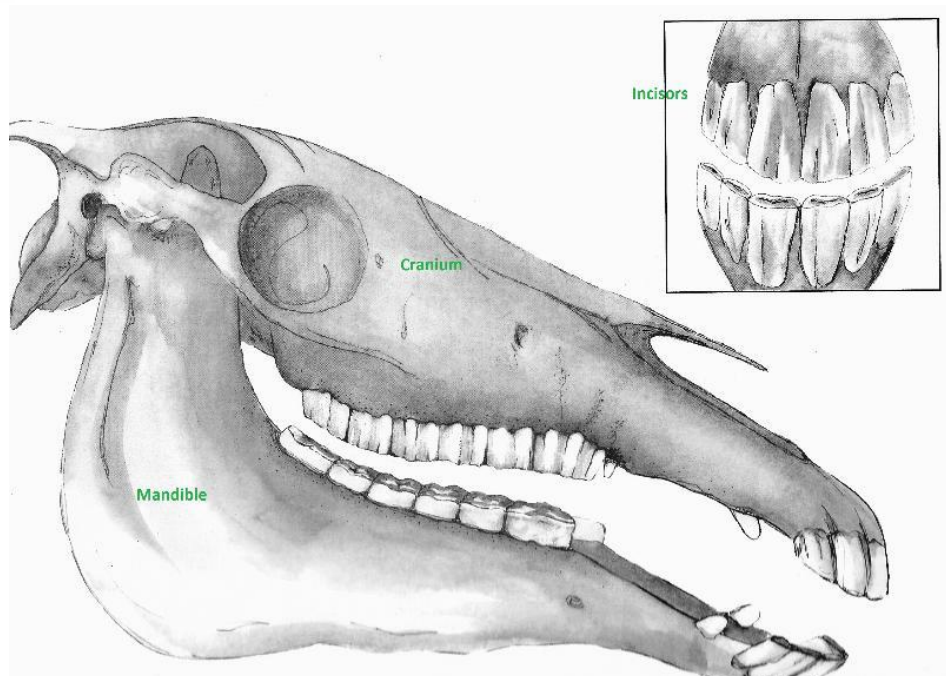




The Equine Skeleton

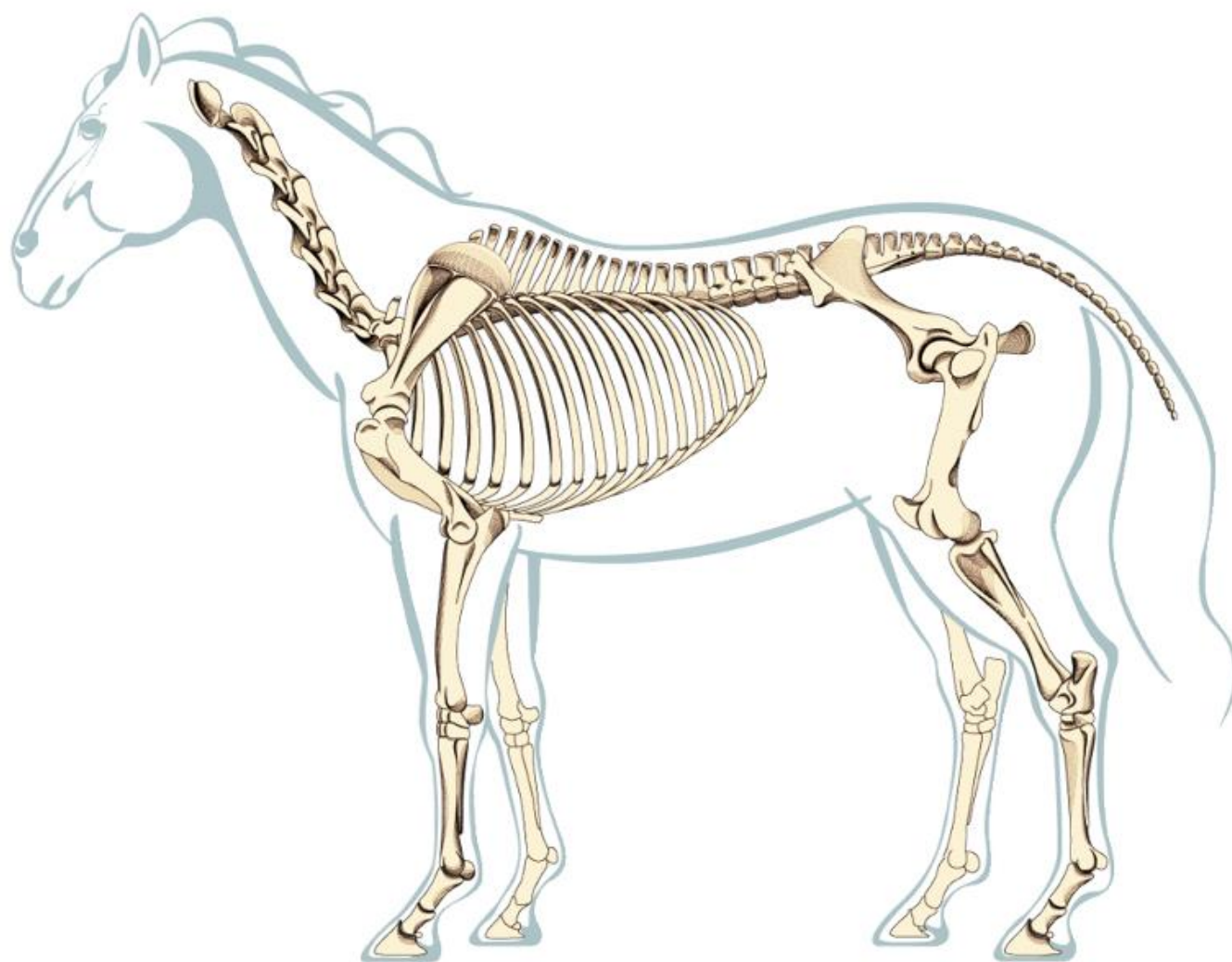
is composed of roughly 205 bones.

