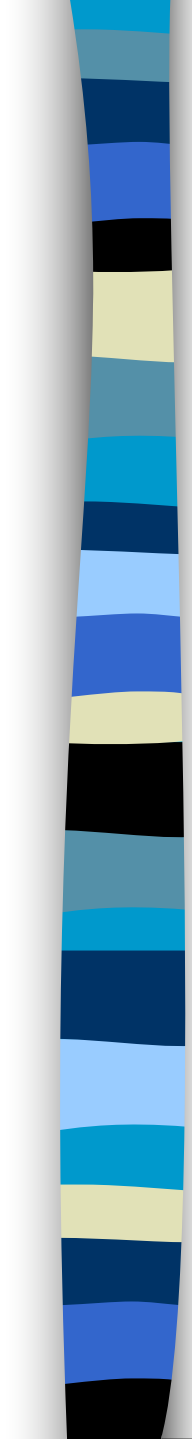
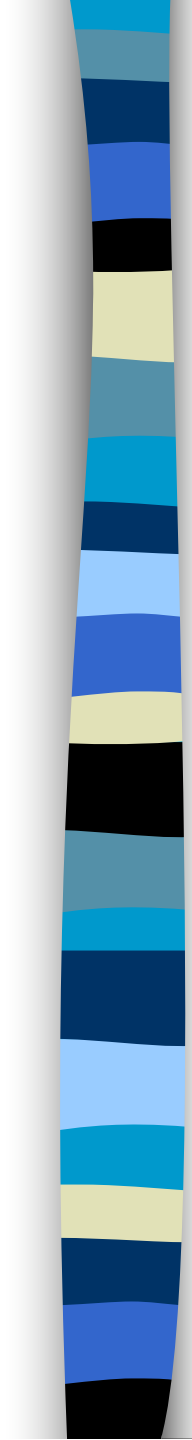


24a A&P: Muscular System- Organization of Skeletal Muscle



24a A&P: Muscular System - Organization of Skeletal Muscle Class Outline

5 minutes	Attendance, Breath of Arrival, and Reminders
10 minutes	Lecture:
30 minutes	Lecture:
15 minutes	Active study skills:
60 minutes	Total



24a A&P: Muscular System - Organization of Skeletal Muscle

Class Reminders

Quizzes:

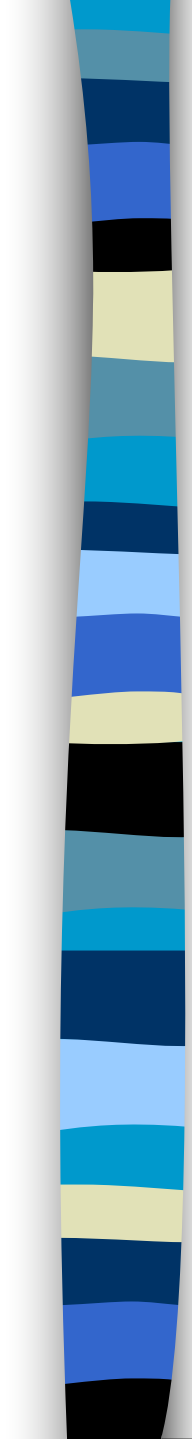
- 30a Kinesiology Quiz
 - Supraspinatus, infraspinatus, teres minor, subscapularis, pec minor, & serratus anterior
- 31a Quiz (20a, 20b, 21b, 22a, 23a, 24b, 29b, and 30a, 24a, 25a, 26a, 27a, 28a, 29a, 30b, and 31b)

Assignments:

- 24a Hydro Review Questions (A: 145-148) – **DUE NOW!!**
- 30a Review Questions
 - Packet A: 141-158

Preparation for upcoming classes:

- 25a A&P: Muscular System: Mechanism of Contraction
 - Trail Guide: subscapularis
 - Packet E: 37-40
 - RQ Packet A-151
- 25b Hydrotherapy: Dry Brushing, Cold Water Wash, Hand and Foot Treatment
 - Packet G: 15-19



Classroom Rules

Punctuality - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

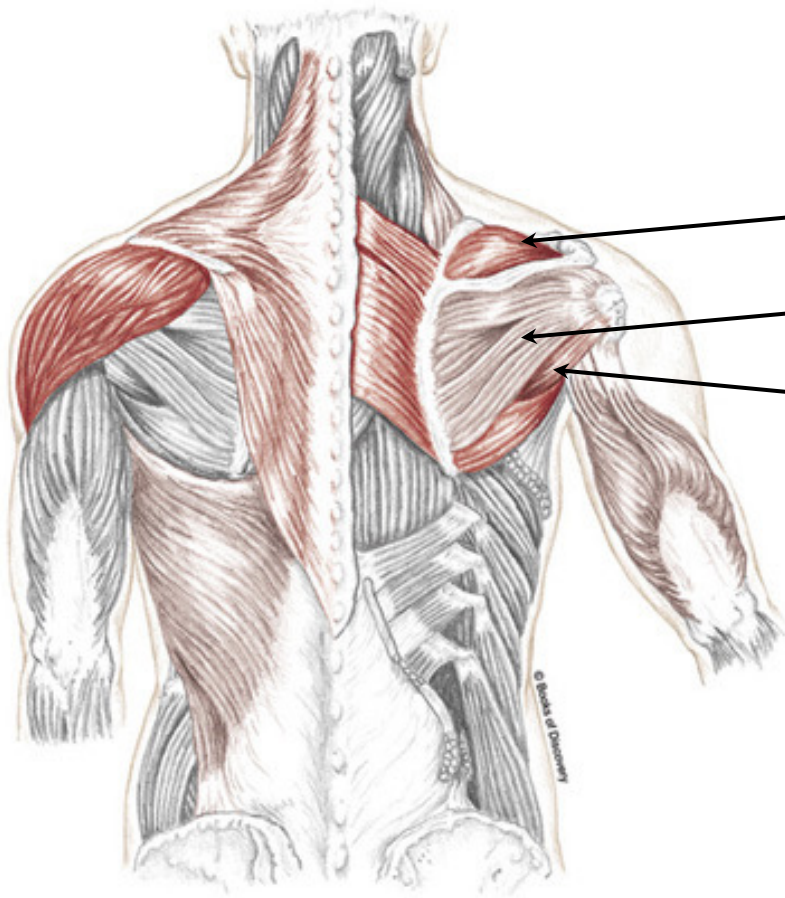
The following are not allowed:

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

You will receive one verbal warning, then you'll have to leave the room.

Rotator Cuff

Trail Guide, Page 74



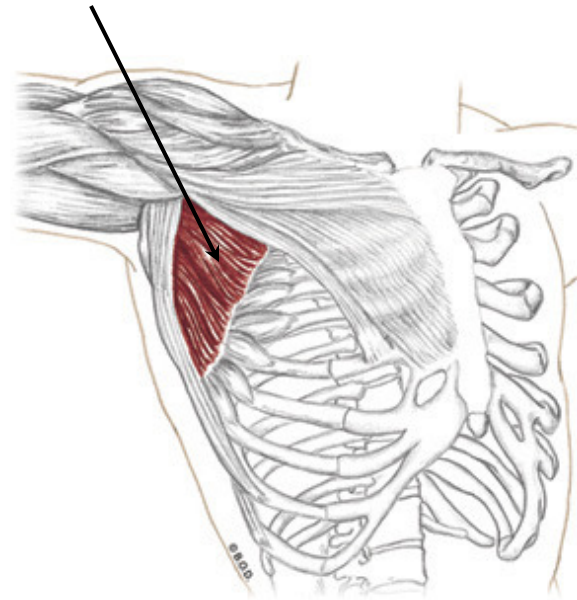
Posterior View

Supraspinatus S

Infraspinatus I

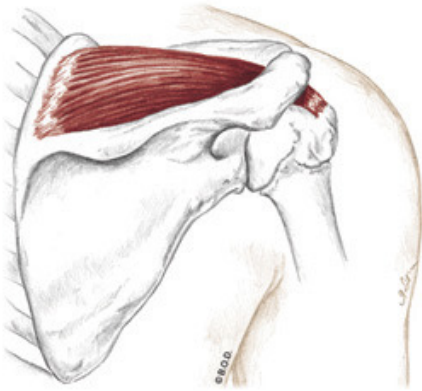
Teres Minor T

Subscapularis S

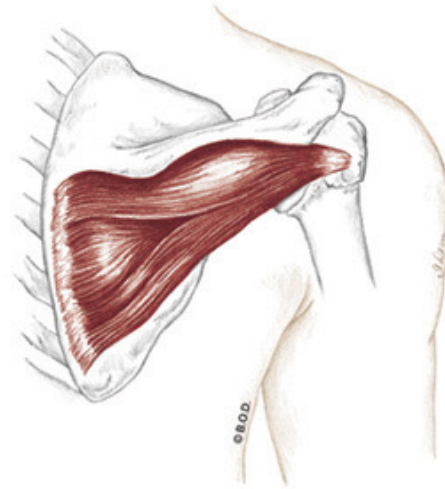


Rotator Cuff

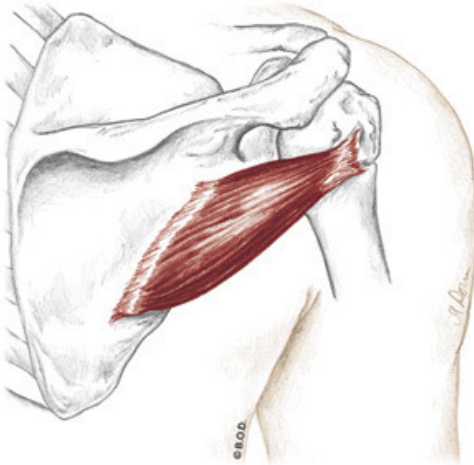
Trail Guide, Page 74



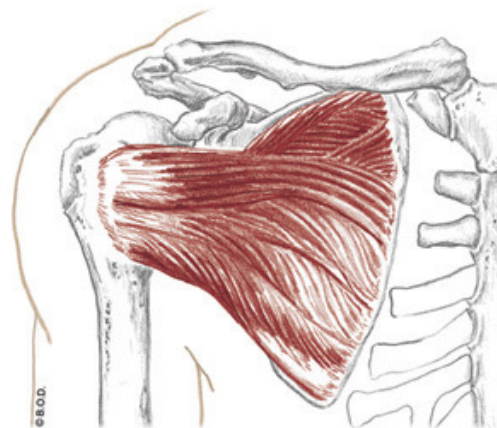
Supraspinatus
Posterior View



Infraspinatus
Posterior View



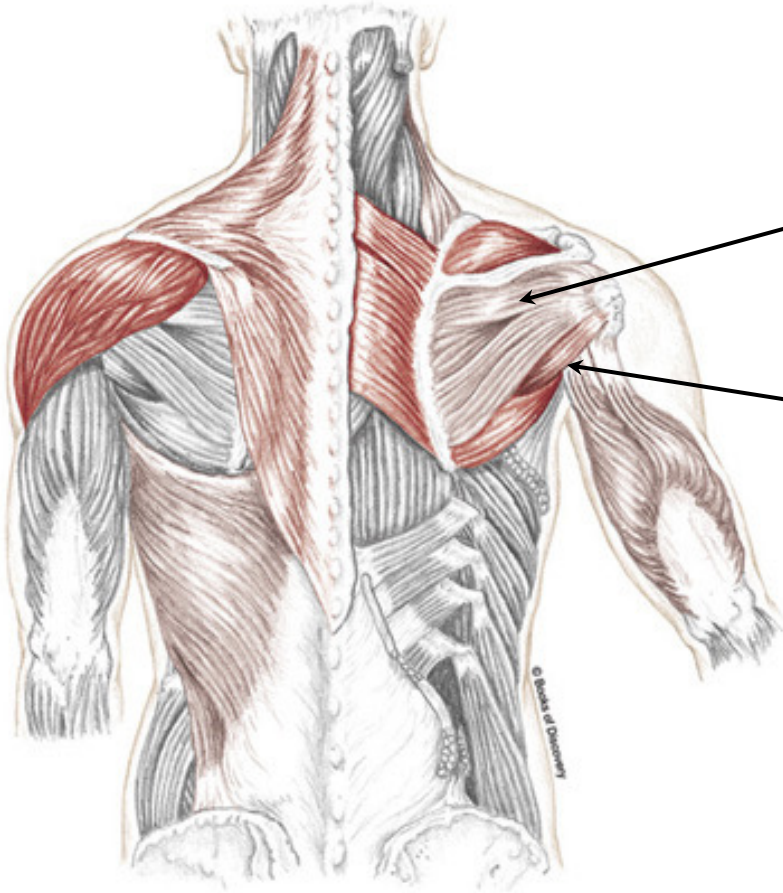
Teres Minor
Posterior View



Subscapularis
Anterior View

Infraspinatus and Teres Minor

Trail Guide, Page 75



Infraspinatus is located in the infraspinous fossa, with its medial portion deep to the trapezius fibers.

Teres minor is a small muscle squeezed between infraspinatus and teres major.

What do you use infraspinatus and teres minor for?

Posterior View

Infraspinatus, page 75

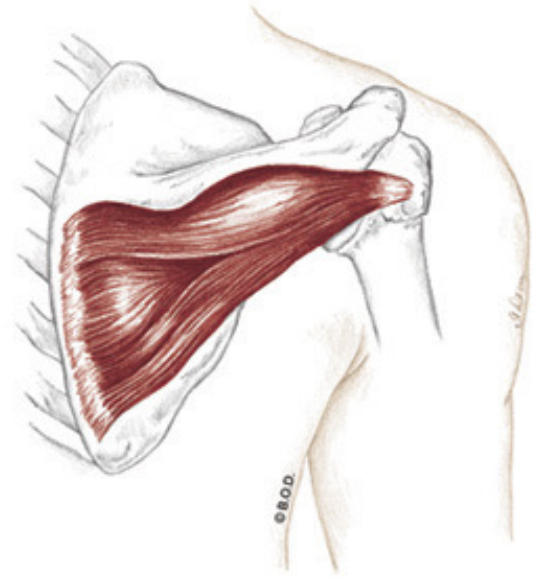
A Laterally rotate the shoulder joint (glenohumeral joint)

Adduct the shoulder joint (glenohumeral joint)

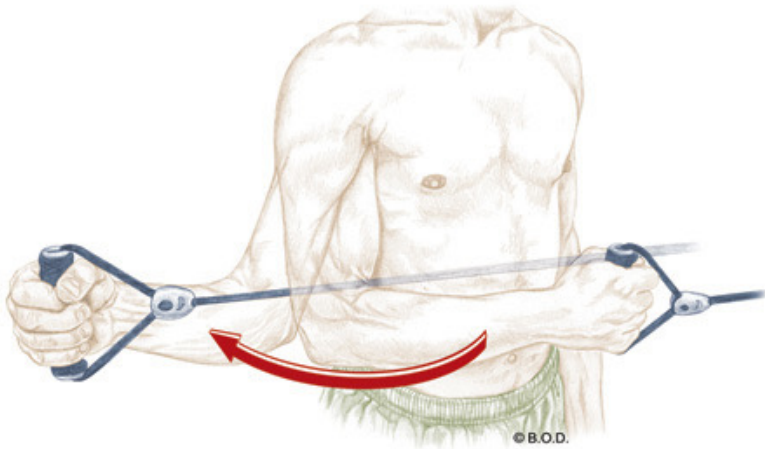
Stabilize the head of the humerus in glenoid cavity

