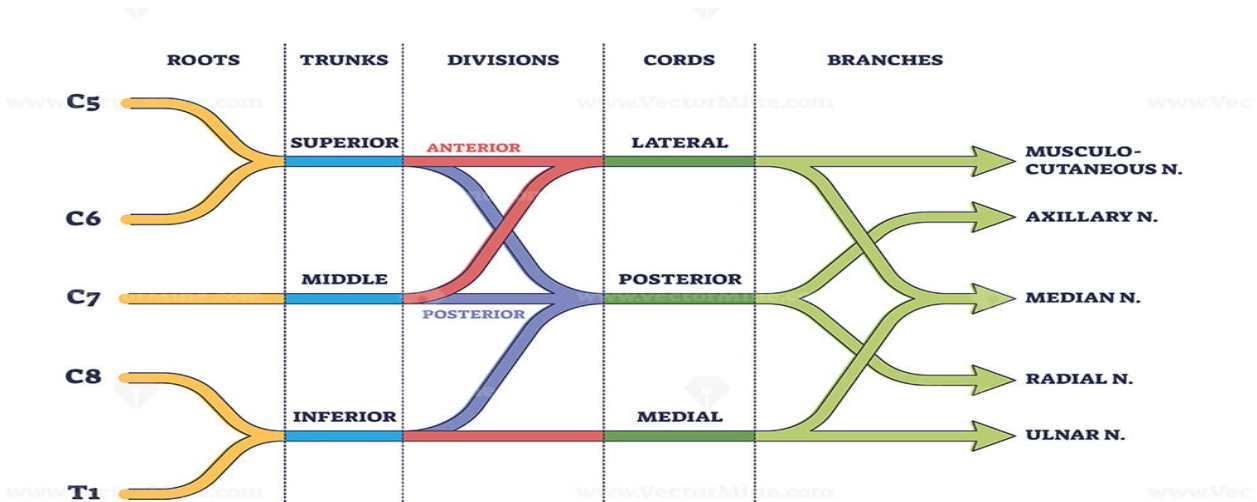
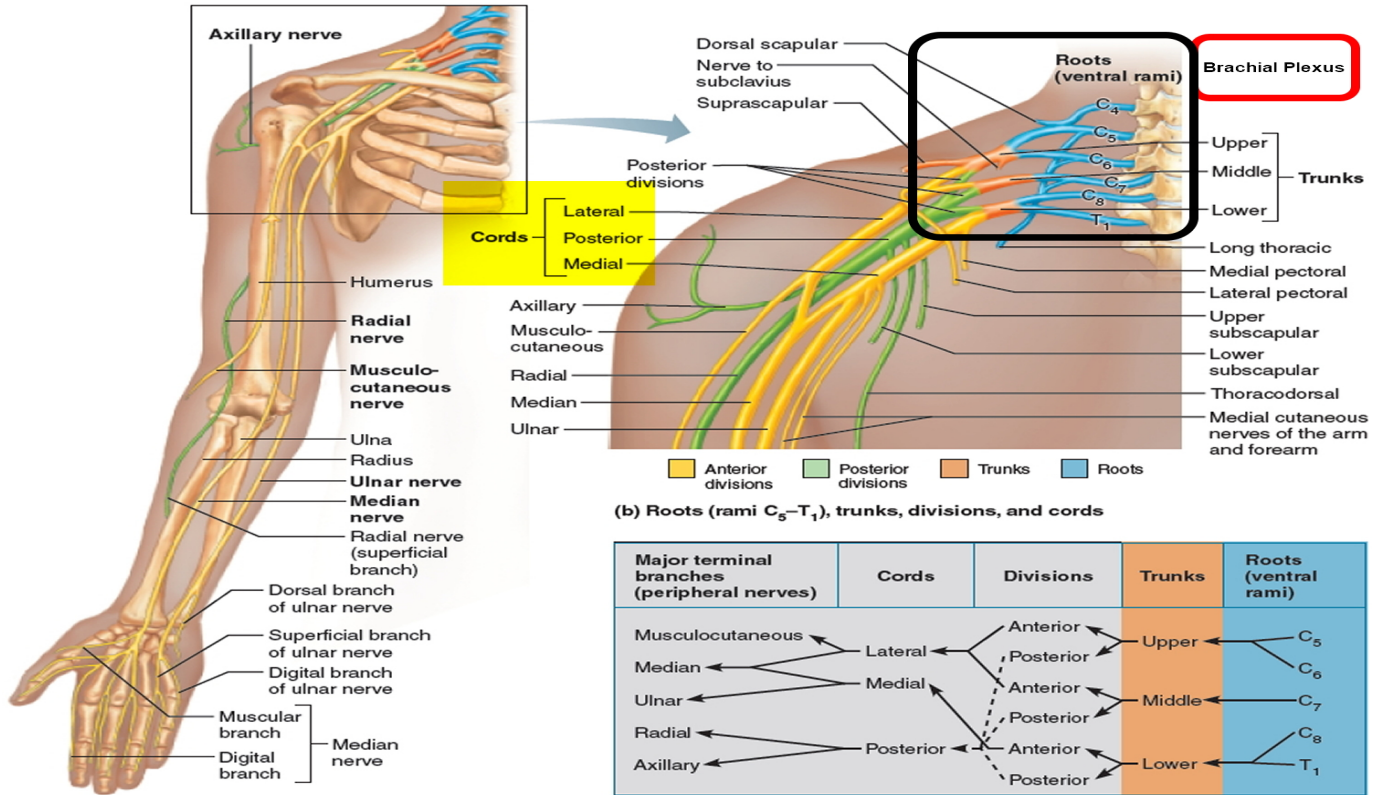
