UGT Module Lab 3
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Chlamydia

Diagnosis

1. Staining
2. Culture
3. Non-culture tests
   - Nucleic Acid Amplification Tests (NAATs)
   - Non-Nucleic Acid Amplification Tests (Non-NAATs)

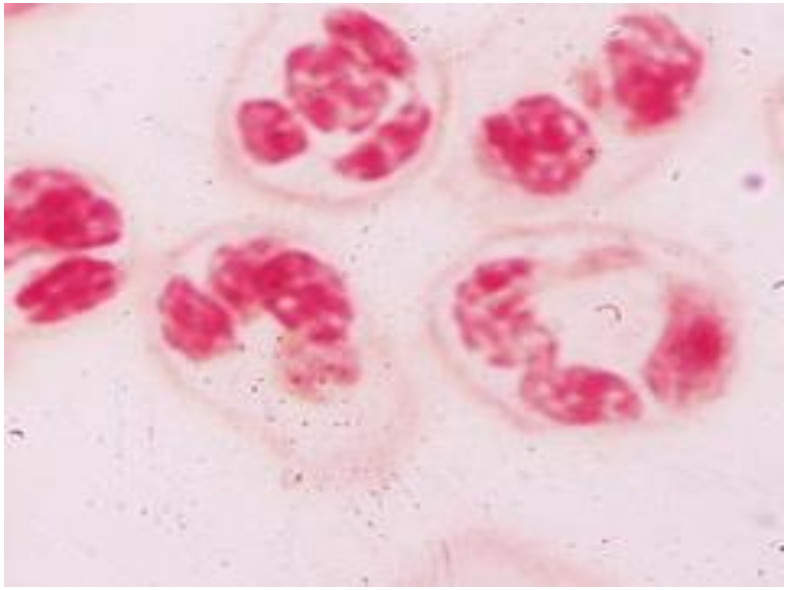
Diagnosis

1- Staining

- Interpretation of results

-Positive leukocyte estrase indicative of urethritis

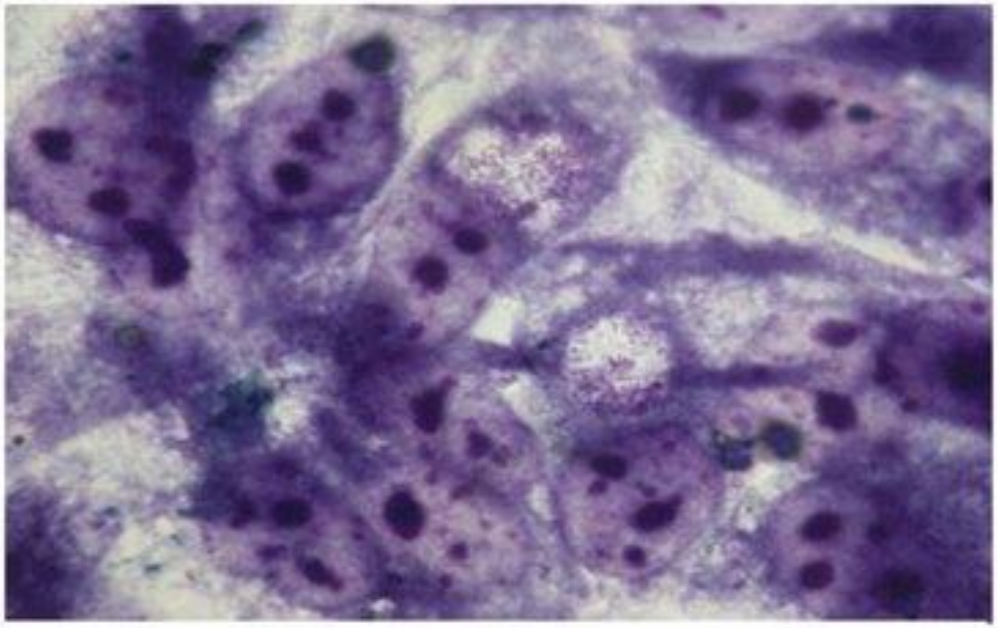
-Four or more PMNs per 1000X field with no gram negative diplococci indicates NGU



Non-gonococcal urethritis

Staining methods

- Gram-negative but Gram stain is not used for identification.
- Giemsa stain is often used. EB is purple while RB is blue.

