Design your own Blood type and antibodies

Humans have 4 main blood types: A, B, AB, and O and are based on different *protein markers* called *antigens* located on the surface of the red blood cell.

Your task is to **create elaborative** and **unique** designs of the A and B antigen and the Rhesus factor. They cannot be simple "triangles" or "squares" as the antigens are in a very distinctive in their protein structures.

3 marks

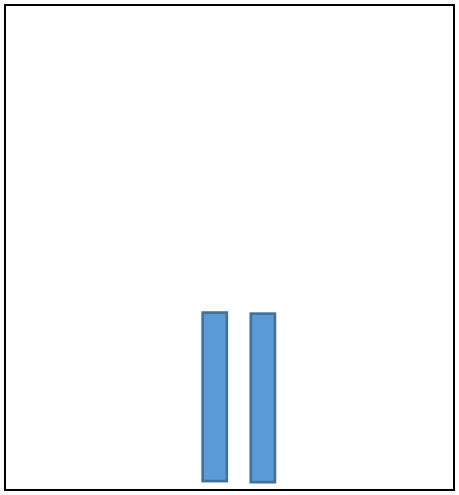
A antigen

B antigen

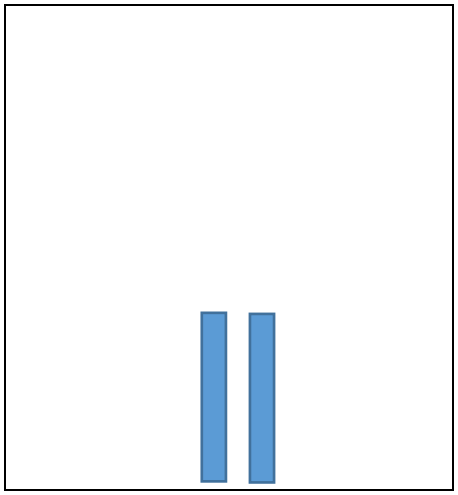
Rhesus factor

Now that you have completed your antigen designs, you have to create Antibodies that will **bind** with the antigens. Your antibodies must have a shape that **complements** the antigen structure, like a key and lock, or hand and glove, otherwise the antibody cannot combine with the antigen.

