Anatomy and Physiology
Packet 6
Red Blood cells and Blood typing

Name:
Date:
Red blood cells are also called erythrocytes. They are responsible for carrying oxygen to organs in our body. They are also responsible for blood types. There are 8 main types of blood types: O positive, O negative, AB positive, AB negative, B positive, B negative, A negative, and A positive. Blood Types are determined by three different antigens. An antigen is a protein (encoded from the right enzyme) that “sits” on the surface of your RBC. There are 3 different blood antigens, A, B and D (Rh).

If you have the A antigen on the surface of your red blood cells, you have type A blood. If you have the B antigen on the surface of your red blood cells, you have type B blood. If you have both on the surface of your red blood cells then you are AB blood. If you have none on the surface of your red blood cells then you are 0 Blood.

The D antigen (also known as the Rh factor) determines positive and negative blood. If you have the D antigen (Rh factor) then you are positive. If you do not have the D antigen (RH factor) then you are Negative.

The chart on the next page shows the blood type and what antigens are present. A check represents that an antigen is present in that blood type.
<table>
<thead>
<tr>
<th>Blood Type</th>
<th>A antigen</th>
<th>B antigen</th>
<th>D antigen</th>
</tr>
</thead>
<tbody>
<tr>
<td>A positive</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>A negative</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B positive</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>B negative</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O positive</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>O negative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB positive</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>AB negative</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

You can see from this chart that A positive blood has A and D antigen. A negative blood has A antigen. B positive blood has B and D antigen. B negative blood has B antigen. O negative
blood has no antigens. O positive blood only has D antigen. AB negative blood has A and B antigen. AB positive blood has A, B, and D antigens (all of them).

Task #1
1. What is on the surface of your red blood cell?
2. What are the proteins on the surface of your red blood cells called?
3. What are the eight different types of blood groups?

4. What are the 3 antigens called on the surface of your red blood cells?

5. What does D antigen determine?

6. What type of antigens does blood type A negative have on its surface?

7. What type of antigens does blood type A positive have on its surface?

8. What type of antigens does blood type B positive have on its surface?

9. What type of antigens does blood type B negative have on its surface?

10. What type of antigen does blood type AB negative have on its surface?

11. What type of antigens does blood type AB positive have on its surface?

12. What type of antigens does blood type O negative have on its surface?

13. What type of antigens does blood type 0 positive have on its surface?
Task #2

1. Where are antigens found?
   a. On RBC
   b. On WBC
   c. In the plasma
   d. On platelets

2. Where are antibodies found?
   a. On RBC
   b. On WBC
   c. In the plasma
   d. On platelets

3. What is the name for red blood cells?
   a. Erythrocytes
   b. Leukocytes
   c. Monocytes
   d. Thrombocytes

4. What are red blood cells used for?
   a. Fight infections
   b. Carry oxygen to organs
   c. Clot blood
   d. Phagocytosis

5. Which of the following is not a blood type?
   a. AB positive
   b. O positive
   c. AN negative
   d. B negative

6. Which of the following antigens are on AB positive blood?
   a. A
   b. B
   c. D
   d. All of the above

7. Which of the following antigens are on B positive blood?
   a. A
   b. B
   c. D
   d. Both B and D

8. Which of the following antigens are on O positive blood?
   a. A
   b. B
   c. D
   d. All of the above

9. Which of the following antigens are on O negative blood?
   a. A
   b. B
   c. D
   d. None of the above

10. Which of the following antigens are on AB negative blood?
    a. A
    b. B
    c. D
    d. Both A and B

11. Which of the following antigens are on B negative blood?
    a. B
    b. A
    c. D
    d. Both A and D

12. Which of the following antigens are on A negative blood?
    a. A
    b. B
    c. D
    d. Both A and D

13. Which of the following antigens are on A positive blood?
    a. A
    b. B
    c. D
    d. Both A and D
Task #3

Draw 8 different red blood cells. Each one should represent one of the blood types. Be sure to include their antigens. Represent an A antigen with a triangle, B antigen with a square, and D antigen (Rh factor) with a circle. Remember antigens are found on the surface of red blood cells.