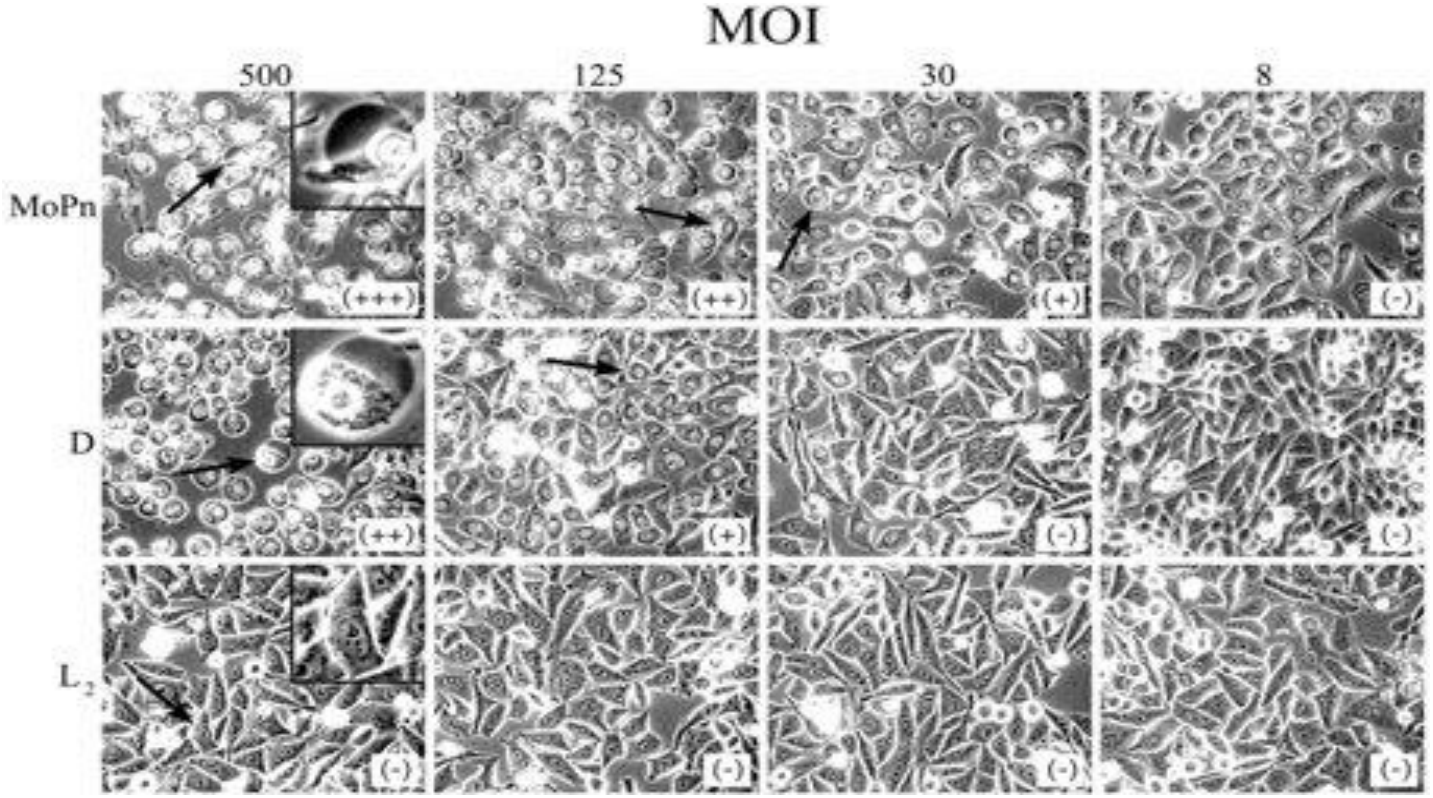


To be seen each cell are two inclusions with elementary bodies. (Giemsa stain)

Diagnosis

2- Culture

- Variable sensitivity (50%-80%) & High specificity
- Not suitable for widespread screening
- The McCoy cell line originally derived from human synovial fluid in 1955, has been later found useful for cultivation of Chlamydia trachomatis.



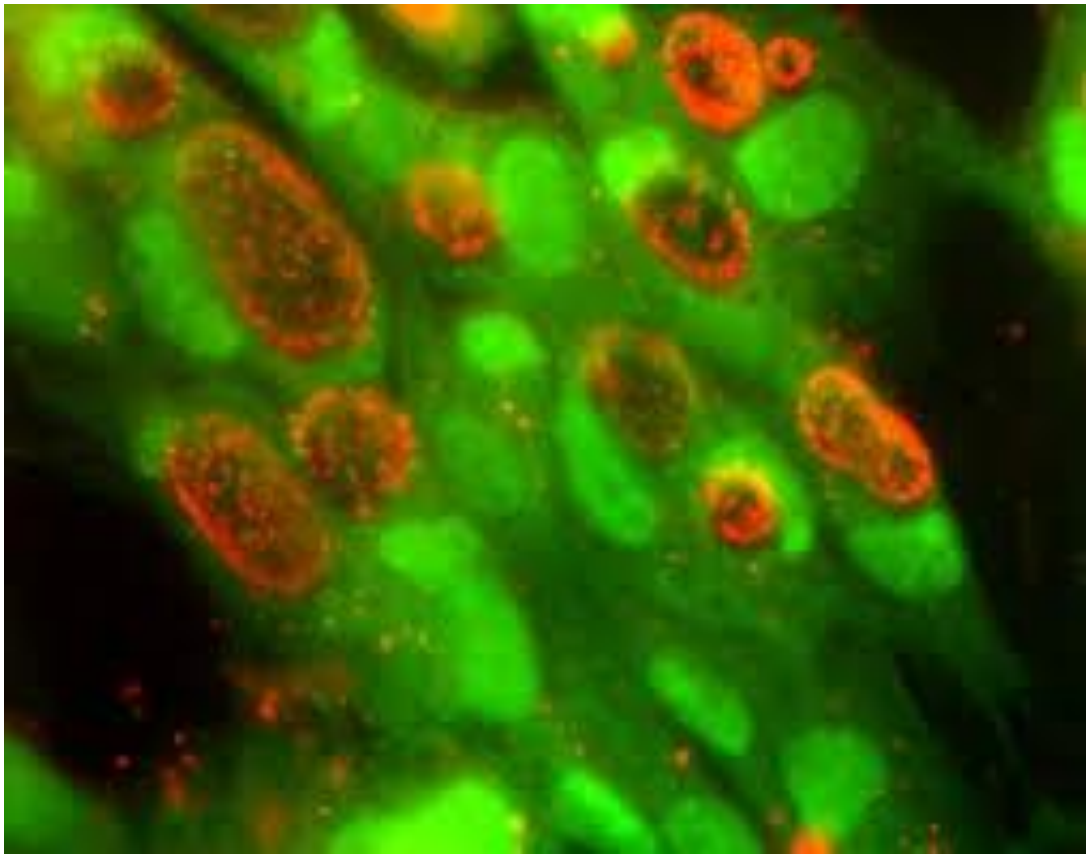
New Tests: Nucleic Acid Amplification Tests (NAATs)

