

How do infections spread?

1

MATERIALS cup, sample liquid, solution A, solution B

PROCEDURE

1. Get a cup of sample liquid from your teacher. Pour half the liquid from your cup into the cup of a classmate, then pour the same amount back into the original cup. Your cup should then contain a mixture of the liquids from both cups.
2. Repeat step 1 with at least two other classmates.
3. Drop one drop of solution A into your paper cup. If it changes color, you are “infected.” If you were “infected,” add drops of solution B until your liquid turns clear again. Count how many drops it takes to “cure” you.

WHAT DO YOU THINK?

1. If you were “infected,” can you figure out who “infected” you?
2. If you were not “infected,” is it possible for anyone who poured liquid into your cup to be “infected”?

CHALLENGE

Only one person in your class started out with an “infection.” Try to figure out who it was.

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VIRUSES ARE NOT ALIVE BUT AFFECT LIVING THINGS.

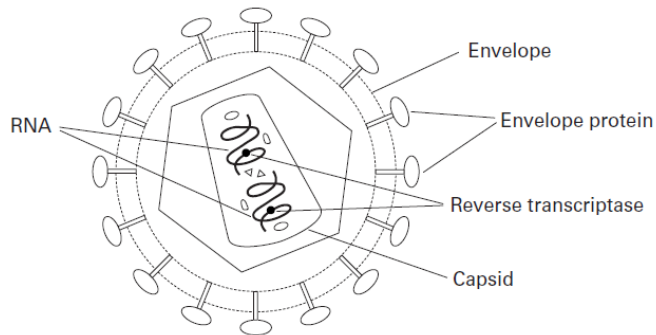
Challenge and Extension

2

BIG IDEA Bacteria and protists have the characteristics of living things, while viruses are not alive.

KEY CONCEPT Viruses are not alive but affect living things.

Comparing Structures The diagram below shows HIV (human immunodeficiency virus), the virus that causes AIDS. In HIV, the outermost layer of the virus consists of a double-layered coat called an envelope. Knoblike proteins on the outside of the envelope enable HIV to recognize white blood cells. Inside the envelope lies the capsid. The capsid contains RNA, the virus's genetic material.



Once HIV is attached to the host cell, the capsid enters the host cell. The capsid then directs the host cell to make DNA copies of the viral RNA. The DNA instructs the host cell to make thousands of new copies of the virus. In the early stages of HIV infection, new viruses are released from the host cell by budding.

1. HIV contains an enzyme called reverse transcriptase. What do you think is the function of reverse transcriptase?
2. Explain why the envelope surrounding an HIV particle is derived from the host cell membrane.
3. The structure of the knoblike proteins on the outside of the HIV envelope can mutate, or change. Explain why this makes it difficult to create an AIDS vaccine.

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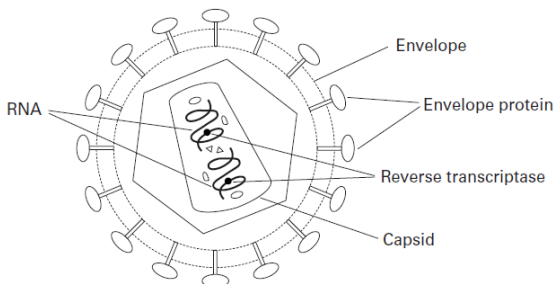
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