

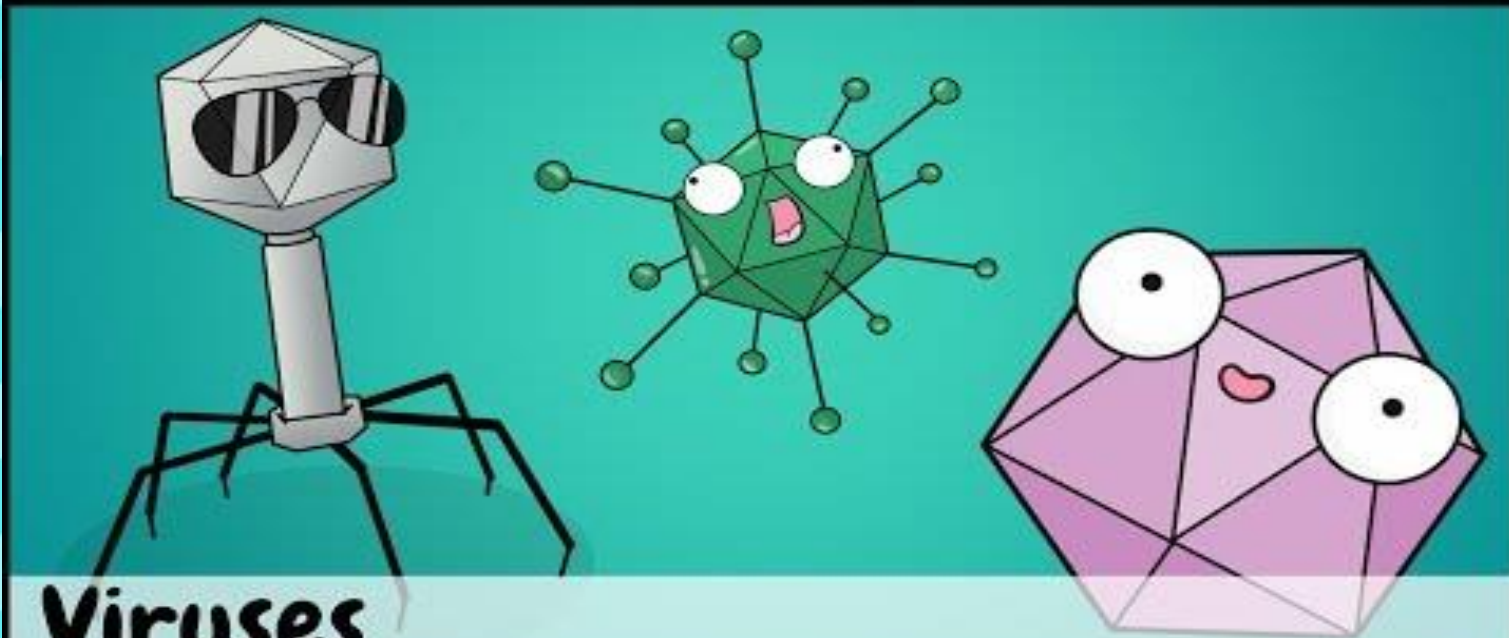
Performance Based Objective

SWBAT engage in argument using structural and functional evidence of living things IOT classify viral particles as nonliving things based on these characteristics.

Viruses

What is a Virus?

Viruses are non-living pathogens that require a host cell to reproduce.

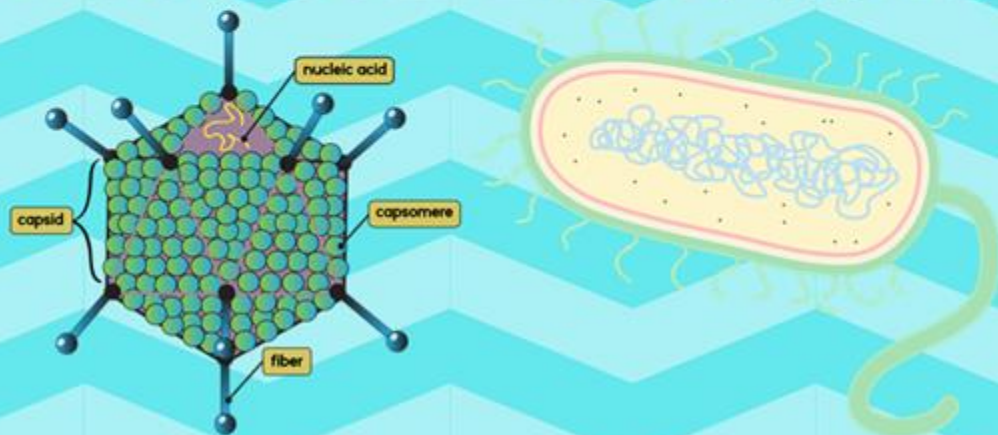


Viruses

with the Amoeba Sisters

How do viruses compare to cells?

