

# Genito-Urinary System

*Chlamydia trachomatis,*  
*Ureaplasma and Gardnerella*

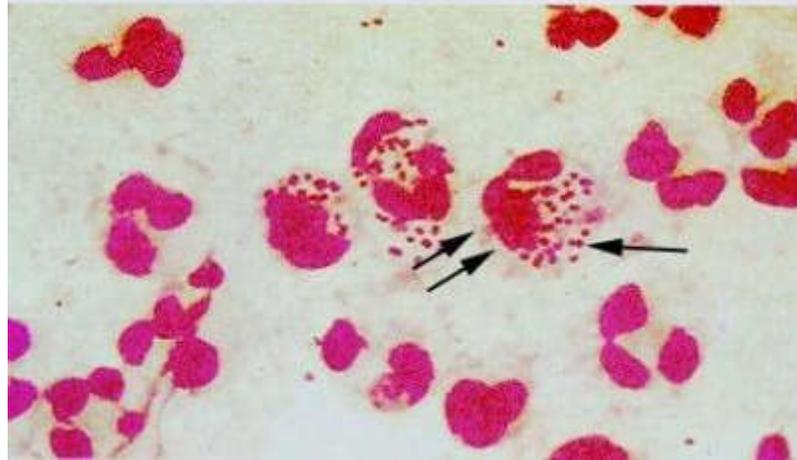
# Chlamydia

- Three of the nine species cause disease in humans.
  - Chlamydia trachomatis
    - is the most important human pathogen as a major cause of genital infection and conjunctivitis.
    - trachoma, is the leading preventable cause of blindness in the world.
      - Transmition direct contact
  - Chlamydophila pneumoniae
  - Chlamydophila psittaci



# *Chlamydia trachomatis*

- *C. trachomatis*
  - round cells between 0.3 and 1  $\mu\text{m}$  in diameter depending on the replicative stage.
  - lack the peptidoglycan layer
  - obligate intracellular parasites



# REPLICATIVE CYCLE

- Involves two forms of the organism:

## Elementary body (EB)

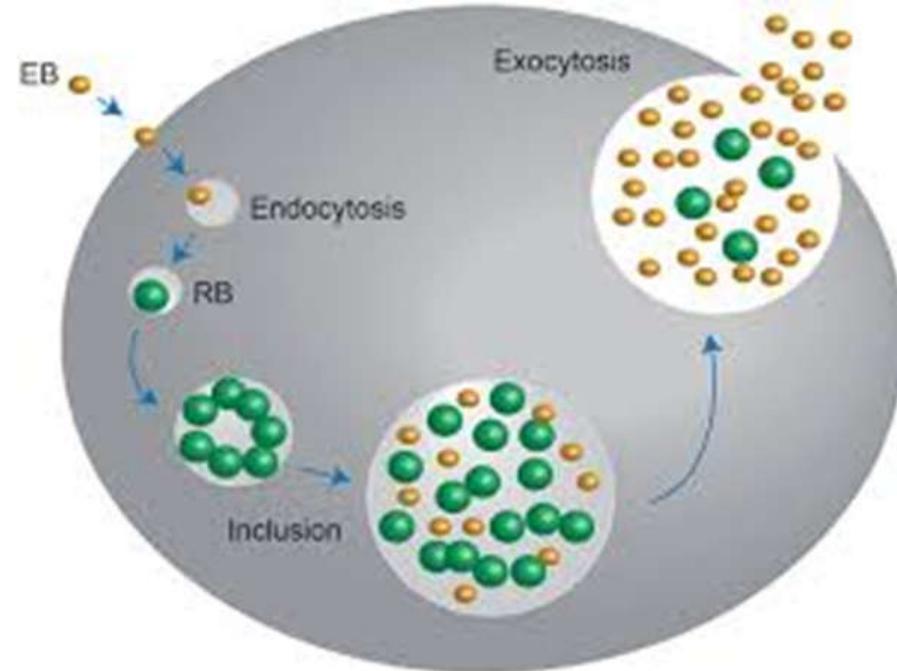
- a small, hardy metabolically inert infectious form



