PLAGUES IN MAN

INFECTIOUS DISEASE

I. Germ Theory of Disease
   - A. Louis Pasteur and Robert Koch – 1870-80
   - B. Koch's postulates
     1. Agent is found only in diseased hosts
     2. Isolate and grow agent in pure culture
     3. Inoculate and induce disease in new host
     4. Reisolate agent & show that it is the same
   - C. Pasteur & the wine industry – bacterial contamination
   - D. Koch and the anthrax bacillus

II. Disease and Infection
   - A. Constant state of infection
     1. Normal flora – e.g., skin bacteria
     2. Transient flora
   - B. Infection with disease
     3. Pathogens
        - a. Opportunistic agents
        - b. Pathogens
        - c. Virulent pathogens
     4. West Nile virus and polio virus
     5. Ebola virus and rabies virus
   - C. What is disease?
     1. Morbidity and mortality
     2. Symptoms: localized or systemic
     3. Loss of normal activities
     4. Common cold to rabies encephalitis
   - D. Progression of disease
     1. Exposure
     2. Incubation & incubation period
     3. Acute phase – symptoms apparent
     4. Convalescence
     5. Chronic infection, Sequelae
     6. Measles as an example

III. Eukaryotes – protozoans and yeasts (others)
   - A. What are protozoans and yeasts? Eukaryotes?
   - B. Nuclei and other organelles
   - C. Some pathogens:
     Candida albacans – Candidiasis, Thrush
     Plasmodium spp. (eg. *P.falciparum*) - Malaria

IV. Prokaryotes – Bacteria
   - A. What are Bacteria? Prokaryotes? (Archaeans?)
   - B. Normal flora, opportunists, pathogens
   - C. How are bacteria characterized?
   - D. What makes them pathogenic? Virulence factors?
     1. toxins - Diphtheria
     2. capsules - Pneumonia (pneumococcus)
     3. pili or fimbriae - Gonorrhea

E. Some common pathogens:
***Escherichia coli* & relatives (*Yersenia pestis*)**
Treponema pallidum, Chlamydia, Neisseria gonorrhoeae
Staphylococcus aureus, Streptococcus pyogenes
Mycobacterium tuberculosis

V. Viruses
A. What are viruses?
B. Are they living or dead or what?
C. How do they replicate?
D. Some viral pathogens:
HIV-1, polio, mumps, measles, influenza viruses
Herpes, Papilloma, pox viruses

VI. Viroids & Prions
A. Recent discovery & characterization
B. Called “subviral” particles
C. Viroids are small RNAs that propagate
Infect plants – potato spindle tuber viroid
Coconut cadang cadang viroid
D. Prions – Infectious proteins
Infect all mammals (Also a genetic disease)
Cause fatal neurological disease
How does it propagate if there is no genome (NA)?
Host’s own protein - What is its normal function?
Has an altered form or conformation
Yeast “conditions” are due to prions