

# MOTOR NEURONS CAUSE MUSCLES TO CONTRACT

## Gross Anatomy of Skeletal Muscle

### Connective Tissue Sheaths

Endomysium: "endo—within; mysium—muscle) surrounds each muscle fiber (areolar conn.)

Perimysium: "peri—around" surrounds each fascicle (group of muscle fibers)

Epimysium: "epi—upon" surrounds each muscle organ

### Attachments—continuous with epimysium

Tendon: dense regular connective tissue that connects muscle to bone

Aponeurosis: flat sheet of connective tissue

## Microscopic Anatomy

**sarcolemma:** plasma (cell) membrane of a muscle fiber

**myofibrils:** Majority of muscle fiber is filled with these organelles that contain the contractile units of muscle tissue

**striations:** Bands of alternating dark and light tissue on myofibrils.

Caused by actin (thin myofilament) and myosin (thick filament)

I band: lighter band, only actin

A band: darker band, both actin and myosin

H zone: only myosin (only visible in relaxed state)

**sarcomere:** functional unit of muscle contraction

Z line: borders of sarcomere; anchors actin to sarcolemma

**sarcoplasmic reticulum:** muscle-modified smooth ER, surrounds myofibril

regulate intracellular levels of calcium

stores it and releases it when muscle fiber is stimulated to contract

**T Tubules:** channels through the cell, allowing extracellular fluid to pass through

Purpose: allow electrical stimulation to reach all sarcomeres.

**Motor Unit:** motor neuron and all muscle fibers it supplies

The muscle fibers of a given motor neuron are scattered evenly throughout muscle

This allows "weak" contractions—strong contractions "recruit" more motor neurons.