
The upper limb

Muscles That Move the Pectoral Girdle

- Originate on the axial skeleton and insert on the clavicle and scapula.
 - Stabilize the scapula and move it to increase the arm's angle of movements.
 - Some of the superficial muscles of the thorax are grouped together according to the scapular movement they direct.
 - elevation, depression, protraction, or retraction
-

The muscles of back

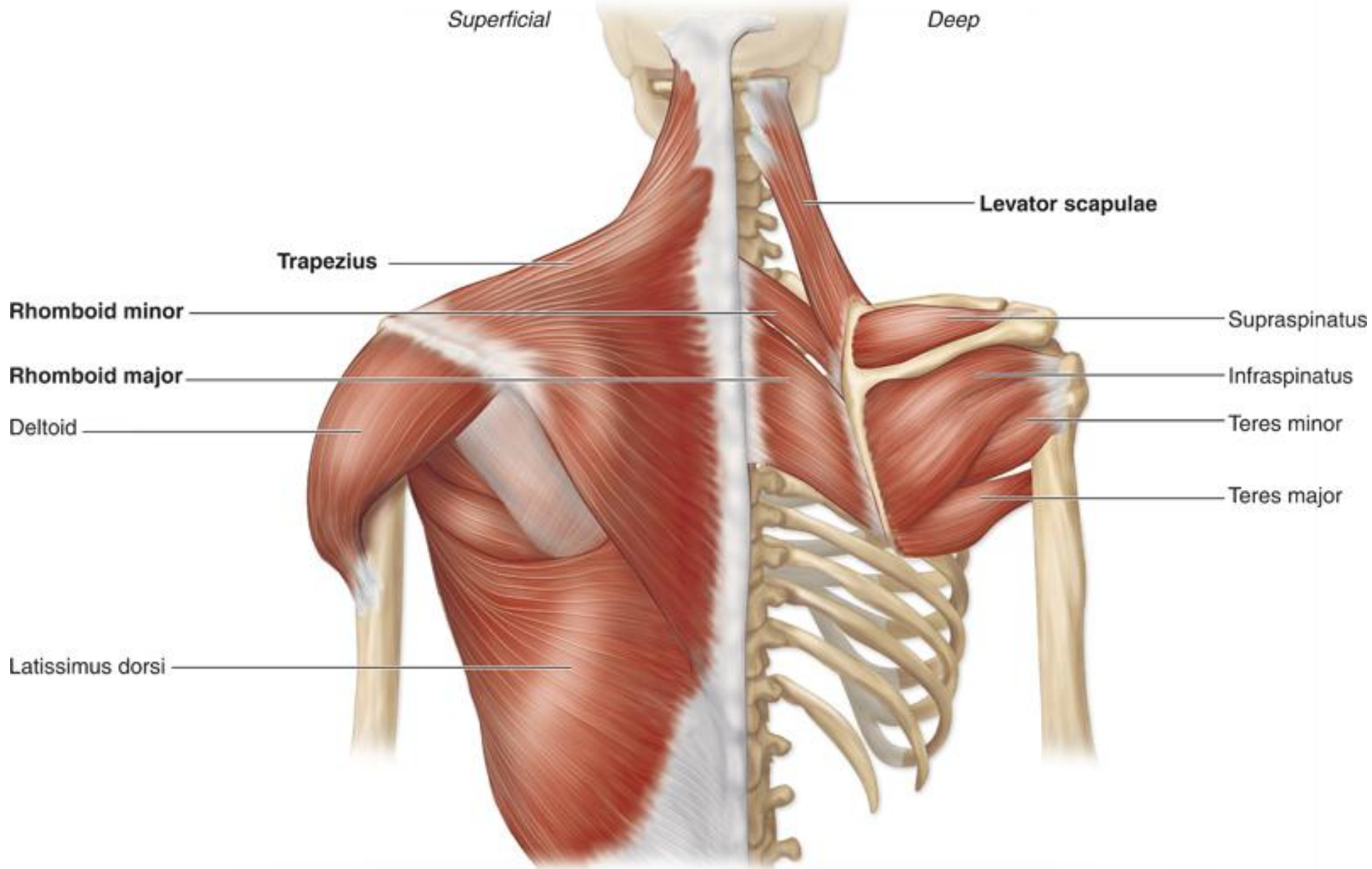
Superficial group

- Trapezius
- Latissimus dorsi
- Levator scapulae
- Rhomboideus

Deep group

- Erector spinae
- Splenius
- Thoracolumbar fascia





The muscles of thorax

Extrinsic muscles

- Pectoralis major
- Pectoralis minor
- Serratus anterior

Intrinsic muscles

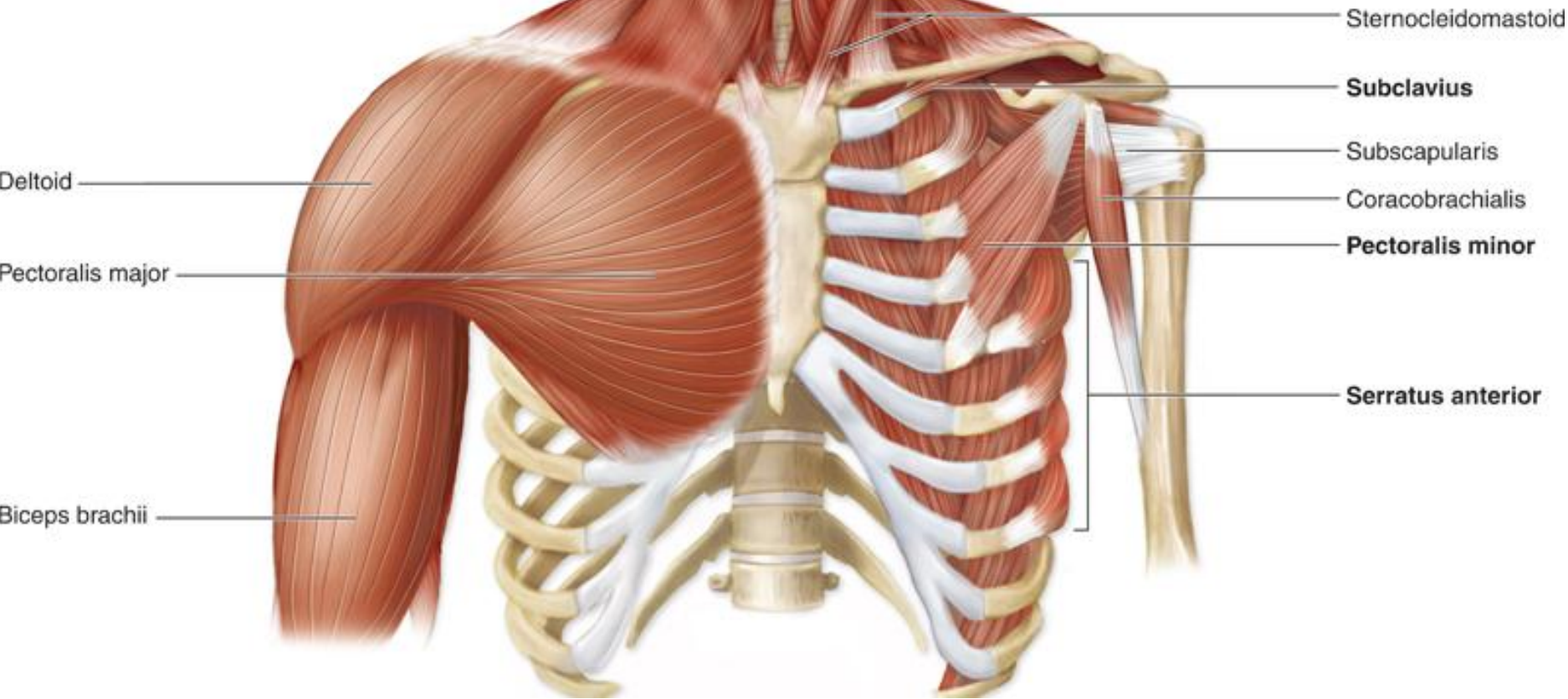
- Intercostales externi
- Intercostales interni
- Intercostales intimi



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Superficial

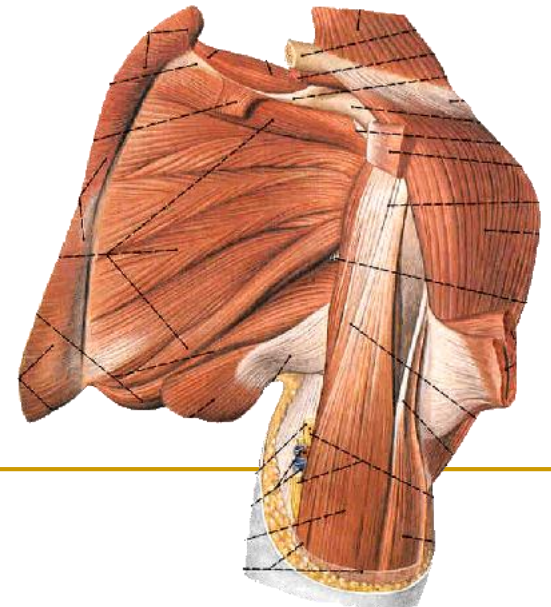
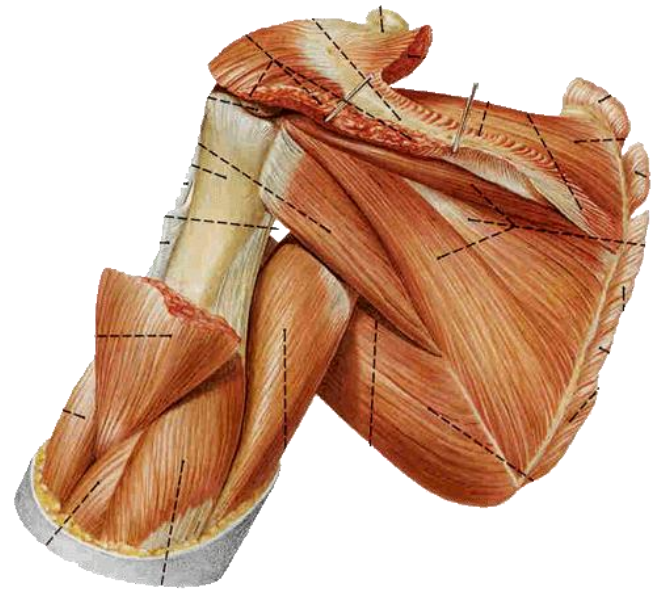
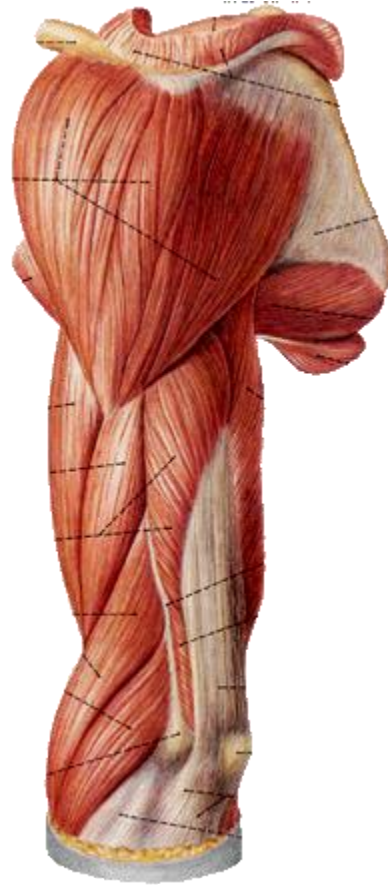
Deep