The Skull is composed of two parts the cranium and the mandible. A skull without a mandible is only a cranium. The skull is a part of the skeleton.





There are on average 18 ribs, 54 vertebrae, 34 cranial bones (including the auditory ossicles), 20 bones in each limb and the sternum.



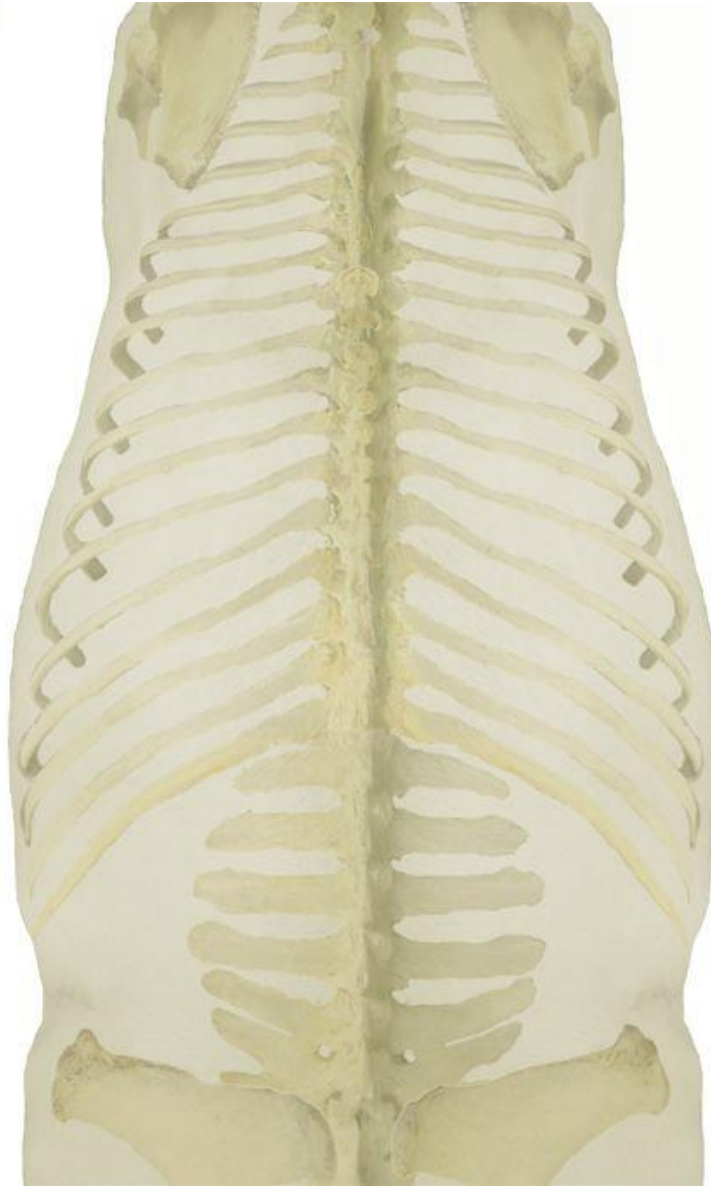


There are seven vertebrae of the **cervical** region of the horse they are named after their relative position (C-1 to C-7). The first and second cervical vertebrae (Atlas and Axis) are unique while C-3 through C-7 are fairly uniform.





The Torso is shaped by a complex structure of inter-jointed bones. Each rib [articulates](#) at its corresponding vertebrae as well as with the sternum. The [ventral](#) portion of the rib is cartilaginous attaching to a costal cartilage. The ventral cartilage of the last rib may fail to be intact, so this rib is said to be floating. The scapula attaches to the torso entirely by soft tissue attachment. There is no joint attachment as in the human, no collar bone.



Thoracic Vertebrae

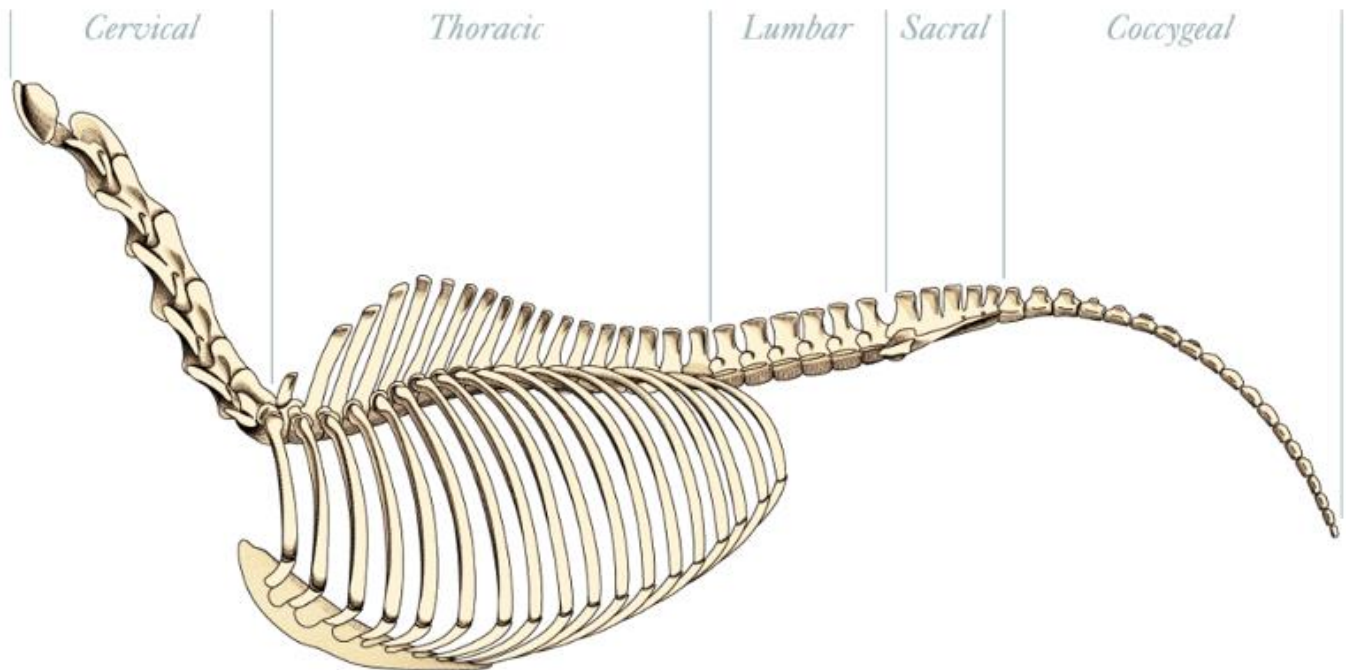
There are normally eighteen thoracic vertebrae in the horse, sometimes nineteen and rarely seventeen. These vertebrae distinguish themselves by having processes that permit articulations with the ribs. The spinous processes vary considerably in height, ranging from



quite long at the withers to less than a quarter this height in T-12 to T-18, forming a graduated series.

