
4. *Phylum Spirochaetes*

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Gram negative

Aquatic environments; some pathogens

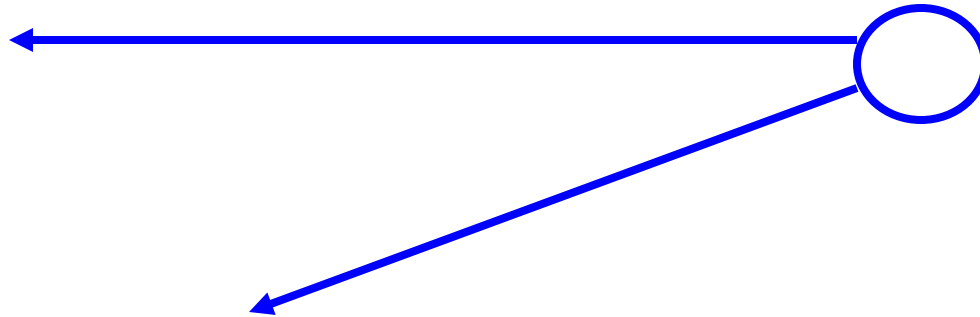
Unique morphology. Endoflagella

4. Phylum Spirochaetes

Treponema: animal and human hosts, microaerophilic, very sensitive to environmental stress



T. pallidum: syphilis



5. *Phylum Bacteroidetes*

5. *Phylum Bacteroidetes*



5. Phylum Bacteroidetes

Gram negative

Complex substrates

Habitats: digestive tract, hypersaline environments, water and soil

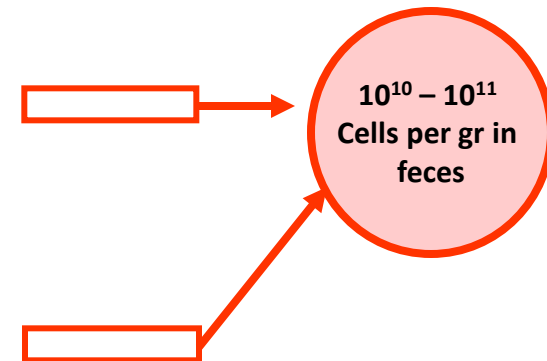
Genus *Bacteroides*

Rods, strict anaerobes

Fermentative

Gut comensals

Pathogens



5. *Phylum Bacteroidetes* Rumen microbiota



Rumen metabolism

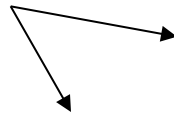
5. *Phylum Bacteroidetes*

Cytophaga

Abundant in soils and waters

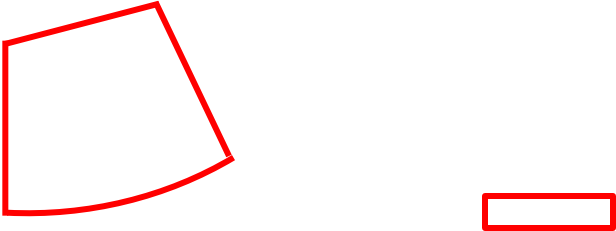
Many species degrade cellulose, chitine and/or agar

Fish pathogens



6. *Phylum Actinobacteria*

6. *Phylum Actinobacteria* High GC Gram POSITIVES



6. *Phylum Actinobacteria*

Gram positive

Corynebacterium → *C. diphtheriae* (Diphtheric toxin)

Anaerobic facultative rods

Saprophytic and pathogenic

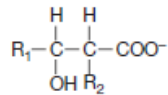
BBE

DIFTERIA

pseudomembrane

6. Phylum Actinobacteria

Mycobacterium



(a) Mycolic acid; R_1 and R_2 are long-chain aliphatic hydrocarbons

Acid fastness

Mycolic acids

Ziehl-Neelsen staining

6. Phylum Actinobacteria

Mycobacterium tuberculosis

(Koch's bacillum) TUBERCULOSIS



MULTIDRUG RESISTANT TB!!!