The Muscles of Upper Limb

Muscles of shoulder

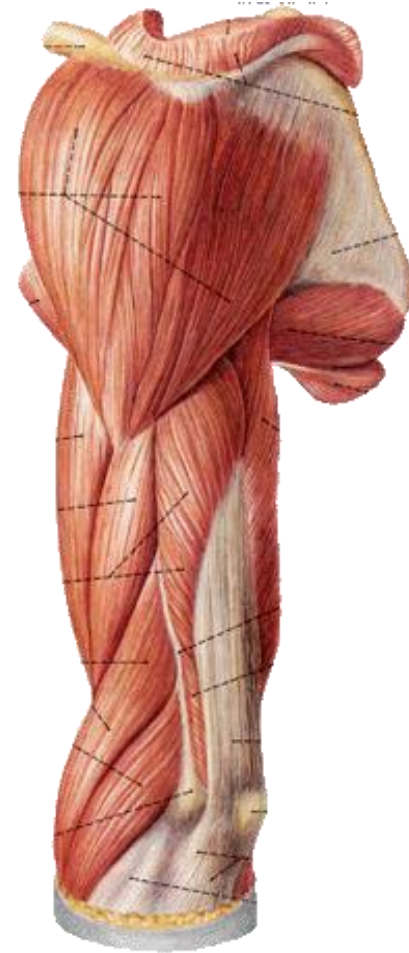
- Deltoid
- Supraspinatus
- Infraspinatus
- Teres minor
- Teres major
- Subscapularis



Major muscles of shoulder

Deltoid

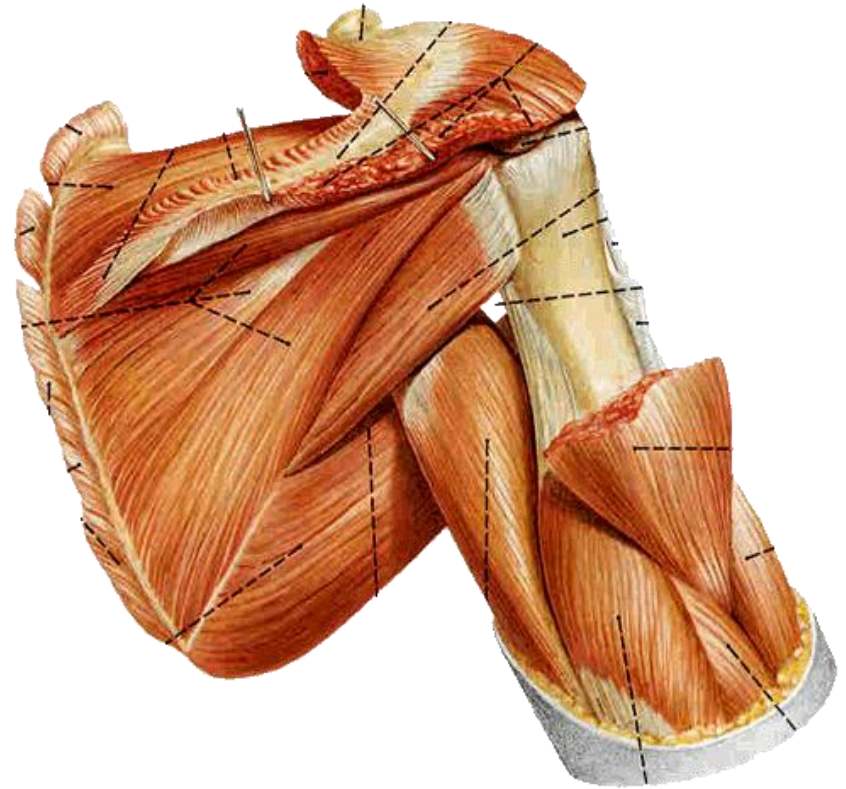
- **Origin:** lateral third of clavicle, acromion, and spine of scapula
- **Insertion:** deltoid tuberosity of humerus
- **Action:** abduction, flexion and extension, medial and lateral rotation of arm



Major muscles of shoulder

Teres major

- **Origin:** dorsal surface of inferior angle of scapula
- **Insertion:** crest of lesser tubercle of humerus
- **Action:** medially rotates and adducts arm

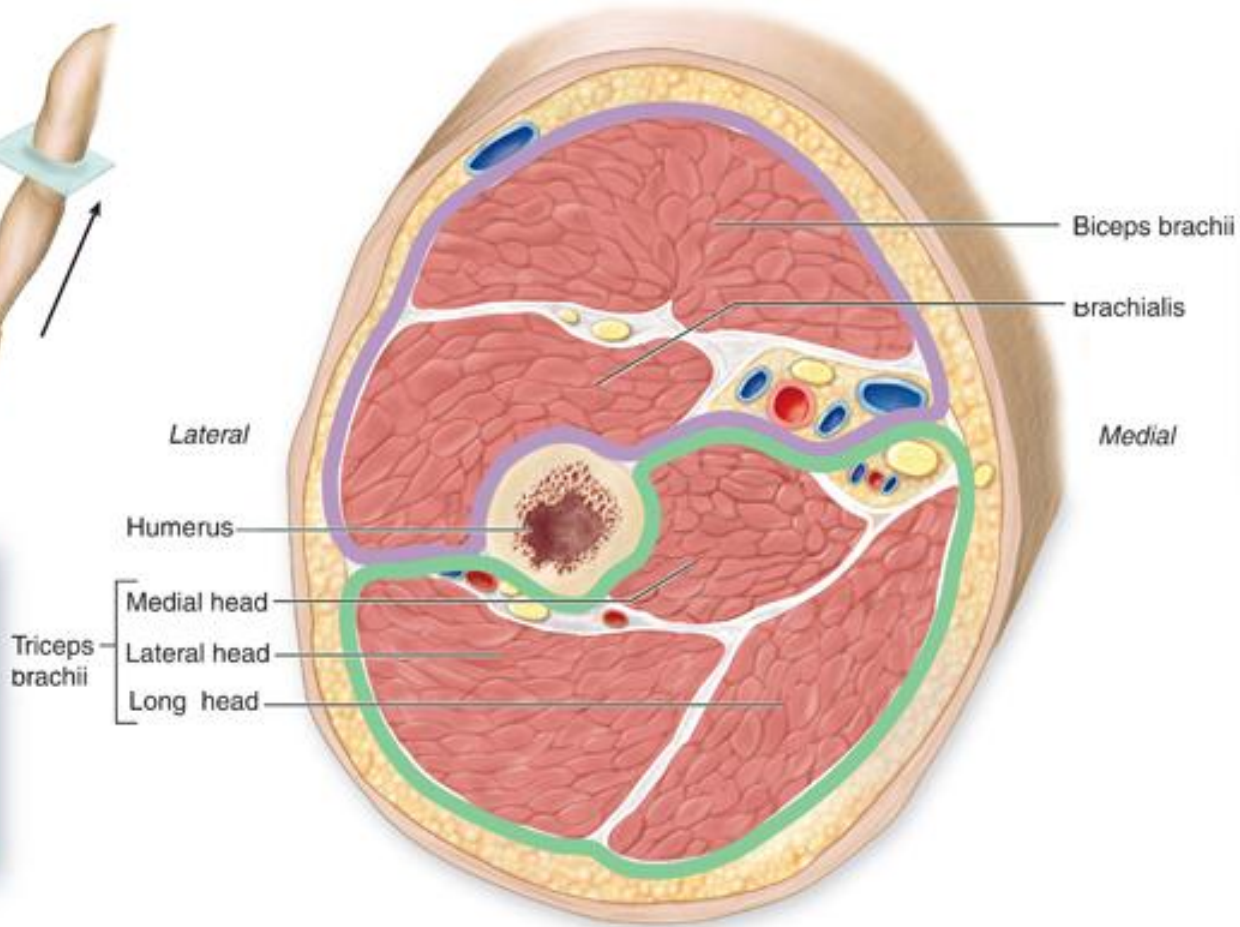
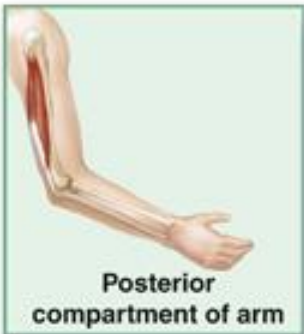
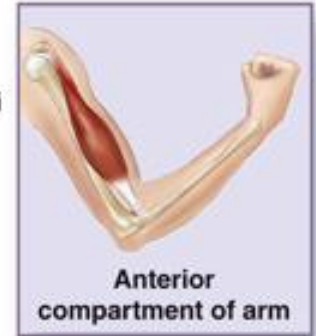


