

MUSCLE TISSUE

Muscle Tissue is designed to shorten (contract) and allow movement of the whole body or the substances within it. There are three types of muscle tissue. Muscle cells are so long they are called "fibers", not to be confused with the proteins that are secreted in connective tissue! Muscle fibers in skeletal muscle can be 2 feet long (in a person with a very long thigh muscle).

Skeletal muscle is specialized so that different amounts of the muscle can contract, depending on the force needed (gross movements like kicking a ball, or fine motor skills such as writing). Skeletal muscle is very good at working anaerobically when needed, and if it does this, it will produce lactic acid as a byproduct. **FASTEST MUSCLE TYPE**

Cardiac muscle is specialized so that the entire heart muscle beats as ONE unit. Relies primarily on aerobic cellular respiration.

MOST COORDINATED MUSCLE TYPE.

Smooth muscle is specialized so that it can have a slow contraction that can spread throughout intestines, uterus, etc. **SLOWEST CONTRACTIONS ALLOW WAVE-LIKE MOVEMENT.**

TYPES OF MUSCLE TISSUE					
Cell Type	Example (s)	Characteristics			
		Striated?	Number of nuclei?	Intercalated discs?	Branching cells?
Cardiac muscle	Heart muscle	YES	ONE	YES	YES
Smooth muscle	Encircles intestines, uterus, blood vessels	NO	ONE	NO	NO
Skeletal muscle	Thigh muscles, arm muscles	YES	MANY	NO	NO

Striations are "stripes" seen microscopically on the cells. These are formed from areas of thicker protein content and areas of thinner protein content. These areas overlap when the muscle is contracted. Striations are absent in smooth muscle because it is not as tightly organized as the other two types...note that its contractions are slower to occur.

Intercalated discs are only found in cardiac muscle, and they serve the purpose of connecting neighboring cells electrically. It is one of many safeguards to ensure the heart beats as one unit and doesn't "fibrillate" (contract randomly). Always remember that the heart is a pump, and therefore must relax fully between contractions.