LECTURE FIVE
UPPER LIMB

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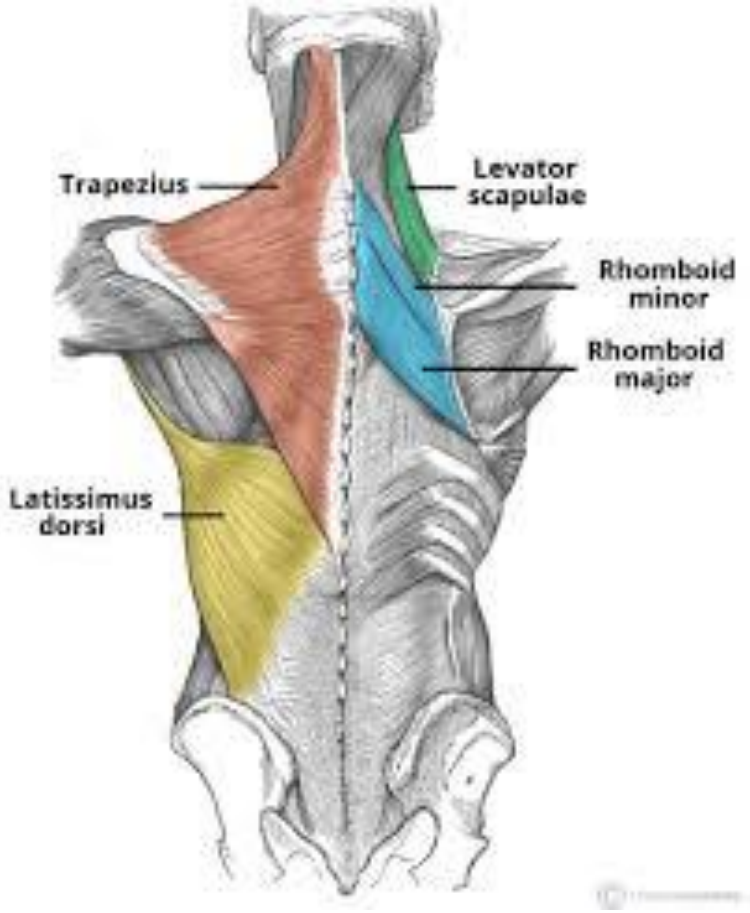
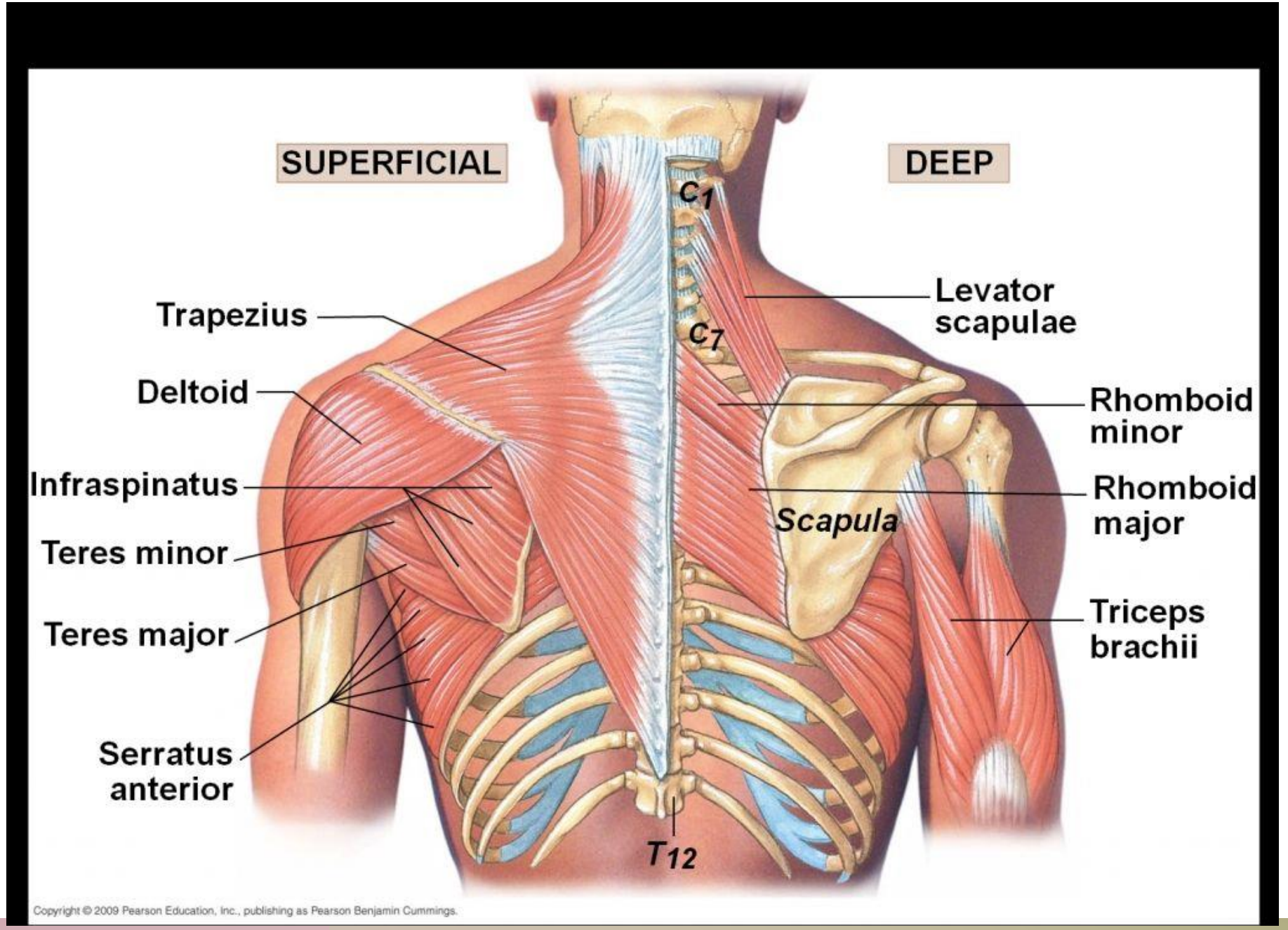
MUSCLES OF THE UPPER LIMB

The muscles of the upper limb can be organized into the following groups

- **Scapular muscles.**
- **Rotator cuff muscles.**
- **Intertubercular groove muscles**.




SUPERFICIAL
DEEP
C1
C7
Trapezius
Deltoid
Infraspinatus
Teres minor
Teres major
Serratus anterior
Levator scapulae
Rhomboid minor
Rhomboid major
Scapula
Triceps brachii
T12
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■ **Rotator cuff muscles.**

❖ **These muscles are considered a cuff** because the inserting tendons blend with the **glenohumeraljoint capsule and provide stability and movement to the** joint.

