

1-Mycobacteria

2-Chlamydia

3-Mycoplasma

4-Legionella

5- Spirochetes

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1-Mycobacteria Group

- **Acid-Fast Bacilli**.. Aerobic.. Cell Wall.. Mixed protein-polysaccharides, High Phospholipids (mycolic acid, waxes).. Resistant to Dryness, low Acidity, Alcohol, detergents.. Susceptible to UV-light, Heat, Common Human.. Asymptomatic persons. domestic Animal, Birds, Environment..kill 3-5 Million yearly
- **Human/animals Pathogens**.. Slow growth in vitro culture (2-6 weeks).. Causing tissue necrosis in lung and any body part.
- **Common Pathogens**: Mostly ***M. tuberculosis*** ..Lung & systemic tuberculosis.. Less than 1% ***M. bovis*** .. Animals, Dairy products..Mostly Intestinal tuberculosis.

2-Mycobacteria Group

- **Pulmonary Tuberculosis**/ Exudative type: Slow intracellular growth in lung tissue..Incubation time 1-12 months.. droplet infection.. Primarily mild Lung lesion Mostly Children (90%).. Asymptomatic infection, Rarely active lesions..Recovery.. Hypersensitivity Immunity..Positive skin tuberculin test..
- Asymptomatic infection is not necessary result in Disease
- **Active-Productive type**: Adult infection.. Reactivation of old tuberculosis lesions..may present in any Body site.. Intestinal tract, Kidney, bones.. Meningitis common in children.
- **Lung lesion**: Cough, Bloody sputum, night sweats ,weight loss.. Detection X-ray and positive tuberculin test..Larger reaction.