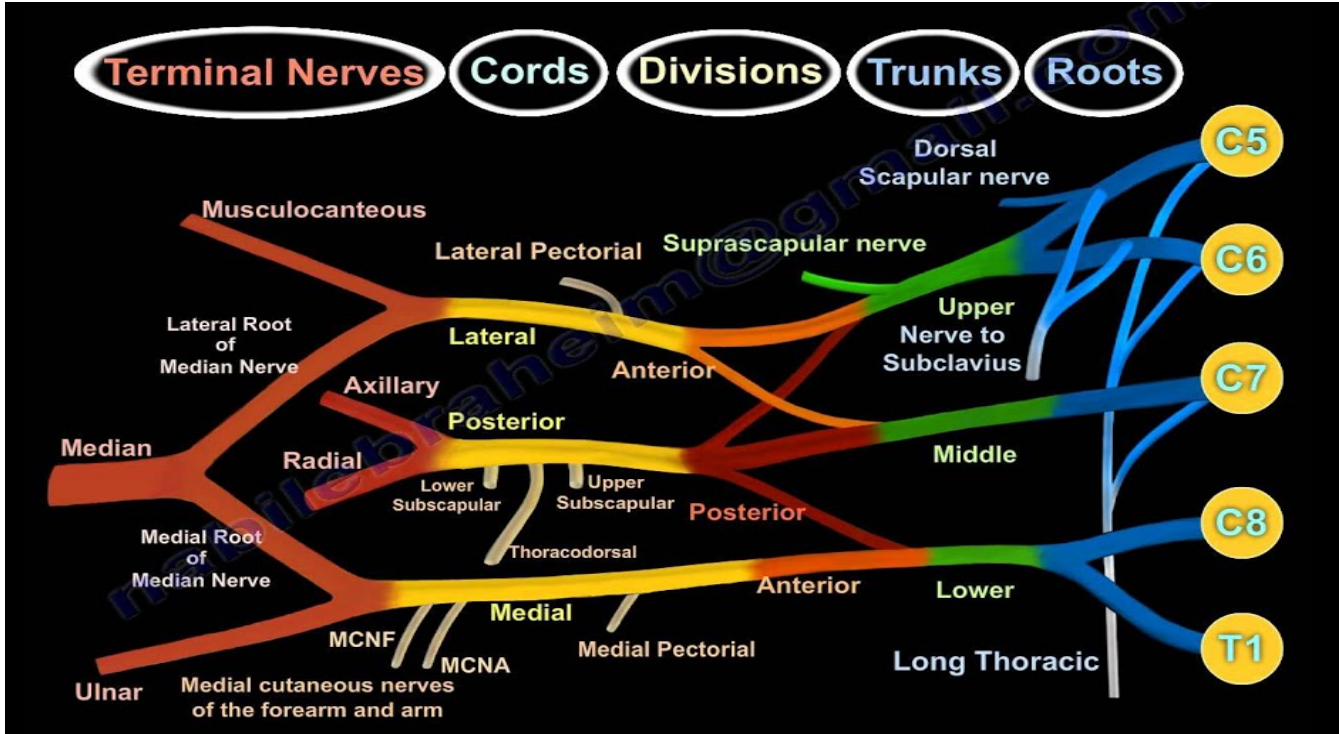


