

Difference Between Arteries and Arterioles

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Key Difference – Arteries vs Arterioles

The **circulatory system** or the **cardiovascular system** is a network of organs and blood vessels that transport blood, nutrients, **hormones**, **oxygen** and other gases throughout the body. The heart is the main organ of the cardiovascular system. Blood vessels, which are tubular hollow structures, transport blood through the body. There are three major types of blood vessels named arteries, **veins** and **capillaries**. Arteries carry blood away from the heart. Capillaries facilitate the exchange of water and chemicals between blood and tissues. Veins return blood from capillaries to heart. Arteries are divided into small arteries or blood vessels called arterioles before branching into capillaries. The blood from the heart goes via arteries, arterioles, and capillaries to body tissues and then returns back to the heart via venules and veins. **The key difference between arteries and arterioles is that arteries are the blood vessels that carry blood from the heart while arterioles are smaller arteries which receive blood from the larger arteries and pass to capillaries.**

What are Arteries?

Arteries are a type of blood vessels that carry blood away from the heart. However, coronary artery supplies oxygen rich blood to heart muscles. Arteries, except pulmonary artery which goes to lungs, contain oxygenated blood. The heart pumps blood with a pressure. Hence, arteries contain blood with high pressure. Since the blood is under high pressure, arteries are composed of thick muscular walls to tolerate the pressure. Arteries are strong and elastic. Hence, they can regulate the amount and rate of the blood that goes to organs of the body.

The largest artery in the body, which is the main tube that comes directly from the heart, is known as aorta. Aorta branches into network of arteries and runs throughout the body. Arteries then branch into small arteries called arterioles.

