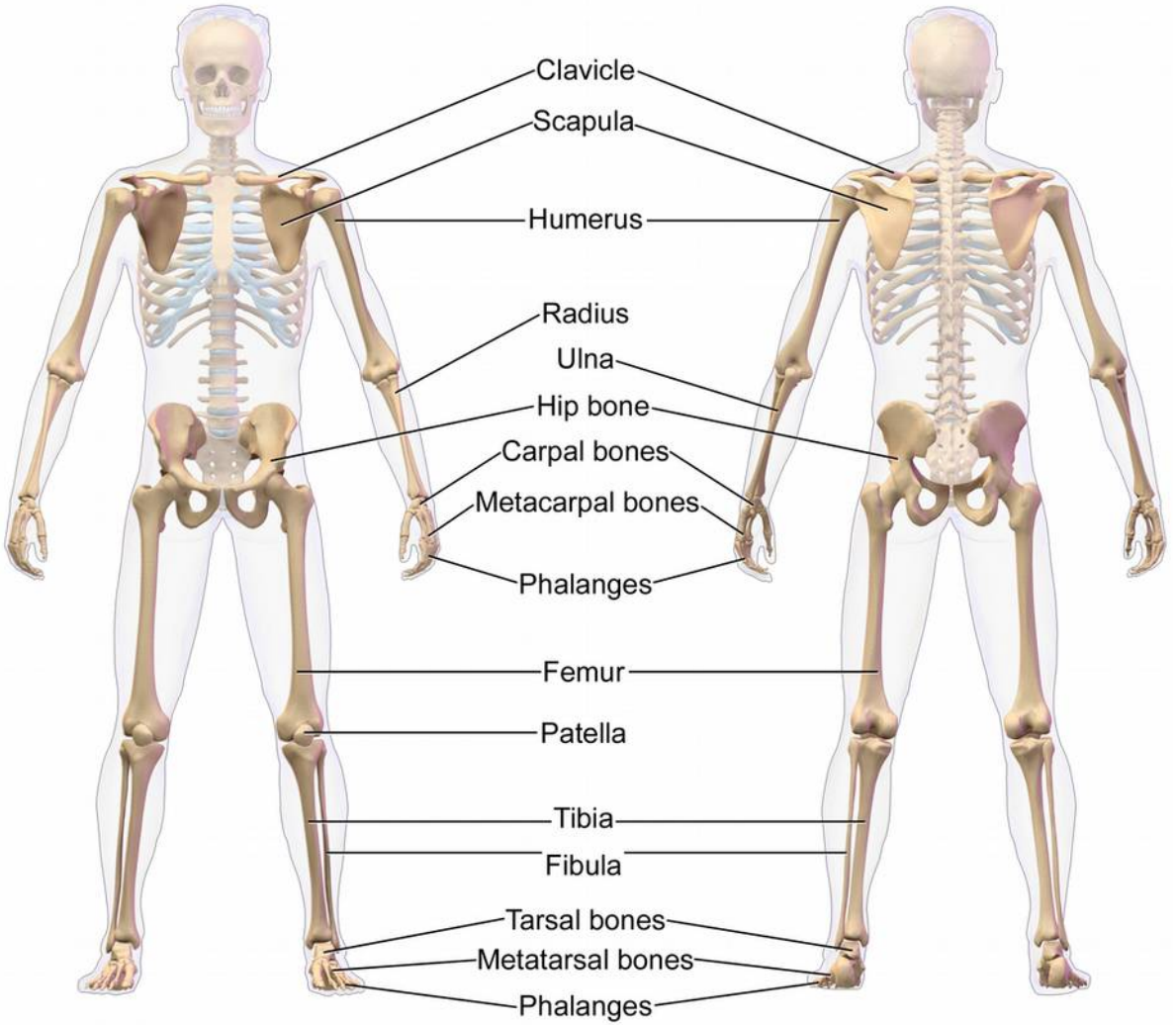
Appendicular Skeleton
Introduction, Pectoral Girdle and Upper Limb

