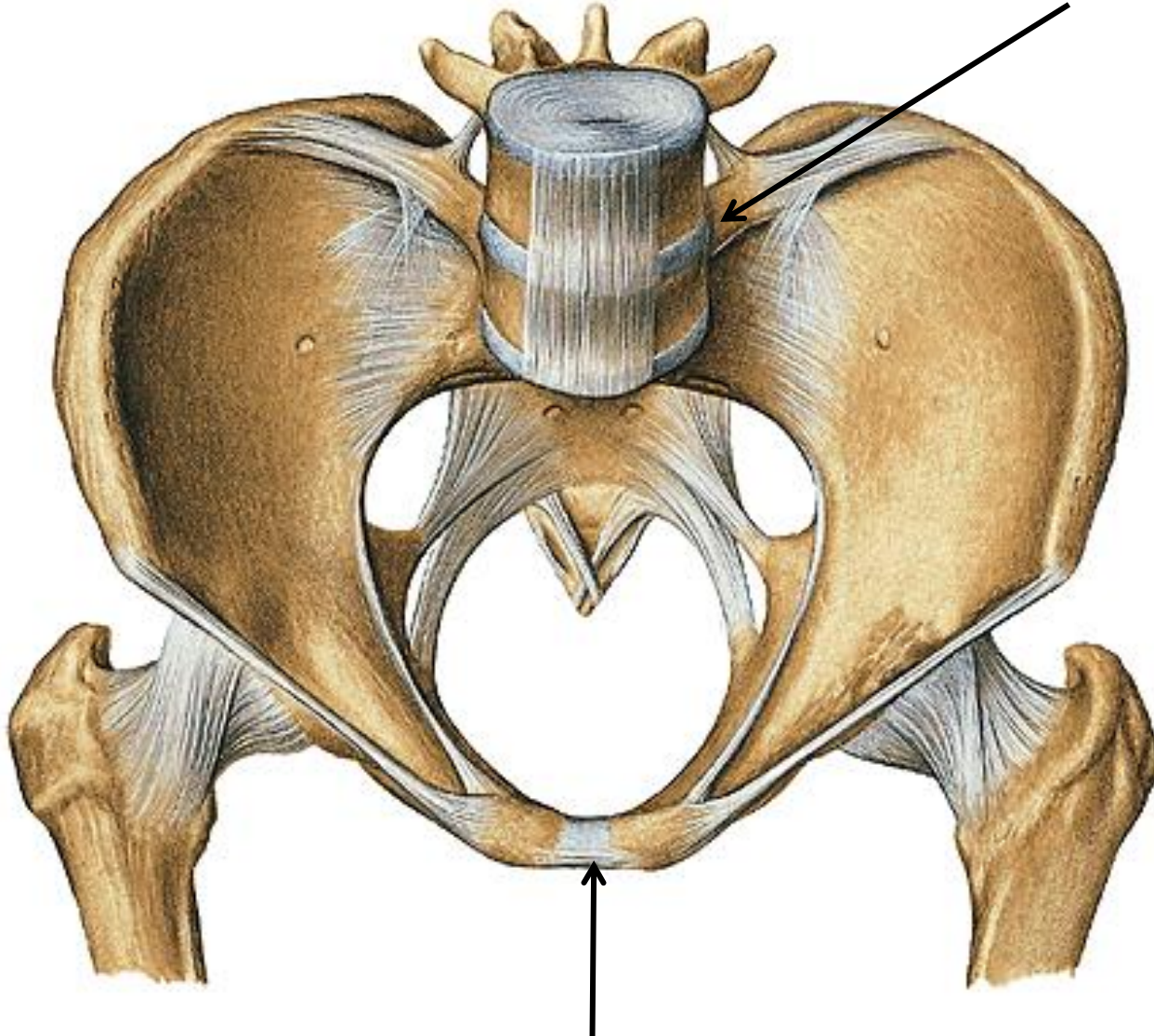
Protection of soft parts of foot
Longitudinal and transversal vault
Firmed by tendons and ligaments



