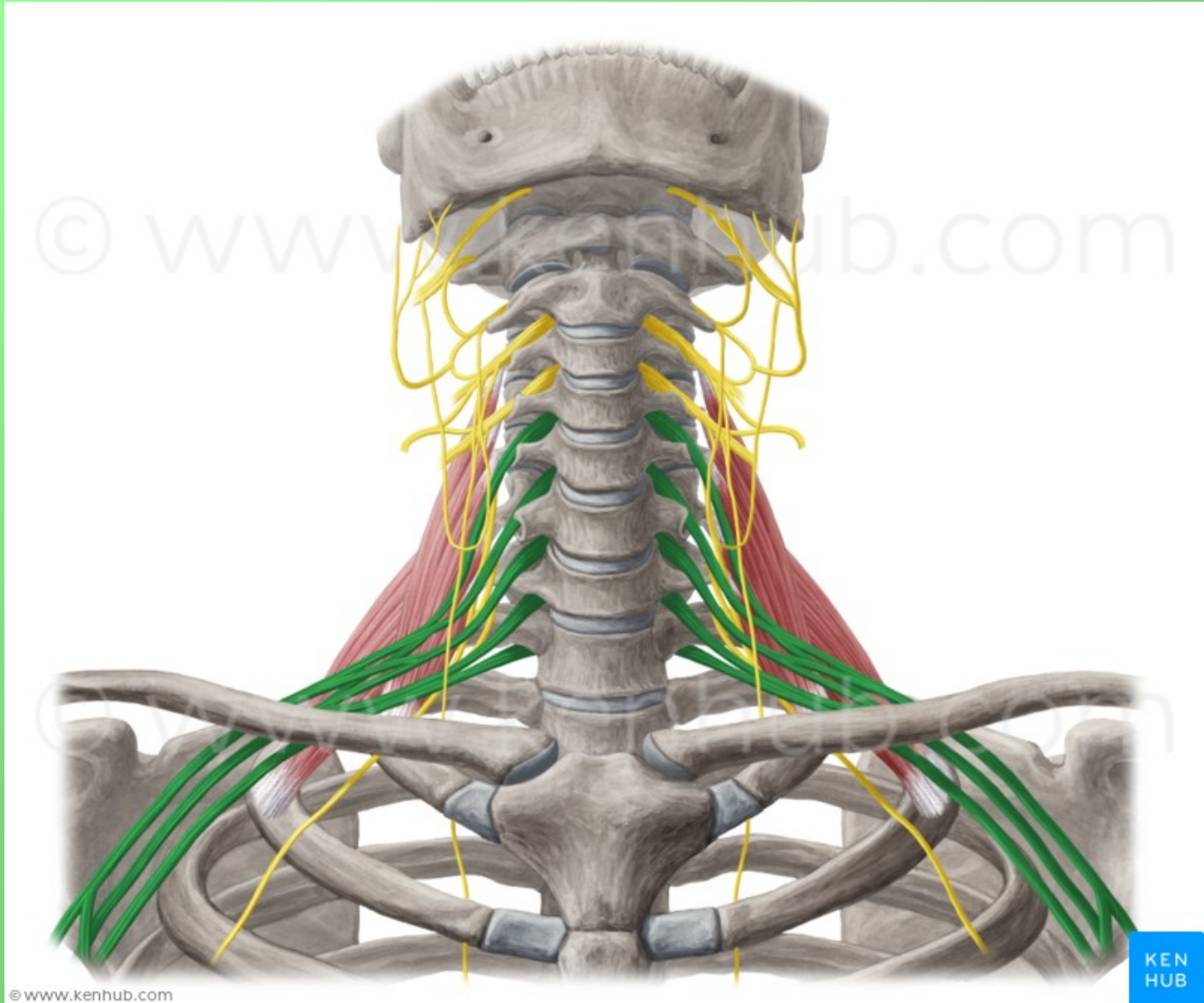
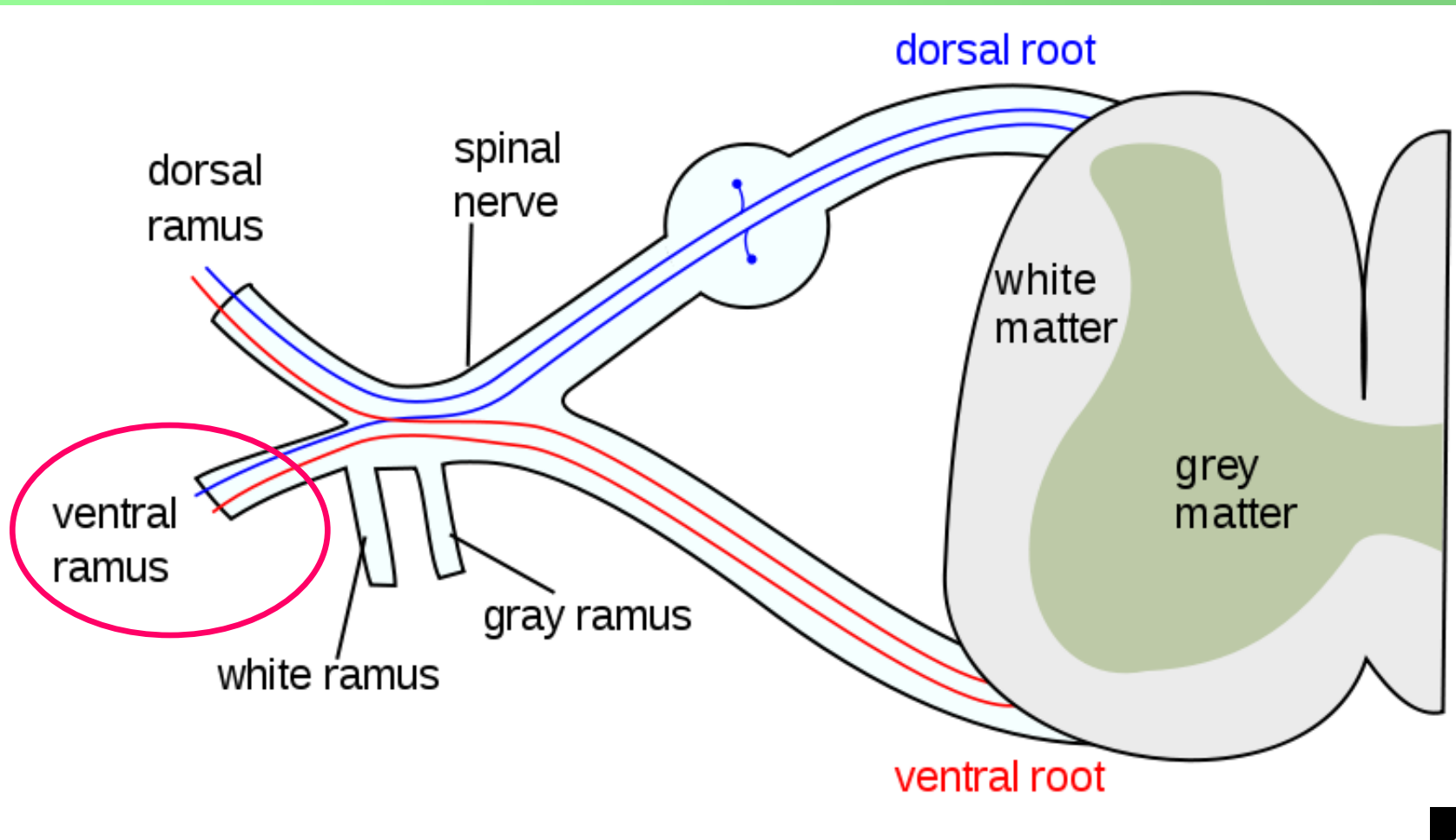


# BRACHIAL PLEXUS



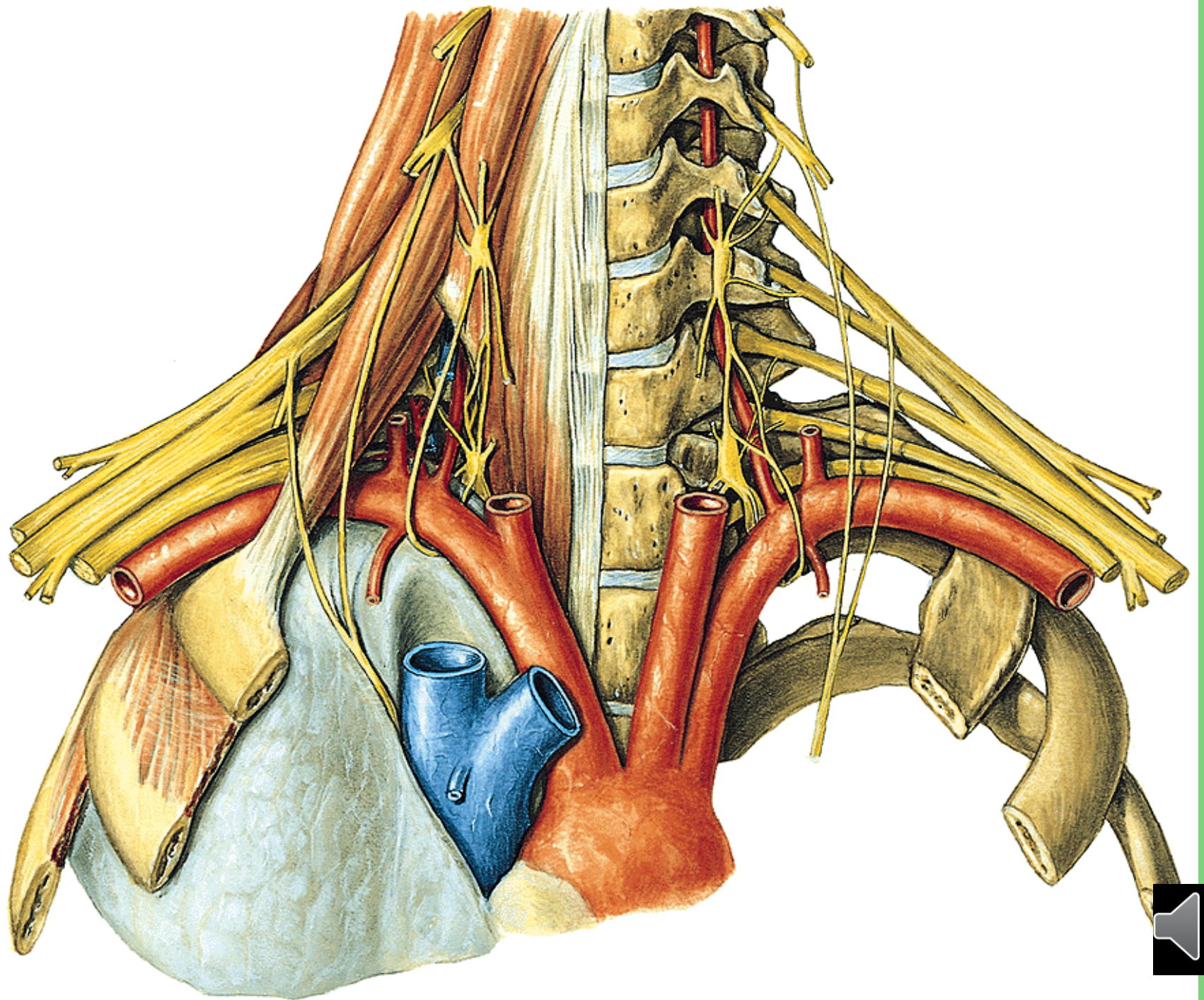
# Spinal nerve



# Plexus brachialis (C4-Th1)

- within fissura scalenorum
- Senzory innervation: skin of the upper limb
- Motor innervation: muscles of the upper extremity and some muscles of the back and thorax





# Plexus brachialis (C4-Th1)

The primary bundles - trunks/*trunci*:

Truncus superior (C4) C5+6

Truncus medius C7

Truncus inferior C8+Th1

The secondary bundles - cords/*fasciculi*:

**Fasciculus posterior:** connection of all three posterior branches

**Fasciculus lateralis:** connection of anterior branches of truncus superior and medius

**Fasciculus medialis:** anterior branch of truncus inferior

The particular nerves arise from the cords:

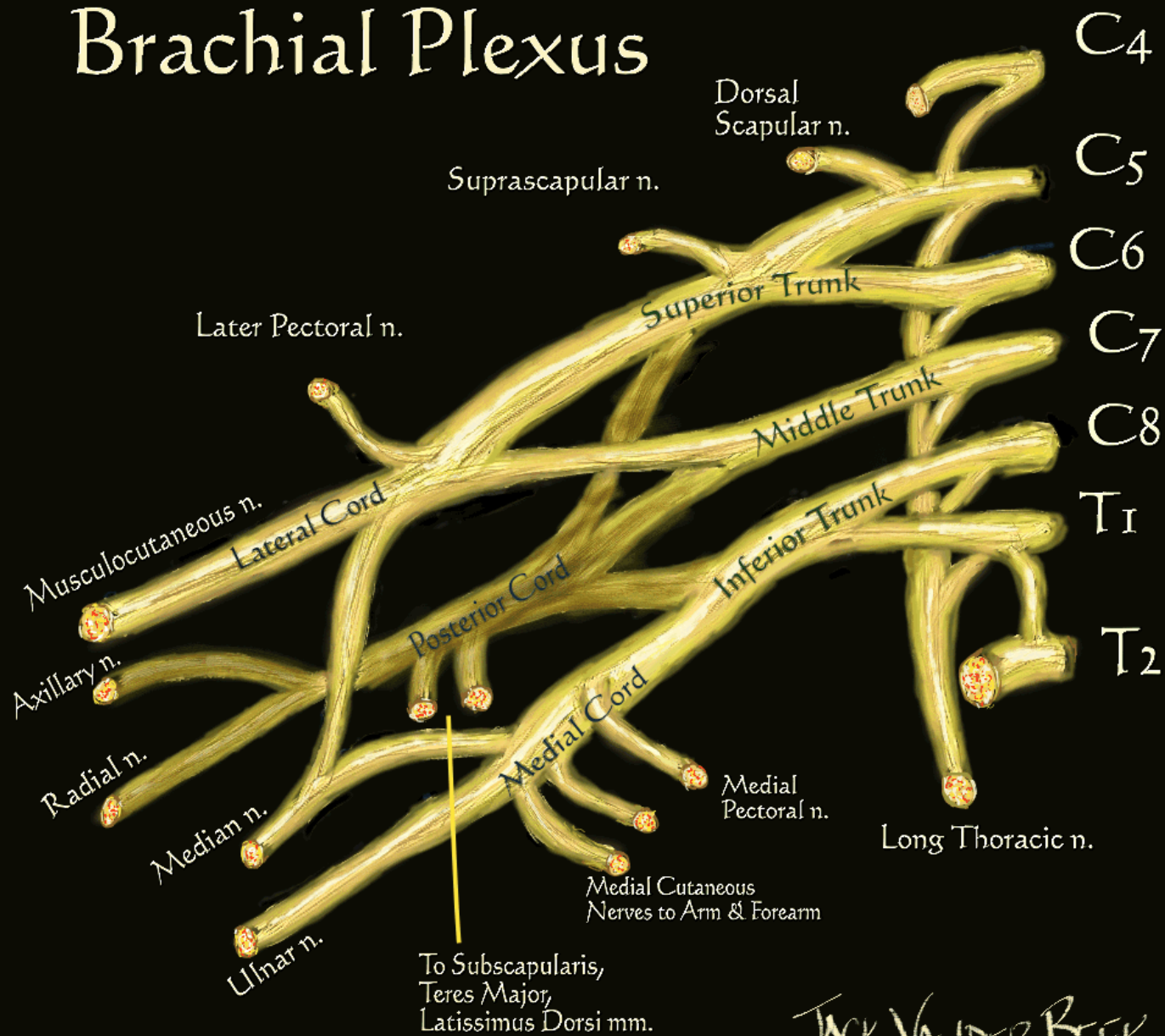
**FP:** n. radialis, n. axillaris

**FL:** n. musculocutaneus + part of n. medianus

**FM:** n. ulnaris + part of n. medianus



# Brachial Plexus



JACK VANDER BEEK  
(c) 2005 neuraxiom.com



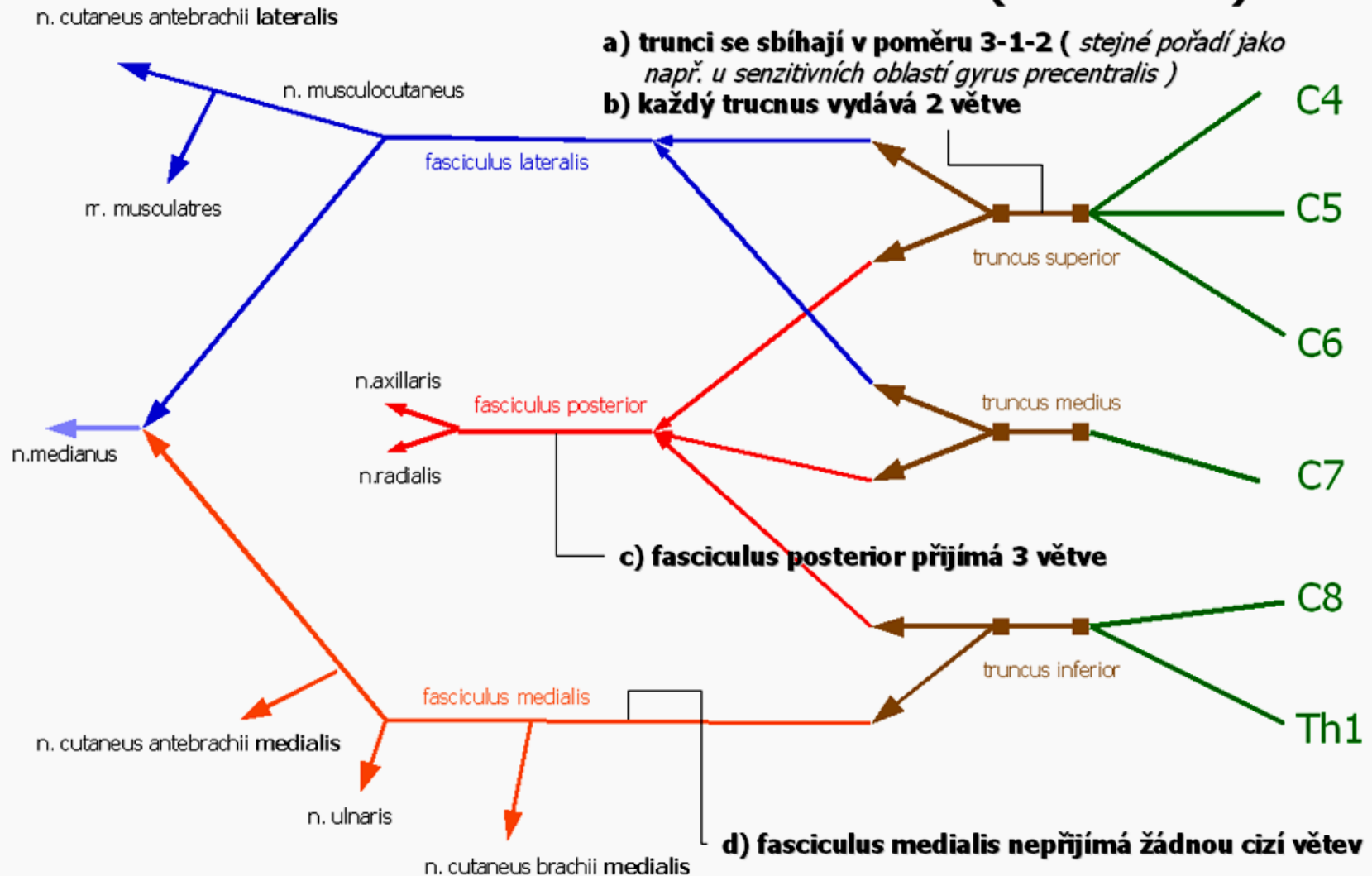
# Plexus brachialis ( C4 – Th1 )

a) trunci se sbíhají v poměru 3-1-2 ( stejné pořadí jako např. u senzitivních oblastí gyrus precentralis )

b) každý truncus vydává 2 větve

c) fasciculus posterior přijímá 3 větve

d) fasciculus medialis nepřijímá žádnou cizí větev



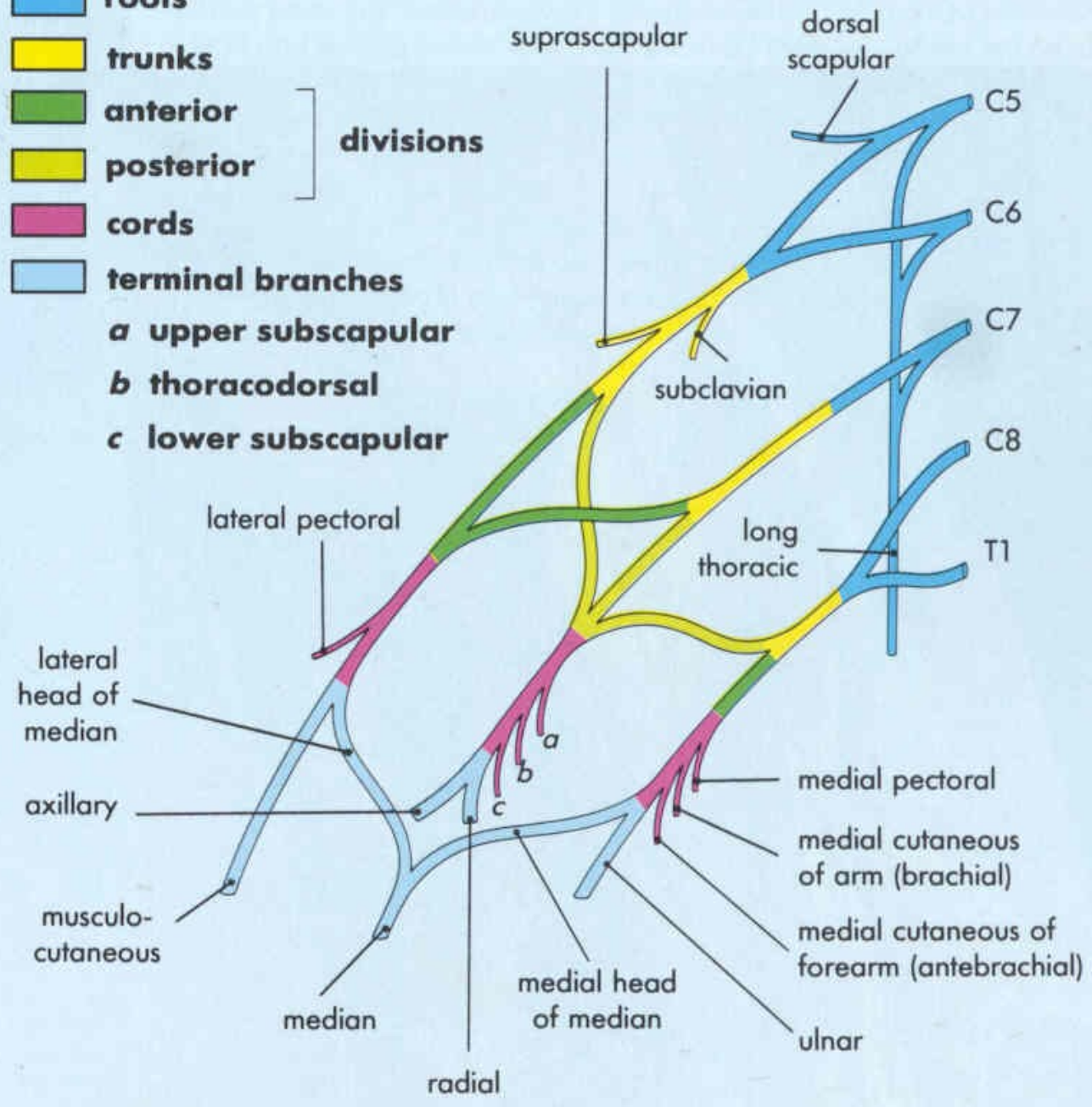
Result: there are axons from more segments within one nerve- by injury of the root, there can be paralysis of more muscles



- roots
- trunks
- anterior
- posterior
- cords
- terminal branches

divisions

- a* upper subscapular
- b* thoracodorsal
- c* lower subscapular



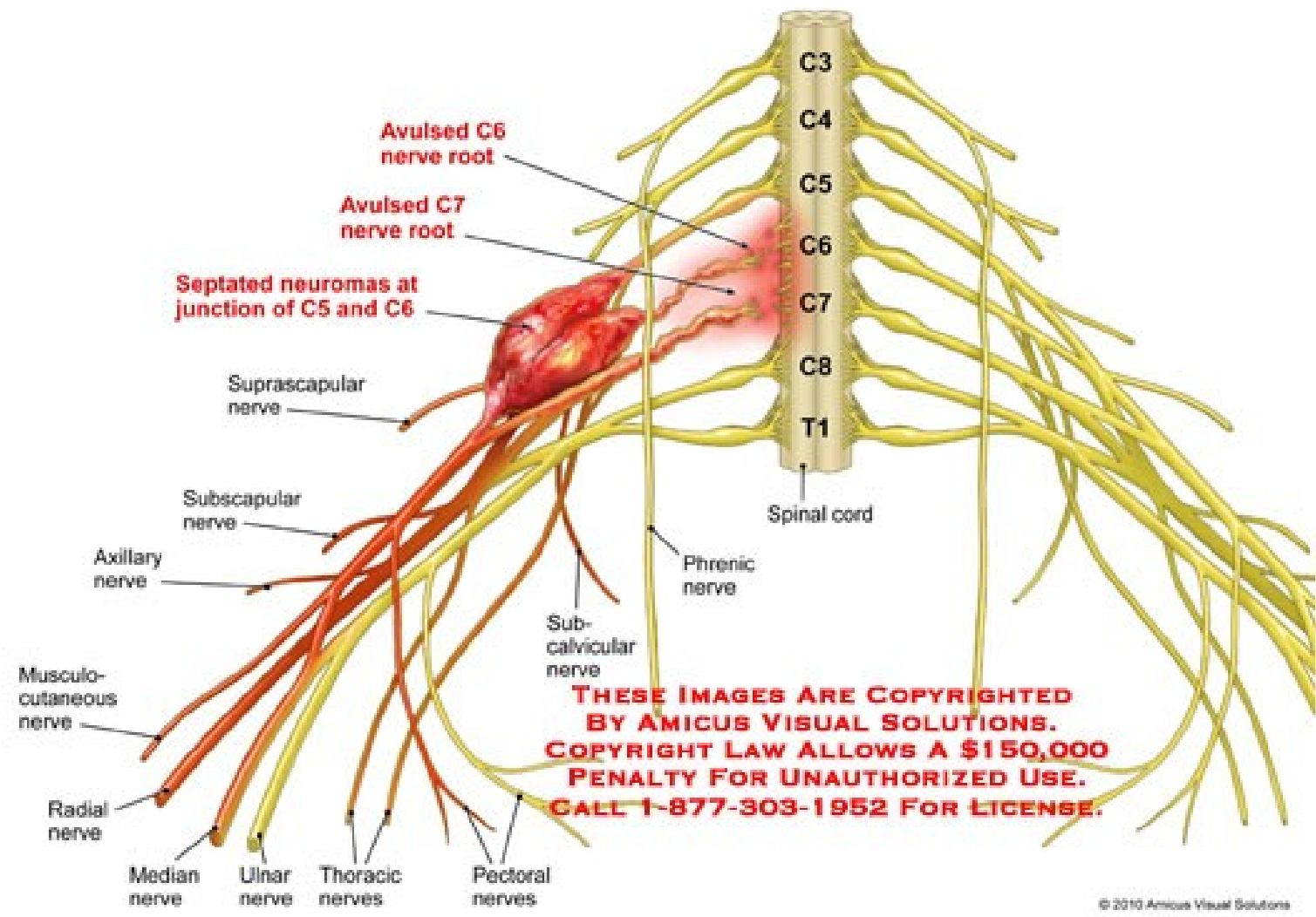


- **scalenus syndrome (fissura scalenorum)**

- C
- B
- te

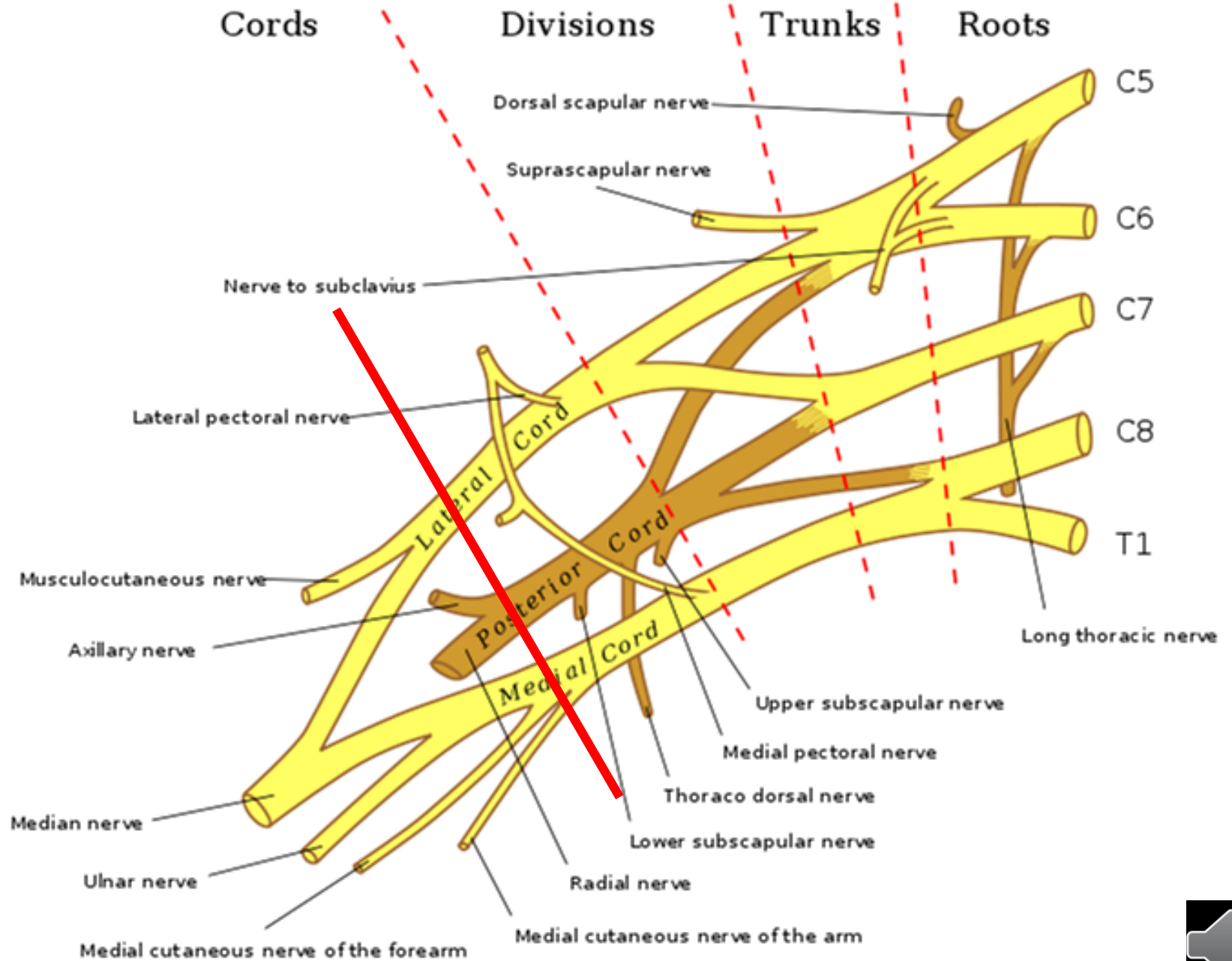
lly

## ██████████'s Brachial Plexus Injuries

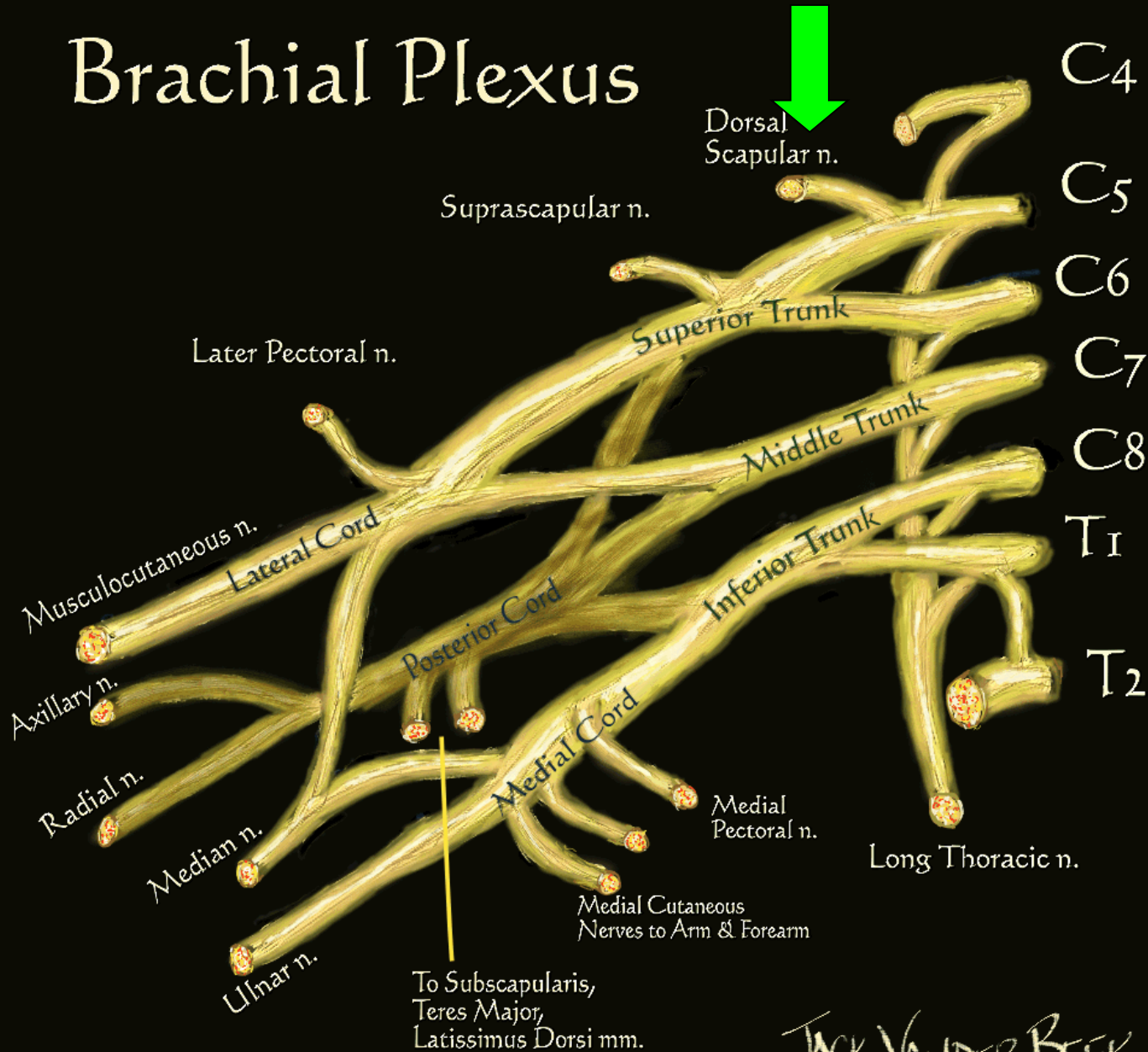


**THESE IMAGES ARE COPYRIGHTED BY AMICUS VISUAL SOLUTIONS. COPYRIGHT LAW ALLOWS A \$150,000 PENALTY FOR UNAUTHORIZED USE. CALL 1-877-303-1952 FOR LICENSE.**





