

BLOOD VESSELS

PART A

Complete the following statements:

1. Simple squamous epithelial tissue called _____ forms the inner linings of the tunica interna of blood vessels.
2. The _____ of an arterial wall contains many smooth muscle cells.
3. The _____ of an arterial wall is largely composed of connective tissue.
4. When contraction of the smooth muscle in a blood vessel wall occurs, the vessel is referred to as being in a condition of _____.
5. Relaxation of the smooth muscle in a blood vessel wall results in the vessel being in a condition of _____.
6. The smallest blood vessels are called _____.
7. Tissues with high rates of metabolism tend to have _____ densities of capillaries.
8. _____ are composed of smooth muscles that encircle the entrances to capillaries and, thus, can control the distribution of the blood within the tissues.
9. The process called _____ provides the most important means of transfer of biochemicals through capillary walls.
10. Filtration results when substances are forced through capillary walls by _____ pressure.
11. The presence of plasma proteins in the blood increases its _____ pressure as compared to tissue fluids.
12. Excess tissue fluid is returned to the venous circulation by means of _____ vessels.
13. _____ in certain veins close if the blood begins to back up in that vein.
14. _____ are vessels that serve as blood reservoirs.

PART B

1. Sketch and label a section of an arterial wall.

2. Sketch and label a section of a venous wall.

3. Describe the differences you noted in the structures of the arterial and venous walls. Mention each of the three layers of the wall. _____

Figure 37.1 Label the tunics of the wall of this artery and vein.

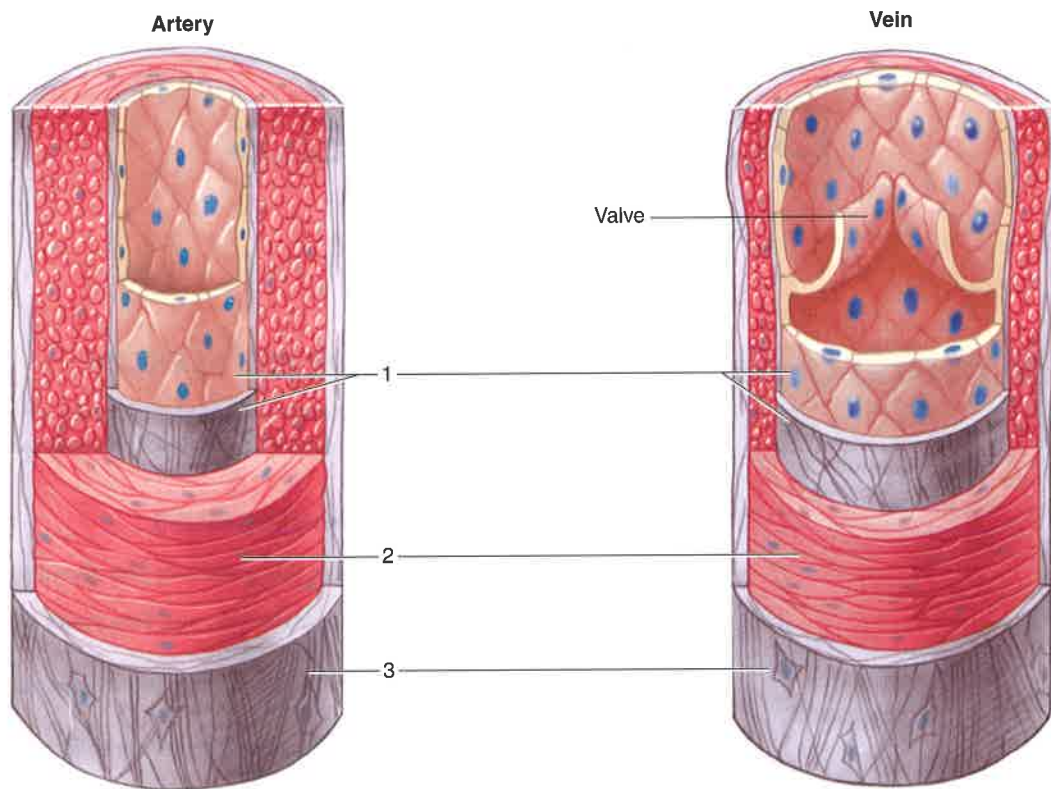
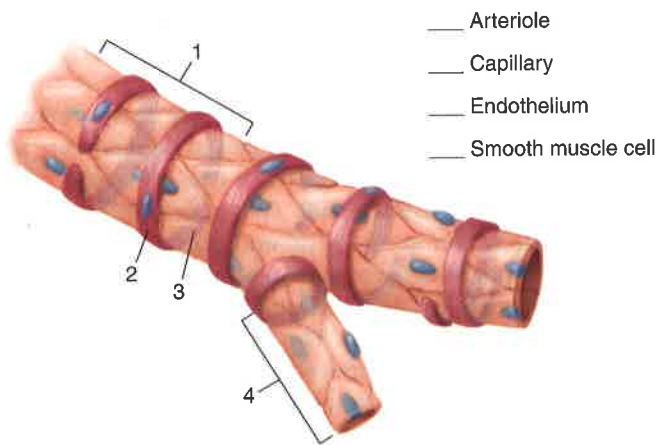


Figure 37.2 Label this arteriole by placing the correct numbers in the spaces provided.



6. Obtain a slide of a vein cross section and examine it as you did the artery cross section. Note the thinner wall and larger lumen relative to an artery of comparable size. Identify the three layers of the wall, and prepare a labeled sketch in Part B of the laboratory report.
7. Complete Part B of the laboratory report.

8. Observe the blood vessels in the webbing of a frog's foot. To do this, follow these steps:
 - a. Obtain a live frog. Wrap its body in a moist paper towel, leaving one foot extending outward. Secure the towel with rubber bands, but be careful not to wrap the animal so tightly that it could be injured. Try to keep the nostrils exposed.
 - b. Place the frog on a frog board or on a piece of heavy cardboard with the foot near the hole in one corner.
 - c. Fasten the wrapped body to the board with masking tape.
 - d. Carefully spread the web of the foot over the hole and secure it to the board with dissecting pins and thread (fig. 37.4). Keep the web moist with frog Ringer's solution.
 - e. Secure the board on the stage of a microscope with heavy rubber bands and position it so that the web is beneath the objective lens.
 - f. Focus on the web, using low-power magnification, and locate some blood vessels. Note the movement of the blood cells and the direction of the blood flow. You might notice that red blood cells of frogs are nucleated. Identify an arteriole, a capillary, and a venule.