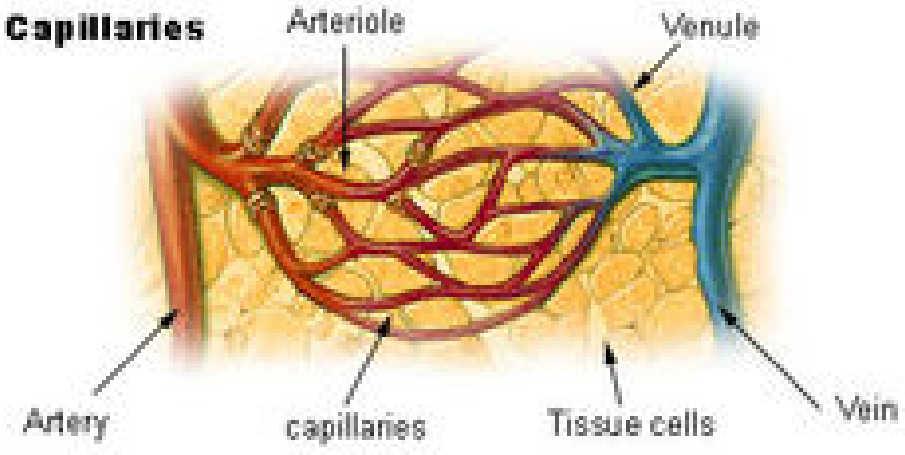
Capillaries

Capillaries are the smallest of a body's blood vessels and are parts of the microcirculation.Their endothelial linings are only one cell thick. These microvessels, measuring 5-10 μm in diameter, connect arterioles and venules, and enable the exchange of water, oxygen, carbon dioxide, and many other nutrients and waste chemical substances between blood and surrounding tissues.During embryological development, new capillaries are formed by vasculogenesis, the process of blood vessel formation occurring by a de novo production of endothelial cells and their formation into vascular tubes. The term angiogenesis denotes the formation of new capillaries from pre-existing blood vessels

Transmission electron microscope image of a capillary with a red blood cell within the pancreas. The capillary lining consists of long, thin endothelial cells, connected by tight junctions.

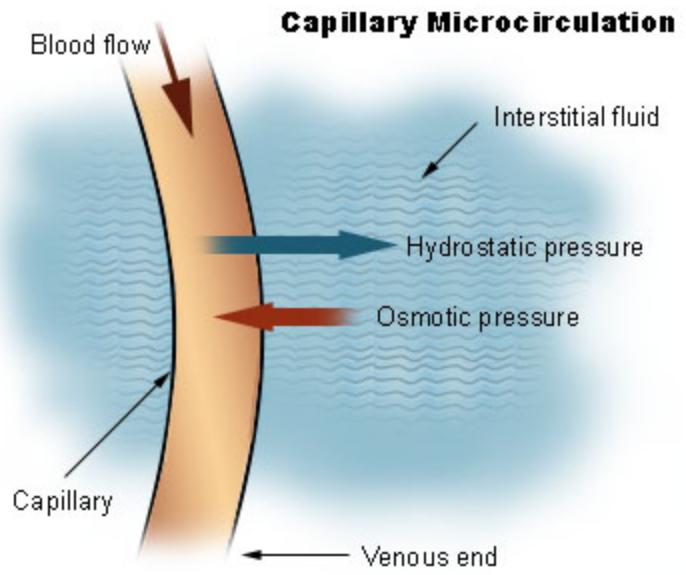


Blood flows away from the heart to arteries, which follow into arterioles, and then narrow further into capillaries. After the tissue has been perfused, capillaries branch and widen to become venules and then widen more and connect to become veins, which return blood to the heart.

The variables

According to Starling's equation, the movement of fluid depends on six variables:

1. Capillary hydrostatic pressure (P_c)
2. Interstitial hydrostatic pressure (P_i)
3. Capillary oncotic pressure (π_z)
4. Interstitial oncotic pressure (π_i)
5. Filtration coefficient (K_f)
6. Reflection coefficient (σ)



- Note that oncotic pressure is not illustrated in the image.