


Different surface regions and joint regions

Surface anatomy

- Surface anatomy is also called as **superficial anatomy** and **visual anatomy**.
- This is a branch of gross anatomy that examines shapes and markings on the surface of the body as they relate to deeper structures.
- It deals with anatomical features that can be studied without dissection.
- It is essential in locating and identifying anatomic structures prior to studying internal gross anatomy.

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- **It provides information about**
 - **Palpation of arterial pulses**
 - **Skeleton, muscles, and blood vessels**
 - **Sounds of the heart and lungs**
 - **Where to give injections**

Basic techniques to examine surface anatomy

- **Visual inspection:** directly observe the structures and markings of surface features.
- **Palpation:** feeling with firm pressure or perceiving by the sense of touch, precisely locate and identify anatomic features under the skin.
- **Percussion:** tap sharply on specific body sites to detect resonating vibrations.
- **Auscultation:** listen the sound emitted from organs.

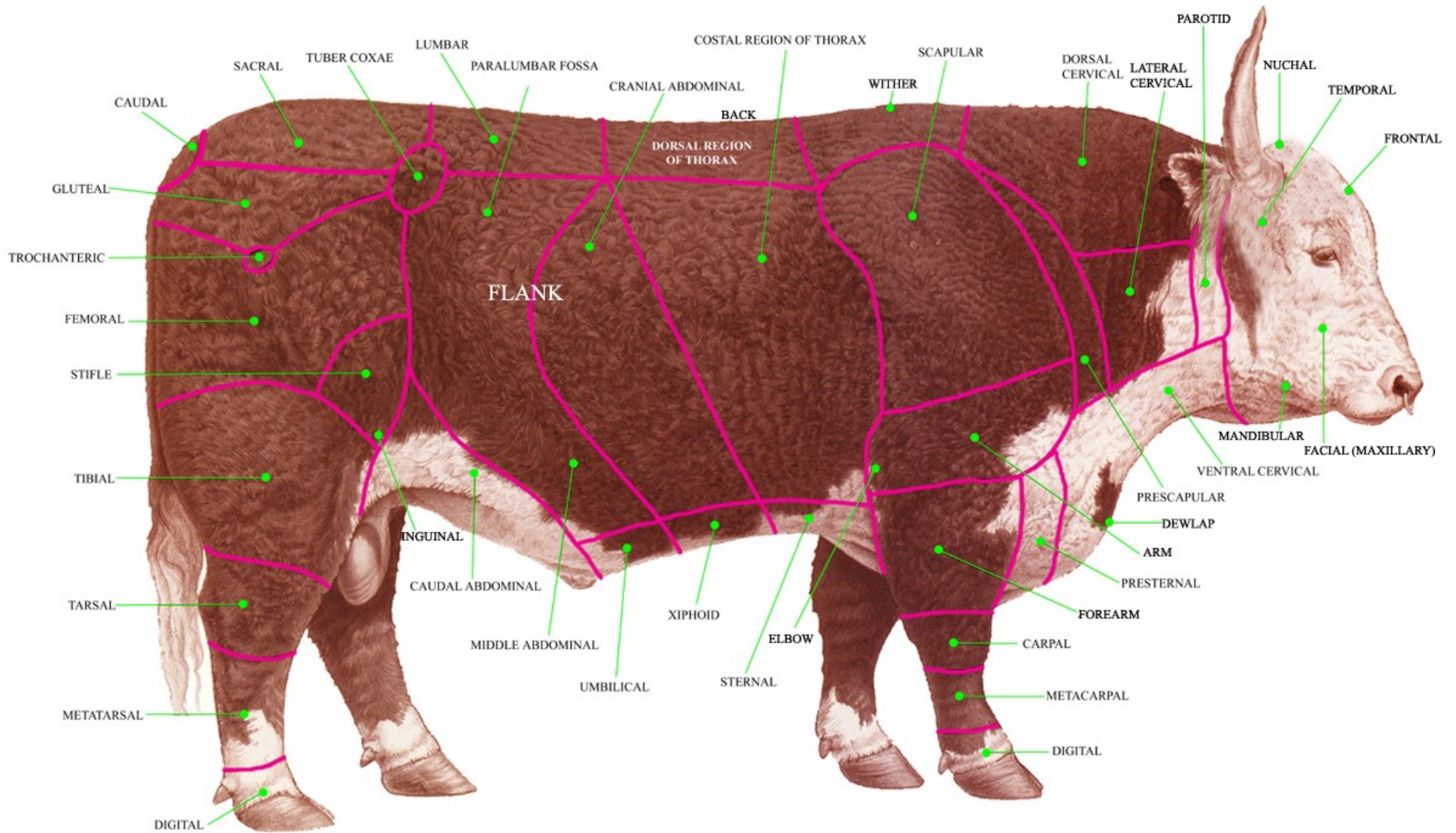
Surface regions





Head region

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



BODY REGIONS OF THE OX



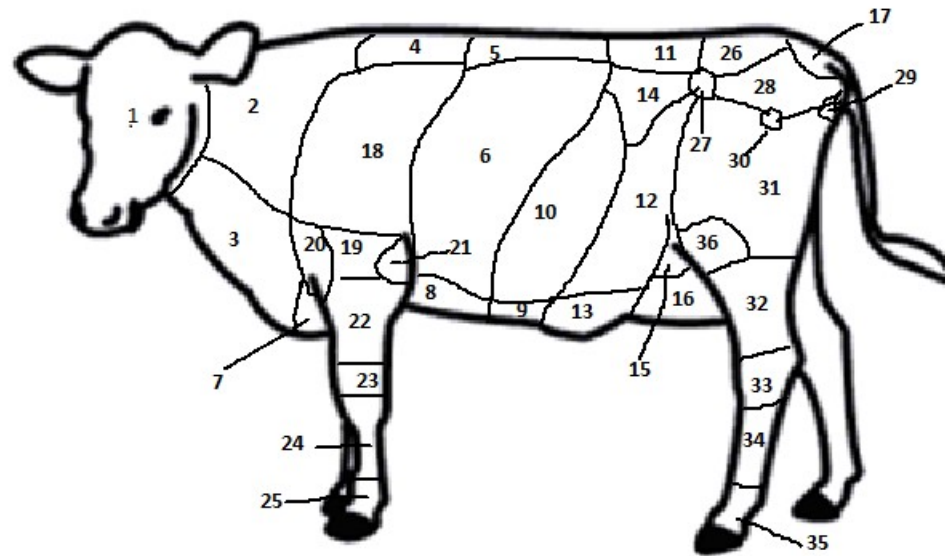
Neck region

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



Thorax region

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



Topographic divisions of the body of ox

1. Head
2. Neck dorsal
3. Neck ventral
4. Interscapular region
5. Dorsum
6. Costal region
7. Presternal region
8. Sternal region
9. Xiphoid region
10. Hypochondriac region
11. Lumber region

12. Iliac region
13. Umbilical region
14. Paralumber fossa
15. Inguinal region
16. Pubic region
17. Tail
18. Shoulder
19. Arm
20. Shoulder joint
21. Point of elbow
22. Antebrachium

23. Carpus
24. Metacarpus
25. Digits
26. Sacral region
27. Tuber coxae
28. Gluteal region
29. Tuber ischi
30. Hip (trochanter major)
31. Thigh
32. Leg
33. tarsus

34. Metatarsus
35. Digits
36. stifle

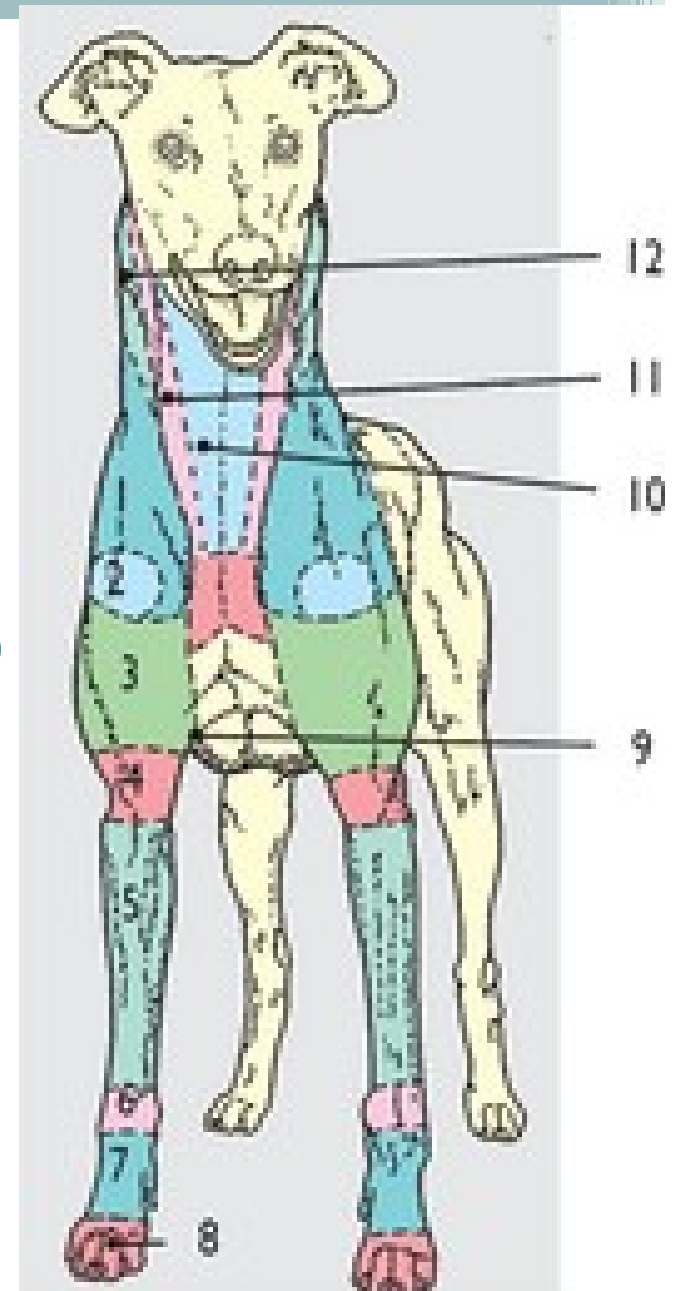
Abdomen region

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

Forelimb region

- Thoracic / Pectoral limb
 - Shoulder (Scapular) region
 - Arm (Humerus) region
 - Elbow (Cubital) region
 - Fore arm (Radius and Ulna) or antebrachial
 - Manus - Carpal region
 - Metacarpal region
 - Digital region (Medial and lateral)

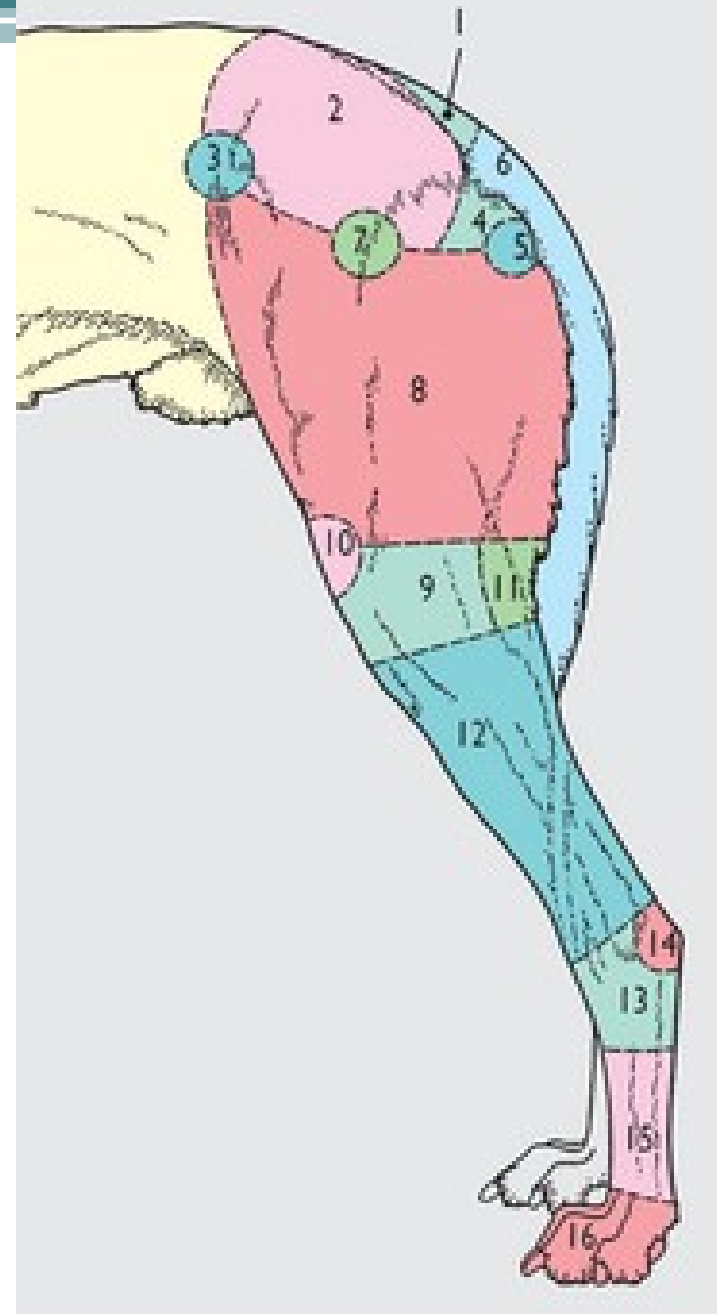
1 Scapular Region. **2** Shoulder Joint Region. **3** Brachial Region. **4** Cubital Region. **5** Antebrachial Region. **6** Carpal Region. **7** Metacarpal Region. **8** Phalangeal (Digital) Region. **9** Axillary Region. **10** Ventral Neck Region. **11** Lateral Neck Region. **12** Dorsal Neck Region.



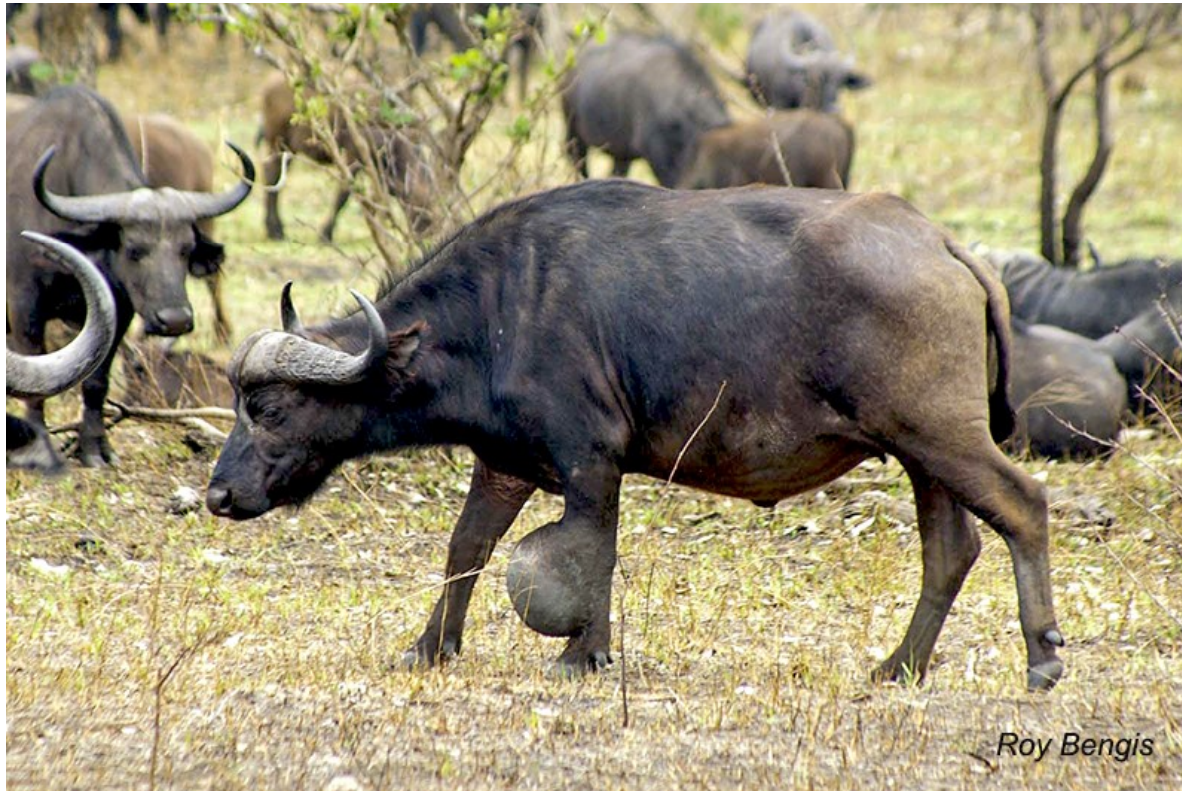
Hindlimb region

- Gluteal region
- Thigh region (femur)
- Stifle region
- Leg (crural) region (tibia and fibula)
- Pes – tarsal (hock) region
 - Metatarsal region
 - Digital region (Medial and lateral)

1-6 Pelvic Regions. **1** Sacral Region. **2** Gluteal Region. **3** Coxal Tuber Region. **4** Ischiorectal Fossa. **5** Ischiadic Tuber Region. **6** Caudal Region. **7** Hip Joint Region. **8** Femoral Region. **9** Genual (Stifle Joint) Region. **10** Patellar Region. **11** Popliteal Region. **12** Crural Region. **13** Tarsal Region. **14** Calcaneal Region. **15** Metatarsal Region. **16** Phalangeal (Digital) Region.