O Infraspinous fossa of the scapula

I Greater tubercle of the humerus



Posterior View



Infraspinatus, page 75

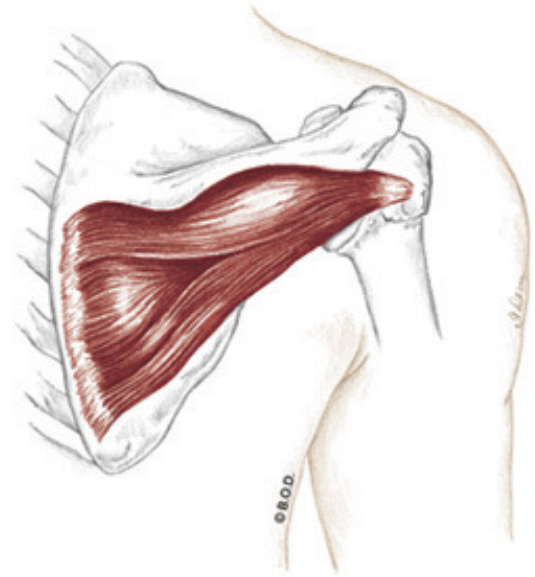
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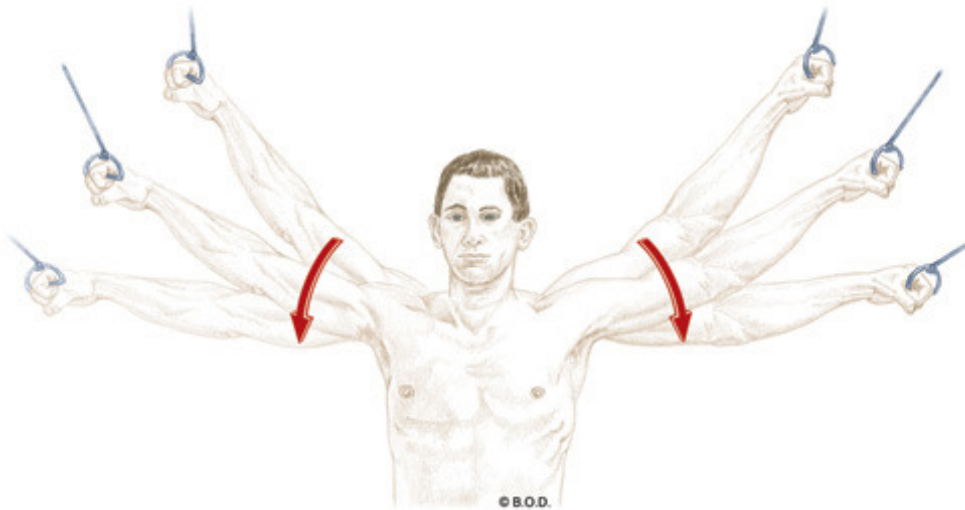
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Posterior View



Infraspinatus, page 75

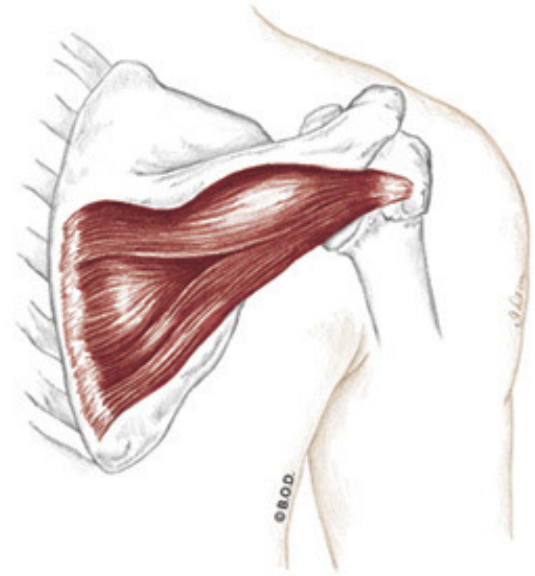
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Posterior View

Infraspinatus, page 75

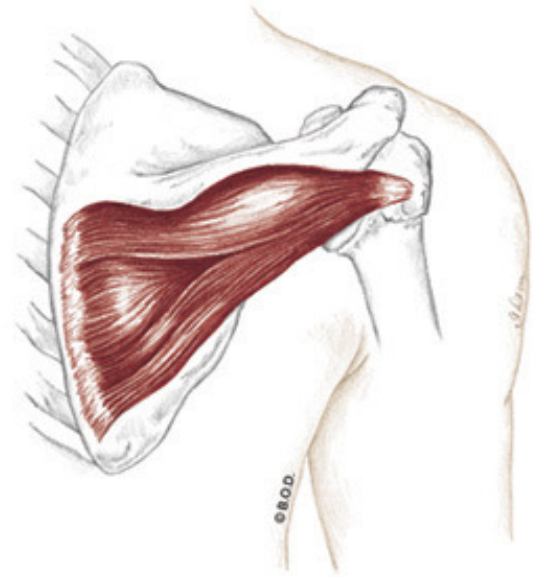
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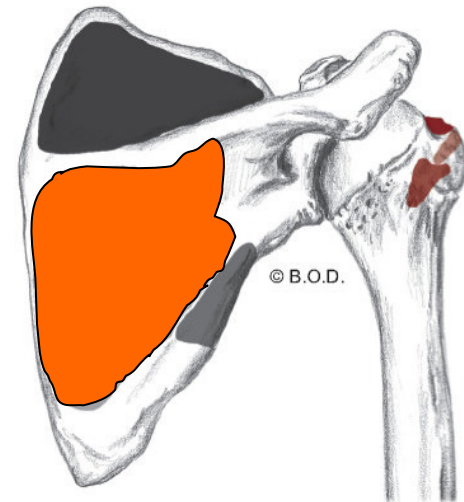
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Posterior View



Infraspinatus, page 75

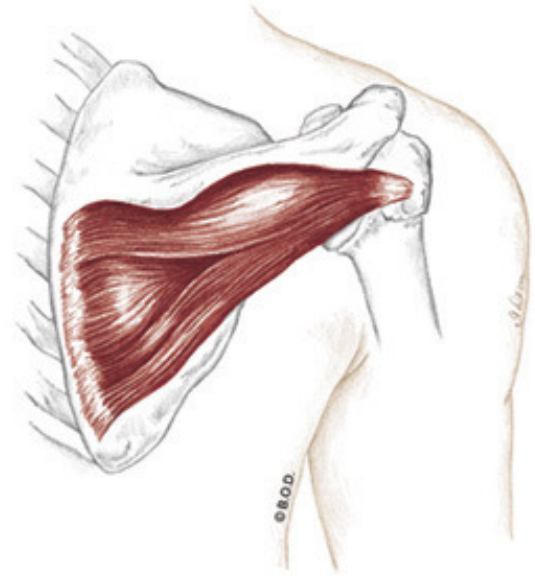
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Adduct the shoulder joint (glenohumeral joint)

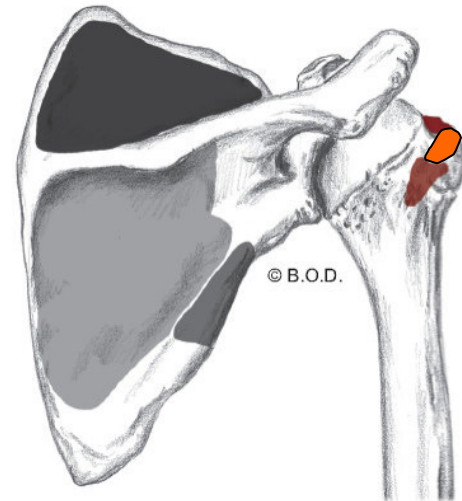
Stabilize the head of the humerus in glenoid cavity

O Infraspinous fossa of the scapula

I Greater tubercle of the humerus



Posterior View



Shift gears from
Infraspinatus to Teres Minor



Teres Minor, page 75

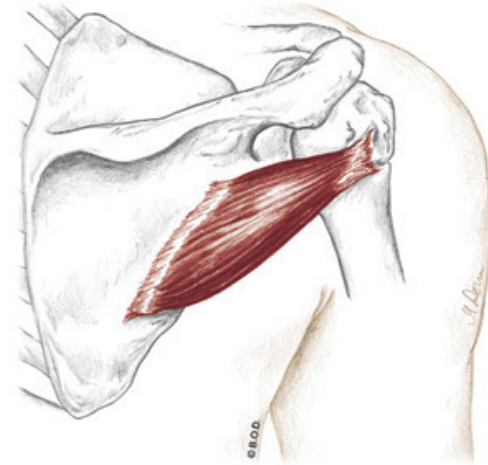
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Adduct the shoulder joint (glenohumeral joint)

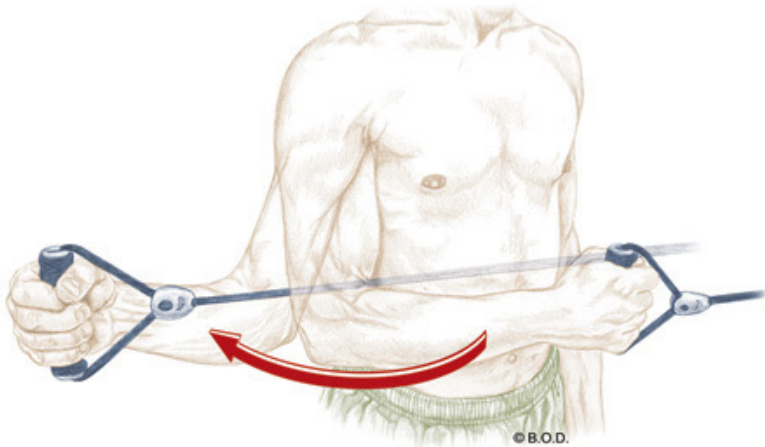
Stabilize the head of the humerus in glenoid cavity

O Upper two-thirds of lateral border of the scapula

I Greater tubercle of the humerus



Posterior View



Teres Minor, page 75

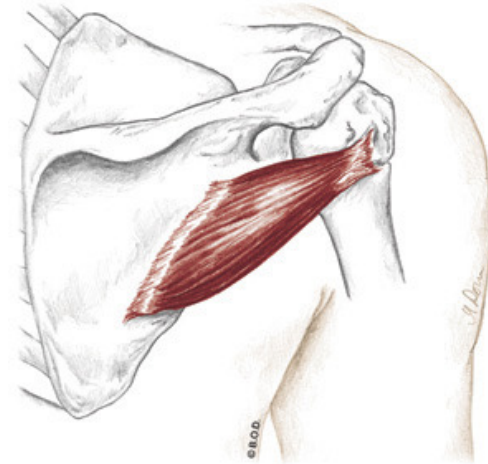
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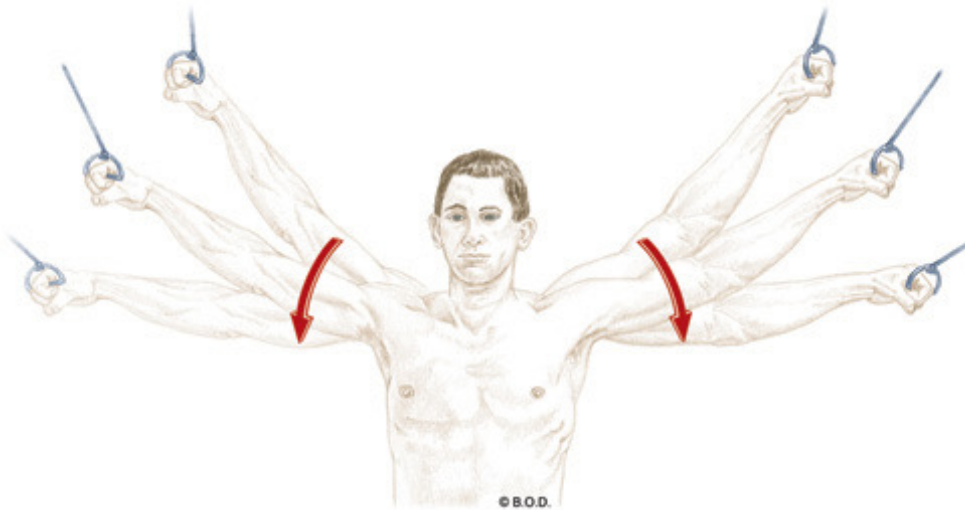
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Posterior View



Teres Minor, page 75

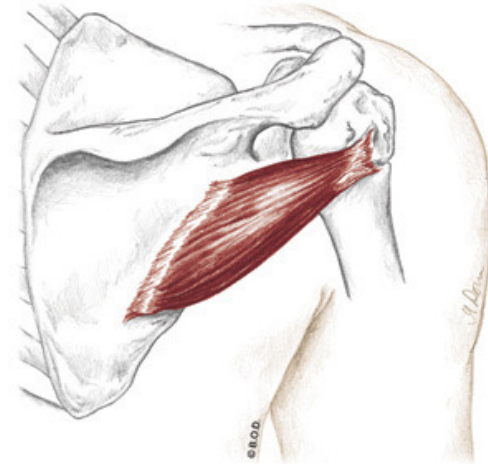
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Posterior View

Teres Minor, page 75

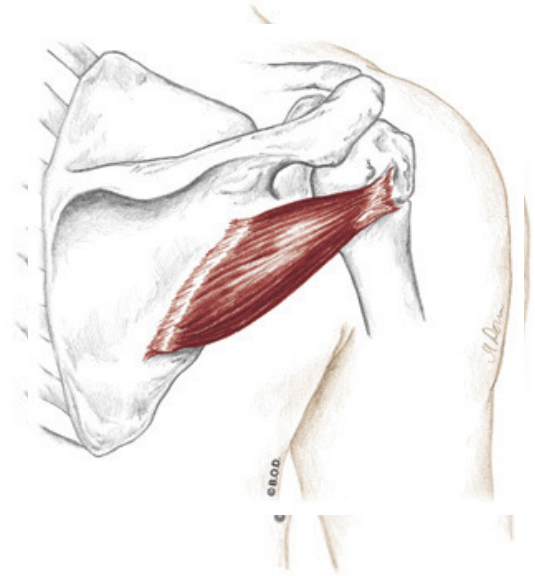
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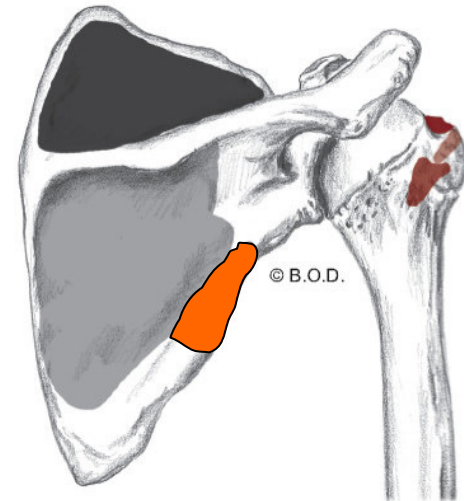
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Posterior View



Teres Minor, page 75

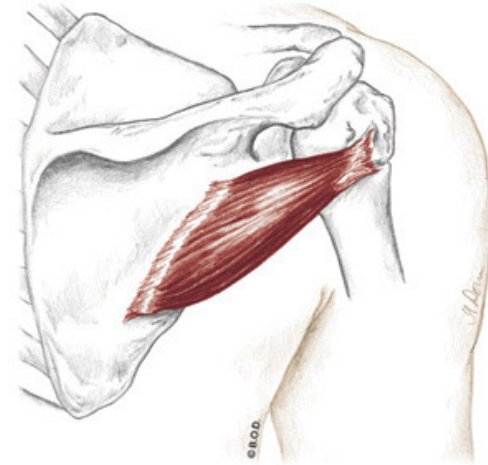
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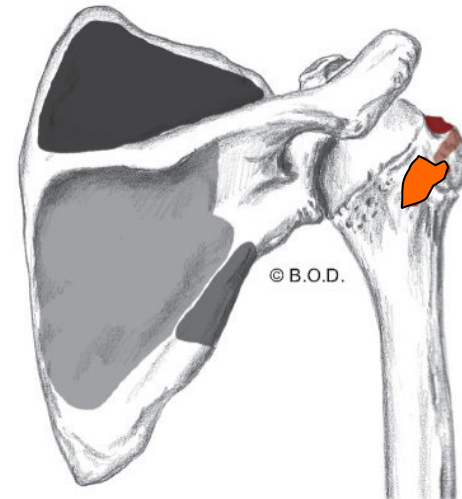
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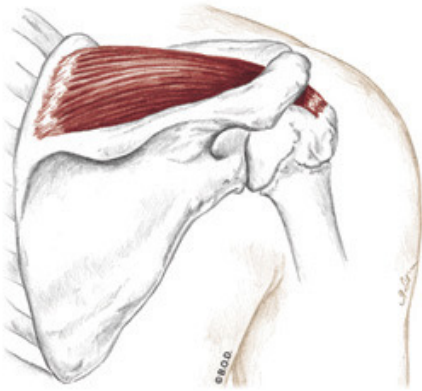


