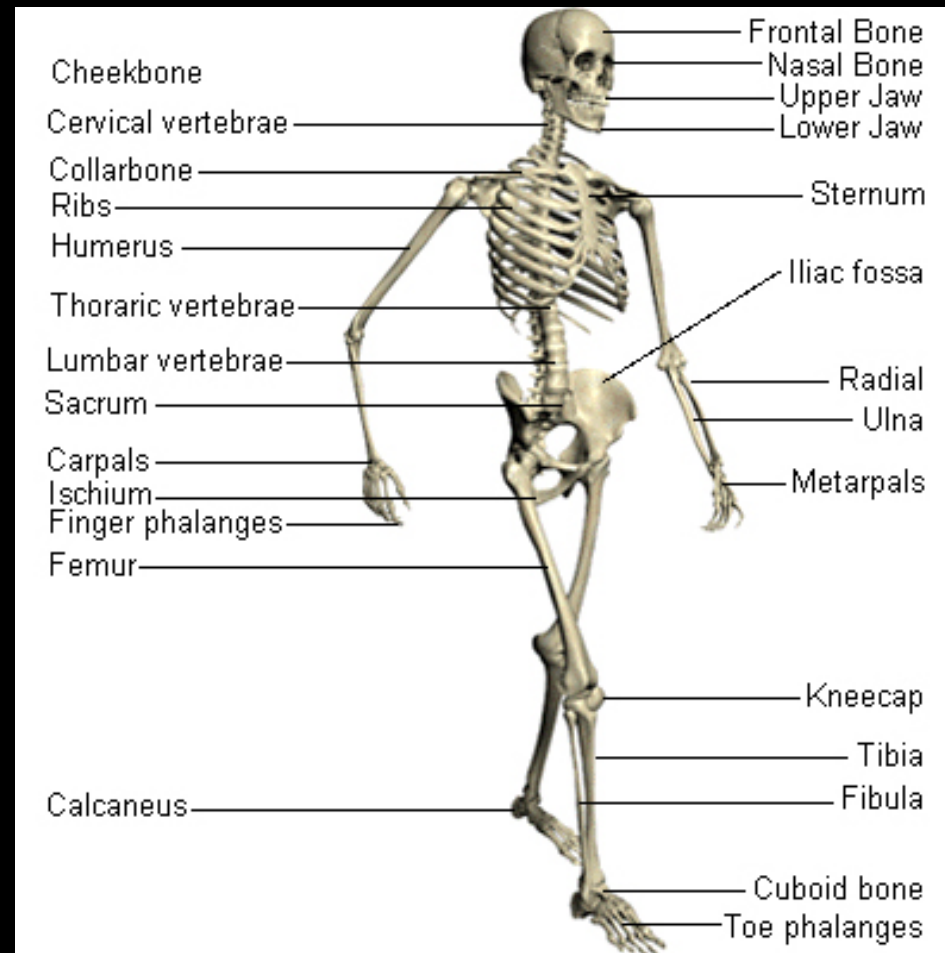


The Skeleton

206 bones



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What makes up the skeleton?

- Cartilage
- Bone
 - In embryos the skeleton is mainly hyaline cartilage that eventually is replaced by bone, in adults

Function of the skeletal system

- Support
- Protect
- Lipid & mineral storage
- Site for blood cell formation (in marrow cavities)

2 divisions of the skeletal system:

1. Axial

- Skull, vertebral column, thorax, sternum

2. Appendicular

- Pelvis, upper & lower extremities, scapula, clavicles



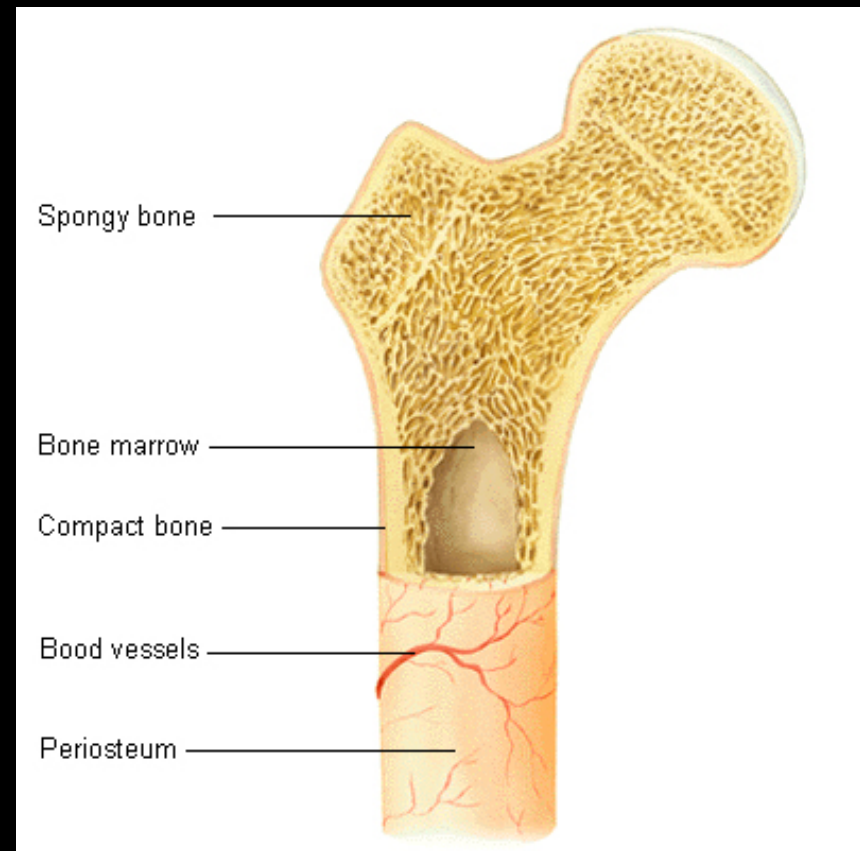
Bone Markings

- Projections/Processes
 - Sites for muscle attachment/formation of joints
- Depressions/cavities
 - Passageway for Nerves/Blood Vessels

* Pg 51 table 7.1

Classification of bone according to texture:

- Compact
 - Dense, smooth
 - Spongy
 - Made up of *trabeculae*...lots of open space
- * Pg 52 fig 7.2

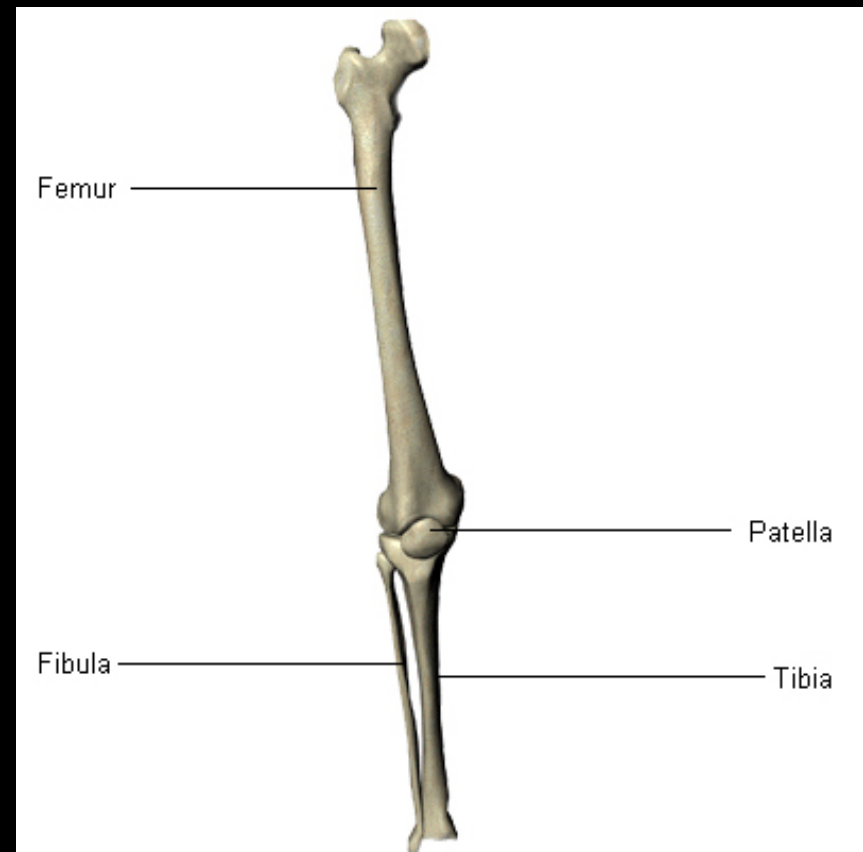


Classification of bone continued...

