

ADAM Interactive Physiology

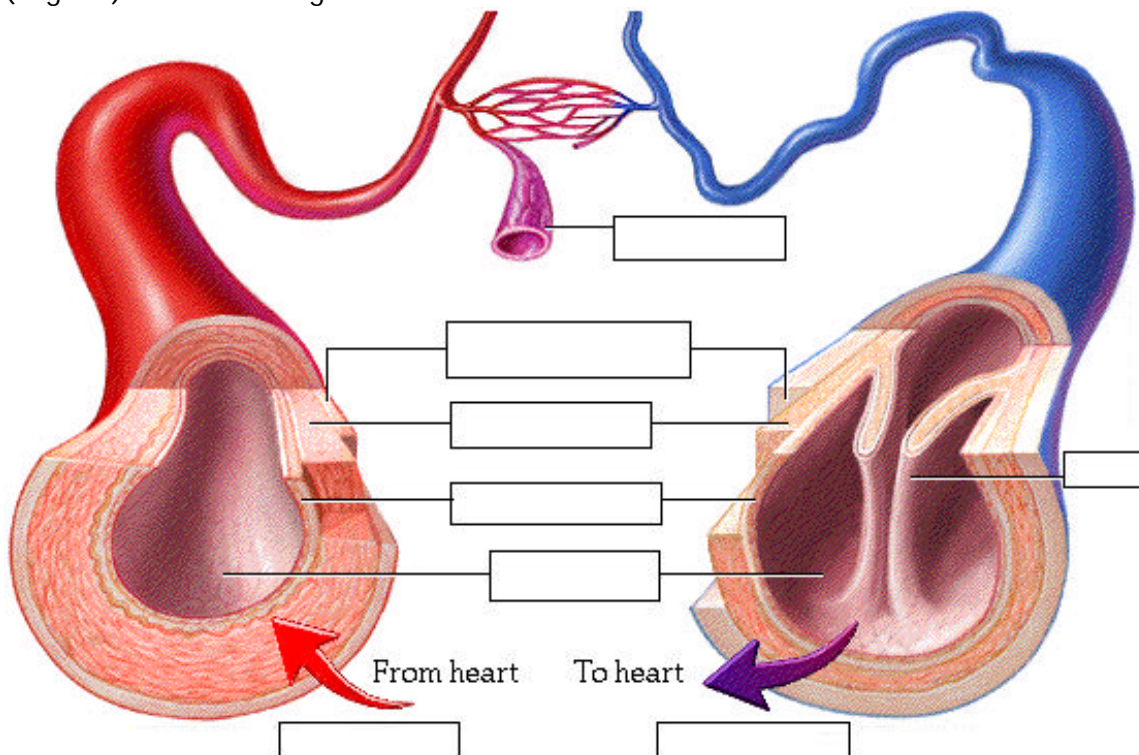
Anatomy Review: Blood Vessel Structure & Function

Goals

- To describe the general structure of blood vessel walls.
- To compare and contrast the types of blood vessels.
- To relate the blood pressure in the various parts of the vascular system to differences in blood vessel structure.

1. (Page 3.) What is the central blood-containing space of a blood vessel called?
2. (Page 3.) What are the names of the three distinct layers of a blood vessel from innermost to outermost?
3. (Page 3.) What is the tunica intima composed of?
4. (Page 3.) What is the function of endothelium?
5. (Page 3.) What two structures is the tunica media composed of? What is the purpose of each?
6. (Page 3.) What is the tunica adventitia composed of? What is its function?