The Ribs

The ribs are thin, curved, long bones that form the thoracic wall skeleton. They are arranged in a series of pairs, which correspond to the number of thoracic vertebrae. The rib articulates dorsally with two vertebrae. The ventral end is a costal cartilage. The first eight sets of ribs articulate by their cartilage attachments to the ribs as well and are termed sternal ribs. The remainder are termed asternal since they do not attach to the sternum. The last ribs that are free on their ventral ends are termed "floating". The spaces between the ribs are termed intercostal spaces and are numbered according to the vertebra that is just anterior to the space.

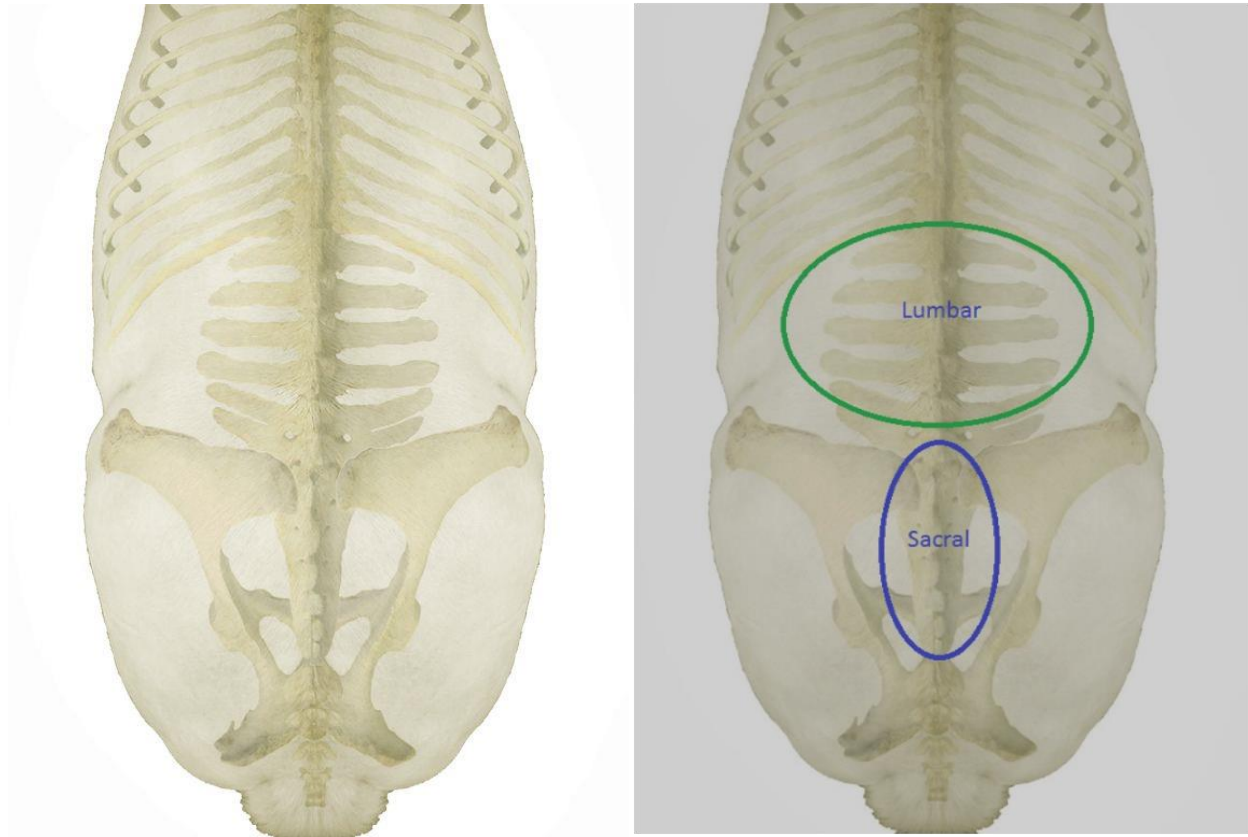




Bones of the Lower Back

There are normally six lumbar (L-1 to L-6) and five sacral vertebrae in the horse. They each carry a spinous process and a set of fixed transverse processes. The final lumbar vertebra has articular surfaces for the wing of the sacrum.

