

DEPARTMENT OF VETERINARY ANATOMY

1ST PROFESSIONAL YEAR, BVSC & AH

Credit Hours: 4+3

UNIT- I

Topic:- Different surface and joint regions, Palpable Bony prominences of the animal body. Palpable Lymph nodes and Arteries of the body and Surface veins for Venipuncture. Sites for the collection of Bone marrow and Cerebrospinal fluid.

By

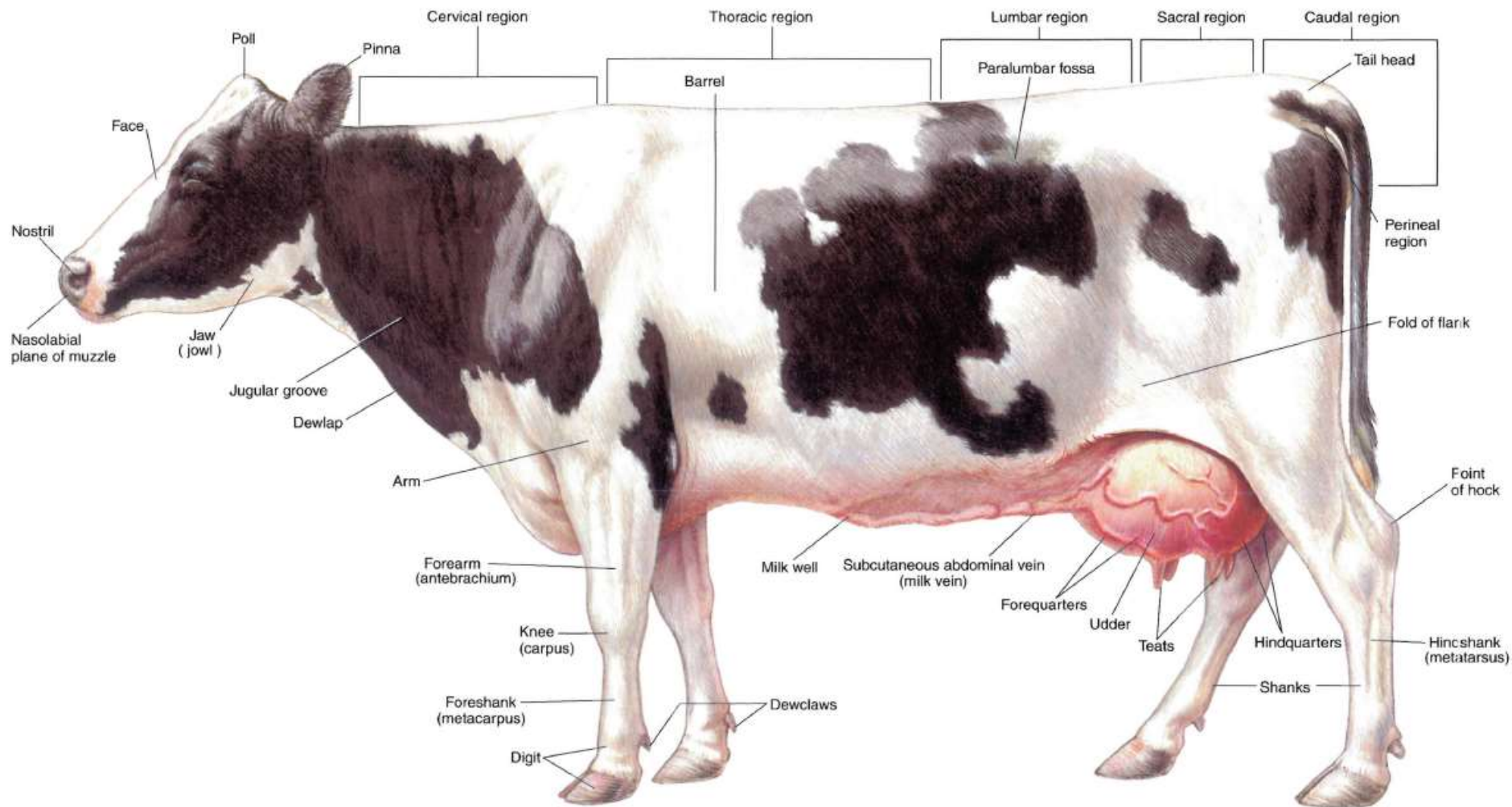
Dr. Avnish Kumar Gautam

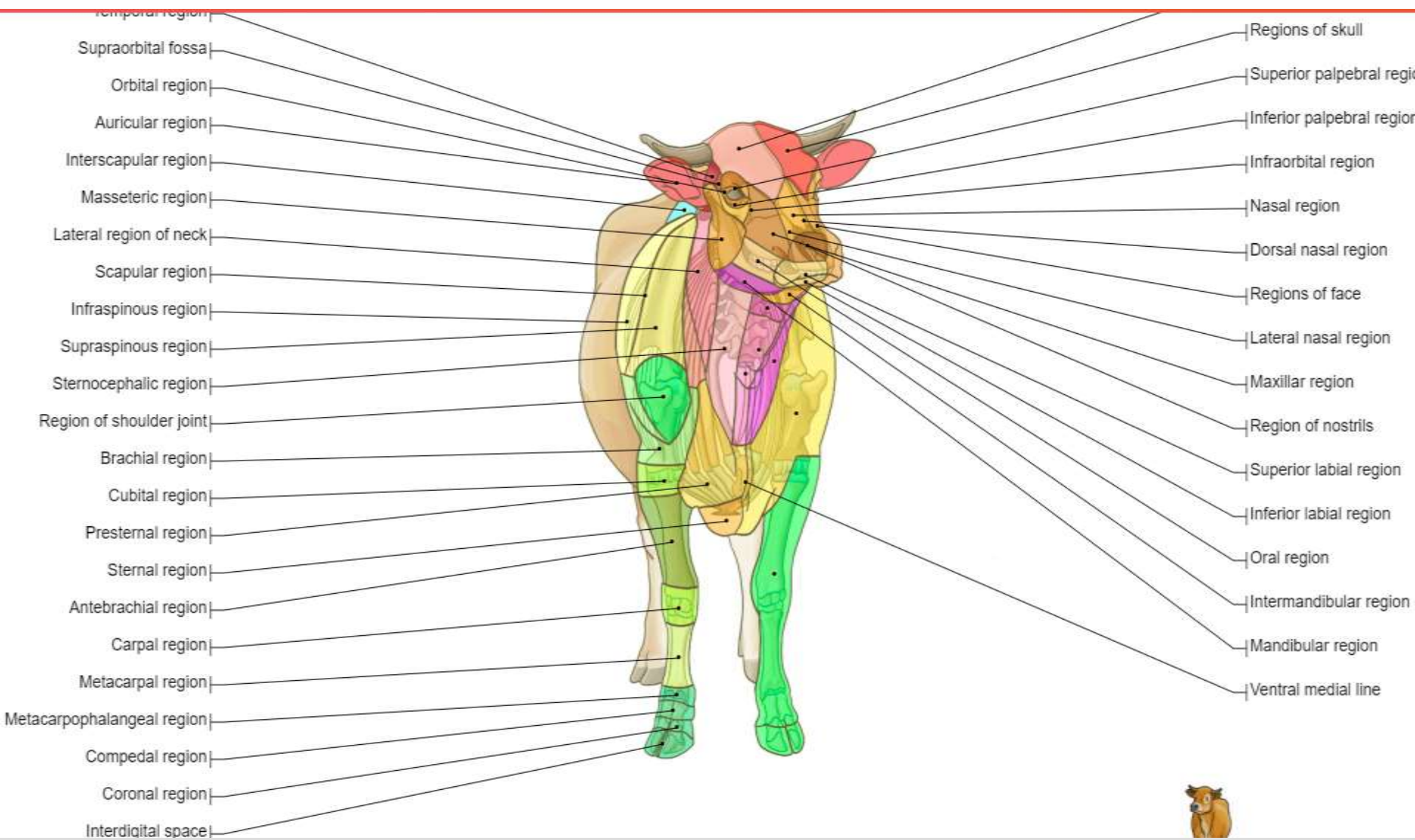
Assistant Professor

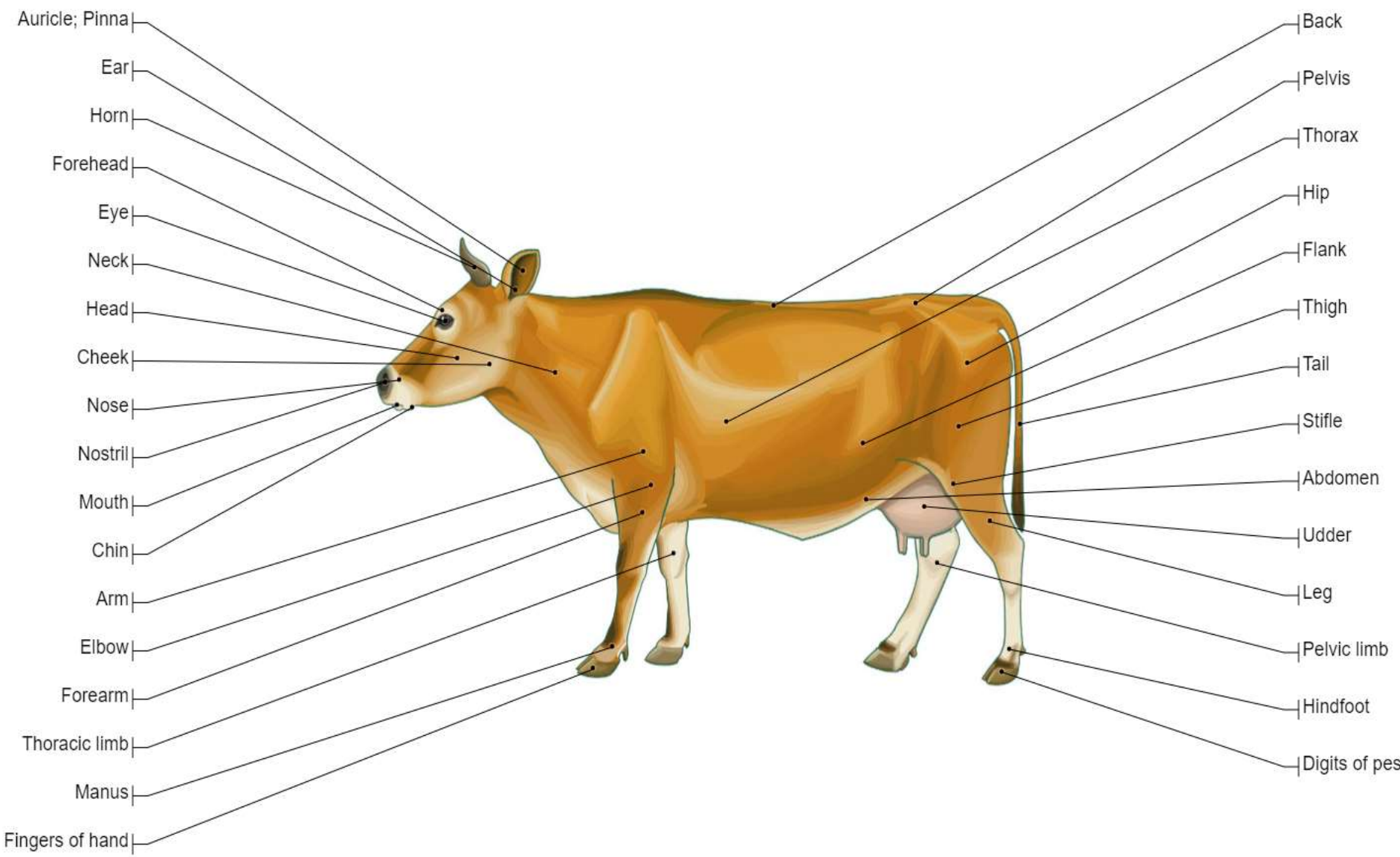
Surface regions of the body

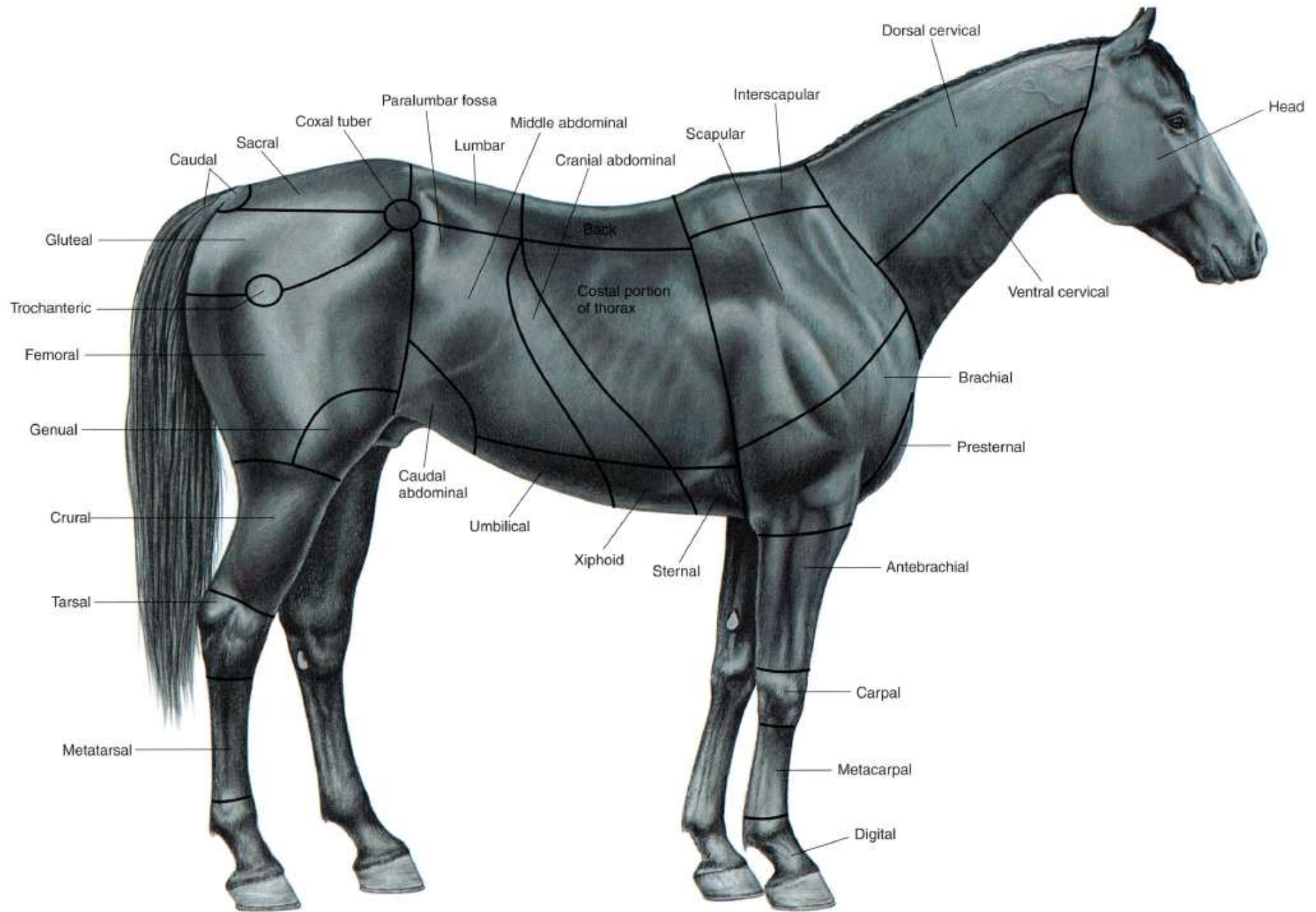
