

Review Questions for Blood Typing 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).

=====

1) Antigen

- A) A medicine given to heart attack victims to restore blood flow
- B) A type of leukocyte
- C) The molecules on the surface of a cell that the immune system interacts with
- D) A medicine given to heart attack victims to counteract blood poisonings (such as snake bites or peanut allergy reactions)

2) The A antigen on RBCs is a

- A) Protein
- B) Lipid
- C) Carbohydrate
- D) Nucleic acid

3) The B antigen is a

- A) Protein
- B) Lipid
- C) Carbohydrate
- D) Nucleic acid

4) The Rh antigen is a

- A) Protein
- B) Lipid
- C) Carbohydrate
- D) Nucleic acid

5) A person whose blood type A has red blood cells with ____ antigens, and the antigen ____ is a foreign antigen to their immune system.

- A) B; B
- B) A; B
- C) A; A
- D) B; A

6) Considering the three RBC antigens discussed in lecture (A, B, and Rh), how many blood types are there?

- A) 3
- B) 4
- C) 8
- D) 9

7) Considering only the ABO system of red blood cell typing, which of the following is true?

- A) People of blood type A have the B antigen only
- B) People of blood type B have the A antigen only
- C) People of blood type O have the O antigen
- D) People of blood type O have no antigens

8) Considering only the ABO system of red blood cell typing, which of the following is true?

- A) People of blood type AB have the A antigen and the B antigen
- B) People of blood type B have the A antigen
- C) People of blood type O have the AB antigen
- D) People of blood type O have the O antigen

9) A person with O+ blood could always safely be given which blood types?

- A) O-, O+
- B) B+, B-, A+, A-, AB+, AB-
- C) O- only
- D) O-, O+, B+, B-, A+, A-, AB+, AB-

10) A person with AB+ blood could always safely be given which blood type(s)? More than one answer may be possible.

- A) O+
- B) O-
- C) AB+
- D) B+

11) A person with A- blood could always safely be given which blood type(s)? More than one answer may be possible.

- A) O-
- B) AB+
- C) A+
- D) B-

12) The “Universal donor” blood type is:

- A) A+
- B) O+
- C) O-
- D) AB-
- E) AB+

13) The “Universal acceptor” blood type is:

- A) A+
- B) O+
- C) O-
- D) AB-
- E) AB+

14) A woman who has just given birth is given a drug called RhoGAM. This drug protects

- A) The newborn baby
- B) The woman
- C) The next baby the woman has
- D) The doctor’s insurance corporation

15) A woman who has just given birth is given a drug called RhoGAM. She is given this drug because she is

- A) Rh+
- B) Rh-
- C) O
- D) AB

16) Any molecules on cells that the immune system interacts with are called _____. They are usually proteins, carbohydrates, or lipids on the surface of a cell.

17) Molecules on cells that the immune system interacts with but does not attack (because the molecules occur naturally as part of the organism) are called _____.

18) Molecules on cells that the immune system interacts with and attacks (because the molecules do not occur naturally as part of the organism) are called _____.

19) Humans have different _____ because of differing antigens on their erythrocytes. These antigens cause such severe immune reactions that a transfusion mismatch is fatal.

20) The three antigens that may be present on a person's RBCs are _____, _____, and _____.

21) List the eight major blood groups. Give full blood types as answers.

22) What do the terms "positive" and "negative" refer to in blood types?

23) A person received a transfusion mismatch and died from it. Describe all the events that occurred in the person's body, starting with the transfusion and ending with their death, that lead to their death.

24) Pete is blood type B-. Which blood types could he always receive safely? Each of your answers must be a complete blood type, such as B- for example.

25) Pete is blood type B-. People of which blood types can always receive Pete's blood safely? Each of your answers must be a complete blood type, such as B- for example.

26) Sean is blood type O+. What blood type(s) can he always safely receive as transfusions? Give full blood types as answers.

27) Sean is blood type O+. To people of which blood types could Sean always safely donate his blood? Give full blood types as answers.

