

Batteri

Virus (parassiti intracellulari)

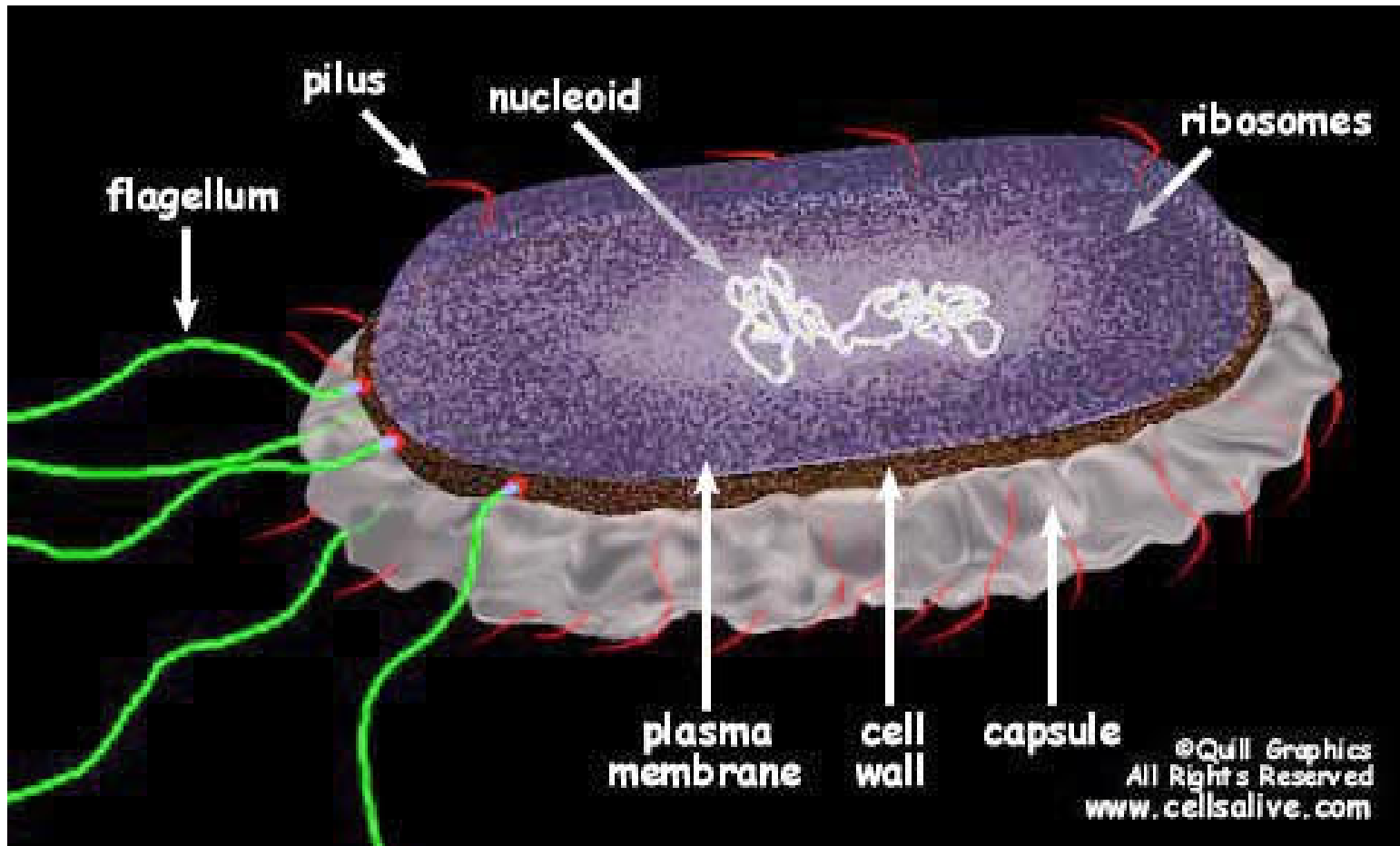
Miceti

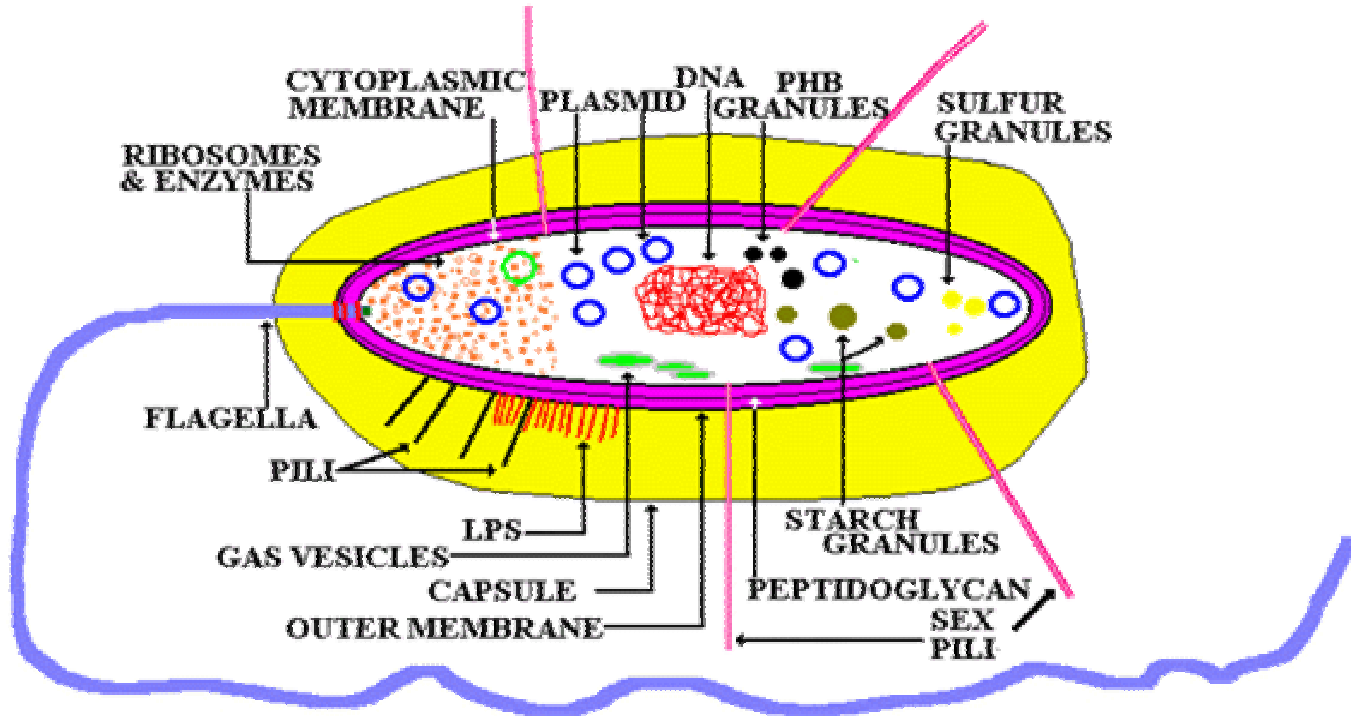
Protozoi

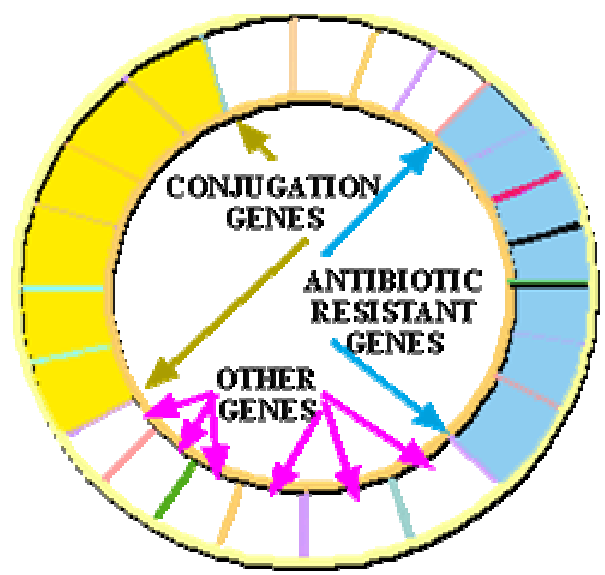
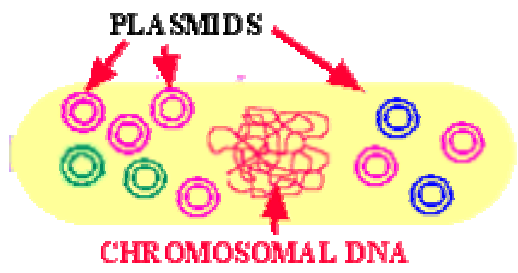
Batteri

- Organismi unicellulari
- Parete/membrana cellulare/citoplasma/nucleoide (DNA)
- Replicazione autonoma
- Gram + / Gram -
- Flagelli
- Fimbrie (Pili)
- Capsula
- Cocchi, Bacilli, Vibrioni, Spirilli, Spirochete
- Spore o endospore: bacilli aerobi, clostridi anaerobi
- Metabolismo: aerobi, anaerobi facoltativi e/o obbligati

