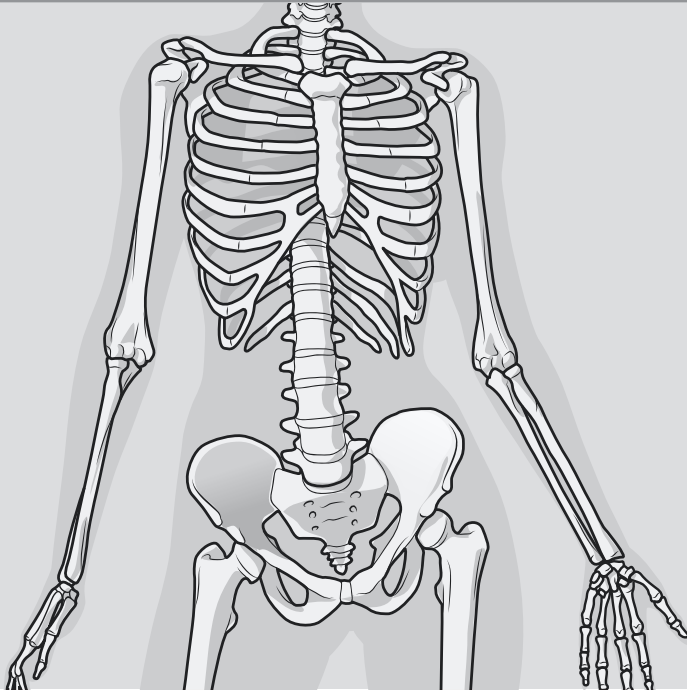


ACTIVITY



APPENDICULAR SKELETON AND LONG BONE DISSECTION

OBJECTIVES

- **How to get ready:** Read CHAPTERS 6 AND 8, MCKINLEY ET AL., *HUMAN ANATOMY*, 2024 RELEASE. All text references are for this textbook.
- Observe and dissect a fresh cow long bone. **YOU MUST BRING YOUR OWN GLOVES FOR THIS ACTIVITY.** Read dissection instructions **BEFORE** coming to lab.
- Identify the bones and bone markings from the upper limb and pectoral girdle.
- Identify the bones and bone markings from the lower limb and pelvic girdle.
- **Before next class:** Preview Appendicular (and Axial) Muscle terms lists from SLCC Anatomy Laboratory website or your printed laboratory manual and your textbook.

Activity 4

BONE DISSECTION

Dissection Instructions

1. Acquire all dissection materials. (1 set per table)
 - Dissection tray
 - Scalpel
 - Probe
 - Cow bone
 - Gloves (supply your own)
 - Forceps
2. After getting the cow bone back to your table, place it on your tray, cut side up, and begin to examine it closely. Notice that within the compact bone there are red dots, which are blood vessels within the compact bone.

Procedure

3. a. Take probe and carefully dig into the **yellow bone marrow** in an attempt to find a **nutrient artery** (unlikely). Bone is living tissue and is highly vascular. Next, dig out all of the marrow from the cavity to expose the **trabeculae** (spongy bone portions) visible on the side toward the epiphysis. These trabeculae are the network that makes up the spongy bone. Within this spongy bone you will find an area that will be red and bloody, this is the **red bone marrow** and the site of blood cell production (**hematopoiesis**).
- b. Now look toward the outside of the bone to the outer lining of the shaft. Take forceps and peel away the **periosteum**. The periosteum serves as a site of attachment for tendons and ligaments and an anchor for blood vessels.
- c. Now look for cartilage. **Hyaline cartilage** will be located in the **articular cartilage** at the ends where the bone will articulate with another bone. In some cases **fibrocartilage** will be visible in the shape of a 'C' on the end of the cow tibia. Closely look at the difference between the two cartilages.
- d. Identify all of the structures on the following list before properly disposing of your specimen.

You must dispose of the cow bone as instructed, and completely clean, dry, and put away all instruments and trays in order to earn your participation grade for the lab.

Appendicular Skeleton and Long Bone Dissection

STRUCTURES TO IDENTIFY—COW BONE DISSECTION	TEXT REFERENCES AND SKETCH
<input type="checkbox"/> diaphysis	FIG. 6.4
<input type="checkbox"/> compact bone tissue (forming most of the diaphysis and the outside of all bones)	
<input type="checkbox"/> proximal and distal epiphysis (form the ends of the long bone)	
<input type="checkbox"/> articular surface with articular (hyaline) cartilage	
<input type="checkbox"/> metaphysis	
<input type="checkbox"/> epiphyseal line or epiphyseal (growth) plate	
<input type="checkbox"/> medullary (marrow) cavity	
<input type="checkbox"/> yellow bone marrow	
<input type="checkbox"/> spongy bone tissue	
<input type="checkbox"/> red bone marrow	
<input type="checkbox"/> trabeculae (thin bony plates running within spongy bone tissue) within spongy bone	
<input type="checkbox"/> periosteum (dense irregular connective tissue covering the outside of all bones)	
<input type="checkbox"/> endosteum (tissue lining the inside of the medullary cavity in the diaphysis)	
<input type="checkbox"/> nutrient artery (if visible)	