JOINTS

Joints of girdle

SI joint : Sacrum-Ilium



Pubic symphysis - synchondrosis

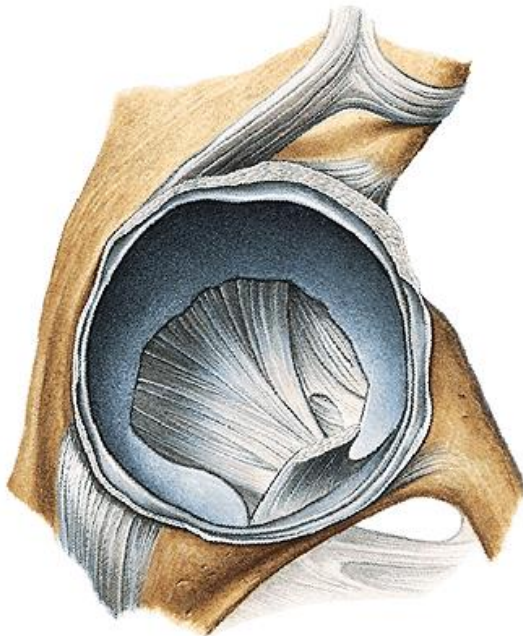
Joints of free extremity

Articulatio coxae (hip joint)

Acetabulum, head of femur

Labrum acetabulare

Joint capsule firmes by ligaments





Movements:

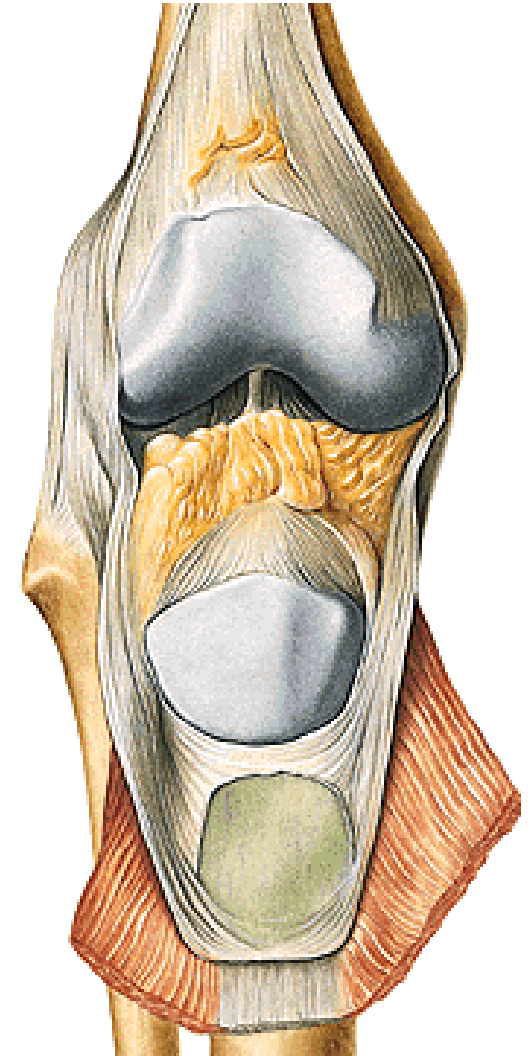
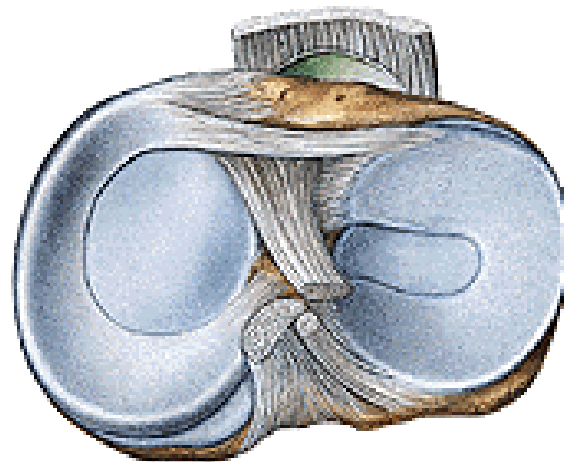
Abduction
Adduction
Flexion
Extension
Pronation
Supination

