



MUSCLE TISSUE:

Muscle tissue is made of "excitable" cells that are capable of contraction. Of all of the different tissue types (muscle, epithelial, connective, and nervous), muscle tissue is the most abundant in most animals.

Muscle tissue contains numerous microfilaments composed of the contractile proteins actin and myosin. These proteins are responsible for movement in muscles.

There are three major types of muscle tissue:

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Cardiac Muscle

- * Cardiac muscle is so named because it is found in the heart. Cells are joined to one another by intercalated discs, which allow the synchronization of the heart beat. Cardiac muscle is branched, striated muscle. The heart wall consists of three layers: epicardium, myocardium, and endocardium. Myocardium is the middle muscular layer of the heart. Myocardial muscle fibers carry electrical impulses through the heart, which power cardiac conduction.

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Skeletal Muscle

- * Skeletal muscle, which is attached to bones by tendons, is controlled by the peripheral nervous system and associated with the body's voluntary movements. Skeletal muscle is striated muscle. Unlike cardiac muscle, the cells are not branched. Skeletal muscle cells are covered by connective tissue, which protects and supports muscle fiber bundles. Blood vessels and nerves run through the connective tissue supplying muscle cells with oxygen and nerve impulses that allow for muscle contraction. Skeletal muscle is organized into several muscle groups that work in a coordinated fashion to perform body movements. Some of these groupings include head and neck muscles (facial expressions, chewing, and neck movement), trunk muscles (move the chest, back, abdomen, and vertebral column), upper extremity muscles (move the shoulders, arms, hands, and fingers), and lower extremity muscles (move the legs, ankles, feet, and toes).

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Visceral (Smooth) Muscle

Visceral muscle is found in various parts of the body including blood vessels, the bladder, digestive tract, as well as in many other hollow organs. Like cardiac muscle, most visceral muscle is regulated by the autonomic nervous system and is under involuntary control. Visceral muscle is also called smooth muscle because it doesn't have cross striations. Visceral muscle contracts slower than skeletal muscle, but the contraction can be sustained over a longer period of time. Organs of the cardiovascular system, respiratory system, digestive system, and reproductive system are lined with smooth muscle. This muscle can be described as rhythmic or tonic. Rhythmic or phasic smooth muscle contracts periodically and spends most of the time in a relaxed state. Tonic smooth muscle remains contracted for the majority of the time and only relaxes periodically.

Interesting Facts About Muscle Tissue

Interestingly, adults have a certain number of muscle cells. Through exercise, such as weight lifting, the cells enlarge but the overall number of cells does not increase. Skeletal muscles are voluntary muscles because we have control over their contraction. Our brain controls skeletal muscle movement. However, reflex reactions of skeletal muscle are an exception. These are involuntary reactions to external stimuli. Visceral muscles are involuntary since, for the most part, they are not consciously controlled. Smooth and cardiac muscles are under control of the peripheral nervous system.



