

Muscle Tissue

- Composed of cells that contract (shorten) when stimulated and relax passively
- Helps move the body and specific body parts
- Skeletal (voluntary, striated), cardiac, smooth (involuntary, unstriated)

Skeletal Muscle

- Located in muscles that attach to bones
- Long, cylindrical cells (fibers) are striated
- Cells are bundled closely together in parallel arrays
- Cells fuse together forming a fiber with many nuclei in embryos



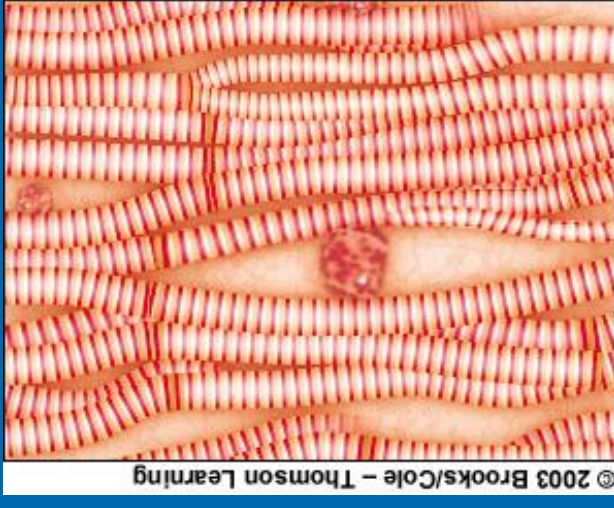
- Every fiber contains myofibrils
- Myofibrils are formed of contractile elements (Sarcomeres)
- Sarcomere unit is formed of actin and myosin, contract by reflexes and by well
- Skeletal muscle makes up 40% of human weight

Smooth Muscle

- In walls of internal organs and blood vessels.
- Single unbranched cells and central nucleus
- Cells are not striped and taper at the ends (not striated). Slow but longer contraction (artery, sphincter, gut)
- Actin and myosin are attached to plasma membrane by intermediate filaments

Cardiac Muscle

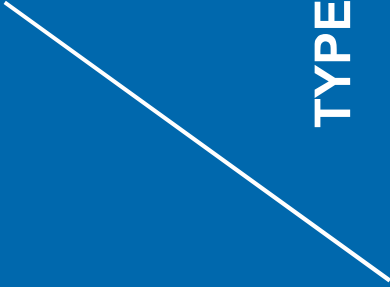
- Present only in the heart
- Cells are striated and branched
- Ends of cells are joined by adhering and gap junctions



Many mitochondria, does not store glycogen,
dies in absence of oxygen, involuntary

- Signals move from one cell to another through gap junctions
- Needs continuous supply of ATP
- During heart attack, no oxygen supply, thus heart cells die
- Striated, involuntary

nucleus



TYPE: Skeletal muscle

DESCRIPTION: Bundles of cylindrical, long, striated contractile cells; many

LOCATIONS: Partner of skeletal bones, against which it exerts great force

FUNCTION: Locomotion, posture; head, limb movements

adjoining
ends of
abutting
cells



TYPE: Cardiac muscle

DESCRIPTION: Unevenly striated, fused-together cylindrical cells that contract as a unit owing to signals at gap junctions between them



LOCATIONS: Heart wall

FUNCTION: Pump blood forcefully through circulatory system



nucleus



TYPE: Smooth muscle

DESCRIPTION: Contractile cells tapered at both ends; not striated

LOCATIONS: Wall of arteries, sphincters, stomach, intestines, urinary bladder, many other soft internal organs

FUNCTION: Controlled constriction; motility (as in gut); arterial blood flow