Arm and Forearm Muscles That Move the Elbow Joint/Forearm

- Anterior (flexor) compartment
 - Posterior (extensor) compartment
 - Anterior compartment
 - primarily contains **elbow flexors**
 - Posterior compartment contains **elbow extensors**
 - the principal **flexors**
 - biceps brachii, brachialis, and brachioradialis
 - muscles that **extend** the elbow joint
 - triceps brachii and anconeus
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Anterior



Posterior

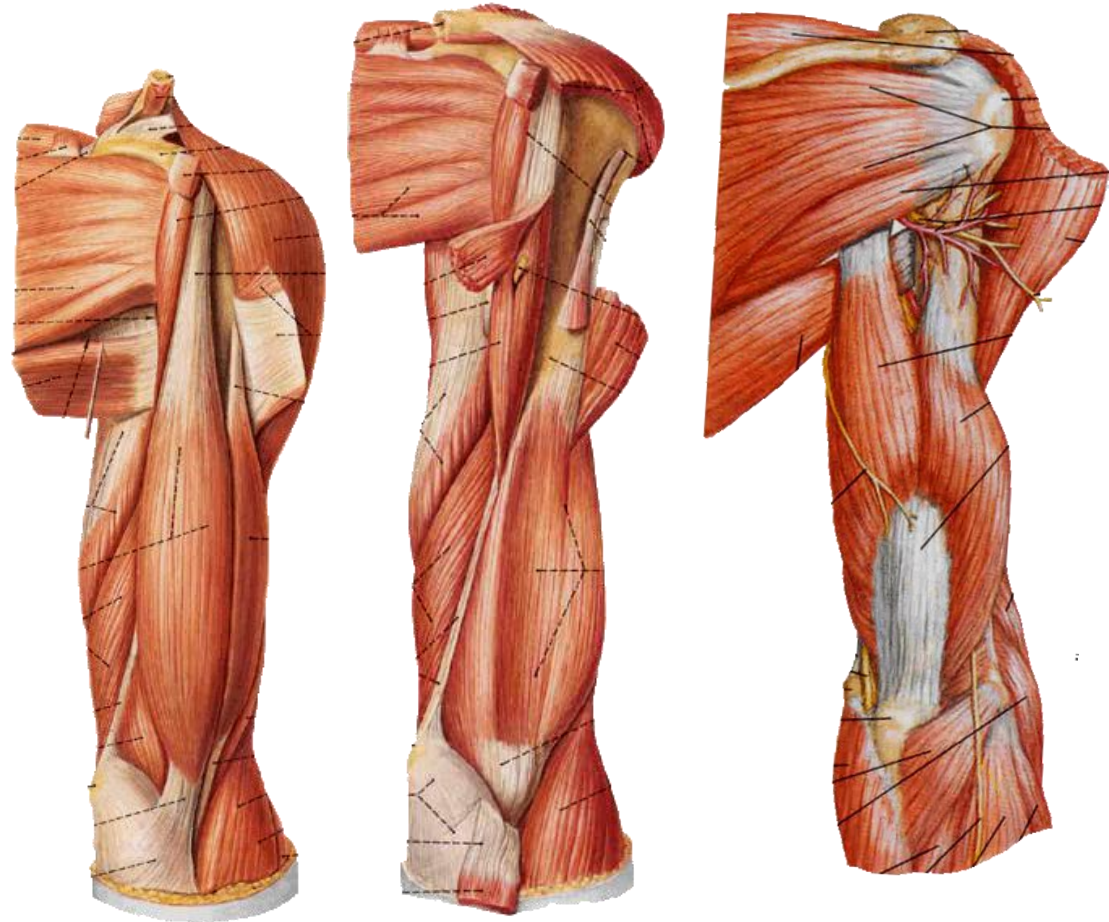
Muscles of arm

- **Anterior group**

- Biceps brachii
- Coracobrachialis
- Brachialis

- **Posterior group**

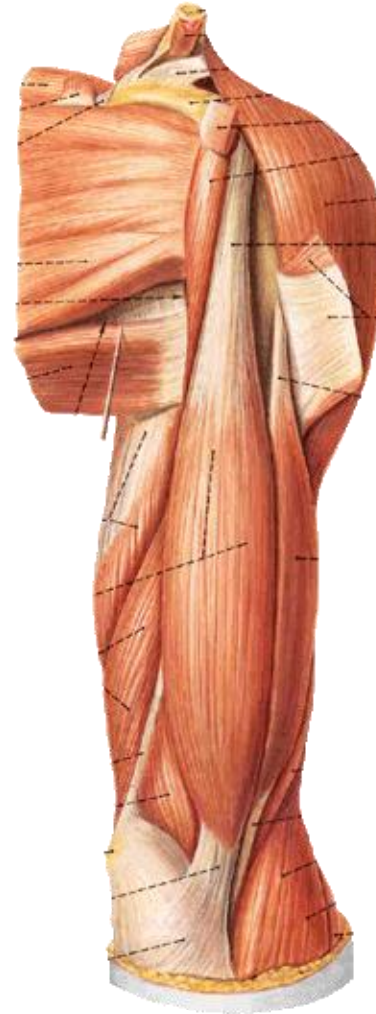
- triceps brachii
- anconeus



Muscles of arm

Biceps brachii

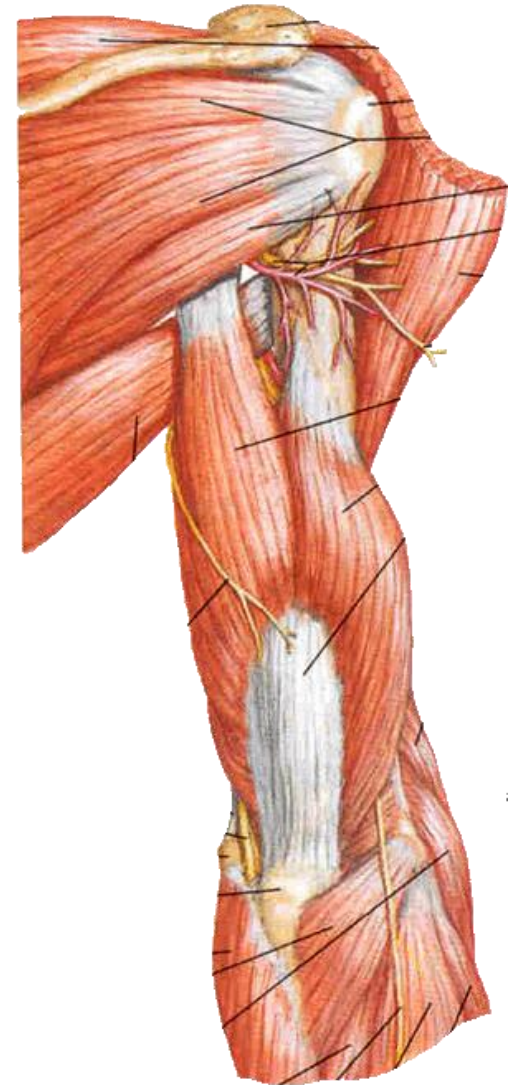
- **Origin:** long head, supraglenoid tubercle; short head, coracoid process
- **Insertion:** radial tuberosity
- **Action:** supinator of forearm, flexor of elbow joint, weak flexor of shoulder joint