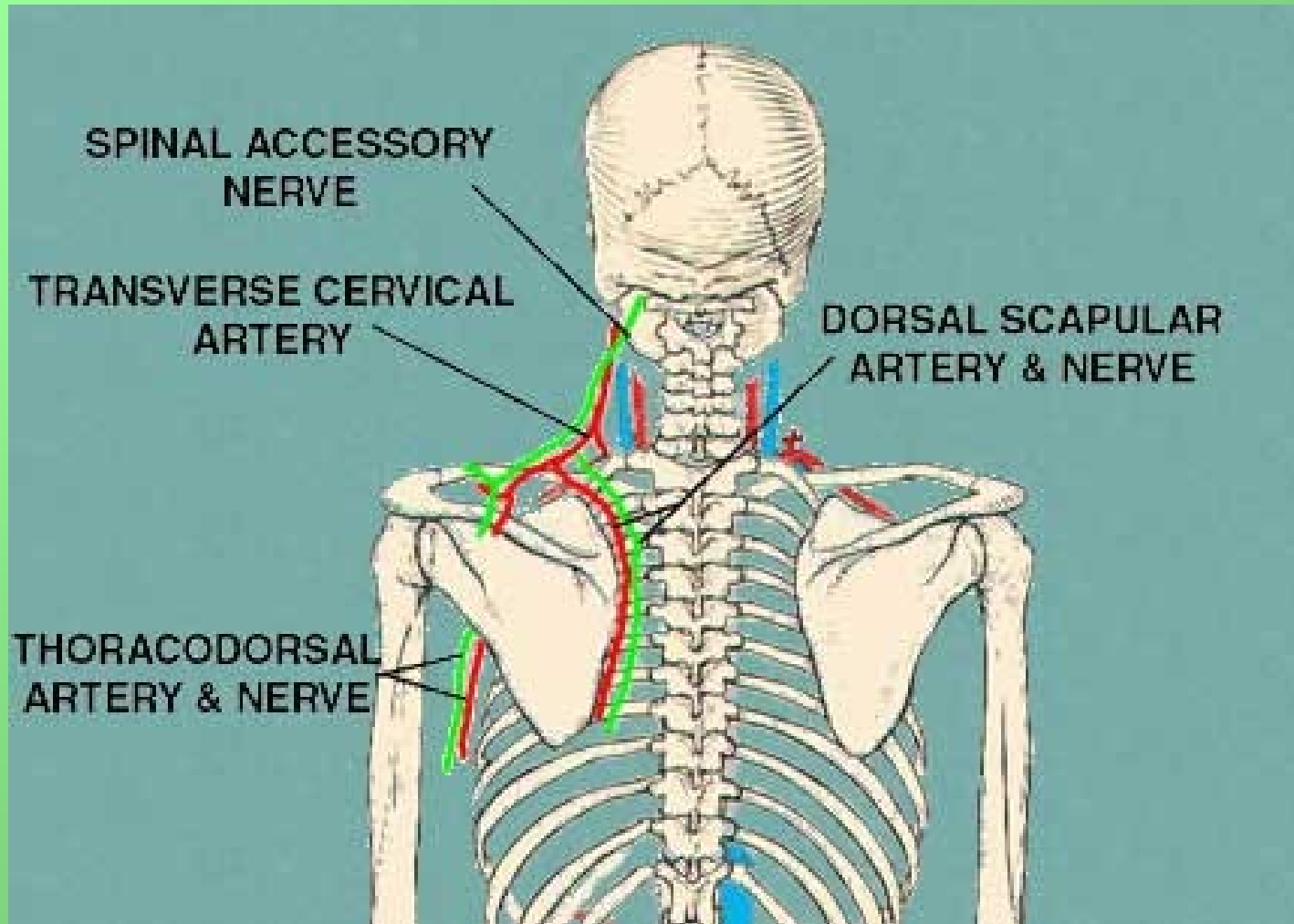
# Brachial Plexus



JACK VANDER BEEK

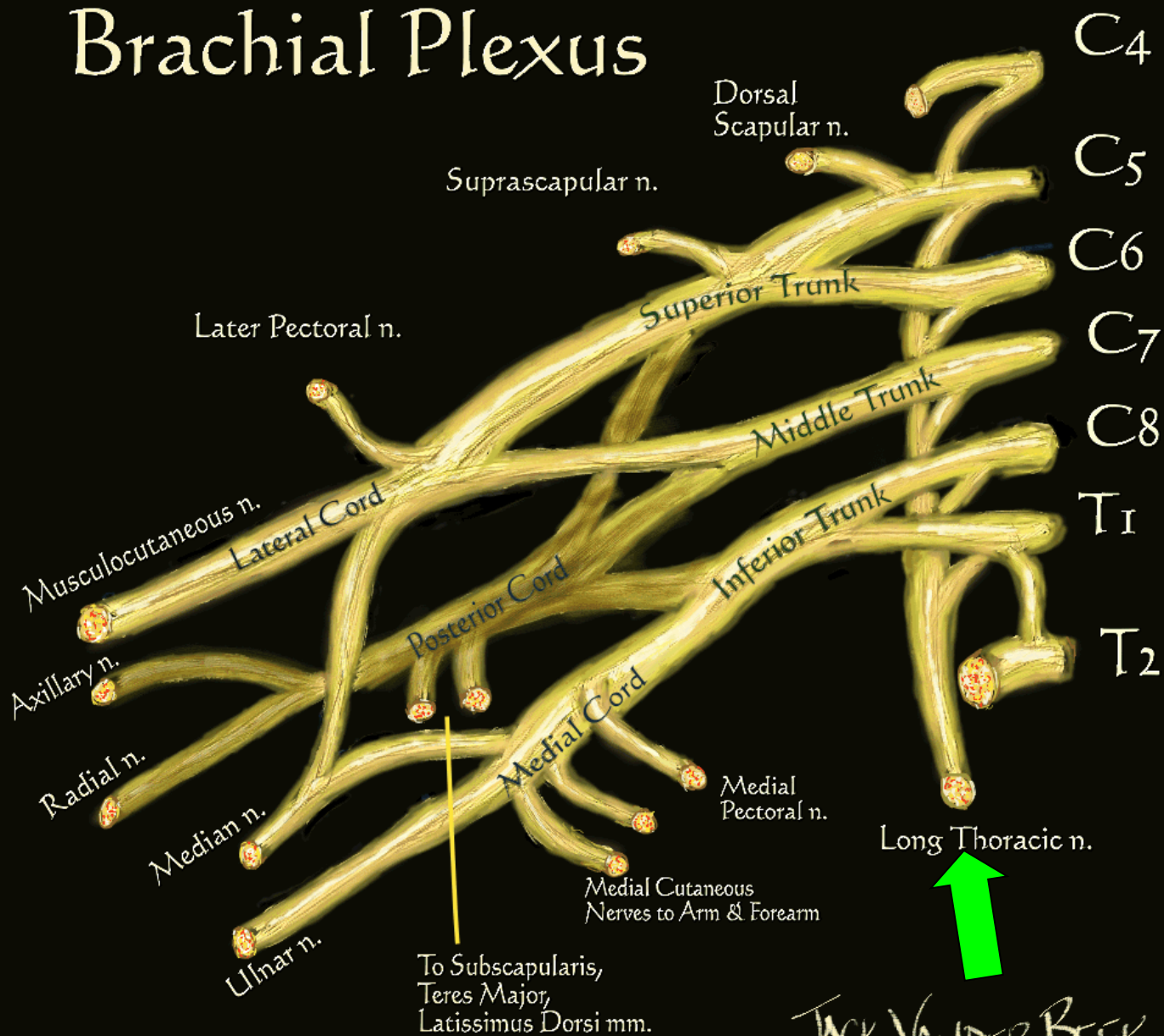
(c) 2005 neuraxiom.com





# Brachial Plexus

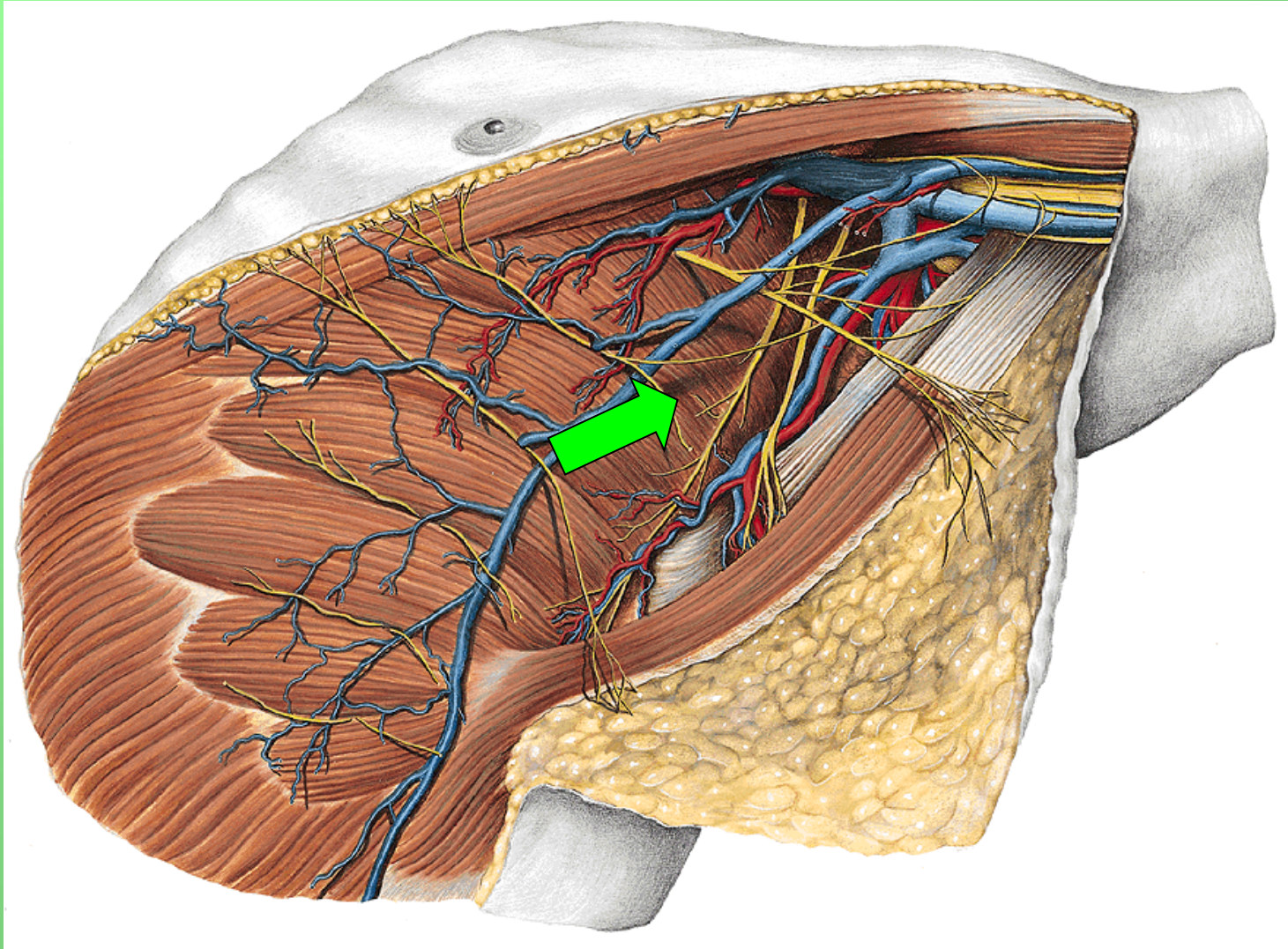
• m



JACK VANDER BEEK  
(c) 2005 neuraxiom.com

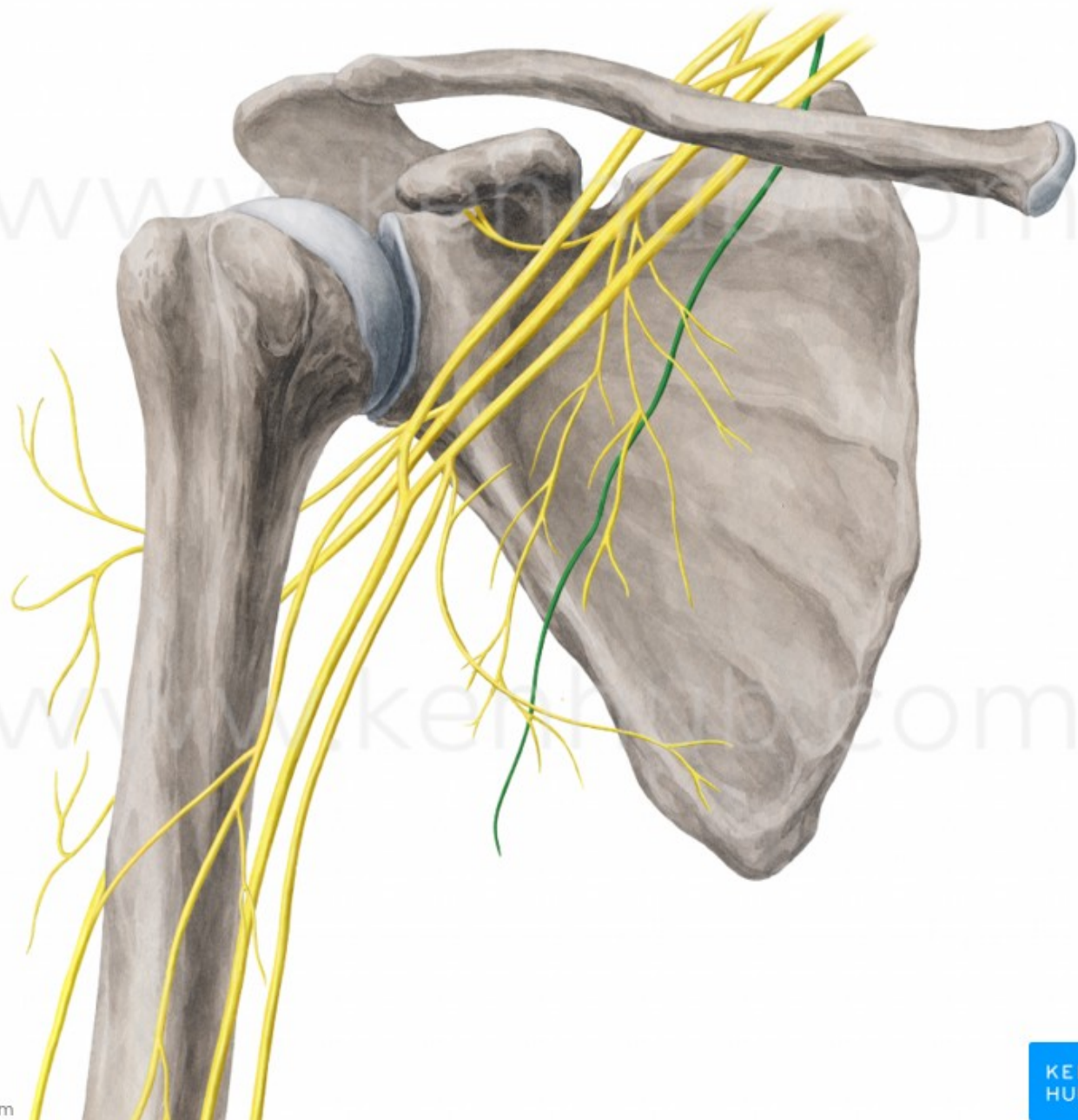


# nervus thoracicus longus (C5-7)



© www.kenhub.com

© www.kenhub.com



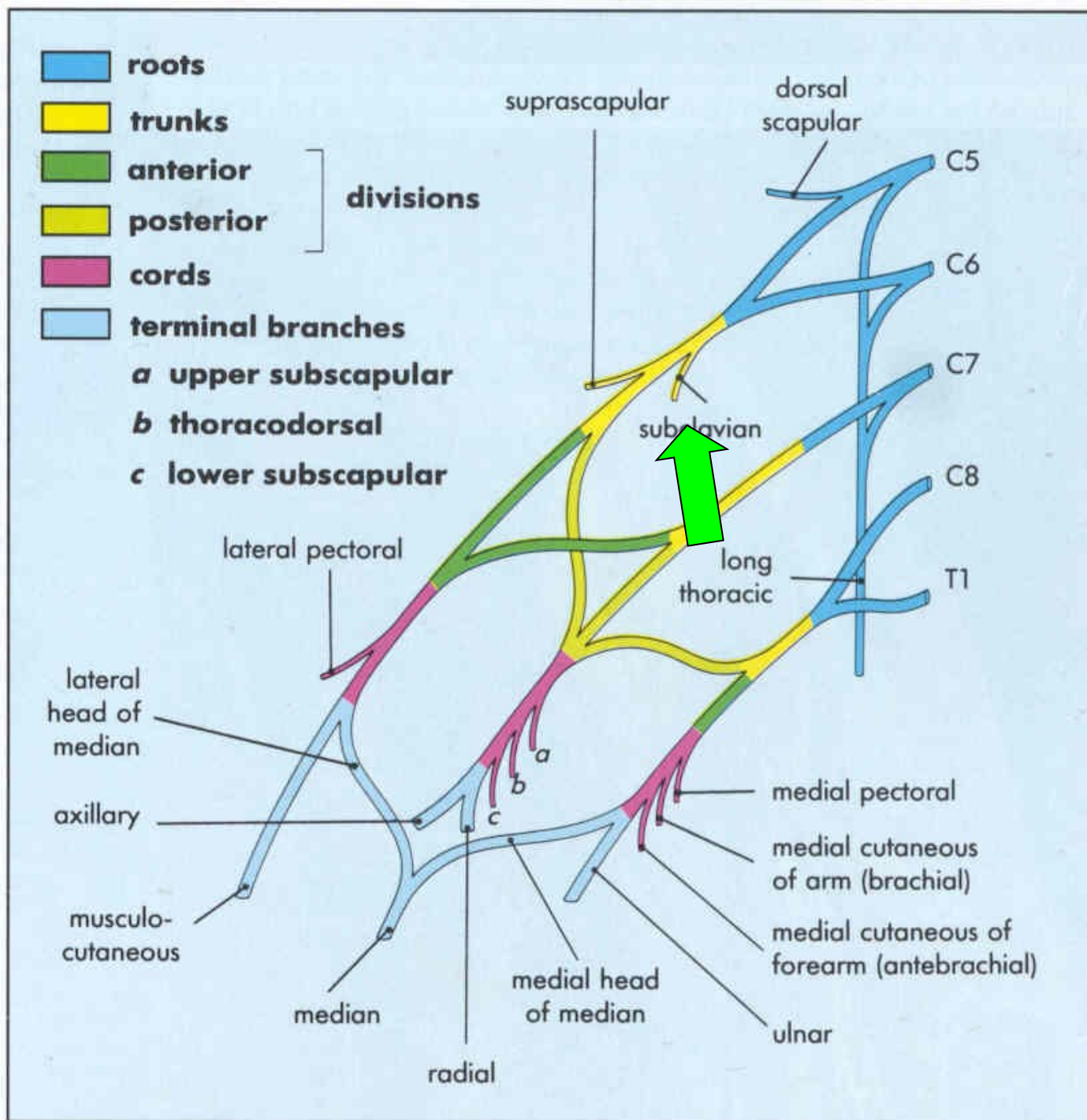
# nervus thoracicus longus (C5-7)

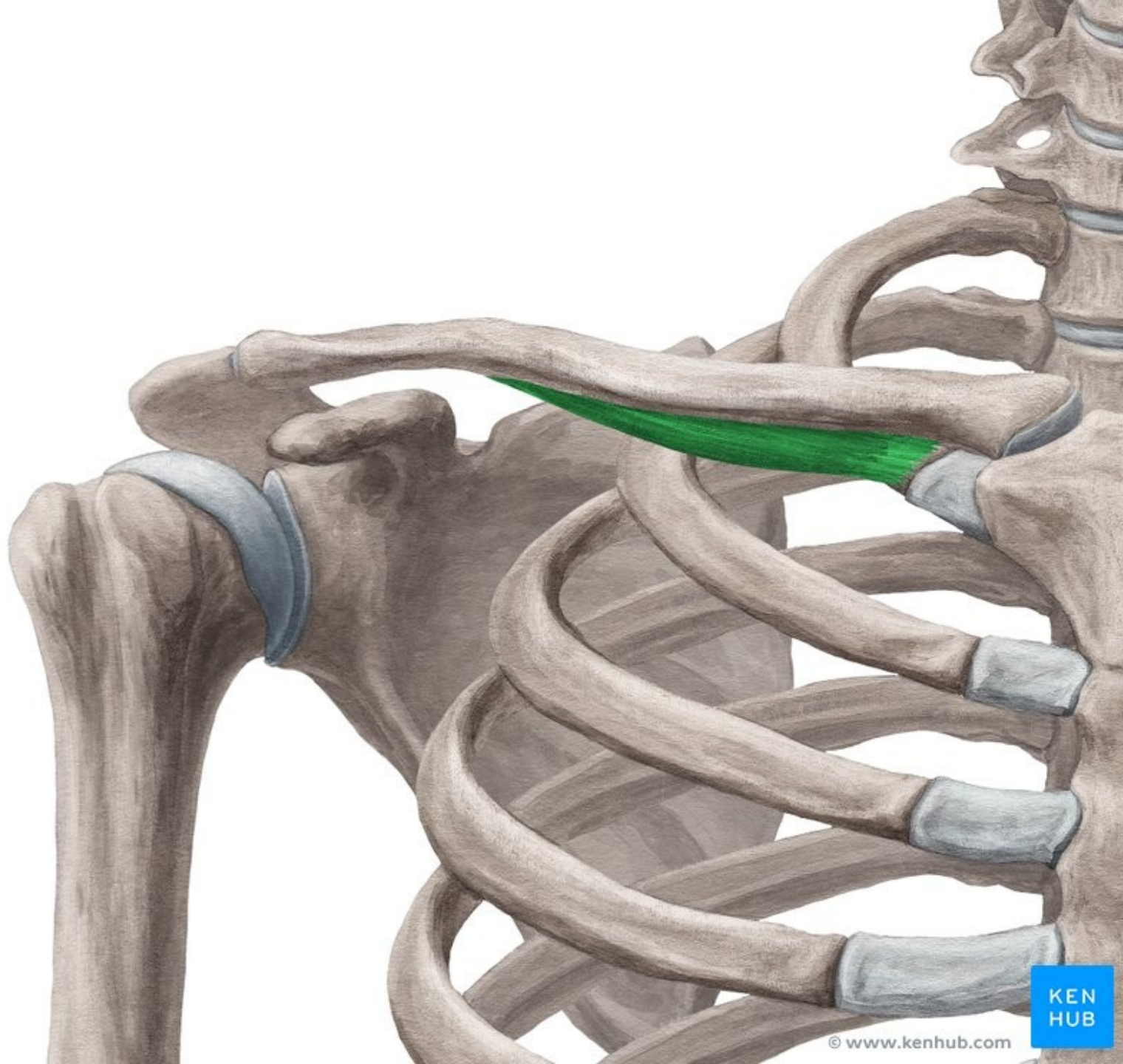
- scapula alata



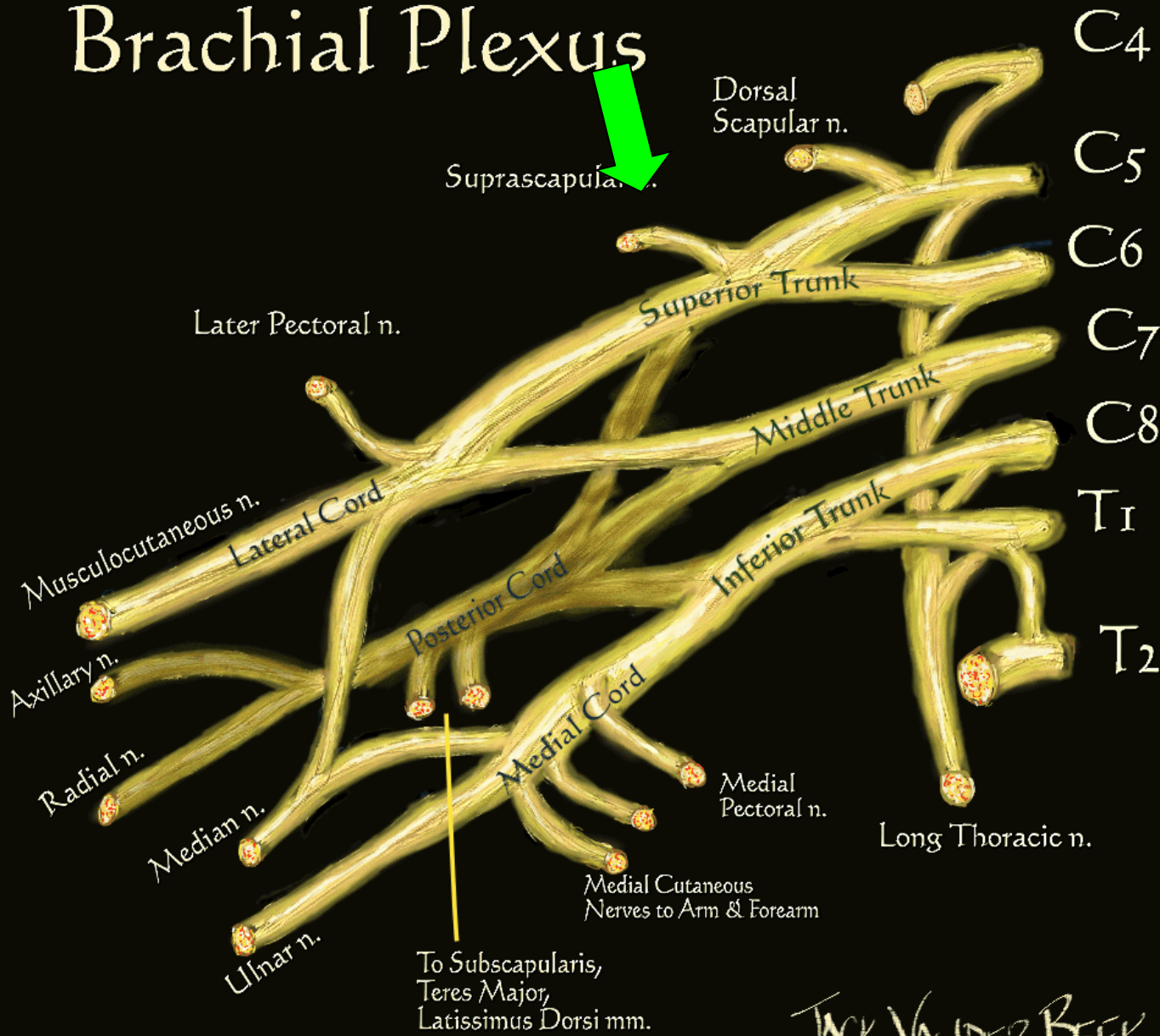


• m





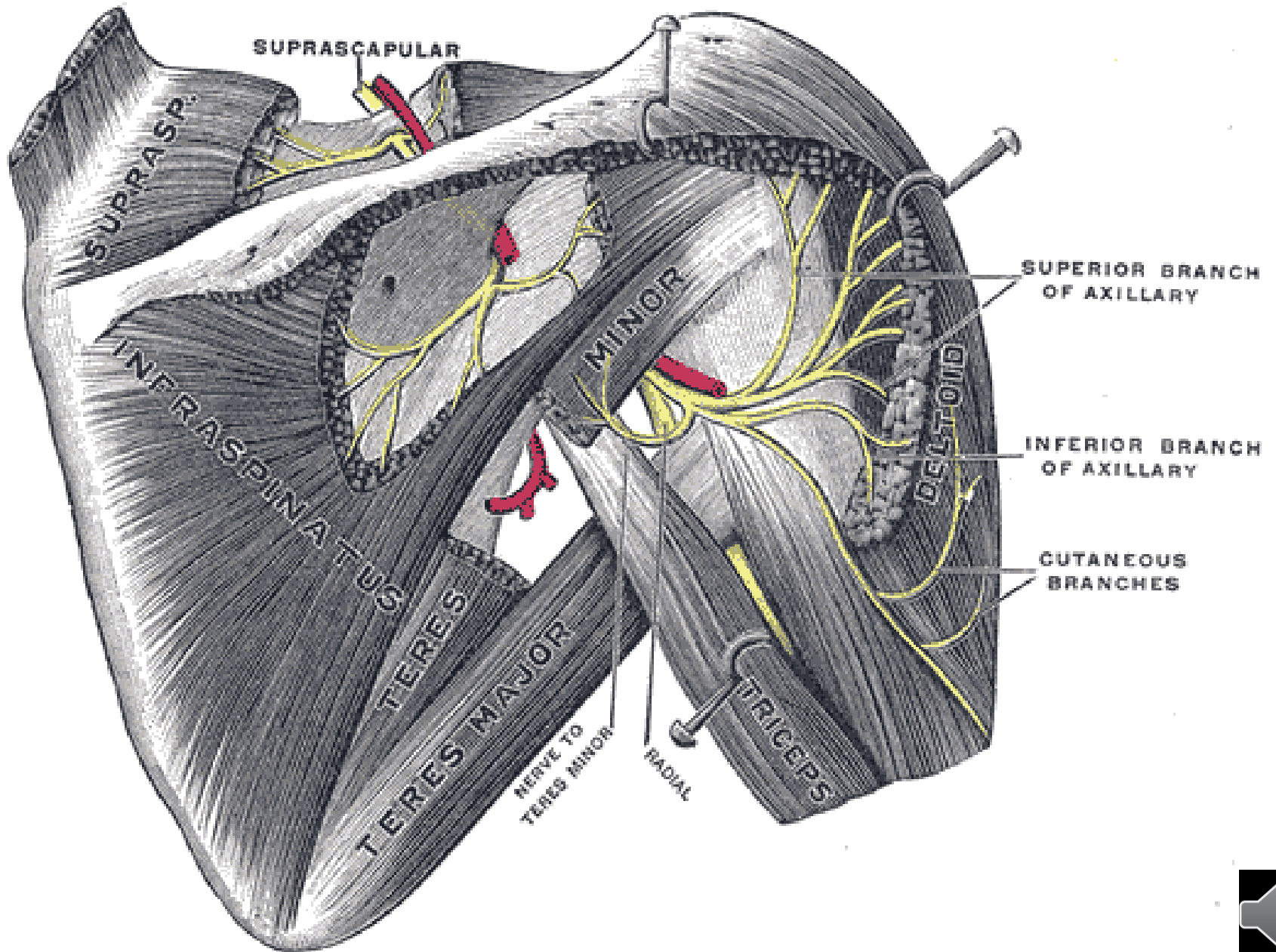
# Brachial Plexus

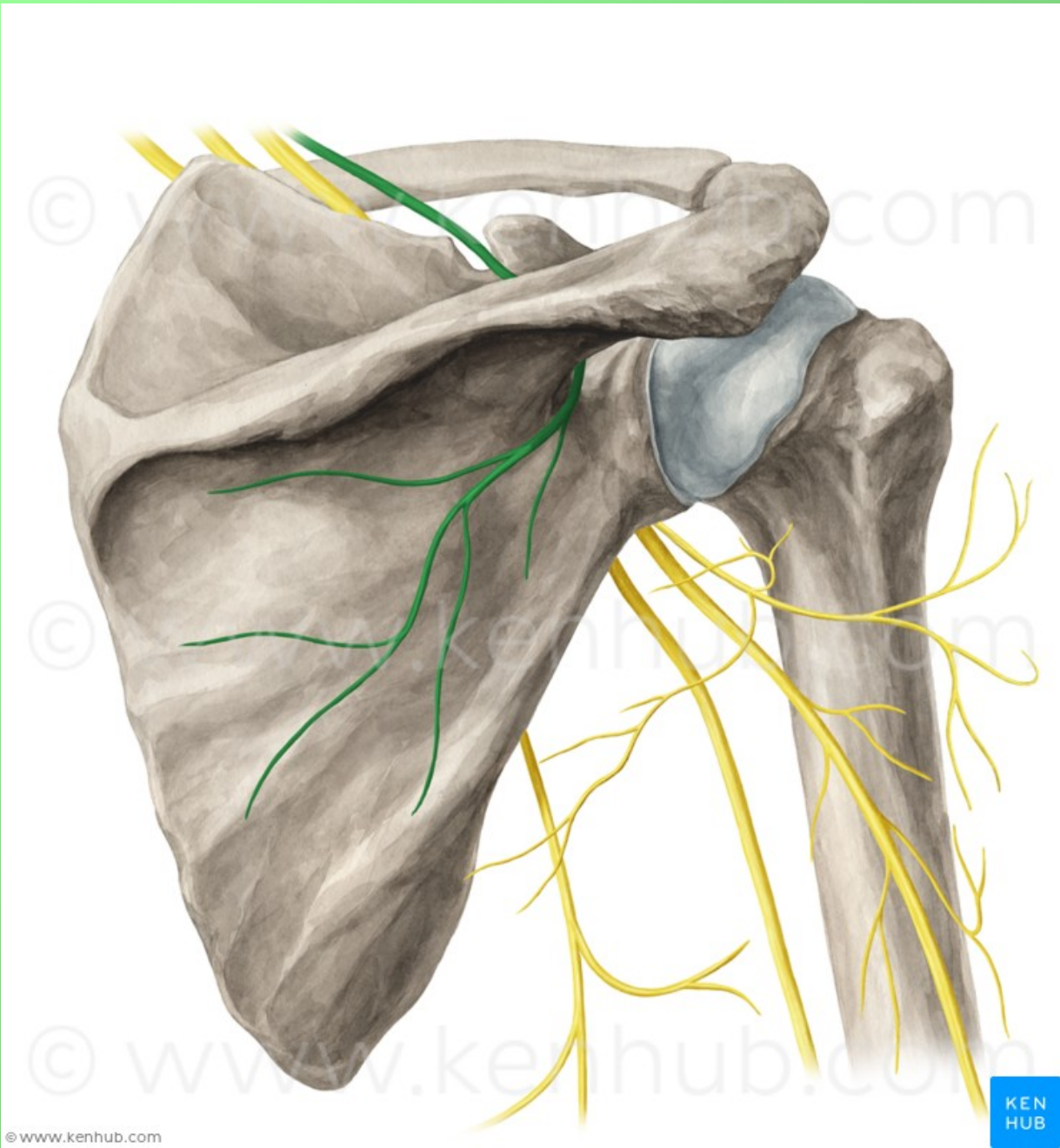


6)