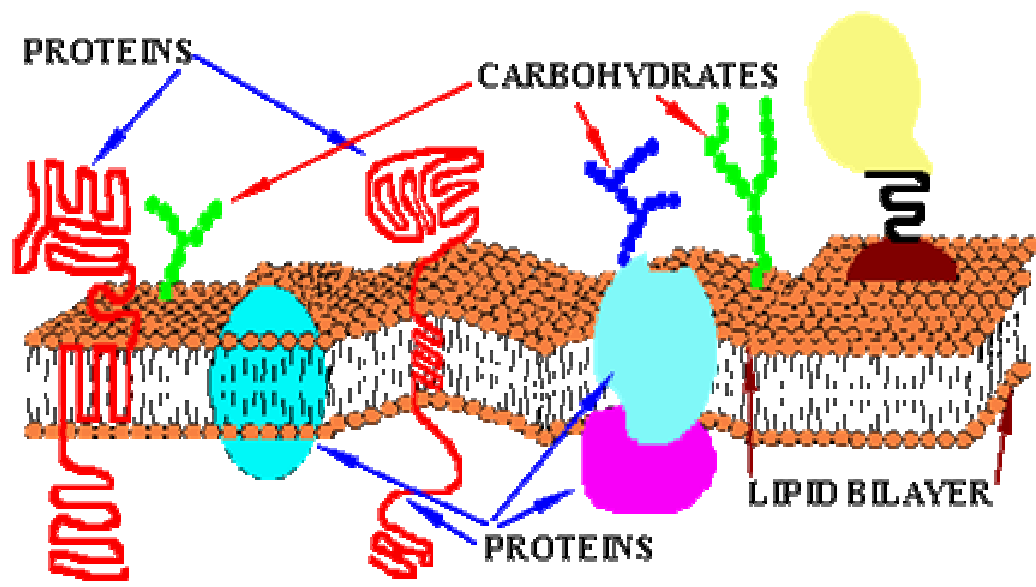
Cellula batterica





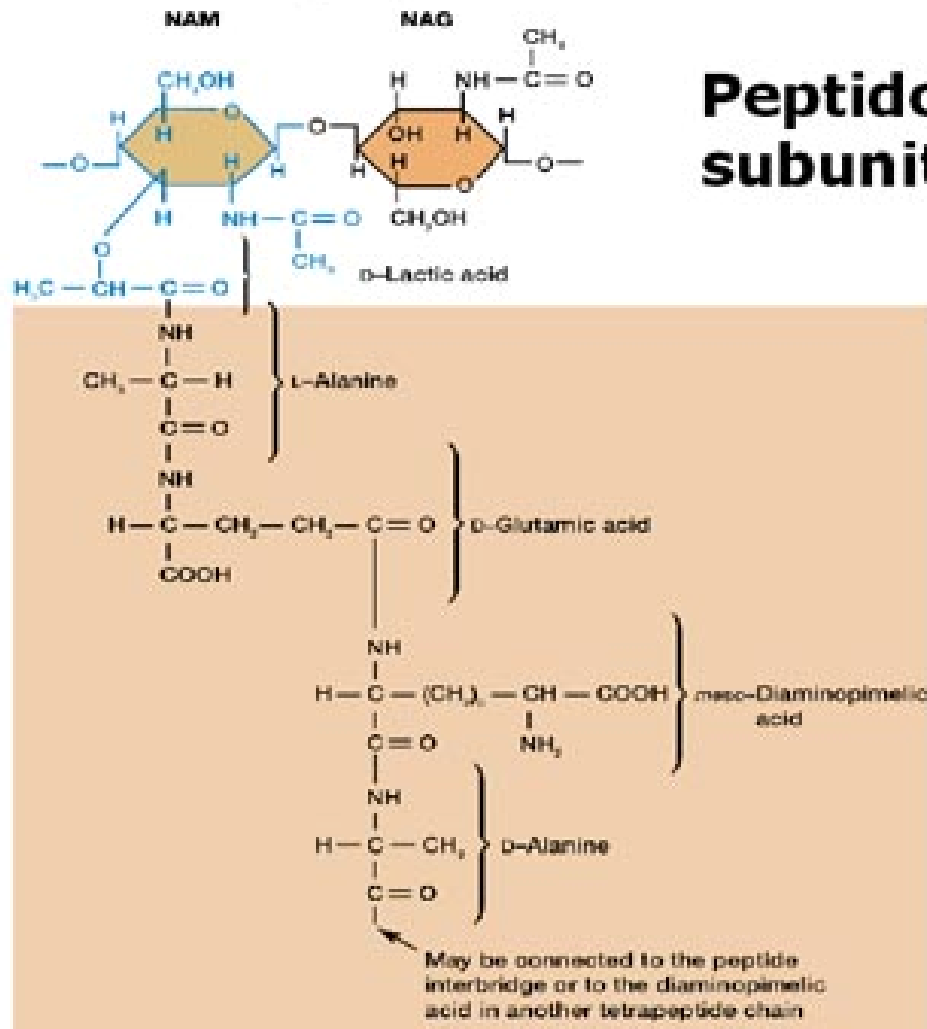


CIRCULAR PLASMID DNA



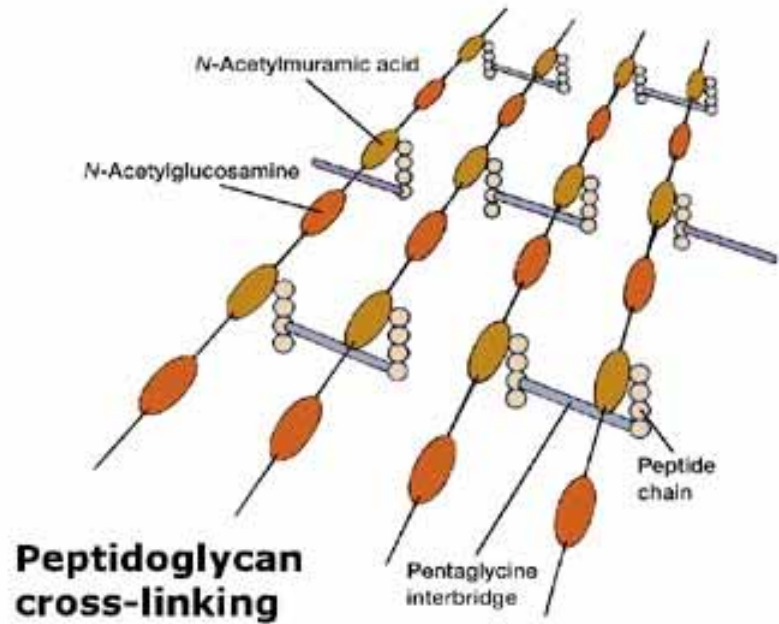
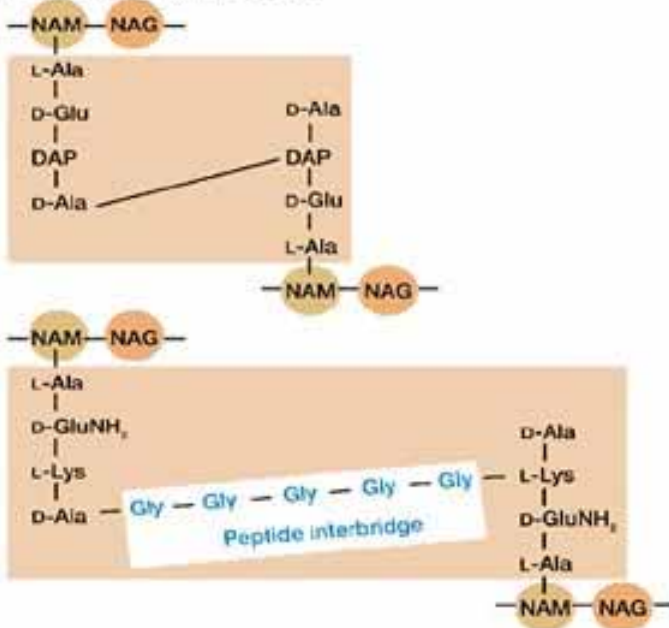
Composizione del peptidoglicano

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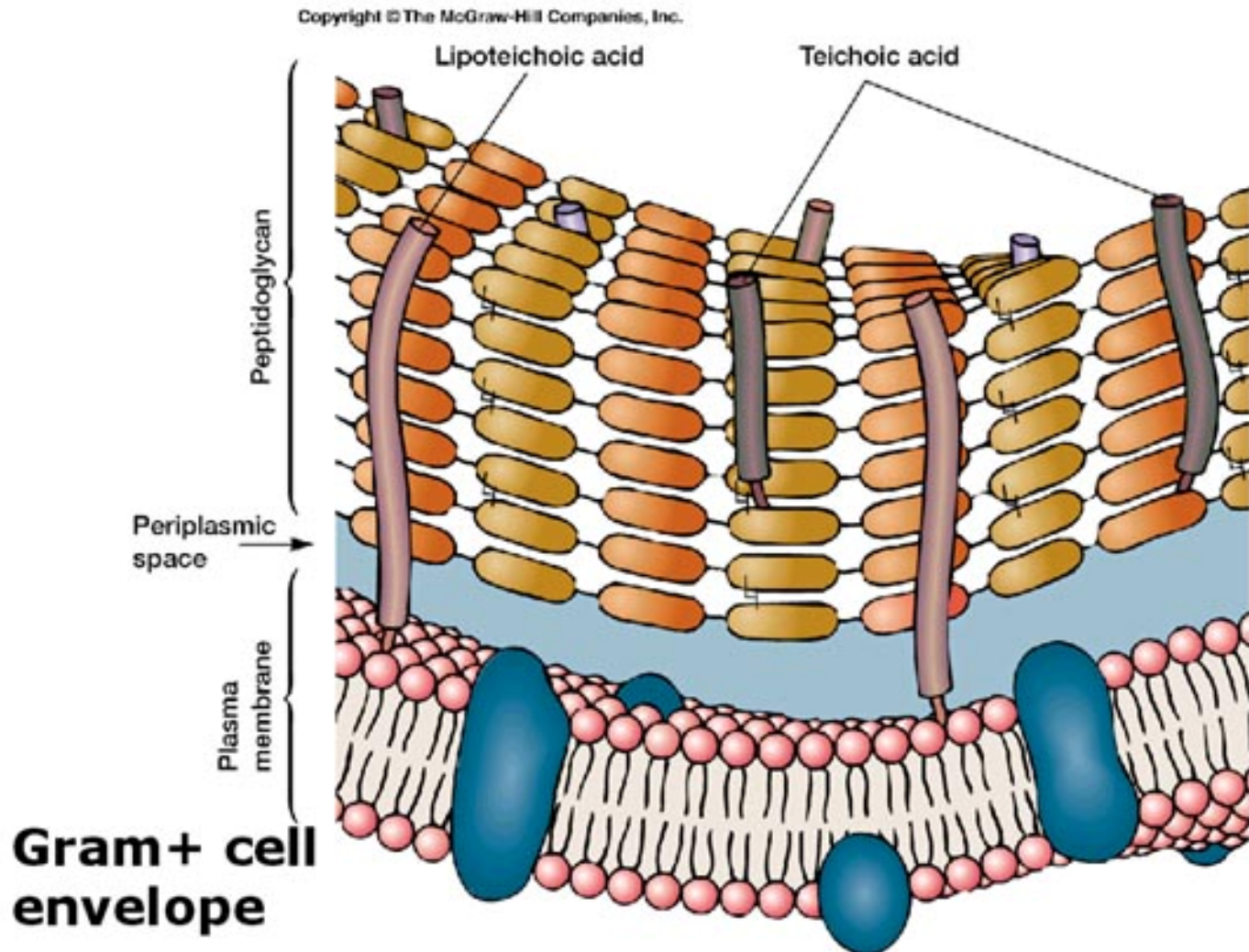
Struttura del peptidoglicano