Posterior View

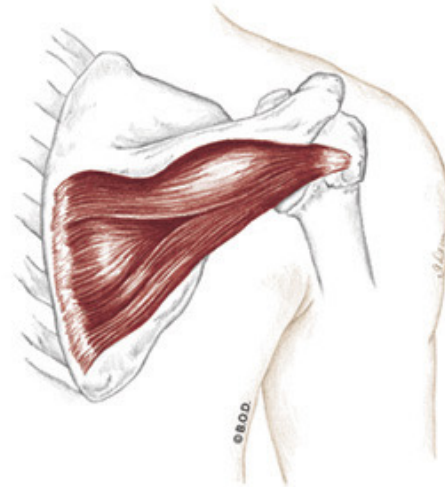


Rotator Cuff

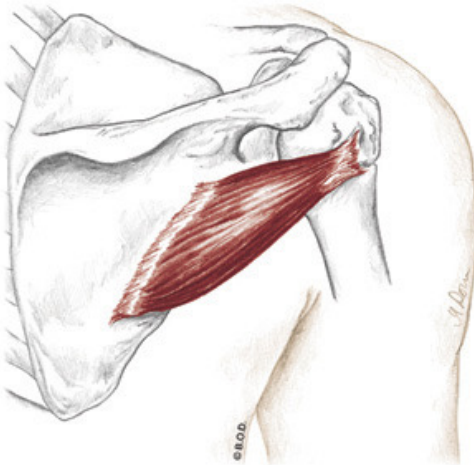
Trail Guide, Page 74



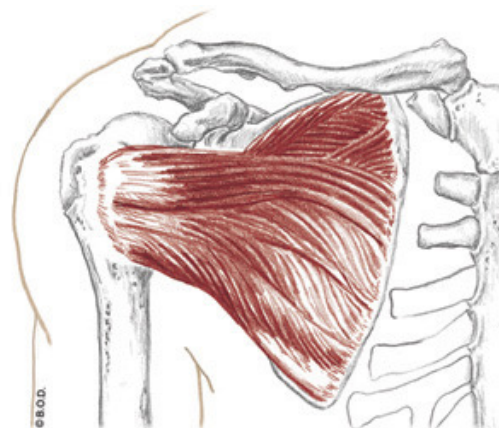
Supraspinatus
Posterior View



Infraspinatus
Posterior View

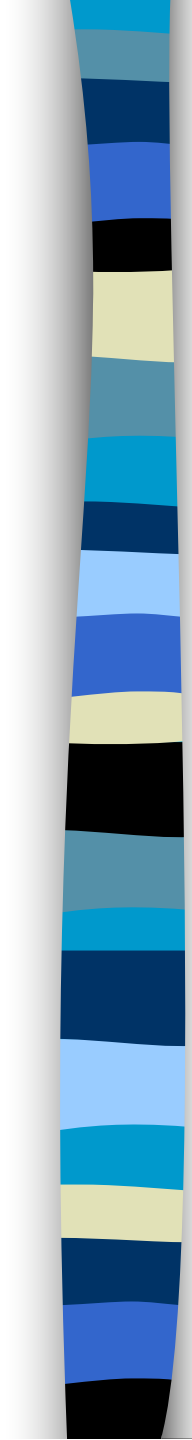


Teres Minor
Posterior View



Subscapularis
Anterior View

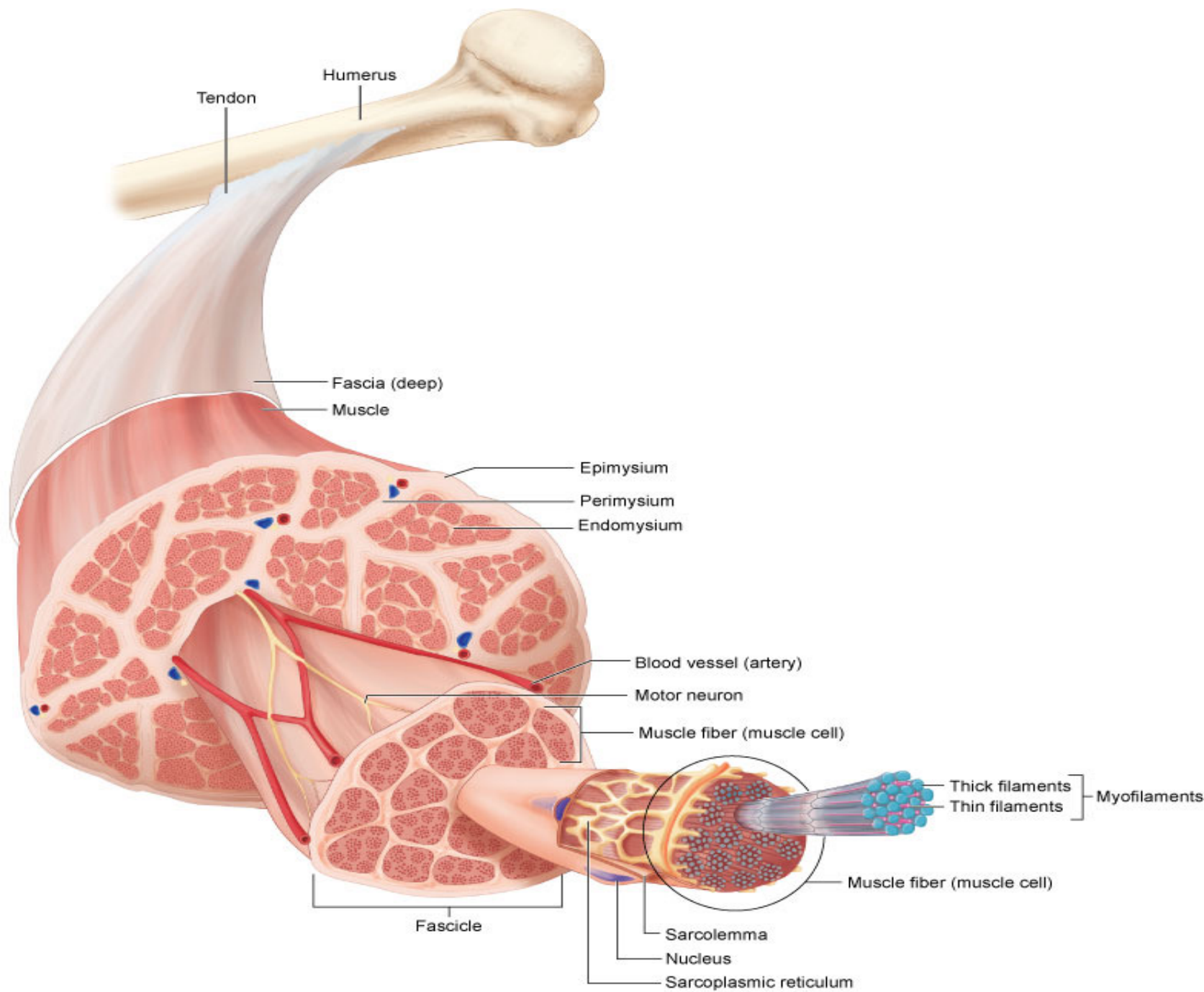
24a A&P: Muscular System -
Organization of Skeletal Muscle
E-37

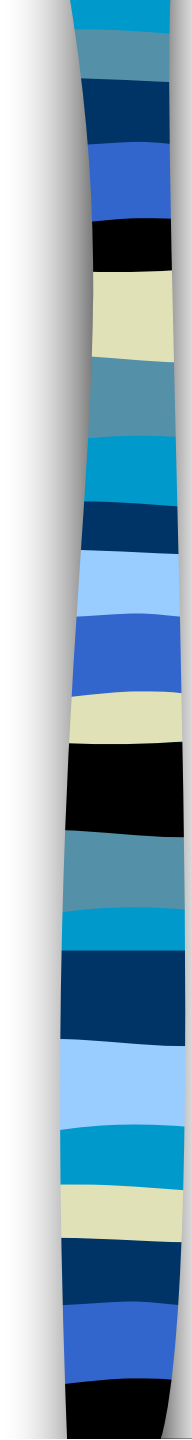


Anatomy

Skeletal muscles.

Related fascial structures including tendons and aponeuroses.





Physiology

Movement

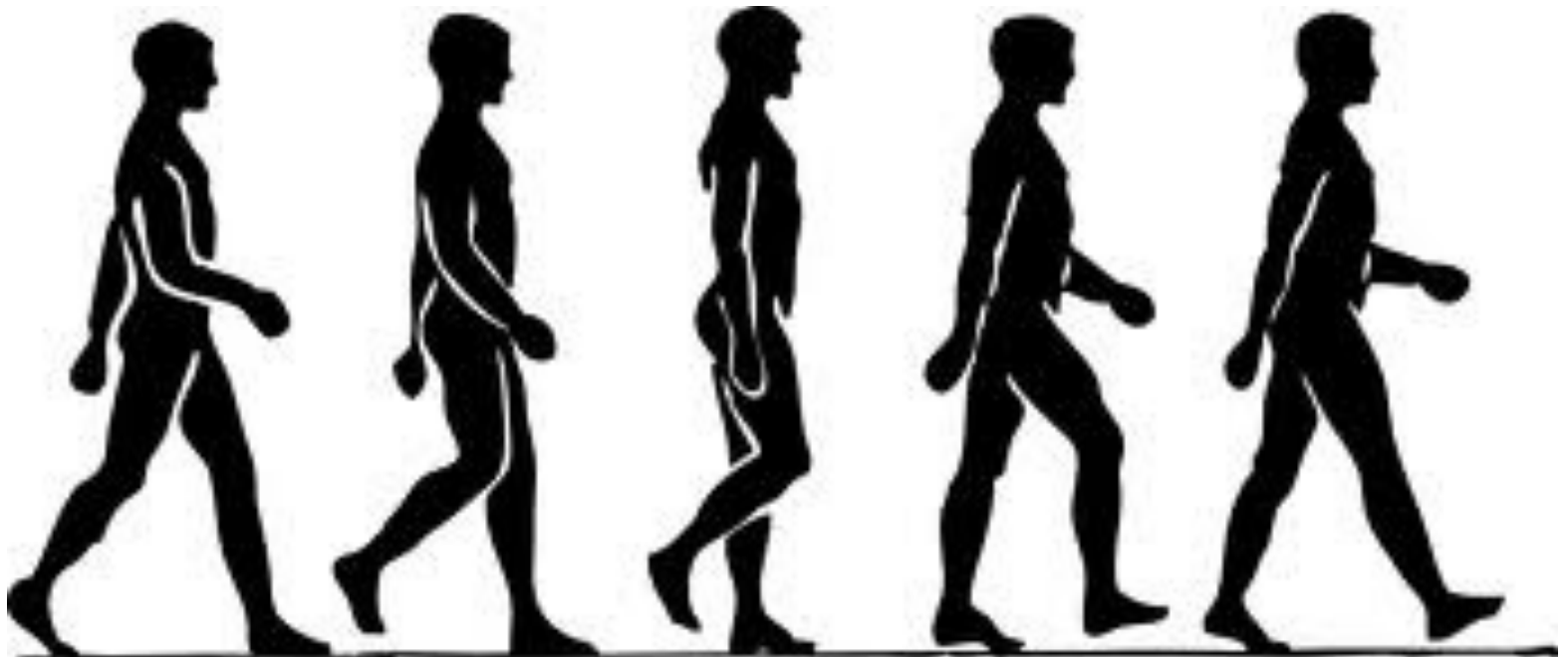
Posture maintenance

Moving substances

Heat production

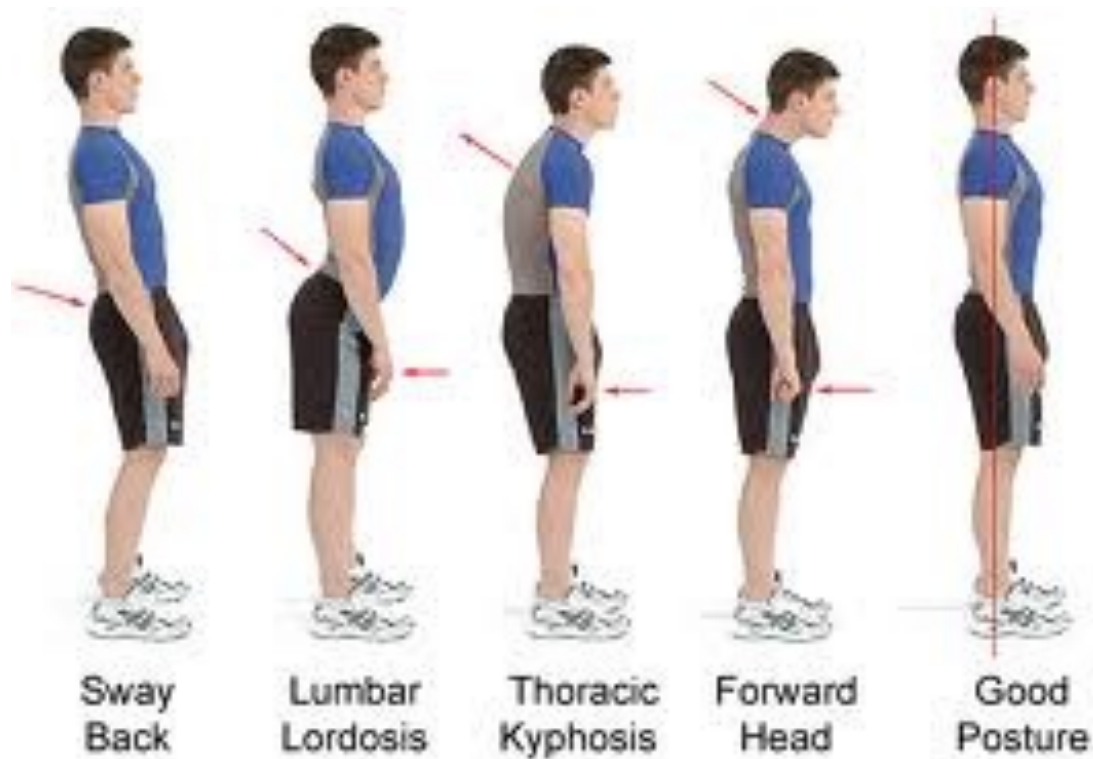
Physiology

Movement Skeletal muscle contractions produce movement of the body as a whole, called locomotion, and movement of its parts.



Physiology

Posture maintenance Skeletal muscles must contract to maintain static postures, such as in sitting and standing.