Activity 4

TABLE 4-1. Pectoral girdle		
BONE	BONE MARKINGS	TEXT REFERENCES, NOTES, AND SKETCH
CLAVICLE	<input type="checkbox"/> sternal end (medial)	FIG. 8.2
	<input type="checkbox"/> acromial end (lateral)	
	<input type="checkbox"/> conoid tubercle	
SCAPULA	<input type="checkbox"/> superior border	FIG. 8.2, 8.3
	<input type="checkbox"/> medial (vertebral) border	
	<input type="checkbox"/> lateral (axillary) border	
	<input type="checkbox"/> superior angle	
	<input type="checkbox"/> inferior angle	
	<input type="checkbox"/> spine	
	<input type="checkbox"/> acromion	
	<input type="checkbox"/> coracoid process	
	<input type="checkbox"/> supraspinous fossa	
	<input type="checkbox"/> infraspinous fossa	
	<input type="checkbox"/> subscapular fossa	
	<input type="checkbox"/> glenoid cavity (fossa)	
	<input type="checkbox"/> supraglenoid tubercle	
<input type="checkbox"/> infraglenoid tubercle		

Appendicular Skeleton and Long Bone Dissection

TABLE 4-2. Upper limb – arm

BONE	BONE MARKINGS	TEXT REFERENCES, NOTES, AND SKETCH
HUMERUS	<input type="checkbox"/> head	FIG. 8.4
	<input type="checkbox"/> greater tubercle	
	<input type="checkbox"/> lesser tubercle	
	<input type="checkbox"/> intertubercular sulcus/groove	
	<input type="checkbox"/> anatomical neck	
	<input type="checkbox"/> surgical neck	
	<input type="checkbox"/> deltoid tuberosity	
	<input type="checkbox"/> coronoid fossa	
	<input type="checkbox"/> olecranon fossa	
	<input type="checkbox"/> radial fossa	
	<input type="checkbox"/> medial epicondyle	
	<input type="checkbox"/> lateral epicondyle	
	<input type="checkbox"/> trochlea	
<input type="checkbox"/> capitulum		

TABLE 4-3. Upper limb – forearm

BONE	BONE MARKINGS	TEXT REFERENCES, NOTES, AND SKETCH
ULNA	<input type="checkbox"/> olecranon process	FIG. 8.5
	<input type="checkbox"/> coronoid process	
	<input type="checkbox"/> trochlear notch	
	<input type="checkbox"/> radial notch	
	<input type="checkbox"/> styloid process	
	<input type="checkbox"/> head	
RADIUS	<input type="checkbox"/> head	FIG. 8.5
	<input type="checkbox"/> neck	
	<input type="checkbox"/> radial tuberosity	
	<input type="checkbox"/> ulnar notch	
	<input type="checkbox"/> styloid process	

Activity 4

TABLE 4-4. Upper limb – wrist and hand		
BONE	INDIVIDUAL BONES	TEXT REFERENCES, NOTES, AND SKETCH
CARPAL BONES (8)	proximal row (lateral to medial)	FIG. 8.6
	<input type="checkbox"/> scaphoid bone	
	<input type="checkbox"/> lunate bone	
	<input type="checkbox"/> triquetrum bone	
	<input type="checkbox"/> pisiform bone	
	distal row (lateral to medial)	
	<input type="checkbox"/> trapezium bone	
	<input type="checkbox"/> trapezoid bone	
	<input type="checkbox"/> capitate bone	
	<input type="checkbox"/> hamate bone	
METACARPAL BONES	I through V	
PHALANGES	<input type="checkbox"/> proximal phalanx	
	<input type="checkbox"/> middle phalanx	
	<input type="checkbox"/> distal phalanx	
	<input type="checkbox"/> pollex (has no middle phalanx)	

Activity 4

TABLE 4-5. Pelvic girdle: Each os coxa (pl., *ossa coxae*) is composed of three fused bones: ilium, ischium, and pubis.