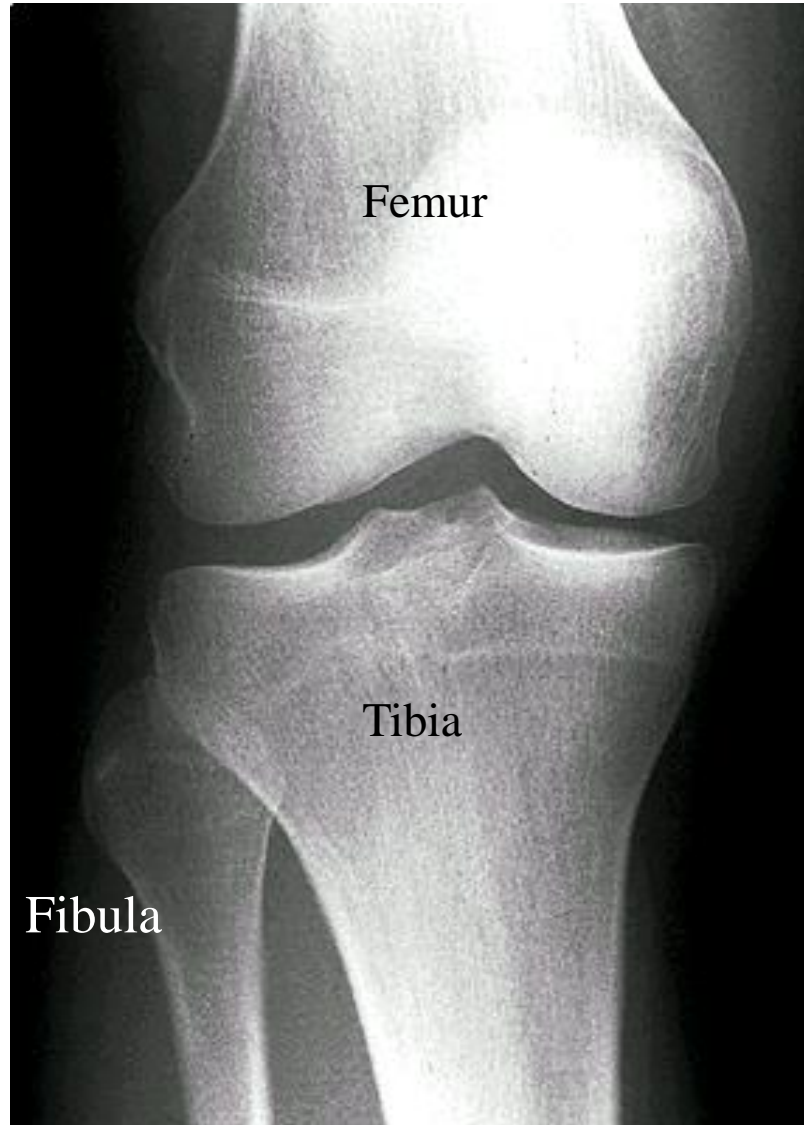
Articulatio genus – knee joint

Articulatio composita: femur, tibia, patella

Meniscus medialis et lateralis

Ligamenta cruciata (ant. et post.)