These muscles consist of the:

- **SUPRASPINATUS**
- **INFRASPINATUS**
- **TERES MINOR**
- **SUBSCAPULARIS.**

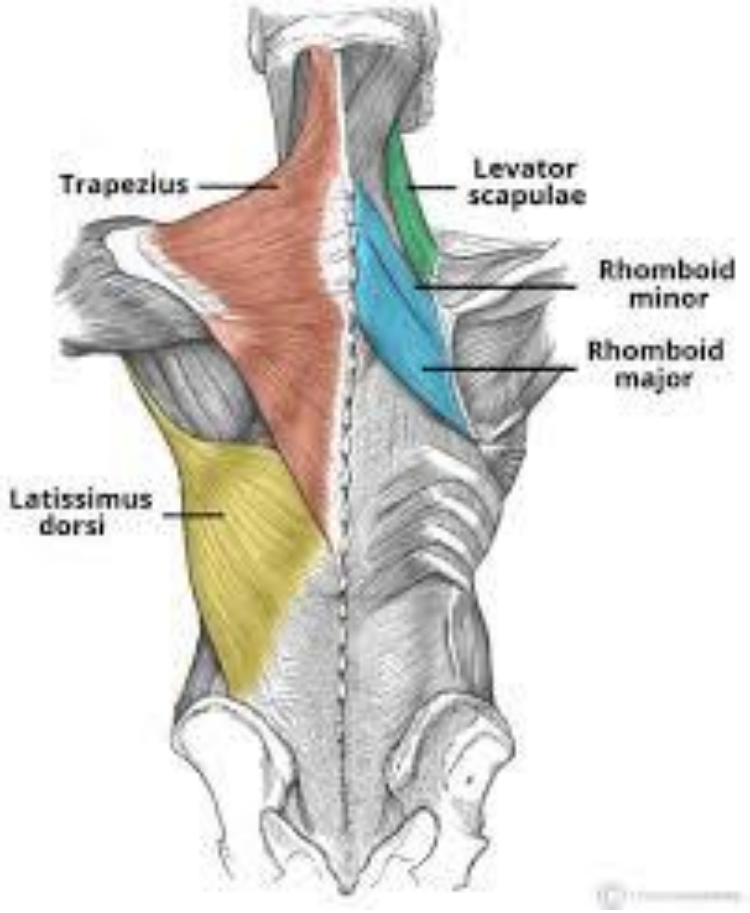
❖ **The supraspinatus, infraspinatus, teres minor, subscapularis make up the "rotator" cuff** that "rotates" the humerus. An exception is the **supraspinatus** which **abducts** the humerus

❖The teres major and latissimus dorsi **do not** hold the shoulder joint therefore these are not members of the rotator cuff.

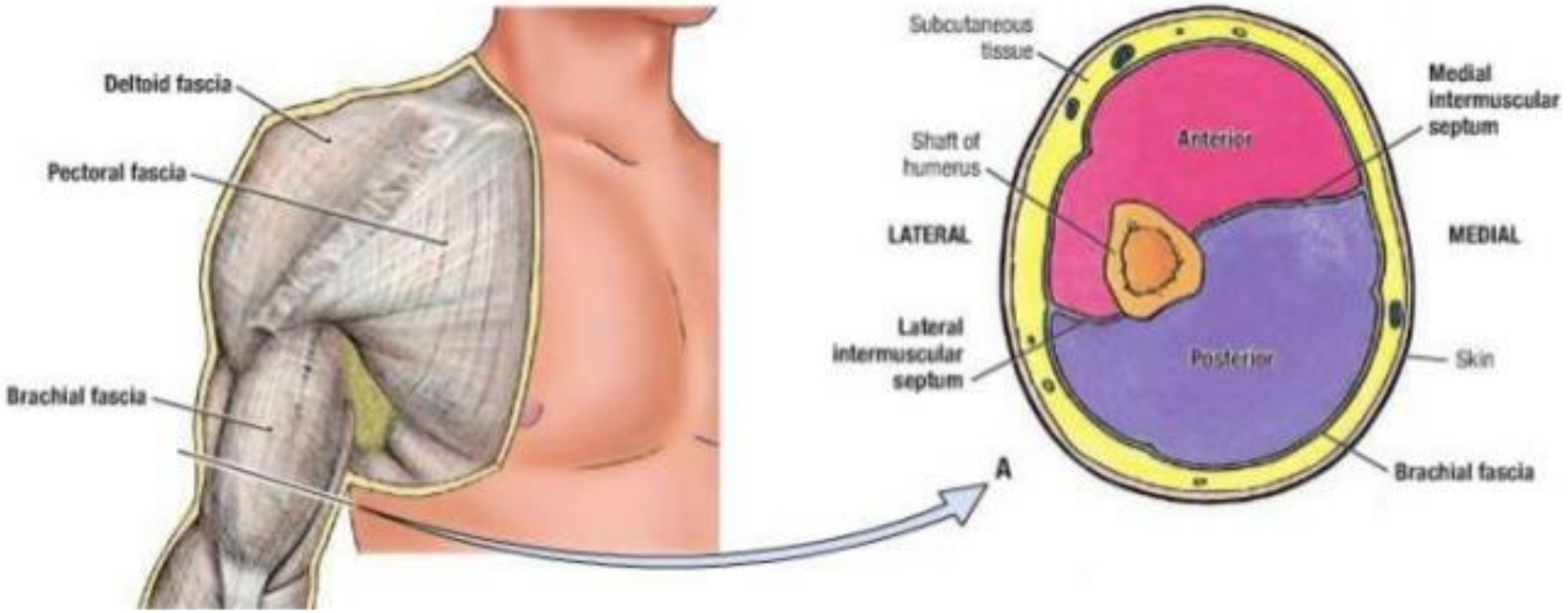
MUSCLES OF THE UPPER LIMB

The muscles of the upper limb can be organized into the following groups

- **Arm muscles.**
  - **Muscles of the anterior compartment of the arm.**
  - **Muscles of the posterior compartment of the arm.**



Arm muscles, enclosed by, **brachial fascia** (DEEP FASCIA) are divided into the ANTERIOR and **POSTERIOR** ones by two intermuscular septa.



Contents of the Anterior Fascial Compartment of the Upper Arm

❑Muscles:

I. Biceps brachii

II. Brachialis

III. Coracobrachialis

❑Blood supply: Brachial artery

❑ Nerve supply to the muscles: Musculocutaneous nerve

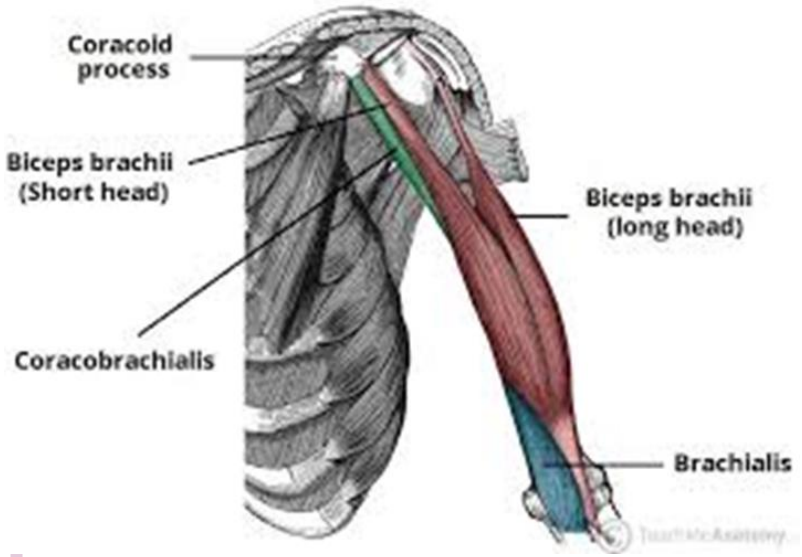
❖ Structures passing through the compartment: (N,A,V)