ule

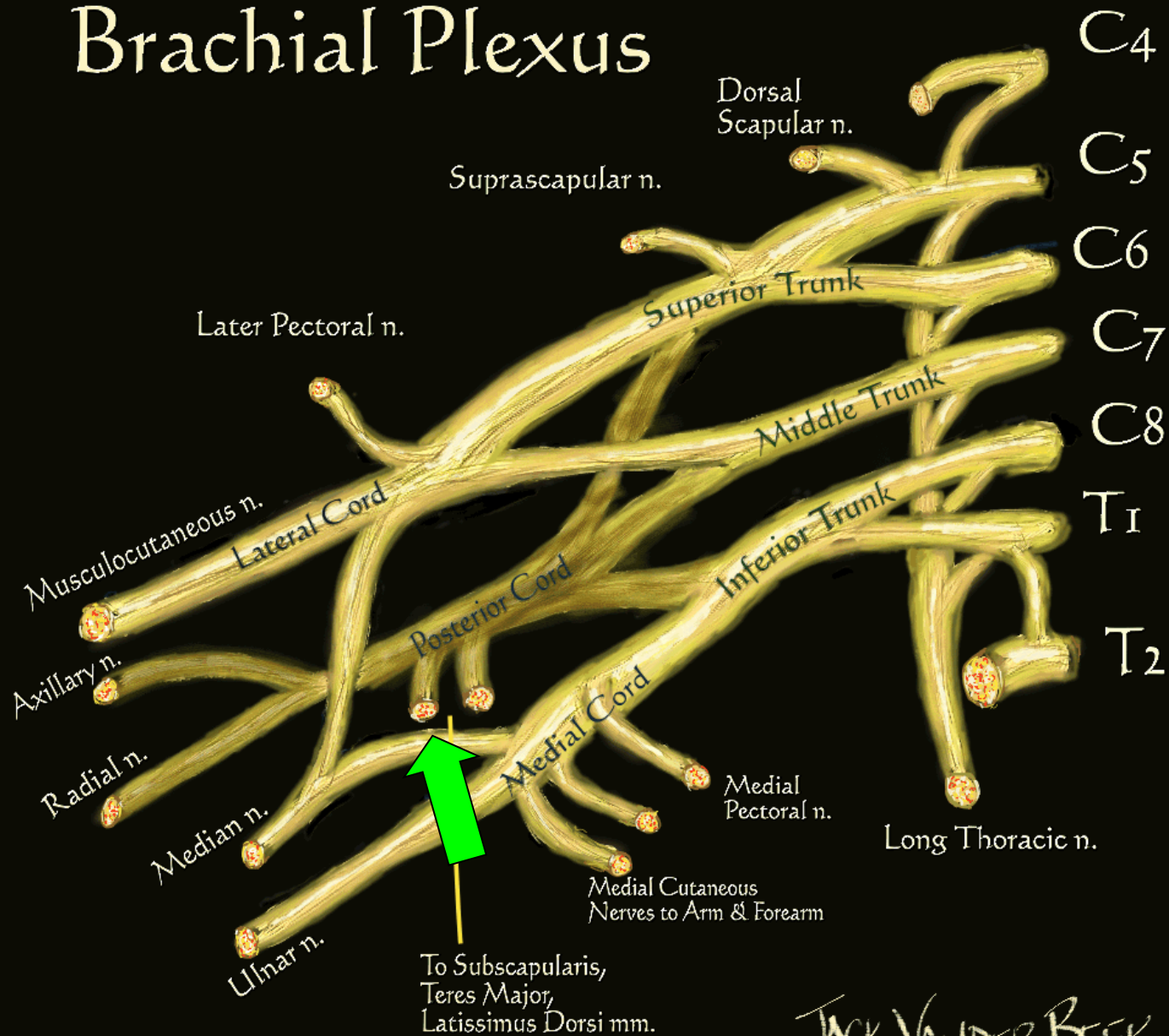






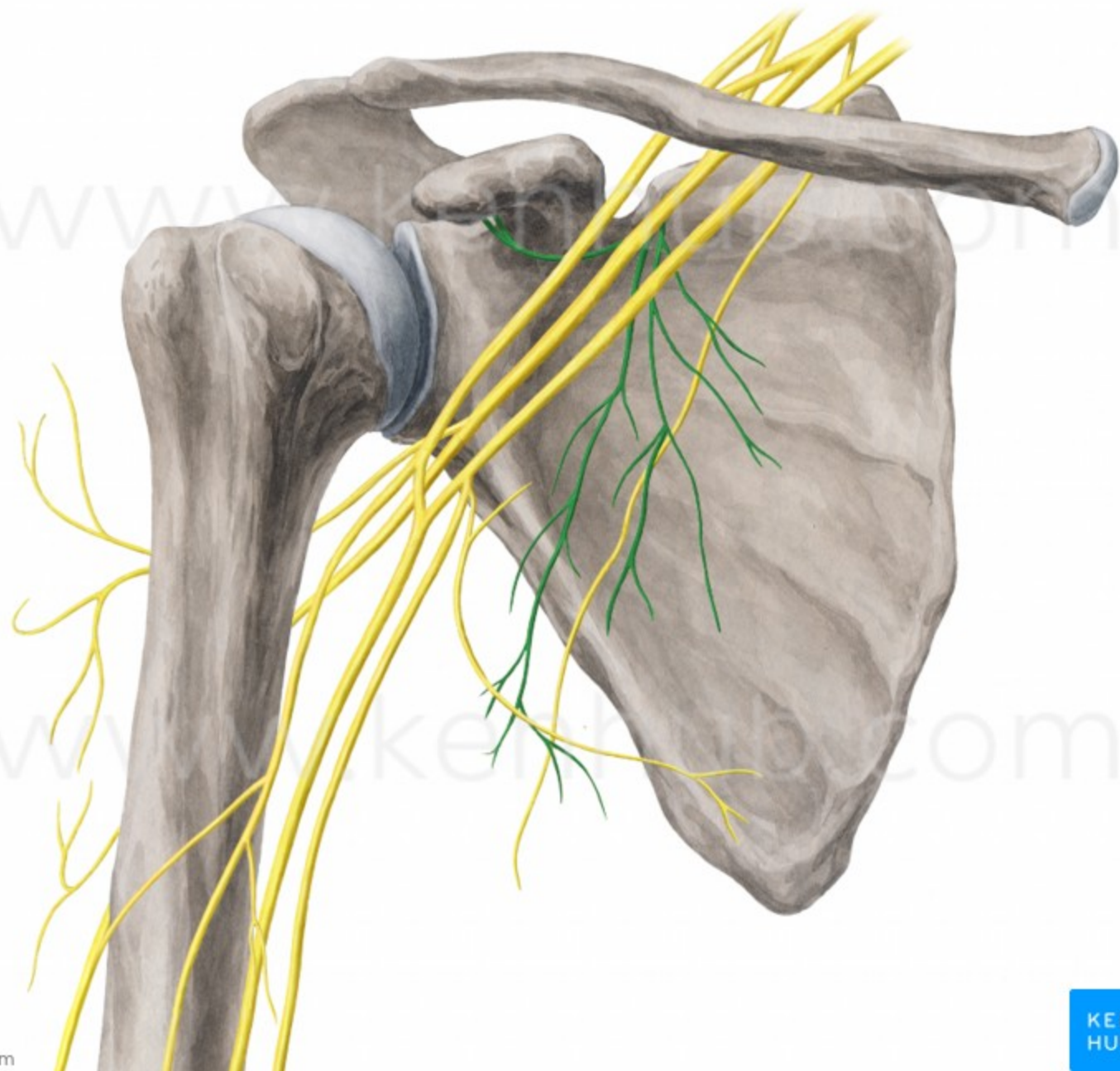
# Brachial Plexus

• m



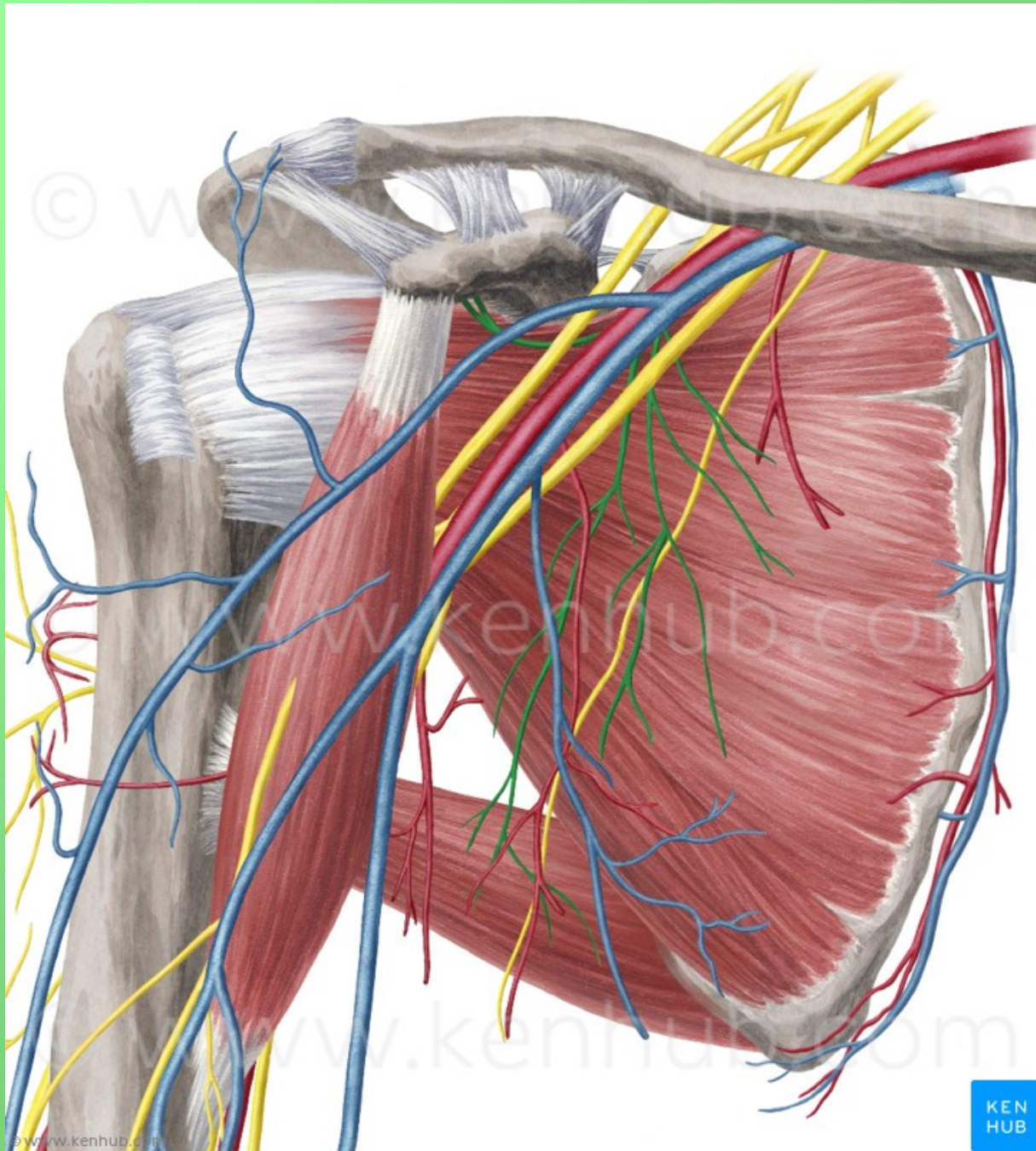
JACK VANDER BEEK  
 (c) 2005 neuraxiom.com





