

# Difference Between Fat and Muscle

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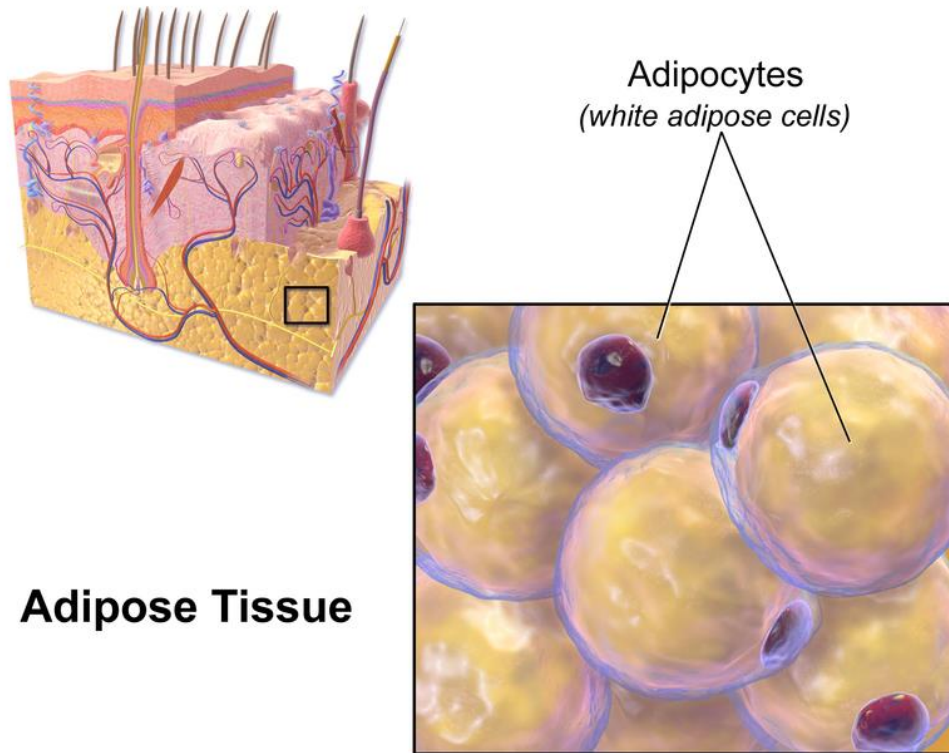
## Key Difference - Fat vs Muscle

In the context of different tissue types, fat and muscle tissues are two types of important tissues present in the body. Fat tissue is commonly referred to as adipose tissue. Adipose tissue is classified under the loose connective tissue. It is involved in the storage of lipids and provides insulation to the body. This helps in maintaining homeostasis of the body. Muscle tissue is involved in the maintenance of body posture and provides a shape to the body. **Adipose tissue or the fat tissue has a central role in the storage of substances in the fat cells and utilization of it for energy requirements whilst the muscle tissue involves in locomotion by connecting with the bone which also provides a shape and maintains the posture of the body.** This is the **key difference** between fat and muscle.

## What is Fat (Adipose Tissue)?

In the context of a connective tissue, adipose tissue is classified as a loose connective tissue with the function of energy storage derived from fat and also involves in insulating and cushioning the body. Adipose tissue is mainly composed of adipocytes along with other cells such as vascular endothelial cells, preadipocytes, and fibroblasts. These cells are collectively termed as Stromal Vascular Fraction of cells. Adipose tissue also consists of different cells of the immunity system which includes adipose tissue macrophages.

Preadipocytes give rise to mature adipocytes which develop into the adipose tissue. The adipocytes consist of an endocrine function which involves in the synthesis of estrogen from androgen. They also synthesize the hormone leptin which regulates hunger. Adipose tissue can be classified into two types, white adipose tissue, and brown adipose tissue. The white adipose tissue involves in the storage of energy and the brown adipose tissue acts as an insulator for the body by producing heat. The functioning of the adipose tissue is regulated by the adipose gene.