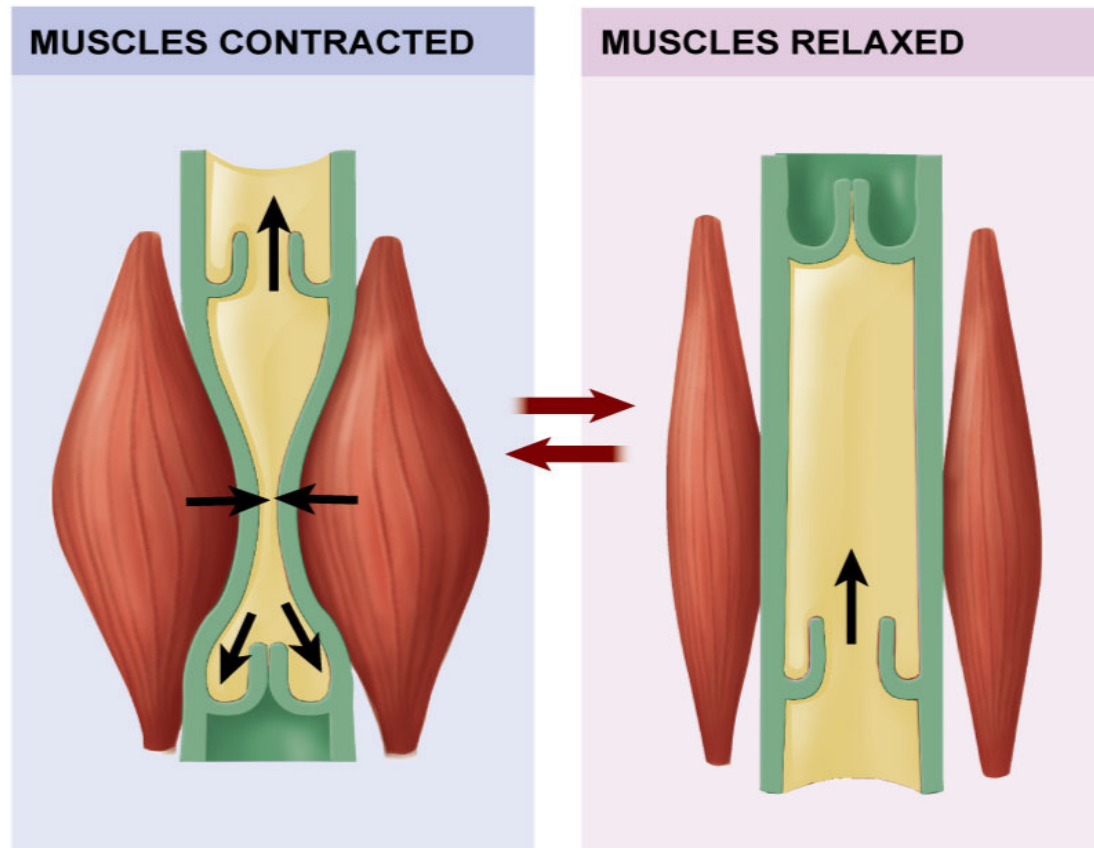
Physiology

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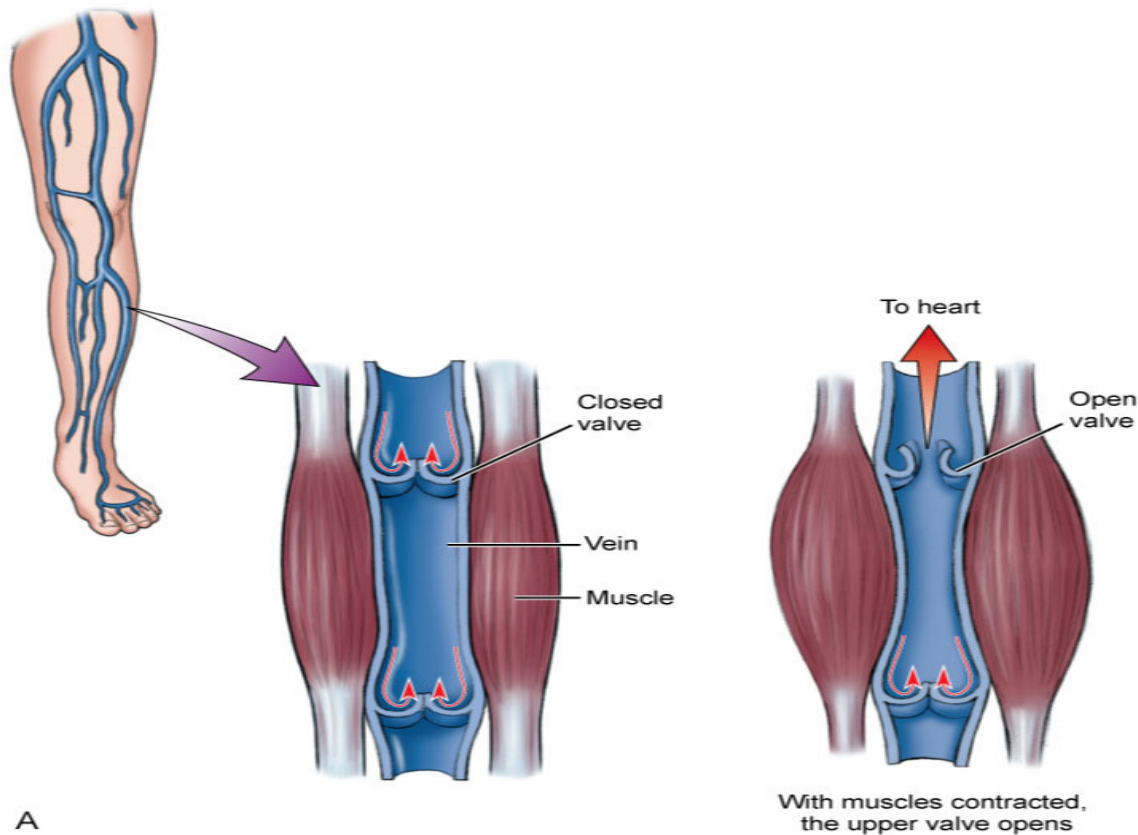
Physiology

Moving substances Contraction of skeletal muscles promotes lymphatic flow and blood flow from the extremities to the heart.



Physiology

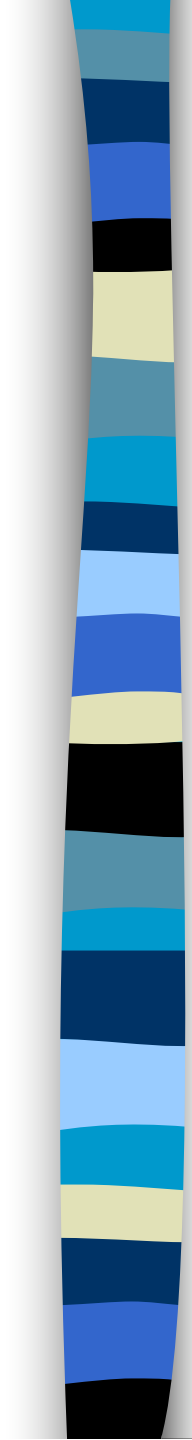
Moving substances Contraction of skeletal muscles promotes lymphatic flow and blood flow from the extremities to the heart.



Physiology

Heat production (AKA: thermogenesis) Muscle contractions produce and release heat that is important for homeostasis.





Organization: Muscle Cells into Muscle Organs

Muscle group → skeletal muscle → fascicle → muscle fiber → myofibril → myofilament
Covered by Covered by Covered by Covered by
Deep fascia → epimysium → perimysium → endomysium

Myofilaments

Sarcomere

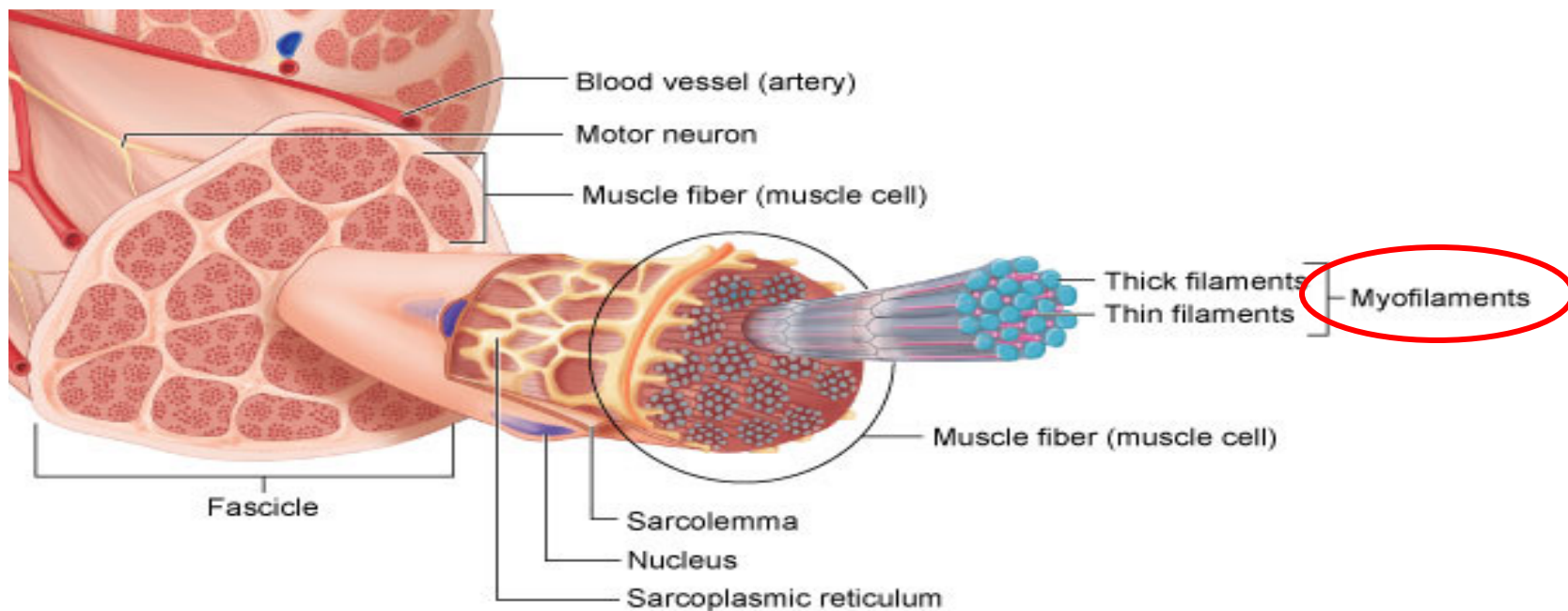
Myofibrils

Muscle fiber

Fasciculi

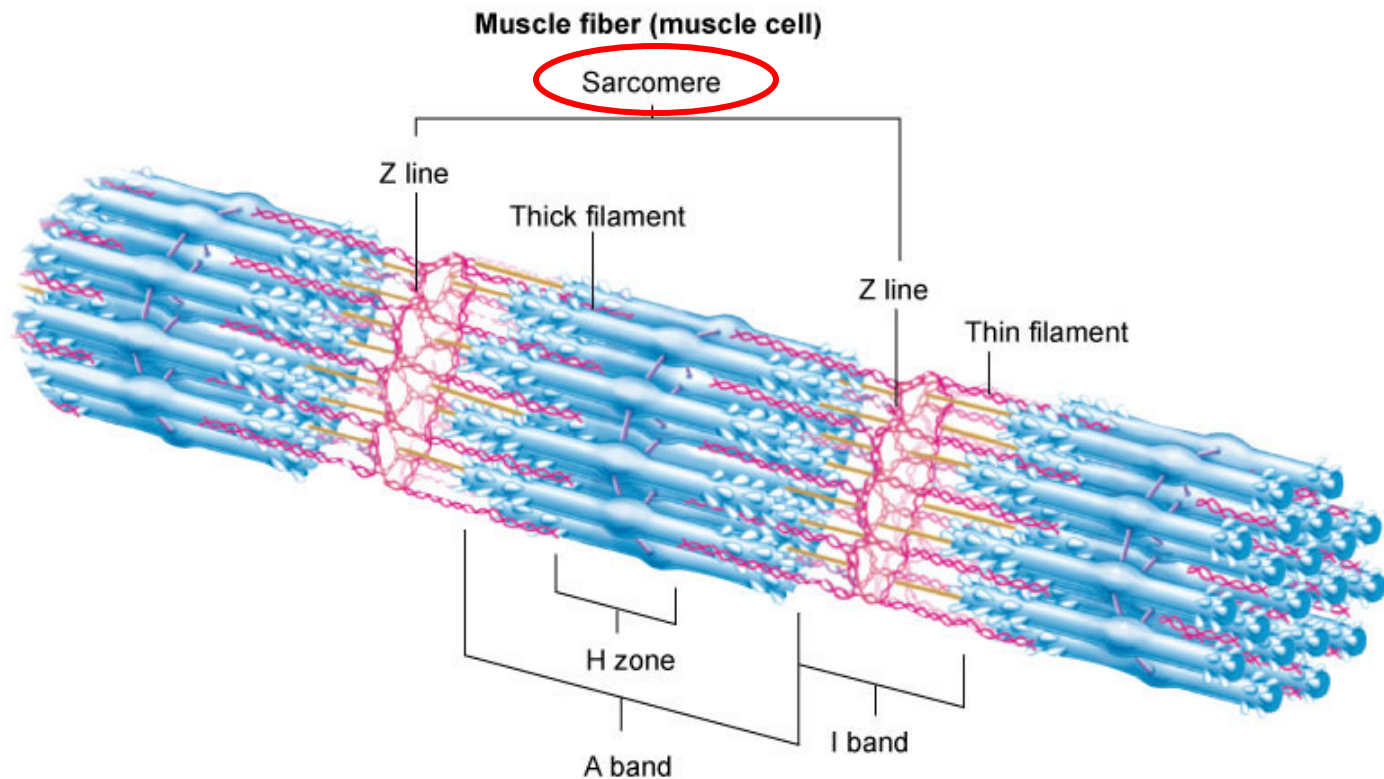
Organization: Muscle Cells into Muscle Organs

Myofilaments Thick and thin protein strands within each sarcomere. Consist of actin and myosin.



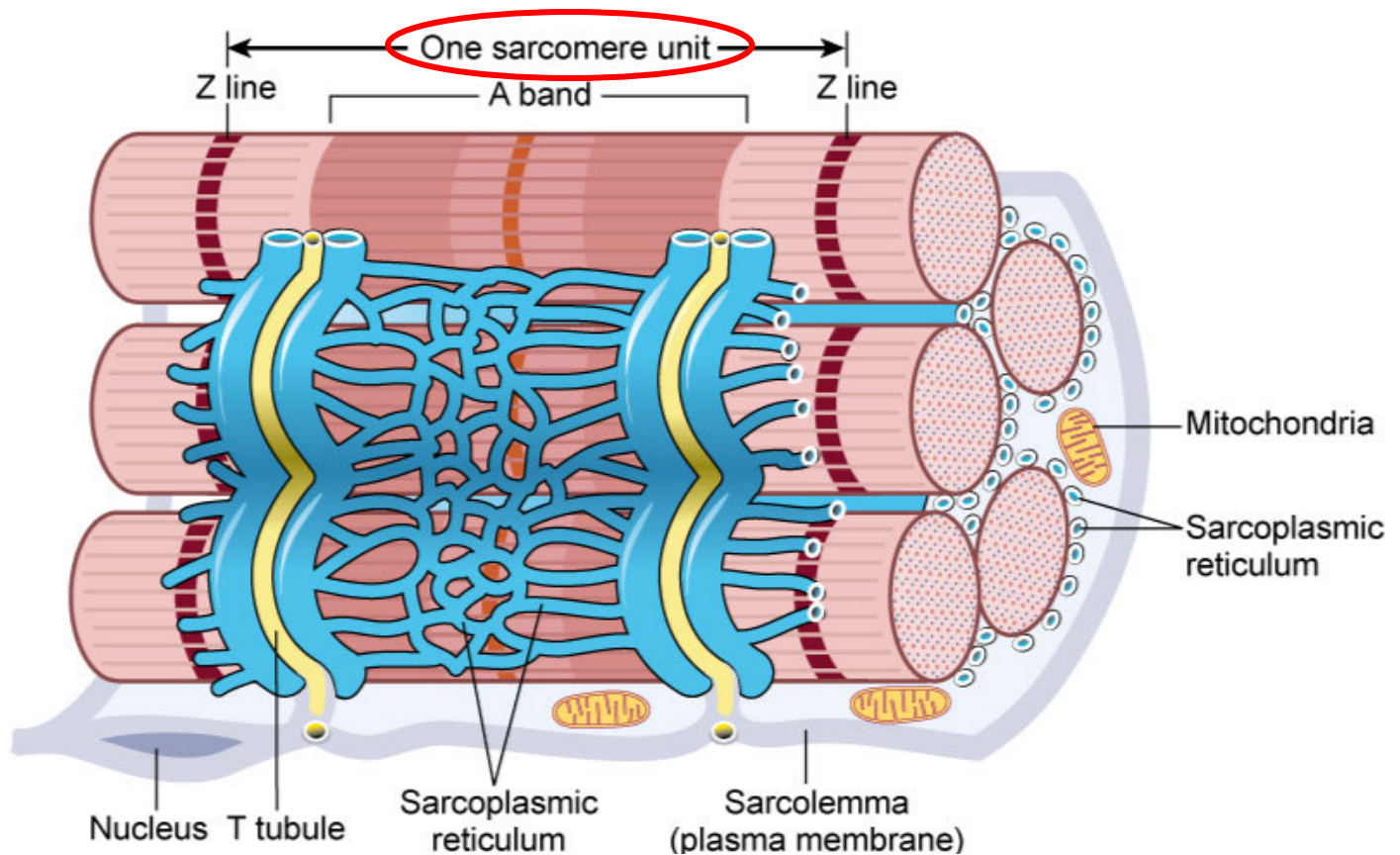
Organization: Muscle Cells into Muscle Organs

Sarcomere A muscle's contractile unit. Found within myofibrils.



