

# Plagues in Man

## AIDS - A new pandemic

### AIDS

- I. The virus(es)
  - A. Classification - Retroviridae (lentiviruses)
  - B. Structure
    - 1. Genome is two copies of plus-strand RNA (mRNA-like)
    - 2. Wedge-shaped core (gag proteins and RTase/Integrase)
    - 3. Enveloped with two glycoproteins  
gp120 and gp41
    - 4. Replication: Infection → RT → dsDNA → integration  
→ transcription
  - C. HIV-1 and HIV-2 (and the simian immunodeficiency viruses)
- II. The disease
  - A. Long progression
  - B. A staged, chronic disease
  - C. Fatal without treatment
  - D. Immunodeficiency diseases
    - 1. Pneumocystis pneumonia
    - 2. Kaposi's sarcoma (HHV-8)
    - 2. Variety of systemic fungal diseases
    - 4. TB, herpes infections
    - 5. PML
- III. The epidemic - 1980 →
  - A. Out of Africa - probably cross-species transmission
  - B. HIV-1 (East Africa) and HIV-2 (West Africa)
  - C. Sexual transmission (ease related to sexual practices)
  - D. Early entry into USA
    - 1. Male homosexual transmission
    - 2. IV drug use
    - 3. Heterosexual transmission
    - 4. Contaminated blood (1978-1985)  
Many tragedies  
Blood testing
    - 5. Discovery of the virus
    - 6. AZT
    - 7. Other drugs: RT inhibitors and protease inhibitors
- IV. The aftermath (in the USA)
  - A. Now treated as a chronic disease
    - 1. Combination of drugs (many side reactions)
    - 2. HAART - highly active anti-retroviral therapy
  - B. Mortality has fallen since 1992 (as has number of AIDS cases)
  - C. HIV positivity continues to increase
  - D. Search for a vaccine
    - 1. Several types have been tested:
    - 2. Inactivated virus
    - 3. Virus components (gp120)