



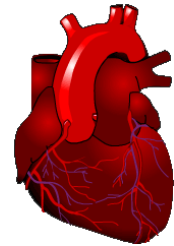
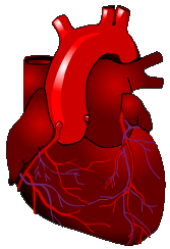
Systematic Anatomy

Locomotor system - Part 6

Muscles of abdomen

Muscles of the upper limb

腹部肌与上肢肌



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复旦大学枫林校区

English into Chinese

1. Medial pterygoid muscle
2. Sternocleidomastoid
3. Omohyoid
4. Scalenus anterior
5. Venal caval foramen

Chinese into English

1. 骨骼肌
2. 咬肌
3. 胸大肌
4. 胸骨舌骨肌
5. 食管裂孔

English into Chinese

1. Medial pterygoid muscle 翼内肌
2. Sternocleidomastoid 胸锁乳突肌
3. Omohyoid 肩胛舌骨肌
4. Scalenus anterior 前斜角肌
5. Venal caval foramen 腔静脉裂孔

Chinese into English

1. 骨骼肌 Skeletal muscle
2. 咬肌 Masseter
3. 胸大肌 Pectoralis major
4. 胸骨舌骨肌 Sternohyoid
5. 食管裂孔 Esophageal hiatus

The content today



Muscles of abdomen

Muscles of the upper limb

Anterolateral group 4 Posterior group 2

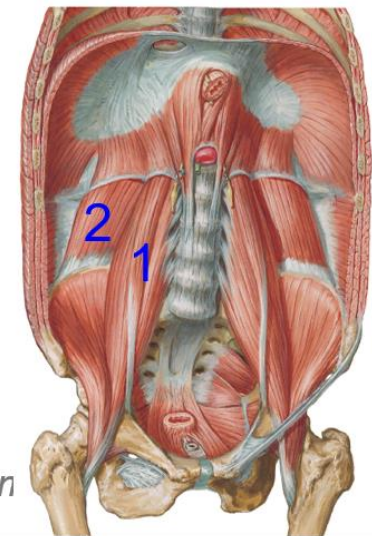
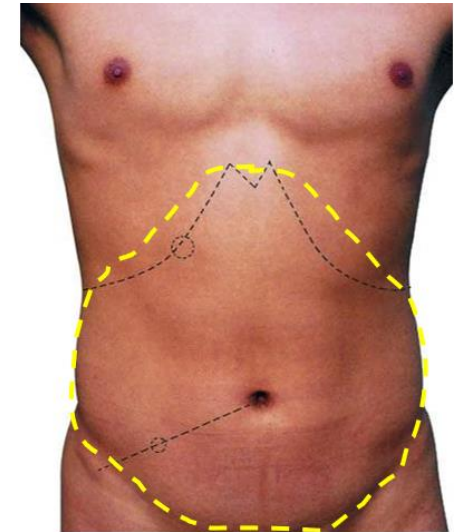
Anterolateral group

Obliquus externus abdominis 腹外斜肌

Obliquus internus abdominis 腹内斜肌

Transversus abdominis 腹横肌

Rectus abdominis 腹直肌



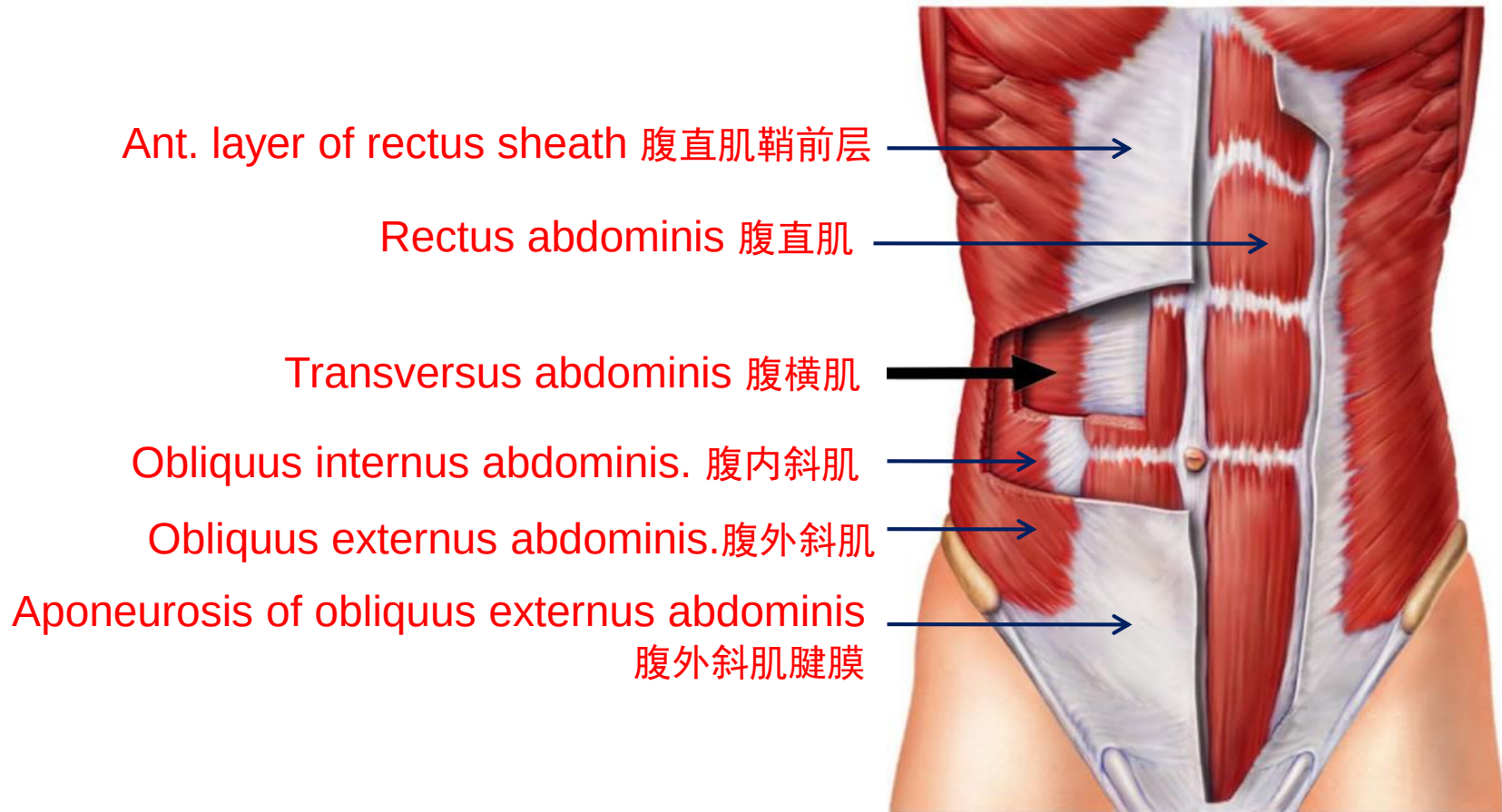
n

Posterior group

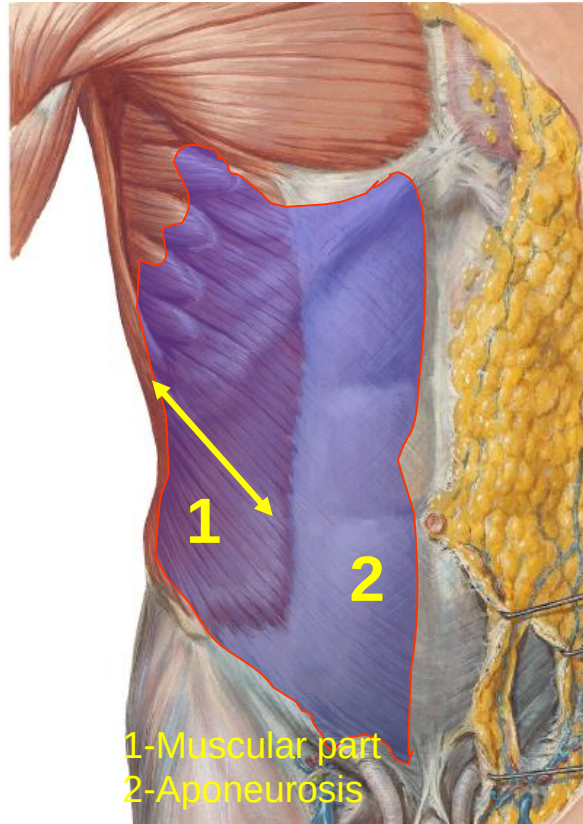
1.Psoas major 腰大肌

2.Lumbar quadratus m. 腰方肌

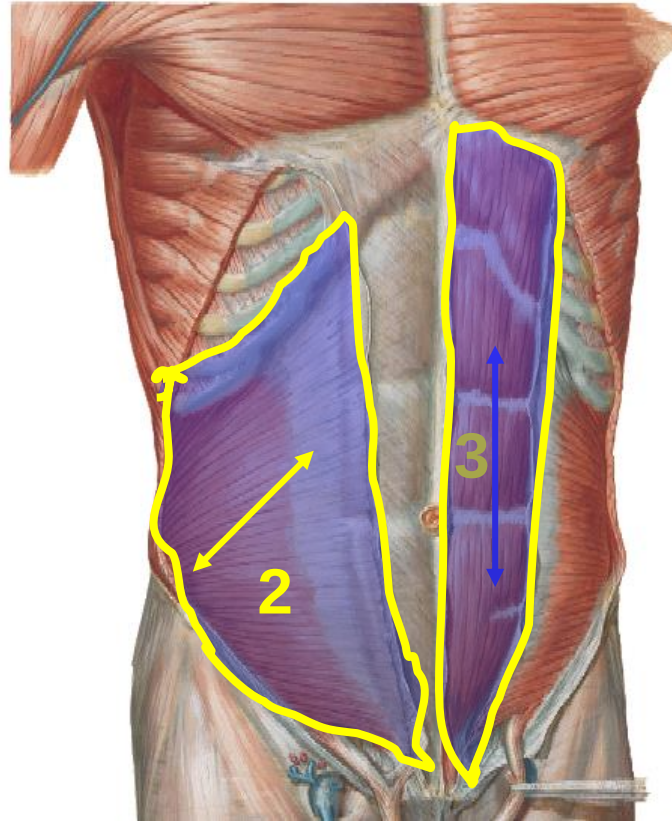
Muscles of antrolateral abdominal walls 腹前外侧壁肌肉



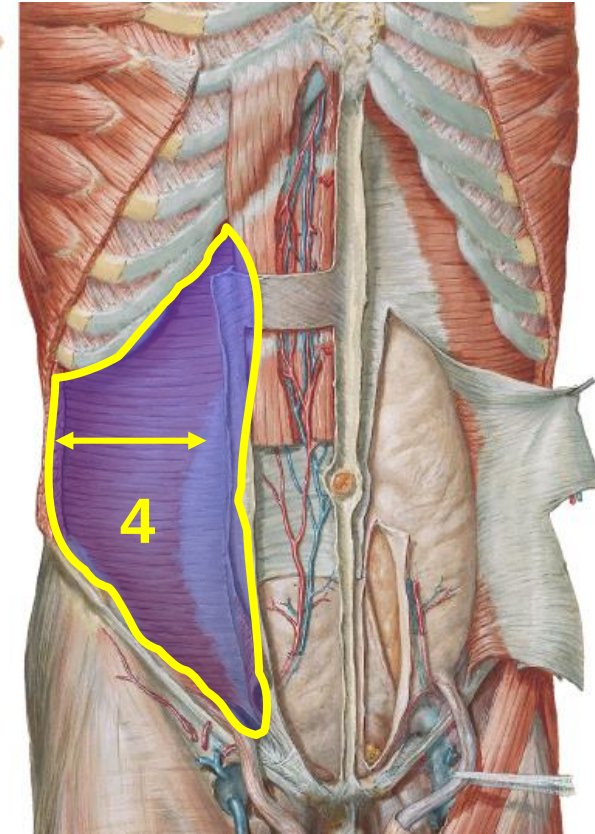
Muscle of the Anterolateral abdominal wall



1-obliquus externus abdominis



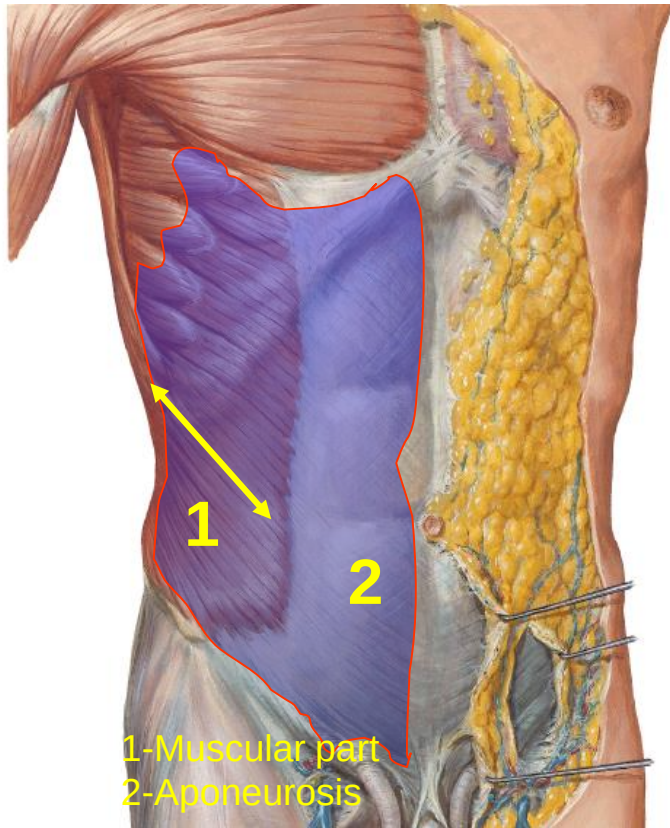
2-obliquus internus abdominis
3-Rectus abdominis