Brachial Plexus

Dr. Gary Mumaugh – Campbellsville University





Roots of the Brachial Plexus

- The brachial plexus originates from C5, C6, C7, C8, T1
- C8 is not a vertebra, it is the 8th pair of spinal nerves between C7 and T1

How do we remember divisions of the Brachial Plexus?

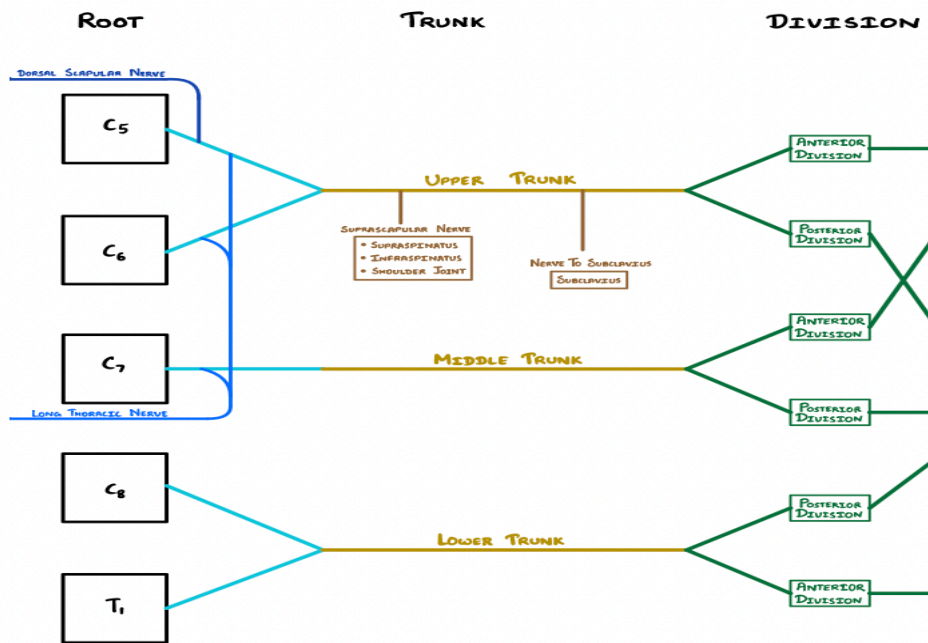
- Mnemonic for the divisions – **R**emember **T**o **D**rink **C**old **B**eer
- **R**oot **T**unk **D**ivisions **C**ords **B**ranches
- Two Mnemonics for the peripheral branches of the divisions
- **MARMU**
 - Mom Always Read Me Ulysses
 - **M**usculocutaneous N. **A**xillary N. **R**adial N. **M**edian N. **U**lnar N.
- **Most Alcoholics Really Must Urinate**
 - **M**usculocutaneous N. **A**xillary N. **R**adial N. **M**edian N. **U**lnar N.
- Mnemonic to remember peripheral nerves
 - **Three Musketeers Assassinated Five Rats, Five Mice and Two Unicorns**
 - **Three Musketeers** from three nerves (C5-C7) – Musculocutaneous N.
 - **Assassinated** from two nerves (C5-C6) – Axillary N.
 - **Five Rats** from five nerves (C5-T1) – Radial N.
 - **Five Mice** from five nerves (C5-T1) – Median N
 - **Two Unicorns** from two nerves (C7-T1) – Ulnar nerve