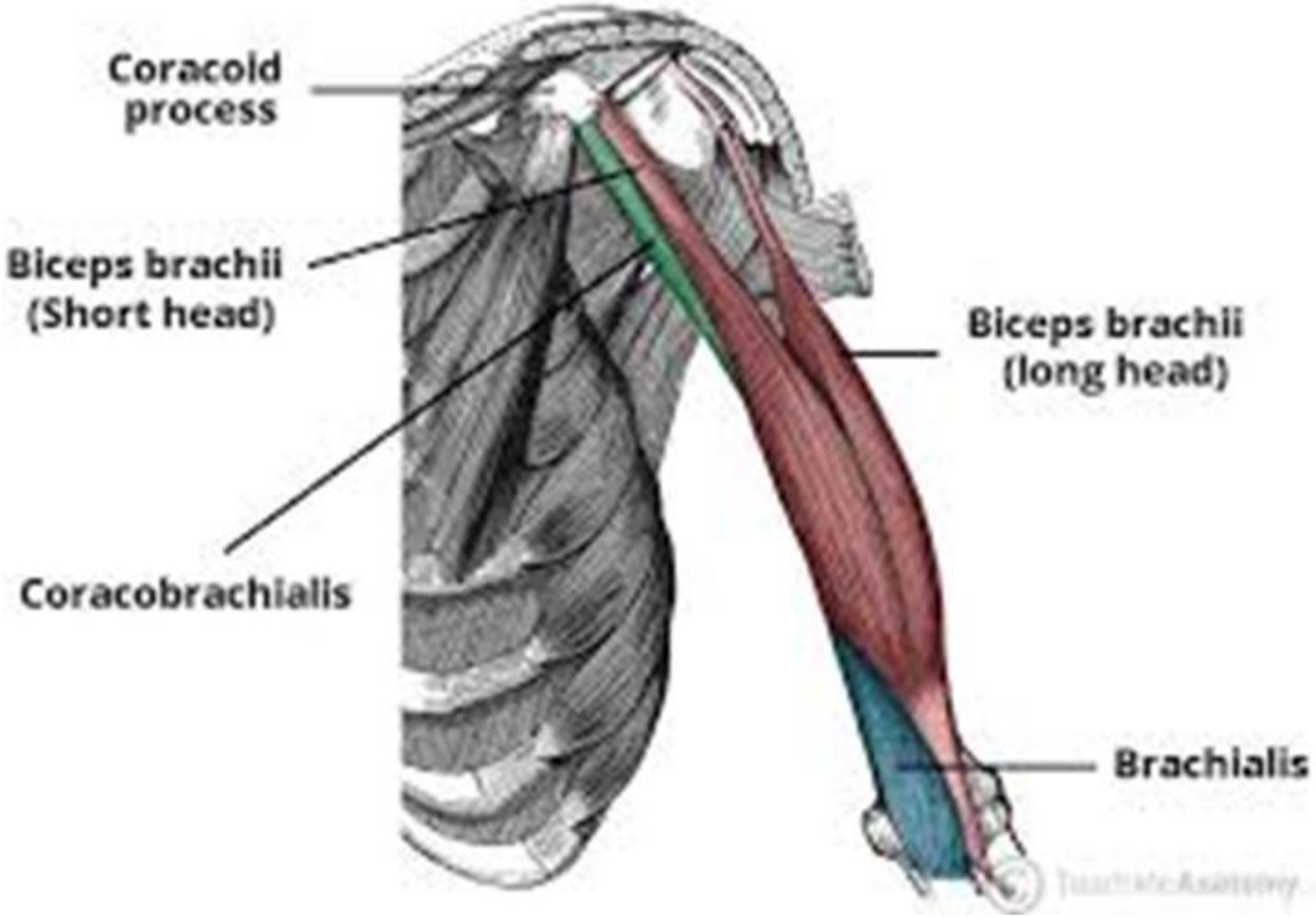
✓Musculocutaneous, Median NERVES

✓The **radial** NERVE is present in the lower part of the compartment.

✓ Brachial ARTERY

✓ Basilic VEIN.

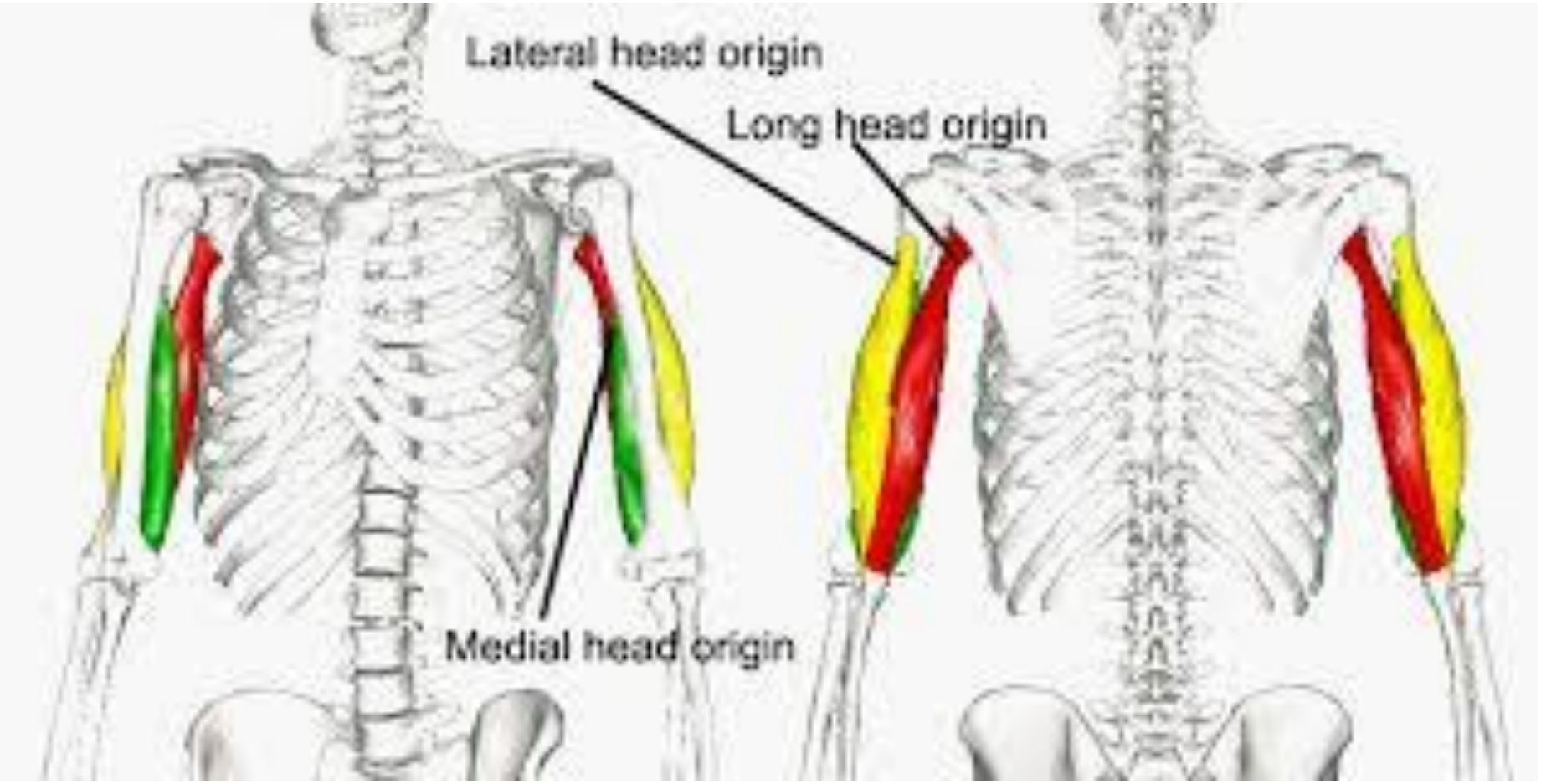



Coracoid process
Biceps brachii (Short head)
Coracobrachialis
Biceps brachii (long head)
Brachialis

