



REVIEW

Characteristics of Living Things

Cellular organization

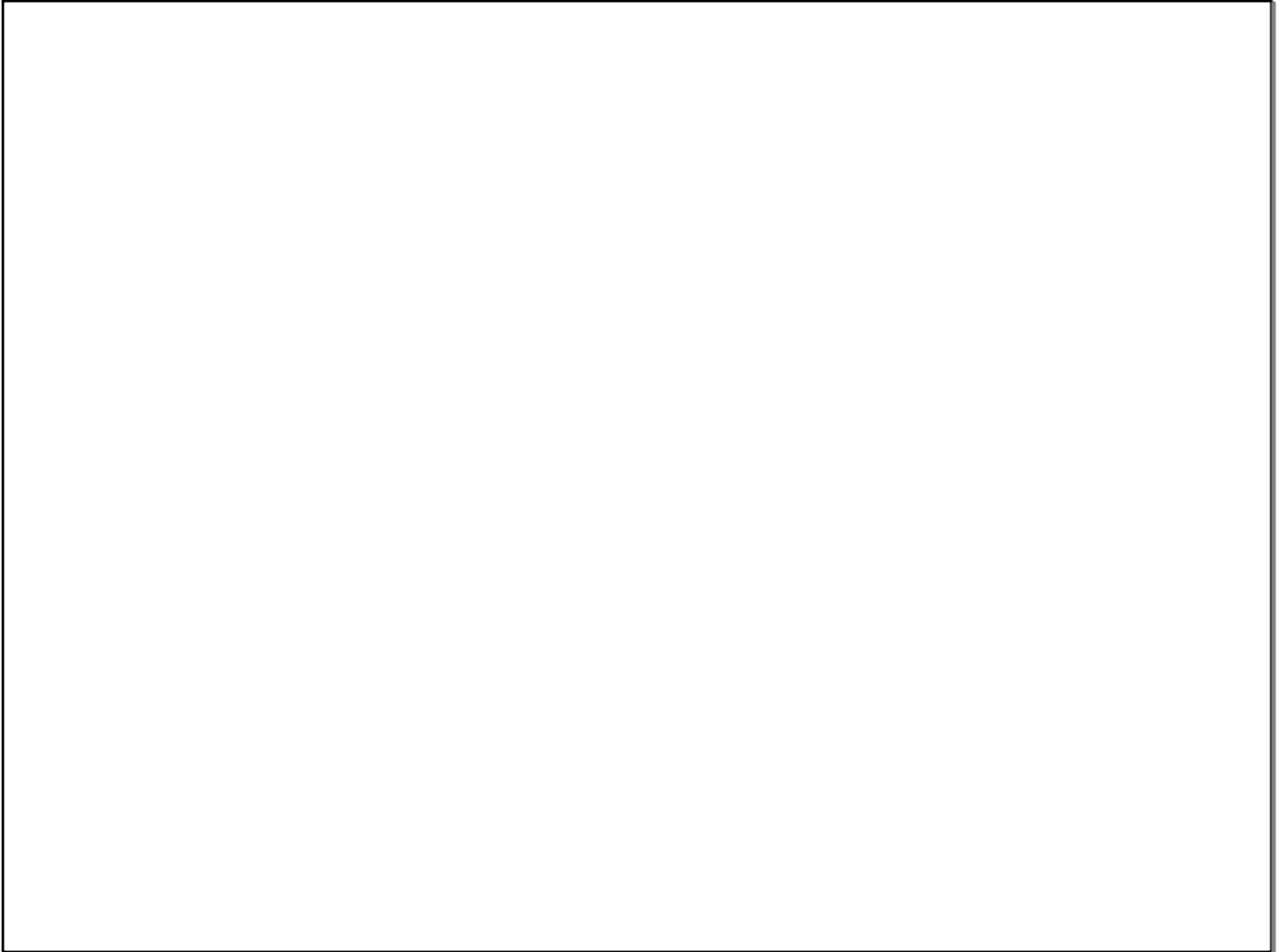
Similar chemicals

Use energy

Respond to their surroundings

Grow and develop

Reproduce



Key Concepts:

- How do viruses differ from living things?
- What is the basic structure of a virus?
- How do viruses multiply?

