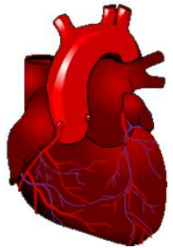


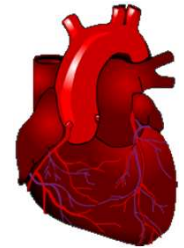


Systematic Anatomy

Locomotor system - Part 6



Muscles of abdomen ***Muscles of the upper limb***



Dr.Hongqi Zhang (张红旗)

Dept.of Anatomy,Fudan University

Email: zhanghq58@126.com

Muscles of abdomen Muscles of the upper limb



Muscles of abdomen

Anterolateral group 4
Posterior group 2

Anterolateral group

External oblique m. of abdomen

Internal oblique m. of abdomen

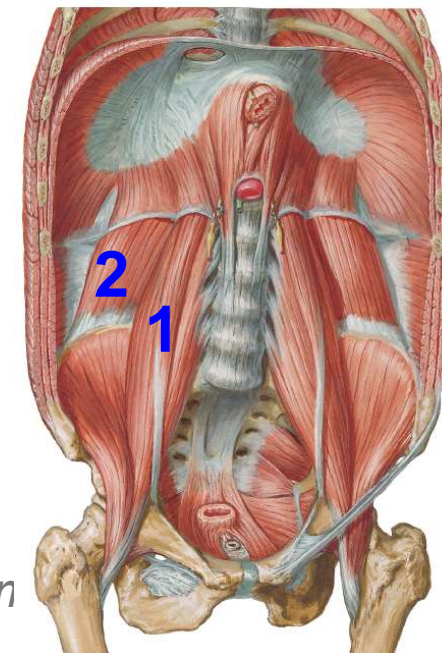
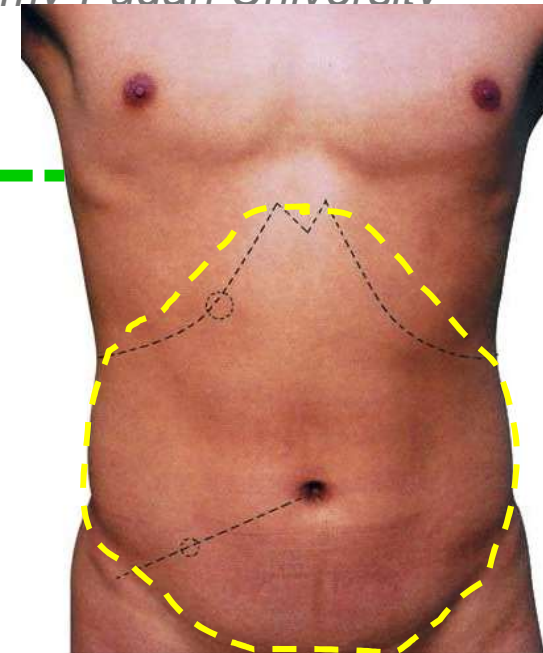
Transversus abdominis

Rectus abdominis

Posterior group

1. Psoas major

2. Lumbar quadratus m



Different saying of some muscles

Obliquus externus abdominis

Oblique external abdominal m.

Ext.oblique m.of abdomen

Obliquus internus abdominis

Oblique internal abdominal m.

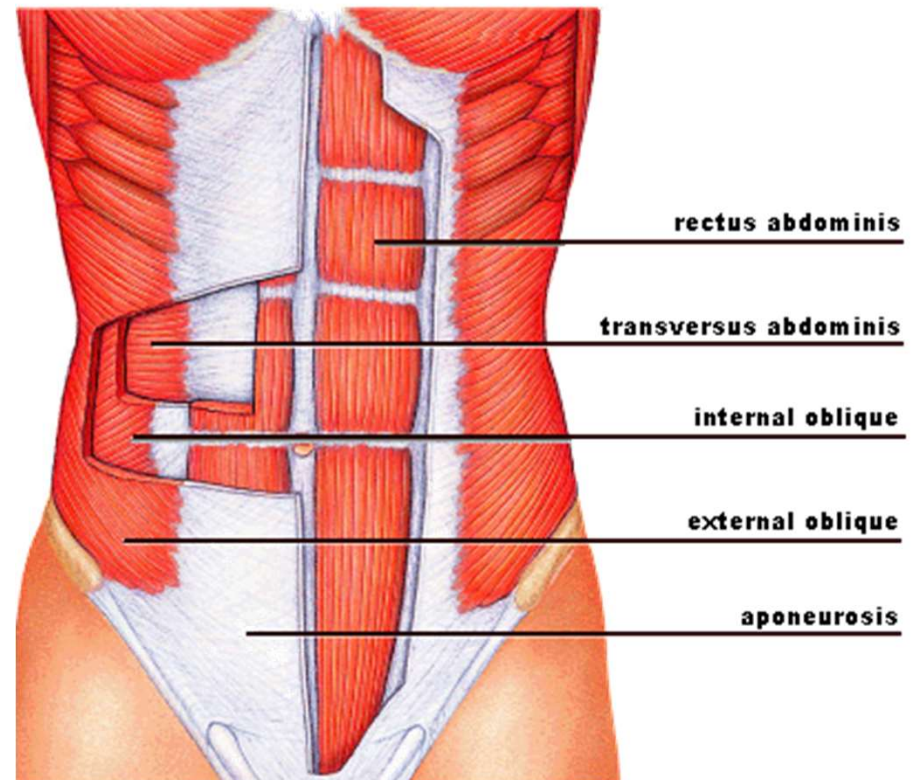
Int.oblique m.of abdomen

Transversus abdominis

Transverse abdominal m.

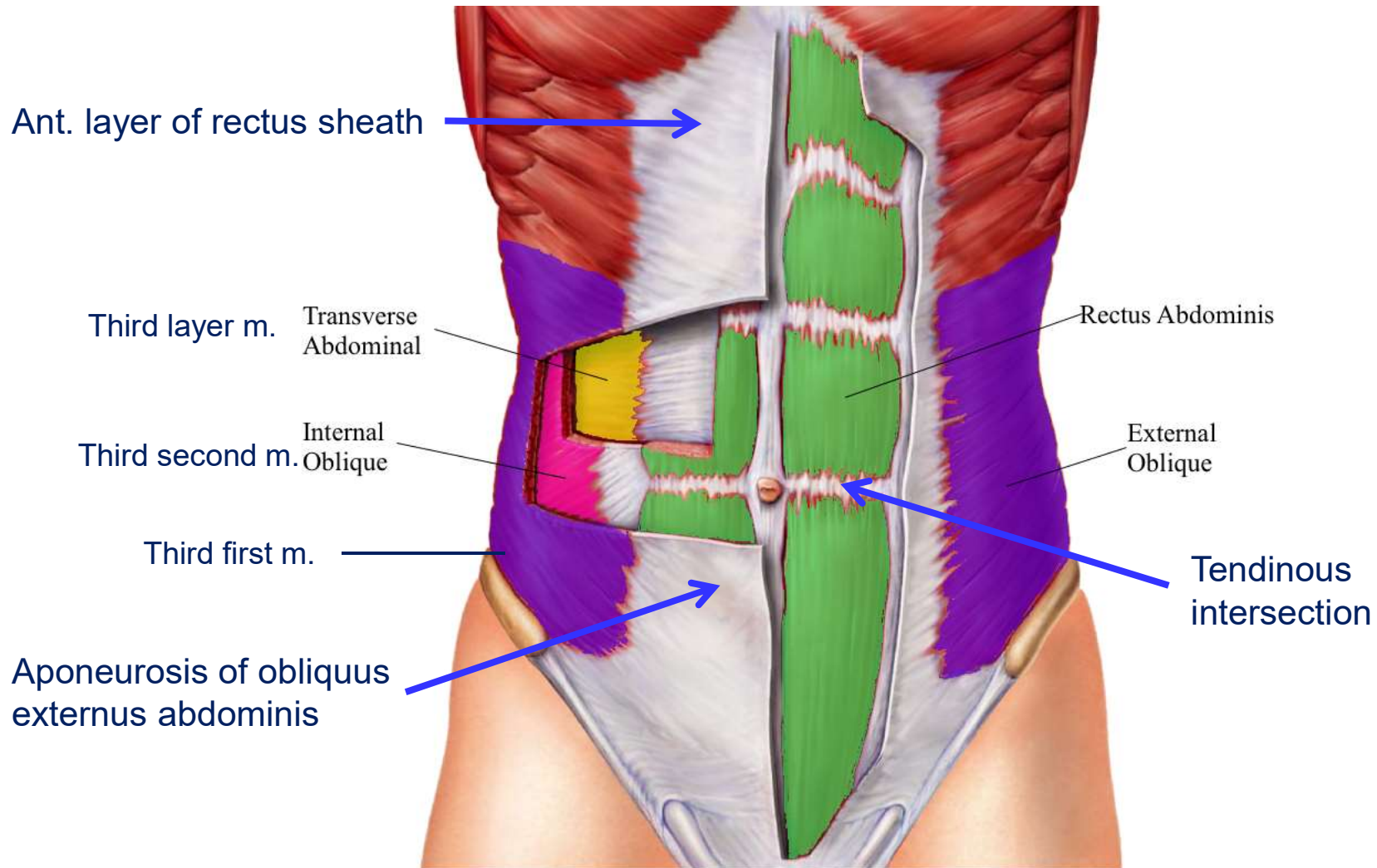
Rectus abdominis

Anterior View of the Abdominal Muscles



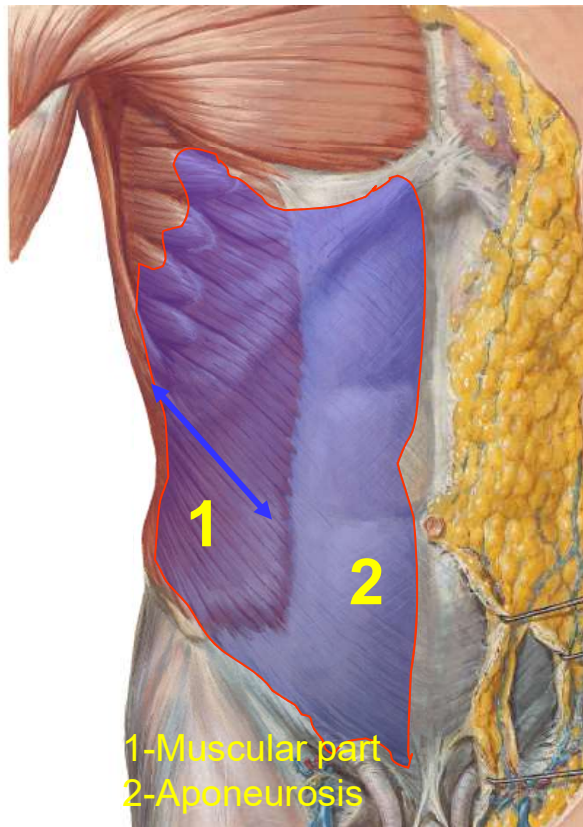
Co

Different saying of some muscles

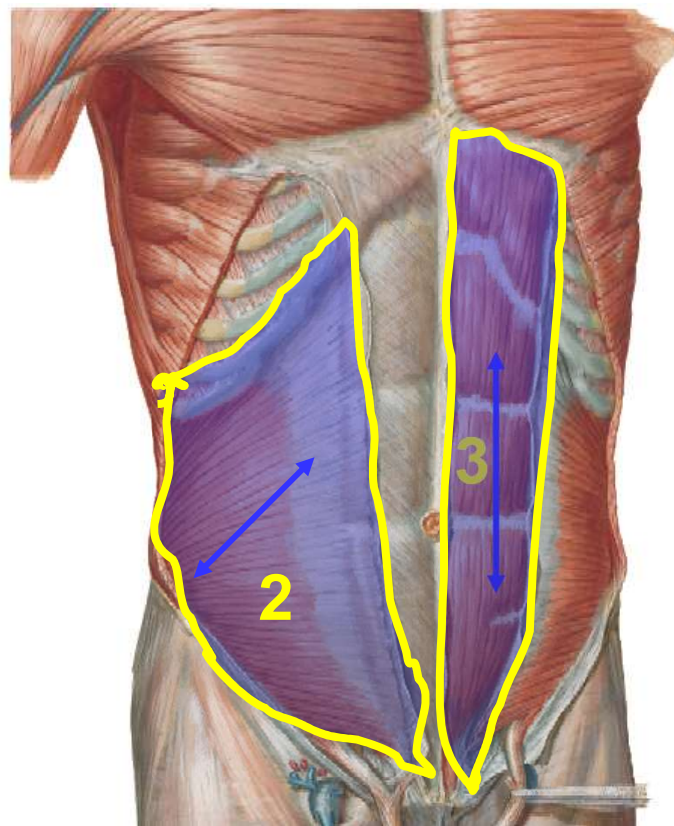


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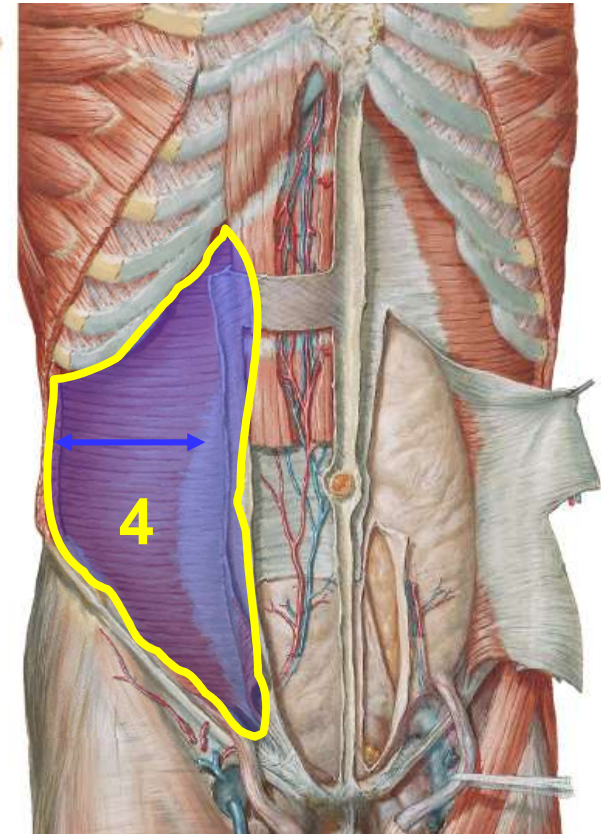
Muscle of the Anterolateral abdominal wall



