

**AIDS and Other Human Diseases  
Review Sheet for Final Exam**

- I General Aspects of Disease
  - A. Definition of a disease
  - B. Causes of disease
  - C. Types of Infectious Agents
    - 1. bacterium
    - 2. virus
  - D. Difference between an antibiotic and an antiviral agent
  
- II Epidemiology of AIDS
  - A. Which areas of the world are most affected
  - B. Incidence vs. Prevalence/Incidence and Prevalence rates  
Be able to calculate each from raw data
  - C. Epidemic vs. Pandemic
  - D. Definition of AIDS
  
- III Biochemistry
  - A. Definition of a compound
  - B. Proteins
    - 1. How are proteins important to cells
    - 2. Different functions of proteins
    - 3. General Structure  
Composed of Amino acids  
Importance of shape/structure to function
    - 4. Enzymes
  - C. Nucleic Acids
    - 1. Function
    - 2. Gene definition
    - 3. General structure of DNA  
Nucleotide, double helix, base pairing
    - 4. DNA replication
    - 5. Protein Synthesis
      - A. Transcription vs. Translation
      - B. RNA general structure
      - C. Be able to determine amino acid sequence from nucleotide sequence in DNA
  
- IV How HIV causes AIDS
  - A. HIV structure (know the major parts and the major proteins)
  - B. Definition of retrovirus
  - C. Type of cell HIV infects
  - D. How HIV chooses what cell to infect/types of receptors
  - E. Replication of HIV – different steps in the process

- F. Immune System
    - 1. Organs of immune system
    - 2. Cells of immune system
    - 3. T lymphocytes
      - Helper T cell vs. Killer T cell
    - 4. B lymphocytes
  - G. What happens to the immune system when HIV is present
- V Stages in HIV/AIDS
- A. Acute Retroviral Syndrome
  - B. Asymptomatic Period
  - C. Chronic Symptomatic HIV Disease
  - D. AIDS
- VI Testing for HIV
- A. Indirect Tests
    - 1. ELISA and Western blot / Seroconversion/Window of Infectivity
  - B. Direct Tests
    - 1. Polymerase Chain Reaction
    - 2. Viral Load
  - C. Rapid Tests
- III Treatments
- A. Purpose of the drugs
  - B. Biological basis for how drugs work
  - C. Drugs – AZT, fuzeon, protease inhibitors
  - D. HAART
    - 1. Advantages and why
    - 2. Why do mutations in the virus occur?
    - 3. How do these mutations lead to drug resistance?
    - 4. What are side effects due to?
- IV Transmission of HIV
- V Prevention
- A. How can one prevent HIV transmission from one person to the next?
  - B. Vaccines
    - Traditional vaccines vs. Experimental vaccines
    - What they are and how do they work
- VI And The Band Played On
- A. Involvement of the CDC
  - B. National Politics
  - C. Politics within the Gay Community
  - D. Politics within the Scientific Community
  - E. Scientific process of investigation

VII Duesberg's Theory about AIDS

VIII Origin of HIV

IX AIDS in Africa

- A. Factors leading to the spread of AIDS in Africa
  - 1. Economic
  - 2. Sociocultural
  - 3. Political
- B. What are the costs of AIDS in Africa
  - 1. Human
  - 2. Social
  - 3. Economic
- C. South Africa vs. Uganda
  - 1. Recent political history of both countries
  - 2. AIDS policies in both countries/prevention programs
  - 3. How has the prevalence of HIV/AIDS in both countries changed with time? (general trends and not specific numbers)
- D. Brazil and its HIV/AIDS policy

X Cancer

- A. Most prevalent specific types of cancers
- B. Specific types of cancers people die from the most
- C. General types of cancers
  - 1. Benign cancer
  - 2. Malignant cancer
- D. Cell Division - Stages of the cell cycle
- E. What factors control cell division
- F. Stages of cancer
  - 1. Initiation
  - 2. Promotion
  - 3. Progression
  - 4. Conversion
- G. Factors that can initiate cancer
  - 1. Carcinogens
  - 2. Genetic factors
  - 3. Environmental factors/diet
- H. Treatment
  - 1. Surgery
  - 2. Radiation Therapy
  - 3. Chemotherapy

XI. Presentations