- Most sensitive chlamydia tests: amplify nucleic acid sequences specific to C. *trachomatis*
- Do not require viable organisms
- Either swab (vaginal, endocervical, urethral) or urine specimens are FDA-cleared for use
- Can detect GC and CT in single specimen
- Now widely available

Diagnosis

Non-NAATs

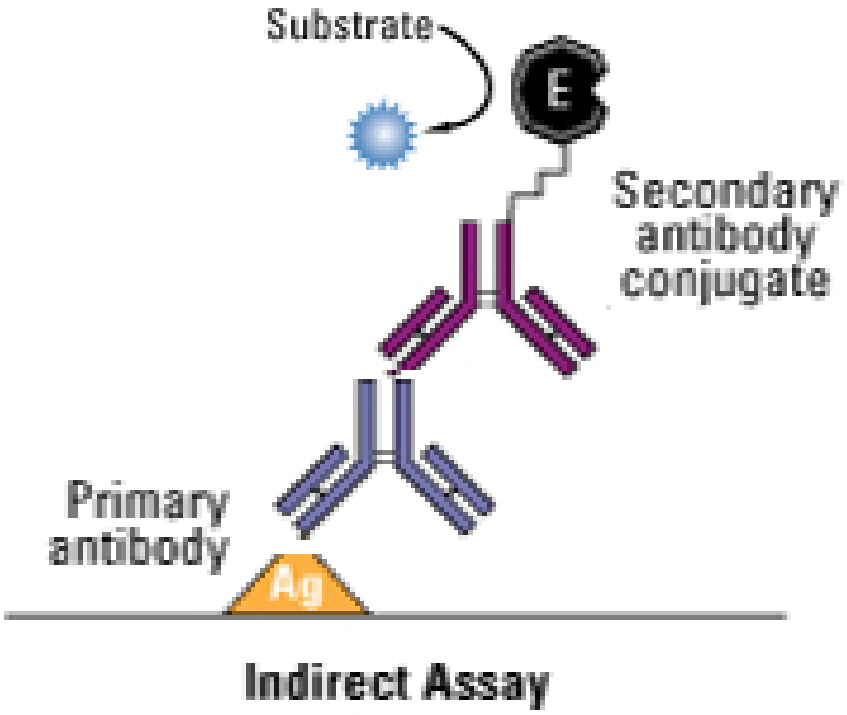
- Direct fluorescent antibody (DFA)



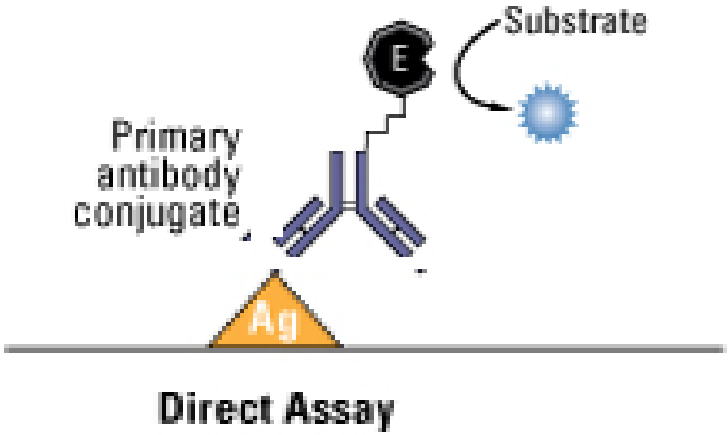
Diagnosis

Non-NAATs

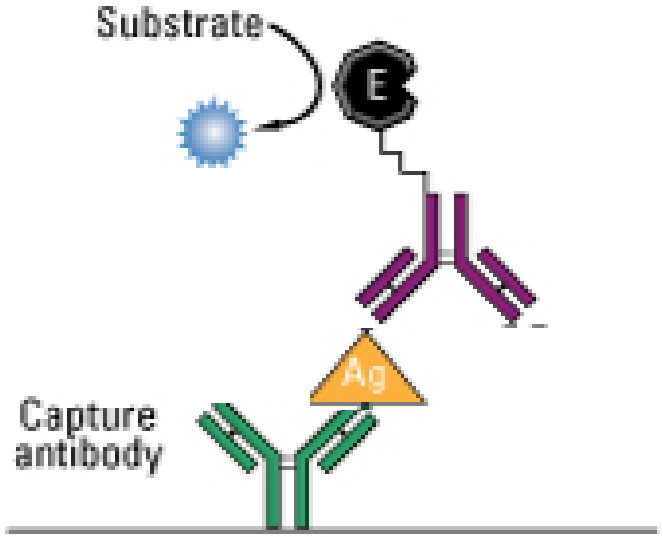
- Enzyme immunoassay (EIA)