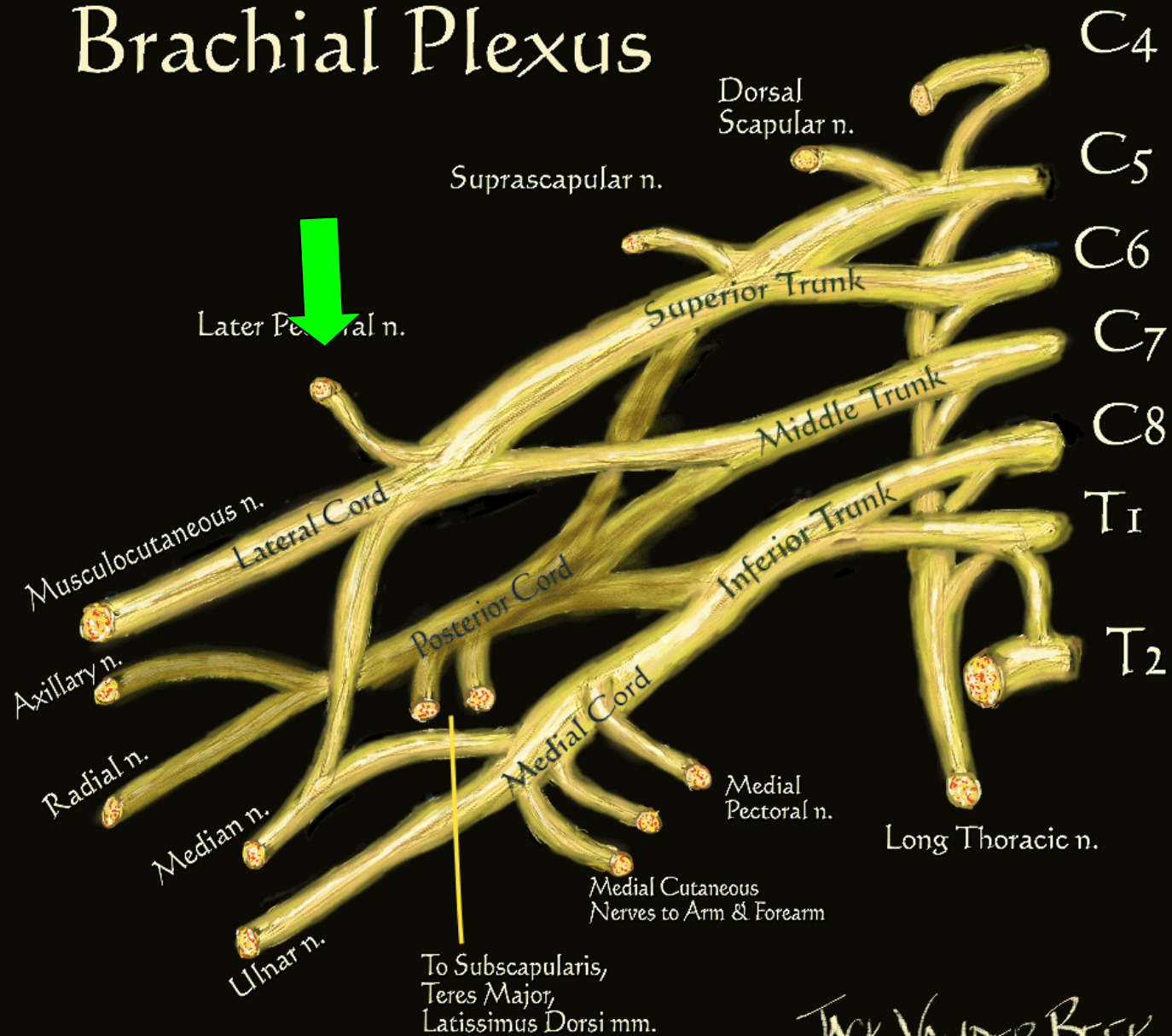
© www.kenhub.com

© www.kenhub.com



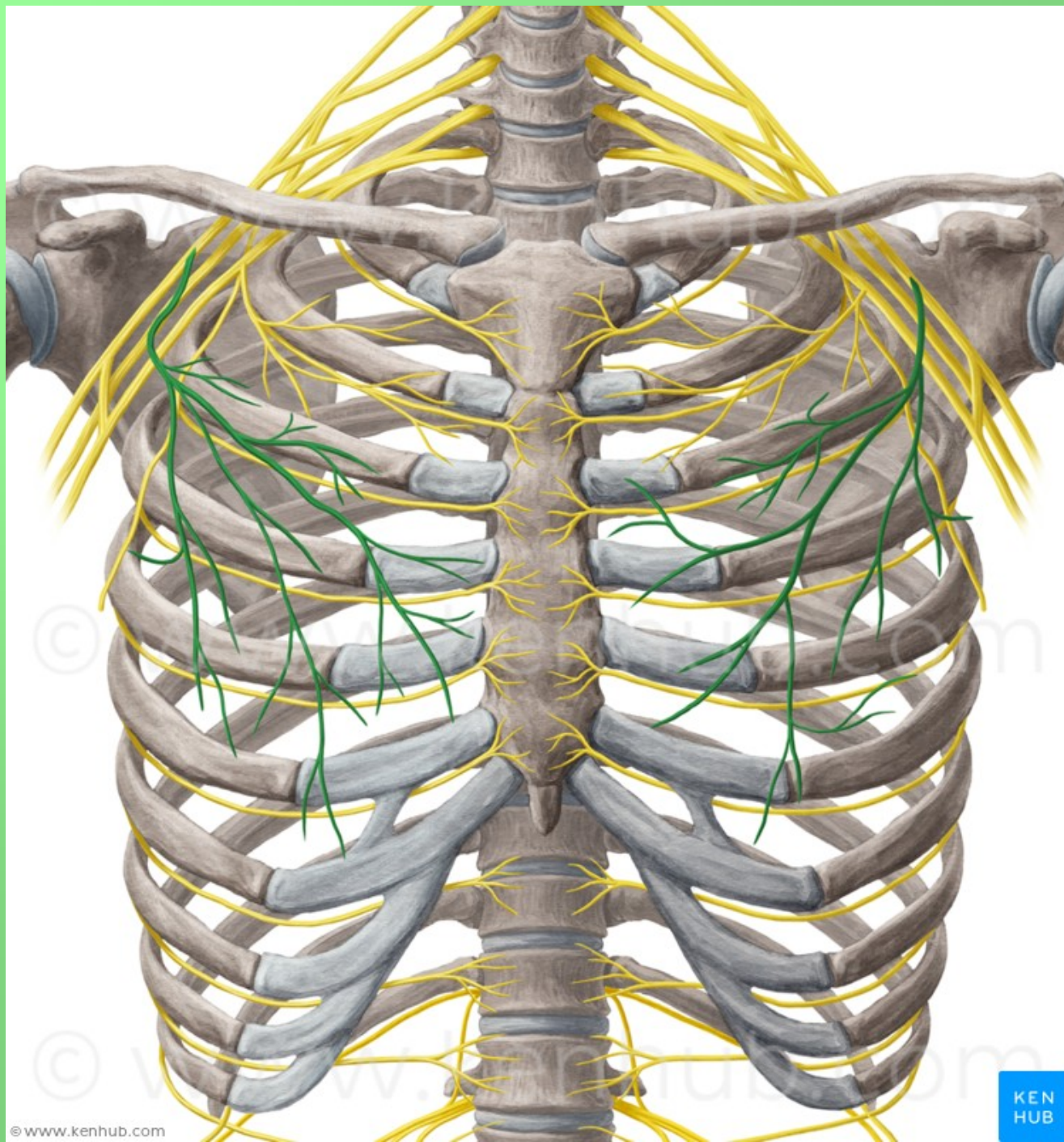


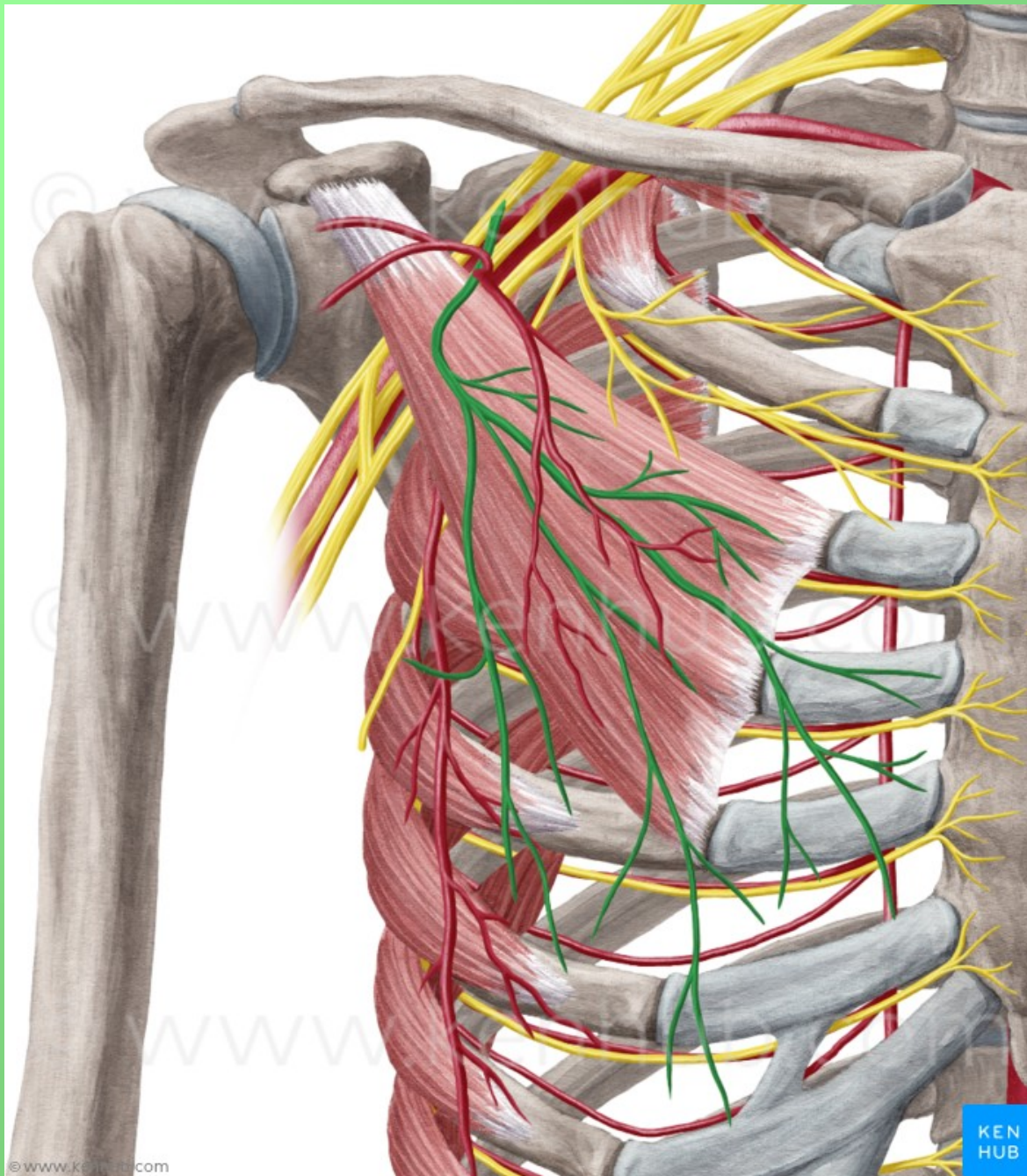
# Brachial Plexus



-7

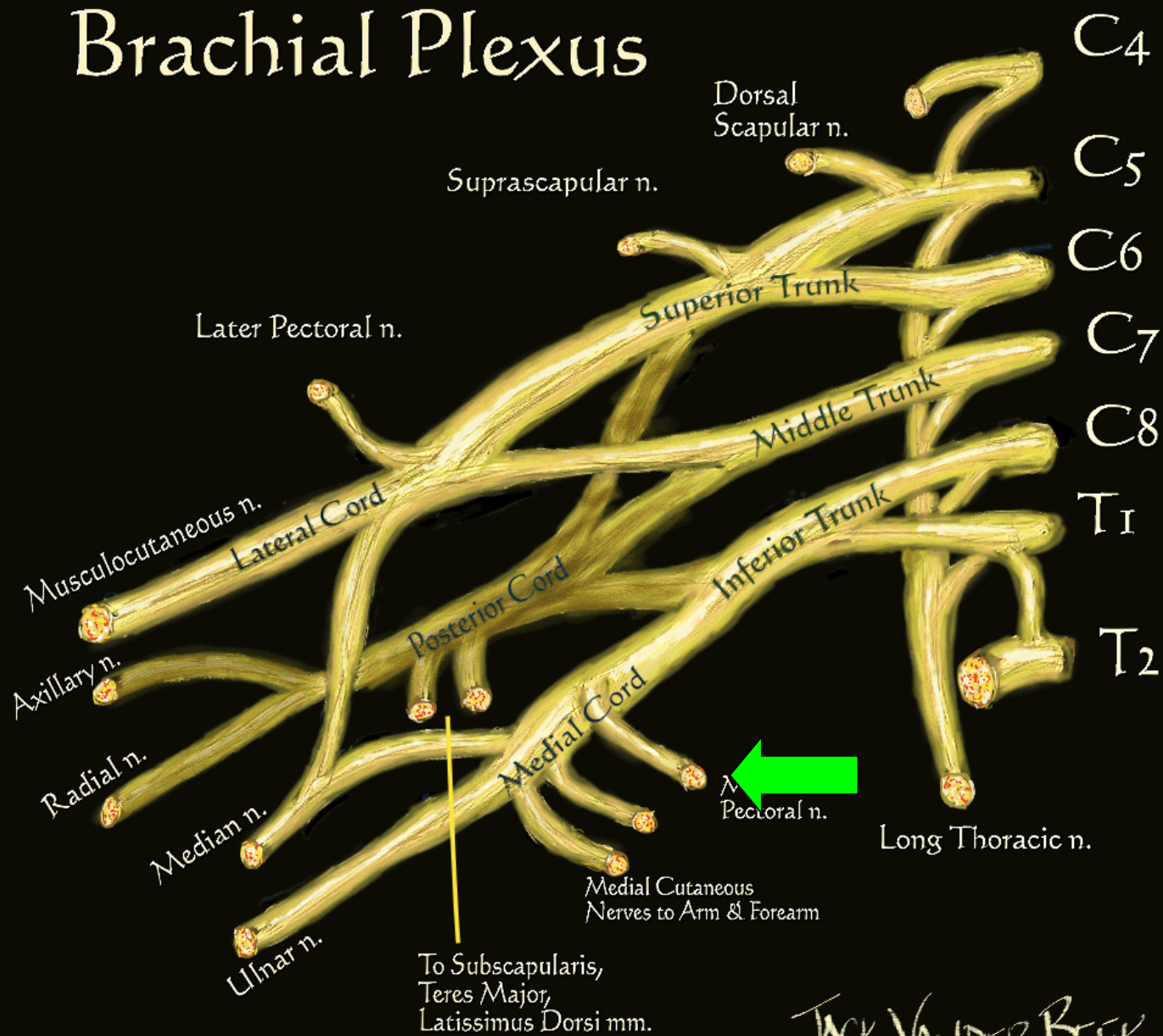






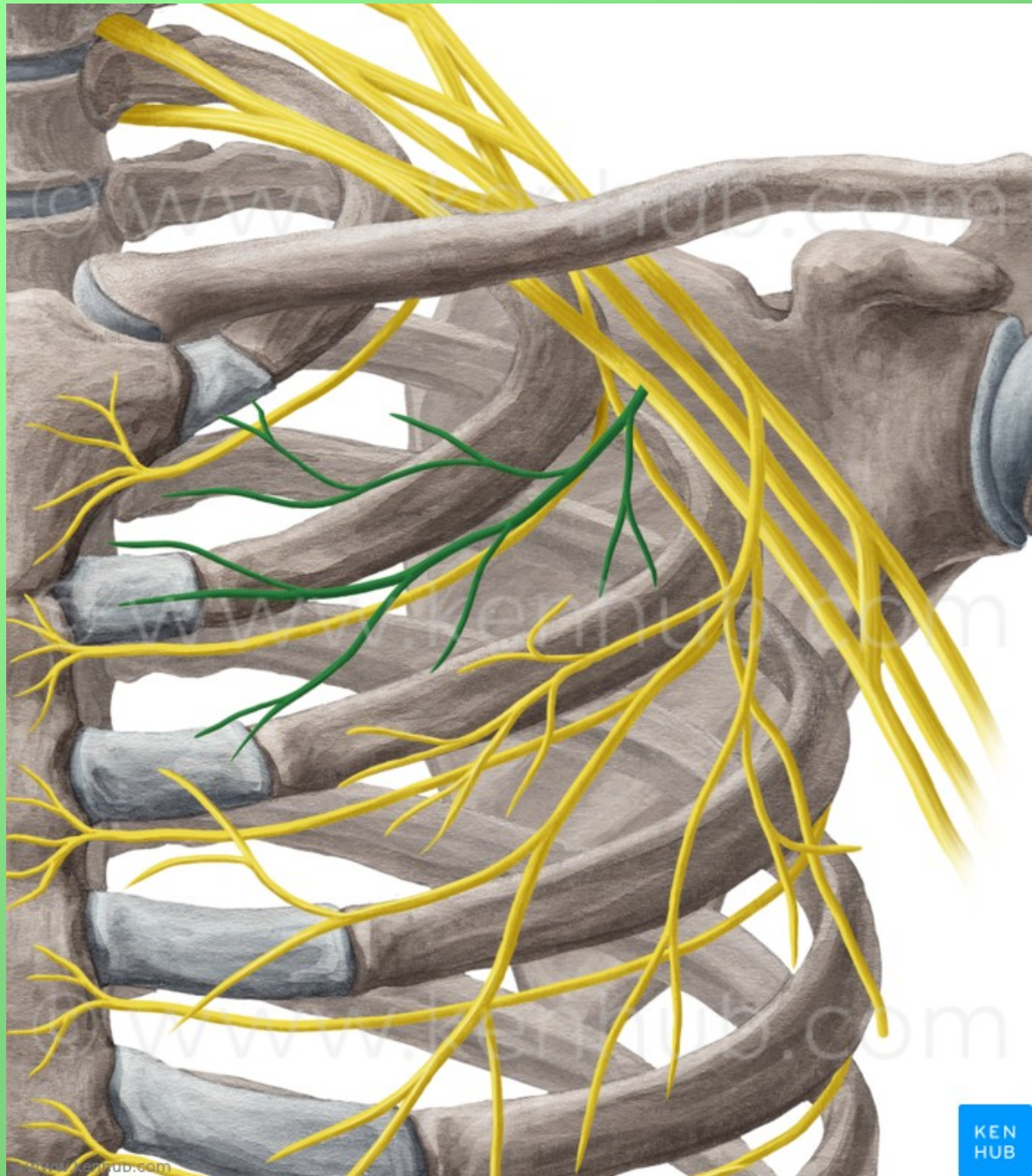
# ne Brachial Plexus

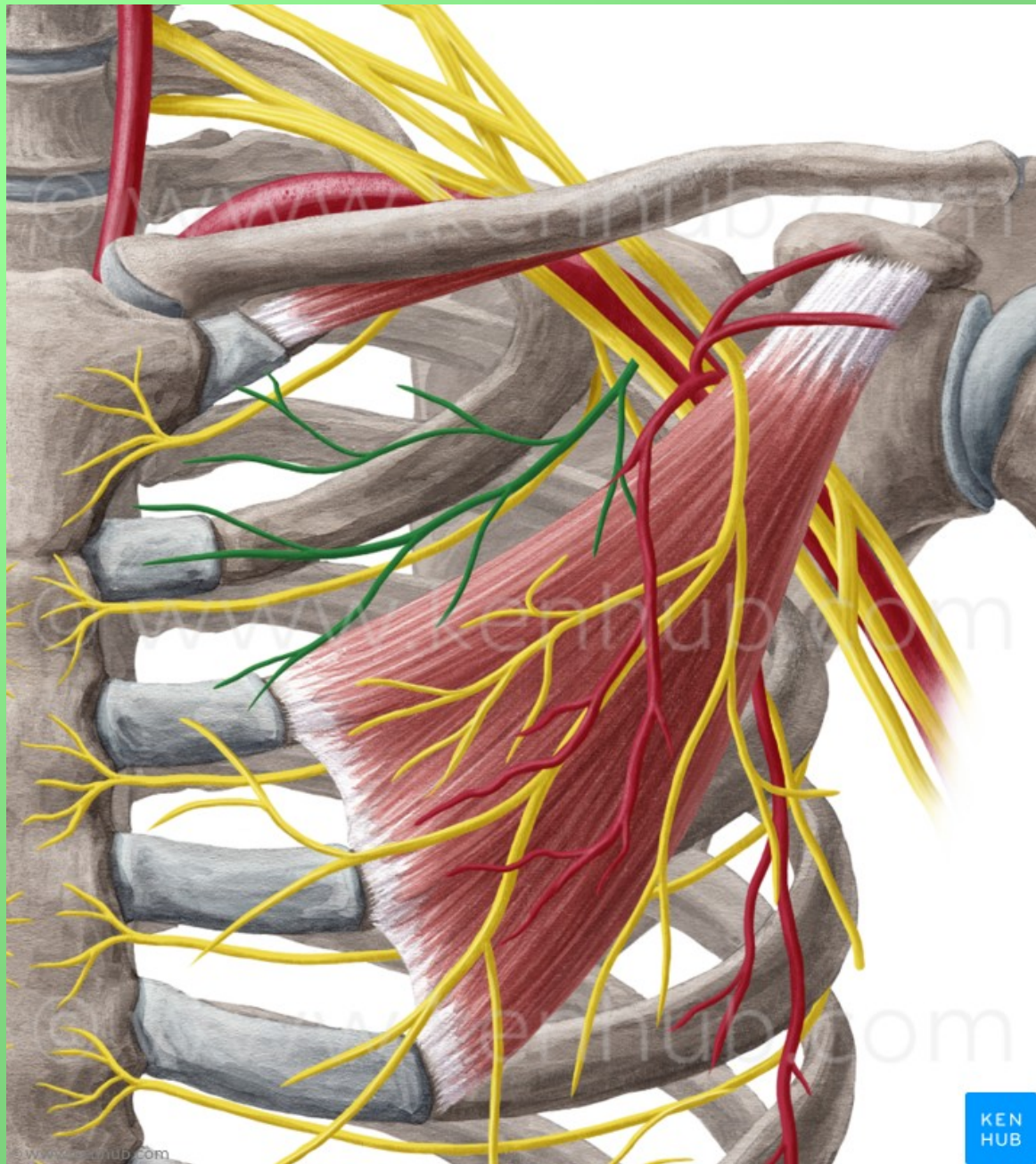
• m



h1



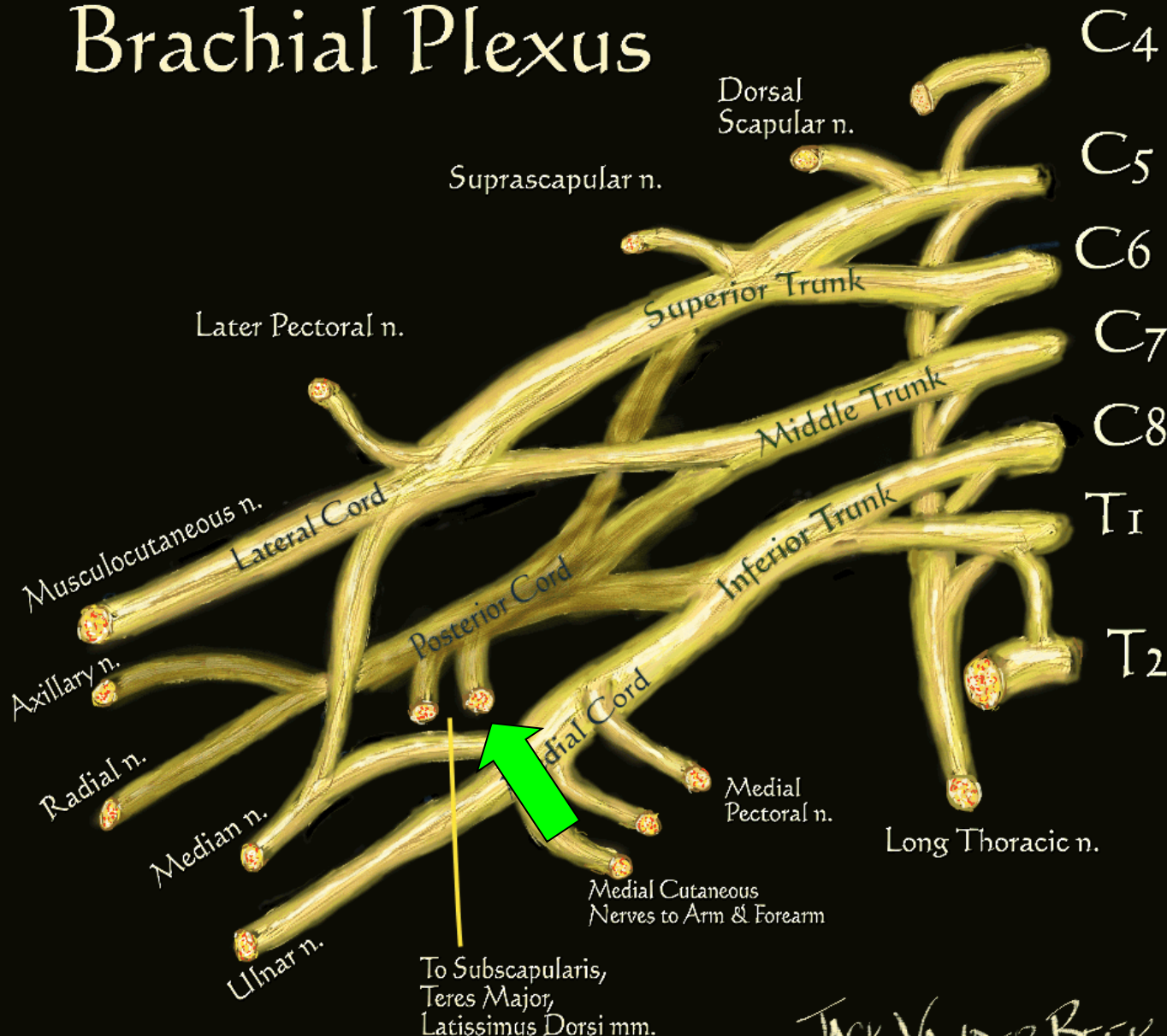




KEN  
HUB

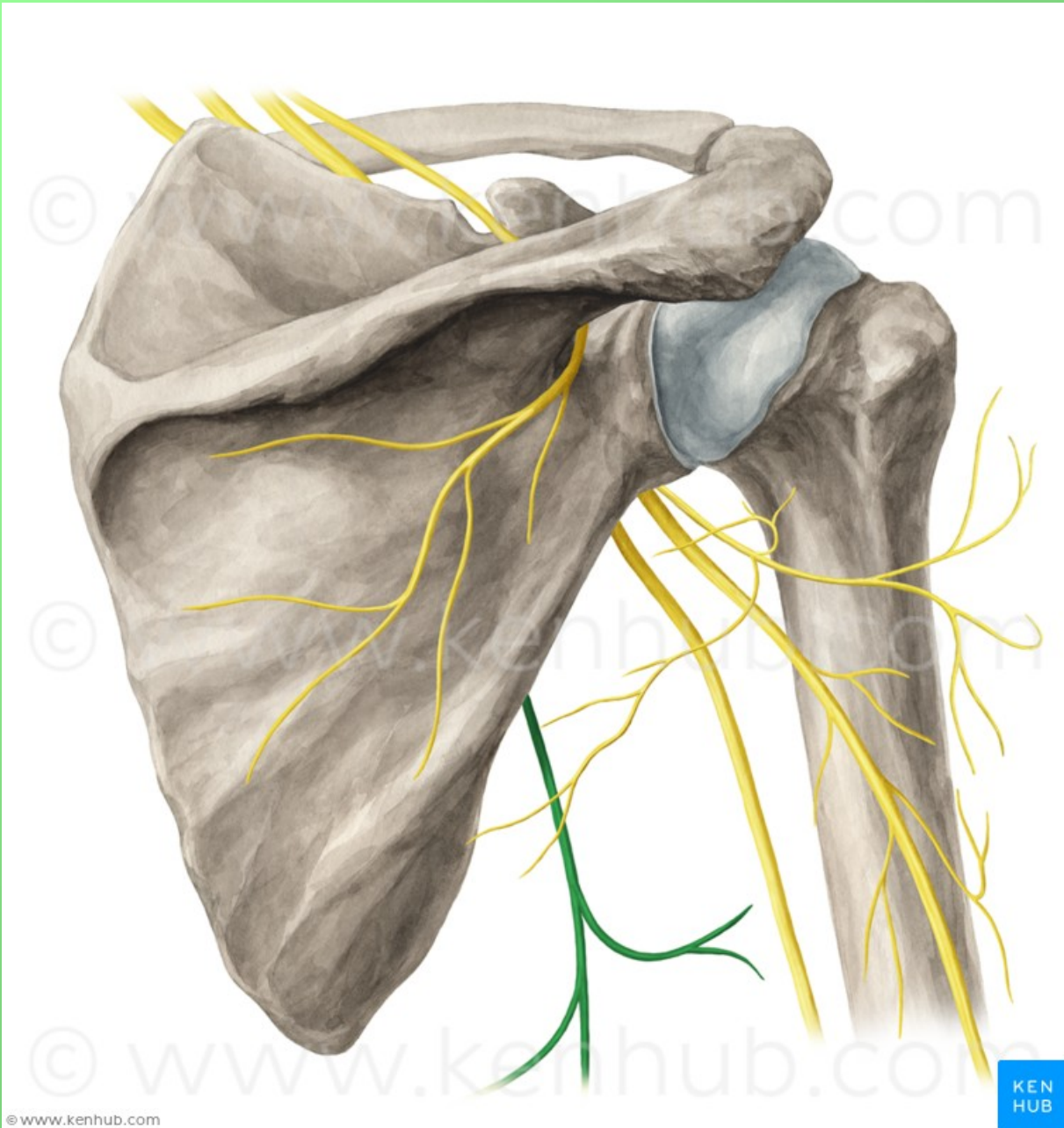


# Brachial Plexus

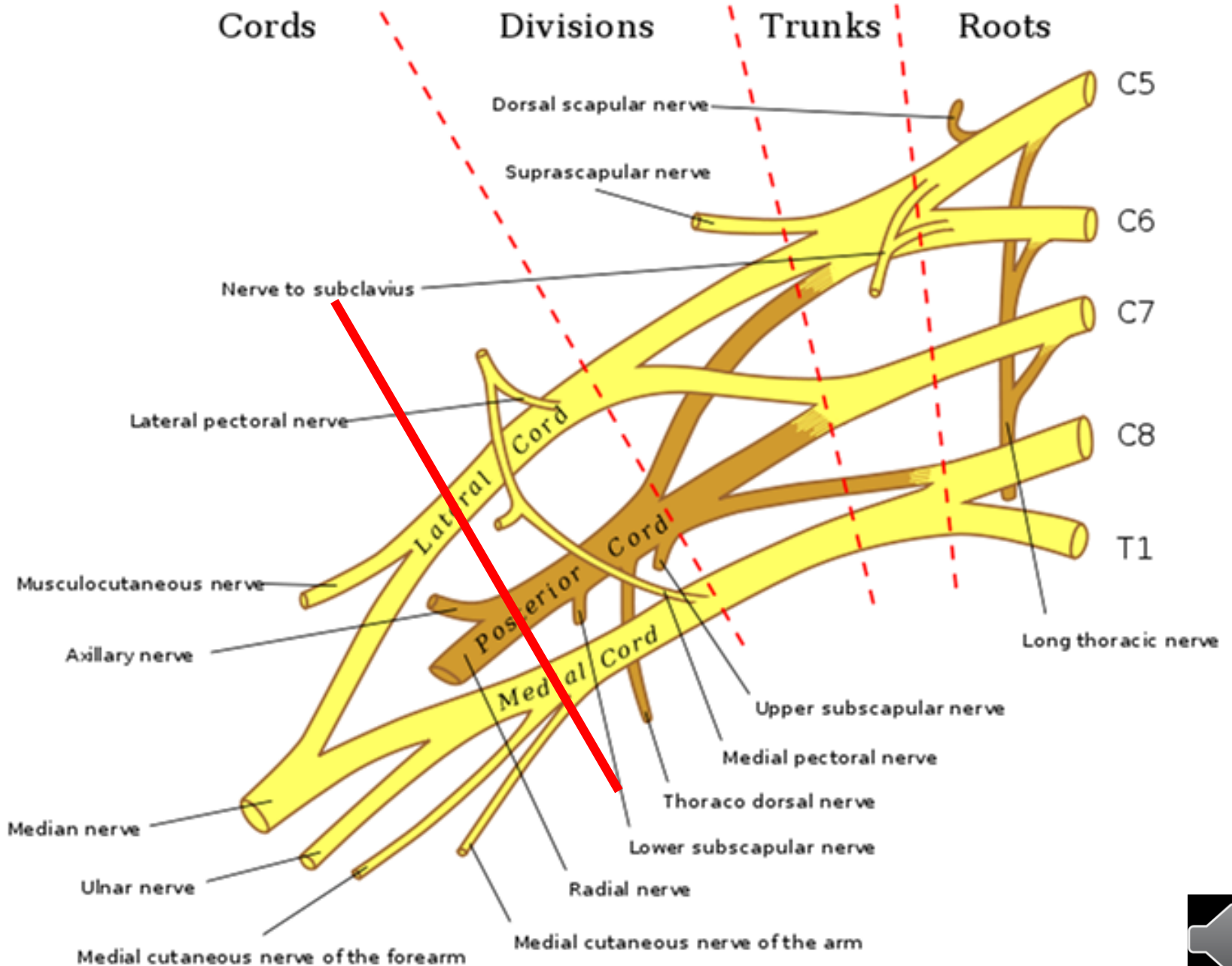


JACK VANDER BEEK  
 (c) 2005 neuraxiom.com



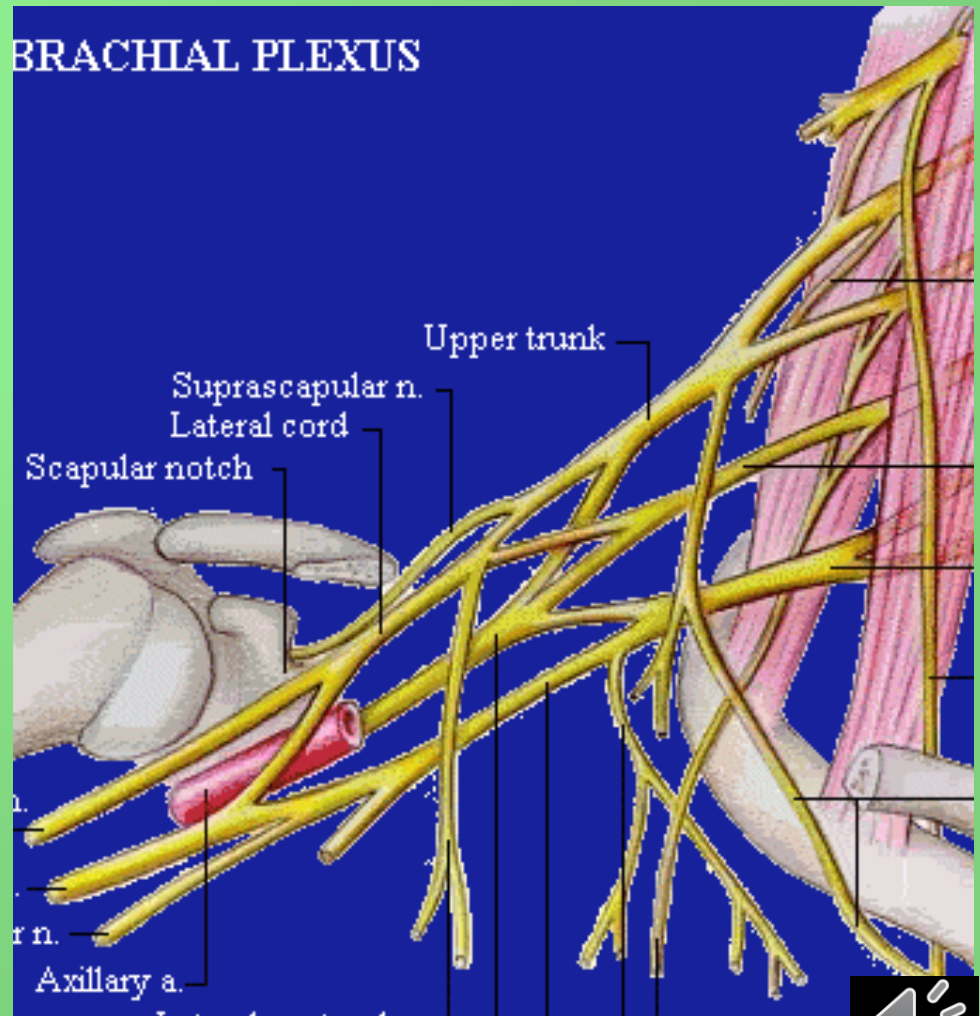


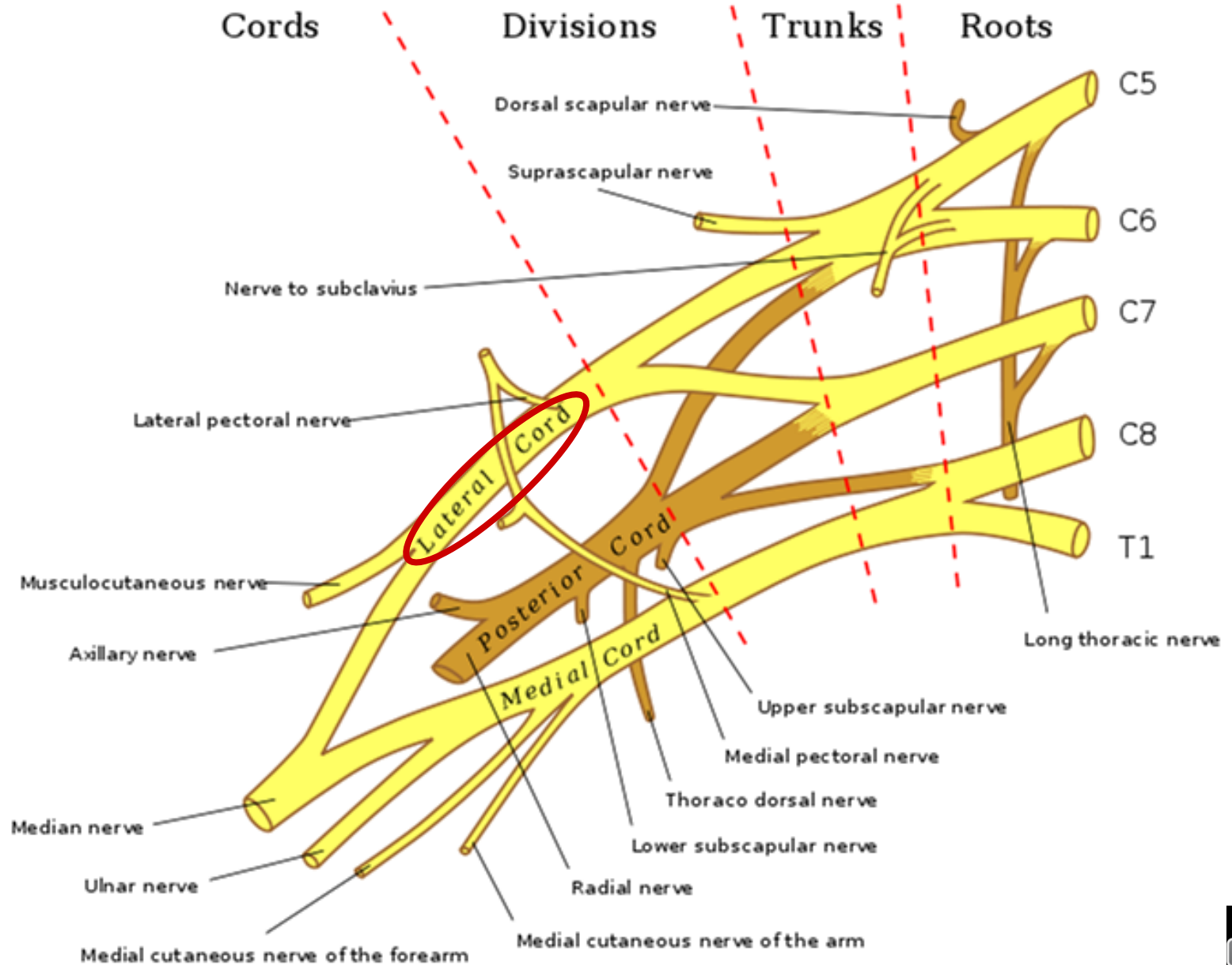




# Pars infraclavicularis plexus brachialis

- fasciculus lateralis
- fasciculus medialis
- fasciculus posterior





# Fasciculus lateralis

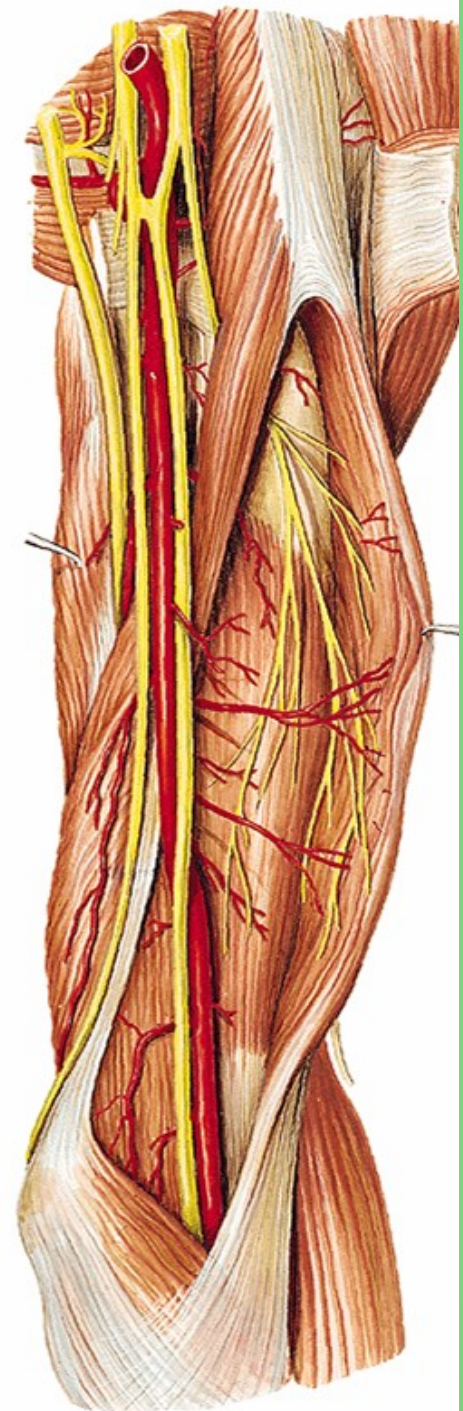
## n. musculocutaneus

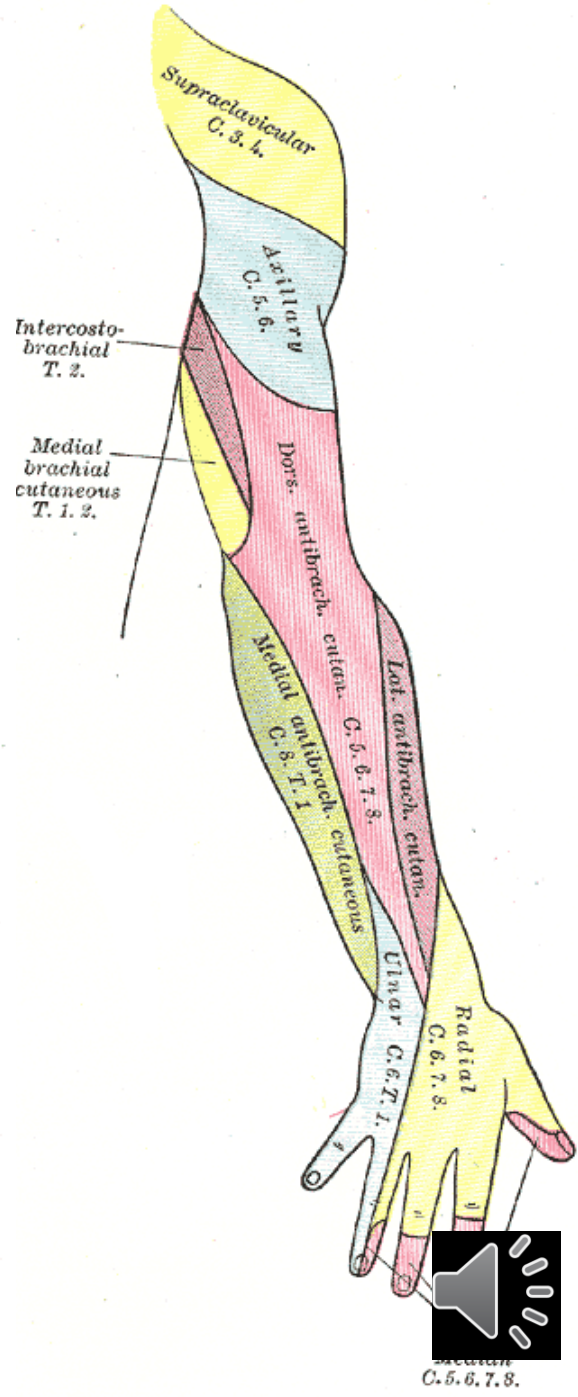
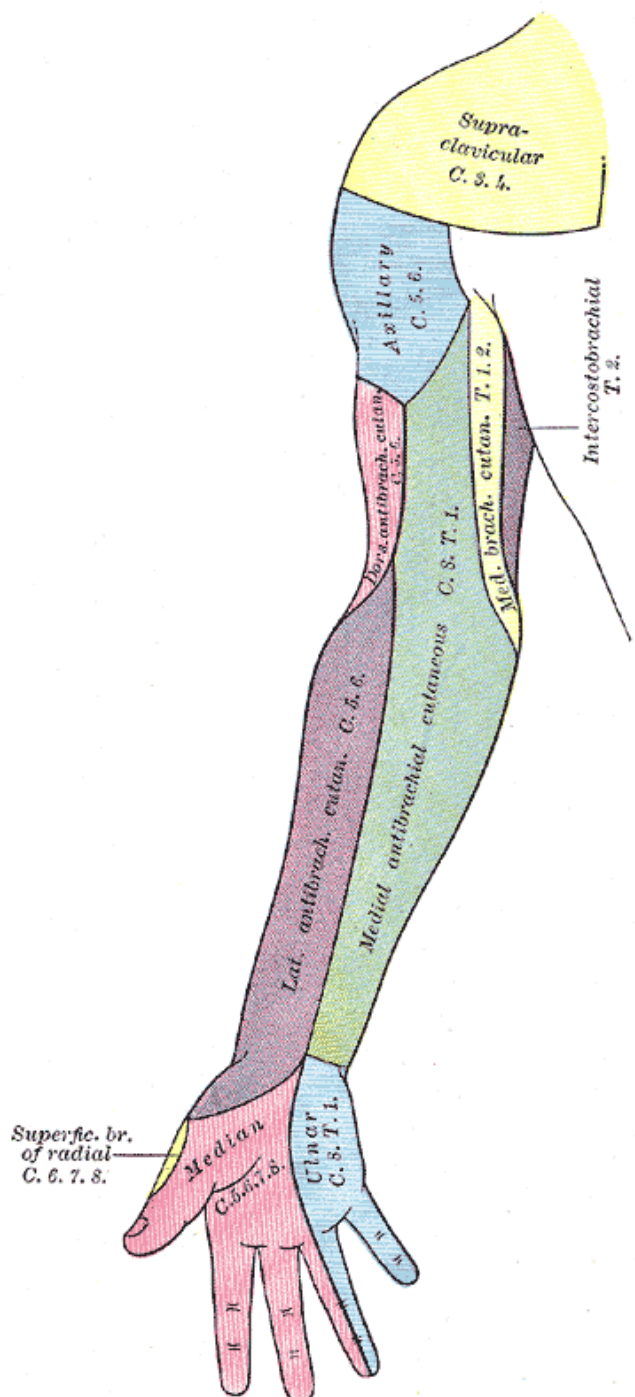
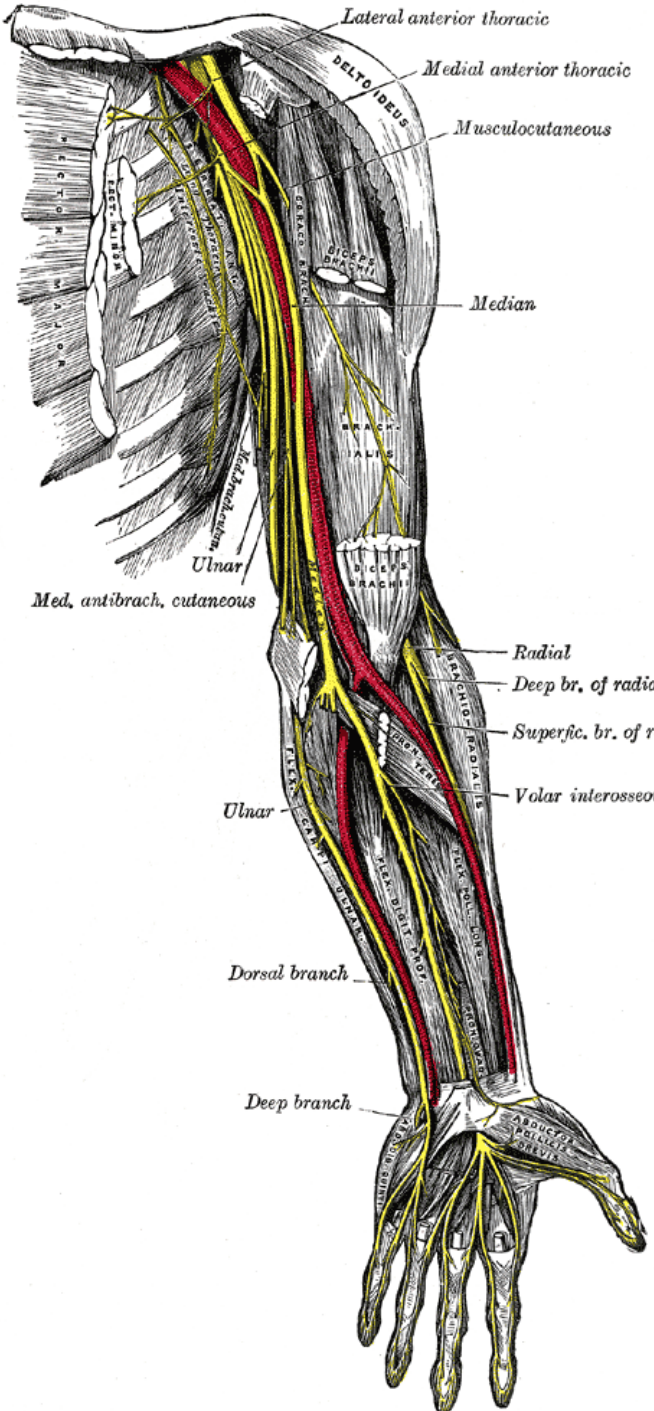
(mixed) (C5-7)

rr. musculares (m. coracobrachialis,  
m. biceps brachii, m. brachialis)

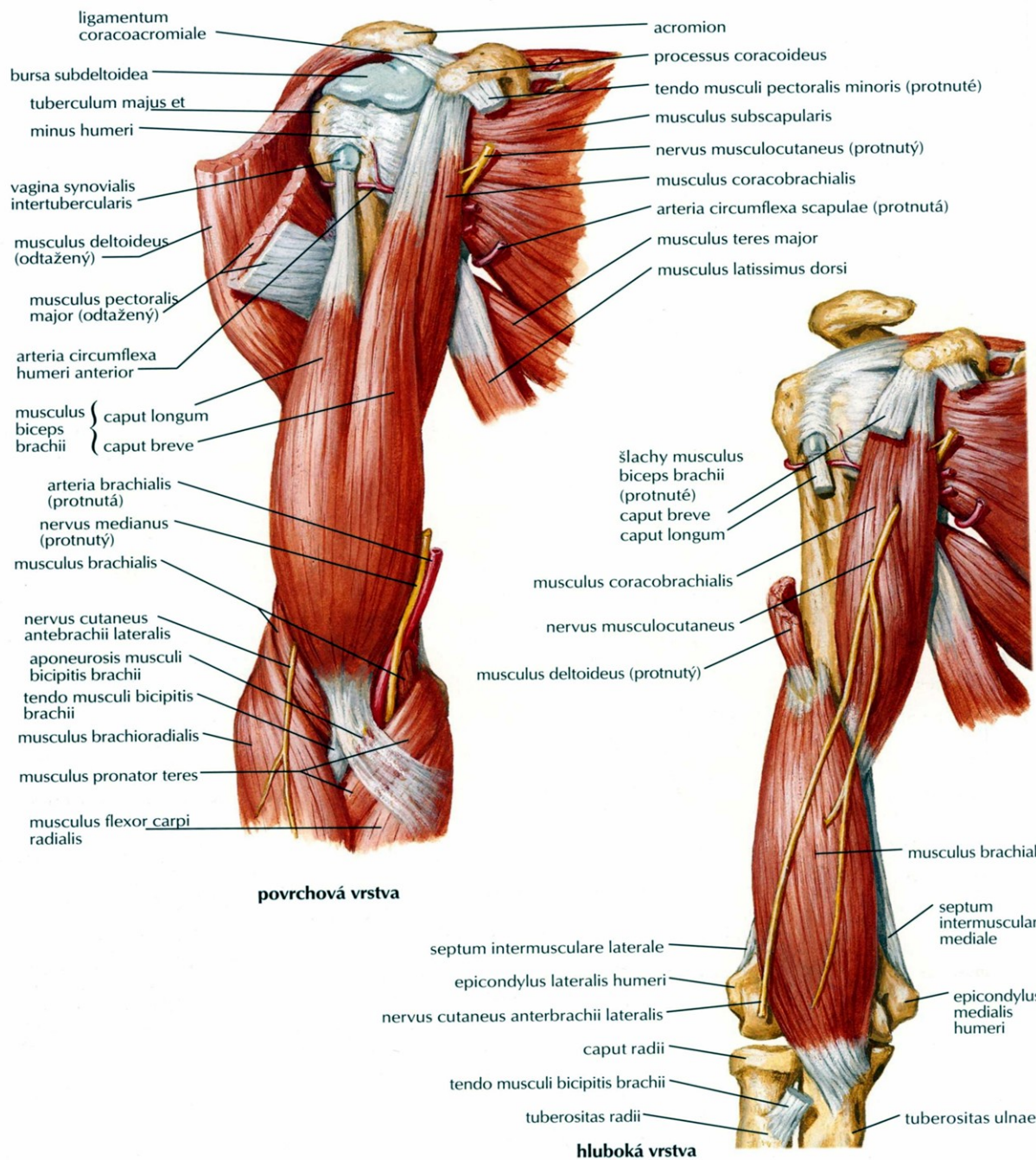
n. cutaneus antebrachii lateralis  
vulnerable place - fossa cubiti