Viruses are much **SMALLER** than cells. They do not have a nucleus or any other organelles, but like cells they do have **GENETIC MATERIAL**.

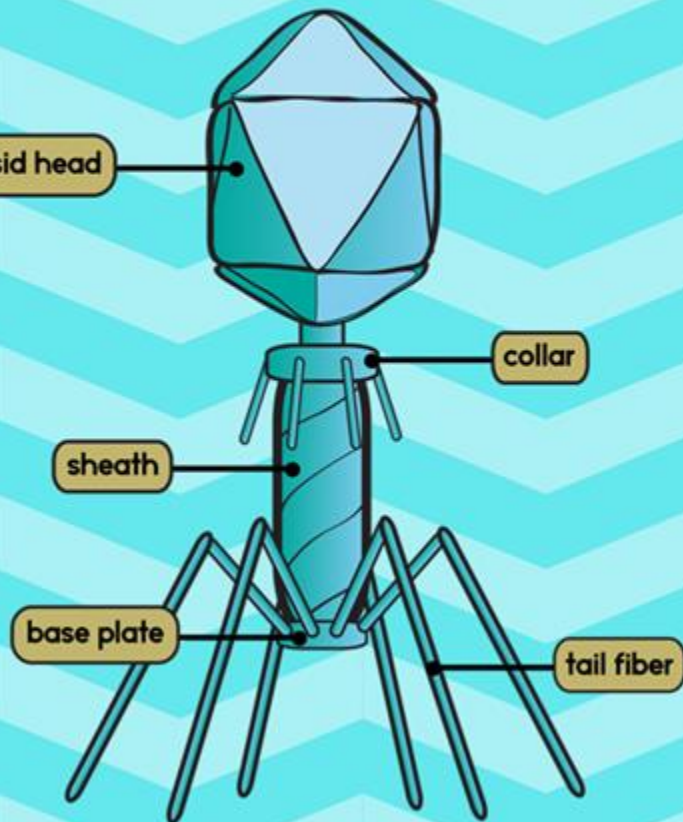


What do viruses look like?

Each virus has a capsid (protein coat) that surrounds its genetic material. In addition, every virus has surface projections that allow it to attach to the host cell. These projections serve as "keys" that fit into a "lock" on the surface of the host cell. If the key fits, then the virus gains access to the host cell and it can begin its infection.

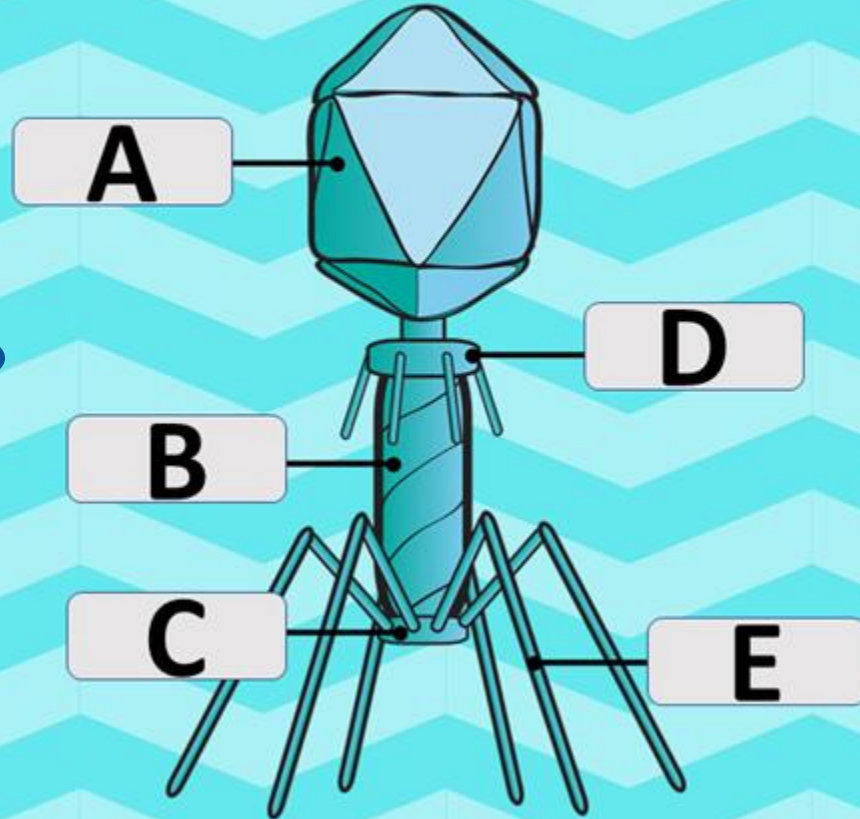
What do viruses look like?