Arm Muscles

Muscles of the POSTERIOR COMPARTMENT of the arm. Consist of :

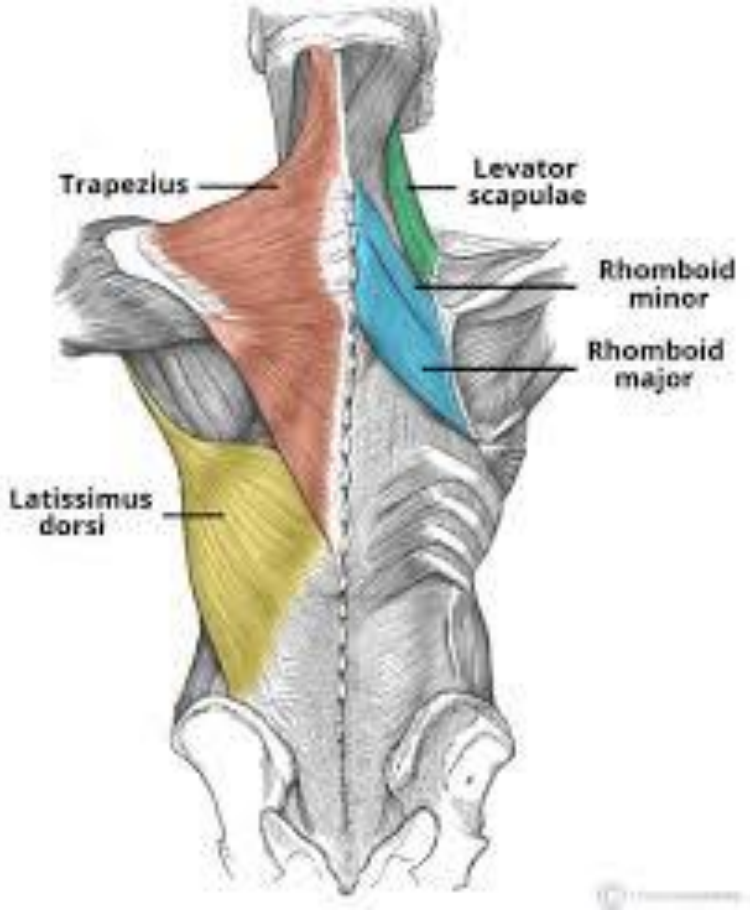
- **TRICEPS BRACHII MUSCLE**.



MUSCLES OF THE UPPER LIMB

The muscles of the upper limb can be organized into the following groups

- **Forearm muscles.**
- **Muscles of the anterior compartment of the forearm.**
- **Muscles of the posterior compartment of the forearm.**



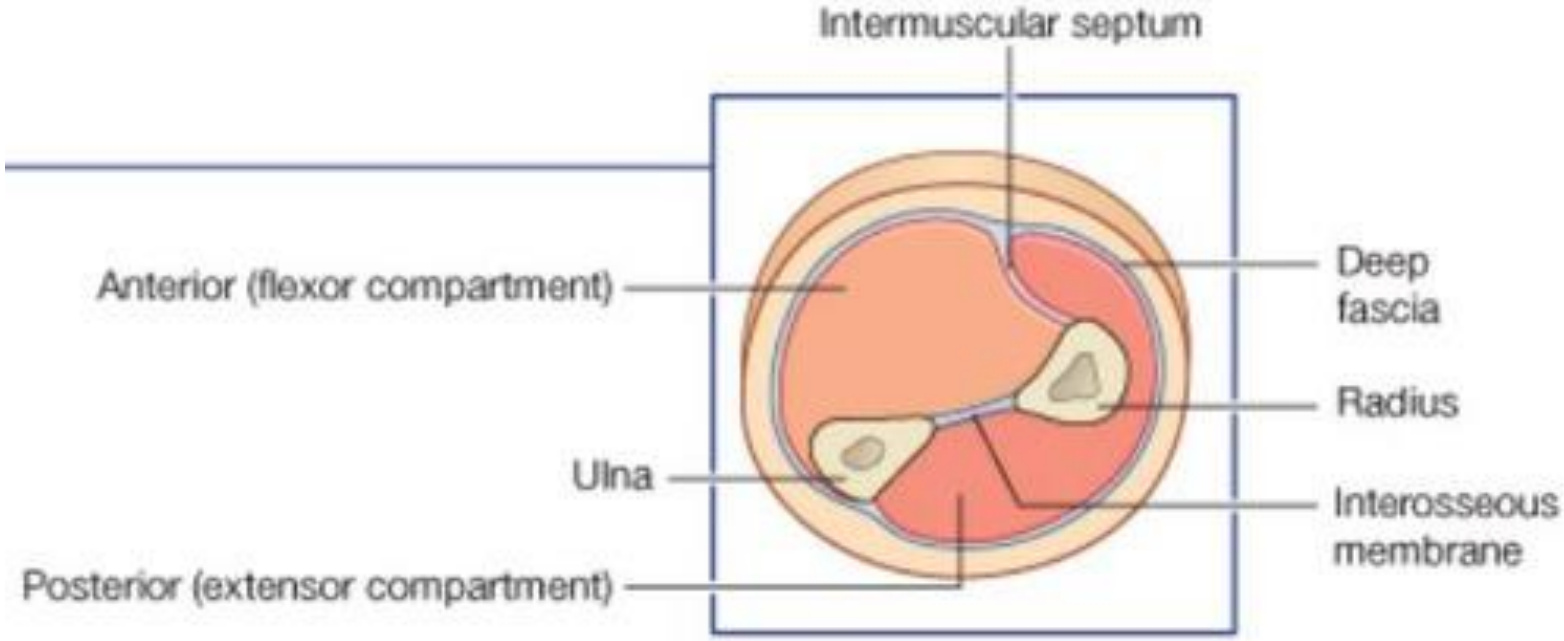
The forearm is divided into two compartments:

- A **ventromedial** or flexor compartment:

An anterior group (the **FLEXORS** of the wrist and fingers and the **PRONATORS**)

- A **dorsolateral** or extensor compartment:

A posterior group (the **EXTENSORS** of the wrist and fingers and the **SUPINATOR)**



FOREARM MUSCLES OF THE ANTERIOR COMPARTMENT

The muscles in the anterior compartment of the forearm have the following similar features:

- ❑ **Common attachment [origin]: Medial epicondyle of the humerus.**
- ❑ **Common innervation: Median nerve with minimal contribution** from the **ulnar nerve**.
- ❑ **Common action: Flexion.**
- ❑ **The vascular supply:** branches of the ulnar and radial arteries.
- ❑The **muscles in the anterior compartment of the forearm are** divided into THREE GROUPS:

✓ **SUPERFICIAL**
✓**INTERMEDIATE**
✓ **DEEP**

Contents of the Anterior Fascial Compartment of the Forearm

❑**Muscles:**

❖ **Superficial Group, consisting of:**

✓ The Pronator Teres
✓ The Flexor Carpi Radialis
✓ The Palmaris Longus
✓ The Flexor Carpi Ulnaris