Indirect Assay



Direct Assay



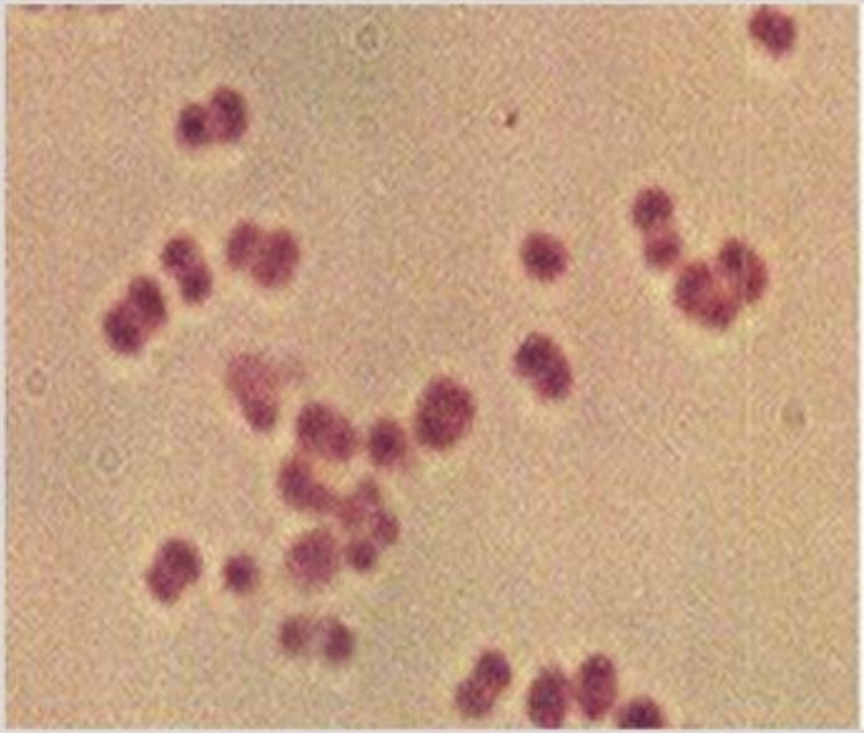
Capture Assay
"Sandwich"

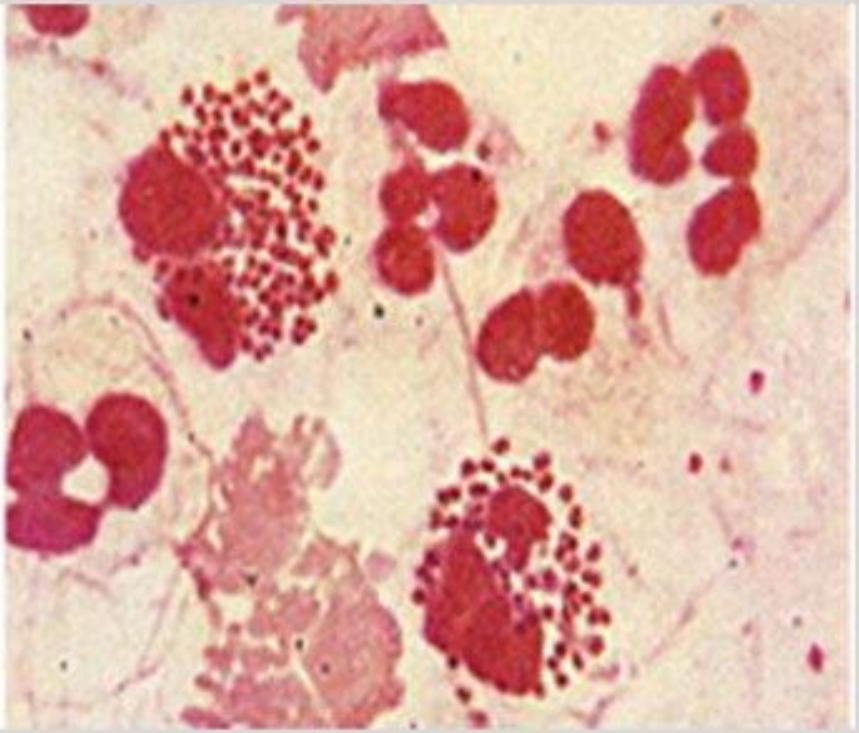
Gonorrhea

Microscopic features:

Neisseria gonorrhoeae is a Gram-negative cocci, 0.6 to 1.0 µm in diameter, usually seen in pairs with adjacent flattened sides.

The organism is frequently found as **intracellular** coffee bean-shaped **diplococci** in polymorphonuclear leukocytes of the gonorrhea pustular exudate.