Label the virus structure in your student study guide.



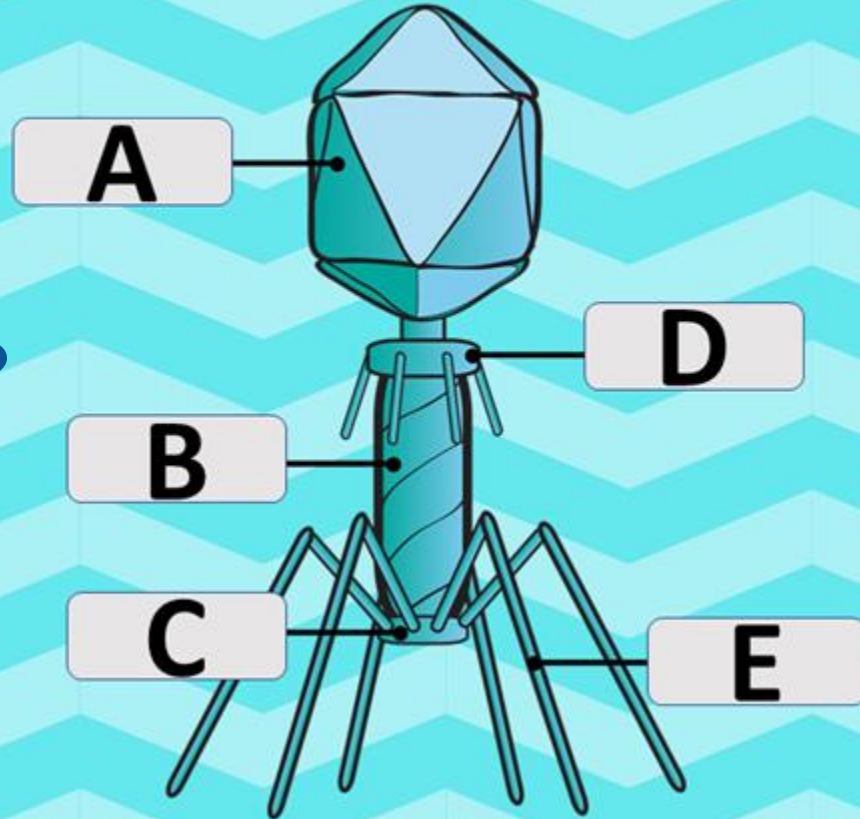
What do viruses look like?

What
structure is
letter A is
pointing to?



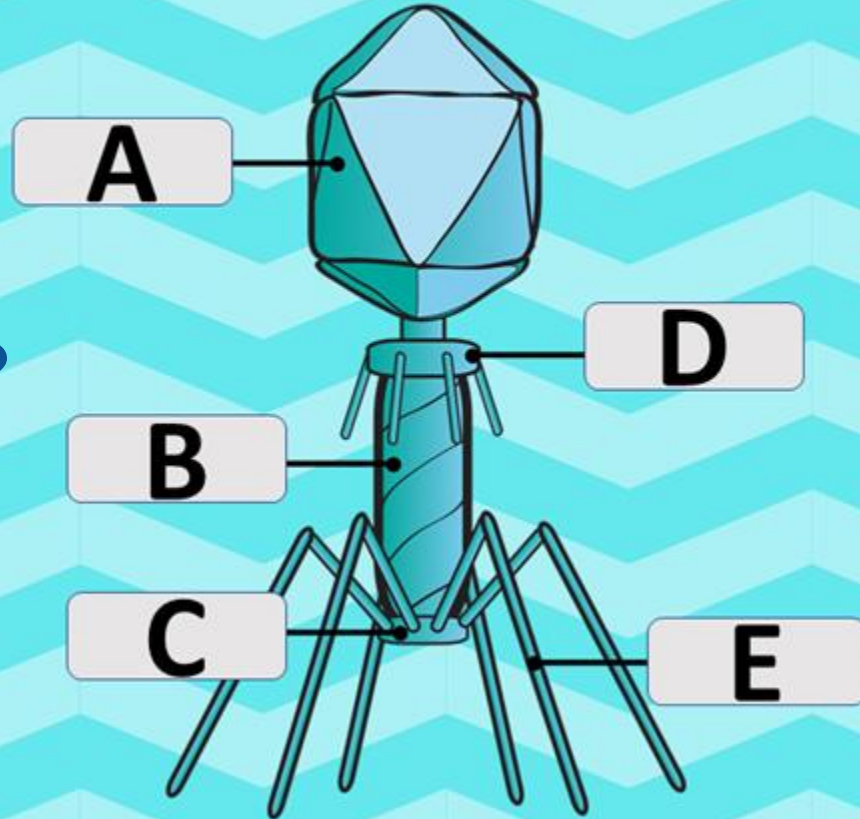
What do viruses look like?