Muscles of arm

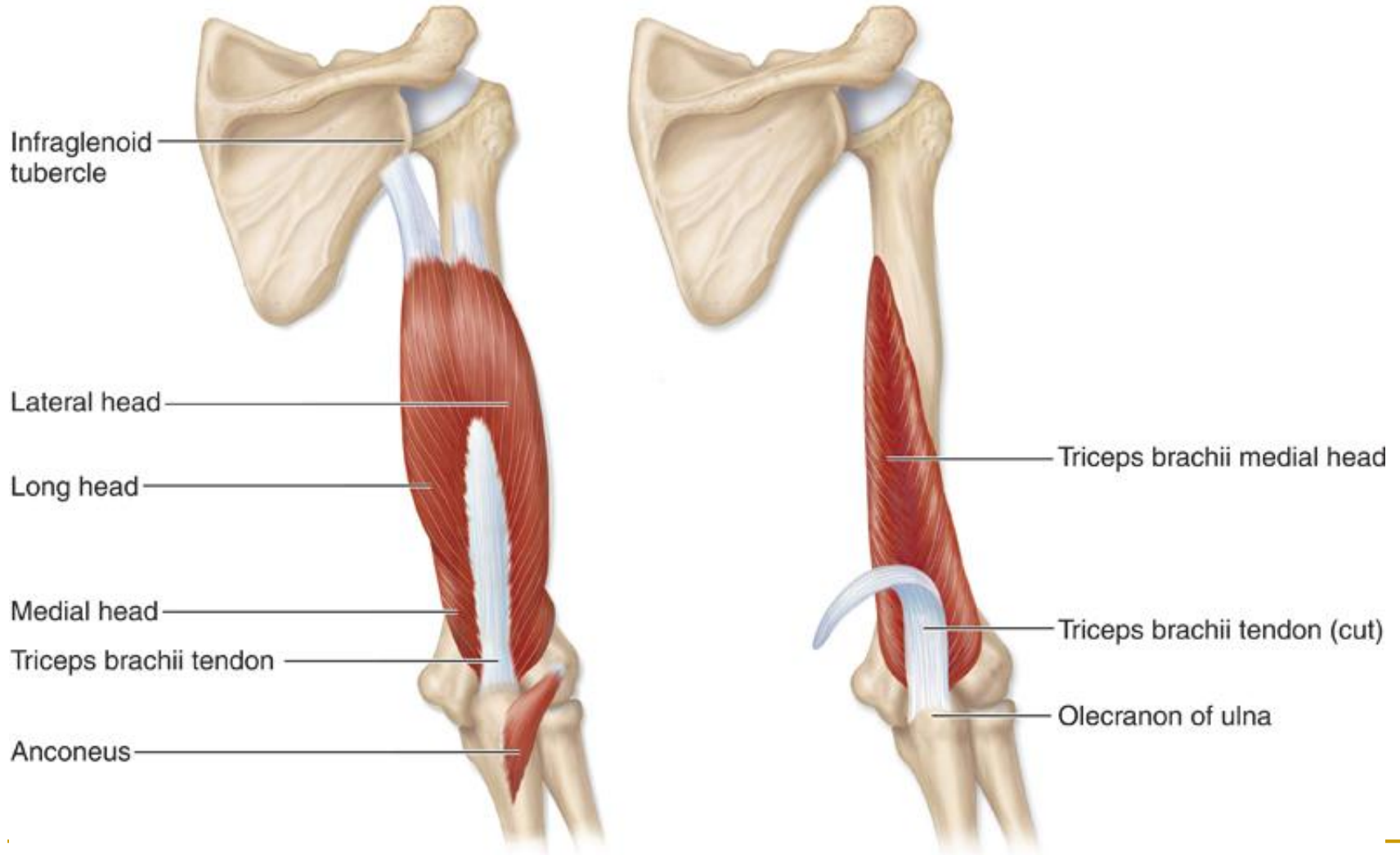
Triceps brachii

- **Origin:**
 - *long head*, infraglenoid tubercle
 - *lateral head*, above groove for radial nerve
 - *medial head*, below groove for radial nerve
- **Insertion:** olecranon of ulna
- **Action:** extends elbow joint, long head extends and adducts shoulder joint



Triceps brachii

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Superficial *Deep*



(b) Posterior muscles

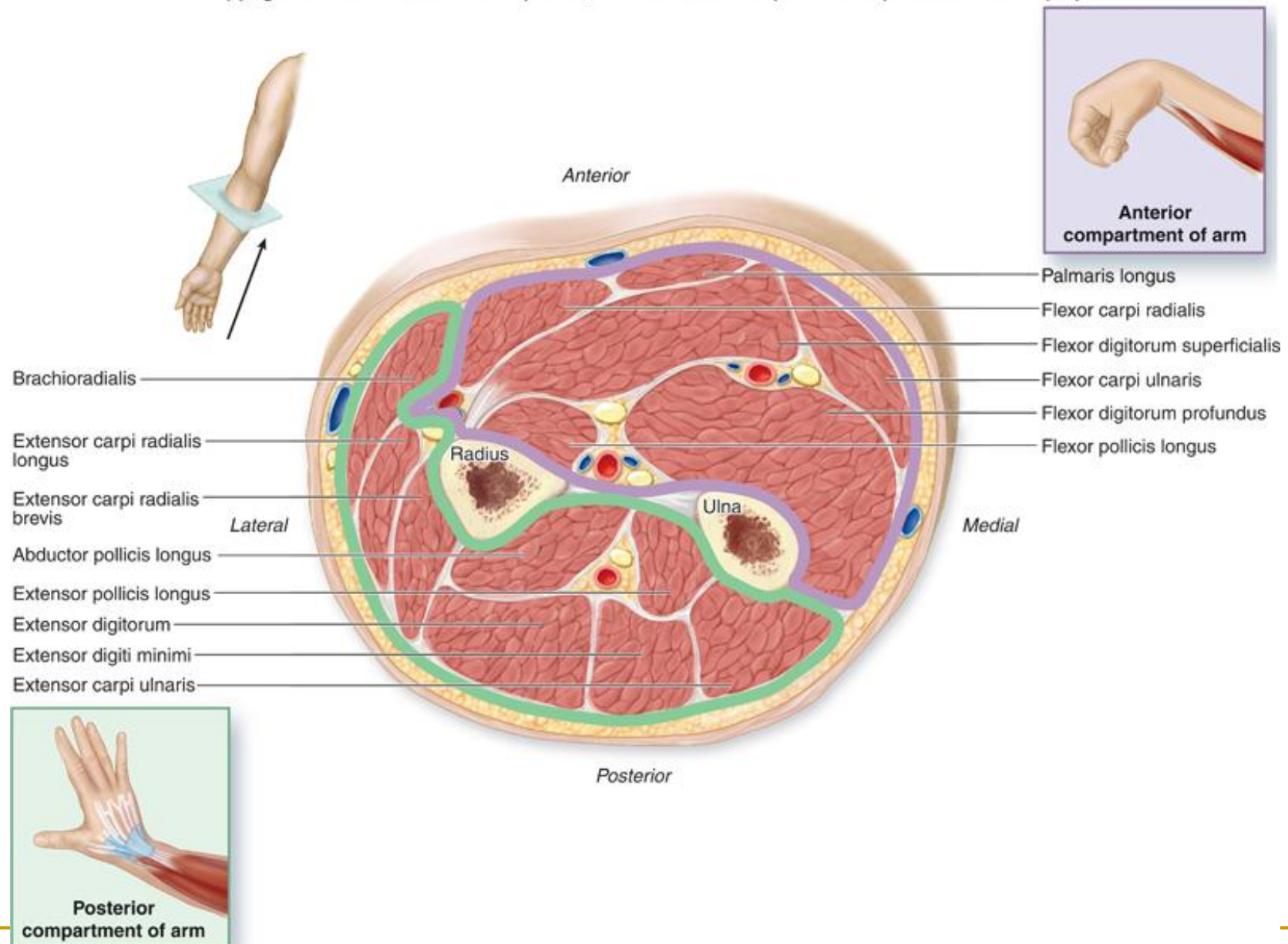
Forearm Muscles

Supinate and Pronate

- **Supinator muscle** supinates the forearm.
- **Biceps brachii** supinates the forearm.
- **Pronator teres** and **pronator quadratus** pronate the forearm.

Move the Wrist Joint, Hand, and Fingers

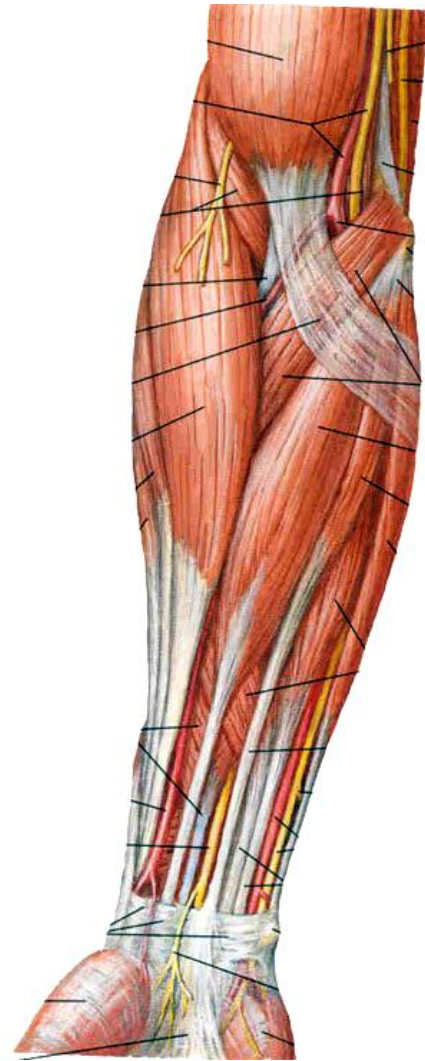
- Muscles in the forearm move the hand at the wrist and/or the fingers.
 - Extrinsic muscles of the wrist and hand originate on the forearm, not the wrist or hand.
 - Tendons of forearm muscles typically are surrounded by tendon (synovial) sheaths and held adjacent to the skeletal elements by strong fascial structures.
 - At the wrist, the deep fascia of the forearm forms thickened, fibrous bands termed **retinacula**.
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Muscles of forearm

■ Superficial layer

- Pronator teres
- Flexor carpi radialis
- Palmaris longus
- Flexor carpi ulnaris



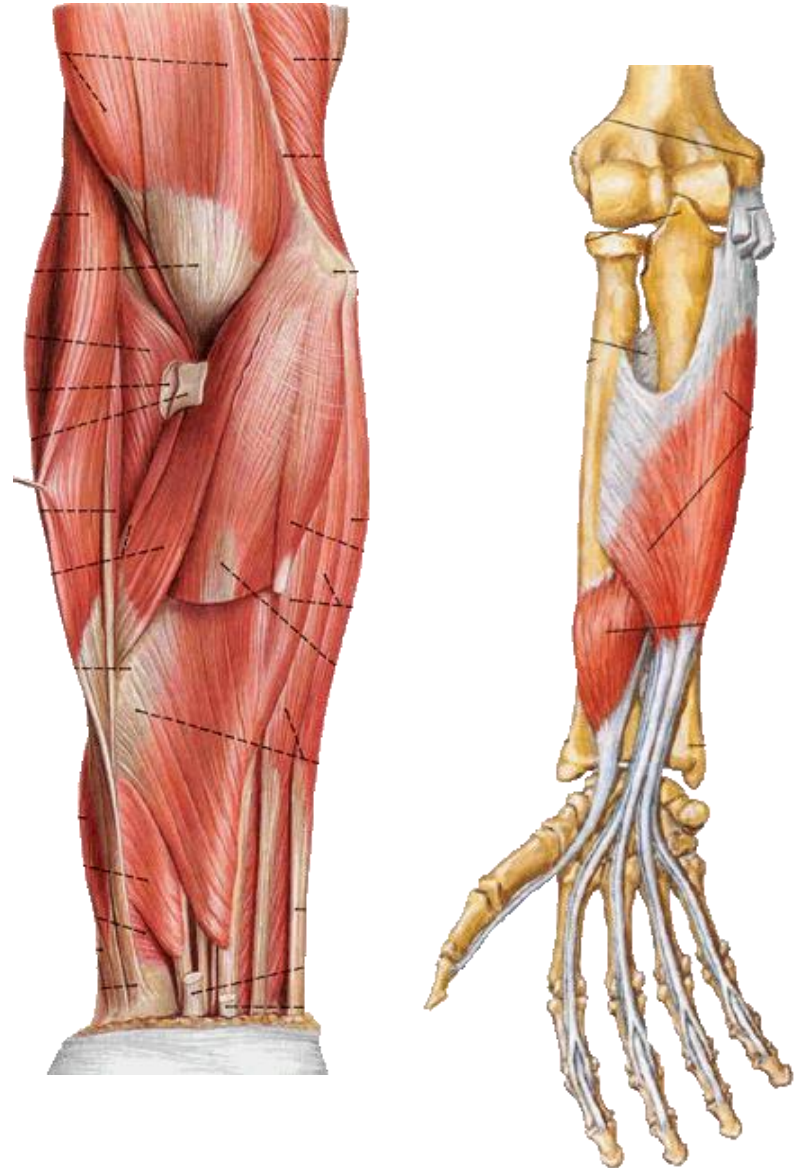
Muscles of forearm

Pronator teres

- **Origin:** medical epicondyle of humerus and deep fascia of forearm
- **Insertion:** middle of lateral surface of radius
- **Action:** pronation of forearm and flexion of elbow