The Appendicular Skeleton

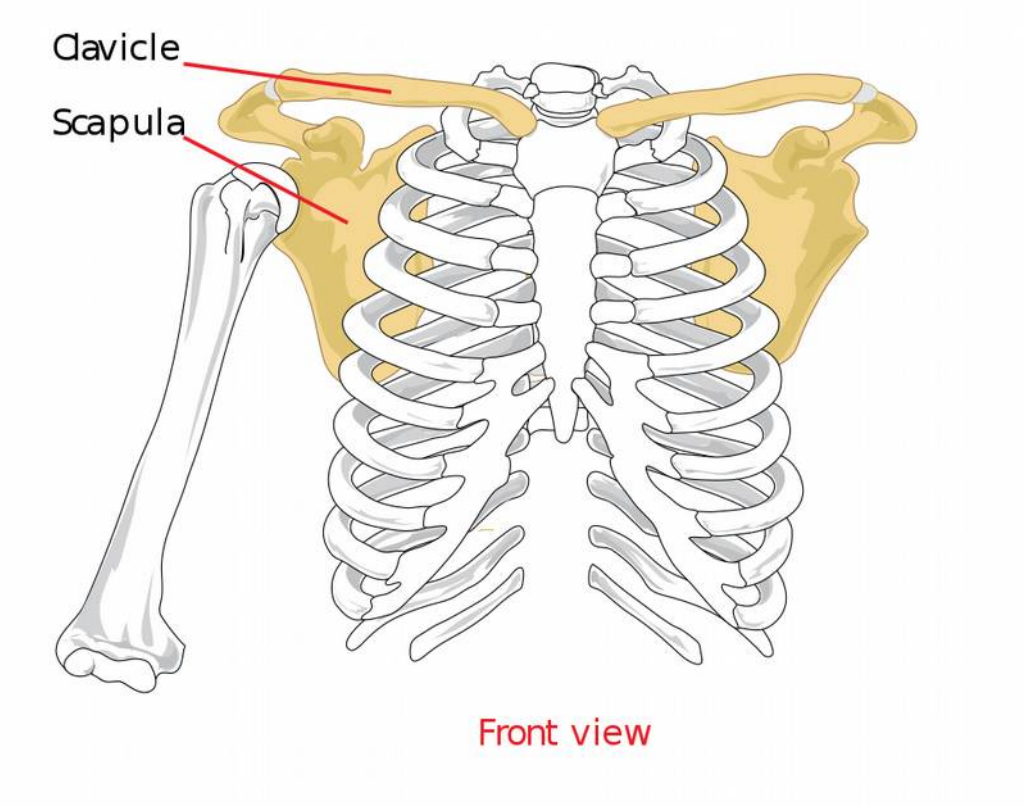
- pectoral girdle
- bones of the upper limb
- pelvic girdle
- bones of the lower limb