What
structure is
letter B is
pointing to?



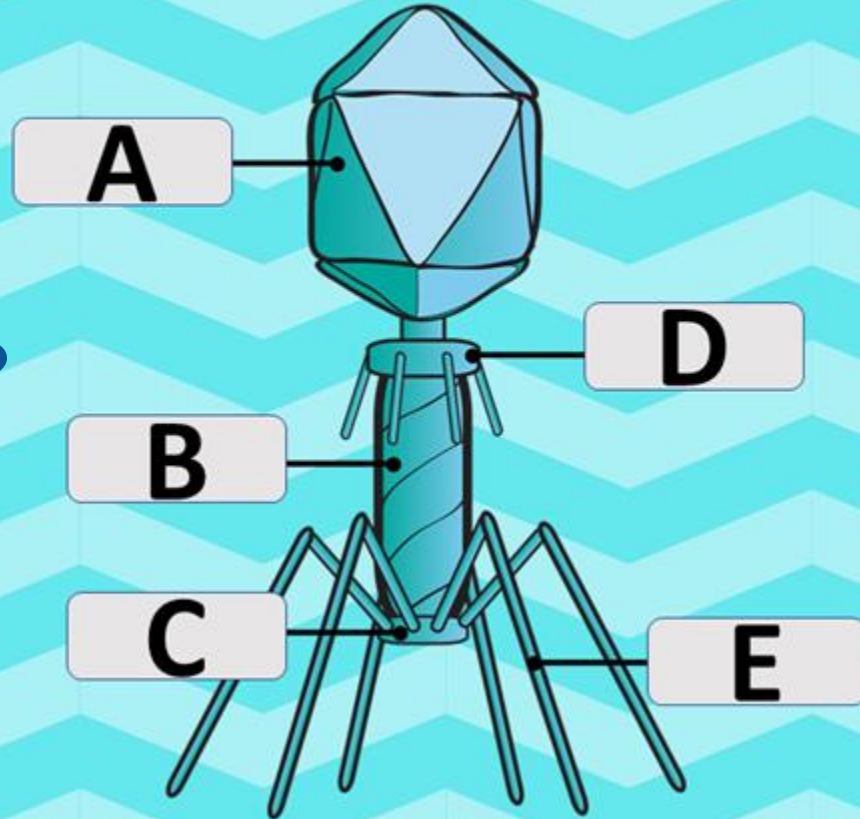
What do viruses look like?

What
structure is
letter C is
pointing to?



What do viruses look like?

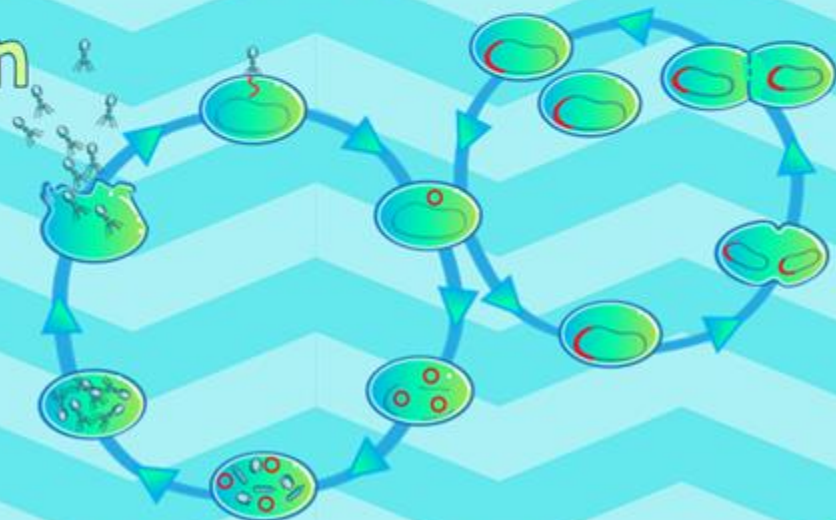
What
structure is
letter E is
pointing to?



How does a virus reproduce?

There are two different types of viral reproduction.