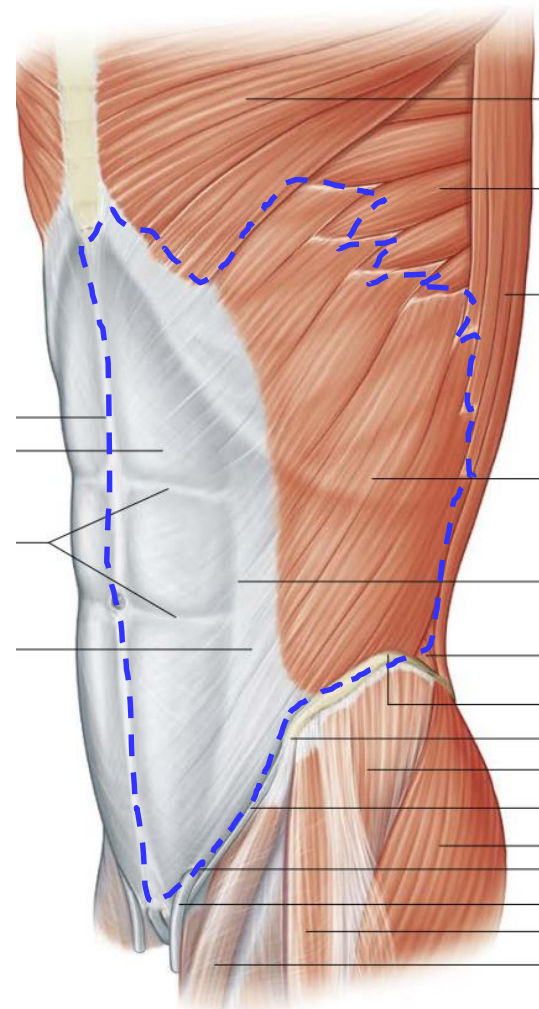
4-Transversus abdominis

→ The direction
of muscular fiber

Anterolateral abdominal wall m.-obliquus externus abdominis

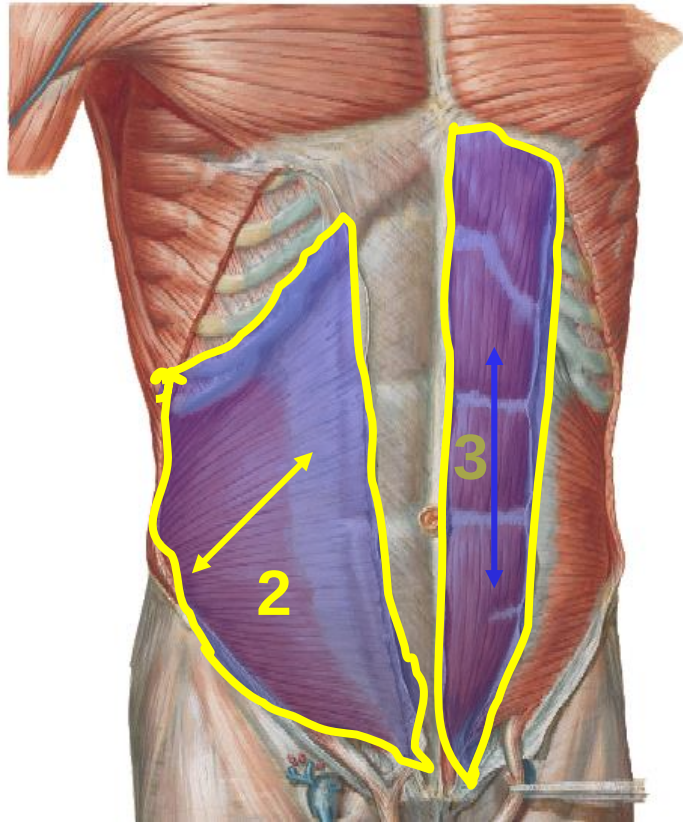


1-obliquus externus abdominis



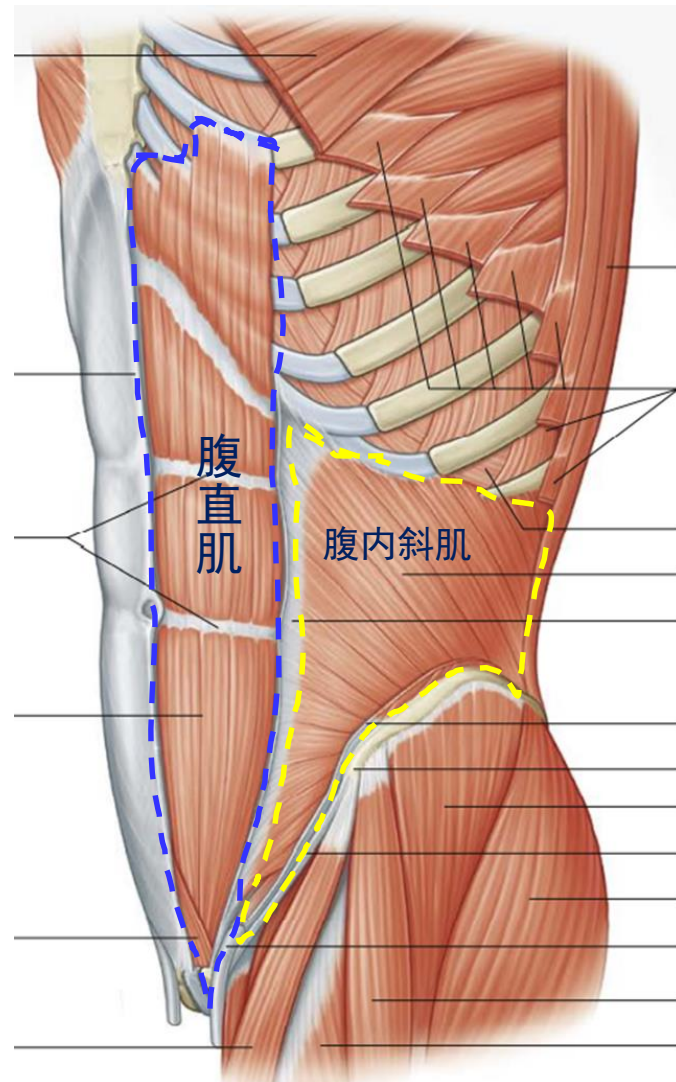
→ The direction
of muscular fiber

Obliquus internus abdominis & rectus abdominis

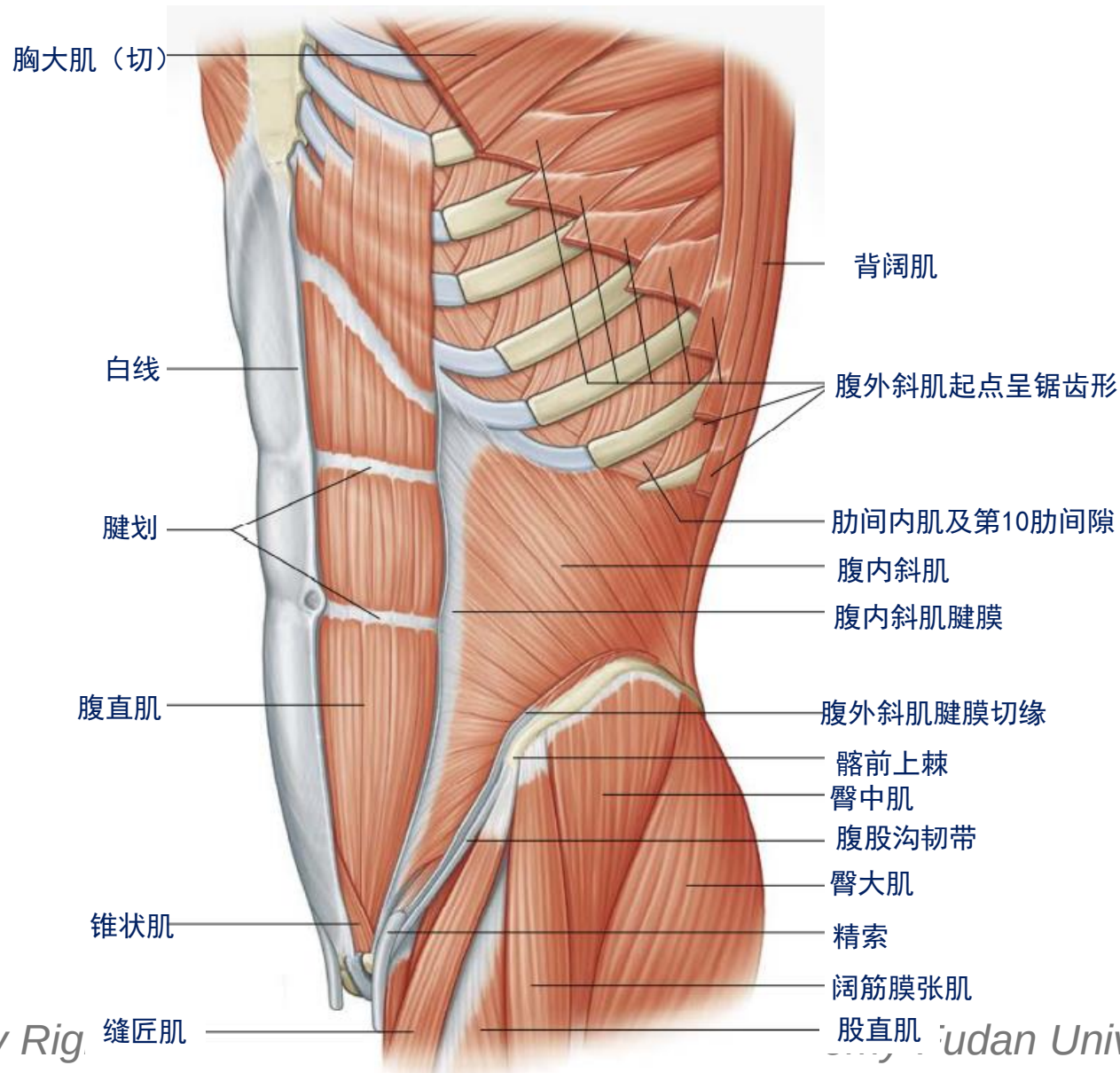


2-obliquus internus abdominis
3-Rectus abdominis

→ The direction
of muscular fiber

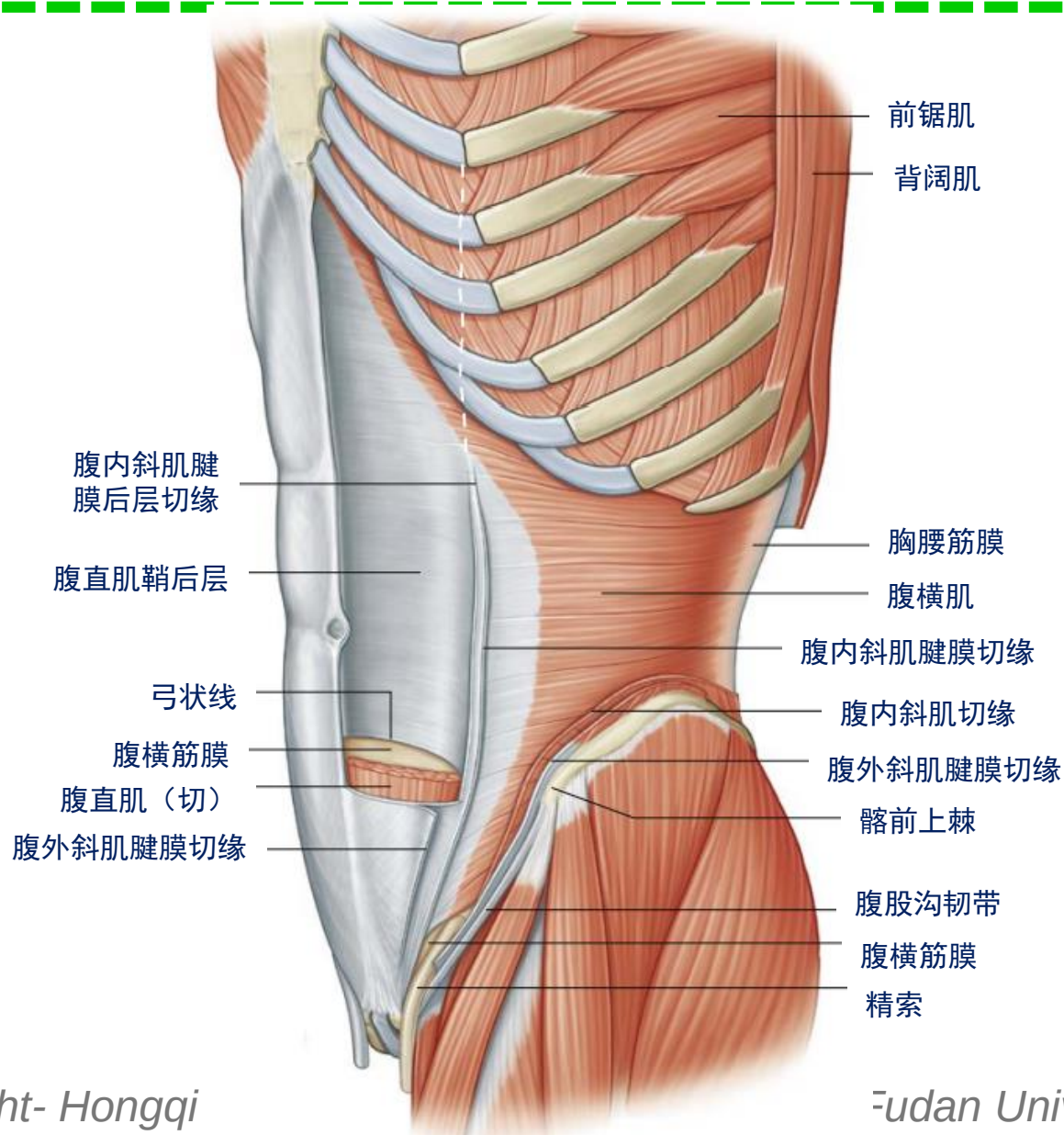


Obliquus internus abdominis & rectus abdominis

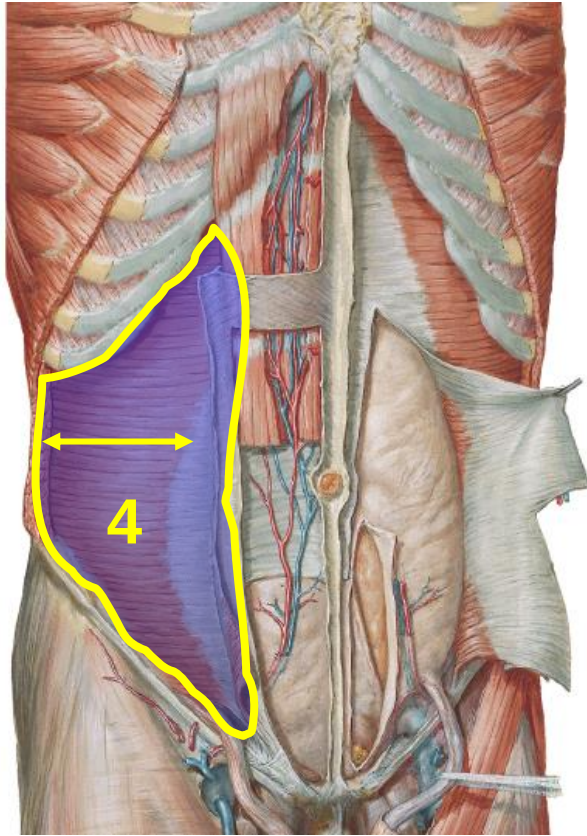


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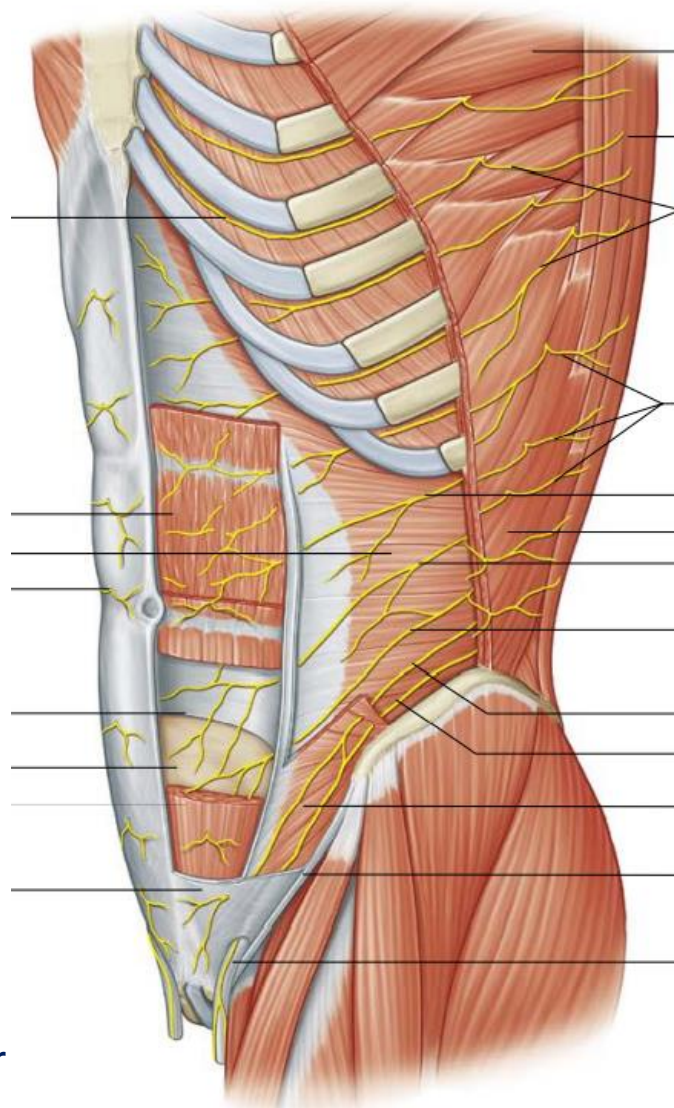


