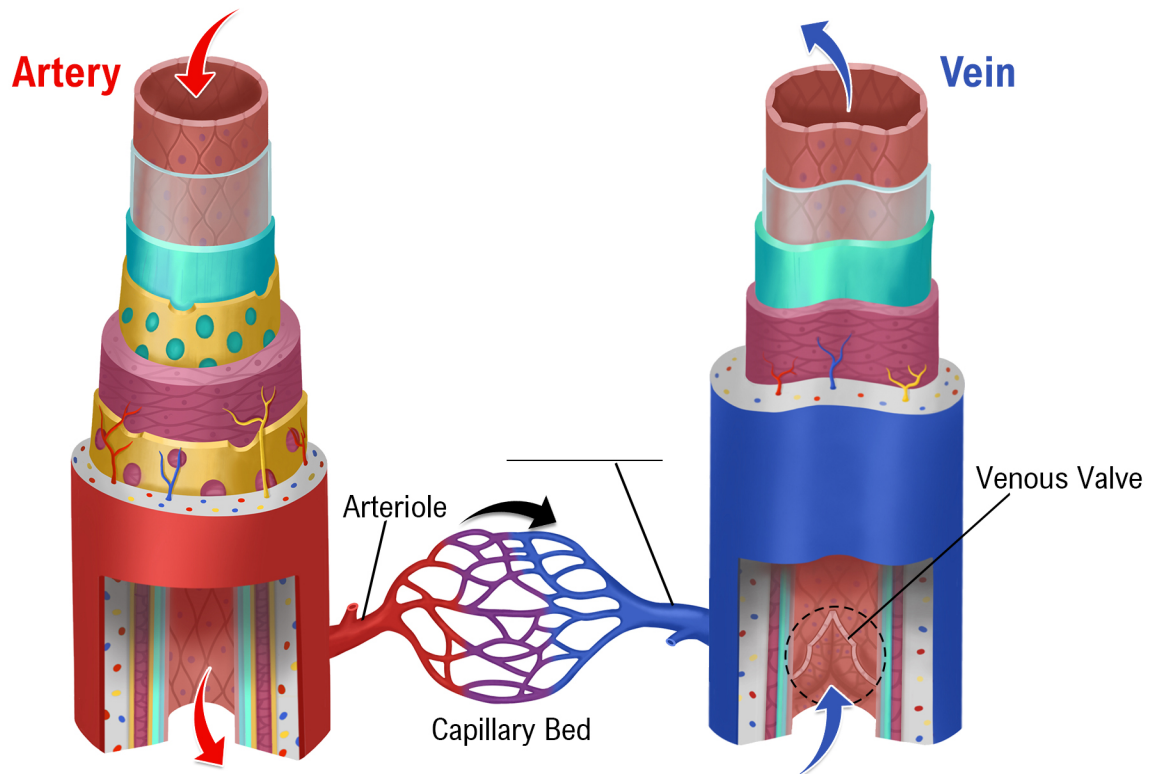


TOPIC: VEINS

Introduction to Veins

- ◆ Recall: **Veins** are blood vessels that carry blood _____ the heart.
 - Have all 3 tunics but tend to have _____ walls & _____ lumens compared to arteries.
 - Tunica _____ is generally the *thickest* tunic in veins.
 - Average blood pressure is *lower*, so some veins have *venous* _____ preventing backflow of blood.
- ◆ **Venules:** _____ veins that collect blood from capillaries & converge to form larger veins.



EXAMPLE

Which of the following statements about veins and venules is true?

- a) There are significantly more venules than veins in the body.
- b) Venules have a smaller diameter than veins.
- c) Venules always converge into veins.
- d) All of the above are true.

TOPIC: VEINS


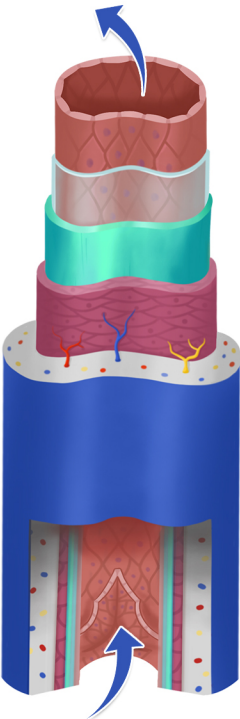
PRACTICE

A major difference between venules and arterioles is that:

- a) The smallest arterioles consist of only one layer (tunic), while the smallest venules have all 3 layers (tunics).
- b) Some arterioles make direct contact with capillaries, but no venules do.
- c) Arterioles deliver blood to capillaries while venules collect blood from capillaries.
- d) Arterioles collect blood from capillaries while venules deliver blood to capillaries.

Arteries vs. Veins

Here is a comparison table showing the key differences between arteries & veins:

	Arteries	Veins	
	Carry blood _____ from heart	Carry blood towards the heart	
	Carry Oxygenated Blood (except for Pulmonary Arteries)	Carry Deoxygenated Blood (except for Pulmonary Veins)	
	Usually Brighter Red	Usually Darker Red or Purple	
	Thick wall, contains higher proportion of _____	Thin wall, contains less muscle & elastin	
	May have internal/external elastic laminae	Always lack internal/external elastic laminae	
	Narrower lumen	_____ lumen	
	Does not have valves	May have venous valves to prevent _____ flow	
	_____ blood pressure (receive blood directly from heart)	_____ blood pressure (deliver blood back to heart)	

TOPIC: VEINS

EXAMPLE

Arteries need to have _____ walls than veins to prevent _____ under high pressure.

- | | |
|-----------------------|-----------------------|
| a) Thinner; backflow. | c) Thicker; backflow. |
| b) Thinner; collapse. | d) Thicker; collapse. |

PRACTICE

Which of the following is *not* a reason that veins need valves to prevent backflow, but arteries do not?

- a) Arteries have thicker walls than veins, providing a natural resistance to backflow.
- b) Veins require valves to prevent gravity from causing backflow when blood is transported up to the heart.
- c) Arteries have higher blood pressure, reducing the likelihood of backflow when they transport blood upward.
- d) All of the above are correct reasons for veins requiring valves.

PRACTICE

Which of the following statements regarding arteries and veins is true?

- a) Arteries have less smooth muscle than veins.
- b) Arteries always carry oxygenated blood, while veins always carry deoxygenated blood.
- c) At any given time, there is more blood in the veins than in the arteries.
- d) There tends to be a lower blood pressure in arteries than in veins.