

- In addition to the network of blood vessels throughout the body, there is also a network of **lymphatic vessels**. The fluid that leaks out of the capillaries is collected by the lymphatic vessels and eventually **drains back into the bloodstream**.

Blood Vessels

All blood vessels have an endothelial lining which is only 1 cell thick. This reduces friction by giving a smooth surface to the lumen.

ARTERIES

- Arteries carry oxygenated blood **away from the heart**
- Arteries have **thick walls** to withstand **high blood pressure**
- Arteries have lumens with **small diameters**
- **Elastic tissue** allow the artery to **expand and recoil** under high pressure
- Arteries have a **thick fibrous layer** made of collagen which resists pressure to prevent arteries from bursting

VEINS

- Veins carry deoxygenated blood **towards the heart**
- Veins have **valves** to prevent backflow of blood in conditions with **low blood pressure**
- Veins have **thinner walls** and **bigger lumens**

CAPILLARIES

- Capillaries have walls which are **one cell thick** (squamous endothelial cells) to **decrease diffusion distance** for more efficient exchange of substances
- Capillaries are very small, meaning that they can carry blood **close to any cell**
- Capillaries are **selectively permeable**, allowing for diffusion and osmosis between the blood and body cells.

Coronary Heart Disease

Coronary heart disease is when the coronary arteries that supply the blood to the muscles of the heart become **blocked by layers of built-up fatty materials** and blood clots. This causes the arteries to become narrower and **restricts blood flow**. This means there is a lack of oxygen and glucose to the heart muscle and so the heart tissue can no longer respire aerobically. This causes a buildup of **lactic acid**, lowering the pH and **stopping muscle cells from contracting**. This can cause the heart to stop beating and can trigger a **myocardial infarction** (heart attack).