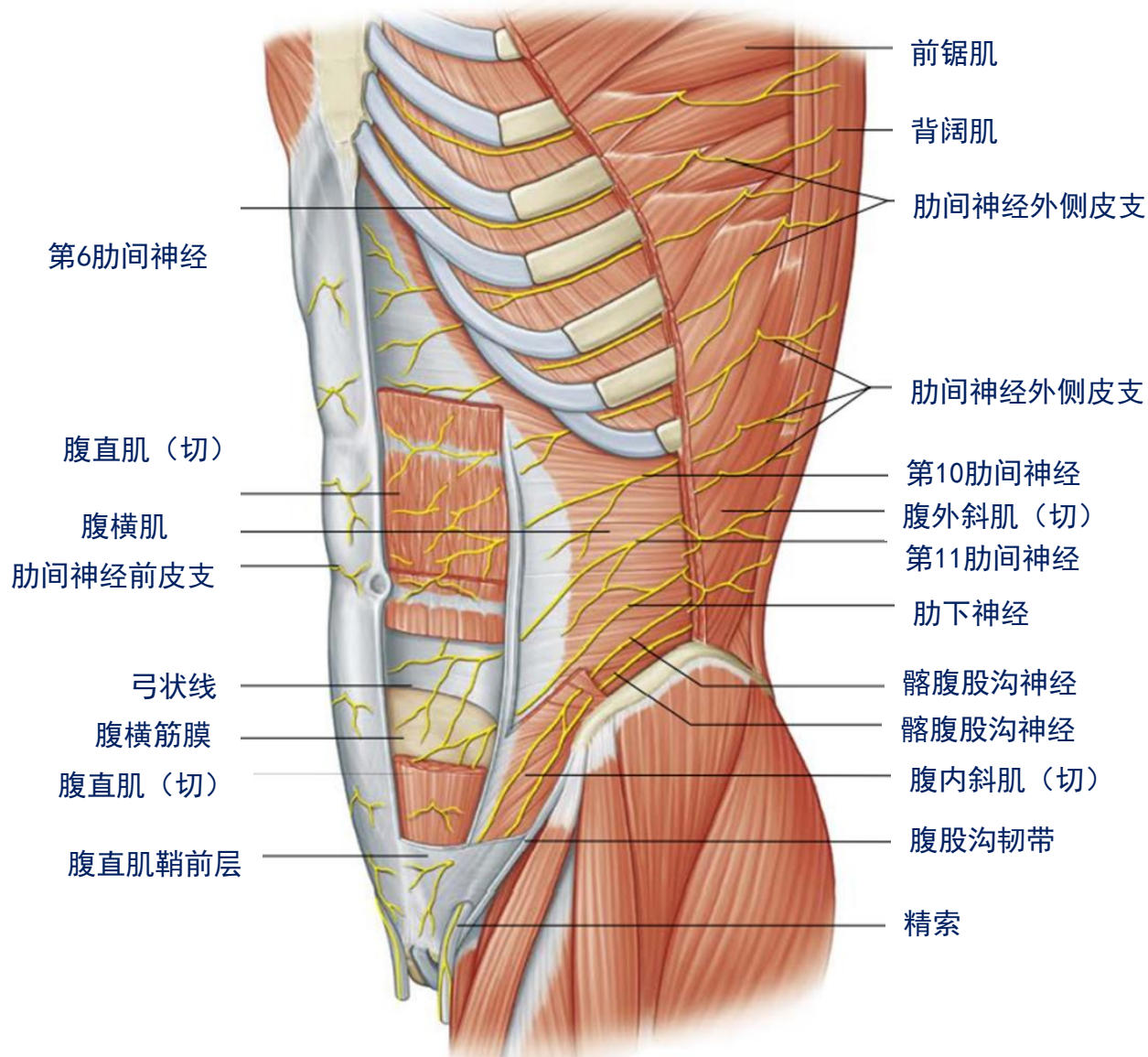
Muscle of the Anterolateral abdominal wall



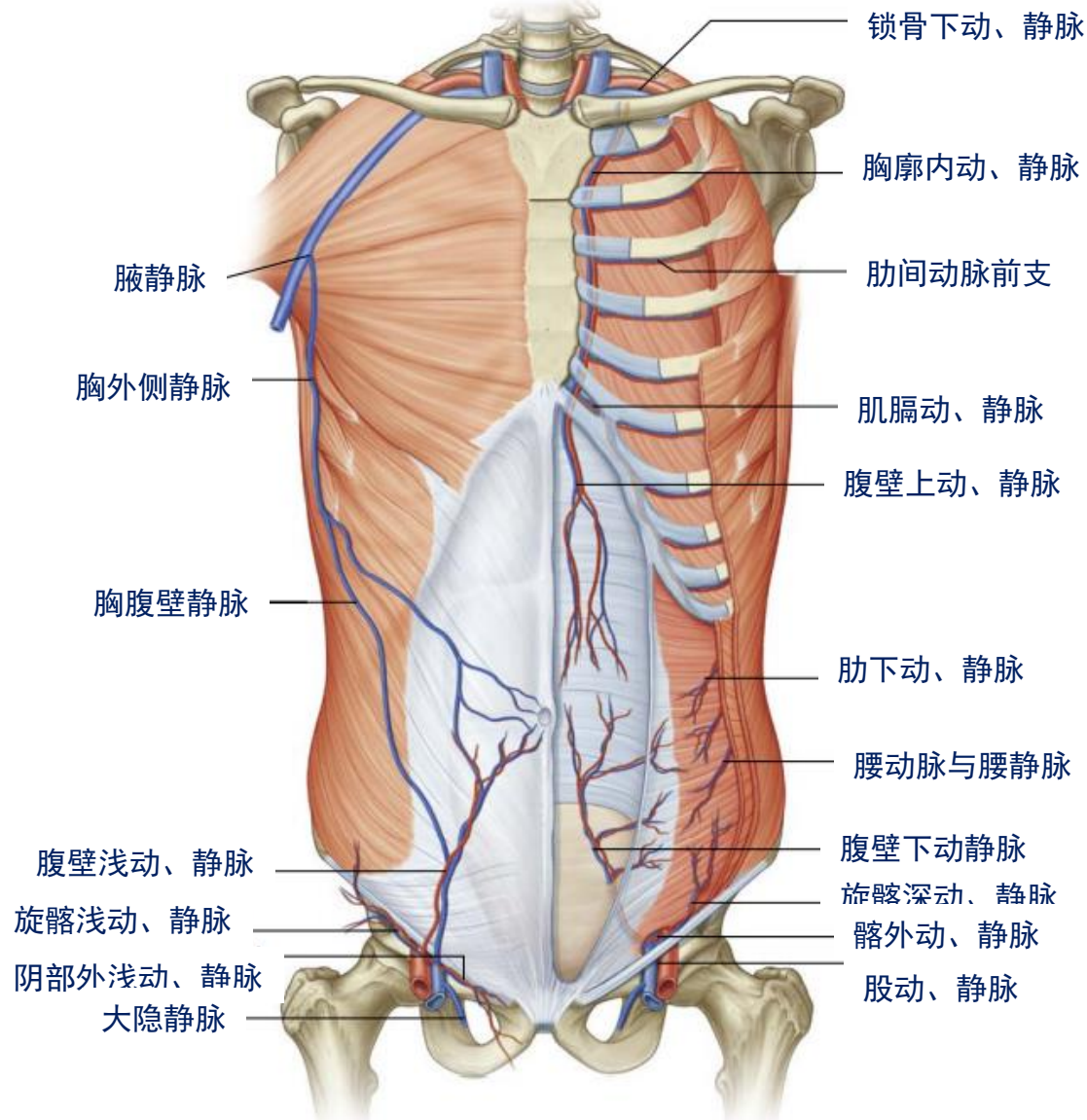
4-Transversus abdominis

→ The direction
of muscular fiber

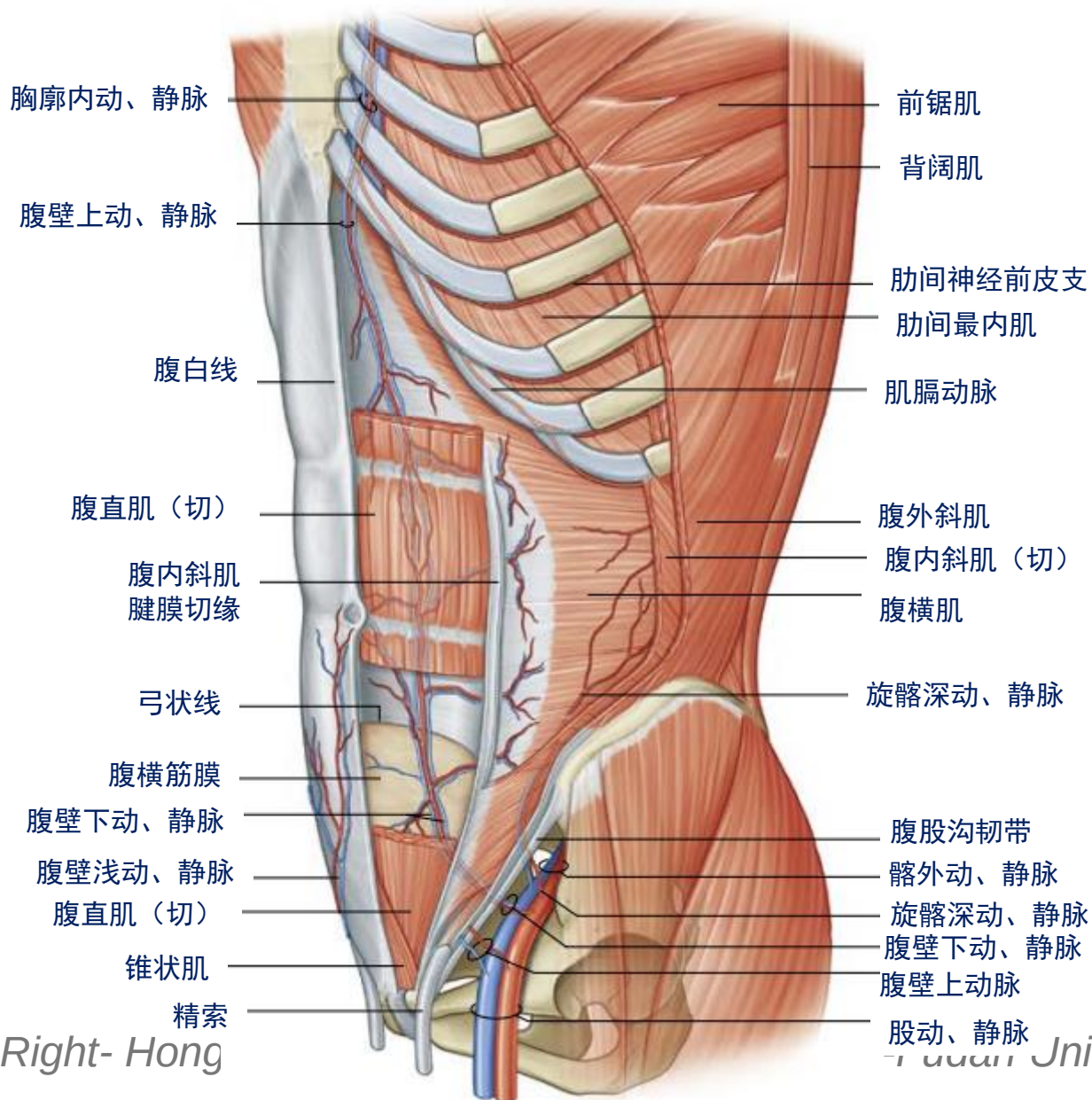




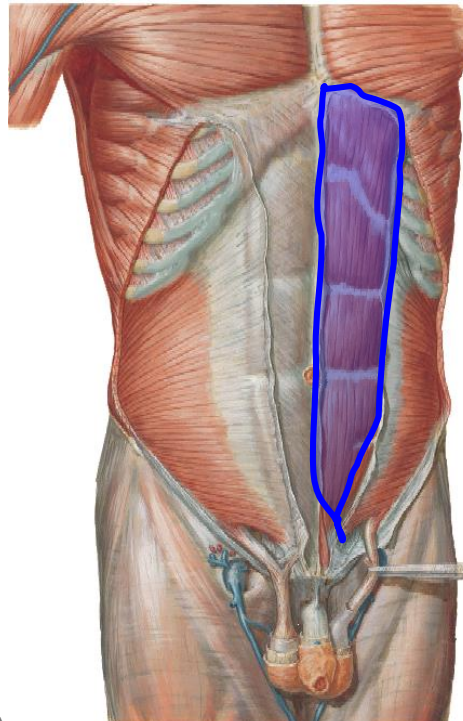
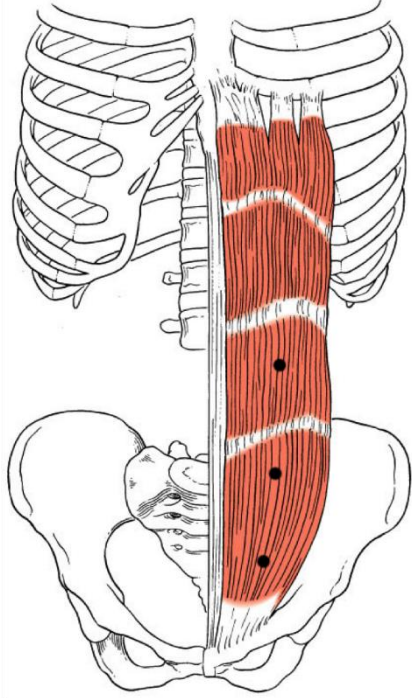
Blood vessels of anterolateral abdominal wall



Blood vessels of anterolateral abdominal wall

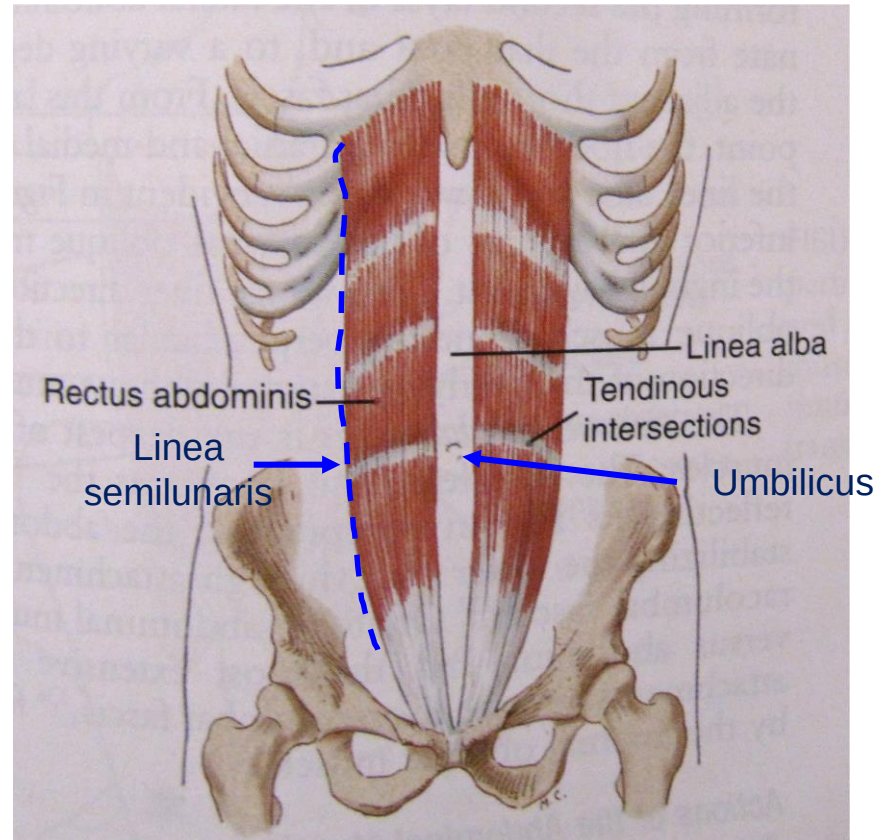


- ◆ **Position:** lie on to either of ant. midline of abdomen
- ◆ **Origin:** pubic crest and symphysis
- ◆ **Insertion:** xiphoid process & 5-7th costal cartilages
- ◆ **Tendinous intersections** 3-4
- ◆ **linea semiluaris** (lat. border)



Rectus abdominus and it's intersection 腱划

- 1-Linea alba 腹白线
- 2-Rectus abdominis 腹直肌
- 3-Tendinous intersections 腱划
- 4-Linea semilunaris 半月线
- 5-Umbilicus 脐 (between L3 ~ L4)

