Station 1:

A patient is rushed to the emergency room and has suffered severe blood loss. Type AB blood is in short supply, but the nurse says "Don't worry, he's type AB positive. We can give him any kind of blood." Explain. (Why is type AB called the universal recipient?)

Station 2:

On the battlefield, a medic is treating a soldier who has lost a great deal of blood. They are out of blood typing supplies so the medic, who is Type O negative, simply donates his own blood to the patient. Why could this work? (Why is Type O called the universal donor?)

Station 3:

There is a practical joker in the maternity ward who removed all the baby id bracelets. There are three babies that cannot be easily distinguished and the parents want to be sure they get the right ones back so the doctors do a blood test. A particular mom is homozygous type A and the dad is type O. The babies have blood types AB, A, and O. Show your work below and indicate which baby must be theirs.

Station 4

The police have rounded up the usual suspects in the latest rash of bookstore robberies. The thief got a nasty paper cut at the scene of the crime. The suspects are of blood types O, A, B and AB. The blood at the crime scene contained i alleles. Which suspect therefore **cannot** have been involved? Explain.

|  |  |  |  |
| --- | --- | --- | --- |
| Suspect 1 | Blood Type O | Possible Genotype(s): | ii |
| Suspect 2 | Blood Type A | Possible Genotype(s): | IAIA or IAi |
| Suspect 3 | Blood Type B | Possible Genotype(s): | IBIB or IBi |
| Suspect 4 | Blood Type AB | Possible Genotype(s): | IAIB |

Station 5:

 In a paternity case, a single mother claimed that a certain man was the father of her baby. The man denied it, claiming that her current boyfriend was the father. The court ordered a blood test (much cheaper than DNA testing) to see if he could be ruled out as the father. The mother was Type O and the baby was Type O. The man was Type AB. Is it **possible** that he was the father? Why or why not?

Station 6:

Why is it that a blood type test can only **disprove** but never prove paternity? Why are DNA tests used to "prove" paternity instead?

Station 7:

(True Story) In Denmark, a husband and wife who had been unsuccessfully trying to have a baby went to a fertility clinic. Sperm and eggs were collected from father and mother, and combined in a petri dish, creating several "test-tube babies". These babies were implanted in the mother and 9 months later she delivered twins, one with light skin and one with dark skin. Because this seemed strange, a DNA test was conducted and it was found that both children were related to the mother, but only the light skinned child was related to the father. How can this be explained?

Station 8:

Rh factors are proteins that were first discovered in the blood of Rhesus Monkeys, but humans have them too. If you are Rh positive, it means that there are Rh type proteins in your blood. If you are Rh negative, there are no Rh type proteins in your blood. Positive is dominant over negative, so heterozygous individuals are Rh positive. Problems can arise when an Rh negative mother has a child who is Rh positive. Why does the mother's body attack her own baby in this situation? Why does the situation get worse for the second pregnancy?

Station 9:

The father of two children is type O+, and the mother is type A+. The children are O- and A+. Given this information, what can you say about the genotypes of father and mother?

Station 10:

 List all the possible genotypes for each of the 4 blood types:  
  
**Type O     
Type A     
Type B    
Type AB**  
**SHOW WORK! (multiple questions for 10)**  
  
\*\*\*A man with AB blood is married to a woman with AB blood. What blood types will their children be and in what proportion?  
  
  
  
\*\*\*A man who has type B blood (genotype: BB) is married to a woman with type O blood. What blood type will their children have?  
  
  
\*\*\*A woman with type A blood (genotype: AO) is married to a type B person (genotype: BO). What blood types will their children have?  
  
  
  
\*\*. A woman with type A blood is claiming that a man with type AB blood is the father of her child, who is   
also type AB. Could this man be the father? Show the possible crosses; remember the woman can have AO or AA genotypes.