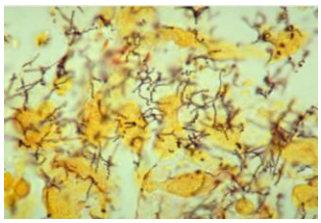
- **Syphilis:**
  - **Pathogen**: Treponema pallidum.
    - ✓ It is an anaerobic, highly-motile (internal flagella), spiral bacteria.
    - ✓ It cannot be detected by gram-stain because it is very thin.
  - **Clinical manifestations:**
    - ✓ Responsible for syphilis which is a chronic Sexually Transmitted Disease (STD) evolving in different stages:
      - ❖ *Primary syphilis*: chancre (painless ulcer).
      - ❖ *Secondary syphilis*: rash.
      - ❖ *Tertiary syphilis*: gumma (occurring in connective tissue of the brain, heart, liver and testes). If chest radiograph is done, it will show an aortic aneurysm.

Primary syphilis – chancre in male | Secondary syphilis-rash | Tertiary syphilis - gumma | Tertiary syphilis chest radiograph, showing aneurysm

    - ✓ In pregnant women, transplacental transmission can occur resulting in congenital syphilis which is characterized by:
      - ❖ Microcephaly, hemorrhage, general wasting, rash and hepatosplenomegaly.
  - **Microbiological tests:**
    - ✓ Culture is impossible.
    - ✓ No gram-stain but they can be detected by using a modified steiner silver stain (see the image).
    - ✓ Dark-field microscopy: direct detection in the secretion from the ulcer in contrast phase.

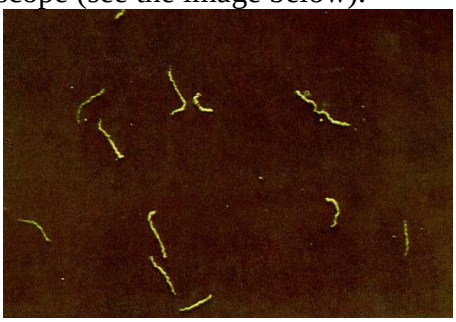


  - **Serological approach:**
    - ✓ Non-treponemal tests (screening tests):
      - ❖ *RPR (Rapid Plasma Reagin):* detecting antibody substance in blood stream when syphilis is present. How is it performed? Spread 1 drop of patient sample in a glass slide → add 1 drop of carbon-antigen → rotate glass slide for 8 minutes → clumping mean positive test result.
        - Negative RPR test result → compatible with patient not having syphilis or who had syphilis and was treated effectively (primary syphilis 6 months – secondary syphilis 12-18 months)
        - False-negative RPR result → in early stages of the disease or when patient has syphilis but the immune system is impaired (AIDS).
        - False-positive RPR result (although syphilis is not present) → infectious mononucleosis, lupus, hepatitis A, leprosy malaria and occasionally pregnancy.

- ❖ *VDRL (Venereal Disease Research Laboratory):* same ad RPR:
  - False-negative: in early stages of the disease.
  - False-positive results might also occur as in RPR.

✓ Treponemal tests (specific tests):

- ❖ *FTA-ABS (Fluorescent Treponemal Antibody Absorption):* how is it done? Commercially available Treponema strain is added to a slides → serum of patient is added (which contains antibodies against Treponema) → fluorescienated anti-immunoglobulin is added which will bind to antibodies of the patient → bacteria will be revealed under fluorescent microscope (see the image below).



- **Treatment:**
  - ✓ Penicillin G: 7 million units.
  - ✓ Doxycyclin: 100mg bid for one month.

- **Leishmania:**

- **Cutaneous leishmaniasis is caused by:**
  - ✓ L.major
  - ✓ L.tropica
  - ✓ L.aethiopica

  There will be local ulcer (single or multiple). The disease is self-limiting within months. Some patient's will progress to a chronic condition. Diagnosis:

  - ❖ Clinical manifestations + demonstrating parasites by a smear taken from the lesion (ulcer). The smear will be stained by Romanowsky stain:
    - Immerse the slide in fixative solution containing thiazine dye for 30 seconds.
    - Transform it (without rinsing) to eosin for 3- seconds.
    - Transform it (without rinsing) to methylene blue for 30 seconds.
    - Rinse with water and allow to dry.
    - Examine under the microscope to reveal amastigotes (promastigotes are found in the in-vitro culture and in the midgut of Phlebotomus or Lutzomyia female sandfly.

Simple 'dry' lesion on cheek. *Leishmania tropica* produces dry, often self-healing lesions which are usually single. This form is commonly seen in and around towns in Middle and Near East.