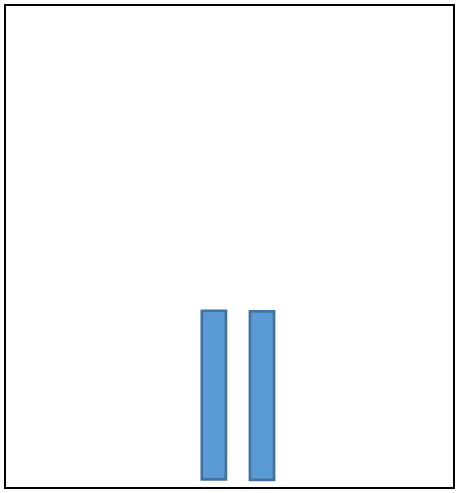
3 marks



Anti-A antibody

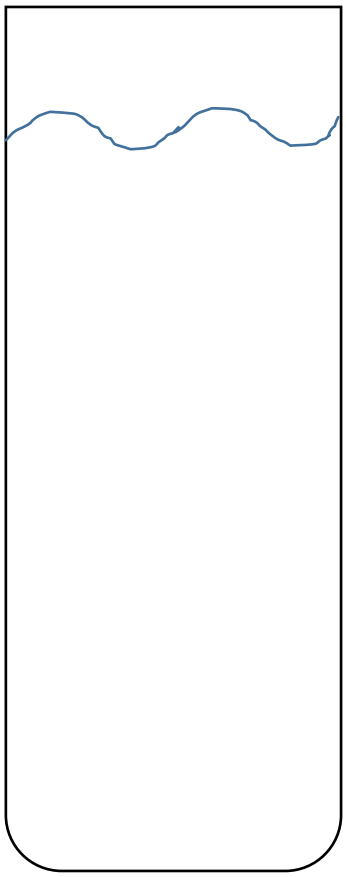


Anti-B antibody

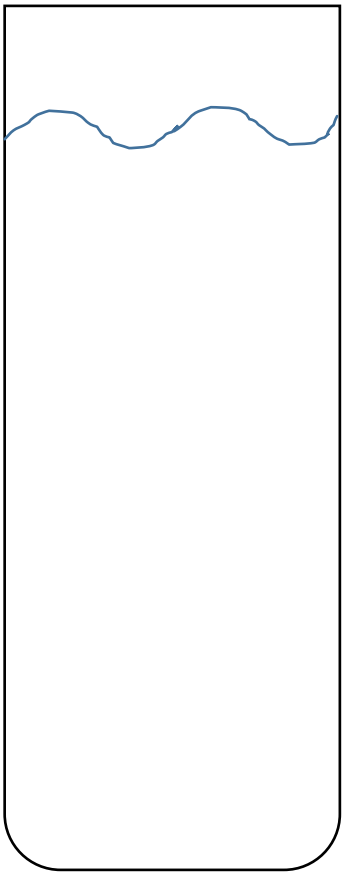


Anti-Rh Factor

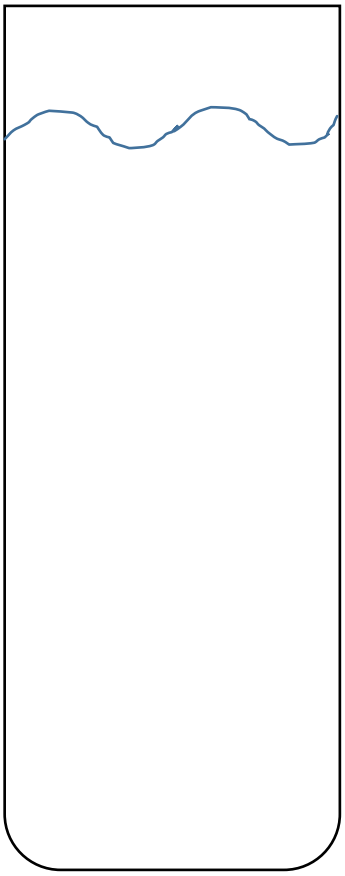