BBE

6. *Phylum Actinobacteria*

Mycobacterium tuberculosis TUBERCULOSIS

BBE

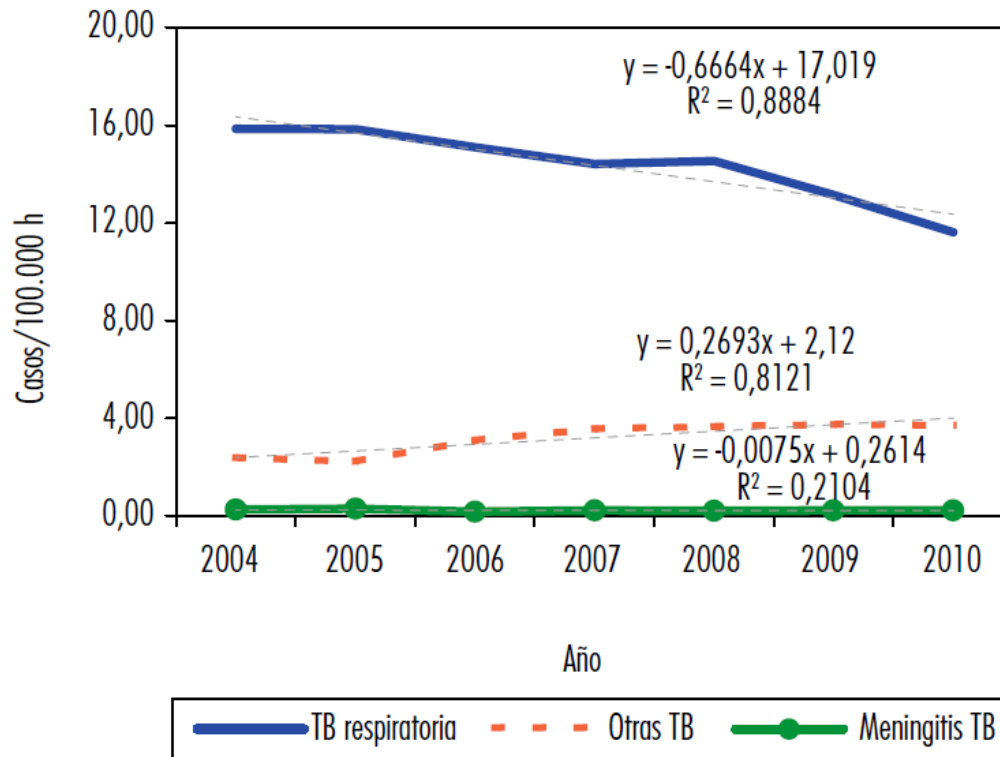
Tubercles

Tuberculin test

Tuberculosis

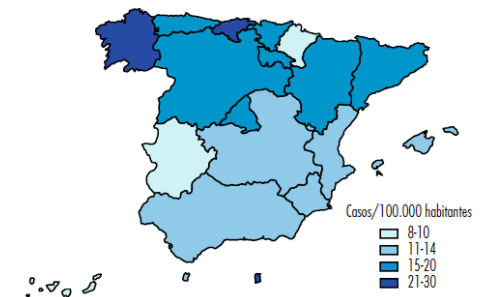
SIDA

Figura 1. Tasas de tuberculosis según categorías de declaración. España, 2004-2010



Fuente: Red Nacional de Vigilancia Epidemiológica
Elaboración: Centro Nacional de Epidemiología

Figura 2. Tasas de incidencia de tuberculosis por Comunidades Autónomas, 2010.