The Appendicular Skeleton

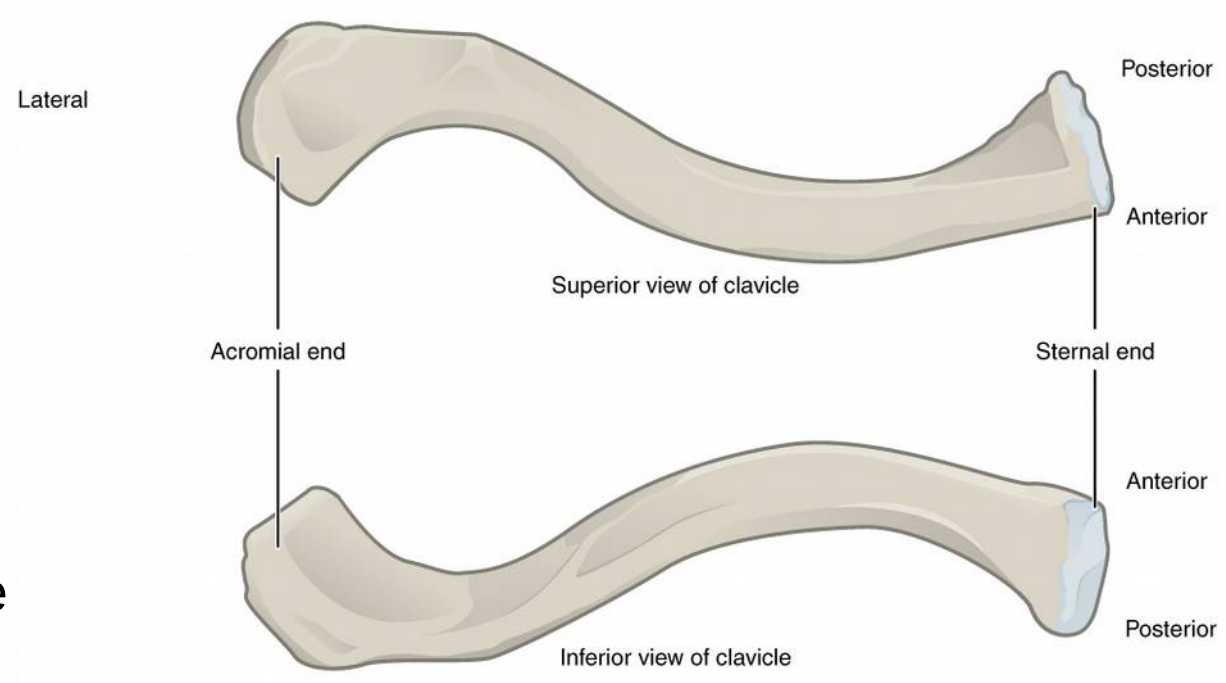
The Pectoral Girdle

- clavicle (2)
- scapula (2)



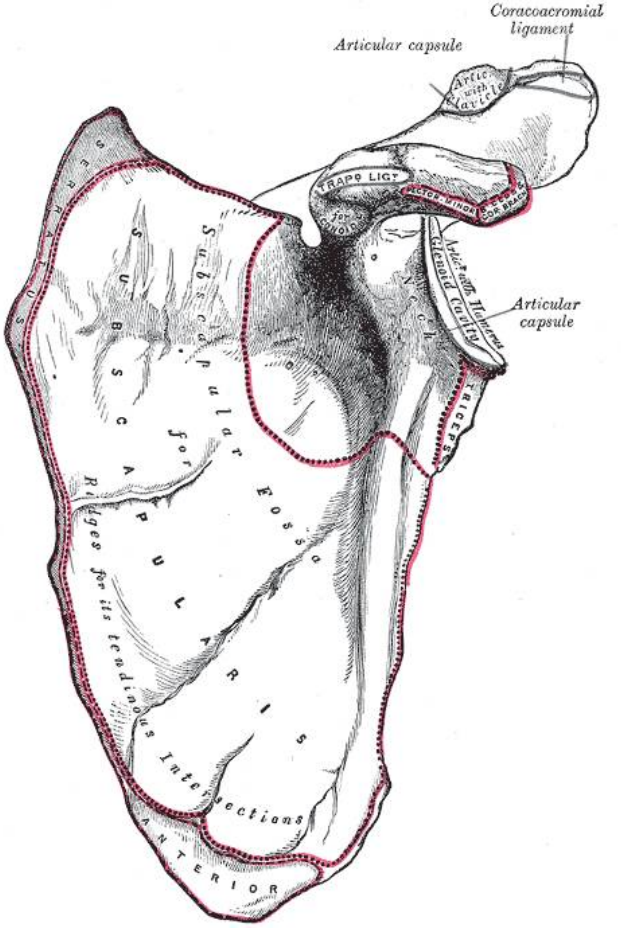
Clavicle

- sternal end
  - medial
  - attaches to sternum
  - only bony attachment for upper limb
- acromial end
  - lateral
  - attaches to scapula at the acromion



Scapula

- acromion
  - posterior side; lateral and continuous with the spine
  - attached to the acromial end of clavicle
- coracoid (crows beak) process
  - anterior side
  - muscle attachments from arm and chest
- glenoid cavity (fossa)
  - humerus of upper arm touches here (shoulder joint)
  - lateral side
- spine
  - posterior side
  - muscle attachments