Key Terms: virus, host, parasite, bacteriophage

Viruses

Virus - a tiny, nonliving particle that invades and then reproduces inside a living cell



Why is a virus a nonliving particle?

(influenza virus)

Why is a virus a nonliving particle?

- viruses don't have cells
- they do not use their own energy to grow or to respond to their surroundings
- cannot make their own food, take in food, or produce waste
- their only similarity to an organism is that they are able to multiply

Host - is an organism that provides a source of energy or suitable environment for a virus or another organism to live.

Parasite - an organism that lives on or in a host and causes harm to the host

How is a virus act like a parasite?

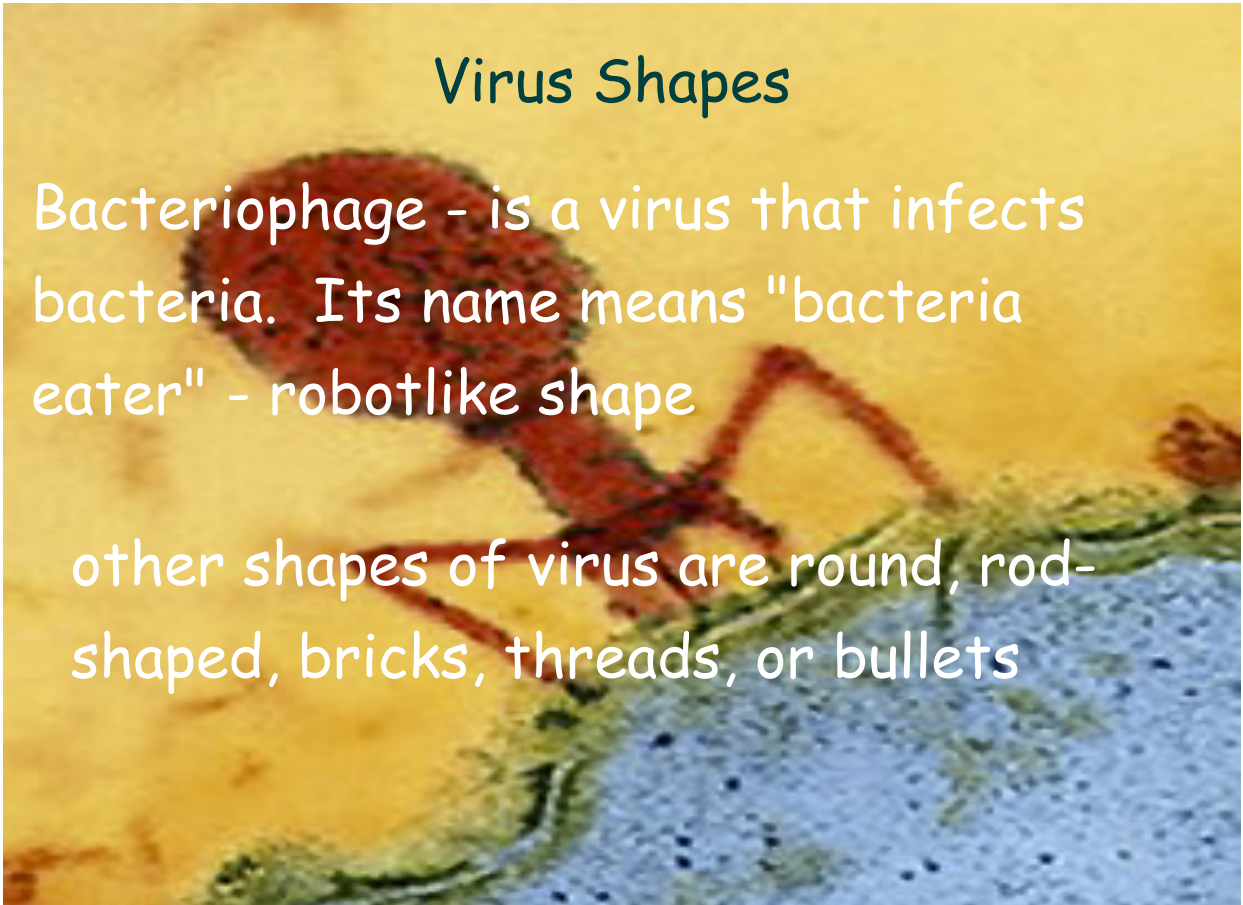
How is a virus like a parasite?

