HIV (Human Immunodeficiency Virus)

Text: pp. 545-552

1. Introduction
   A. HIV Viruses
      i. HIV-1
      ii. HIV-2
   B. AIDS - Acquired Immunodeficiency Syndrome
      i. Acquired
      ii. Immunodeficiency
      iii. Syndrome
         a. Opportunistic Infections
   C. Pandemic

2. Origins
Microbiology Student Outline – HIV (Human Immunodeficiency Virus)

Th Cell

Infected Th Cell

Will Lead to Cell Death
HIV, on the other hand, displays the gp 120 protein on its envelope which will specifically bind to the CD4 receptor. By doing so, the T4 Helper T cell "ingests" the virus by receptor mediated endocytosis.

CD4 Helper T cells display the CD4 receptor. This receptor is important for the normal control of immune response. A number of cells in the human body display the CD4 receptor. Since the CD4 Helper T cell displays more CD4 receptors than any other cell in the body, it is also the cell that will be hardest hit by a HIV infection.
A. Viral Core
   i. ssRNA
   ii. Reverse Transcriptase
   iii. Integrase
   iv. Protease

B. Protein Matrix

C. Envelope
   i. Spikes -
      a. GP 120

4. HIV Life Cycle

A. Adhesion (1)
B. Penetration (by Fusion) (2)
C. Uncoating (3)
D. Replication and Synthesis of DNA
   i. HIV is a Retrovirus
      a. ssRNA --> ssDNA (4)
      b. ssDNA --> dsDNA (5)

E. Integration (6)
   i. Integrase
   ii. Provirus

F. Synthesis
   i. Transcription (7)
      a. mRNA (8)
      b. Genetic ssRNA (9)

G. Assembly (10)
   i. Protease

H. Budding (11&12)

I. Reinfection
5. Genetic Make up of the HIV Virus

A. Essential Retrovirus Genes
   
i. GAG
   
ii. POL
   
iii. ENV

B. Other Genes
   
i. Regulatory and Auxiliary Genes

5. Stages of Disease
6. Drug Therapy

A. Reverse Transcriptase Inhibitors

B. Integrase Inhibitors

C. Protease Inhibitors