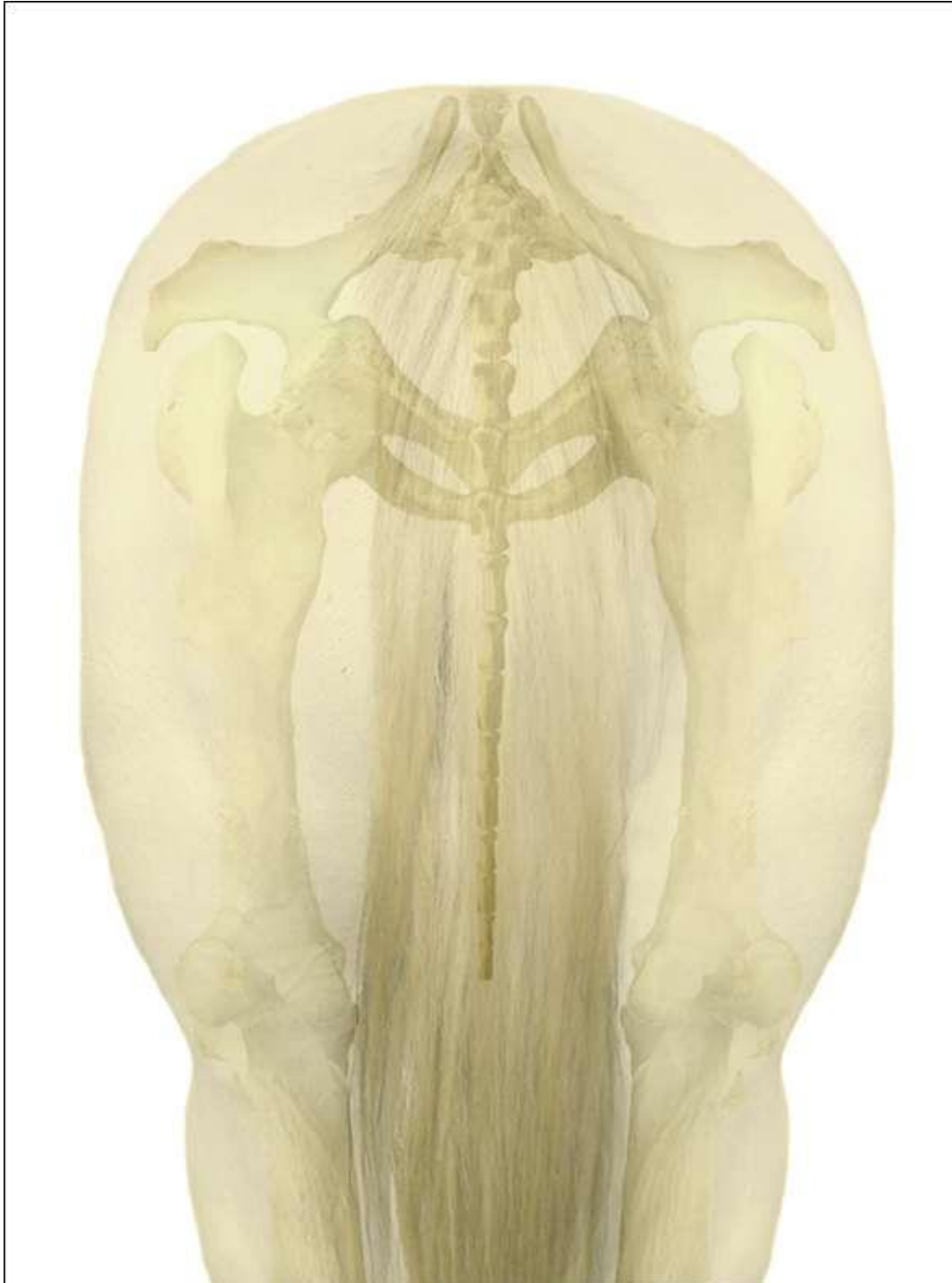
The sacrum is formed by a fusion of five vertebrae. The first vertebra supports "wings" that articulate anteriorly with the last lumbar vertebra and posteriorly with the ilium.





Posterior View of Hindquarter

The pelvis of male and female horses is significantly different with the average internal conjugate diameter about 9.5 in mares and 7.5 in stallions. The outlet is larger and the ischial arch is wider in the female. The pelvic surface of the pubis is concave in a mare and the inclination of the pelvis is also greater. The pelvis of a gelding that has been castrated early will resemble the female pelvis. There are on average 18 coccygeal vertebrae in the tail of the horse while this number may vary considerably. The first vertebra is often fused to the sacrum in older horses.