Viruses multiply only when they are inside a living cell, then destroy the cell

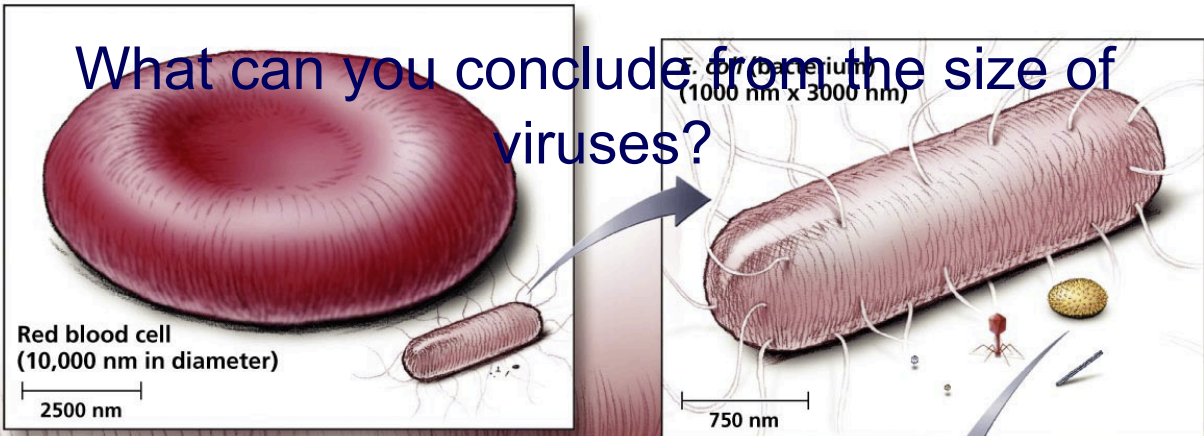
Virus Shapes

Bacteriophage - is a virus that infects bacteria. Its name means "bacteria eater" - robotlike shape

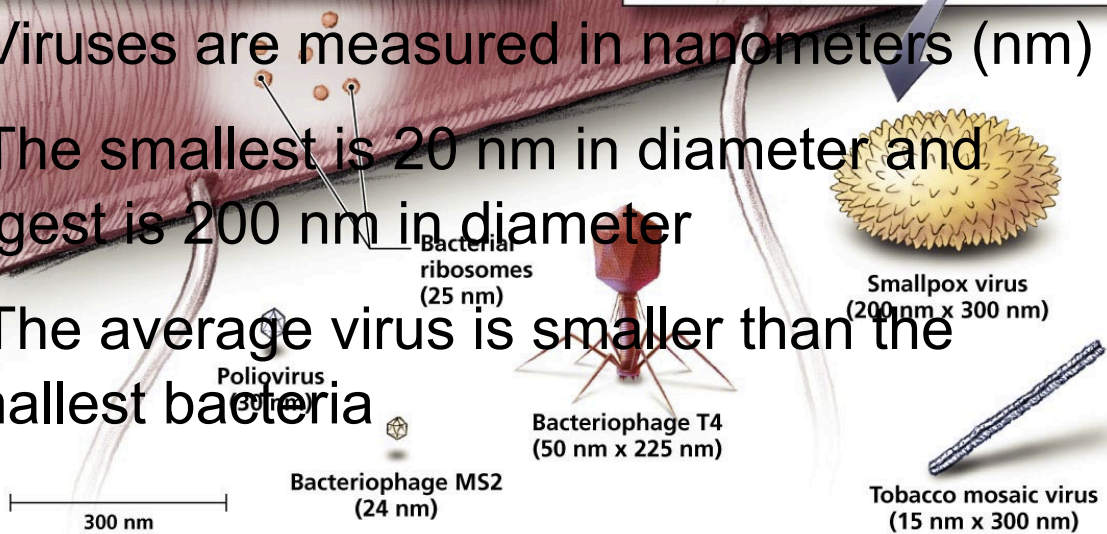
other shapes of virus are round, rod-shaped, bricks, threads, or bullets



What can you conclude from the size of viruses?



