

# The Circulatory System

222 Descriptive Histology

# The circulatory system is subdivided into two functional parts

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## I. **Blood vascular system**

- a. Distributes nutrients, gases, hormones to all parts of the body; collects wastes produced during cellular metabolism.
- b. Consists of a range of blood **vessels** (arteries, arterioles, capillaries, venules, veins) and a **muscular pump (heart)**.
- c. Blood is the fluid found within the blood vascular system.



# The circulatory system is subdivided into two functional parts

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## I. **Lymph vascular system**

- a. Collects tissue fluid from tissues and returns it to the blood vascular system.
- b. Consists of blind-ended capillaries (**lymphatic capillaries**) connected to venous vessels (**lymphatic vessels**) and various **lymphoid organs** (e.g. lymph nodes).
- c. **The fluid** found within the lymph vascular system is **lymph**.  
Composition of lymph in smaller lymphatic vessels is very similar to tissue fluid.

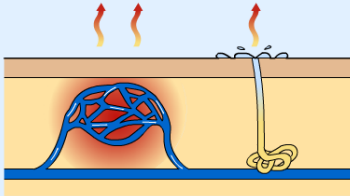
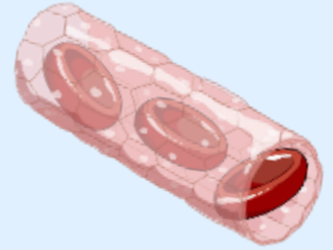


# Functions of the circulatory system

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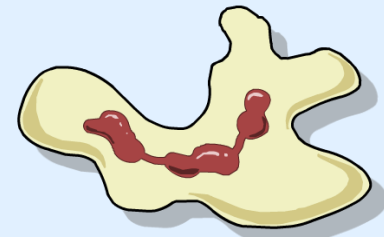
The circulatory system has three functions:

1. **Transporting** substances around the body. These include oxygen, glucose, carbon dioxide, nutrients, water and waste products.



2. **Controlling** body temperature.

3. **Protecting** the body. Blood contains cells and anti-bodies that fight infection and clotting agents to stop bleeding.



# Tissue Component of Vascular wall

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The vascular wall is composed of three basic structure

1. Endothelium
2. Muscle
3. Connective Tissue

## **Tunica Intima**

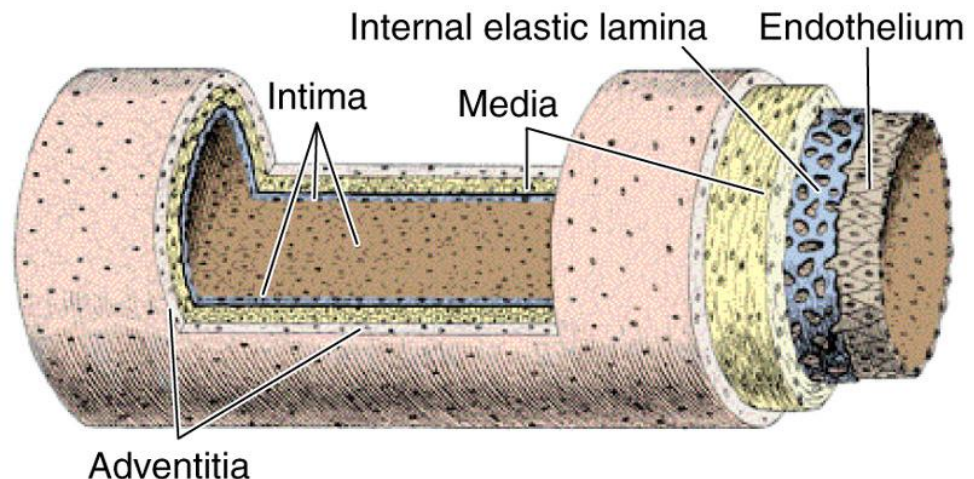
Endothelium supported by basement membrane and delicate collagenous tissue.