- **Second layer**
Flexor digitorum superficialis



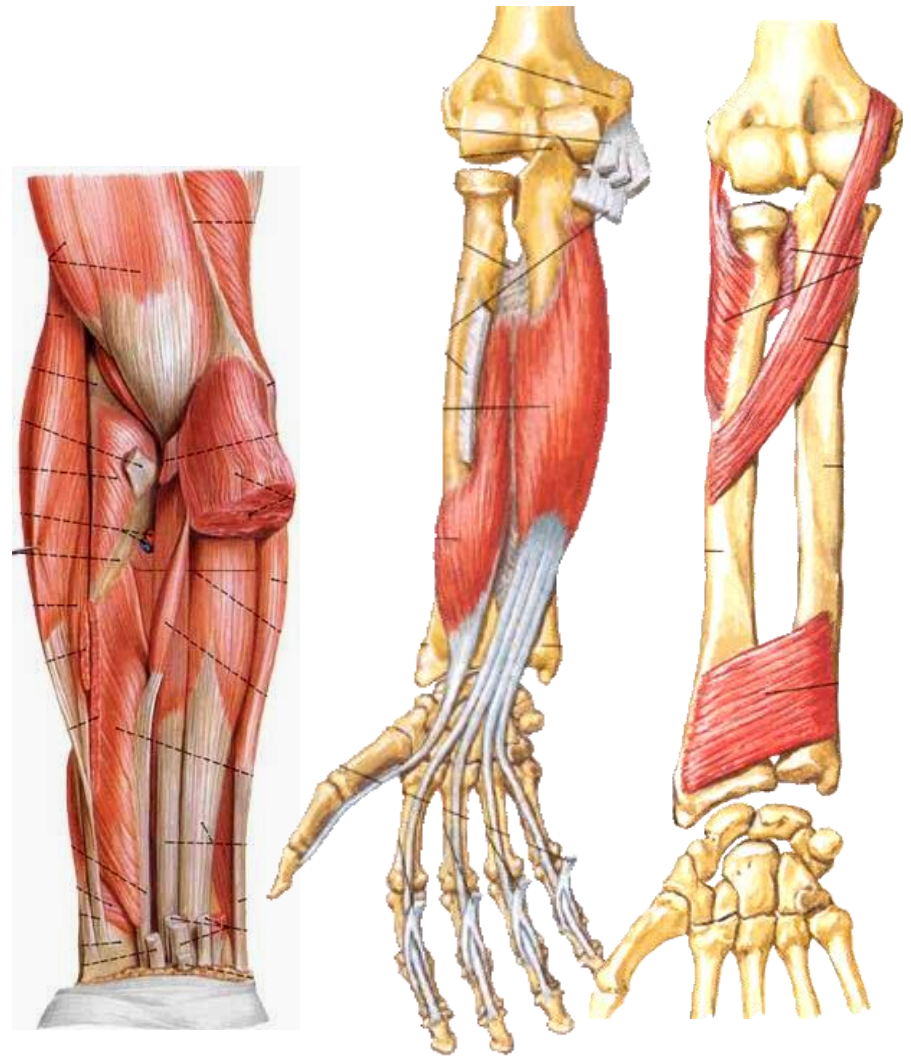
- **Third layer**

- Flexor digitorum profundus
- Flexor pollicis longus

- **Fourth layer**

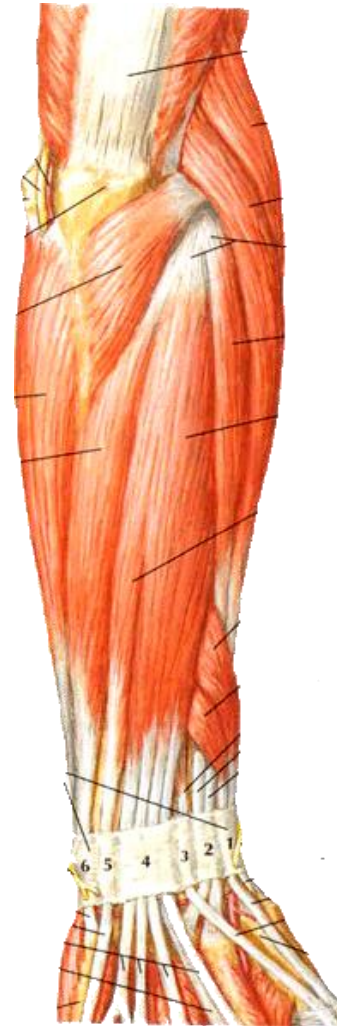
- Pronator quadratus

Action: flex radiocarpal joint and fingers, pronate forearm



Lateral group (3)

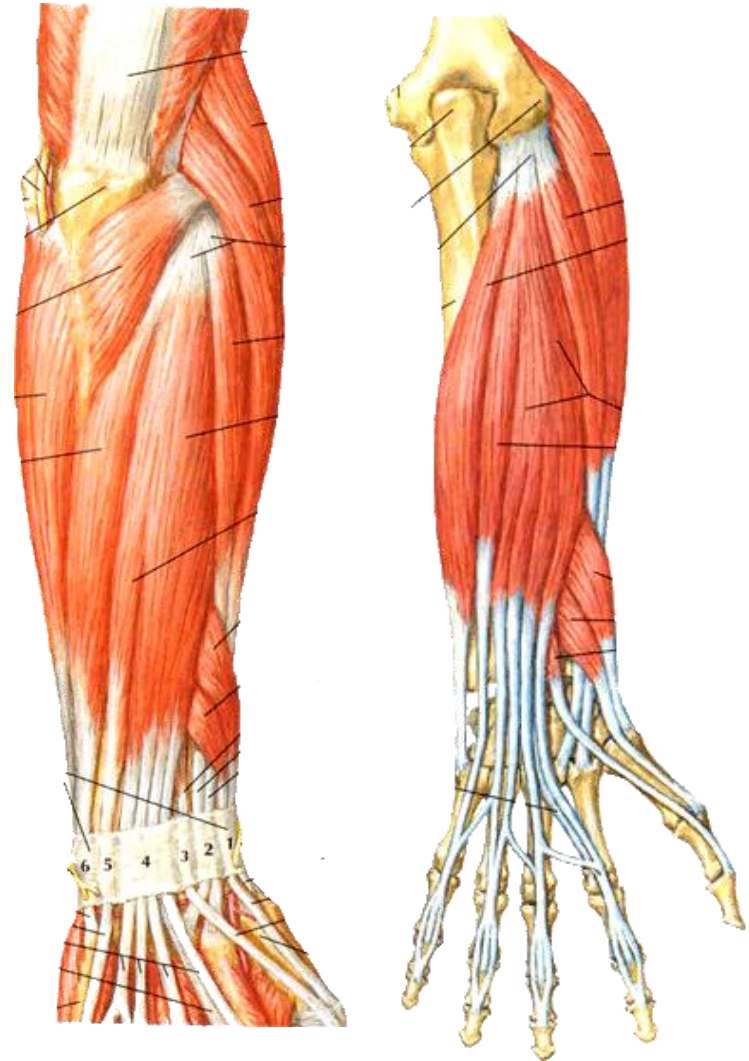
- ❑ Brachioradialis
- ❑ Extensor carpi radialis longus
- ❑ Extensor carpi radialis brevis



Posterior group (8)

■ Superficial layer (3)