3 musketeers assassinated 5 rats 5 mice and 2 unicorns

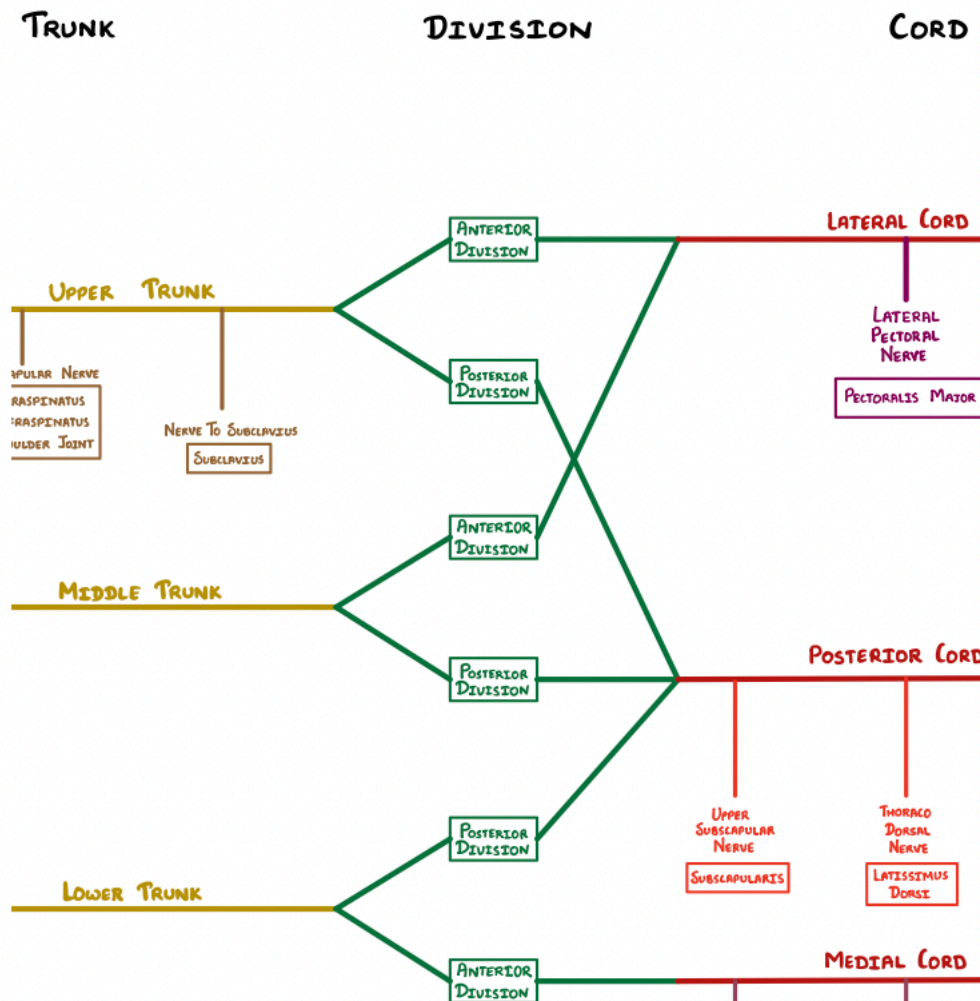
Trunks and Divisions

- C5 and C6
 - Forms upper trunk
 - Contains the anterior and posterior divisions
- C7
 - Forms its own trunk called the middle trunk
 - Contains the anterior and posterior divisions
- C8 and T1
 - Forms the lower trunk
 - Contains the anterior and posterior divisions



Cords and Branches

- Posterior cord
 - All the posterior divisions join to form the posterior cord
 - Posterior cord forms the **axillary nerve** and the **radial nerve**
- Lateral cord
 - The anterior divisions of C5-C8 join together to form the lateral cord
 - Lateral cord forms the **musculocutaneous nerve**
- Medial cord
 - The anterior division of the lower trunk forms the medial cord.
 - Medial cord forms the **ulnar nerve**
 - Tip to remember this:
 - The ulna is located on the *medial* side of the body in an anatomical position. Therefore ulnar nerve → medial cord.
- Lateral and Medial cord combined
 - Branches of the lateral and medial cord form the **median nerve**



Peripheral nerves formed from the Branches

Musculocutaneous Nerve (remember **M**ARMU – **M**ost)

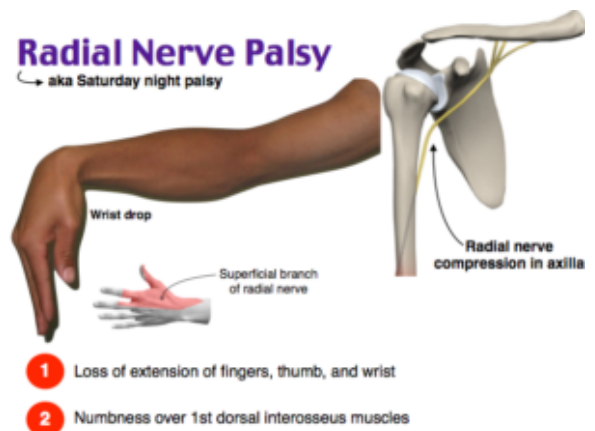
- C5 - C7 (3 roots – “3 musketeers”)
- Sensory supply – lateral arm and forearm
- Motor supply – anterior flexors of the arm
- Injury – patient cannot flex elbow

