

Did You Know?

The word *reproduce* is commonly used when discussing viruses, but in the strictest sense, viruses do not reproduce. Viruses use the machinery of the host cell to replicate themselves by creating an exact copy of the virus, just as a copy machine is used to replicate a document. Whatever you call it, however, the result is the same: viruses multiply!

Explain It!

Once a computer virus infects a machine, the virus can spread to other disks, programs, and even other computers. In your Science Notebook, explain why the term *virus* is a good description of these computer invaders.

Figure It Out

1. What are the steps in a lytic cycle?
2. Compare and contrast a lytic cycle and a lysogenic cycle.

Reproduction of Viruses

The structure of viruses allows them to succeed in their main mission—reproduction.

Lytic Cycle Once attached to a host cell, a virus injects its nucleic acid into the cell. The nucleic acid takes over the normal operation of the host cell and produces multiple copies of the virus's protein coat and nucleic acid. Once produced, the protein coats and the nucleic acids are assembled into new viruses. As the host cell fills with newly assembled viruses, it bursts, just like a balloon with too much air. The host cell then dies, and the released viruses begin searching for the next host cell. This type of viral reproduction is called a **lytic** (LIT ihk) **cycle**. The steps of a lytic cycle for a bacteriophage are illustrated in **Figure 7.4**.

Lysogenic Cycle Some viruses, such as herpes and HIV, enter the host cell but remain hidden for years. Even though the viral nucleic acid becomes part of the host cell's chromosome, it does not seem to affect the functions of the cell. At some point, however, the viral nucleic acid becomes active. It separates itself from the host cell's genetic material, takes over the functions of the cell to produce new viruses, and destroys the host cell as the new viruses are released. This type of viral reproduction is called a **lysogenic** (li suh JE nihk) **cycle**. The steps of a lysogenic cycle are also shown in **Figure 7.4**.

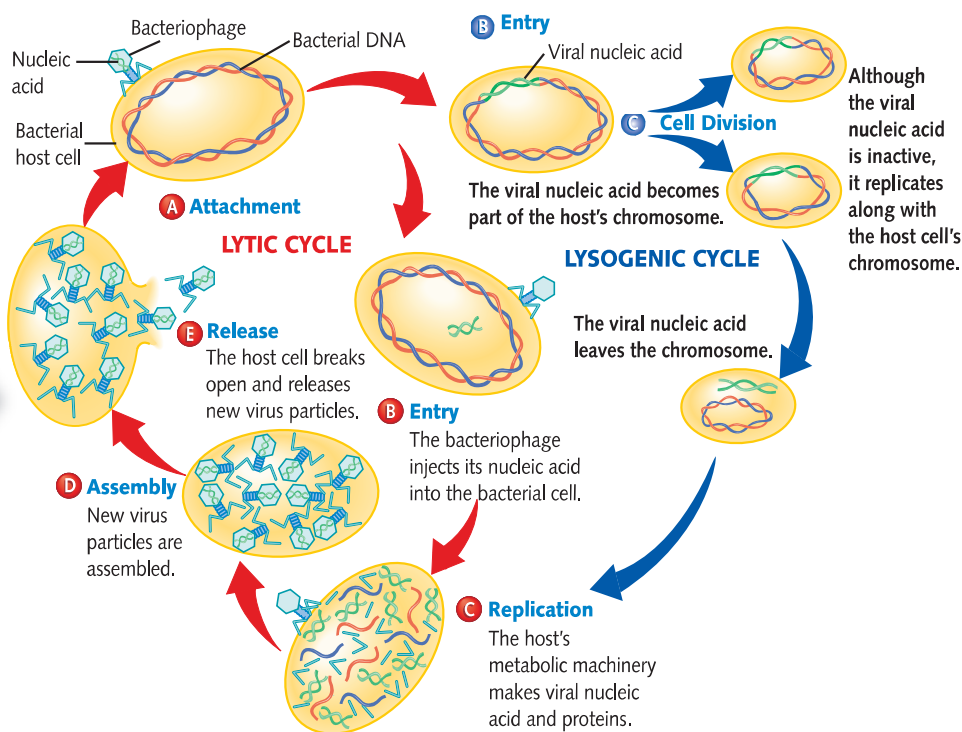


Figure 7.4 In a lytic cycle (red arrows), the virus uses the host cell's organelles to make new viruses. In a lysogenic cycle (blue arrows), the virus "hides" in the host cell's chromosome until it becomes active and uses the host cell's organelles to reproduce.