- Lytic Infection
- Lysogenic Infection

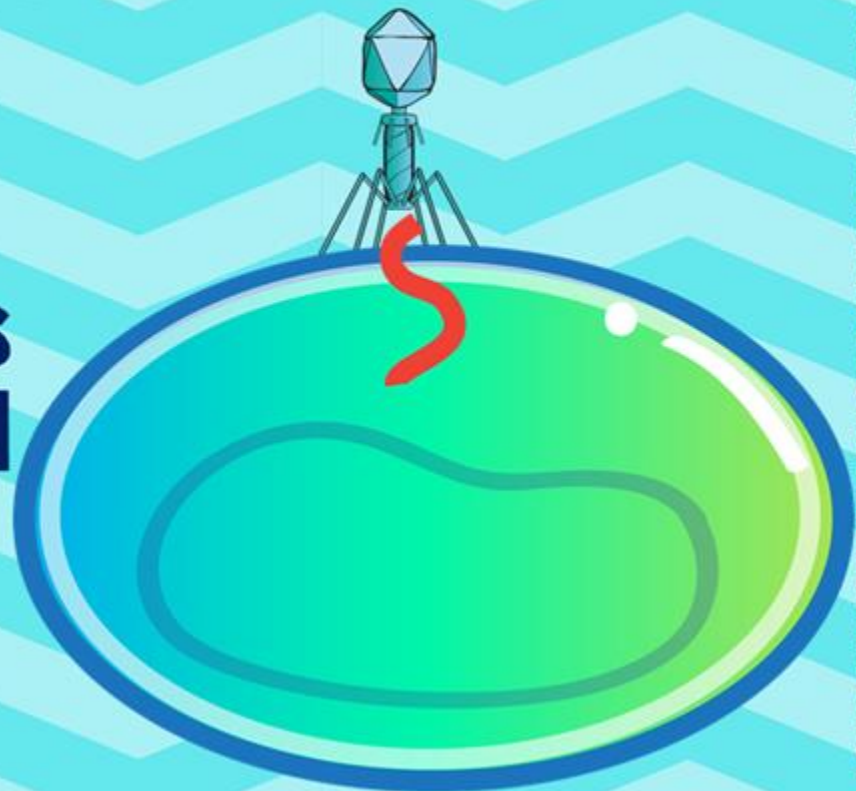


Lytic Infection

Viruses that undergo a lytic infection, such as Influenza (the flu), start reproducing immediately upon infecting a host cell. Therefore it is characterized by a QUICK onset of symptoms.

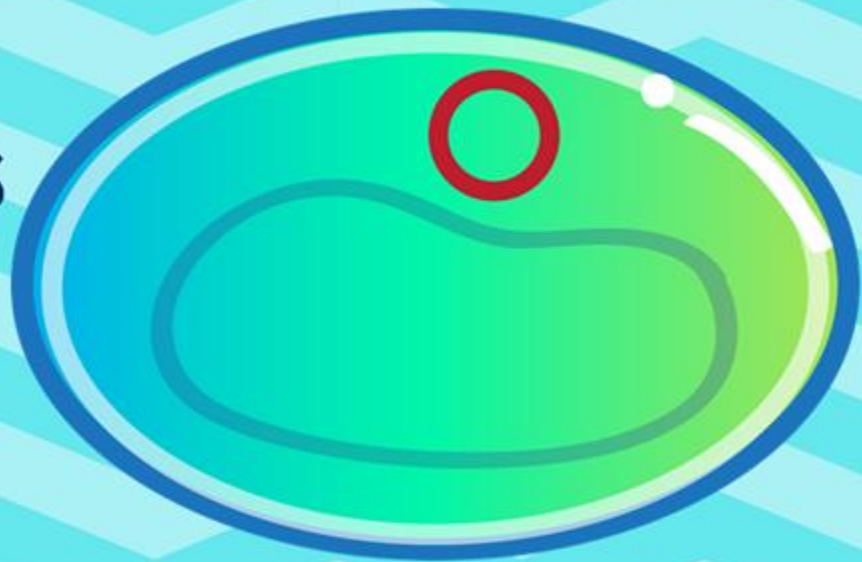
Lytic Infection

Step 1: The virus attaches to the host cell and injects its genetic material (DNA or RNA).