BONE	BONE MARKINGS	TEXT REFERENCES, NOTES, AND SKETCH
OS COXA (2)	<input type="checkbox"/> acetabulum	FIG. 8.7, 8.9, 8.10, TABLE 8.1
	<input type="checkbox"/> obturator foramen	
ILIUM	<input type="checkbox"/> iliac crest	
	<input type="checkbox"/> anterior superior iliac spine	
	<input type="checkbox"/> anterior inferior iliac spine	
	<input type="checkbox"/> posterior superior iliac spine	
	<input type="checkbox"/> posterior inferior iliac spine	
	<input type="checkbox"/> greater sciatic notch	
	<input type="checkbox"/> iliac fossa	
	<input type="checkbox"/> auricular surface	
ISCHIUM	<input type="checkbox"/> body	
	<input type="checkbox"/> ischial spine	
	<input type="checkbox"/> lesser sciatic notch	
	<input type="checkbox"/> ramus <i>or</i> ischial ramus	
	<input type="checkbox"/> ischial tuberosity	
PUBIS	<input type="checkbox"/> body	
	<input type="checkbox"/> pubic tubercle	
	<input type="checkbox"/> superior pubic ramus	
	<input type="checkbox"/> inferior pubic ramus	

Appendicular Skeleton and Long Bone Dissection

TABLE 4-6. Lower limb – thigh and knee

BONE	BONE MARKINGS	TEXT REFERENCES, NOTES, AND SKETCH
FEMUR	<input type="checkbox"/> head <input type="checkbox"/> fovea <input type="checkbox"/> neck <input type="checkbox"/> greater trochanter <input type="checkbox"/> lesser trochanter <input type="checkbox"/> intertrochanteric crest <input type="checkbox"/> shaft <input type="checkbox"/> gluteal tuberosity <input type="checkbox"/> linea aspera <input type="checkbox"/> medial condyle <input type="checkbox"/> medial epicondyle <input type="checkbox"/> adductor tubercle <input type="checkbox"/> lateral condyle <input type="checkbox"/> lateral epicondyle <input type="checkbox"/> intercondylar fossa	FIG. 8.11
PATELLA		FIG. 8.12

Activity 4

TABLE 4-7. Lower limb – leg and foot		
BONE	BONE MARKINGS OR INDIVIDUAL BONES	TEXT REFERENCES, NOTES, AND SKETCH
TIBIA	<input type="checkbox"/> medial condyle	FIG. 8.13, 8.14
	<input type="checkbox"/> lateral condyle	
	<input type="checkbox"/> intercondylar eminence	
	<input type="checkbox"/> tibial tuberosity	
	<input type="checkbox"/> medial malleolus	
	<input type="checkbox"/> anterior border (crest)	
FIBULA	<input type="checkbox"/> head	FIG. 8.13, 8.14
	<input type="checkbox"/> neck	
	<input type="checkbox"/> lateral malleolus	
TARSAL BONES (7 bones)	<input type="checkbox"/> talus bone	FIG. 8.14, 8.15
	<input type="checkbox"/> calcaneus bone	
	<input type="checkbox"/> navicular bone	
	<input type="checkbox"/> medial cuneiform bone	
	<input type="checkbox"/> intermediate cuneiform bone	
	<input type="checkbox"/> lateral cuneiform bone	
	<input type="checkbox"/> cuboid bone	
METATARSAL BONES	I through V	
PHALANGES	<input type="checkbox"/> proximal phalanx	
	<input type="checkbox"/> middle phalanx	
	<input type="checkbox"/> distal phalanx	
	<input type="checkbox"/> hallux (has no middle phalanx)	

Activity 4

STUDY AIDS FOR APPENDICULAR SKELETON

Helpful bone marking terms used in Appendicular Skeleton

ANATOMICAL TERMS	DESCRIPTION
acetabulum	small receptacle, vinegar cup
acromion	summit of the shoulder, tip of the shoulder
anatomical neck	area between the head and greater/lesser tubercles of humerus
calcaneus	heel
capitate	having a caput (head)
capitulum	head
clavicle	key (old Roman keys were S-shaped)
conoid	resembling a cone, cone-shaped
coracoid	like a crow's beak
cuboid	cube-shaped
cuneiform	wedge-shaped
deltoid	Greek delta letter, triangular shape
femur	thigh
fibula	a clasp, as in a safety pin
fovea	a pit
glenoid	socket-shaped
hamate	hooked
ilium	bone of the groin or flank
ischium	socket, contributes to most of the acetabulum
linea aspera	rough line
lunate	moon-shaped
malleolus	hammer
navicular	little ship
obturator	a structure which closes a hole
olecranon	upper end of the ulna
os coxae	os=bone, coxae= hip, the hip bone
patella	a small pan
phalanx (pl., <i>phalanges</i>)	row of soldiers
pisiform	pea-shaped
scaphoid	boat-shaped
scapula	resembling a spade
sciatic	pertaining to the hips
spinous	sharp process
surgical neck	region distal to the tubercles and continuous with shaft of humerus
talus	ankle-bone
tibia	the shin-bone; flute-shaped
trapezium	a quadrilateral with two sides parallel
trapezoid	resembling a trapezium
triquetrum	three-cornered