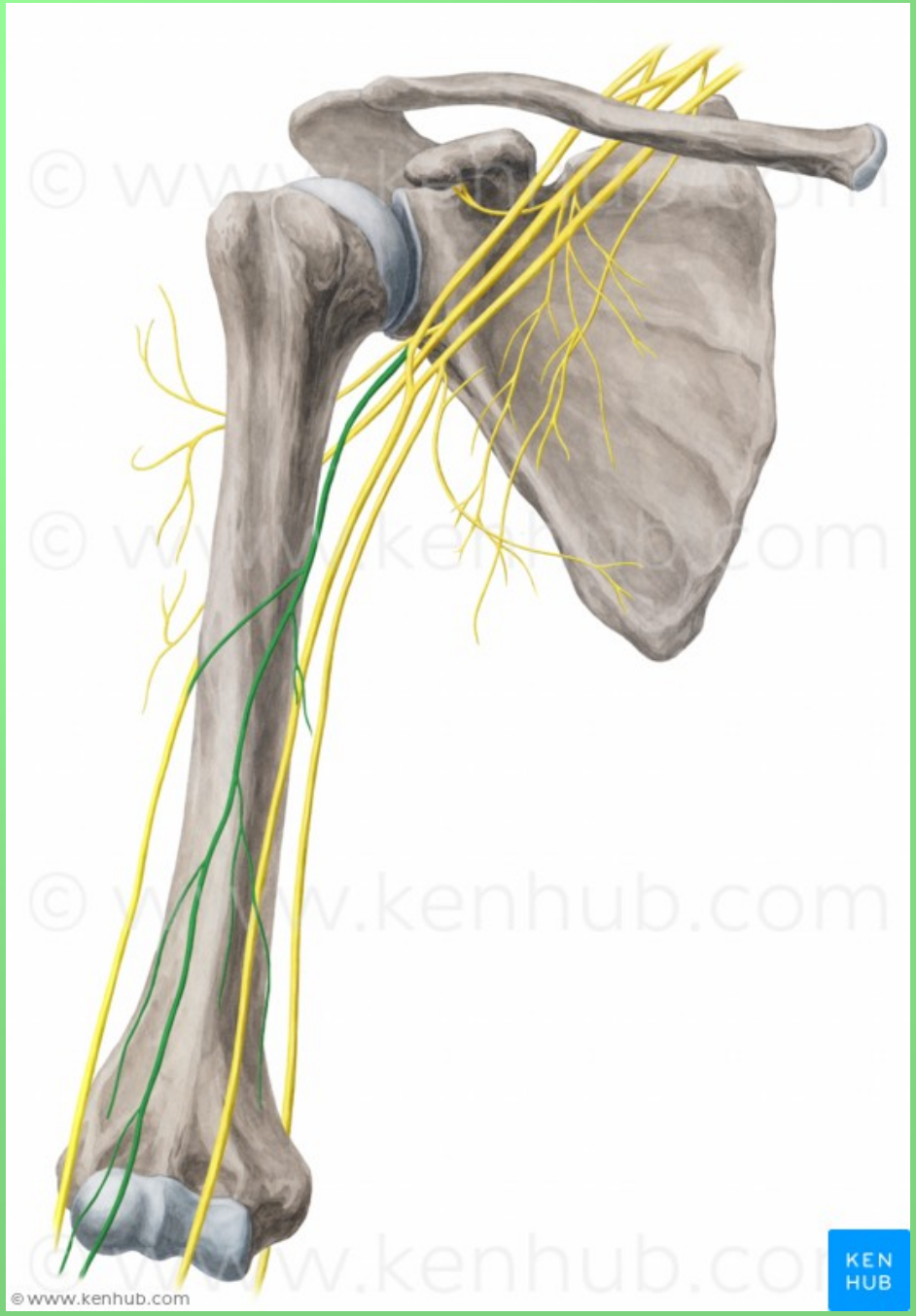
## radix lateralis n. mediani

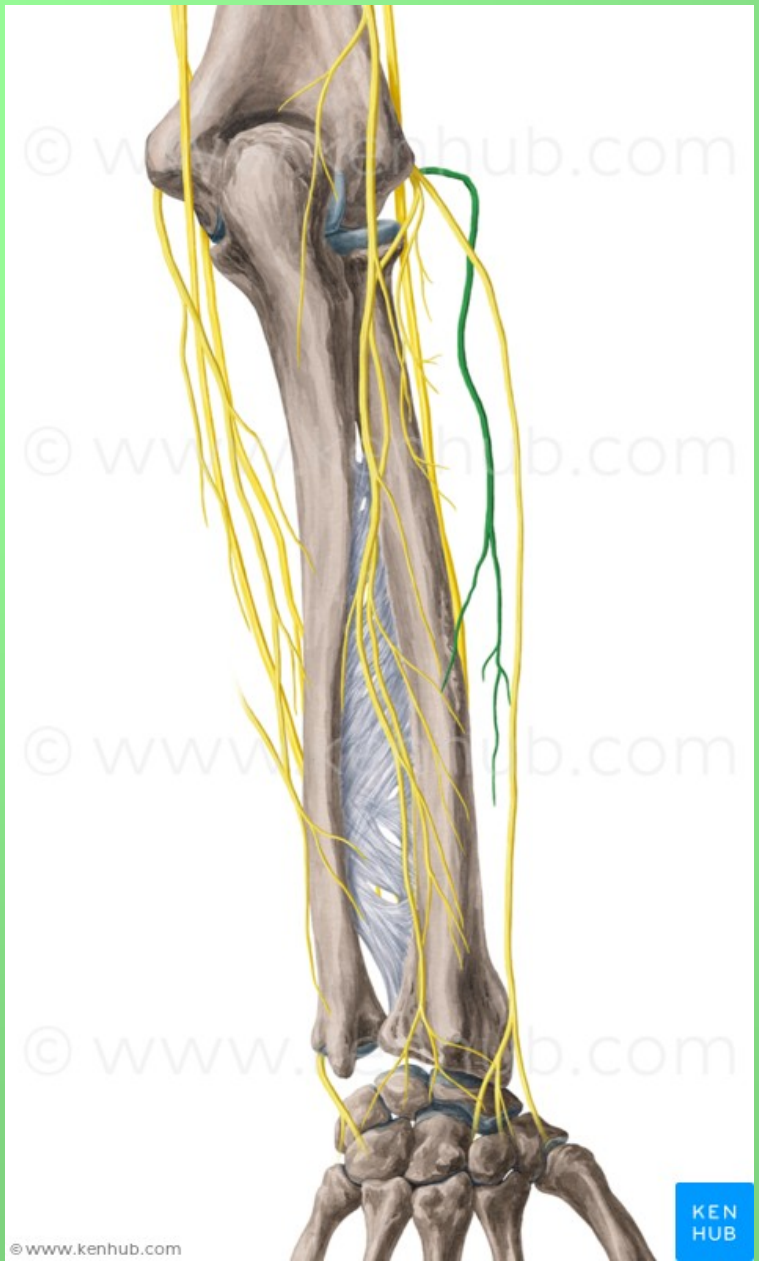




C. 5, 6, 7, 8.





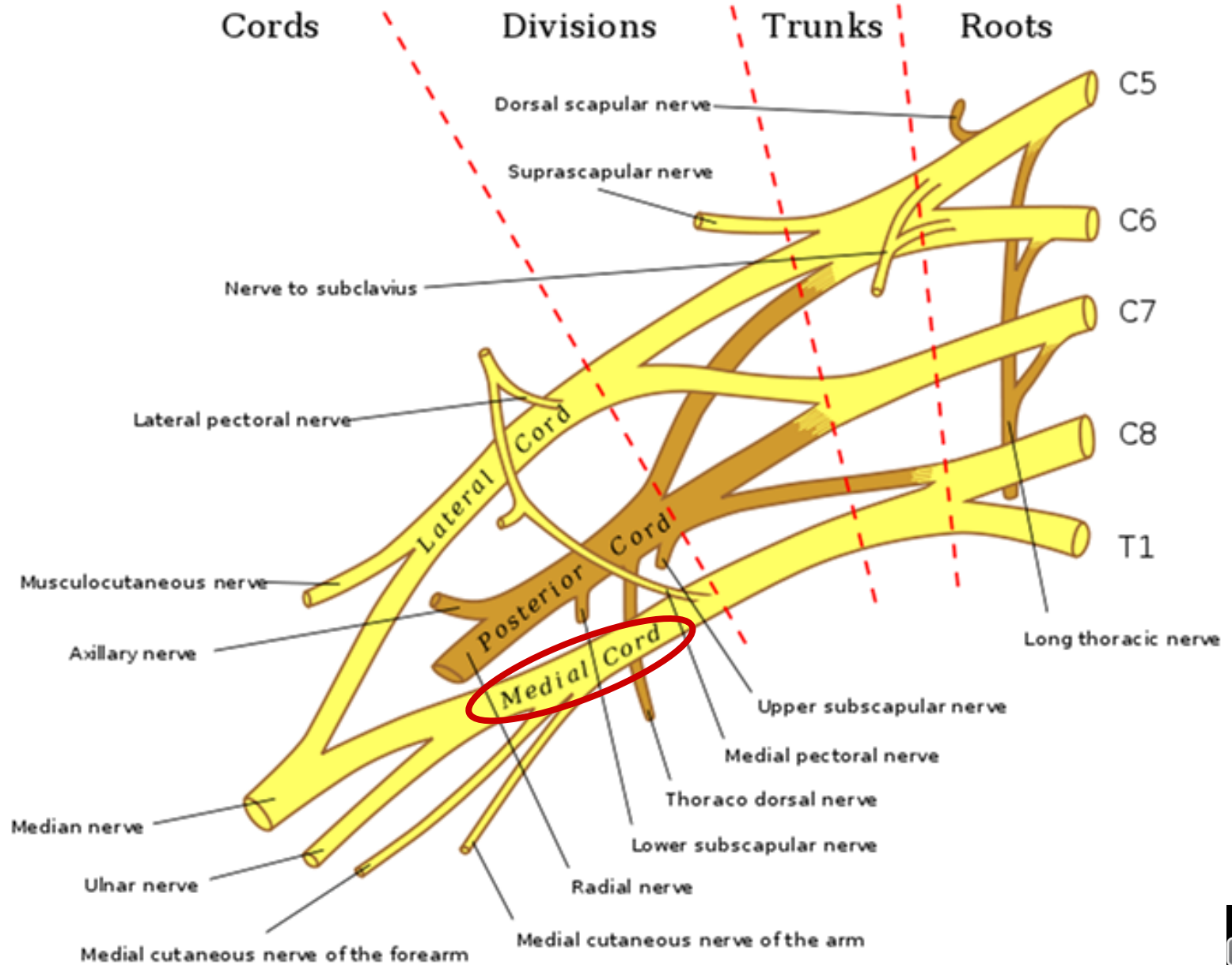


©www.kenhub.com

KEN  
HUB







# Fasciculus medialis

## radix medialis n. mediani

## n. cutaneus brachii medialis (C8–Th1)

- Connections with nn. intercostales II., (III.) – nn. intercostobrachiales

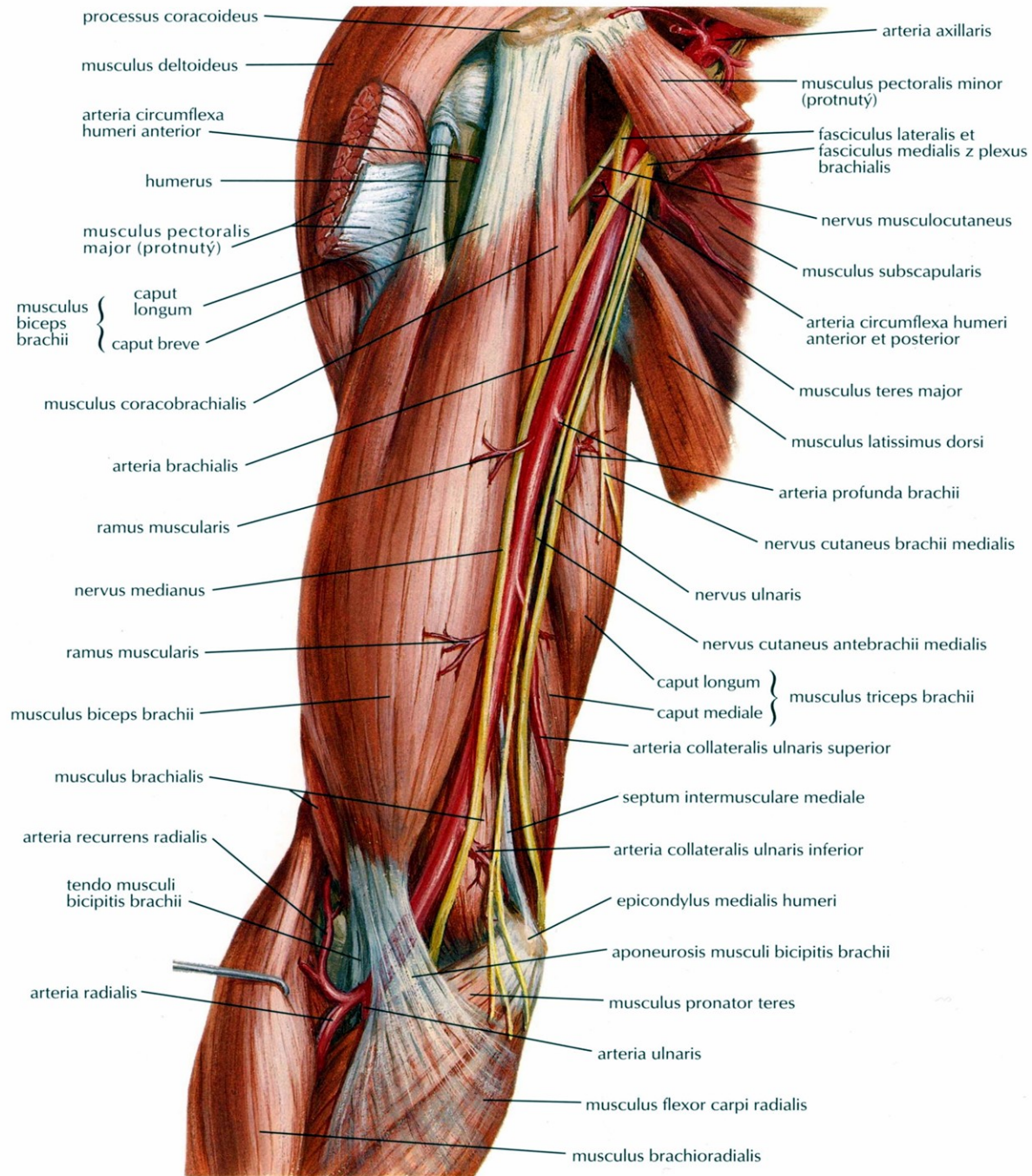
## n. cutaneus antebrachii medialis (C8–Th1)

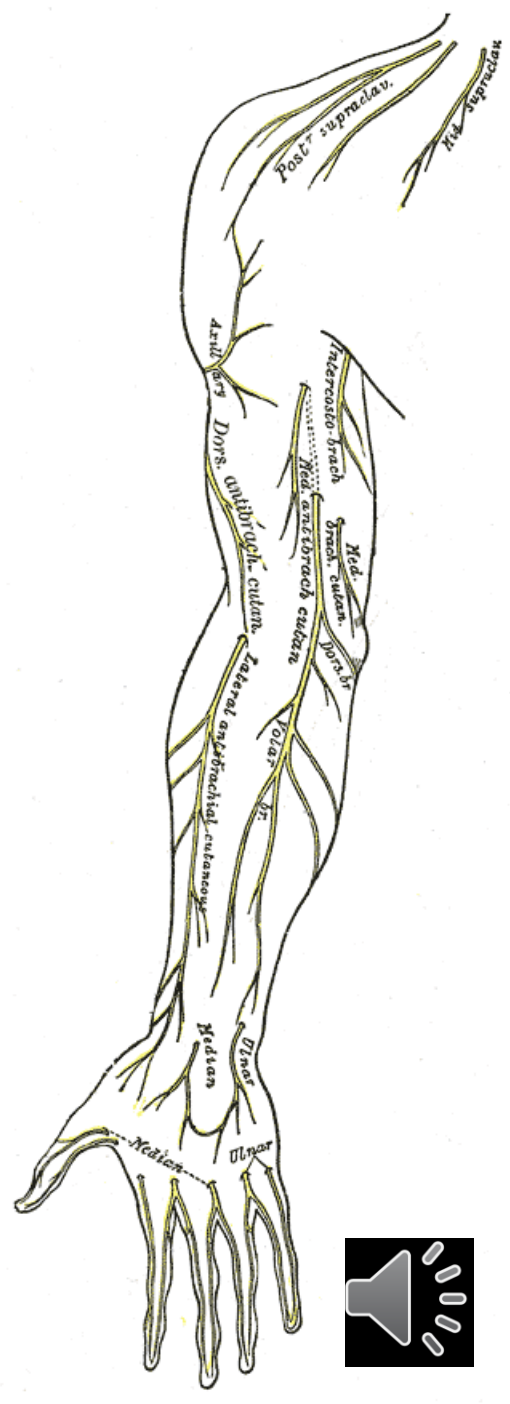
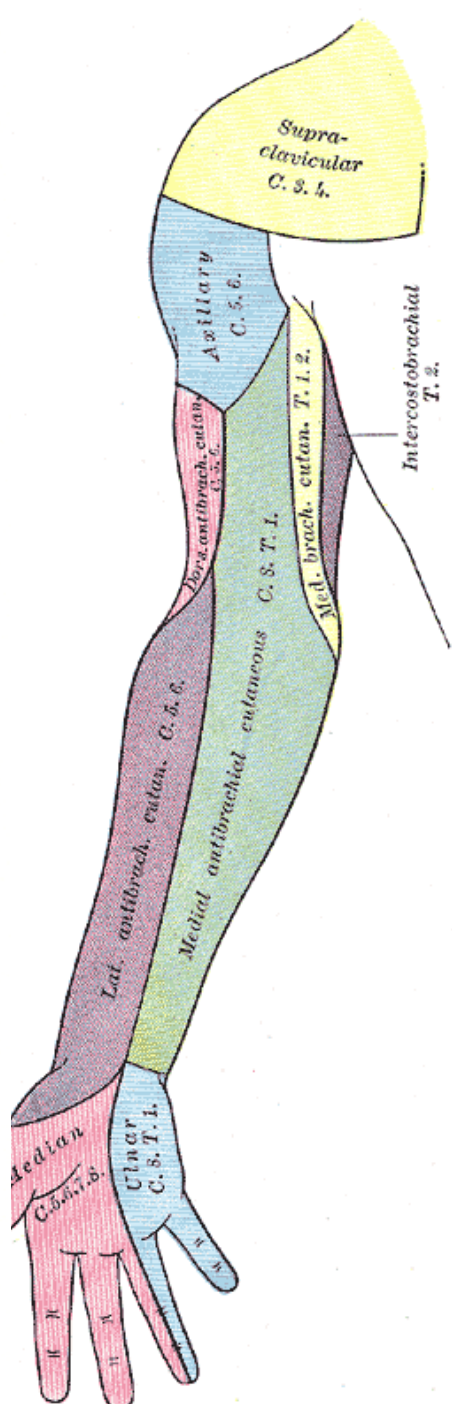
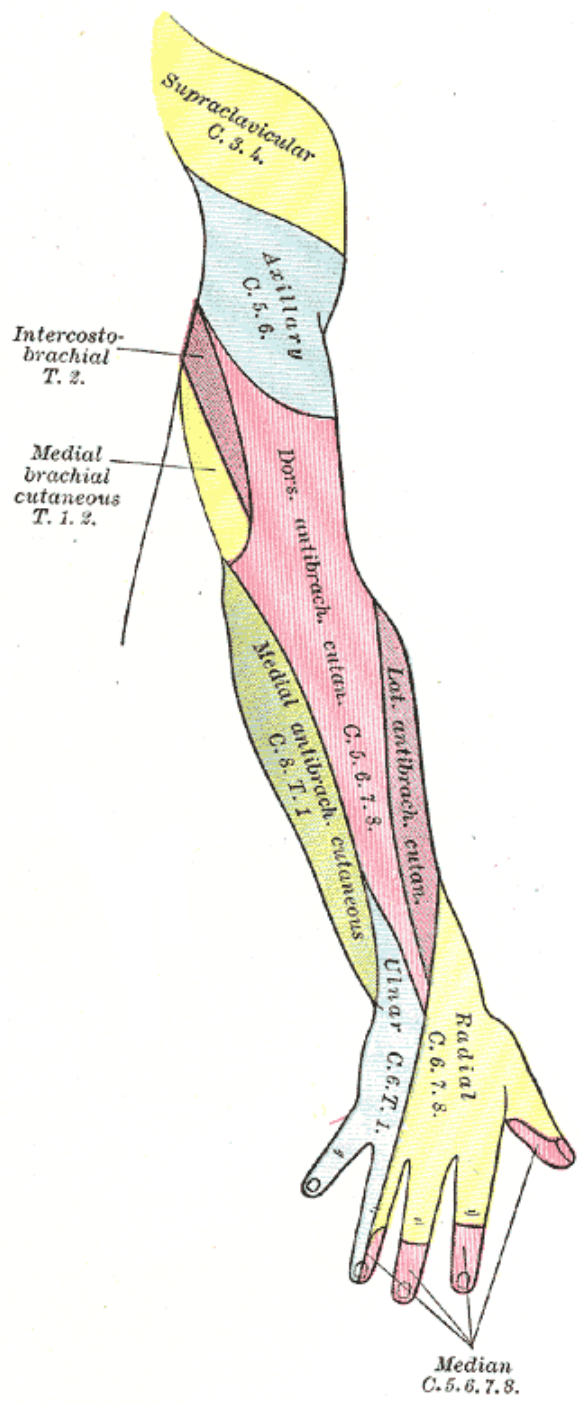
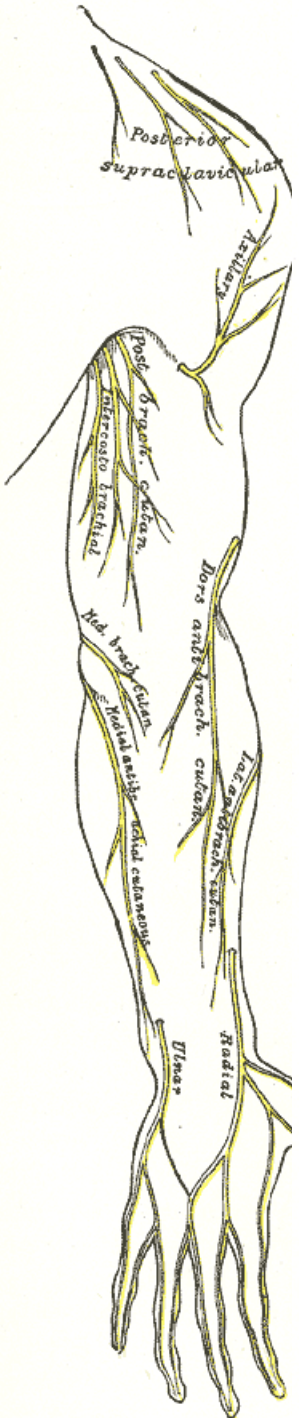
(it passes through hiatus basilicus into the subcutaneous tissue and it continues distally onto the antebrachium)

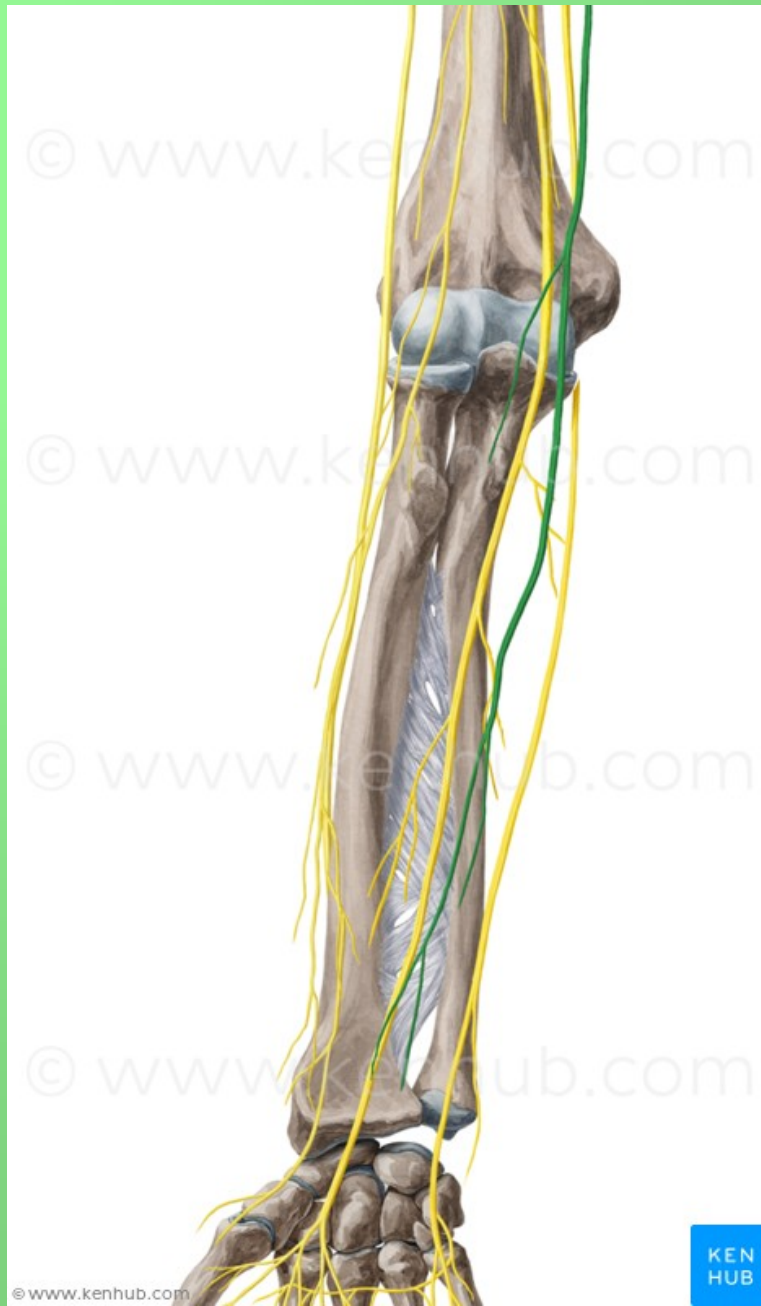
r. anterior et r. ulnaris

## n. ulnaris









© www.kenhub.com

KEN  
HUB



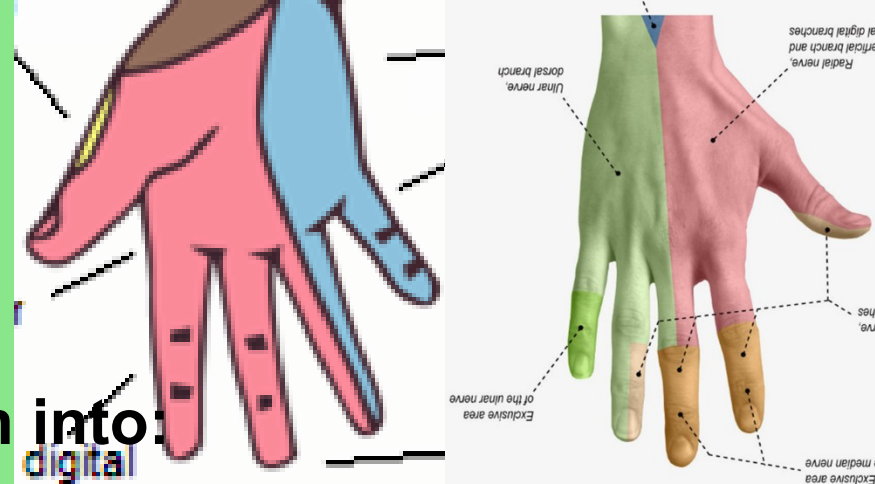
## n. ulnaris - (mixed) (C8–Th1)

- It runs on the medial side of the arm, then within sulcus nervi ulnaris, between m. flexor carpi ulnaris and m. flexor digitorum profundus together with a. ulnaris and further toward the palm on the surface of retinaculum flexorum

- **rr. articulares**
- **rr. musculares**
- **r. dorsalis n. ulnari**
  - nn. digitales dorsales
- **r. palmaris n. ulnaris**

**N. ulnaris divides within the palm into:**

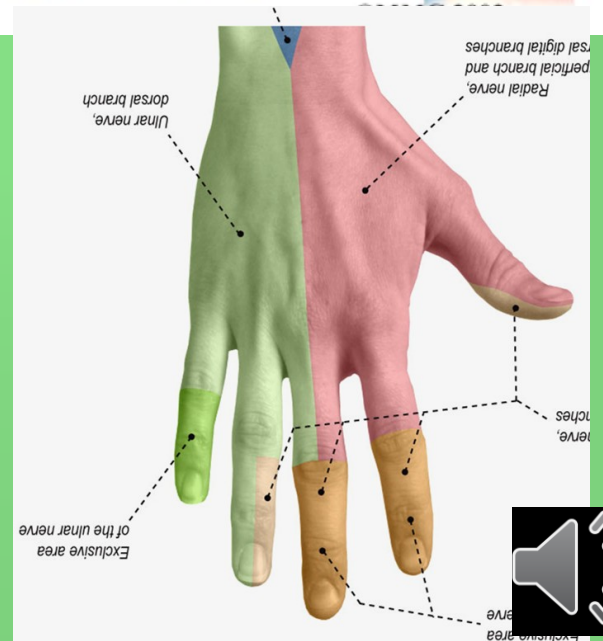
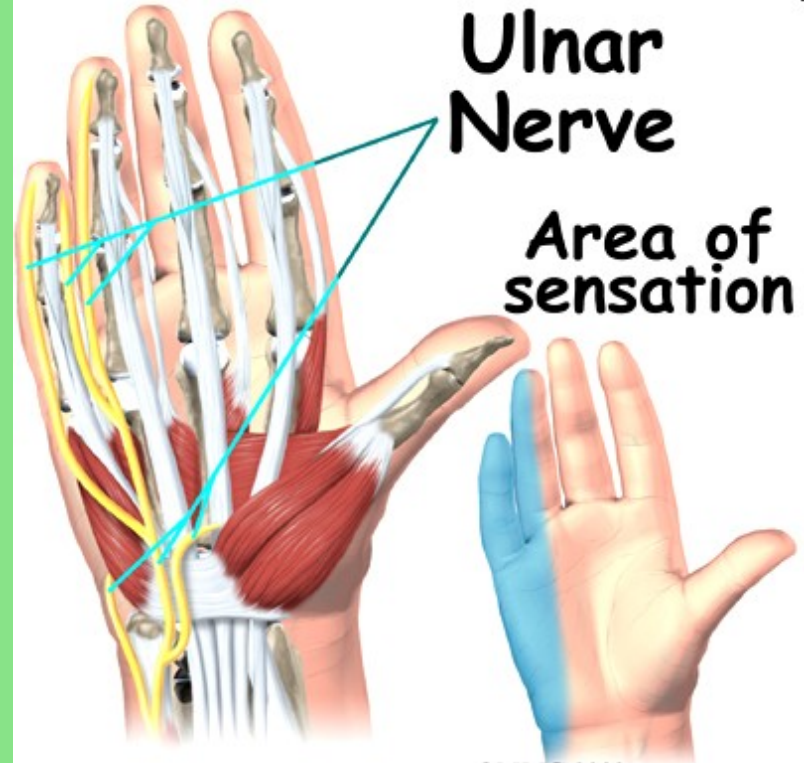
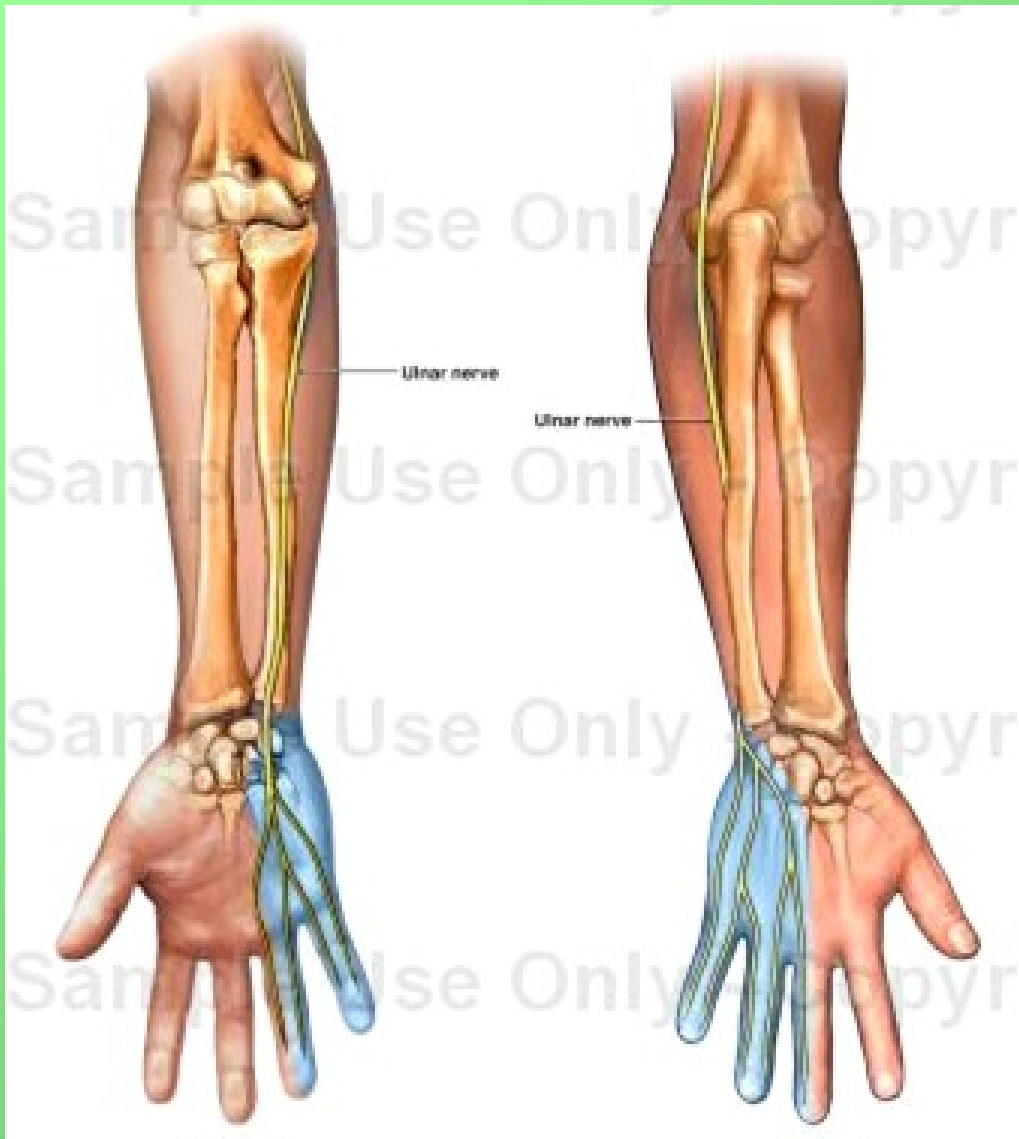
- **r. superficialis**
  - r. muscularis (m. palmaris brevis)
  - 2 nn. digitales palmares communes et proprii
- **r. profundus** - rr. musculares



**Motor innervation:** m. flexor carpi ulnaris, m. flexor digitorum profundus (for 4th and 5th finger), muscles of hypothenar, m. adductor pollicis and m. flexor pollicis brevis (caput profundum), mm. interossei, mm. lumbricales (III. and IV.)

**Sensory innervation:** on the palm: 5th and half of 4th finger  
on dorsum: 5th, 4th and half of 3rd finger





ANTERIOR

POSTERIOR

Supra-clavicular (C3-4)

Axillary, sup. lat. cut. (C5-6)

Intercostobrachial (T2)

Medial brachial cut. (T1-2)

Medial brachial cut. (C8-T1)

Ulnar (C8-T1)

Palmar Dorsal

Palmar, digital

Proper palmar digital

Median (C5-8)

Proper palmar digital

Radial, dors. antebrach. cut. (C5-6)

Lateral antebrachial cutan. (C5-6)

Radial, superficial (C6-8)

Palmar

Palmar, digital

Post. brach. cut.

Inf. lat. cut.

Post. antebrach. cut.

Lateral antebrachial cutan. (C5-6)

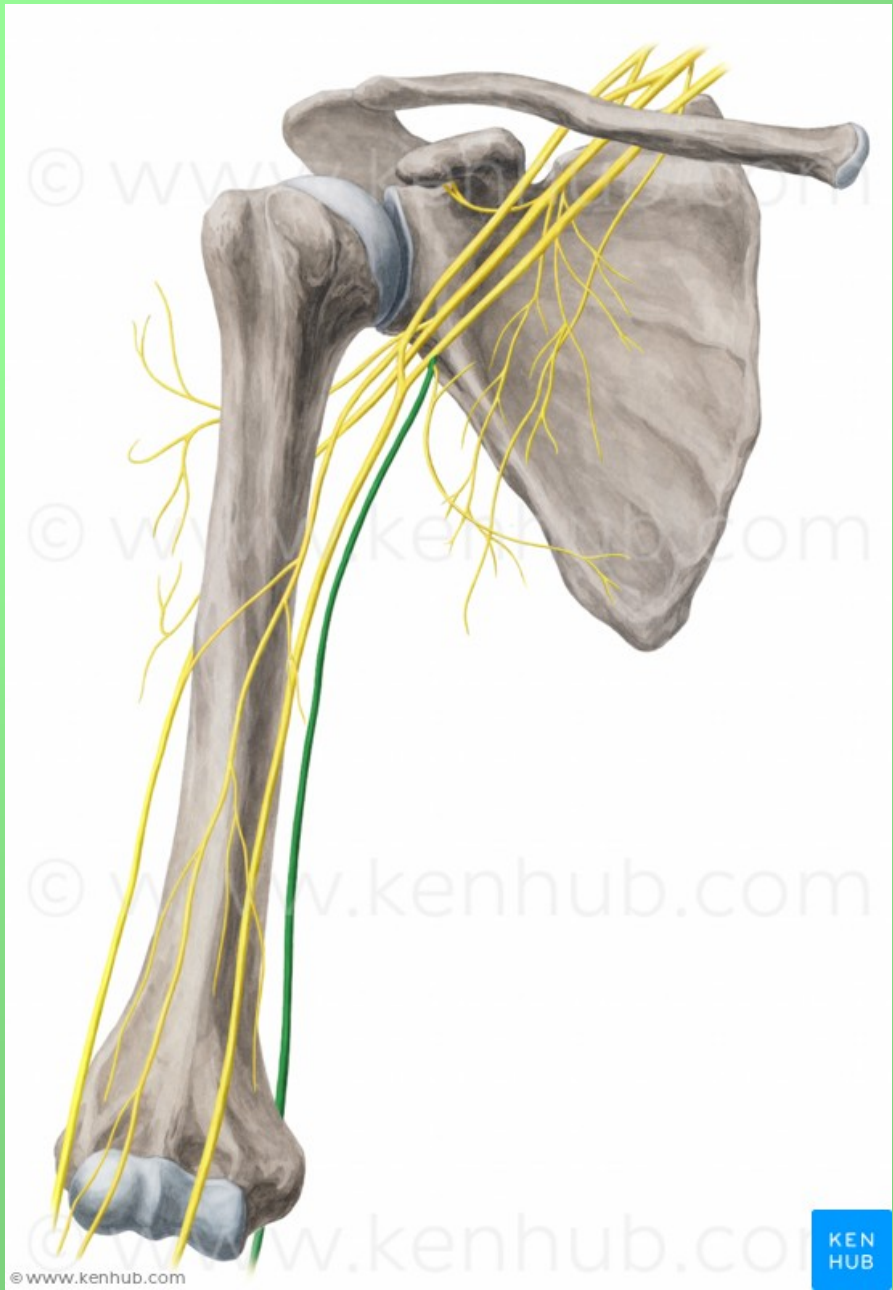
Radial, superficial (C6-8)