Fuente: Red Nacional de Vigilancia Epidemiológica
Elaboración: Centro Nacional de Epidemiología

6. *Phylum Actinobacteria*

Mycobacterium leprae LEPROSY (Hansen's disease)

Tuberculoid leprosy

Lepromatous leprosy

BBE

6. *Phylum Actinobacteria*

Streptomyces

Filaments without cross-walls

Mycellium and spores (conidia - no endospores)

G+C range: 63-78% (the highest)

> 500 species, soil microbiota

Pigments / geosmines

Chemoorganoheterotrophic aerobes

Antibiotic producers

Género *Streptomyces*

Mycelium

**Spore-bearing
structures**

**Spore
formation**

6. *Phylum Actinobacteria*

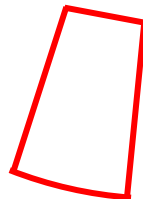
Streptomyces: antibiotic production



Soil sample

7. *Phylum Chlamydiae*

7. *Phylum Chlamydiae*



7. Phylum *Chlamydiae*

Gram negativas

Obligated intracellular parasites

No PG (genes present)

“Energetic parasites” (ATP) (genes present)

Transmission: Air and direct contact

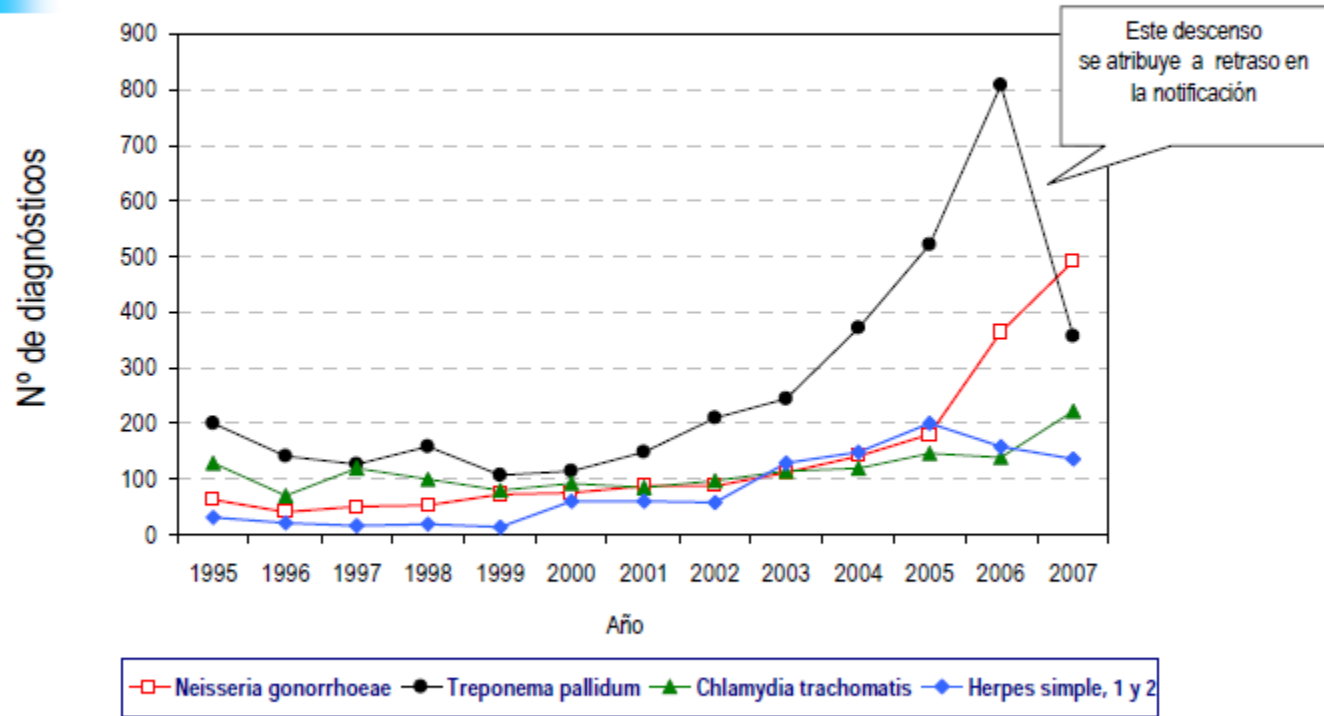
Elementary body: **chlamydiospore**



7. *Phylum Chlamydiae*

NGU, very high incidence

Diagnósticos microbiológicos de infecciones de transmisión sexual. España 1995-2007



Fuente: Sistema de Información Microbiológica. Red Nacional de Vigilancia Epidemiológica

Epidemiología de las infecciones de transmisión sexual