

Review Questions for Blood Clotting topic

Review questions will not be collected and are not worth any points. Doing them will, however, help you prepare for the midterms and quizzes in this course. Furthermore, some of these review questions will appear on the final exam (although the numbers within the questions may be changed).

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- 1) Platelets
 - A) help fight bacteria and viruses
 - B) are the largest of the formed elements and are also called megocytes.
 - C) help stop blood loss when we are cut.
 - D) are the basis for classifying people into the eight major blood groups.

- 2) Blood clotting would not occur if the plasma were deficient in
 - A) antibodies
 - B) hormones
 - C) albumin.
 - D) fibrinogen.

- 3) All the events that result in slowing and halting of blood loss from a broken blood vessel are called
 - A) Coagulation
 - B) Thrombus
 - C) Hemostasis
 - D) Hemolysis

- 4) Which is **not** one of the three steps of hemostasis?
 - A) Coagulation
 - B) Hemophilia
 - C) Platelet plug formation
 - D) Vasoconstriction

- 5) Which of the following events is the first to occur during the process of hemostasis after a blood vessel becomes injured?
 - A) The vessel wall is damaged, exposing collagen proteins to the blood.
 - B) The injured blood vessel is dilated by newly released chemicals to let in defense cells.
 - C) Platelets become "sticky" and a platelet plug is formed near the injury site.
 - D) A web of fibrin protein strands tightly interweave the platelet plug.

- 6) The inner most layer of the blood vessels is called the
- A) tunica externa.
 - B) tunica media.
 - C) tunica interna
 - D) vasomedia
- 7) Which clotting factor is part of the common pathway?
- A) Clotting factor XII
 - B) Clotting factor VII
 - C) Clotting factor X
 - D) Clotting factor XI
- 8) Which of the following does **not** cause abnormally long bleeding time?
- A) Low WBC levels
 - B) Low platelet count
 - C) Hemophilia
 - D) Vitamin K deficiency
- 9) Thrombus
- A) A blood clot in an unbroken blood vessel
 - B) The molecules on the surface of a cell that the immune system interacts with
 - C) A medicine given to heart attack victims to restore blood flow
 - D) The smallest of the three blood cell types
- 10) Which of the following events is the last to occur during the process of hemostasis after a blood vessel becomes injured?
- A) The vessel wall is damaged, exposing collagen proteins to the blood.
 - B) The injured blood vessel is dilated by newly released chemicals to let in defense cells.
 - C) Platelets become "sticky" and a platelet plug is formed near the injury site.
 - D) A web of fibrin protein traps RBCs
- 11) This substance is an anticoagulant that rapidly dissolves blood clots. It is often immediately given to people suffering from a heart attack or stroke.
- A) anti-embolane
 - B) thrombin
 - C) TPA
 - D) fibrin

11) Define the following terms as they were defined in class:

a) Hemostasis

b) Coagulation

12) The central space in a blood vessel through which blood flows is called the _____.

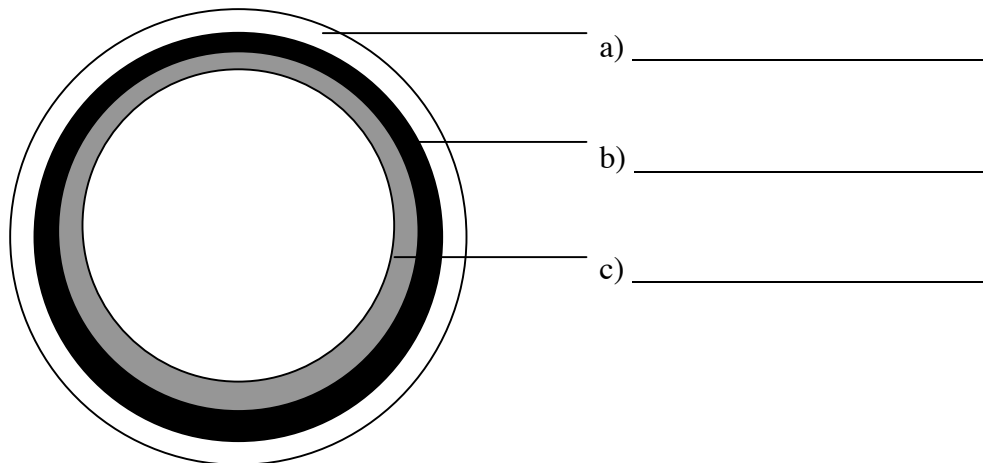
13) The innermost wall of the blood vessels is called the _____ and it is made of _____ (which tissue type?).