Dorsal digital

Proper palmar digital







© www.kenhub.com

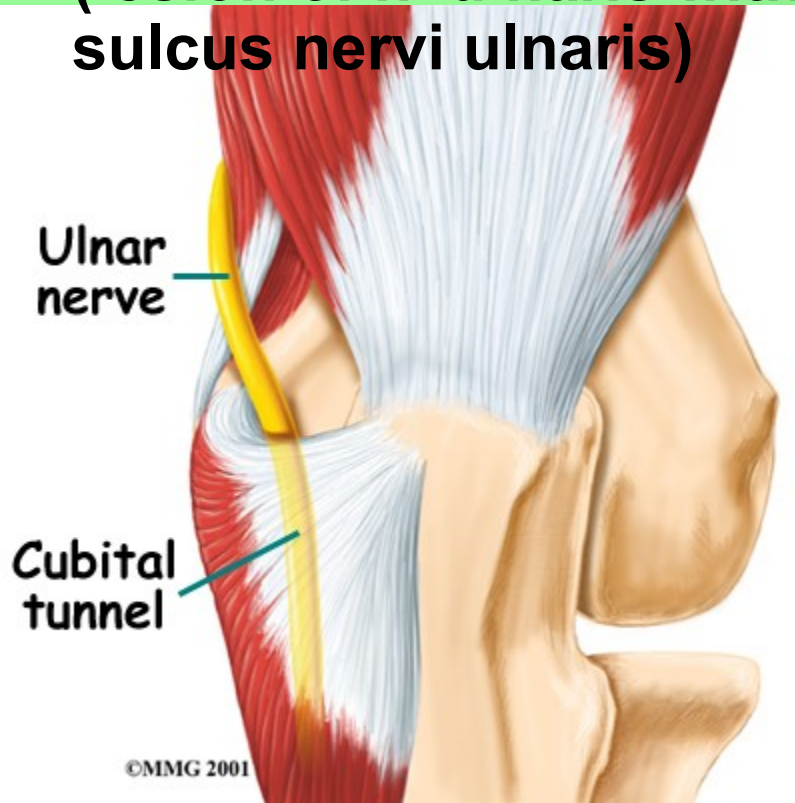
KEN  
HUB





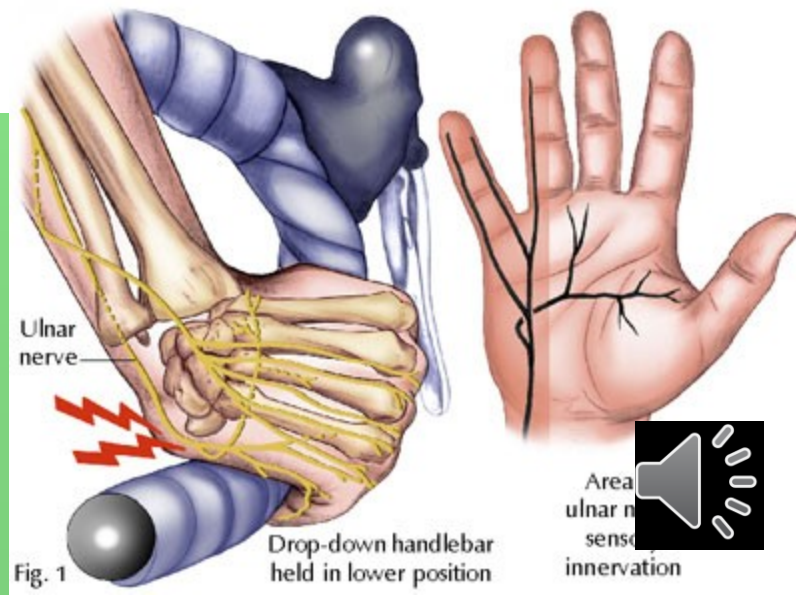
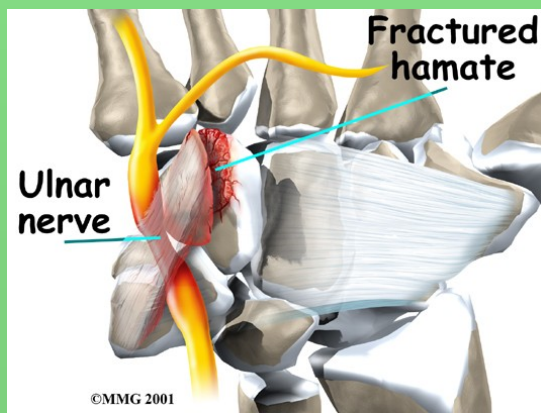
# Canalis cubitalis

-Cubital tunelle syndrome  
(lesion of n. ulnaris within  
sulcus nervi ulnaris)



# Guyon's canal

(between os pisiforme  
and hamulus ossis  
hamati)





## Claw hand





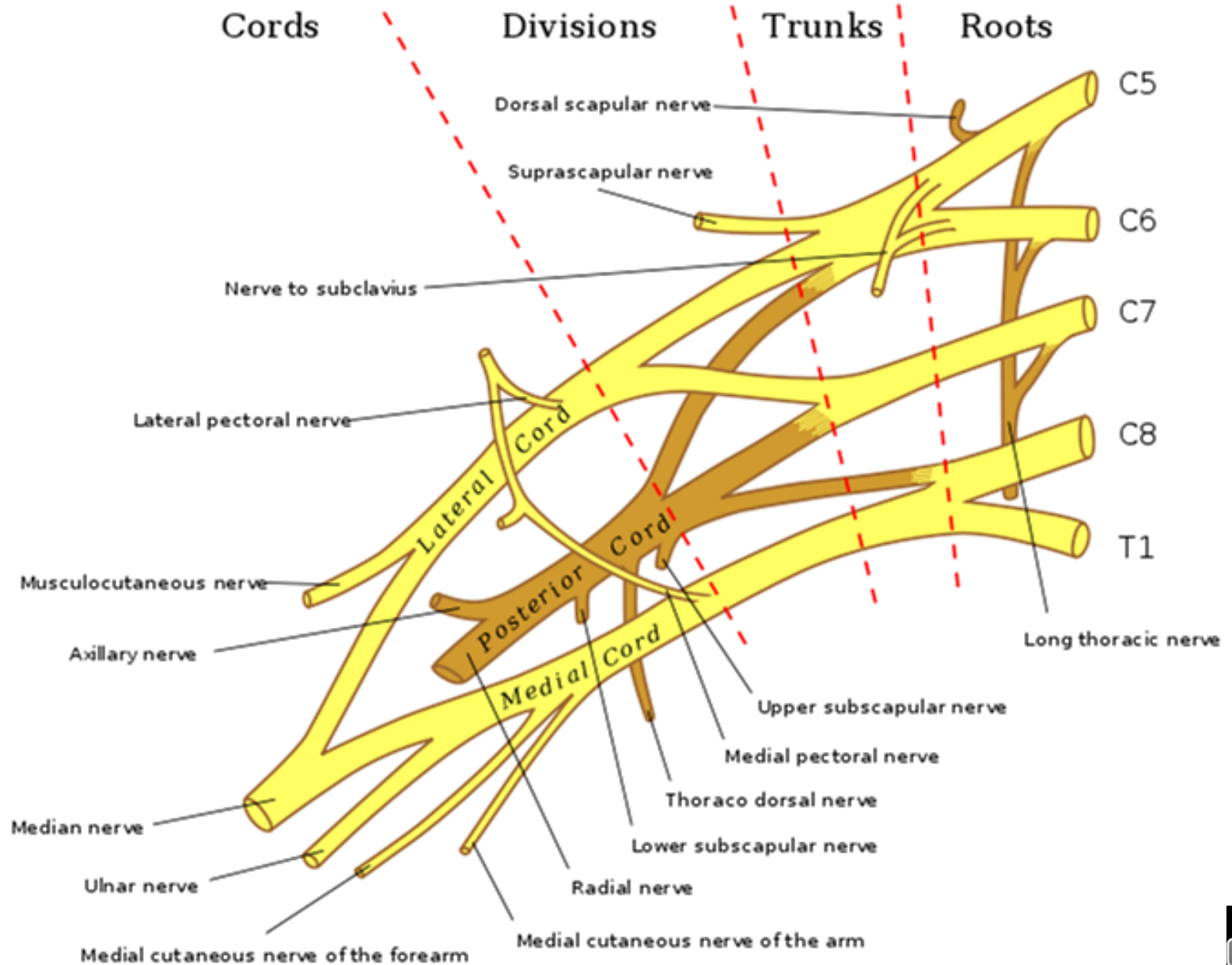
1 cm

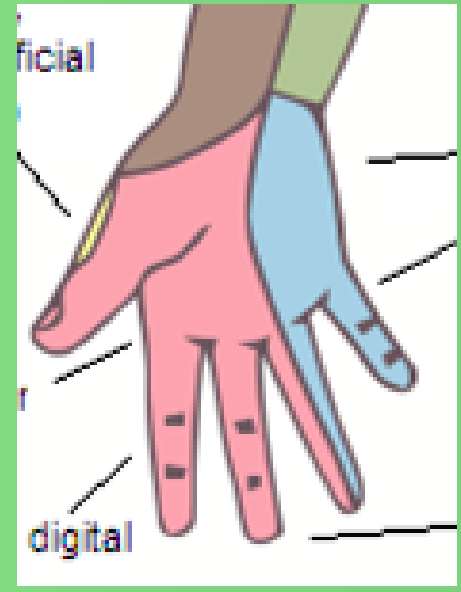
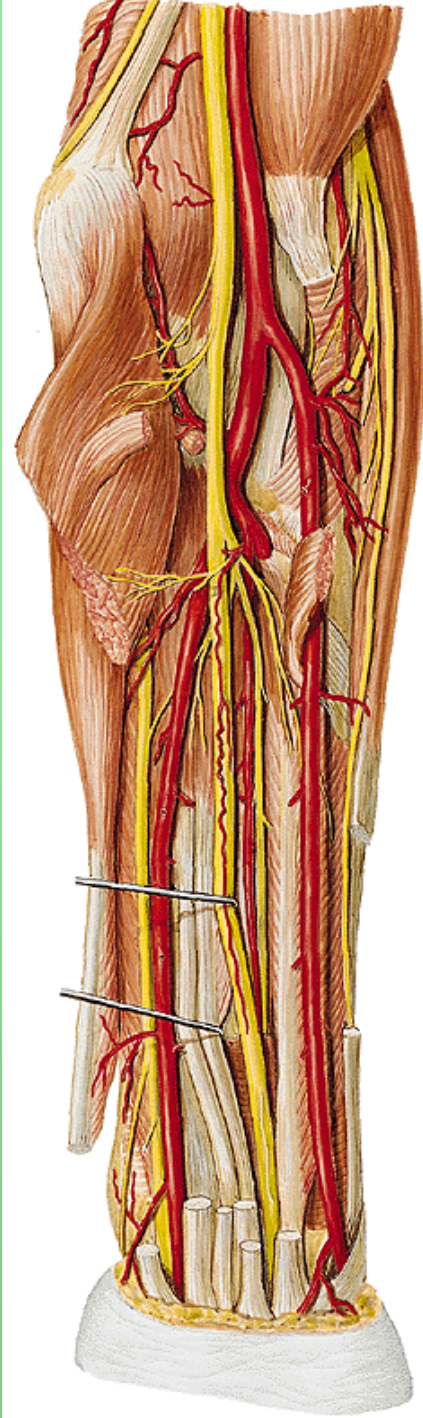
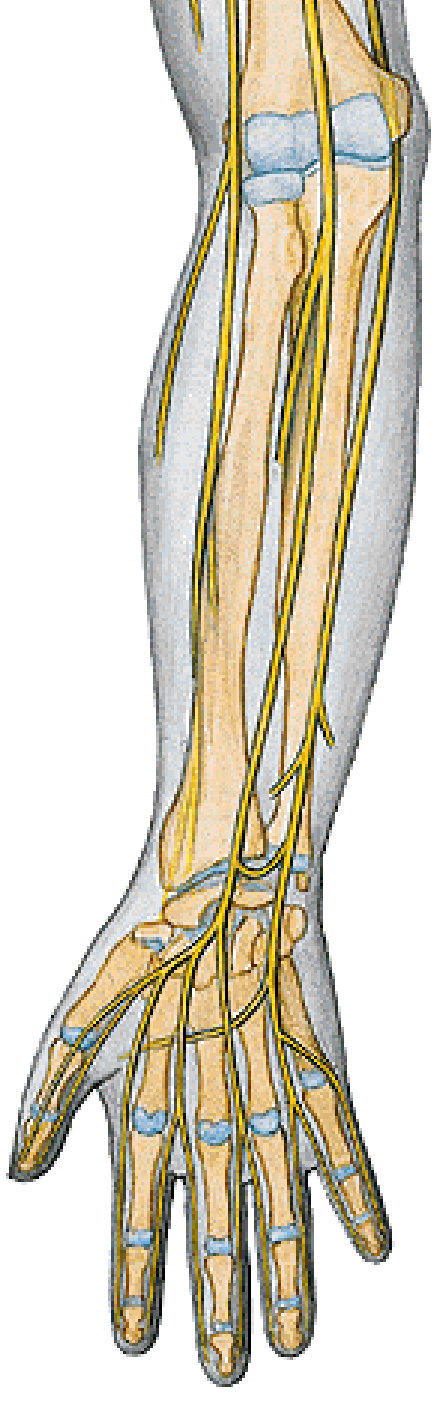
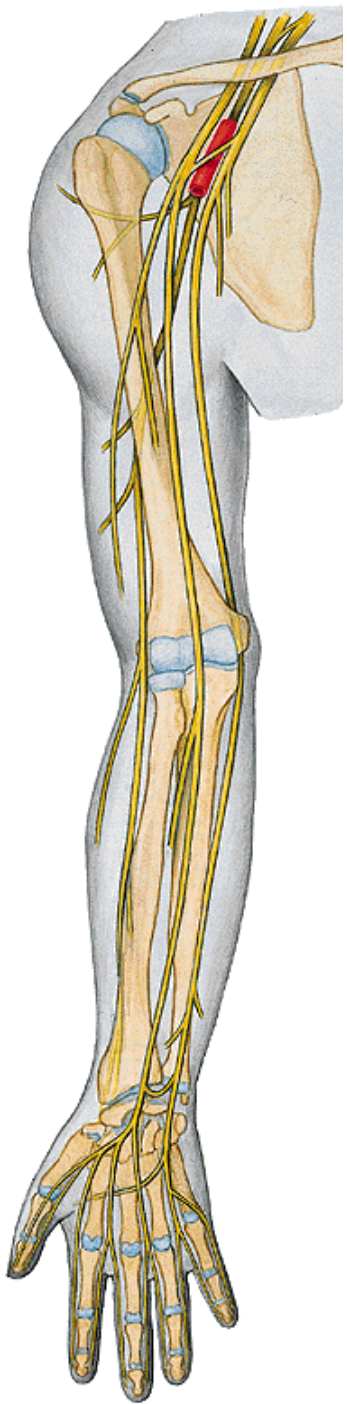
**HH**

**UH**

**NM**

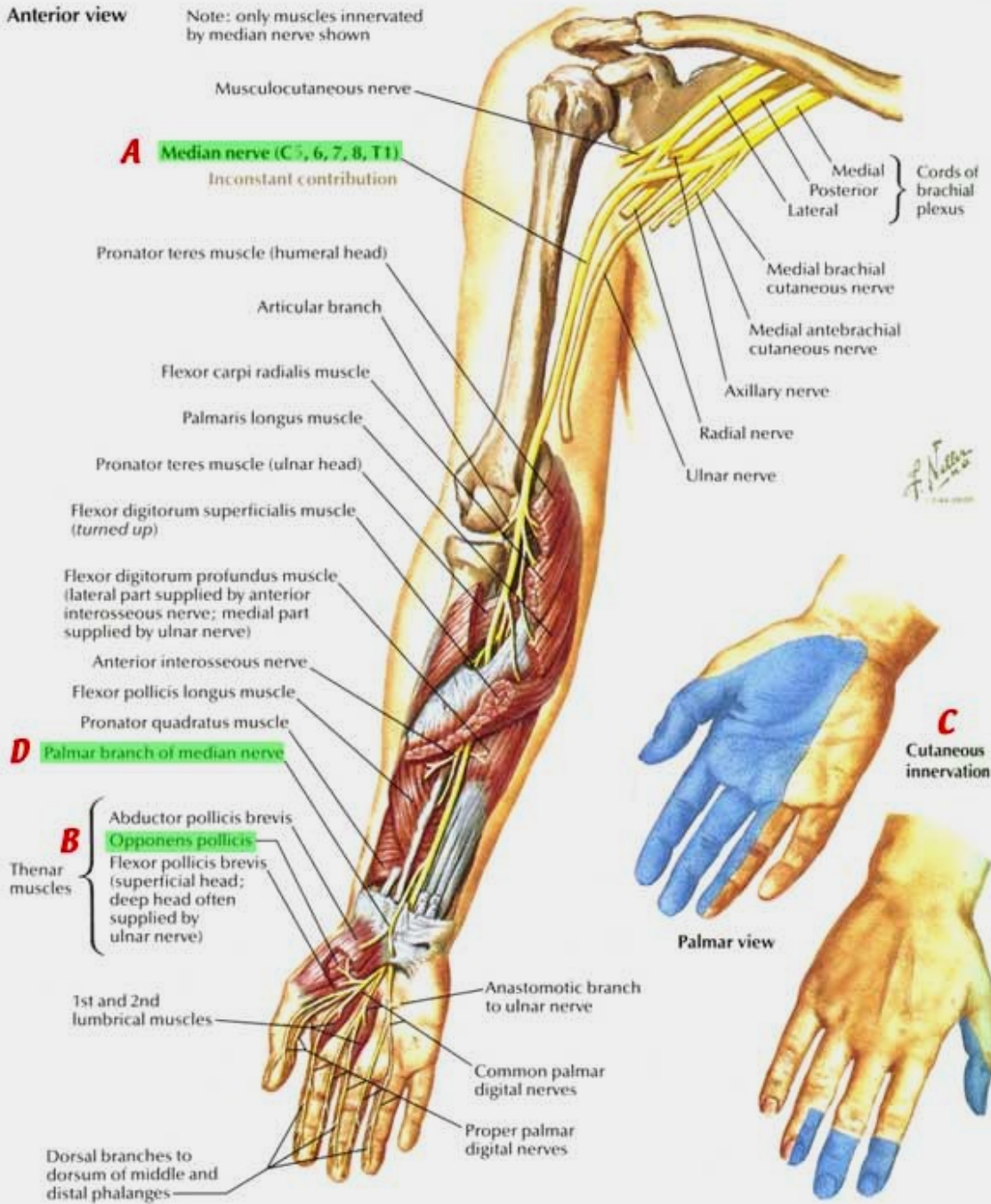




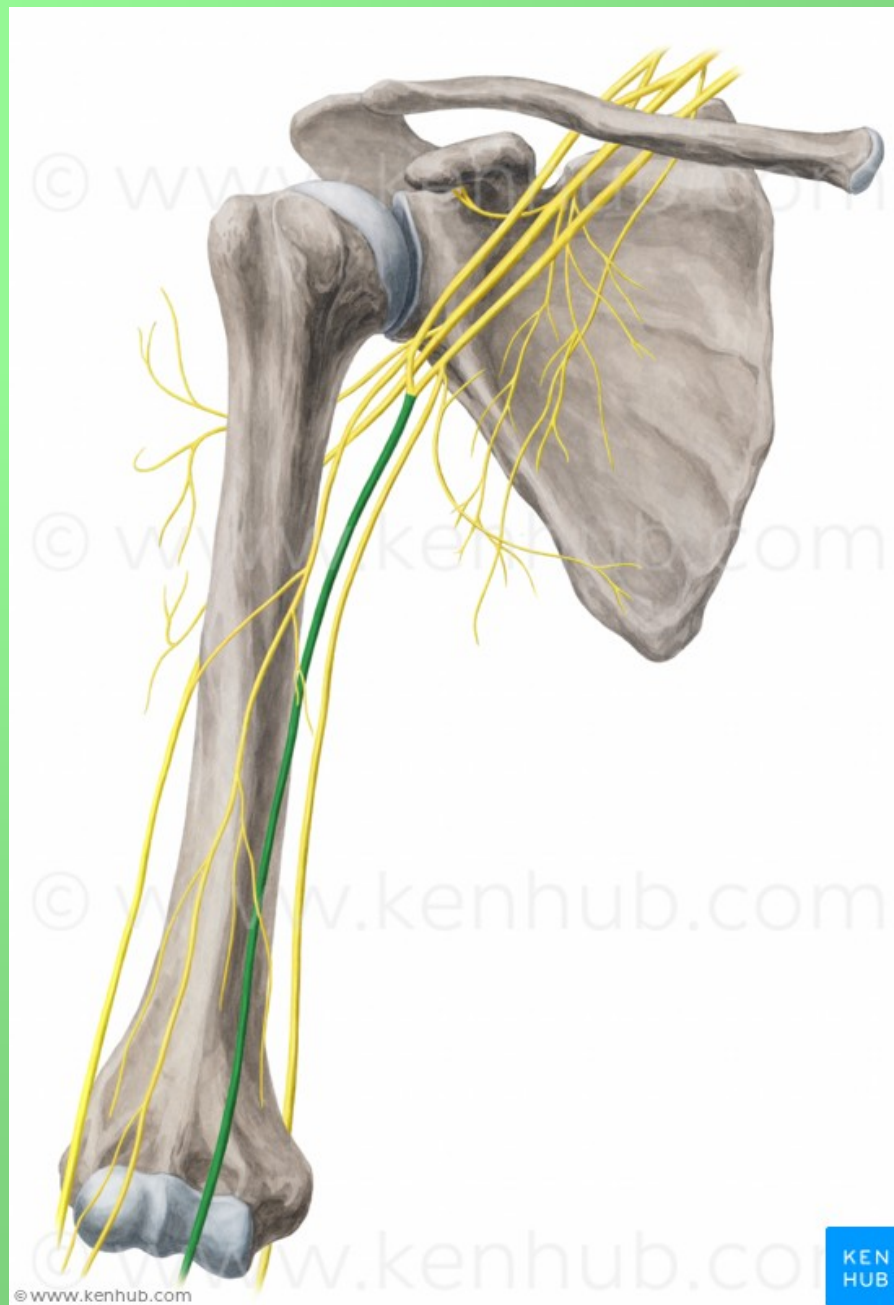


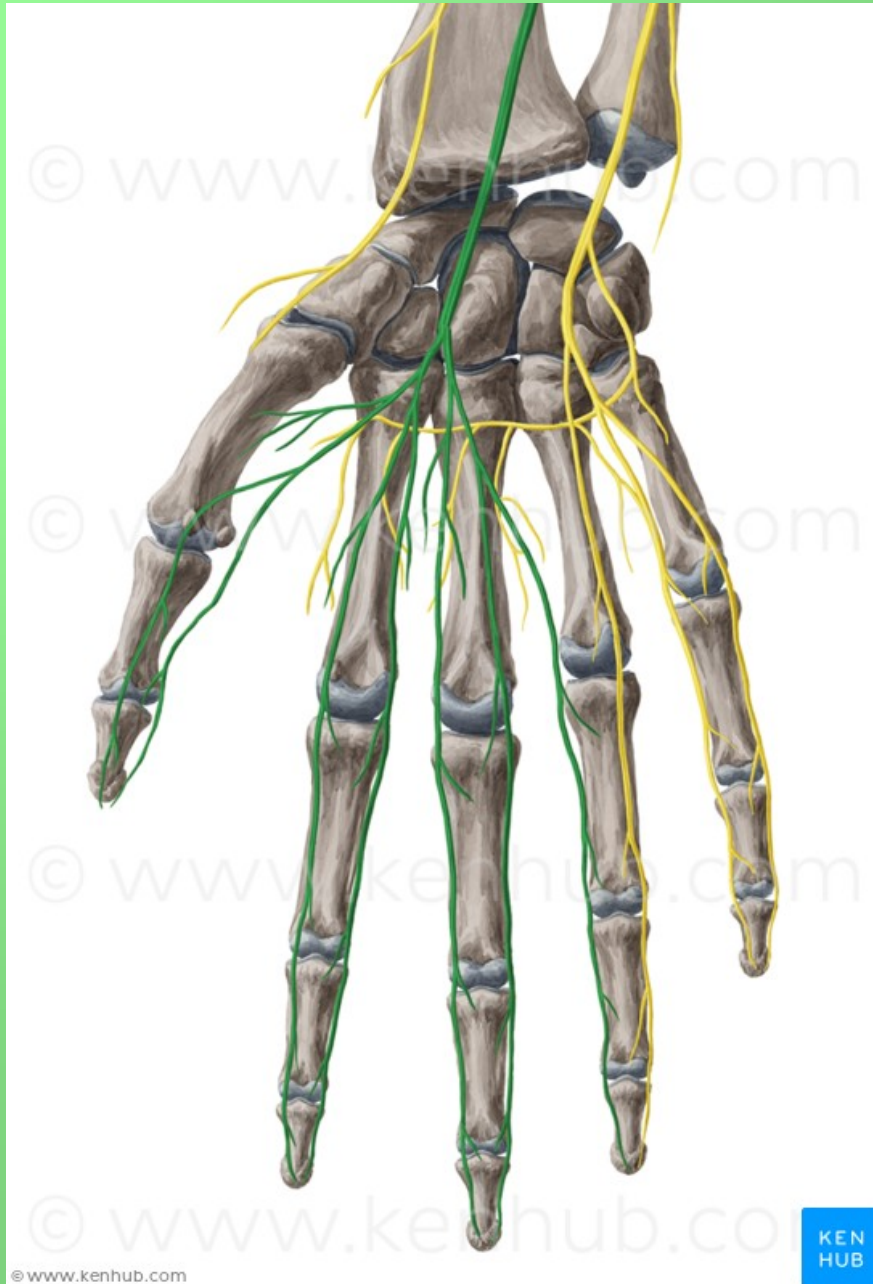
**Anterior view**

Note: only muscles innervated by median nerve shown









© www.kenhub.com

© www.kenhub.com

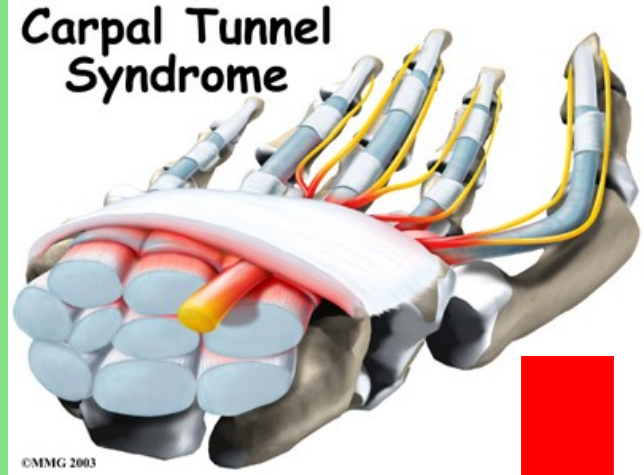
© www.kenhub.com

© www.kenhub.com



# The injury of the nerve:

- suicide attempts (gashes)
- pathological changes within carpal tunnel
- gripping movement is missing

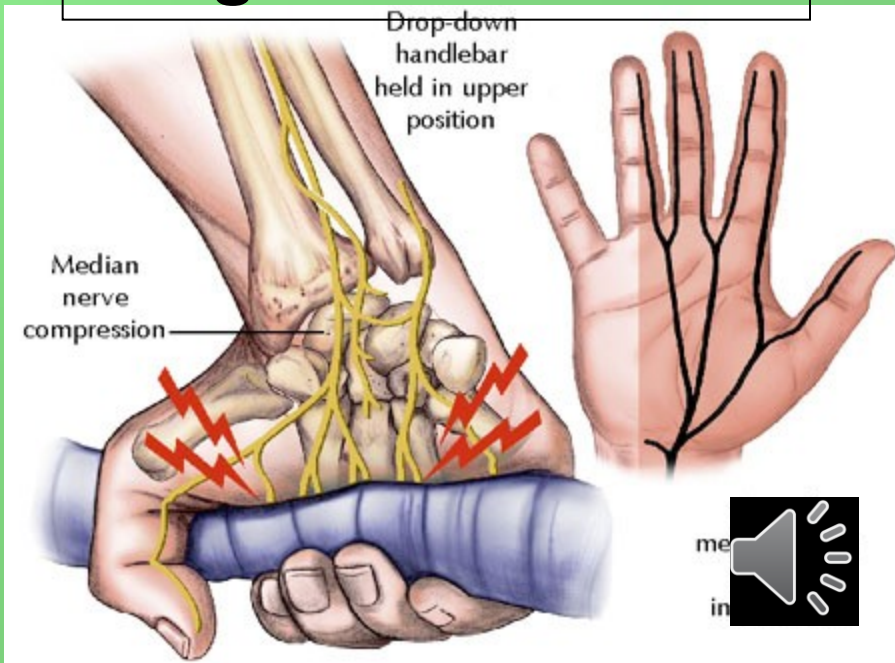


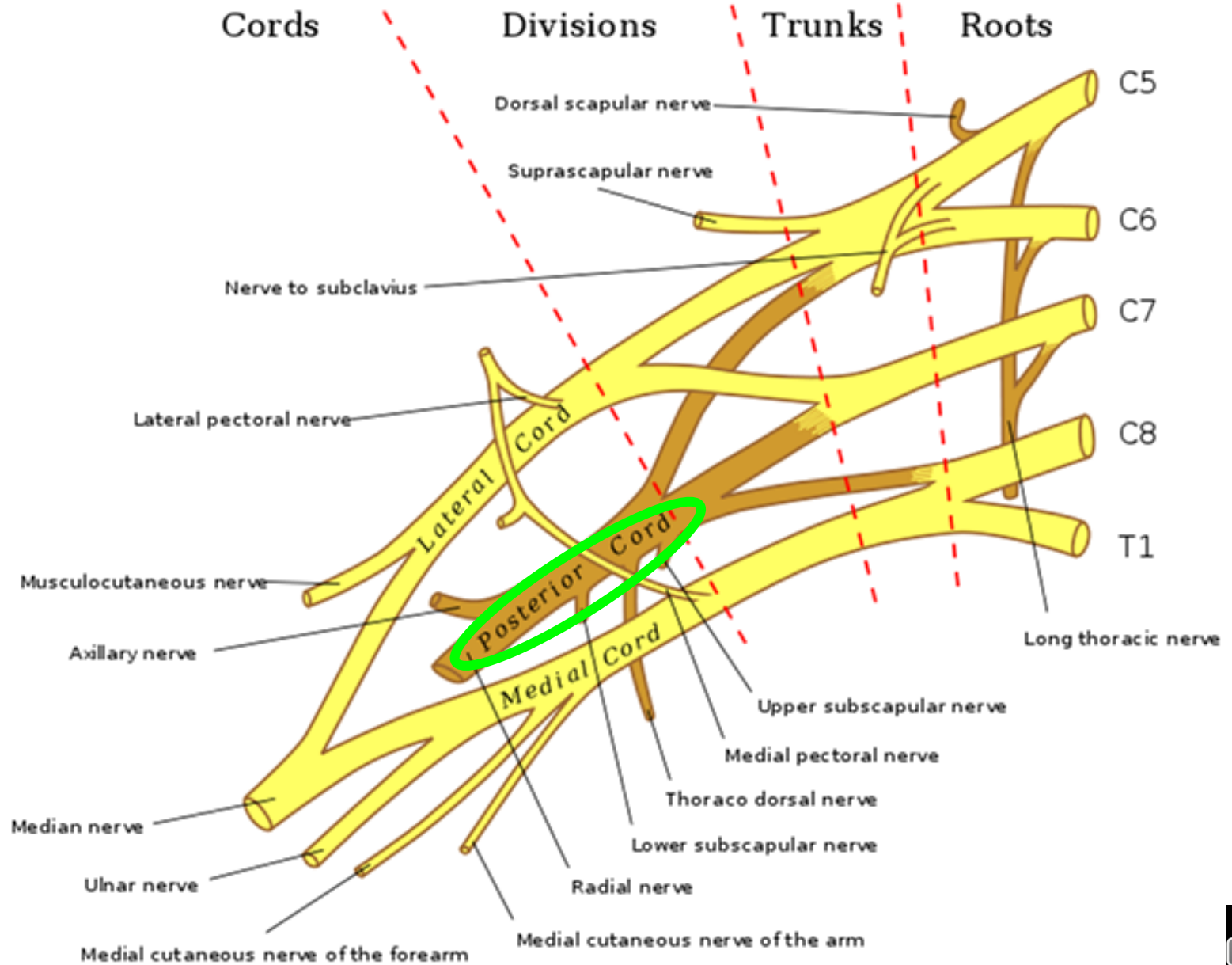
**Ape hand -  
Oposition of thumb  
stagnates**



# Hand of benediction

(inability of oposition of thumb and flexion of 2nd and 3rd finger)



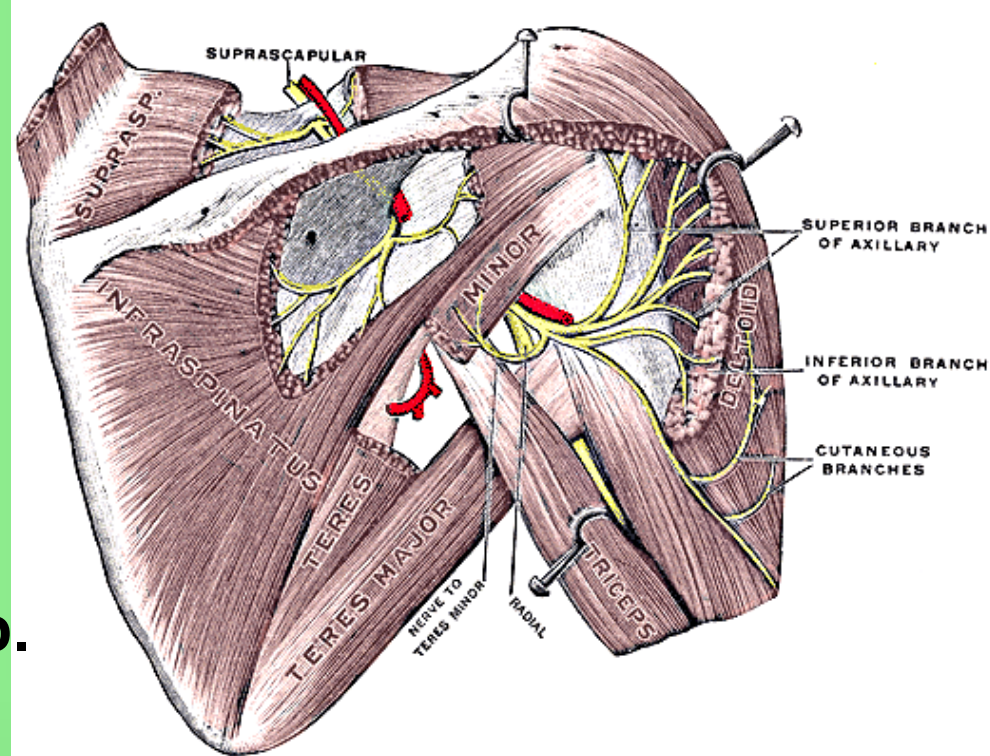


# Fasciculus posterior

## n. axillaris

foramen humerotricipitale  
(mixed) (C5–6)

- rr. musculares
- rr. articulares
- n. cutaneus brachii lat. sup.