1-obliquus externus abdominis



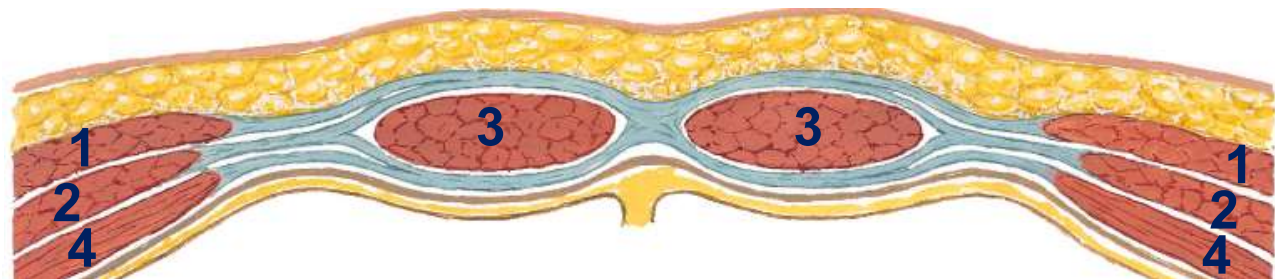
2-obliquus internus abdominis
3-Rectus abdominis



4-Transversus abdominis

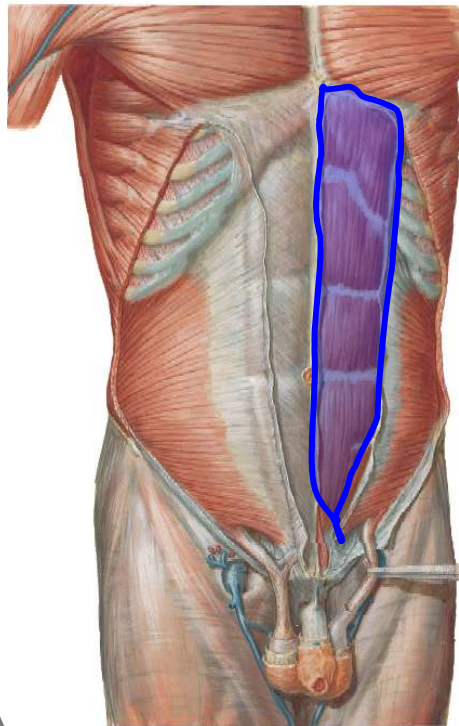
→ The direction
of muscular fiber

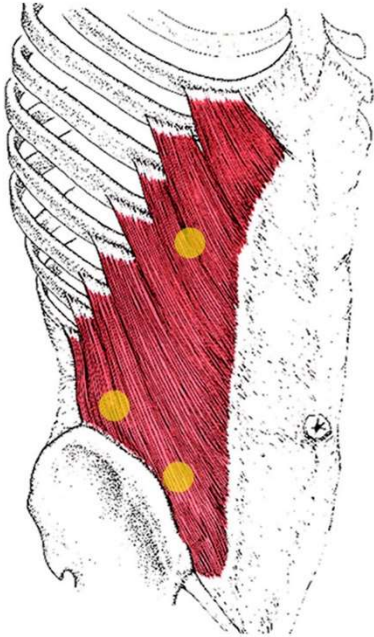
Anterolateral abdominal
wall-H section



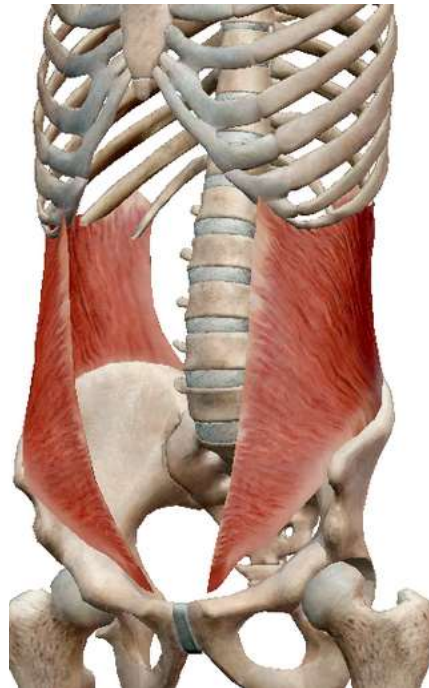
Rectus abdominis

- ◆ **Position:** lie on to either of ant. midline of abdomen
- ◆ **Origin:** pubic crest and symphysis
- ◆ **Insertion:** xiphoid process & 5-7th costal cartilages
- ◆ **Tendinous intersections** 3-4
- ◆ **linea semiluaris** (lat. border)

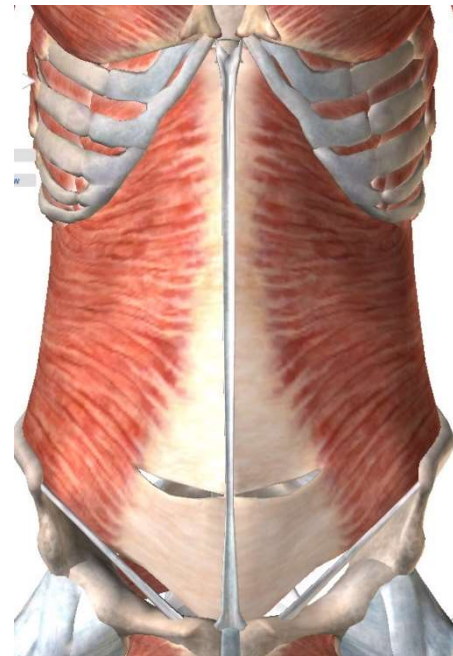




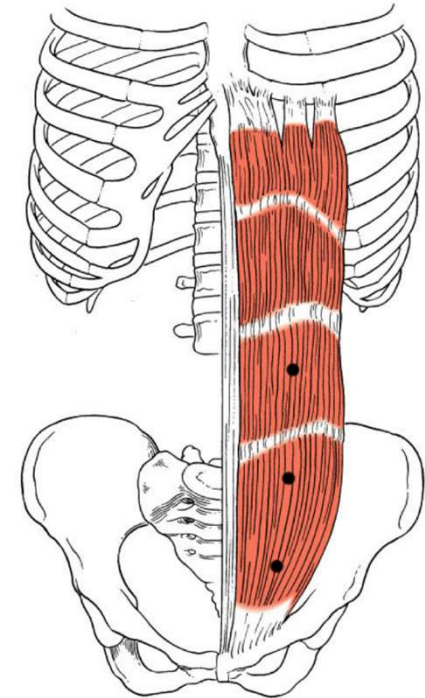
Obliquus
externus
Abdiminis



Obliquus
internus
Abdiminis



Transversus
abdominis



Rectus
Abdominis

Sheath of rectus abdominis

Concept

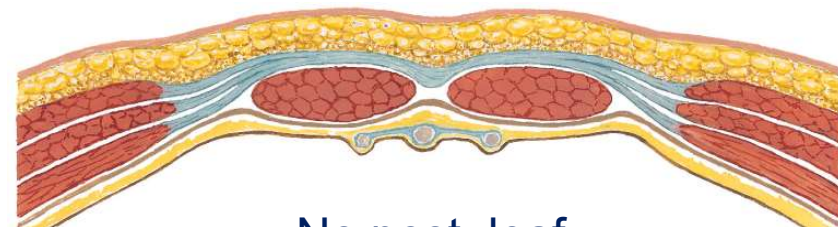
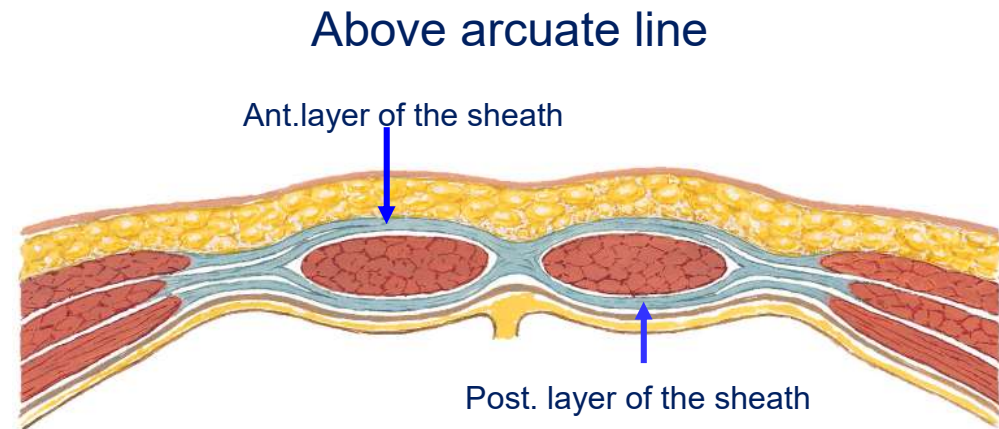
It is a strong incomplete fibrous compartment of the rectus abdominis.

Anterior layer

Formed by fusion of aponeurosis of obliquus externus abdominis and ant. leaf of aponeurosis of obliquus internus abdominis

Posterior layer

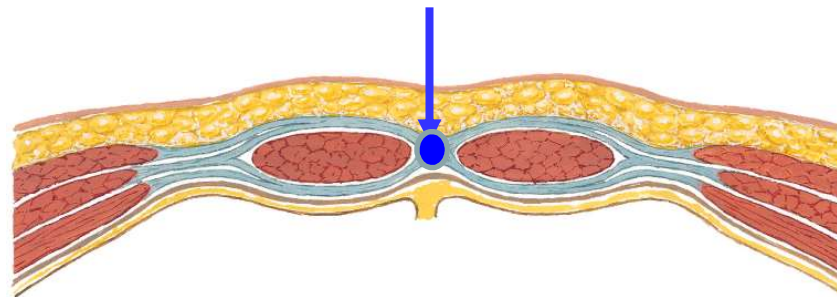
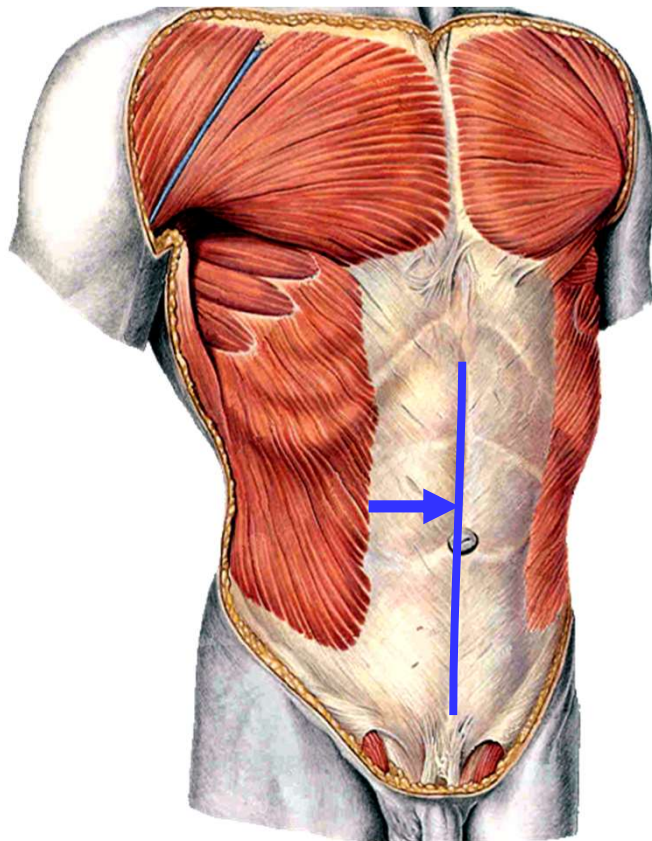
- ◆ Formed by fusion of post. leaf of aponeurosis of obliquus internus abdominis and aponeurosis of transversus abdominis
- ◆ Absent in **about 4-5cm below the umbilicus**, where aponeuroses of all three muscles form ant. layer the lower free border named **arcuate line**
- ◆ Below this line rectus abdominis in contact with transverse fascia



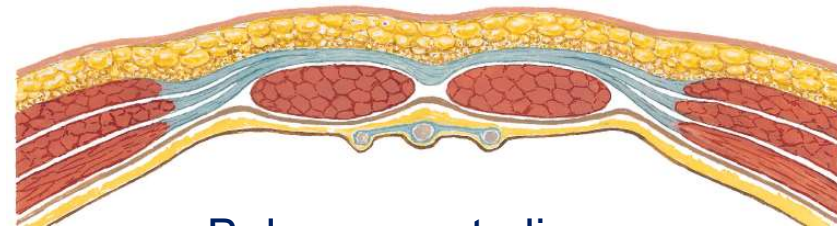
Below arcuate line

Linea alba

It is located on the anterior median line of the abdomen.
Tendinous raphe between right & left recti from xiphoid
to pubic symphysis