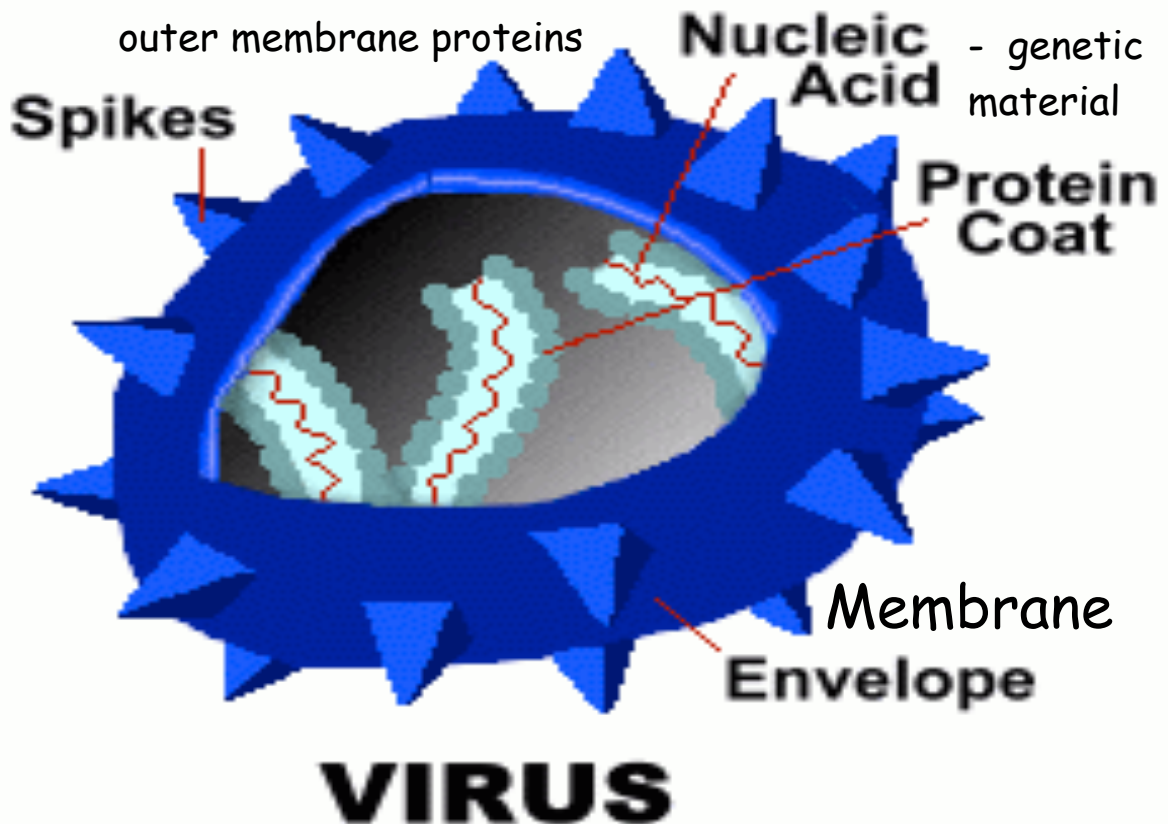
- Viruses are measured in nanometers (nm)
- The smallest is 20 nm in diameter and largest is 200 nm in diameter
- The average virus is smaller than the smallest bacteria



Structure of Viruses

All viruses have two basic parts:

- a protein coat that protects the virus
- an inner core made of genetic material

