

Chapter 11 – Skeletal Muscle

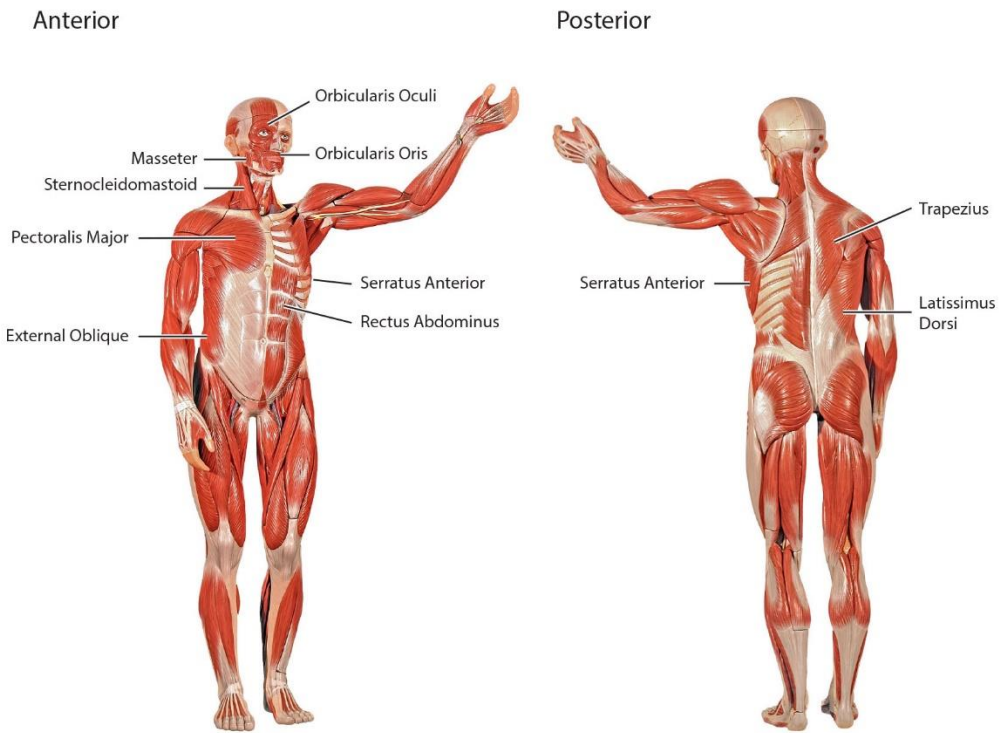
Objectives

Given the synopsis in this chapter, competence in each objective will be demonstrated by responding to multiple choices or matching questions, completing fill-in questions, or writing short answers, at the level of 75% or greater proficiency for each student..

- A. To locate, name, and determine the action of major muscles of the head and trunk.
- B. To locate, name, and determine the action of major muscles of the upper limbs.
- C. To locate, name, and determine the action of major muscles of the lower limbs.
- D. To describe the general organization of skeletal muscles
- E. To describe the cellular structure of skeletal muscle.

