Chapter 19 (in part)
Viruses
Viruses as living things (?)

“A kind of borrowed life”

A ___________ is an infectious particle consisting of genetic information in a protein coat.

Viruses are not cells!
Viruses are not capable of reproduction or metabolism outside of a host cell.

Viruses consist of two main parts:

1. ____________ - which is a nucleic acid like DNA or RNA

2. ____________ - a protein shell enclosing the viral genome. May be several different shapes.
Viruses as infectious particles

• Small size - much smaller than the smallest bacteria
• Simple genome – viral genome may only consist of a few genes.

• **Host range**
  – Each particular type of virus can infect cells of a specific type of host. Can mutate to spread to additional hosts.
1. Entry and uncoating

2. Replication

3. Transcription and manufacture of capsid proteins

4. Self-assembly of new virus particles and their exit from the cell
Viruses as pathogens

- Viruses may damage or kill cells during the virus life cycle

- Many times the fever and aches are from the immune system of host trying to fight the infection of the viruses
• ________________are harmless variants or derivatives of a pathogenic virus given to stimulate the immune system.

• Although vaccines can help prevent certain viral infections, current medical technology can do little to cure a viral infection once established.
• Epidemic – a wide-spread outbreak of a viral illness

• Pandemic – a global epidemic

  – Example H1N1 flu virus (influenza virus strain)
    • 2009 in Mexico and USA
    • By 2010 spread to 207 countries and infected over 600,000 people killing almost 8,000.
Examples of important human viruses

- **HIV virus** – human immunodeficiency virus
  - a retrovirus - contains RNA and host cells make DNA which is inserted into their genome.
  - Causes **AIDS** (acquired immunodeficiency syndrome)

- **Rhinovirus** - causes common cold

- **Herpesvirus** – causes herpes, cold sores, shingles, chicken pox