Microbiology (Bio 206) #25:
Tuberculosis: the “White Plague”

Terms you should know:

- mycolic acids
- reactivation tuberculosis
- tuberculin test
- alveolar macrophages
- progressive primary infection
- prophylactic
- primary tuberculosis
- tubercles
- multi-drug resistance
- secondary tuberculosis
- BCG vaccine

Legionella pneumophila

Description: Gram-negative short rods
Diseases: Legionellosis (“Legionnaires’ disease”), a form of pneumonia
Virulence factors: Ability to multiply in macrophages and other phagocytic cells
Treatment: Antibiotics; CMI response is important
Reservoir and spread: Environmental reservoir (water supplies, air conditioning systems, etc.)
Multiples inside freshwater amoebae

Mycobacterium tuberculosis

Description: Long, thin, Gram-positive rods; obligate aerobe; forms cords
Diseases: Tuberculosis (#1 killer among infectious diseases)
Primary tuberculosis: progressive disease in only 10% of individuals
Secondary tuberculosis: bacteria survive for years in walled-off tubercules, then escape; lung damage mostly from type IV hypersensitive response
Currently a very important complication of AIDS
Virulence factors: Thick, waxy outer layer of cell wall, composed of mycolic acids
Highly resistant to antibiotics, chemicals, drying
Survives and grows inside macrophages (slow growth)
Treatment: Multiple antibiotics over long periods (e.g. rifampicin, isoniazid and pyrazinamide for a 2-year period)
Tuberculin test for primary tuberculosis, with prophylactic antibiotics for those who test positive.
Vaccine (BCG) available but poorly protective; not used in US
Multiple drug resistance a serious problem
Reservoir and spread: Human reservoir only; spread by respiratory route