Head region

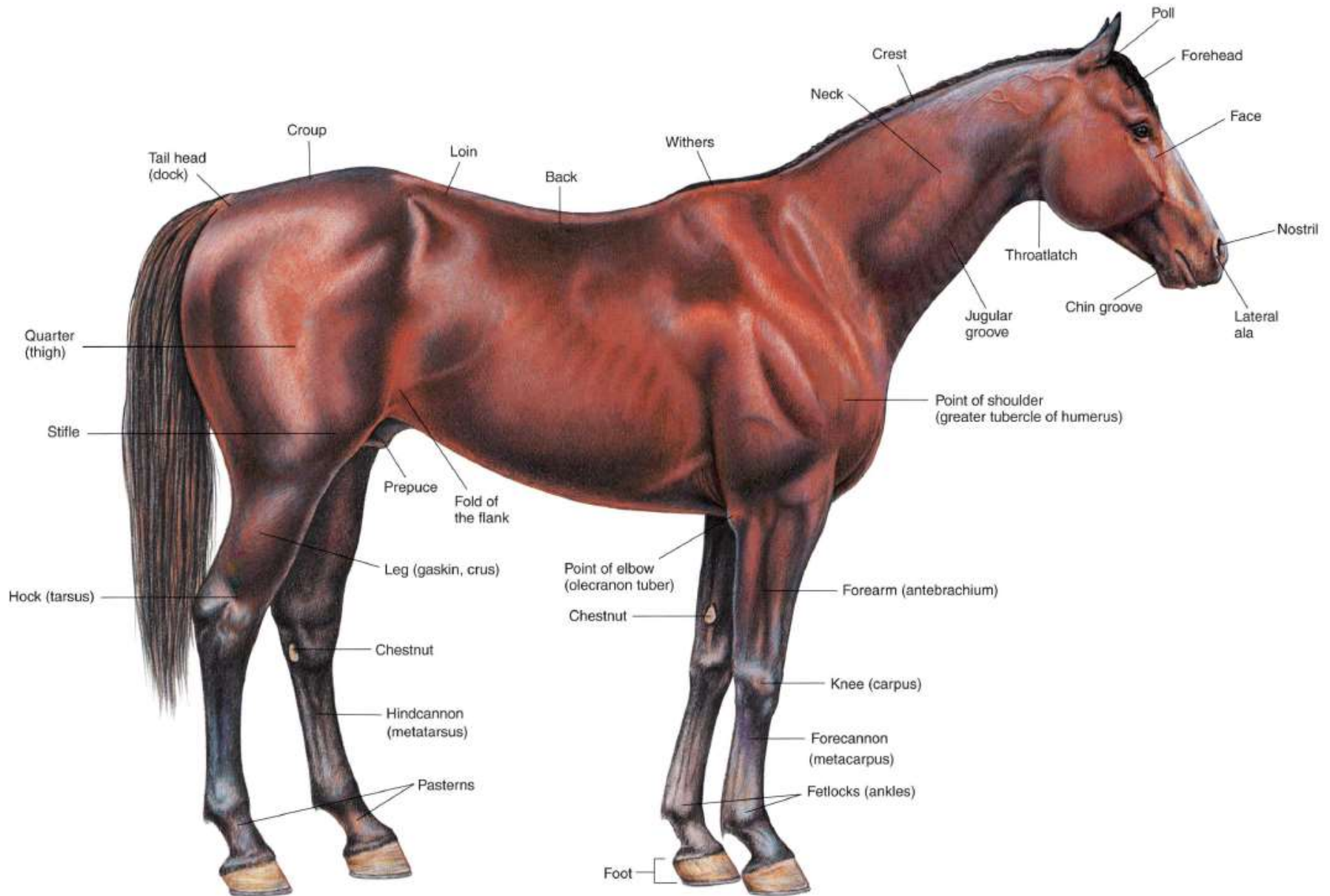
- Frontal region
- Temporal region
- Facial region
- Nuchal region
- Parotid region
- Maxillary region
- Mandibular region











Neck Region

- Dorsal cervical region
- Lateral cervical region
- Ventral cervical region
- Prescapular region
- Dewlap region

Fore limb region

- a. Shoulder (Scapular) region
- b. Arm (Humerus) region
- c. Elbow (cubital) region
- d. Fore arm (Radius and Ulna)
- e. Manus
 - i. Carpal region
 - ii. Metacarpal region
 - iii. Digital region (Medial & lateral)