❖ **Intermediate Group consisting of:**

✓ The Flexor Digitorum Superficialis

❖ **Deep Group consisting of:**

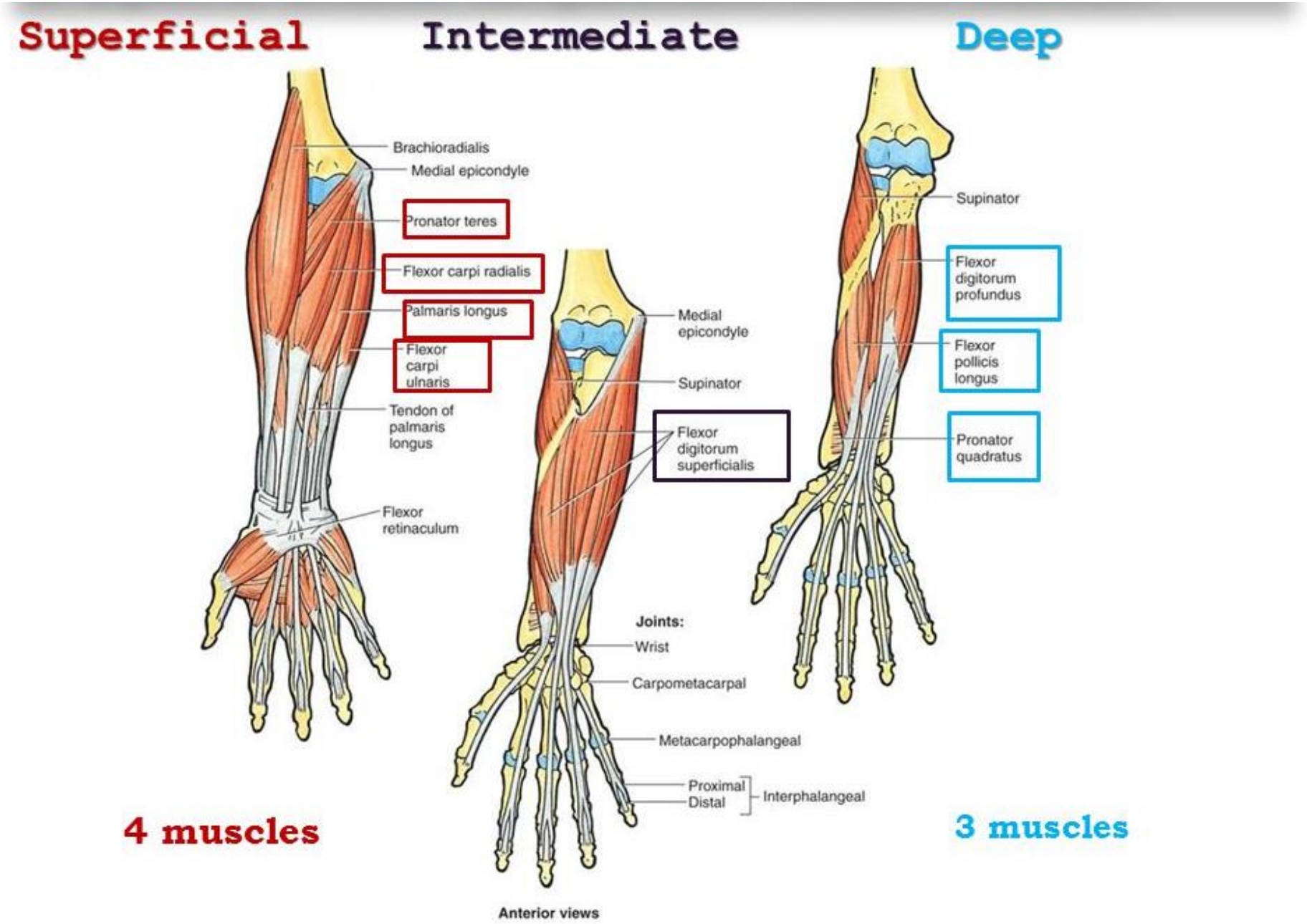
✓ The Flexor Pollicis Longus
✓ The Flexor Digitorum Profundus
✓ The Pronator Quadratus

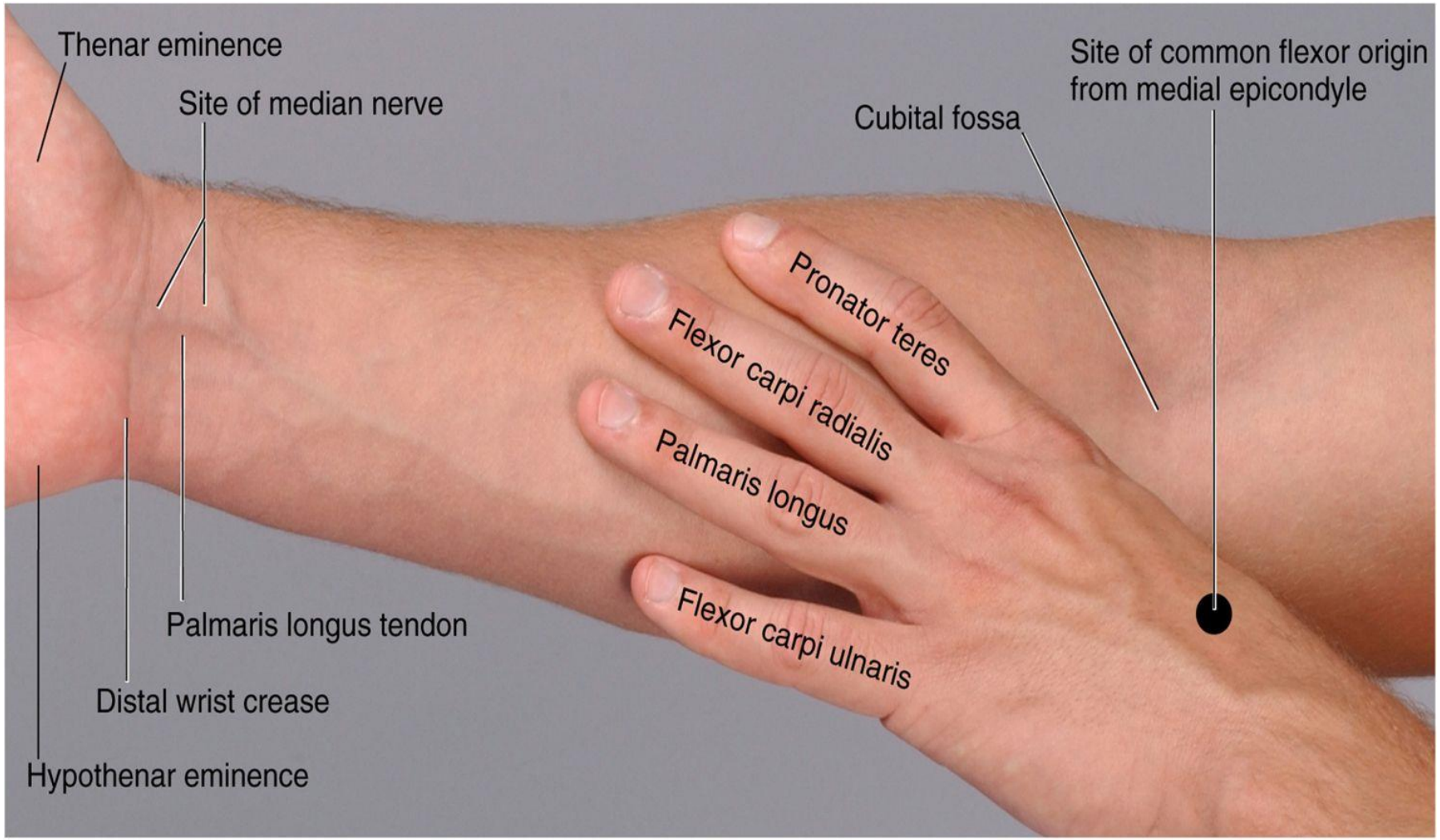
❑ **Blood supply to the muscles: Ulnar and radial arteries**

❑ **Nerve supply to the muscles: All the muscles are supplied** by the ***MEDIAN NERVE*** and its branches, EXCEPT the