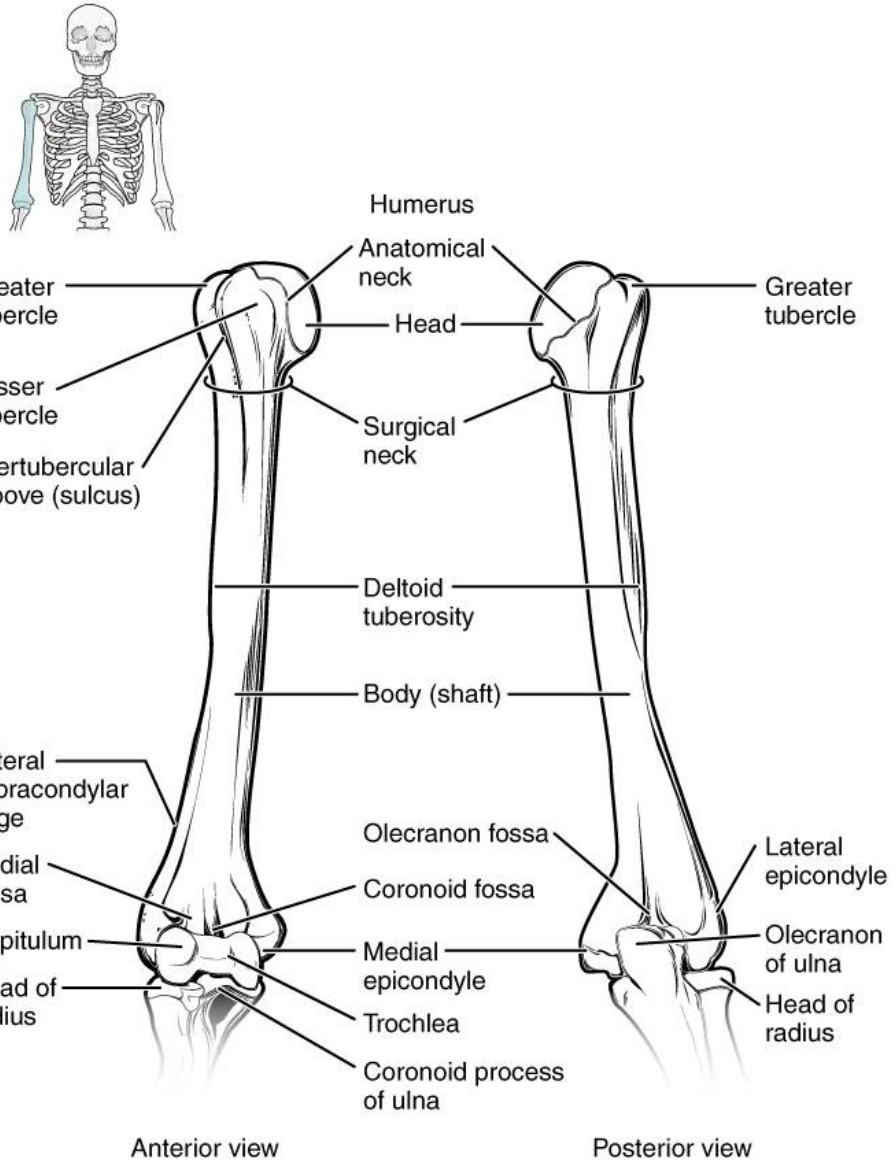


The Upper Limb

- humerus (2)
  - not spelled hum**orou**s, I misspell when on autopilot fairly often
- ulna (2)
- radius (2)
- carpal bones (8 x 2 wrists)
- metacarpal bones (5 x 2 hands)
- phalanx bones (14 x 2 hands)

Humerus

- bone of the upper arm (brachium)
- superior head articulates with the glenoid cavity of the scapula
- greater and lesser tubercles, at the proximal end, for muscle attachment
- intertubecular groove (sulcus) for passage of a tendon (tendon of biceps brachii)
- deltoid tuberosity for attachment of the deltoid muscle
- medial and lateral epicondyles at distal end, can palpitate at sides of elbow, attachment sites for muscles
- trochlea articulates with the ulna
- olecranon fossa, posterior side, receives the olecranon process of the ulna