Thorax region

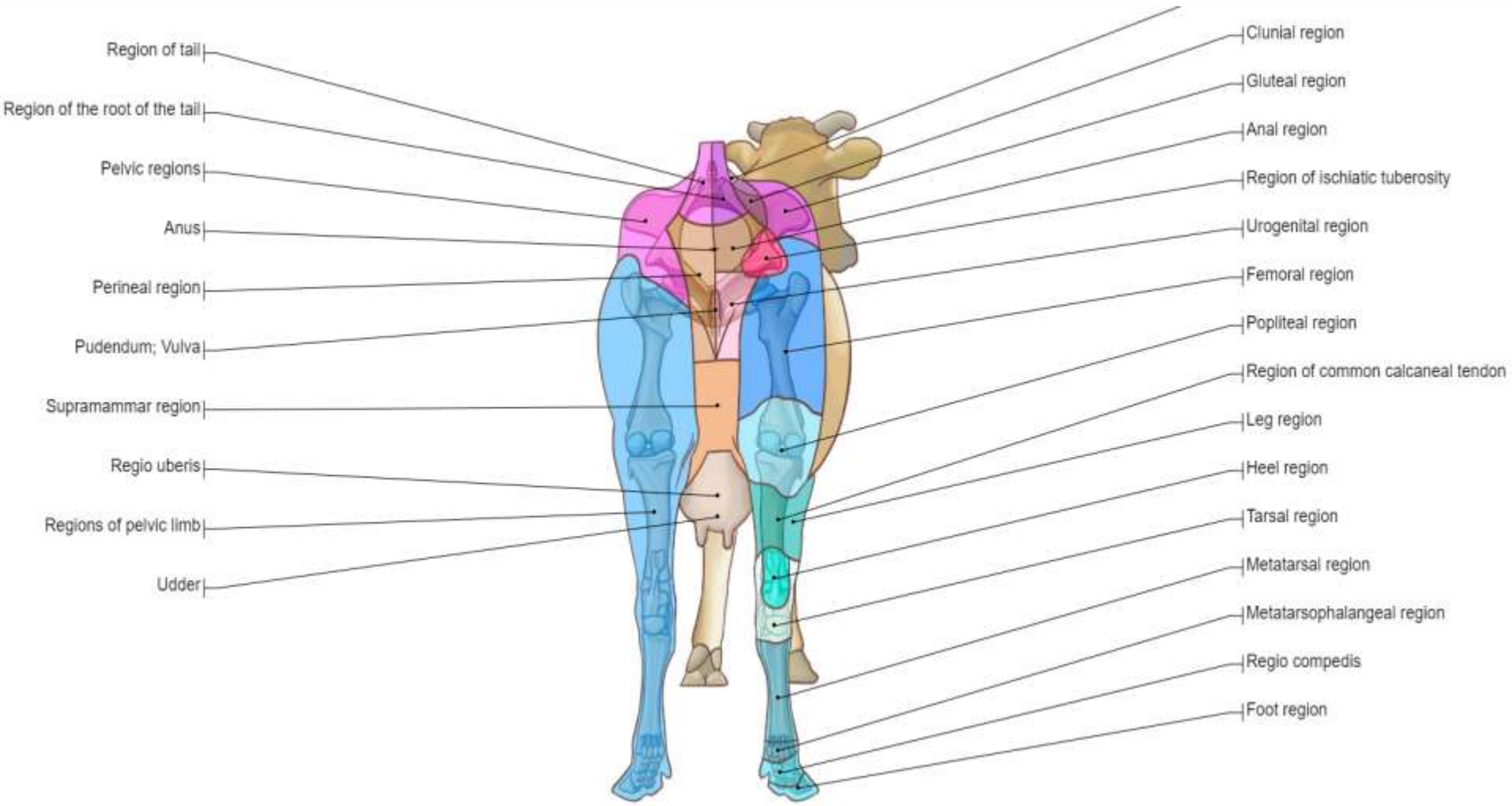
- Back region
- Withers (highest point of thoracic spines)
- Costal and intercostal region
- Interchondral region
- Sternal region

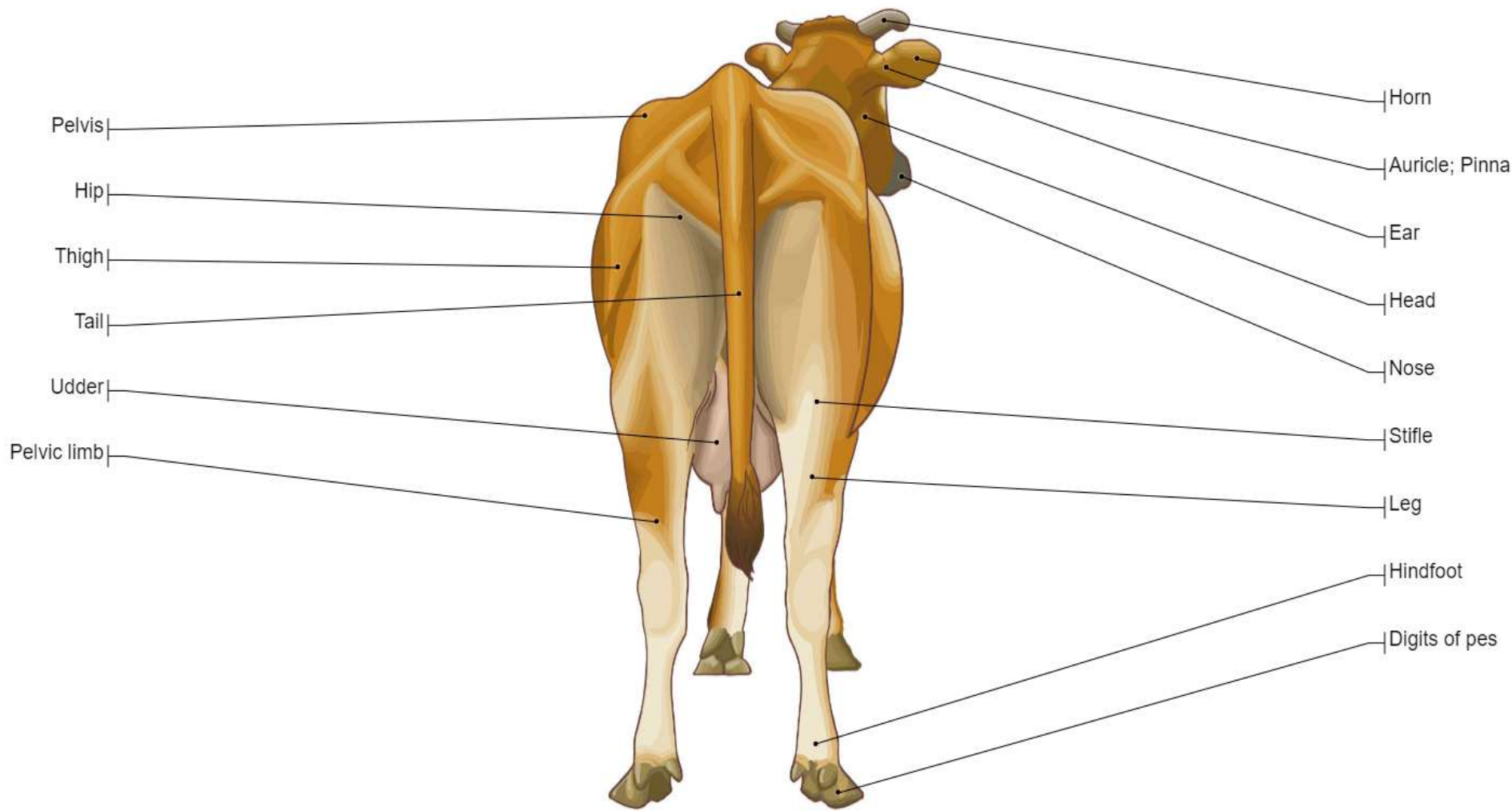
Abdomen Region

- Lumbar region (Loin)
- Flank region
- Paralumbar fossa region
- Costal arch, parachondriac region
- Umbilical, Prepubic, Inguinal region

Hind limb Region

- a. Tuber coxae (Hook bone)
- b. Tuber ischi (Pinbone)
- c. Gluteal region
- d. Hip region
- e. Thigh (femur) region
- f. Leg (Tibia) region
- g. Pes
- i. Tarsal region
- ii. Metatarsal region
- iii. Digital region (medial & lateral)





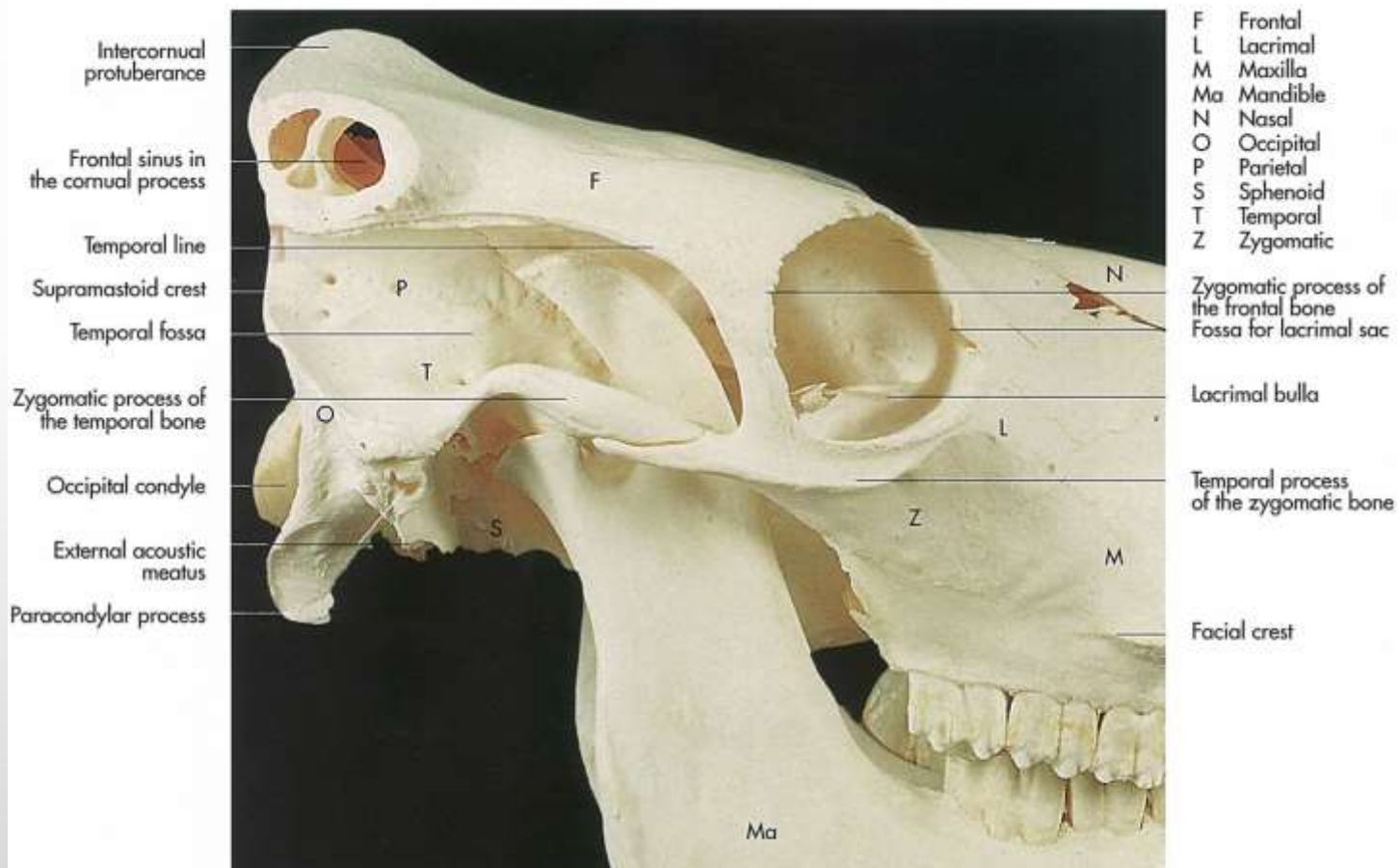
Other regions

- Croup region
- Coccygeal region
- Anal region
- Ischiorectal fossa region
- Perineal region

