

Mother and Child Reunion

ABO Blood Typing Lab

A local maternity ward has caught fire. Two mothers and their three children have been rescued, but the ID tags are missing on the mothers and the newborns. You must perform quick blood typing tests to determine which children belong to which mothers. The mothers are in comas and unable to answer any questions. The only information you have is that two of the infants are identical twins. Follow the procedures below to figure out which child belongs to which mother.

DATA CHARTS

- In the Data section of your lab notebook, create a table to determine which blood type will react with which antigen.
- Write a YES or NO in each column for the predicted reaction.
- Create a chart in the data section of your notebook to record the results of each individual's blood sample to antigen A and antigen B. After observing the results, determine the blood type.

BLOOD TYPE	ANTI A	ANTI B
A		
B		
AB		
O		

SAMPLE	ANTI A	ANTI B	BLOOD TYPE
Mother 1			
Mother 2			
Child 1			
Child 2			
Child 3			

BLOOD TYPING PROCEDURE

1. In this lab, it is VERY important that the blood samples and antigens remain at their designated station. Mixing up the materials will give you inconclusive results. Also, use the pipettes provided at each station to avoid contaminating blood samples. Do not take pipettes with you!
2. Obtain a sampling well and label the rows ANTI A and ANTI B. Label columns M1, M2, C1, C2 and C3.
3. Stations are labeled for individual blood samples. Station "Mother 1" is for the M1 on your sampling tray.
4. Put apx 2 mls of the blood sample in the wells marked ANTI A and ANTI B.
5. Put apx 5 drops of ANTI A into the ANTI A well and record any reactions.
6. Put apx 5 drops of ANTI B into the ANTI B well and record any reactions.
7. Determine the blood type based on the reactions and record in your chart.
8. Repeat this procedure for all of the individual blood samples.
9. When finished, thoroughly rinse and dry your sampling well. It is safe to pour the samples into the lab sinks. (When using real blood, you would dispose of it in a sealed biological waste container).

ANALYSIS

1. How did you determine blood type based on the antigen reactions?
2. Which children are identical twins and what evidence supports this?
3. For each child, what are all of the possible GENOTYPES of their parents?
4. Which child belongs to which mother?
5. What evidence did you use to determine this?
6. What paternal (father) genotypes are NOT possible for the twins? Show Punnet squares to support your answer.
7. What paternal genotypes are NOT possible for the non-twin? Show Punnet squares to support your answer.

CONCLUSION

Write a paragraph summarizing the results of this lab. Include a scenario where it would be impossible to determine maternity based on blood types and what modern technology could have been used instead.