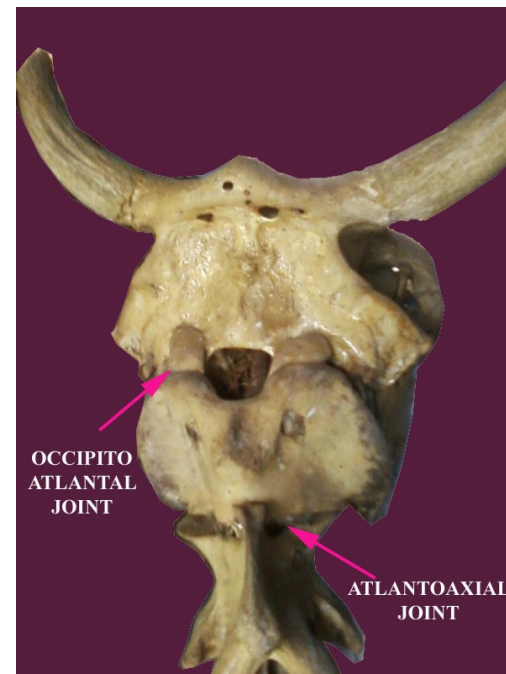
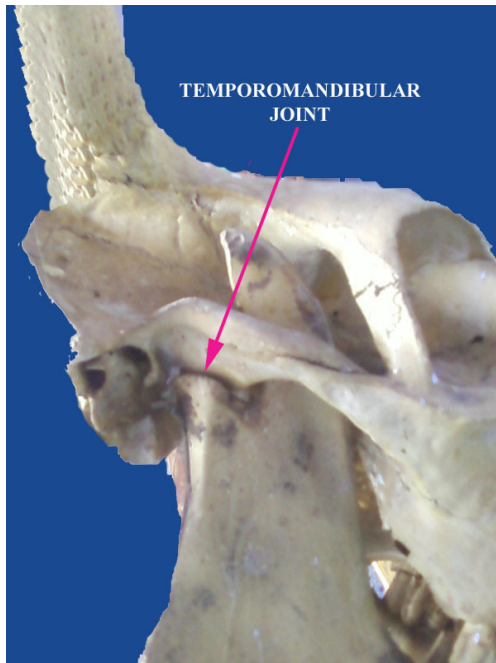
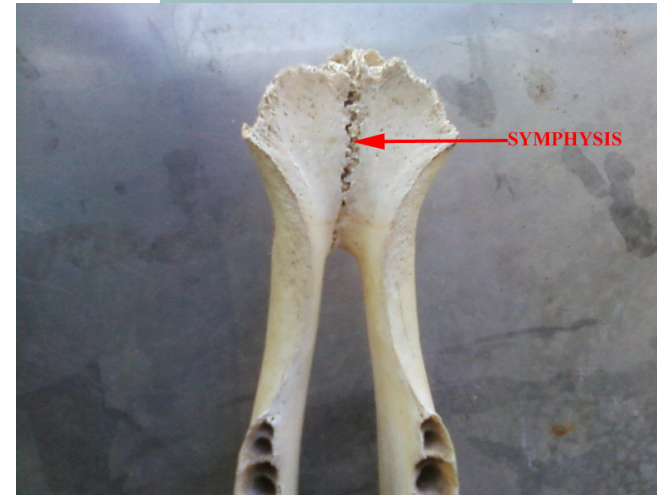


Joint regions



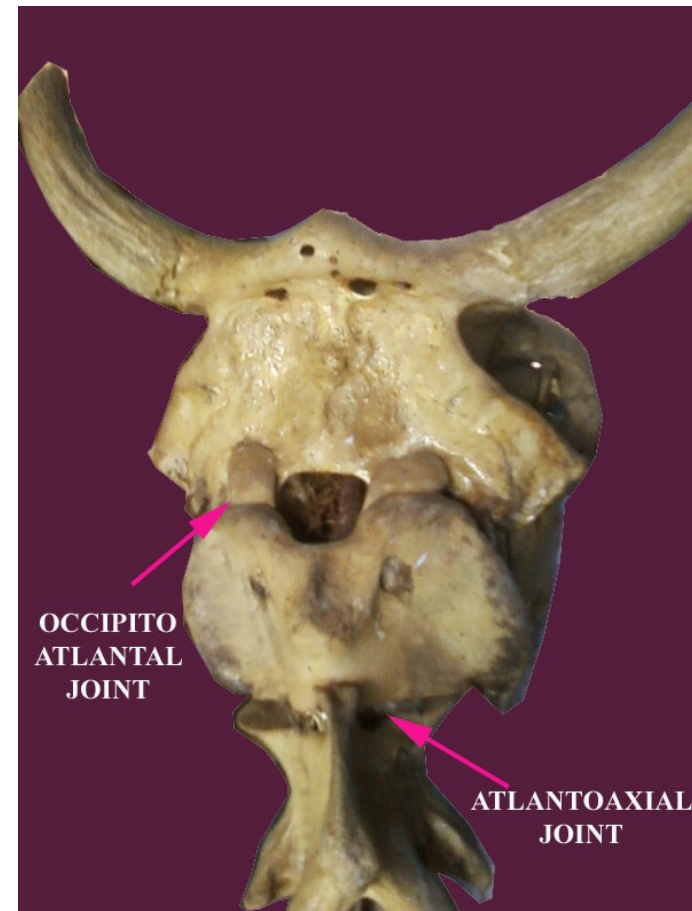
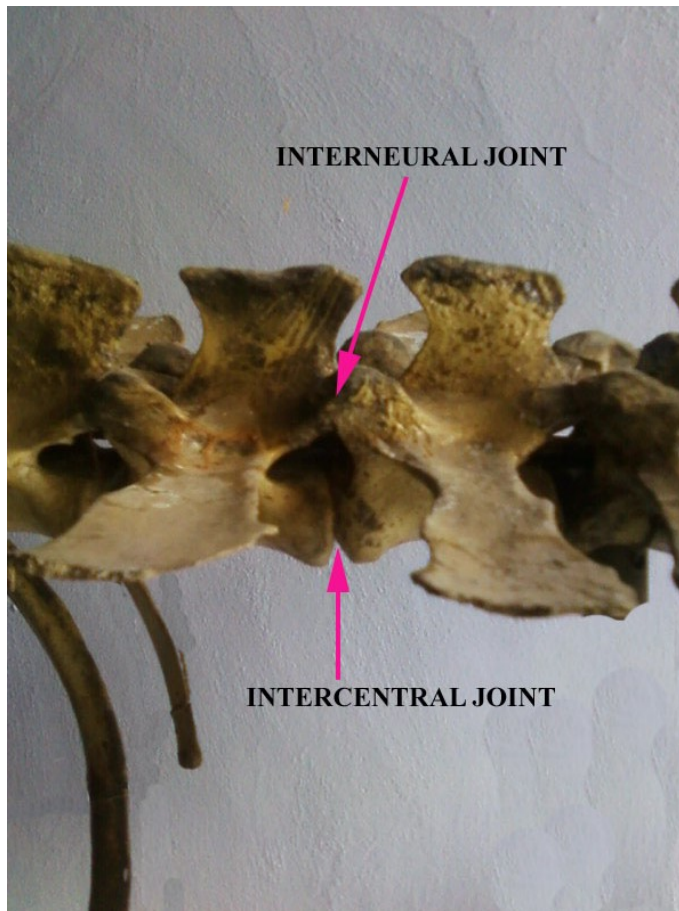
Joints of head

- Symphyseal joint of mandible
- Temporo mandibular articulation
- Occipital atlantal articulation
- hyoidean articulations



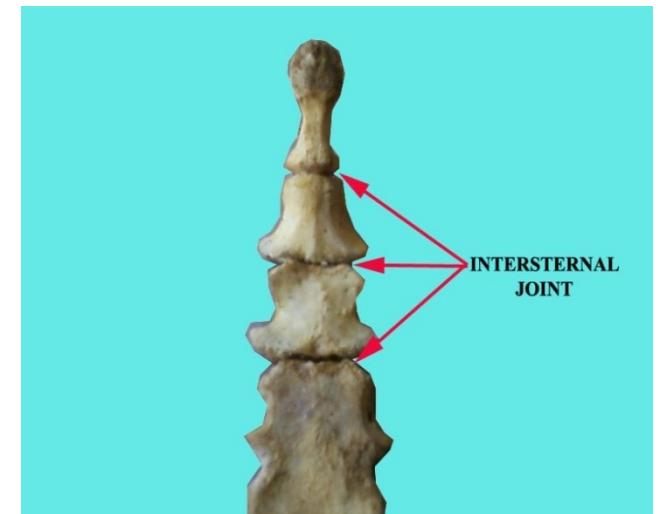
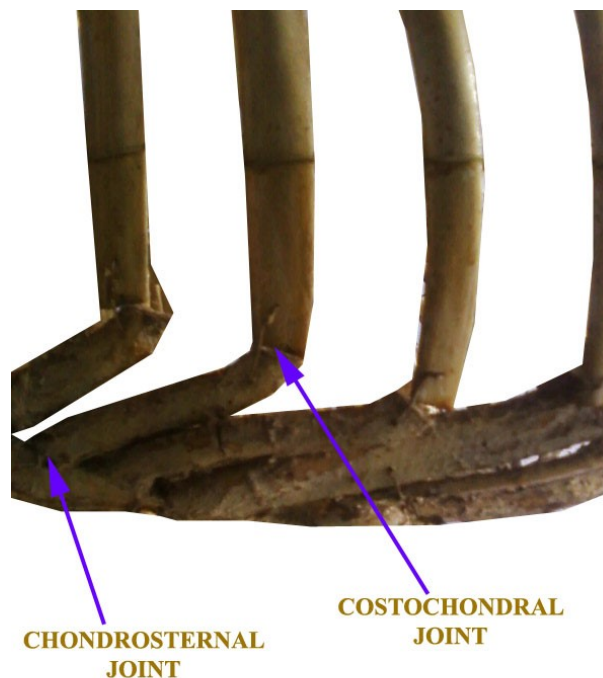
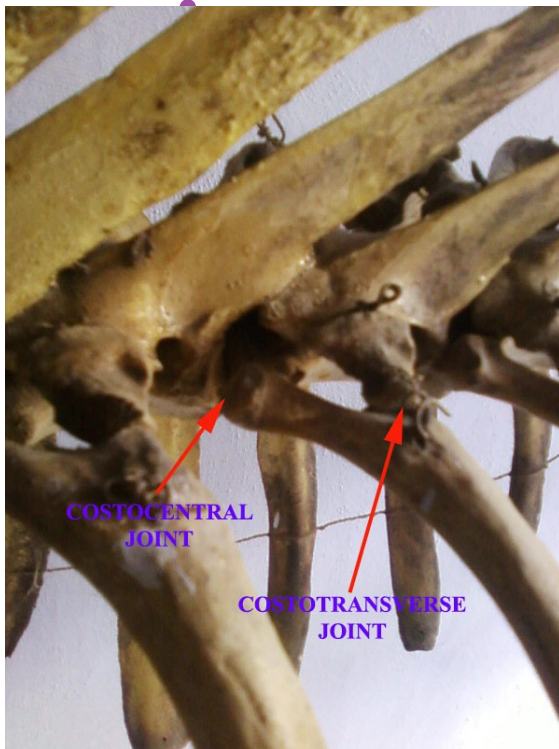
Joints of Vertebral Column

- Intercentral articulation
- Interneural articulation
- Atlanto axial articulation



JOINTS OF THORAX

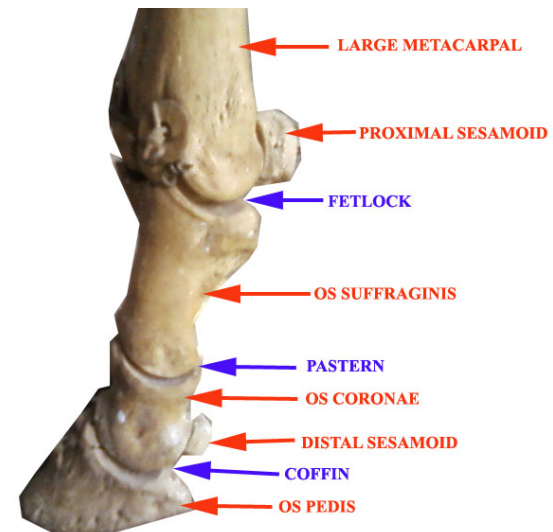
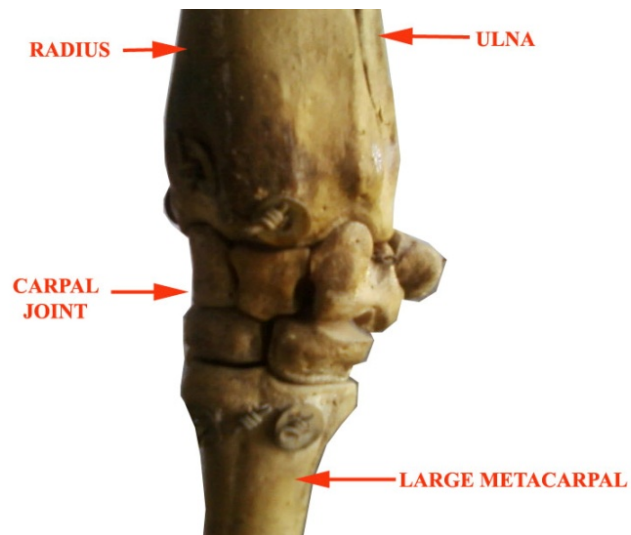
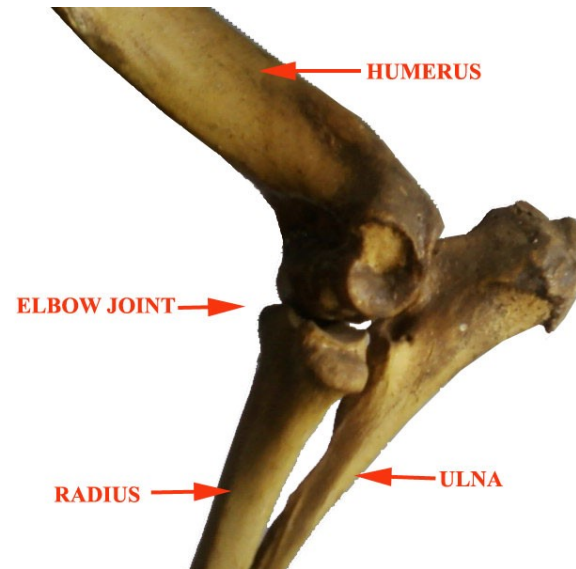
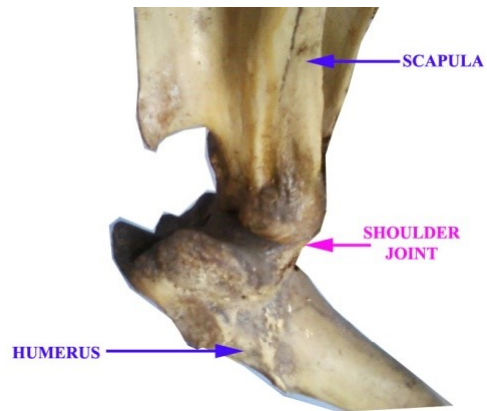
- Costo vertebral articulation
- Costo-central, Costo-transverse
 - Costochondral articulation
 - Chondro sternal articulation
 - Sternal articulation



Joints of fore limb

- Shoulder joint between the scapula and humerus.
- Elbow joint (cubital) between humerus and radius and ulna.
- Carpal joint formed by the union of carpals bones with radius and ulna above and metacarpals below
- Intermetacarpal articulation between the metacarpal bones.
- Fetlock joint between the metacarpal, first phalanx with proximal sesamoids.
- The *interphalangeal articulations* are
 - 1st interphalangeal joint (Pastern joint) formed between the first and second phalanges
 - 2nd interphalangeal joint (Pastern joint) Coffin joint formed between the second and third phalanges and the distal sesamoid.

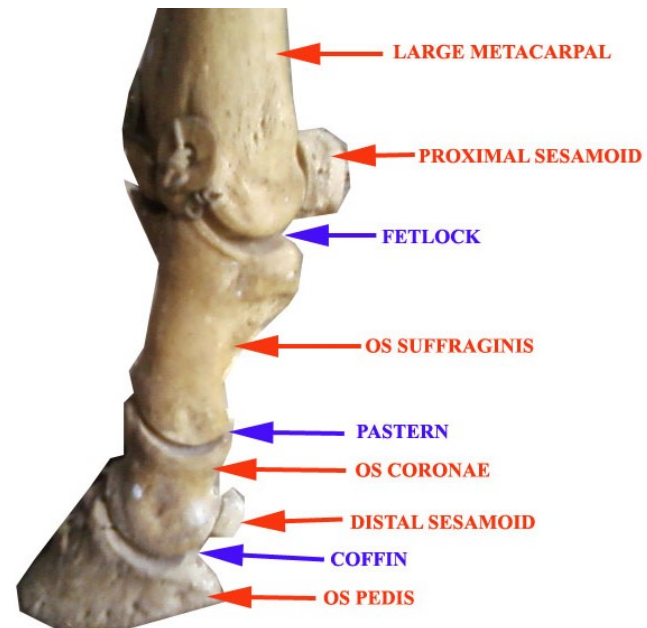
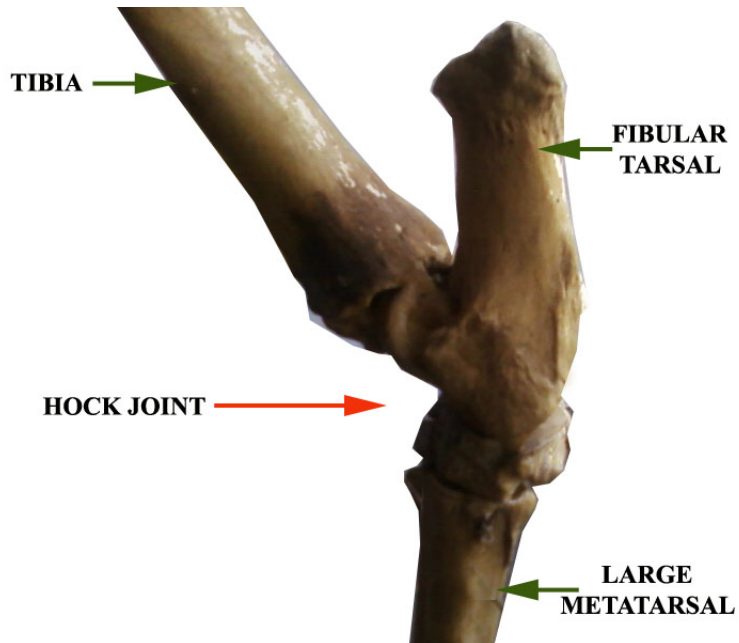
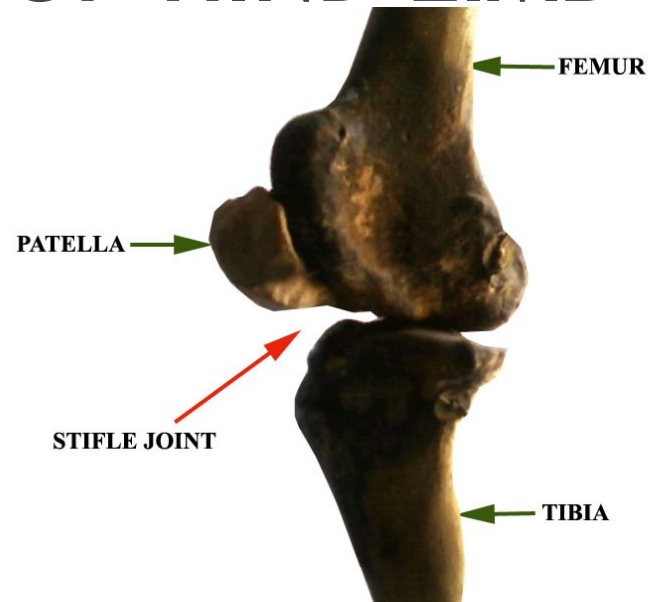
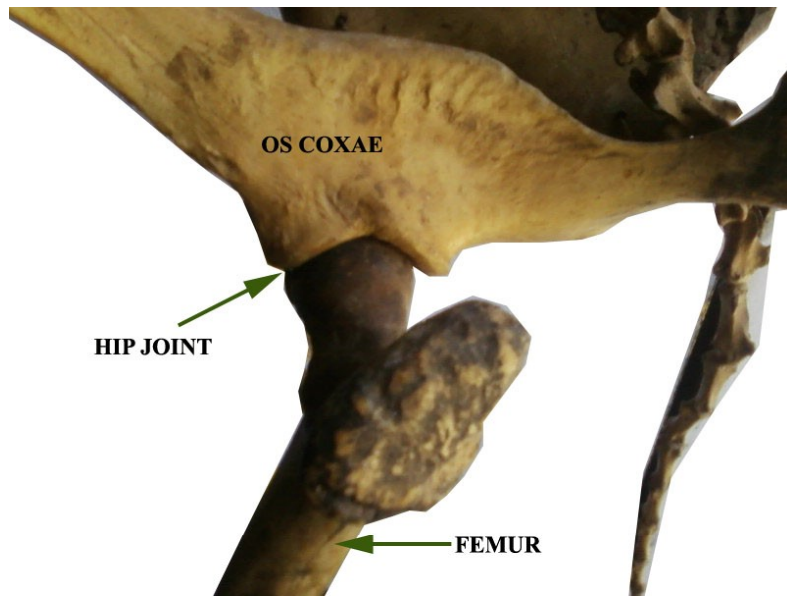
DIFFERENT JOINTS

