

## Viruses

### I. Characteristics of Viruses

- A. Viruses are composed of nucleic acid (DNA or RNA) enclosed in a protein shell.
  - 1. some have a membrane envelope around the protein capsid.
- B. Viruses can evolve and adapt to a changing environment.
- C. Intracellular parasites (reproduce only inside living cells).
- D. Classified by: genetic material, capsid size, and shape, presence or absence of an envelope.

### II. Viral Reproductive Cycle

#### A. Lytic cycle

- 1. the virus injects genetic material into the cell,
- 2. takes over the metabolic machinery,
- 3. causes host to make viral components,
- 4. assembly,
- 5. cell lyses (cuts open)

#### B. Lysogenic cycle

- 1. viral DNA becomes incorporated into the host cell's chromosomes.
- 2. viral genome lies dormant until a certain stimulus activates the virus to enter its lytic cycle.
- 3. In transduction, lysogenic viral particles may carry host cell DNA to a new host cell during and infective cycle

#### C. Budding - produced and released continuously from intact host cells

### III. Retroviruses

- A. RNA viruses that contain reverse transcriptase which is used to make a DNA copy of the viral genome.
  - 1. The DNA may be incorporated into the host cell's DNA
- B. Some retroviruses carry oncogenes which can transform the host cell into a cancer cell.
- C. The HIV virus is a retrovirus

### IV. Viral Diseases

- A. Viruses show specificity for their host cells
- B. Viruses cause disease by interfering with the cell's metabolism and eventually destroying the cell
- C. Because of the viruses' methods of reproduction, it is difficult to develop drug therapies