

LABORATORY EXERCISE 44 BLOOD VESSELS

Instructional Suggestions

If live frogs are not available for the microscopic observation of blood vessels, you might want to provide small goldfish. The head of a fish can be wrapped loosely in wet cotton to keep its gills moist, and the fish can be placed on a glass plate on the stage of a microscope. If its tail is spread out beneath a microscope slide, the blood vessels can be observed with low- and high-power magnification. However, if the fish is not returned to water within a few minutes, it will likely die.

Figure Labels

FIG. 44.1

- | | | | |
|----|----------------|----|----------------|
| 1. | Tunica interna | 3. | Tunica externa |
| 2. | Tunica media | | |

FIG. 44.2

- | | |
|---|---|
| 1 | 3 |
| 4 | 2 |

Laboratory Report Answers

PART A

- | | | | |
|-----|------------------------------|-----|-------------------------|
| 1. | endothelium | 11. | precapillary sphincters |
| 2. | tunica media (middle layer) | 12. | diffusion |
| 3. | tunica externa (outer layer) | 13. | lipid |
| 4. | vasoconstriction | 14. | pores |
| 5. | vasodilation | 15. | hydrostatic |
| 6. | arteriovenous shunt | 16. | osmotic |
| 7. | capillaries | 17. | lymphatic |
| 8. | small | 18. | histamine |
| 9. | blood-brain barrier | 19. | valves |
| 10. | greater | 20. | veins |

PART B

- | | | |
|----|---|---|
| 1. | (sketch) | artery contains relatively greater amounts of smooth muscle and elastic tissue than that of the vein. |
| 2. | (sketch) | |
| 3. | The tunica interna and tunica externa are similar in the artery and vein. The tunica media of the | |



Critical Thinking Application Answer

Because arteries are under higher pressure than veins, the thicker arterial walls help to maintain the strength and elasticity necessary against their walls.

PART C

1. The blood in an arteriole moves with a pulsating rapid flow, whereas that in a venule moves with a steady slower flow.
2. A capillary could be identified by its small diameter and the presence of blood cells moving in single file.
3. Blood moves fastest in arterioles, somewhat slower in venules, and slowest in capillaries.
4. If noted, the flow from an arteriole into a capillary will change from continuous flow to an interrupted flow and may cease flow for brief periods of time. This irregular flow into the capillary is a result of changes caused by the precapillary sphincter.