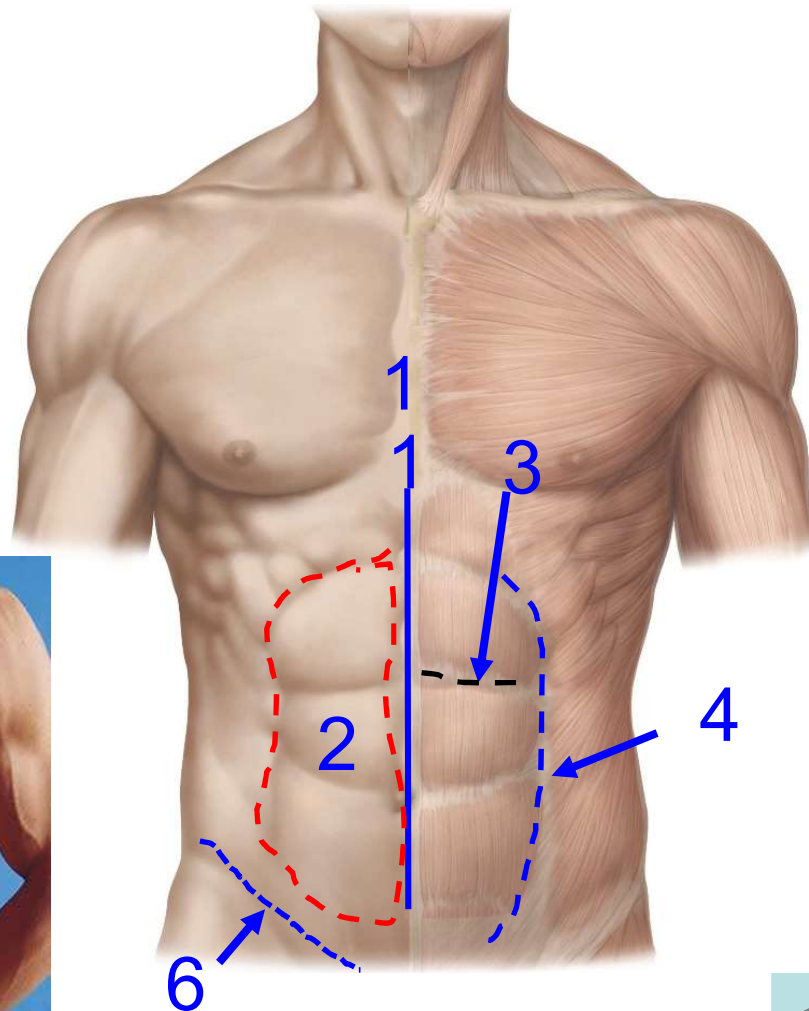
Above arcuate line



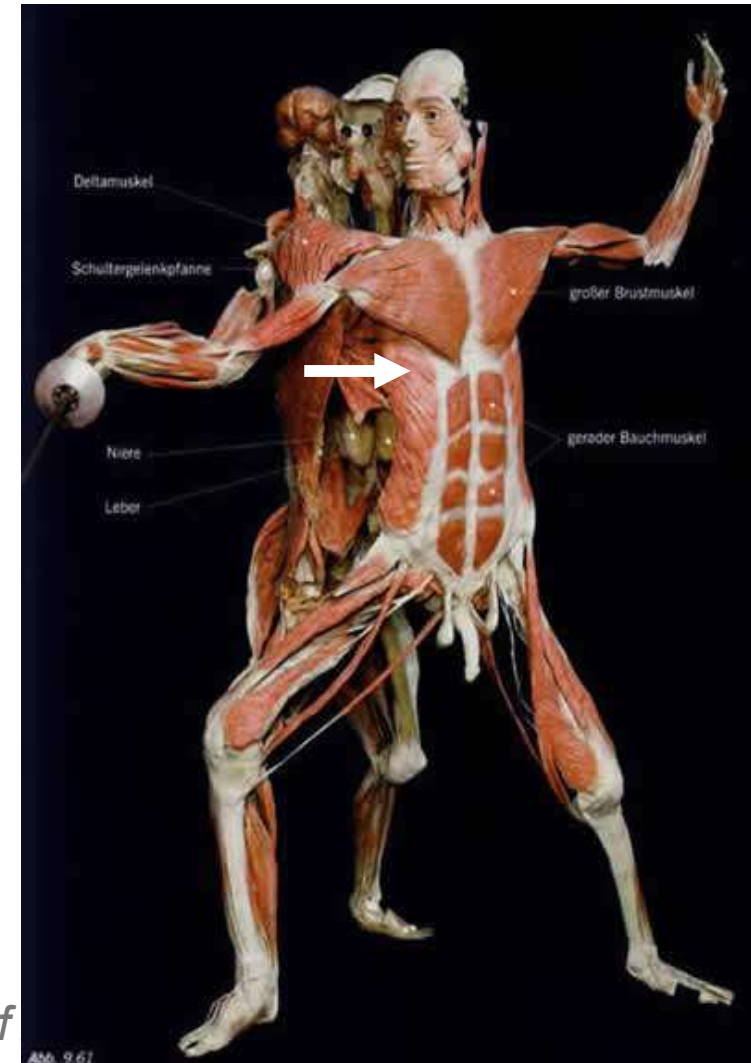
Below arcuate line

Landmarks & surface anatomy

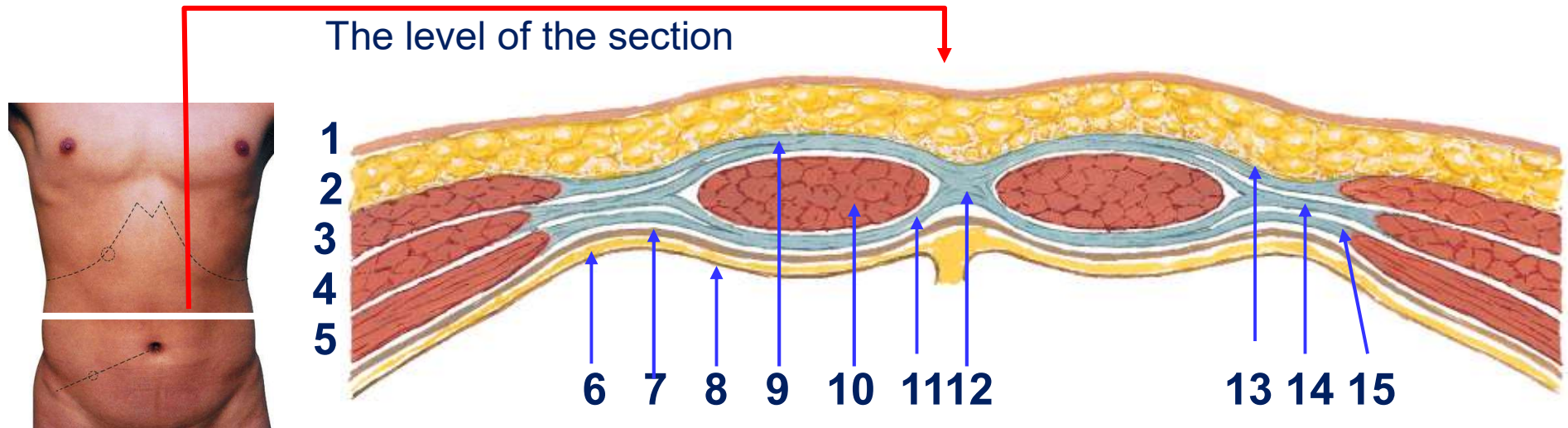
- 1-Linea alba
- 2-Rectus abdominis
- 3-Tendinous intersections
- 4-Linea semilunaris
- 5-Umbilicus: at the level
of L3 ~ L4
- 6-Inguinal lig.



Rectus abdominus and it's intersection



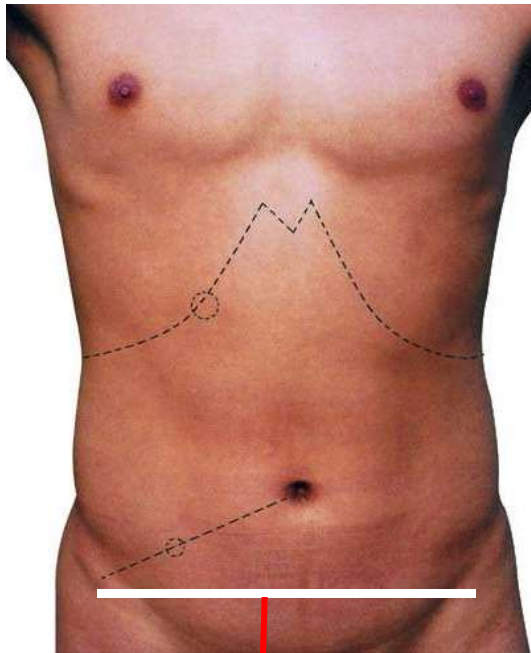
Rectus sheath -cross section above arcuate line



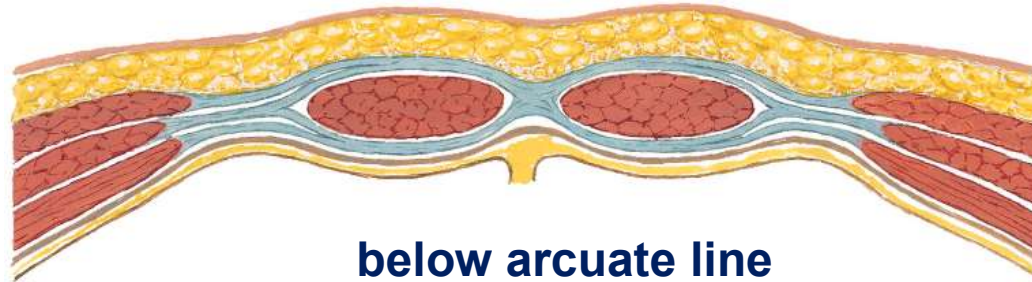
1. Skin
2. Subcutaneous tissue
3. Obliquus externus abdominis.
4. Obliquus internus abdominis.
5. Transversus abdominis
6. Extraperitoneal fascia
7. Transverse fascia
8. Peritoneum

9. Ant. layer of rectus sheath
10. Rectus abdominis muscle
11. Post. layer of rectus sheath
12. Linea alba
13. Aponeurosis of obliquus externus abdominis
14. Aponeurosis of obliquus internus abdominis
15. Aponeurosis of transversus abdominis

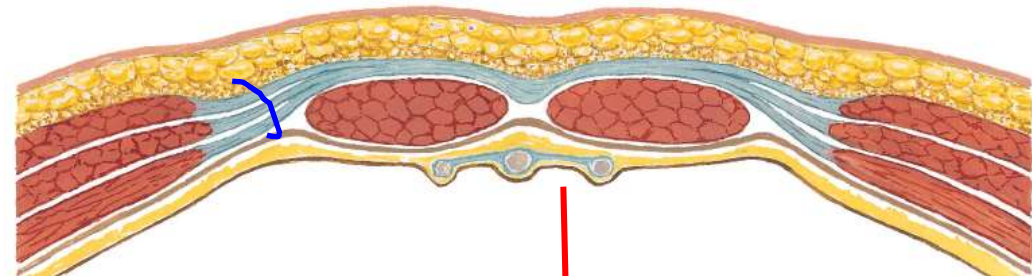
Rectus sheath-Cross section below arcuate line



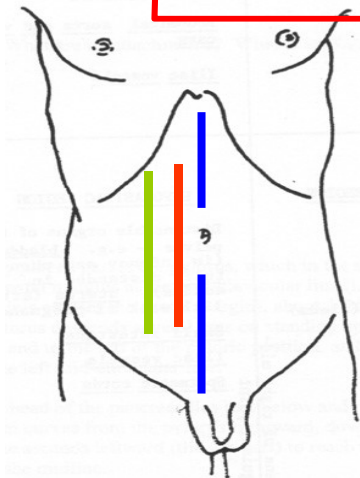
above arcuate line



below arcuate line

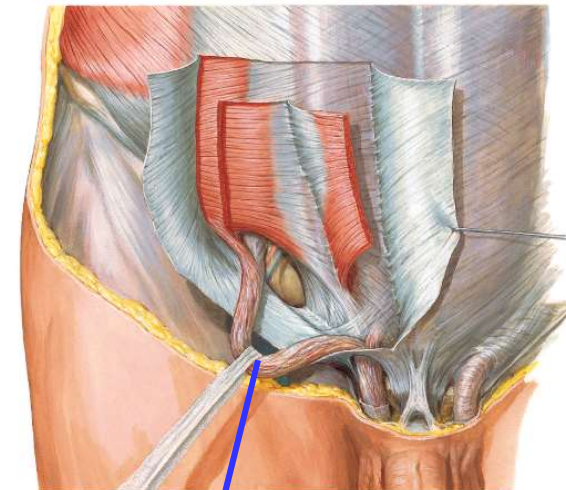
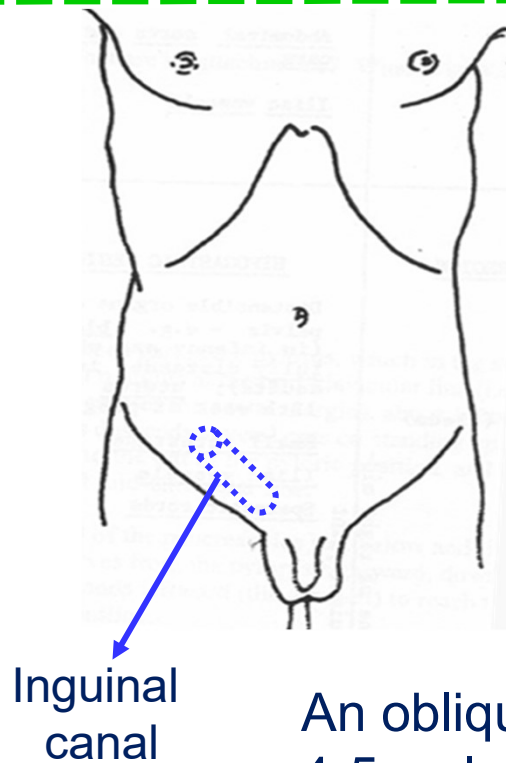