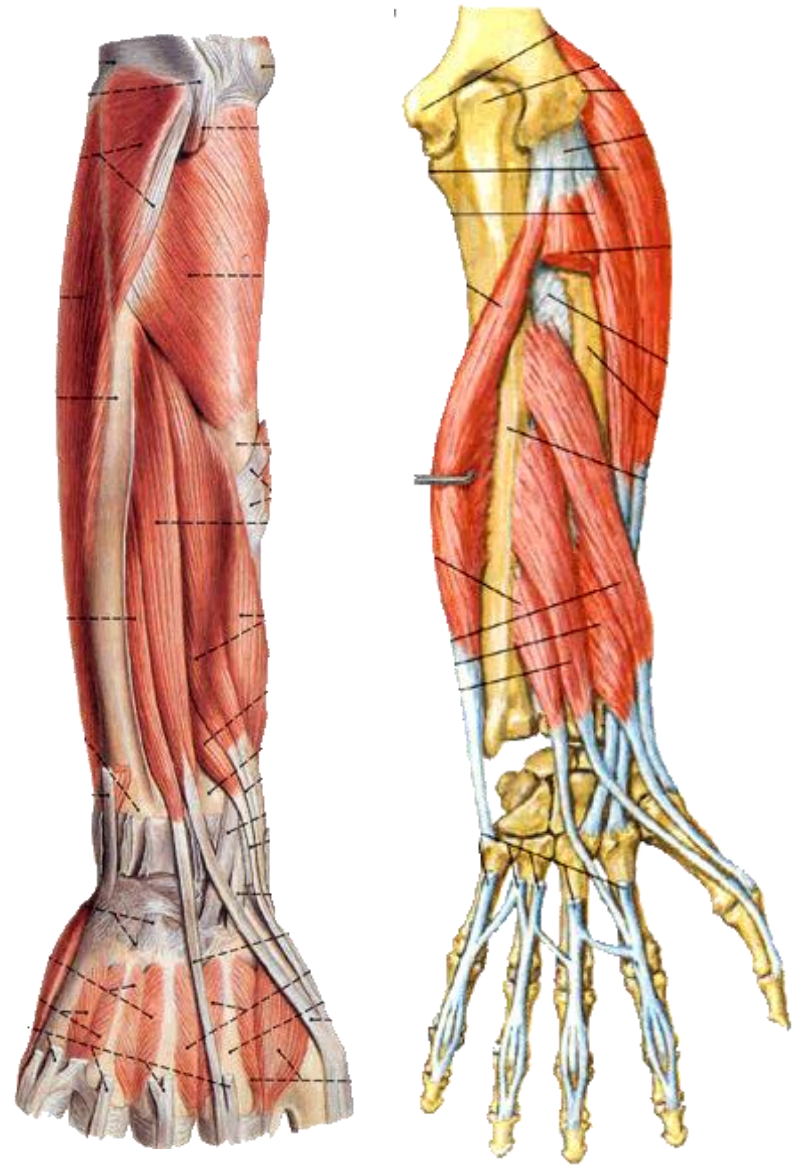
- ❑ Extensor digitorum
Extensor digiti minimi
- ❑ Extensor carpi ulnaris
- ❑ Action: extension at wrist joint



Posterior group (8)

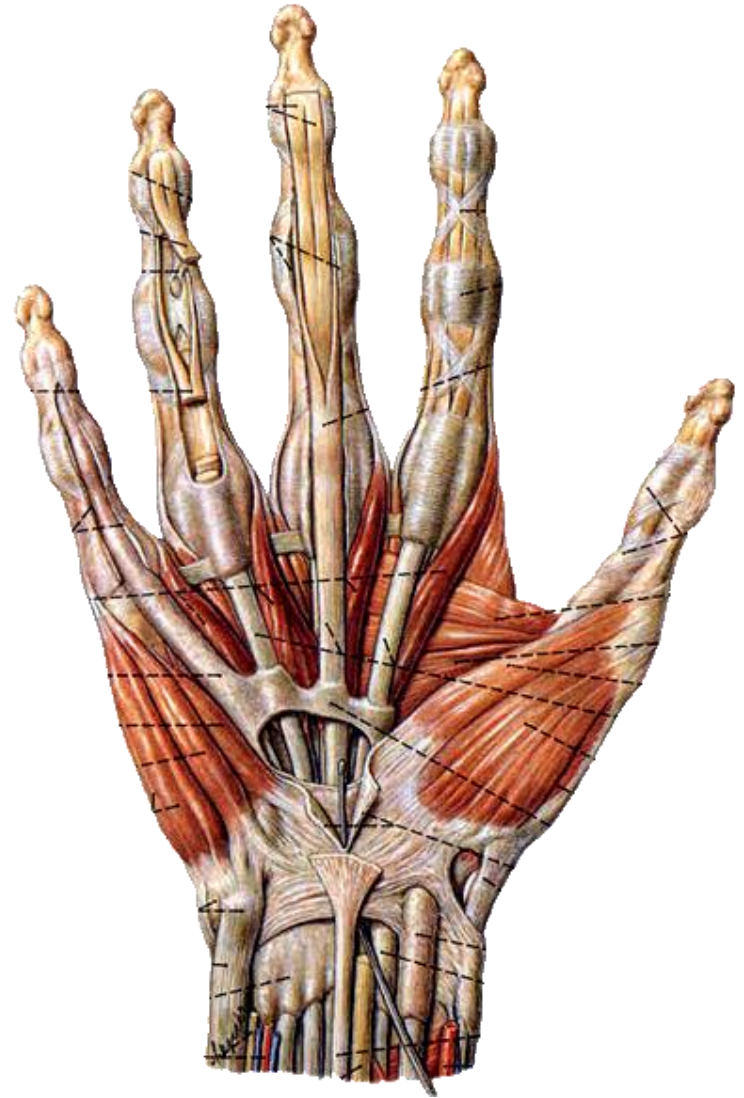
Deep layer (5)

- Supinator
- Abductor pollicis longus
- Extensor pollicis brevis
- Extensor pollicis longus
- Extensor indicis
- Action: extend at wrist joint and fingers, and supinate forearm



Muscles of hand

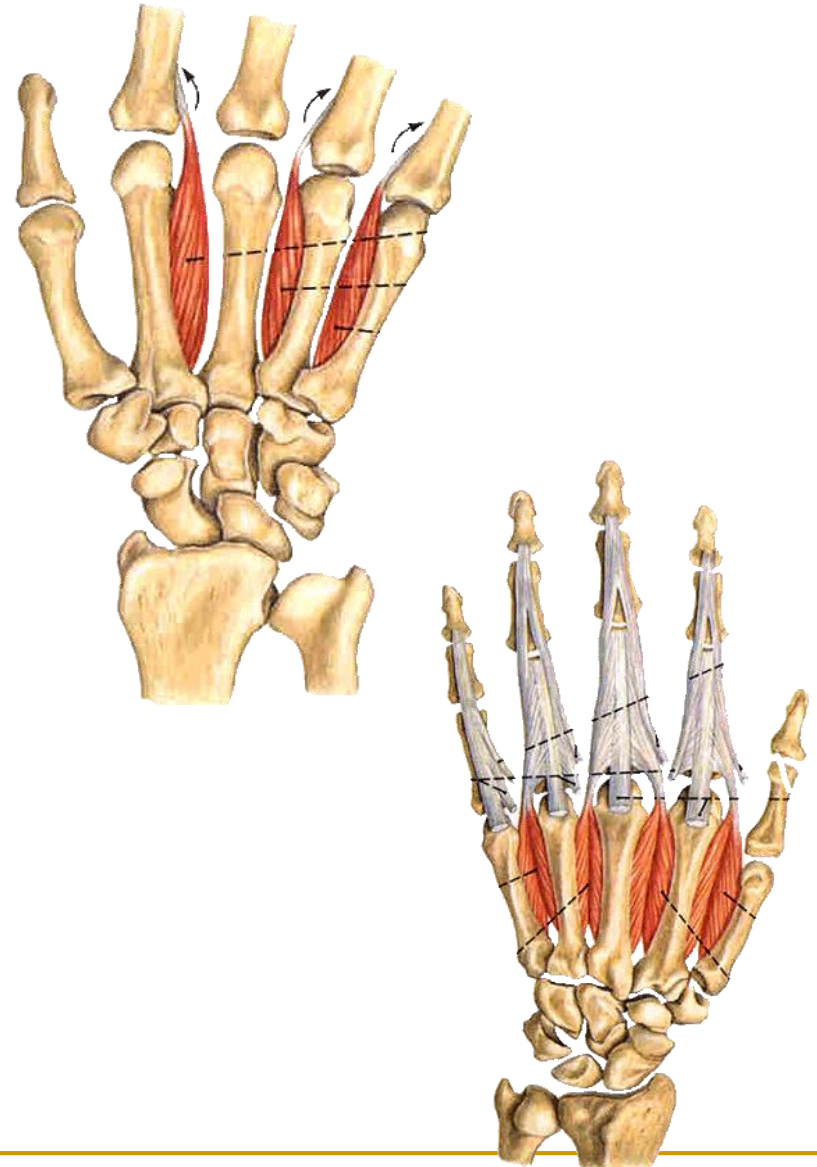
- **Lateral group thenar (4)**
 - Abductor pollicis brevis
 - Flexor pollicis brevis
 - Opponens pollicis
 - Adductor pollicis
- Action: flex, abduct, adduct and oppose thumb
- **Medial group hypothenar (3)**
 - Abductor digiti minimi
 - Flexor digiti minimi brevis
 - Opponens digiti minimi
- Action: flex, abduct , and oppose little finger



Muscles of hand

Intermedial group

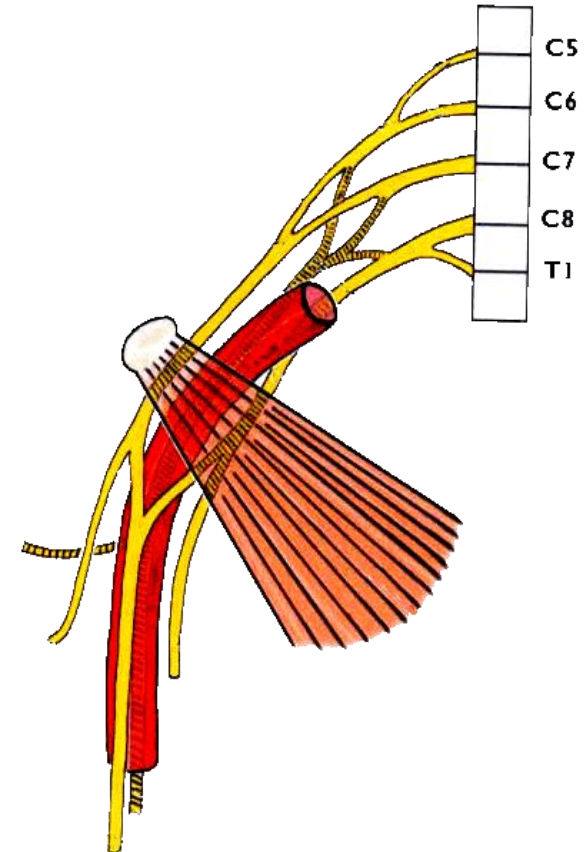
- **Lumbricales** (4) flex fingers at MP joints; extend fingers at IP joints
- **Palmar interossei** (3) adduct fingers towards middle finger at MP joints
- **Dorsal interossei** (3) abduct fingers away from middle finger at MP joints



Brachial plexus

Formation:

- Five roots: formed by anterior rami of C5-C8 and T1 spinal nerves, roots C5-C7 give rise to **long thoracic n.**
- Three trunks
 - The upper trunk is formed by the joining of root C4, C5, C6.
 - The middle trunk is the continuation of root C7.
 - The lower trunk is formed by the joining of root C8 and T1.
- Six divisions: above clavicle, trunks form anterior and posterior divisions
- Three cords: below clavicle, divisions form three cords that surround the second portion of axillary a.