14) _____ is the middle layer of blood vessels, and primarily consists of _____ tissue.

15) The _____ refers to the outermost layer of the blood vessel wall. Its function is to _____.

16) The outermost layer of blood vessels is composed mostly of _____ tissue.

17) Below is a diagram of a blood vessel. The inner white circle is the lumen (hollow space where the blood flows through). All the other circles are layers of tissue. In each blank label, write the name of the tissue layer and write the type of tissue it is composed of. Be as specific as possible for full credit.



18) _____ cells are critical for starting and carrying out all steps of the hemostasis process.

19) Platelets bind tightly to any _____ (a protein type) that they encounter. This protein is normally not accessible to platelets, since it is in the outer _____ (a tissue) layer of the blood vessel wall, but not in the inner layer.

20) _____ is the body's first step in hemostasis. This slows blood flow through the broken vessel by making the vessel smaller.

21) Platelets that have encountered collagen cause vasoconstriction by _____.

22) The second step in hemostasis is forming a temporary seal where a blood vessel has broken. This step is called the _____.

23) The final step in hemostasis is filling the vessel break with a solid clump of protein fibers and trapped RBCs. The clump is called a _____ and its formation is called _____.

24) One of the last steps in blood clotting is conversion of prothrombin to the active enzyme _____, which then forms a mesh of _____ protein that traps RBCs. The protein that traps the RBCs is made from a smaller blood protein called _____.

25) _____ is the name for all the plasma proteins that are involved in the clotting process.

26) The extrinsic clotting pathway starts when the protein _____ is released from damaged cells. This protein helps to activate is clotting factor VII. The intrinsic clotting pathway starts when _____ or _____ or _____ activate clotting factor XII.

27) Place the events of hemostasis in their proper order by writing numbers in the blank space after each event. Write 1 for the first event, 2 for the second event, etc.

- _____ Prothrombin converted to thrombin
- _____ Passing RBCs are trapped
- _____ Platelets release molecules
- _____ Fibrin produced from fibrinogen
- _____ Blood vessel constricts

28) The clotting factors are dissolved in the _____ (a part of the blood).

29) Vitamin _____ is needed by the _____ (an organ) for the formation of many clotting factors.

30) Common causes of long bleeding times are deficiency in _____ (a formed element), failure of the liver to synthesize clotting factors because of lack of vitamin _____, or a genetic defect in one or more of the clotting factors (called “_____”).

31) Explain how chemotherapy can lead to slow clotting time.

32) A blood clot that develops in an unbroken blood vessel is called a(n) _____. It may or may not become large enough to block the vessel.

33) What is the most common cause of a thrombus?

34) Thrombus that totally blocks a blood vessel will cause tissue hypoxia (lack of oxygen) and possibly tissue death. If this happens in the heart it is called a _____. If it happens in the brain it is called a _____.

35) A drug called _____ is injected into heart attack victims to dissolve the thrombus in their heart.

36) Blood thinners are substances that inhibit _____. They are often given to people at risk for a heart attack.

37) _____ is a common, over-the-counter drug which is a blood thinner.

38) The most common prescription blood thinner is _____.

39) Name all the clotting factors in the extrinsic clotting pathway: _____

40) Name all the clotting factors and proteins in the intrinsic clotting pathway:

41) Name all the clotting factors and proteins in the common clotting pathway:

42) Which clotting pathway, the extrinsic or intrinsic, is usually faster? _____. Justify your answer.

43) The factor that converts fibrinogen into fibrin is called _____.

44) The factor named in the above question is derived from an inactive precursor form known as _____.

45) Name an anticoagulant that is used in vivo other than coumadin or aspirin: _____

46) At a molecular level, describe how citric acid (citrate) and EDTA function as anticoagulants. Also, explain why are these anticoagulants only used in vitro, not in vivo?

47) In the formation of a platelet plug, platelets release _____, which makes platelets sticky.

48) The term _____ means the general category of disorders in which a person's clotting time is abnormally long.

49) Why might a person with an abnormally slow clotting time be given vitamin K? Would treatment with vitamin K immediately improve the clotting time? Explain why or why not.