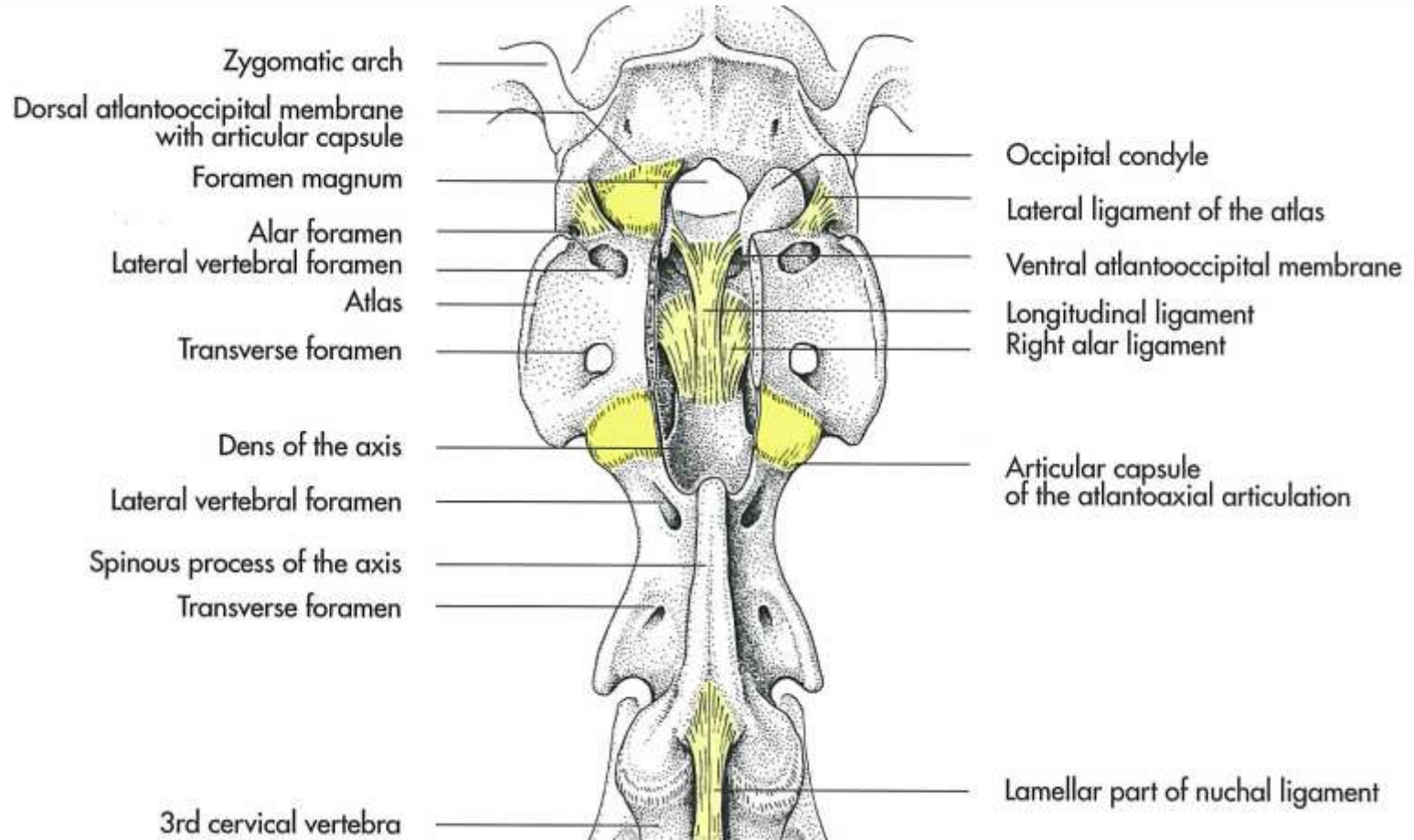
JOINT REGIONS OF THE BODY

Head Region

- Symphyseal joint of mandible
- **Temporo-mandibular articulation:** Between the squamous temporal bone and the condyles of the ramus of mandible.
- **Occipito -atlantal articulation:** Between the occipital condyle and anterior articular cavities of atlas.



Joints in cervical region

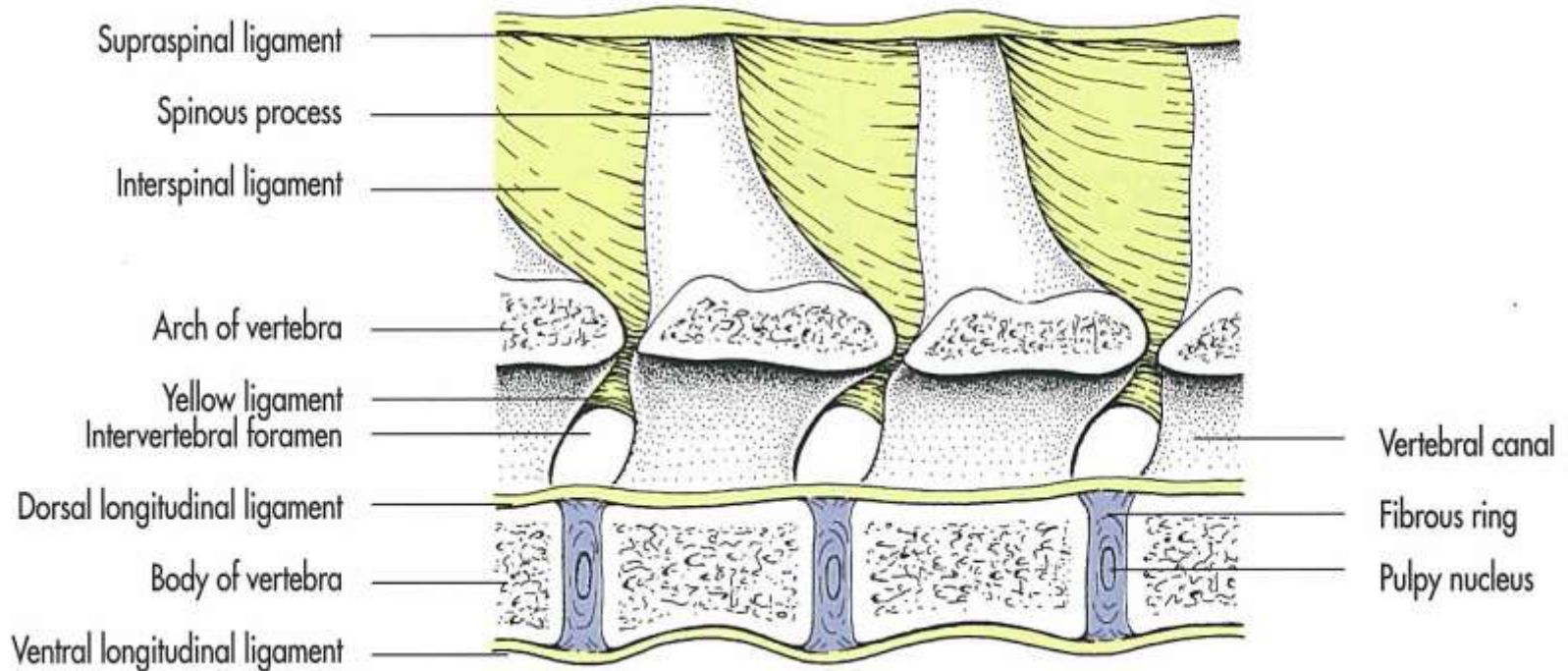


Joints in Vertebral column

There are three types of articulation in vertebral column-

- **Intercentral articulation:-** Formed between the bodies of vertebrae with intervertebral disc between them.
- **Interneural articulation:-** Formed between the articular process of adjacent vertebrae.
- **Atlantoaxial articulation:-** Posterior articular surfaces of lateral masses and dorsal surface of ventral arch of atlas (fovea dentis) and anterior aspect of body of axis and ventral surface of dens with a common joint capsule.