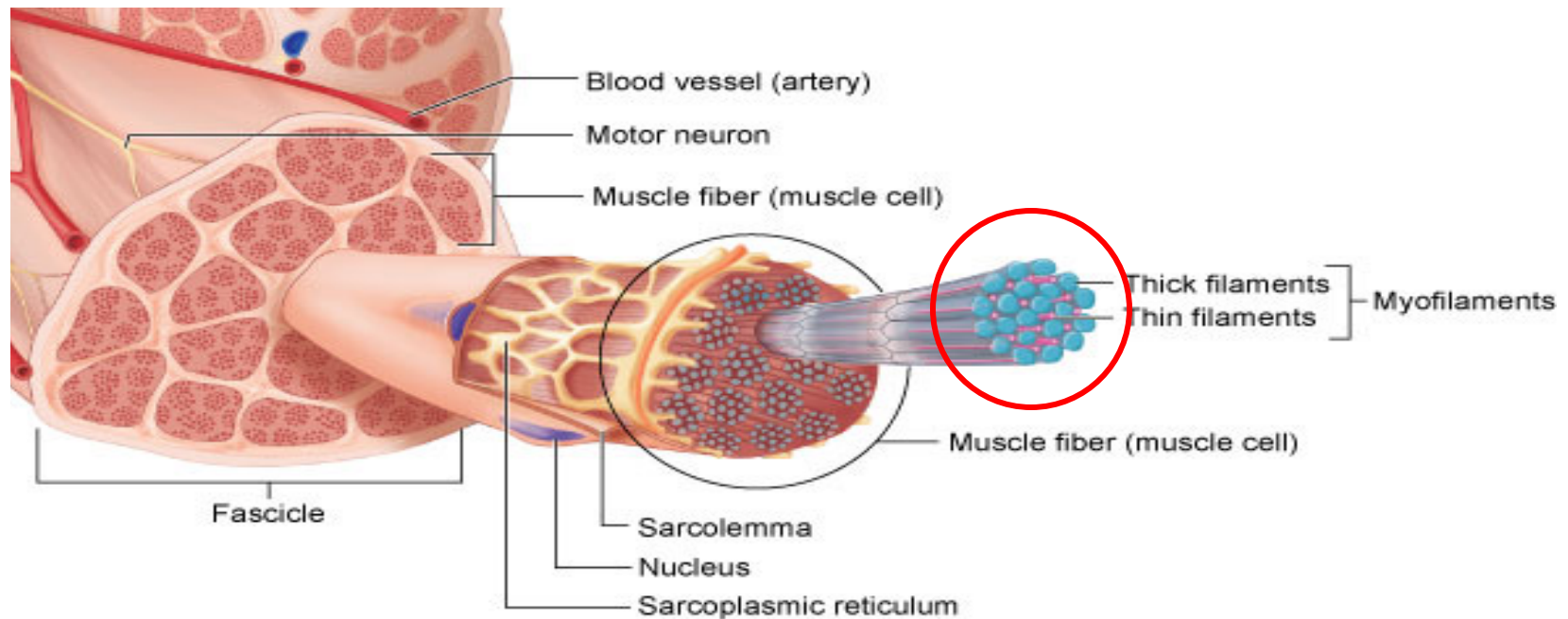
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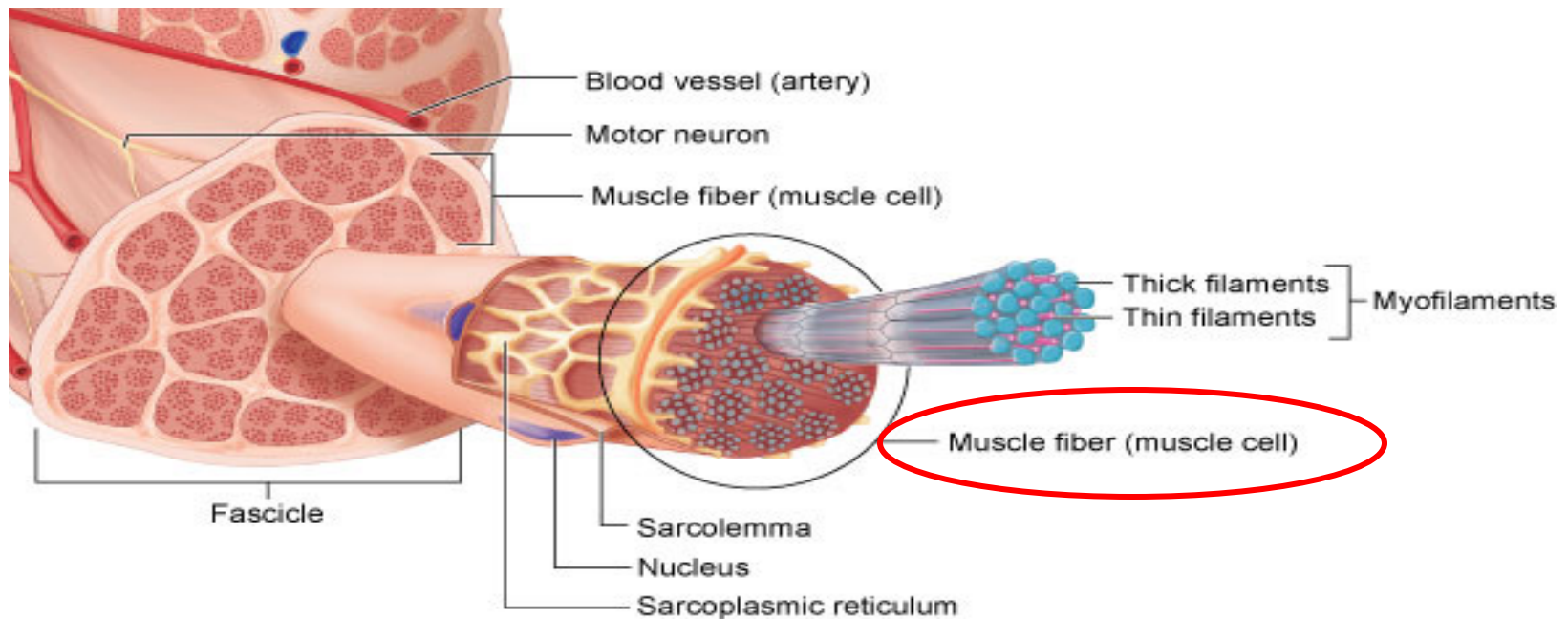
Organization: Muscle Cells into Muscle Organs

Myofibrils Thin strands within each muscle fiber. Contain myofilaments.



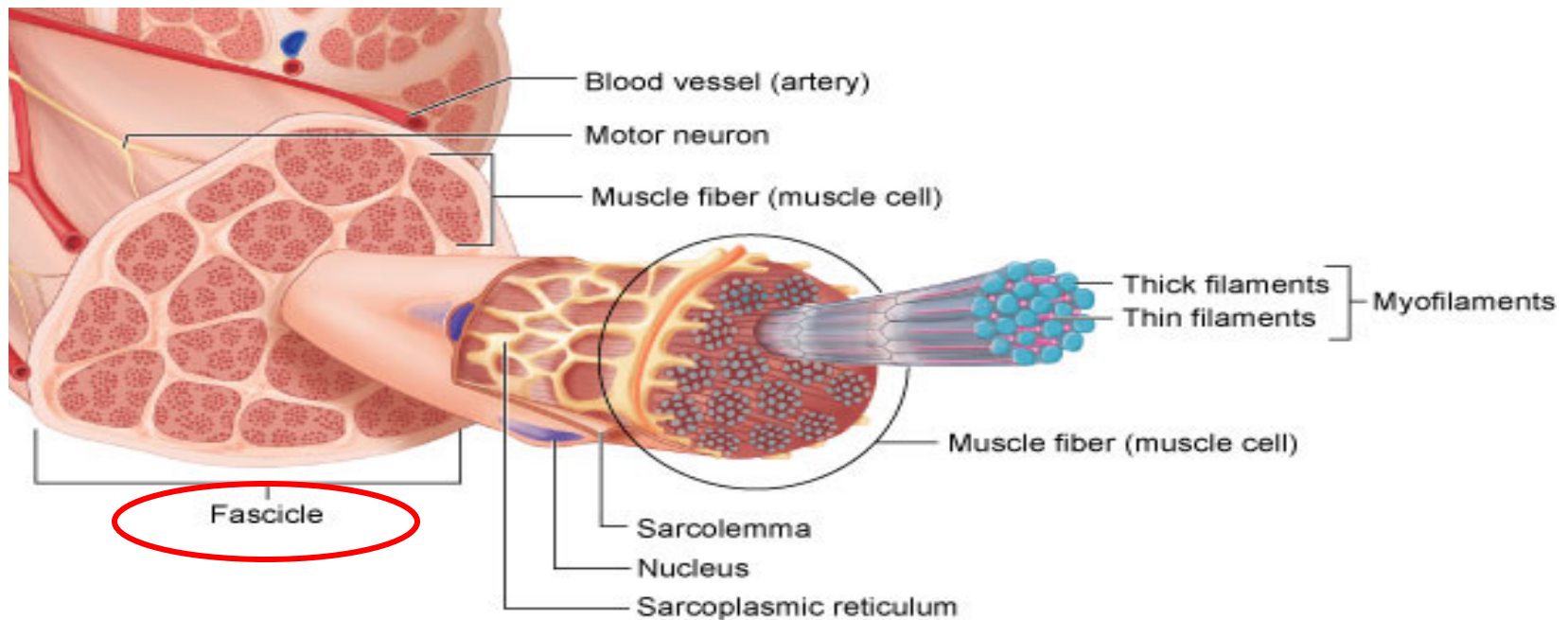
Organization: Muscle Cells into Muscle Organs

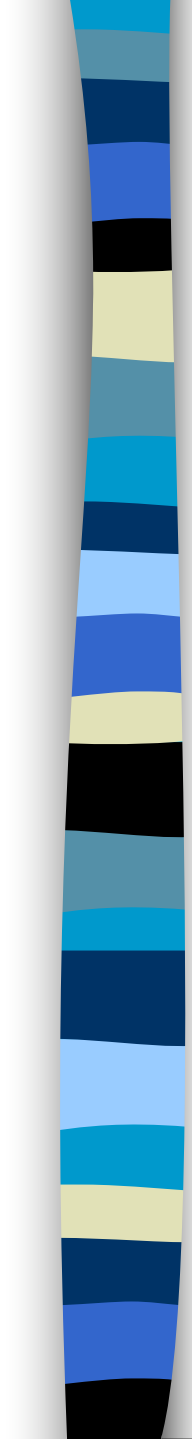
Muscle fiber Thread-like muscle cell.



Organization: Muscle Cells into Muscle Organs

Fasciculi (s. fascicle) Groups of muscle fibers or neurons.