The level of the section



Attention: below arcuate line, no posterior layer of rectus sheath

Inguinal canal



An oblique cleft or passage
4-5cm long in adult

Between muscles, aponeurosis and fascia,
Above the medial part of the inguinal ligament

Spermatic cord in male

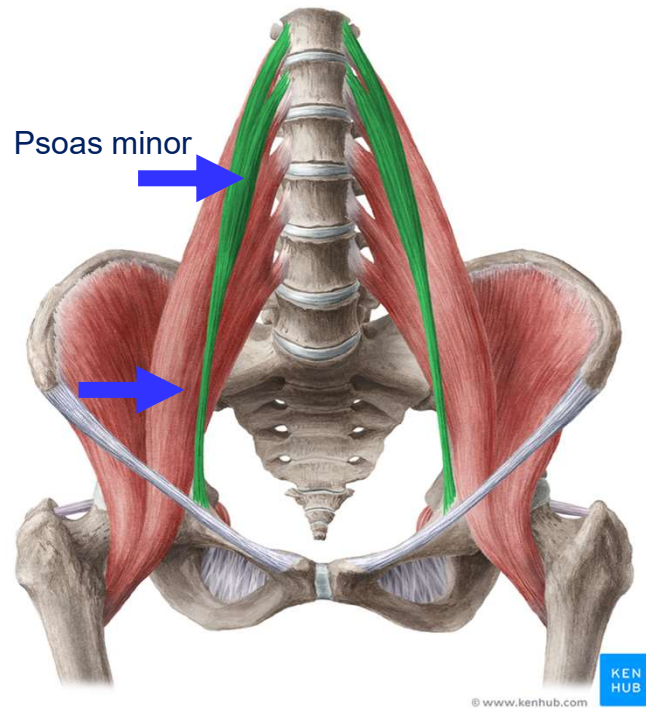
Round ligament of uterus in female

Similar functions for above four pairs of muscles

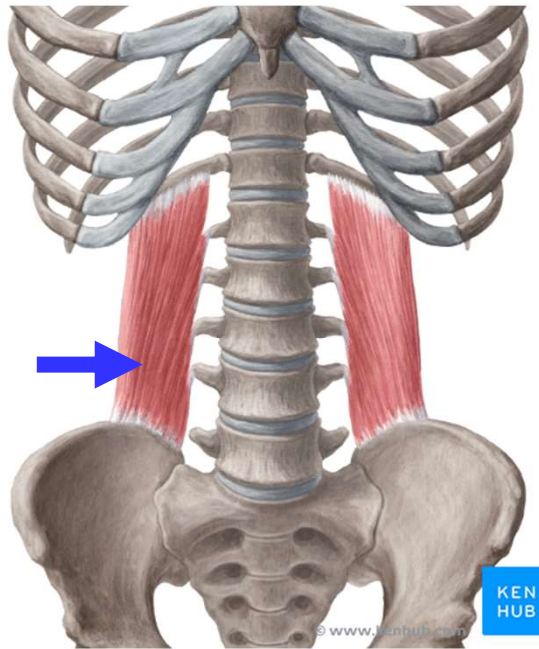
- ◆ Support and compress the abdominal viscera
- ◆ Increase intra-abdominal pressure, aid in expulsive efforts - vomiting, coughing, sneezing, defecation, urination and childbirth or delivery.
- ◆ Depress ribs, assist in expiration.
- ◆ Flex, lateral flex, and rotate vertebral column

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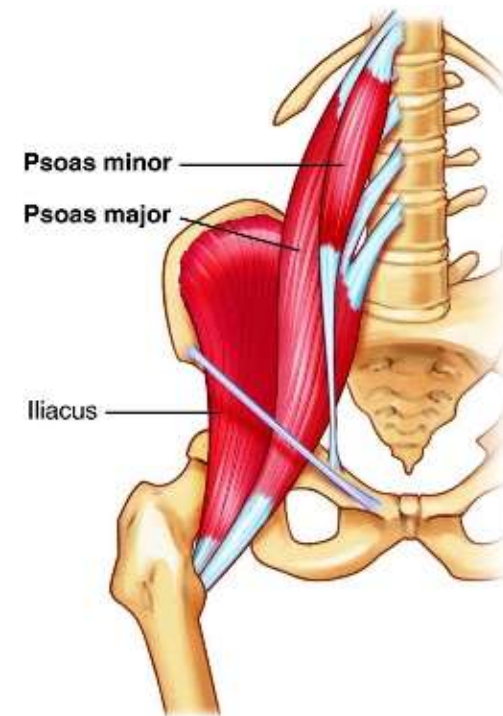
Posterior group of abdominal muscle



Psoas major



Lumbar quadrate m.



Psoas major

Lumbar quadrate muscle

A roughly quadrilateral thick muscle

Locate between 12th rib and iliac crest

Fixes and lowers the 12th rib,

Acting alone, bends the trunk toward the same side

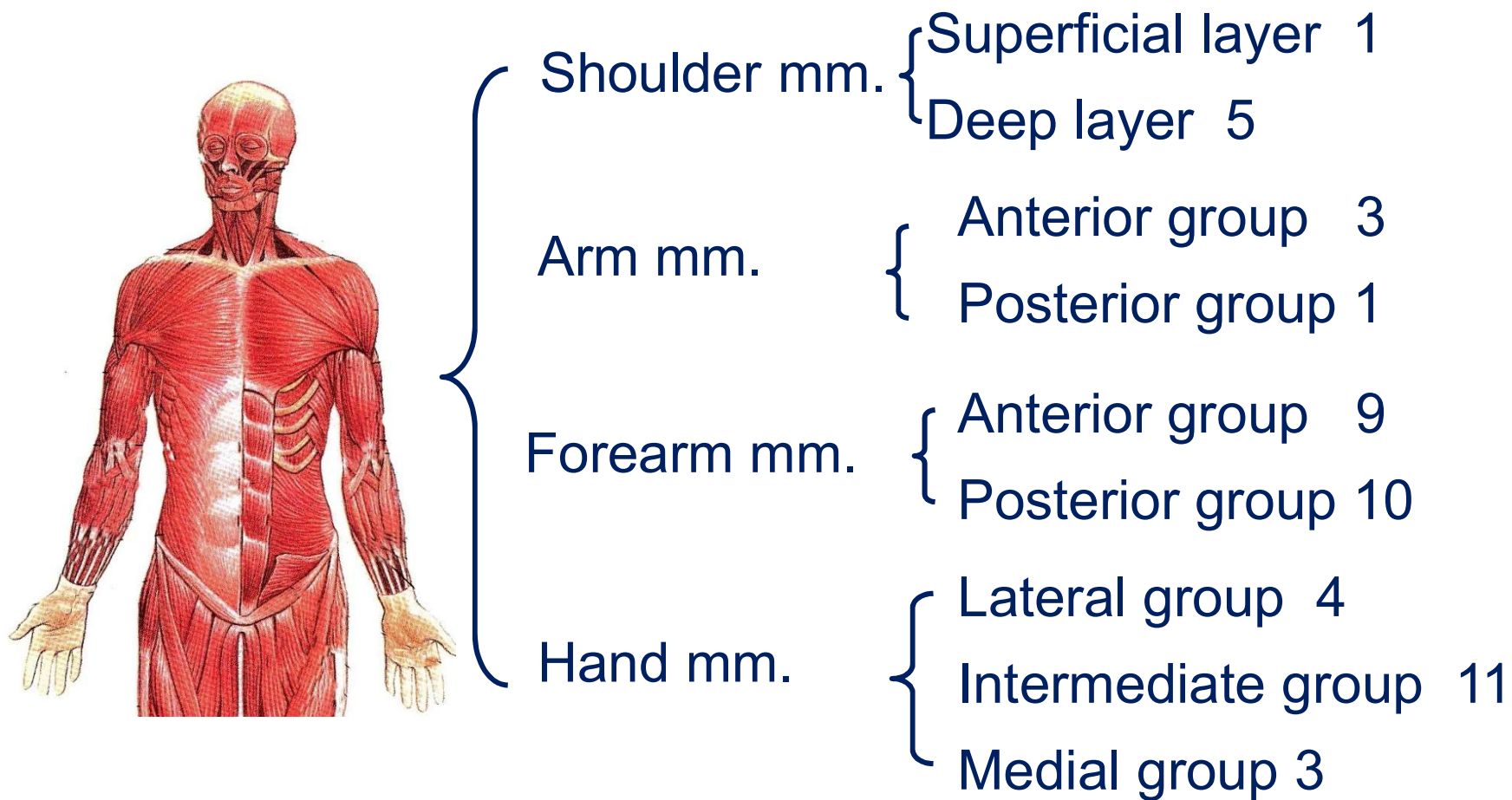
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The muscles of the upper limb