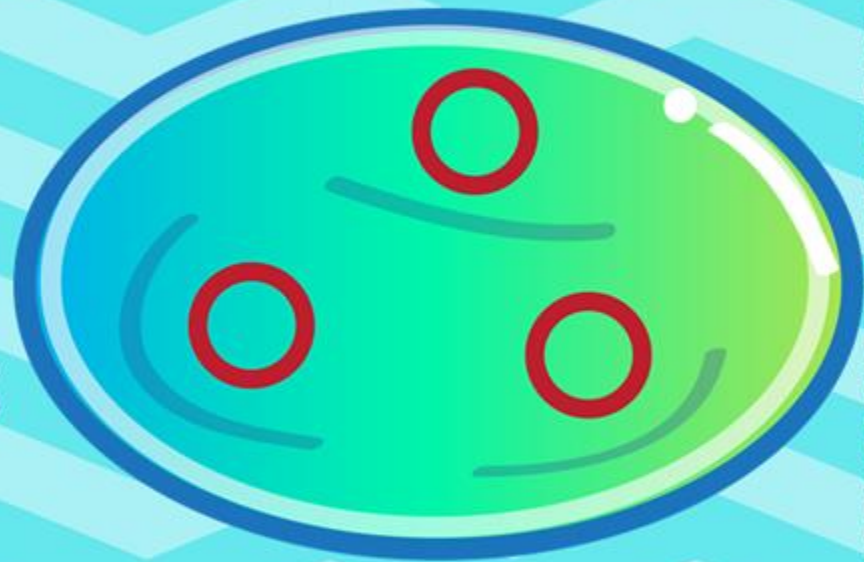
Lytic Infection

Step 2: The viral genetic material is released into the cell.



Lytic Infection

Step 3: The virus begins to make copies of itself using the host cells machinery or enzymes.



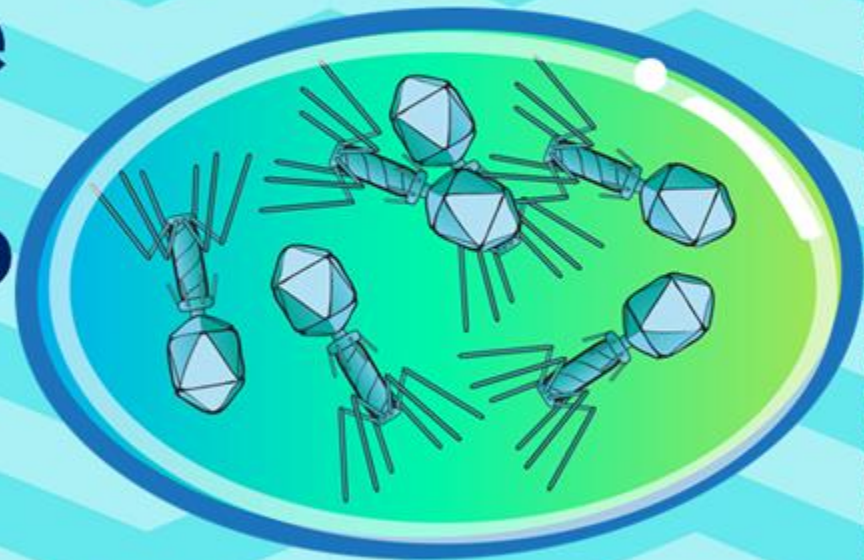
Lytic Infection

Step 4: Viral parts
accumulate or build
up inside the cell.



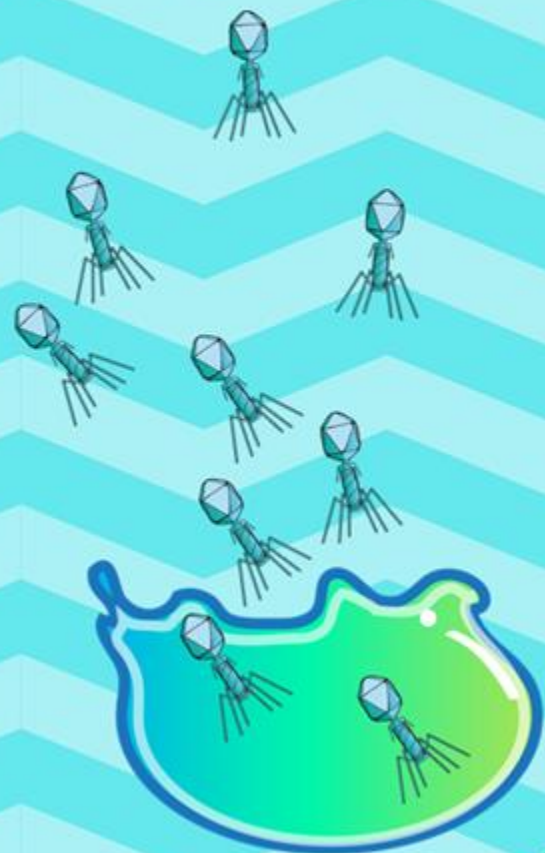
Lytic Infection

Step 5: Viruses are assembled or put together and fill up the inside of the cell.



Lytic Infection

Step 6: The cell
lyses or bursts
open, releasing the
new viruses to
infect new cells.



