



PLTW Virtual Learning

# Medical Detectives

## Lesson 21

May 4, 2020



# **7 & 8 Grade Medical Detectives**

## **Lesson: May 4, 2020**

**Objective/Learning Target:**  
**Lesson 21, Part 6**

**Students will be able to explain the different blood types  
and participate in a virtual blood typing lab**

**Disclaimer: This lesson is optional for anyone who is uncomfortable with this topic.**

# Warm-Ups:

## Quick Write:

1. Name three different reasons why it would be important to know your blood type.
2. Where does our blood type come from?
3. What is used to clump blood cells together when determining our blood type?
4. How many blood types are there?

Take a minute to write **WHAT YOU KNOW!**

[One Minute Timer](#)



# Lesson Introduction/Background Information:



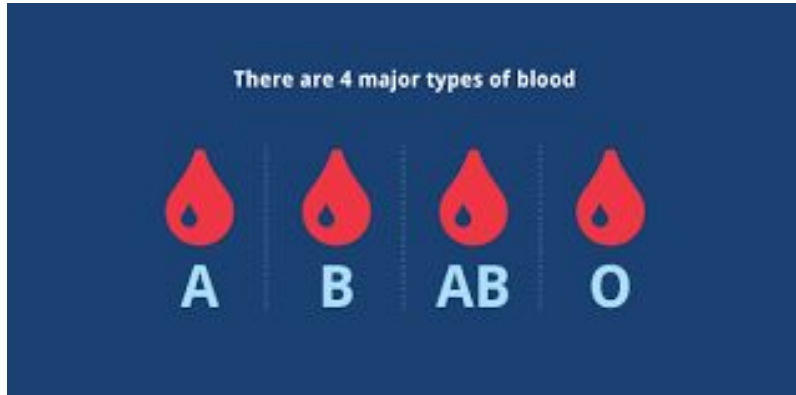
How your blood type protects you and hurts you. Scientists are learning all kinds of information about blood types and how it can affect our overall health. One of the responsibilities of a forensic scientist is to determine the blood type of the victim and the suspects. Determining blood types is a big part of their examination.

See the chart showing the four different blood types and the protein markers found on the red blood cell membranes.

ABO Blood Type	ABO Protein Marker
A	A
B	B
AB	A and B
O	none
Rh Factor	Rh Protein Marker
+	Rh
-	no Rh protein marker

# Practice:

Go to the [Blood Typing Main Menu](#) site to learn what blood typing is and the different blood types. Once you have read and reviewed the site, you are ready to play the game. Now click on the [Blood Typing Game](#) choosing which game you would like to play.



# Practice:

In this virtual lab you will be working through a blood typing lab to determine the type of blood for four different people who are wanting to donate blood to help another person in their community who is needing a blood transfusion. You will be going through the process of determining the blood type A, B, AB, or O and whether the sample is Rh+ or Rh- for each of the four donors. First click the link below, next you will click on the lab Blood Typing at the bottom of the page to take you to the lab. Begin with the Problem tab and work through the lab. Be sure and read the information from the Background tab also.

Follow the instructions throughout the lab, interacting when requested and answering the questions on the charts and at the end of the lab in your lab notebook. You will be answering questions from the Analyze and Conclude tab on the Self Assessment page, so leave the site for the completed lab open to help you answer your questions. Have fun!

[WOW Biolab Blood Typing Virtual Lab](#)

# Self Assessment:

After working through the virtual blood test lab and determining your answers to the charts, please answer the following questions using your chart information:

1. Were any of the blood samples a match for the patient who needed a blood transfusion? They were a B+ blood type. If so, which sample was it and why would they be a match?

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2. If a person has a type A blood type, which antibodies would they have to have. \_\_\_\_\_

3. Why is a type O negative blood type known as the universal donor?

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1. If a person has a type O blood type, what type of blood can they only receive? \_\_\_\_\_

Why? \_\_\_\_\_

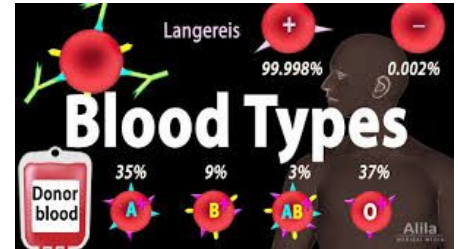
5. Is knowing the ABO blood type of a possible blood donor enough to determine a probable match? \_\_\_\_\_ Why or why not?

# Extend Your Learning/Continued Practice:

## The Possible ABO/Rh Blood Combinations



If You Have Type	You Can Donate To	You Can Receive From
A	A, AB	A, O
B	B, AB	B, O
AB	AB	A, B, AB, O
O	A, B, AB, O	O
If You Have Type	You Can Donate To	You Can Receive From
Rh <sup>+</sup>	Rh <sup>+</sup>	Rh <sup>+</sup> , Rh <sup>-</sup>
Rh <sup>-</sup>	Rh <sup>-</sup> , Rh <sup>+</sup>	Rh <sup>-</sup>



**\*\*After studying the chart above, what are four statements you can make about blood combinations.**

**\*\*Do you know your blood type?**

Blood Typing Lab - [https://www.classzone.com/books/hs/ca/sc/bio\\_07/virtual\\_labs/virtualLabs.html](https://www.classzone.com/books/hs/ca/sc/bio_07/virtual_labs/virtualLabs.html)



# Answer Key:

## Blood Typing Virtual Lab Chart Results:

### Prediction

Blood Type	Reaction		
	Anti-A Antibody	Anti-B Antibody	Anti-Rh Antibody
A	<input type="text" value="Yes"/>	<input type="text" value="No"/>	<input type="text"/>
B	<input type="text" value="No"/>	<input type="text" value="Yes"/>	<input type="text"/>
AB	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>
O	<input type="text" value="No"/>	<input type="text" value="No"/>	<input type="text"/>
Rh+	<input type="text"/>	<input type="text"/>	<input type="text" value="Yes"/>
Rh-	<input type="text"/>	<input type="text"/>	<input type="text" value="No"/>



Blood Sample	Clumps in Response to Anti-A	Clumps in Response to Anti-B	Clumps in Response to Anti-Rh	Type
1	<input type="text" value="No"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	B Rh+ (B+)
2	<input type="text" value="No"/>	<input type="text" value="No"/>	<input type="text" value="No"/>	O Rh- (O-)
3	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	Rh+ (AB+)
4	<input type="text" value="Yes"/>	<input type="text" value="No"/>	<input type="text" value="Yes"/>	A Rh+ (A+)

### Blood Typing Results

## Answer Key:



### Assessment Answer Key:

1. Sample #1 because they are B+ and the only blood a B+ patient can have is from a B+ donor.
1. Type A blood type
2. Because they can donate to A, B, and AB.  
As long as they are Rh+
1. Only type O. They cannot receive A, B or AB even though they can be a donor for those blood types.
1. No, you also need to know if they are Rh+ or Rh-.

Warm Up Answer Key: 1.blood transfusion, donating blood, forensic science  
2.genetics 3.antigens 4. 4