## Adipose Tissue

**Figure 01: Fat or Adipose tissue**

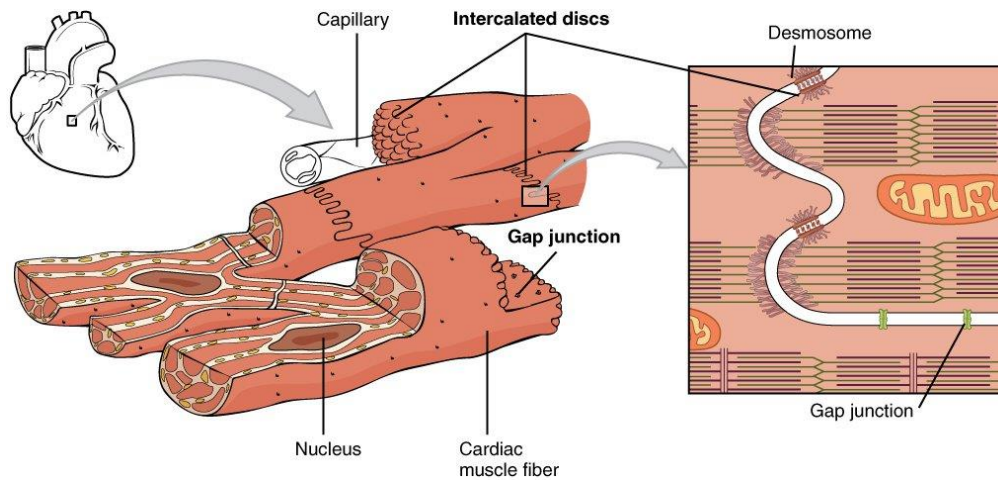
Human adipose tissue is present at the subcutaneous level beneath the skin. It is also located surrounding internal organs, breast tissue, yellow bone marrow, and in the system of muscles. The adipose tissue provides protection and cushioning to the internal organs since the tissue act as a protective lining. Since it is located beneath the skin at the level of subcutaneous, the adipose tissue insulates the body from heat and cold and maintains homeostasis. The fat cells of the adipose tissue are the main locations of storage of lipids that are stored in terms of triglycerides. Excess glucose can be converted to fat and is stored in the adipose tissue and liver. This reserve of lipids could be utilized in need of energy which provides necessary energy requirements of the body by the oxidation of lipids.

## What is Muscle?

In the context of posture and movement of living organisms, the muscle system plays a major role. It is developed through a process known as myogenesis during the early embryonic development. The muscle tissue is distinguished from other tissues due to its ability of contraction. According to the type and locations, the functioning of the muscle tissue varies. Mammalian muscle system is composed of three types of muscles; Skeletal muscle, Smooth muscle, and cardiac muscle. The classification of the muscle tissue into three categories was developed with the consideration of physical and functional factors. This includes the voluntary, involuntary contractions and the presence and absence of striations.

Muscle coordination is regulated by the central nervous system which receives stimuli from both peripheral plexus and hormones. This involves the action of neurotransmitters such as acetylcholine, adrenaline, and noradrenaline. During

muscle coordination, different types of muscles respond to neurotransmitters and endocrine hormones in a varied manner. This occurs due to variations in muscle type and location. Muscle contraction is coordinated by the presence of actin and myosin.



**Figure 02: Cardiac Muscle**

The skeletal muscle is one of the major types of muscle. It is attached to the skeletal system, the bone which provides a shape to the body and involves in maintaining posture and locomotion. The skeletal muscle is attached to the bone through a bundle of collagen fibers referred to as tendons. The skeletal muscle is striated. The basic unit of muscle tissue is the muscle fiber; myofibrils. They are cylindrical in shape and are multinucleated. The smooth muscle is present in stomach, esophagus, intestines, respiratory tract (bronchi), urethra, bladder, etc. It cannot be voluntarily controlled and is unstriated. Smooth muscle fiber is uninucleated and has a greater elasticity strength. Cardiac muscle is striated which is present in the walls of the heart, the myocardium. The myocardium is composed of outer epicardium layer and inner pericardium layer. The cardiac muscles are involuntarily controlled by the pacemaker.

## What is the Similarity Between Fat and Muscle?

- Both tissues involve in the storage of different compounds of the body such as lipid and glucose.

## What is the Difference Between Fat and Muscle?

Fat vs Muscle	
The fat or adipose tissue is a tissue involves in the storage of substances in the fat cells and utilization of them for energy requirements.	Muscle is a tissue involves in locomotion by connecting to the bone while also providing a shape and thus maintaining the posture of the body.
Function	
Fat tissue functions in the storage of lipids and utilization of stored reserves for energy purposes through oxidation.	Muscle tissue provides support and shape to the body and involves in maintaining posture.

Cell type	
Adipocytes	Muscle fibre

## Summary - Fat vs Muscle

Adipose tissue and muscle tissue are two important tissue types present in the body. Muscle tissue is of three types. Skeletal muscle, smooth muscle, and cardiac muscle. The muscle fiber is considered as the structural unit of muscle tissue. Muscle tissue provides support and shape to the body and involves in maintaining posture. Adipose tissue is derived from adipocytes. It involves in the storage of lipids and utilization of stored reserves for energy purposes through oxidation. This is the difference between fat and muscle.

### Reference:

1. Publishing, Inc. Argosy. "Muscle Types | Learn Muscular Anatomy." *Visible Body - Virtual Anatomy to See Inside the Human Body*. [Available here](#)

### Image Courtesy:

- 1.'Blausen 0012 AdiposeTissue' Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. - Own work, [\(CC BY 3.0\)](#) via [Commons Wikimedia](#)
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