

Circulatory System



1 In general terms, what is the function of the circulatory system?

Transports chemical substances around the body.

2 Describe the function of the following structures in the circulatory system:

Structure	Function
Blood	<i>Carries substances in the body</i>
Veins	<i>Transport blood from the lungs and body to the heart</i>
Capillaries	<i>Site of diffusion of substances between blood and tissues</i>
Arteries	<i>Transport blood from the heart to the rest of the body</i>
Heart	<i>Pumps blood</i>
Spleen	<i>Produces, stores and breaks down blood cells and filters lymph</i>
Lymphatic System	<i>Collects and filters interstitial fluid</i>

3 List the substances carried by the cells and plasma of blood:

Blood proteins

Inorganic salts

Nutrients

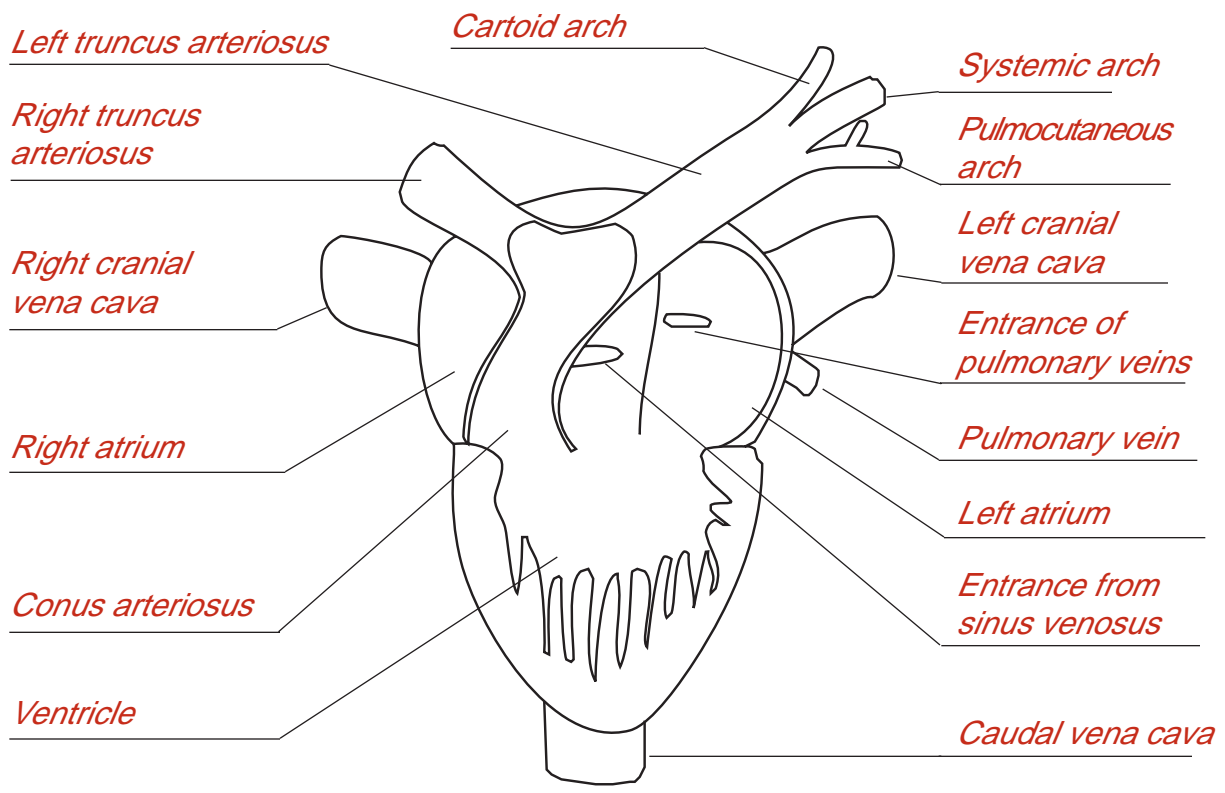
Metabolic waste

Hormones

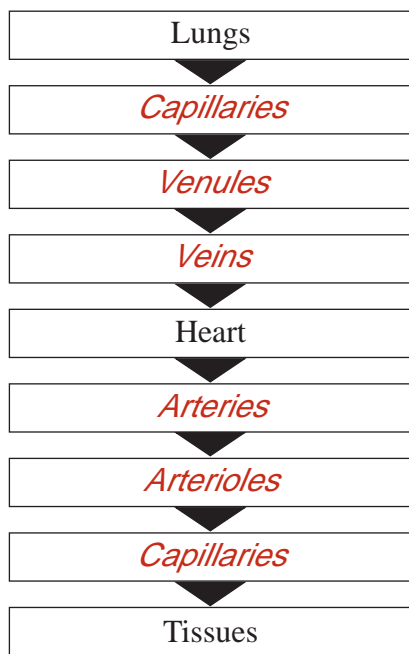
Oxygen

Carbon dioxide

4 The heart is a complex organ and the “heart” of the circulatory system. (It is interesting to note how the word has come to mean “center” or “most important part”.) Review the animated diagram and label the parts of the heart.



5 Specify the order of blood vessels an oxygen molecule entering the lungs would pass through on the way to the tissues:



6 a. Which veins carry oxygenated blood?
Pulmonary veins (from lungs to heart)

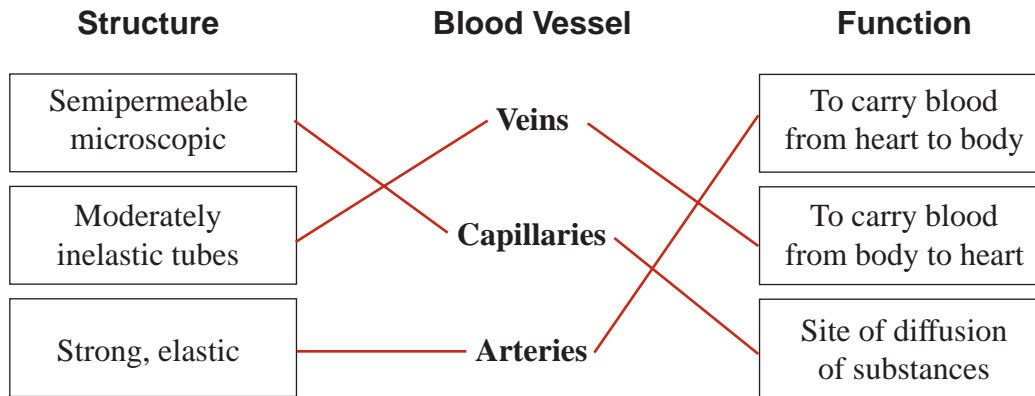
b. Which arteries carry deoxygenated blood?
Pulmonary arteries (from heart to lungs)