- Long
- Short
- Flat
- Irregular

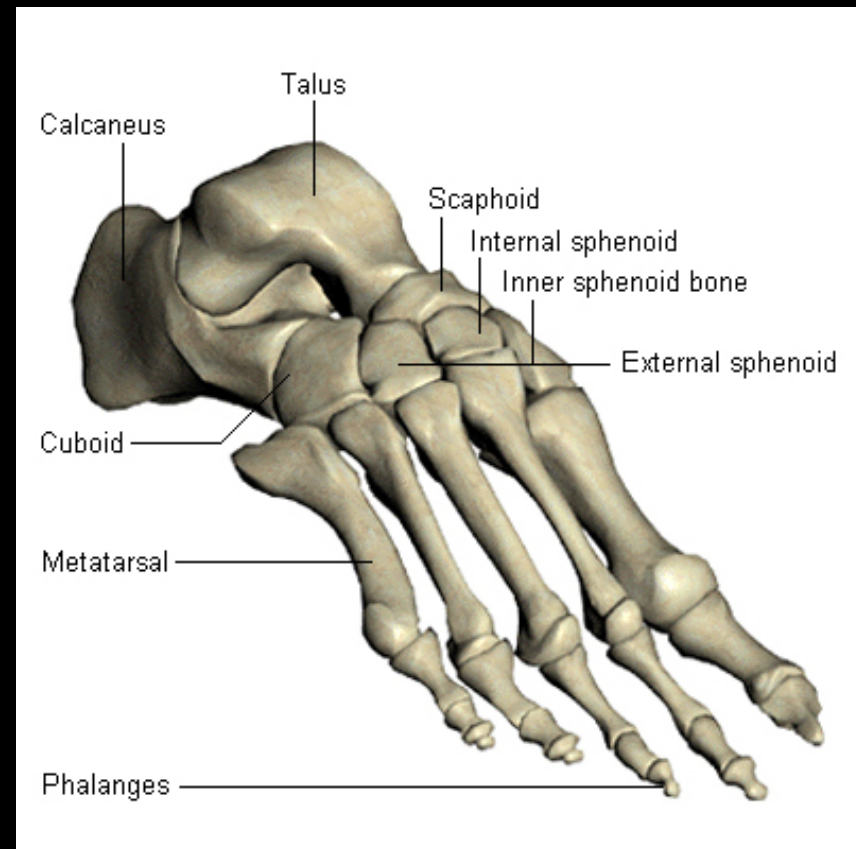
Long Bones

–Longer than they are wide, has shaft w/ head on each end, mostly compact Ex: femur



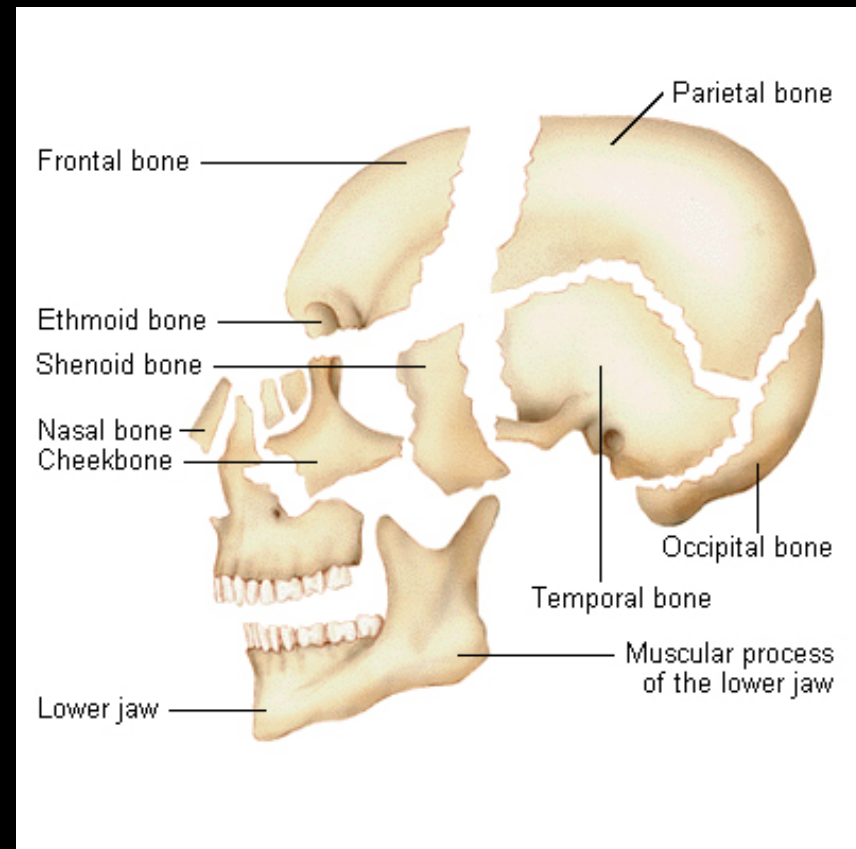
Short Bones

—Cube shaped, more spongy bone ex: tarsals



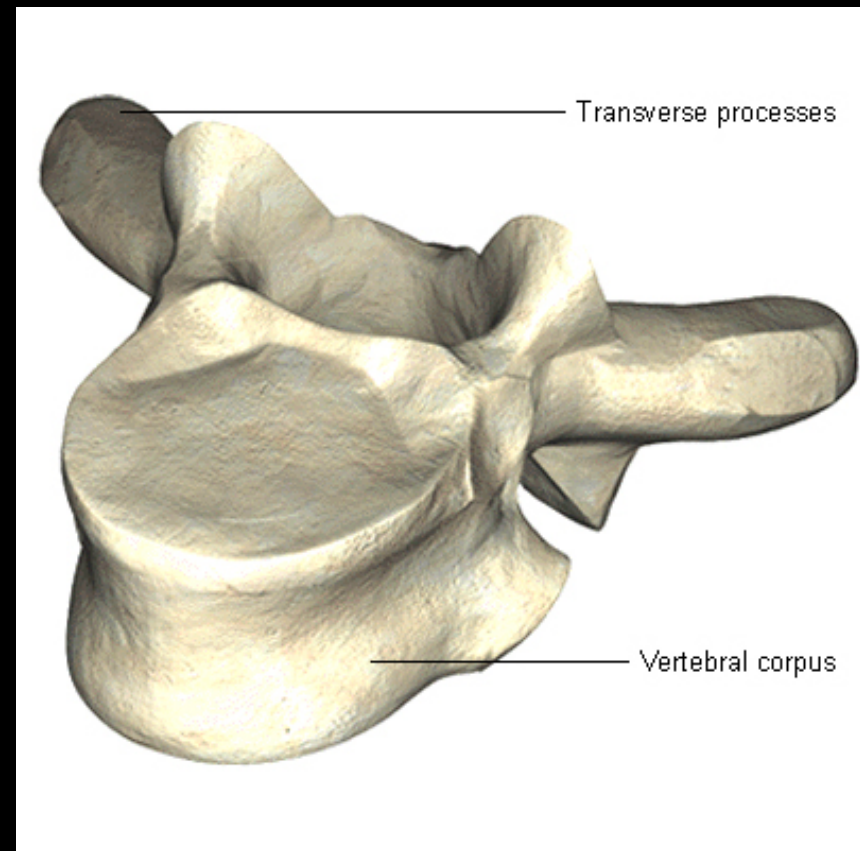
Flat Bones

Very thin,
spongy bone
sandwiched
between
compact
bone ex: skull



Irregular Bones

–Anything else
ex: vertebrae



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Parts of the Long Bone/ pg. 52

- **Diaphysis:** smooth shaft, compact bone
- **Periostium:** fibrous membrane covers surface
- **Epiphysis:** end of bone, compact Bone enclosing spongy Bone

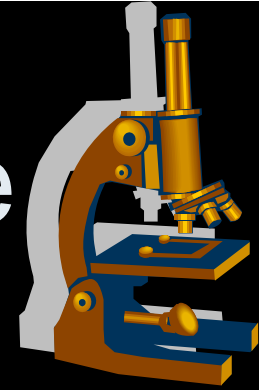
Long bones

- **Articular cartilage:** made up of hyaline cartilage to prevent friction of joints: replaces periosteum at epiphysis
- **Ephiphyseal plate:** growth plate, hyaline cartilage that is replace by bone....epiphyseal lines

Long bones

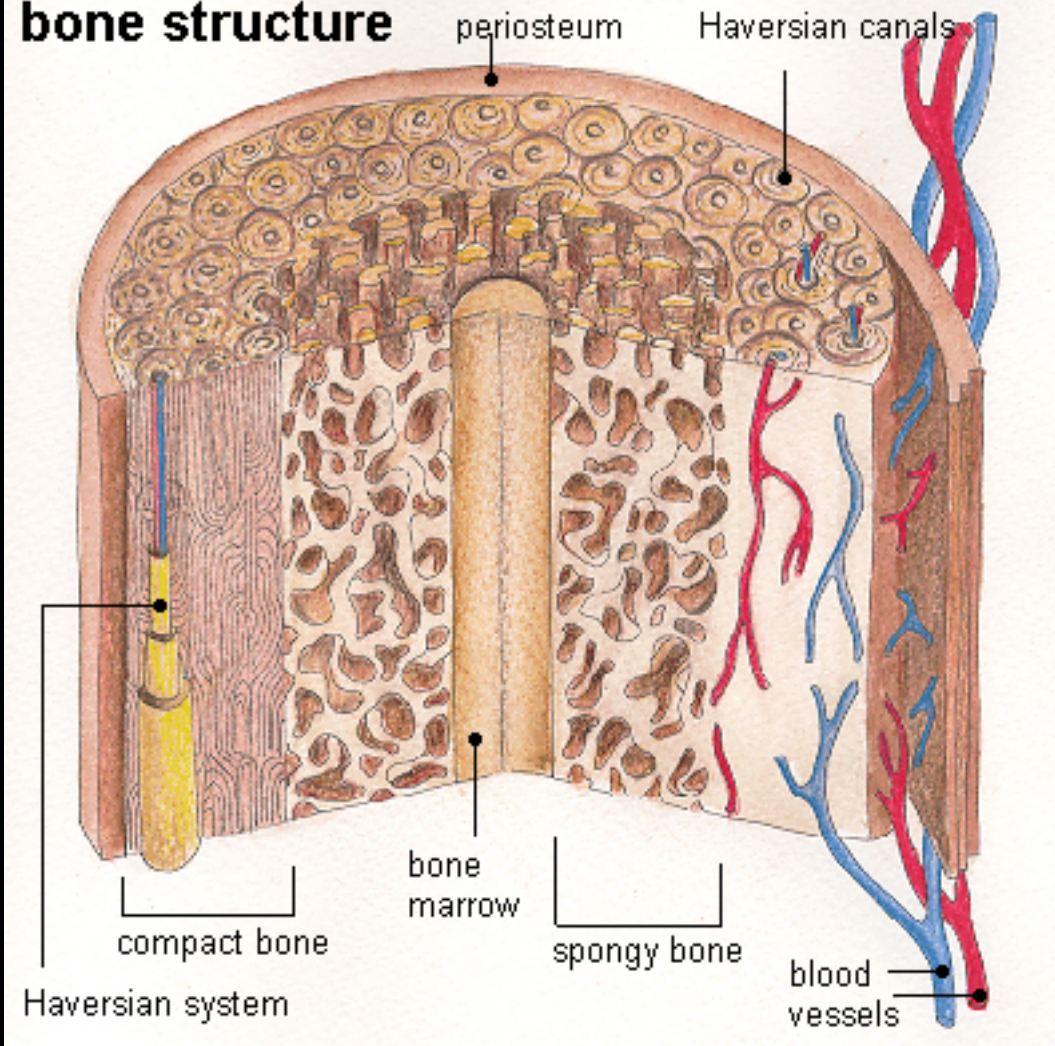
- **Medullary cavity:** central canal
- **Yellow marrow:** fatty tissue found in medullary cavity
- **Red marrow:** forms RBC's in infant and is found in medullary cavity...in adults red marrow is in the interior epiphyses
- **Endosteum:** lines the medullary cavity

