

# Muscular system

Muscles are soft tissues composed of tubular cells called myocytes

Half of the body weight is muscle tissue. Male – 40% & female – 32%

## Properties of muscles

1. Contractibility: muscle pulls & shortens with force
2. Excitability: from polarized to depolarized
3. Elasticity: return to original length during relaxation
4. Extensibility: can stretch or extend

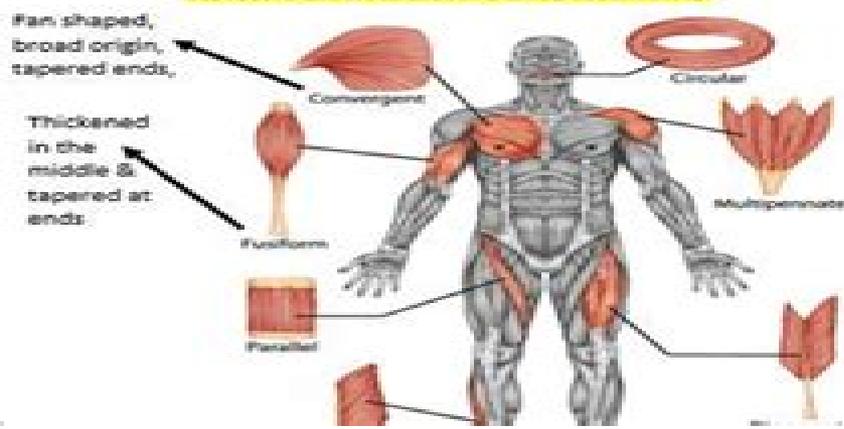
## Functions of Muscles

- 1) Produce movement
- 2) Maintain posture
- 3) Stabilize joints
- 4) Produce heat

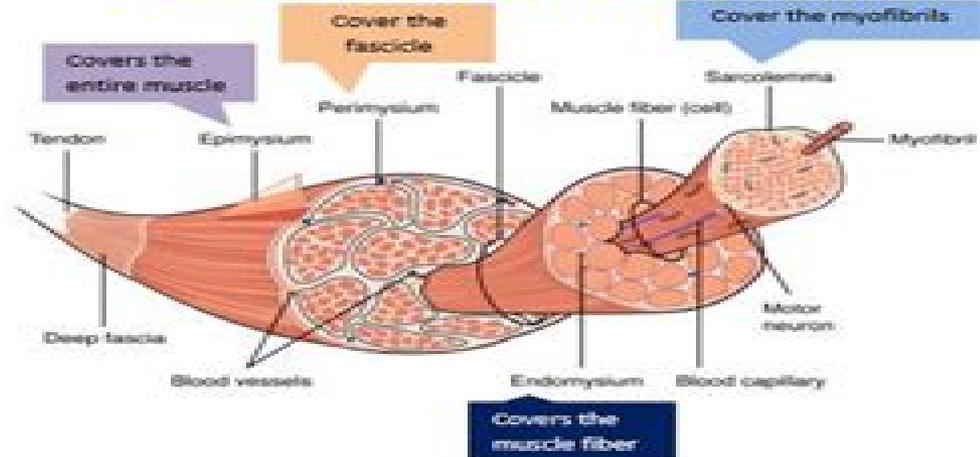
## Types of muscles

	Main features	Histology
Skeletal muscle	<ul style="list-style-type: none"> <li>• Fibers: striated, tubular and multi nucleated</li> <li>• Voluntary</li> <li>• Usually attached to skeleton</li> </ul>	
Smooth muscle	<ul style="list-style-type: none"> <li>• Fibers: non-striated, spindle-shaped, and uninucleated</li> <li>• Involuntary</li> <li>• Usually covering wall of internal organs</li> </ul>	
Cardiac muscle	<ul style="list-style-type: none"> <li>• Fibers: striated, branched and uninucleated</li> <li>• Involuntary</li> <li>• Only covering walls of the heart</li> </ul>	

## Classification of muscles



## Connective Tissue Layers of Muscle

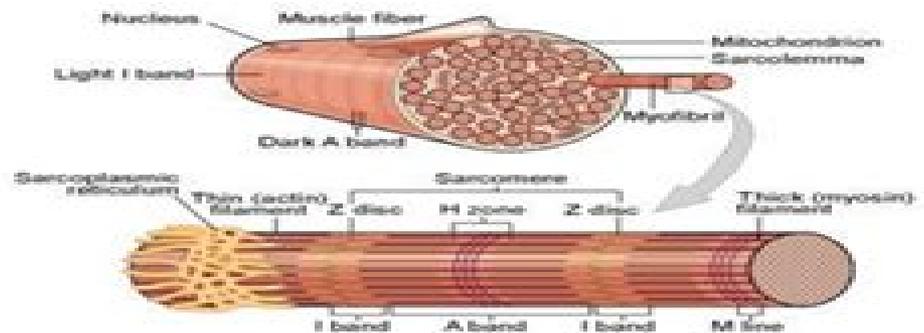


## Muscle Fiber

Muscle Fiber: a single cylindrical muscle cell

Myofibril: a basic rod-like organelle of a muscle cell.

Sarcomere: the basic contractile unit of muscle fiber exists from Z-line to Z-line. It is responsible for striation.



**A band:** dark band (overlapping thick & thin filaments)

**I band:** light band (Thin filaments only)

**Z disc:** the lateral borders of sarcomeres and are the smallest functional units in striated muscle.

**H zone:** is in the center of the A band where there is no overlap between the thick and the thin filaments.

**M line:** attachment site for the thick filaments

# Muscular Skeletal Systems Study Guide

**Yi-Tong Ma**



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