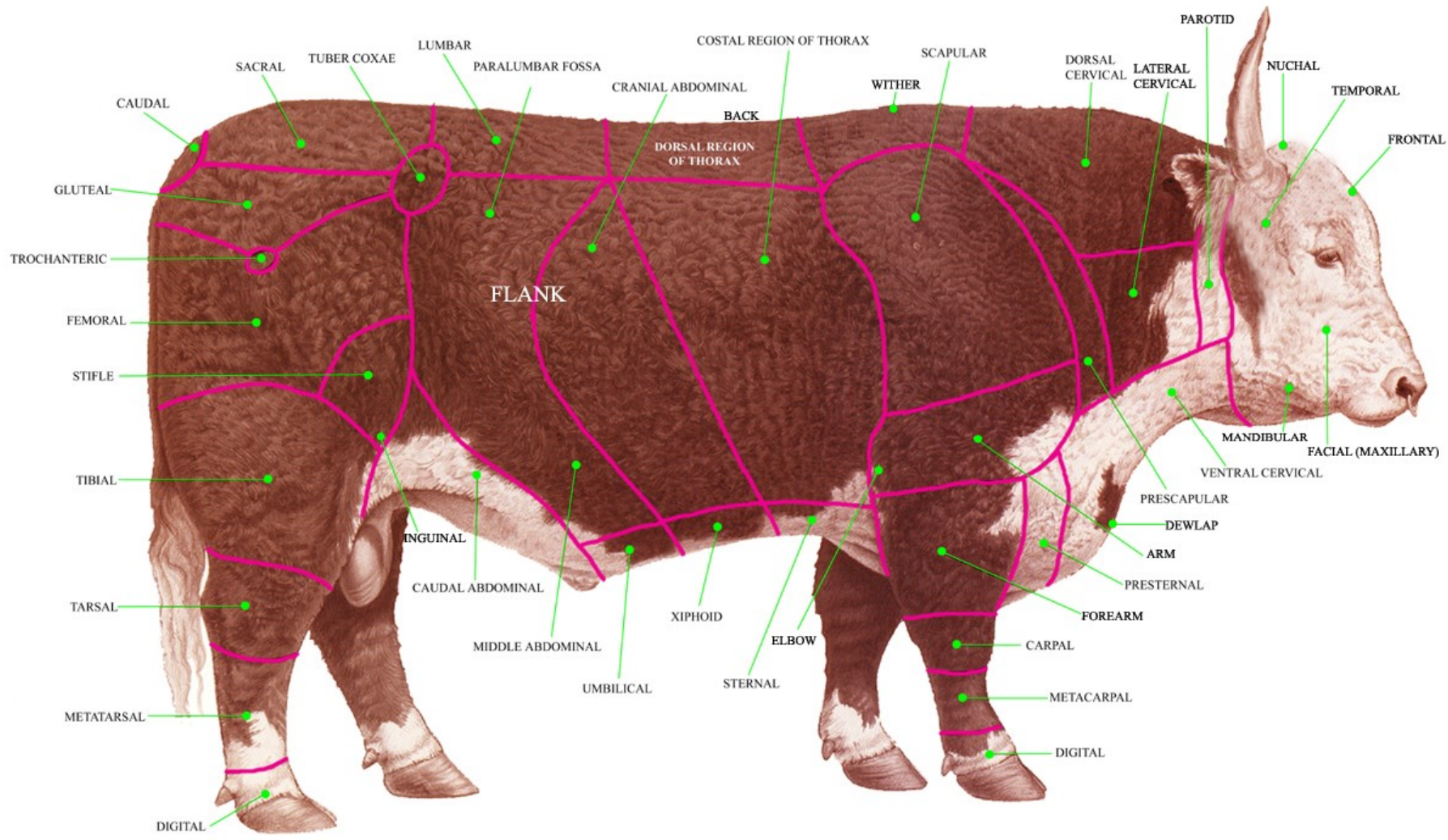


Joints of hind limb

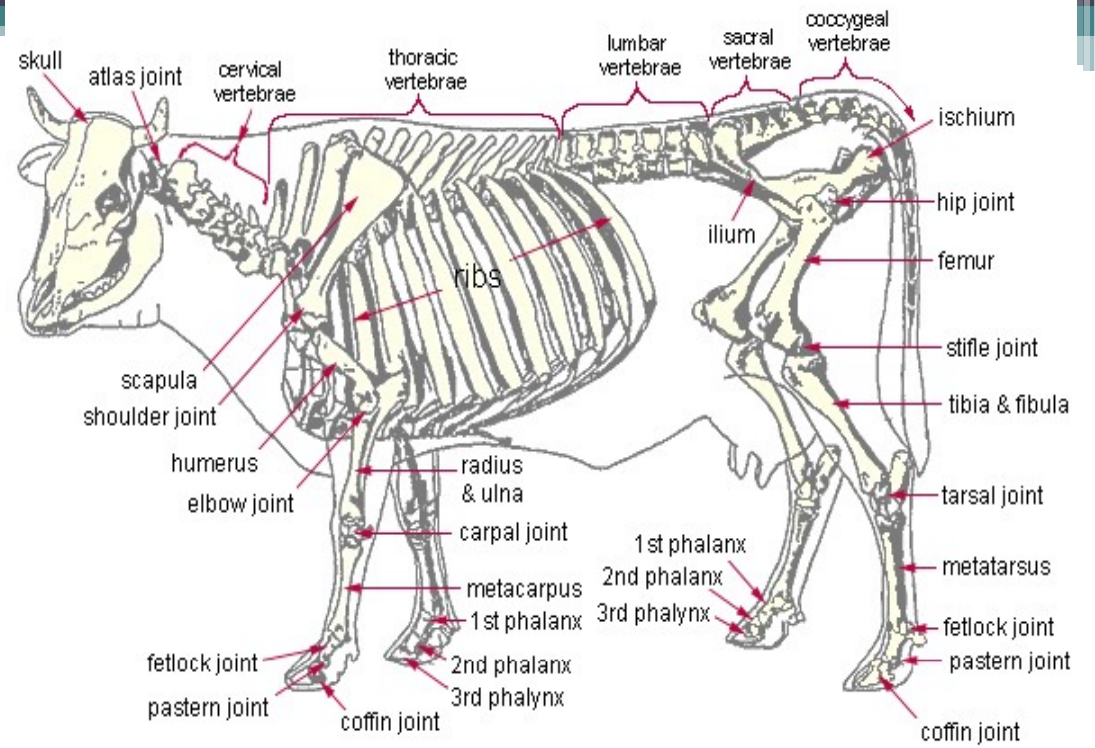
- Sacro-iliac joint between the articular surfaces of the ilium and sacrum.
- Pelvic symphysis formed between the pubis and ischium of the two sides.
- Hip joint (coxofemoral) between the acetabulum of os coxae and the head of the femur.
- Stifle joint (Femoropatellar articulation, Femortibial articulation) between the femur, tibia and patella.
- Tibio-fibular joint between the tibia and fibula
- Hock joint (Tibio -Tarso -metatarsal) formed by the union of tarsal bones with tibia and fibula above and metatarsal below.
- Fetlock joint between the metatarsal, first phalanx with proximal sesamoid.
- The *interphalangeal articulations* are
 - Pastern joint formed between the first and second phalanges.
 - Coffin joint formed between the second and third phalanges and the distal sesamoid.

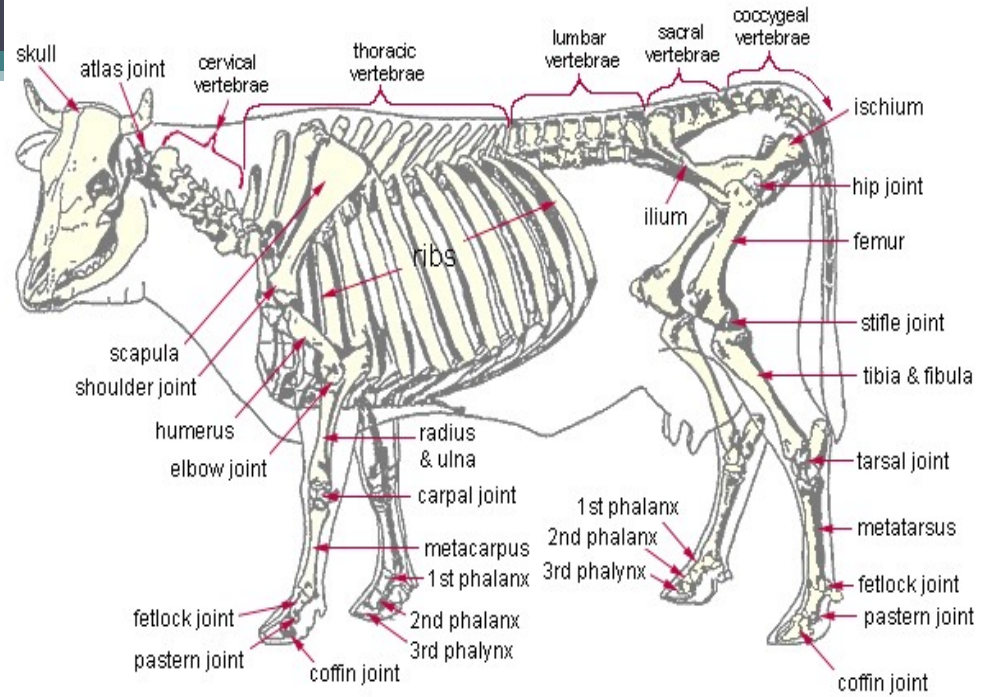
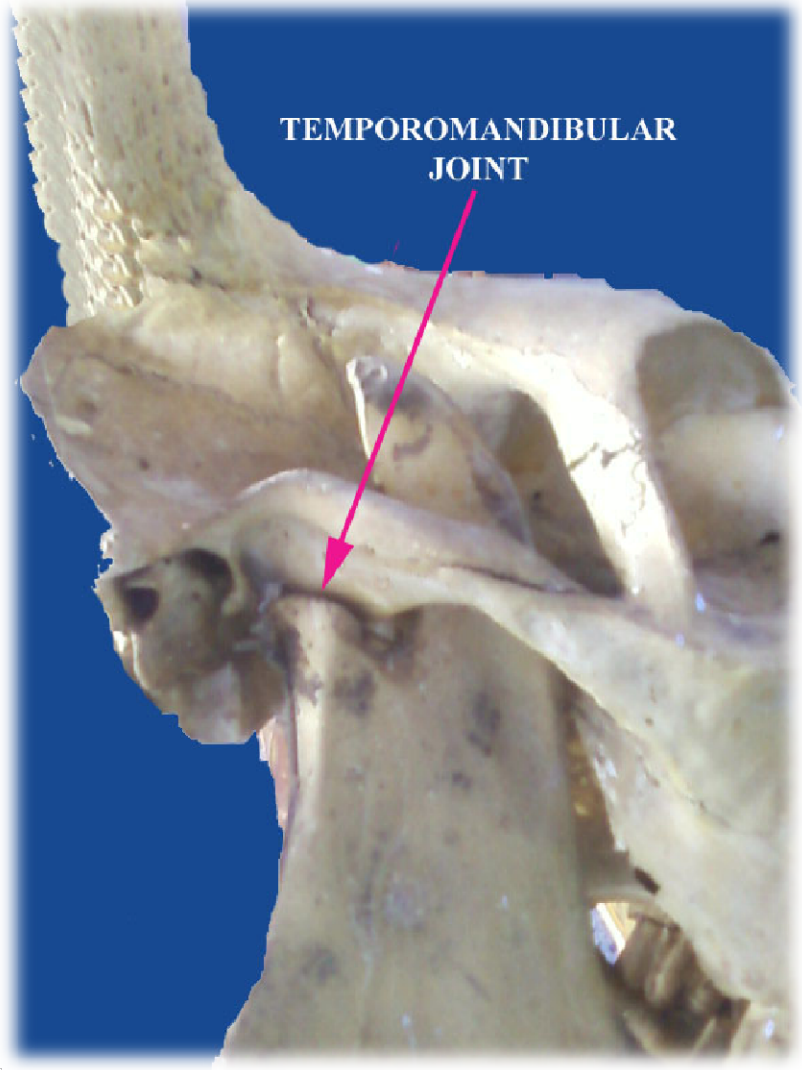
DIFFERENT JOINTS OF HIND LIMB

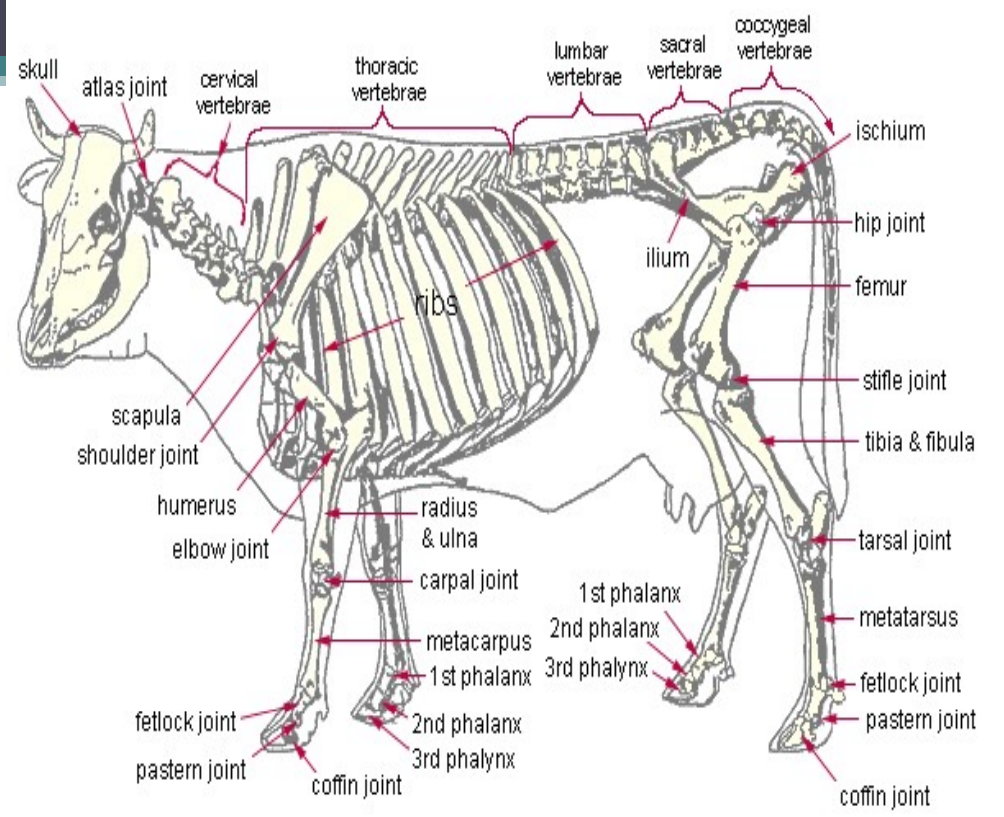
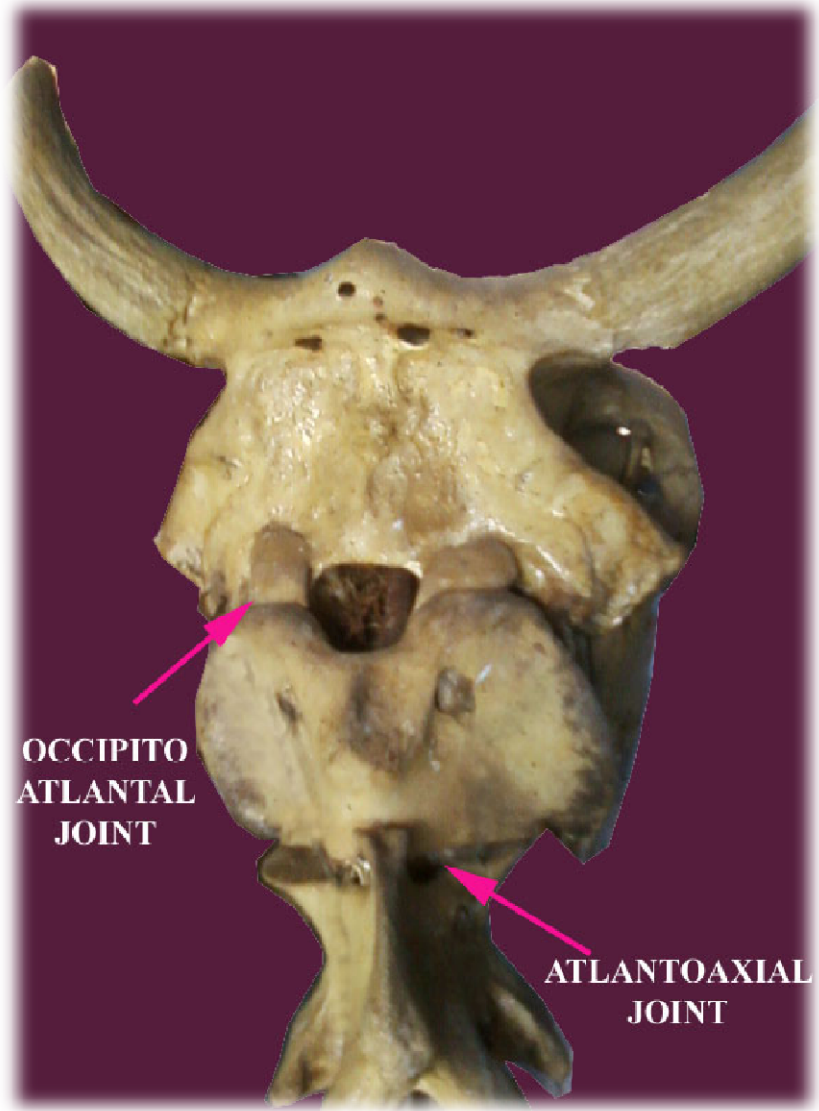