(Page 4.) Label the diagram



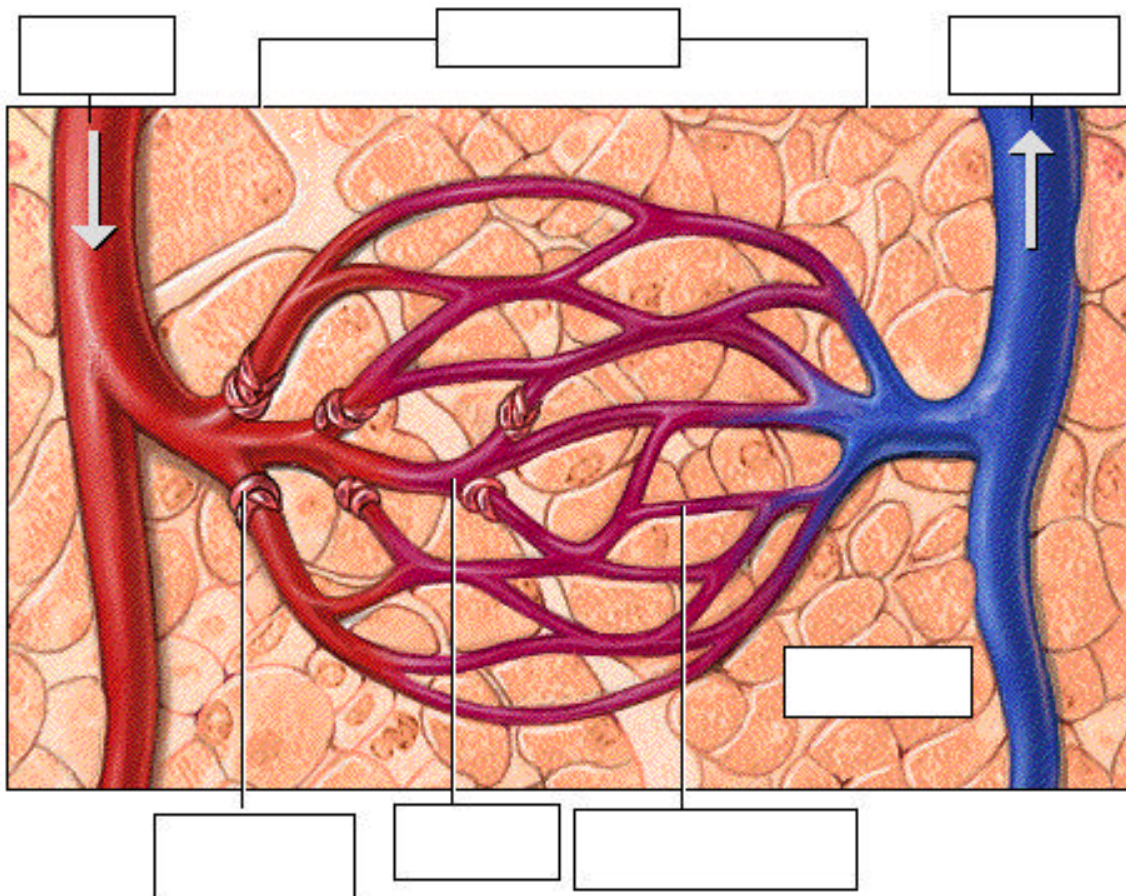
7. (Page 4.) Tell if the following are characteristic of

(A= arteries, C = capillaries, V = veins:

- a. _____ Presence of smooth muscle allows them to constrict and dilate.
 - b. _____ Lumens are largest.
 - c. _____ Have the thickest tunica media.
 - d. _____ Are able to accommodate a large volume of blood.
 - e. _____ Exposed to the highest pressures of any vessels.
 - f. _____ The link between arteries and veins in the pathway of blood.
 - g. _____ Experience the least pressure.
 - h. _____ The smallest vessels.
 - i. _____ Vessels that transport blood away from the heart.
 - j. _____ The tunica adventitia is the heaviest wall layer.
 - k. _____ Presence of elastin allows them to stretch and recoil.
 - l. _____ Walls consist of just a thin tunica intima.
 - m. _____ Role: the exchange of materials between the blood and the interstitial fluid.
8. (Page 7.) What are the three types of arteries classified by relative size and function? List from largest to smallest.
9. (Page 8.) What layer of elastic arteries allows them to stretch and recoil?
10. (Page 8.) What is the aorta?
11. (Page 8-10.) Tell if the following are characteristic of (EA = elastic arteries or MA = muscular arteries):
- a. _____ Have the greatest amount of elastin, enabling them to expand when blood is forced into them.
 - b. _____ More smooth muscle and less elastin enables them to actively constrict and relax.
 - c. _____ Deliver blood to specific body organs.
 - d. _____ Closest to the heart.
 - e. _____ When the heart relaxes, they recoil.
 - f. _____ The tunica media is composed mainly of smooth muscle.
 - g. _____ Vasomotor fibers of the sympathetic nervous system regulate the size of the lumen.
 - h. _____ Experience the greatest pressure.
12. (Page 10.) Define vasodilation and vasoconstriction.
13. (Page 10.) What causes vasoconstriction?

14. (Page 13.) What are the smaller arterioles that allow blood to flow to capillary beds called?
15. (Page 12,13.) Contrast the difference in the layers of a large arteriole compared to a smaller arteriole.
16. (Page 14.) Does the blood pulsate in arterioles?
17. (Page 14.) Which of the three types of arteries offers the greatest resistance to blood flow?
18. (Page 16.) What are capillaries made of? How does that affect their function?
19. (Page 17.) Match the following to their function or characteristic:
- | | |
|--------------------------------|---|
| 1. ____ feeder arteriole | a. exchange of materials take place here |
| 2. ____ shunt | b. short vessel that directly connects the feeder arteriole and the drainage venule |
| 3. ____ true capillaries | c. accepts the blood coming from the true capillaries |
| 4. ____ precapillary sphincter | d. acts as a valve to regulate the flow of blood into the true capillaries |
| 5. ____ drainage venule | e. brings blood to the capillary bed |

(Page 17) Label the following diagram



20. (Page 18.) What happens to blood flow through a capillary bed when precapillary sphincters constrict?
21. (Page 19.) What would happen if blood pressures were high in the capillaries?
22. (Page 20.) What layers are found on larger venules?
23. (Page 21.) What layers are found on smaller venules?
24. (Page 23.) How does the structure of veins differ from arteries?
25. (Page 23.) What is the heaviest wall layer in veins?
26. (Page 24.) List the three factors which assist in returning blood to the heart.
27. (Page 25.) What is the structure and function of venous valves?
28. (Page 25.) Where are venous valves the most abundant?
29. (Page 26.) How does the muscular pump work?
30. (Page 27.) Explain how the respiratory pump works.