Now, draw the following scenarios with the antigens and antibodies that you have just designed. 9 marks



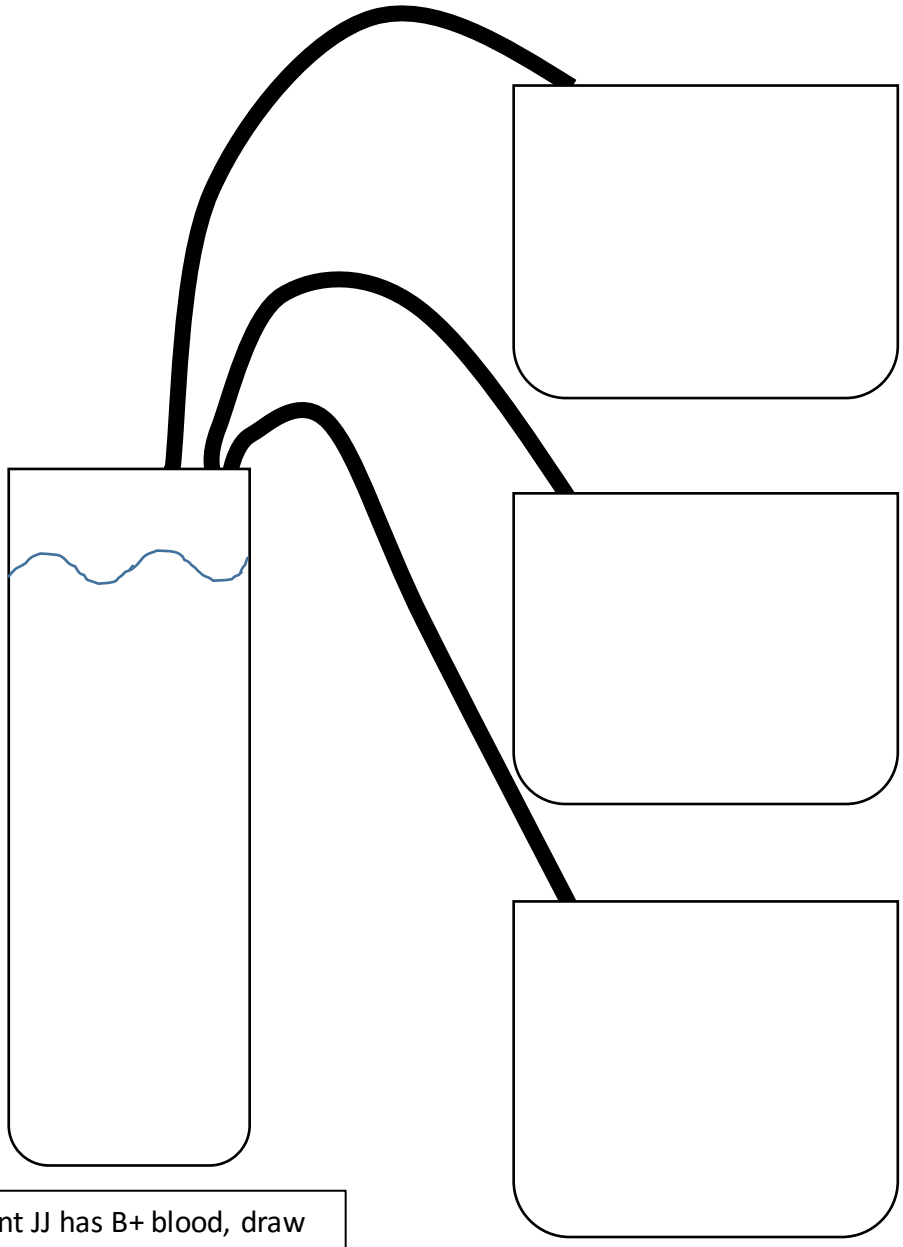
Draw the *A+* blood that is found inside test tube above. Be sure to include all the appropriate antigens and antibodies



