

## The Circulatory System in Man

### Introduction

The circulatory system of man includes blood vessels, blood and heart. The blood is mainly made up of a fluid component-the plasma, along with cells red blood cells (RBC), white blood cell (WBC) and platelets.

Plasma makes up about 60% of the blood. It contains dissolved materials such as proteins, glucose, ions, hormones and gases.

Red blood cells are also called erythrocytes. These are disc-like in shape and do not contain nuclei. They contain a molecule of haemoglobin which enables oxygen atoms to be attached to it so that it can be transported around the body. They have a life span of 3 months or 120 days by which they will be destroyed by the spleen and liver.

White blood cell can also be called leucocytes. They are irregularly shaped with nuclei but no haemoglobin. They are part of the immune system. Their role is to destroy invading organisms. Phagocytes engulf and destroy organisms. Lymphocytes produce antibodies to destroy them.

Platelets are fragments of cells they help in the clotting of blood.

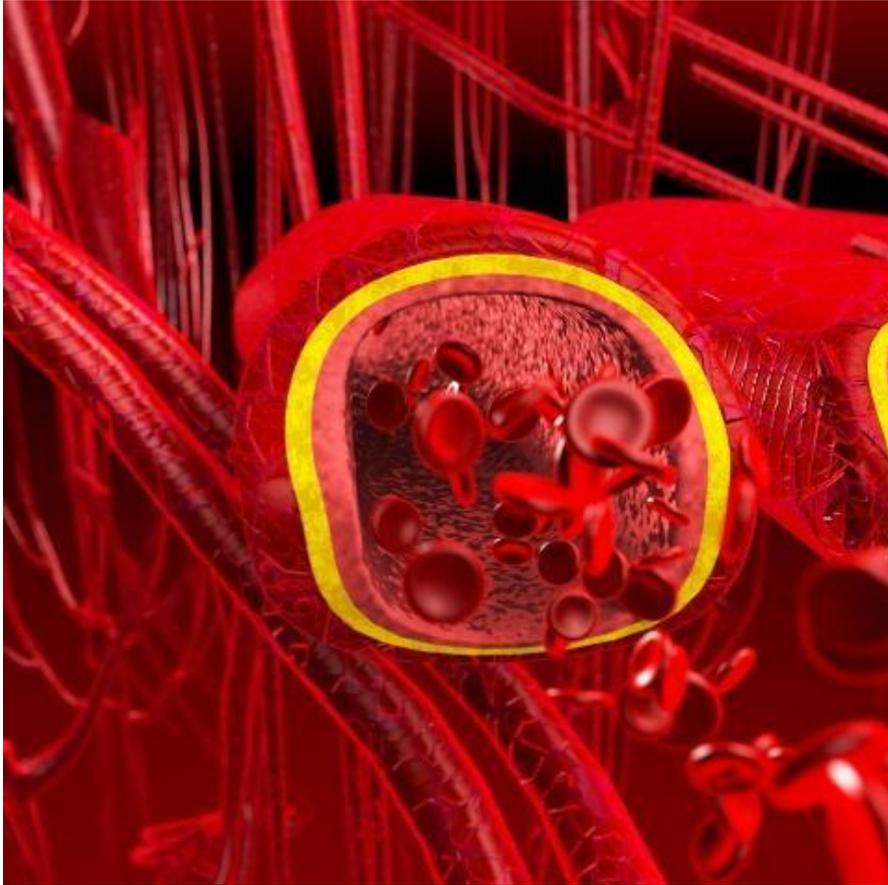
### BLOOD VESSELS

There are three types of blood vessels:

1. Artery
2. Vein
3. Capillary

<b>Feature</b>	<b>Artery</b>	<b>Vein</b>	<b>Capillary</b>	<b>Table Comparing the Features of the Three Blood Vessels</b>
Lumen	Small	Large	Small	
Valves	None	Present	None	
Direction of blood flow	Away from the heart	Towards the heart	Towards the heart	
Type of blood transported	Oxygenated	Deoxygenated	Both oxygenated and deoxygenated	
Pressure of blood	High	Low	Medium	

