Unit 2: Lesson 2 – Case Studies: Influenza and HIV

Activity 3: The Life Cycle of the Human Immunodeficiency Virus

Refer to Figure 1 on page 2 of this activity sheet and use resources suggested by your teacher to answer the questions.

1. In Step 1, virus attaches (binds) to the host cell surface. What is the significance of the CD4 receptor?

2. In Step 2 the virus envelope fuses with the host cell membrane. How could a fusion inhibitor drug prevent HIV infection of the host cell?

3. What is the role of the reverse transcriptase enzyme molecule?

4. Which molecule enables HIV to integrate its DNA into the host cell's DNA?

5. In Step 5, what is the role of the host cell in allowing replication of HIV DNA?

6. Step 6 shows a process known as "assembly." In what way is assembly similar to the process of fusion in Step 2?

7. When the HIV particle first leaves the cell, it is inactive and cannot reinfect another host cell. What final step allows the HIV particle to become infectious?

Figure 1. The HIV Life Cycle (Image source: NIH)