Para median section of Vertebrae



Intervertebral disc

Pulpy nucleus

Fibrous ring

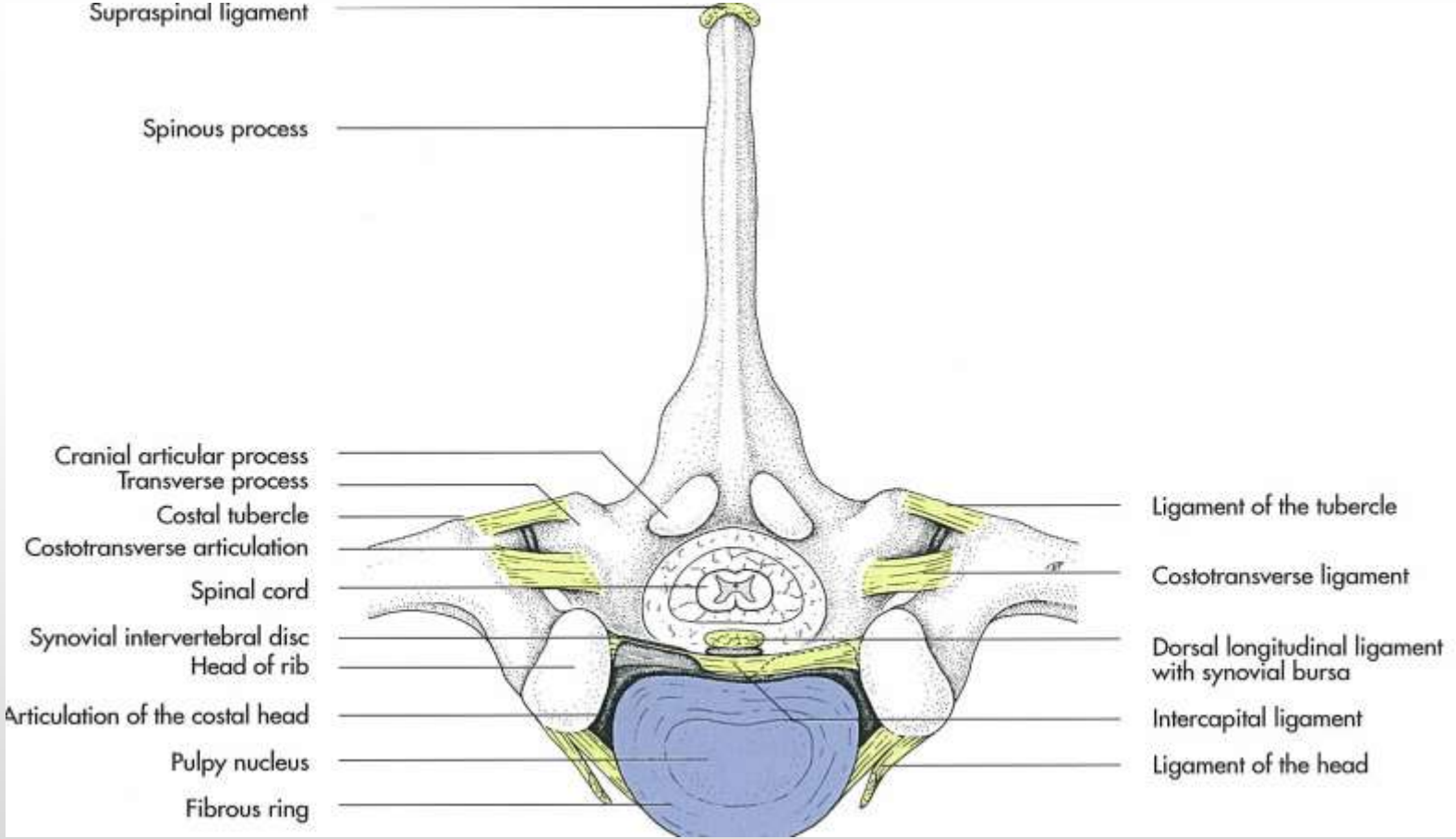


Joints in thorax region

1. Costovertebral articulation

- a. **Costo – central:-** Formed between the head of a rib and capitular facets of adjacent thoracic vertebrae.
- b. **Costo –transverse:-** Formed between the facets of transverse processes of thoracic vertebrae and tubercular facet of ribs of same number.

Costovertebral articulation



2. Costochondral articulation:- Formed between the ventral ends of sternal ribs and costal cartilages

3.Chondrosternal articulations:-Costal cartilages of sternal ribs and articular cavities between sternbrae.

4. Sternal articulations: Between the adjacent sternbra.

6th cervical vertebra

Scapula

Cartilage of the
1st rib
3rd rib

Manubrium
of sternum
Sternal ribs

Sternum

Humerus



1st lumbar vertebra

Last thoracic vertebra

13th rib,
floating rib (carniv.)

Asternal rib

12th rib
with cartilage

Costal cartilage

Femur

Patella

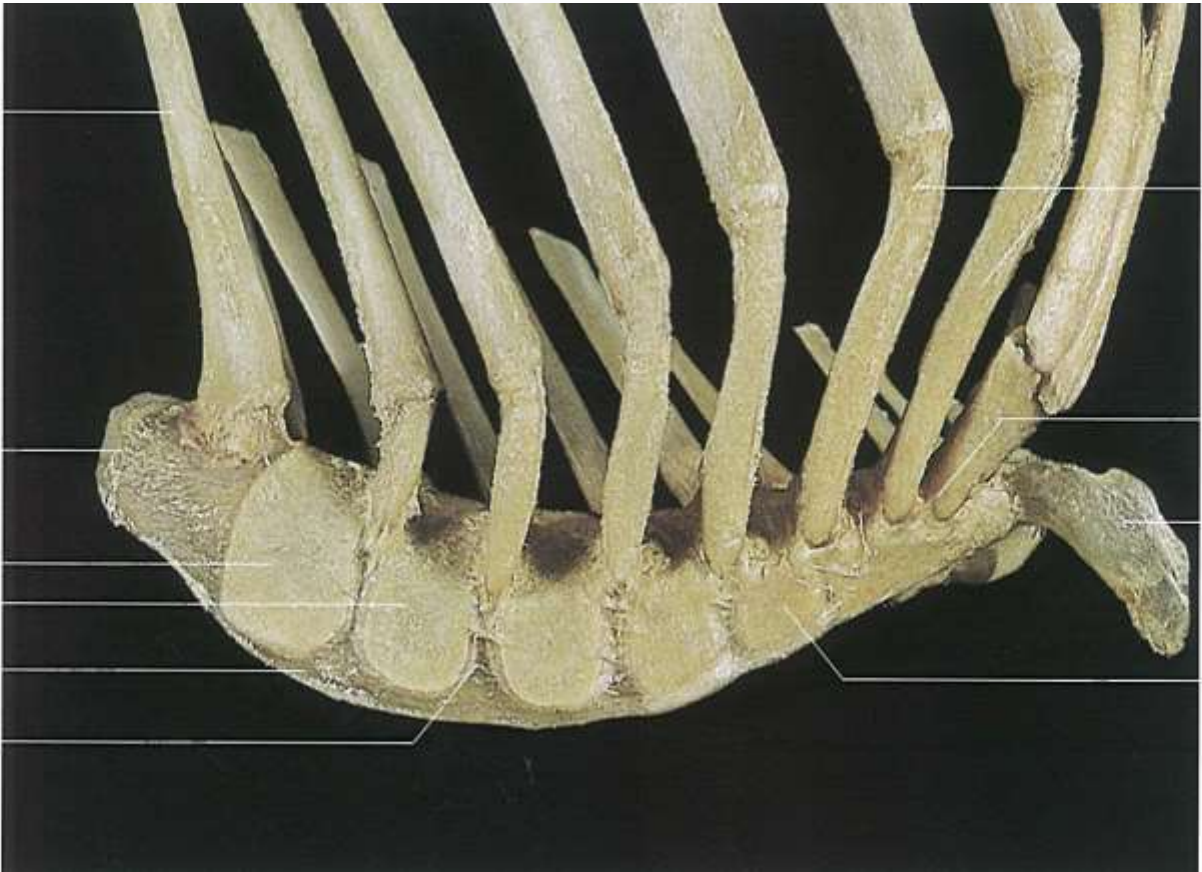
Costal arch

Tibia

Xiphoid process

Radius

Ulna



1st rib

Costal cartilage

Manubrian cartilage

Sternal synchondrosis

Manubrium sterni
1st sternbra

Xiphoid process
with cartilage and
xiphosternal
synchondrosis

Crista sterni

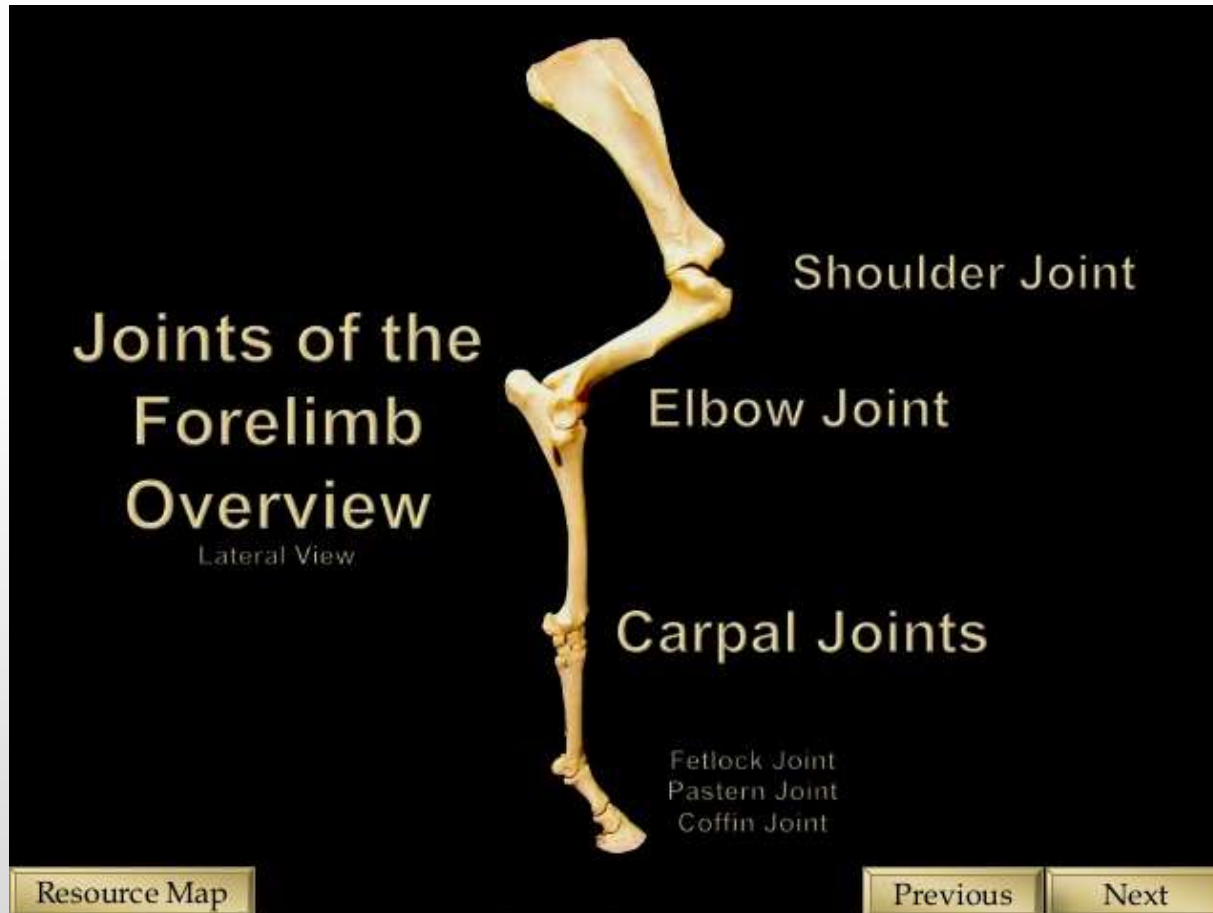
4th sternbra

Synchondrosis
intersternalis

JOINTS OF FORELIMB

- Shoulder joint
- Elbow (cubital) joint
- Carpal joint
- Fetlock (metacarpophalangeal) joint
- Pastern (Proximal Interphalangea)
- Coffin (Distal Interphalangeal) joint