Axillary Nerve (remember **M**ARMU – **A**lcoholics)

- C5, C6 (2 roots “assassinated”)
- Sensory supply – shoulder and deltoid
- Motor – Deltoid and Teres Minor muscles
- Injury – loss of abduction from 15° to 90°

Radial Nerve (remember **M**ARMU – **R**eally)

- C5 – T1 (5 roots – “5 rats”)
- Sensory supply
 - Posterior arm and forearm and 3 ½ fingers
 - Thenar eminence of thumb
- Motor supply
 - Extensor muscles of arm and hand
 - Supination of hand
- Injury
 - Fracture in body of humerus
 - Saturday Night Palsy
 - Compression of nerve in axilla from using improperly adjusted crutches
 - Results in wrist drop



Median Nerve (remember **M**ARMU – **M**ust)

- C5-T1 (5 roots – “5 mice”)
- Sensory
 - palmar surface of hand and fingertips
 - thumb – thenar eminence
- Motor
 - Flexors of wrist and hand
 - Thumb – thenar eminence
- Injury
 - Carpel Tunnel Syndrome
 - Supracondylar fracture of humerus
 - Lunate dislocation

Ulnar Nerve (remember MARMU – Urinate)

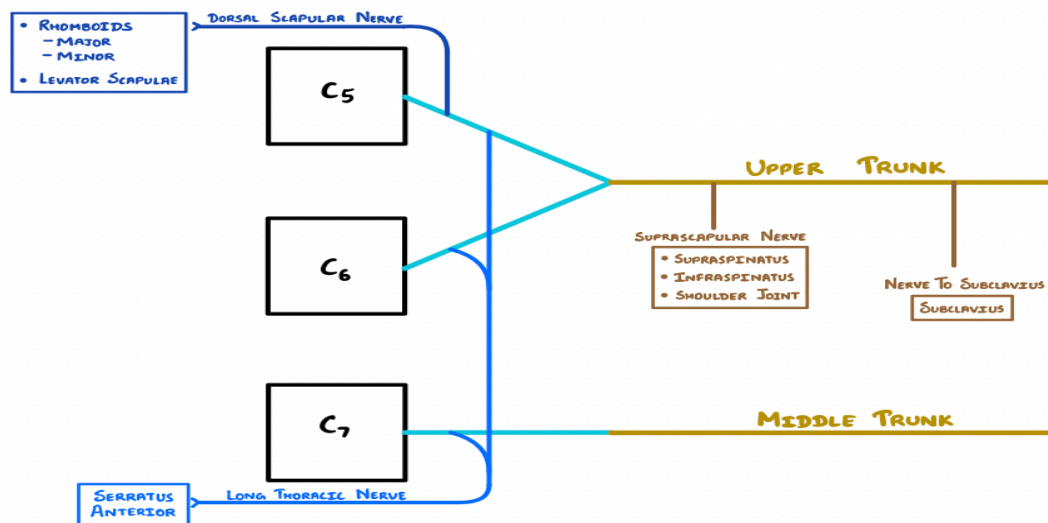
- C8-T1 (2 roots – “2 unicorns”)
- Sensory
 - Dorsal hand and 1 ½ fingers
- Motor
 - Wrist and hand flexors
 - Hypothenar muscles
- Injury
 - Medial epicondyle fracture
 - Fracture of hamate
 - Results in inability to adduct and abduct wrist
 - Results in ulnar claw hand
 - Patient cannot extend 4th and 5th digit



