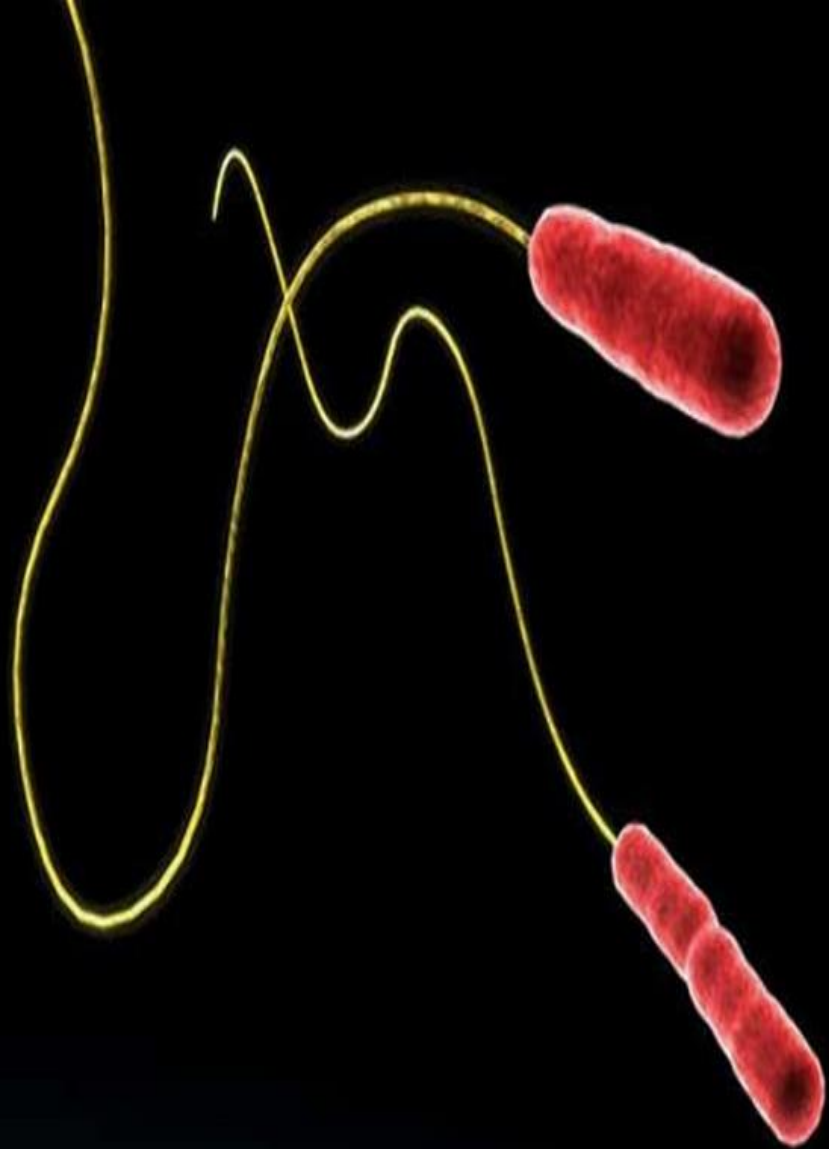


Fastidious Gram Negative Rods

**Legionella, Francisella and
Pasteurella**



LEGIONELLA

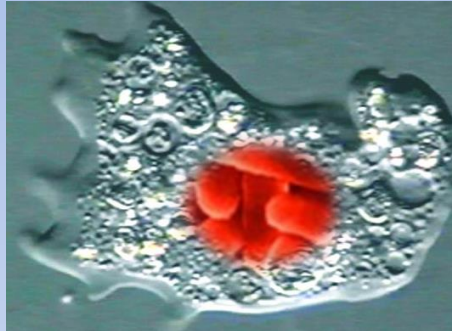
Legionella

- A naturally occurring bacterium
- Found in most water systems

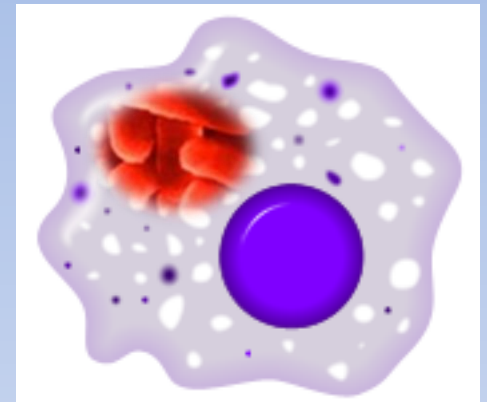


Intracellular

Parasitizes Amoebae

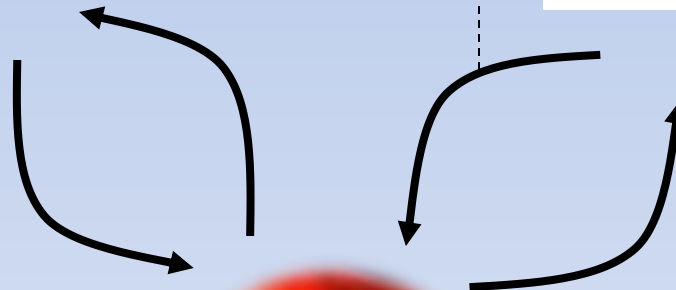


Invades Human
Macrophages in Lung



Extracellular

Lives in Soil or Water

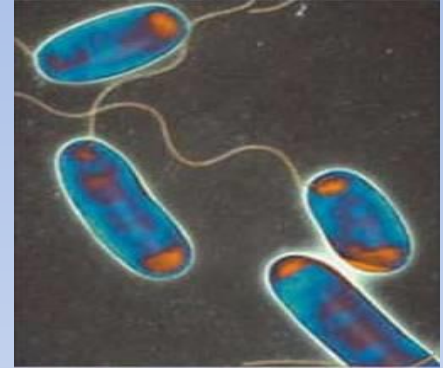


Legionella

Requirements for Growth

Transmission