Bone under the microscope



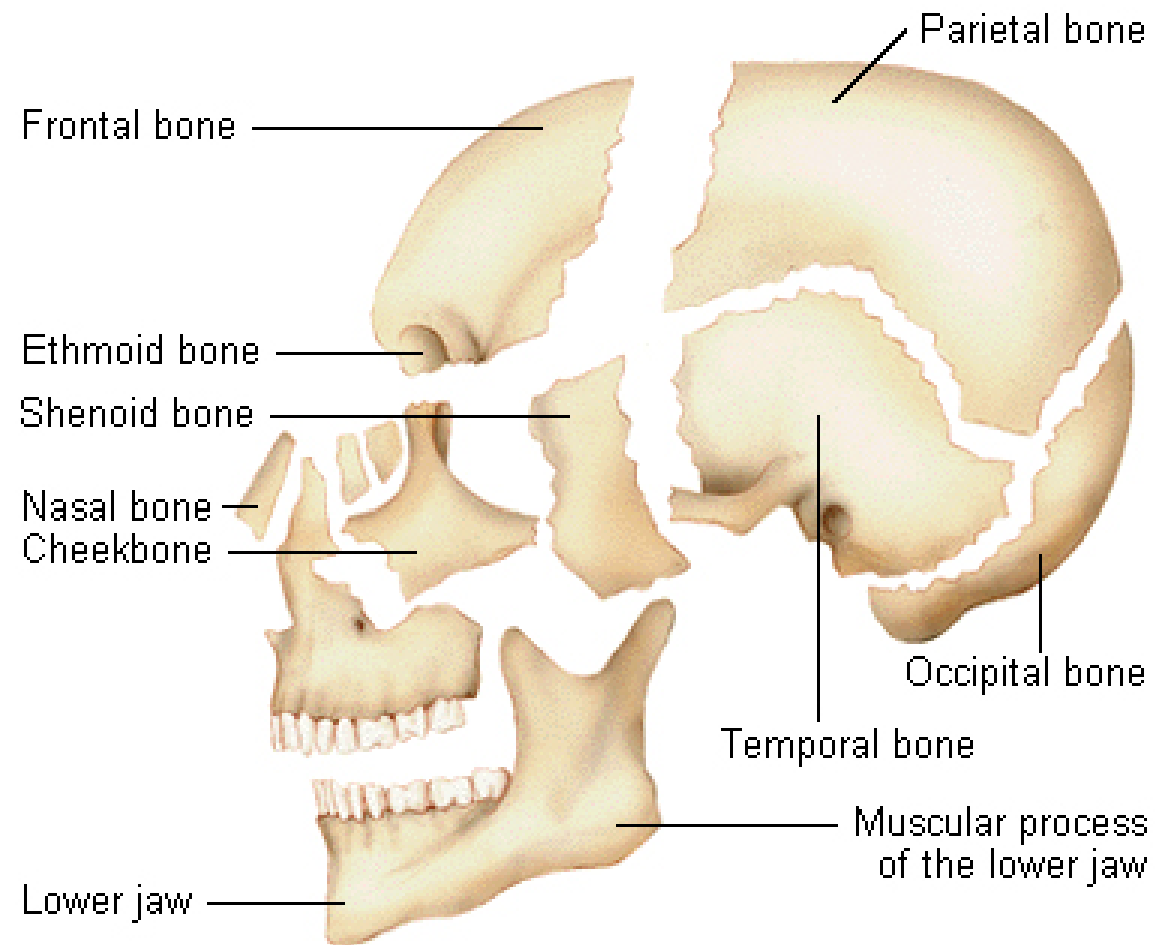
- **Central/Haversian Canal:** verticle
- **Lacunae:** chambers
- **Osteocytes:** mature bone cells
- **Lamellae:** circular arrangement
- **Osteon/Haversian system:** central canal & all lamellae surrounding it
- **Caniliculi:** tiny canals running from central canal to lacunae of first lamellae than lam. to lam.
- **Perforating/Volkman's Canals:** horozontal

