

Disease of the
Day 10
Lyme Disease

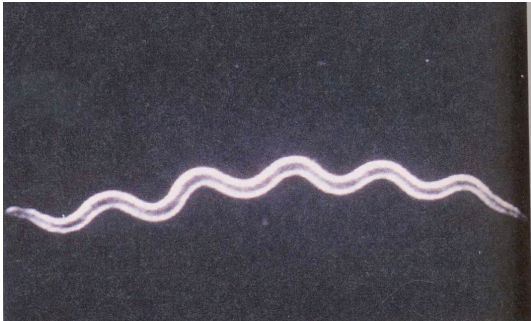
Zoonosis

Lyme, Connecticut in 1982

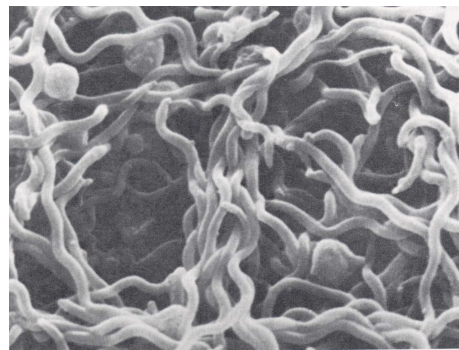
Causative agent

- ✓ *Borrelia burgdorferi*
 - Bacterium
 - Large spirochete
 - 11 to 25 μm
 - Linear genome (multiple copies)

Borrelia burgdorferi



Borrelia burgdorferi



Transmission

- ✓ Bite of an infected tick
- ✓ *Borrelia burgdorferi* reproduce and spread radially
- ✓ No transmission to other people
- ✓ Major reservoir
 - White footed mouse
 - White tailed deer

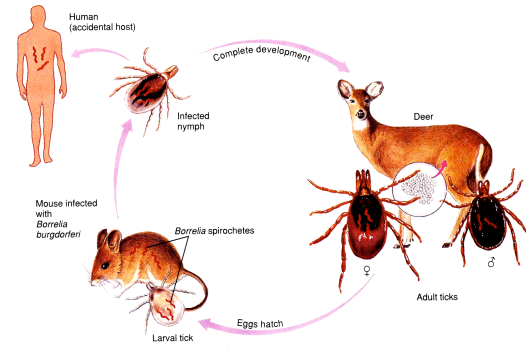
Vector

- Black-legged tick
- *Ixodes scapularis*
- Deer tick

Ixodes scapularis (Black legged tick)



Life-cycle



Signs/symptoms

✓ Stage 1 - one week

- Bull's-eye rash develops at bite site
 - Ring-like - up to 6 inches
- Fever, malaise, headache, and body aches
 - Flu-like

Signs/symptoms

✓ Stage 2 & 3

- Acute - 2-8 weeks -
 - heart and nervous system
 - Paralysis of the face, pacemaker, impairment of arm and leg movement, fatigue, severe headache,
- Chronic - 6 months -
 - Arthritis, joint pain, swelling, tenderness in joints

Bull's-eye rash



Bull's-eye rash



Bull's-eye rash



FIGURE 9.11

Erythema Chronicum Migrans (ECM)

Lyme Disease

- ✓ Clinical symptoms
 - Rash - sometimes
 - Arthritis - most cases
- ✓ Antibody test

Lyme disease

- ✓ Treatment
 - Doxycycline
 - Amoxicillin
 - Ampicillin
 - Ceftriaxone
- ✓ Prevention
 - Protective clothing, tick repellents
 - Vaccine (4/5 people it works)
 - Parasitic wasp against black-legged ticks

Lyme disease distribution

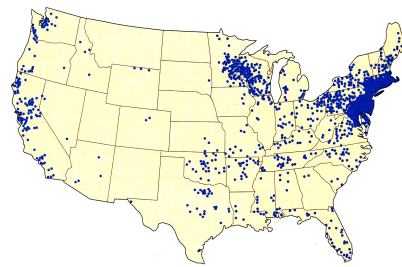


FIGURE 9.9

Lyme Disease in the United States, 1997