Connective Tissues

Endomysium

Perimysium

Epimysium

Deep fascia

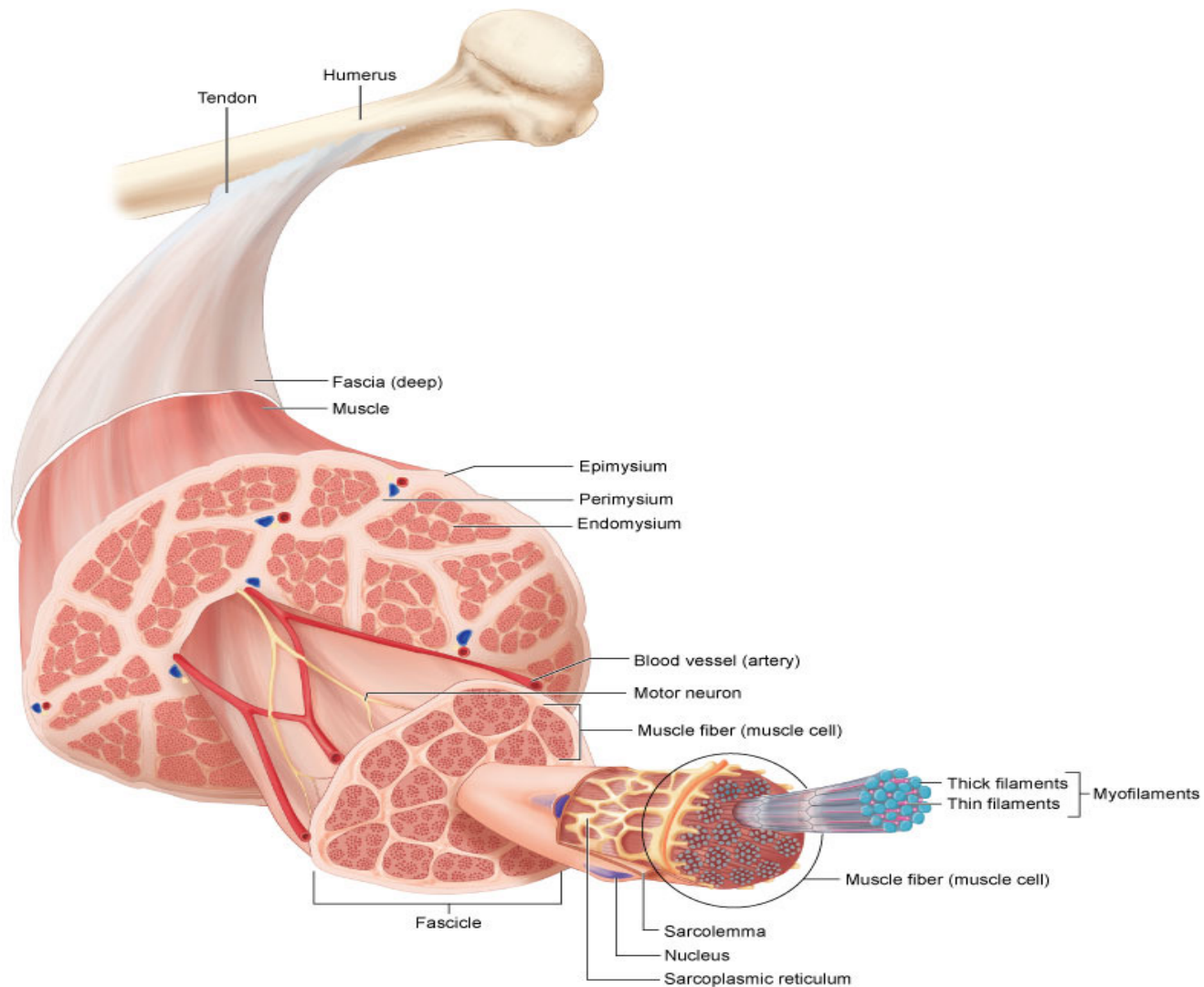
Myofascial

Tendon

Aponeurosis

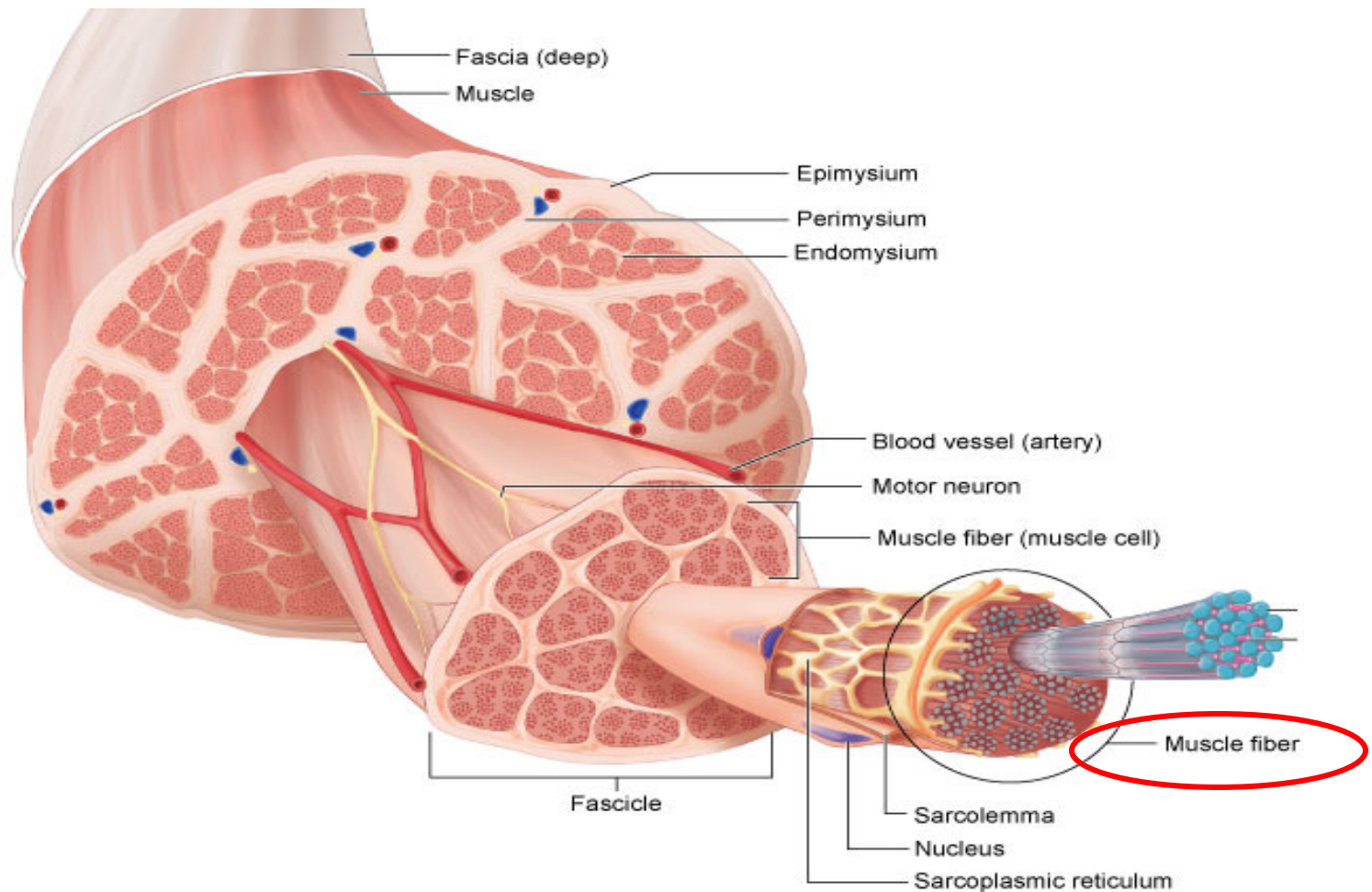
Retinaculum

Deep Fascia, Epimysium, Perimysium, Endomysium



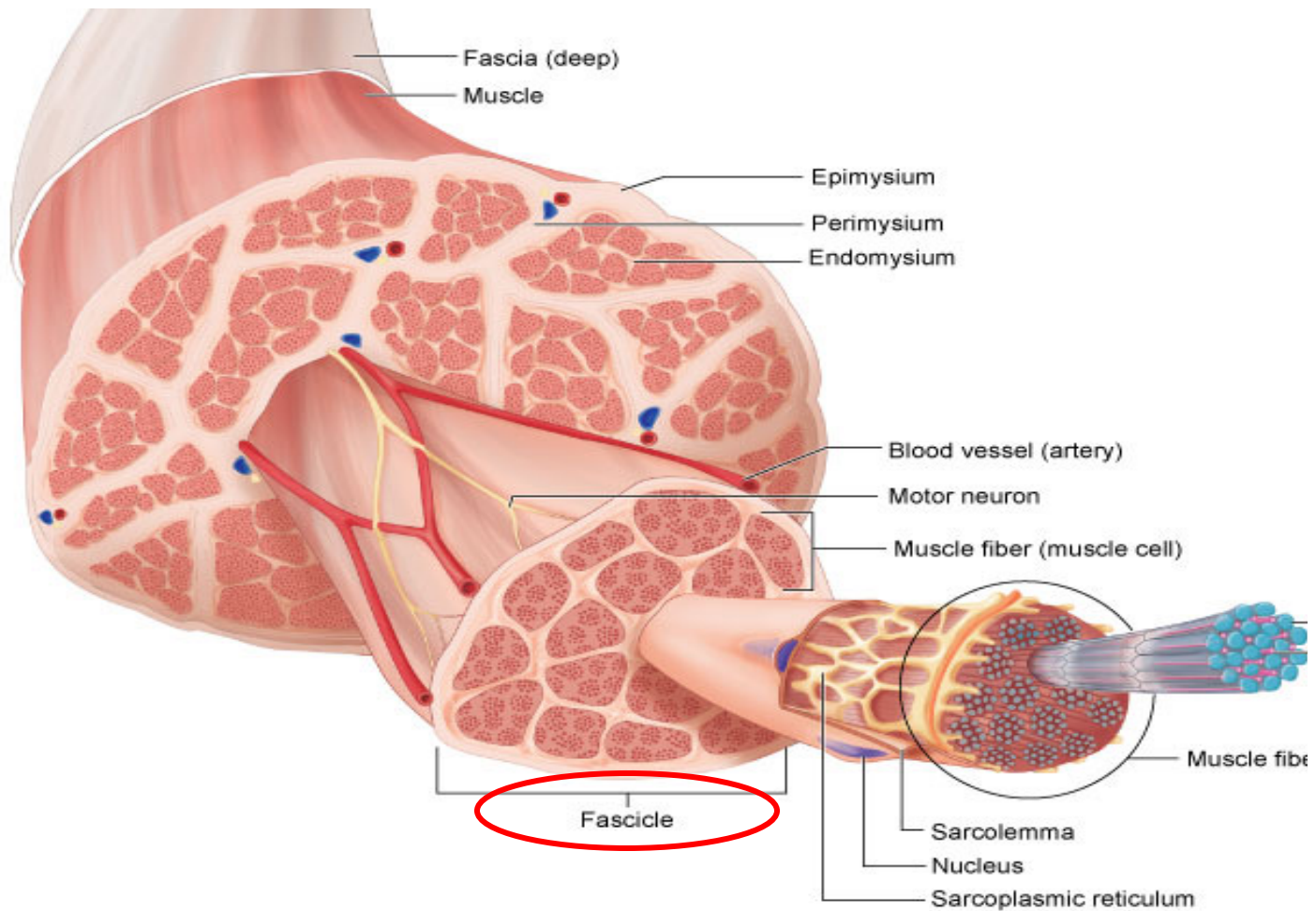
Connective Tissues

Endomysium Connective tissue layer that surrounds individual muscle fibers.



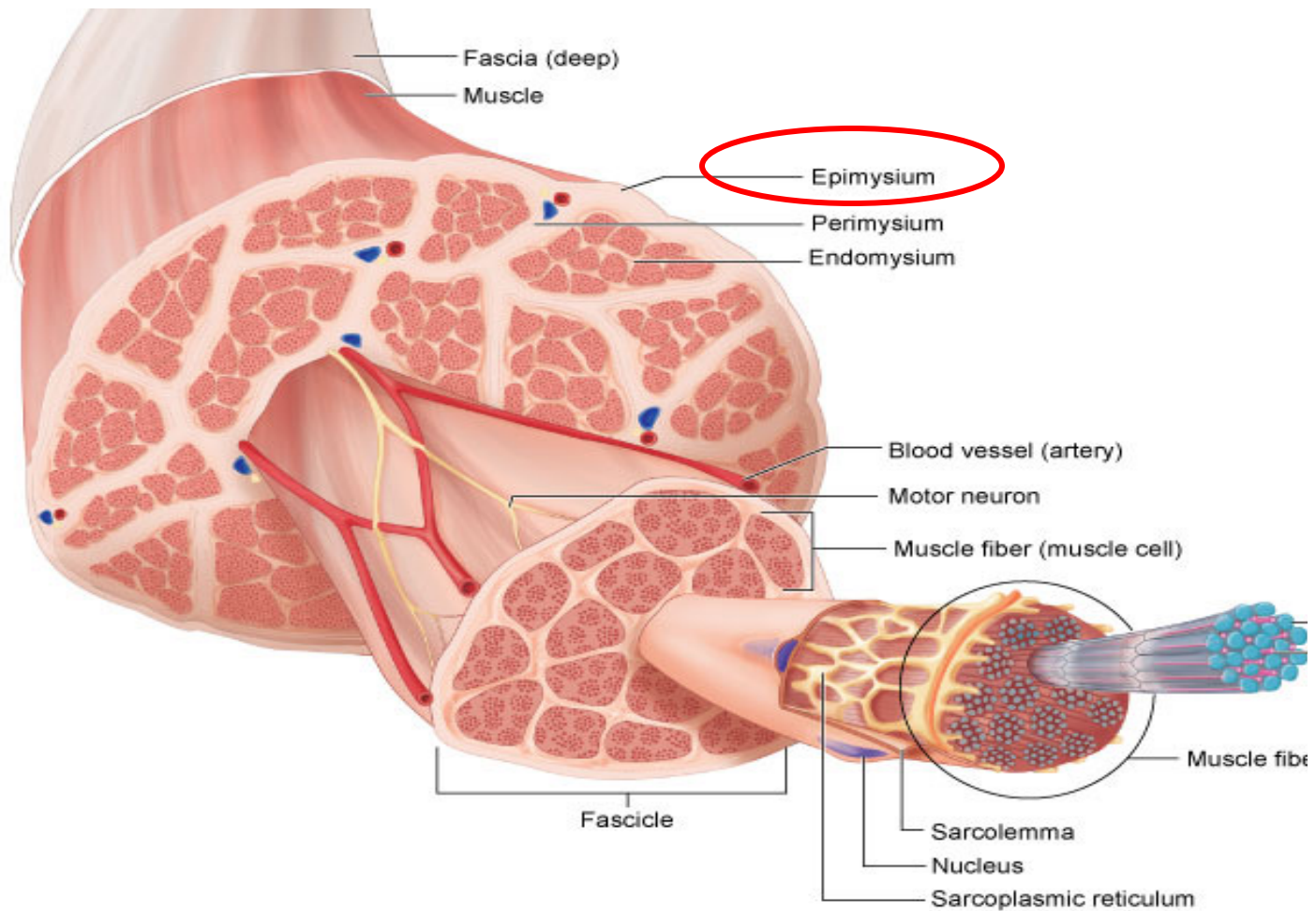
Connective Tissues

Perimysium Connective tissue layer that surrounds fasciculi.



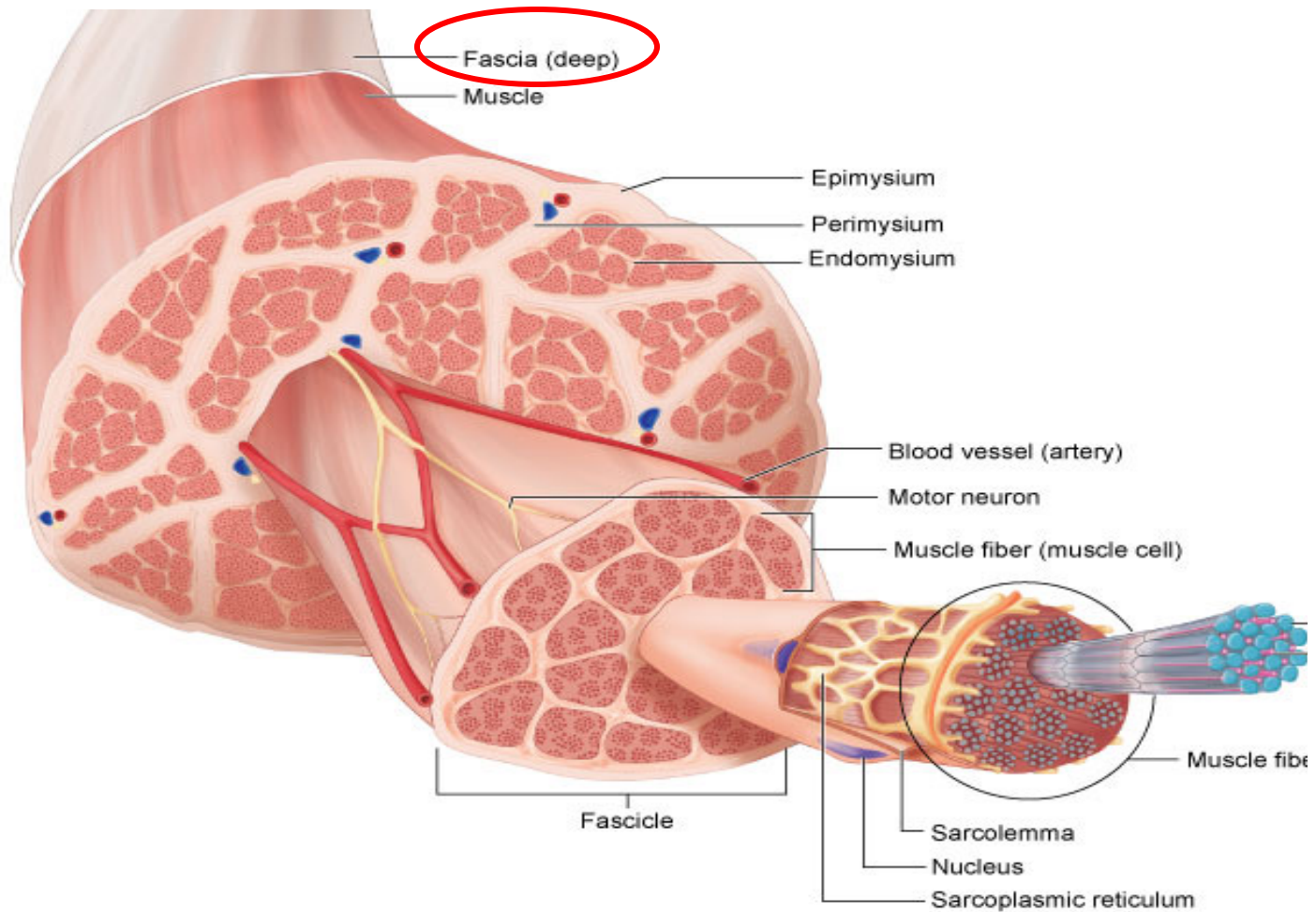
Connective Tissues

Epimysium Connective tissue layer surrounding an entire muscle.



Connective Tissues

Deep fascia Connective tissue layer that surrounds muscle groups.