Major Muscles of the Body

Head, Neck and Trunk



Shoulders, Arms, Hips and Legs

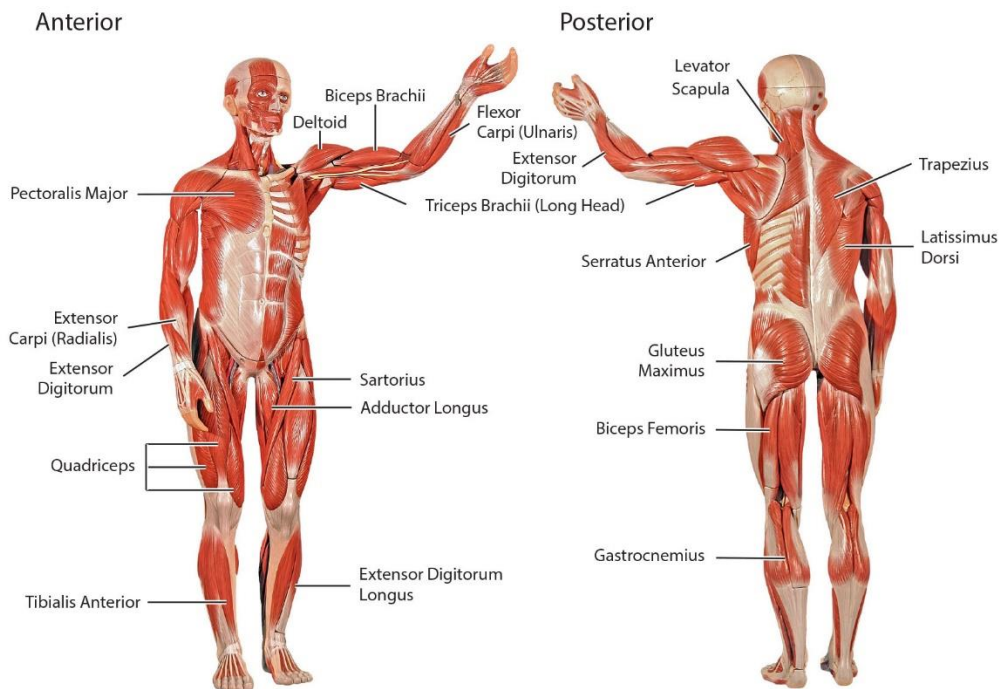


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Skeletal Muscle and Fascicles

Skeletal Muscles - Right Anterior Shoulder

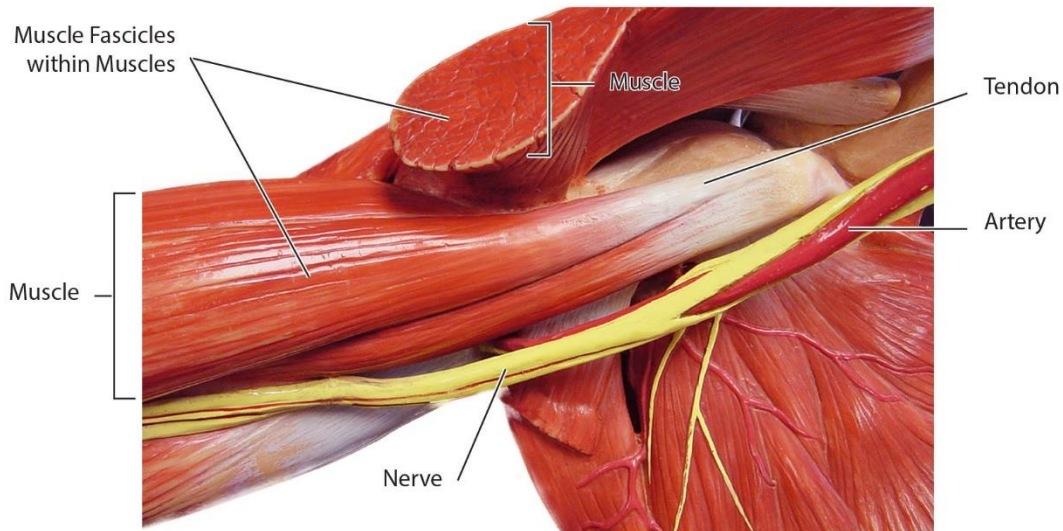


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Major Movements of the Face, Trunk, and Limbs

Face

Action (movement)	Name of Muscle	Insertion	Origin
Close Eyes (Blinking and Winking)	Orbicularis Oculi	Eyelids	Maxilla / Frontal
Pucker Lips (Kiss)	Orbicularis Oris	Lips	Maxilla / Mandible
Chew (Close Mouth)	Masseter	Mandible	

