Name _____ Date _____

Therapeutic Services

Project 8.1 Topic: What's Your Type?

Materials Needed

For the Class

- 20 clear disposable cups
- Permanent marker
- Yellow and blue food coloring
- Water

For Individual Students

- Paper and pencil to record observations
- Research resources
- Word processing access
- Internet access:
  http://nobelprize.org/nobel_prizes/medicine/laureates/1930/landsteiner-bio.html

Introduction

Found bleeding from stab wounds near a bus stop at 17th and Lime, Mr. E.M. Askew was rushed by ambulance to a nearby hospital emergency department. Waiting in Examining Room A, Dr. E.J. Brinkley, the emergency department physician on duty, immediately determined that Mr. Askew required a blood transfusion due to a massive loss of blood. Dr. Brinkley asked the registered nurse who would administer the transfusion to contact the lab. After the urgent call, the lab sent a phlebotomist to collect a sample of Mr. Askew's blood. Back at the lab, a medical laboratory technician waited impatiently to type and crossmatch the sample before determining what kind of blood to order for Mr. Askew's transfusion. Meanwhile, the Emergency Department team continued to examine and observe their patient, evaluate his symptoms and clean and suture his wounds.

PART 1: Blood Types

Life-saving blood can sometimes be life threatening for a variety of reasons. One reason is incompatibility between a patient's blood and donated blood. The following demonstration will simulate a process to show which blood types are compatible and which are not. Your teacher will name four students to demonstrate. Everyone else in the class will observe the demonstration using colored water to simulate the four blood types – "A," "B," "AB" and "O."

Lab Procedure

You will be observing four students mix colored water that represents a particular blood type – A, B, AB, or O. After each transfer of colored water, record what you observed. For example, when colored water from a cup marked "A" is poured into another cup marked "A," record what you observe on the following record sheet.

(continued)

Name _____ Date _____

Project 8.1: *(continued)*

Record Sheet	
Blood Transfer	**What Happened**
A to A	
A to B	
A to AB	
A to O	
B to A	
B to B	
B to AB	
B to O	
AB to A	
AB to B	
AB to AB	
AB to O	
O to A	
O to B	
O to AB	
O to O	

After all exchanges are made, you will transfer your observations to a chart that will summarize which blood types are compatible. If there was no change in the color, you can assume that the "blood" is compatible for the transfusion. Using the Blood Type Compatibility Chart, write yes in the cell at the intersection of the two types where there was no change in color. If there is a change in color, write no in the space where the two types intersect.

(continued)

Name _____ Date _____

Project 8.1: *(continued)*

Blood Compatibility Chart

DONORS

	A	B	AB	O
A				
B				
AB				
O				

RECIPIENTS

Conclusions

What other conclusions can you make when you look at the chart?

PART 2: Research

The four basic blood groups were identified by Karl Landsteiner in 1909. The groups were identified as A, B, AB and O. Landsteiner knew that in the wrong combinations, mixing the blood groups could be fatal.

Using the Web address listed in the "Materials Needed" section, as well as library and computer resources, research Karl Landsteiner's life and research career. Write a two-page report detailing his major accomplishments in the study of blood groups.

You may also want to check out the "Blood Typing Game" link on the **nobelprize.org** Web site.