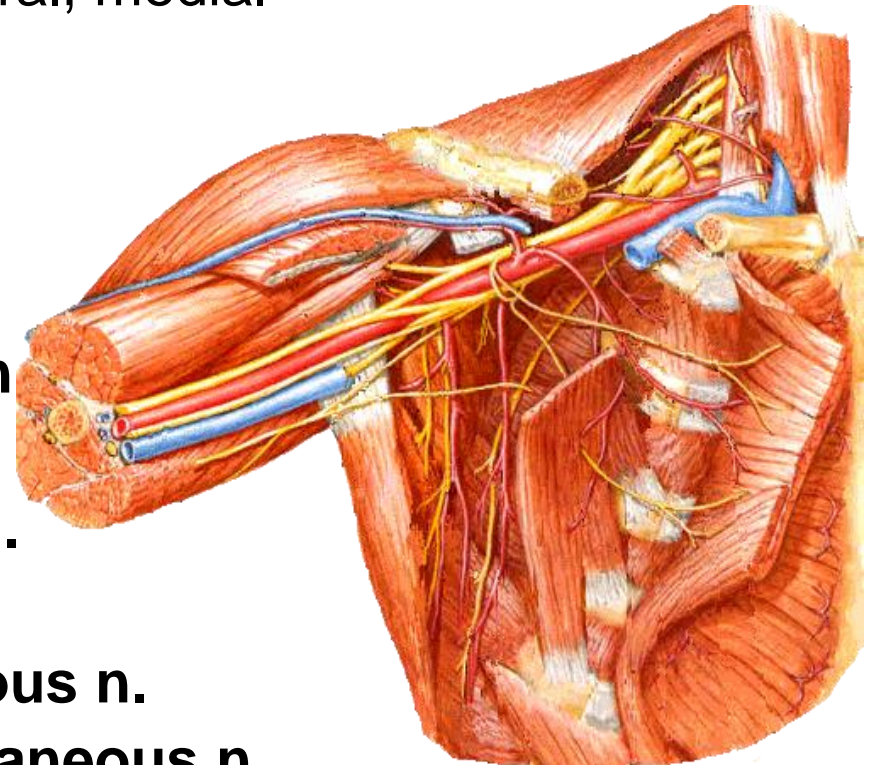


Position:

passes through the scalene fissure to posterosuperior of subclavian artery, then enters the axilla to form lateral, medial and posterior cords

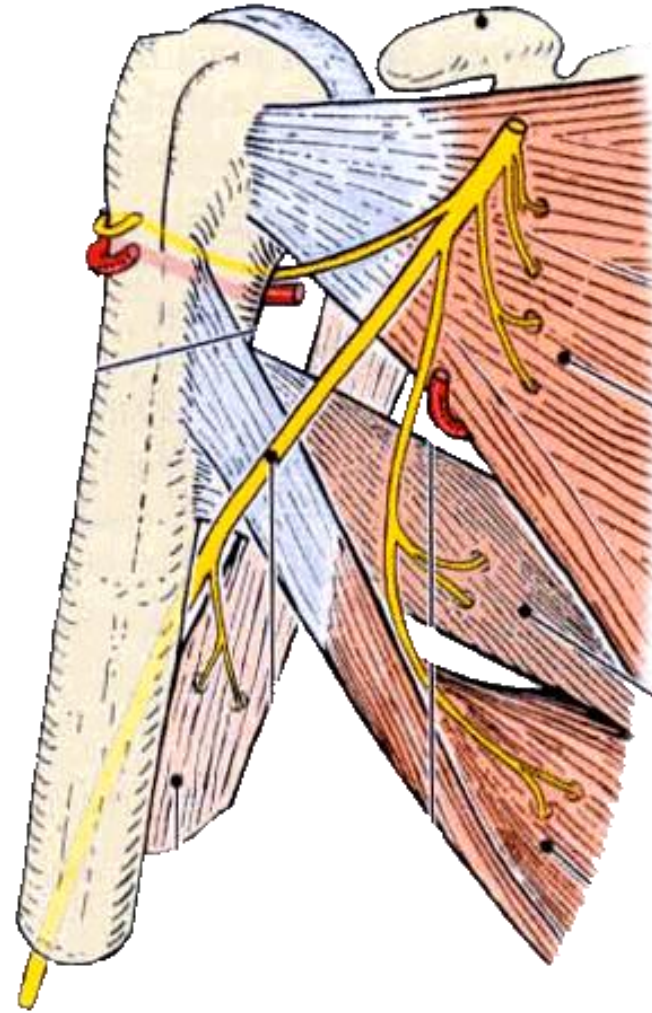
Main branches

- **Lateral cord**
 - Musculocutaneous n.
 - Lateral root to median n.
- **Medial cord**
 - Medial root to median n.
 - Ulnar n.
 - Medial brachial cutaneous n.
 - Medial antebrachial cutaneous n.



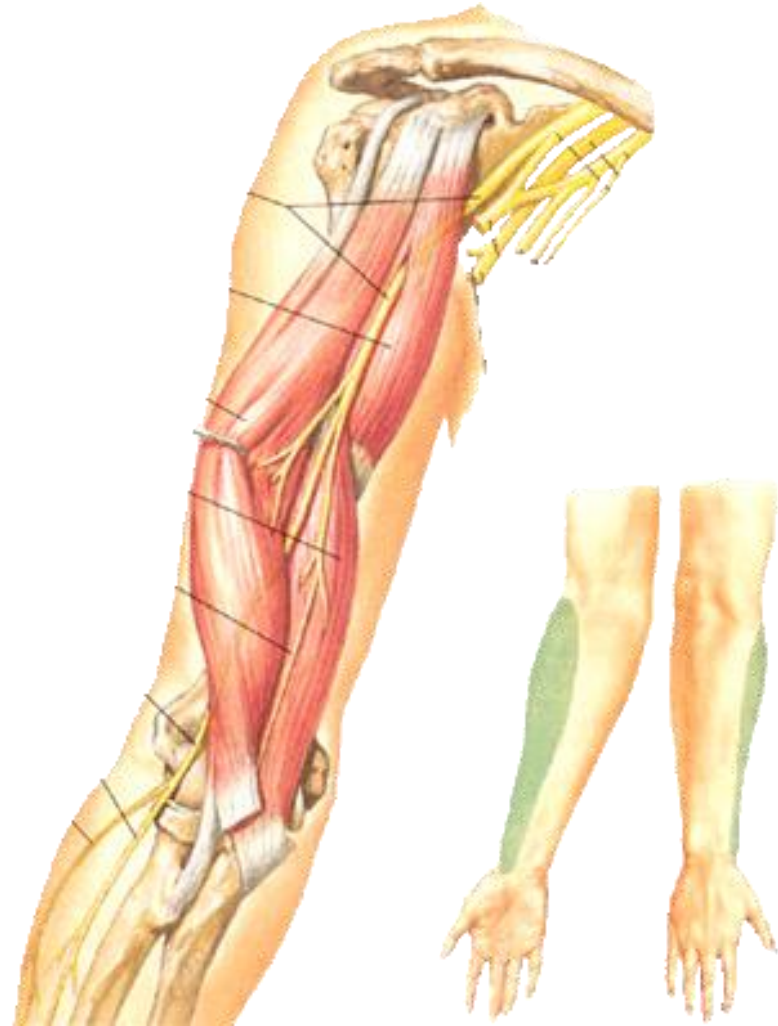
- **Posterior cord**

- radial n.
- axillary n.
- thoracodorsal n.



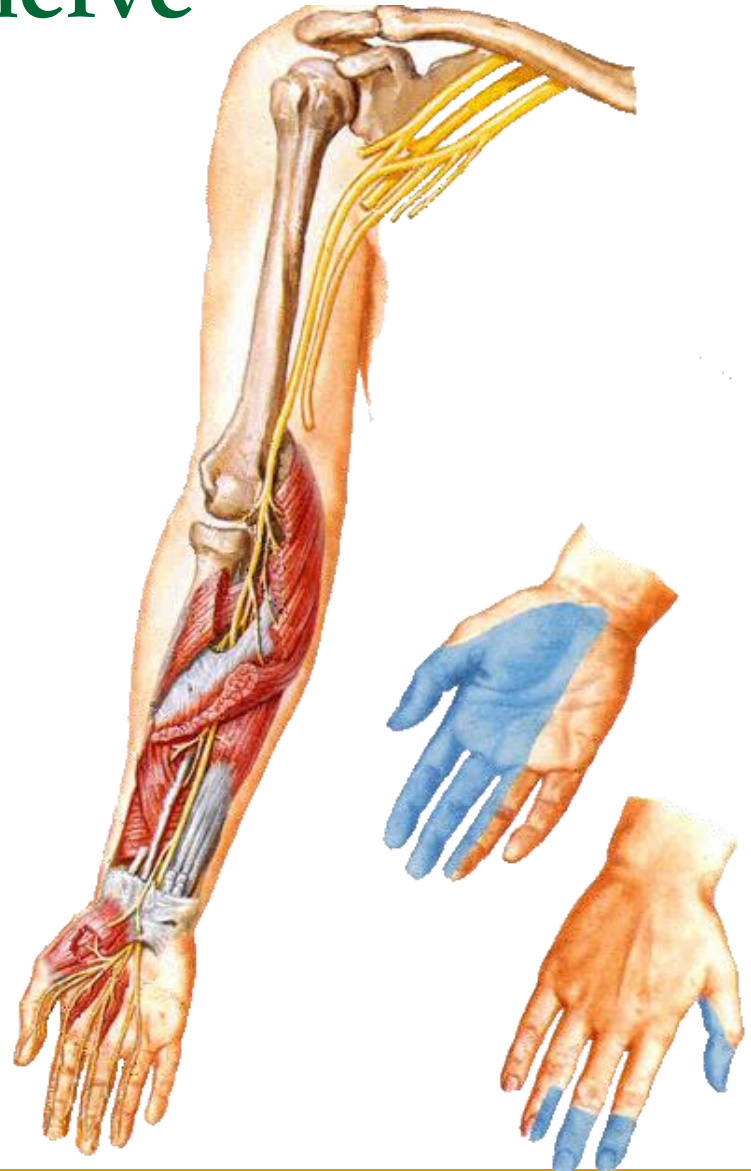
- **Musculocutaneous**

Distribution: Biceps brachii, brachialis and coracobrachialis 'BBC nerve'; skin on anterior aspect of forearm