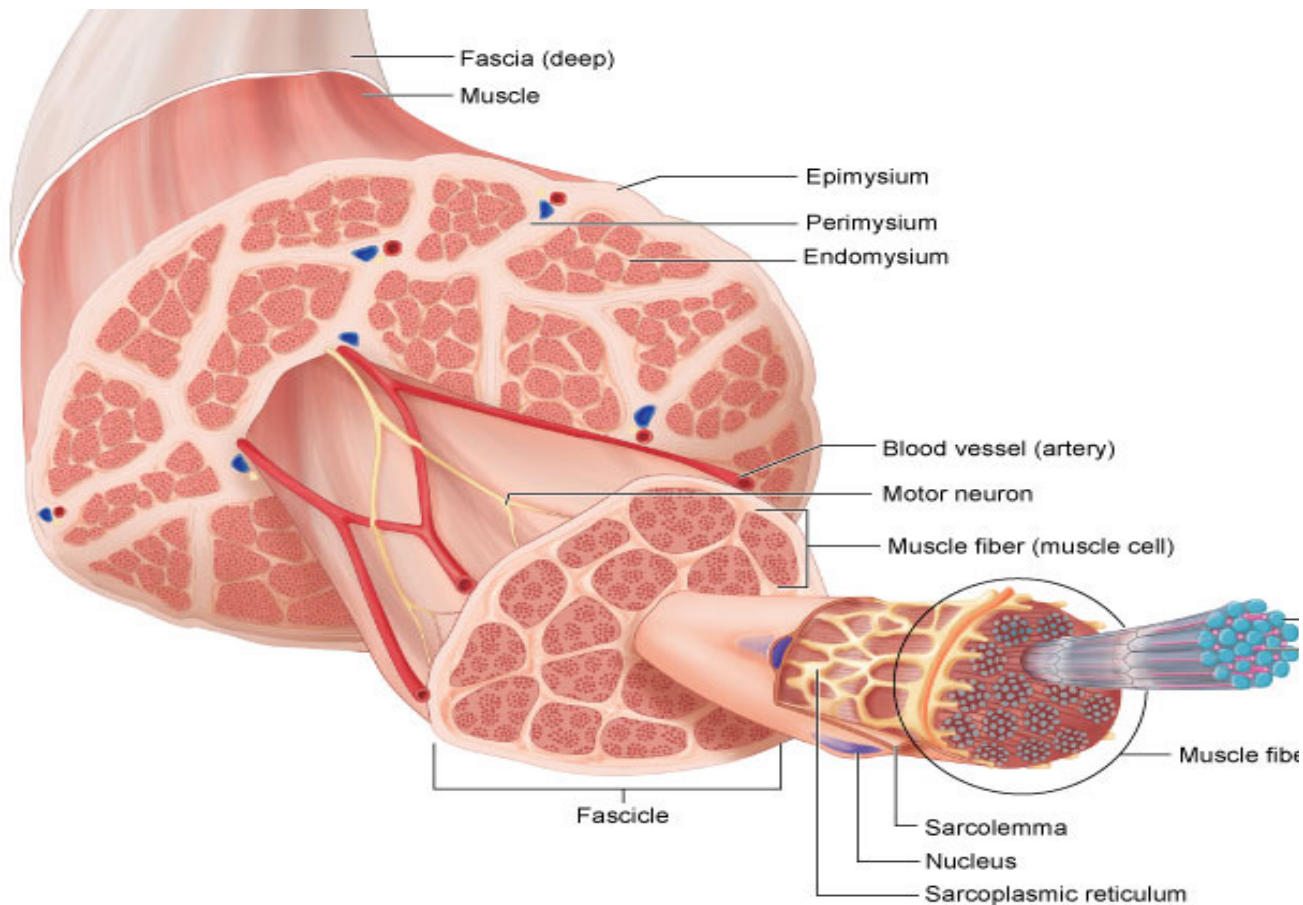


Superficial Fascia



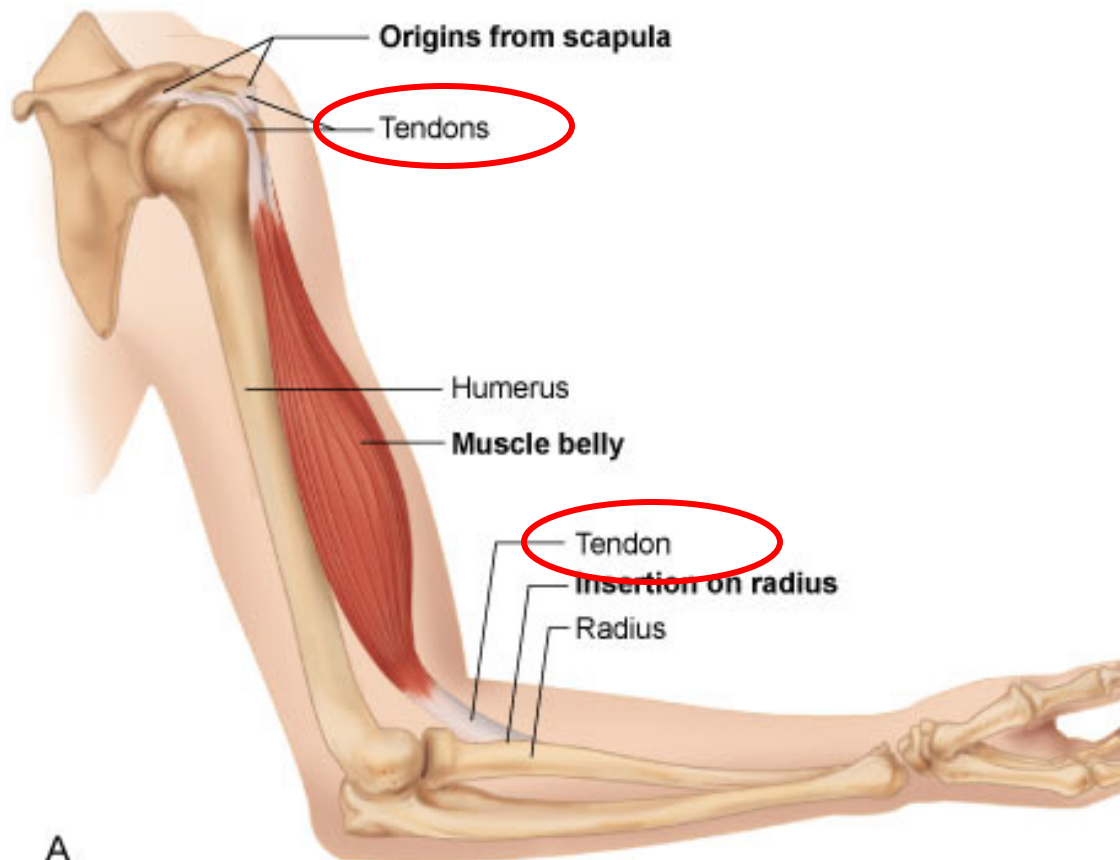
Connective Tissues

Myofascial Referring to skeletal muscles and related fascia in the muscular system.



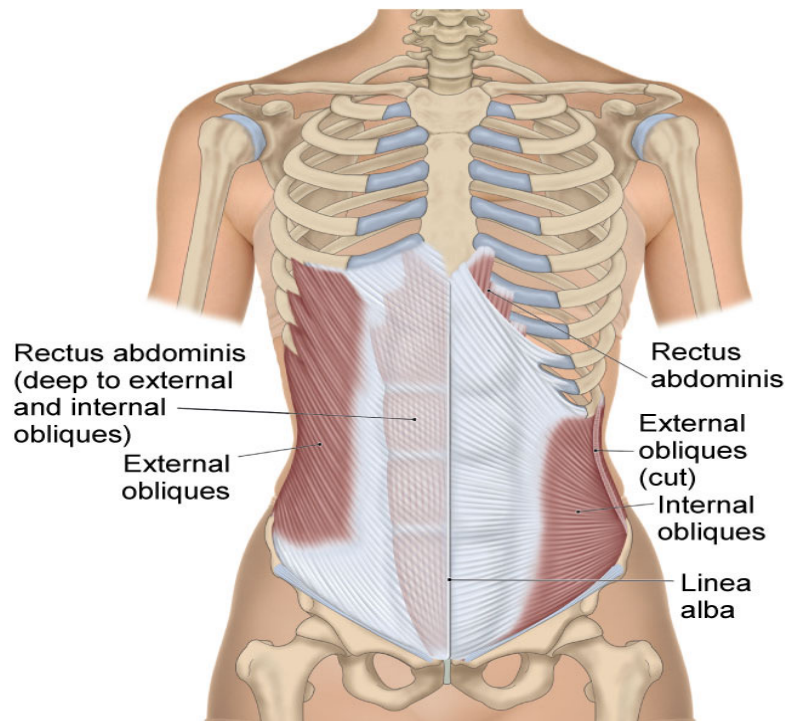
Connective Tissues

Tendon Cord-like structure anchoring the end of a muscle to a bone.

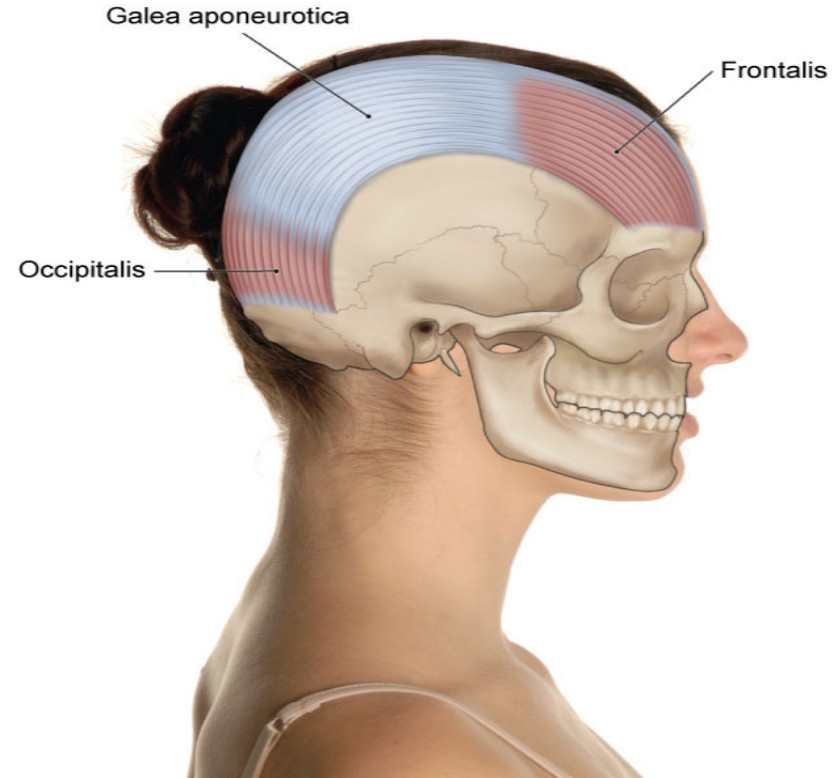


Connective Tissues

Aponeurosis (p. aponeuroses) Broad, flat tendon. Attaches skeletal muscle to bone, another muscle, or skin.



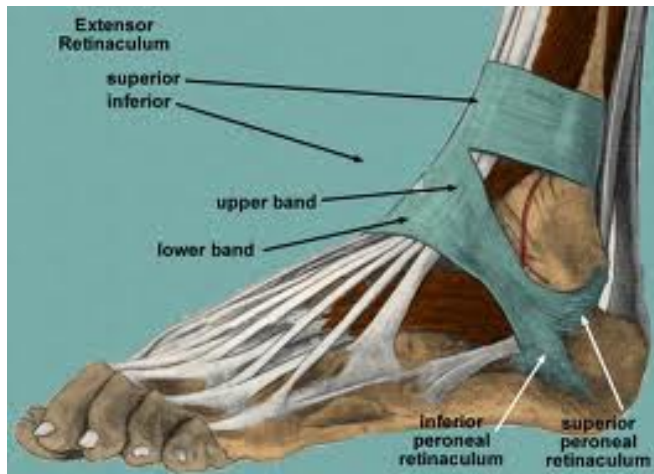
Anterior View



Lateral View

Connective Tissues

Retinaculum (p. retinacula) Bandage-like retaining bands of connective tissue found primarily around the elbows, knees, ankles, and wrists. May also act as a pulley for tendons.



Muscle Cells

Sarcoplasm

Sarcolemma

Sarcoplasmic reticulum

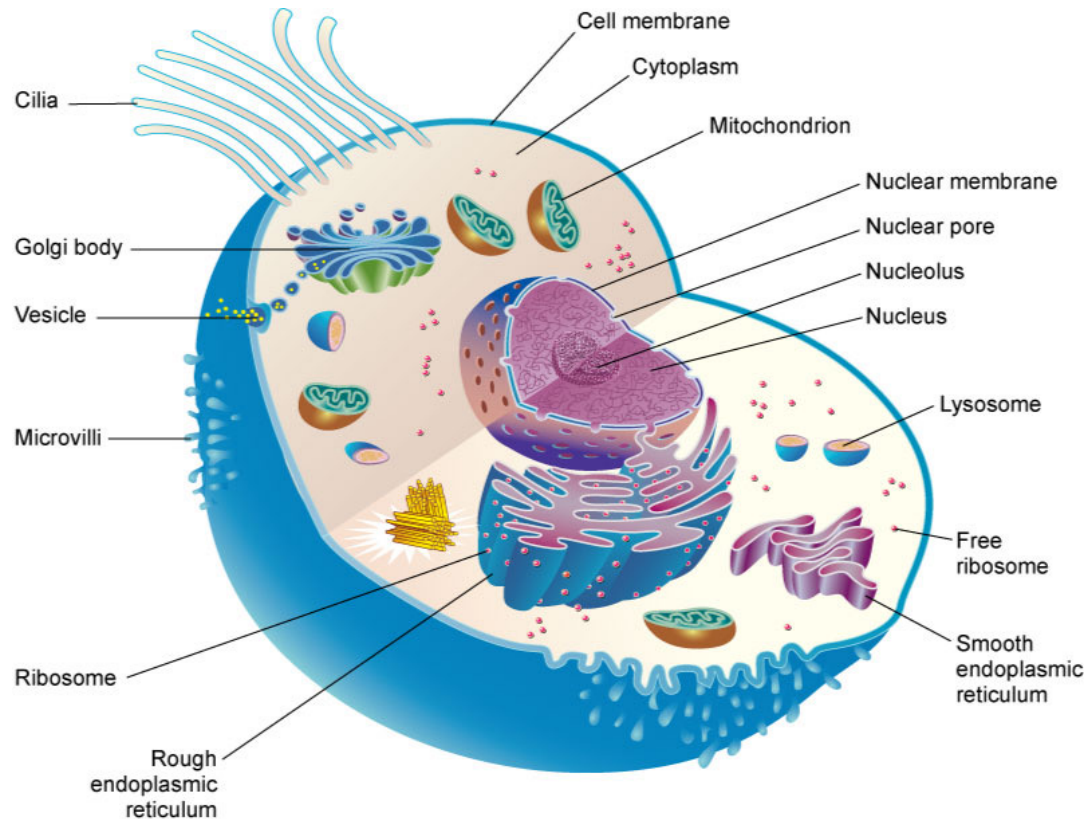
T-tubules

Sarcomere

Muscle Cells

Sarcoplasm Muscle cell cytoplasm.

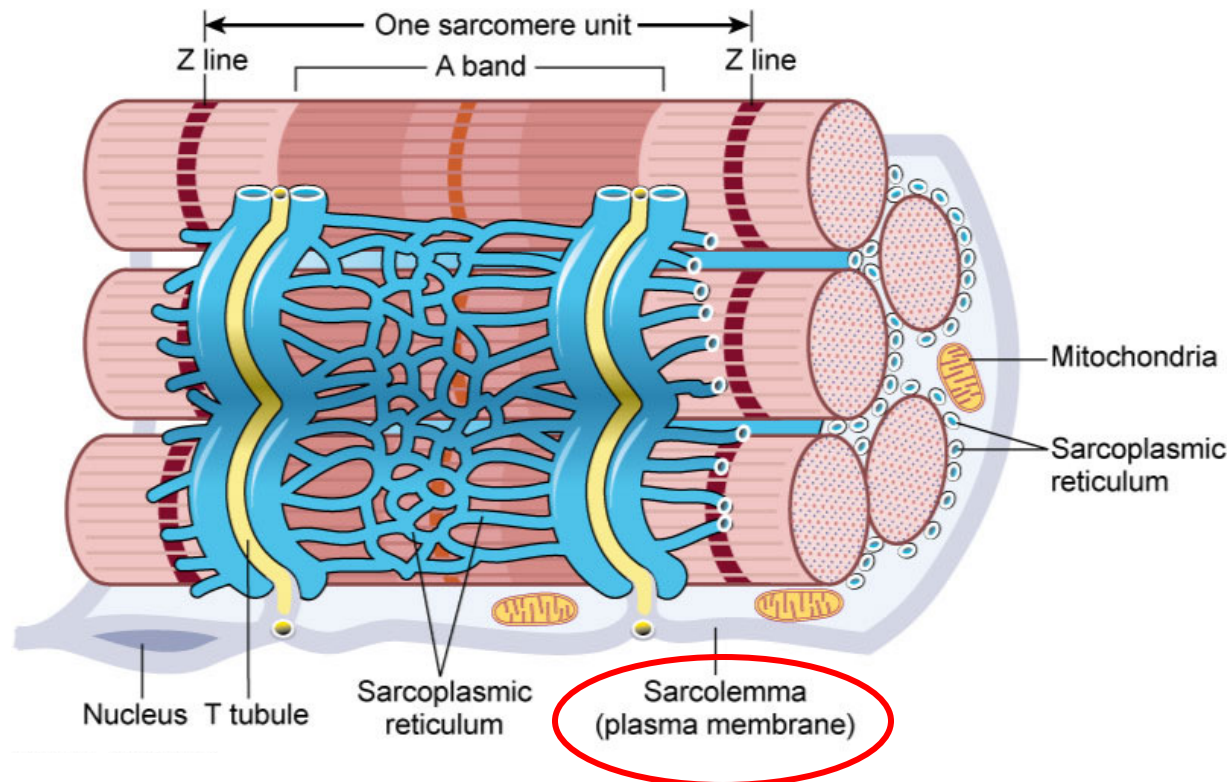
Sarcolemma Muscle cell membrane.