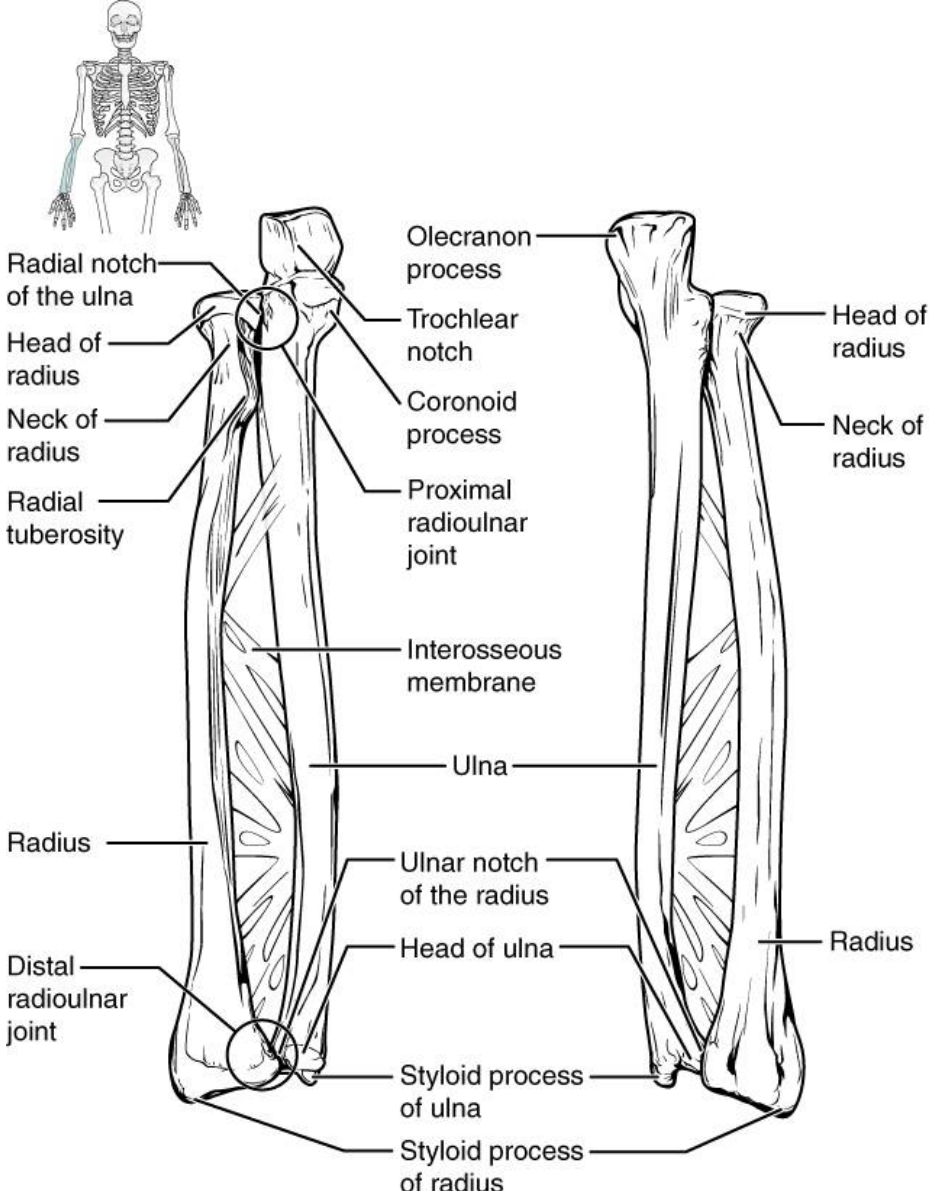

Humerus
Anatomical neck
Greater tubercle
Head
Lesser tubercle
Surgical neck
Intertubercular groove (sulcus)
Deltoid tuberosity
Body (shaft)
Lateral supracondylar ridge
Radial fossa
Capitulum
Head of radius
Coronoid fossa
Medial epicondyle
Trochlea
Coronoid process of ulna
Anterior view
Greater tubercle
Olecranon fossa
Lateral epicondyle
Olecranon of ulna
Head of radius
Posterior view

Ulna

- one of two bones in the antibrachium
- olecranon, U-shaped area at proximal end, articulates with the humerus, impacts the olecranon fossa when hyperextended, forms the peak of a bent elbow
- trochlear notch articulates with trochlea or humerus
- styloid process, attachment point to the adjacent radius