Lysogenic Infection

Unlike a lytic infection, a lysogenic infection is **not** characterized by a quick onset of symptoms. This is due to the fact that a lysogenic virus such as the **Human Immunodeficiency Virus or HIV** hides its genetic material inside of the host cell's DNA. As the host cell continues through the cell cycle, the viral DNA is copied with the host cell's DNA. Thus, each new cell contains the viral DNA that is hidden inside the host cell's DNA. Finally, when triggered, the viral DNA will come out of hiding and will then follow the steps of the lytic reproductive cycle.

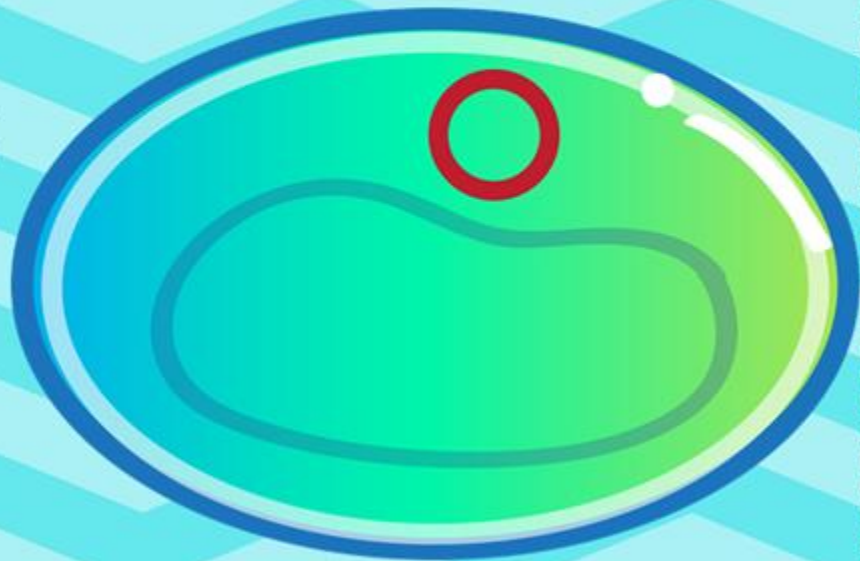
Lysogenic Infection

Step 1: The virus attaches to the host cell and injects its genetic material (DNA or RNA).



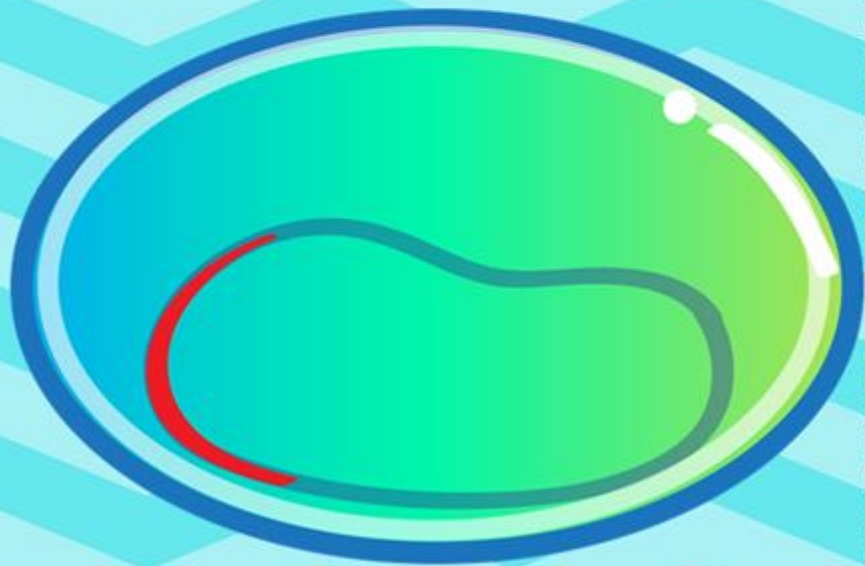
Lysogenic Infection

Step 2: The viral genetic material is released into the cell.