Muscle Cells

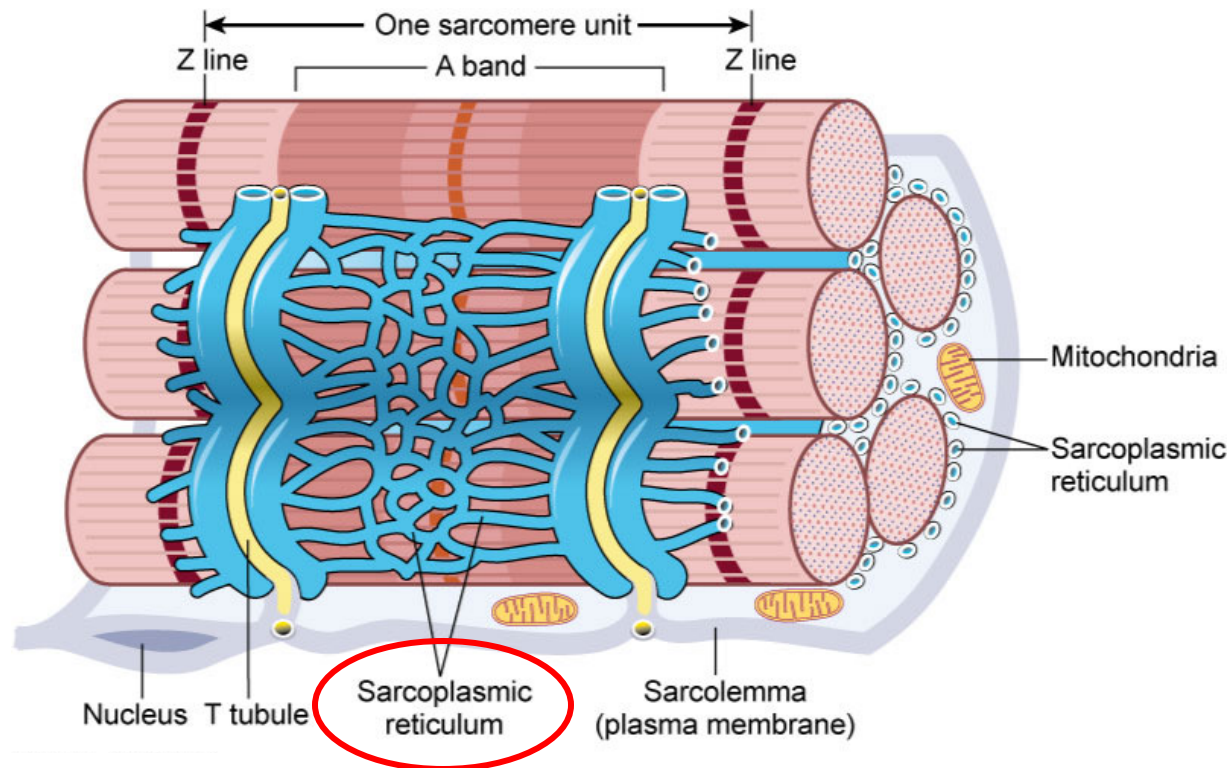
Sarcoplasm Muscle cell cytoplasm.

Sarcolemma Muscle cell membrane.



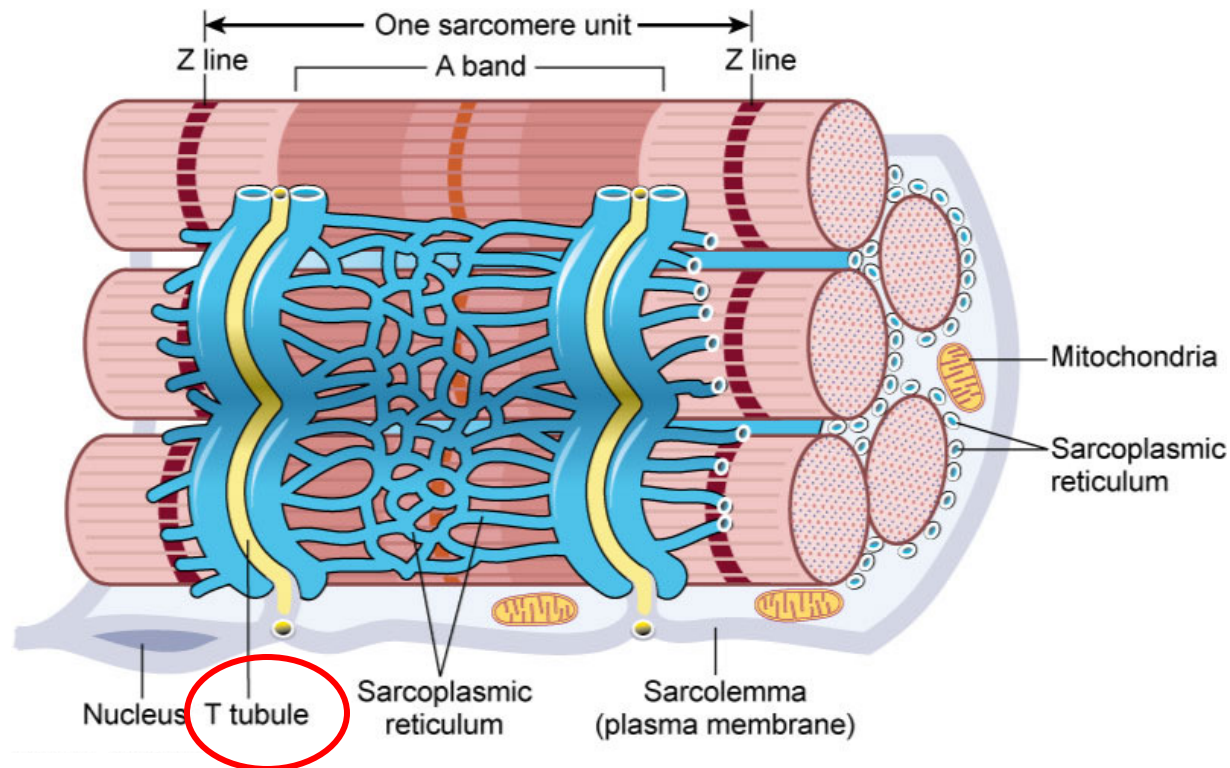
Muscle Cells

Sarcoplasmic reticulum A fluid-filled system of sacs that store calcium.



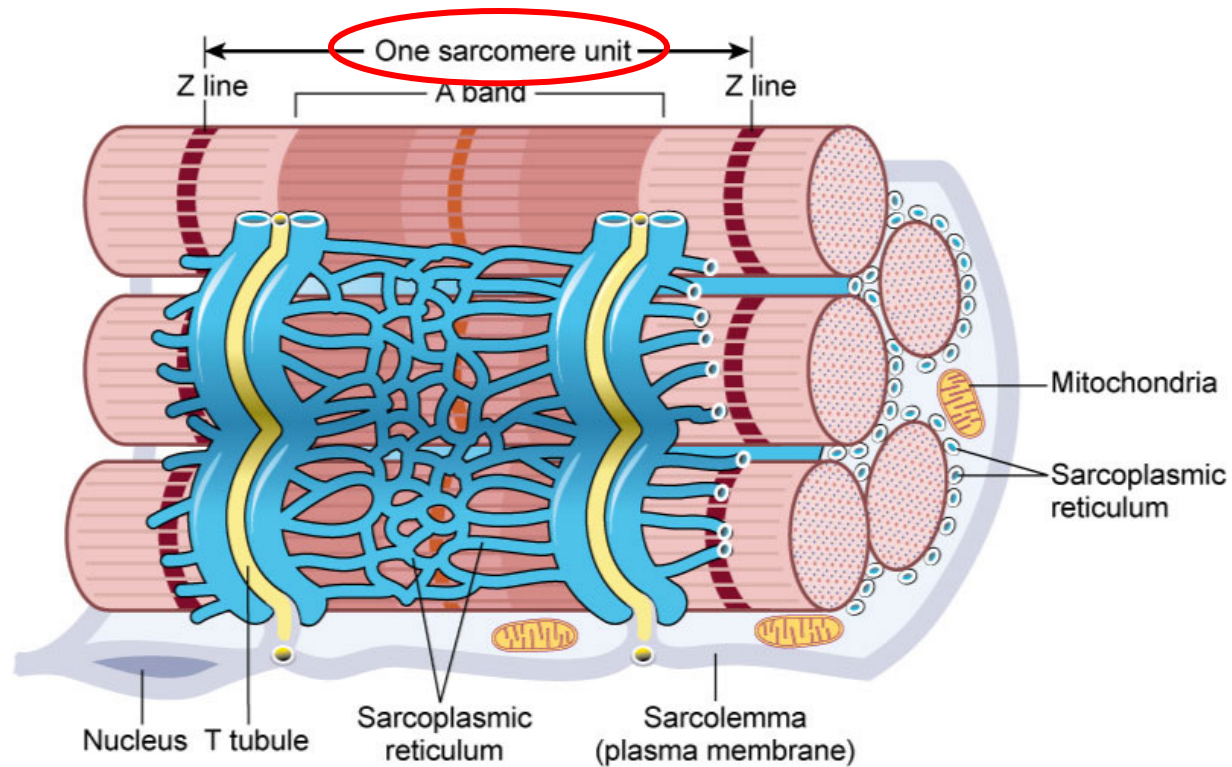
Muscle Cells

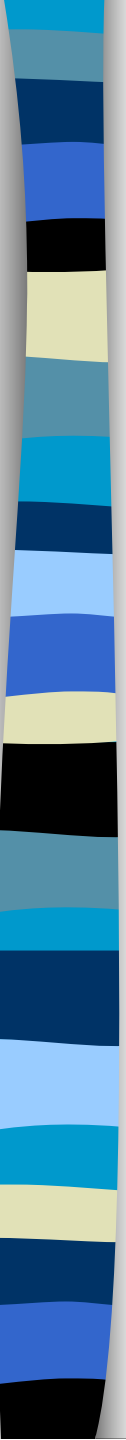
T-tubule Runs transversely across the sarcoplasmic reticulum, forming inward channels. Transports stored calcium ions from the sarcoplasmic reticulum into the interior of the muscle cell.



Muscle Cells

Sarcomere A muscle's contractile unit. Found within myofibrils.





Myofilaments

Thin myofilaments

Actin

Tropomyosin

Troponin

Thick myofilaments

Myosin

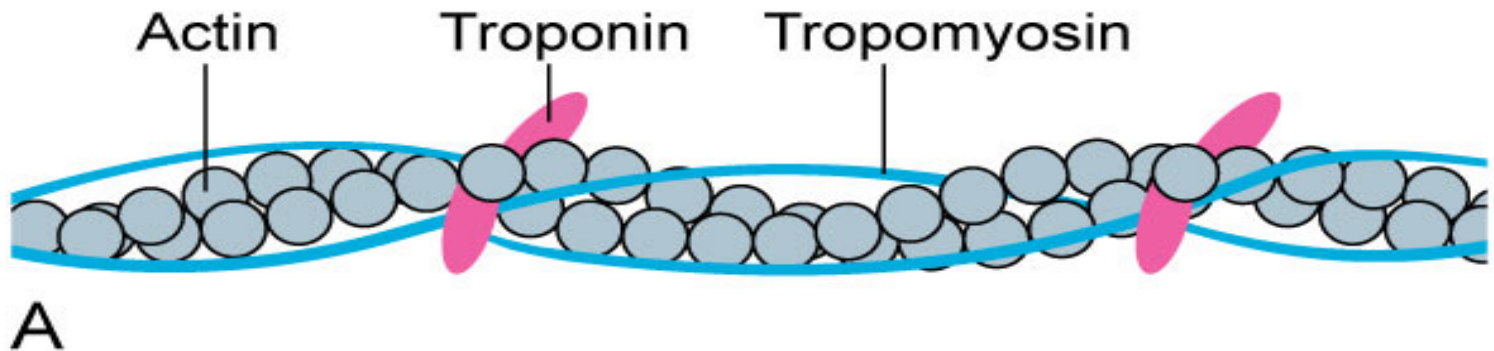
Myofilaments

Thin myofilaments

Actin Protein molecules within a muscle cell that contain binding sites used during skeletal muscle contraction. Help make up thin myofilaments.

Tropomyosin Protein molecule.

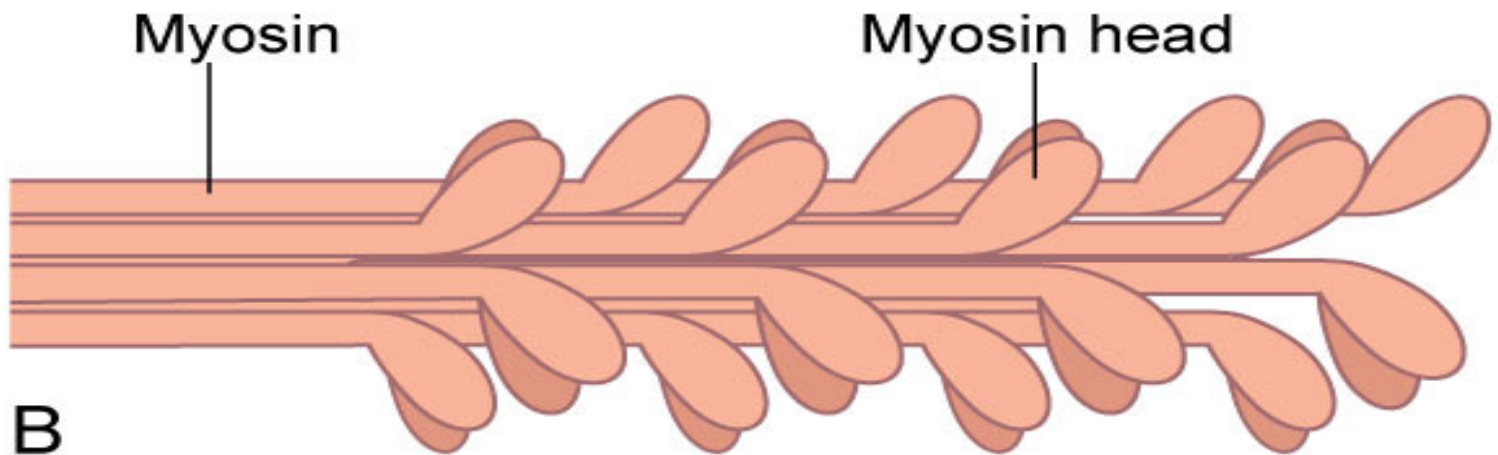
Troponin Protein molecule.

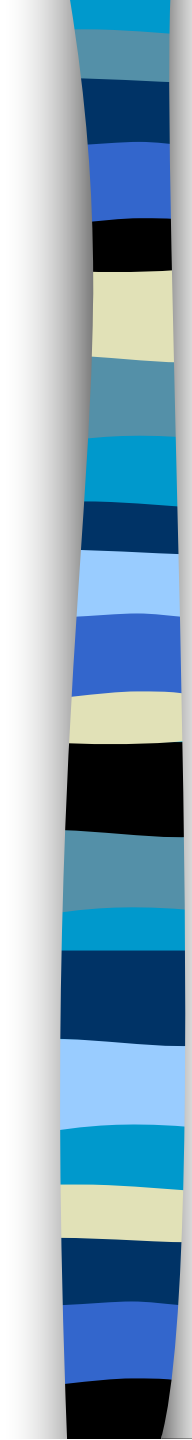


Myofilaments

Thick myofilaments

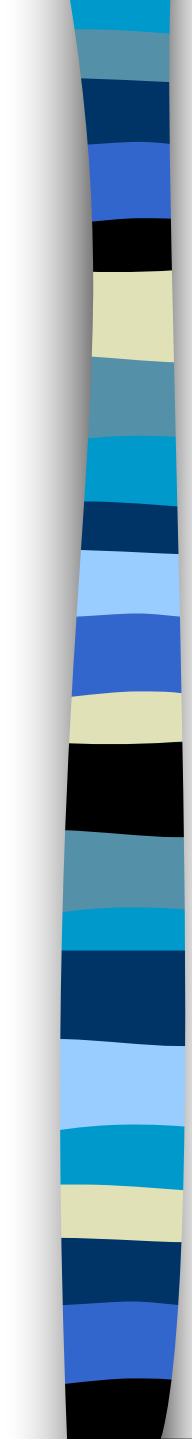
Myosin Protein molecules within a muscle cell that attach to actin during skeletal muscle contraction. Make up the bulk of thick myofilaments.





Muscle Cell Properties

Excitability
Contractility
Extensibility
Elasticity



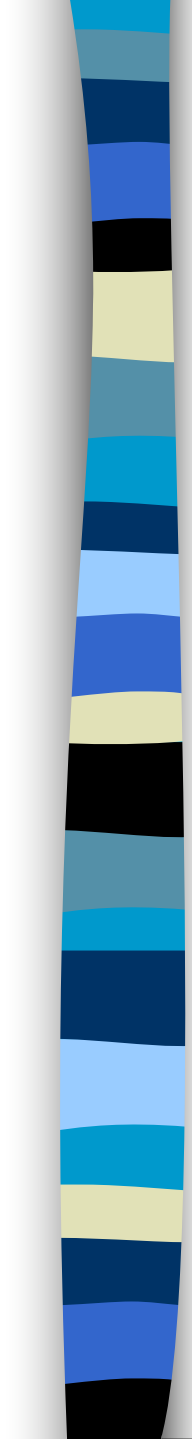
Muscle Cell Properties

Excitability The ability to respond to a stimulus.

Contractility The ability to shorten.

Extensibility The ability to lengthen.

Elasticity The ability to return to its original shape after movement.



24a A&P: Muscular System- Organization of Skeletal Muscle