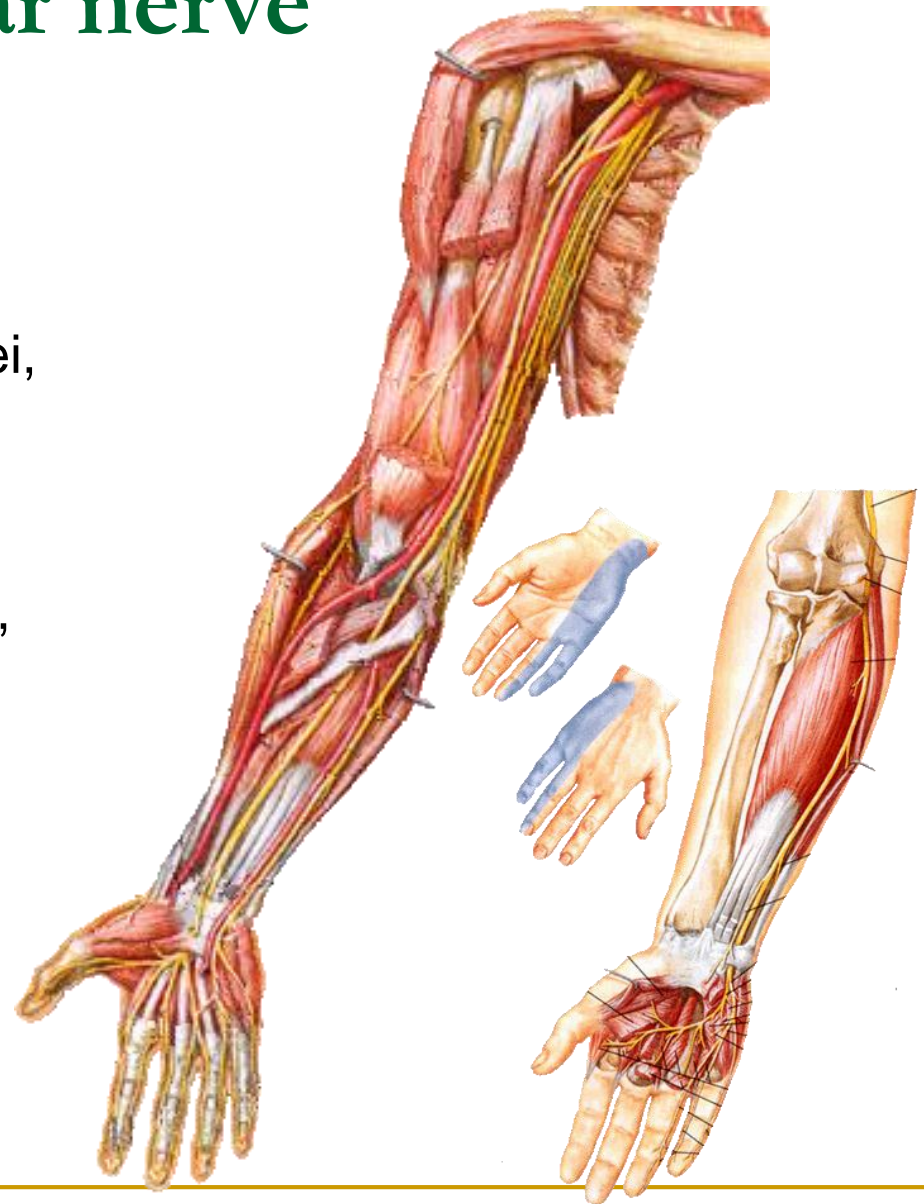
Median nerve

- **Distribution:** Flexors of forearm except brachioradialis, flexor carpi ulnaris and ulnar half of flexor digitorum profundus, thenar except adductor pollicis, first two lumbricals; skin of thenar, central part of palm, palmar aspect of radial three and one-half fingers, including middle and distal fingers on dorsum.
- **Injury:** Apehand produces sign of **benediction**, in which the index and middle fingers cannot be flexed and the thumb cannot be opposed



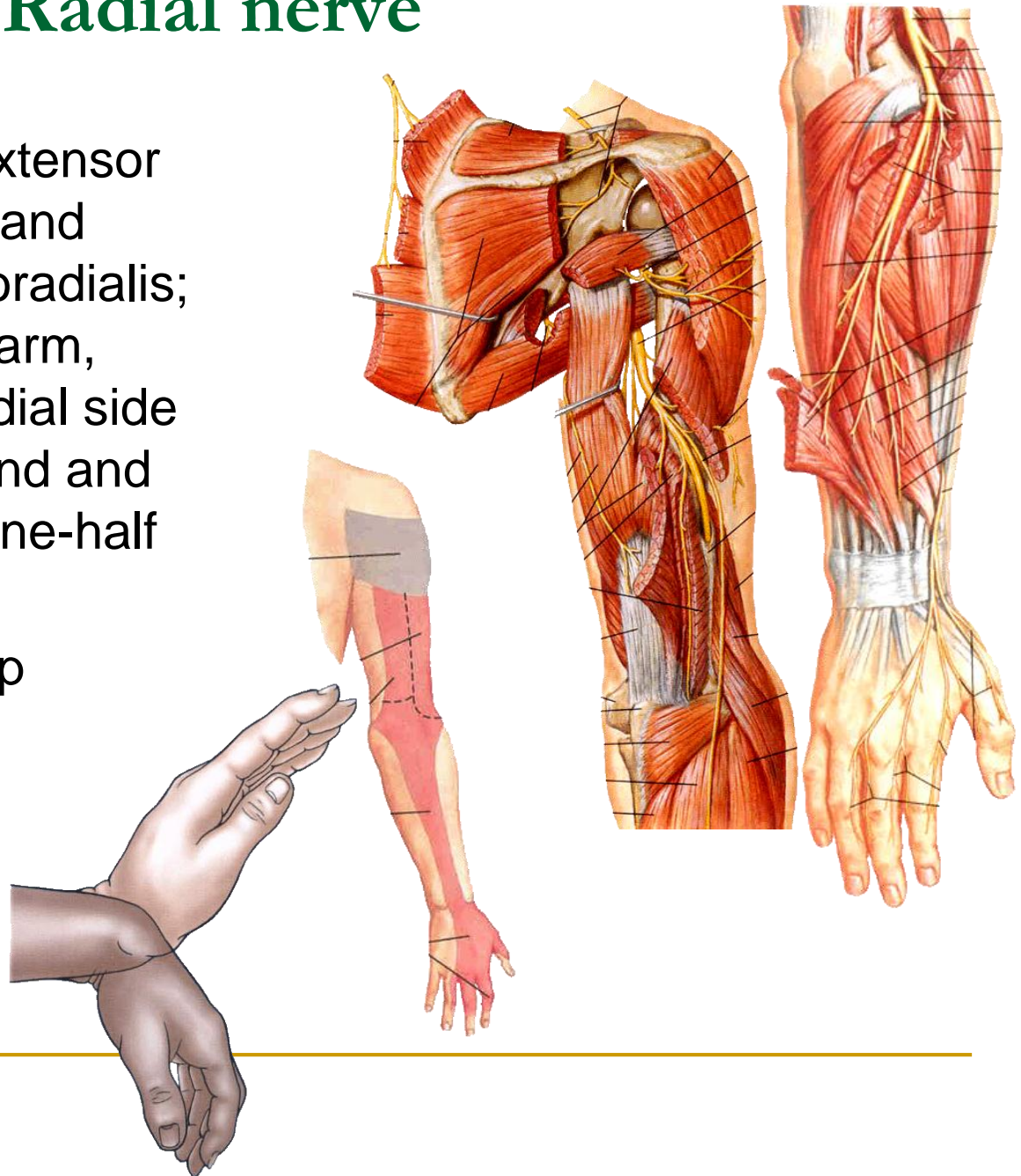
Ulnar nerve

- **Distribution:** Flexor carpi ulnaris, ulnar half of flexor digitorum profundus, hypothenar muscles, interossei, 3rd and 4th lumbricals and adductor pollicis; skin of hypothenar, palmar surface of ulnar one and one-half fingers, ulnar half of dorsum of hand, posterior aspect of ulnar two and one-half fingers
- **Injury:** clawhand



Radial nerve

- ❑ **Distribution:** Extensor muscles of arm and forearm, brachioradialis; skin on back of arm, forearm, and radial side of dorsum of hand and radial two and one-half fingers
- ❑ **Injury:** Wristdrop



■ Axillary

- **Distribution:** Deltoid and teres minor muscle; skin over deltoid and upper posterior aspect of arm
- **Injury:** results in deltoid and teres minor paralysis (loss of shoulder abduction and wheel external rotation) with loss of sensation over the deltoid