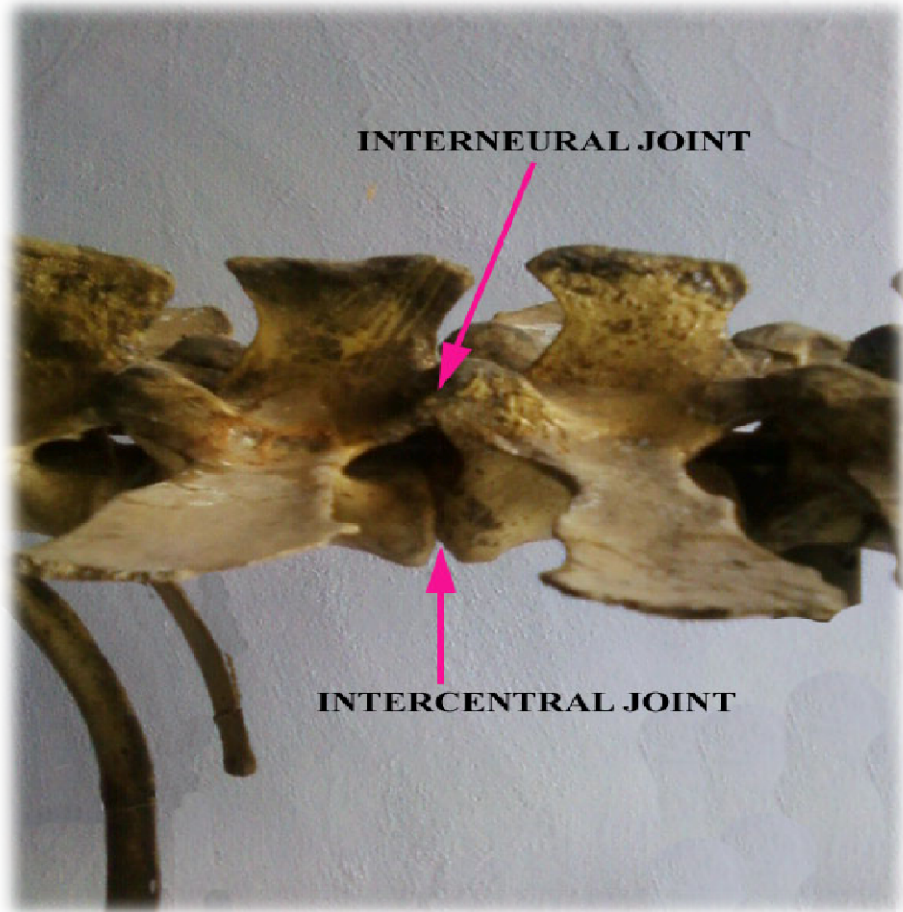
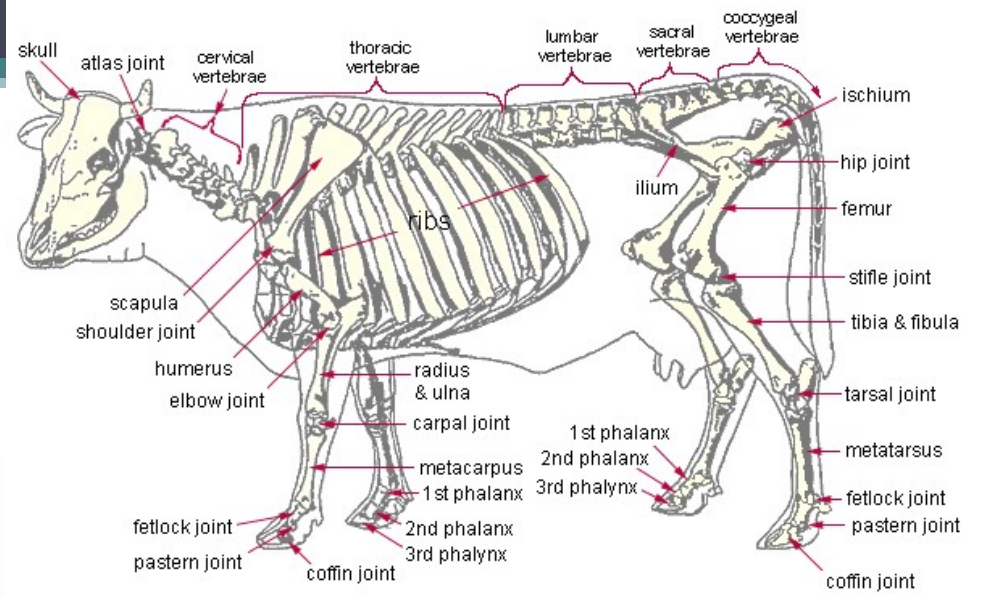


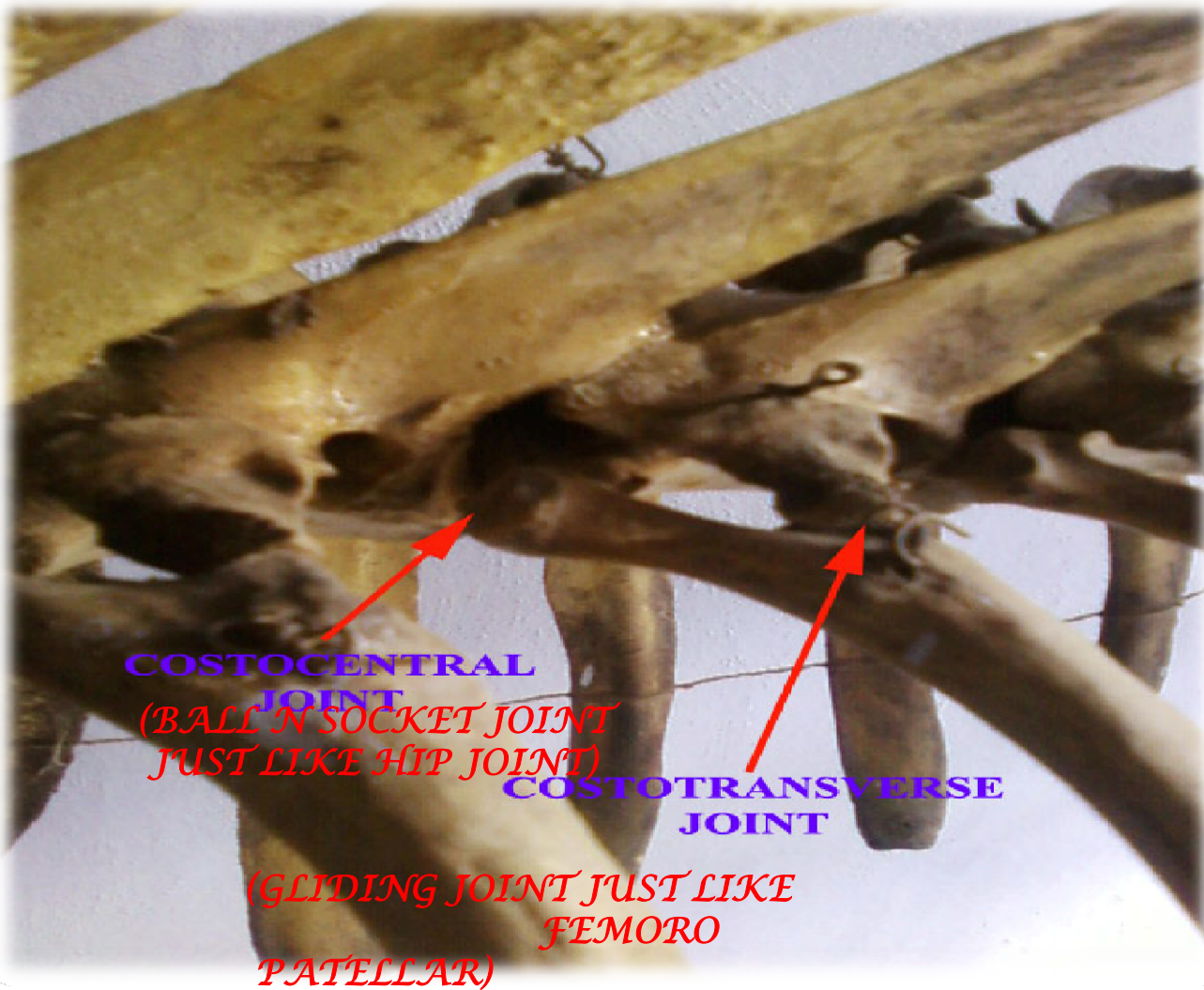
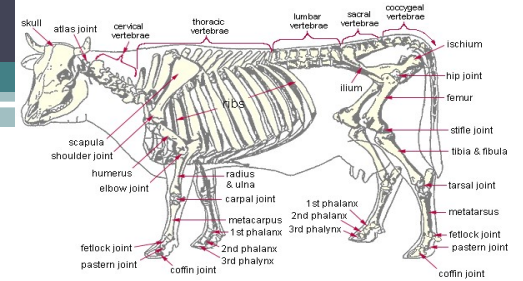
BODY REGIONS OF THE OX

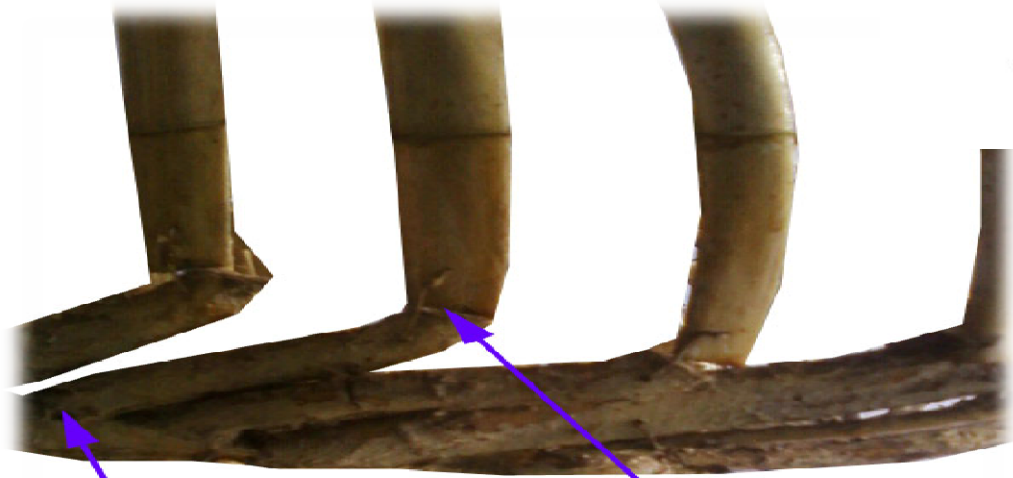






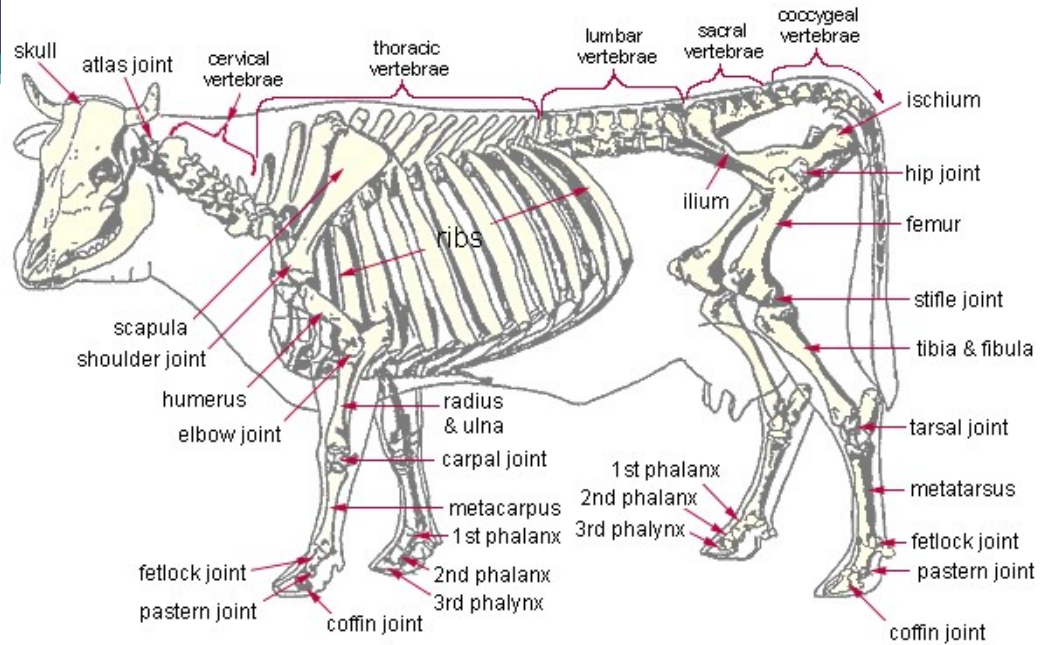


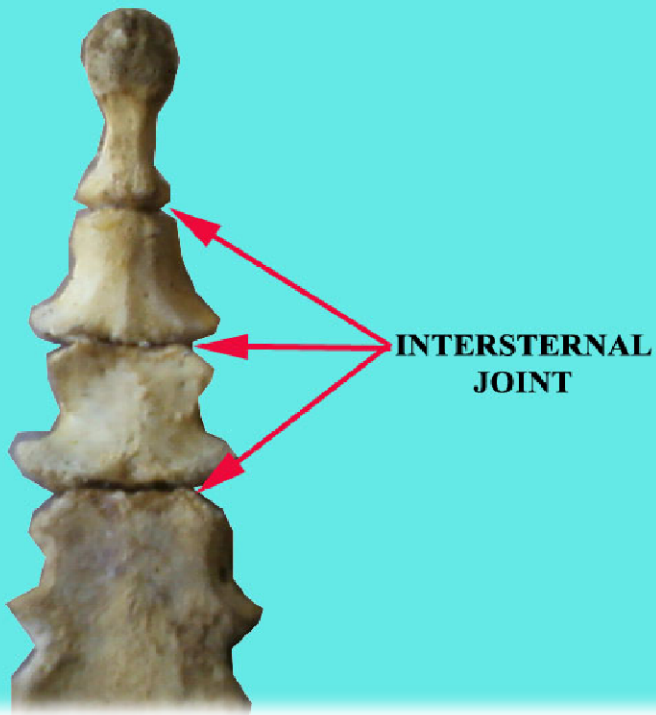
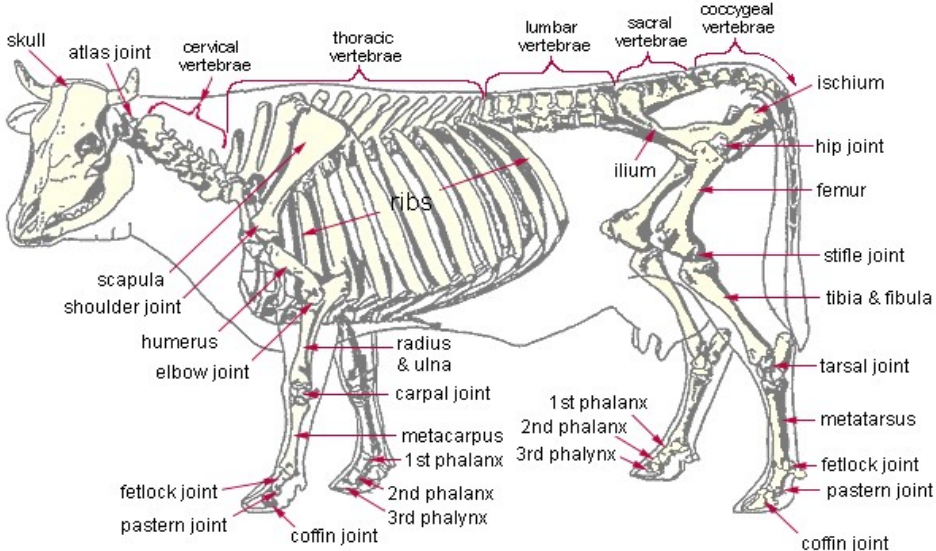


