13.15: Smooth, Skeletal, and Cardiac Muscles

What exactly are muscles?

Does the word "muscle" make you think of the biceps of a weightlifter, like the man in pictured above? Muscles such as biceps that move the body are easy to feel and see, but they aren’t the only muscles in the human body. Many muscles are deep within the body. They form the walls of internal organs such as the heart and stomach. You can flex your biceps like a body builder, but you cannot control the muscles inside you. It’s a good thing that they work on their own without any conscious effort on your part, because movement of these muscles is essential for survival.
What Are Muscles?

The **muscular system** consists of all the muscles of the body. Muscles are organs composed mainly of muscle cells, which are also called **muscle fibers**. Each muscle fiber is a very long, thin cell that can do something no other cell can do. It can contract, or shorten. Muscle contractions are responsible for virtually all the movements of the body, both inside and out. There are three types of muscle tissues in the human body: cardiac, smooth, and skeletal muscle tissues. They are shown in Figure below and described below.

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Types of Muscle Tissue. Both skeletal and cardiac muscles appear striated, or striped, because their cells are arranged in bundles. Smooth muscles are not striated because their cells are arranged in sheets instead of bundles.

**Smooth Muscle**

Muscle tissue in the walls of internal organs such as the stomach and intestines is **smooth muscle**. When smooth muscle contracts, it helps the organs carry out their functions. For example, when smooth muscle in the stomach contracts, it squeezes the food inside the stomach, which helps break the food into smaller pieces. Contractions of smooth muscle are involuntary. This means they are not under conscious control.

**Skeletal Muscle**

Muscle tissue that is attached to bone is **skeletal muscle**. Whether you are blinking your eyes or running a marathon, you are using skeletal muscle. Contractions of skeletal muscle are voluntary, or under conscious control. When skeletal muscle contracts, bones move. Skeletal muscle is the most common type of muscle in the human body.

**Cardiac Muscle**

**Cardiac muscle** is found only in the walls of the heart. When cardiac muscle contracts, the heart beats and pumps blood. Cardiac muscle contains a great many mitochondria, which produce ATP for energy. This helps the heart resist fatigue. Contractions of cardiac muscle are involuntary, like those of smooth muscle. Cardiac muscle, like skeletal muscle, is arranged in bundles, so it appears **striated**, or striped.
Summary

- There are three types of human muscle tissue: smooth muscle (in internal organs), skeletal muscle, and cardiac muscle (only in the heart).

Review

1. Compare and contrast the three types of muscle tissue.
2. What can muscle cells do that other cells cannot?
3. Why are skeletal and cardiac muscles striated?
4. Where is smooth muscle tissue found?
5. What is the function of skeletal muscle? Give an example.