

# Review chapter 19

[Science](#), [Biology](#)



Chapter 19 Review Questions 1. D 2. B 3. D 4. C 5. E 6. D 7. C 8. B 9. B 10. A 11. B 12. C 13. b 14. B 15. D 16. 1. G, 2. C, 3. F, I, 4. H, 5. D 17. Their location and the thinness of walls, allow for exchange of materials between the blood and interstitial fluid. 18. Elastic arteries: Location- near the heart Histology elastin and smooth muscle cells Functional adaptations they function as simple elastic tubes Muscular arteries Location deliver blood to specific body organs Histology smooth muscle and fibrous Functional adaptation active in vasoconstriction

Arterioles Location leading to the capillary beds Histology thinner but also mostly smooth muscle and fibrous Functional adaptation determine the minute to minute flow into the capillary beds. 19. Blood flow = the difference in blood flow divided by resistance 20. Blood Pressure is the force per unit area exerted on a vessel wall by the contained blood expressed in mmHg. Systolic is pressure at contraction, and diastolic is pressure at rest. B) 110-140, over 70-80. Short term control mediated by the nervous system and blood borne chemicals, counteracting moment to moment fluctuations in bp by altering peripheral resistance. Involves baroreceptors and to a lesser degree chemoreceptors. 21. It is fastest in the aorta and large arteries, where the cross sectional area is the highest and slower in the capillaries where the cross sectional area is least. 22. The blood flow to the skin for the purpose of nutrients is served by autoregulation in response to the need for oxygen. The flow for temperature regulation requires neural intervention, and are controlled by temperature receptors from higher CNS centers. 23. When experiencing the Fight or flight reflex the nervous system and blood borne chemicals counteract moment to moment fluctuations in B/P and CO.

The neural controls distribute blood to the organs needing it like you musculoskeletal system during running, and chemoreceptors react to increased  $\text{CO}_2$  or decreased  $\text{O}_2$  levels are present, flight. 24. Tissue perfusion, blood flow through body tissues is involved in the delivery of oxygen and nutrients to and the removal of wastes from the tissue cells, as well as gas exchange in the lungs absorption of nutrients in the digestive tract and urine formation in the kidneys.

The rate of blood flow to the tissues is almost exactly right to provide proper function. 1. Lipid soluble molecules such as respiratory gasses diffuse through the lipid bilayer of the endothelial cell plasma membranes. Small water soluble solutes such as amino acids and sugars pass through fluid filled intercellular capillary clefts or fenestrations. Some larger molecules such as proteins are actively transported in pinocytotic vesicles or caveolae. 25. Hepatic portal vein, Superior mesenteric vein, Splenic vein, Inferior mesenteric vein.

In most circulation, the blood goes from the heart to the aorta to the arteries, to the organ or tissue, to the veins and back to the heart. In a portal circulation, the blood goes from the heart to the aorta to the arteries, to the organ or tissue, to a vein, then to another tissue or organ BEFORE it goes back to the heart. An example of this is the blood that goes through the anterior mesenteric artery to the small intestine, goes through the mesenteric vein to the hepatic portal vein, and to the liver, before it returns to the heart.

This is because the blood coming from the intestines has a lot of sugar that it absorbed. The body tries to keep the level of sugar in the blood the same at all times. So, the blood goes to the liver, where it stores some of the sugar, before it goes back to the heart and through the rest of the circulation. Then, in the middle of the night, when you haven't eaten anything in a while (and the level of sugar in your blood is low), some of that sugar that was stored in the liver is released back to the blood.