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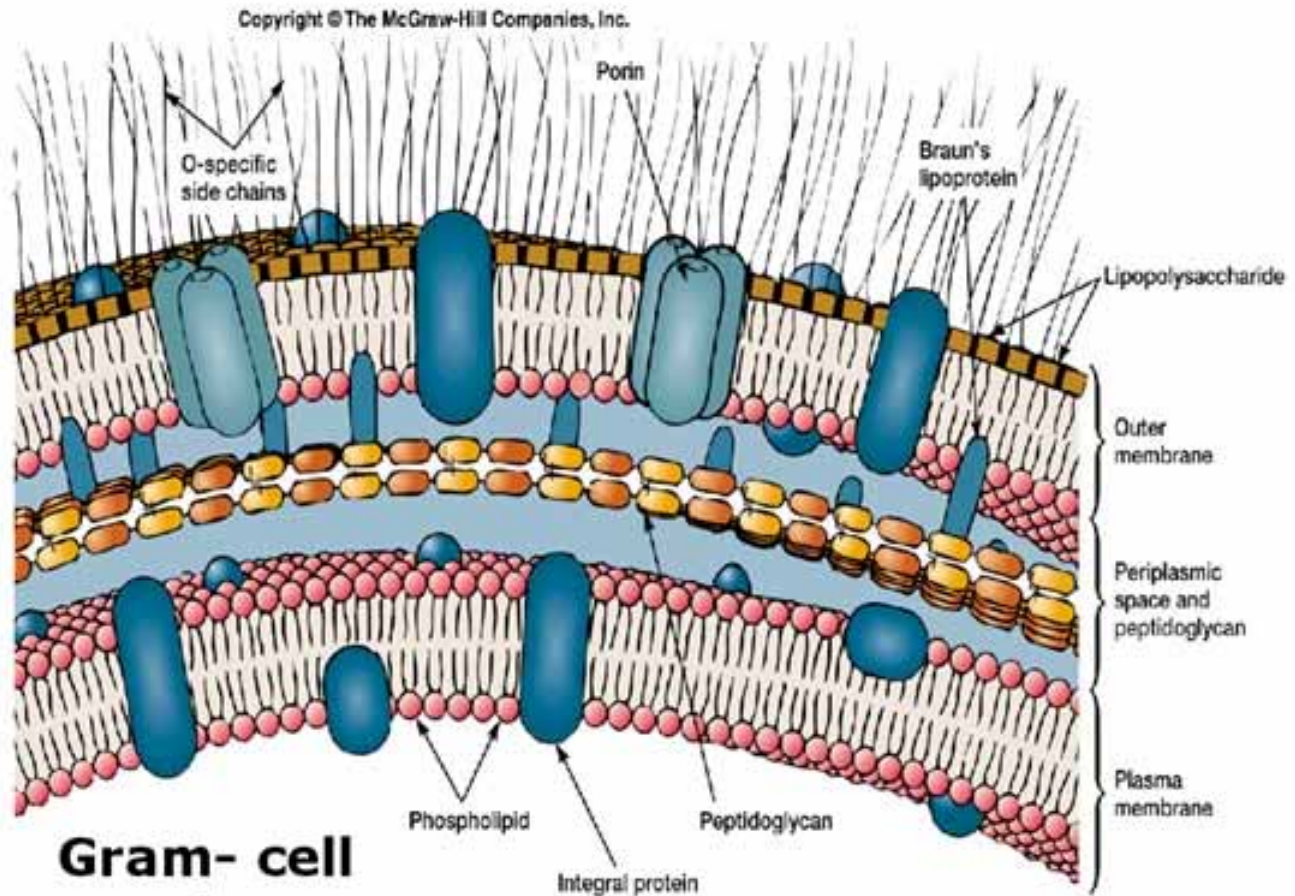


I batteri si differenziano in base alla struttura della parete di peptidoglicano

Gram +



Gram -

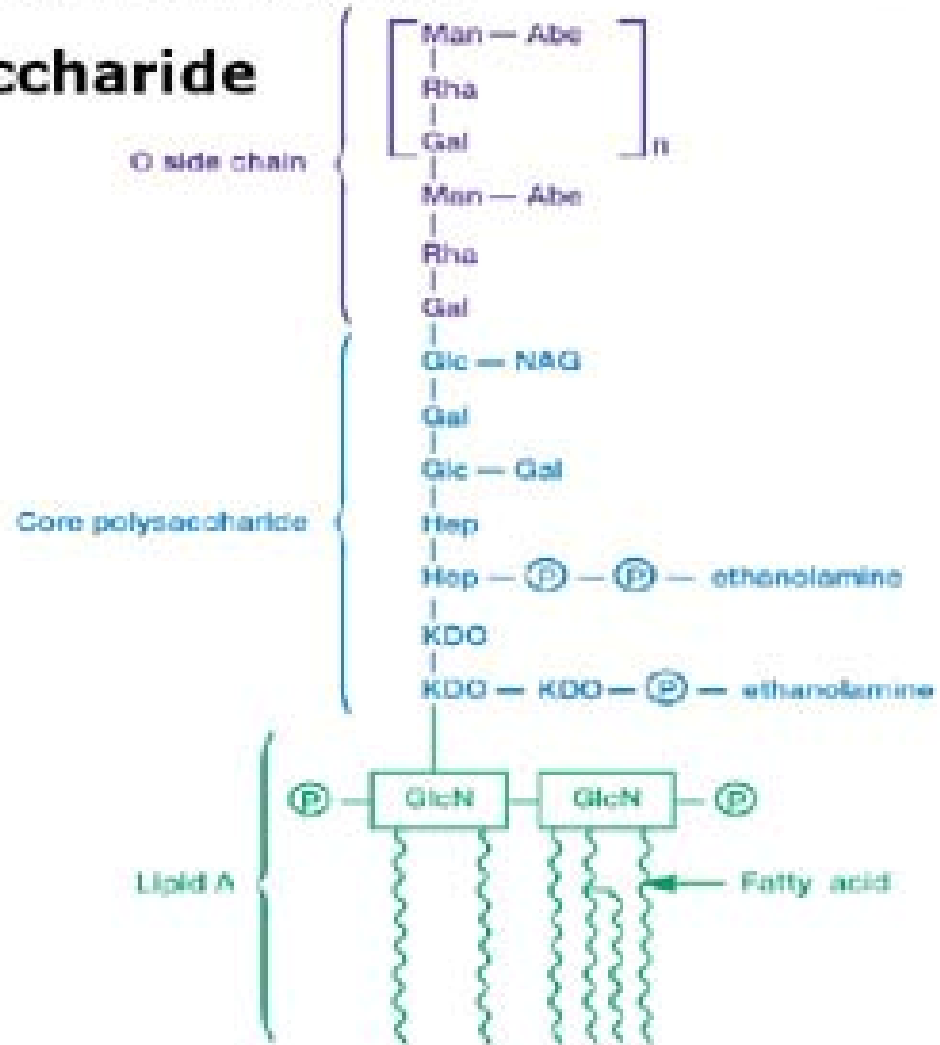


Gram- cell envelope

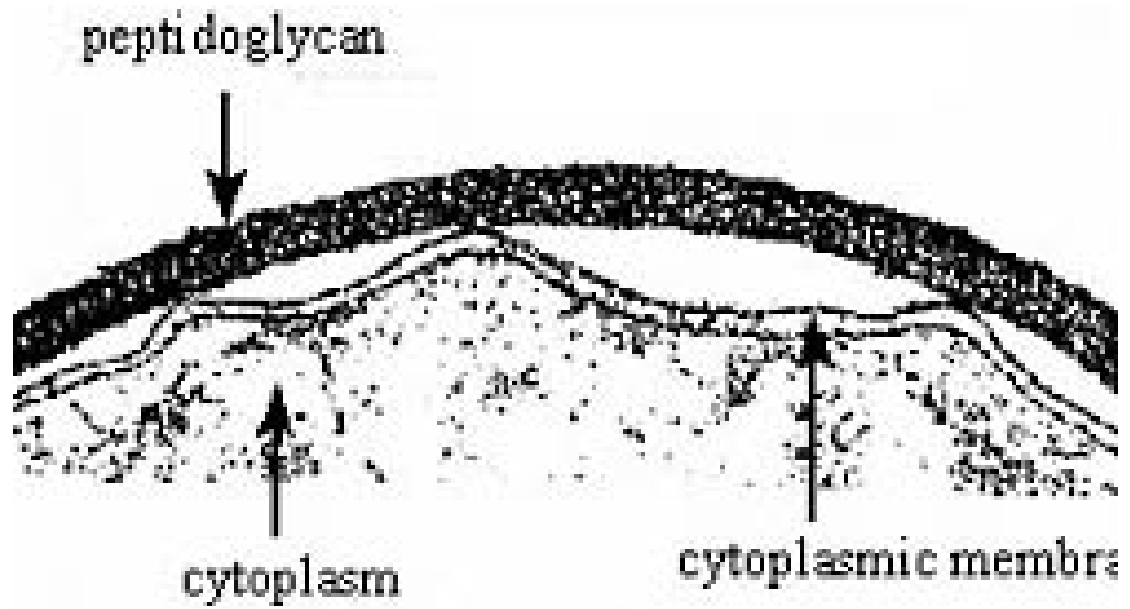
Lipopolisaccharide batterico (Endotossina)

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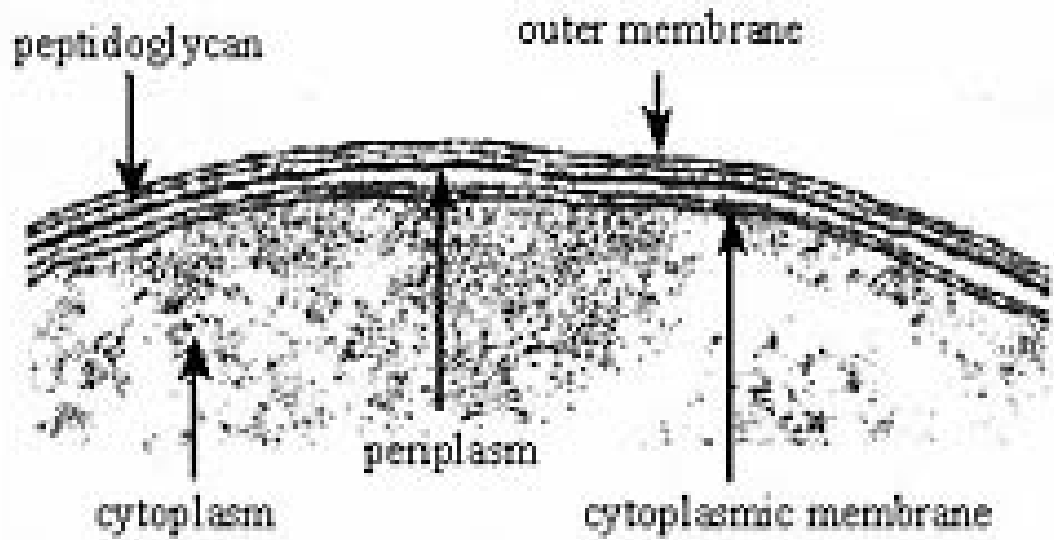
Lipopolysaccharide