Bones of the Forelimb [Thoracic Limb]

The upper thoracic limb of the horse is composed of a scapula, a large flat bone with a central spine (tuber spinae). The superior end of the bone is cartilage. The scapula is connected to the torso of the horse only by soft tissue attachments. There is no articulation of the shoulder with the axial skeleton. So the angle of the scapula is dictated by its relative position as well as by the state of the soft tissue. A healthy angle (of the spine of the scapula) is X. The humerus sits immediately inferior to the scapula and forms an angle of X-X to the ground. Its distal end meets with the forearm.

The radius and ulna, which form the forearm, are fused in the horse. They are distally fixed in the position of pronation. The olecranon or elbow is an easily palpable landmark.

The knee of the horse is homologous to the human wrist. It contains eight bones arranged in two horizontal rows. The cannon bone is a developed central or third metacarpal digit and the splint bones are remnants of digits two and four.



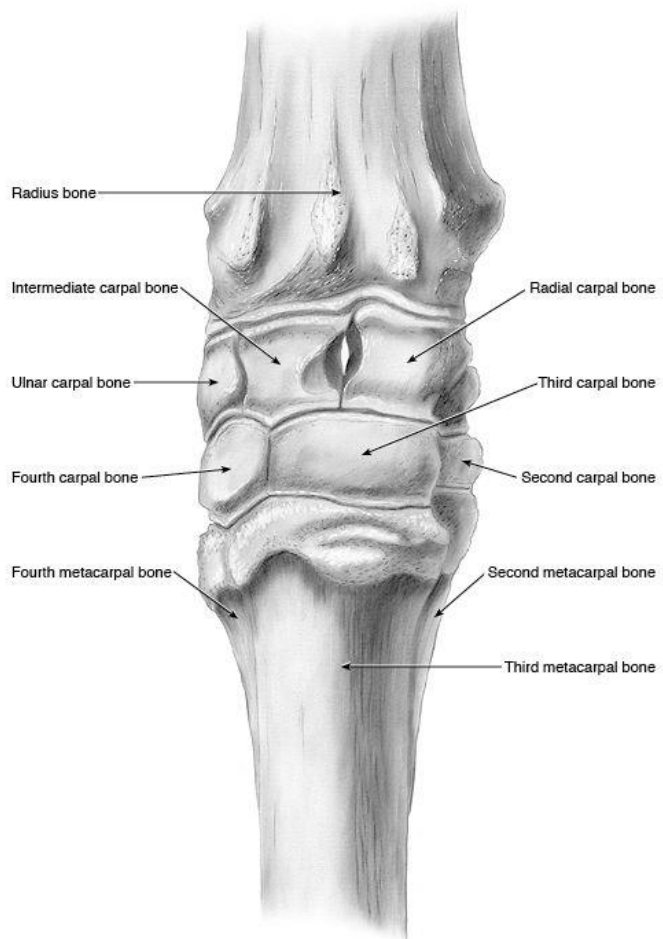
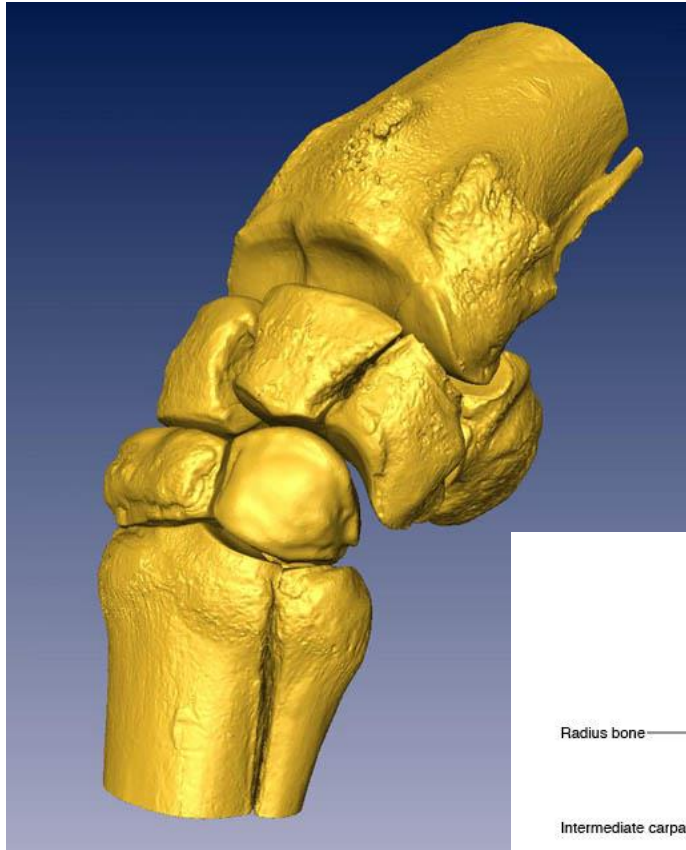