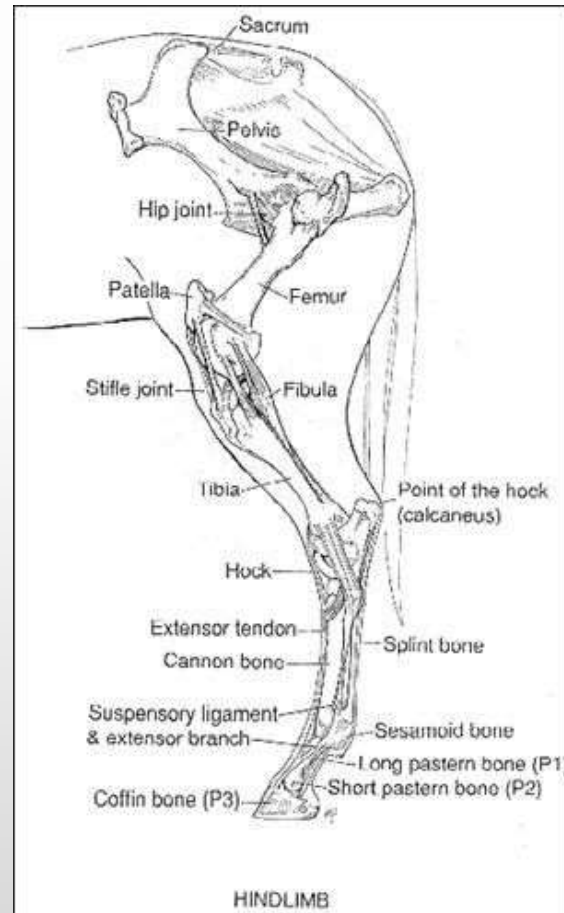
JOINTS OF FORELIMB



JOINTS OF HIND LIMB

- Sacroiliac articulation
- Hip joint (Coxofemoral)
- Stifle
 - a. Femoro patellar articulation
 - b. Femora tibial articulation
- Hock (Tibia, Tarso, metatarsal) joint
- Fetlock (Metatarso phalangeal) joint
- Pastern (Proximal inter phalangeal) joint
- Coffin (Distal Interphalangeal) joint

JOINTS OF HIND LIMB



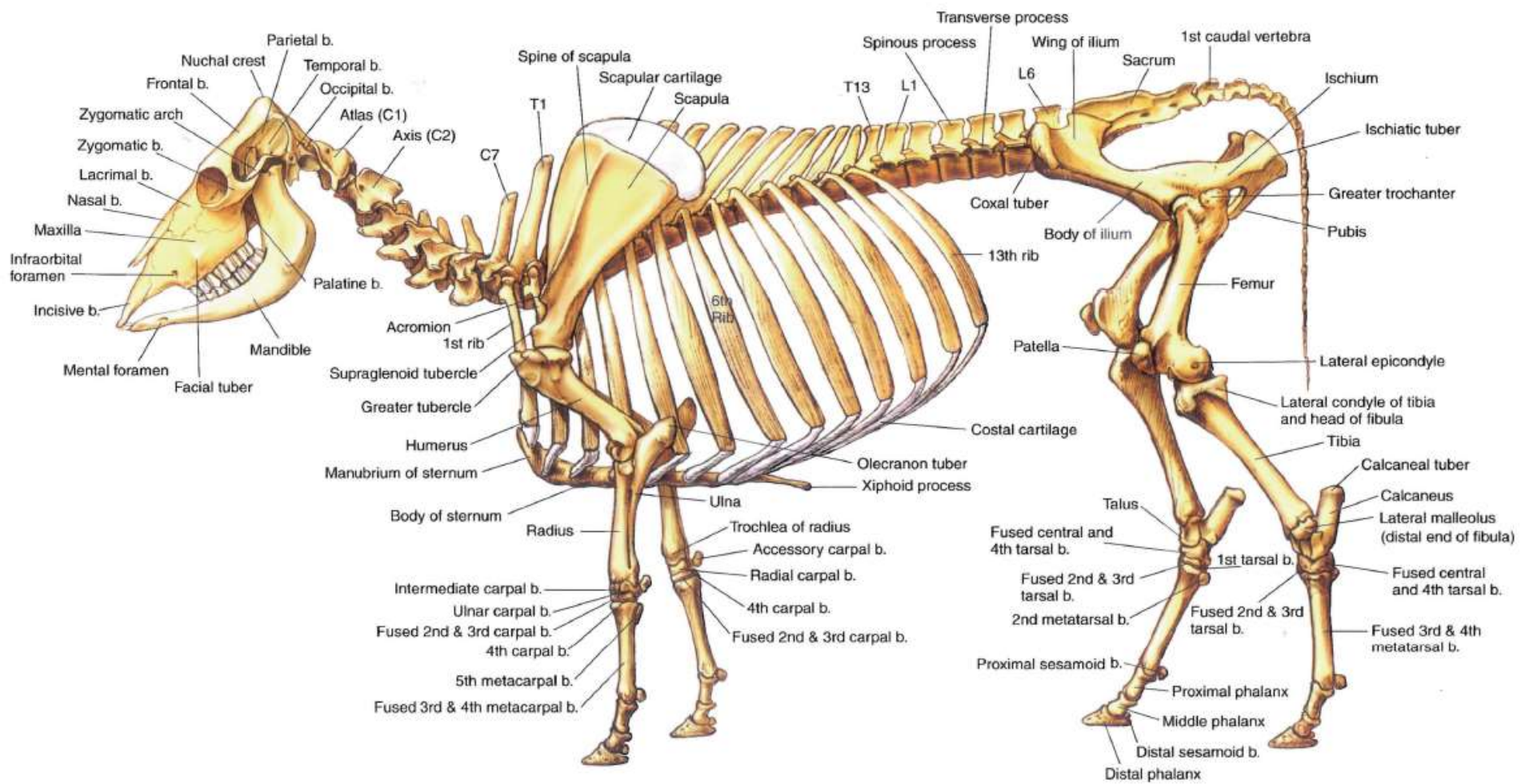
Palpable Bony areas or prominences of an animal