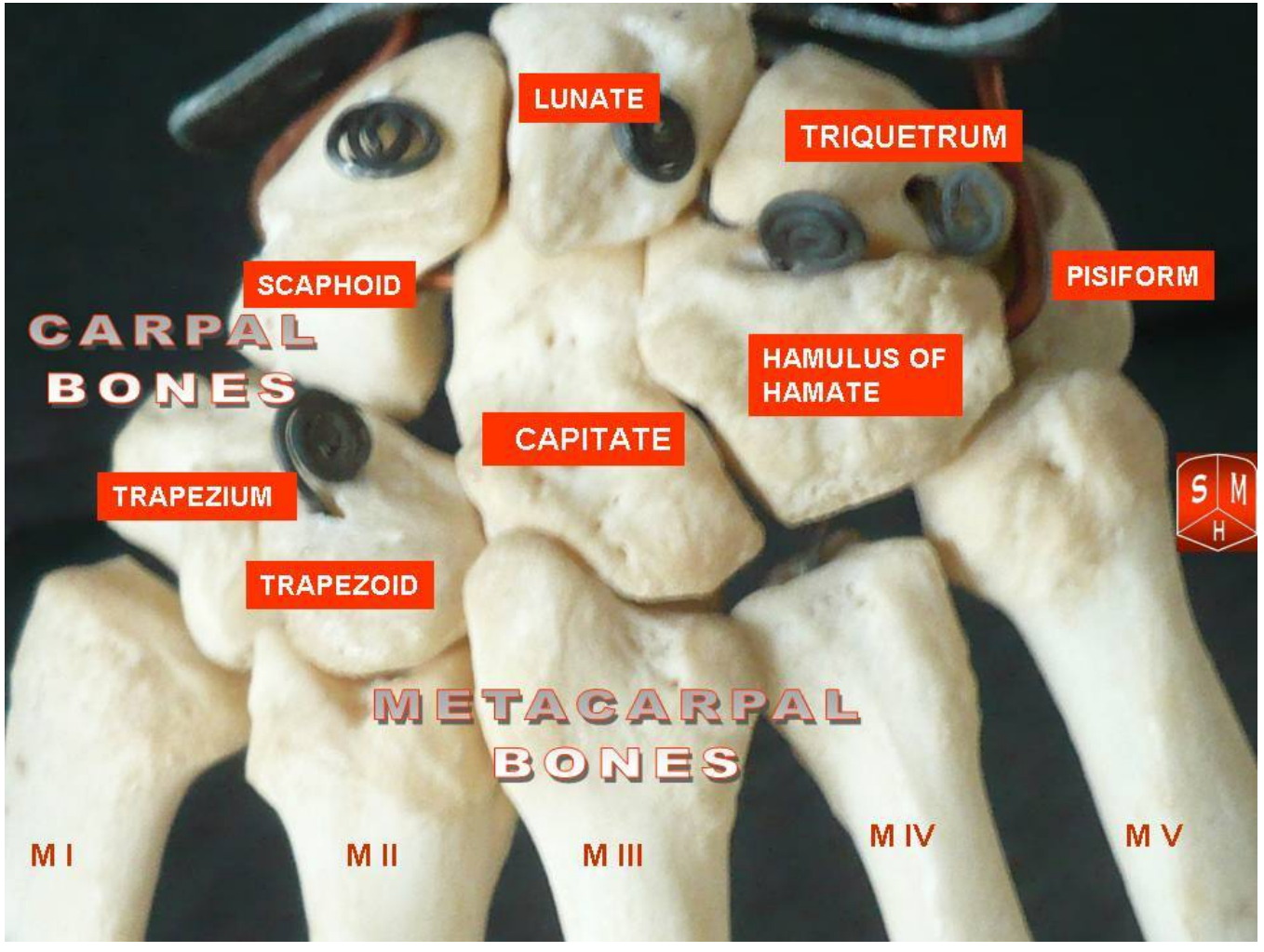
Radius

- second bone of the antibrachium, the distal end runs to the thumb
- proximal head of the radius is disc-like, provides for rotation of the radius (facilitates pronation and supination of the antibrachium)
- interosseous membrane attaches to the interosseous boarders of the ulna and radius (binds bones together)
- distal styloid process of radius, attachment for ligaments supporting the lateral side of the wrist


Radial notch of the ulna
Head of radius
Neck of radius
Radial tuberosity
Olecranon process
Trochlear notch
Coronoid process
Proximal radioulnar joint
Interosseous membrane
Ulna
Radius
Ulnar notch of the radius
Head of ulna
Distal radioulnar joint
Styloid process of ulna
Styloid process of radius
Head of radius
Neck of radius
Radius