Femur

Tibia

Fibula

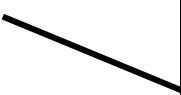
Patella



Tibia



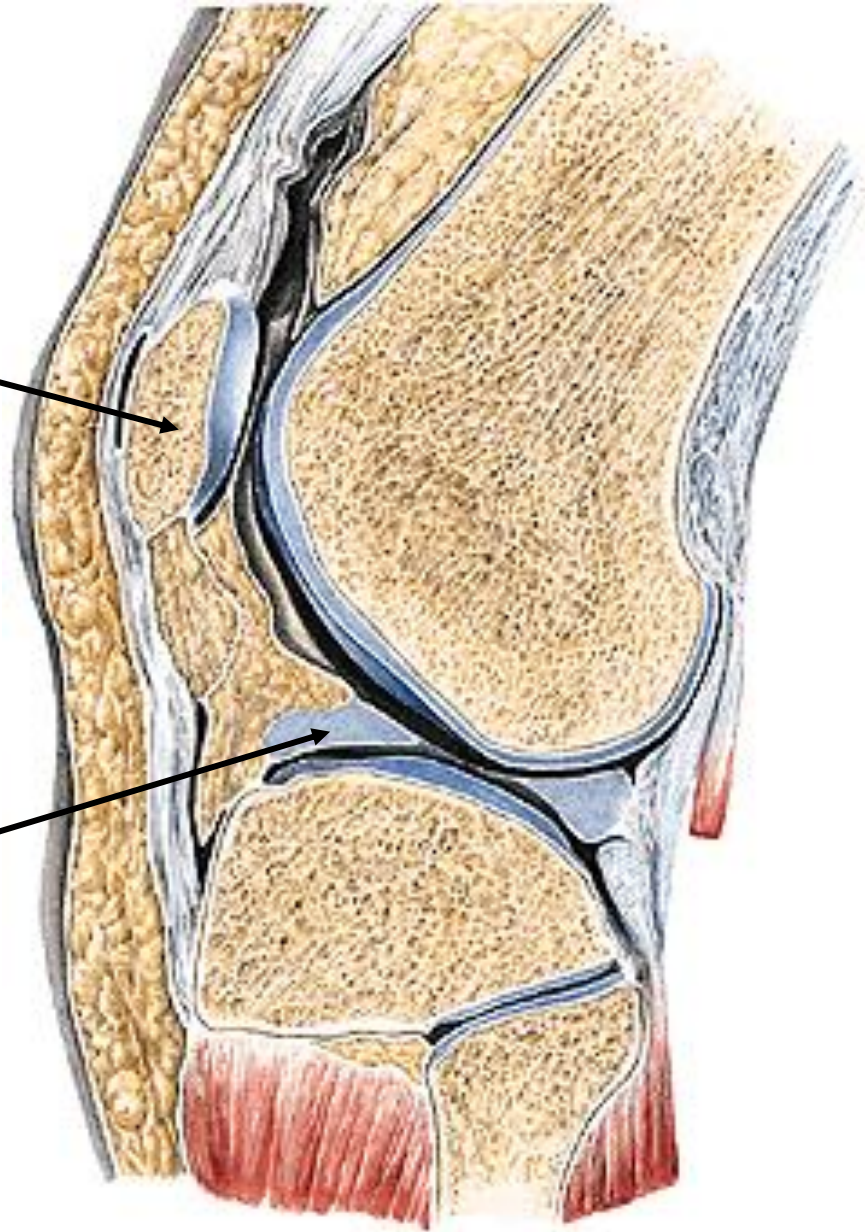
Fibula



Patella



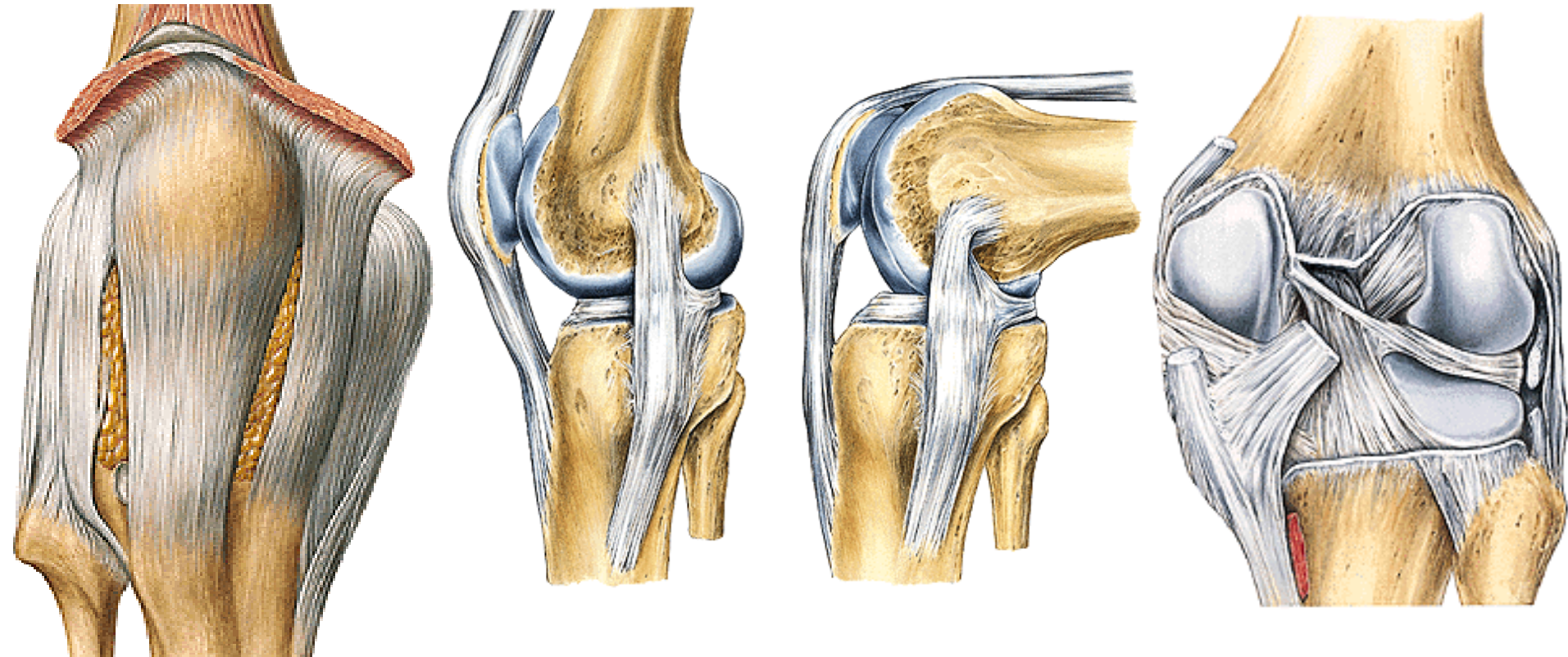
Meniscus