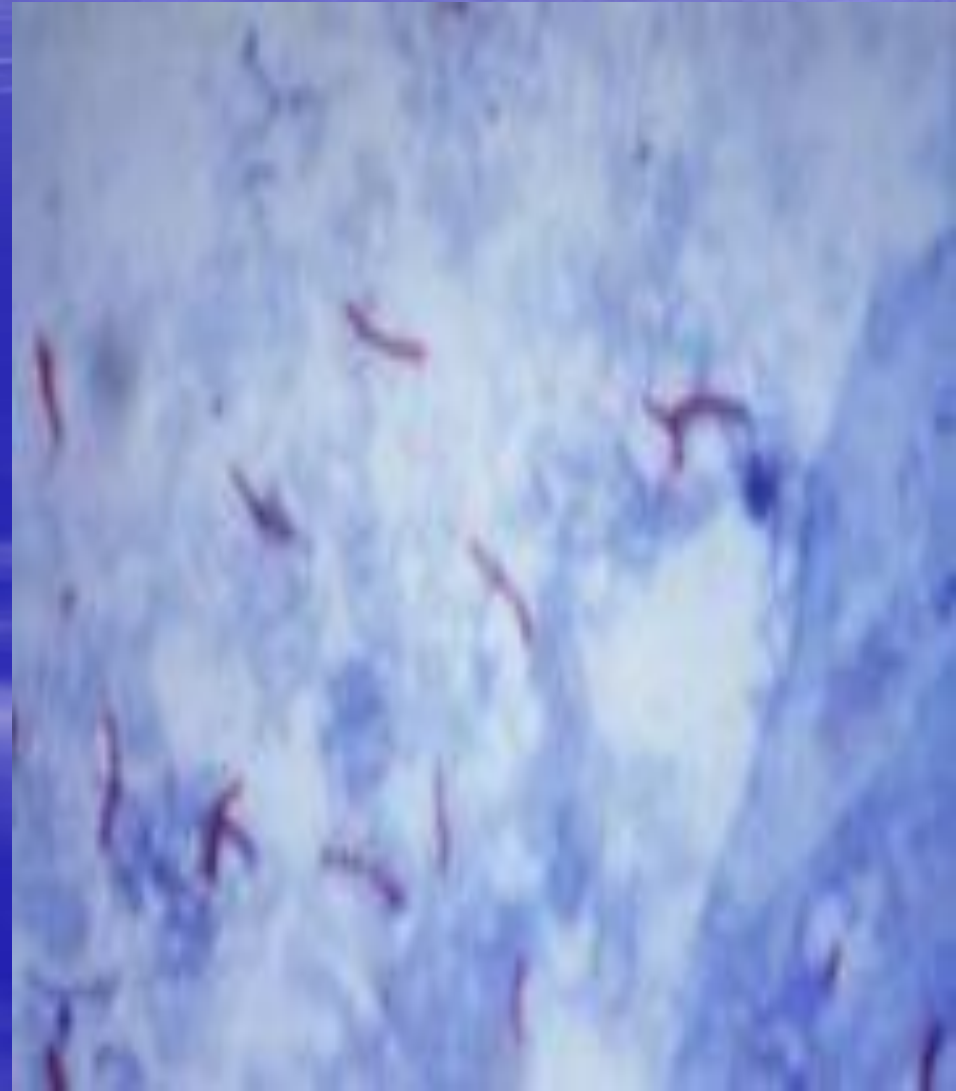
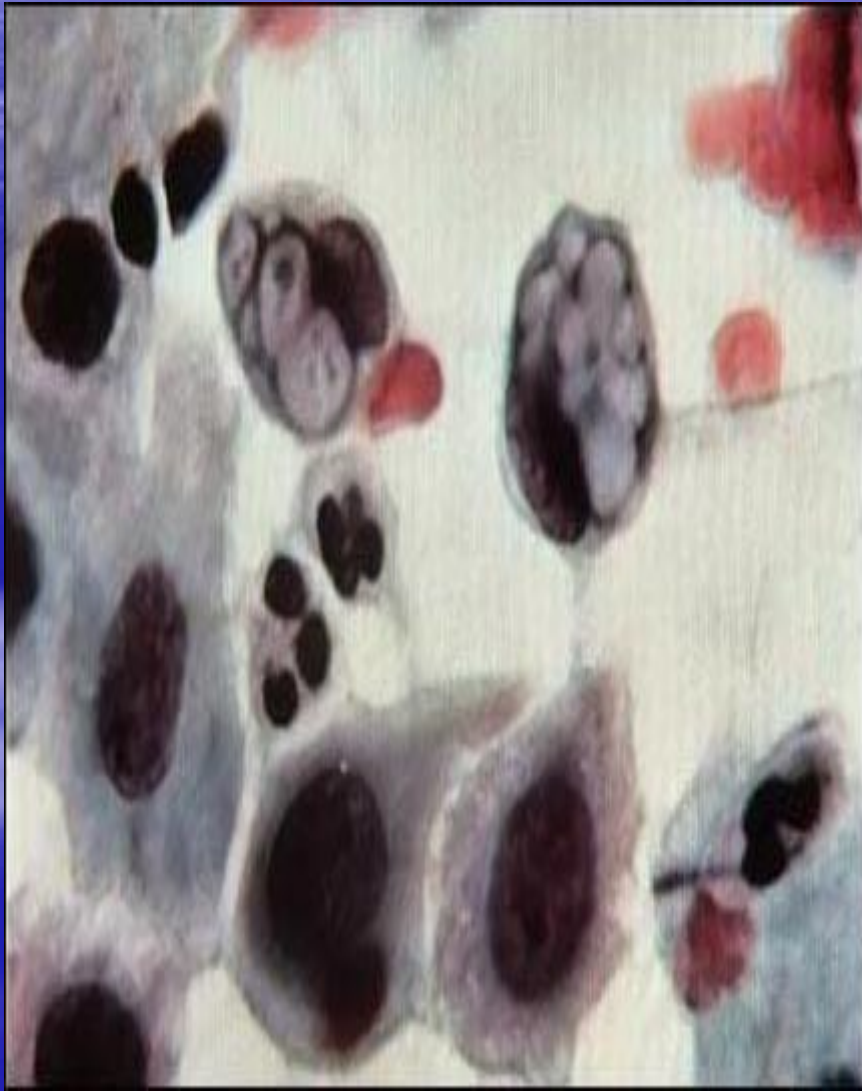
2/Mycobacteria

- **Atypical Mycobacteria** .. pigmented and non-pigmented..Slow and rapid grower types common in environment..Rarely cause of lung or systemic Tuberculosis.. Immunosuppressed.
- **Nonpathogenic species**.. genital tract, skin (*M. smegmatis*.. rapid growth (3-7 days)..rarely skin lesions.
- **Lab Diagnosis:** Direct AFS.. Ziehl-Neelsen stain, Culture 2-6 weeks, Lowenstein -Jensen Medium, Sputum, urine, Pleural fluid, CSF, Biopsy.
- **Treatment:** Combination of anti-tuberculosis drugs (6-24 months).
- Prevention.. **BCG vaccine** (Bacilli Calmette-Guerin)..Children..Protective 30-50%