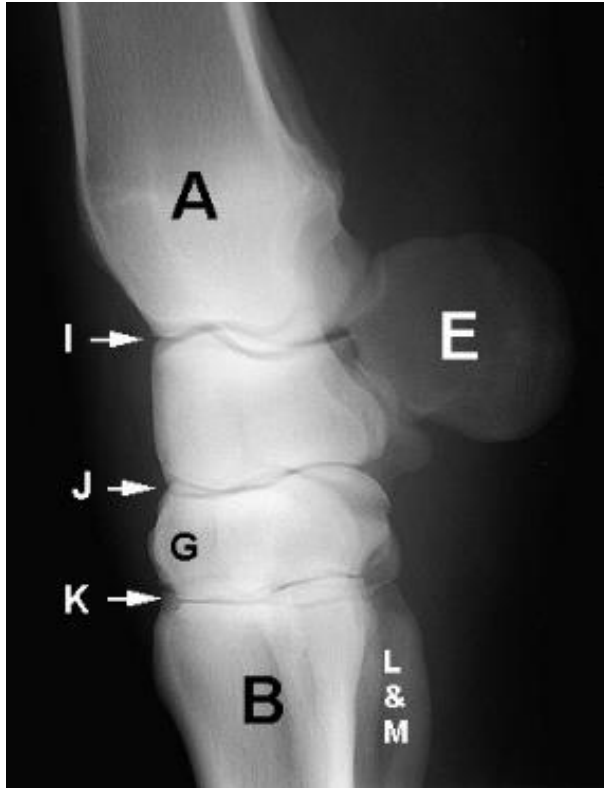
Bones of the Carpus

The knee of the horse is homologous to the human wrist. It usually contains eight bones arranged in two horizontal rows.

Proximal Row (medial to lateral): Radial, Intermediate, Ulnar and Accessory Carpal Bones

Distal Row (medial to lateral): First, Second, Third and Fourth Carpal Bones





Accessory Bone of the Carpus (E)

While not directly carrying load, the accessory carpal bone enables the flexors of the carpus to act at a mechanical advantage. It is situated posterior to the ulnar carpal bone and the lateral aspect of the distal end of the radius.

Bones of the Hind Limb [Pelvic Limb]

The thigh of the horse, as in the human, contains one long bone known as the femur, which articulates with the acetabulum of the pelvis and inferiorly with the tibia and patella. The leg is composed of the tibia, fibula (not shown) and patella or "knee-cap". The fibula does not articulate with the femur. It is situated along the lateral border of the tibia. The space between the tibia and fibula is known as the interosseous space.





Bones of the Hind Limb

Femur
Patella

Tibia
Fibula (not shown)

Tarsus (Hock)
Large Metatarsal bone (Cannon)

P-1
P-2
P-3



The Stifle Articulation

The stifle is composed of three bones, the femur, tibia and patella. The position of the patella may be consciously moved by the horse inferiorly thereby "locking" the hind limb. This action along with a healthy stay-apparatus helps the horse sleep while erect.