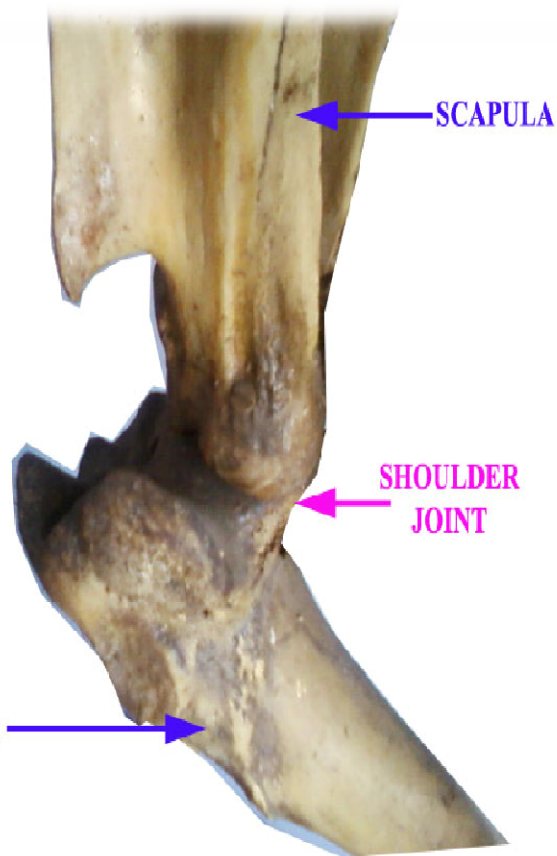
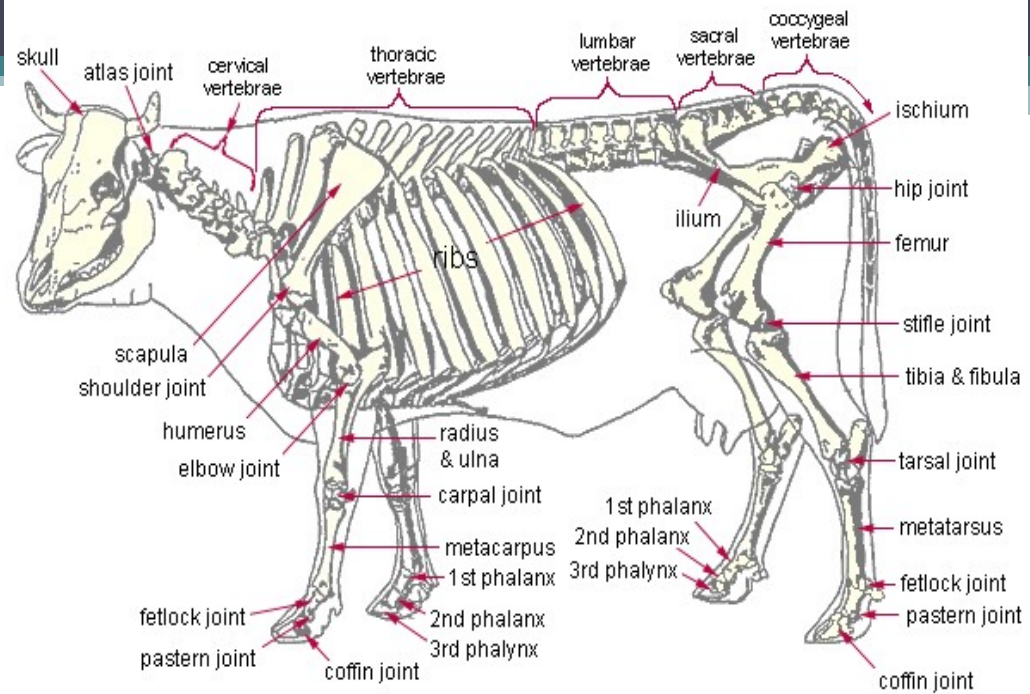


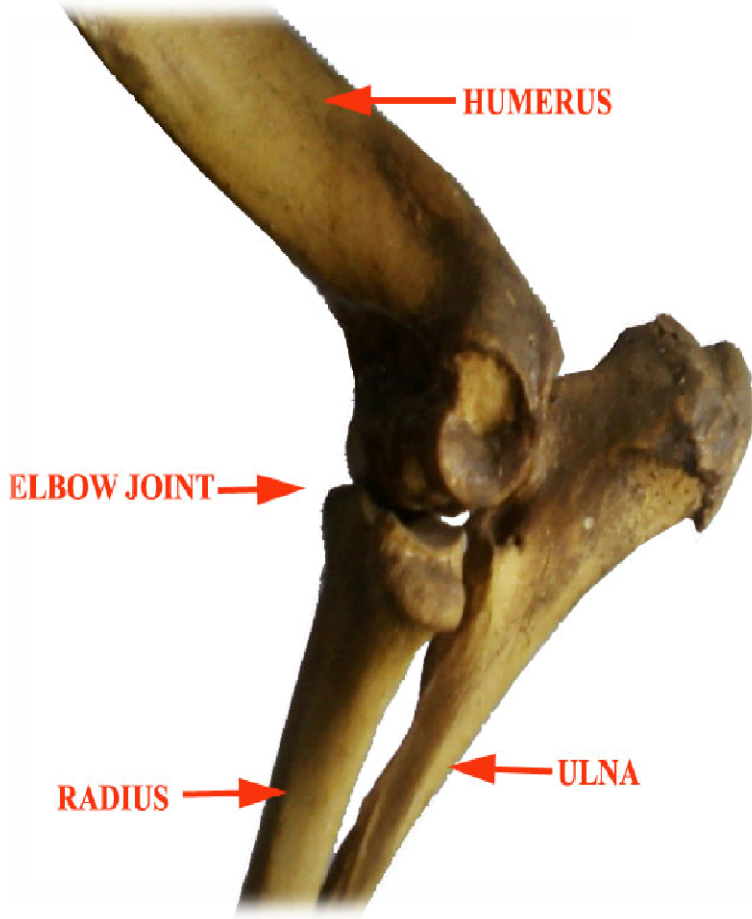
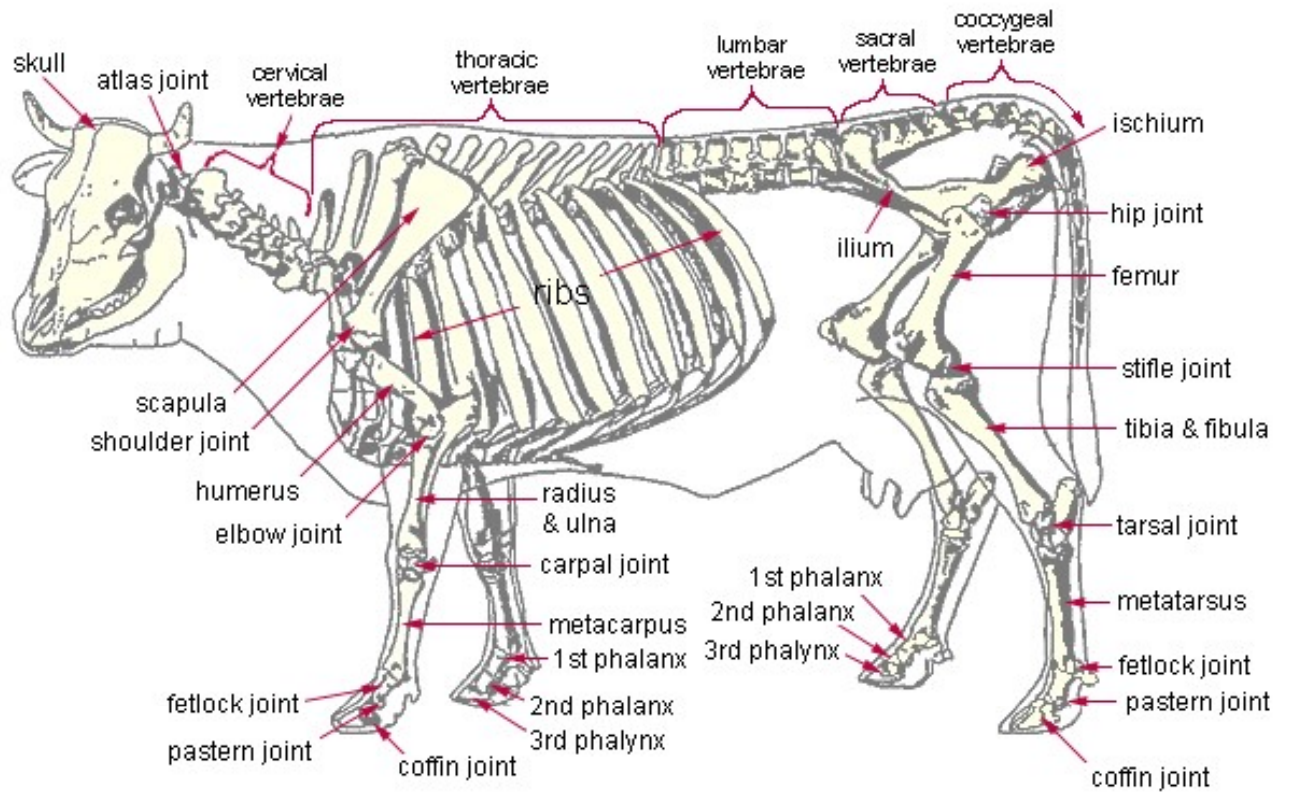
CHONDROSTERNAL JOINT

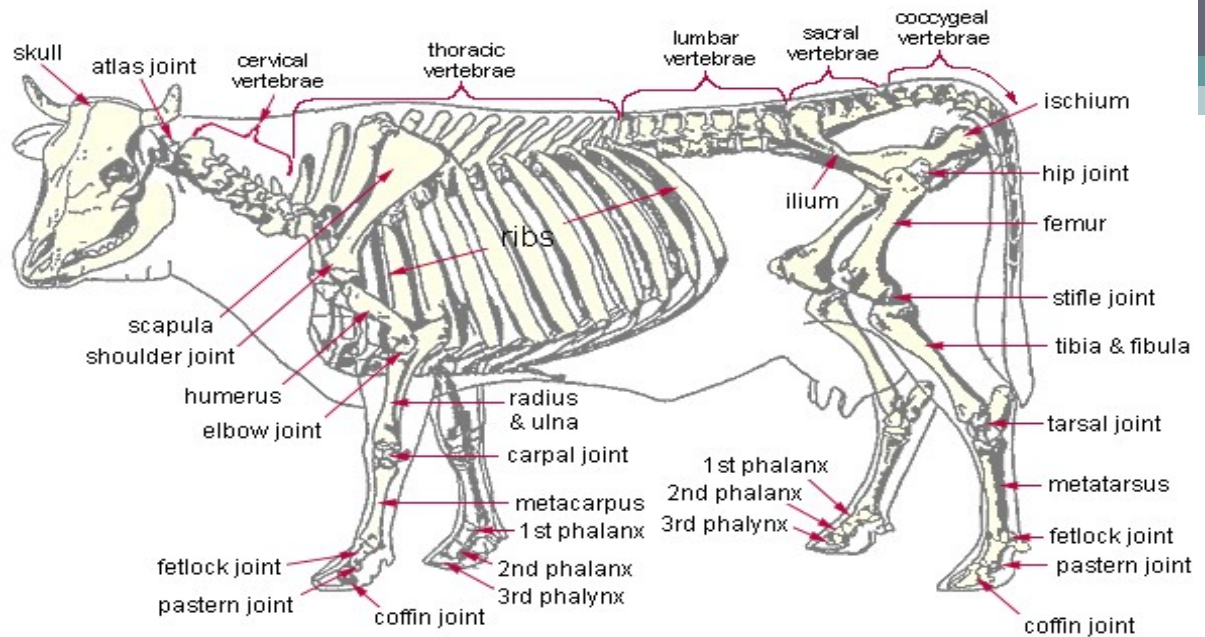
COSTOCHONDRAL JOINT











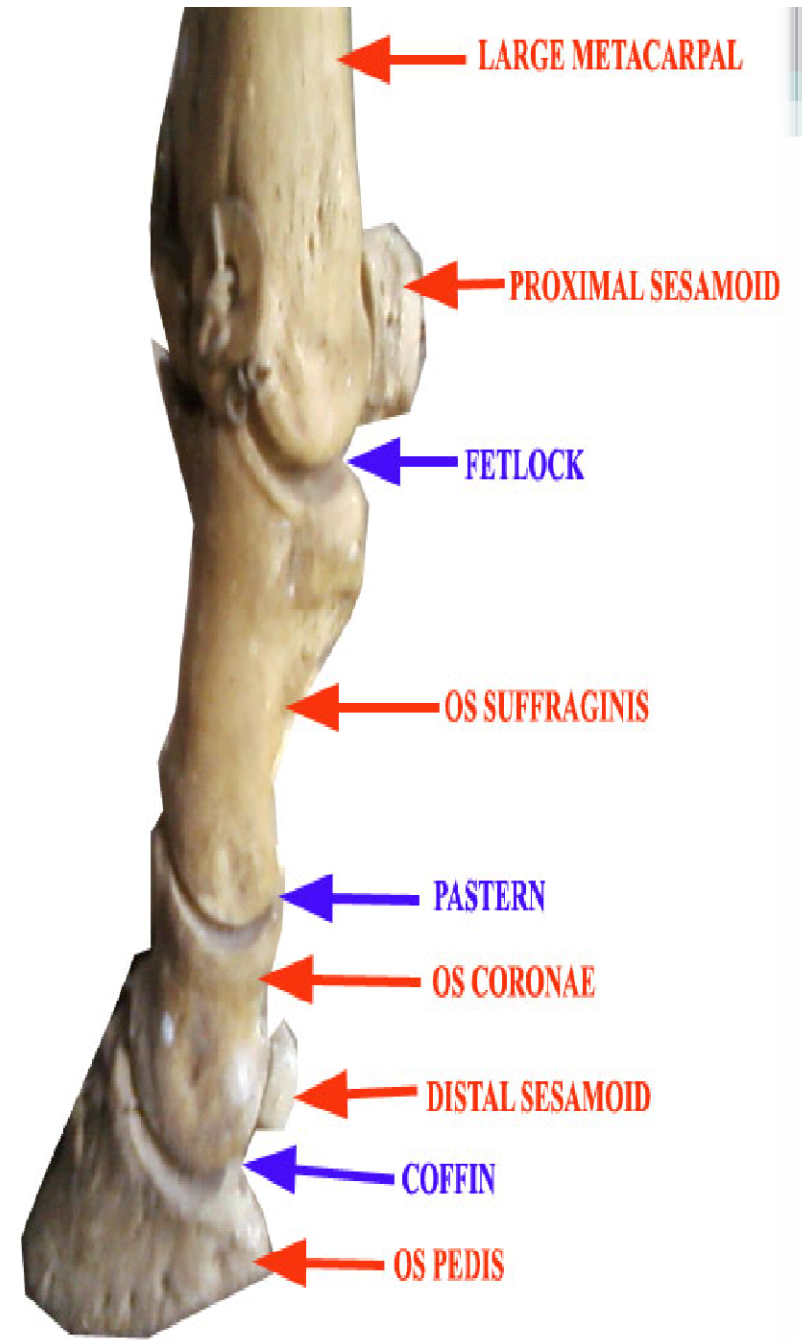
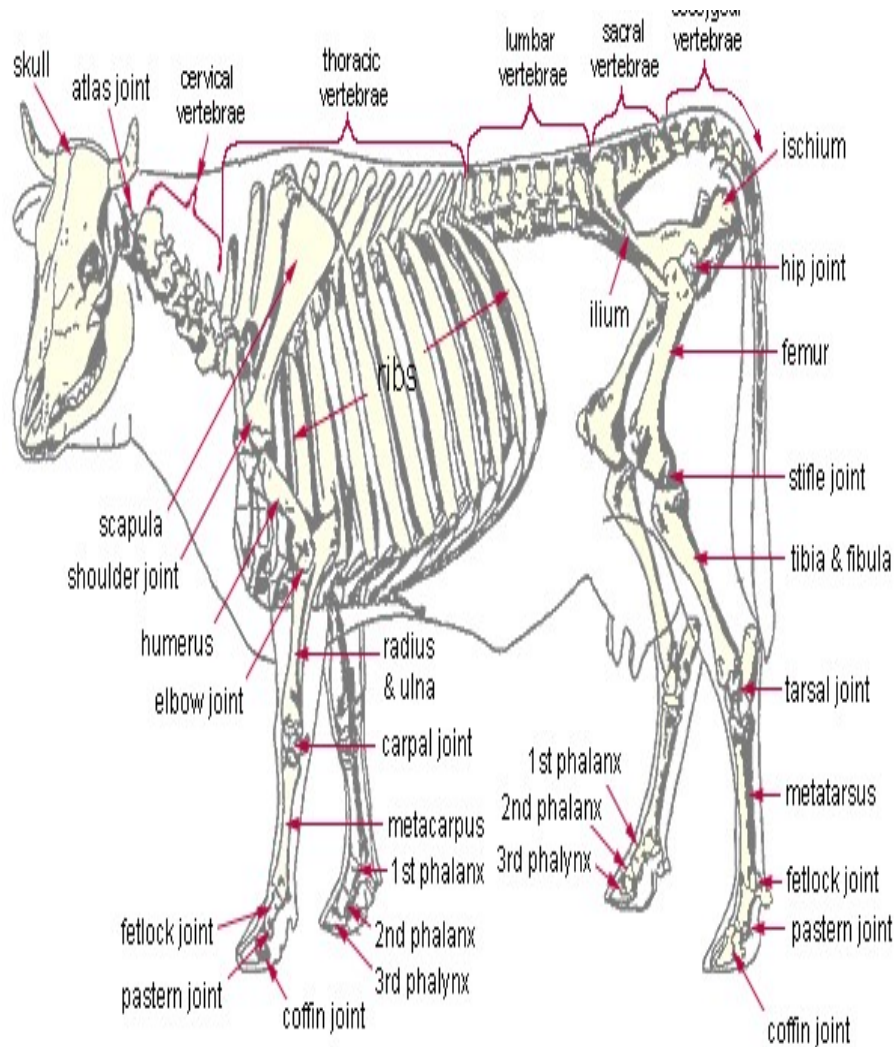
RADIUS

