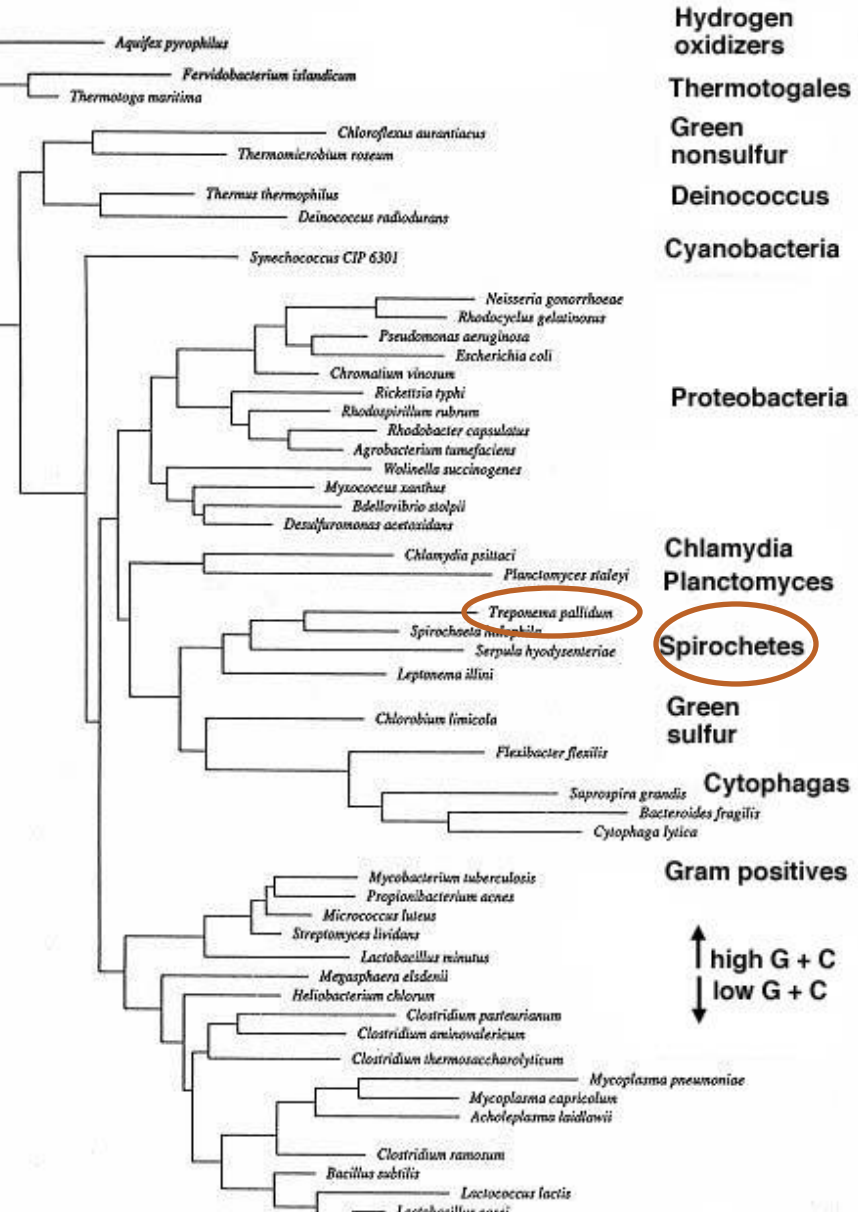
Treponema pallidum

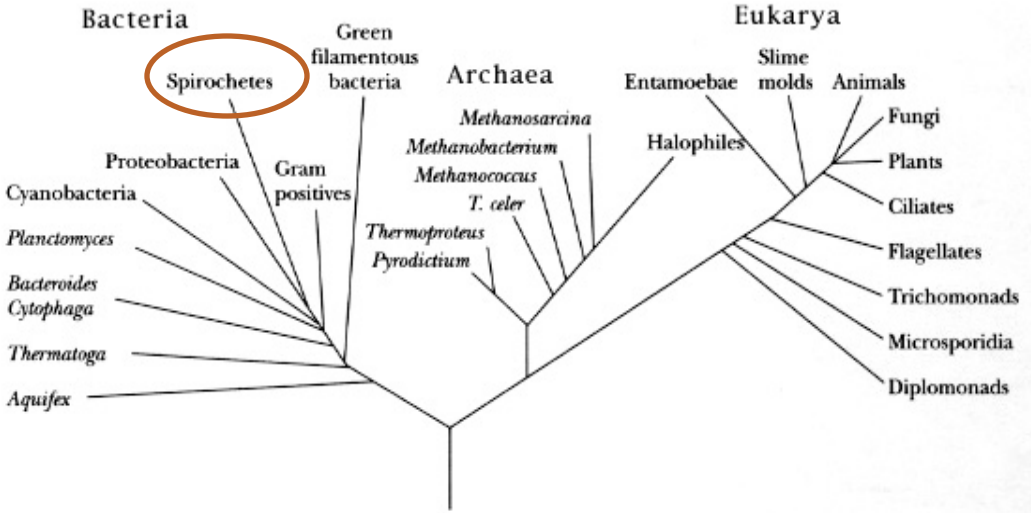
Lindsay Wexler

Taxonomy of *Treponema pallidum*

- Microbial group: Bacteria
- Phylum: Spirochaetes
- Genus: *Treponema*
- Species: pallidum