bone structure

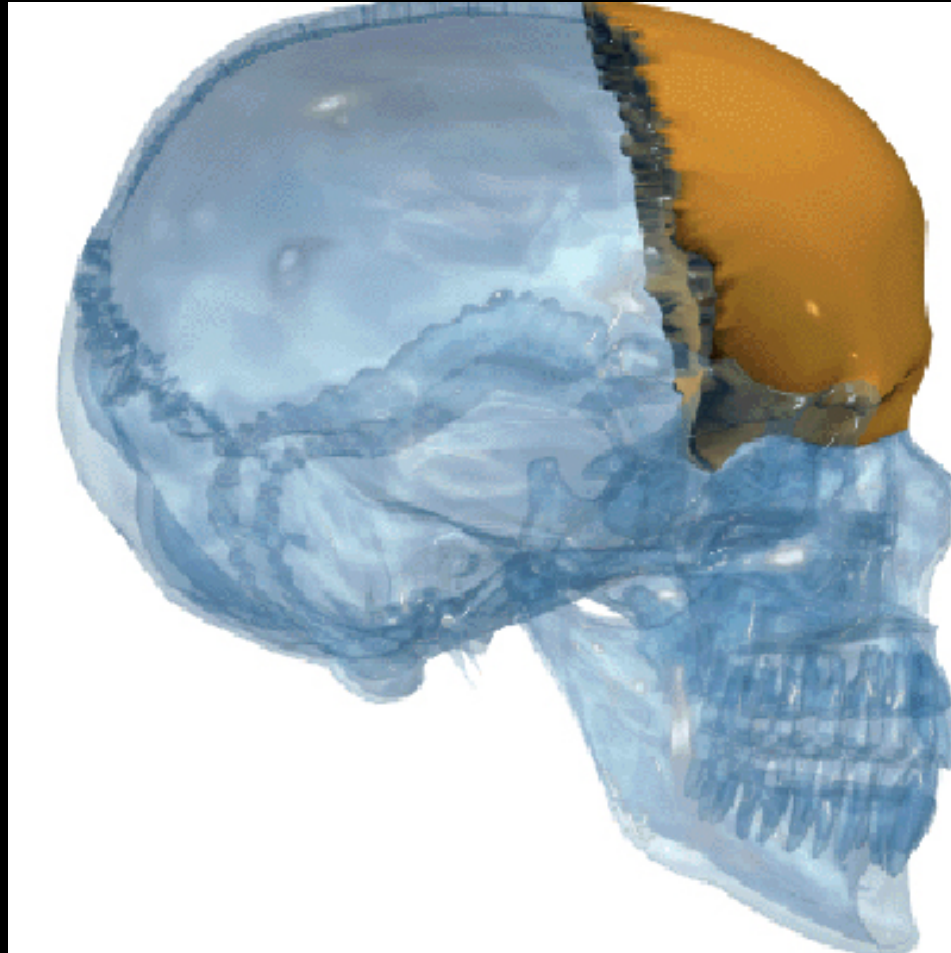


The Axial Skeleton

The Skull



Frontal bone

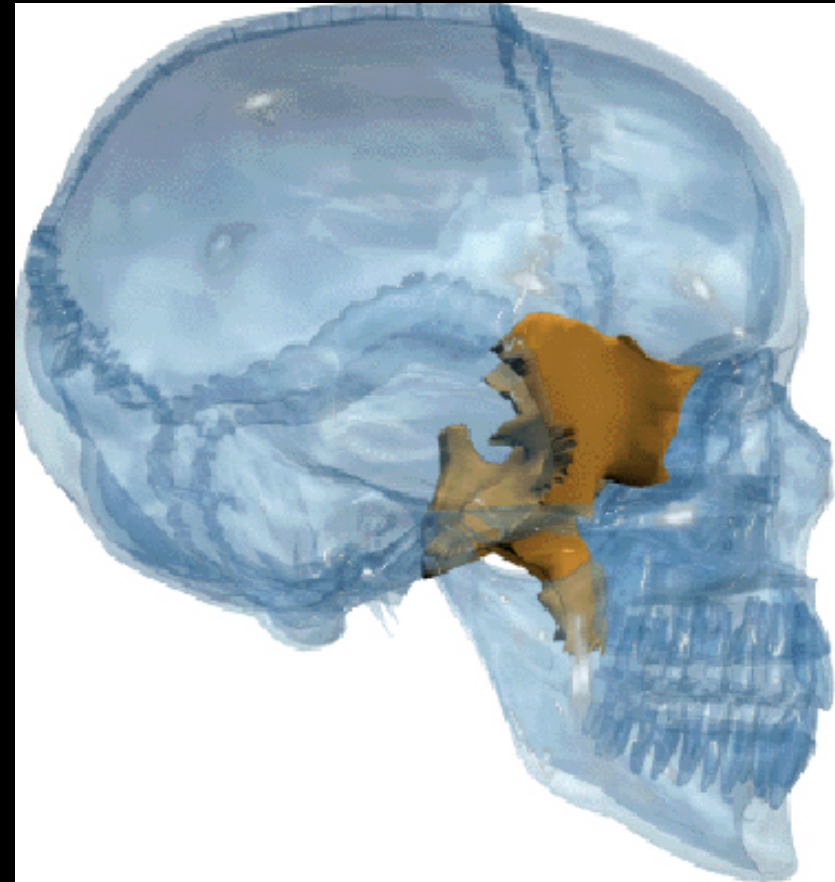
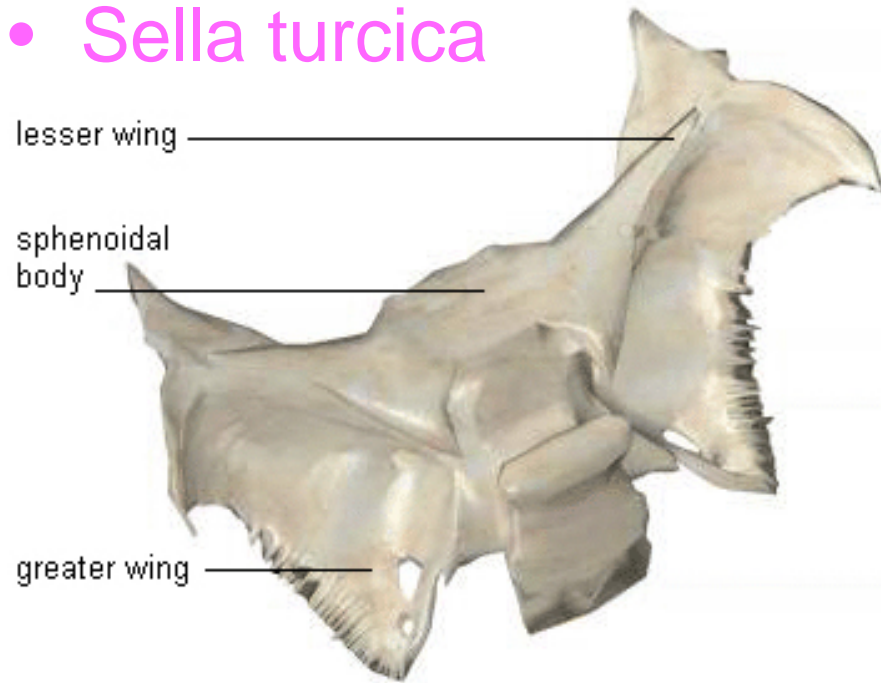