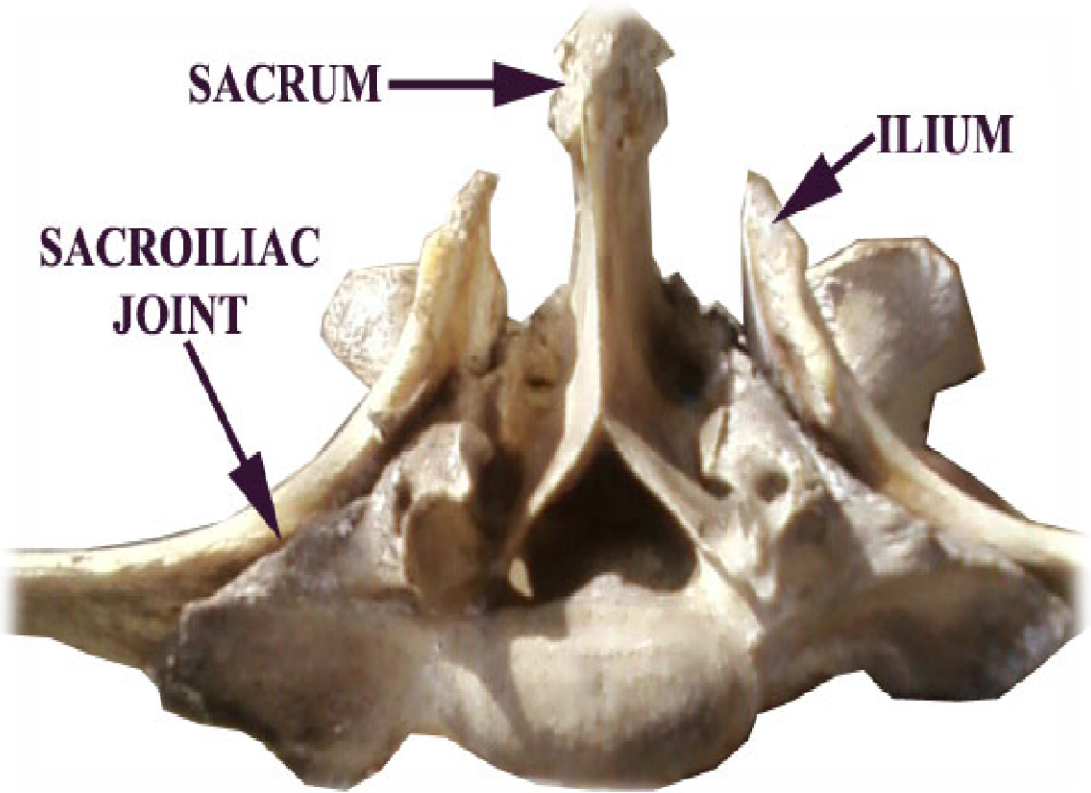
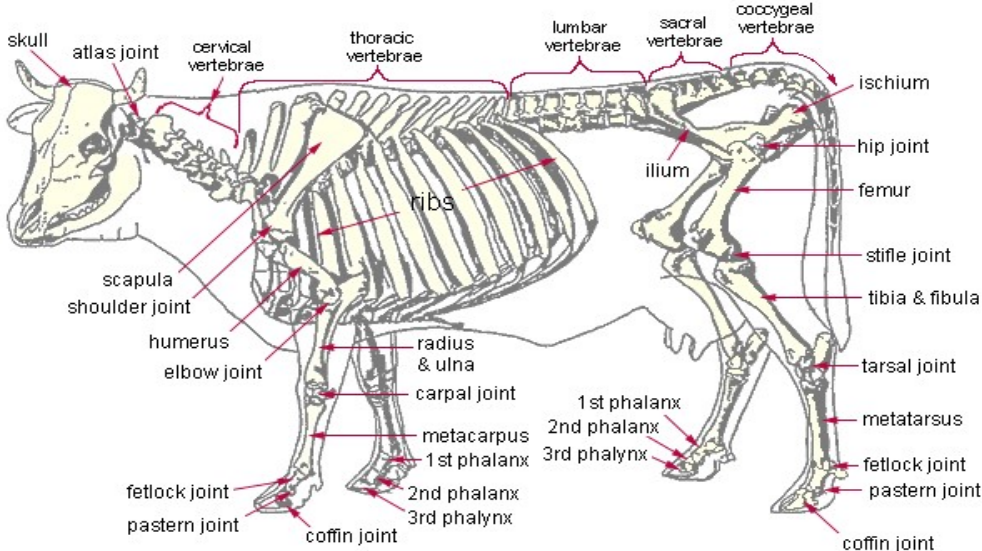
ULNA

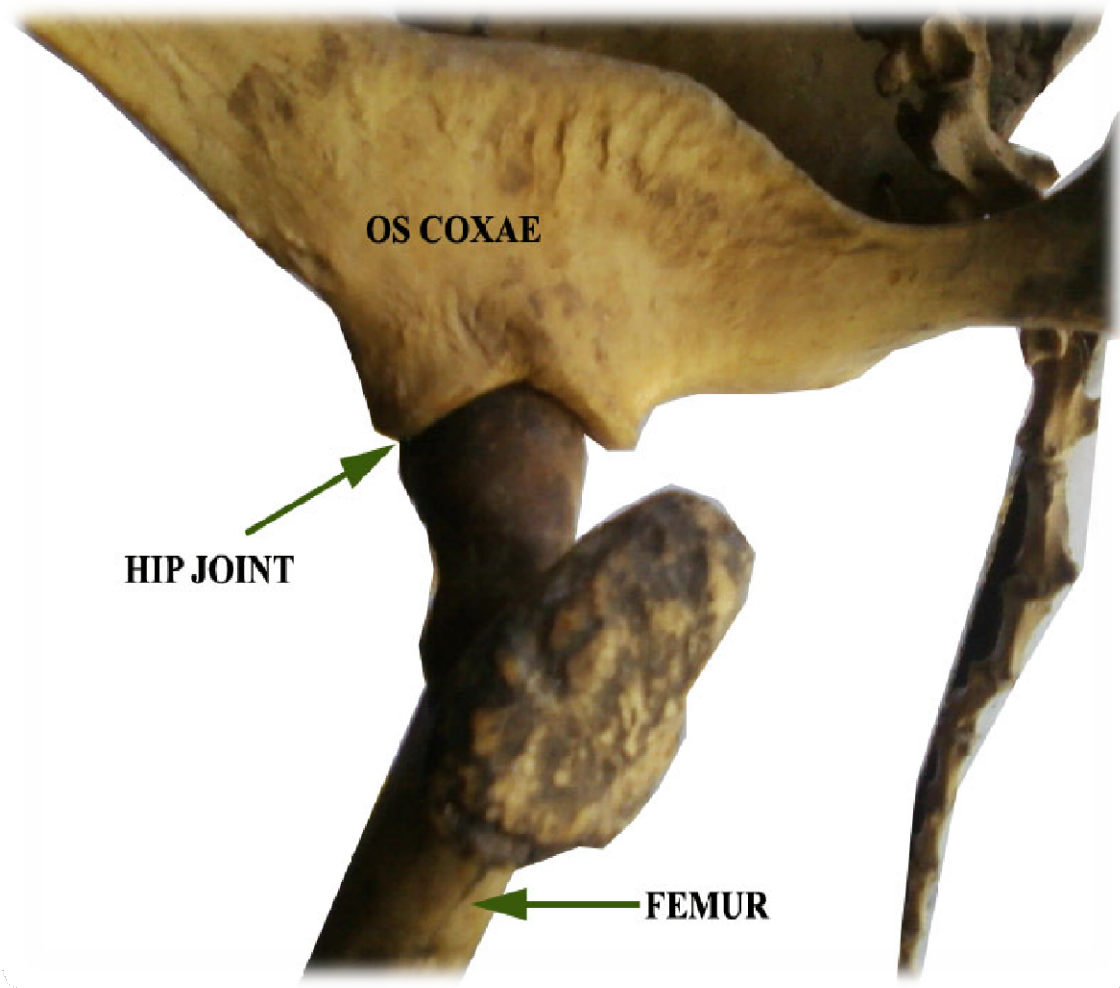
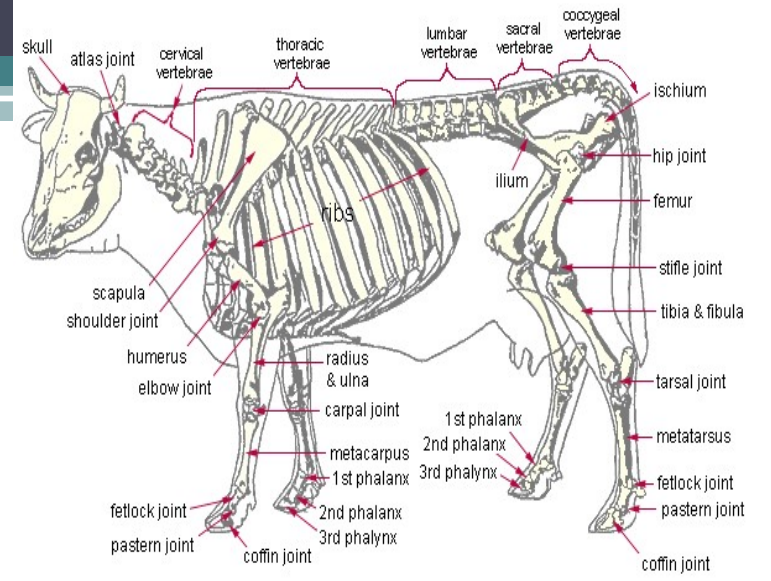
CARPAL JOINT

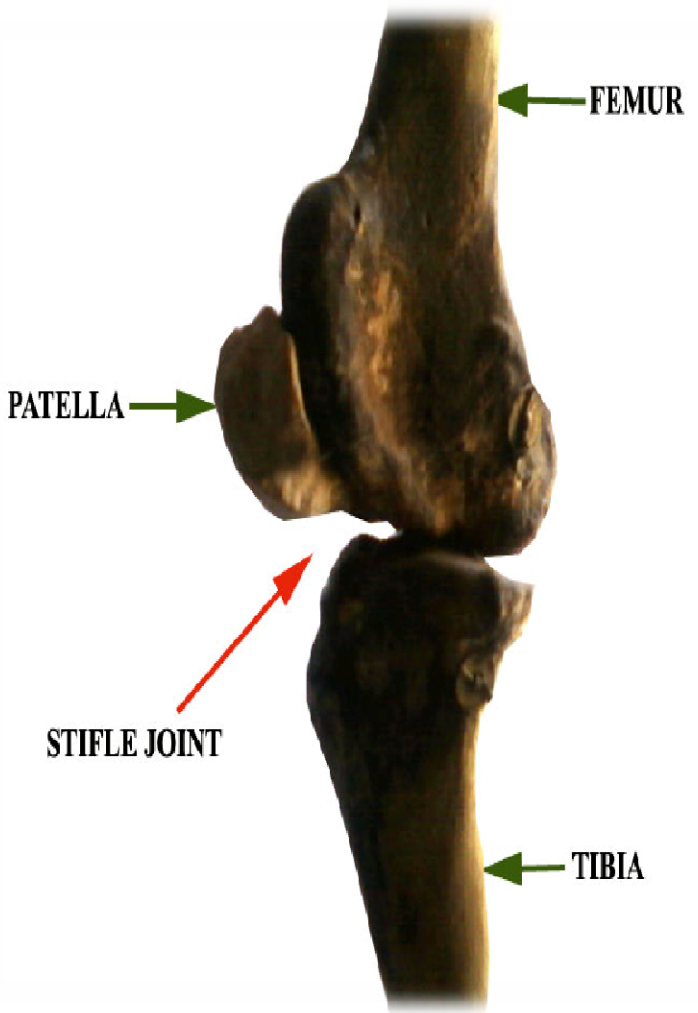
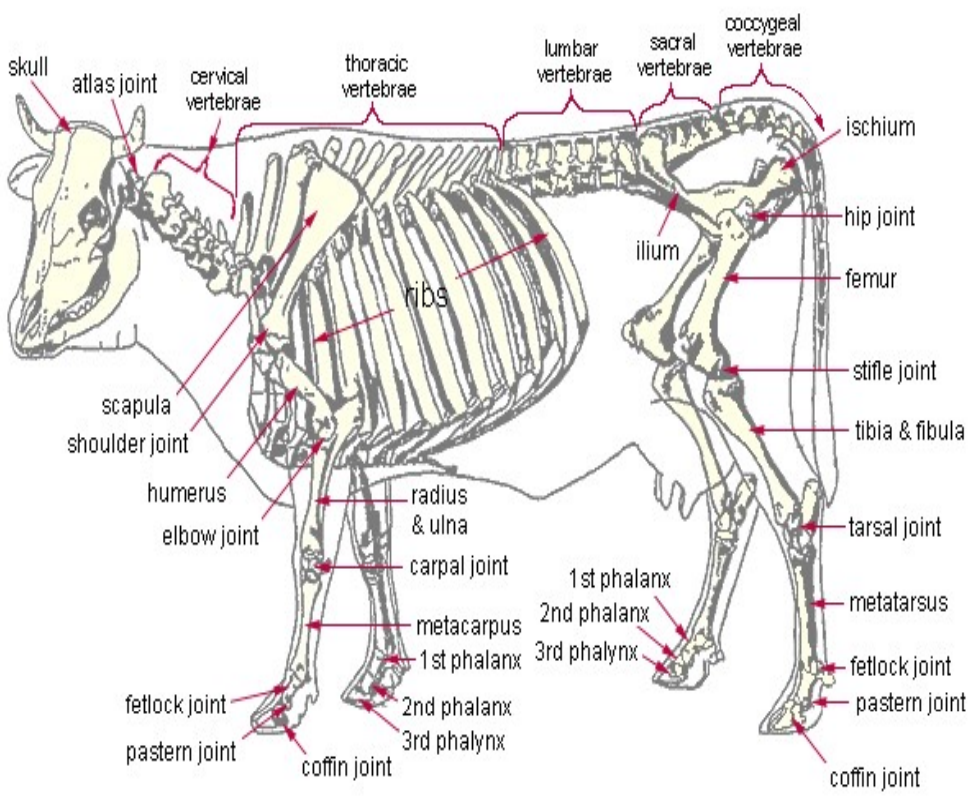
LARGE METACARPAL

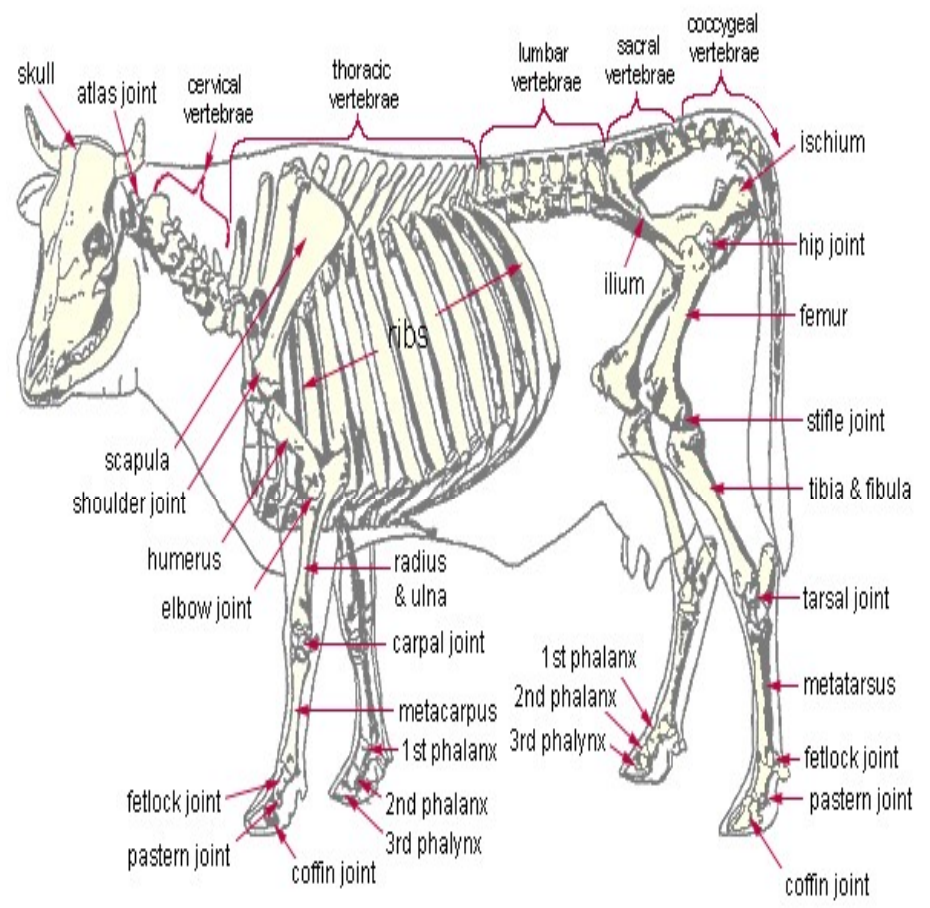
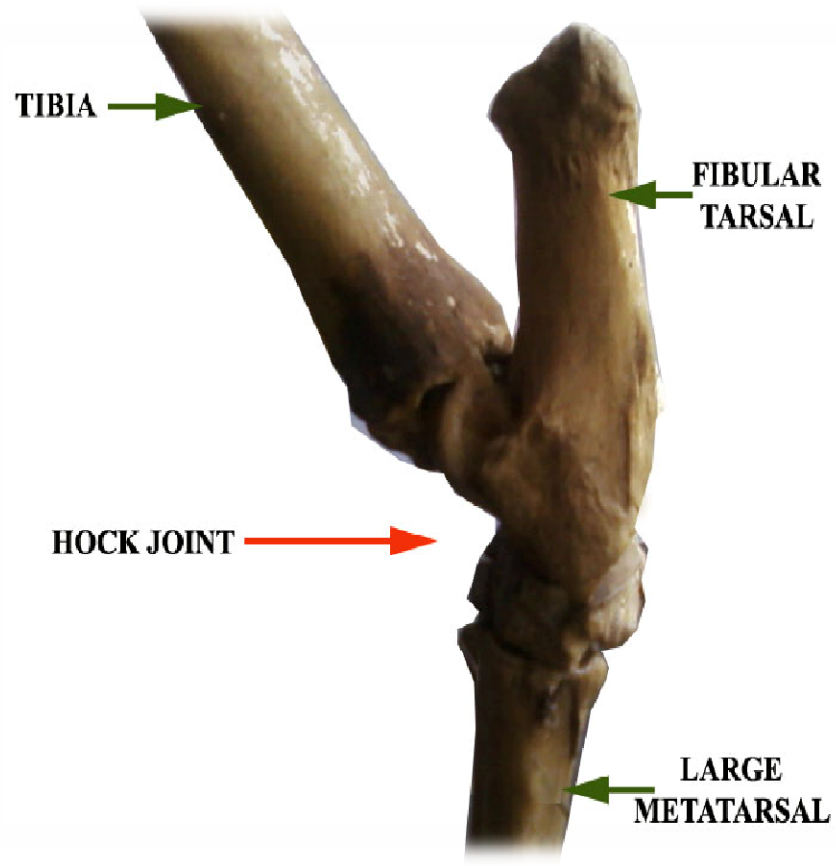