I. Flexor Carpi Ulnaris and
II. The Medial Part Of The Flexor Digitorum Profundus

→ which are supplied by the **ulnar nerve**


Superficial
Intermediate
Deep
Brachioradialis
Medial epicondyle
Pronator teres
Flexor carpi radialis
Palmaris longus
Flexor carpi ulnaris
Tendon of palmaris longus
Flexor retinaculum
Medial epicondyle
Supinator
Flexor digitorum superficialis
Joints:
Wrist
Carpometacarpal
Metacarpophalangeal
Proximal
Distal
Interphalangeal
Supinator
Flexor digitorum profundus
Flexor pollicis longus
Pronator quadratus
4 muscles
3 muscles
Anterior views



(A) Anterior view of supinated forearm

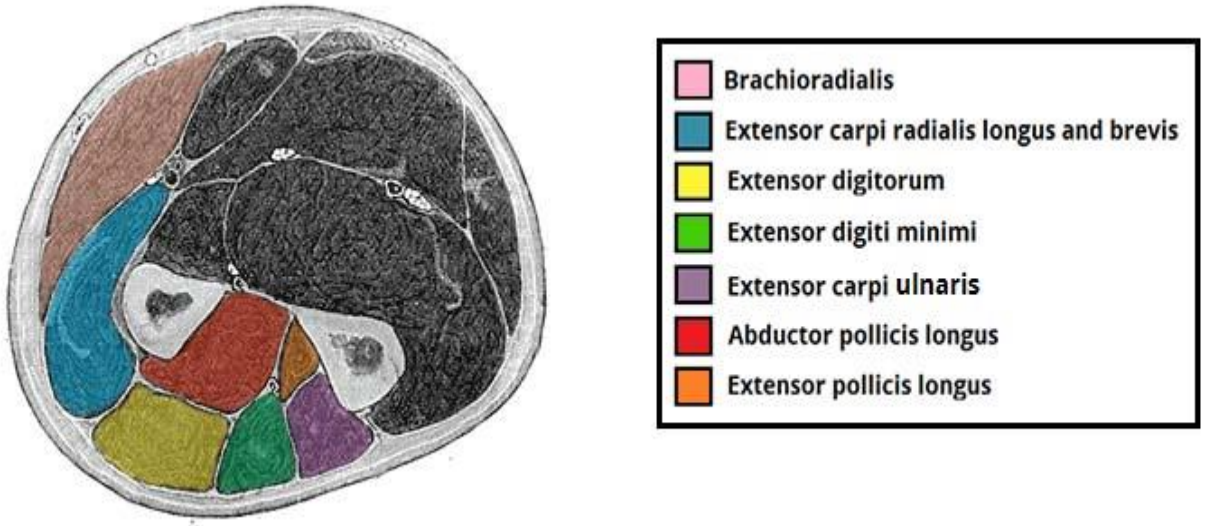
FOREARM MUSCLES OF THE POSTERIOR COMPARTMENT

The muscles in the posterior compartment of the forearm have the following similar features:

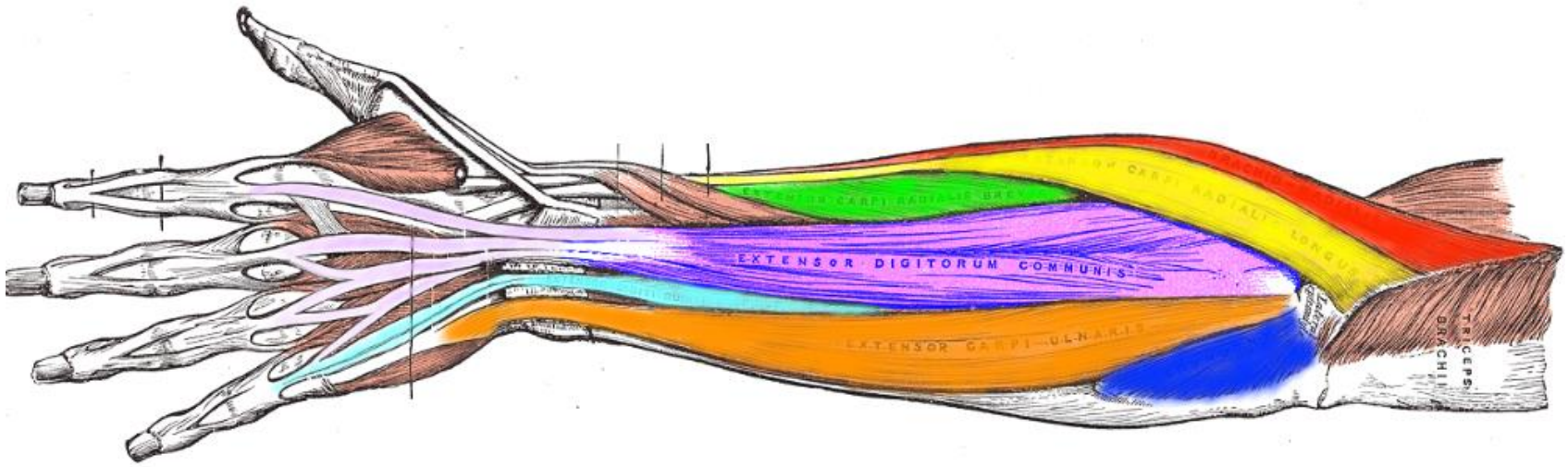
- **Common attachment: Lateral epicondyle of the humerus.**
- **Common innervation: Deep branch of the Radial nerve.**
- **Common action: Extension**
- **The vascular supply:** branches of the ulnar and radial arteries[**Posterior and anterior interosseous arteries]**
- The **muscles in the posterior compartme**

➢ **Superficial Group**

➢ **Deep Groups.**



Superficial Layer of the **Posterior Compartment**



- Brachioradialis
- Extensor carpi radialis brevis
- Extensor digiti minimi
- Extensor carpi radialis longus
- Extensor digitorum communis
- Extensor carpi ulnaris
- Anconeus

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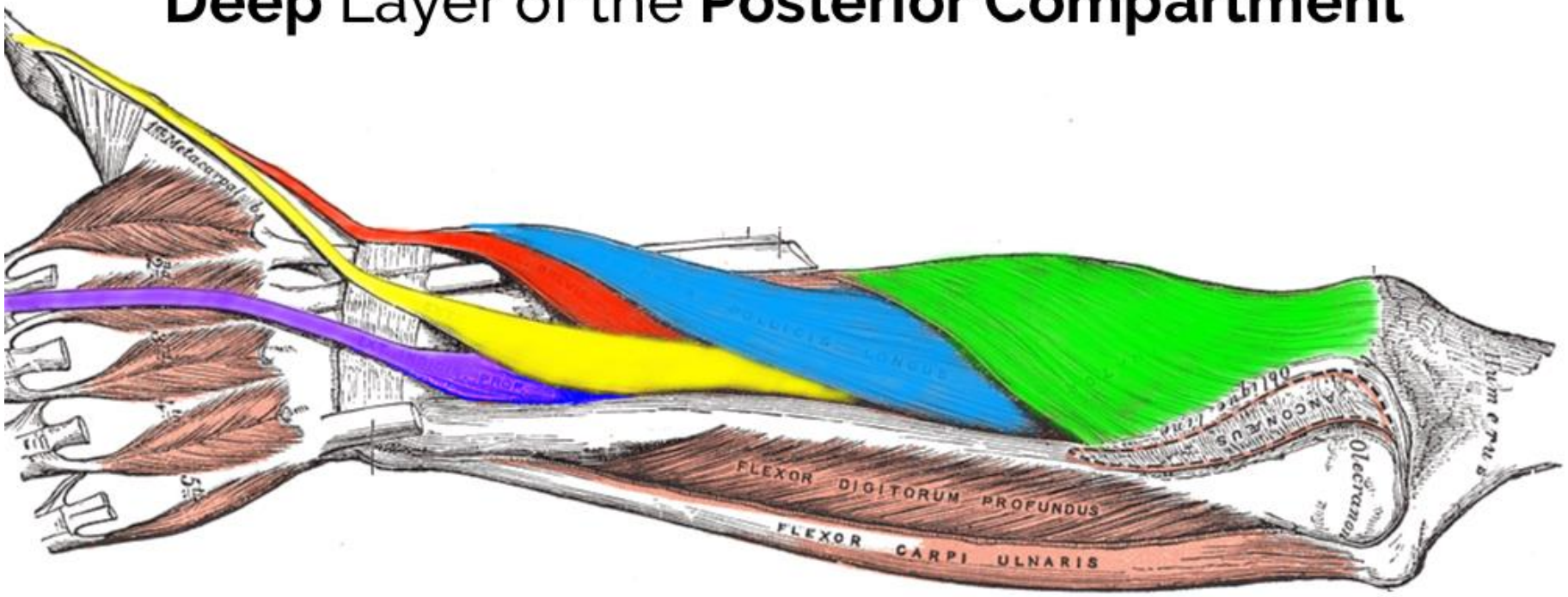
Muscles of back of forearm