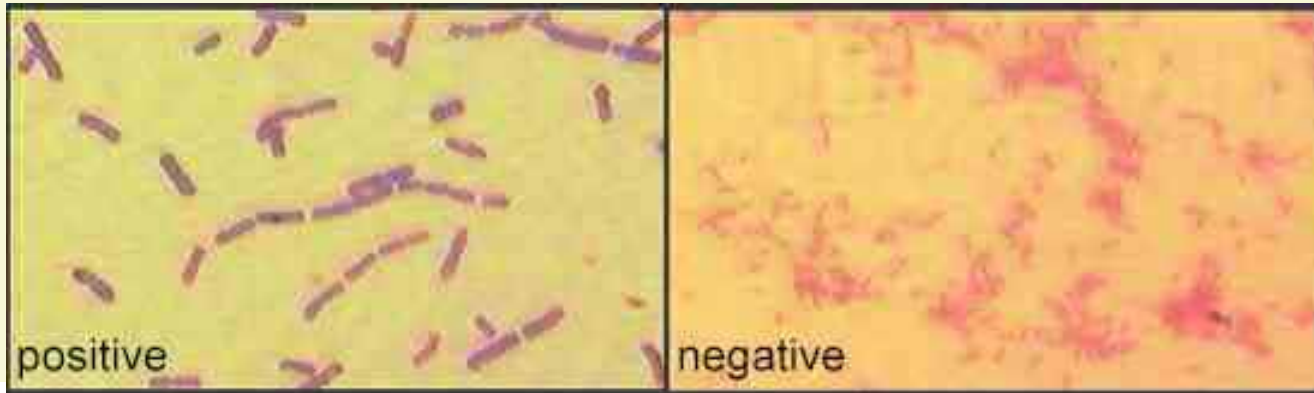


Gram +



Gram -

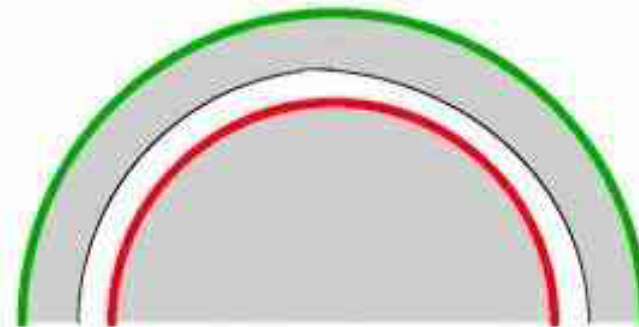




Gram positive



Gram negative

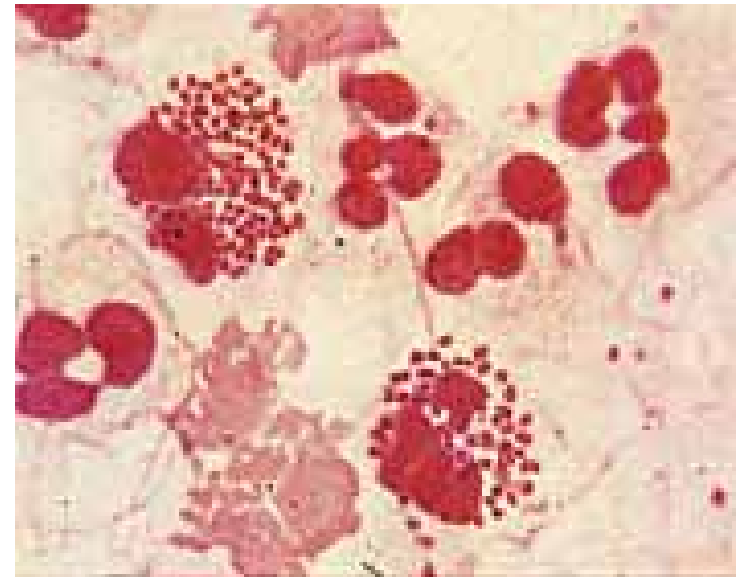


Red: cell membrane
Black: peptidoglycan
Green: Outer membrane



Gram +

Streptococcus pyogenes

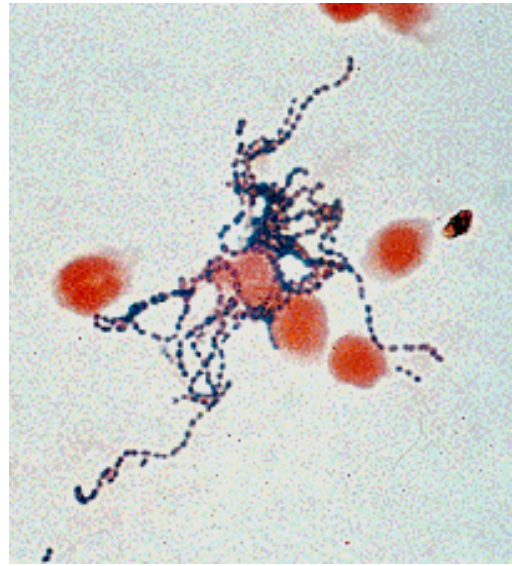


Gram -

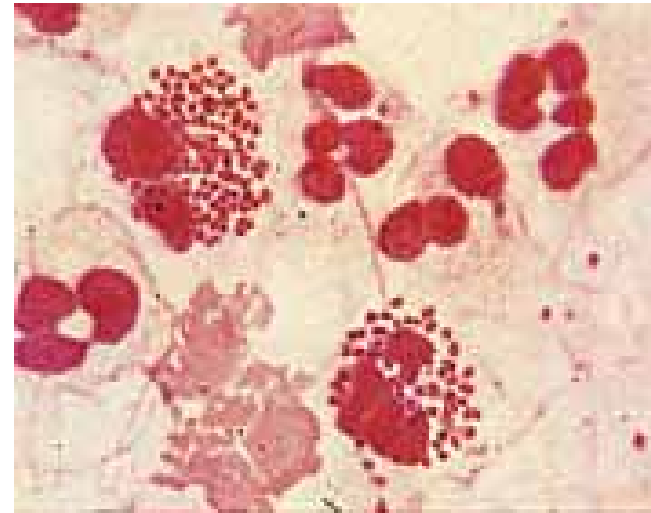
Neisseria meningitidis



Gram +
(metacromatici)
Clostridium difficile



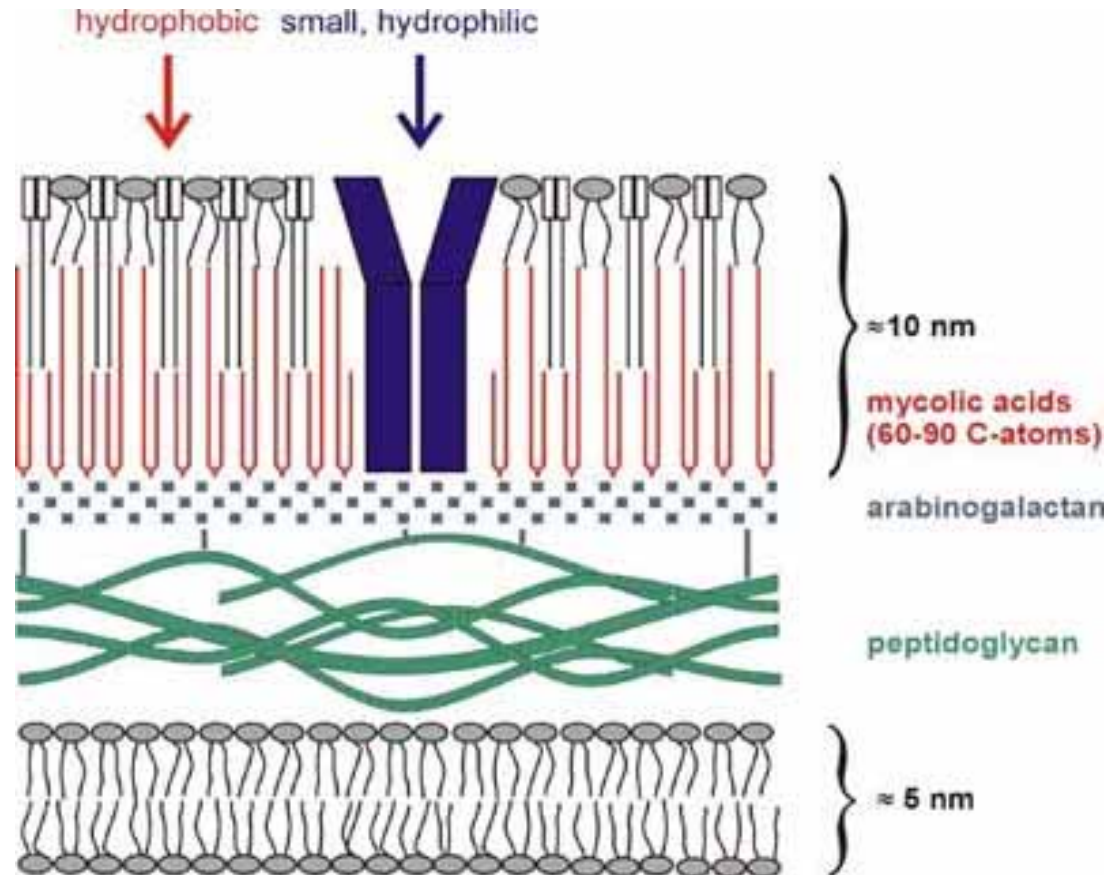
Gram +
streptococchi



Gram -
Neisseria meningitidis

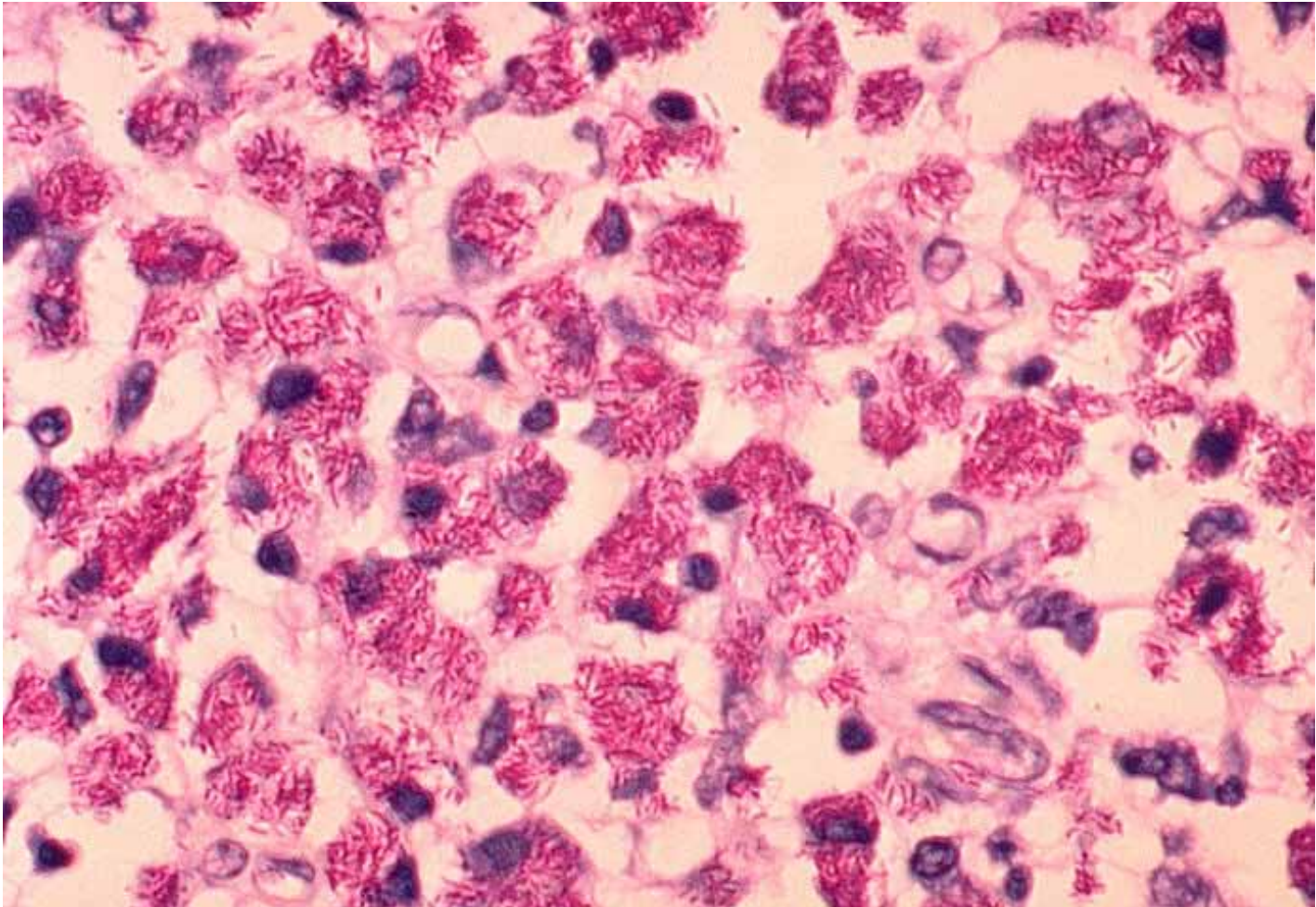
Micobatteri

Non si colorano con colorazione di Gram perché la loro parete è ricca in cere e lipidi



Micobatteri

Sono acido-basico resistenti e si colorano con
Colorazione di Ziehl-Neelsen



Capsula



Colorazione negativa con rosso congo per evidenziare capsula mucopolisaccaridica

Specie batteriche di interesse medico

Gram+

Stafilococchi

Streptococchi

Corine batteri

Bacilli sporigeni aerobi

(*B. Antracis*; *B. Subtilis*)

Bacilli sporigeni anaerobi

(*Clostridium tetani*; *C. botulinum*; *C. perfringens*)

- Micobatteri
- Spirochete (treponema, borrelia, leptospire)
- Clamidie, micoplasmi, ricketsie (intracellulari)