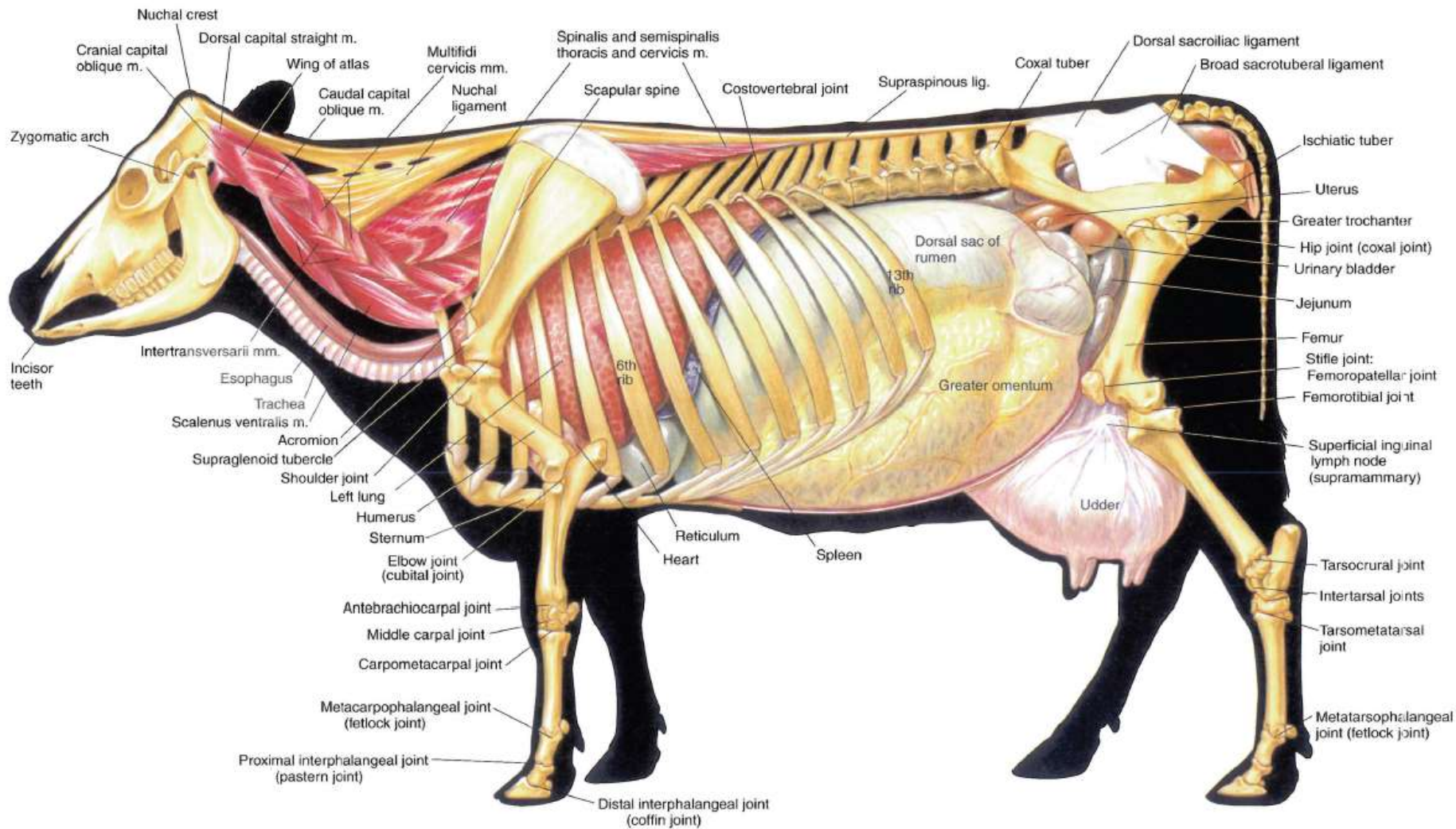
Head region

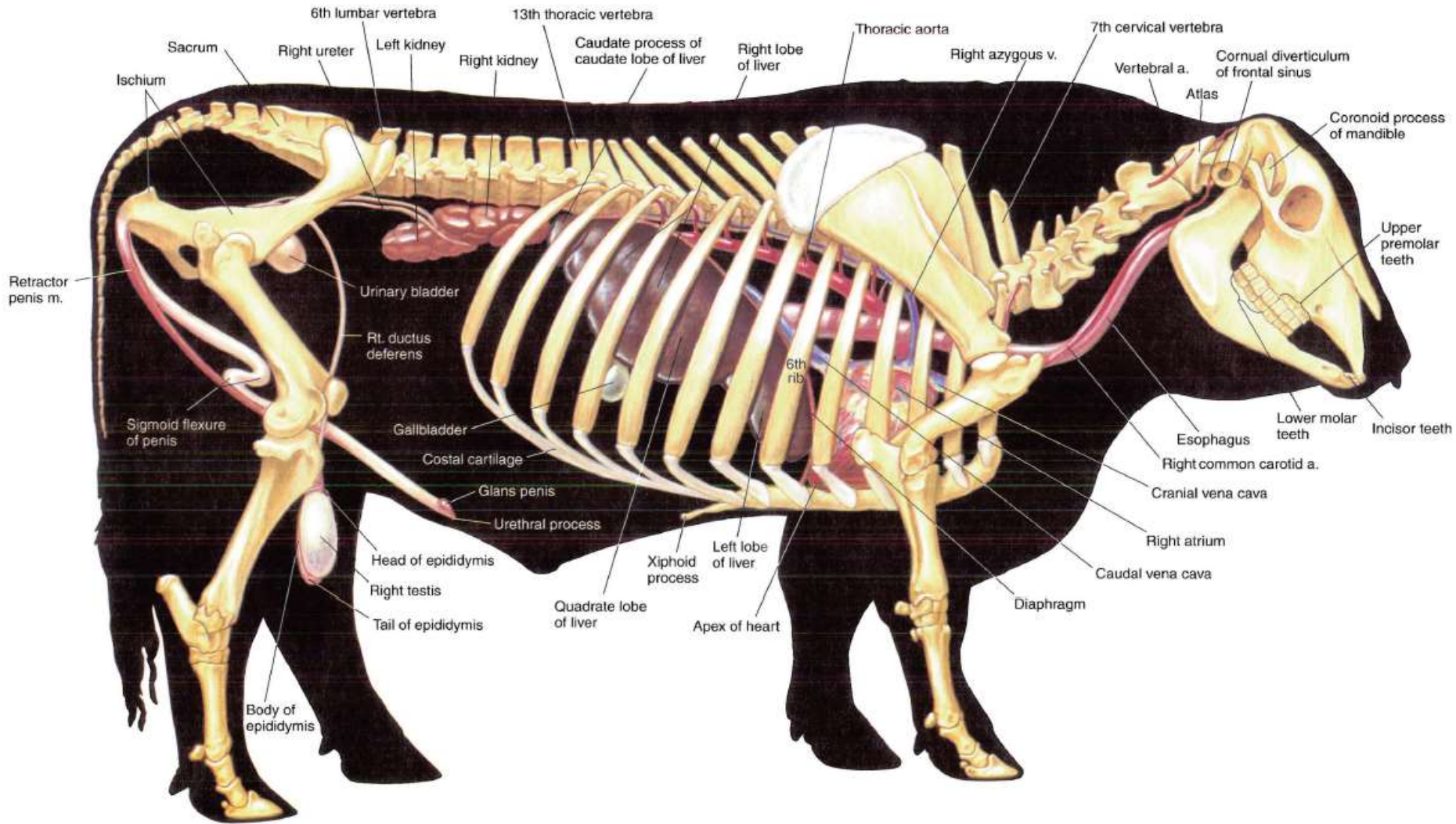
- Frontal crest
- Facial Tuberosity
- Zygomatic arch
- Rim of orbit
- Nasal Bones, body of Frontal
- Angle of Mandible
- Horizontal Ramus of mandible

Vertebral column

- Wing of atlas
- Transverse processes of cervical vertebrae
- Thoracic spines
- lumbar spines and transverse processes, sacral crest
- Transverse processes and spines of cranial series of Coccygeal vertebrae.
- Sternum and Ribs







Contt..

Fore Limb

- Scapular spine
- Acromion process
- Point of elbow (Olecranon process), medial border of radius,
- styloid process of ulna
- Accessory carpal
- Medial and lateral borders of shaft of Metacarpal

Hind Limb

- External angle of ilium (Hook bone -tuber coxae)
- Tuber ischi (Pinbone)
- Patella
- Tibial tuberosity and crest
- Medial surface of tibia
- Point of Hock (Tuber calcis)
- Medial and lateral surfaces of shaft of Metatarsus

PALPABLE SUPERFICIAL LYMPHNODES

Importance:-

1. They are useful in diagnosis of certain diseases (eg: Theileriosis) by palpating enlarged lymphnodes since they are superficially located.
2. Important in meat inspection point of view to test the quality of meat for consumption.

If a particular lymphnode is inflammed the dependent area drained by particular lymph node is considered unfit for consumption, since the inflammed glands suggest the presence of infection.

Location of Lymphnode

- a. **Parotid lymphnode:** Over posterior portion of the masseter muscle partly under cover of the parotid salivary gland.

- b. **Mandibular lymphnode:** Present at the lower part of the mandibular salivary gland under cover of insertion of sternomandibularis muscle.

Contt..

- c. **Prescapular:** (Supra scapular) Situated at the anterior border of the supraspinatus about few cm above the shoulder joint under cover of omotransversarius muscle.
- d. **Prefemoral:** (Precural/Suprapatellar): Located in front and under cover of tensor fascialatae about a hands breadth above the patella.

e. **Superficial inguinal/ supramammary**

Male: Situated at the neck of the scrotum.

Female: Situated on the posterior border of mammary gland.

PALPABLE SUPERFICIAL LYMPHNODES

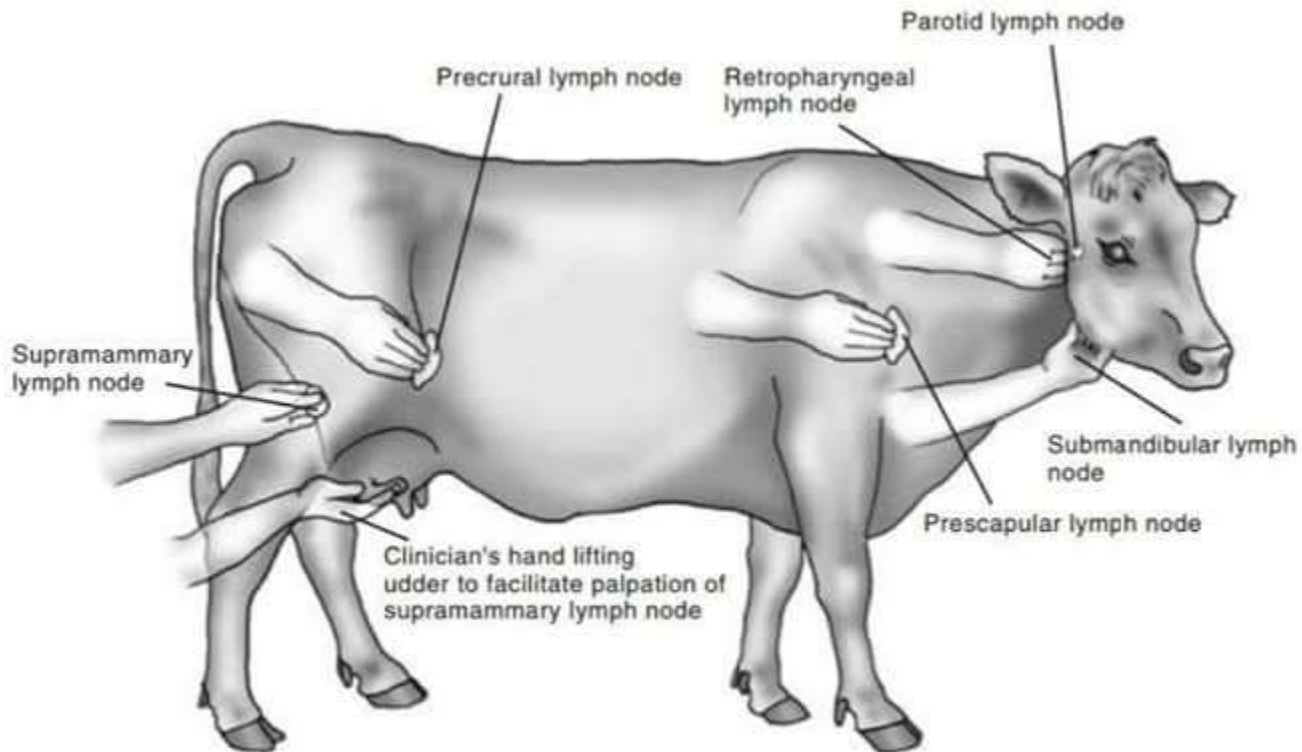


Figure 3.1 Locations of the readily palpable lymph nodes in cattle showing placement of the clinician's hand. See text for details.

PALPABLE ARTERIES AND SURFACE VEINS AND THEIR CLINICAL IMPORTANCE

PALPABLE ARTERIES

Importance: Used for taking pulse

Cattle : Ventral coccygeal artery

Horse : External maxillary artery

Sheep & Goat : Femoral artery

.

Dog : Femoral artery

PALPABLE ARTERIES

Ventral coccygeal artery



External maxillary artery



Location of Palpable artery

1. **Ventral Coccygeal artery:** can be felt on the ventral aspect of the base of the tail. It is located between sacrococcygeus ventralis muscles.
2. **External maxillary artery:** can be felt on the medial surface of the vertical ramus of the mandible.
3. **Facial artery** is along anterior border of the masseter along with vein and stenson's duct behind.
4. **Median artery** is on the upper part of forearm along medial border of radius.
5. **Femoral artery** is on the medial aspect of the thigh in femoral canal.

Surface veins for Venipuncture

Importance: These veins can be used for

- a. for blood transfusion
- b. for intravenous injection of medicines
- c. for collection of blood samples

Cattle:

- a. External Jugular vein:- Located in jugular furrow.
- b. Ear vein
- c. Subcutaneous abdominal vein / Anterior mammary vein.

Horse: External jugular vein

Dog : Cephalic vein -Anterior aspect of elbow, Recurrent Tarsal Vein (Lateral saphenous vein) Infront of Tendoachilles.

Pig : Ear vein

Surface veins for Venipuncture Contt..