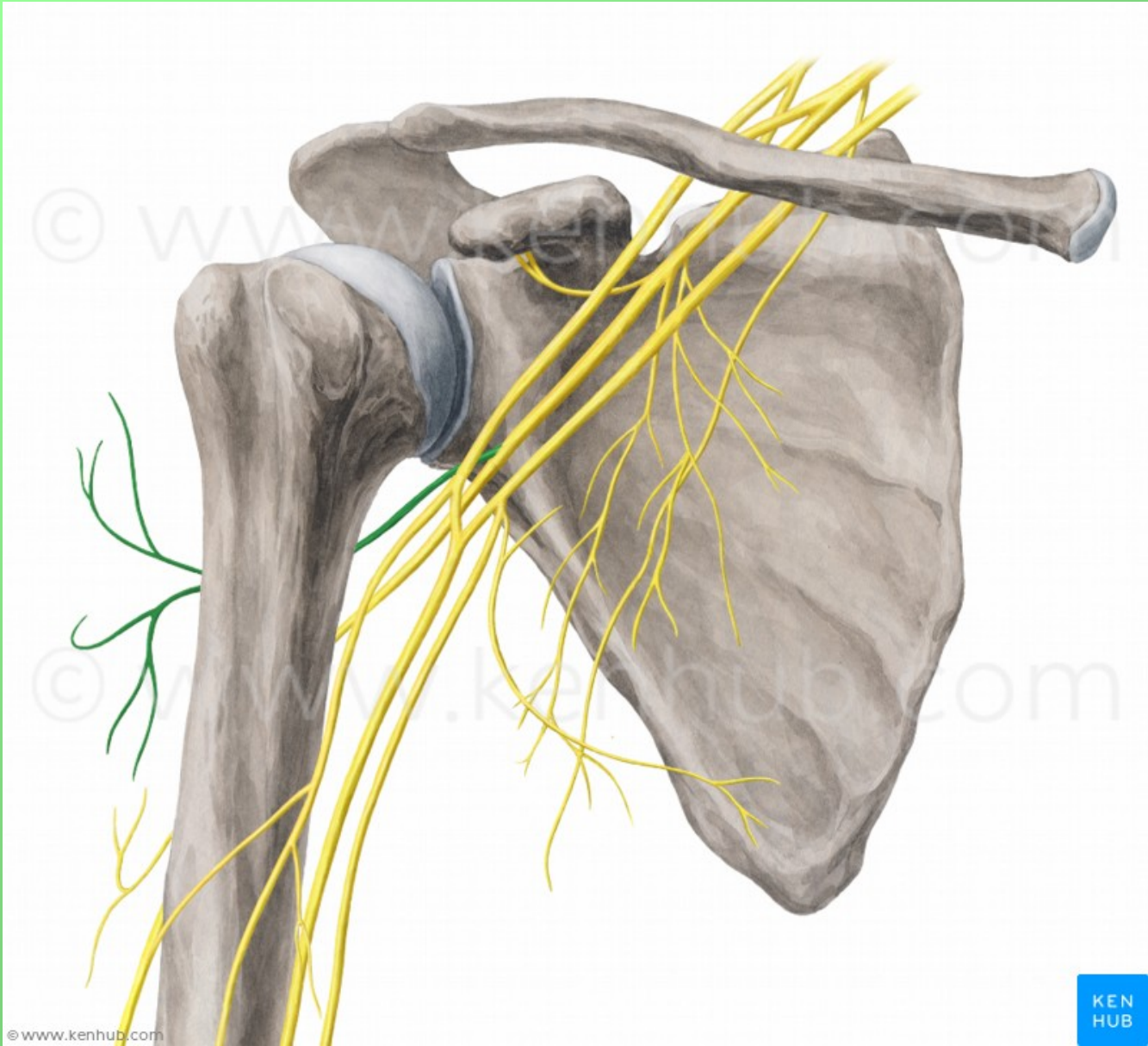
**Motor innervation:** m. deltoideus, m. teres minor

**Sensory innervation:** the area around the shoulder

**The injury of the nerve** (luxation, fracture of collum chirurgicum)

- supination and abduction of the arm till horizontal are missed





# n. radialis

(mixed) (C5–Th1)

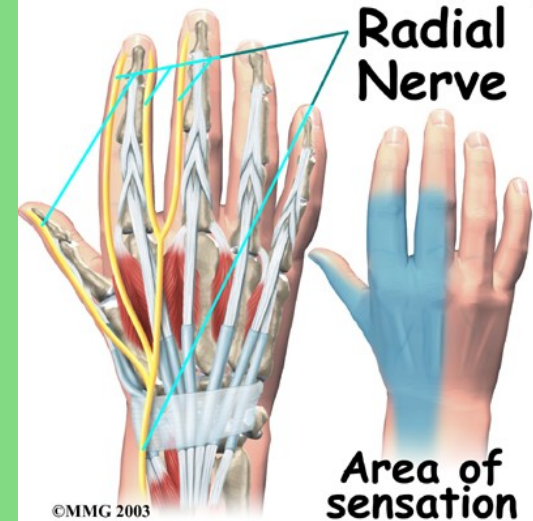
- n. cutaneus brachii posterior
- n. cutaneus brachii lateralis inferior
- rr. musculares
  
- n. cutaneus antebrachii posterior

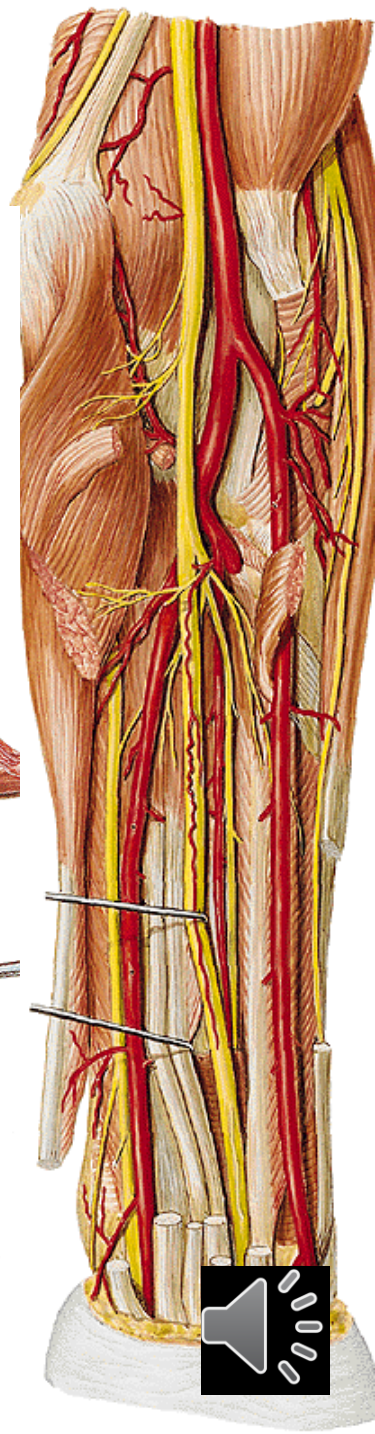
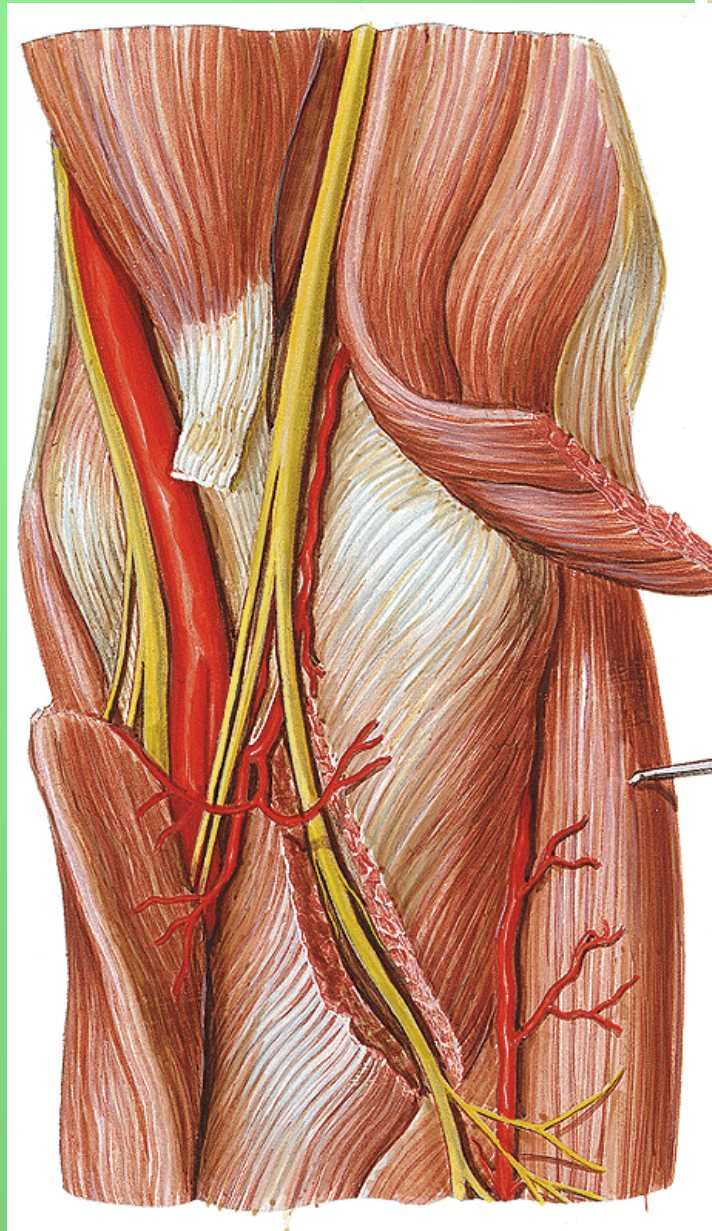
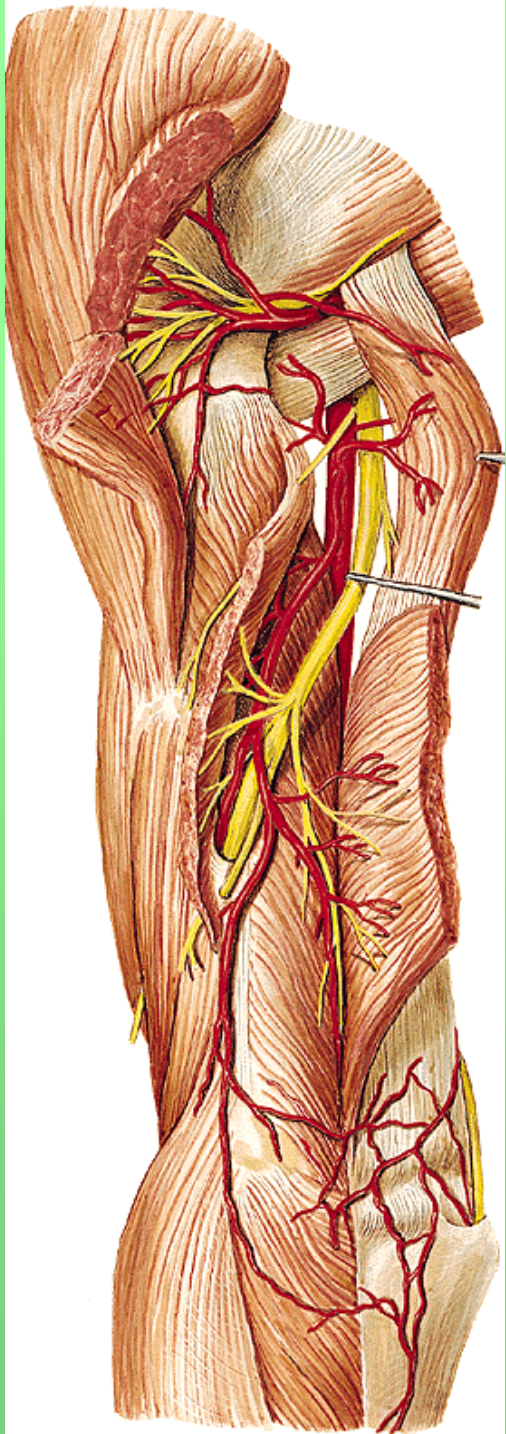
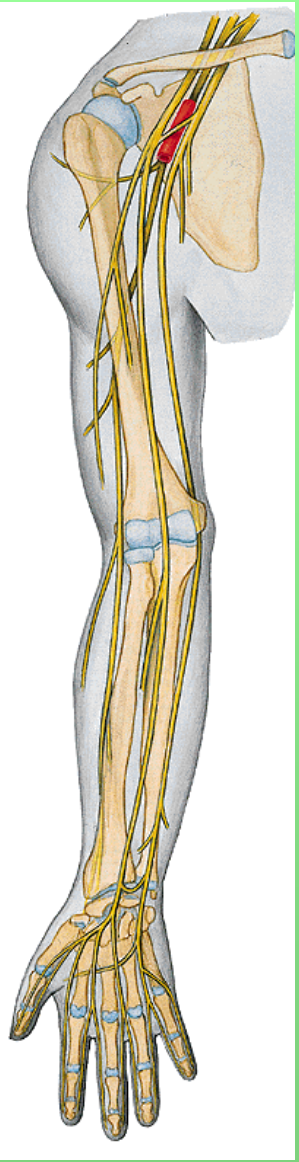
Branching within cubital area(between m. brachialis and m. brachioradialis)

- r. profundus (muscles of the dorsal group of forearm)
  - n. interosseus antebrachii posterior (sensory nerve)
- r. superficialis (below m. brachioradialis onto dorsum manus)
  - nn. digitales dorsales

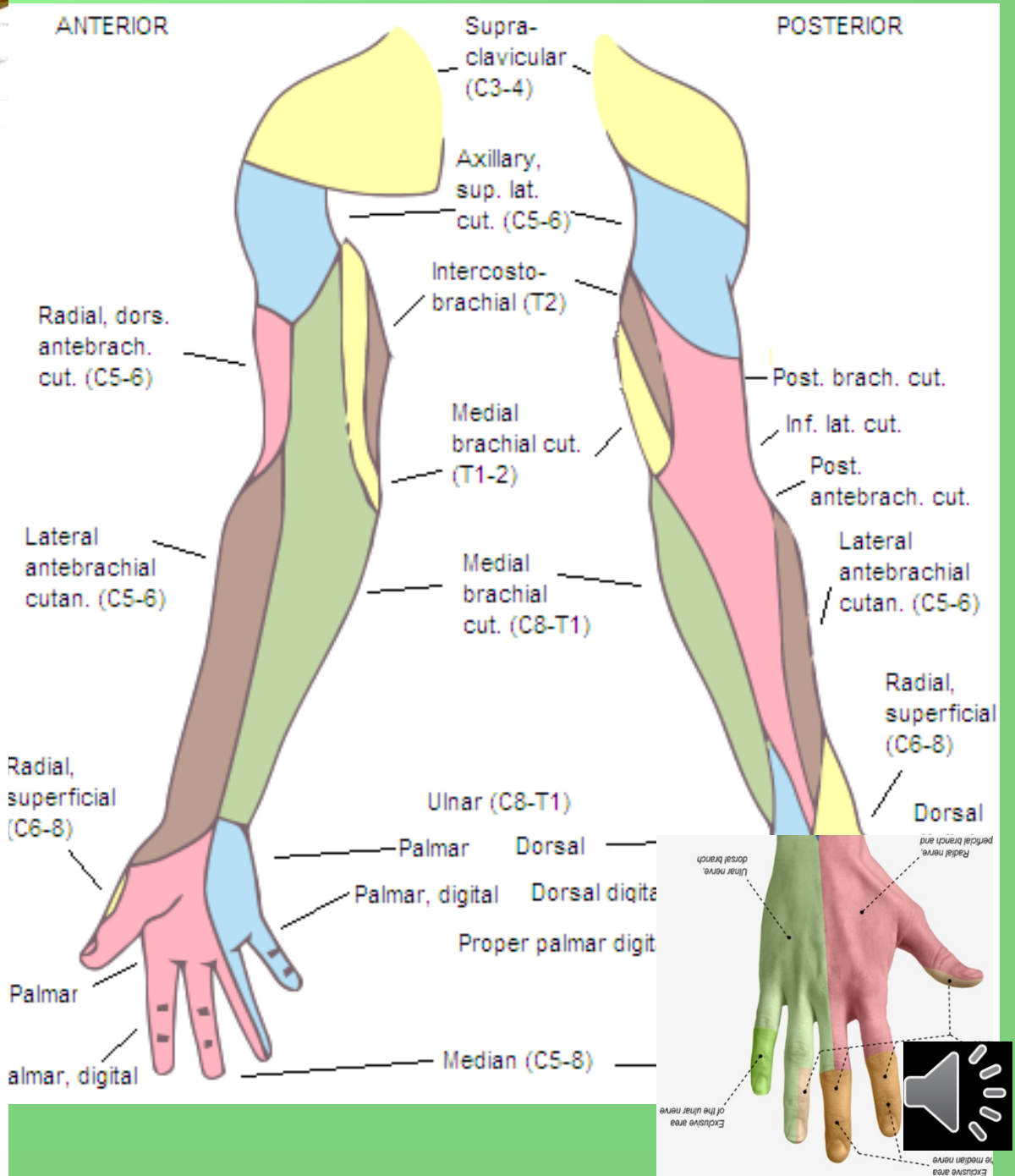
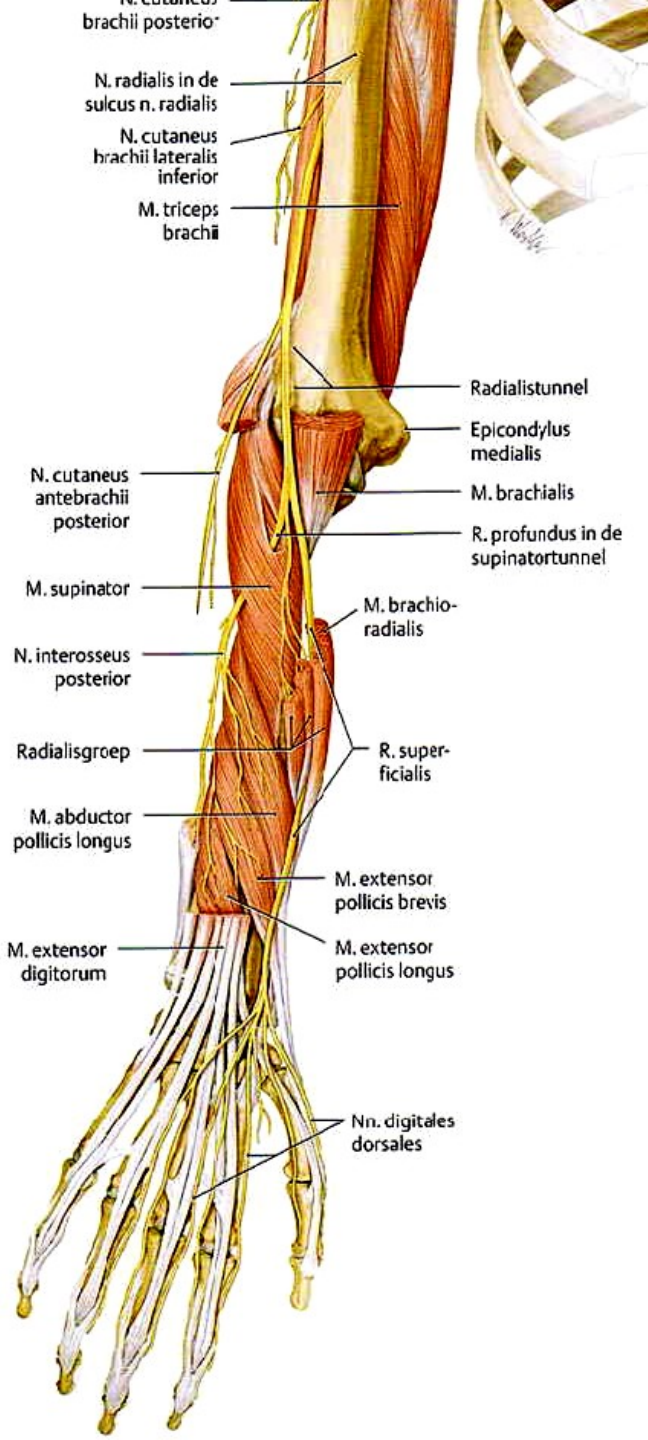
**Motor innervation:** m. triceps brachii, lateral group of forearm muscles, m. supinator, muscles of the posterior side of forearm

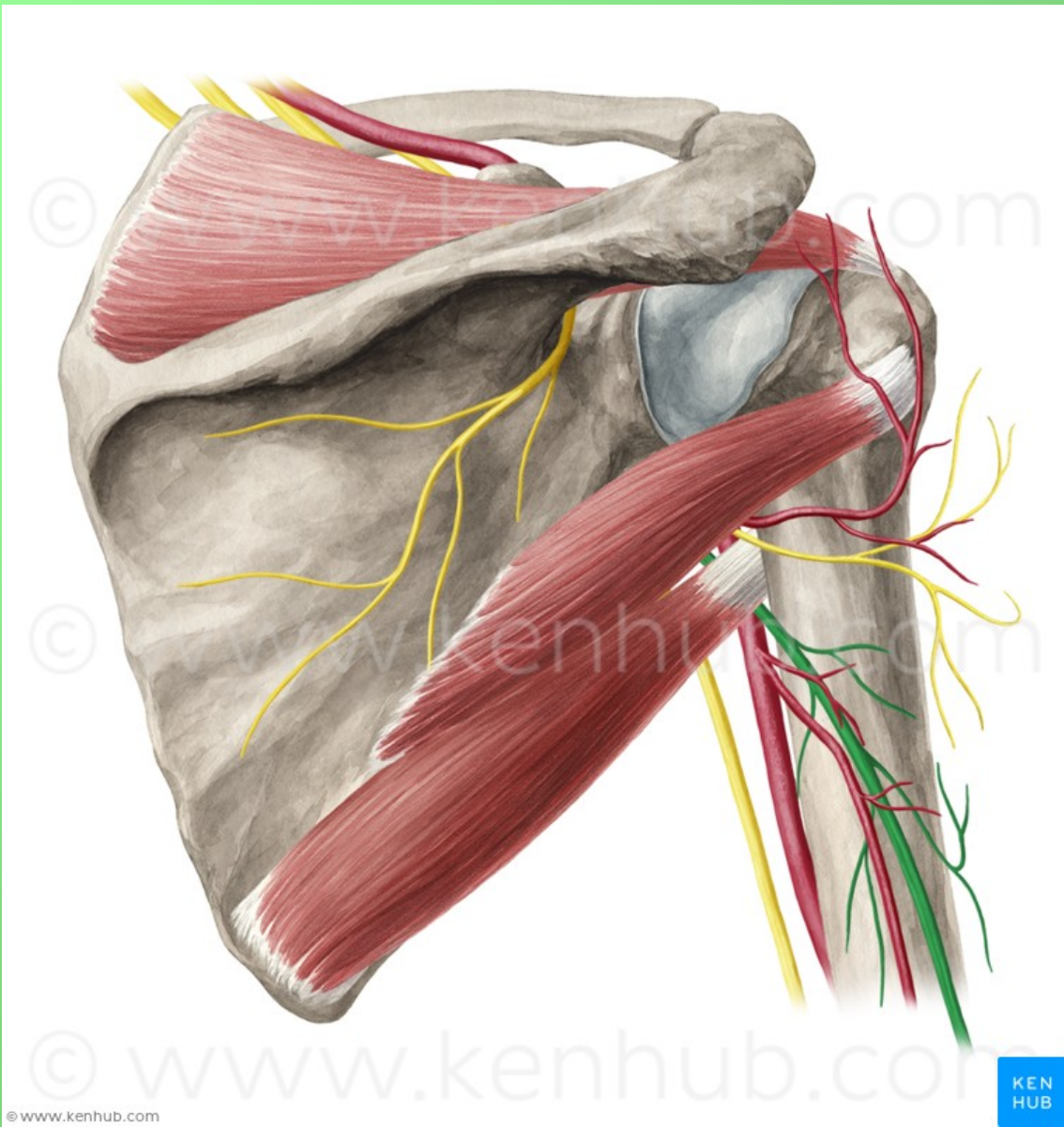
**Sensory innervation:** dorsal surface of wrist and 1st, 2nd and half of 3rd finger











© www.kenhub.com

KEN  
HUB



© www.kenhub.com

© www.kenhub.com

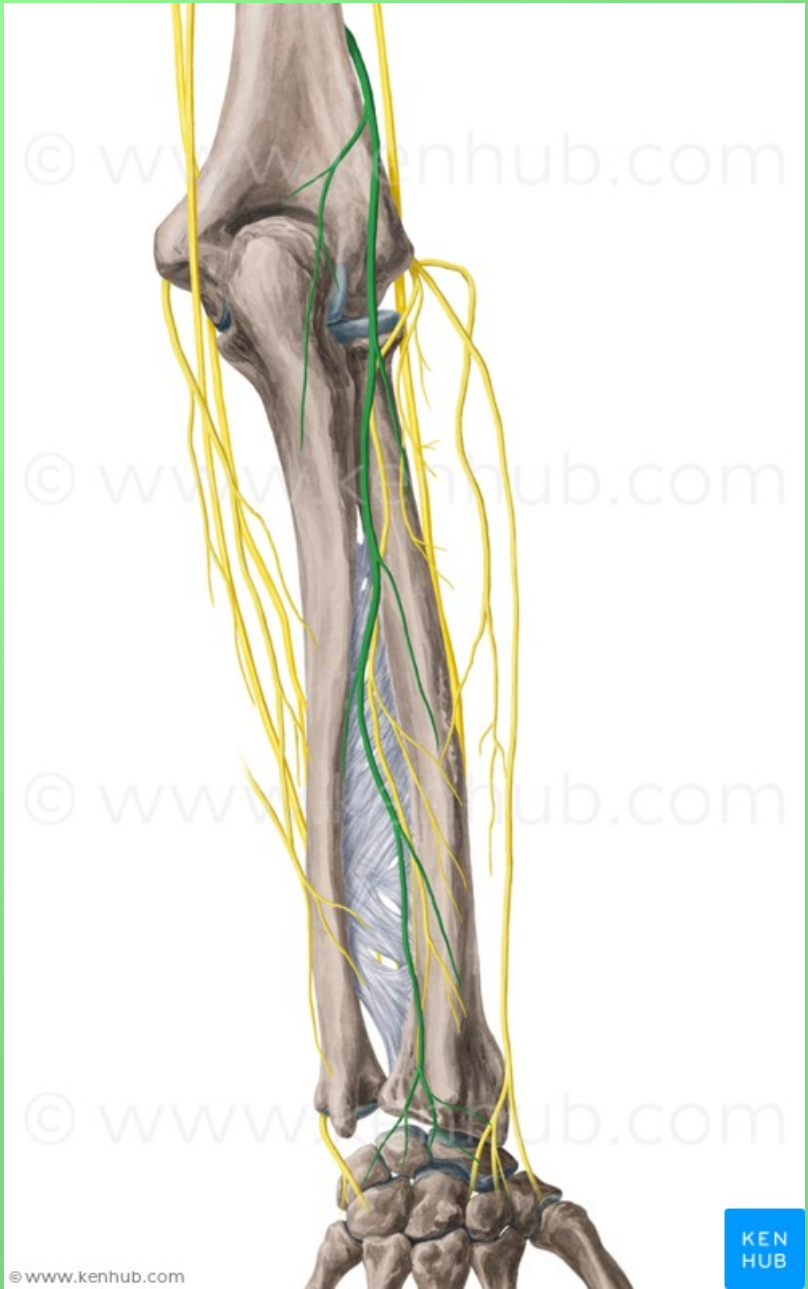
© www.kenhub.com

© www.kenhub.com

© www.kenhub.com

KEN  
HUB





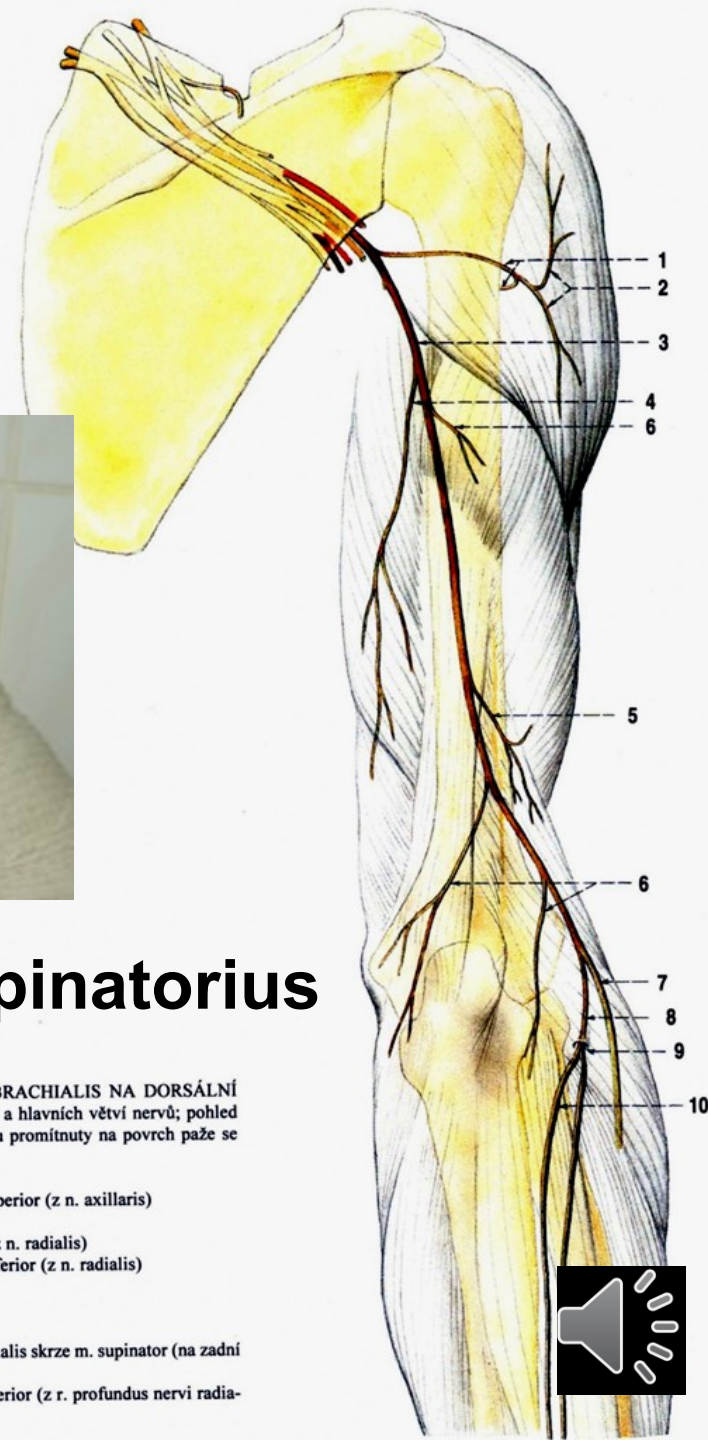
© www.kenhub.com

KEN  
HUB



# The injury of the nerve: on the arm (fractures)

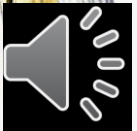
- palsy of extensors of hand – it drops in palmar direction



## Canalis supinatorius

Obr. 292. NERVY Z PLEXUS BRACHIALIS NA DORSÁLNÍ STRANĚ PAŽE; schéma průběhu a hlavních větví nervů; pohled zezadu na pravou paži; nervy jsou promítnuty na povrch paže se znázorněným skeletem

- 1 n. axillaris
- 2 n. cutaneus brachii lateralis superior (z n. axillaris)
- 3 n. radialis
- 4 n. cutaneus brachii posterior (z n. radialis)
- 5 n. cutaneus brachii lateralis inferior (z n. radialis)
- 6 rr. musculares (nervi radialis)
- 7 r. superficialis nervi radialis
- 8 r. profundus nervi radialis
- 9 průchod r. profundus nervi radialis skrze m. supinator (na zadní stranu předloktí)
- 10 n. interosseus antebrachii posterior (z r. profundus nervi radialis)