Parietal Bone



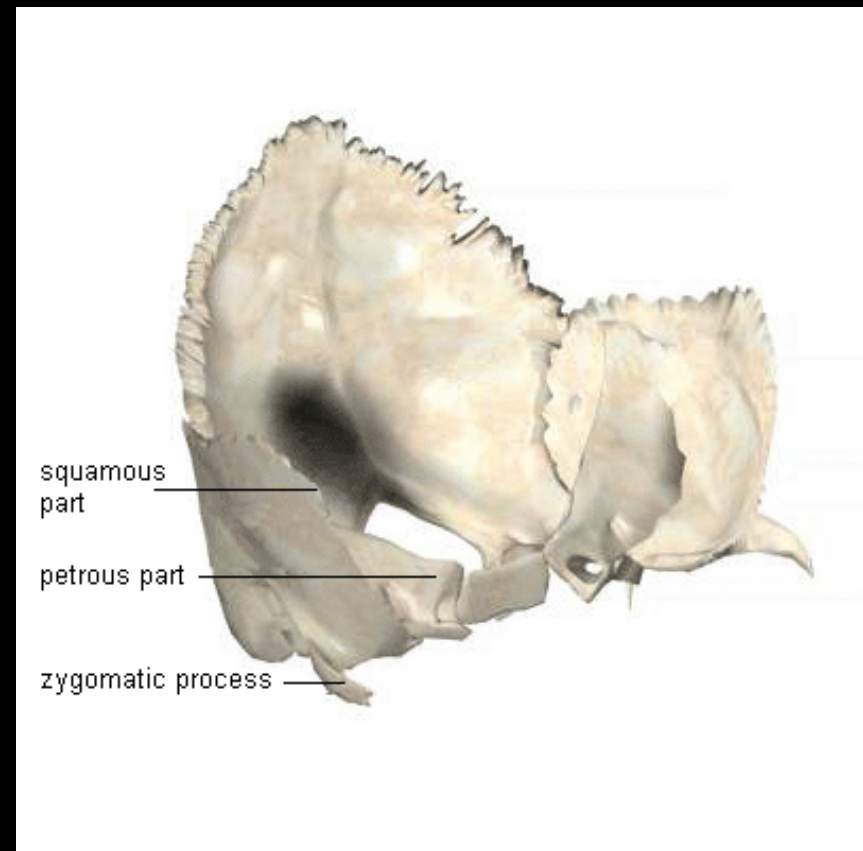
Sphenoid Bone

- Greater wings
- Lesser wings
- Foramen ovale: CNV
- Sella turcica



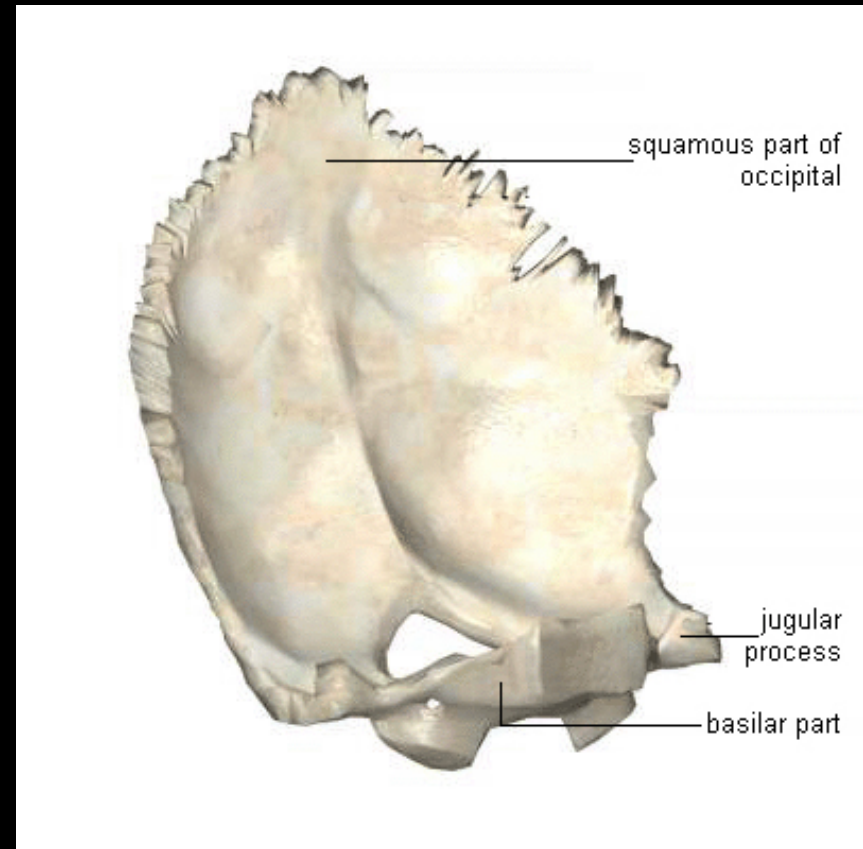
Temporal Bone

- Zygomatic process
- Mastoid process
- EAM
- Styloid process
- Jugular foramen



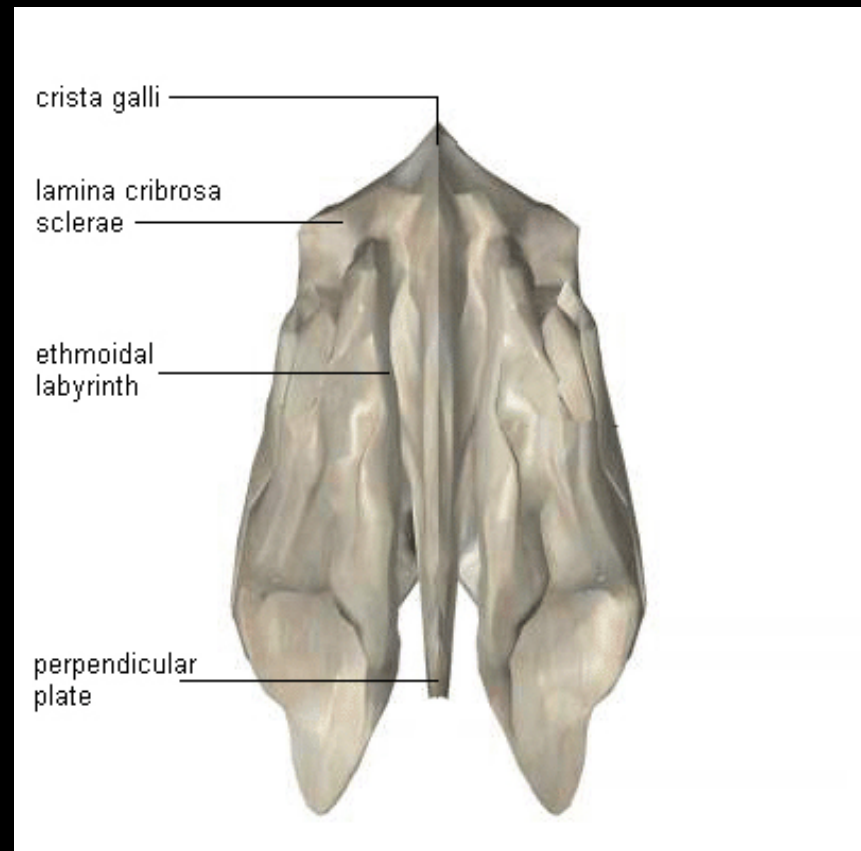
Occipital Bone

- Foramen Magnum
- Occipital condyle

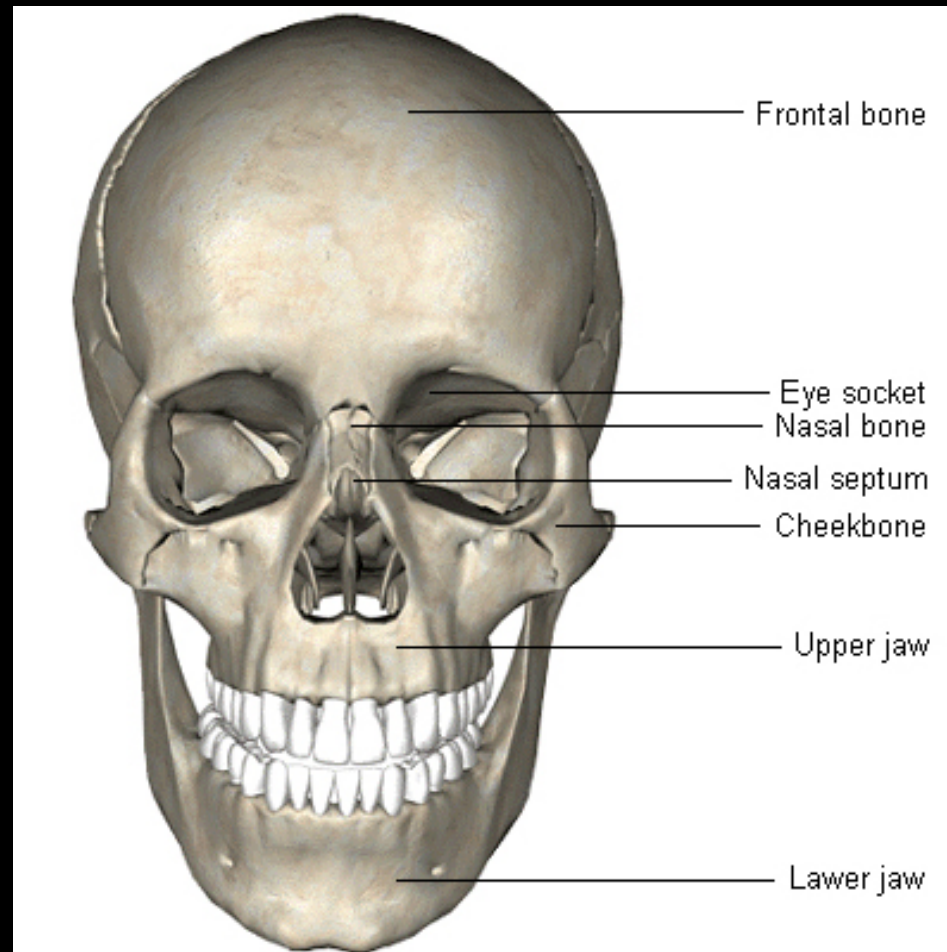


Ethmoid bone

- Crista galli
- Cribiform plates



Facial bones



Facial bones

Maxillae: upper jaw, 2 bones fused medially all bones join it, except mandible

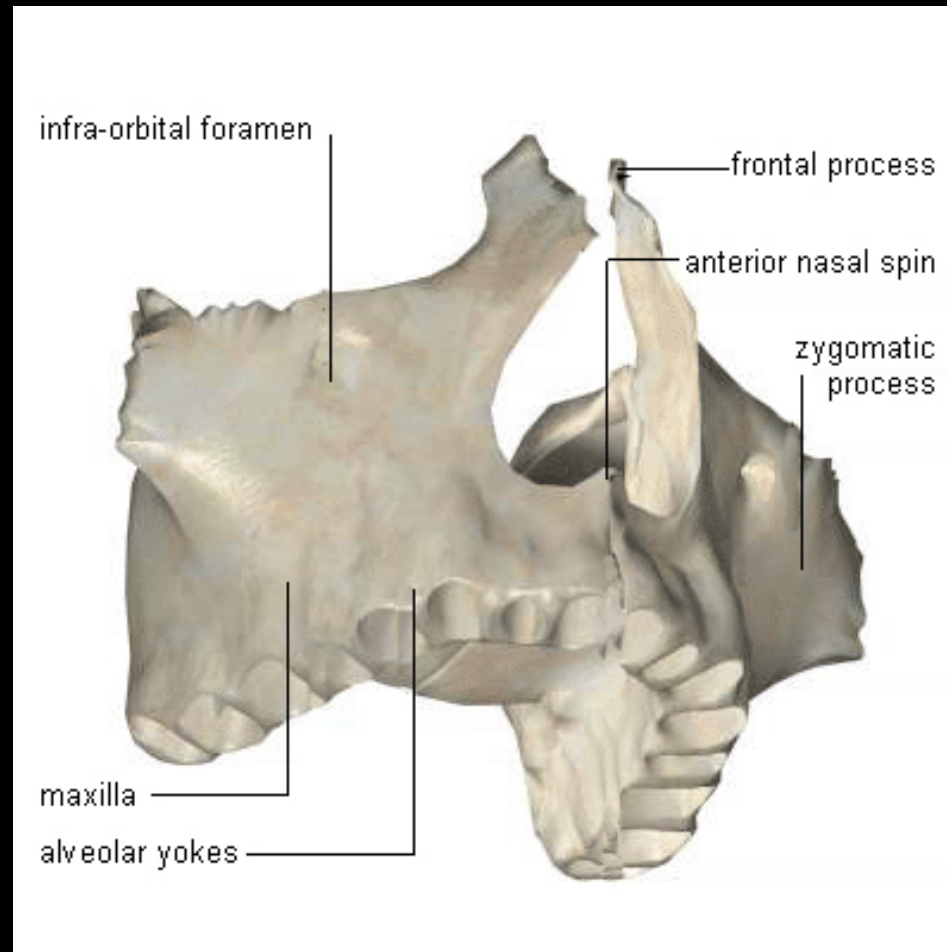
*palatine process: anterior hard palate

Lacrima bones: forming medial orbit, w/ opening for tears, between ethmoid & maxilla

Nasal bones: small, rectangular, form bridge of nose

Palatine bones: posterior to palatine process, form posterior hard palate and part of orbit

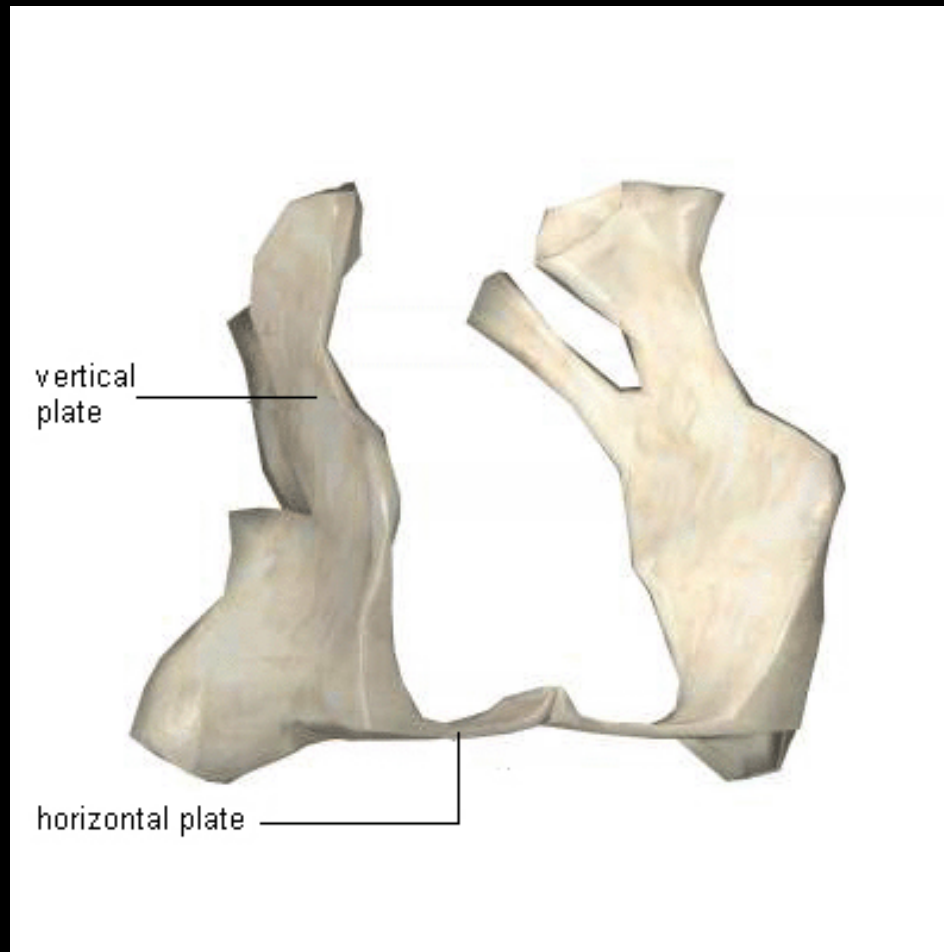
Maxillae



Lacrimal bones



Palantine Bones



Facial bones

Mandible: single bone, lower jaw, only freely movable joint of skull (w/ temporal)