Head and Trunk

Action (movement)	Name of Muscle	Insertion	Origin
Flex Head/Neck	Sternocleidomastoid	Temporal	Sternum / Clavicle
Extend Head/Neck	Trapezius	Occipital	Vertebrae / Scapula
Compress Abdomen and rotate trunk	External Oblique	Linea Alba	Coxa / Vertebrae
Flex Trunk (Flex Vertebral Column)	Rectus Abdominus	Sternum / Ribs	Pubis

Shoulder, Arm, Wrist, Hand, and Digits

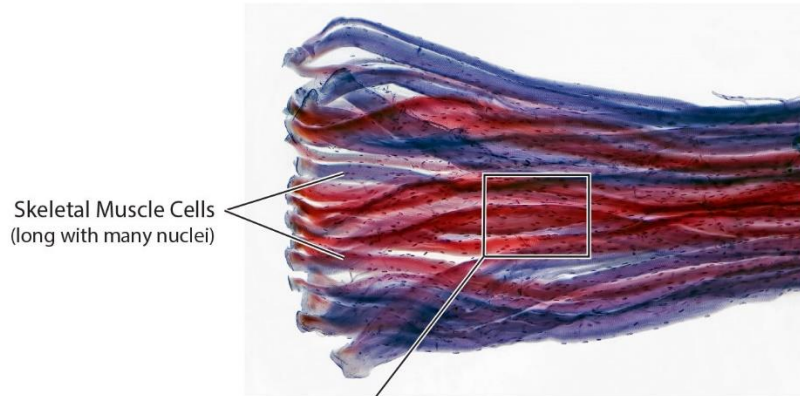
Action (movement)	Name of Muscle	Insertion	Origin
Elevate Scapula (Shrug Shoulder)	Trapezius	Scapula	Occipital
Abduct Scapula (Punching)	Serratus Anterior	Scapula	Vertebrae
Abduct Humerus (Abduct Shoulder)	Deltoid	Humerus	Scapula / Clavicle
Flex Humerus (Flex Shoulder and Cross Chest)	Pectoralis Major	Humerus	Ribs / Sternum
Extend Humerus (Extend-hyperextend shoulder)	Latissimus Dorsi	Humerus	Vertebrae / Sacrum
Flex Radius/Ulna (Flex Elbow)	Biceps Brachii	Radius	Scapula
Extend Ulna/Radius (Extend Elbow)	Triceps Brachii	Ulna / Radius	Scapula / Humerus
Flex Carpals/Metacarpals (Wrist)	Flexor Carpi	Metacarpals	Humerus / Ulna
Extend Carpals/Metacarpals (Wrist)	Extensor Carpi	Metacarpals	Humerus / Ulna
Flex Digits (Flex Fingers)	Flexor Digitorum	Phalanges	Ulna / Humerus / Radius
Extend Digits (Extend Fingers)	Extensor Digitorum	Phalanges	Humerus

Hip, Thigh, Leg, Ankle, Feet, and Toes

Action (movement)	Name of Muscle	Insertion	Origin
Extend Femur (Extend Hip)	Gluteus Maximus	Femur	Coxa (Ilium)
Adduct Femur (Adduct Hip/Thigh)	Adductor Longus	Femur	Coxa (Pubis)
Flex Tibia (Flex Knee)	Biceps Femoris	Fibula / Tibia	Femur
Extend Tibia (Extend Knee)	Quadriceps	Tibia	Femur / Coxa (Ilium)
Flex Tibia / Flex and Abduct Femur (Cross Legs)	Sartorius	Tibia	Coxa (Ilium)
Plantar Flex Foot (Stand on tip toes)	Gastrocnemius	Femur	Calcaneus
Dorsiflex Foot (Toes up heel down)	Tibialis Anterior	Tibia	Metatarsal
Extend Digits (Lift / Extend Toes)	Extensor Digitorum Longus	Phalanges	Tibia / Fibula

