Muscle tissue: is responsible for movement of the body and it's parts and for changes in the size and shape of internal organs. This tissue characterized by aggregates of specialized, elongated cells arranged in parallel array, whose primary role is contraction. The cytoplasm of muscles cell is called (**Sarcoplasm**).The plasma membrane or cell membrane is called (**Sarcolemma**).Each muscle fiber sarcoplasm contains numerous **(myofibril)**, which contain 2 type of contractile protein filaments **(Actin and myosin)**. That myofilament interaction is responsible for muscle cell contraction. Muscle surrounded by dense connective tissue layer called **(epimysium)**. A group of fibers to form a bundle or fascicle surrounded by connective tissue called **(perimysium).** Each muscle fiber surrounded by connective tissue called **(Endomysium)**.

Types of muscle in the body: Skeletal muscles, Cardiac muscles, smooth muscles.

- **Skeletal muscle:**

Show in that slide each muscle fiber a long and multinucleated. The nuclei are peripherally and immediately below the sarcolemma of each muscle fiber. In addition, show cross- striation which are visible as alternating dark or A bands and light or I band. Muscle fibers aggregated into bundles or fascicles surrounded by fiber of connective tissue (perimysium). From each perimysium thin partition of connective tissue extend into each muscle fascicle, and invest individual muscle fiber with a connective tissue layer called the endomysium. Small blood vessels and capillaries are present in the connective tissue around each muscle fiber.

FIGURE 8.1 ■ Longitudinal and transverse sections of skeletal (striated) muscles of the tongue. Stain: hematoxylin and eosin. High magnification.

- **Cardiac muscle:**

Show in that slide the cross-striation are similar in both sk. M. and cardiac m. type but are less prominent in cardiac m. The branch cardiac fiber is elongated fiber, irregular structure and the characteristic intercalated disk (appear as rather straight band or staggered across individual fiber).

The large, oval nuclei, usually one per cell, occupy the central position of the cardiac muscle fiber, surrounding the nucleus by perinuclear sarcoplasm. The connective tissue fiber of endomysium surround the cardiac muscle fiber capillaries with erythrocytes normally seen in the endomysium.

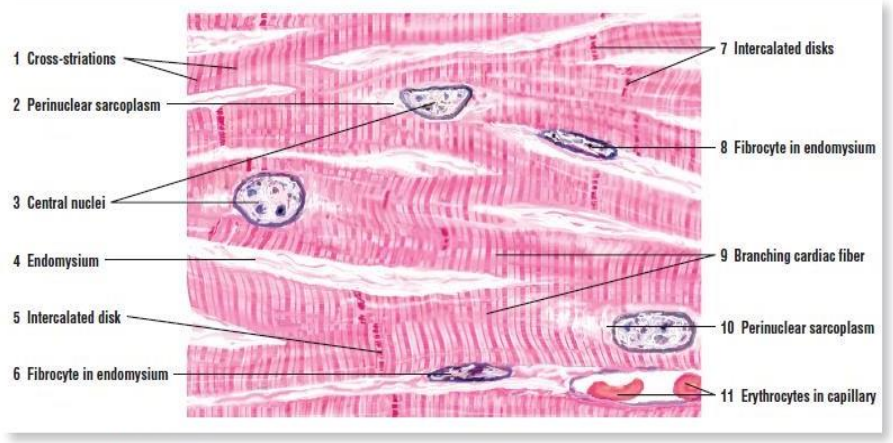

FIGURE 8.10 ■ Cardiac muscle in longitudinal section. Stain: hematoxylin and eosin. High magnification.

- **Smooth Muscle**

Smooth muscle fiber is spindle–shaped cell with tapered ends. The cytoplasm (sarcoplasm) of each muscle fiber stain dark. An elongated or ovoid nucleus is present in the center of each smooth. In the small intestine the Smooth Muscle fiber layer are closed to each other with only a minimal amount of connective tissue fiber and fibroblast present between the two layers, and rich blood vessels, capillaries between individual fiber and layer. The Smooth Muscle fiber arranged in two layer an inner circular layer and an outer longitudinal layer.

In the inner circular layer, a single nucleus is visible in the center of the cytoplasm of different fiber.

In the outer longitudinal layer, single nuclei of individual m. f. are visible. Located between the two Smooth Muscle layers is a group of autonomic neurons of the myenteric nerve plexus, small blood vessels seen between individual muscle fiber and muscle layer.

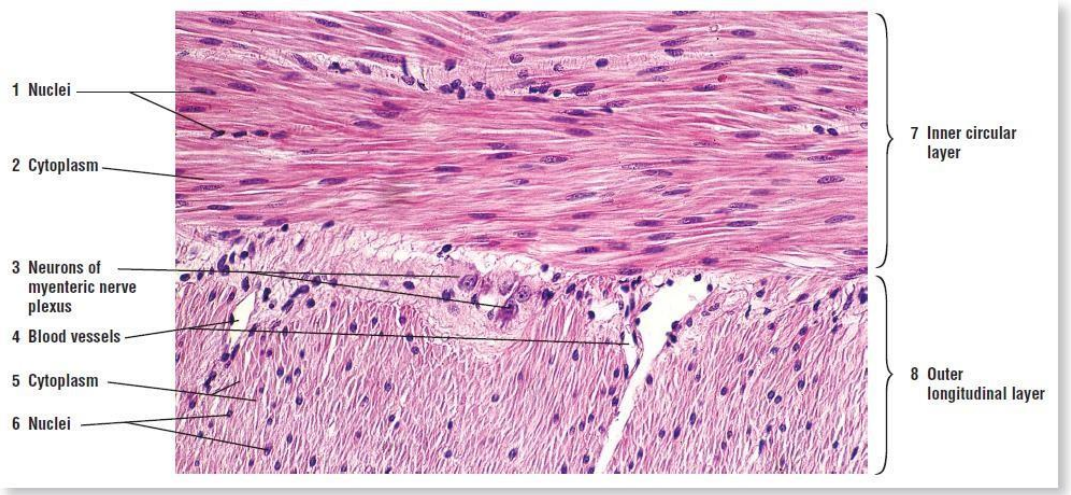

FIGURE 8.13 ■ Smooth muscle: wall of the small intestine (transverse and longitudinal section). Stain: hematoxylin and eosin. ×80.