28) Deric is blood type AB+. What blood type(s) can he always safely receive as transfusions? Give full blood types as answers.

29) Deric is blood type AB+. To people of which blood types could Deric always safely donate his blood? Give full blood types as answers.

30) Blood type _____ is considered the "universal donor" (can be safely given to everyone) because it lacks any antigens. (Give the full blood type).

31) People of blood type _____ are considered the "universal acceptors" (They can be safely receive any blood type) because all antigens are self-antigens to them. (Give the full blood type).

- 32) A person has blood type O+.
- List all the antigens (if any) on this person's RBCs: _____
 - This person has never had a transfusion. List all the antibodies against RBC antigens (if any) that this person has: _____
 - If, in the past, this person had a transfusion of B+ blood and survived the transfusion mismatch, list all the antibodies against RBC antigens (if any) that this person has: _____
- 33) A person has blood type O-.
- List all the antigens (if any) on this person's RBCs: _____
 - This person has never had a transfusion. List all the antibodies against RBC antigens (if any) that this person has: _____
 - If, in the past, this person had a transfusion of B+ blood and survived the transfusion mismatch, list all the antibodies against RBC antigens (if any) that this person has: _____
- 34) A person has blood type A+.
- List all the antigens (if any) on this person's RBCs: _____
 - This person has never had a transfusion. List all the antibodies against RBC antigens (if any) that this person has: _____
 - If, in the past, this person had a transfusion of B+ blood and survived the transfusion mismatch, list all the antibodies against RBC antigens (if any) that this person has: _____
- 35) A person has blood type AB+.
- List all the antigens (if any) on this person's RBCs: _____
 - This person has never had a transfusion. List all the antibodies against RBC antigens (if any) that this person has: _____
 - If, in the past, this person had a transfusion of O+ blood, list all the antibodies against RBC antigens (if any) that this person has: _____
- 36) A person has blood type AB-.
- List all the antigens (if any) on this person's RBCs: _____
 - This person has never had a transfusion. List all the antibodies against RBC antigens (if any) that this person has: _____
 - If, in the past, this person had a transfusion of O+ blood and survived the transfusion mismatch, list all the antibodies against RBC antigens (if any) that this person has: _____

37) If a person who was blood type B- received a transfusion of blood that was B+, would they be in danger? Justify your answer.

38) Although the exact percentages differ between ethnic groups, in all ethnic groups the most common ABO blood type is _____. The second most common ABO blood type is _____. The third most common ABO blood type is _____. The rarest (least common) ABO blood type is: _____.

39) Although the exact percentage differs between ethnic groups, in all ethnic groups most people are Rh-/Rh+ (circle one).

40) The immune system only makes antibodies against the _____ antigen *after* an exposure to that antigen. In contrast, the immune system already has antibodies against _____ antigen and _____ antigen, even if the person has never been exposed to these two antigens.

41) If an Rh- woman's first pregnancy is an Rh+ fetus, the fetus' blood cells are/aren't (circle one) in danger of being attacked by the woman's antibodies.

42) If an Rh- woman's second pregnancy is an Rh+ fetus, and she received no RhoGAM during her first Rh+ pregnancy, the fetus' blood cells are/aren't (circle one) in danger of being attacked by the woman's antibodies.

43) The drug _____ is given to Rh- women after the birth of each baby to prevent her immune system from attacking any future Rh+ babies.

44) During pregnancy, blood cells from the fetus do/don't (circle one word) cross the placenta to enter the mother's blood. During pregnancy, blood cells from the mother do/don't (circle one word) cross the placenta to enter the fetus' blood.

45) At the time of birth, blood cells from the fetus do/don't (circle one word) enter the mother's blood.

46) During pregnancy, antibodies can/can't (circle one word) cross the placenta.

47) Women who have just given birth are sometimes given a substance called RhoGAM. RhoGAM does nothing for the health of the mother or her newborn.

a) Who then benefits from the RhoGAM?

b) Explain exactly how the RhoGAM protects the above person and what it protects them from.

48) In the blood typing lab, what exactly was in the blue liquid that was added to the first square on the blood typing card?