Superficial group (7)

Deep group (5)

1. Brachioradialis
2. Extensor carpi radialis longus
3. Extensor carpi radialis brevis
4. Extensor digitorum
5. Extensor digiti minimi
6. Extensor carpi ulnaris
7. anconeus

Deep Layer of the **Posterior Compartment**



- Supinator
- Extensor pollicis brevis
- Extensor indicis
- Abductor pollicis longus
- Extensor pollicis longus

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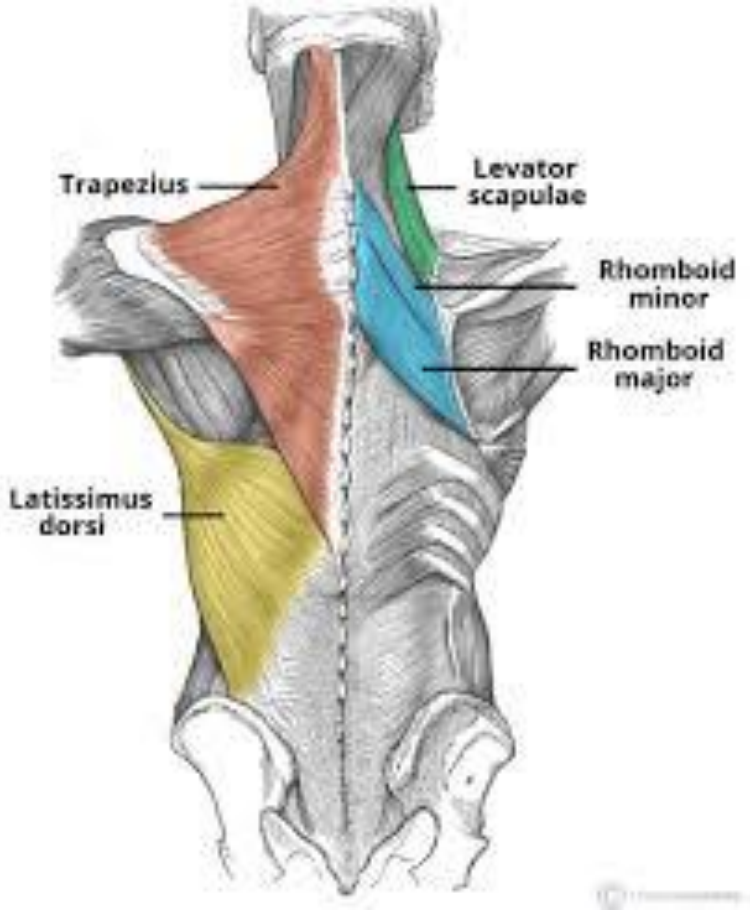
MUSCLES OF THE UPPER LIMB

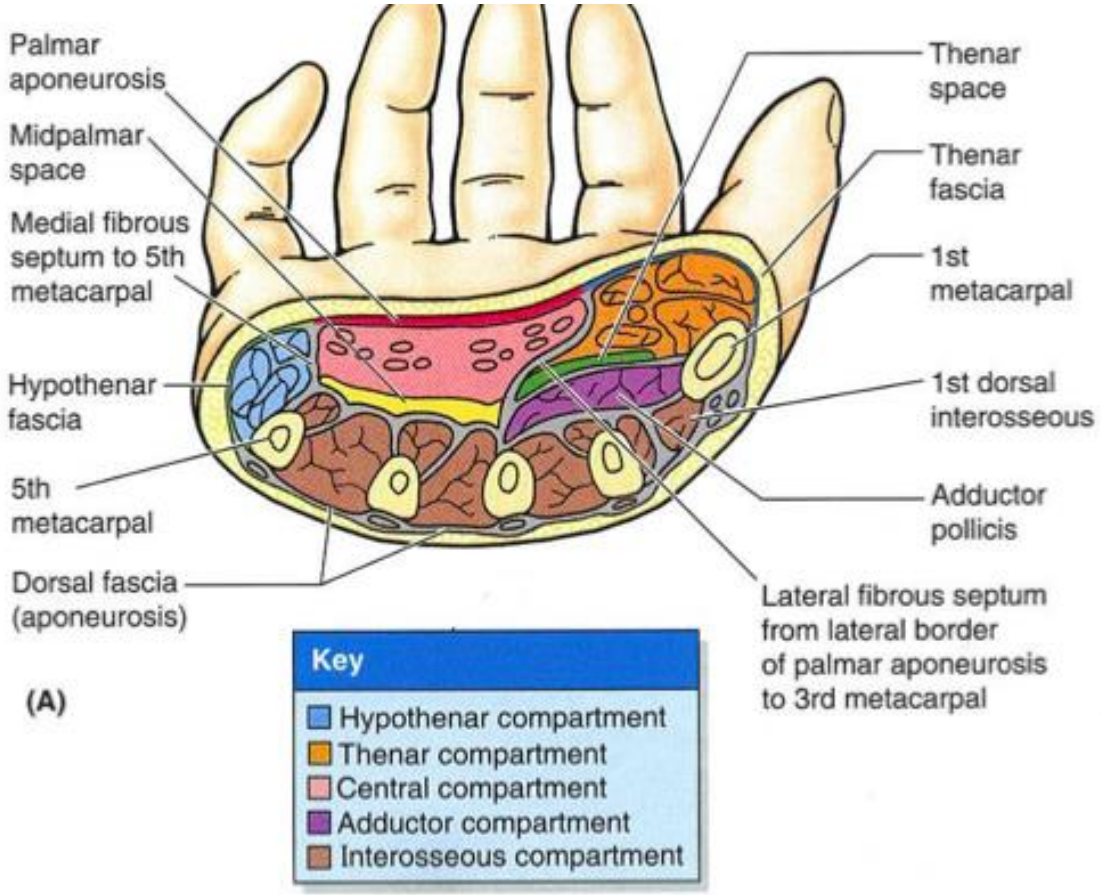
The muscles of the upper limb can be organized into the following groups

❖**Internsic Hand muscles**



FASCIAL COMPARTMENTS OF THE PALMAR

The fascial layers divide the palmar side of the hand into the following **FIVE** compartments



FASCIAL COMPARTMENTS OF THE PALMAR

- **Thenar compartment**

→ **Contains three muscles that act on** digit 1 (thumb).