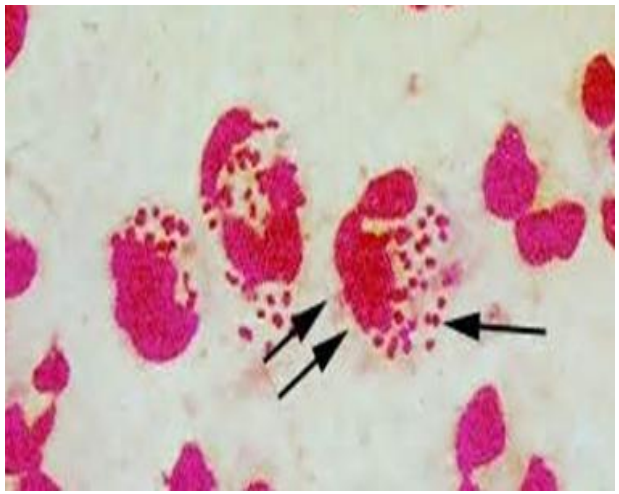
Diagnosis

1- Staining

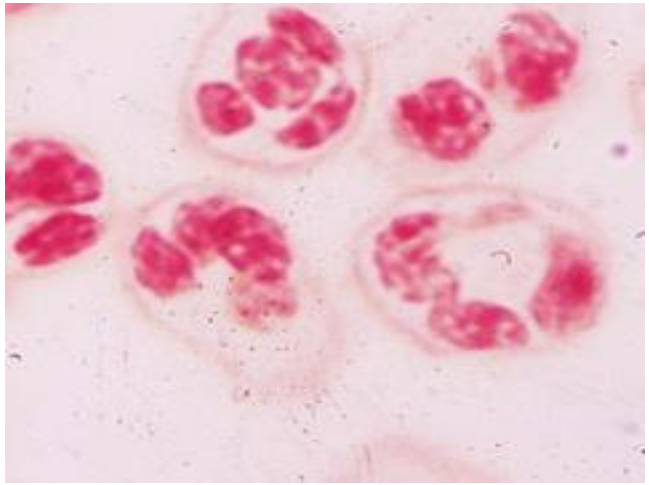
- 40-96 % of Nongonococcal Urethritis (NGU) are due to *C. trachomatis*
- Other 10-20% caused by *Uroplasma urealyticum* and *T. vaginalis*
- Interpretation of results

-Positive leukocyte estrase indicative of urethritis.

-PMNs per 1000X field with gram negative diplococci indicates gonococcal infection



Gonorrheal urethritis



non-gonococcal urethritis

Diagnosis

2. Culture

In men

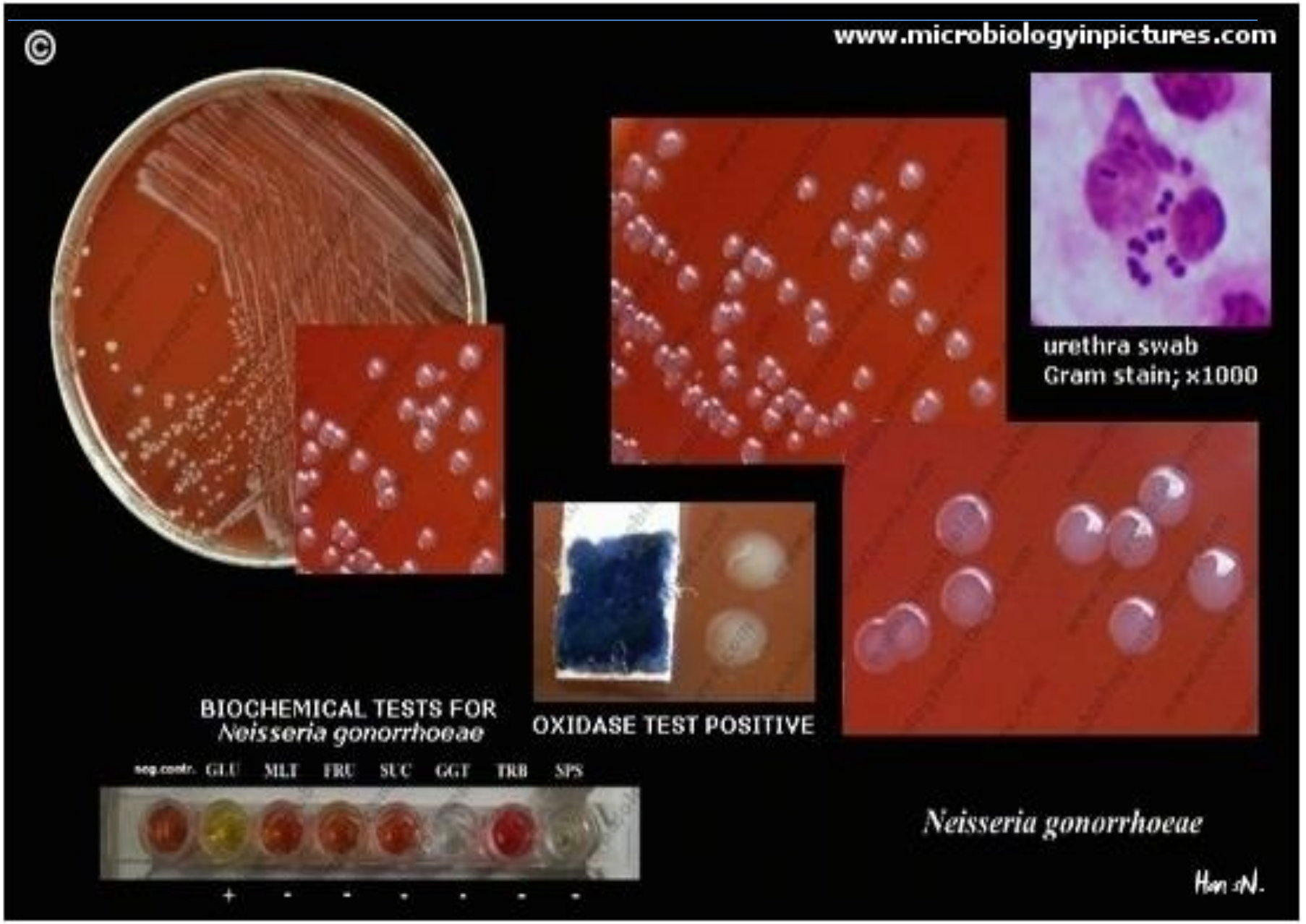
- the best specimen is urethral **exudates** or **urethral scrapings** (obtained with a loop or special swab).