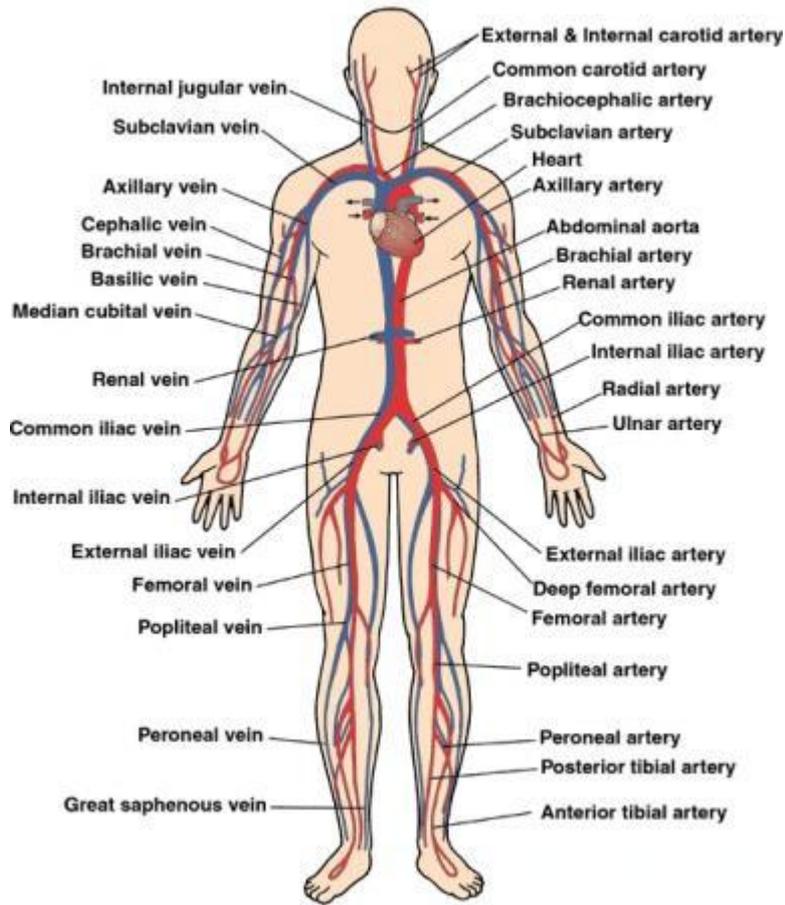
## STRUCTURE OF THE BLOOD VESSELS



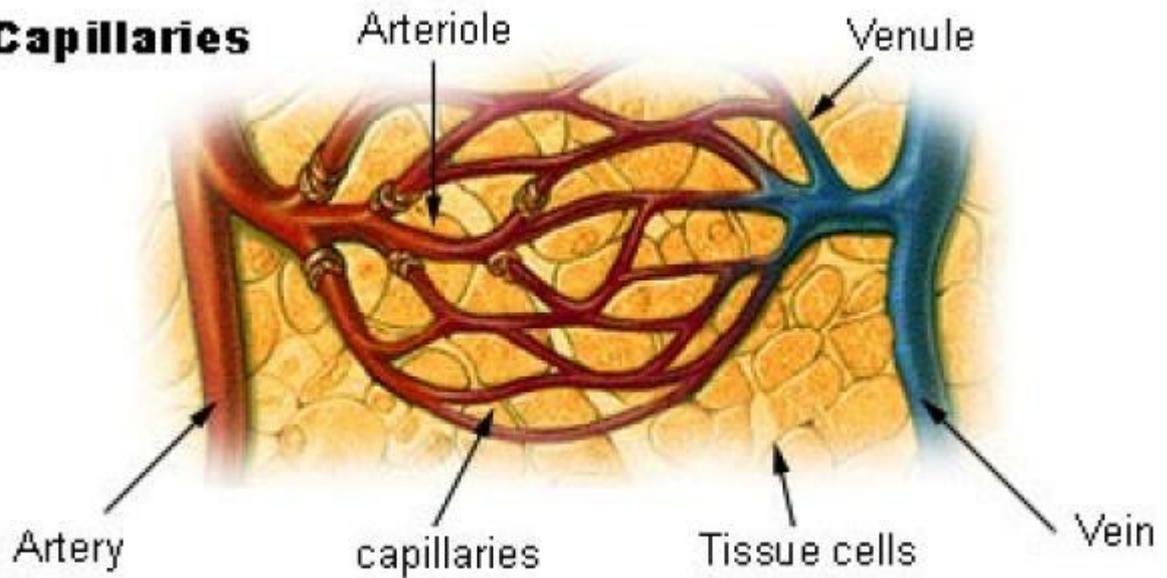
3D image of a cut section in blood arteries

# Circulatory System

Circulatory system  
(source: [www.fairview.org](http://www.fairview.org))



## Capillaries



### **STRUCTURE RELATED TO FEATURE**

The lumen of the artery is small and hence ensures that blood is kept at a high pressure. It has no valves because of the high pressure of the blood. The high pressure ensures that oxygenated blood can reach the entire body.

**Vein:** they have a larger lumen because the pressure of blood it carries is low. It contains valves to prevent backflow of blood. It returns blood to the heart.

**Capillary:** they are one cell thin and allow easy diffusion of gases between the blood and tissues.