ramus: verticle extensions of body

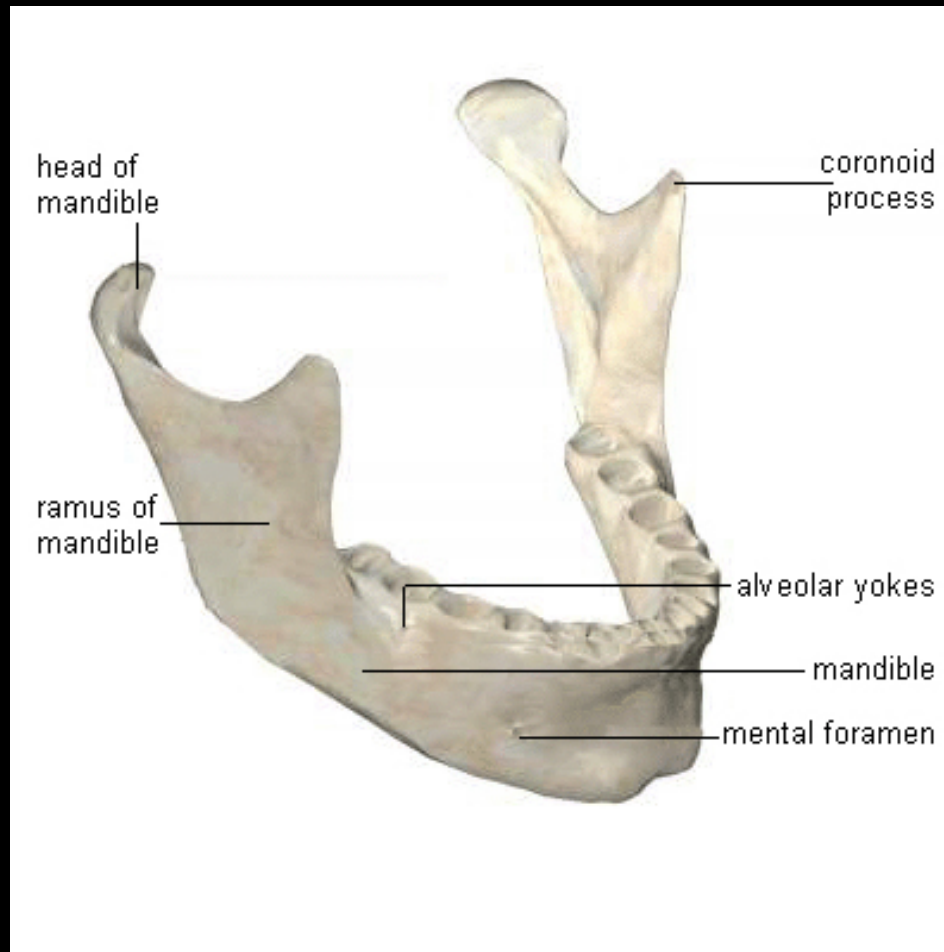
body: chin

alveolar margin: superior margin, contains teeth sockets

Zygomatic bones: cheek bones/lateral orbit

Vomer: single bone, forms nasal septum, blade shaped in median plane

Mandible



Zygomatic bones



Vomer



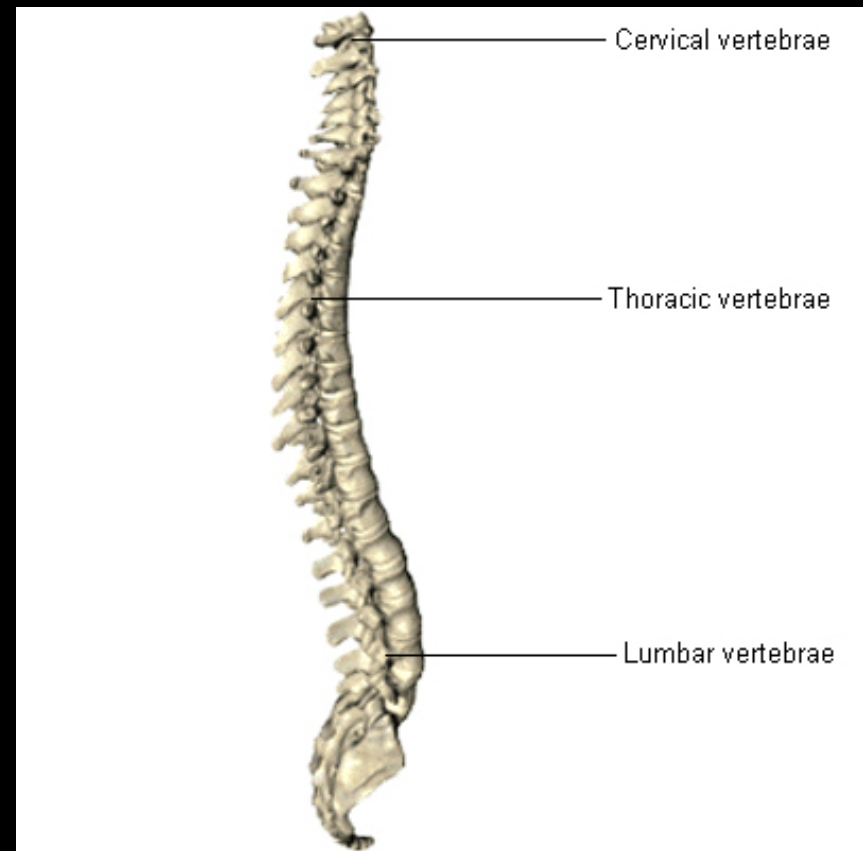
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Vertebral Column

24 single & 2 fused bones

5 parts:

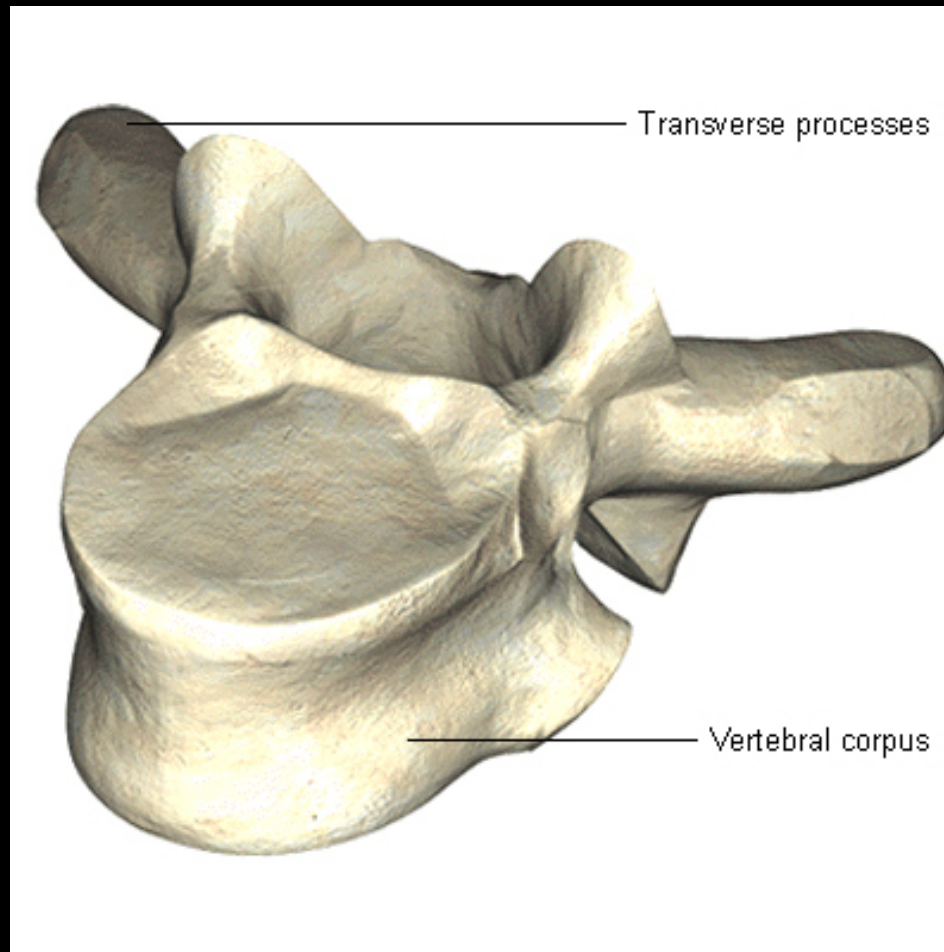
1. Cervical: 7
2. Thoracic: 12
3. Lumbar: 5
4. Sacral: 5 fused
5. Coccyx: 3-5 fused