Placement on phylogenetic tree

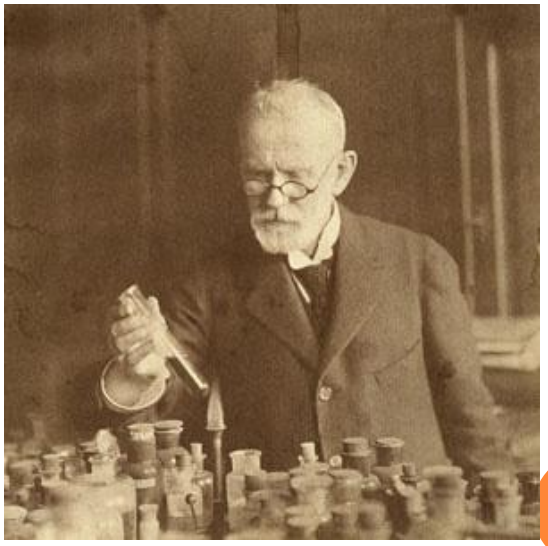




History

Christopher Columbus

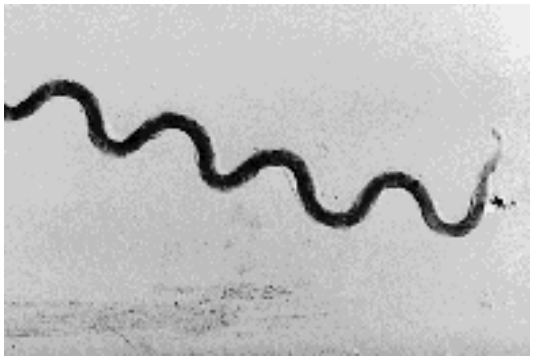
Fritz Schaudinn

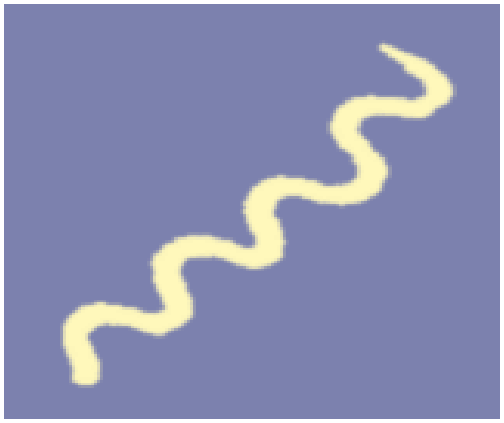


Paul Ehrlich