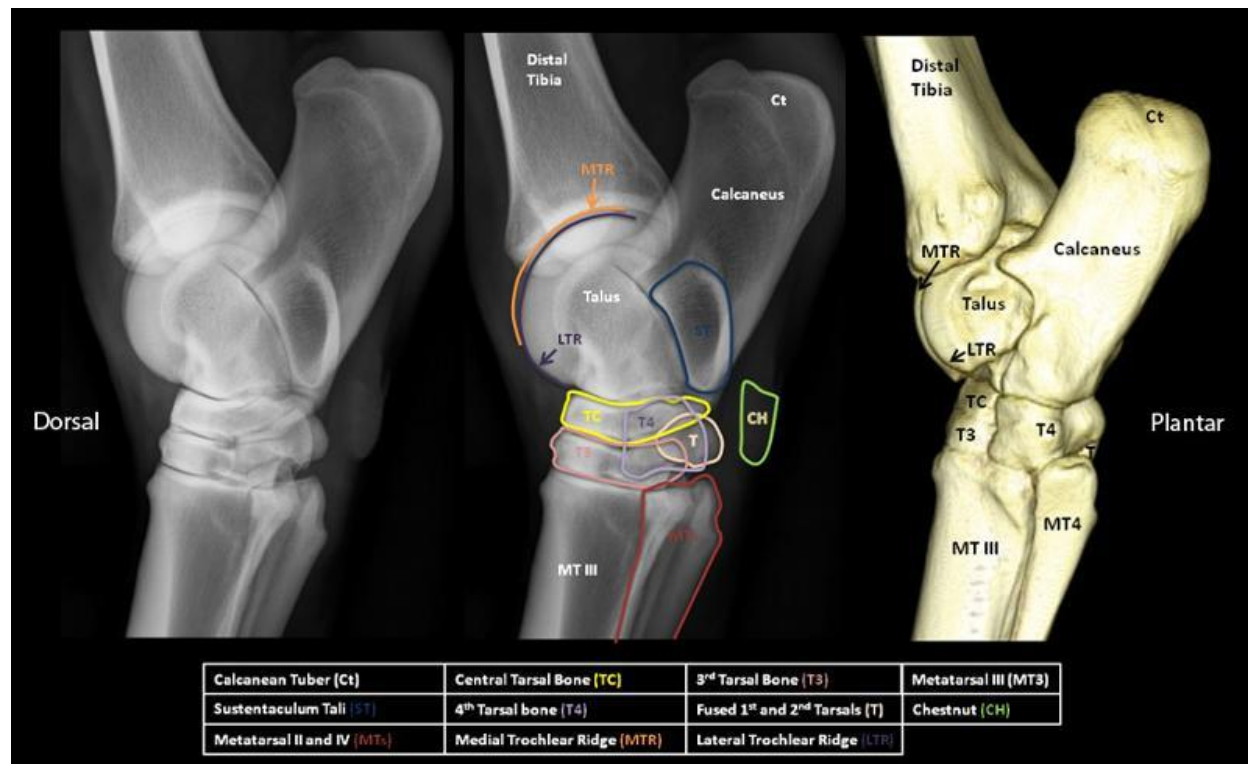
The Patella





The Tarsus Articulation

The hock is homologous to the human ankle and heel. The bones of the tarsus are arranged in three rows. The talus and calcaneus (heel) make up the proximal row. The middle row contains the central tarsal, while the distal row includes tarsal bones 1-4, with tarsal bones 1 and 2 fused.

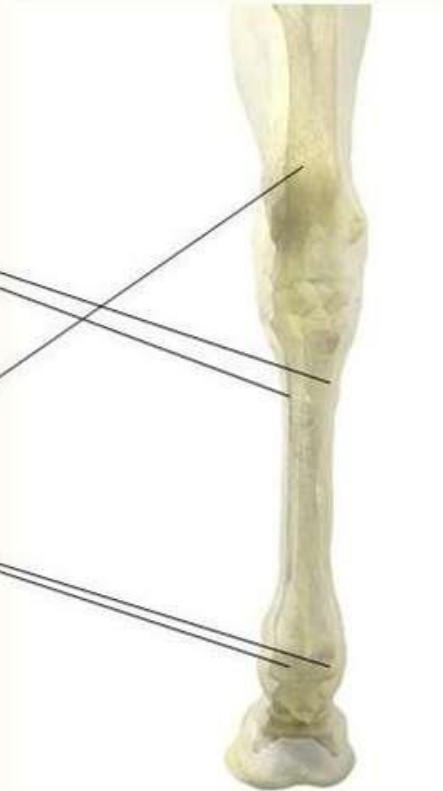




Volar Surface of the Lower Hind

The volar surface of the lower fore and hind limb is dished or concave and the splint bones sit away from the midline to form a sort of channel for the flexor tendon system.

The shape and orientation of the sesamoids as well allows for the safe tracking of the flexor system. The calcaneus easily viewable from this angle is comparable to the human heel.



Bones of the Distal Limb