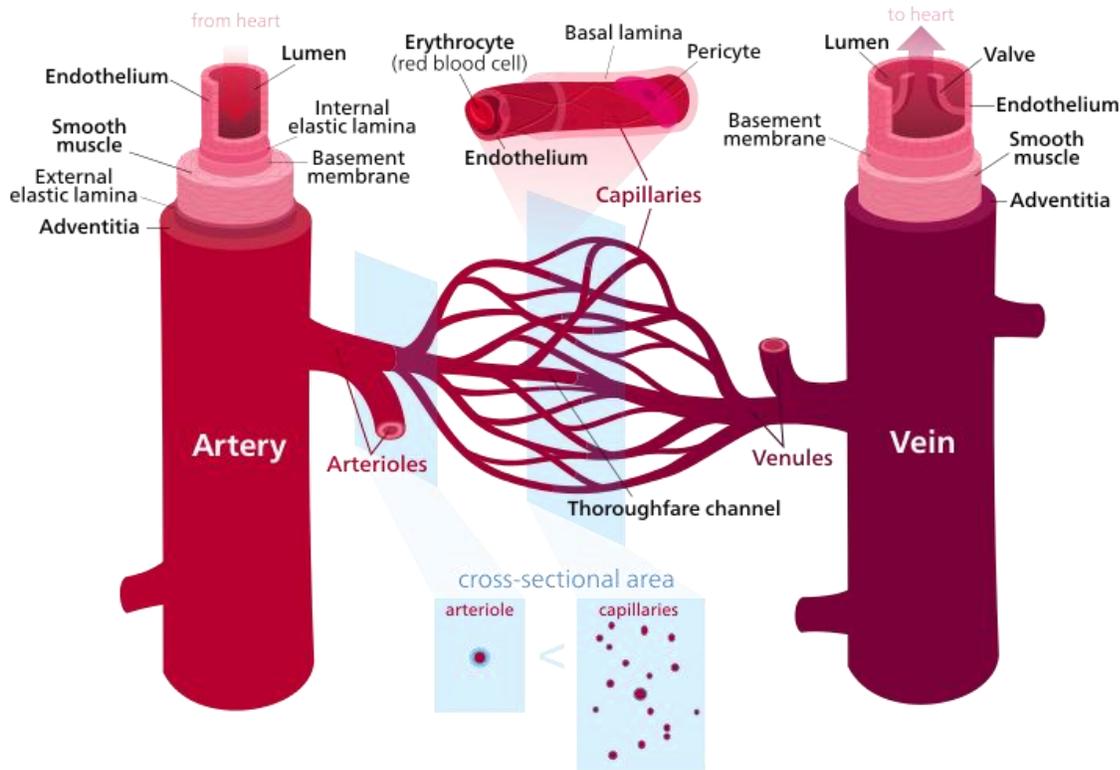


Figure 01: Artery and Other Blood Vessels

Artery muscles are composed of three layers of smooth tissues. They are intima, media and adventitia. Intima is the inner layer lined by [endothelium](#). Adventitia is the connective tissue which anchors arteries to nearby tissues.

What are Arterioles?

Arterioles are a type of small blood vessels that branch from arteries. They are a part of microcirculation. They originate from arteries and further branch into capillaries. Hence arterioles distribute blood to capillaries. The diameter of the arterioles is less compared to arteries. This diameter is adjusted to regulate the blood flow. The thickness of the walls is also less compared to arteries. They are usually made up of one or two layers of smooth muscles. Arterioles contain blood has low pressure and velocity. This enables proper gas and nutrient exchanges within capillaries.

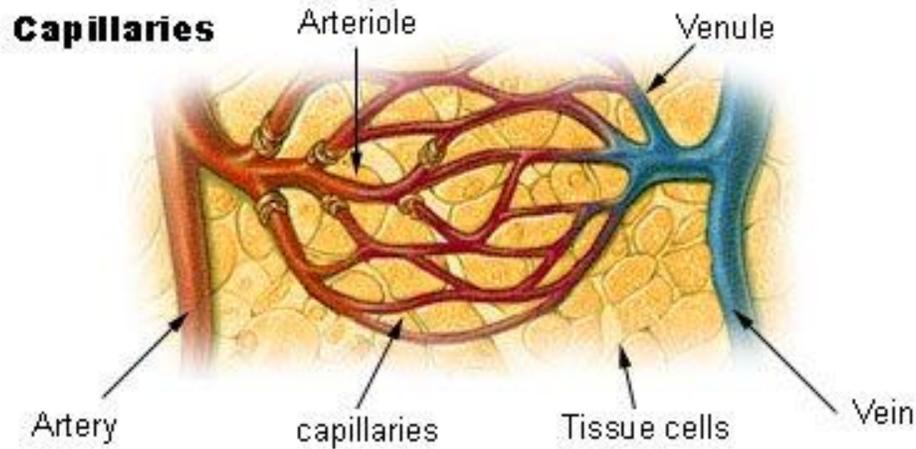


Figure 02: Arterioles

What are the similarities between Arteries and Arterioles?

- Arteries and arterioles transport oxygenated blood.
- Arteries and arterioles have strong and flexible muscular walls

What is the difference between Arteries and Arterioles?

Arteries vs Arterioles	
Arteries are the blood vessels that deliver oxygen rich blood from the heart to the tissues of the body.	Arterioles are the smaller arteries which carry blood to the capillary bed.
Pathway	
Arteries extend from the aorta and lead to arterioles.	Arterioles extend from arteries and lead to capillaries.
Diameter of Tubes	
Arteries have a comparatively higher diameter than arterioles.	Arterioles have lower diameters than arteries.
Transportation of Blood	
Arteries pass blood to arterioles.	Arterioles pass blood to capillaries.

Thickness of Walls	
Arteries are composed of thicker muscular walls.	Arterioles are composed of comparatively thinner muscular walls.
Smooth Tissues	
Arteries have three layers of smooth tissues.	Arterioles have one or two layers of smooth tissues.

Summary – Arteries vs Arterioles

Arteries and arterioles are parts of blood circulation. Arteries are the blood vessels which carry blood away from the heart. Arteries further branch into small arteries called arterioles. Arterioles further divide into capillaries which are the tiny blood vessels that facilitate the exchange of water and nutrients between blood and organs. This is the difference between arteries and arterioles.

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