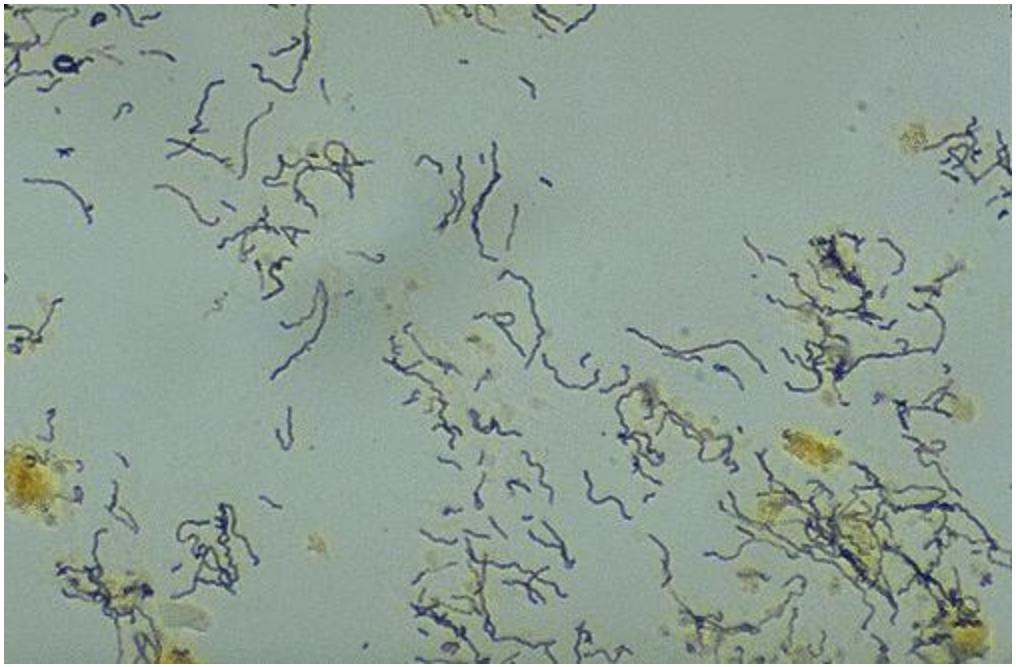
Basic Characteristics

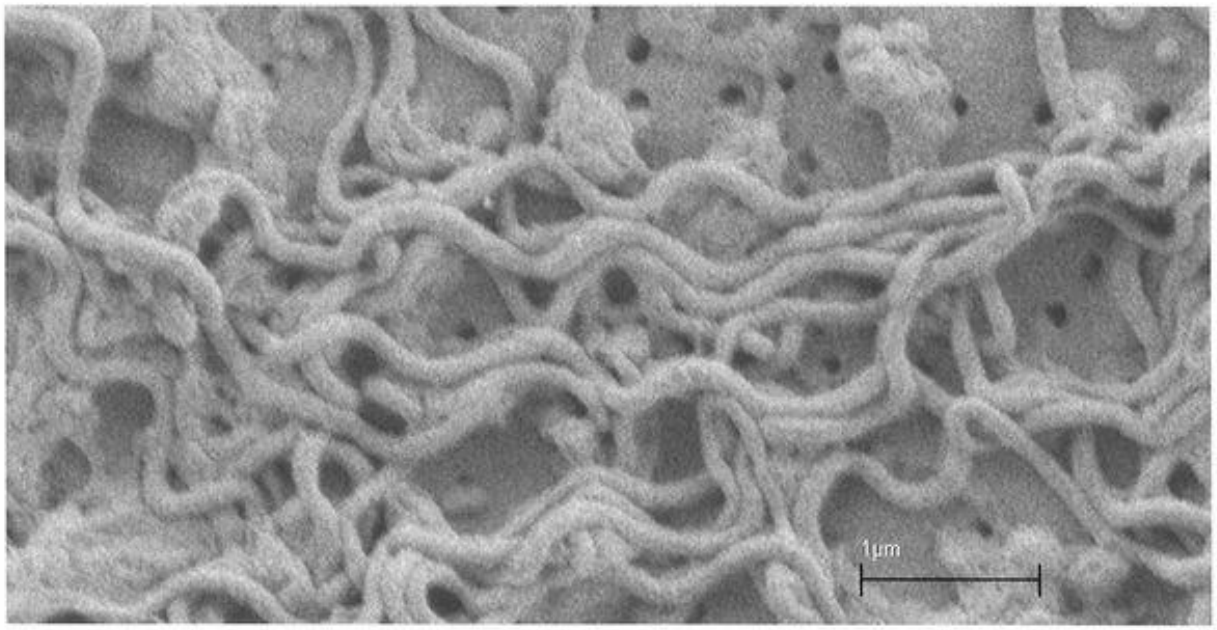
- The gram-negative spirochete





- It length ranges from 6-20 um, its diameter ranges from 18-20 um.