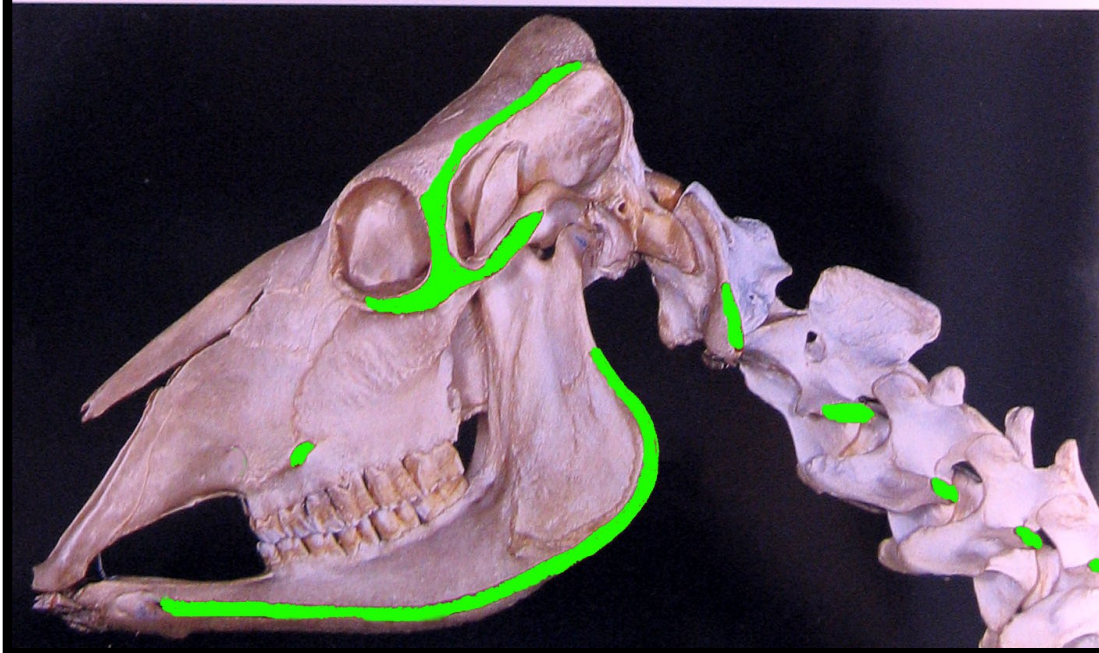
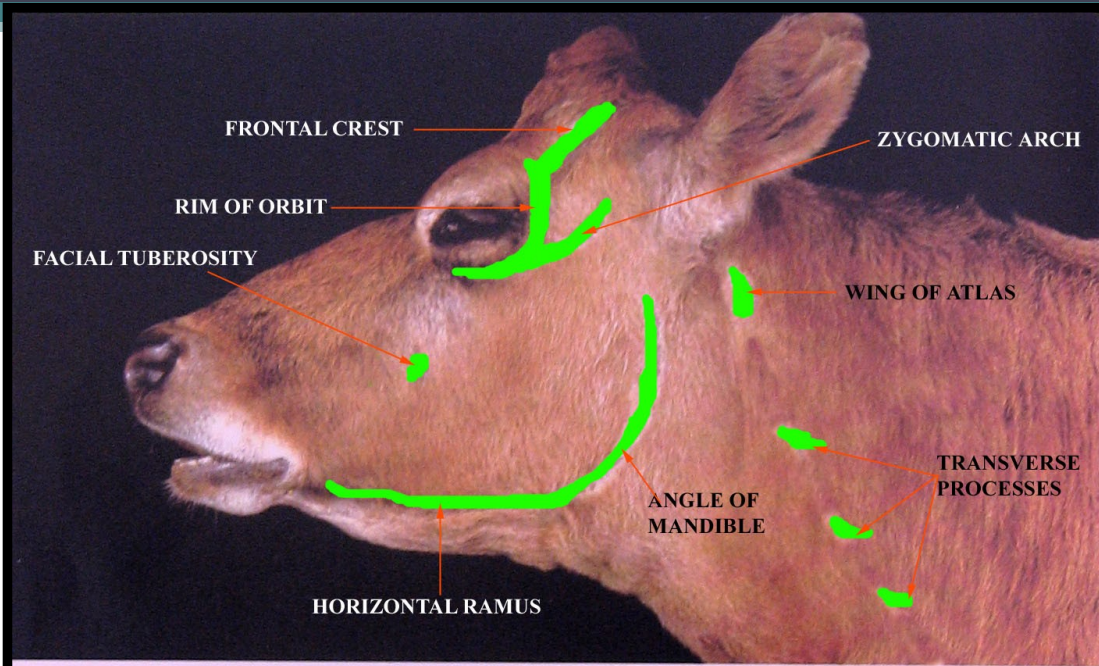


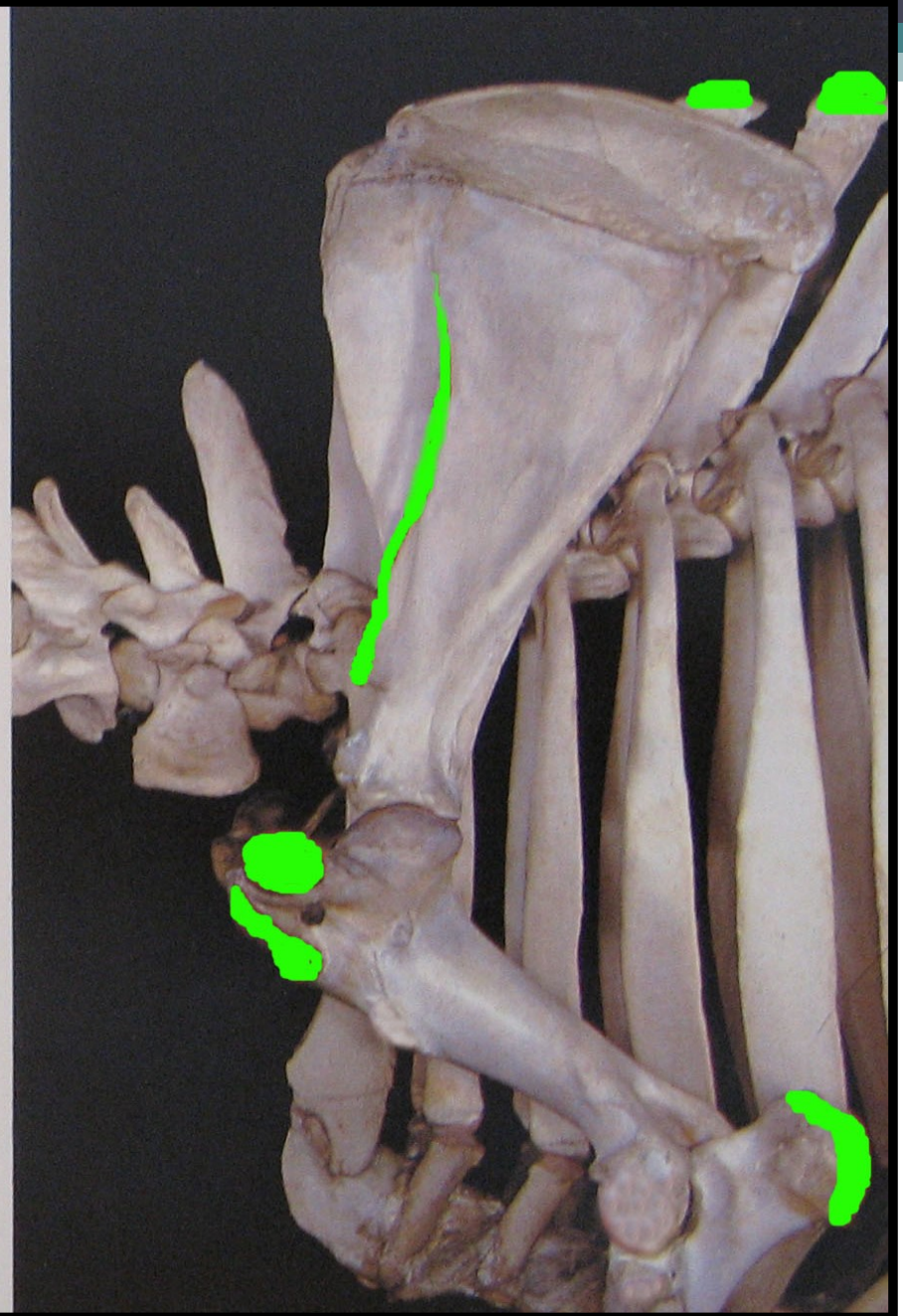
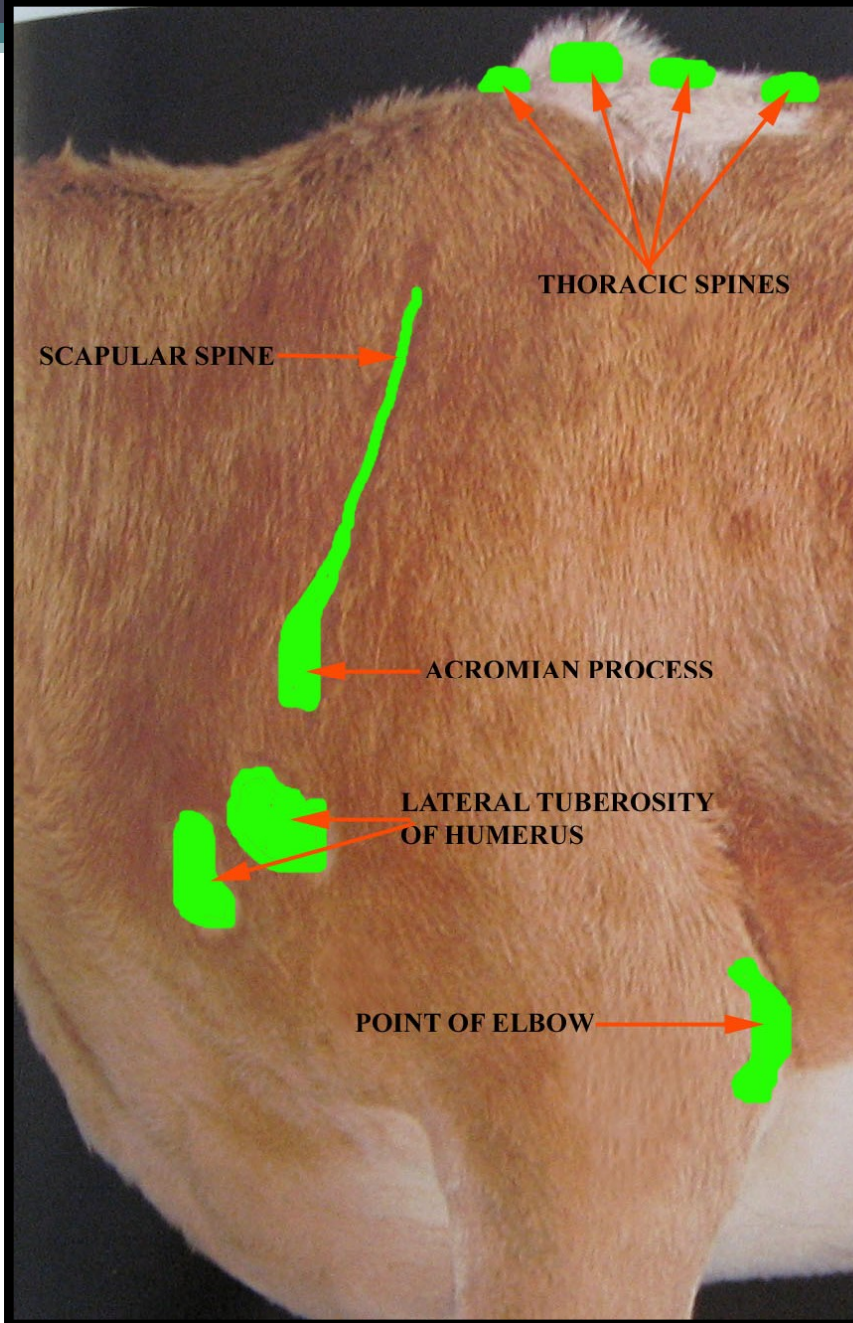


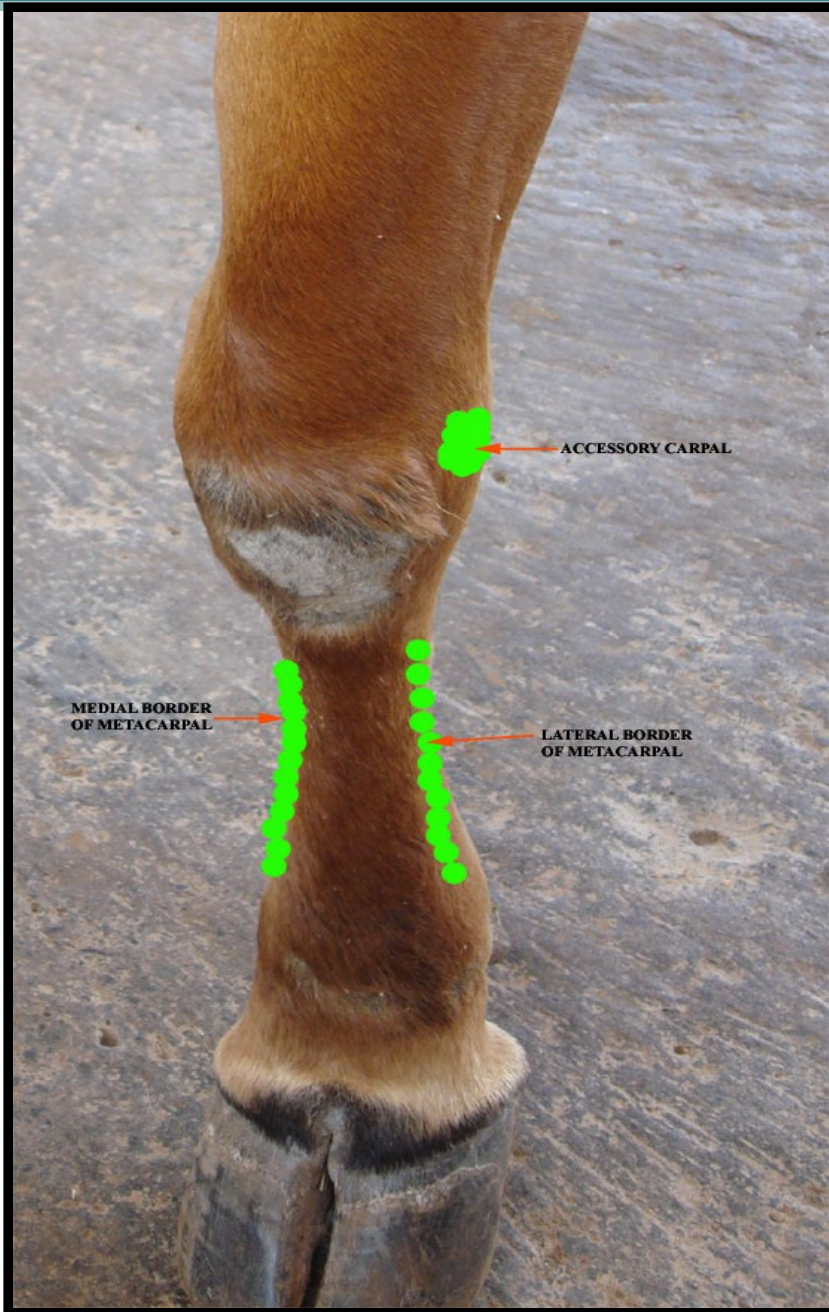


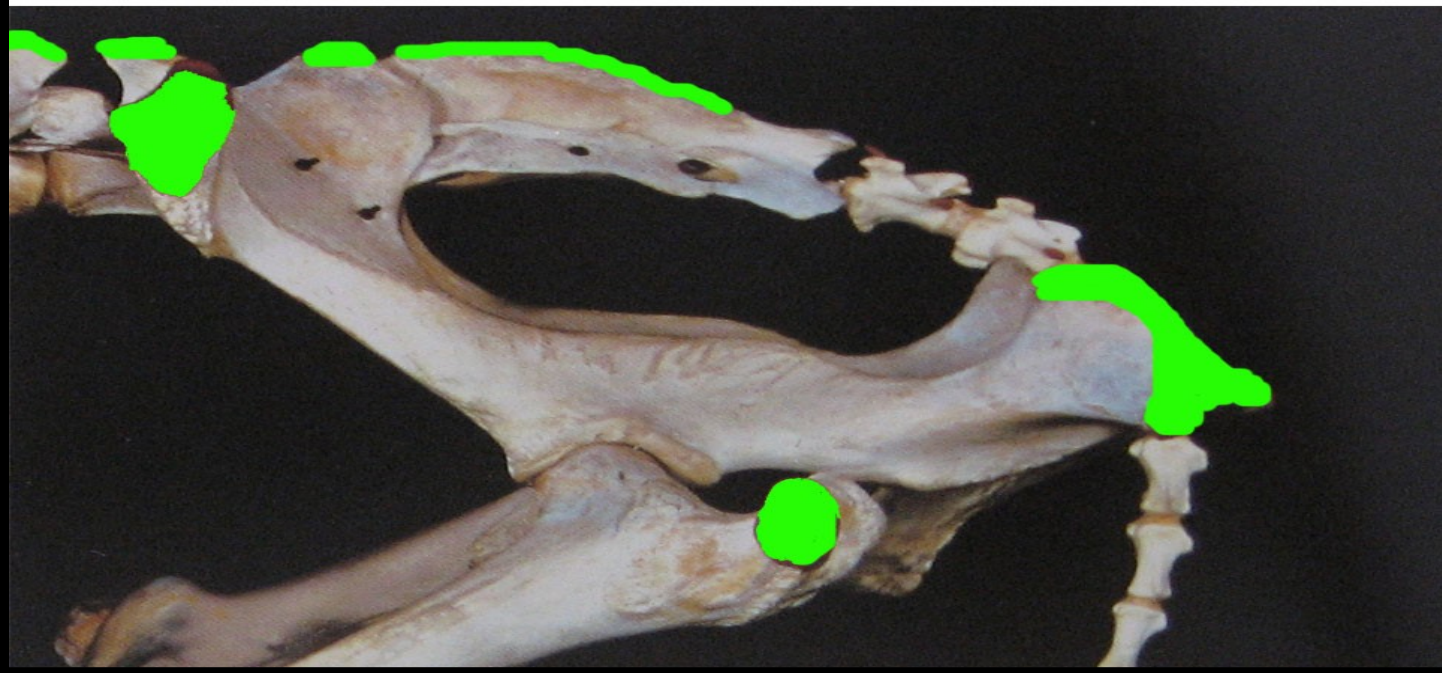
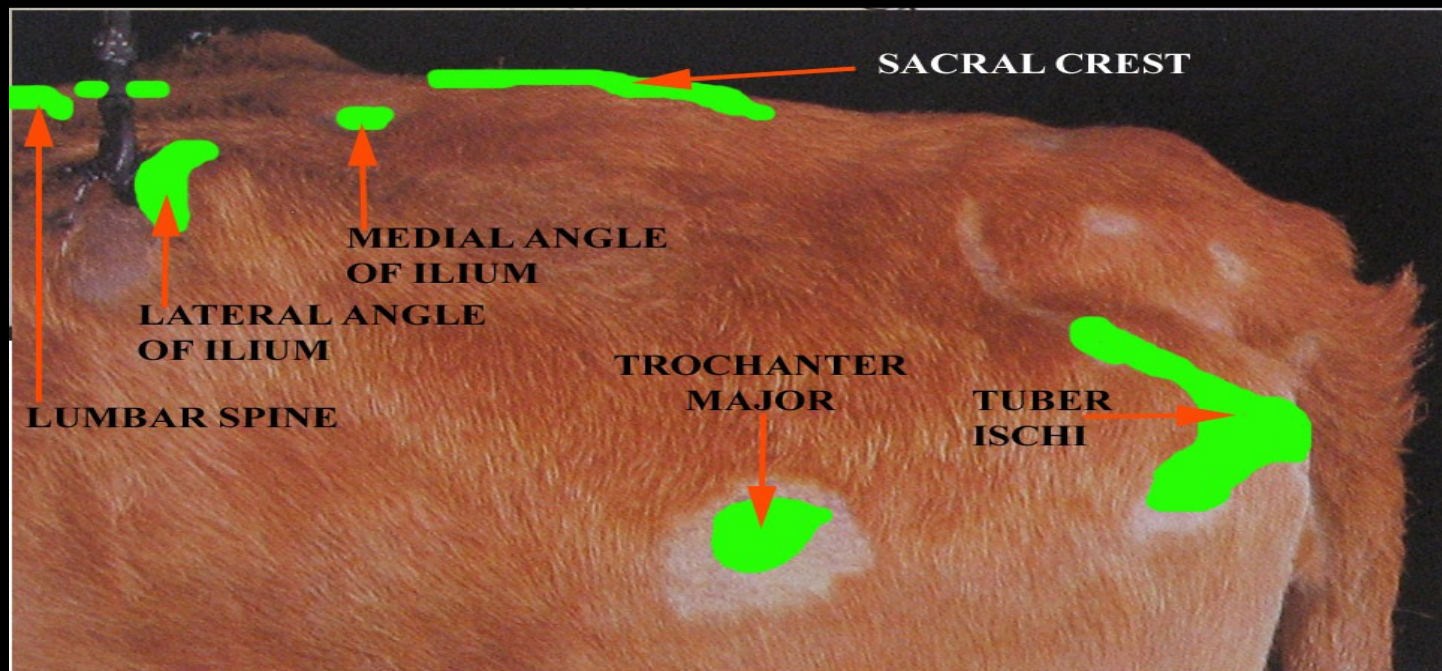