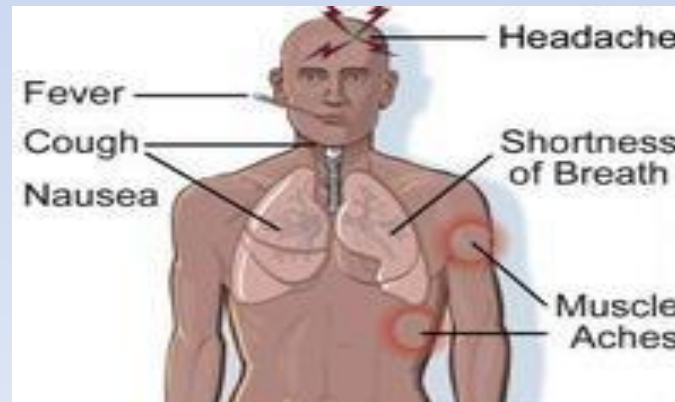
People at Risk



Legionella pneumophila

- Legionnaires disease (LD)
 - Potentially fatal form of pneumonia
 - Incubation period 2-10 days
 - *Legionella pneumophila*

Symptoms

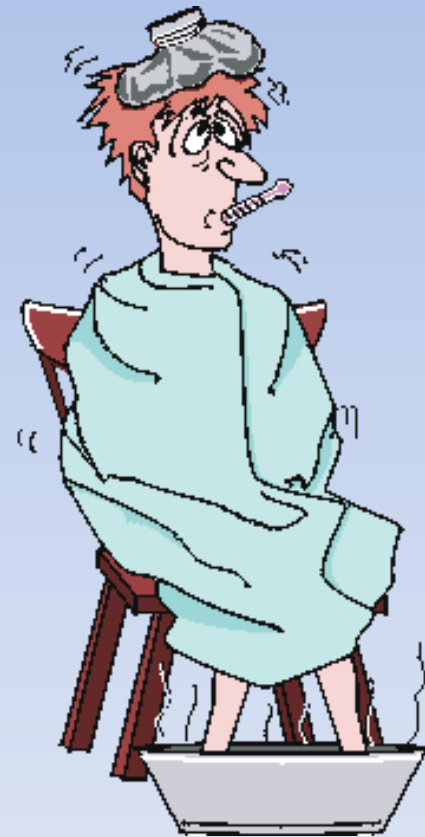


Legionella pneumophila

- **Legionnaires disease (LD)**
 - Does not respond to penicillin
 - Causes systemic damage
 - Causes permanent damage
 - Prognosis

Legionella

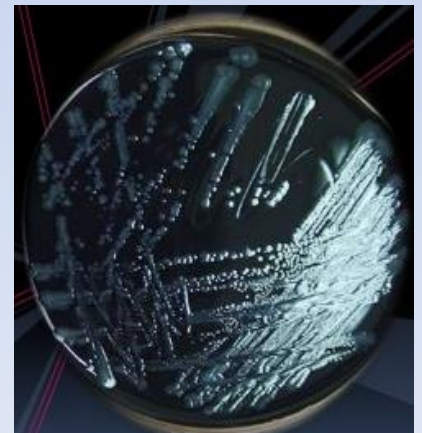
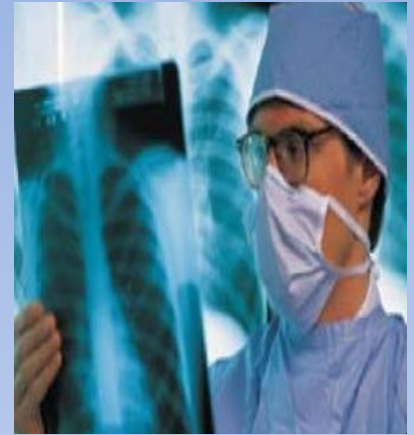
- Pontiac fever
 - influenza-like illness
 - Recovery