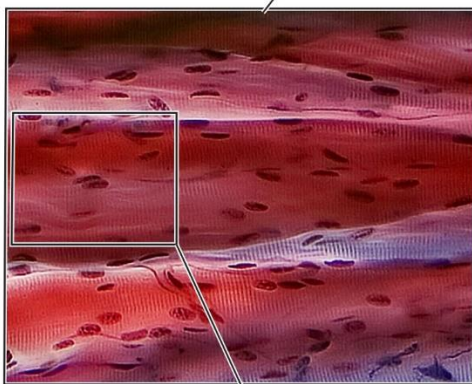
Skeletal Muscle Fascicle and Cells - Histology

Skeletal Muscle Fascicle- longitudinal view
- Histology

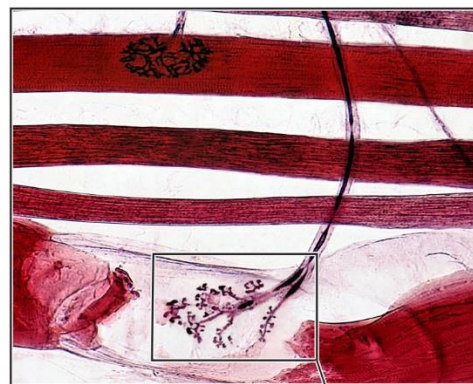


Skeletal Muscle Cells
(long with many nuclei)

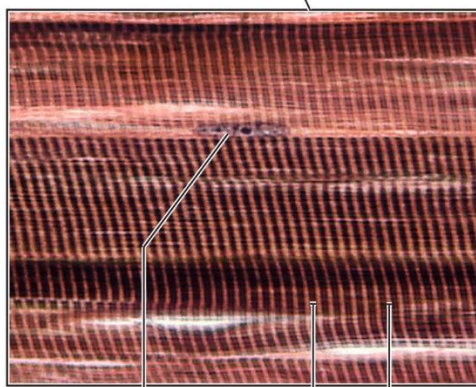
Skeletal Muscle Cells
- Histology



Skeletal Muscle Cells and Nerve
- Histology

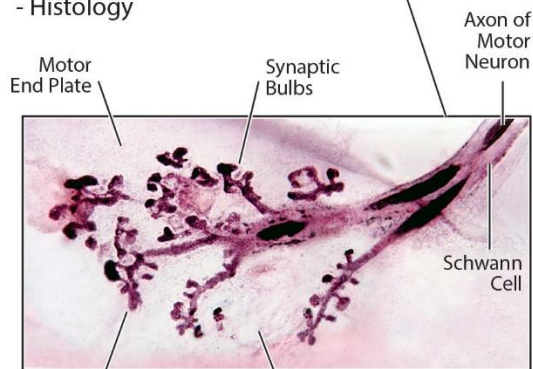


A- and I-Bands
- Histology



Nucleus
A-band (dark)
I-band (light)

Neuromuscular Junction
- Histology



Synaptic Bulbs - secrete acetylcholine from synaptic vesicles
Motor End Plate - has receptors for acetylcholine

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Skeletal Muscle Cell and Myofibrils