Claw hand of the first and second finger

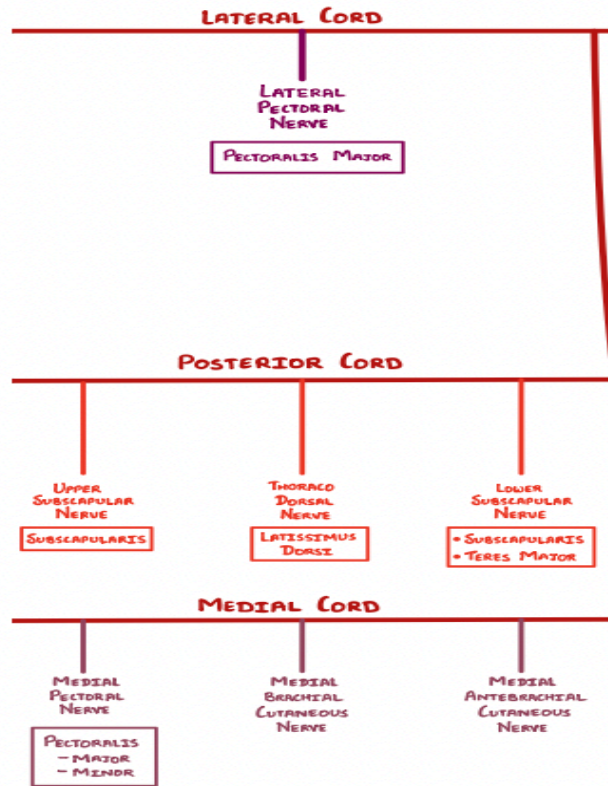
Other Small Branches

- From C5
 - Forms dorsal scapular nerve
 - Motor to Rhomboids and Levator Scapulae
- From C5-C7
 - Forms Long Thoracic Nerve
 - Motor to Serratus Anterior
 - “C5, 6, 7 reach to heaven”
 - (as abducting the shoulder causes scapular winging)
- From Upper Trunk
 - Forms Suprascapular Nerve
 - Motor to Supraspinatus, Infraspinatus, and shoulder
 - Also motor supply to Subclavius muscle (depresses clavicle)



Other Small Branches

- From Lateral Cord
 - Forms the Lateral Pectoral Nerve
 - Motor supply top Pectoralis Major
- From Posterior Cord – forms three branches
 - Upper Subscapular Nerve
 - Motor supply to Subscapularis (medial rotation of scapula)
 - Middle Subscapular Nerve (aka Thoracodorsal Nerve)
 - Motor supply to Latissimus Dorsi
 - Lower Subscapular Nerve
 - Motor supply to Subscapularis and Teres Major
- From Medial Cord – forms three branches
 - Medial Pectoral Nerve
 - Motor supply to Pectoralis Major and Minor
 - Medial Brachial Cutaneous Nerve
 - Sensory to posterior and medial arm
 - Medial Antebrachial Cutaneous Nerve
 - Sensory supply to anterior and medial arm



Nerve	Trunk	Cord	Supply
Musculocutaneous nerve	Upper Trunk	Lateral Cord	<p><u>Motor supply:</u></p> <ul style="list-style-type: none"> → Coracobrachialis → Brachialis → Biceps brachii (both short and long arms) <p><u>Cutaneous supply:</u></p> <ul style="list-style-type: none"> → Lateral forearm
Axillary Nerve	Middle Trunk	Posterior Cord	<p><u>Motor supply:</u></p> <ul style="list-style-type: none"> → Deltoid muscle → Teres minor <p><u>Cutaneous supply:</u></p> <ul style="list-style-type: none"> → Posterior and lateral surface of deltoid
Radial Nerve	Middle Trunk	Posterior Cord	<p><u>Motor supply:</u></p> <ul style="list-style-type: none"> → Triceps brachii → Anconeus → Brachioradialis → Extensor carpi radialis longus/brevis → Extensor digitorum → Extensor indicis → Extensor digiti minimi → Extensor carpi ulnaris → Abductor pollicis longus → Extensor pollicis longus and brevis → Supinator <p><u>Cutaneous supply:</u></p> <ul style="list-style-type: none"> → Posterior and lateral surface of the upper limb → Dorsal and lateral surface of the hand → Pollex (thumb)
Median Nerve	Lower Trunk	Medial & Lateral Cord	<p><u>Motor supply:</u></p> <ul style="list-style-type: none"> → Pronator teres → Quadratus → Palmaris longus → Flexor carpi radialis → Flexor digitorum superficialis → Radial half of the flexor digitorum profundus → 2nd and 3rd Lumbrical muscles → Intrinsic hand muscles → Opponens pollicis brevis → Flexor pollicis brevis → Abductor pollicis brevis <p><u>Cutaneous supply:</u></p> <ul style="list-style-type: none"> → Ventral and lateral surface of the palm (2/3 of the hand) → Ventral & Dorsal surface of digits 2 and 3
Ulnar Nerve	Lower Trunk	Medial Cord	<p><u>Motor supply:</u></p> <ul style="list-style-type: none"> → Abductor pollicis brevis → Flexor carpi ulnaris → Ulnar half of flexor digitorum profundus → Opponens digiti minimi → Flexor digiti minimi → Abductor digiti minimi <p><u>Cutaneous supply:</u></p> <ul style="list-style-type: none"> → Ventral and dorsal 1/3 of the hand

