



# Muscle structure and composition

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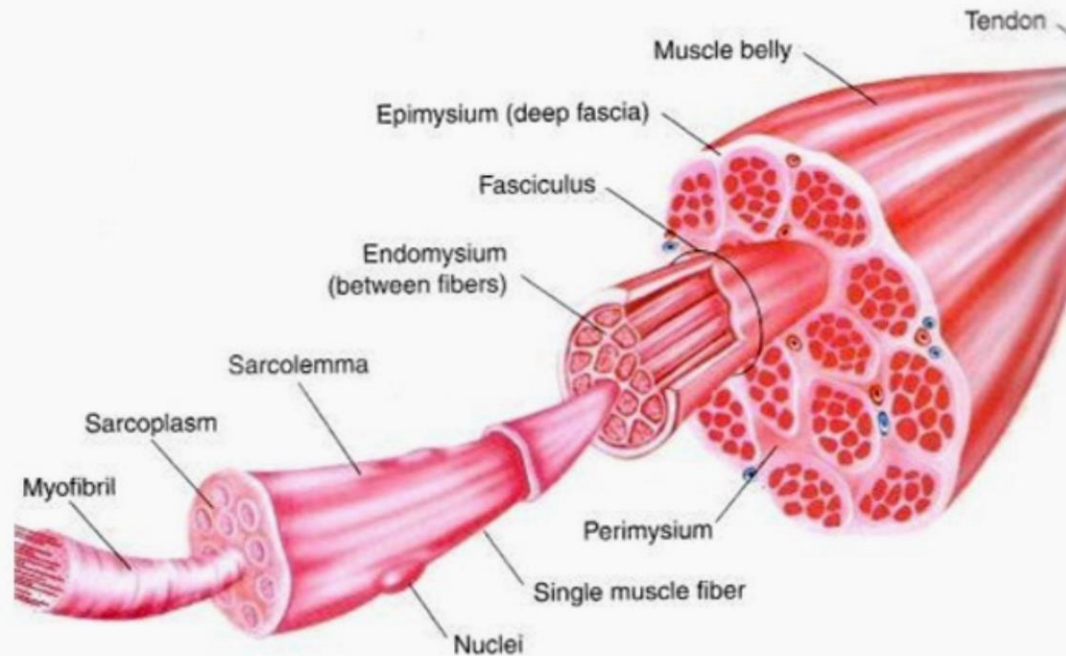
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# Introduction:

## **Muscle Mass:**

1. The muscle mass or muscle tissue is made up of large number of single muscle cell.
2. The muscle cells are commonly called Muscle fibers because these cells are long and slender in appearance.
3. Each muscle fiber is cylindrical in shape with average length of 3 cm- 4 cm varies upon the length of muscle.
4. The tendon of some muscle is flat and thin but tough. Each muscle fiber is enclosed by a cell membrane called sarcolemma. The cytoplasm of muscle is called sarcoplasm. Nuclei, myofibril, golgi apparatus, mitochondria and ribosomes etc are embedded in sarcoplasm



**Figure 1. The detailed structure of muscle fiber**



## **Classification of Muscles**

Muscles in the body perform different functions, having different shape and different mode of actions. Therefore muscles are classified under 3 types

- Presence/absence of striations.
- Control
- Function



### ***Presence/Absence of striations:***

On the basis of presence of cross striation, muscles are divided into two groups:

- Striated muscle
- Nonstriated muscle



### ***Depending on the control***

Depending on the control muscle are of following 2 types:

- ***Voluntary Muscle:***
- ***Involuntary Muscle:***



## ***Depending on the type Function***

These muscle are classified into 3 types:

- Skeletal Muscle
- Cardiac Muscle
- Smooth Muscle





### ***Muscle structure and Biomechanism of contraction:***

- Muscle fibres are grouped into bundles (of up to 150 fibres) called fasciculi. Each fasciculus or bundle is surrounded by connective tissue called perimysium.
- Each individual fibre consists of a membrane (sarcolemma) and can be further broken down into hundreds or even thousands of myofibrils.
- Myofibrils are surrounded by sarcoplasm and together they make up the contractile.

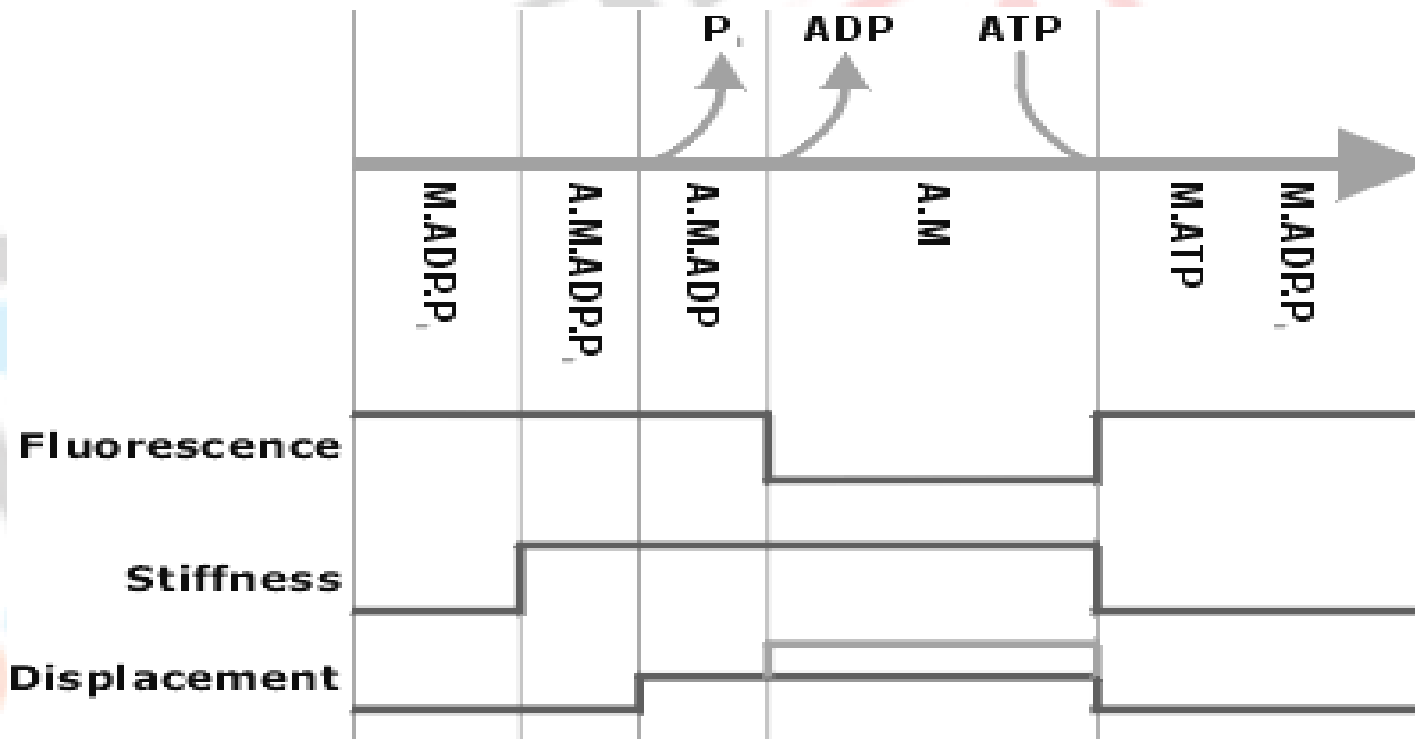


Figure 2. Biochemical mechanism of muscle contraction.



# References

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