

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## **DISEASE TRANSMISSION**

A disease can be caused by a virus, or microorganisms such as bacteria, fungi, and parasites. The human body becomes 'sick' when it is unable to fend off a disease-causing organism or a pathogen. A pathogen is an invader such as a virus or bacteria that resists internal defenses and begins to grow and harms the host. Most diseases will eventually be eradicated from the body by the body's immune system. Some diseases are resistant to the immune system and are able to thrive in the body and cause harm including death to the host. Certain viruses, such as "Colds", can be easily detected by symptoms such as a fever or a runny nose, but some viruses do not cause any symptoms till a later date. An example of this is HIV which causes AIDS. An HIV positive person can walk around for years transmitting it to others without knowing he/she has the virus.

In this lab, you will be given an unknown "Simulated Bodily Fluid". This fluid is clear, and can represent the aerosol droplets from a cough or sneeze, the bodily fluids exchanged in the transmission of HIV, or in any other disease. You will simulate the exchange of bodily fluid with three other students. After three exchanges have taken place, you will then test your sample for the disease. Once the testing is complete, you will find out which student's samples, in your entire class, turn out to be positive. Using this information you will then trace the route of transmission by using a flow chart to find the original carrier.

### **PART A: Disease Transmission Procedure**

#### **Be careful with the contents of the cups!**

- DO NOT SMELL the contents of the cups
  - DO NOT SPILL the contents of the cups
  - DO NOT DRINK the contents of the cups
1. You are to break into groups of four.
    - Each round each person is to pair up with 1 person following your teacher's directions.
    - Your contact and you will pour your liquids into one of your cups.
    - Then you will pour the liquid entirely into the other cup.
    - Then you will split the contents evenly between the two cups.
    - You will then record the name of the person you interacted with on Round 1 of your table.
  2. When your teacher gives the signal you will repeat this process with a new contact.
    - Each time record the individual
  3. After the fourth round is complete, the CDC (teacher) will come and test your cup to see who amongst you is infected
  4. Once all the infected individuals have been identified....it's time to find Patient Zero

### **PART B Find Patient Zero Procedure:**

1. Fill in your contact information on the included spreadsheet
2. Be sure to fill it in from FOURTH round to FIRST round
3. Then use that information to find Patient Zero

1. What was the total number of students who became infected during the simulation?
2. What is the total number that could have been infected?
3. How is it possible to trace the route of transmission of the disease?
4. Describe what would have happened if each student made more than 1 contact per round. How would this have affected your ability to trace the transmission?
5. Can we identify patient Zero?
6. Explain your reasoning.
7. Using the information learned in this lab, explain why disease spreads “quickly” in a day care centers and nursing homes.

Persons you Exchanged "Simulated Bodily Fluids" with:

Round 1 \_\_\_\_\_

Round 2 \_\_\_\_\_

Round 3 \_\_\_\_\_

Infected Person?	4th Round	3rd Round	2nd Round	1st Round

**Route of Transmission Flow Chart**

Round 1	Round 2	Round 3