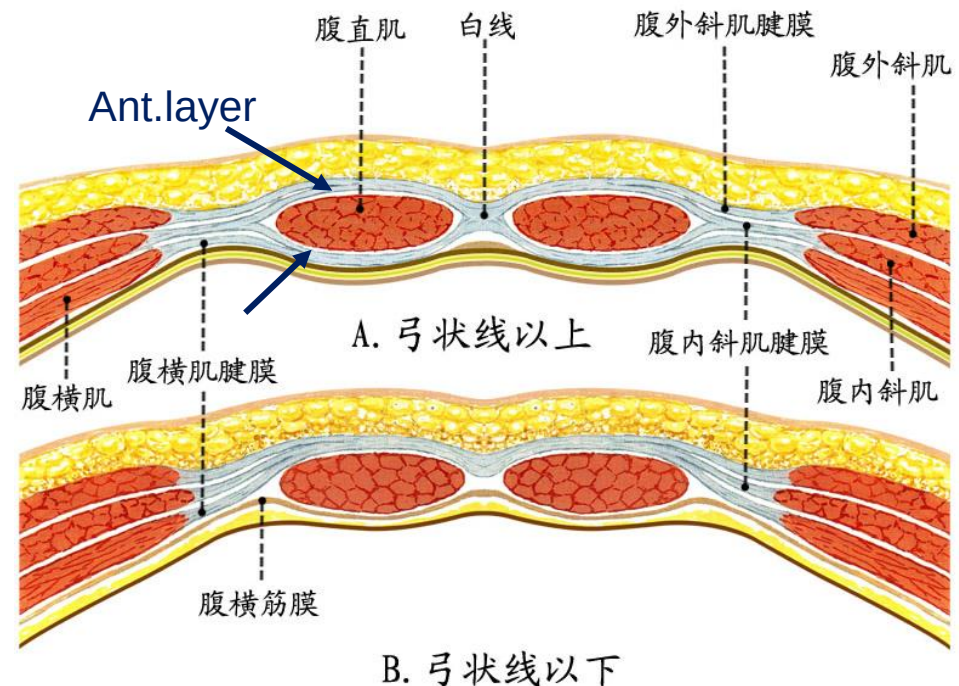
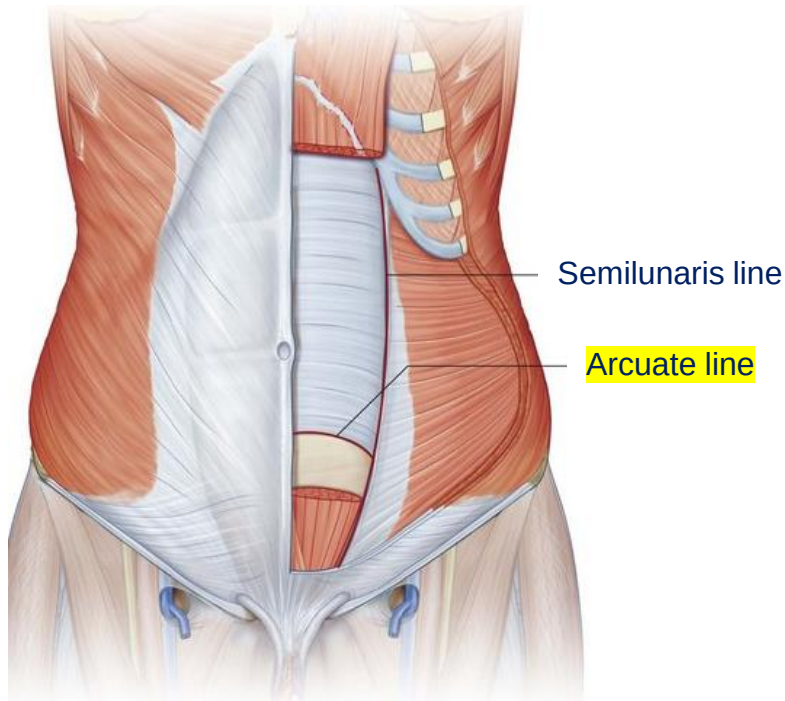


Different saying of abdominal muscles

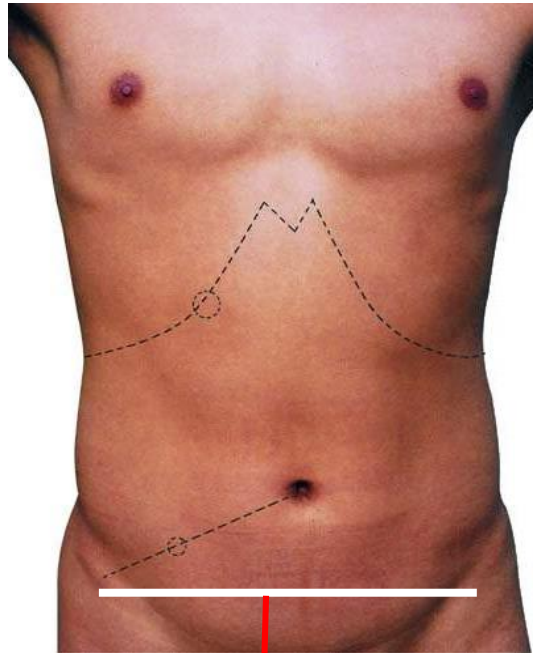
腹外斜肌	{	Obliquus externus abdominis Oblique external abdominal muscle External oblique muscle of abdomen
腹内斜肌	{	Obliquus internus abdominis Oblique external abdominal muscle Internal oblique muscle of abdomen
腹横肌	{	Transversus abdominis Transverse abdominal muscle
腹直肌		Rectus abdominis

Sheath of rectus abdominis 腹直肌鞘

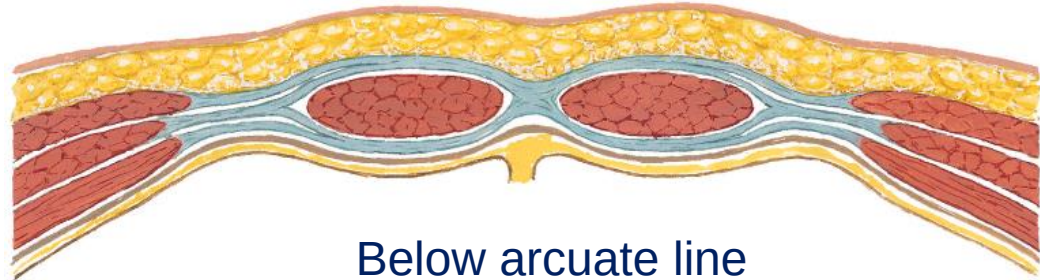
- ◆ It is a strong incomplete fibrous compartment of the rectus abdominis.
- ◆ Two layers - Anterior layer and posterior layer 前层和后层
- ◆ Absent in about 4-5cm below the umbilicus 脐, where aponeuroses of all three mm. form ant. Layer, the lower free border, named **arcuate line** 弓状线
- ◆ Below this line rectus abdominis in contact with transverse fascia 腹横筋膜



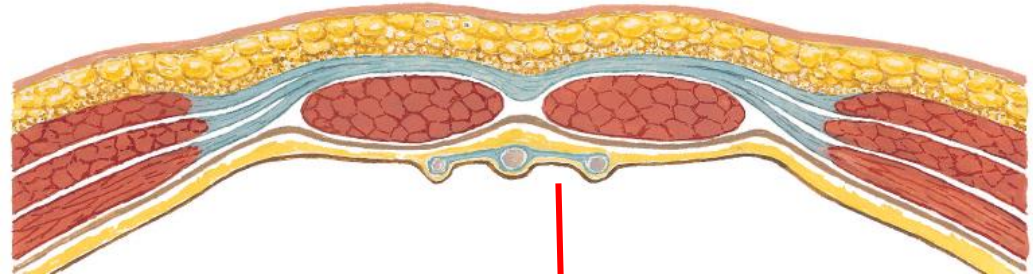
Rectus sheath-Cross section below arcuate line 弓状线



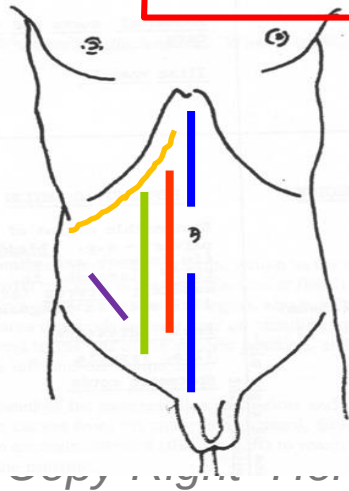
Above arcuate line



Below arcuate line

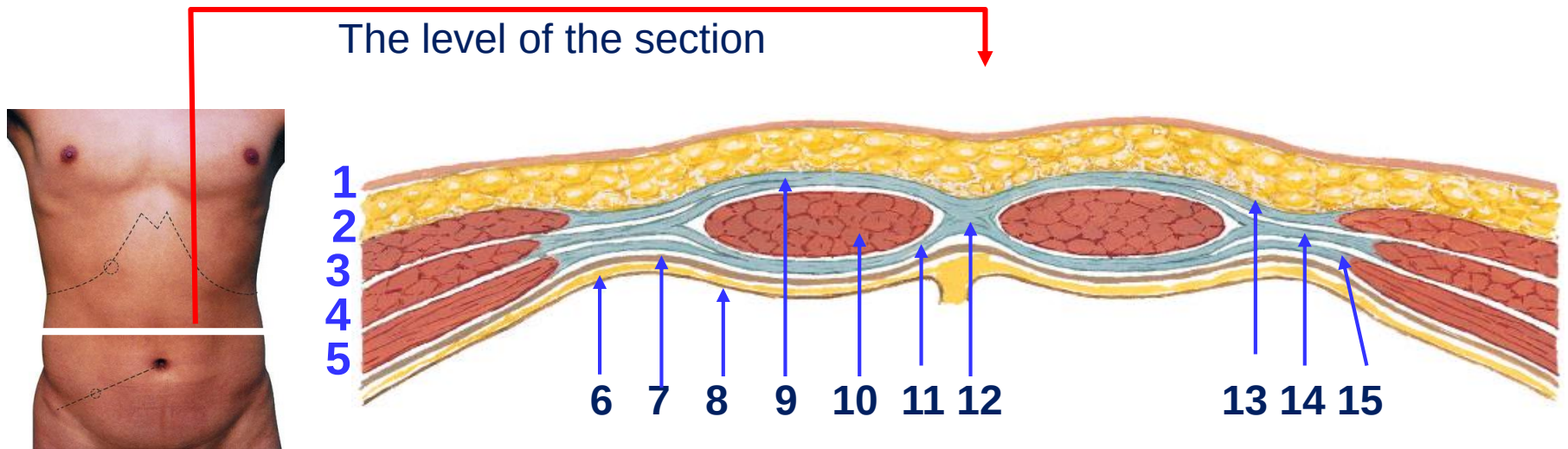


The level of the section



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

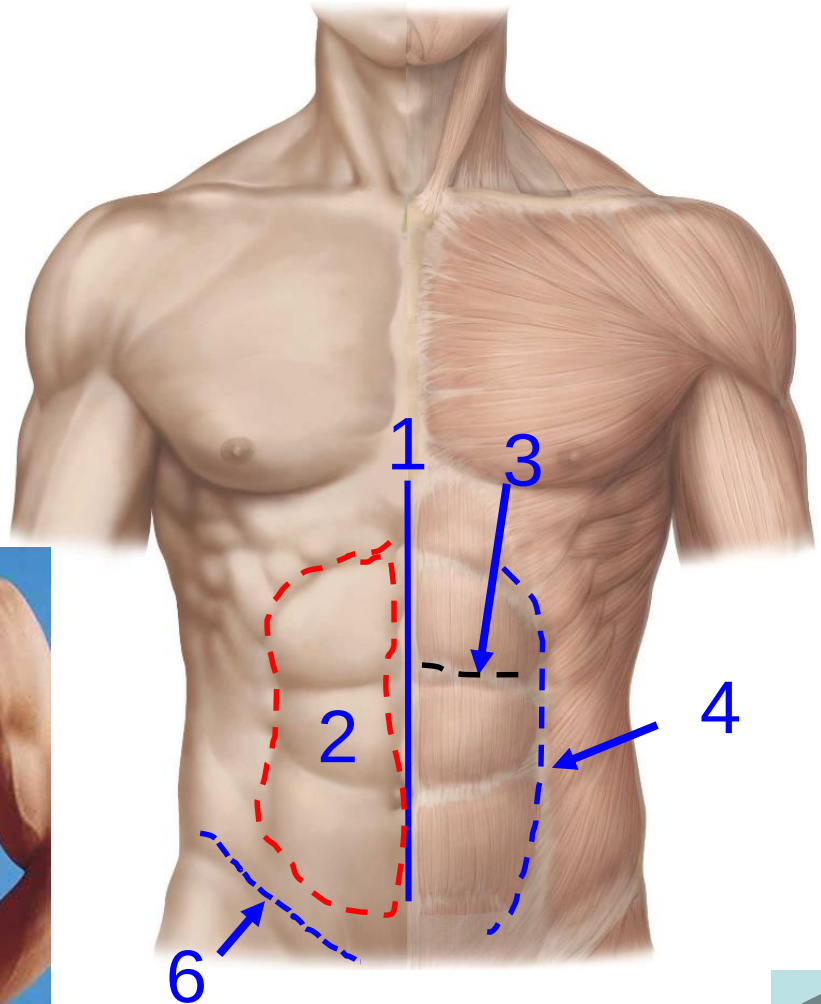
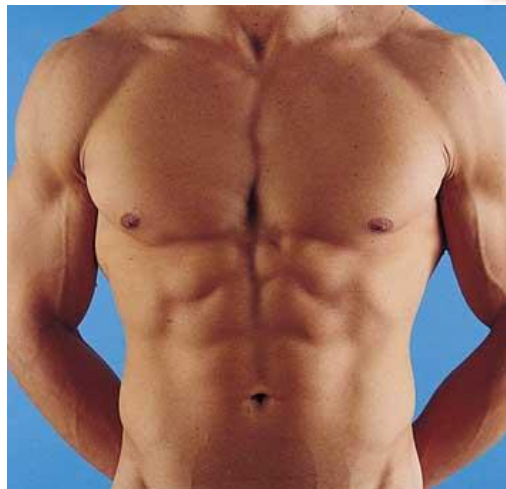
Rectus sheath -Cross section above arcuate line



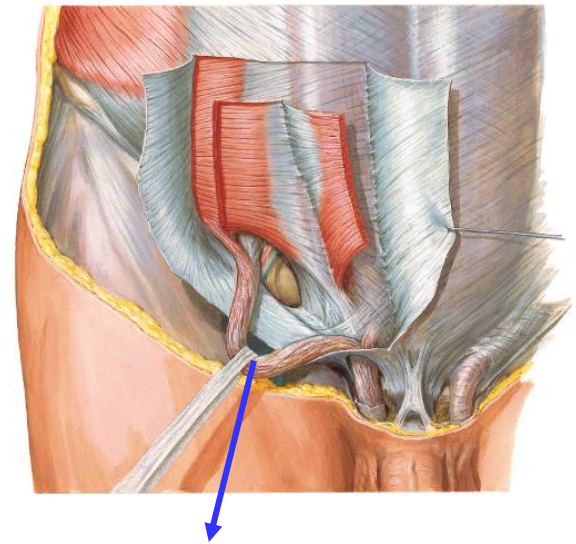
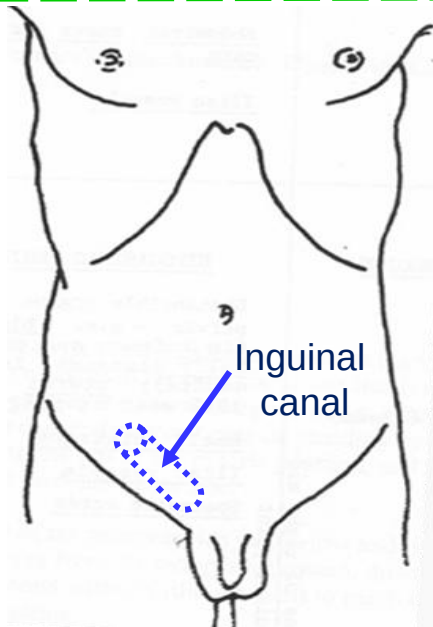
1. Skin 皮肤
2. Subcutaneous tissue 皮下
3. Obliquus externus abdominis. 腹外斜肌
4. Obliquus internus abdominis. 腹内斜肌
5. Transversus abdominis 腹横肌
6. Extraperitoneal fascia 腹外筋膜
7. Transverse fascia 腹横筋膜
8. Peritoneum 腹膜
9. Ant. layer of rectus sheath 腹直肌鞘前层
10. Rectus abdominis 腹直肌
11. Post. layer of rectus sheath 腹直肌鞘后层
12. Linea alba 腹白线
13. Aponeurosis 腱膜 of obliquus externus abdominis
14. Aponeurosis 腱膜 of obliquus internus abdominis
15. Aponeurosis 腱膜 of transversus abdominis

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.