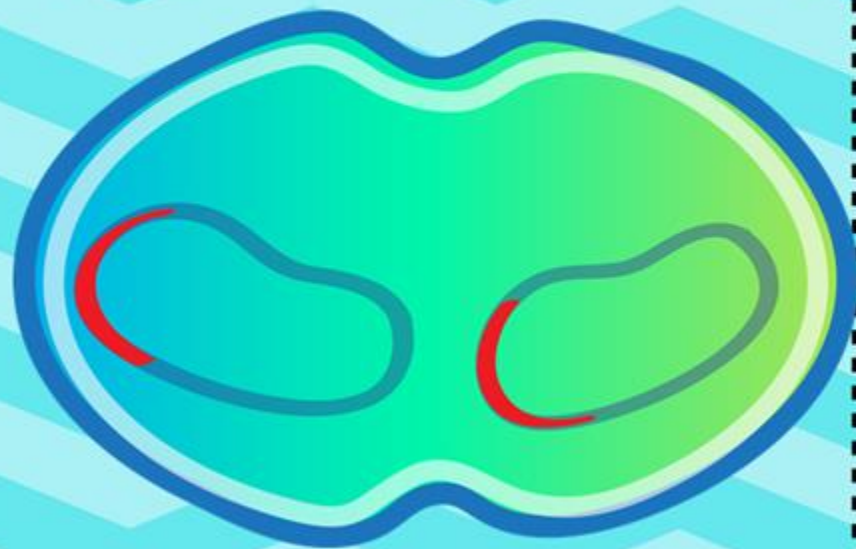
Lysogenic Infection

Step 3: The viral DNA or RNA integrates itself into the host cell's DNA.



Lysogenic Infection

Step 4: The viral DNA or RNA is copied along with the host cell's DNA in preparation for cell division.



Lysogenic Infection

Step 5: The viral DNA or RNA remains hidden in the host cell's DNA as the host cell begins to divide.



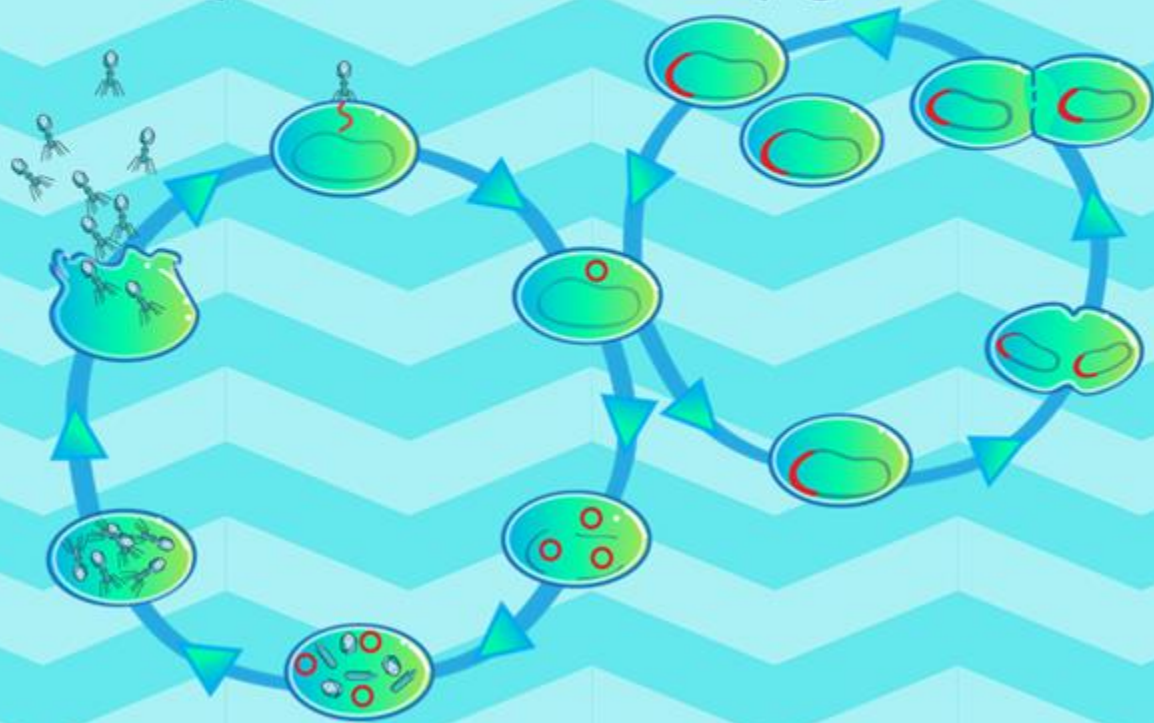
Lysogenic Infection

Step 6: The host cell has divided and so has the viral DNA or RNA along with it. The virus will remain hidden until triggered then it will enter the lytic cycle.



Compare the Lytic and Lysogenic Cycle

Number the steps of each cycle on the diagrams in your student study guide.



Can Viruses be cured with Antibiotics?

NO! Antibiotics only work on bacteria NOT on viruses!

Vaccines, however, work by introducing a weakened version of the virus into a person so that the immune system can develop antibodies to fight the real virus if the person ever encounters it.

Vaccines cannot kill a virus, but prepare the immune system for an attack if the virus ever enters the body.

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