

# Anatomy

## *OSTEOLOGY*

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# Axial Skeleton

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- ( Skull, Vertebral Column, Ribs, Sternum )
- 1- **Skull**: is a group of bones act to protection for senses organs ( Brain, special senses: smell, tast, hearing, etc....)
- The bones of skull divided into:
- Cranial bones group: there are including( occipital, parietal, basi sphenoid, pre sphenoid, ptregoid, temporal, frontal, ethmoid and vomer bone.
- Facial bone group: nasal, ventral nasal. Conchae, zygomatic, lacrimal, incisive, rostral palatine, maxillary, mandible, hyoid bone.
- Most bone of skull are flat and developed intramembranous.
- The cranial base as irregular bone and developed in cartilaginous.
- Only two forms are movable joints with other part of the skull (lower jaw bone) this movable by synovial joint with temporal bones and the hyoid bone is attached to the lateral by band of cartilage.

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- While the immovable joint located between most of the skull bone are termed sutures( which take appearance of irregular line) this sutures line disappeared by ossification with increasing age of animals.
  - The skull present numerous foramen canal , fissure, through which blood vessels, nerve ) to enter and exit.

# Skull

**Figure 2–29** Lateral (A), dorsal (B), and ventral (C) views of the canine skull to show the extents of the cranial bones. 1, Nasal bone; 2, incisive bone; 3, maxilla; 4, lacrimal bone; 5, orbit; 6, frontal bone; 7, parietal bone; 8, occipital bone; 9, temporal bone; 10, zygomatic bone; 11, palatine bone; 12, presphenoid; 12', wing of presphenoid; 13, pterygoid bone; 14, basisphenoid; 14', pterygoid process of basisphenoid; 15, vomer.



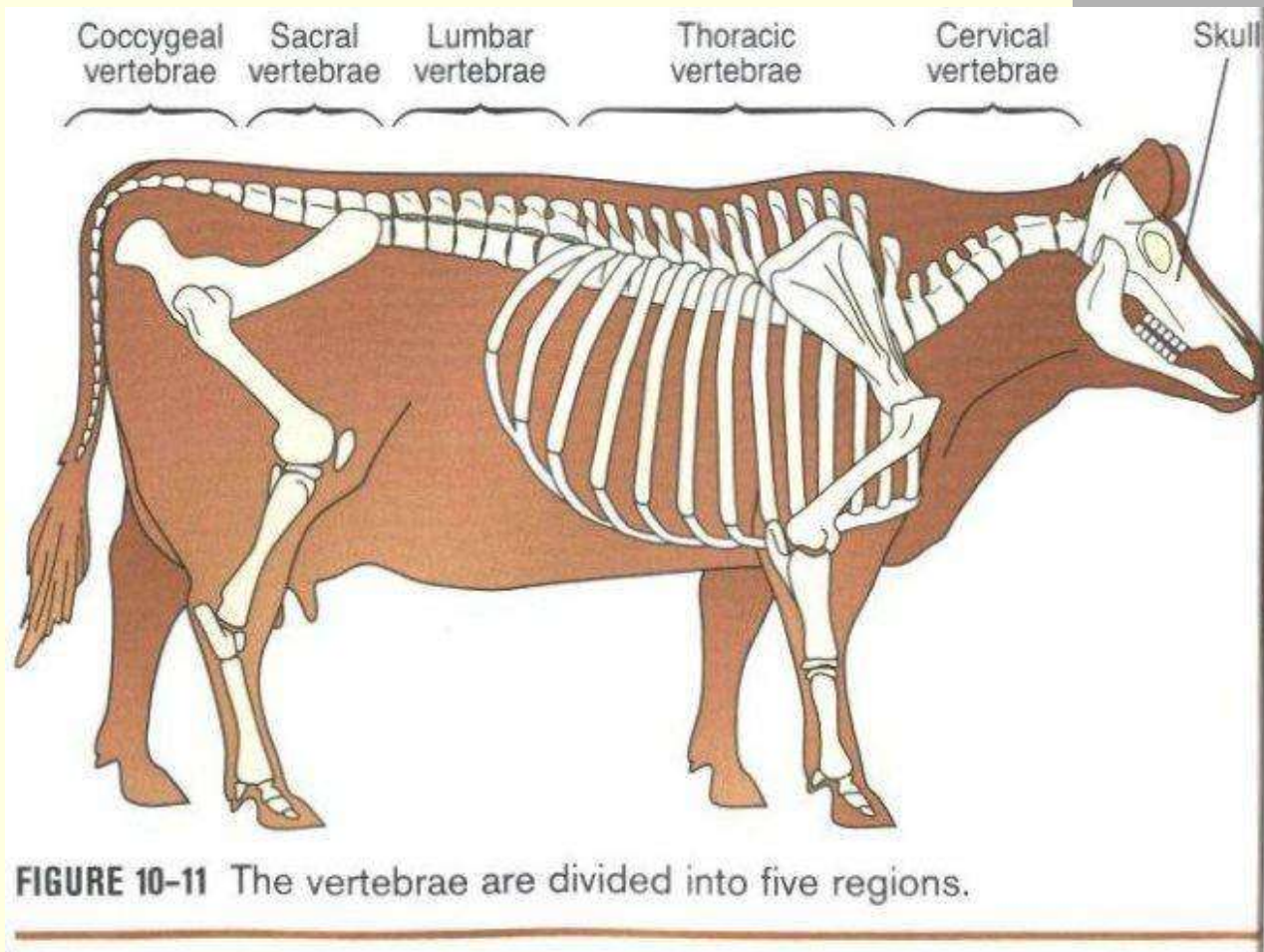
# Vertebral Column:

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- It consist of serious of median, unpaired irregular bones. Each one of them is called vertebra.
- The vertebrae are articulate with each other to form the major part of axial skeleton.
- To protests the spinal cord, support the head and serves as attachment for the muscles effecting body movements.

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- The vertebral column is extended from skull to the end of tail.
  - Divided topographically into five regions, each region contain number of vertebrae.
  - Certain vertebrae In adult have become fused to form single bony mass with which the pelvic girdle articulates.

# Vertebrae are divided into five regions



# Number of vertebrae in domestic animals

Animal	Cervical v.	Thoracic v.	Lumber v.	Sacral v.	Coccygeal v.
Horse	7	17-18	6	5	15-21
cow	7	13	6	5	18-20
Dog	7	13	6-7	3	20-23
Sheep	7	13	6	3-4	16-18



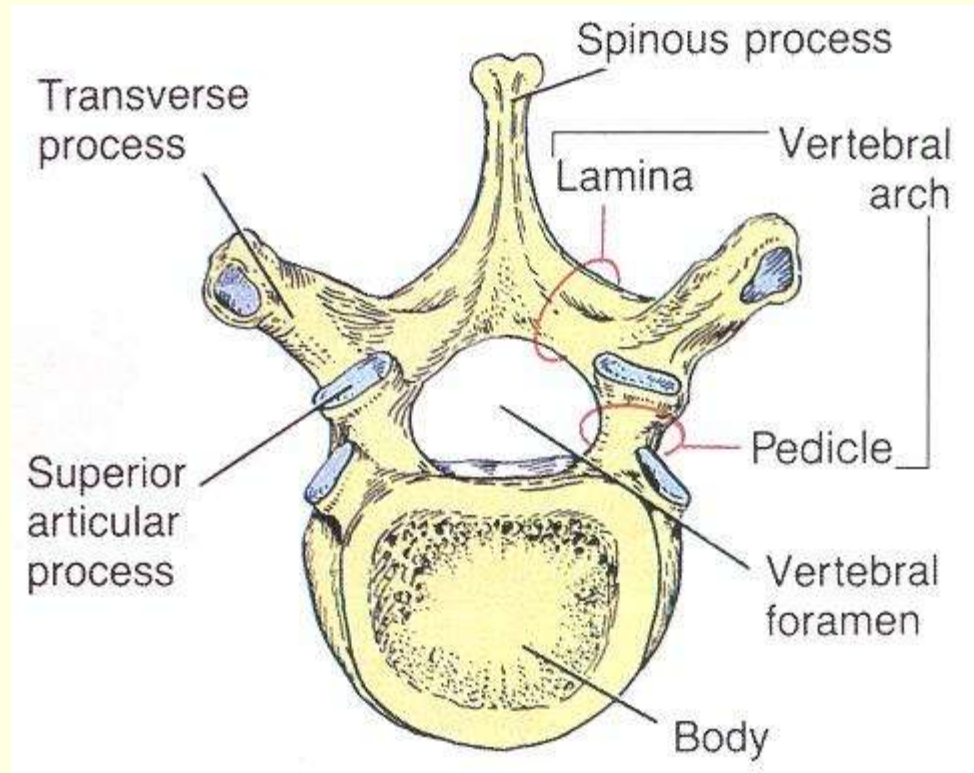
# Typical vertebra

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- The vertebra consist of body arch and processes:
- The **body** is a thick spool-shaped, ventral portion of the vertebra. It is convex cranially and concave caudally to articulate with adjacent vertebra.
- The process of vertebra are attached to the arch and those are including processes:

# Typical vertebra

- 1-body
- 2- Vertebral foramen
- 3- Transverse process
- 4- Spinous process
- 5-lamina
- 6- vertebral arch
- 7-Ventral crest
- 8- cranial articular process
- 9-Caudal articular process
- 10-anterior articular process
- 11- posterior articular process
- 12- Mammillary process



# Articulation of the vertebrae

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- A- Between the bodies of the vertebrae:
  - 1- intervertebral disk
  - 2- ventral longitudinal ligaments
  - 3- dorsal longitudinal ligament
  
- B- Between the arches of the vertebrae:
  - Are include: flava ligament, supraspinatus ligament, nuchal ligament.

1-Flava ligament: which is a rounded the border of arch.

2- supraspinatus lig.: extend from occipital to the sacrum.

3- Nuchal lig.: is a strong ligament elastic type , extend from the occipital bone and continuous with supraspinatus ligament of lumber vertebrae. Its formed from two parts ( funicular part and lamellar part

