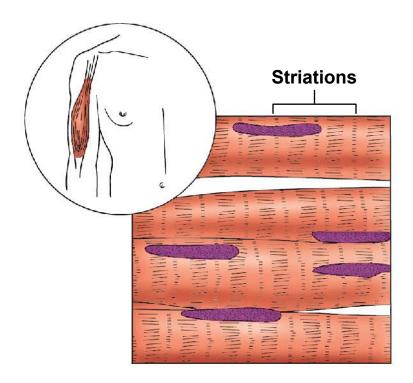
Muscle Tissue Characteristics

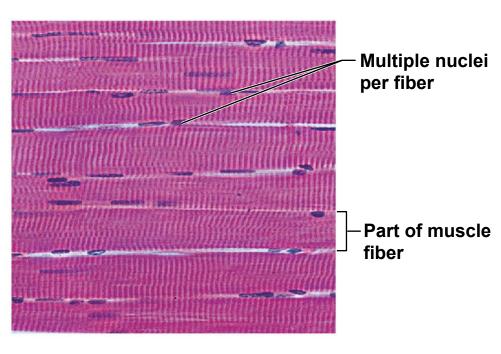
- Muscle cells are also called muscle fibers because they are elongated
- Function is to contract, or shorten, to produce movement
- Three types of muscle tissue
 - 1. Skeletal
 - 2. Cardiac
 - 3. Smooth

Skeletal Muscle Tissue

- Structure: Long, cylindrical shape, multinucleated, obvious striations (stripes)
- Function: Controls voluntary muscle contractions (movement and facial expressions)
- Location: Attaches to bones



(a) Diagram: Skeletal muscle



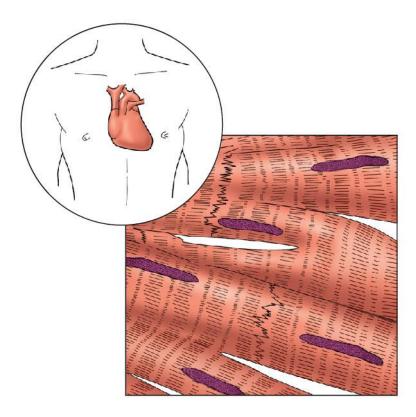
Photomicrograph: Skeletal muscle (195×).

Cardiac Muscle Tissue

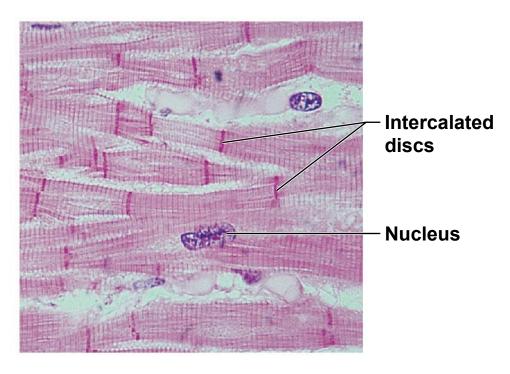
 Structure: Cells are branched with a single nucleus, striated (striped), joined by intercalated disks (junction that connects cells), forms branched network

 Function: Involuntarily controlled, pumps blood through blood vessels

Location: Only in the heart



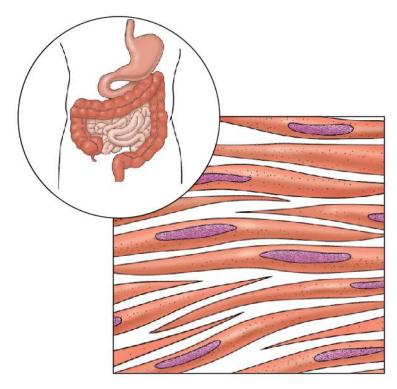
(b) Diagram: Cardiac muscle



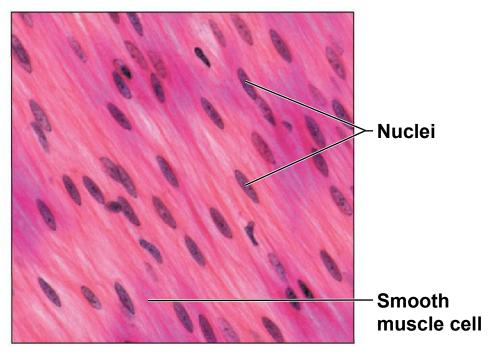
Photomicrograph: Cardiac muscle (475×).

Smooth Muscle Tissue

- Structure: Spindle-shaped cells with a single nucleus, no visible striations
- Function: Involuntarily controlled
- Location: Walls of hollow organs such as stomach, uterus, and blood vessels



(c) Diagram: Smooth muscle



Photomicrograph: Sheet of smooth muscle (360×).

Nervous Tissue

- Structure: composed of cells called neurons and nerve support cells called neuroglia
 - A neuron is composed of a cell body, dendrites, and an axon
 - Cell body: contains nucleus and organelles
 - Dendrites: stimulated by incoming signals
 - Axon: conducts impulses away from cell body
 - The neuroglia insulate, support, and protect the delicate neurons

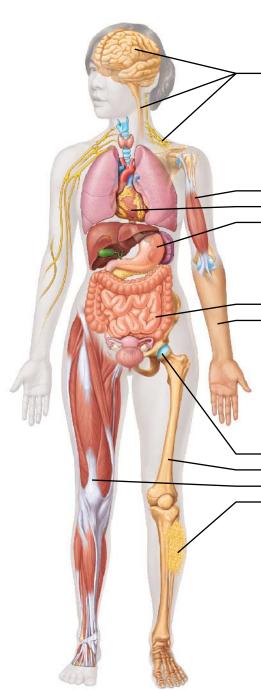
Cell Body

Axon

Nervous Tissue

 Function: receive and conduct electrochemical impulses to and from body parts

Location: brain, spinal cord, nerves



Nervous tissue: Internal communication and control Hallmarks: irritable, conductive

Brain, spinal cord, and nerves

Muscle tissue: Contracts to cause movement Hallmarks: irritable, contractile

- • Muscles attached to bones (skeletal)
- Muscles of heart wall (cardiac)
- Muscles of walls of hollow organs (smooth)

Epithelial tissue: Forms boundaries between different environments, protects, secretes, absorbs, filters Hallmarks: one free (apical) surface, avascular

- Lining of GI tract and other hollow organs
- Skin surface (epidermis)

Connective tissue: Supports, protects, binds other tissues together Hallmarks: extracellular matrix, varying vascularity

- Cartilage
- Bones
- Tendons
- Fat and other soft padding tissue