Skeletal Muscle Cell
- longitudinal view

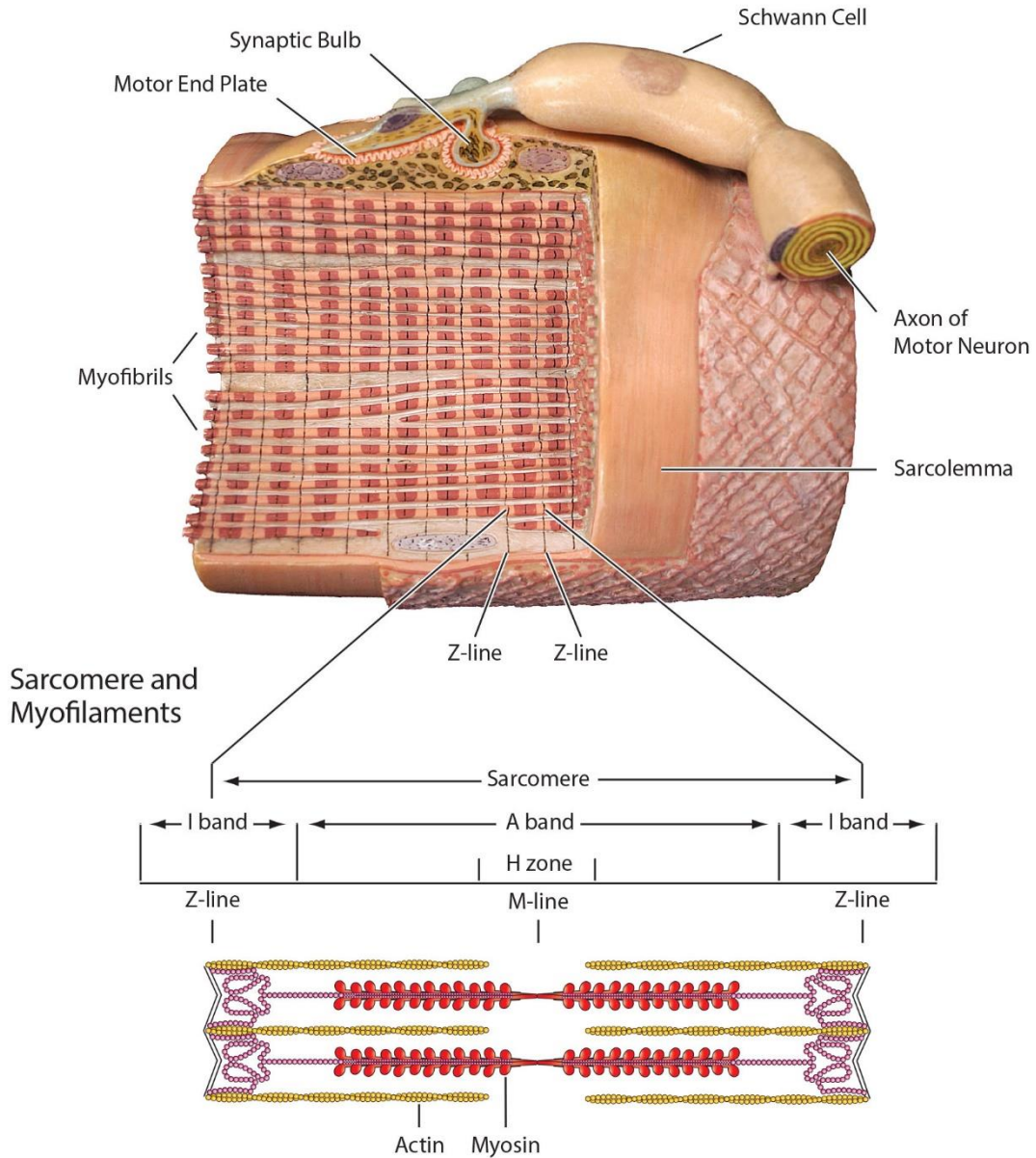


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Movement at Joints

1. **Elevation** - moving bone (or other tissue) in the upward direction
2. **Depression** - moving bone (or other tissue) in the downward direction
3. **Flexion** - decrease of angle of bones at a joint (at hinge joints and ball and socket joints)
4. **Extension** - increase of angle of bones at a joint (at hinge joints and ball and socket joints)
5. **Adduction** - bringing bone toward center of body
6. **Abduction** - taking bone away from center of body
7. **Medial rotation** - twisting bone toward center of body at the shoulder or hip joint (at ball and socket joints)
8. **Lateral rotation** - twisting bone toward side of body at the shoulder or hip joint (at ball and socket joints)
9. **Circumduction** - spinning limb in a circle at the shoulder or hip joint (at ball and socket joints)
10. **Inversion** – moving sole of foot toward center of body at the ankle joint
11. **Eversion** – moving sole of foot toward side of body at the ankle joint