Capillaries

They connect arterioles and venules. It is the site of gas exchange. It has thin walls to create a short diffusion pathway. Blood flow is slow. The structure allows a 2-way exchange. It is **8 micrometre in diameter.**

1. Continuous capillaries
    a. In skeletal and smooth muscle
    b. Connective tissue
    c. Lungs
2. Fenestrated
    a. Pores penetrate the endothelial lining
    b. Rapid exchange of water or large solutes
    c. **Absorption of kidney, choroid plexus and endocrine glands**
3. Sinusoidal
    a. Spaces between endothelial cells
    b. Incomplete or absent basement membrane
    c. Exchange of large solutes such as proteins
    d. Specialised lining cells
    e. **Blood moves slowly**

Capillary bed

- **Metarterioles-** supplies a single capillary bed. Each metarteriole continues as a thoroughfare channel which leads to a vein. ***Restriction to a metarteriole reduces flow to whole bed.***
- **Precapillary sphincter-** guards the entrance to each capillary. Contraction reduces flow by narrowing. Relaxation dilates entrance so increases flow
- **Arteriovenous anastomoses-** direct communication between arterioles and venules. When dilated, blood bypasses the capillary bed and flows directly to the venous.

Venules

1. Collects blood from capillary bed and deliver it to small veins.
2. Diameter: **20 micrometre**
3. **Small- endothelium on basement membrane**
4. **Larger- increasing number of smooth muscle located outside endothelium**

Veins

Small: diameter <**2mm**

Medium **2-9m in diameter**

Large is **>9mm in diameter** (vena cavae)

a) Low pressure
b) Easily distensible
c) Thin walled, tunica externa is dominant. Contain valves