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Muscles of Upper Limb



Muscle of the shoulder-pectoral girdle

Superficial layer 1

Deltoid m

Deep layer 5

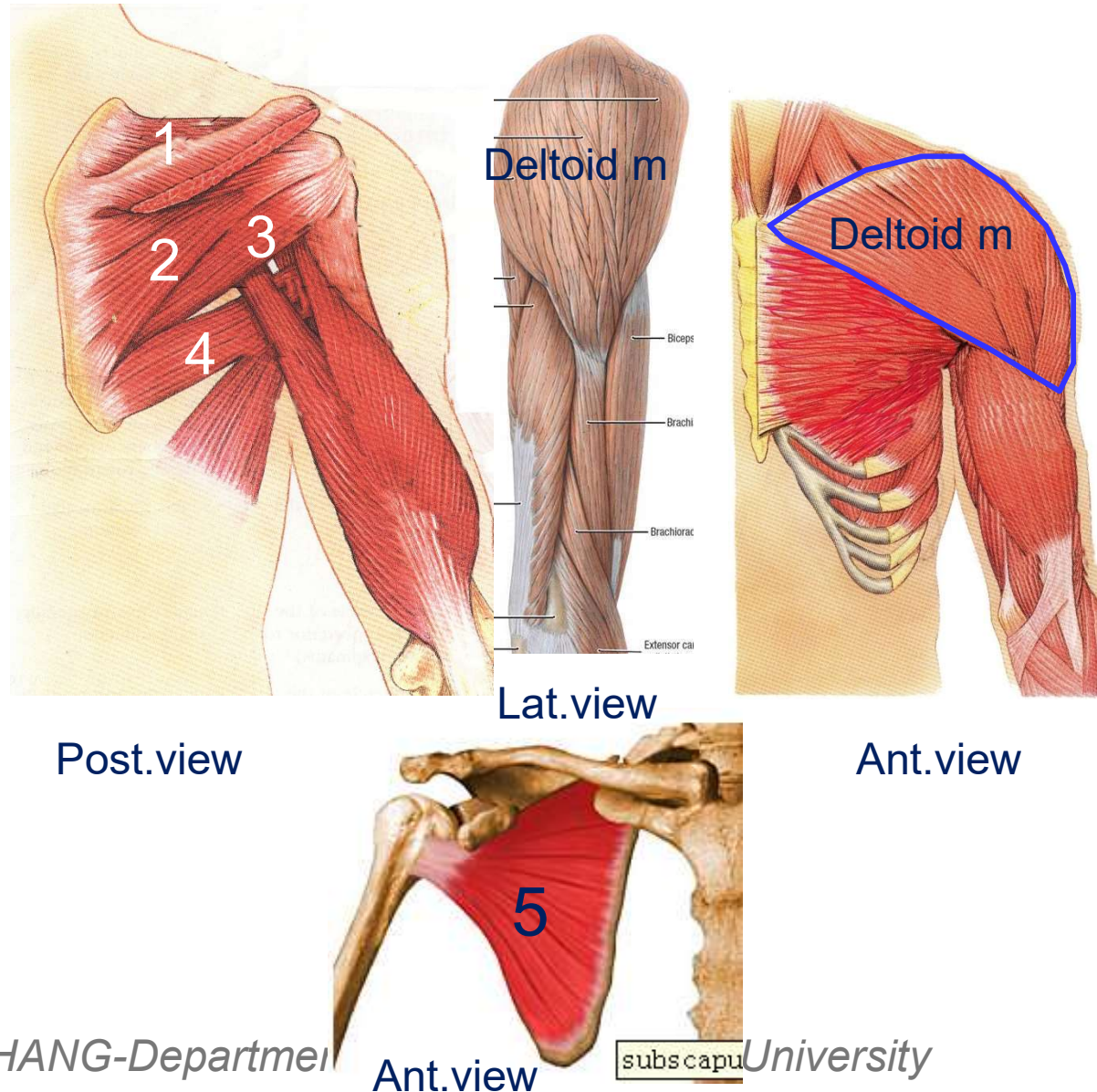
1-Supraspinatus

2-Infraspinatus

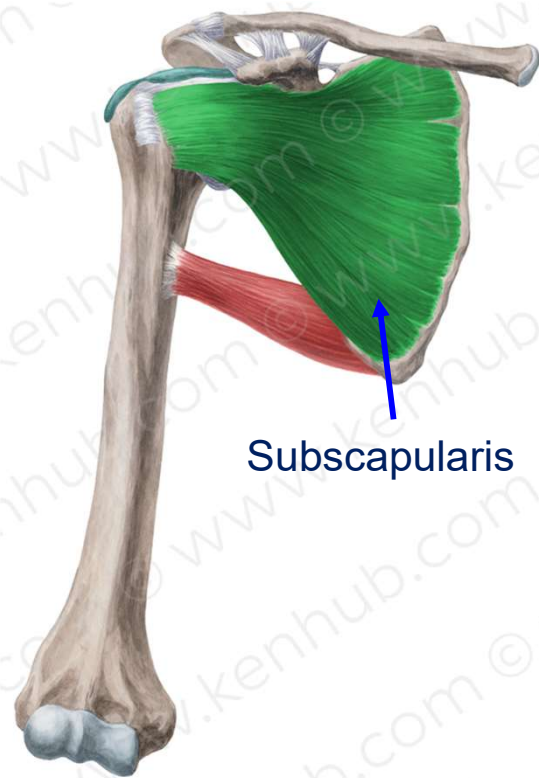
3-Teres minor

4-Teres major

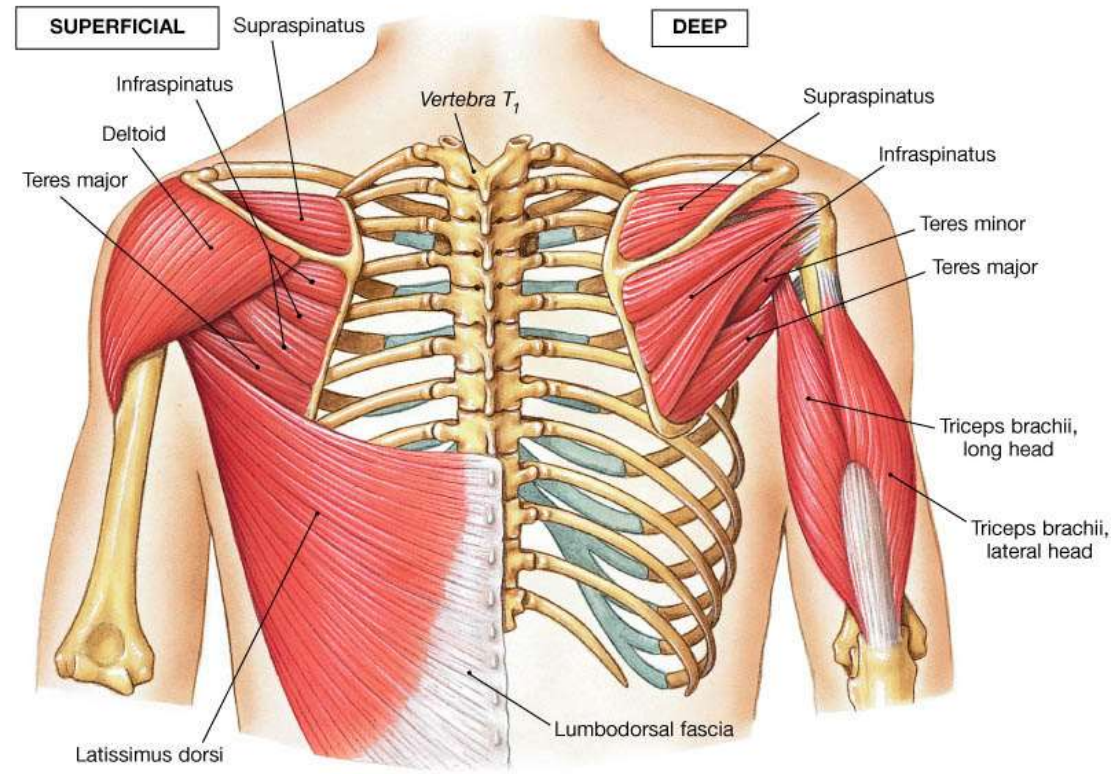
5-Subscapularis



Muscle of the shoulder-pectoral girdle



Ant. view



Post. view

Deltoid



A thick powerful triangular muscle

To form the rounded contour of the shoulder

Origin: Lat. 1/3 of clavicle, acromion, spine of scapula

Insertion: deltoid tuberosity of humerus

Action: the most powerful abductor of the arm

Supraspinatus



In the supraspinous fossa of scapula

Origin: supraspinous fossa of scapula

Insertion: its tendon crosses above the shoulder joint, top of the greater tubercle of humerus

Action: stabilizes and abduct the shoulder joints

Muscles of the shoulder

Infraspinatus



In the infraspinous fossa of scapula, triangular

Origin: infraspinatus fossa of scapula, across
The back of the shoulder joint.

Insertion: the middle of the greater tubercle,

Action: stabilizes the shoulder joints
and laterally rotates the arm

Teres minor



Origin: the upper 2/3 of lat. border of scapula,
across, the back of the shoulder joint.

Insertion: the lower part of the greater tubercle

Action: laterally rotates and adducts humerus
hold the humeral head in glenoid cavity

Muscles of the shoulder

Teres major



A thick round muscle below the teres major

Origin: dorsal surface near inf. angle of scapula

Insertion: crest of lesser tubercle of humerus,

Action: acts on latissimus dorsi in adduction ,
extending and medial rotating the arm

Subscapularis



A large thick triangular muscle, infrascapular fossa

Origin: infrascapular fossa

Insertion: lesser tubercle of humerus, crossing
the front of the shoulder joint

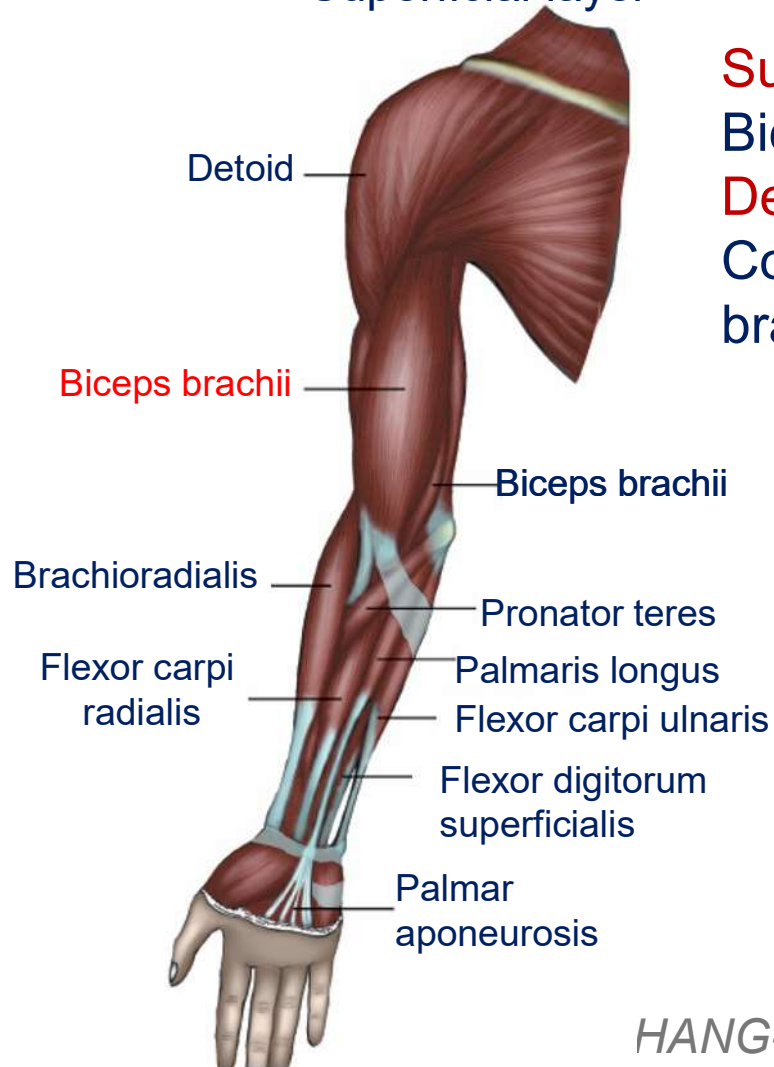
Action: medially rotates the arm and stabilizes
the shoulder joint

Anterior muscular group of arm

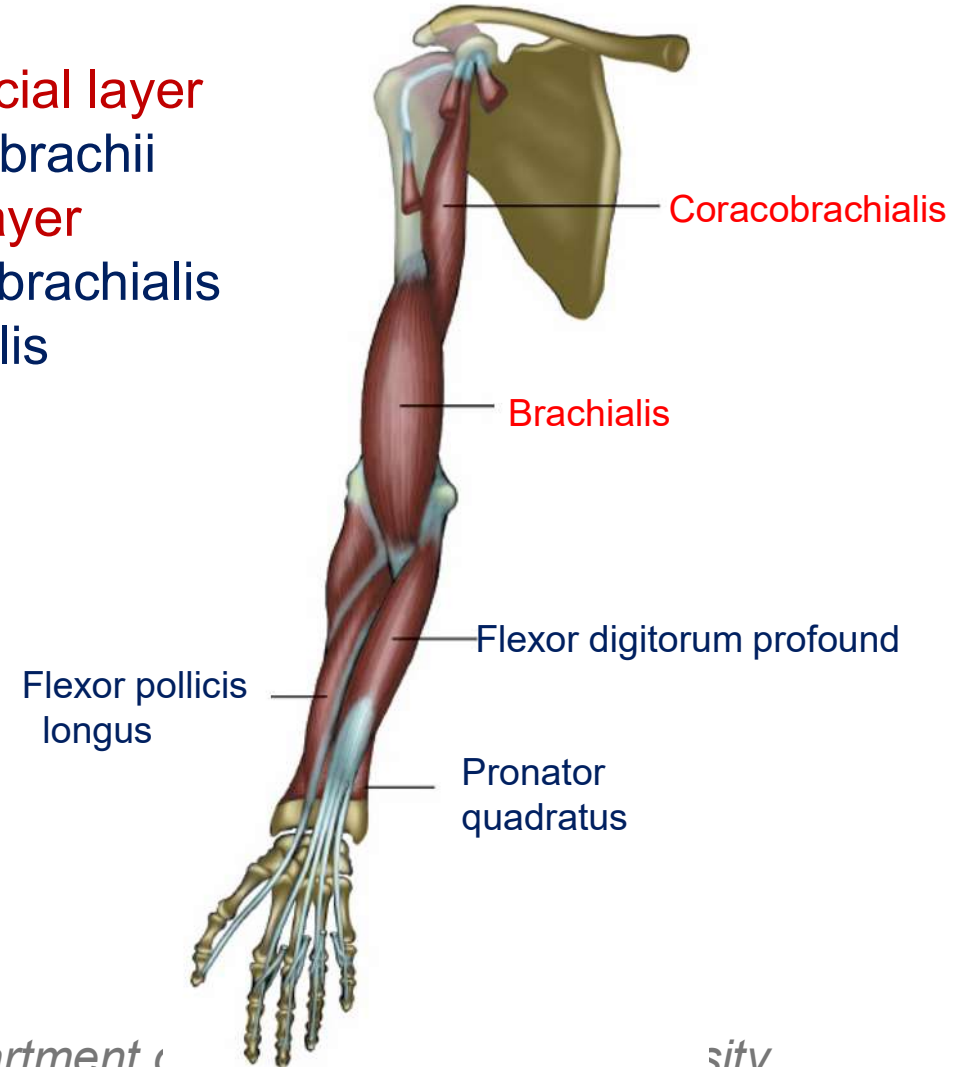
Superficial and deep layer, three muscles

Superficial layer

Deep layer



Superficial layer
Biceps brachii
Deep layer
Coracobrachialis
brachialis



The muscles of the arm

Biceps brachii



Biceps brachii

Location: the anterior surface of the humerus

Origin: medial head-coracoid process,
lateral head-superior tuberosity of the glenoid

Insertion: both heads insert on the radial tuberosity

Action: flex elbow joint and shoulder joint and
supinates the forearm

Coracobrachialis

Coracobrachial m.