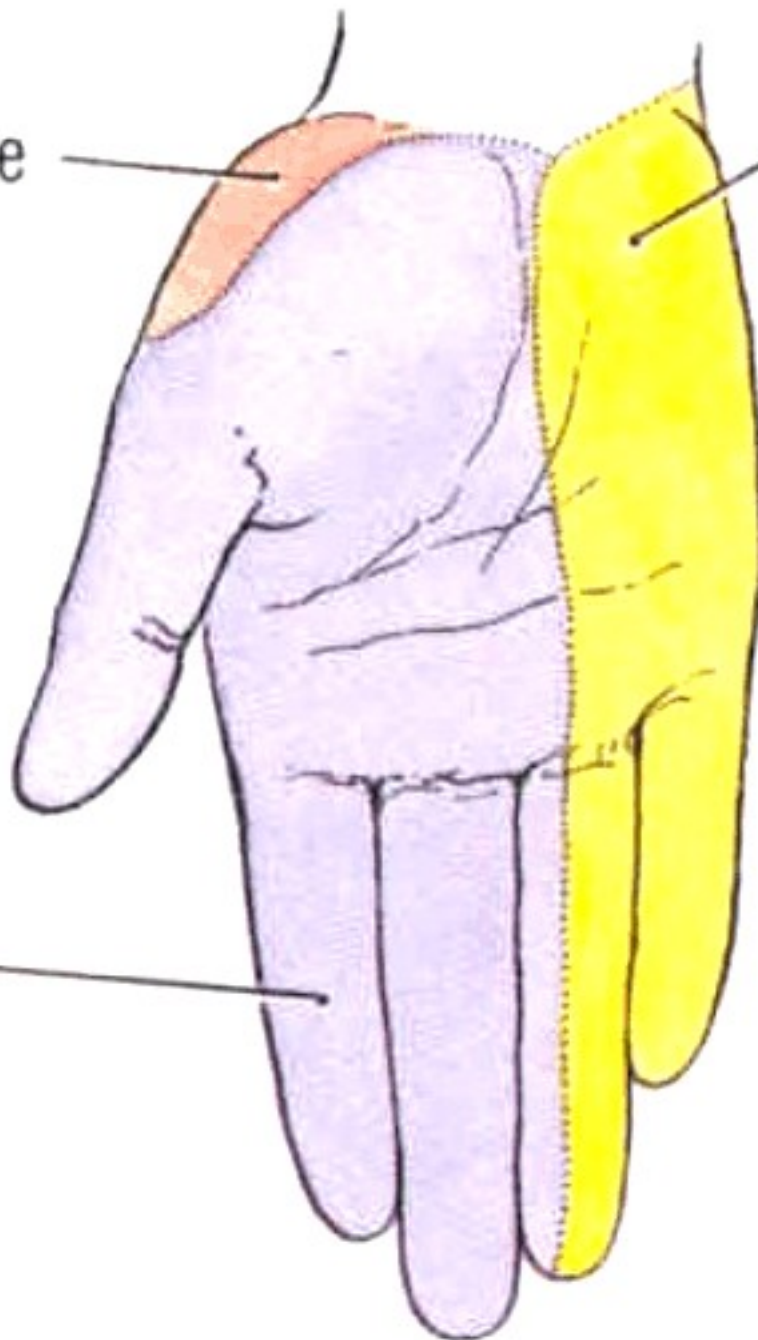


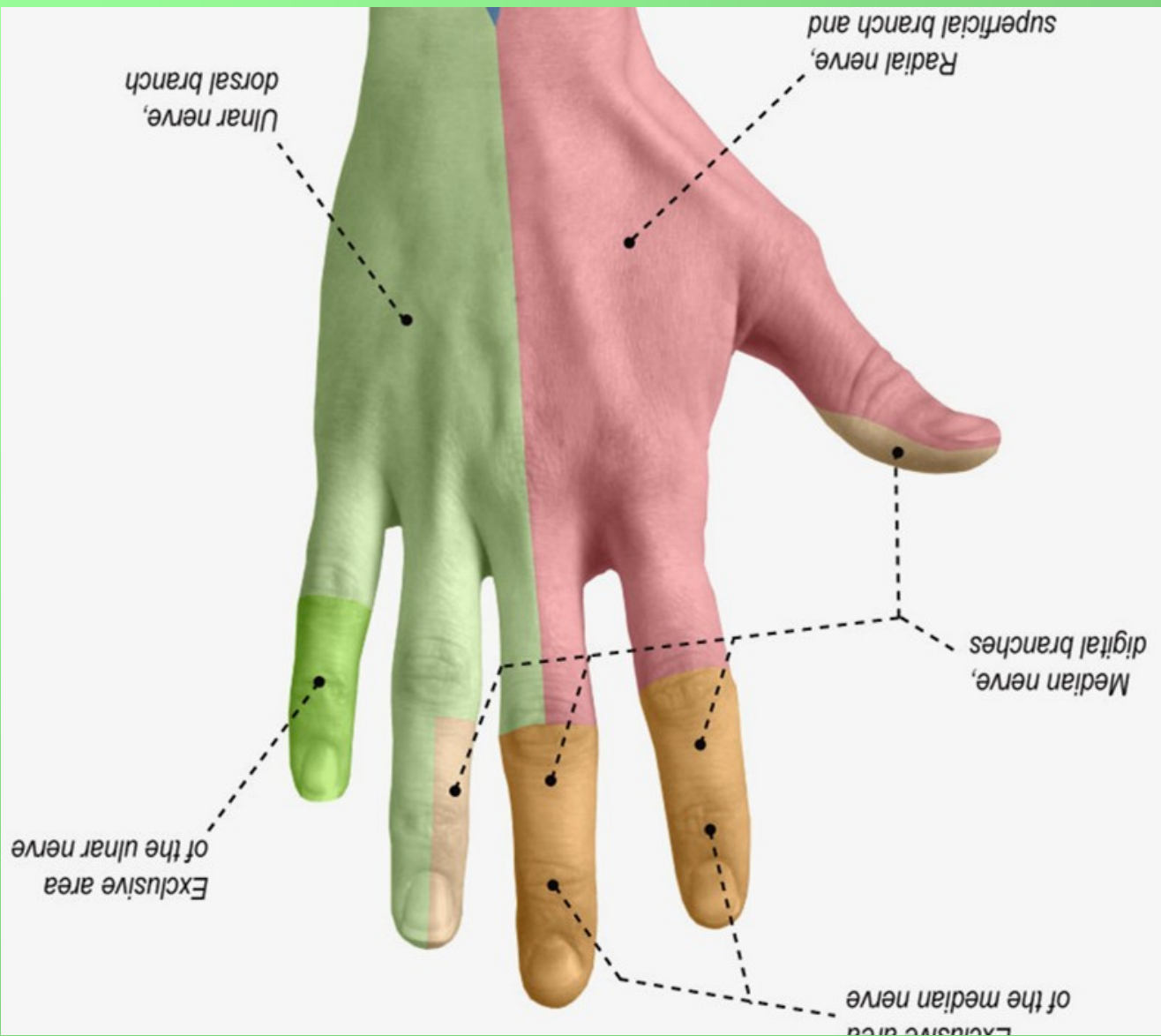
Drop wrist

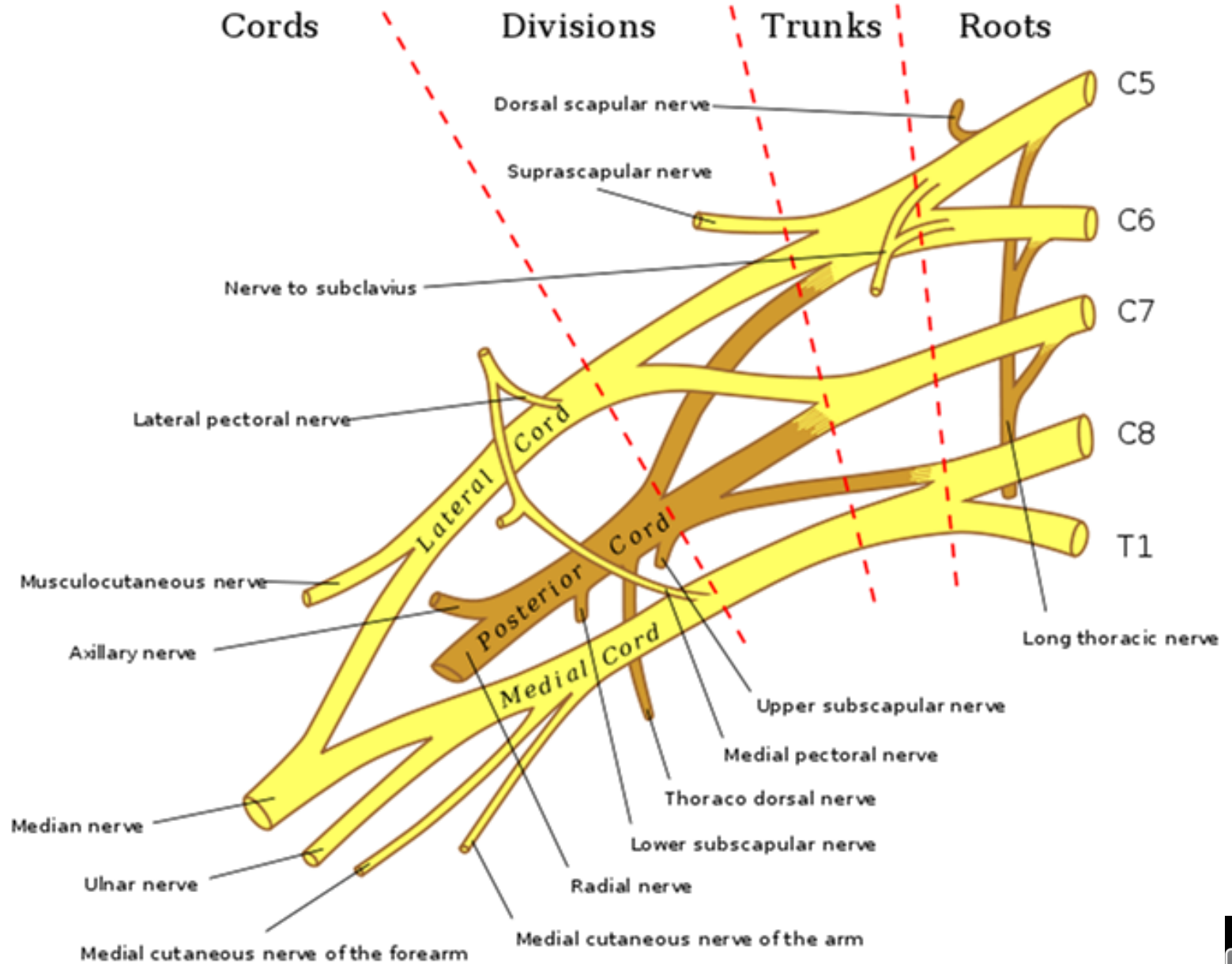
Radial nerve

Ulnar nerve

Median nerve



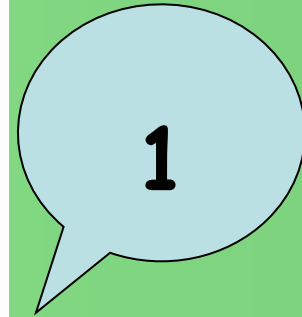






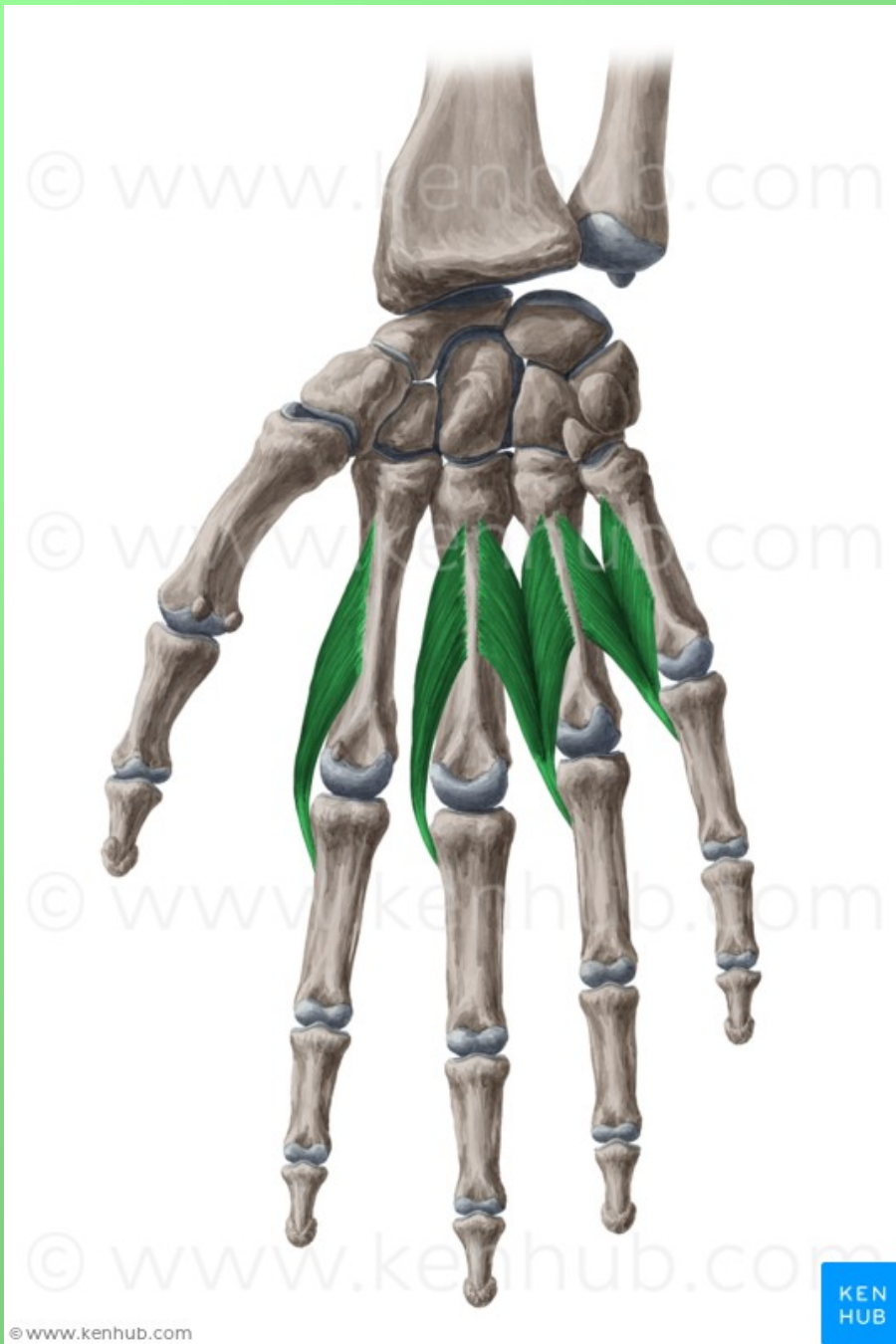
- **Obrázky:**
- **Atlas der Anatomie des Menschen/Sobotta. Putz,R., und Pabst,R. 20. Auflage. München:Urban & Schwarzenberg, 1993**
- **Netter: Interactive Atlas of Human Anatomy.**
- **Naňka, Elišková: Přehled anatomie. Galén, Praha 2009.**
- **Čihák: Anatomie I, II, III.**
- **Drake et al: Gray's Anatomy for Students. 2010**







2



3





5

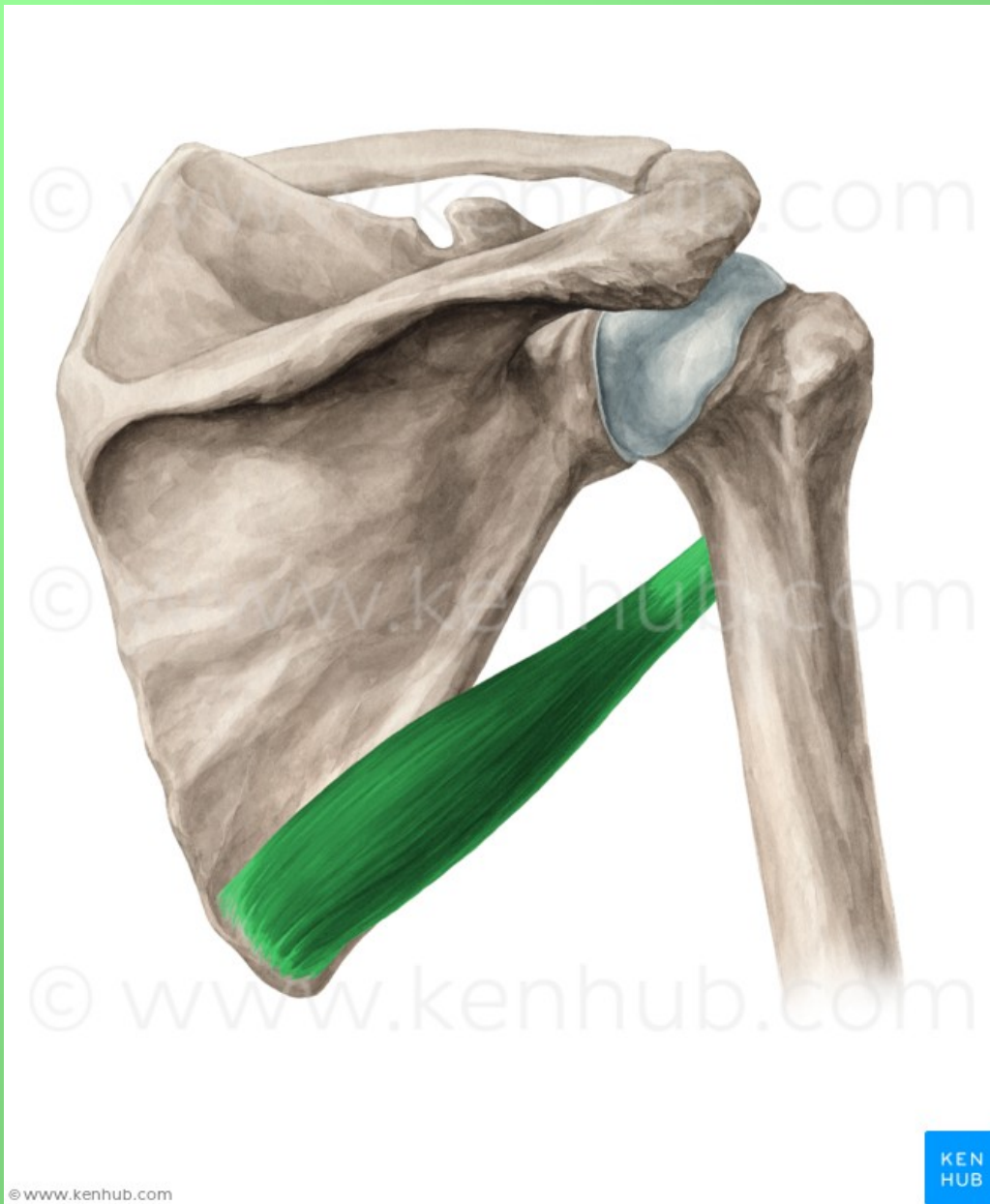








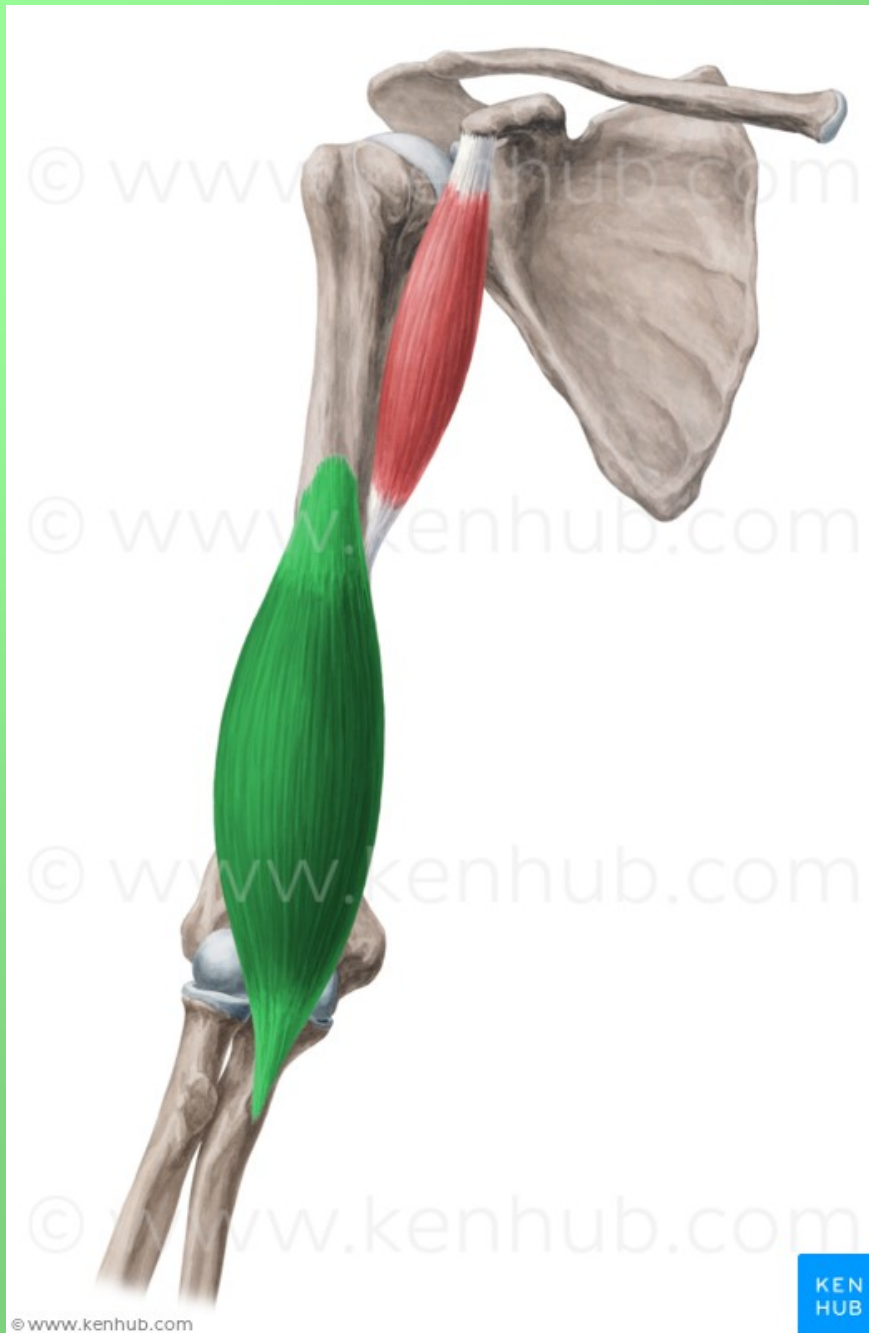




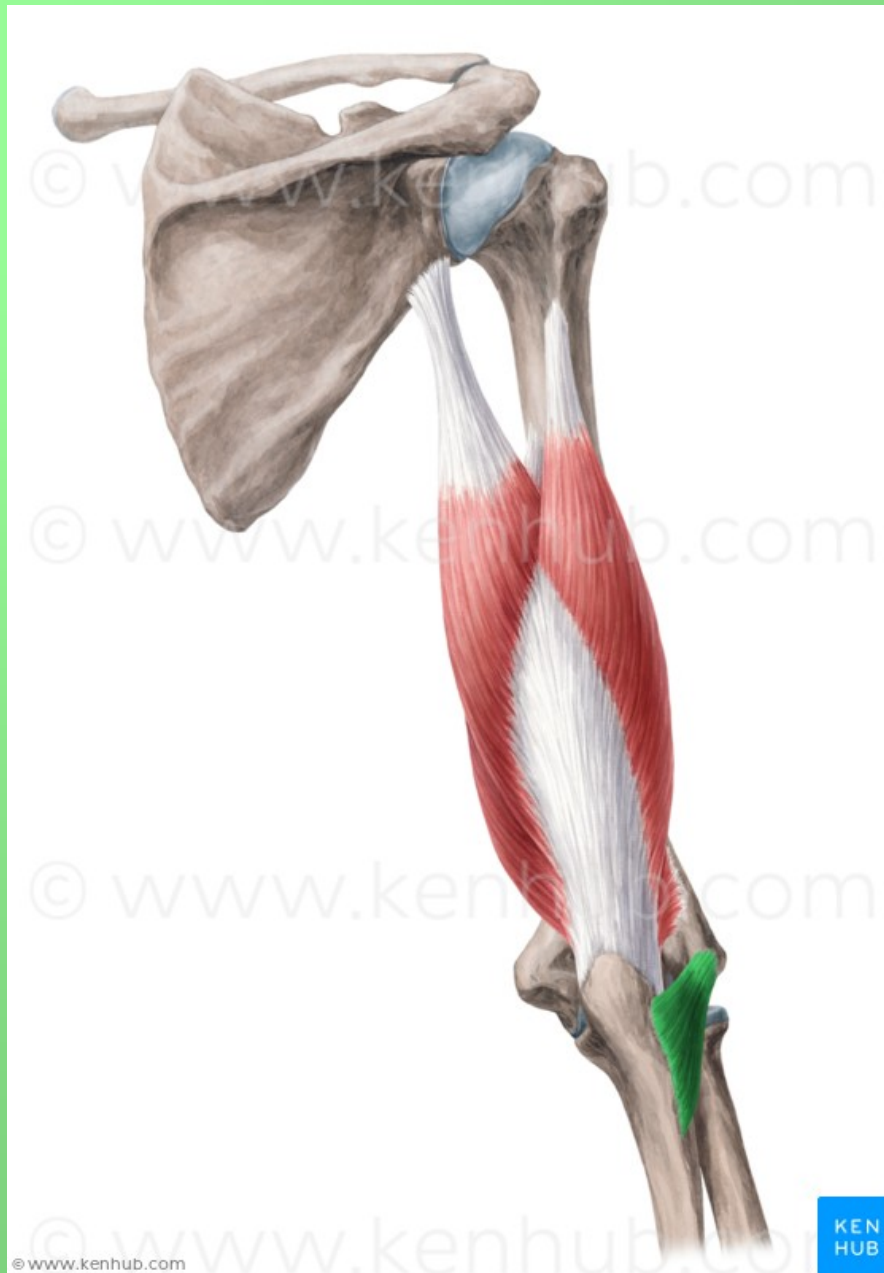
10



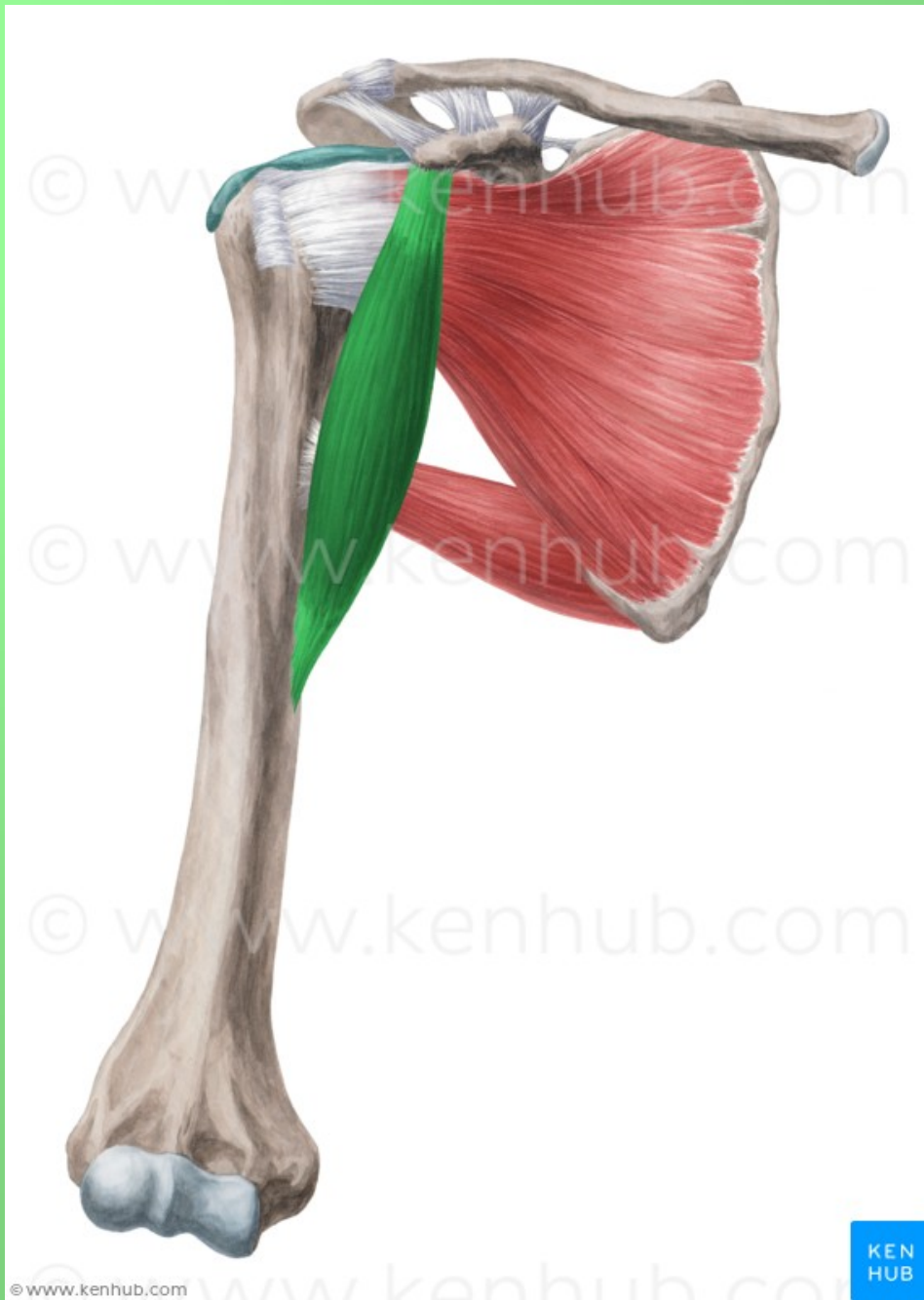
11



12



13

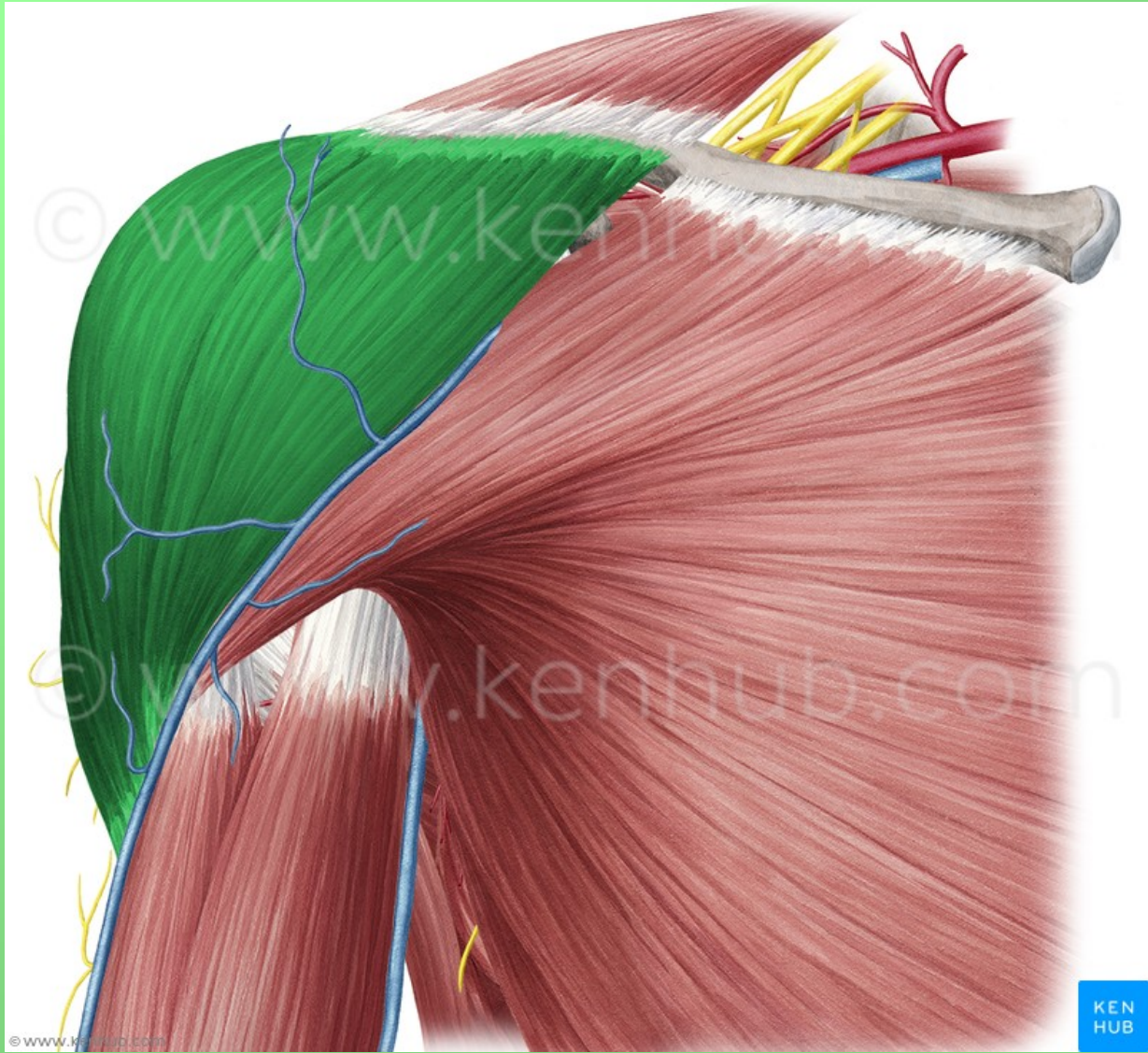


14



15

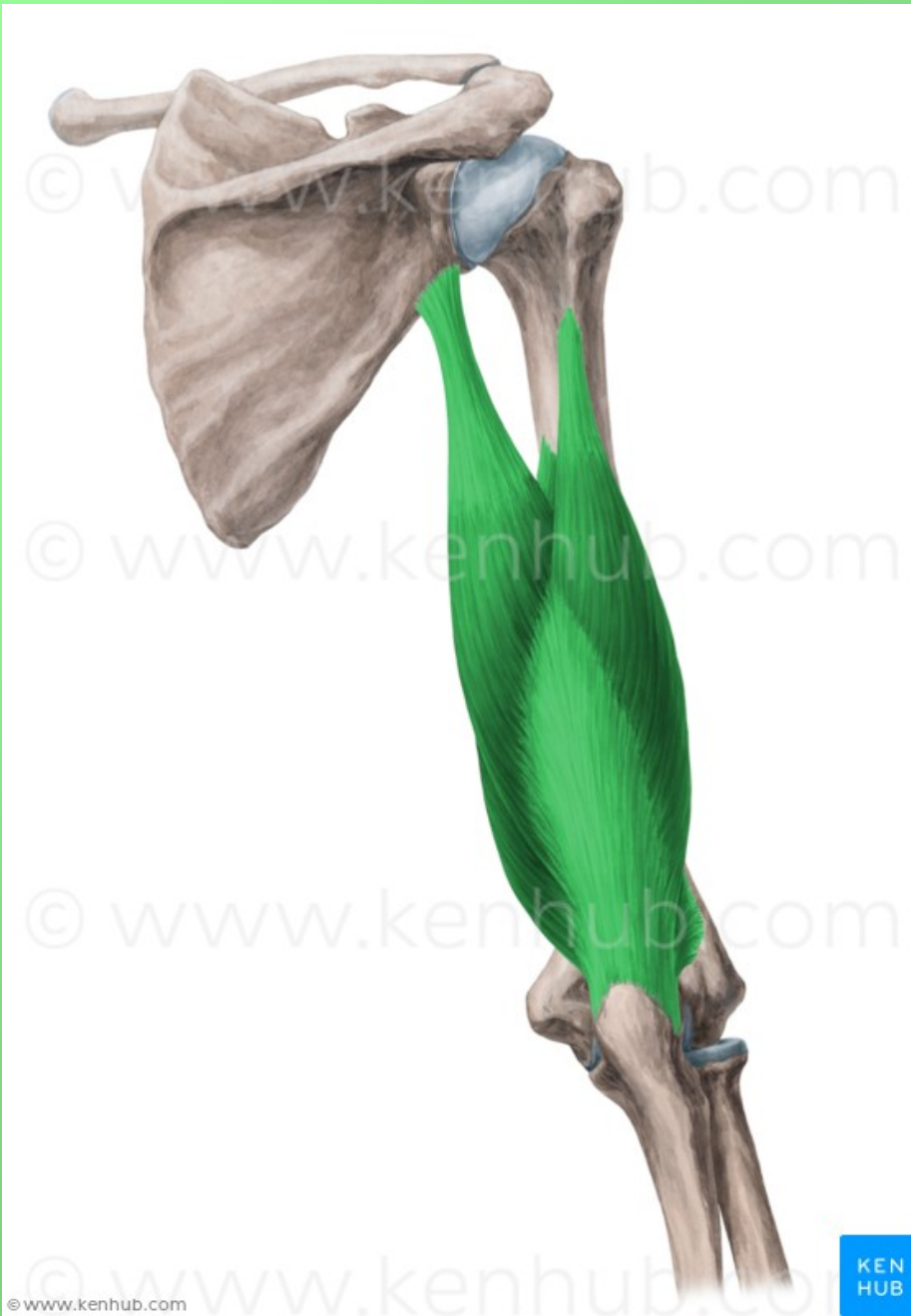




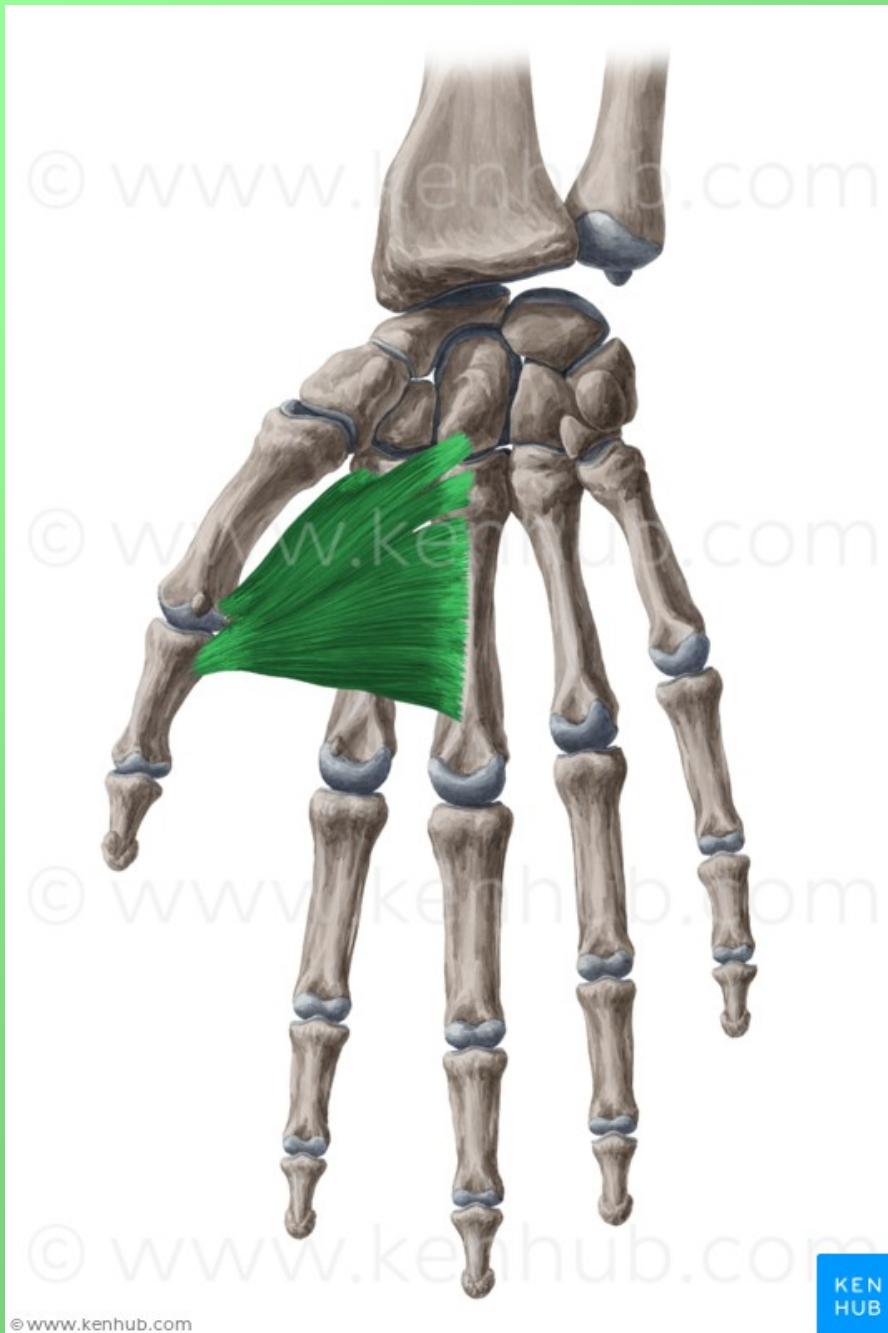
16



17



18



19



20

- 1) m. infraspinatus
- 2) m. flexor digitorum superficialis
- 3) mm. lumbricales
- 4) m. palmaris longus
- 5) m. biceps brachii
- 6) m. pronator quadratus
- 7) m. extensor digitorum communis
- 8) m. supinator
- 9) m. subscapularis
- 10) m. teres major

- 11) m. pronator teres
- 12) m. brachialis
- 13) m. anconaeus
- 14) m. coracobrachialis
- 15) m. palmaris brevis
- 16) m. deltoideus
- 17) m. extensor indicis
- 18) m. triceps brachii
- 19) m. adductor pollicis
- 20) m. brachioradialis

*Thank you for your  
attention!*