Gram-

Neisserie

Enterobatteri

Vibrioni

Pseudomonas

Brucelle

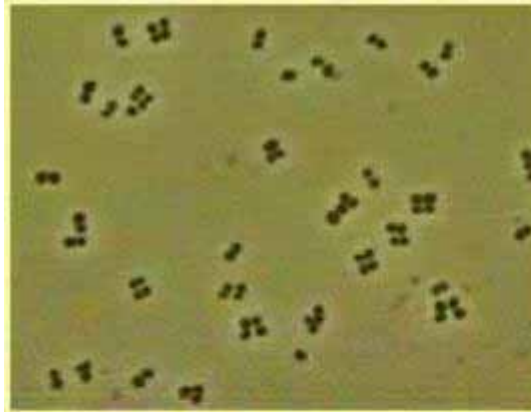
Haemophilus

Bordetella

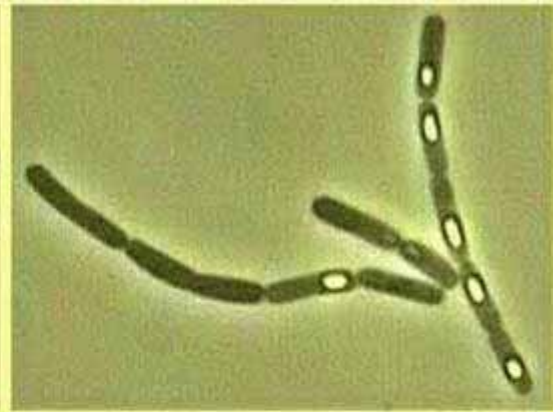
Bacteroides

I batteri sono classificati anche in base alla forma

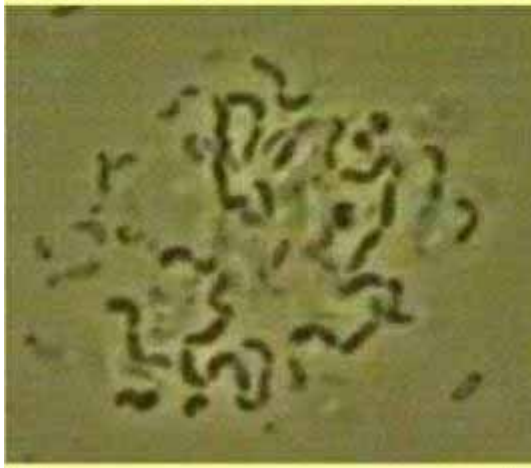
stafilococchi



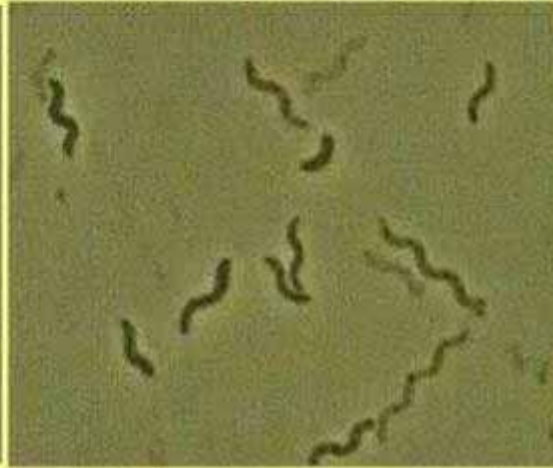
bacillus

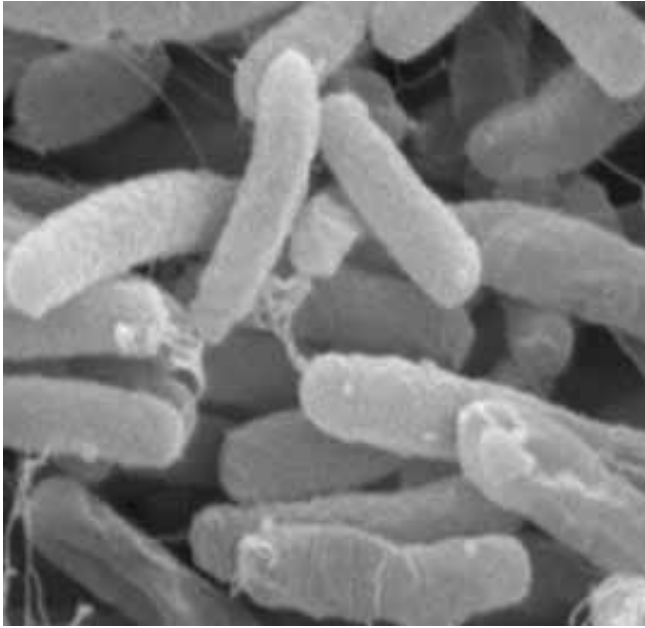