In women

- **Cervical, urethral, or vaginal swabs**
- Swabs may be streaked directly onto culture medium or transmitted to the laboratory in a suitable transport medium if the delay is not more than 4 hours.
- The most common medium is **Martin–Lewis agar**, an enriched selective chocolate agar.

Oxidase test positive

Diagnosis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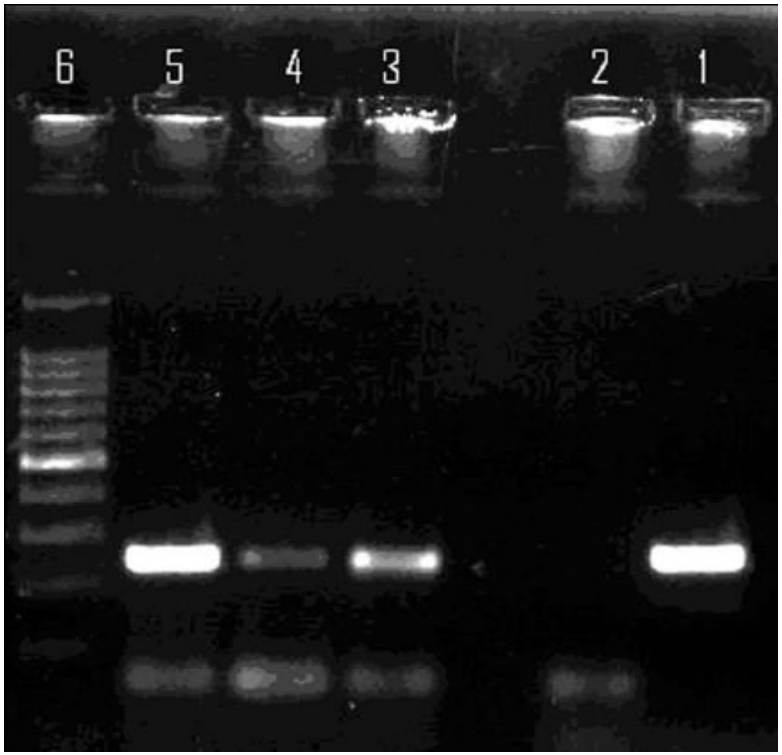
www.microbiologyinpictures.com
urethra swab
Gram stain; ×1000
OXIDASE TEST POSITIVE
BIOCHEMICAL TESTS FOR
Neisseria gonorrhoeae
neg.contr. GLU MLT FRU SUC GGT TRB SPS
+ - - - - - -
Neisseria gonorrhoeae

3. Direct detection

DNA amplification methods that detecting gonococci in clinical specimens without culture

Patients



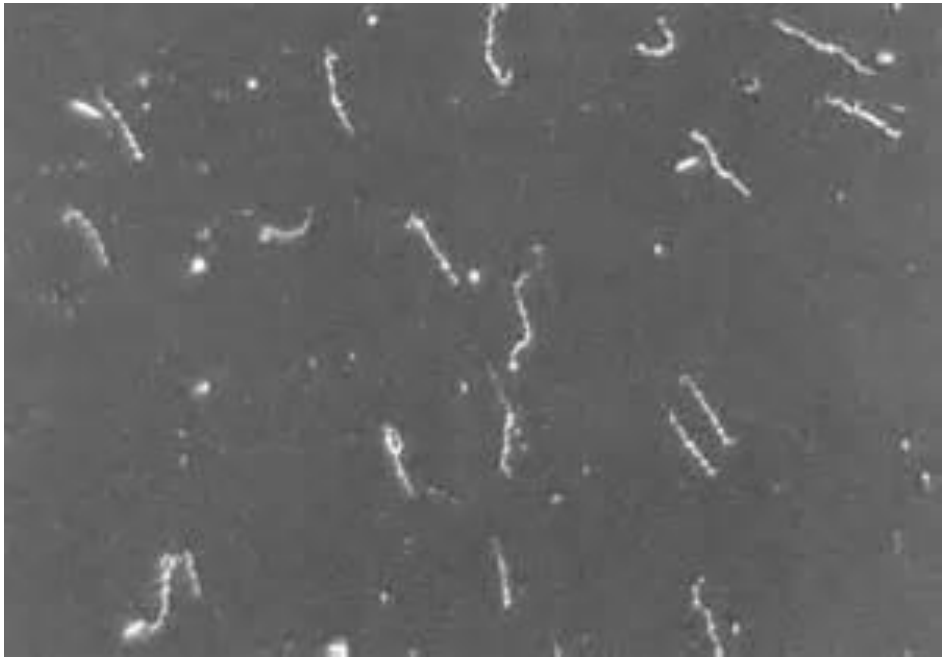
Syphilis

Syphilis

Methods of laboratory diagnosis of syphilis:

