**Microbiology (Bio 206) #38: Systemic Bacterial Infections**

**Borrelia burgdorferi**
- **Description:** Spirochete (Gram-negative spiral-shaped cells with endoflagellum)
- **Diseases:** Lyme disease (originally confused with rheumatoid arthritis)
- **Treatment:** Antibiotics
  - New vaccine has been tested successfully in humans
- **Reservoir and spread:** Animal reservoir: white footed mouse
  - Arthropod vector: deer tick (humans are an “accidental host”)

**Rickettsia prowazekii**
- **Description:** Tiny Gram-negative rods, obligate intracellular parasite
- **Diseases:** Typhus
- **Treatment:** Antibiotics (chloramphenicol or tetracycline)
  - Vaccine used in high-risk areas; High mortality rate if untreated
- **Reservoir and spread:** Human pathogen; spread in feces of human body louse
  - Some recovered patients get a latent infection

**Rickettsia rickettsii**
- **Description:** Tiny Gram-negative rods, obligate intracellular parasite
- **Diseases:** Rocky Mountain spotted fever (RMSF)
- **Virulence factors:** Growth in cells lining blood vessels
- **Treatment:** Antibiotics (chloramphenicol or tetracycline)
  - Fatality rate can be 10% even if treated, due to widespread damage
- **Reservoir and spread:** Spread by ticks (wood tick in West, dog tick in South)
  - Ticks also serve as reservoir and can pass bacteria on to young

**Bacillus anthracis**
- **Description:** Large, gram-positive, spore-forming rod
- **Diseases:** Anthrax (mostly a disease of animals)
  - In humans, cutaneous anthrax results from spores entering breaks in skin
  - Pulmonary anthrax results from inhalation and is often fatal
- **Virulence factors:** Exotoxins
- **Treatment:** Antibiotics (but can still be fatal due to toxin), vaccine
- **Reservoir and spread:** Animal and environmental (soil) reservoirs; spread by spores

**Yellow fever virus**
- **Description:** Enveloped RNA virus
- **Diseases:** Yellow fever; serious in about 20% of cases
  - Related virus spread by same mosquito causes dengue fever
- **Treatment:** None; vaccine available but no longer in use; mosquito control important
- **Reservoir and spread:** Human reservoir; spread by mosquito *Aedes aegypti*