Common features on Vertebrae

- Spinous process: posterior spike
- Body: faces anterior
- Vertebral foramen: spinal cord passageway
- Transverse process: project laterally off body
- Transverse foramen: only in cervical, passageway for vertebral arteries

Vertebrae



Cervical

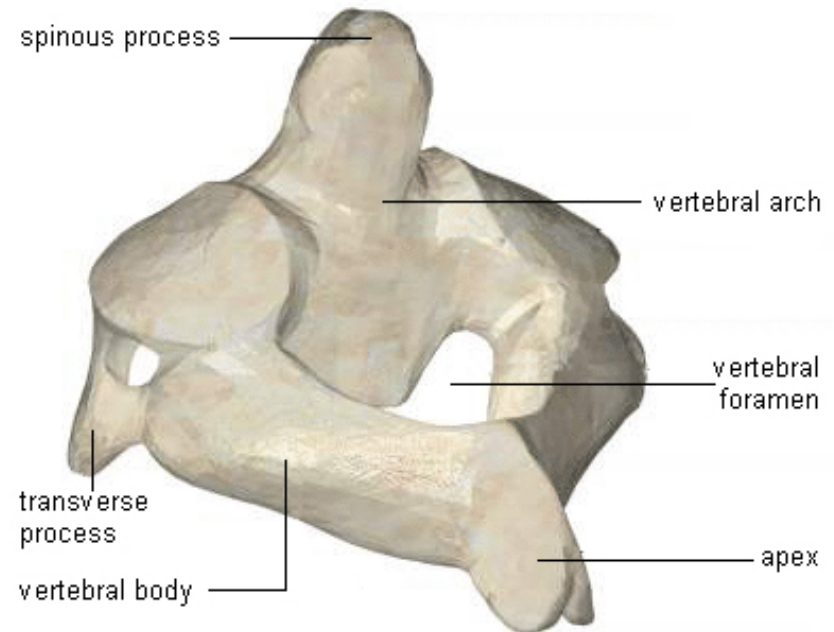
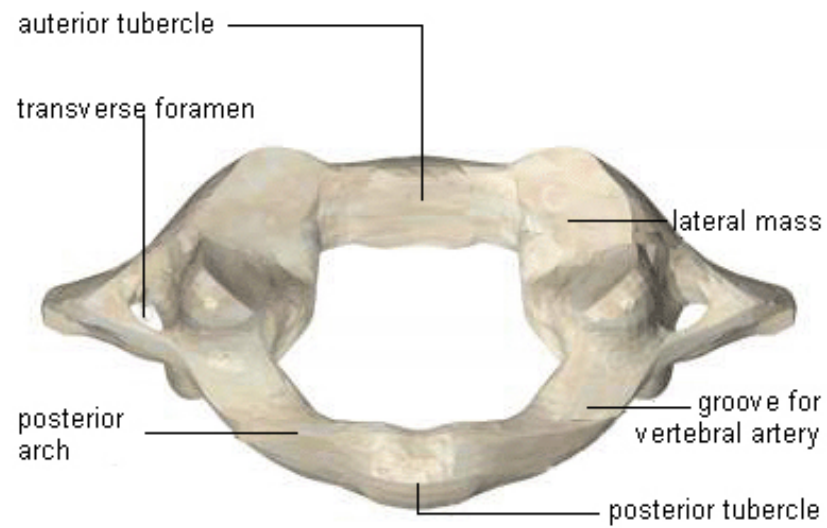
- 7
- Smallest
- Bifid SP's
- Transverse foramens: vertebral arteries
- V. Foramen triangular
- Atlas(C1) no body AO joint ; flex/extnsion
- Axis(C2) odontoid process/den; rotation
- C7: not bifid, vertebral prominens

Cervical X-ray

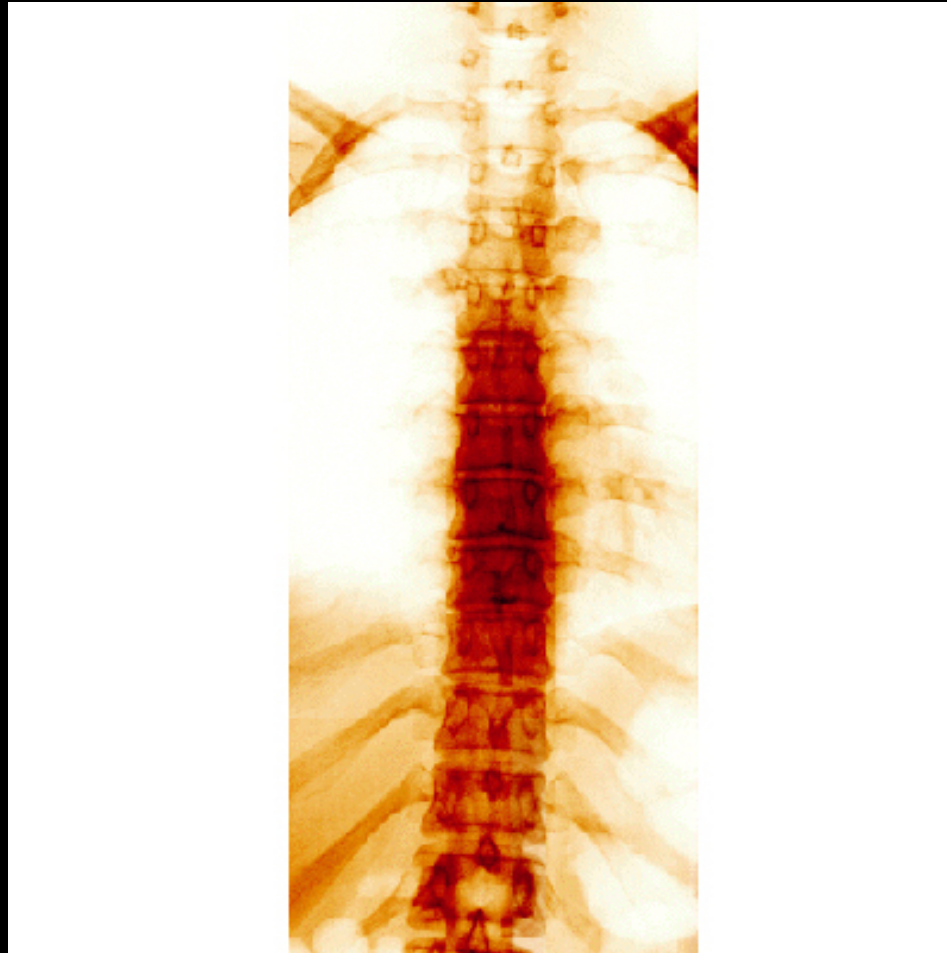


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Atlas & Axis



Thoracic xray



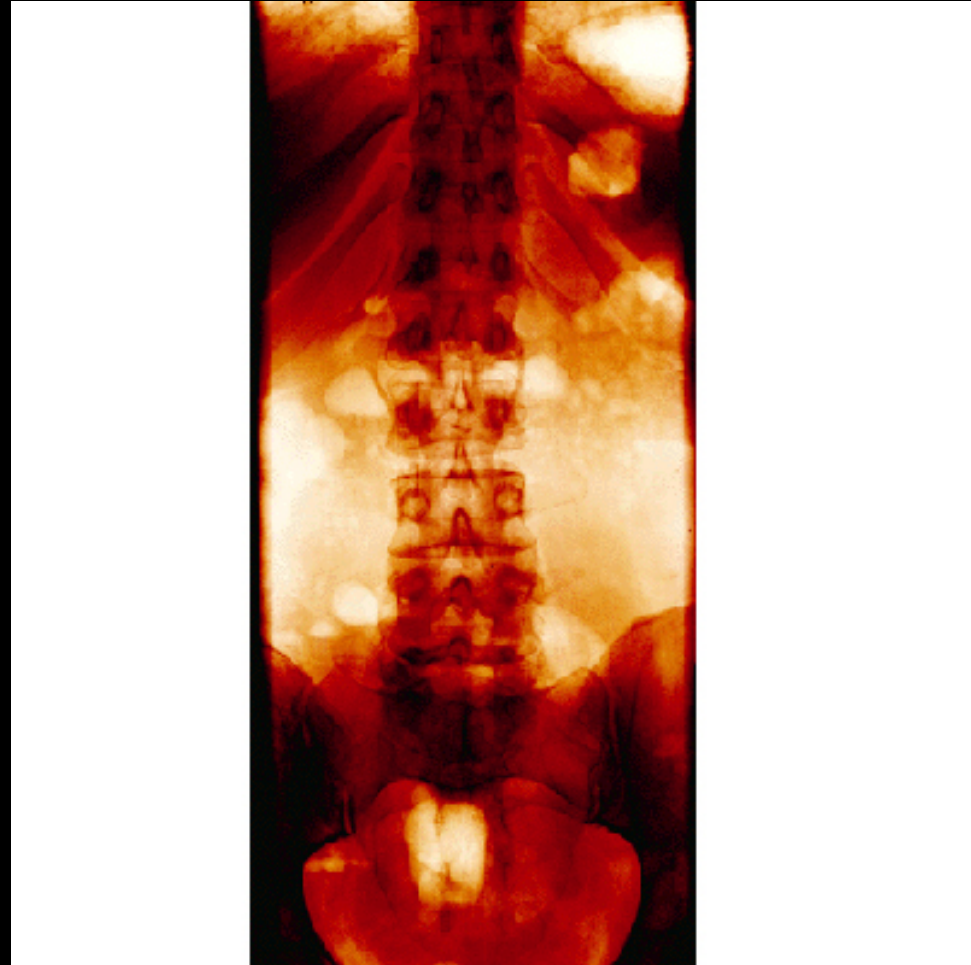
Thoracic Vertebrae

- 12
- Medium
- Heart shaped body
- costal demifacets
- Vertebral foramen round
- Sp's long w/ inferior angle