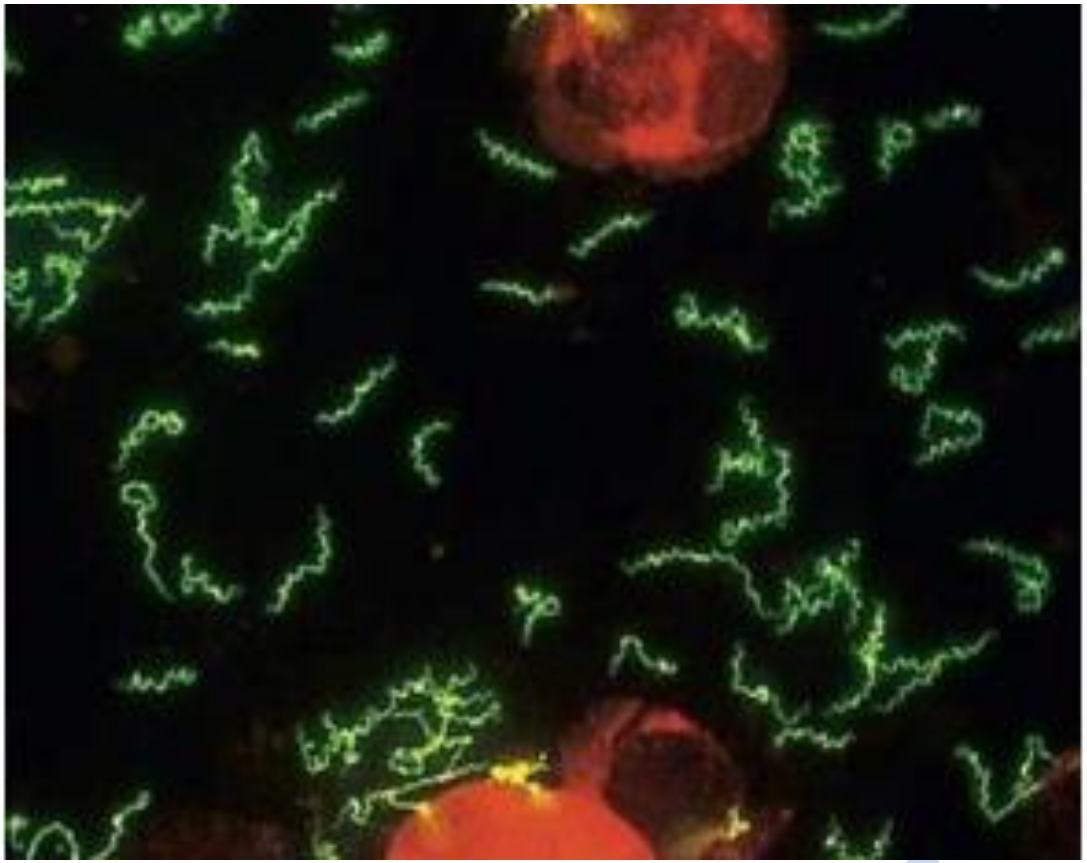
1. **Treponemal tests (Direct detection of spirochetes):**

- Darkfield microscopy - Specimen obtained from lesion is evaluated using darkfield microscopy for characteristic corkscrew morphology.



- Specific fluorescent Antibody Testing: direct or indirect methods

Results of direct fluorescence tests



Syphilis

Methods of laboratory diagnosis of syphilis:

2. Nontreponemal tests Indirect detection of spirochetes:

A. Venereal Disease Research Laboratory (VDRL)

B. Rapid plasma reagin (RPR)

Principle

Treponemal infection

↓

Desrruction of cells

↓

Release of lipid materials from the damaged host cells *called lipoidal material cells as well as lipoprotein-like materials released from the treponemes*

