

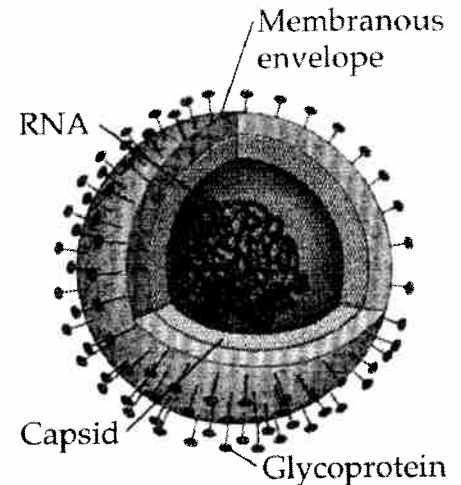
# The Spread of Viral Pathogens

**BACKGROUND INFORMATION:** A **pathogen** is any organism that produces disease. If you have ever had strep throat, you have had firsthand experience with a bacterial pathogen. Another group of pathogens that cause a wide variety of diseases are **viruses**. In this activity you will observe how the pathogen **HIV** (*Human immunodeficiency virus*) which causes the disease known as **AIDS** (*Acquired Immune Deficiency Syndrome*) can easily be spread through a population.

Most people get the AIDS virus through sexual contact. You can't get the virus through casual contact such as hugging, kissing, or shaking hands. Many drug users get AIDS by using contaminated syringes. A pregnant or nursing woman with AIDS can pass the virus to her child. Others have been infected through contaminated blood transfusions. After getting the virus, it may be years before any signs of disease appear.

The AIDS virus attacks certain white blood cells that normally protect the body from infection. Because the virus disables the body's **immune system**, a person with the AIDS virus becomes unable to protect him or herself from other types of viruses or bacteria that cause infections. People with AIDS often develop pneumonia, tuberculosis, and certain forms of cancer. These diseases are called **secondary infections**. People with AIDS die from the secondary infections rather than the AIDS virus itself.

Although we have not yet discovered a cure for AIDS, it is a fact that we do know how to prevent it. **You can prevent AIDS by avoiding exposure to HIV, the virus that causes the disease.**



A typical cross section of the retro-virus HIV that causes the disease AIDS

## PROCEDURE:

1. Obtain a vial containing (harmless) experimental liquid from the teacher. **Only one student will receive a 'contaminated' (infected) mixture, and the teacher is the only one who will know who that individual is!**
2. Record the number of your vial and your name in space provided in attached handout.
3. Using a straw as a pipet, place your finger over one end of the straw. Dip the other end of the straw into the fluid in your sample and exchange a small amount of fluid with another student in the class. Record the name and Vial # of the student with which you exchanged fluid. **Note: use caution when handling any chemical solution in the classroom. If you spill on your hands, wash them immediately.**
4. Mix up your fluid sample well after exchanging (about 3 shakes should do)
4. Repeat step 3 two more times until you have exchanged fluids with a total of 3 people (remember to record the name and vial # of the person with which you exchanged fluids).
5. When you have finished, bring your sample vial to the teacher, where it will be tested for possible contamination. (from exchanging fluids)
6. **Wash hands thoroughly!**

**QUESTIONS:**

1. How many people were eventually 'infected' by exchanging fluids? \_\_\_\_\_

2. List some of the ways in which the AIDS virus can be spread. \_\_\_\_\_

3. What is the name of the virus that causes the AIDS virus? \_\_\_\_\_

4. How does the AIDS virus affect the body's immune system? \_\_\_\_\_

5. Why do people with AIDS develop secondary infections? \_\_\_\_\_

6. Once a person is infected, how long does it take for AIDS symptoms to appear? \_\_\_\_\_

7. What makes AIDS a difficult disease to cure? \_\_\_\_\_

8. What is a pathogen? \_\_\_\_\_

9. AIDS is a virus. Why are viruses not considered to be a living thing? \_\_\_\_\_

10. How are the Ebola virus and the AIDS viruses alike? How are they different? \_\_\_\_\_

**EXTRA CREDIT-5 points:** By comparing your results with other classmates, try and determine which student held the single 'infected' vial to begin with (*Patient zero*).

**VIAL # OF 'PATIENT ZERO'** \_\_\_\_\_