Lumbar Vertebrae

5

- Largest
- Sp's:
Short
thick
point posterior

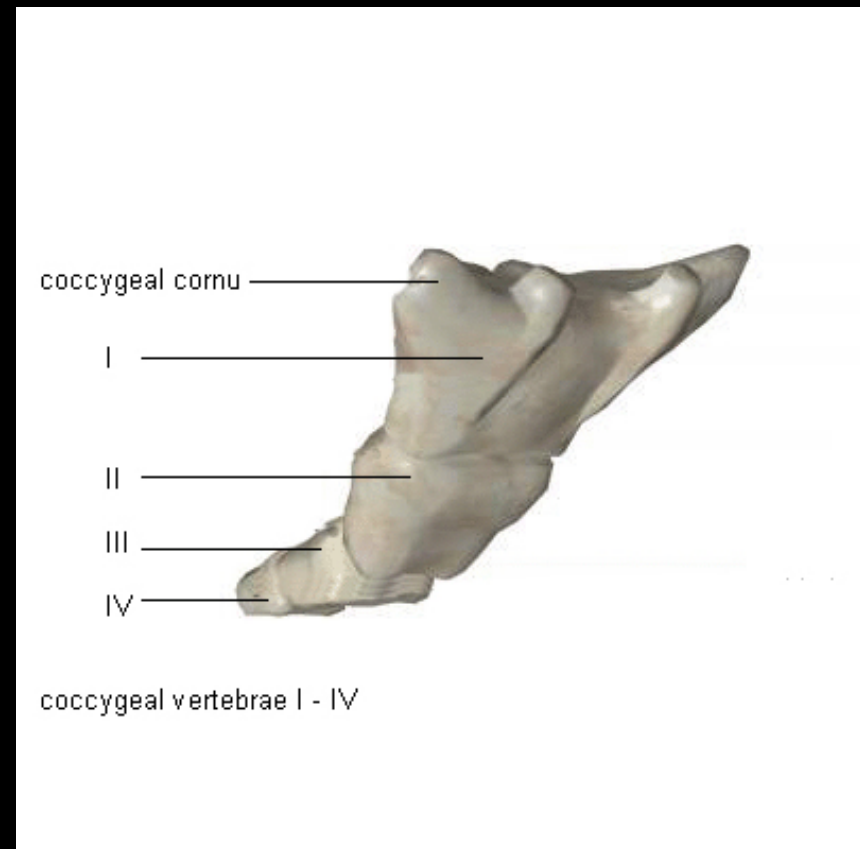


Sacrum

- 5 fused vertebrae
- Median sacral crest: sp' REMNANTS
- Ala: wings
- Sacral canal: A CONTINUATION OF THE VERTEBRAL CANAL

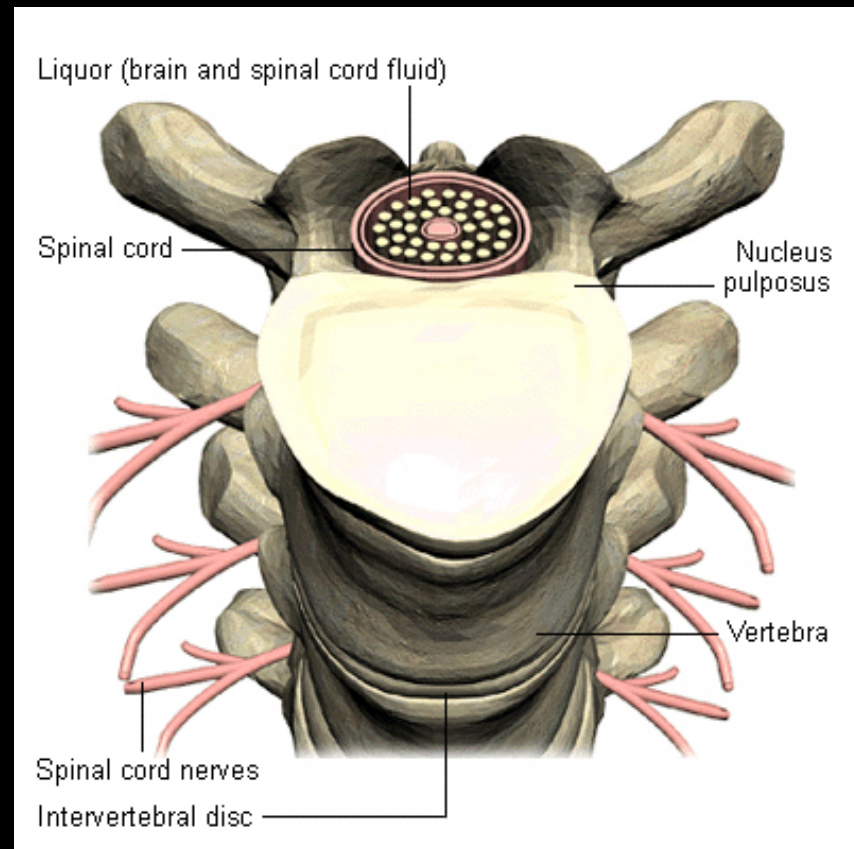
Coccyx

- 3-5 fused
- tailbone



Intervertebral Discs (IVD)

- Shock absorber fibrocartilage pads between vertebrae
- Gel like center Nucleus pulposus
- Outer rings of collagen fibers known as annulus fibrosis
- Give us height

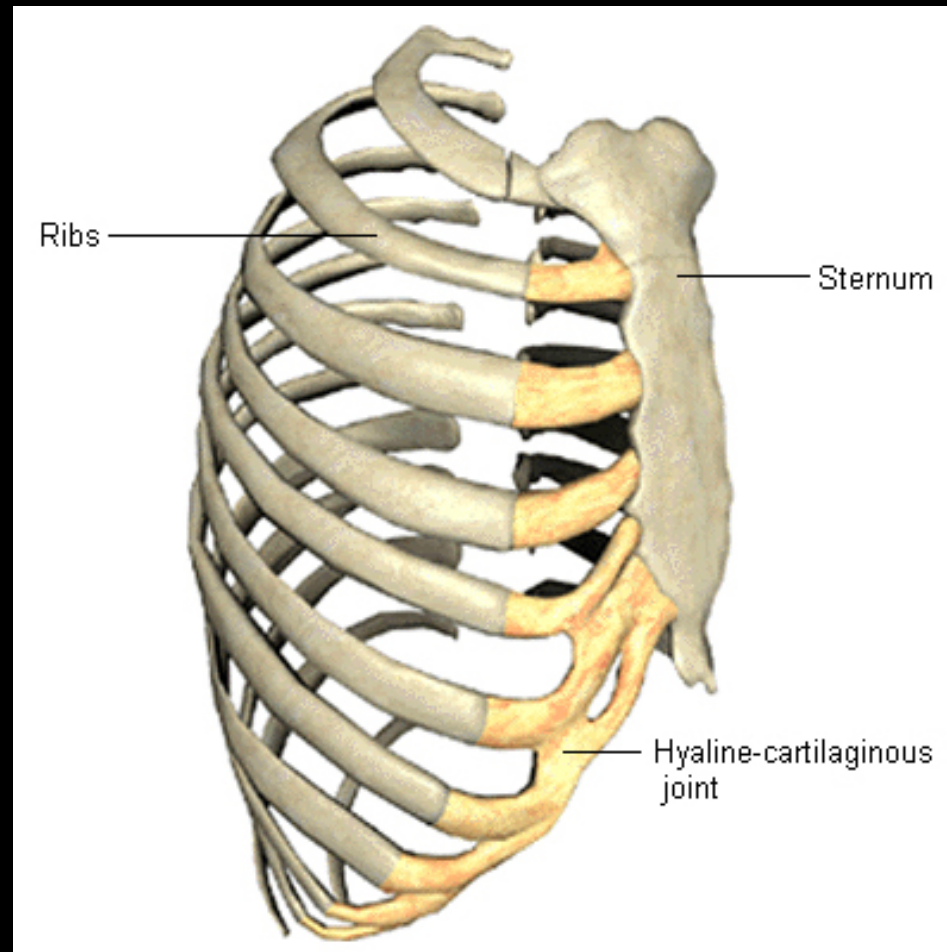


Ribs

12 pair articulate the vertebral column
posterior and first 7 articulate anterior w/
sternum

- True ribs: first 7 attach to sternum by their costal cartilage
- False ribs: 8-12..8- 10 indirect c.c. attachment
- Floating ribs: (11/12) last 2 ribs, no sternal attachment

Rib Cage



Sternum

- Flat bone
- Made from fusion of :
 - body
 - manubrium(knot),
 - xiphoid process(level w/ 5th intercostal space)