Origin: coracoid process

Insertion: humerus

Action: flexs the shoulder joint

Brachialis

Origin: humerus

Insertion: tuberosity of ulna

Action: flex the elbow joint

Brachial muscle

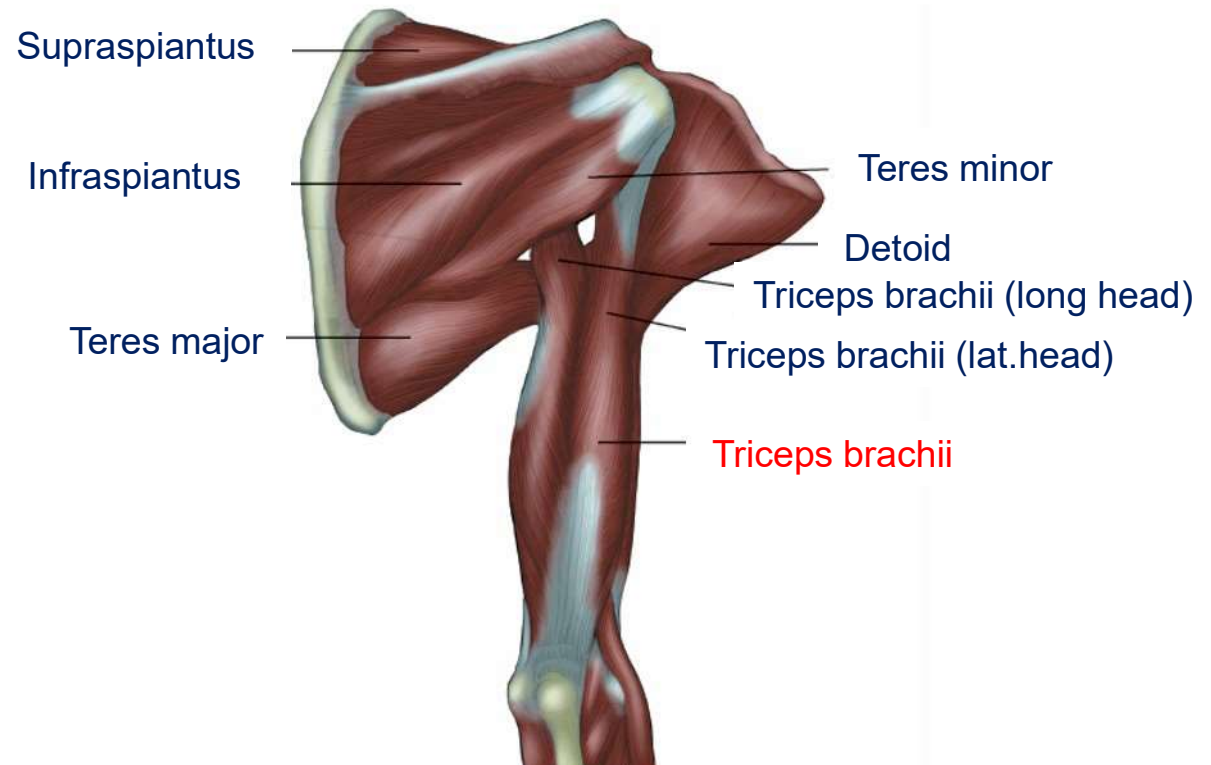


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Posterior muscular group of arm

sity

Triceps brachii



Origin: one from infraglenoid tuberosity
two head from poster surface of humerus

Insertion: olecranon of ulna

Action: it is the chief extensor of the forearm. it's long head
Can also extend and adduct the shoulder joint.

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Feature of ant. muscular group of forearm

- ◆ Most muscles originate from medial epicondyle, attach to wrist and finger.
- ◆ Brachioradial muscle is the muscle of landmark
- ◆ Their action: flex elbow, wrist, finger & pronation

Attention please:

Mastering the function and grouping of each group.

Especially:

Anterior group of forearm

Posterior group of forearm

The anterior muscle group of the forearm

The first layer

From lateral to medial

1-Brachioradialis

2-Pronator teres

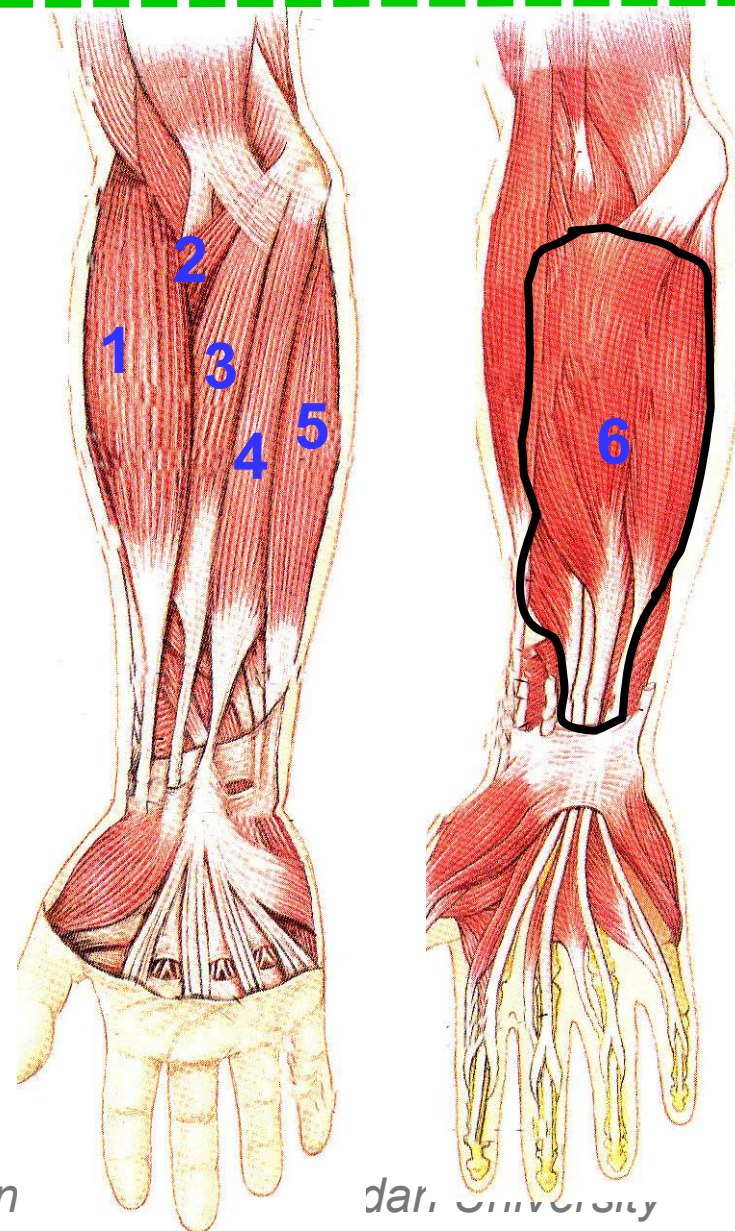
3-Flexor carpi radius

4-Palmaris longus

5-Flexor carpi ulnaris

The second layer

6-Flexor digitorum superficialis



The anterior muscle group of the forearm

The third layer

7-Flexor digitorum profundus

8-Flexor pollicis longus

The fourth layer

9-Pronator quadratus

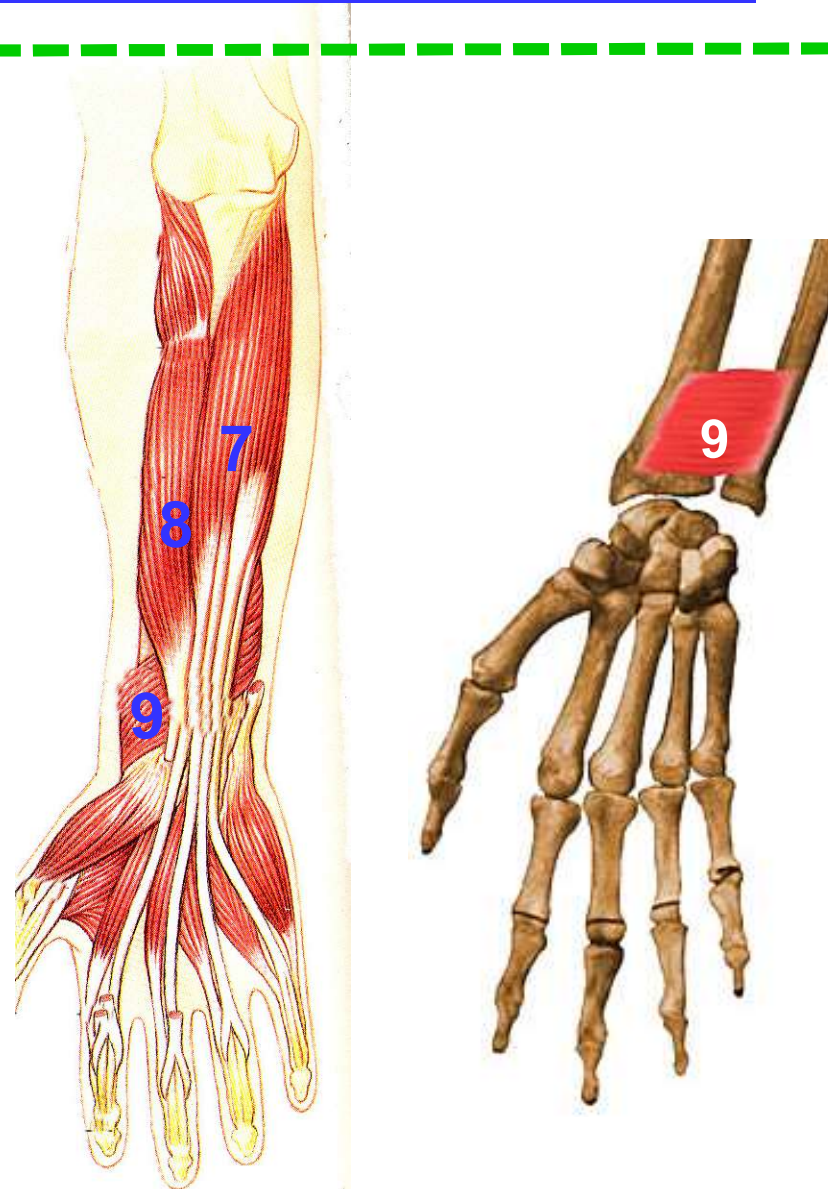
Layer	m.number
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Layer 1.	5
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Layer 2.	1
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Layer 3.	2
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Layer 4.	1
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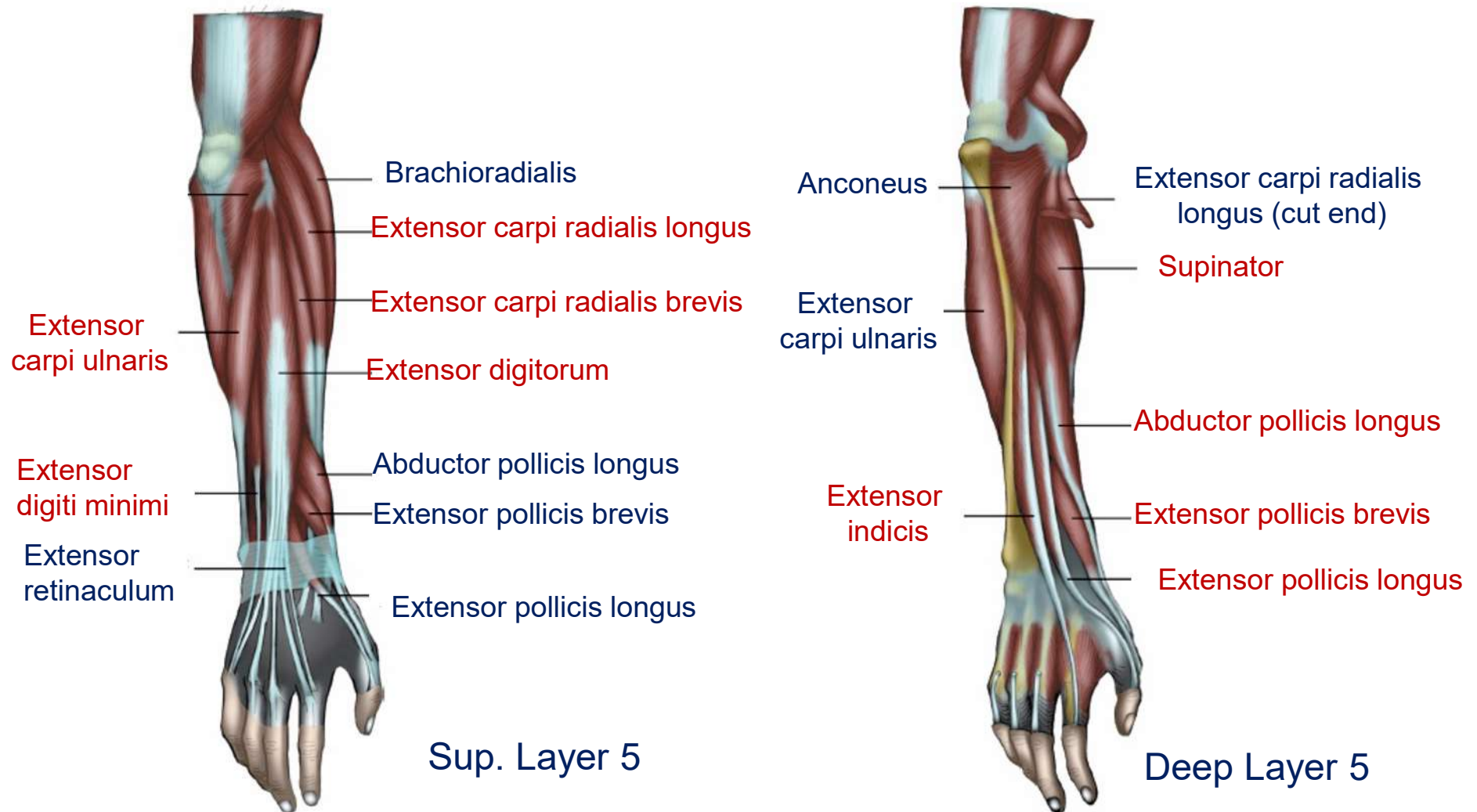