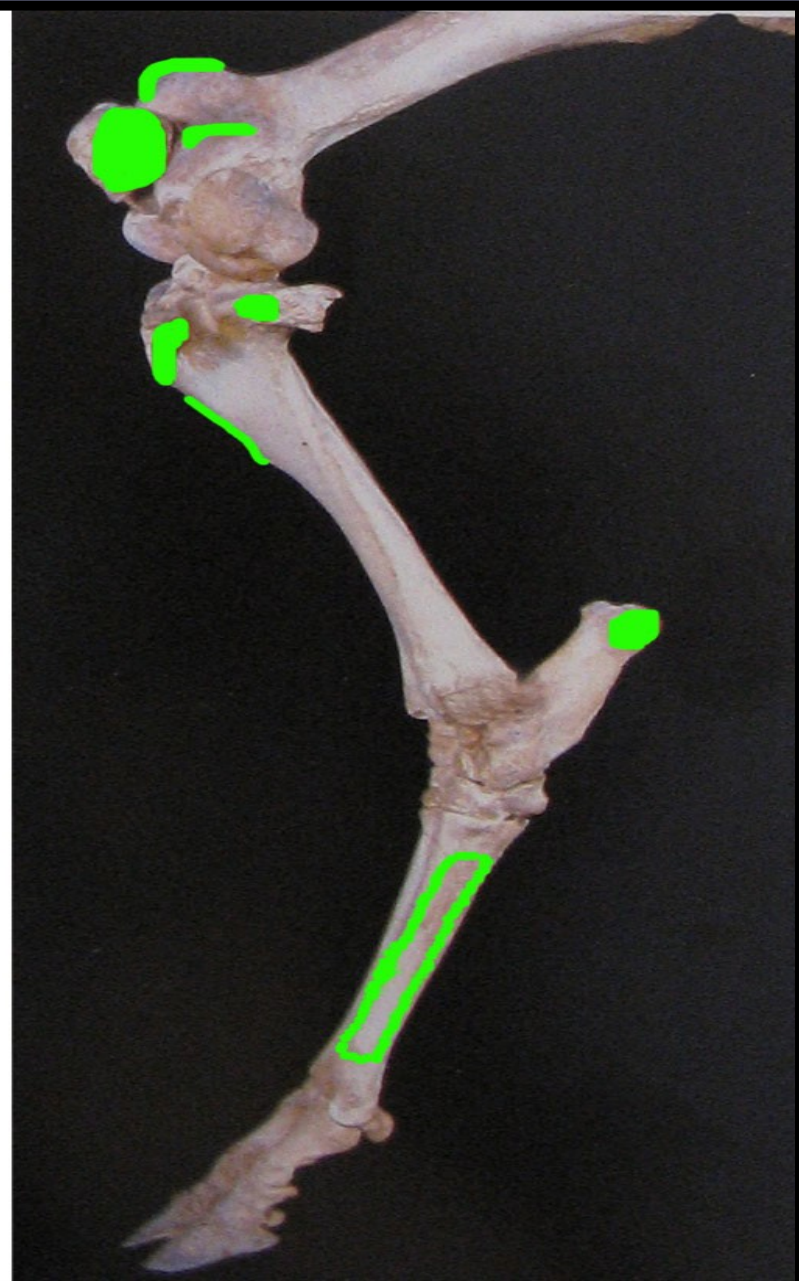
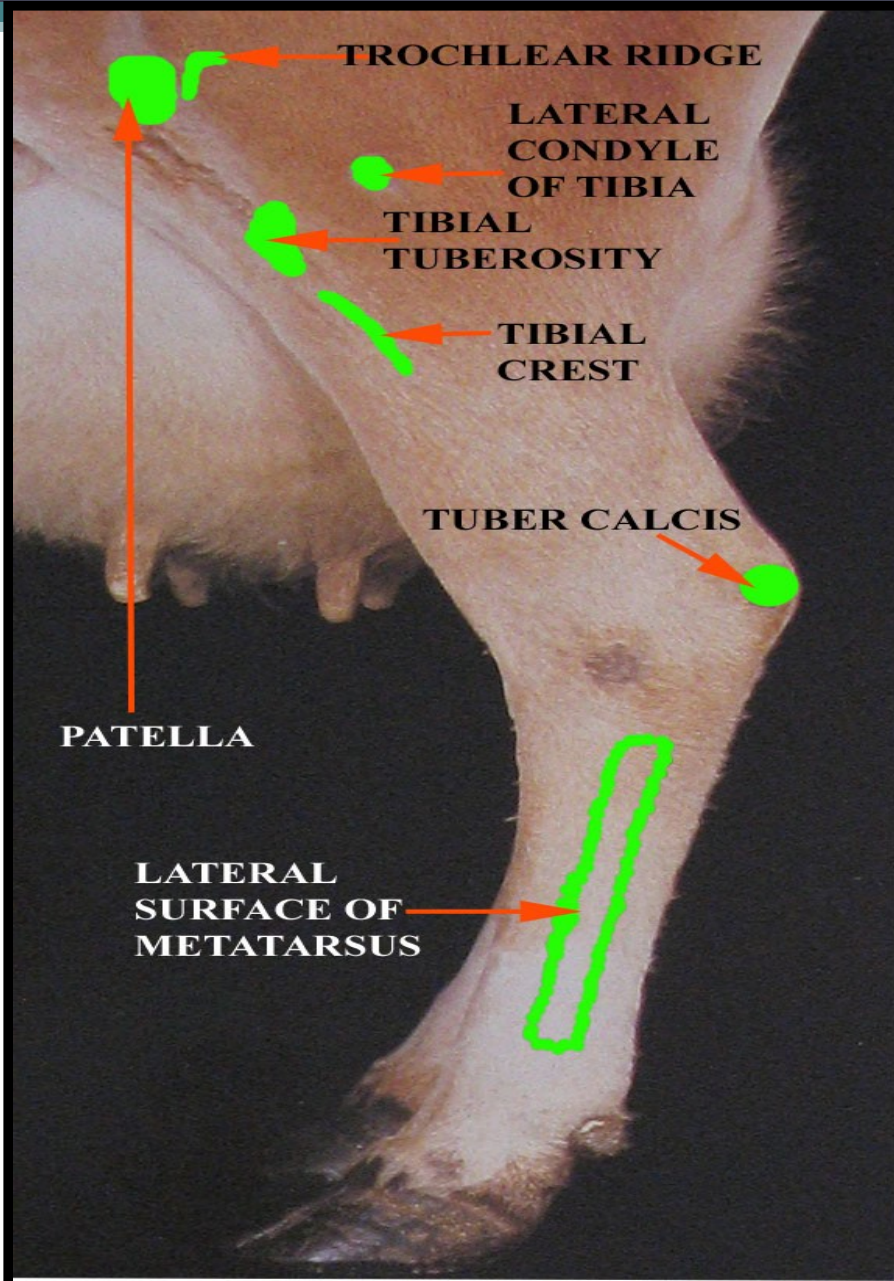


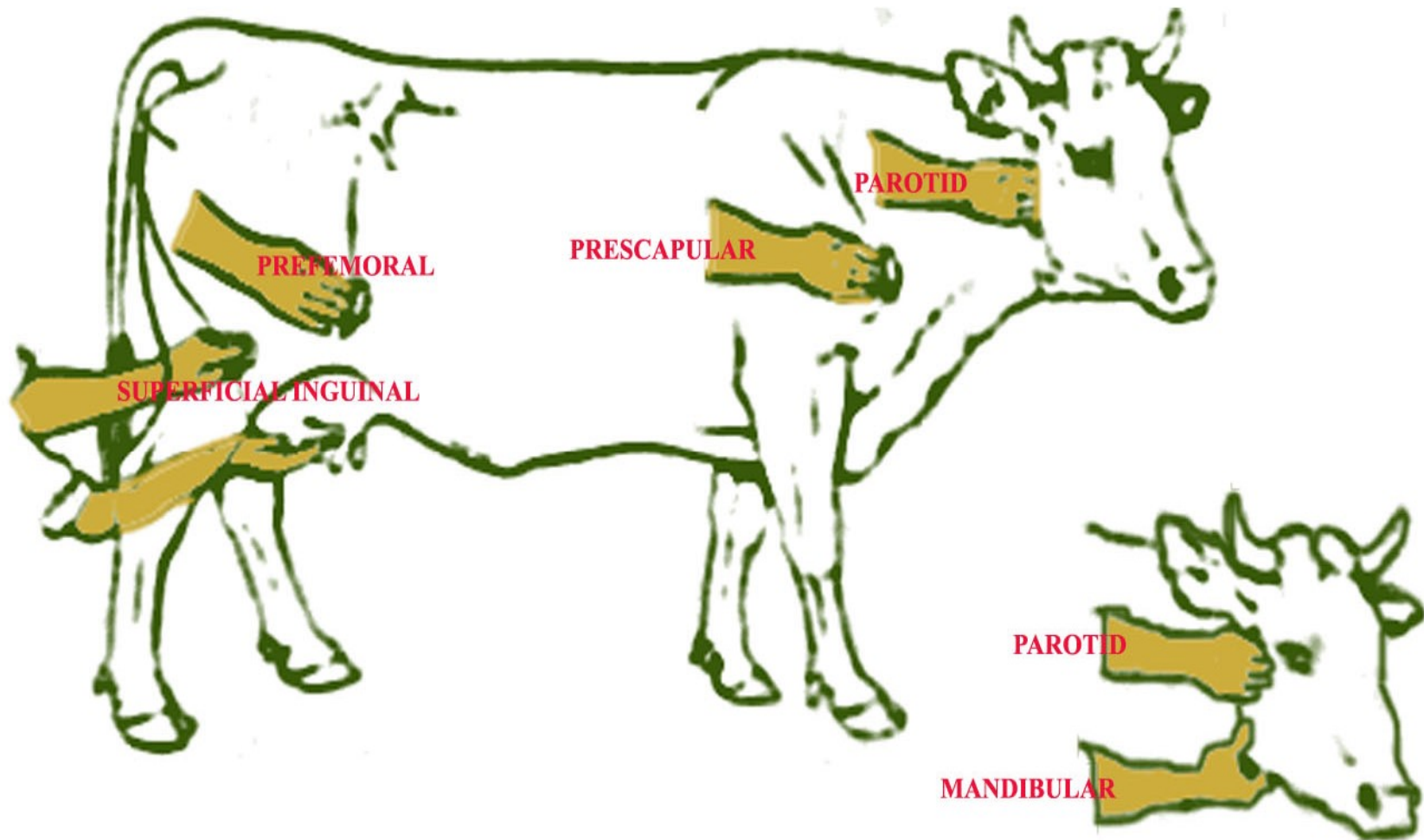








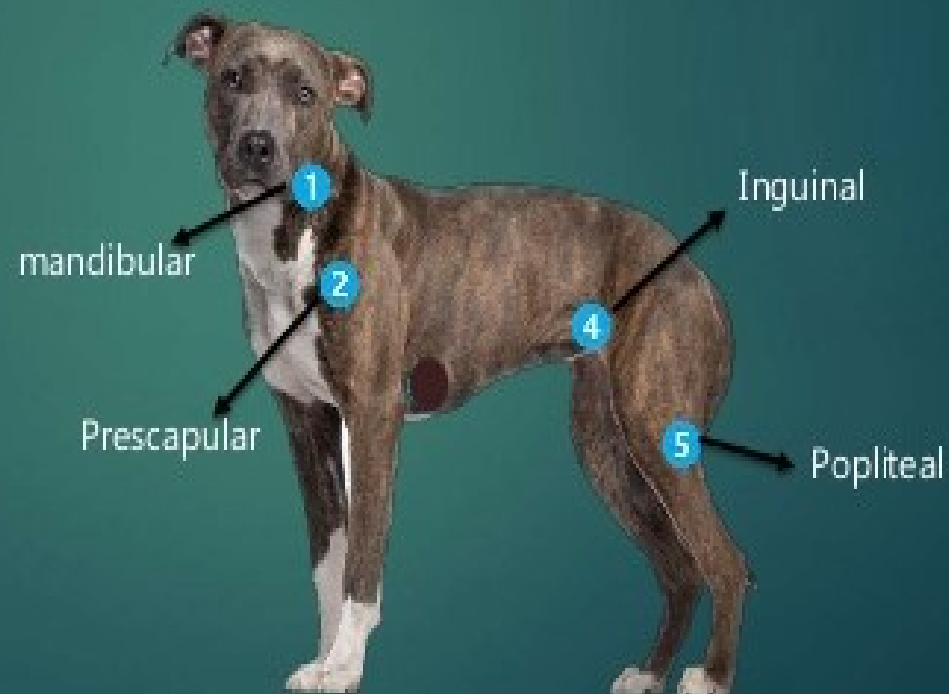




PALPATING THE SUPERFICIAL LYMPH NODES

Lymph nodes that are **normally** palpable in small animals include:

- Mandibular
- Prescapular
- Superficial inguinal
- Popliteal



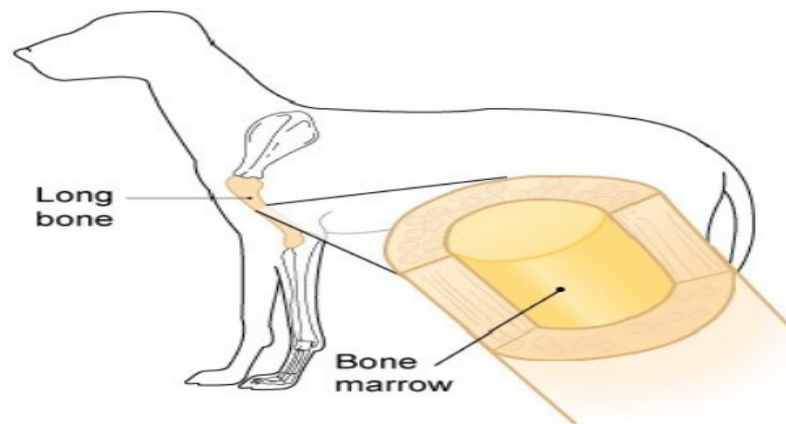
Why is bone marrow collected and examined?

1. Bone marrow is commonly collected and examined when abnormalities are found in the circulating blood. The most common abnormality is a persistent shortage of one of the blood cell types. This is a serious situation and may be due to a problem in the bone marrow. Examination of marrow can often provide information about the underlying cause, and may help to predict the outcome.

2. Bone marrow is also collected and examined to look for certain types of cancer. Some cancers start right in the cells of the bone marrow and other cancers spread to the bone marrow from elsewhere in the body. Cancer that starts in the bone marrow is sometimes called "leukemia." Examination of the bone marrow helps to identify the cancer, and reveals how seriously the marrow is affected.



Can marrow be collected from any bone?



Although many bones contain marrow, samples are collected from three main sites in cats and dogs. These are:

- the hip bone
- the top of the thigh bone
- the forearm below the shoulder. (This site is used especially in young animals and small sized pets such as cats and toy breed dogs.)



How is a bone marrow sample collected?

1. The procedure can be done with just local freezing, but sedation or light general anesthesia is typically used to reduce a pet's stress or discomfort. The actual collection procedure includes the following steps:

- The skin is shaved, cleaned, and disinfected.
- A sterile scalpel blade is used to cut a small nick in the skin, making a small opening.
- A special bone marrow needle is passed through this opening and pushed firmly through the hard outer layer of the bone and into the marrow.
- A syringe is attached to the needle and a small amount of liquid marrow material is sucked up into the syringe; this is called a **“bone marrow aspirate.”**
- The collected material is spread in a thin layer on a glass slide and allowed to dry completely.
- The sample is stained with special dyes and studied under a microscope.

2. Often, a tiny piece of solid bone marrow is collected at the same time as the marrow aspirate. This solid piece of marrow is a tiny cylinder of tissue about $\frac{1}{4}$ " long, and is called a **“core biopsy.”** It is placed in preservative and sent to the lab where it is examined under a microscope.

3. To finish, one or two small stitches are used to close the opening in the skin.





Thank you