vibrioni

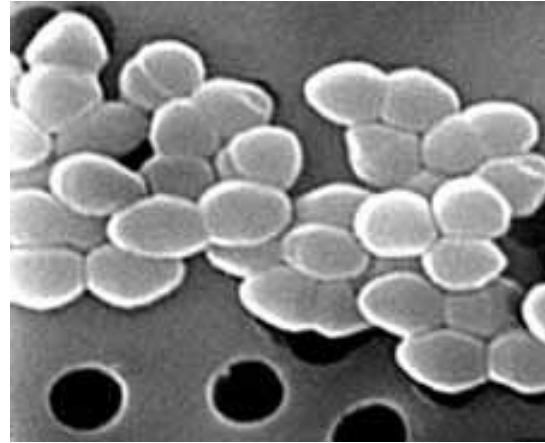


spirilli

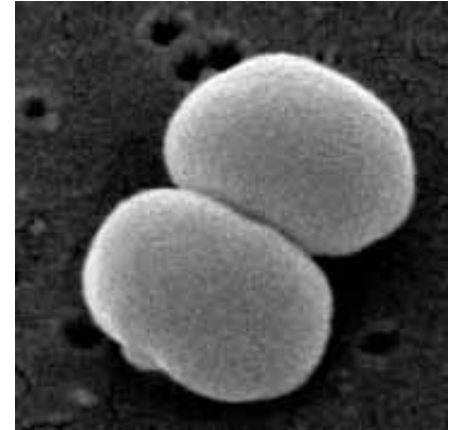




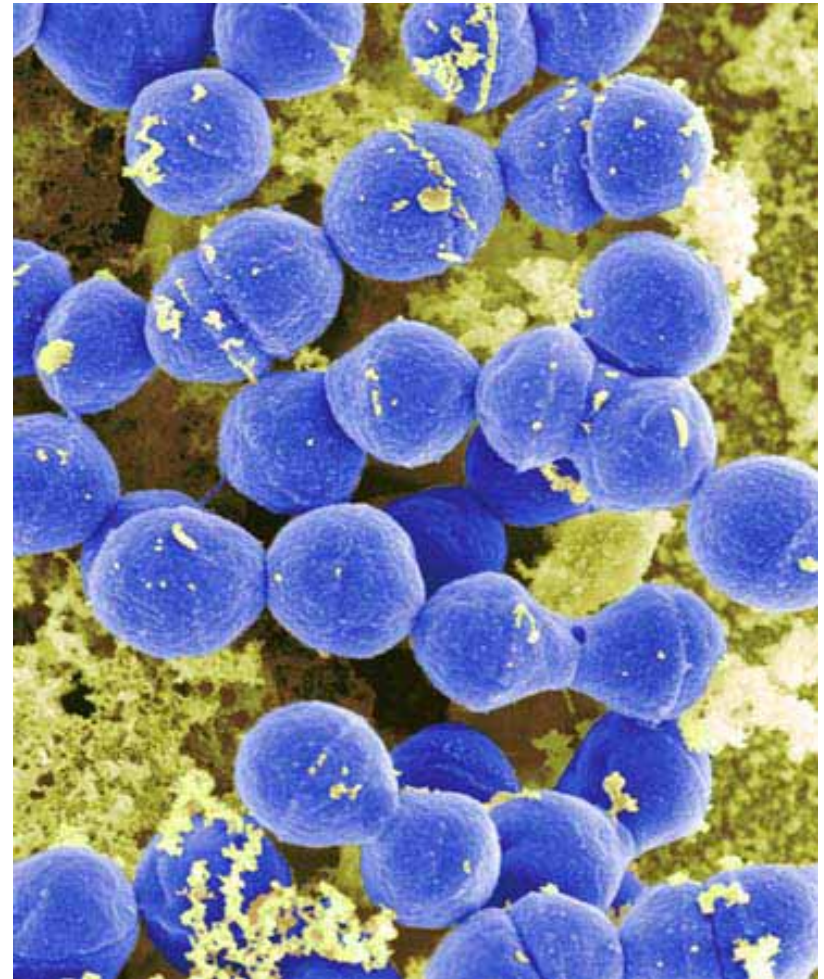
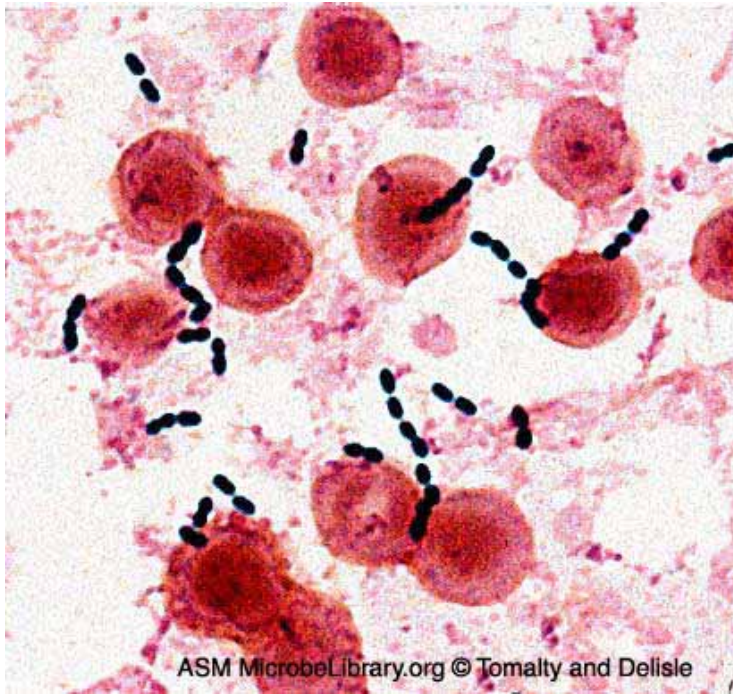
E. coli



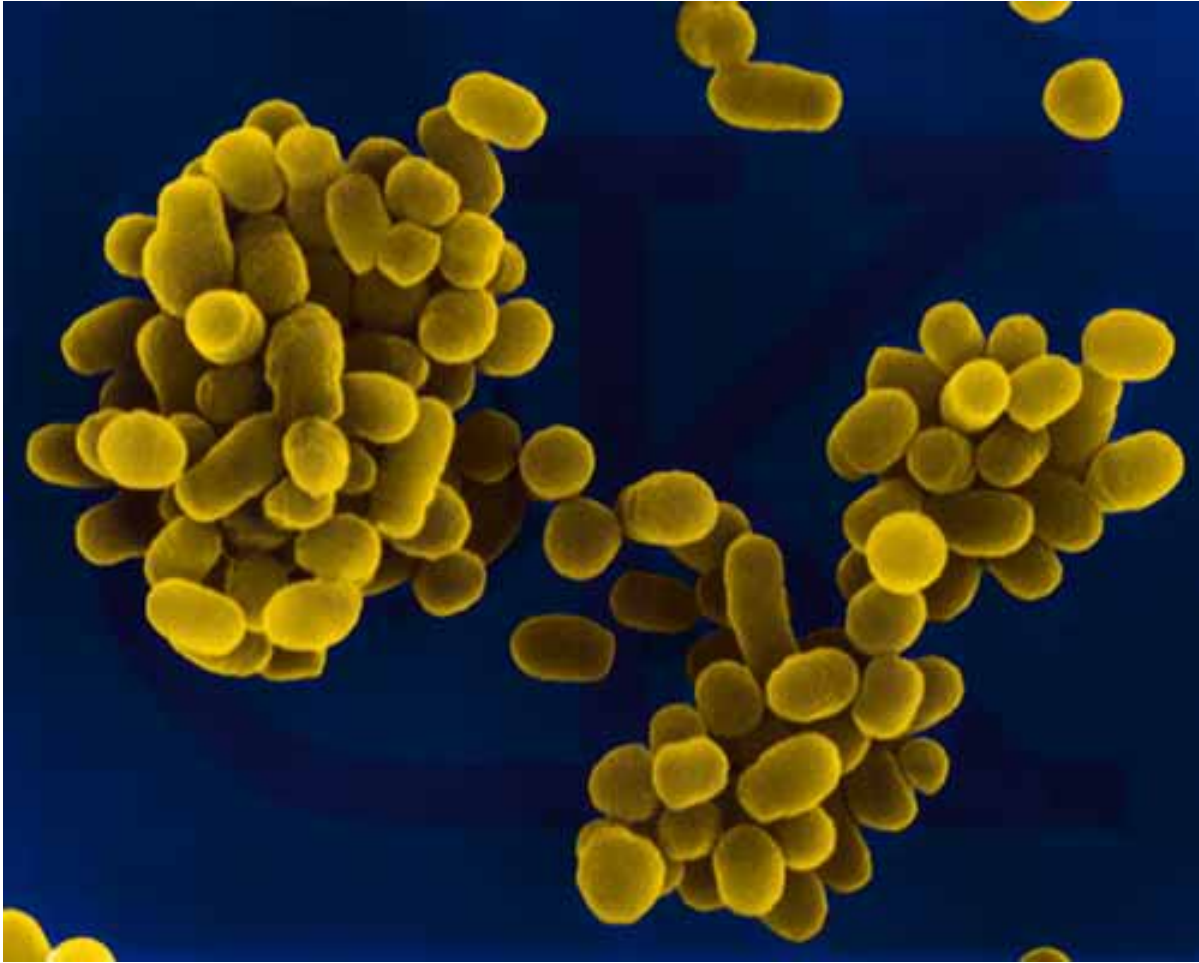
Enterococcus faecalis



Staphylococcus epidermidis

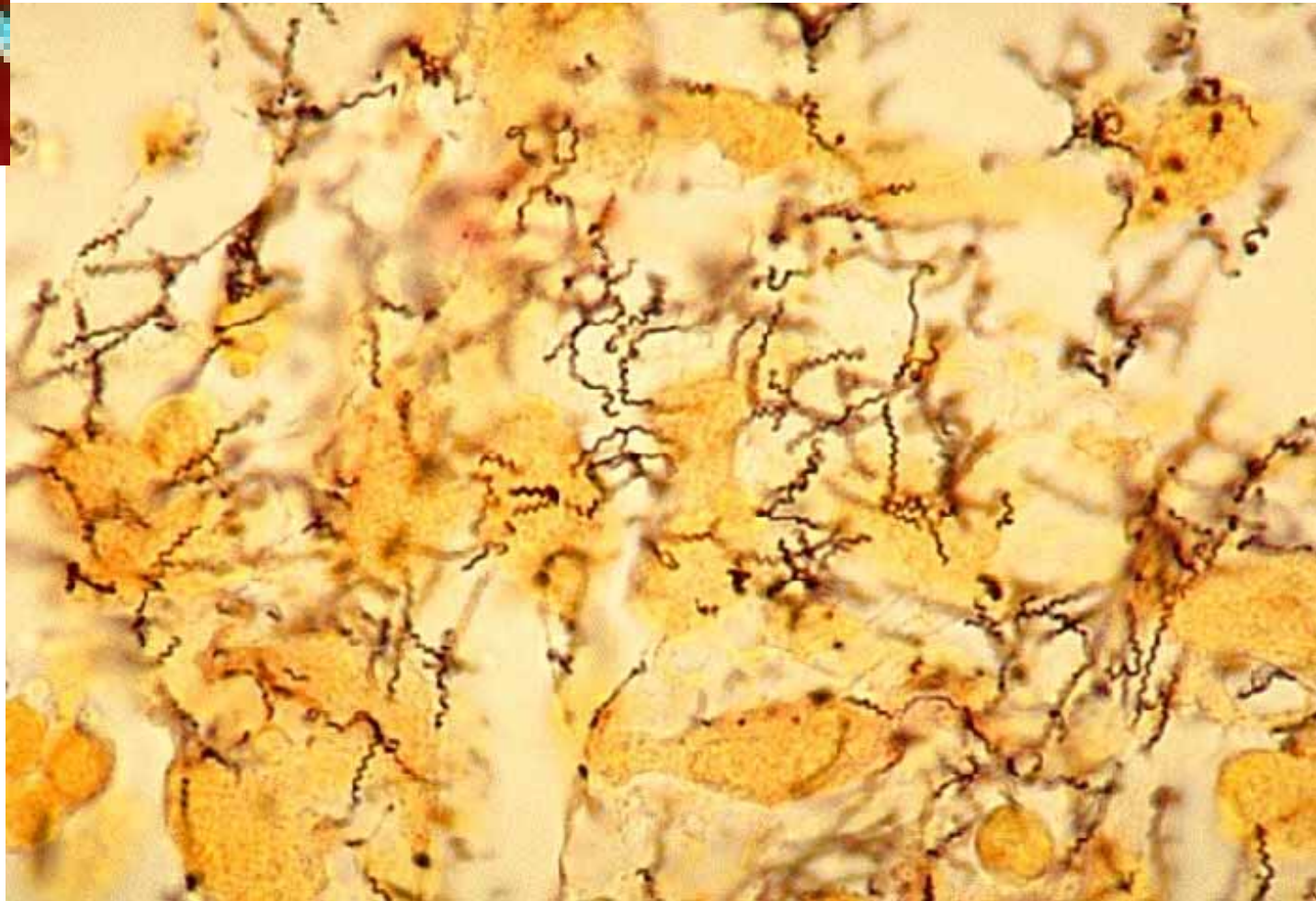
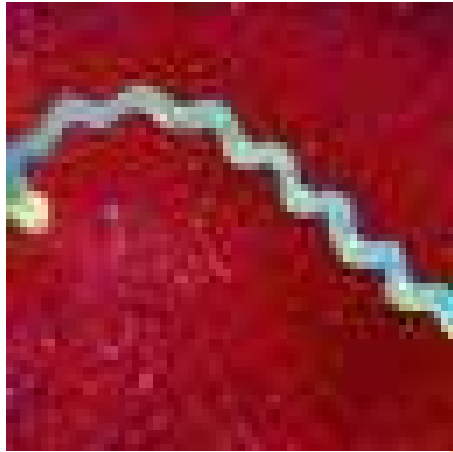