Feature of posterior muscular group of forearm

10 muscles in anterior muscular group of forearm

- ◆ Most muscles originate from lateral epicondyle ,
attach to wrist and finger.
- ◆ We often recognize them according their insertions
- ◆ Their action :extends the elbow, wrist and finger
and supination

Posterior muscular group of forearm



Posterior muscular group of forearm

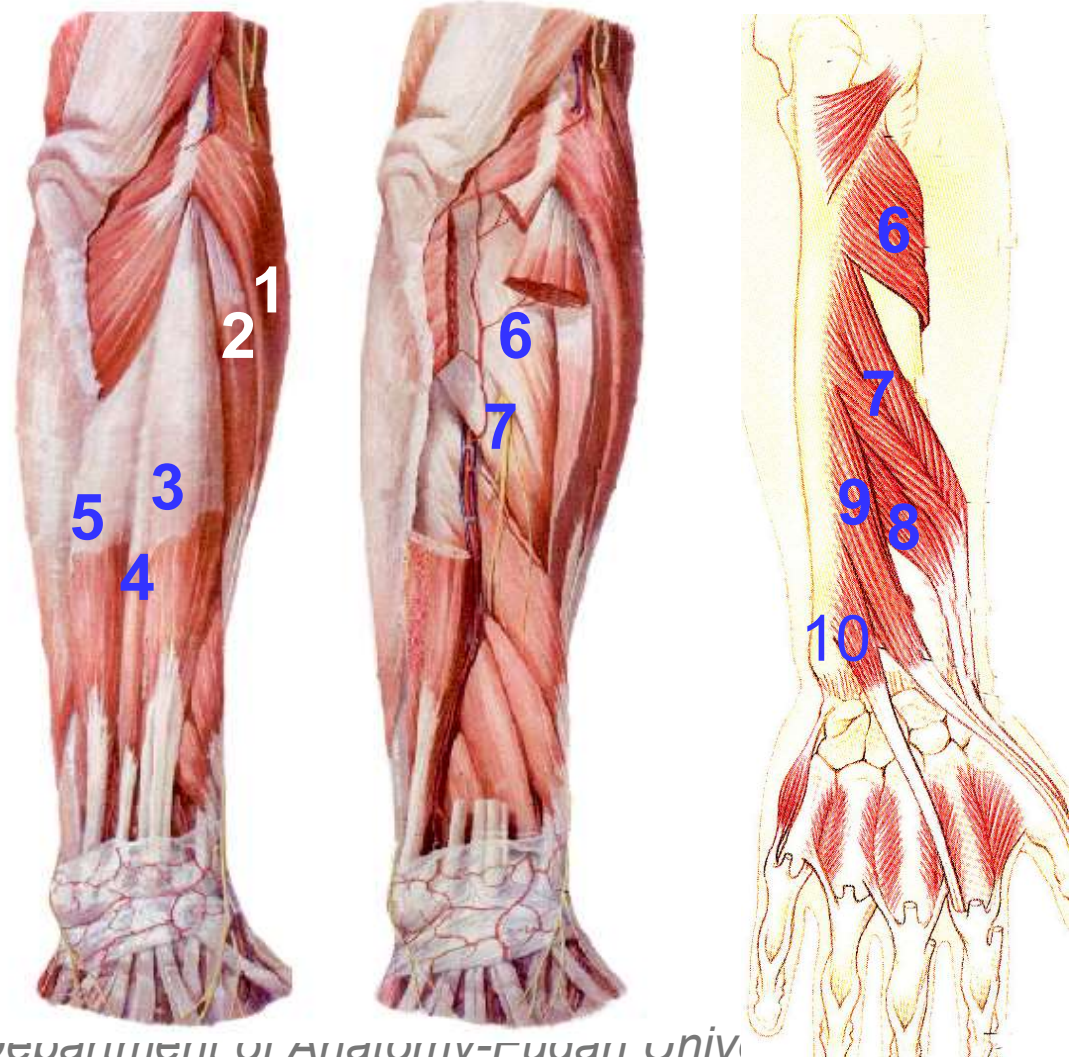
Superficial layer

- 1 Extensor carpi radialis longus
- 2 Extensor carpi radialis brevis
- 3 Extensor digitorum
- 4 Extensor digiti minimi
- 5 Extensor carpi ulnaris

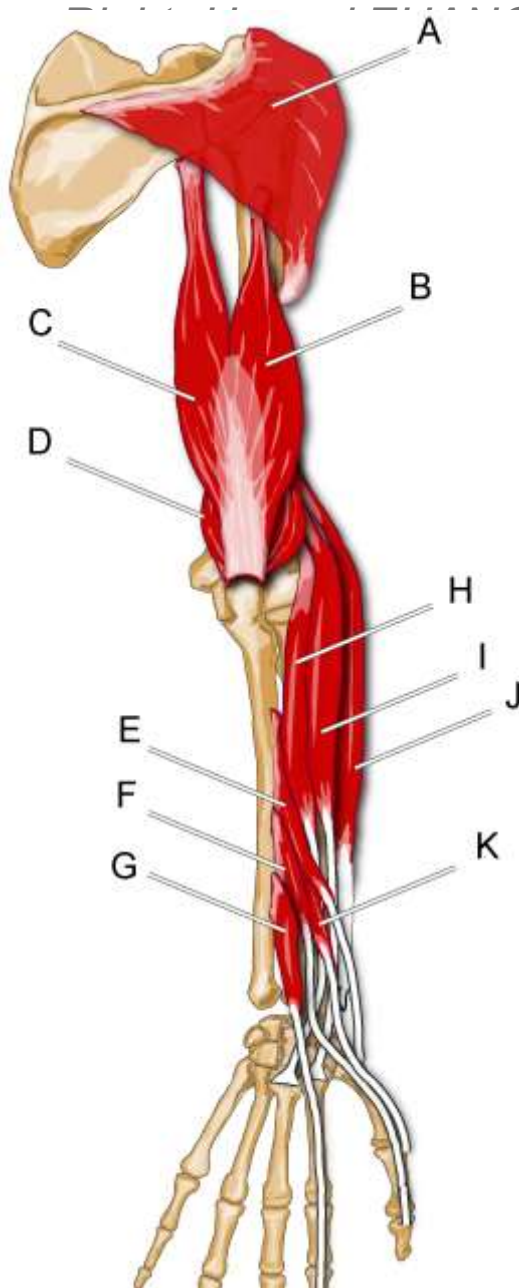
Deep layer

- 6 Supinator
- 7 Abductor pollicis longus
- 8 Extensor pollicis brevis
- 9 Extensor pollicis longus
- 10 Extensor indicis

Learn it by yourself



Co



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A. Deltoid

Learn it by yourself

B. Triceps brachii, lateral head

C. Triceps brachii, long head

D. Triceps brachii, medial head

E. Abductor pollicis longus

F. Extensor pollicis longus

G. Extensor indicis

H. Extensor carpi radialis brevis

I. Extensor carpi radialis longus

J. Brachioradialis

K. Extensor pollicis brevis

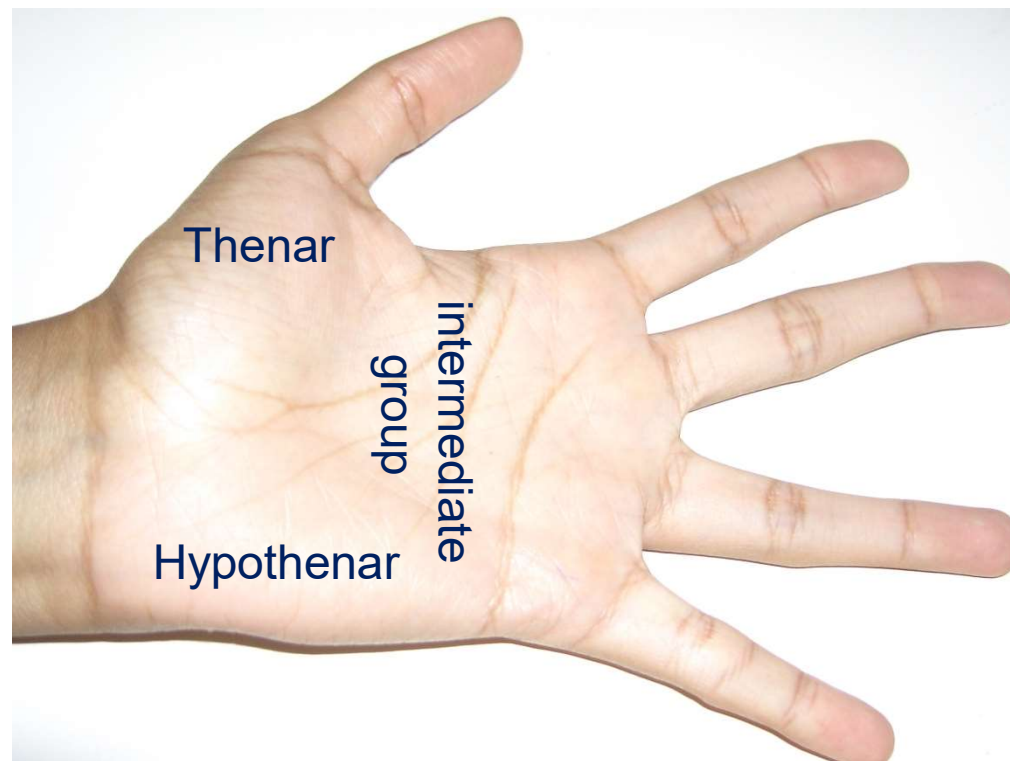
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Muscles of the hand

Thenar (lateral group) 4—movement of the thumb

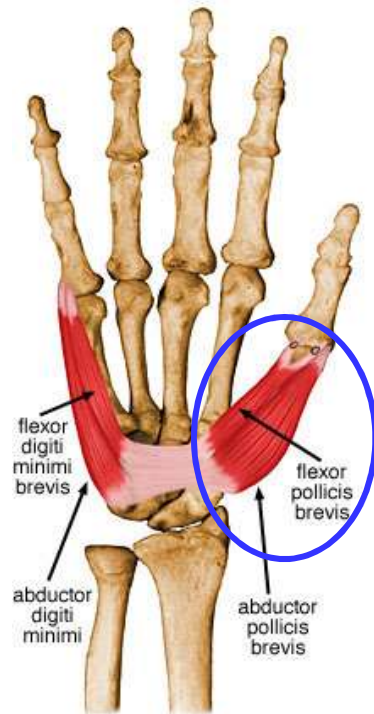
Intermediate group 11—movement of 2-5th fingers

Hypothenar (medial group) 3— movement of 5th finger



Muscles of the hand

Thenar (lateral group) 4—movement of the thumb



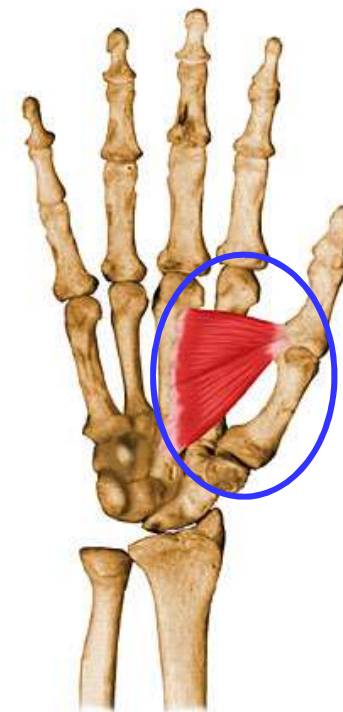
Flexor pollicis brevis
Abductor pollicis brevis