Inguinal canal



Spermatic cord

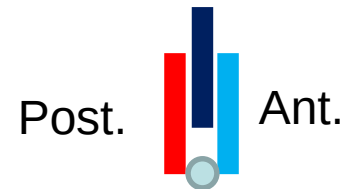
- | | | |
|---|---|---|
| 1 |  | 1. Aponeurosis of obliquus externus abdominus |
| 2 |  | 2. Lower border of obliquus externus and internus abdominus |
| 3 |  | 3. Transverse abdominal fascia |
| 4 |  | 4. Inguinal ligament |

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

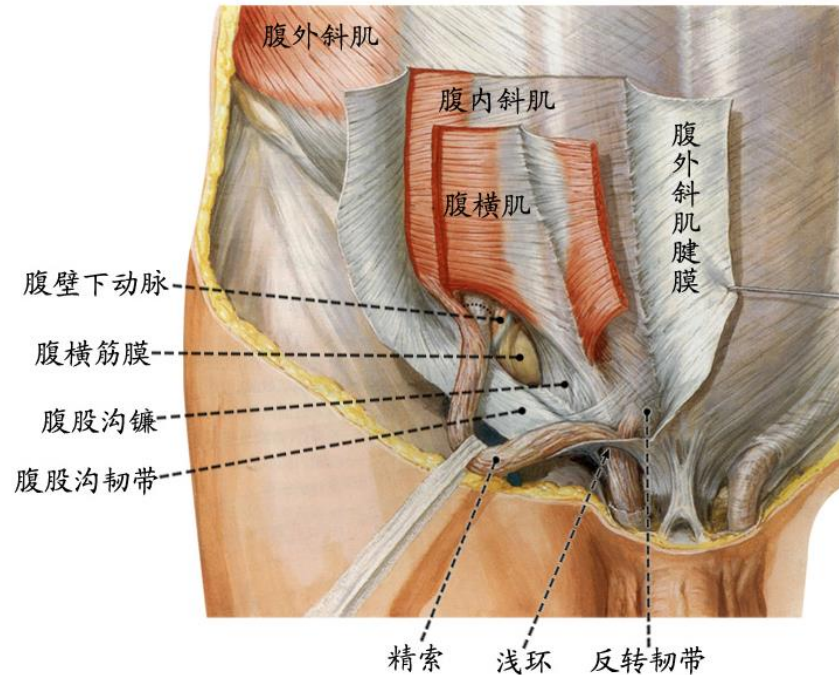
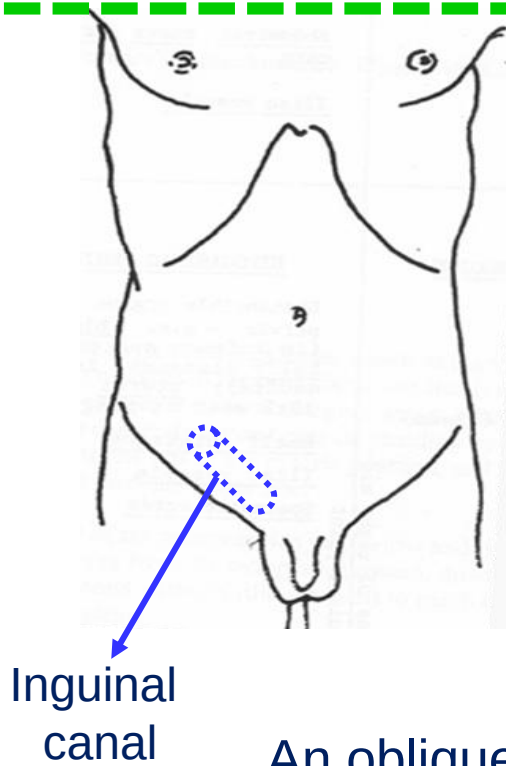
Between muscles, aponeurosis and fascia,
Above the medial part of the inguinal ligament

Spermatic cord 精索 in male

Round ligament of uterus 子宫圆韧带 in female



Inguinal canal 腹股沟管



An oblique cleft or passage
4-5cm long in adult
in between muscles, aponeurosis and fascia
above the medial part of the inguinal ligament

Spermatic cord 精索 in male

Round lig. of uterus 子宫圆韧带 in female

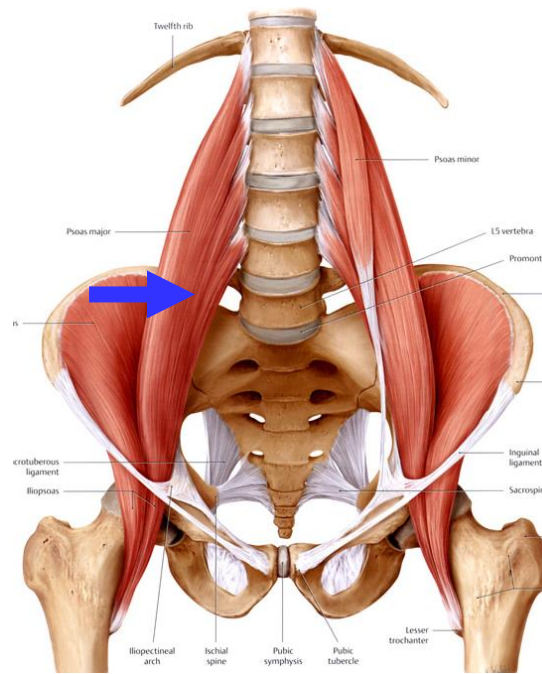
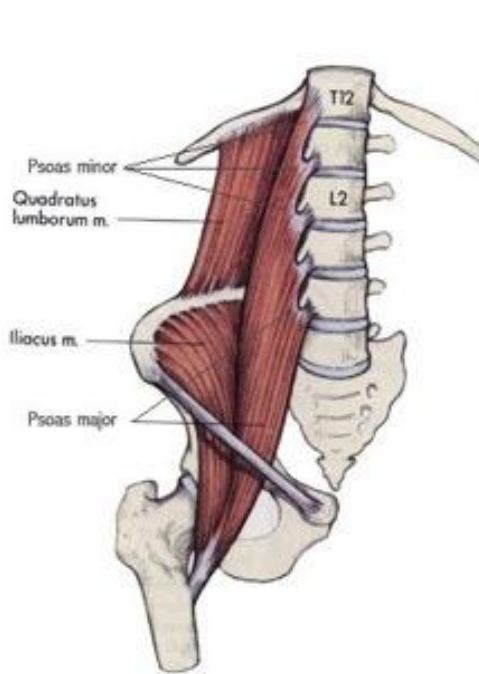
腹肌的起止点、作用

Group	Name	Origin	Insertion	Action
前外侧群	腹直肌	耻骨嵴	胸骨剑突、第5-7肋软骨	脊柱前屈增加腹压
	腹外斜肌	下8肋外面	白线、髂嵴、腹股沟韧带	增加腹压、脊柱前屈、侧屈、旋转
	腹内斜肌	胸腰筋膜、髂嵴、腹股沟韧带	白线	
	腹横肌	下6肋内面、胸腰筋膜，腹股沟韧带	白线	
后群	腰方肌	髂嵴	第12肋	降第12肋、脊柱腰部侧屈

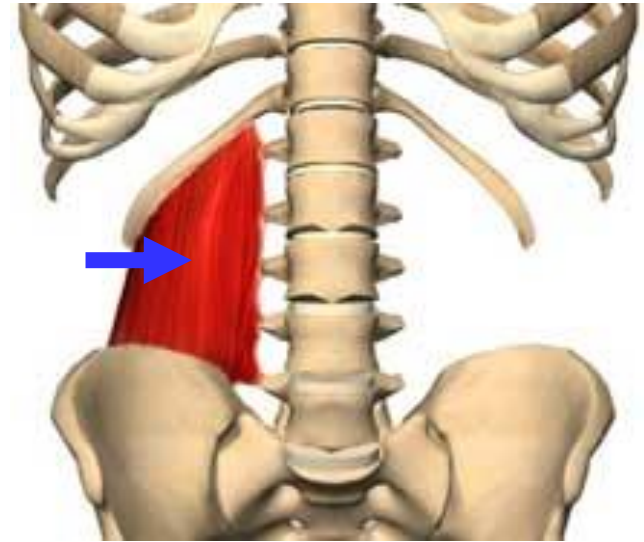
Common functions for about four pairs of muscles

- ◆ Support and compress the abdominal viscera
- ◆ Increase intra-abdominal pressure 腹内压, aid in - vomiting 呕吐, coughing 咳嗽, sneezing 喷嚏, defecation 排便。urination 排尿 and childbirth or delivery 分娩。
- ◆ Depress ribs 降肋, assist in expiration 呼气。
- ◆ Flex 屈, lateral flex 侧曲, and rotate 旋转 vertebral column.

Posterior group of abdominal muscle 腹后群肌



Psoas major



Lumbar quadratus m

Psoas major 腰大肌

Lumbar quadratus muscle 腰方肌

A roughly quadrilateral thick muscle 较厚的方形肌肉

In between 12th rib and iliac crest 在髂嵴和12肋间

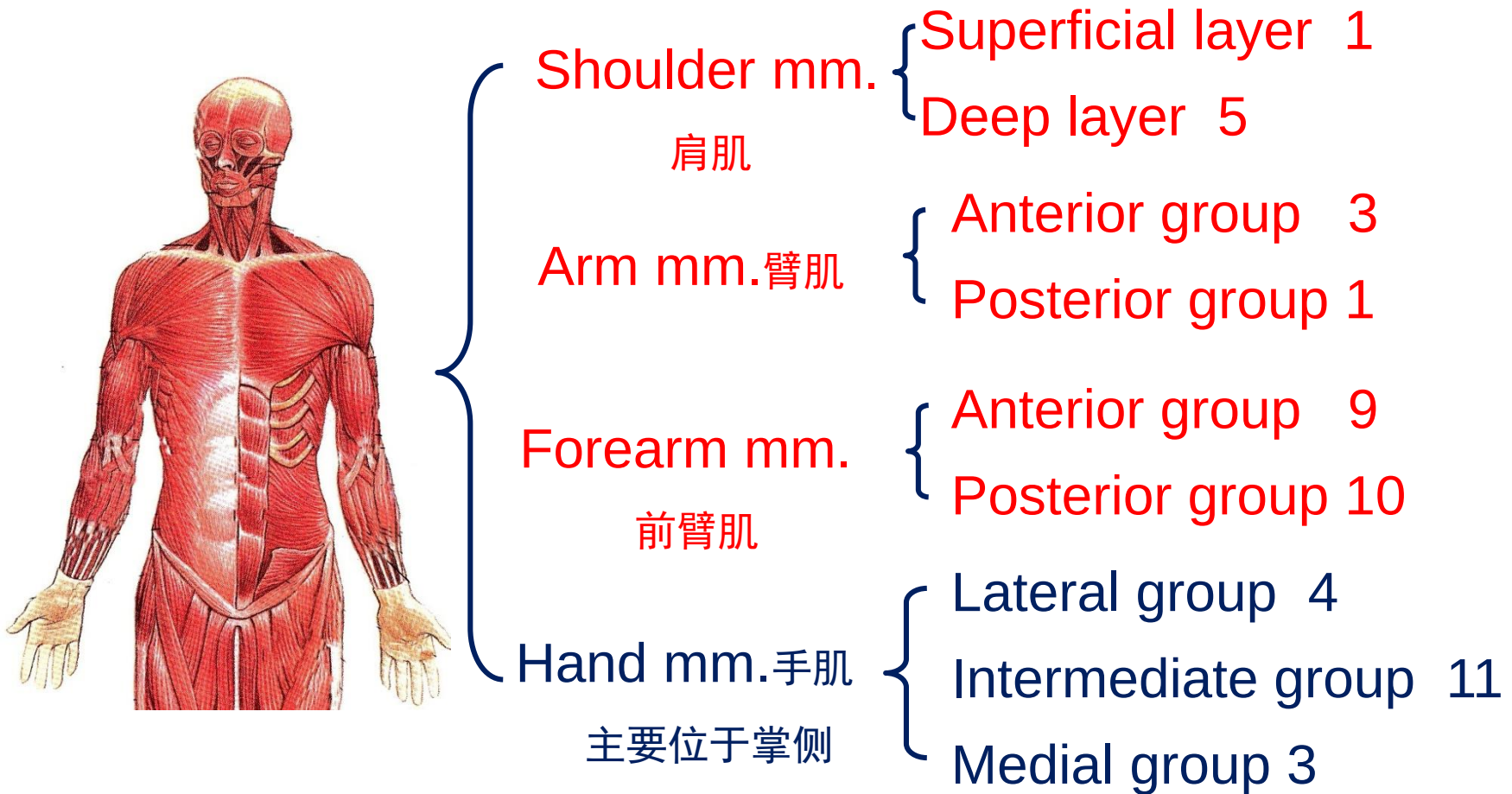
Fixes and lowers the 12th rib 固定和下拉12肋

Acting alone, bends the trunk toward the same side

Muscles of upper limb 上肢肌



Muscles of upper limb 上肢肌



Muscle of the shoulder-pectoral girdle 肩带肌

Superficial layer1 Deltoid

Deep layer 5

1-Supraspinatus 冈上肌

2-Infraspinatus 冈下肌

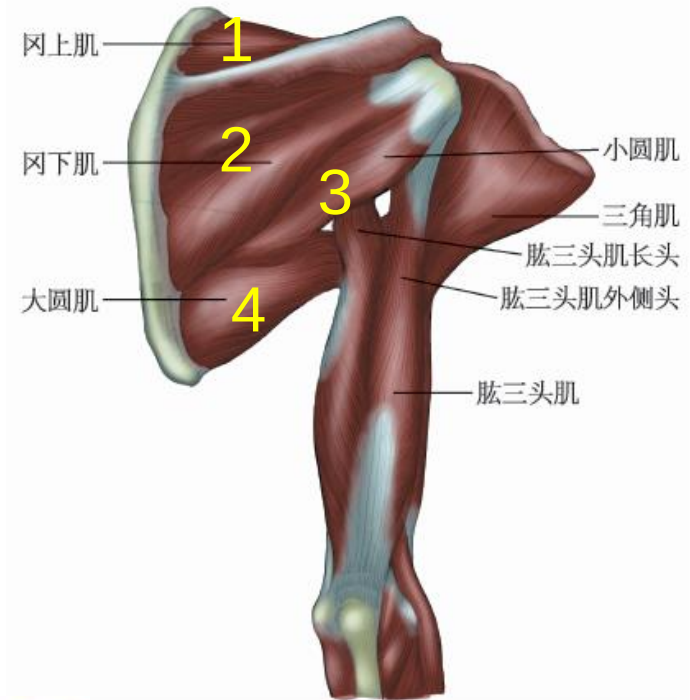
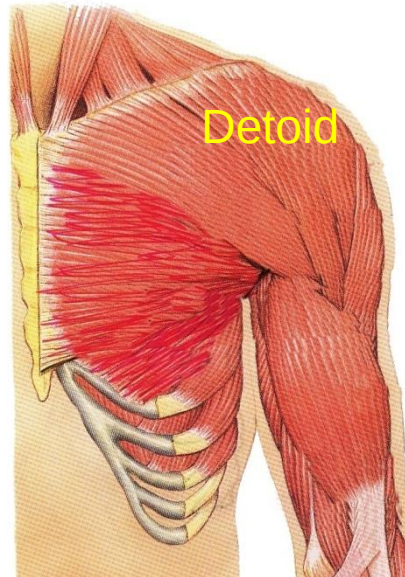
3-Teres minor 小圆肌

4-Teres major 大圆肌

5-Subscapularis 肩胛下肌

“肌腱袖”

Myotendinous cuff



肩胛下肌、冈上肌、冈下肌、小圆肌腱分别止于肩关节的前方、上方和后方。腱纤维与关节囊纤维相交织，形成“肌腱袖”



Deltoid

Deltoid 三角肌

A thick **powerful triangular** muscle
To form the rounded contour of the shoulder

Origin: 锁骨外1/3, 肩峰及肩胛冈

Insertion: Deltoid tuberosity 三角肌粗隆

Action: 肩关节外展、前屈和旋内（前部肌束），
后伸和旋外（后部肌束）



Supraspinatus

Supraspinatus 冈上肌

In the **supraspinous fossa** 冈上窝 of scapula

Origin: supraspinous fossa 冈上窝

Insertion: upper part of greater tubercle 肱骨大结节上部

Action: abduct the shoulder joint 肩关节外展



Infraspinatus 冈下肌

In the infraspinatus fossa 冈下窝 of scapula, triangular

Origin: Infraspinatous fossa of scapular 肩胛骨冈下窝.

Insertion: Mid.part of greater tubercle 大结节中部

Action: Rotate laterally shoulder joint 肩关节旋外

Infraspinatus



Teres minor 小圆肌

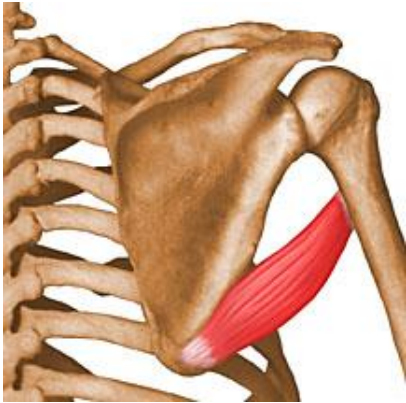
Origin: Lateral border of scapula 肩胛骨外侧缘背面.