streptococco

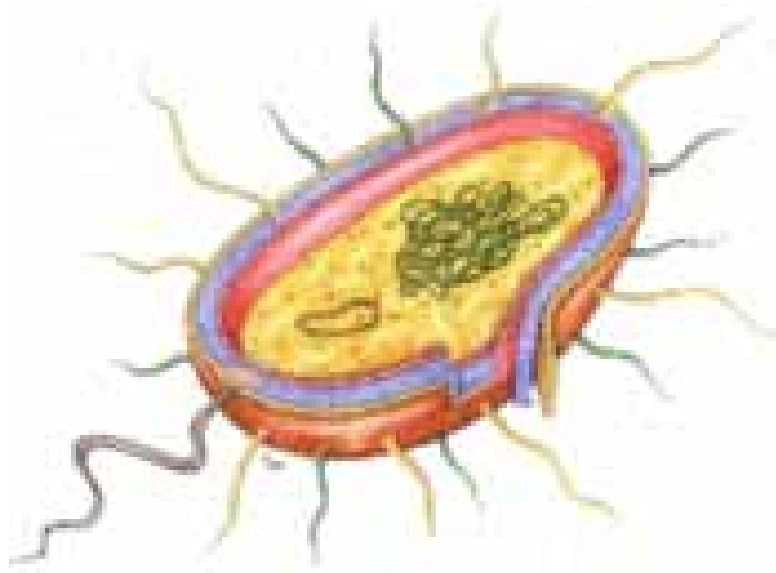


Brucelle

Treponemi

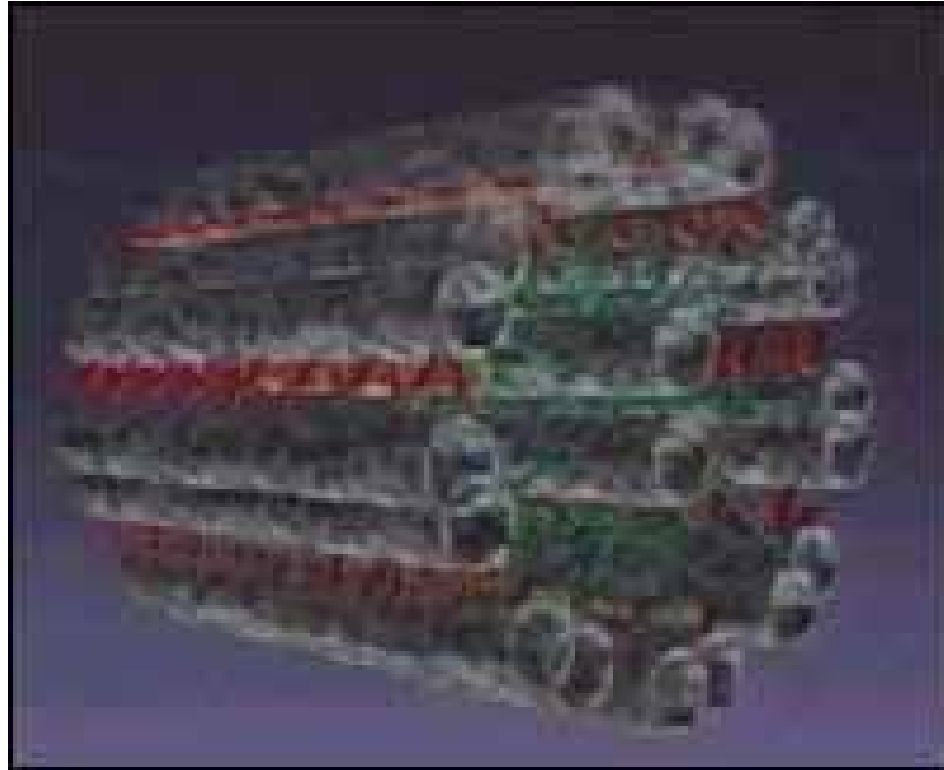


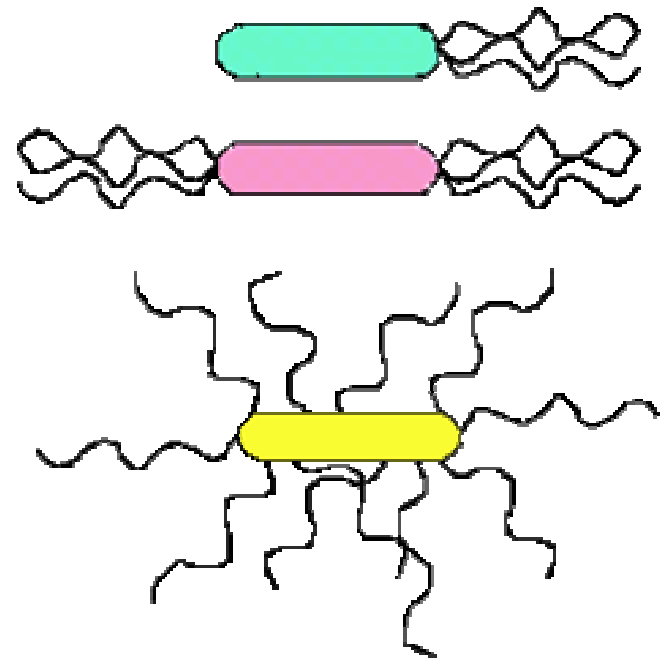
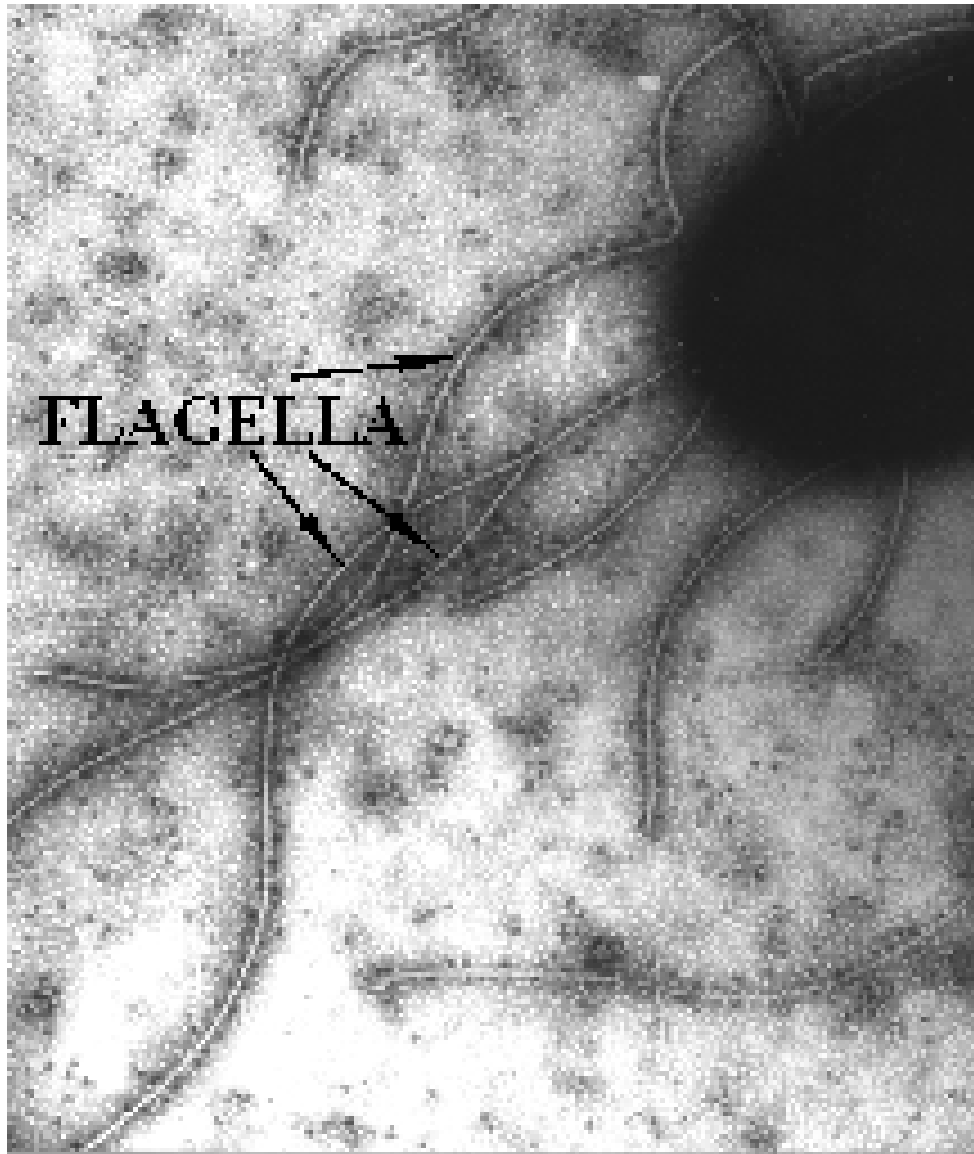
Flagelli e pili