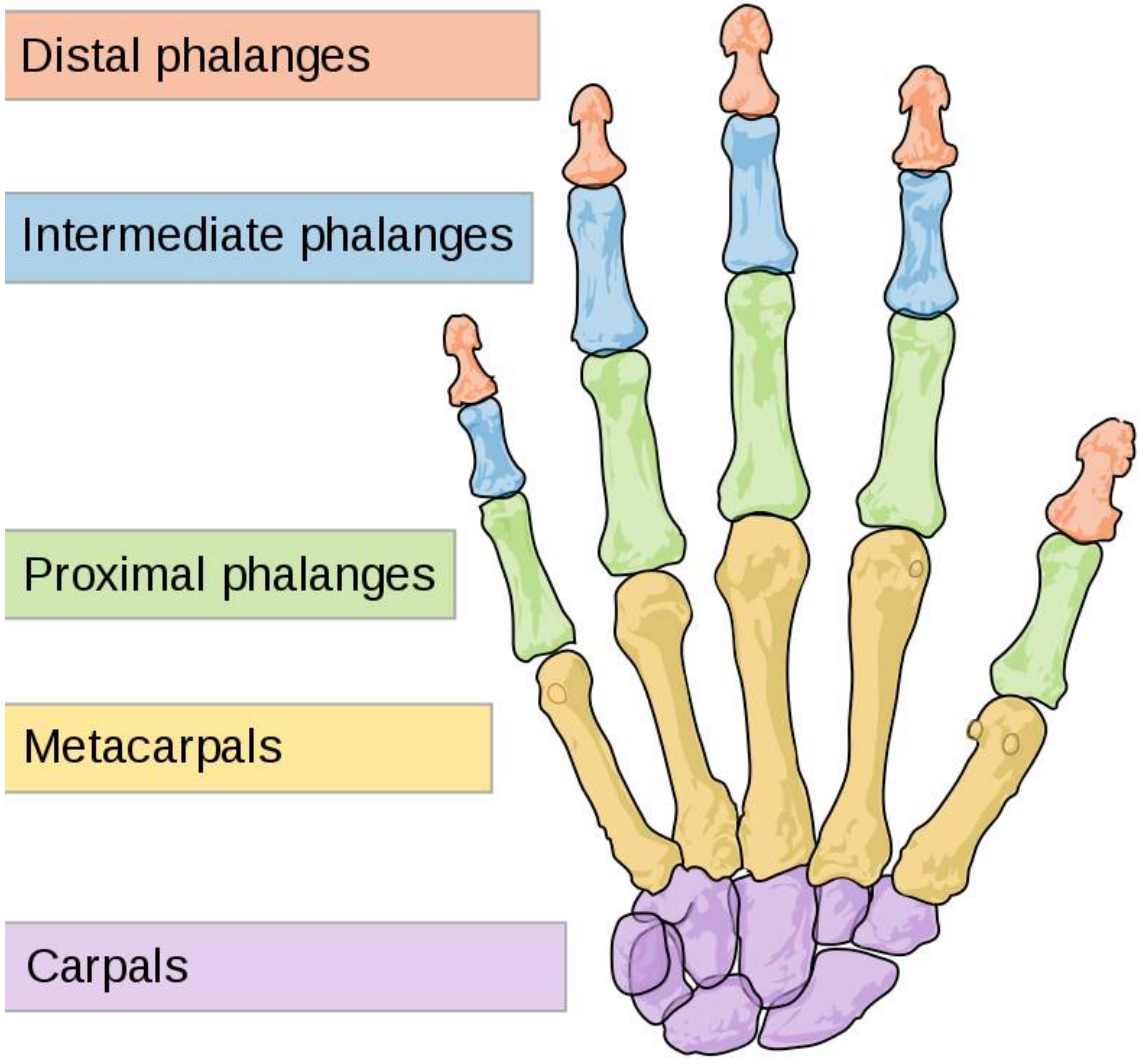
Carpals

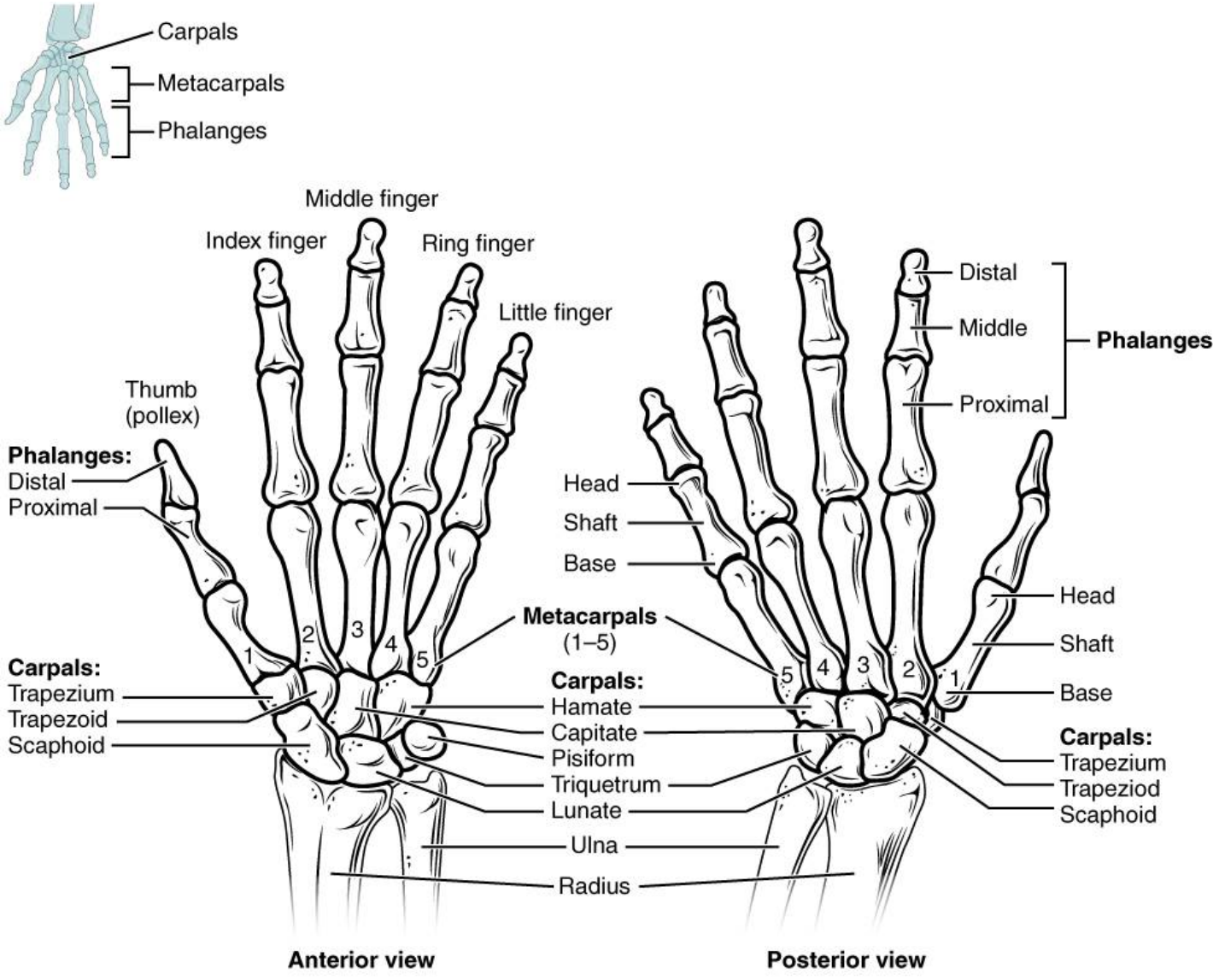
- 8 small bones forming one wrist (two rows of 4)
  - **s**caphoid, **l**unate, **t**riquetrum, **p**isiform
  - **h**amate, **c**apitate, **t**rapeziod, **t**rapezium
    - mnemonic “So Long To Pinky, Here Comes The Thumb” … proximal row near thumb, U-turn, distal row from near pinky (or look up in a textbook when needed, not part of my EDC knowledge unless recently teaching anatomy labs)
    - other mnemonics are out there (Google search)
- flexor retinaculum maintains grouping of the carpal bones (circular compression) with spaces between carpal bones known as the carpal tunnel (passageway for tendons, nerves and blood vessels)


LUNATE
TRIQUETRUM
SCAPHOID
PISIFORM
CARPAL BONES
HAMULUS OF HAMATE
CAPITATE
TRAPEZIUM
TRAPEZOID
METACARPAL BONES
M I
M II
M III
M IV
M V

Metacarpals and Phalanges

- 5 metacarpals per hand, numbered laterally (thumb) to medially (pinky)
- metacarpals form the palmar region of the hand
- phalanges are similarly numbered 1 to 5 (I-V, thumb to pinky)
- each phalanx (singular) is further described as proximal, middle, or distal; however, the thumb (pollex) only has two bones (proximal and distal)


Distal phalanges
Intermediate phalanges
Proximal phalanges
Metacarpals
Carpals


Carpals
Metacarpals
Phalanges
Middle finger
Index finger
Ring finger
Little finger
Thumb
(pollex)
Phalanges:
Distal
Proximal
Carpals:
Trapezium
Trapezoid
Scaphoid
1
2
3
4
5
Metacarpals
(1–5)
Carpals:
Hamate
Capitate
Pisiform
Triquetrum
Lunate
Ulna
Radius
Anterior view
Distal
Middle
Proximal
Phalanges
Head
Shaft
Base
Head
Shaft
Base
Carpals:
Trapezium
Trapeziod
Scaphoid
Posterior view

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References

- Betts J, Desaix P, Johnson E, et al. 2017. Anatomy & Physiology. OpenStax, Houston, TX.
- Saladin KS. 2010. Anatomy and Physiology: The Unity of Form and Function, 5th Edition. McGraw Hill Higher Education, Boston, MA.