

Viruses

What are viruses? _____

What is the general structure of a virus?

1. _____
2. _____

Viruses occur in a variety of _____ and _____. They range from 17nm to 300nm in length.

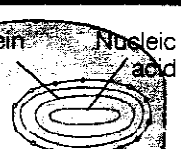

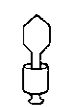




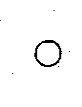








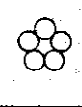

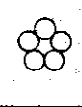

Sizes	Shapes
	
Vaccinia (cowpox) Variola (smallpox) 250 nm	
	
Influenza, mumps 100 nm	
Bacteriophage 65 x 95 nm	
Tobacco mosaic virus 300 x 15 nm	
	
Yellow fever virus 22 nm	
	
Poliomyelitis virus 20 nm	
	
Foot-and-mouth virus 10 nm	
	
Escherichia coli 2000-2500 nm	

Figure 17-3 Viruses come in a variety of sizes and shapes. Notice the size of the bacterium E. coli as compared to the sizes of the viruses.

Representative Virus: _____

Viruses DO NOT contain the _____ required to carry out the chemical reactions for life. The only _____ that they carry function to decode their _____ instructions. Viruses cannot _____ on their own; they need to invade a host cell to _____.

This raises the following question.....ARE VIRUSES LIVING OR NON-LIVING?

Living Characteristics	Non-living Characteristics

How do viral infections occur?

Viruses are activated when they contact the *correct type* of host cell, and they inject their _____ material into this cell.

What is meant by the *correct type* of host cell? _____
 _____ viruses infect _____ organisms. Some viruses are specific to specific species (e.g. humans), whereas other viruses are specific to a specific group of organisms (e.g. mammals).

The general life cycle of a virus is as follows:

1. A virus particle _____ to a host cell.
2. The particle releases it _____ instructions into the host cell.
3. The injected _____ material uses the host cell's _____.
4. The _____ make parts for more new _____ particles.
5. The new particles _____ the parts into new _____.
6. The new _____ break free from the host cell. This can occur in two ways:
 - (i) The new viruses _____ the host cell open and destroy the host cell.
 - (ii) The new viruses _____ from the host's cell membrane by breaking away with a piece of the membrane surrounding them. The host cell IS NOT destroyed. This is called _____.
7. The newly released viruses can _____ other cells.

How does the human cold virus infect you?

1. An infected person sneezes on you.
2. You inhale the virus particle, and it attaches to the cells lining the sinuses in your nose.
3. The virus attacks the cells lining the sinuses and rapidly reproduces new viruses.
4. The host cells break and new viruses spread into your bloodstream and also into your lungs. Because the cells lining your sinuses have been destroyed (when the viruses break them open so that they can emerge), fluid can flow into your nasal passages, resulting in a runny nose.
5. Viruses in the fluid that drips down your throat attack the cells lining your throat and give you a sore throat.
6. Viruses in your bloodstream can attack muscle cells and cause you to have muscle aches.

Recall: A virus is a set of _____ surrounded by a _____.

Because viruses do not carry out any biochemical reactions of their own, they can "live" for years _____ a host cell. Some viruses can insert their _____ into the host cell's DNA (the inserted viral DNA is called a _____). The viral DNA can remain in the host cell's DNA for years before _____.