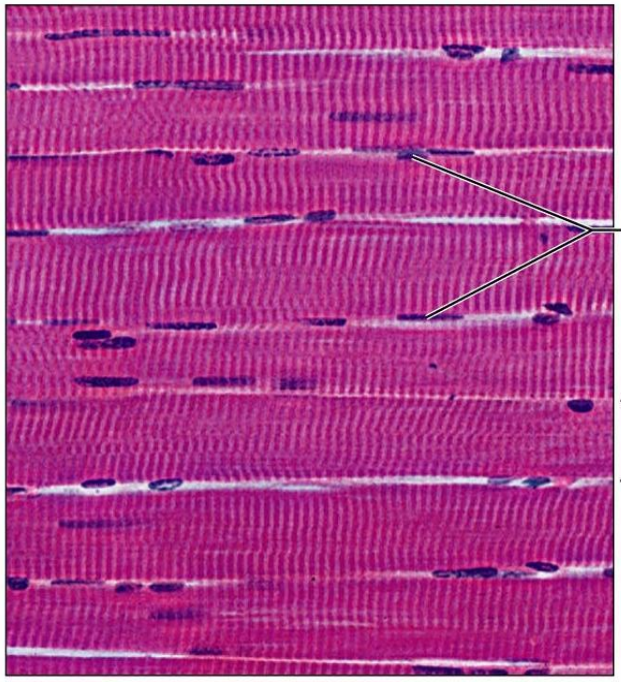
Muscle Tissue

- Characteristics
  - Well vascularized
  - Highly cellular
  - Responsible for most types of body movement
- Functions
  - Responsible for contraction – shortens the cell

Muscle Tissue
Skeletal Muscle

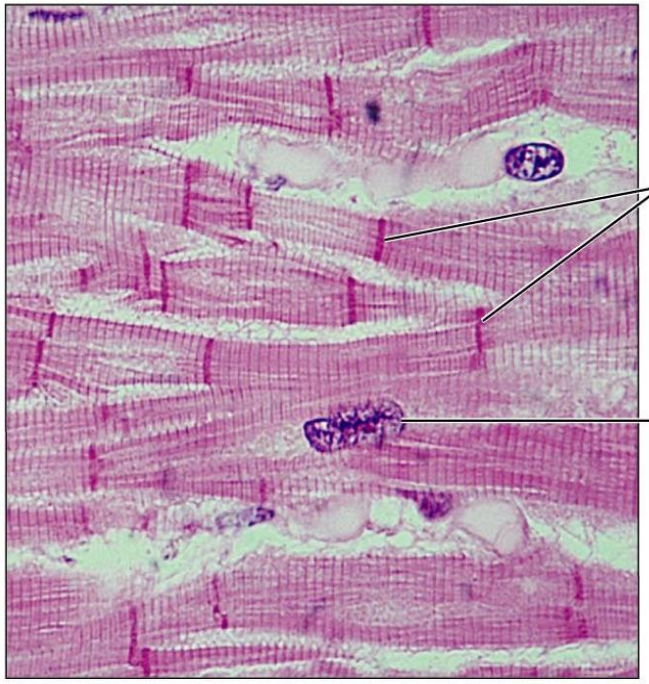
- Description
  - Long, cylindrical, multinucleate cells, obvious striations
- Function
  - Voluntary movement; locomotion; manipulation of the environment; facial expression
  - Voluntary control
- Location
  - Attached to bones or occasionally to skin



Photomicrograph: Skeletal muscle (approx. 300×). Notice the obvious banding pattern and the fact that these large cells are multinucleate.

Muscle Tissue
Cardiac Muscle

- Description
  - Branching, striated, generally uninucleate cells that fit together tightly at intercalated discs
- Function
  - As it contracts, it propels blood into the circulation
  - Involuntary control
- Location
  - Walls of the heart



Photomicrograph: Cardiac muscle (800×); notice the striations, branching of cells, and the intercalated discs.

Muscle Tissue
Smooth Muscle

- Description
  - No striations,
  - Spindle-shaped cells with central nuclei; cells arranged closely to form sheets
- Function
  - Moves substances or objects (food, urine, baby) along internal passageways
  - Involuntary
- Location
  - Found in walls of hollow body organs

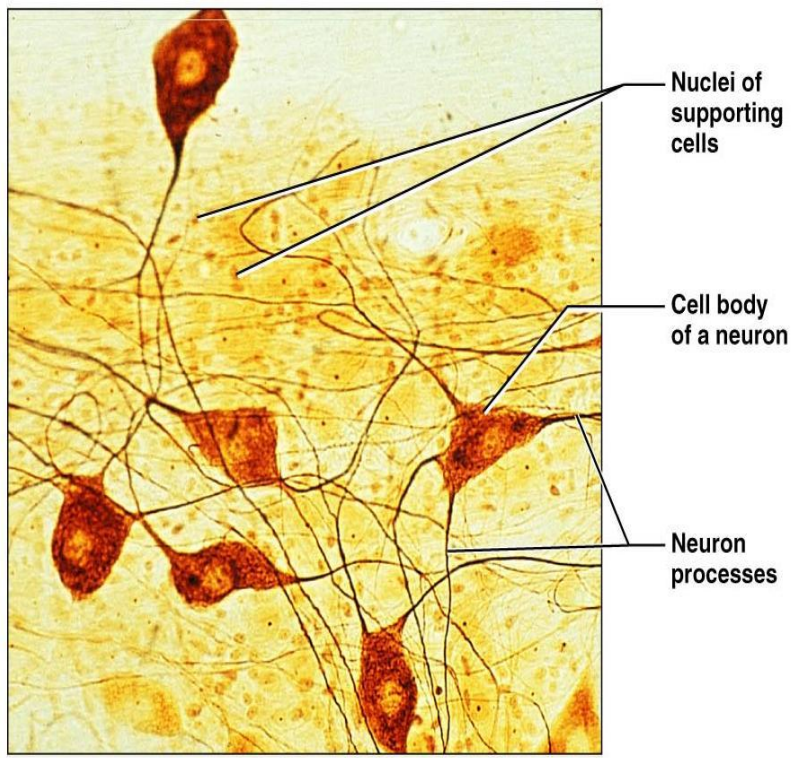
Photomicrograph: Sheet of smooth muscle (approx. 600×).

Nervous Tissue

- Main component of the nervous system-brain, spinal cord, and nerves.
- Regulates and controls body functions.
- Types of cells:
  - Neurons
    - Highly specialized nerve cells - conducts nerve impulses; their processes allow them to respond to stimuli and to transmit electrical impulses
  - Various other types of supporting cells , nonconducting cells that support, insulate, and protect the neurons

Nervous Tissue

- Description
  - Neurons are branching cells; cell processes may be long and extend from the cell body; also contributing to nervous tissue are nonirritable supporting cells
- Function
  - Transmit electrical signals from sensory receptors and to effectors (muscles/glands) which control their activity
- Location
  - Brain, spinal cord, and nerves



Photomicrograph: Neurons (100×)