49) In the blood typing lab, what exactly was in the yellow liquid that was added to the first square on the blood typing card?

50) In the blood typing lab, what exactly was in the clear liquid that was added to the first square on the blood typing card?

51) Dave's blood type was determined using the same method you used in lab. Inspect the card below and state Dave's blood type: _____



52) Malinda's blood type was determined using the same method you used in lab. Inspect the card below and state Malinda's blood type: _____



53) Yvette's blood type was determined using the same method you used in lab. Inspect the card below and state Yvette's blood type: _____



Answers for Review Questions for Blood Typing topic:

1) C

2) C

3) C

4) A

5) B

6) C

7) D

8) A

9) A

10) A, B, C, and D

11) A

12) C

13) E

14) C

15) B

16) Antigens

17) Self antigens

18) Foreign antigens

19) Blood types

20) A, B, and Rh

- 21) A+
A-
B+
B-
AB+
AB-
O+
O-

22) Positive means the person's RBCs have the Rh antigen.
Negative means the person's RBCs do not have the Rh antigen.

- 23) (a) The transfusion mismatch introduced RBCs with a foreign antigen into the person's body. The person's immune system had antibodies against the foreign antigens on the RBC.
- (b) The antibodies bound to the transfused RBCs. This caused the complement proteins in the person's blood to lyse the transfused RBCs.
- (c) The debris from the lysed RBCs clogged the person's blood vessels, which reduced or stopped blood flow to many organs and tissues. In particular, clogging of the blood vessels in the kidneys stops the blood from being cleaned and balanced by the kidneys, which is a fatal condition.

- 24) B-
O-

- 25) B-
B+
AB-
AB+

- 26) O+
O-

- 27) A+
B+
AB+
O+

28) A+
A-
B+
B-
AB+
AB-
O+
O-

29) AB+

30) O-

31) AB+

32) (a) Rh antigen only
(b) Anti-A antibody and Anti-B antibody
(c) Anti-A antibody and Anti-B antibody

33) (a) No antigens
(b) Anti-A antibody and Anti-B antibody
(c) Anti-A antibody, Anti-B antibody, and anti-Rh antibody

34) (a) A antigen, Rh antigen
(b) Anti-B antibody
(c) Anti-B antibody

35) (a) A antigen, B antigen, and Rh antigen
(b) None (no antibodies against RBC antigens)
(c) None (no antibodies against RBC antigens)

36) (a) A antigen and B antigen
(b) None (no antibodies against RBC antigens)
(c) Anti-Rh antibody

37) To the B- person, the Rh antigen on the B+ transfusion blood is a foreign antigen. If this were the person's first exposure to blood with the Rh antigen, then the person would not be harmed by the transfusion. A person who is Rh negative has no antibodies against the Rh antigen until after one exposure. With no antibodies against the Rh antigen, the B- person's immune system will not lyse the transfused B+ blood, so no harmful cellular debris will be generated in their blood vessels.

38) O

- A
- B
- AB

39) RH+

40) Rh

- A antigen
- B antigen

41) Aren't

42) Are

43) RhoGAM

44) Don't

- Don't

45) Do

46) Can

- 47) (a) The woman's next baby benefits from the woman receiving a RhoGAM injection when her first baby is born.
- (b) If the second baby is Rh+ and the mother is Rh-, any anti-Rh antibodies in the mother's blood can cross the placenta and attack the Rh+ baby's RBCs during pregnancy. To prevent anti-Rh antibodies from forming in the mother, she is given RhoGAM injections during her first pregnancy. The drug RhoGAM covers up any Rh antigen on RBCs from the first baby. This masks the Rh antigen from the mother's immune system, so she does not generate any anti-Rh antibodies.
- 48) The blue liquid contained anti-A antiserum (antibodies against the A antigen).
- 49) The yellow liquid contained anti-B antiserum (antibodies against the B antigen).
- 50) The clear liquid contained anti-Rh antiserum (antibodies against the Rh antigen).
- 51) A+
- 52) B-
- 53) B+