↓

Production of antibody
against this lipoidal materials

↓

VDRL and RPR

↓

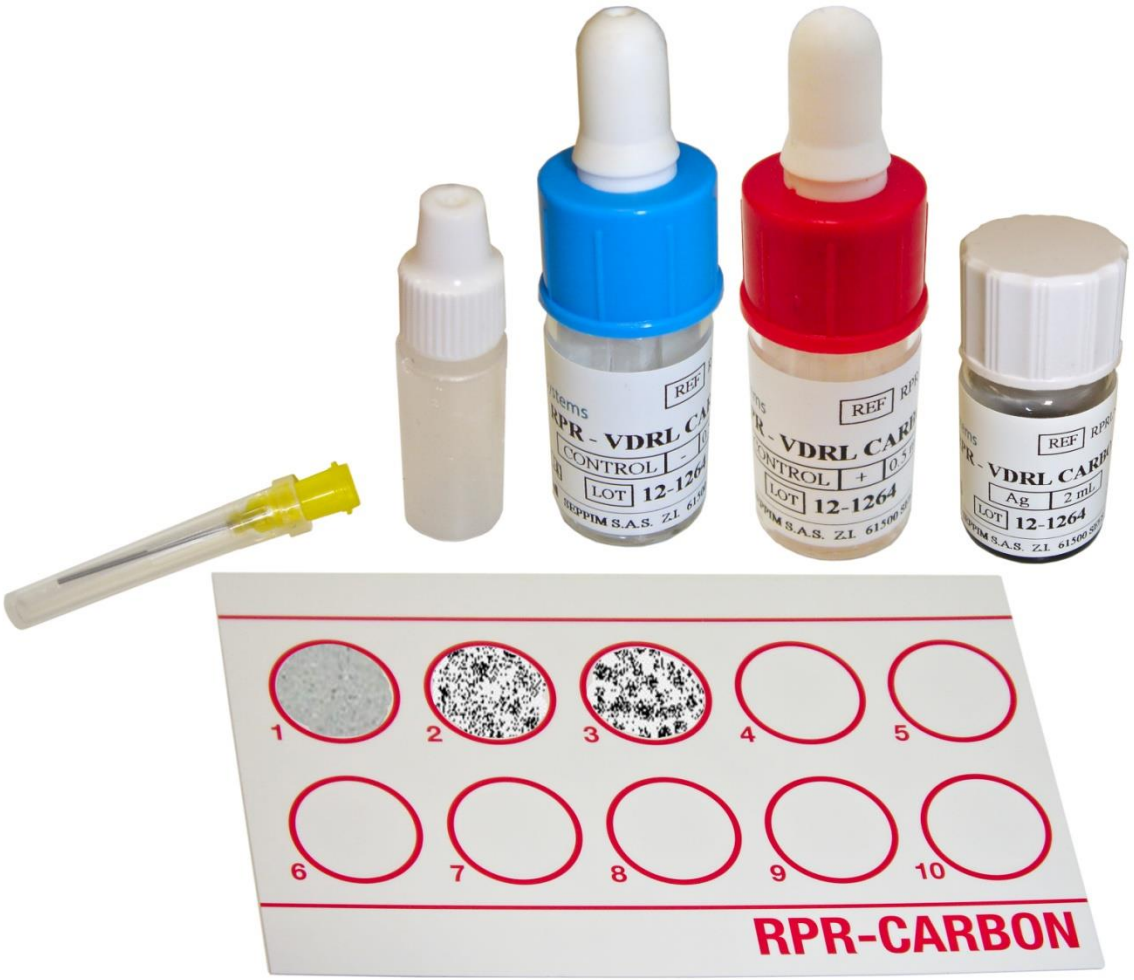
This antibody called reagin Ab

↓

In VDRL: The basis of the test is that the reagin antibody produced by a patient with syphilis reacts with a lipoid reagent extracted from the ox heart (cardiolipin antigen). The agglutination is seen under microscope.

↓

In the RPR test: the same as VDRL , but in that test, the antibody is bounded to several other molecules, including a carbon particle to allow visualization of the reaction without the need of a microscope.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2 mL
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1
2
3
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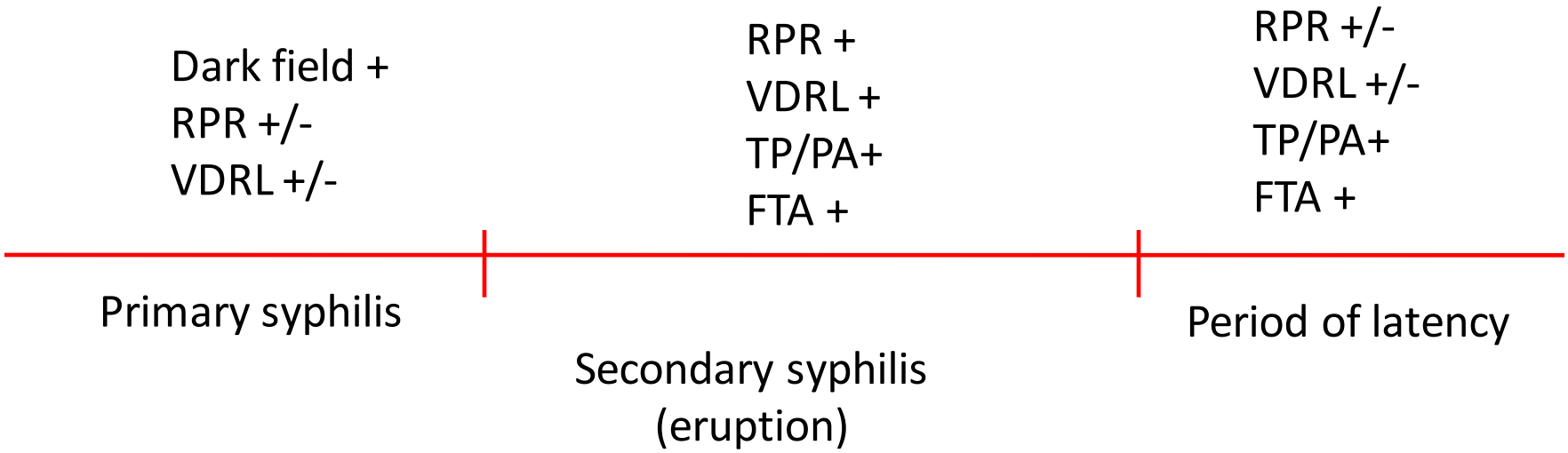
RPR-CARBON

Syphilis stages and possible test results



fluorescent treponemal antibody-absorbed (FTA-ABS)

T pallidum particle agglutination (TP-PA)