Articulatio genus - ligaments

lig. patellae

lig. collaterale mediale et laterale

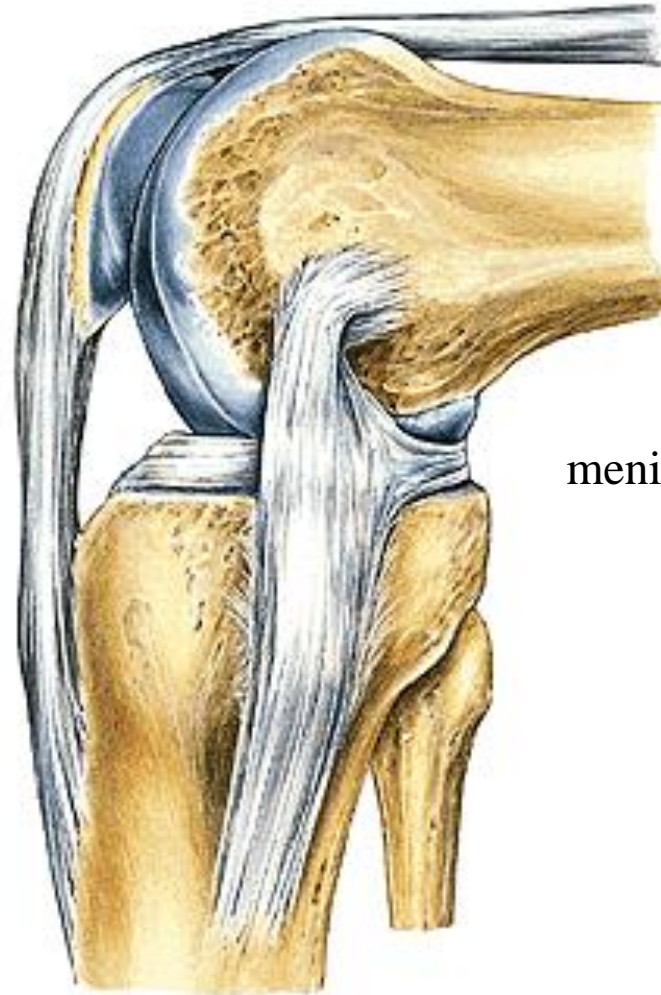


Patella

Tibia, fibula



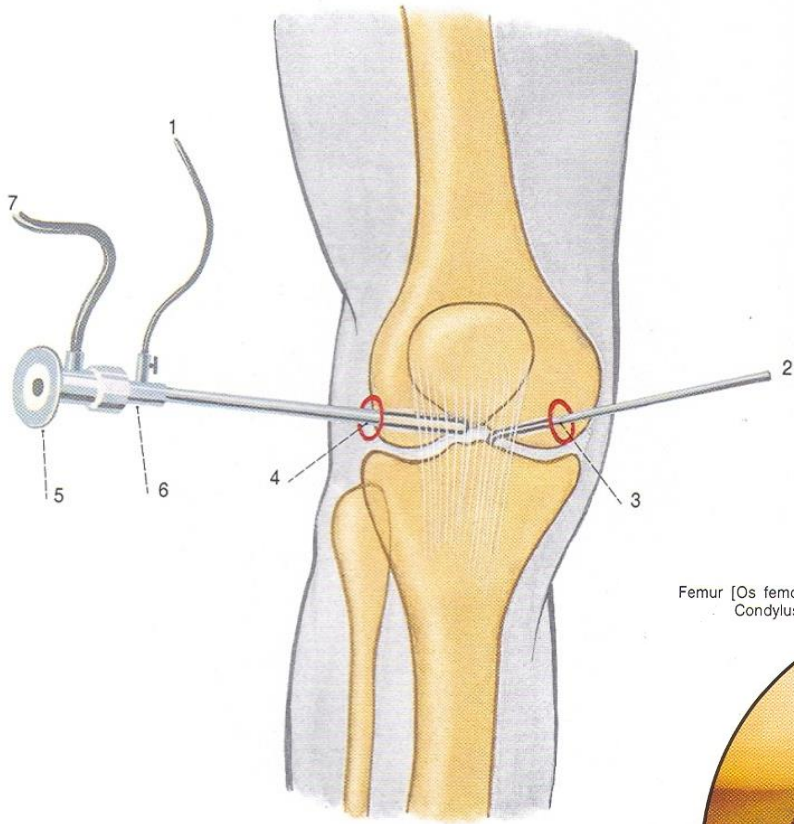
Extension



