Chapter 13
Viruses

General Characteristics of Viruses
- Obligatory intracellular parasites
- Contain DNA or RNA
- Contain a protein coat
- Some are enclosed by an envelope
- Some viruses have spikes
- Most viruses infect only specific types of cells in one host
- Host range is determined by specific host attachment sites and cellular factors

Virion Structure
- Virion
  - Complete virus
- Nucleic acid
  - DNA or RNA
- Capsid
  - Capsomeres
- Envelope
  - Membrane
- Spikes
  - Glycoproteins

Virus Morphology
- Helical
- Polyhedral
- Enveloped
  - Enveloped helical
  - Enveloped polyhedral
- Complex

Taxonomy of Viruses
- Family names end in -viridae.
- Genus names end in -virus.
- Viral species: A group of viruses sharing the same genetic information and ecological niche (host). Common names are used for species.
- Subspecies are designated by a number.

- Herpesviridae
  - Herpesvirus
    - Human herpes virus; HHV-1, HHV-2, HHV-3
- Retroviridae
  - Lentivirus
    - Human immunodeficiency virus HIV-1, HIV-2

Picornaviridae
- Single-stranded RNA, + strand, nonenveloped
  - Enterovirus
- Poliovirus and coxsackievirus
  - Rhinovirus
  - Hepatitis A virus

Orthomyxoviridae
- Single-stranded RNA, – strand, multiple RNA strands
  - Envelope spikes can agglutinate RBCs
  - Influenzavirus (influenza viruses A and B)
  - Influenza C virus

Retroviridae
- Single-stranded RNA, 2 RNA strands, produce DNA
  - Use reverse transcriptase to produce DNA from viral genome
  - Lentivirus (HIV)
  - Oncogenic viruses
    - Includes all RNA tumor viruses