■ **Hypothenar compartment**

→**Contains three muscles that act** on digit 5.

■ **Central compartment.**

→**Located between the thenar and** Hypothenar compartments

→ contains the flexor tendons and the lumbrical muscles.

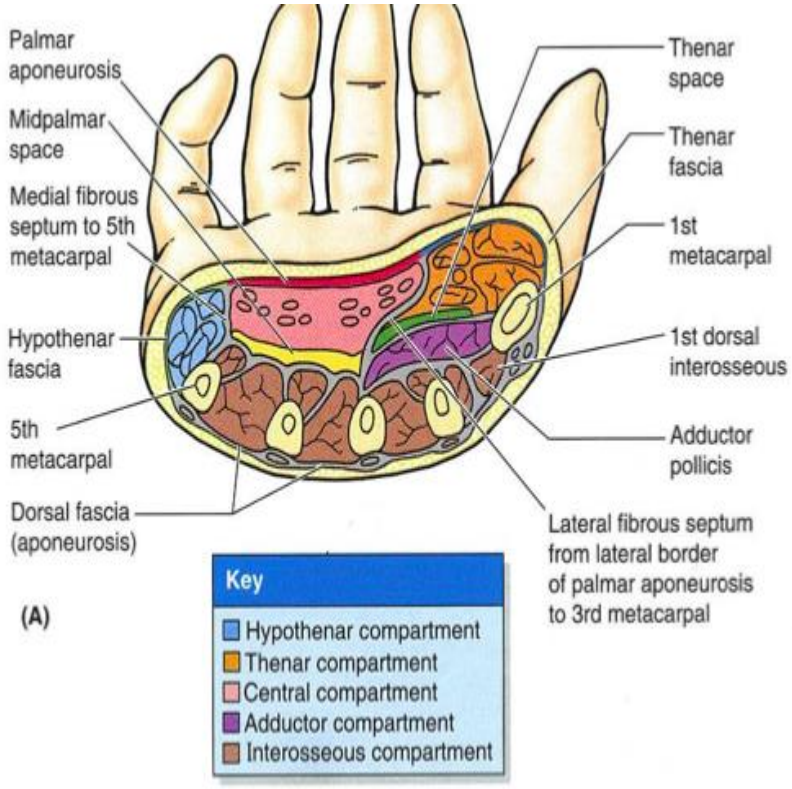
■ **Adductor compartment.**

Contains the adductor pollicis muscle.

■ **Interosseous compartment.**

→**Located between the metacarpals**

→ contains the DORSAL and PALMAR interossei muscles.

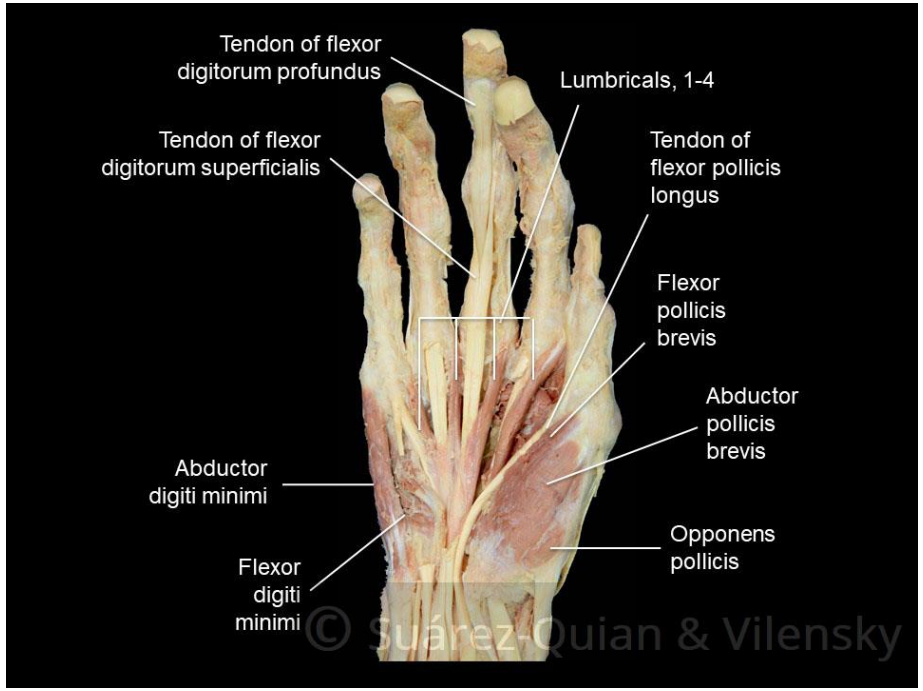


HAND MUSCLES

The intrinsic muscles of the hand consist of:

Those that act on:

- The Thumb (Thenar Muscles)
- The Little Finger (Hypothenar Muscles)
- Lumbricals
- Dorsal Interossei
- Palmar Interossei Muscles

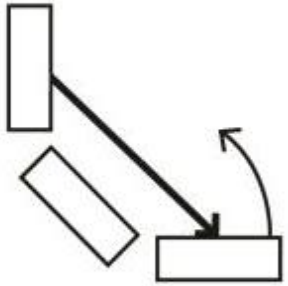


NOTE

The **ACTIONS** produced by the muscles in **THE ANTERIOR COMPARTMENT** of the forearm **depend** upon which joints the muscles cross.

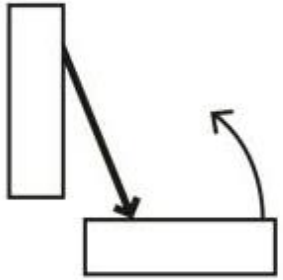
✓Some muscles cross the elbow, wrist, digits, and perhaps a combination of each.

If a muscle crosses two joints, distal joint moves mainly.

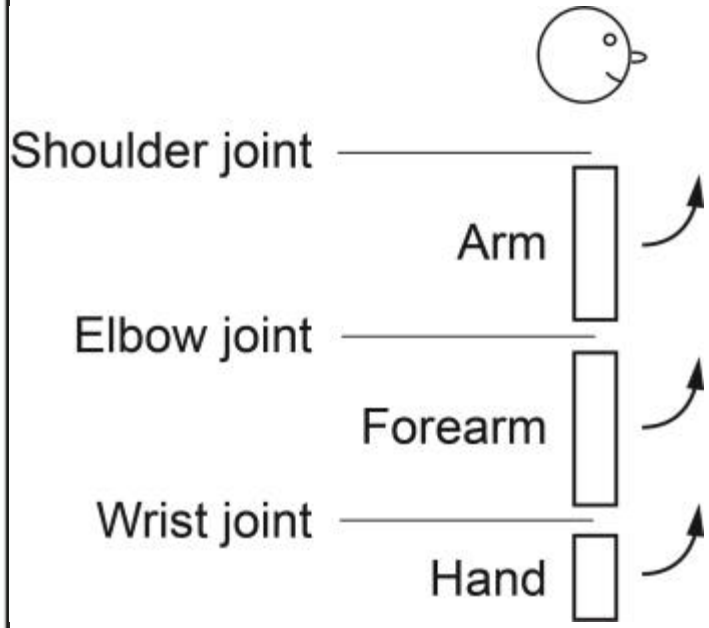


Biceps brachii flexes elbow joint rather than shoulder joint.

The rule is simple. Muscle mostly flexes the joint where the insertion is close,



no matter whether the muscle crosses one or two joints.



KEEP TRYING