Insertion: Lower part of greater tubercle 大结节下部

Action: Rotate laterally shoulder joint 肩关节旋外

Teres minor 小圆肌

Muscle of the shoulder



Teres major 大圆肌

A thick round muscle below the teres major

Origin: back surface of scapula 肩胛骨下角背面

Insertion: crest of lesser tubercle 肱骨小结节嵴

Action: adduct & rotate medially shoulder joint

肩关节内收，旋内

Teres major



Subscapularis 肩胛下肌

A large thick triangular muscle, infrascapular fossa

Origin: subscapular fossa 肩胛下窝

Insertion: lesser tubercle of humerus 肱骨小结节

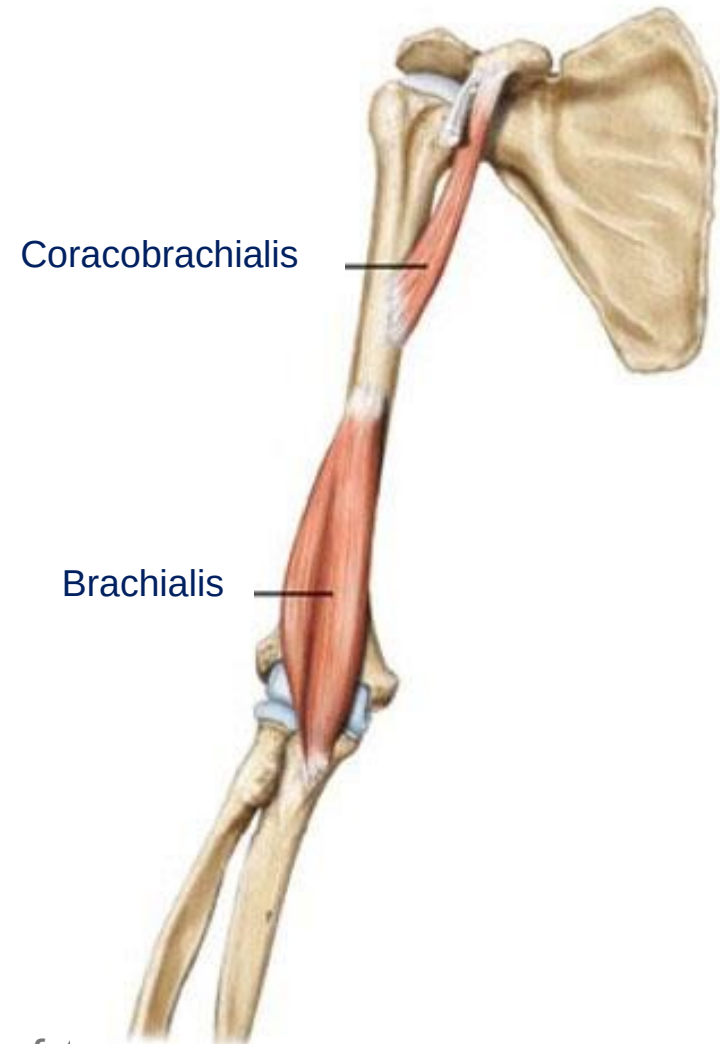
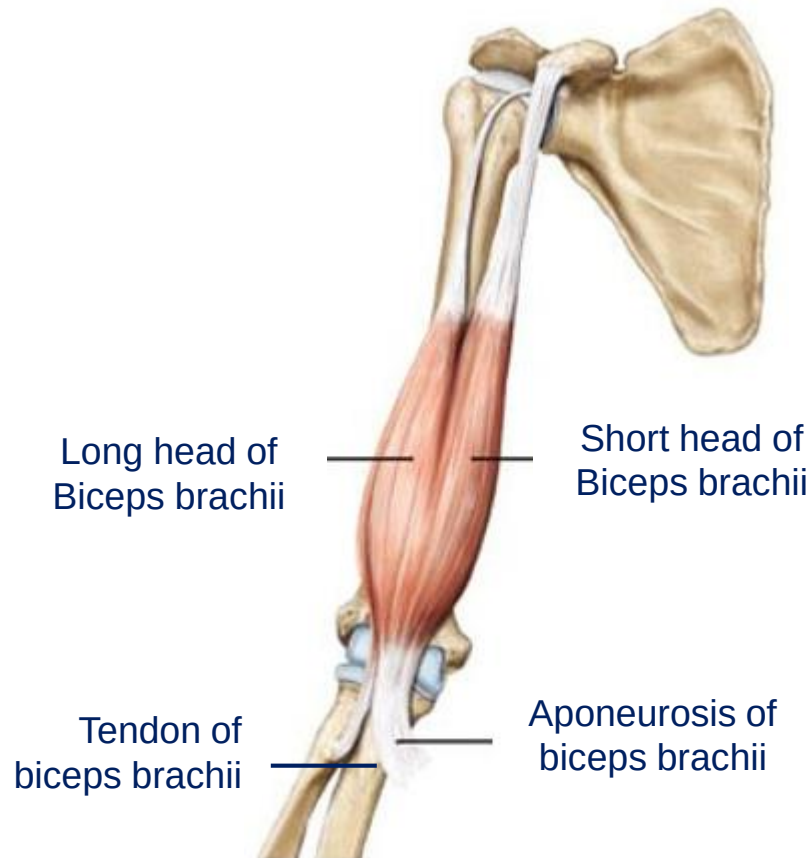
Action: adduct & rotate medially shoulder joint

肩关节内收，旋内

Subscapularis

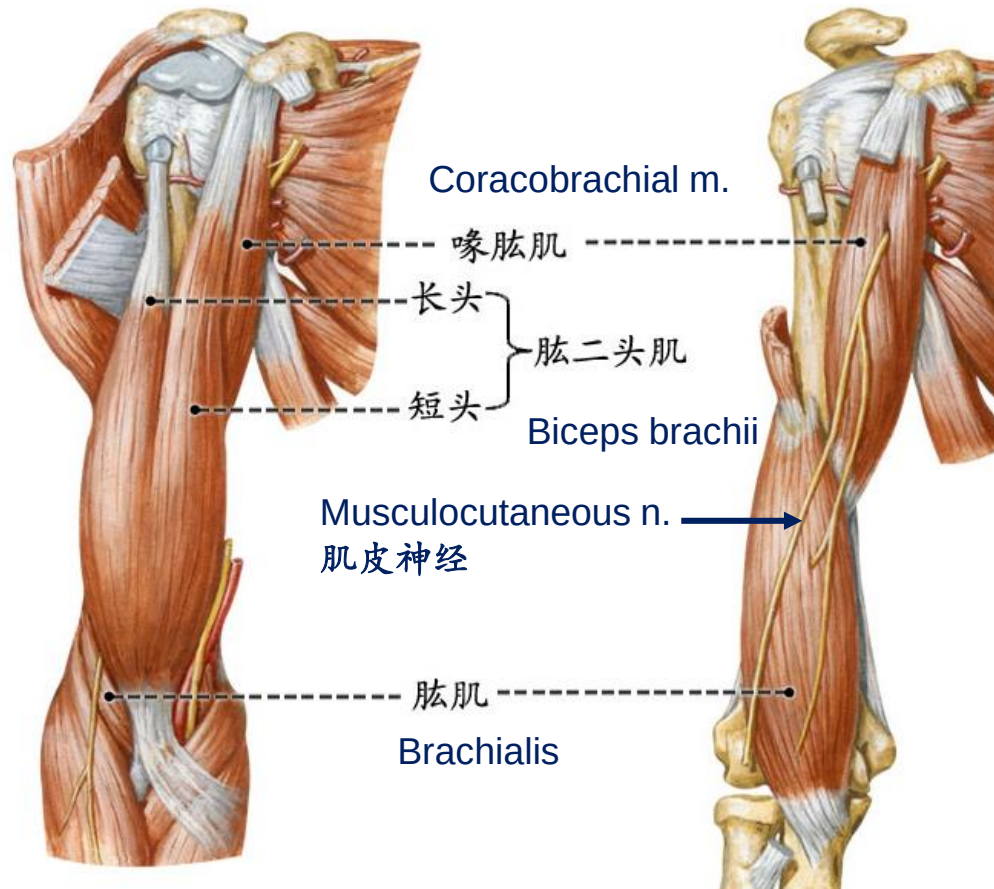
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The anterior muscles of the arm



Anterior muscular group of arm

Superficial and deep layer, three muscles



Superficial layer

Deep layer

Anterior muscular group of arm



Biceps brachii

Location: the ant. surface of the humerus

Origin: long head – articular glenoid 长头-盂上结节
short head – coracoid process 短头-喙突

Insertion: radial tuberosity 桡骨粗隆

Action: flex, shoulder & elbow joints and adduct shoulder joint



Coracobrachial m

Origin: coracoid process 喙突

Insertion: med. side of mid. part of humerus

Action: flex & adduct shoulder joint

Origin: ant. surface . nerus

Insertion: ulnar tuberosity 尺骨粗隆

Action: flex the elbow joint 屈肘关节



Brachial muscle

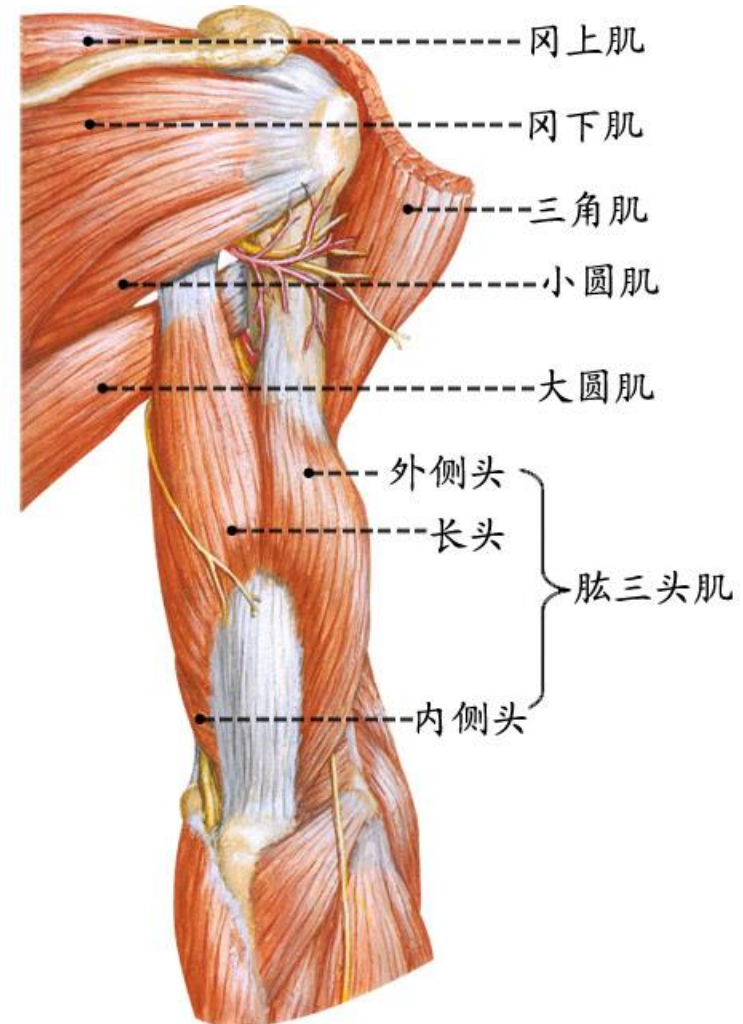
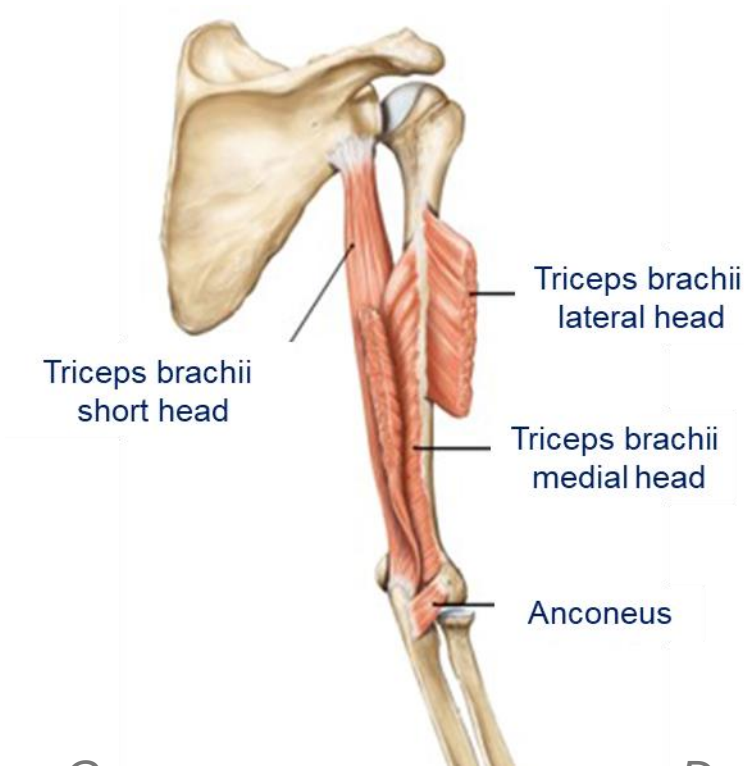
Posterior muscular group of arm

Triceps brachii 肱三头肌

B - Lat. head

C - long head

D - Med. head (not show)



Feature of ant. muscular group of forearm

1. The most originate from medial epicondyle 大部分起自内上髁, attach to wrist and finger 止于手腕和手指.
2. Brachioradial m. 肱桡肌. the landmark m. of the arm 标志肌
3. Action: flex the elbow wrist ,finger & pronation 屈腕屈指旋前

Attention please:

Mastering the function and grouping of each group.

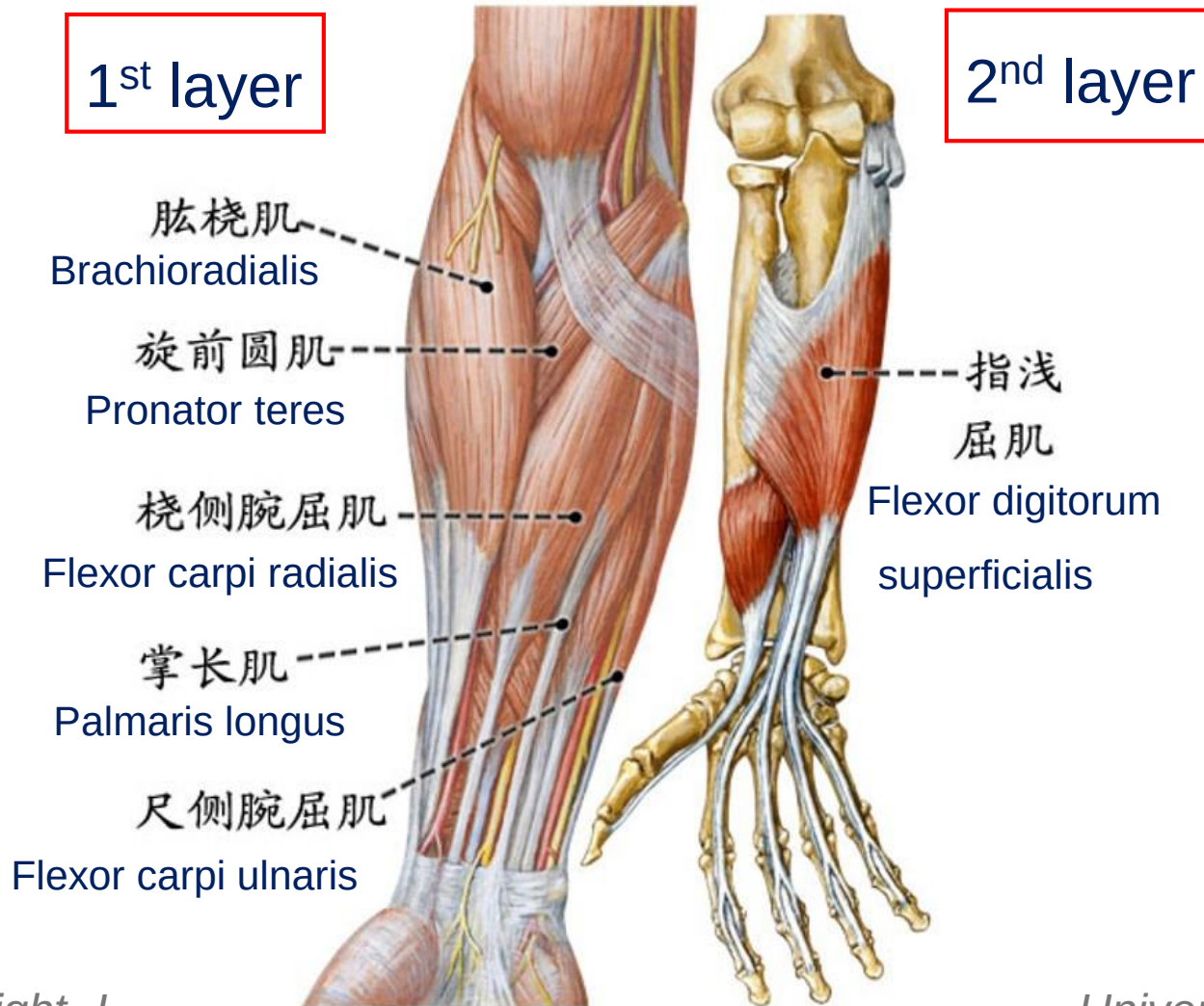
Especially:

Anterior group of forearm 前臂前群

Posterior group of forearm 前臂后群

Anterior muscular group of forearm 前臂前群

4 layers : $5-1-2-1=9$



Anterior muscular group of forearm 前臂前群

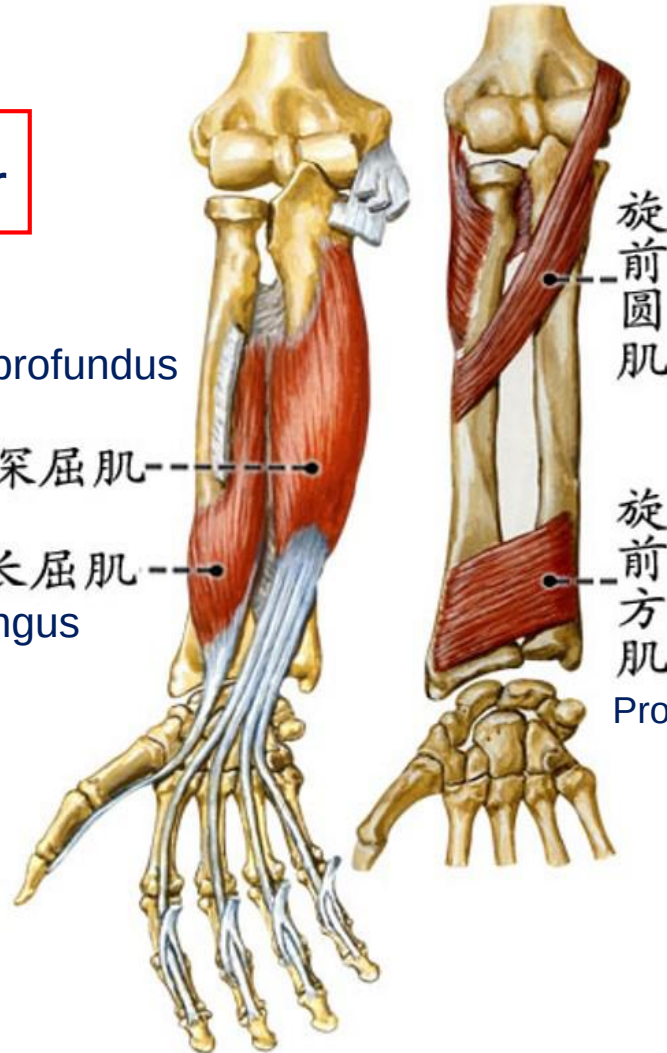
3rd layer

Flexor digitorum profundus

指深屈肌

拇长屈肌

Flexor pollicis longus



4th layer

旋前圆肌

旋前方肌

Pronator quadratus

Pollicis 拇指的
Profound=deep
Digitorum 指的
Capri 腕的
Longus 长的=long
Brevis 短=short

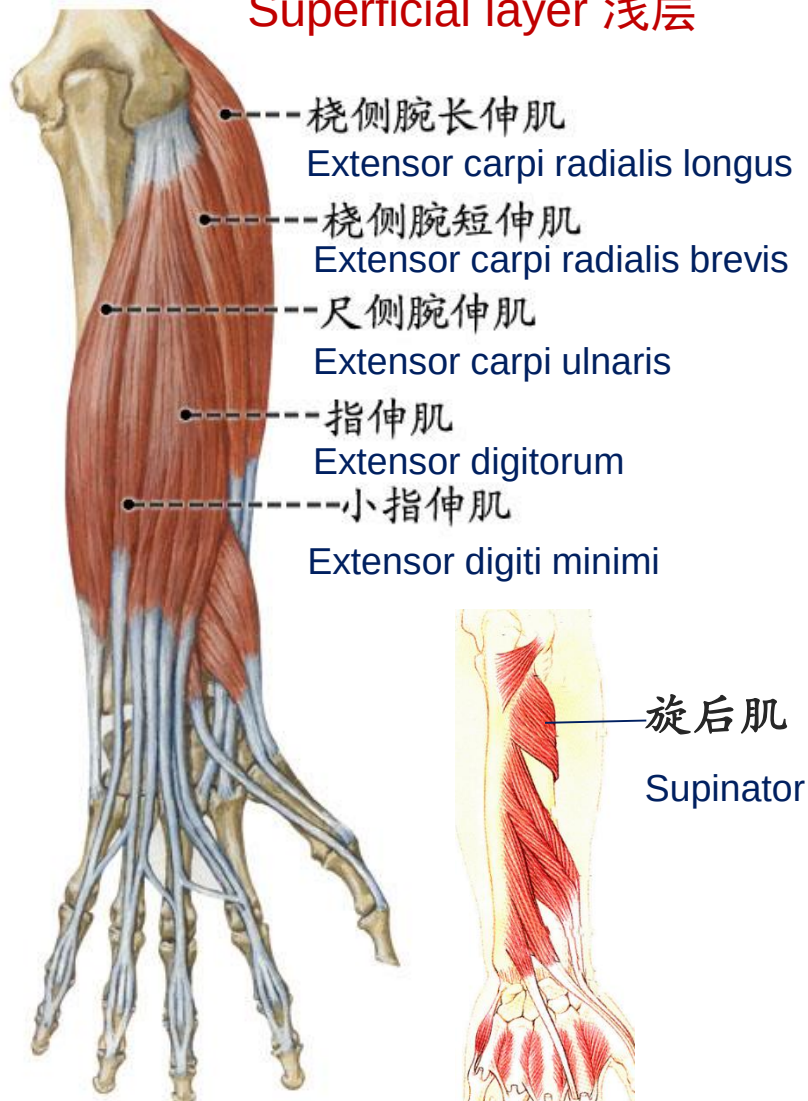
Feature of posterior muscular group of forearm

10 muscle in posterior muscular group of forearm

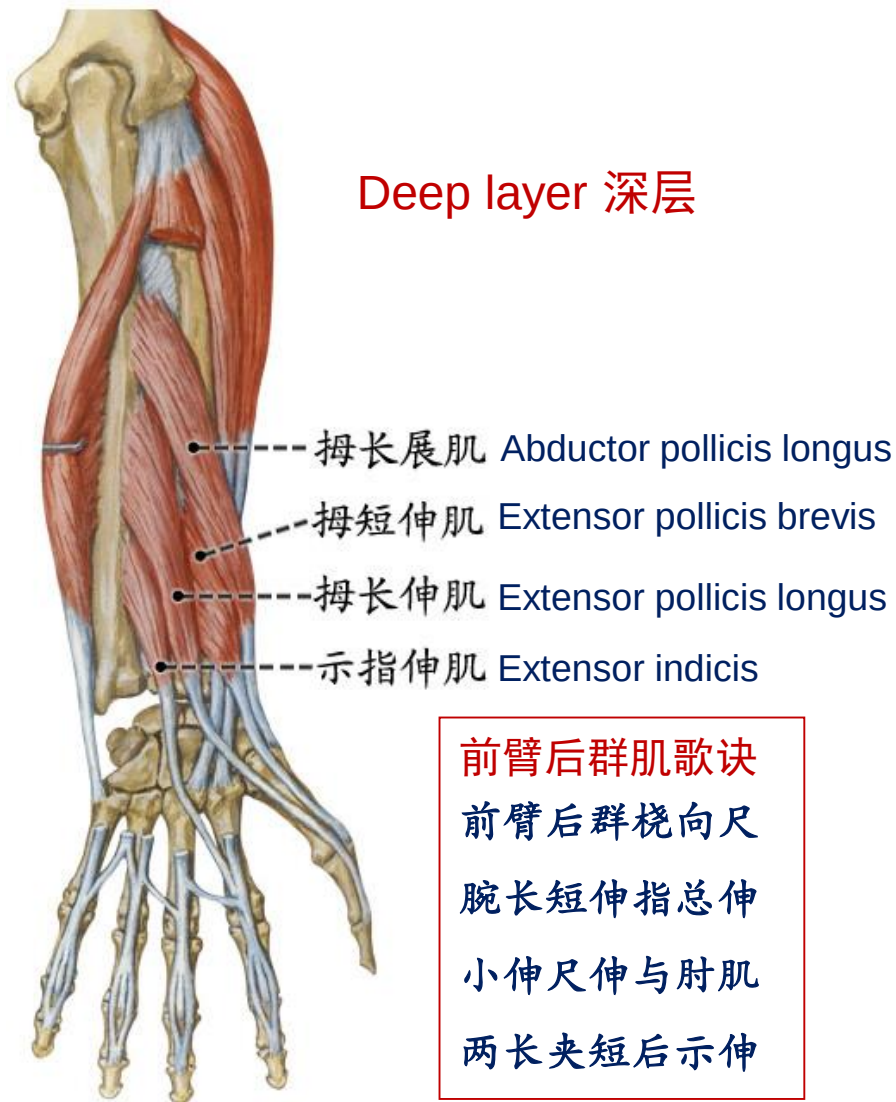
- ◆ Most muscles originate from lateral epicondyle ,
attach to wrist and finger.大部分起自外上髁, 止于手腕和指
- ◆ Usually recognize them according their insertions
一般可根据止点辨认
- ◆ The action: extends the wrist and finger
and supination 伸肘、伸腕、伸指、前臂旋后

Posterior muscular group of forearm

Superficial layer 浅层



Deep layer 深层



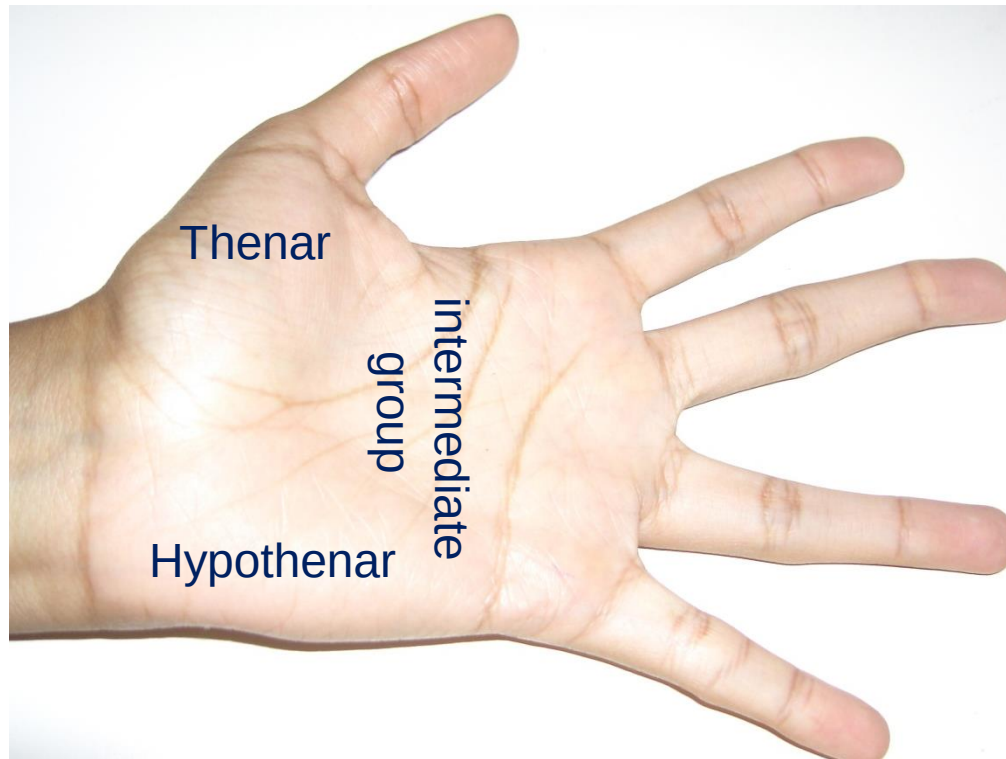
前臂后群肌歌诀
 前臂后群桡向尺
 腕长短伸指总伸
 小伸尺伸与肘肌
 两长夹短后示伸

Muscles of the hand

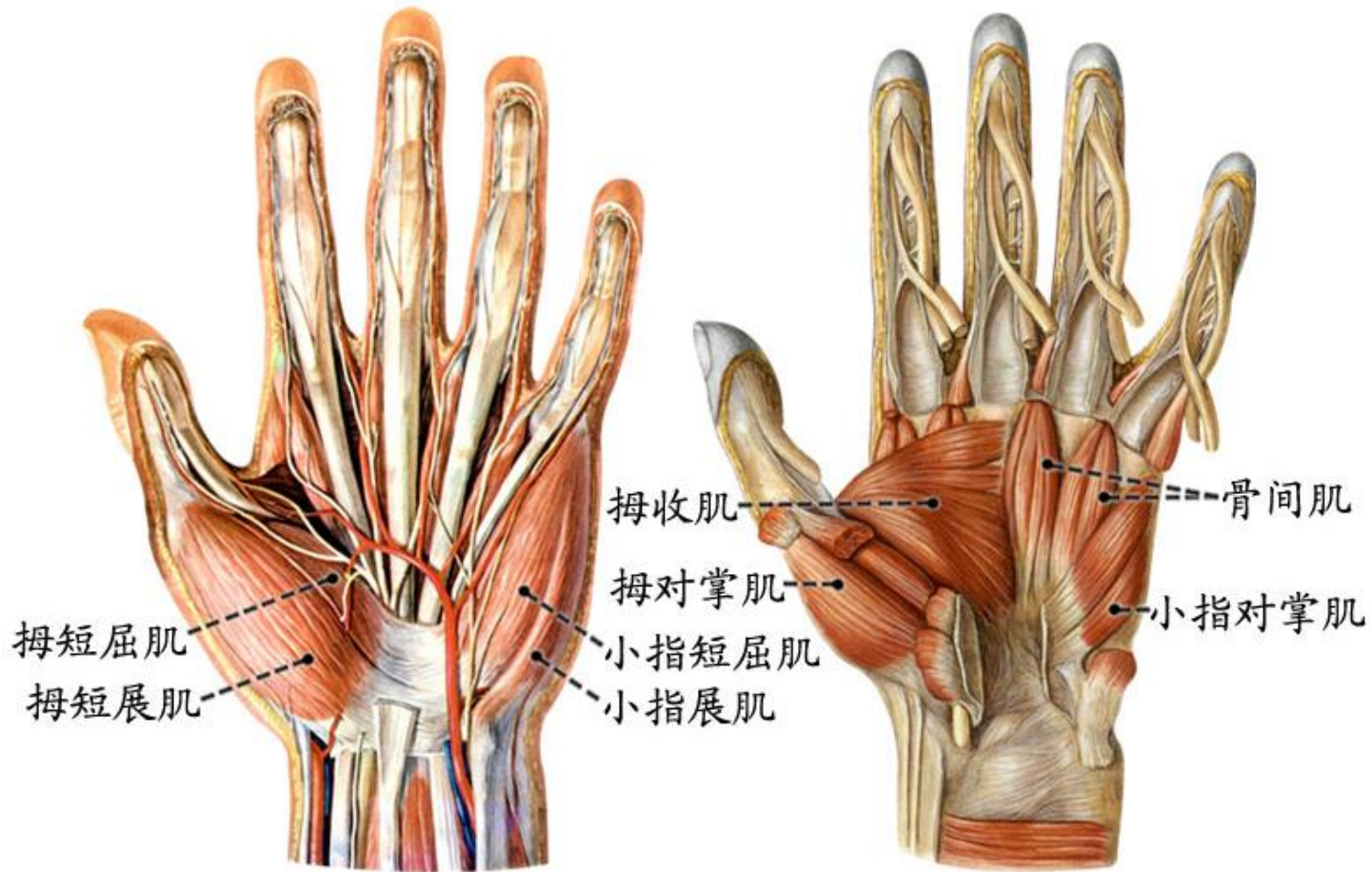
Thenar 鱼际 (lat. group) 4—movement of the thumb