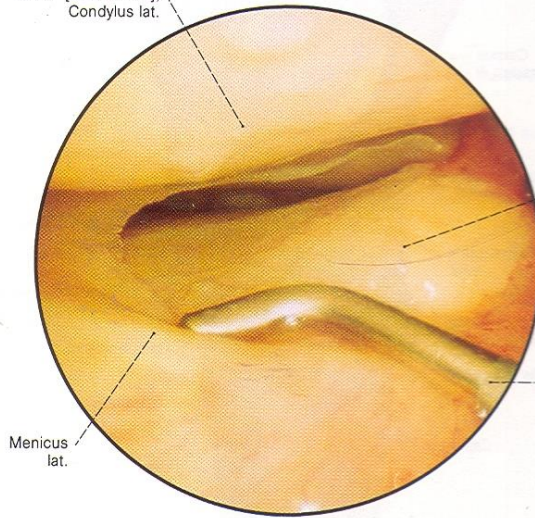
meniscus

Flexion

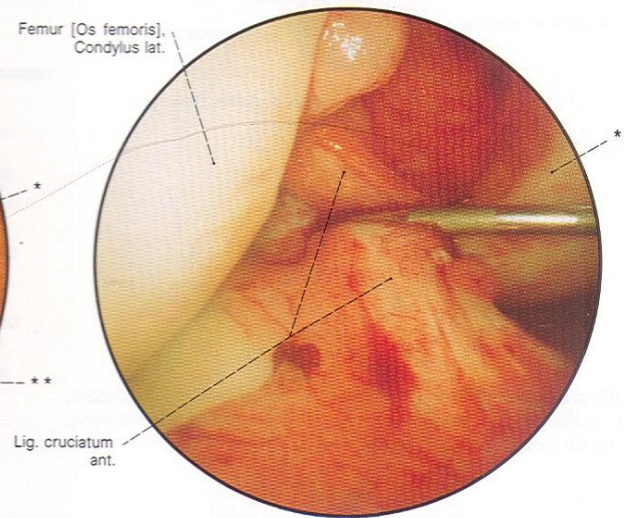
Arthroscopy



Femur [Os femoris],
Condylus lat.



Femur [Os femoris],
Condylus lat.



Meniscus
lat.

Lig. cruciatum
ant.