2-Chlamydia group

- **Chlamydia** : Small Gram-ve cell wall, few amount of lipopolysaccharides.. obligate intracellular.. Microaerophilic dimorphic growth & , Infectious stage.. Elementary bodies/ Infectious.. responsible for attaching to the host mucosa cell and promoting its entry.. Develop Inclusion bodies/Reticulate bodies ..replication.
- **Chlamydia trachomatis**: A common cause of STD worldwide.. Nonspecific urethritis.. Prostatitis, Vaginitis.. Cervicitis, infertility.
- **Newborns with chlamydial conjunctivitis**: have mild to severe eyes redness, swollen eyelids, discharge from the eyes which can be thin and watery or thick and yellow.. Trachoma .. Blindness if not treated.

Chlamydia inclusion bodies/Acid-Fast Mycobacteria



2-*Chlamydia*

- ***Chlamydia pneumoniae***.. Attached to Tracheal epithelial cells acute bronchitis..
Atypical pneumonia.. Mild-severe pulmonary infection..mild-sever cough, Common in children.. Less other ages
- **Diagnosis & treatment** : Clinical features & serological test.. Detection specific antibodies developed after 4-8 weeks infection
- McCoy tissue culture.. PCR test..
- Antibiotics treatment.. No Vaccine

3-Mycoplasma group

- The smallest Bacteria .. Lack Cell Wall.. Lipid bi-layer Membrane.. Microaerophilic.. Associated with mucosal Respiratory/Urinary. .Human, Animals, Birds.
- 1-M. pneumoniae: Human pathogens.. Infection Pharyngitis, Bronchitis, Pneumonia.. Dry cough.. Fever, Common old children & Young adults.. Less others ages, Common infection in Fall-Winter.
- 2-M.hominis/M.genitalium : Part of normal oral-genital flora, opportunistic pathogens.. cause Nonspecific urethritis, vaginitis, cervicitis.
- Diagnosis & treatment: Sputum & Urine special Culture media.. Cold-Agglutination Test, ELISA Specific antibodies, PCR, Antibiotics.. No Vaccine.