1µm

Basic Characteristics

- Metabolism
  - Chemoheterotroph
- Oxygen Utilization
  - Microaerophilic
    - *Treponema* Pallidum is an obligate parasitic bacteria

Disease organism causes

- *Treponema* pallidum is the causative agent of Syphilus

Symptoms: 4 stages

- **Stage One:** contagious stage.
  - Swelling of the lymph glands and the appearance of chancres.

Stage Two

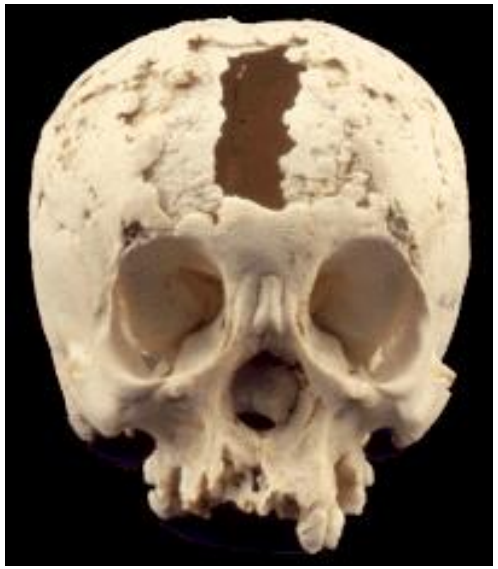
- Also an infectious stage.
- It begins two weeks to six months after the chancre is gone.
- Symptoms may last two to six weeks.

Stage Three (Latent):

- May occur two years after the primary stage and could last 50 years.
- Most people have no symptoms in this stage, a few may develop lesions called "gummas" in bones, skin, nervous tissue and the heart.
- Syphilis is not spread through sexual contact at this stage, but is present in the blood.

Stage Four (Tertiary):

- Not an infectious stage.
- One-third of the people with syphilis will develop heart problems, skin rashes, bone and joint pain or other problems such as insanity, slurred speech, senility or paralysis.



Mode of Transmission

- Treponema pallidum is usually spread through sexual contact.
- Treponema pallidum invades intercellular junctions of endothelial cell monolayers.
- Transmission can occur anytime the infected ulcer comes in contact with mucous membranes or other broken skin.

Who is at Risk for Syphilis?

- Age: Younger men and women
- Number of Sexual Partners:
  higher numbers=higher risk
- Unprotected Sex

How is Syphilis Diagnosed?

- During stage one of syphilis, diagnosis is made based on the presence of chancres.

- In the three later stages a blood test is needed to detect syphilis. The blood test will not be positive until five weeks after the chancres first appear

How is Syphilis Treated?

- Syphilis is treated with penicillin shots.
- Syphilis is curable if treated in time.
- If left untreated, it can cause blindness, insanity, paralysis, heart disease or death. Symptoms may appear 10-90 days after exposure.

Will syphilis recur?

- A person once infected by syphilis is not immune to the disease

- Antibodies are produced after first response to disease, which give the person some protection from re-nfection for only a short period of time.
- Eventually the person is susceptible to a syphilis infection if he/she comes in contact with *Treponema pallidum* again.

Studying *Treponema pallidum*

- The main problem in studying *T. pallidum* is its inability to be cultured.
- Metagrowth is a web database containing information that will be vital for developing culture conditions for obligate parasitic bacteria.
- The information listed in the database is collected from "various sources including published literature, genomic sequence information, metabolic databases and transporter databases" as well as current culture hypotheses.
- This new resource will help in the study of unculturable bacteria.

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