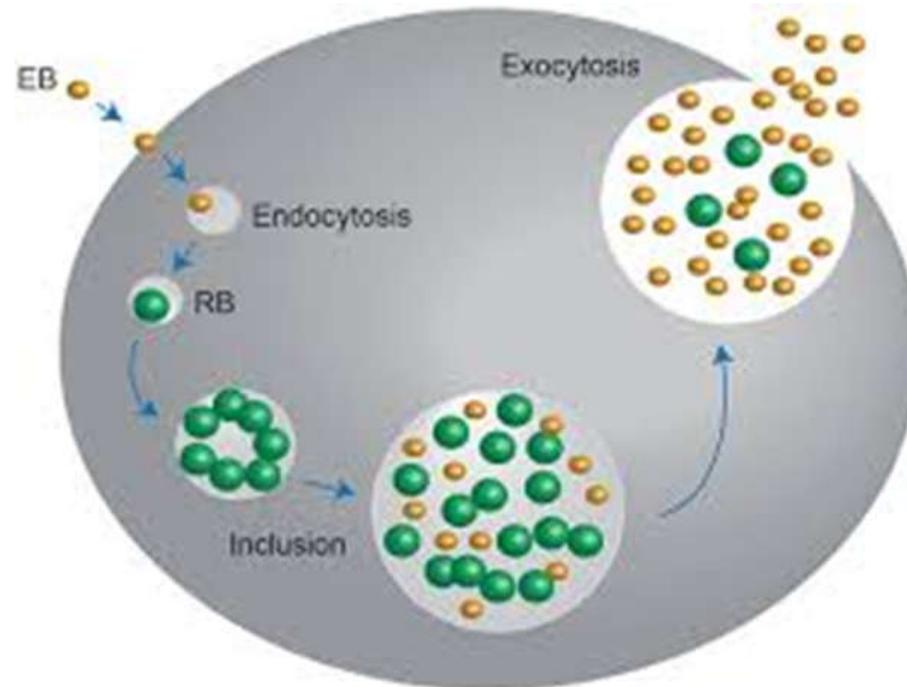
a larger fragile intracellular replicative form termed the Reticulate body (RB).

# REPLICATIVE CYCLE

- The EB attaches to unknown receptors on the plasma membrane (usually columnar or transitional epithelial cells).
- It then enters the cell in an endocytotic vacuole and begins the process of converting to the replicative RB.



- As the RBs increase in number, the endosomal membrane expands by fusing with lipids of the Golgi apparatus eventually forming a large inclusion body. After 24 to 72 hours, the process reverses and the RBs reorganize and condense to yield multiple EBs.



# *Chlamydia trachomatis* Diseases

## EPIDEMIOLOGY

- *C. trachomatis* causes disease in several sites, including the conjunctiva and genital tract.
- It is the most common sexually transmitted disease.
- Humans are the sole reservoir.
- Neonatal conjunctivitis contracted from maternal genital infection (2 to 6% of newborn infants).

## PATHOGENESIS

- Chlamydiae
  - endocervix and upper genital tract of women,
  - the urethra, rectum and conjunct. of both sexes.

## IMMUNITY

- *C. trachomatis* infections do not reliably result in protection against reinfection

# CLINICAL ASPECTS

## Genital Infections

- The clinical spectrum of sexually transmitted infections with *C. trachomatis* is similar to that of *Neisseria gonorrhoeae*. *C. trachomatis*
  - cause urethritis and epididymitis in men
  - cervicitis, salpingitis, and a urethral syndrome in women.

- *C. trachomatis* urethritis
  - dysuria
  - a thin creamy urethral discharge.
- Infections of the uterine cervix may produce vaginal discharge, usually asymptomatic.
- Ascending infection in the form of salpingitis and pelvic inflammatory disease occurs in an estimated 5 to 30% of infected women.
- The scarring produced by chronic or repeated infection is an important cause of sterility and ectopic pregnancy.

- three strains of *C. trachomatis* cause Lymphogranuloma venereum LGV,
  - L1, L2, or L3.
- It is characterized by
  - transient genital lesions
  - followed by multilocular suppurative involvement of the inguinal lymph nodes.
  - The primary genital lesion is usually a small painless ulcer or papule, which heals in a few days.
  - Abscesses, strictures, fistulas if chronic.



- More than 50% of all infants born to mothers excreting *C. trachomatis* during labor show evidence of infection during the first year of life.
- Most develop inclusion conjunctivitis, but 5 -10% develop infant pneumonia syndrome.

- Conjunctivitis(trachoma)
- Infective arthritis
- Reactive arthritis (Ab attack the joint)
  - Reiter's syndrome
    - You can not see
    - You can not pee
    - You can not climb a tree

## DIAGNOSIS

- Epithelial cells from the site of infection are required for detection.
- For genital infections, **cervical specimens** are preferred in females and **urethral scrapings** in males.
- Isolation of *C. trachomatis* has been the “gold standard” for diagnosis.
  - It is achieved in cell culture .

- Ligase chain reaction (LCR) or polymerase chain reaction (PCR)
  - the most sensitive, most specific methods of diagnosis.
- Serodiagnostic methods have little use in diagnosis of chlamydial genital infection
  - difficulty of distinguishing current from previous infection.



<b>non-LGV C. trachomatis infection</b>	Azithromycin
<b>pregnant women and infants</b>	Erythromycin
<b>drug of choice for treating LGV</b>	doxycycline

tetracyclines, macrolides and some fluoroquinolones