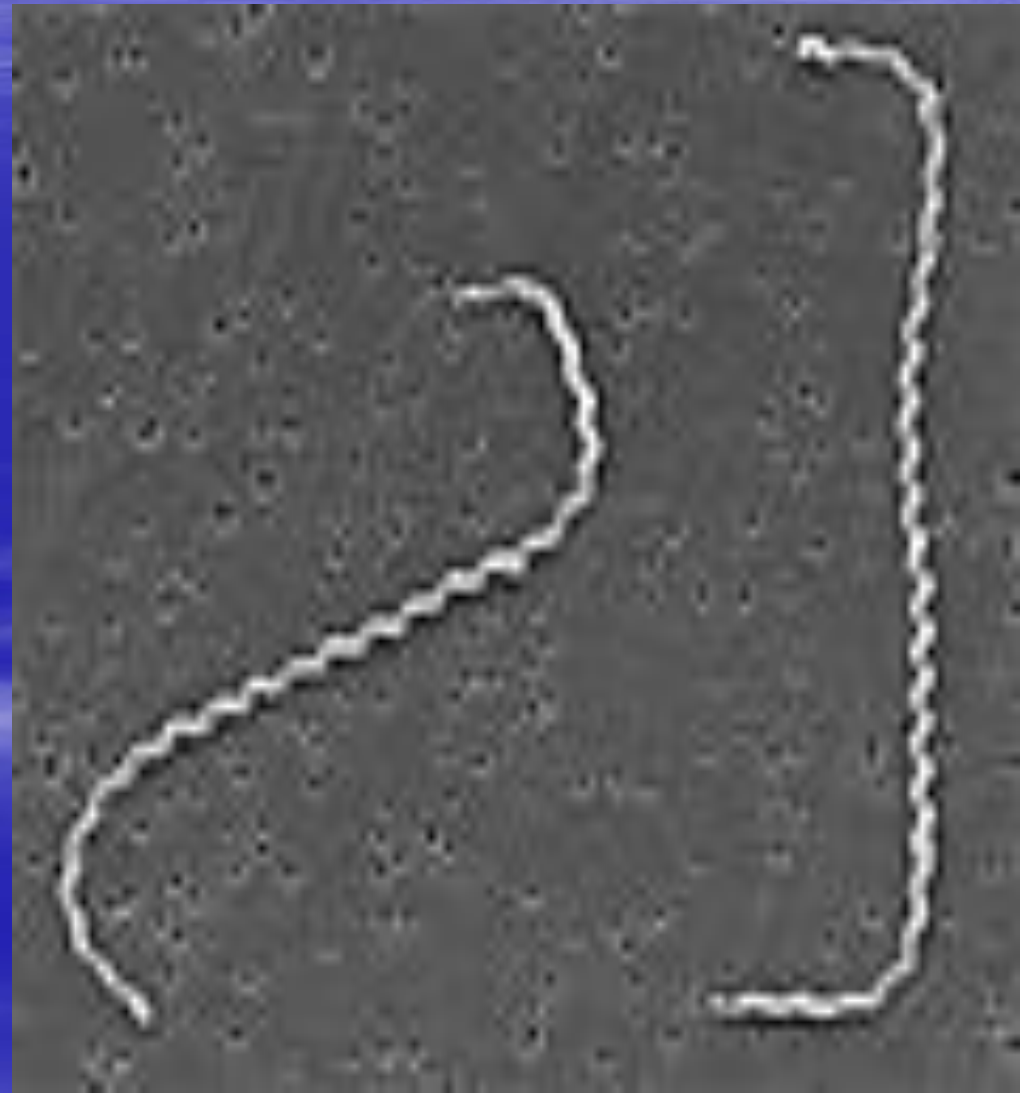
4-Legionella pneumophila

- **Legionnaires' disease** -Thin G-ve Coccobacilli/ Filaments.. Facultative Anaerobes.. Survive 0-80 C.. Cold/Hot Water.. Air Condition, Wet Soil, Droplet infection ..Aerosols, Fine sprays , Respiratory Mucosa Lung.. **Intracellular.. Monocyte-Macrophage**.. Extracellular growth,Not contagious disease.
- **Clinical Features**: High Fever, dry Cough, vomiting, and stomach discomfort, Diarrhea. Other common symptoms include headaches, muscle aches, chest pain, and shortness of breath, Pneumonia, Renal Failure, Death.. **Old/ Immunodeficient / heavy Smoking Persons.**
- **Diagnosis & treatment**: Special Culture Media, Blood-sputum culture, Detection Specific antibodies, PCR, Antibiotics.. No Vaccine.

Spirochetes Group-1

- Gram-ve.. Spiral forms.. Long.. which have long helically coiled cells (5-20um).. Common Human, Animals, Arthropodes.. Nonpathogenic /Pathogenic.
- **1- Treponema species**: Nonpathogenic.. Oral cavity.
- **2-Treponema pallidum**: Syphilis.. Venereal Disease.. Sexual Contact.. entering the host via breaches in mucosa of genital & oral tracts..distribute to blood and lymph systems following multiplication in tissue
- **Incub. 2-week-Few Months**: Acute-Chronic Infection.. Mucosa/Skin Lesions-**Chancre** on Genitalia, Anal area/Mouth.. Systemic Disease.. Affect Any Body Organ.. Meningitis, Hepatitis, Nephritis, Granulomatous lesions. **Congenital Syphilis**.. Pregnancy, affects fetus.. death and abortion.

Legionella- Spirochete Cells



Spirochetes Group-2

- **Lab Diagnosis:** Direct Dark-field Microscopy.. Serological Test.. Rapid Plasma Reagin (**RPR**) / **VDRL**, confirmed by Fluorescent Treponemal Antibody (FTA-ABS).. No artificial Culture.. Antibiotics
- **4- *Borrelia species:*** Worldwide.. Epidemic/Endemic **Relapsing Fever**.. Biting Insects (Human Lice/ Animal Ticks).. Septicemia.. Low-High Fever, Chills, Severe Headache, Common Relapses.
- ***Borrelia Burgdorferi:*** Lyme Disease.. Common USA, Biting Insects (Ticks).. Wild Animals, Rodents, Birds ..Incub. Few Weeks- Months..**Single/Multiple Skin Erythematic Lesions**.. Systemic Disease.. Arthritis, CNS.. **Cardiac Abnormalities**.
- **5-Liptospiral diseases:** Zoonosis, mild-severe fatal systemic .. **Weils's disease** ..high Fever, Jaundice, vasculitis , Bleeding.
- **Diagnosis:** Serological Tests, Special fluid culture methods

Lyme Disease/ Tick Erythematous lesions

