

## Fluid Exchange Record Sheet

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

In this activity, you are going to model how diseases can spread. You will be given a container full of a liquid. One person in the class will have a liquid that is already "infected." You will combine your fluid with three of your classmates and then will use a biotechnology technique called an assay to determine if your sample has been infected. The assay involves the addition of an indicator solution that will cause your sample to change color if it is infected.

1. Examine the liquid in your container. Briefly explain what it looks like by describing the color. Then indicate the volume (for example, is your container half full, three-quarters full, etc.).

\_\_\_\_\_

\_\_\_\_\_

2. Pick a classmate and combine the liquid from your two containers into one. This action will cause the liquid to mix. If the infection is present in one liquid, it will spread to the other liquid. After mixing the two liquids, pour half back into the other container. You should each end up with the same volume of liquid as when you started. Record the name of the person you exchanged fluids with below, as well as the color of your liquid after the exchange.

Person you exchanged fluids with: \_\_\_\_\_  
 Color of your liquid after exchange: \_\_\_\_\_

3. Repeat the fluid exchange with a different classmate, and record the information below.

Person you exchanged fluids with: \_\_\_\_\_  
 Color of your liquid after exchange: \_\_\_\_\_

4. Repeat the fluid exchange for a third and final time. Make sure to pick someone you have not already exchanged fluids with. Record the information below.

Person you exchanged fluids with: \_\_\_\_\_  
 Color of your liquid after exchange: \_\_\_\_\_

5. You are now ready to conduct an assay to determine if your sample is infected. First, you will want to test the assay to ensure that it works by using a positive and negative control. Your teacher has set up a single positive and negative control for the class. Record the results of the controls below, and write a brief description below each entry of what the results mean. (For example, what does a color change indicate? What does it mean if there was no color change?).

Positive Control (circle one):      Solution changed color      Solution did NOT change color

What does this result indicate?

\_\_\_\_\_

\_\_\_\_\_

## Fluid Exchange Record Sheet (continued)

Negative Control (circle one):      Solution changed color      Solution did NOT change color

What does this result indicate?

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6. Now, it is time to test your sample. Follow your teacher's directions for adding the indicator solution to your samples. Record the results here:

Experimental Sample (circle one):      Solution changed color      Solution did NOT change color

What does this result indicate?

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7. Your teacher will ask how many students are infected. Write the total below.

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8. How do you think this number might vary if you increased or decreased the number of exchanges? Explain here:

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9. The following information was obtained from a class of 25 students who conducted the same experiment but varied the number of exchanges. Graph the data, making sure to label the axes.

Number of Exchanges	Number of Infections
1	2
2	4
3	8
4	14
5	23
6	25
7	24
8	23
9	25
10	25

Dependent Variable



Independent Variable

Describe the shape of the curve that you drew.

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Why does it never exceed 25 infections?

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