Intermediate group 中间群 11—movement of 2-5th fingers

Hypothenar 小鱼际 (med. group) 3— movement of 5th finger

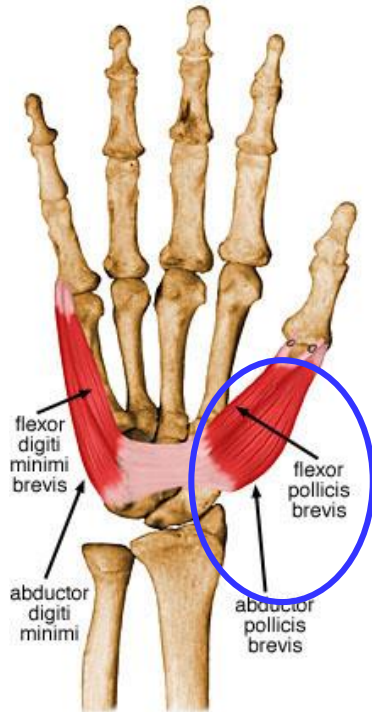


Muscles of the hand

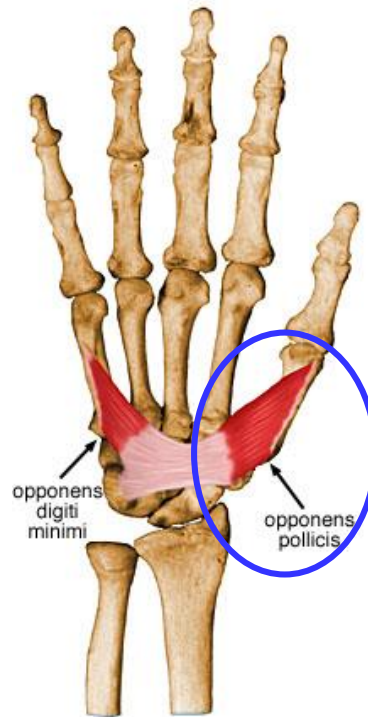


Muscles of the hand

Thenar (lat. group) 4—movement of the thumb



Flexor pollicis brevis 拇短屈肌
Abductor pollicis brevis
拇短展肌

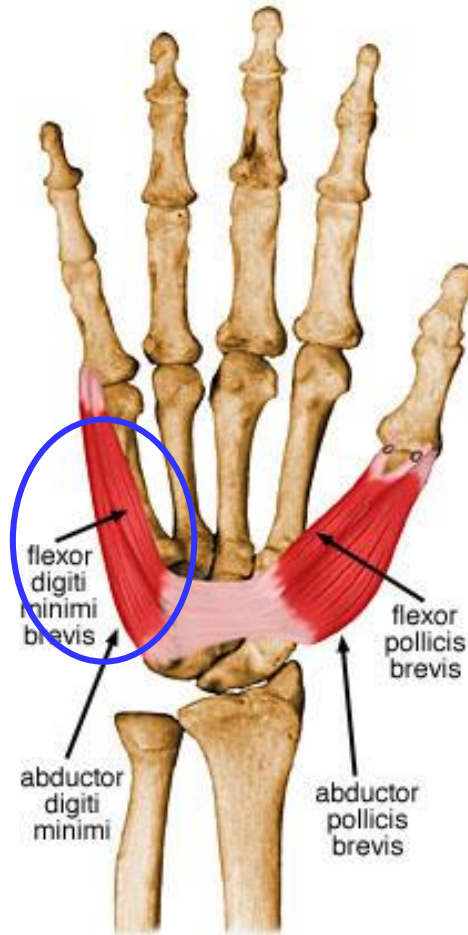


Opponens pollicis
拇对掌肌



Adductor pollicis
拇收肌

Hypothenar 3—movement of 5th finger

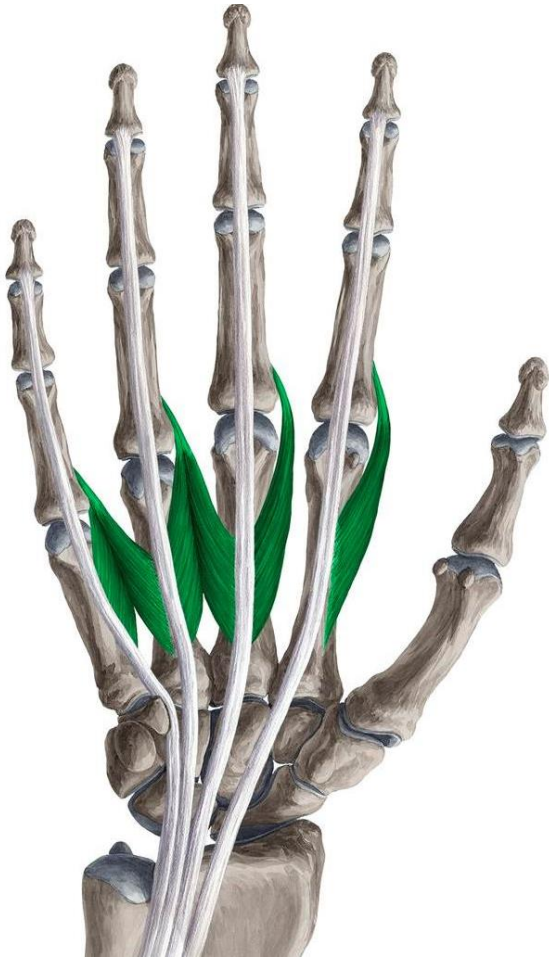


Flexor digiti minimi brevis 小指短屈肌
Adductor digiti minimi 小指收肌



Opponens digiti minimi 小指对掌肌

Intermediate group 11—movement of 2-5 finger



Lumbricales 蚓状肌 4

Action: Flex Metacarpophalangeal joints



Palmar interossei 3

骨间掌侧肌

Action: Adduct



Dorsal interossei 4

骨间背侧肌 (背面观)

Fix 3 finger, abduct 2, 4 finger

Muscles of the upper limb



Various function of the hand



G



H



Extended

J



Flexed



Abducted



Adducted



Opposed to little finger



A



R



C



D

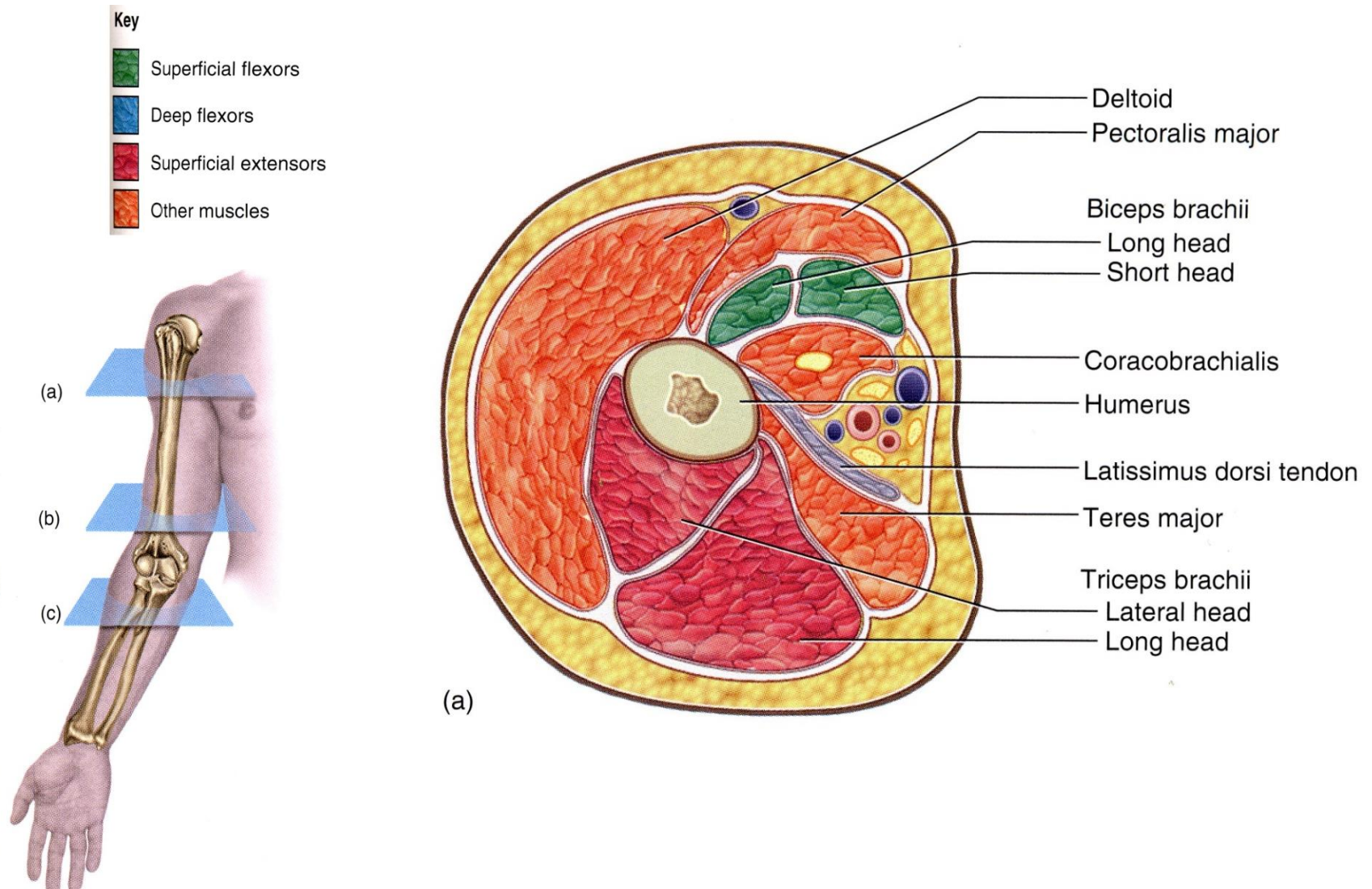


E

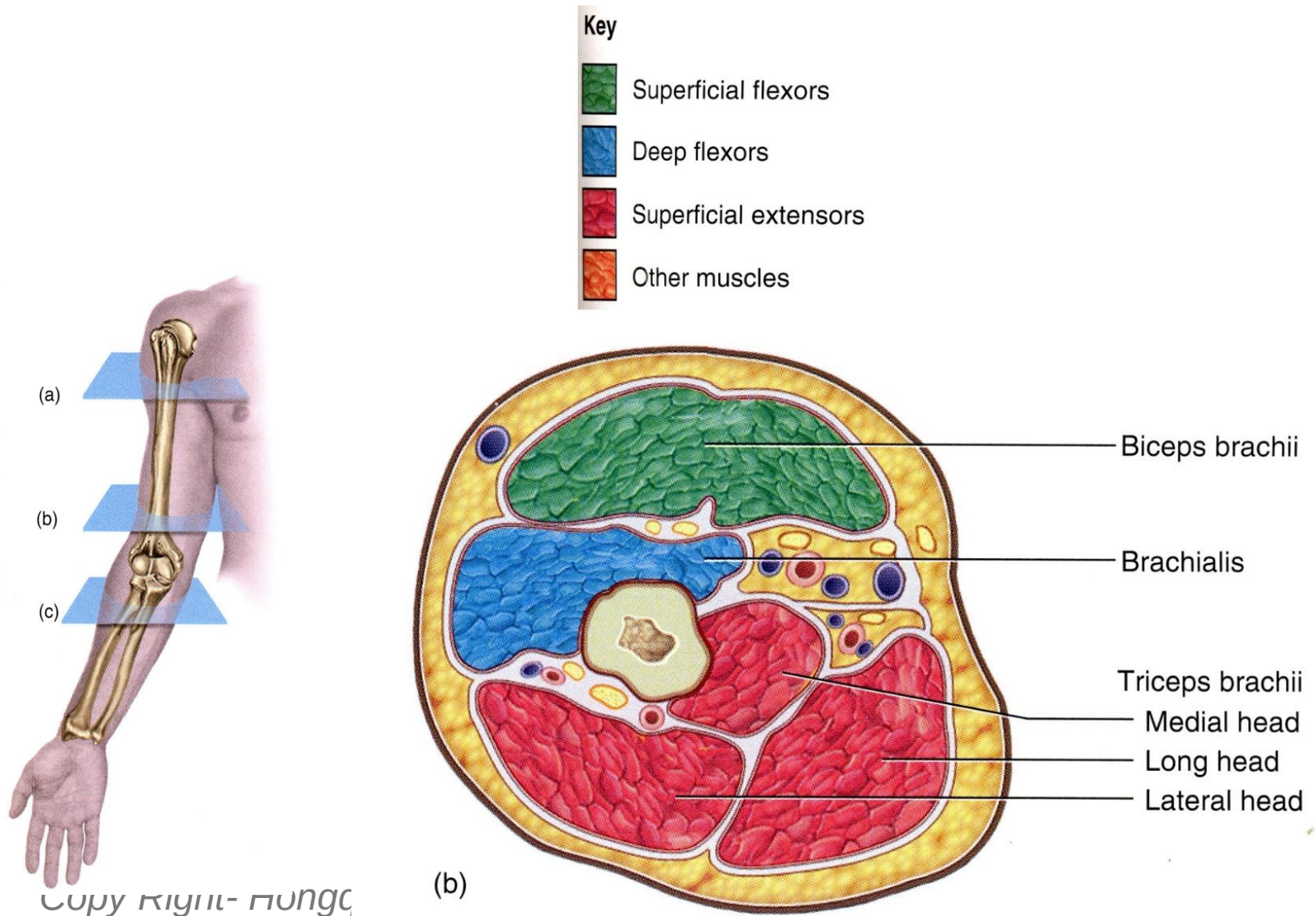


F

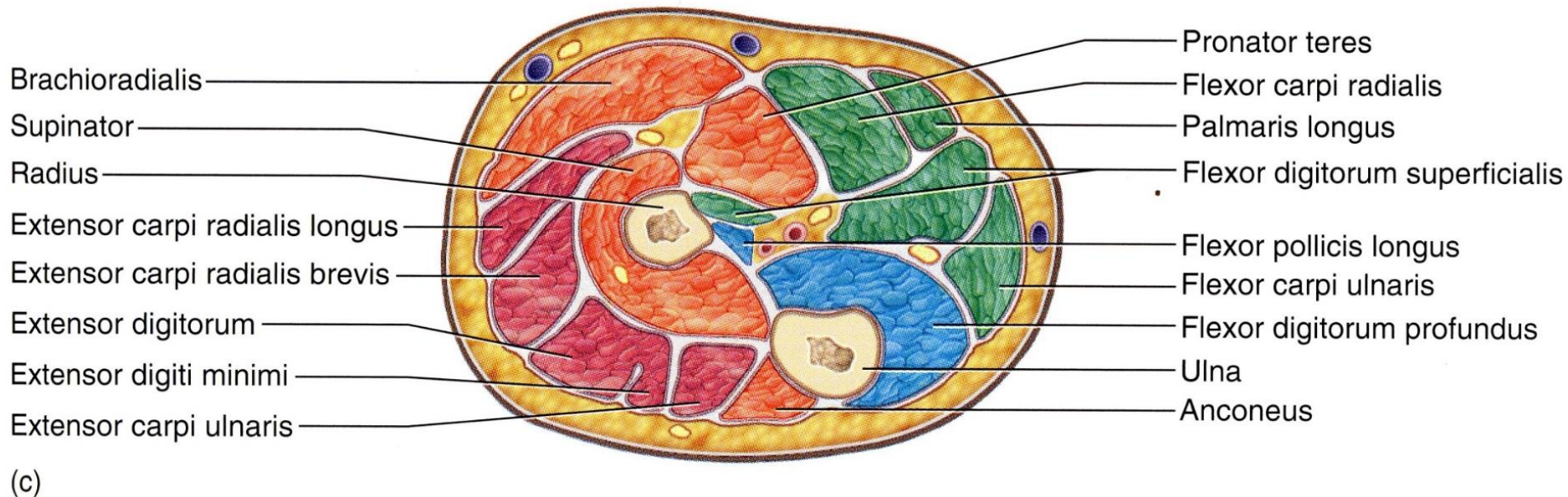
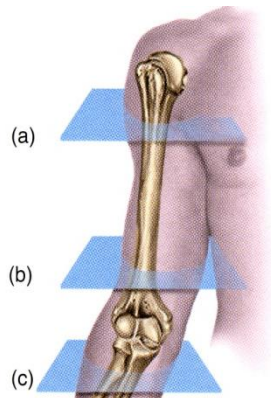
Co The transverse section of the arm



Co The transverse section of the arm



The transverse section of the forearm



The important contents today

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

The important English words

1. Obliquus externus abdominis 腹外斜肌
2. Obliquus internus abdominis 腹内斜肌
3. Transversus abdominis 腹横肌
4. Rectus abdominis 腹直肌
5. Psoas major 腰大肌
6. Quadratus lumborum 腰方肌
7. Tendinous intersection 腱划
8. Sheath of rectus abdominis 腹直肌鞘
9. Semilunaris line 半环线
10. Arcuate line 弓状线
11. Linea alba 白线
12. Inguinal canal 腹股沟管
13. Spermatic cord 精索
14. Round ligament of uterus 子宫圆韧带
15. Deltoid 三角肌
16. Supraspinatus 冈上肌
17. Teres major 大圆肌
18. Subscapularis 肩胛下肌
19. Biceps brachii 肱二头肌
20. Brachialis 肱肌
21. Triceps brachii 肱三头肌
22. Brachioradialis 肱桡肌
23. Pronator teres 旋前圆肌
24. Flexor digitorum superficialis 指浅屈肌
25. Flexor digitorum profundus 指深屈肌
26. Extensor carpi radialis longus 桡侧腕长伸肌
27. Thenar 鱼际
28. Hypothenar 小鱼际
29. Flexor pollicis longus 拇长屈肌
30. Supinator 旋后肌



See you next time!