## **Tunica media**

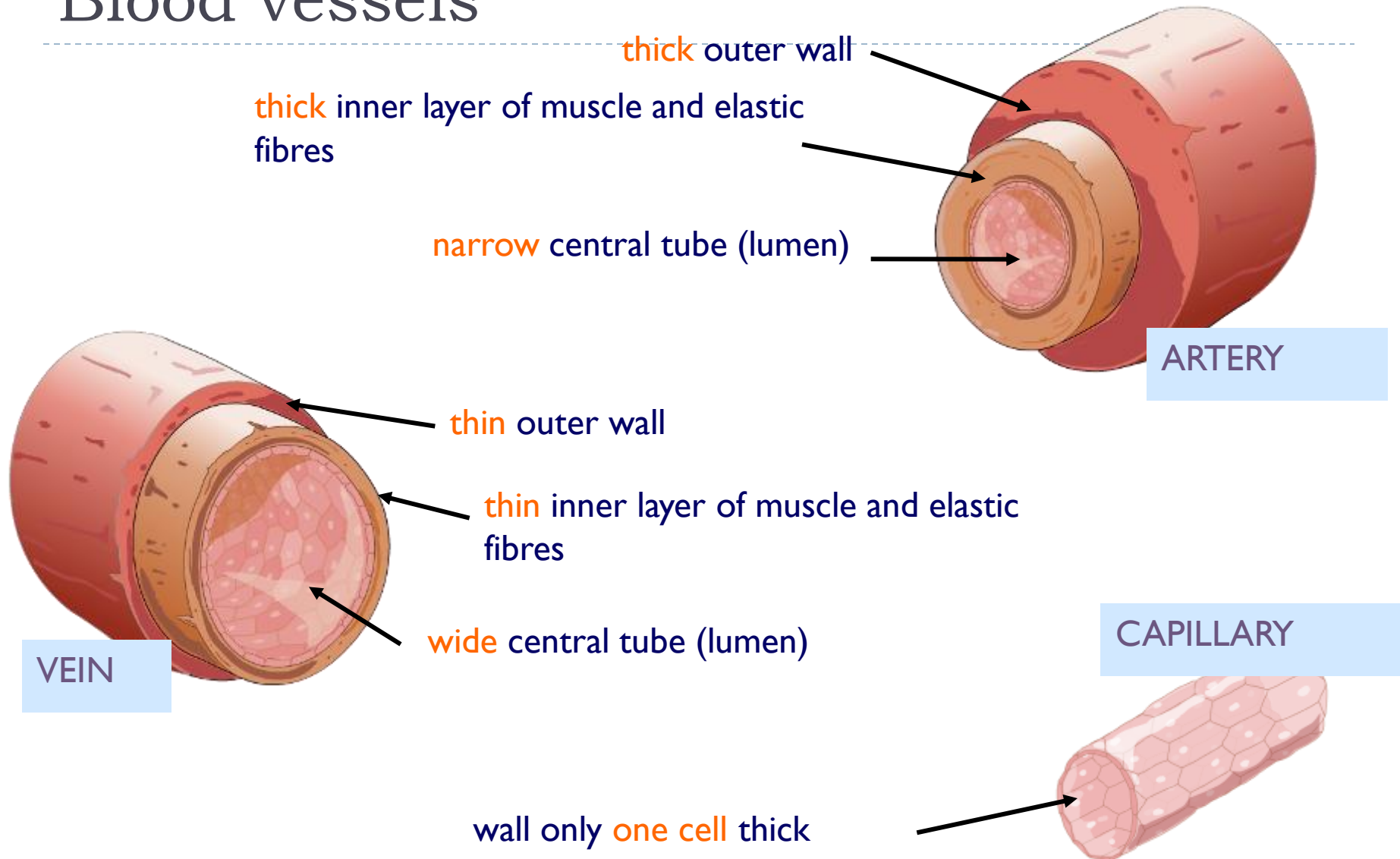
Muscle and CT

## **Tunica adventitia**

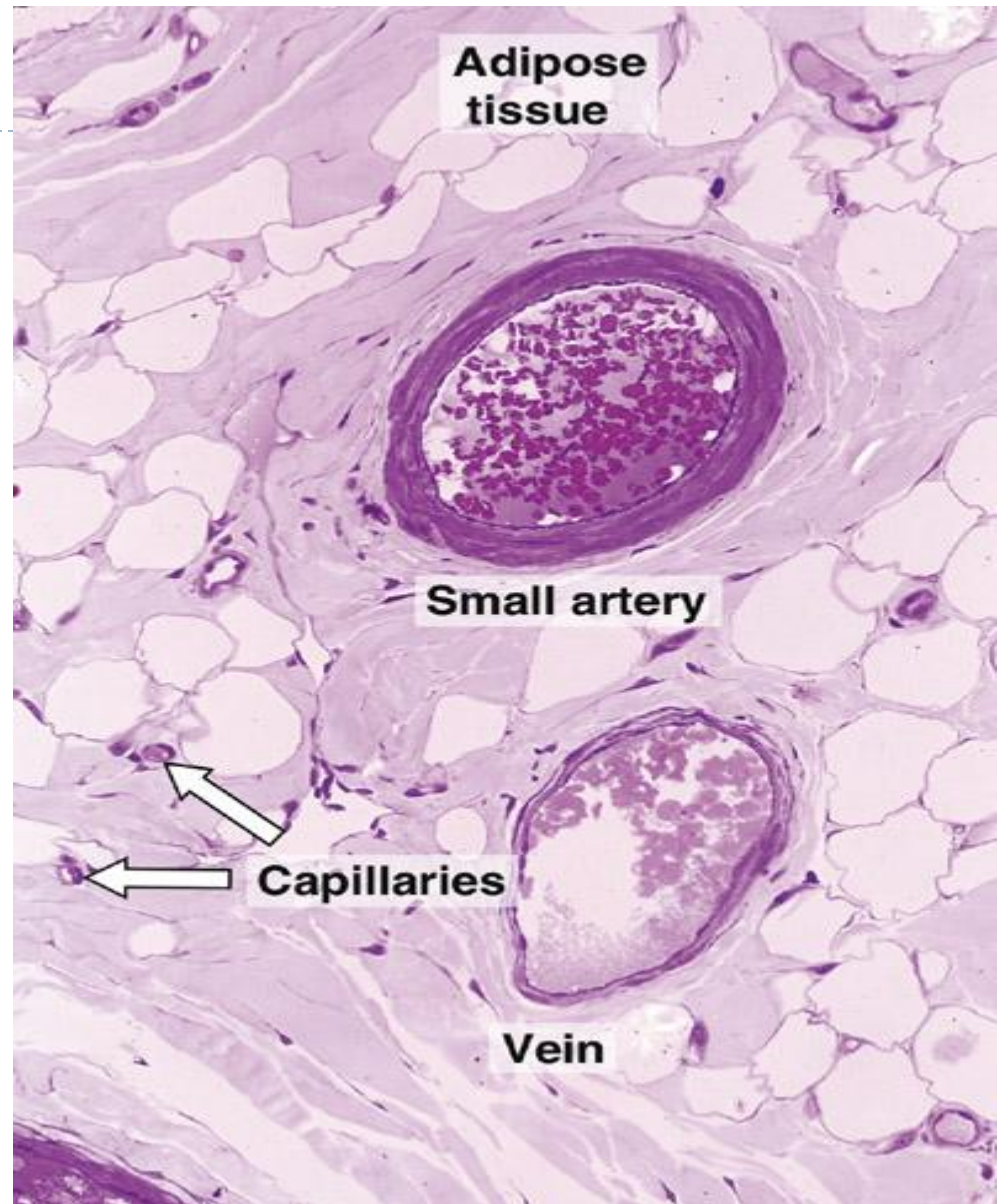
CT



# Blood vessels



Cross section through a small artery and its accompanying muscular vein. Because of vasodilatation, the arteriole is unusually filled with blood. At this stage the internal elastic lamina is not distinguished. Many other small arterial branches and capillaries can be seen in the surrounding connective tissue. Pararosaniline—toluidine blue (PT) stain. Medium magnification.





Cross sections of small arteries. A: The elastic lamina is not stained and is seen as a pallid lamina of scalloped appearance just below the endothelium (arrowhead). Medium magnification. B: A small artery with a distinctly stained internal elastic lamina (arrowhead). From a preparation of the late George Gomori. Low magnification.