Superficial layer



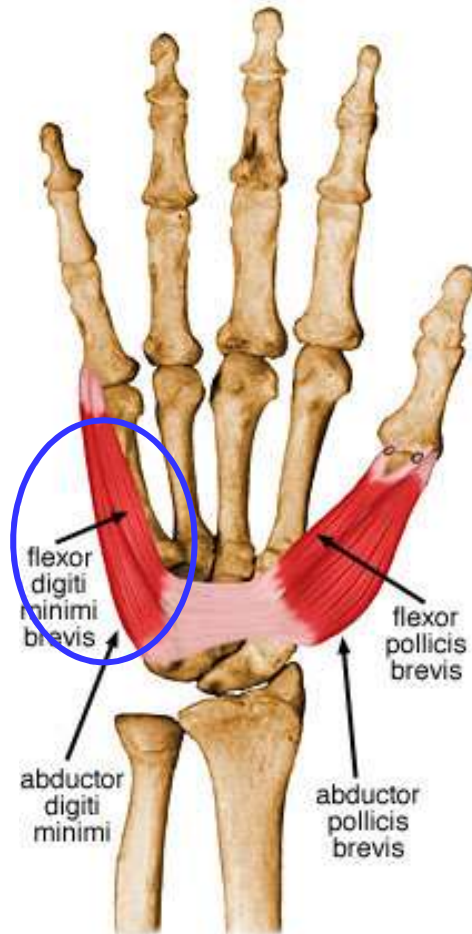
Opponens pollicis

Deep layer



Adductor pollicis

Co Hypothenar 3—movement of 5th finger

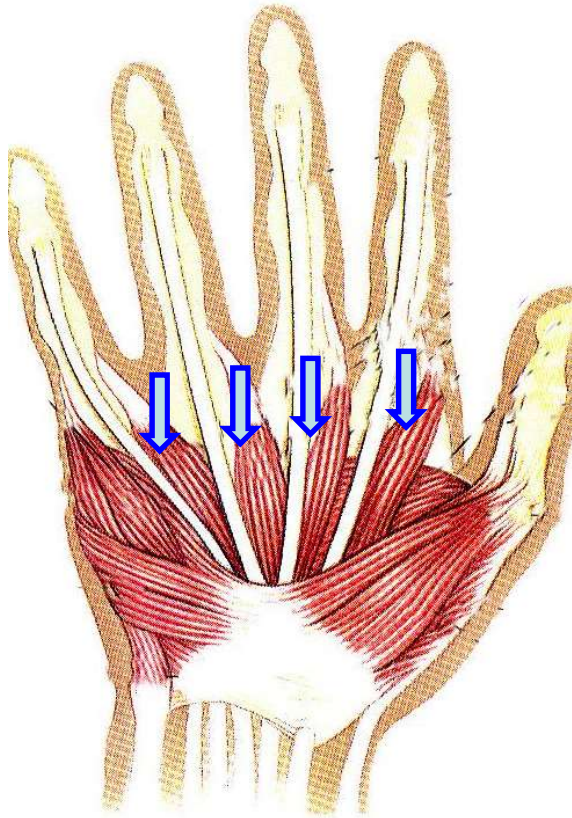


Flexor digiti minimi brevis
Adductor digiti minimi



Opponens digiti minimi

Intermediate group 11 — movement of 2-4th fingers



Lumbricales 4
Flexor the finger



Palmar interossei 3
adductor



Dorsal interossei 4

Co



G

HA



H

Ana



ersity



Extended



Flexed



Abducted



Adducted



Opposed to little finger



A



B



C



D



E

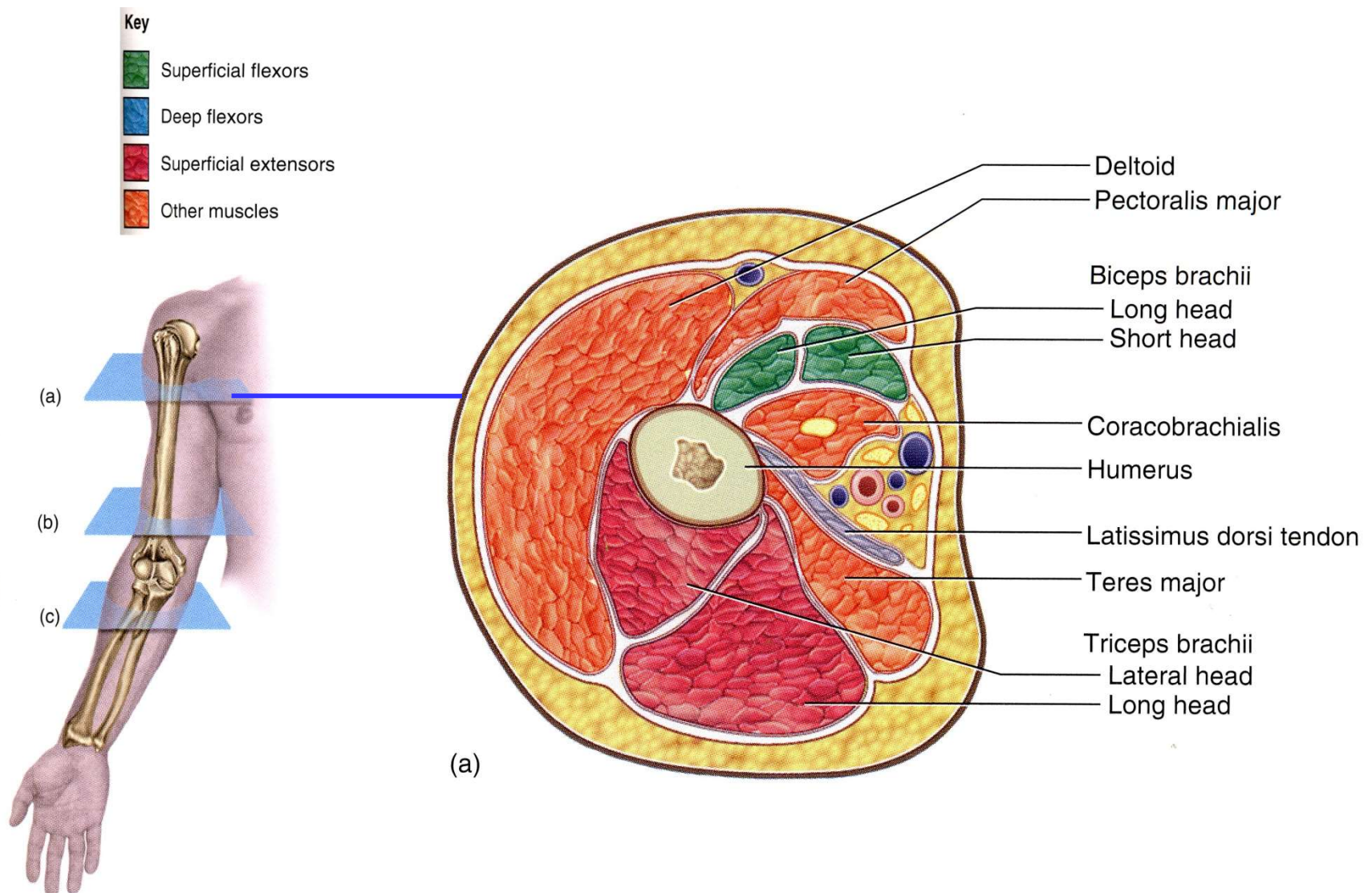


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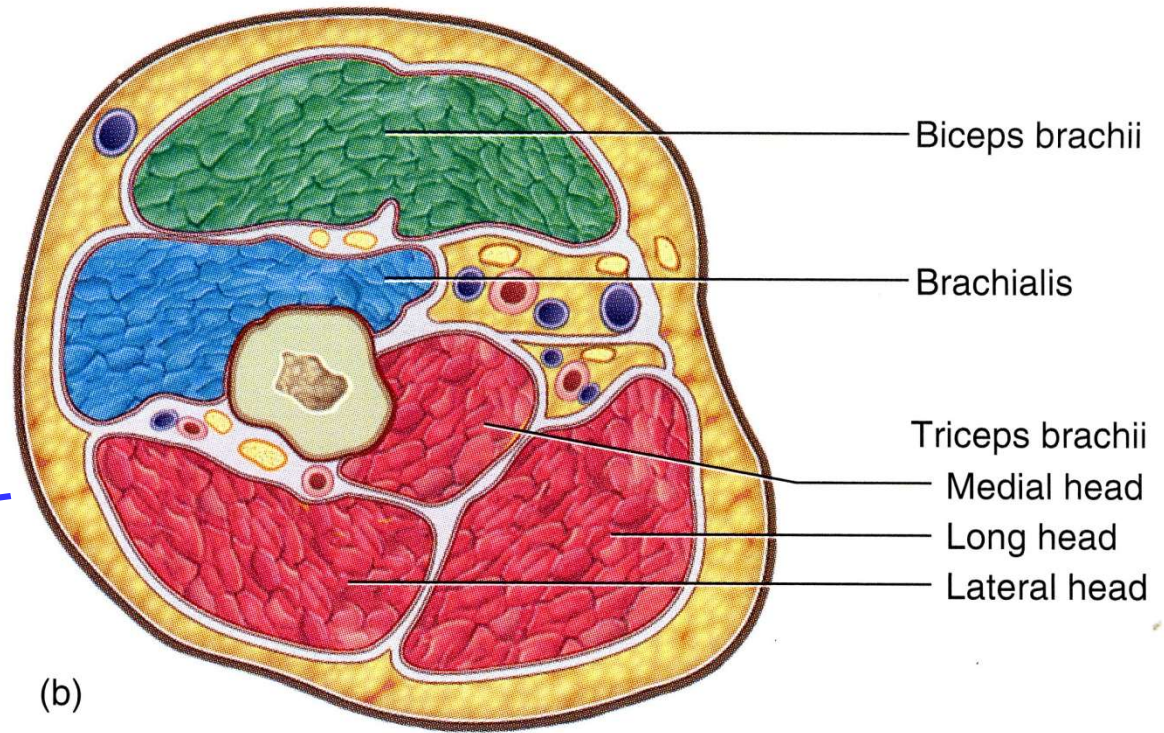
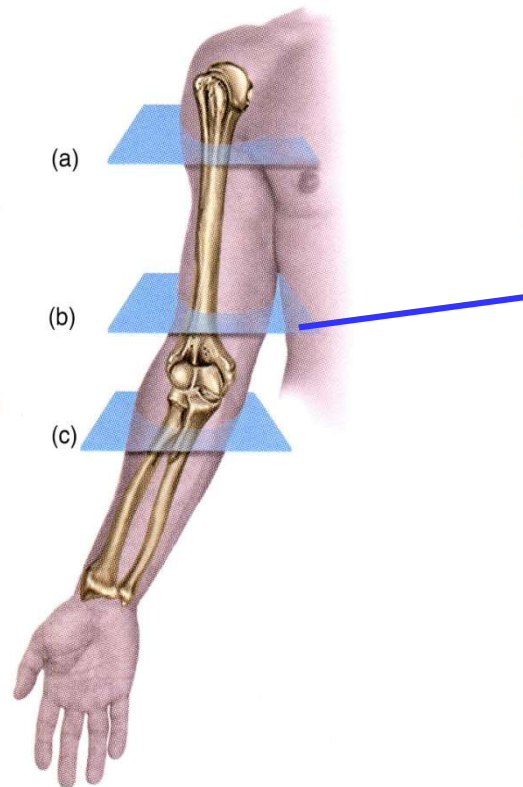
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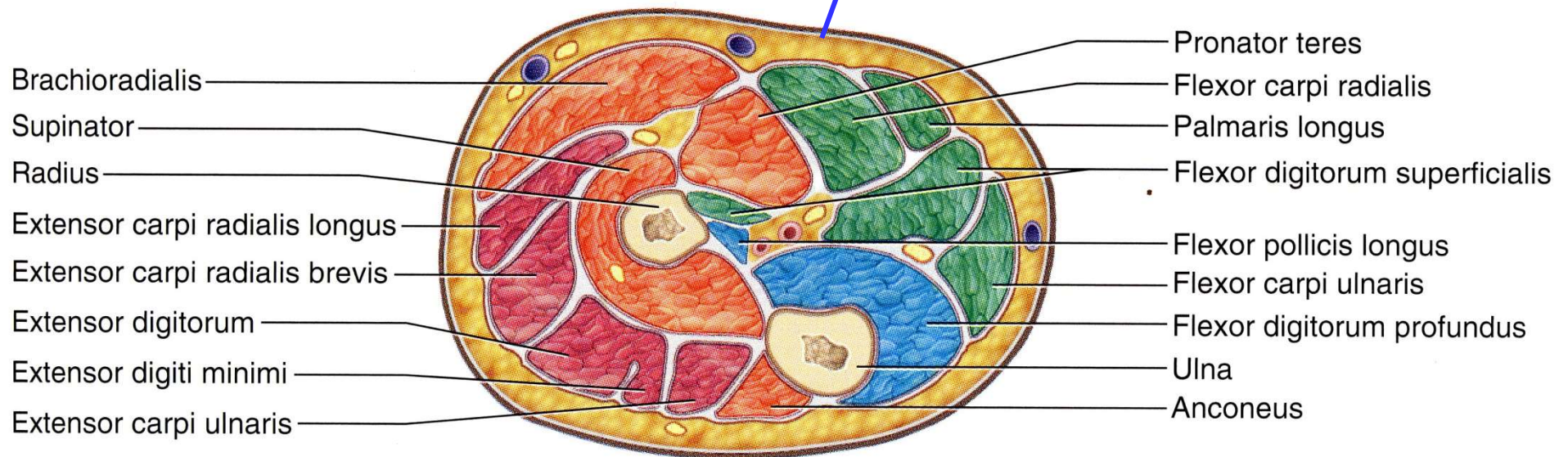
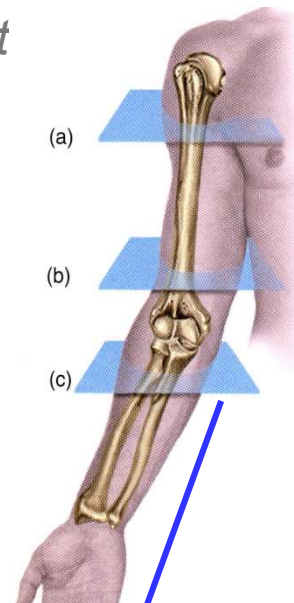
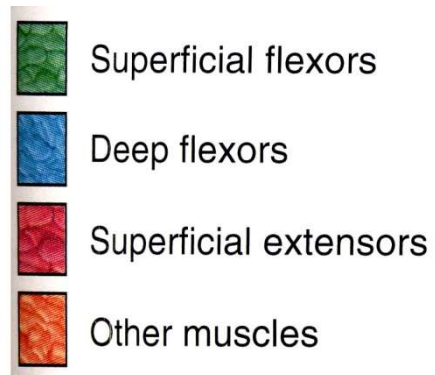
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Key

-  Superficial flexors
-  Deep flexors
-  Superficial extensors
-  Other muscles





(c)

The important contents today

- ◆ Master the name, position and action of anterolateral group muscle in abdomen.
- ◆ Master the name, position and action of shoulder muscle.
- ◆ Master the name, location and function of the arm muscle.
- ◆ Master the name and action of anterior and posterior group in forearm
- ◆ Understand grouping of hand muscle.

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See you next time!

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Co

Different saying of some muscles