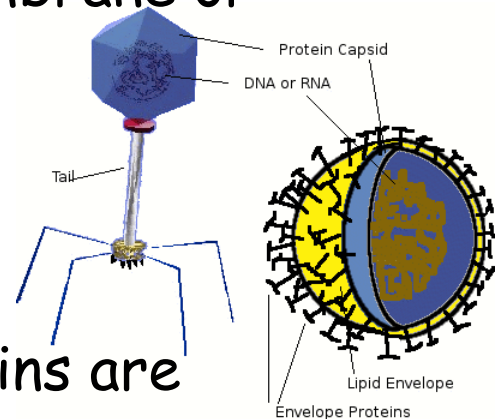


Structure of Viruses

Genetic material contains instructions for making new viruses

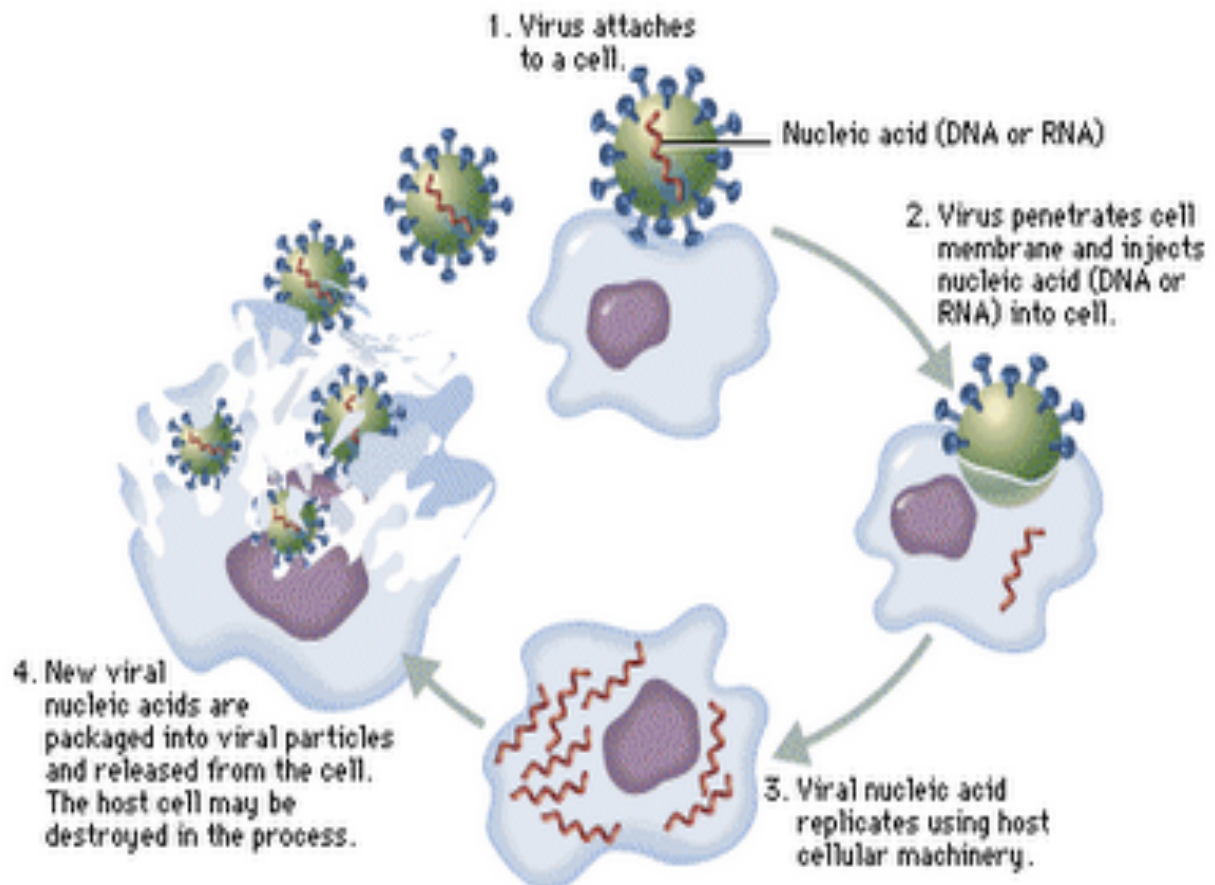
Protein coat protects the virus

The virus has an outer membrane or envelope



The outer membrane proteins are surface proteins that allows the virus to attach to the host

How Viruses Multiply



How Viruses Multiply

A virus attaches to the host cell

A virus injects its genetic material

Virus instructs cell to produce the virus's proteins and genetic material

The protein and genetic material assemble into new viruses that fill the host

The host bursts open, releasing new viruses, and the host dies

Differences between Active and Hidden Viruses



Active viruses goes into action immediately

Hidden viruses enter the cell, its genetic material becomes a part of the cell's genetic material.

Then under certain conditions, the virus's genetic material suddenly comes alive. It becomes an active virus.

Usefulness of Viruses

Gene therapy - Scientists add genetic material to a virus and then use the virus as "messenger service" to deliver the genetic material to cells that need it.