50) Arteries have a thick tissue layer in their wall called the tunica media. What type of tissue is the tunica media and what is its main function?

51) Platelets play many important roles in hemostasis. Describe their role in each of the three steps of hemostasis.

52) What is the normal bleeding time range? _____ to _____.

53) In the lab exercise on bleeding time, blood samples with leather shavings or sand added usually had faster clotting times than blood samples without leather or sand added. Explain why the presence of these substances sped up the clotting time.

Answers for Review Questions for Blood Clotting topic:

1) C

2) D

3) C

4) B

5) A

6) C

7) C

8) A

9) A

10) D

11) C

11) a) All the events that slow and then halt blood loss from a broken blood vessel.

b) The formation of a blood clot (RBCs trapped in a web of fibrin protein)

12) Lumen

13) Tunica interna

Simple squamous epithelial tissue

14) Tunica media
Smooth muscle

15) Tunica externa
Protect and strengthen the blood vessel

16) Irregular dense connective tissue

- 17) a) Tunica externa, made of irregular dense connective tissue
b) Tunica media, made of smooth muscle tissue
c) Tunica interna, made of simple squamous epithelial tissue

18) Platelets

19) Collagen
Irregular dense connective tissue

20) Vasoconstriction

21) Releasing thromboxane and Serotonin, which cause the tunica media smooth muscle to contract.

22) Platelet plug

23) Blood clot
Coagulation

24) Thrombin
Fibrin
Fibrinogen

25) Clotting factors

26) Tissue factor

Collagen

Silica

Polyphosphate

27) 3 = Prothrombin converted to thrombin

5 = Passing RBCs are trapped

1 = Platelets release molecules

4 = Fibrin produced from fibrinogen

2 = Blood vessel constricts

28) Plasma

29) Vitamin K

Liver

30) Platelets

Vitamin K

Hemophilia

31) Chemotherapy slows cellular reproduction in the body. Its goal is to slow the growth of cancer cells, but a side effect is that it slows the production of normal body cells, including blood cells. Therefore chemotherapy can lead to lowered numbers of platelets in the blood, which can lead to slow clotting time.

32) Thrombus

33) A torn plaque in a blood vessel

34) Myocardial infarction (heart attack)

Cerebrovascular accident (stroke)

35) TPA (tissue plasminogen activator)

36) Coagulation/thrombus formation

37) Aspirin

38) Coumadin

39) Tissue factor (tissue thromboplastin)
Factor VII

40) Factor XII
Factor XI
Factor IX
Factor VIII

41) Factor X
Factor V
Prothrombin/Thrombin
Fibrinogen/Fibrin

42) The extrinsic pathway is usually faster. This is because it contains fewer steps.

43) Thrombin

44) Prothrombin

45) Heparin

46) Citric acid and EDTA bind calcium ions, which are required for formation of the clotting factor complexes. Because the presence of calcium ions in the blood is required for many life processes (including the beating of heart cells), EDTA and citric acid are only used as anticoagulants for blood samples in test tubes (in vitro), not as anticoagulants in living organisms (in vivo).

47) ADP

48) Bleeding disorder

49) A common cause of slow clotting time is vitamin K deficiency, which is required by the liver to make many clotting factors. Therefore, an injection of vitamin K is often given as a treatment for slow clotting times. This injection would not immediately improve clotting time because it takes time for the liver to absorb the vitamin K and to use it to synthesize the clotting factors.

50) The tunica media is smooth muscle. It can contract or relax to regulate the blood flow through the blood vessel. The body uses this ability to regulate the amount of blood reaching organs, and also to slow the blood flow when an blood vessel is damaged.

51) a) Vasoconstriction: Platelets release the molecules thromboxane and serotonin to cause the blood vessel tunica media to contract.

b) Platelet plug formation: Platelets release the molecule ADP. This causes platelets to become sticky, which allows them to cling together to form the platelet plug.

c) Coagulation: Platelets release polyphosphate molecule, which activates the intrinsic clotting pathway. Also, platelets have binding sites for the clotting factors, which speeds up the process of clotting factors activating one another.

52) 1 – 7 minutes

53) The leather shavings contain collagen protein (leather is collagen-rich dense connective tissue from cow skin). Sand contains silica. Both silica and collagen are activators of clotting factor XII of the intrinsic clotting pathway.