Legionella

Diagnosis

- Isolation of Legionella
- Laboratory identification:
 - Urinary Antigen Test
 - Culture
 - Serological diagnosis
 - Lung biopsy, respiratory secretions, sputum
 - PCR
 - Chest X-rays: Patchy multi-lobular consolidation



Legionella

Morphology and cultural characters:

- Motile
- Weakly Gram negative rods
- Fastidious, BCYE agar
- 3-10 days @ 37°C, aerobically

Biochemical tests

- Oxidase test
- Beta-lactamase test
- Hippurate test

Legionella

Prevention and control

Treatment

- Macrolides
- Fluoroquinolones



PASTEURELLA

Pasteurella

Pasteurella infections

- Indigenous
- Exogenous
- *Pasteurella multocida*:
 - Most common human pathogen
 - Domestic pets serve as major reservoir
 - Commensals in upper respiratory tract of dogs, cats, etc.

Pasteurella

Diagnosis

- Small Gram-negative, bipolar staining
- Blood agar, grow at 37°C.
- Catalase, Oxidase, Indole and Nitrate test



Francisella

Francisella

Francisella tularensis

- A pathogen of animals
- Small, pleomorphic coccobacilli
- Facultative intracellular pathogen

Francisella

Epidemiology

- The United States, the major endemic tularemic area
- The summer months

Francisella

Tularemia

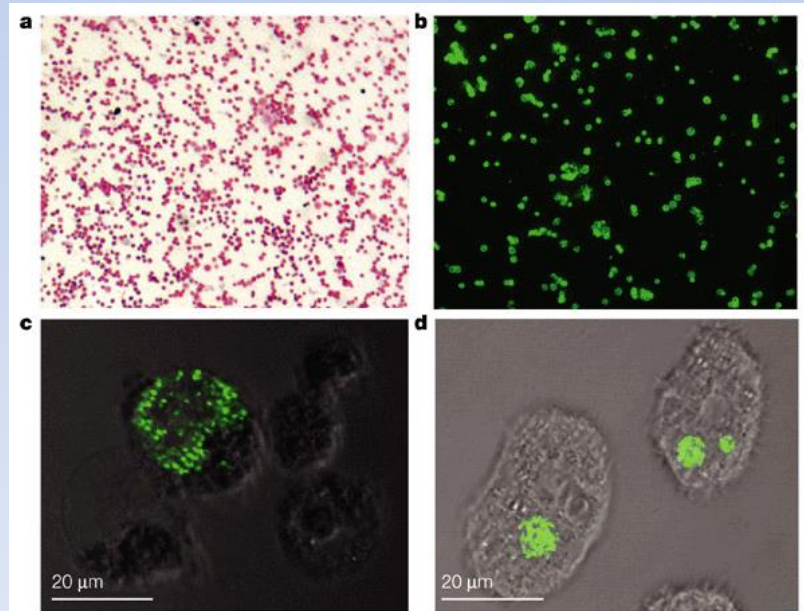
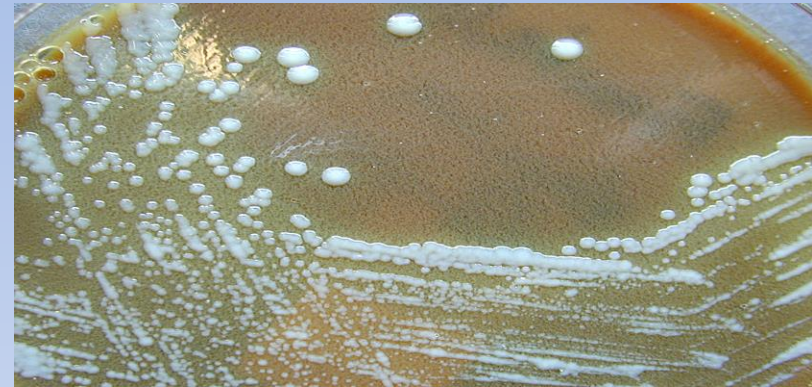
- Starts as a Flulike illness
- **Ulceroglandular tularemia**
- Oculoglandular tularemia
- Pharyngeal tularemia
- Pneumonic tularemia
- Typhoidal tularemia



Francisella

Diagnosis

- Highly infectious
- Nutritionally fastidious requires cysteine
- Oxidase test
- Sugar utilization test



Treatment

Streptomycin or gentamicin plus a tetracycline