Draw the *O+* blood that is found inside test tube above. Be sure to include all the appropriate antigens and antibodies



Draw the *AB-* blood that is found inside test tube above. Be sure to include all the appropriate antigens and antibodies

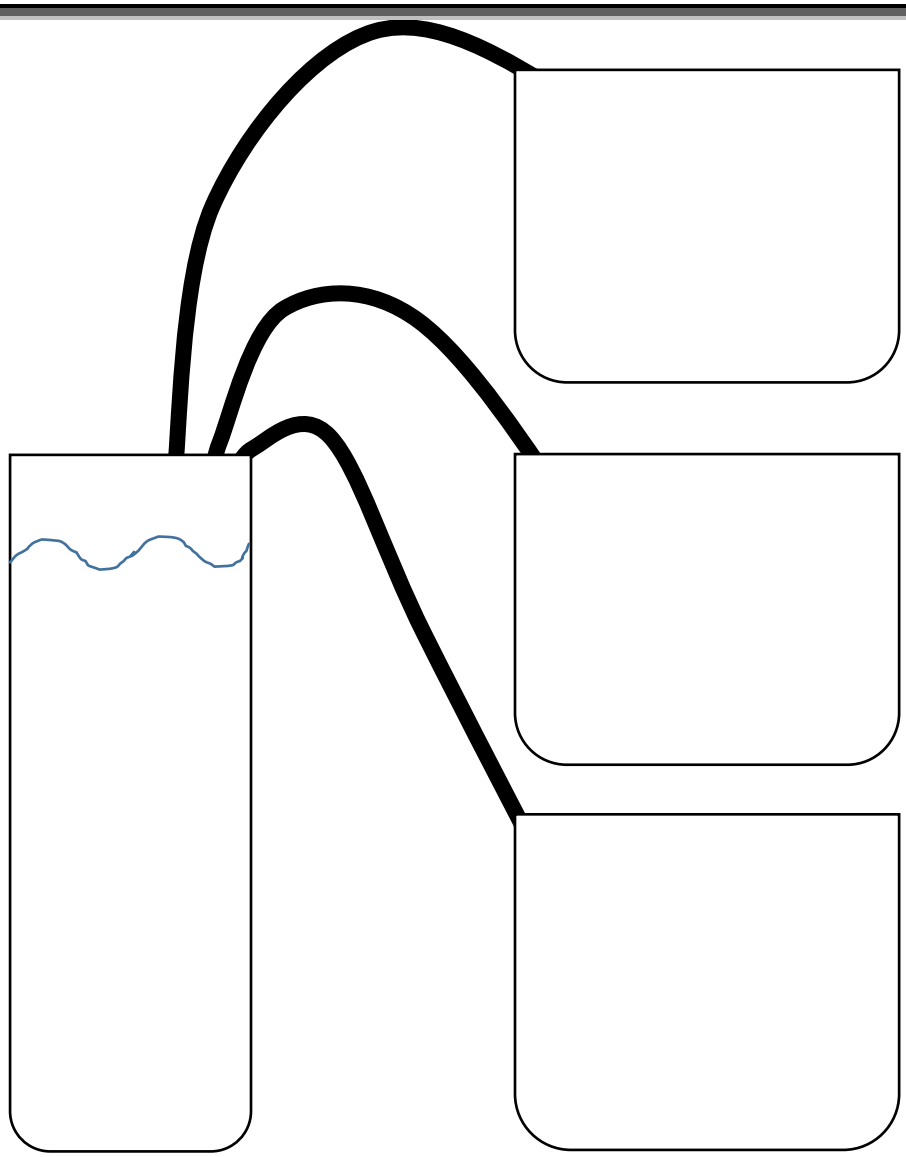


Note:

Remember the blood being donated has already been centrifuged and separated. There are no antibodies in the blood donated.

Patient JJ has B+ blood, draw JJ's blood in the test tube.

Now draw 3 different blood types that can be donated to JJ in the test tubes above.



Note:

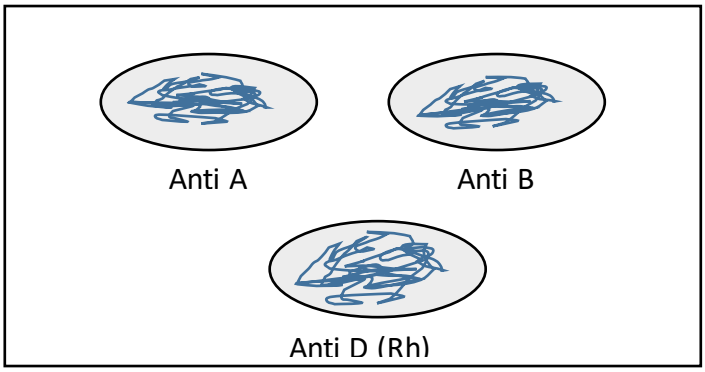
Remember the blood being donated has already been centrifuged and separated. There are no antibodies in the blood donated.

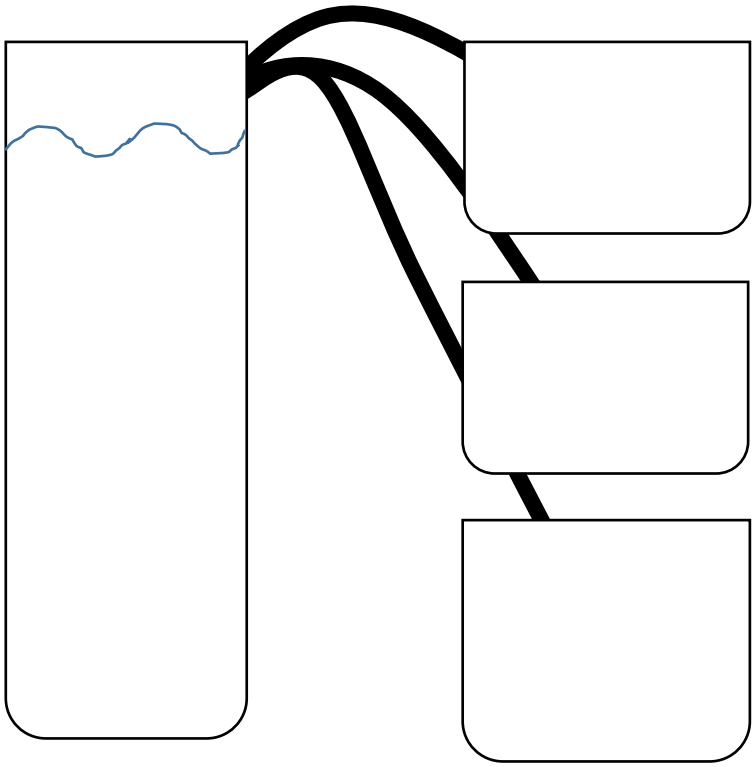
Patient Maslov has O- blood, draw Maslov's blood in the test tube.

Identify the blood types that can be transfused to him.

Finally, a patient named Kan Ye was brought in by his wife Kim Weest.

Use the following blood typing to identify the type of blood that can be transfused to Kan Ye.





Blood types that can be transfused to Kan Ye:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Summary:

Write a summary on how someone can identify their blood type using blood typing technique: (2 marks)

Write a summary on the roles antigens and antibodies play in blood transfusion (3 marks).