7 Consider the plumbing in your house. The water enters under pressure and the waste water is drained using gravity and a series of valves to prevent backflow. If you imagine the house is a frog’s body, this can be compared to the blood vessels.

The incoming pipes can be compared to the:
Arteries

The drainage system is similar to the
Veins

- 8 Match the structures and functions to the corresponding blood vessel:



- 9 a. Capillaries are small and thin. Why is this beneficial?

To increase surface area and allow diffusion in and out.

- b. Why are arteries muscular?

Because blood in them is under high pressure

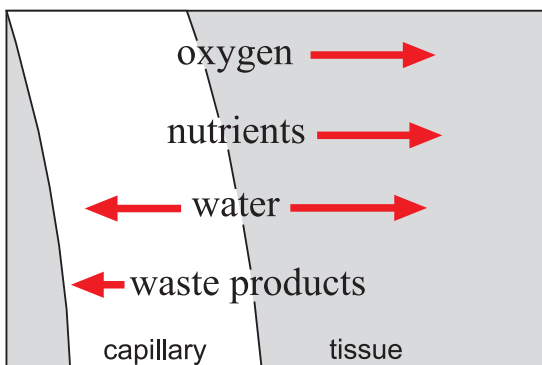
- c. Why do veins have valves?

Blood in them is under low pressure. Valves prevent backflow, helping to move blood back to the heart.

For further thought...

How does blood move through the veins?

- 10 In the following diagram, use arrow to illustrate the movement of the substances either into or out of the capillaries. (*Hint: Some may do both.*)



- 11 a. Which component of red blood cells provides the color?

Hemoglobin, which is red.

- b. What does is the function of this component of the blood?

Carry oxygen.

- c. What is the function of white blood cells?

Protect the frog from infection.

- 12 **Compare to human**



What is the primary difference between frog red blood cells and human red blood cells?

Red blood cells in humans are not nucleated.