Knee joint endoprosthesis



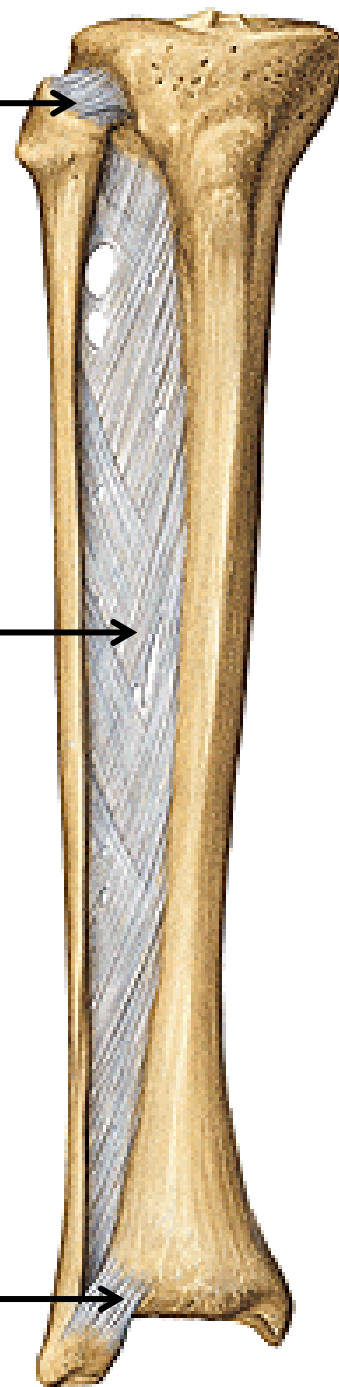
Articulatio tibiofibularis



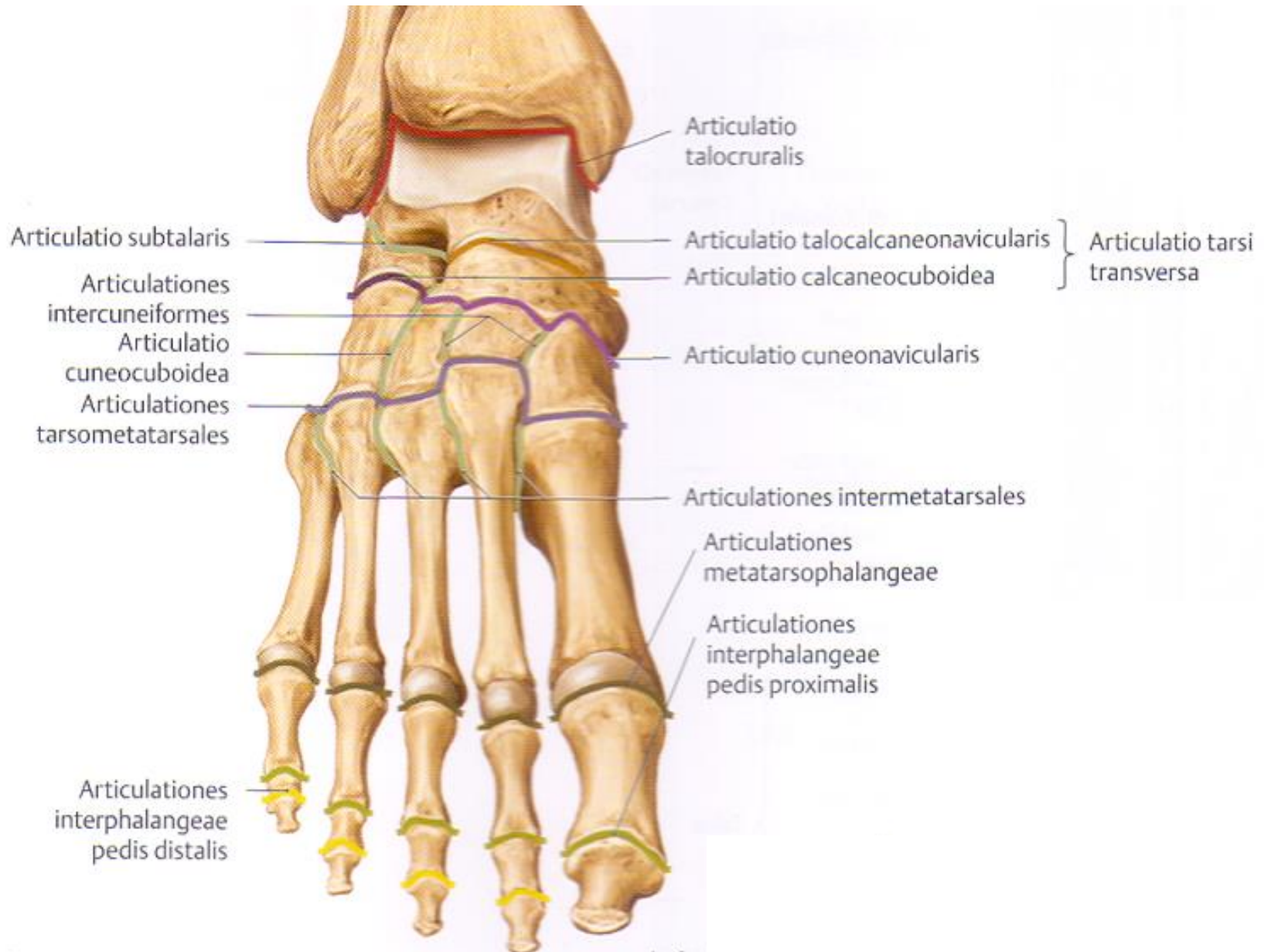
Membrana interossea cruris