Ear vein in pig

External Jugular vein in cattle

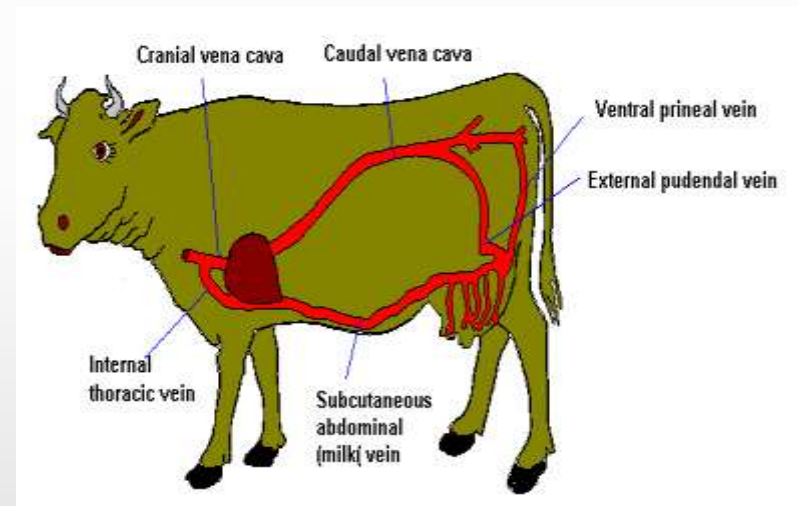


Surface veins for Venipuncture Contt..

Cephalic vein in dog



Subcutaneous abdominal vein in cow



SITES FOR COLLECTION OF BONE MARROW

Indication: For disease investigation

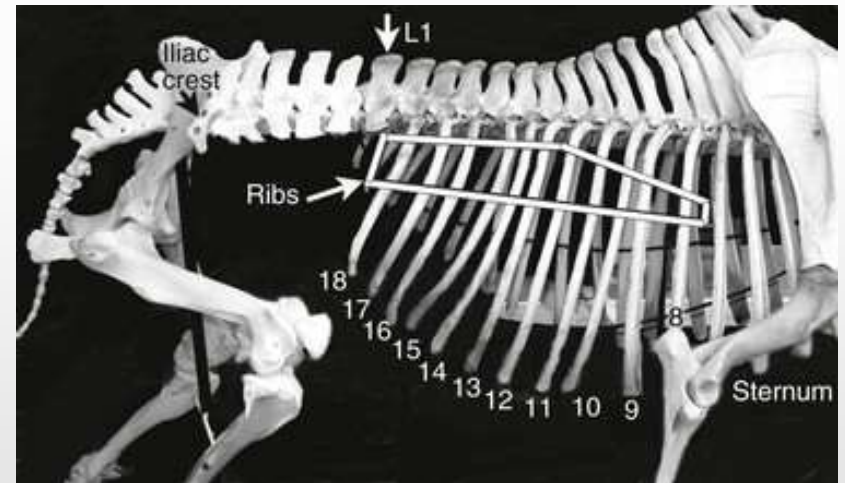
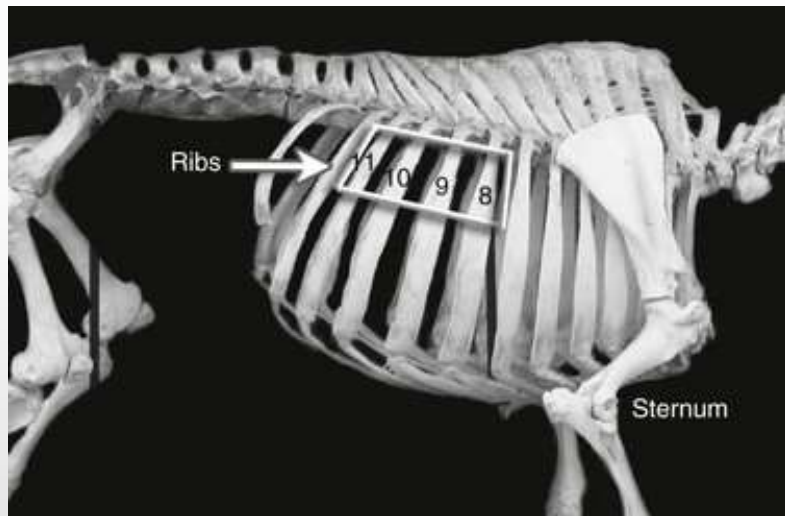
Cattle, Horse, Sheep & Goat :

1. Ribs
2. Tuber Coxae (lateral angle of ilium)
3. Iliac crest -not recommended in old animals.
4. .Vertebral spines (in calf)

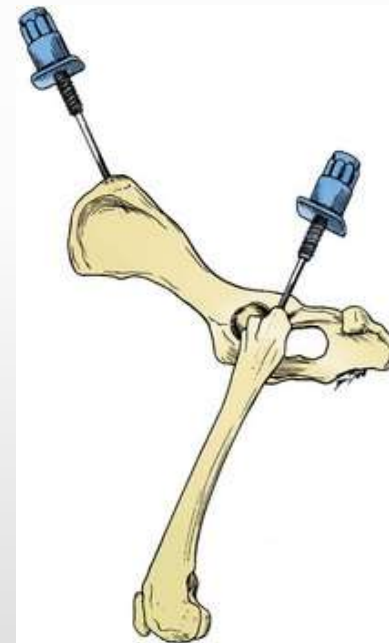
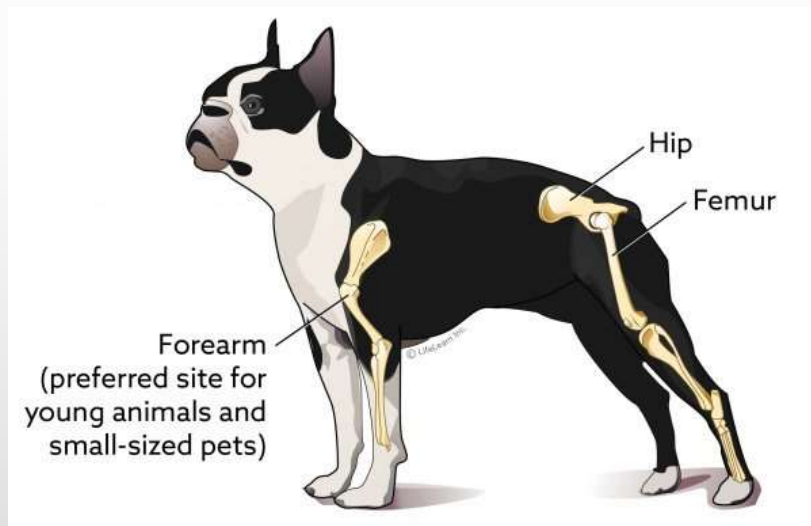
Dog, Cat, Pig and Laboratory Animals:

1. Iliac crest: It is the most convenient site for collection of bone marrow in dog.
2. Proximal end of the femur through the trochanteric fossa -cat.

SITES FOR COLLECTION OF BONE MARROW CONTT..



SITES FOR COLLECTION OF BONE MARROW CONTT..

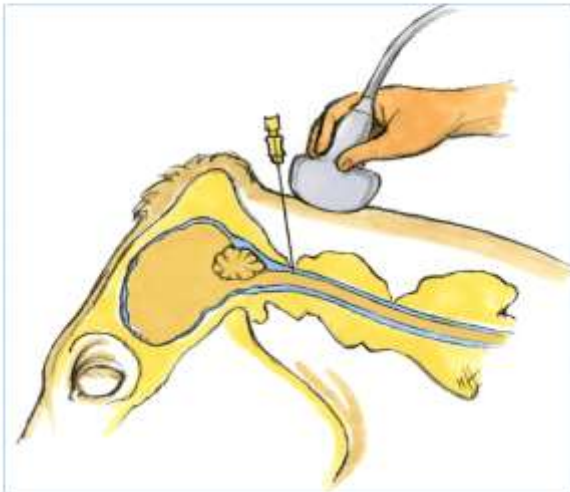


Sites for C.S.F. (Cerebrospinal fluid) Collection

Two sites are preferred for the collection of the CSF.

1. Suboccipital puncture: In this procedure puncture the cisterna magna (expanded portion of subarchnoid space). This site is most useful for horse, cattle, sheep, dog and cat. The lumbosacral puncture is an alternative site useful in cattle, sheep and goats.

Procedure: Cast the animal on right side and flex the head to the left so that its longitudinal axis forms a right angle with the longitudinal axis of the neck. Then insert the needle at the cervical mid line at the level of cranial edge of the wings of atlas, when the needle enters the subarchnoid space, you suddenly feel no resistance.



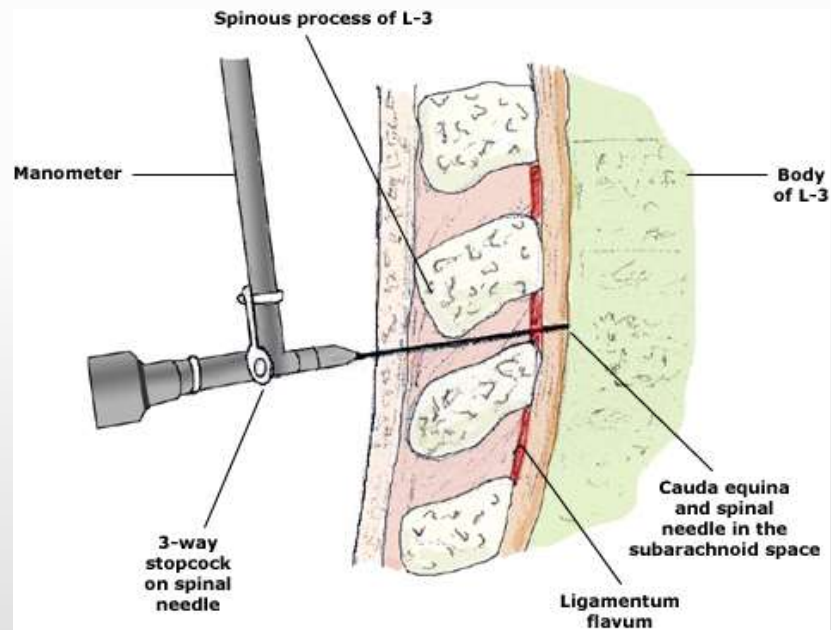
Ultrasonographic examination of the spinal cord and collection of cerebrospinal fluid from the atlanto-occipital space in cattle

Braun *et al.*



Lumbosacral puncture: In this procedure CSF can be collected while the animal is in standing position. This site is found between dorsal spinous process of the last lumbar vertebra and the cranial edge of the median sacral crest.

Sites for C.S.F.



THANKS