Syndesmosis tibiofibularis

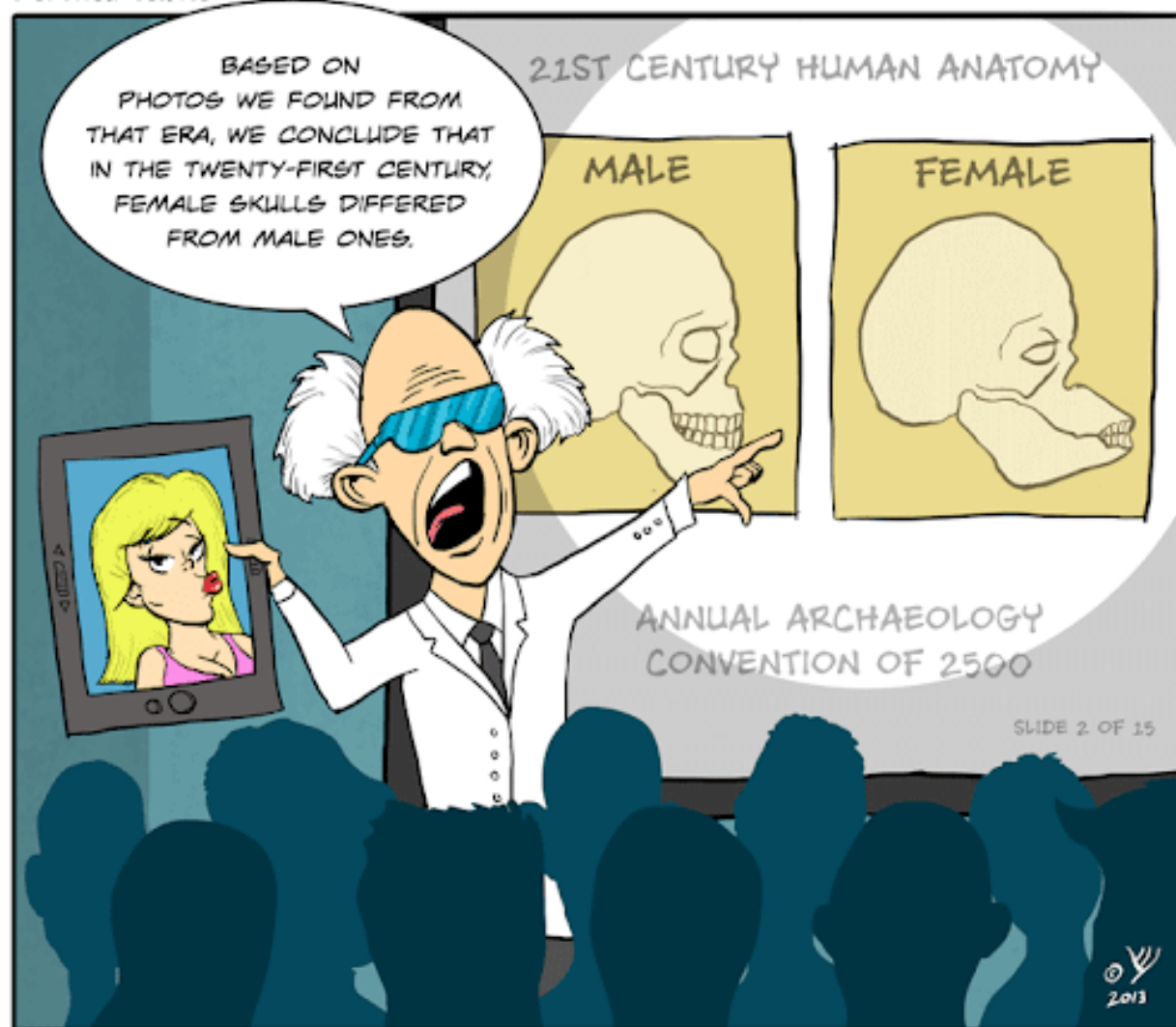


Joints of foot



Thank you for attention

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