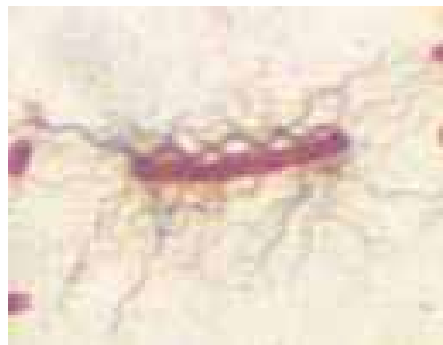
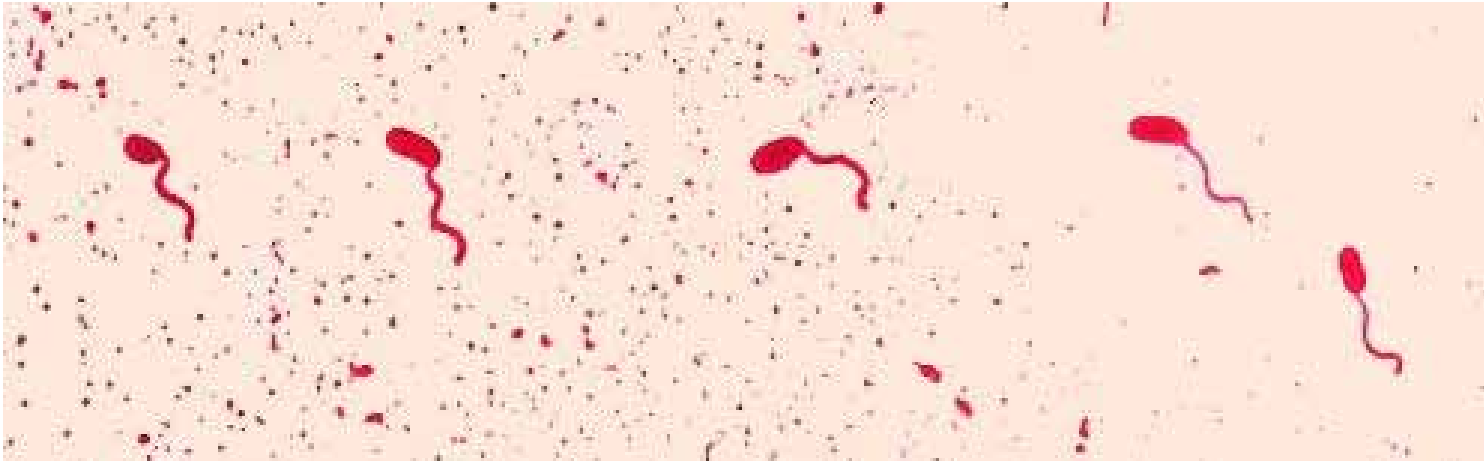
Flagelli e pili

microtubuli



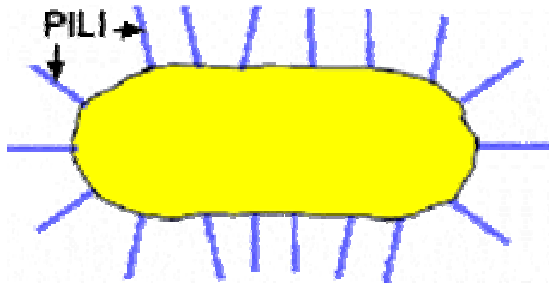


Flagelli

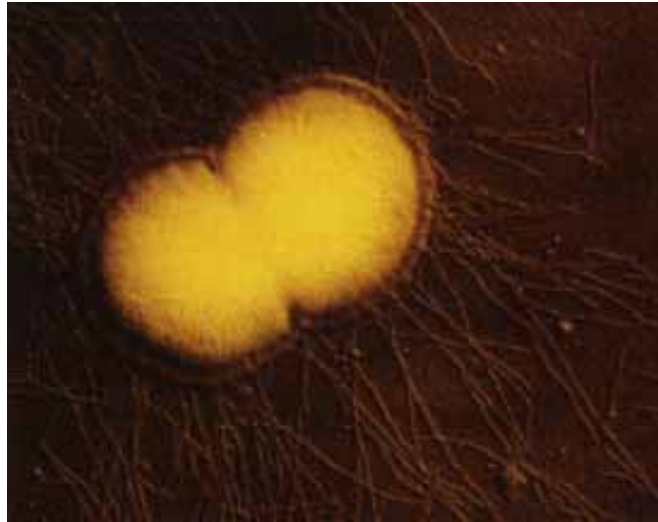


Pili

Sono corti e servono per aderire ai tessuti



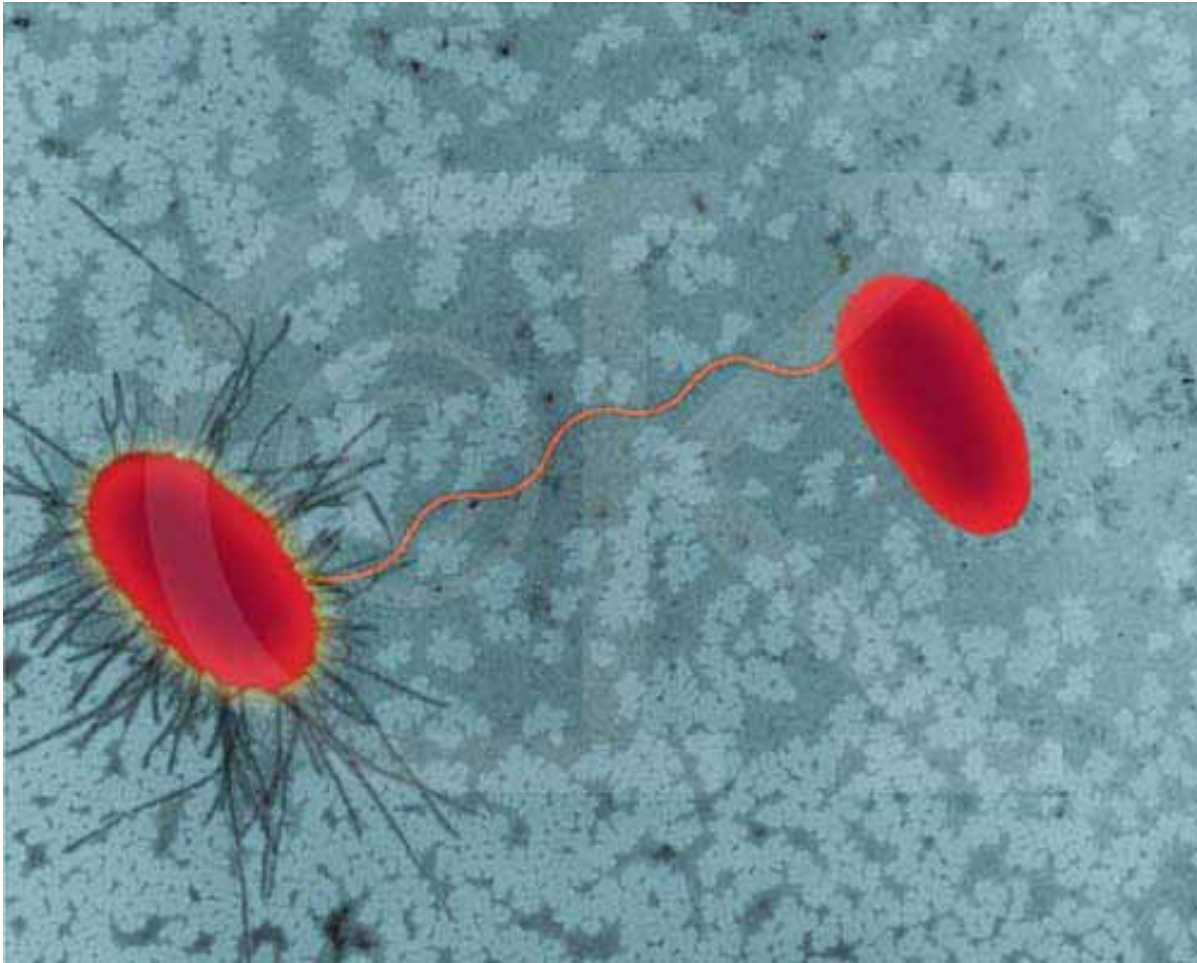
Fimbriae



***Neisseria gonorrhoeae*. Electron micrograph. This pathogen utilizes its fimbriae in order to initially colonize the urethral or cervical epithelium**

Pili sessuali

Servono per trasferire materiale genetico



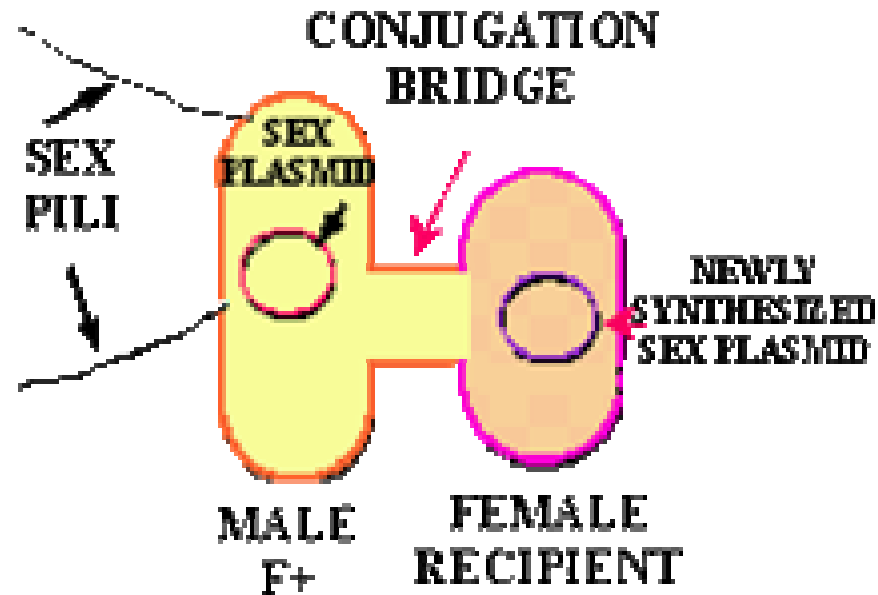
Coniugazione – E.coli

Scambio di materiale genetico tra batteri

- Coniugazione
- Trasformazione
- Trasduzione fagica

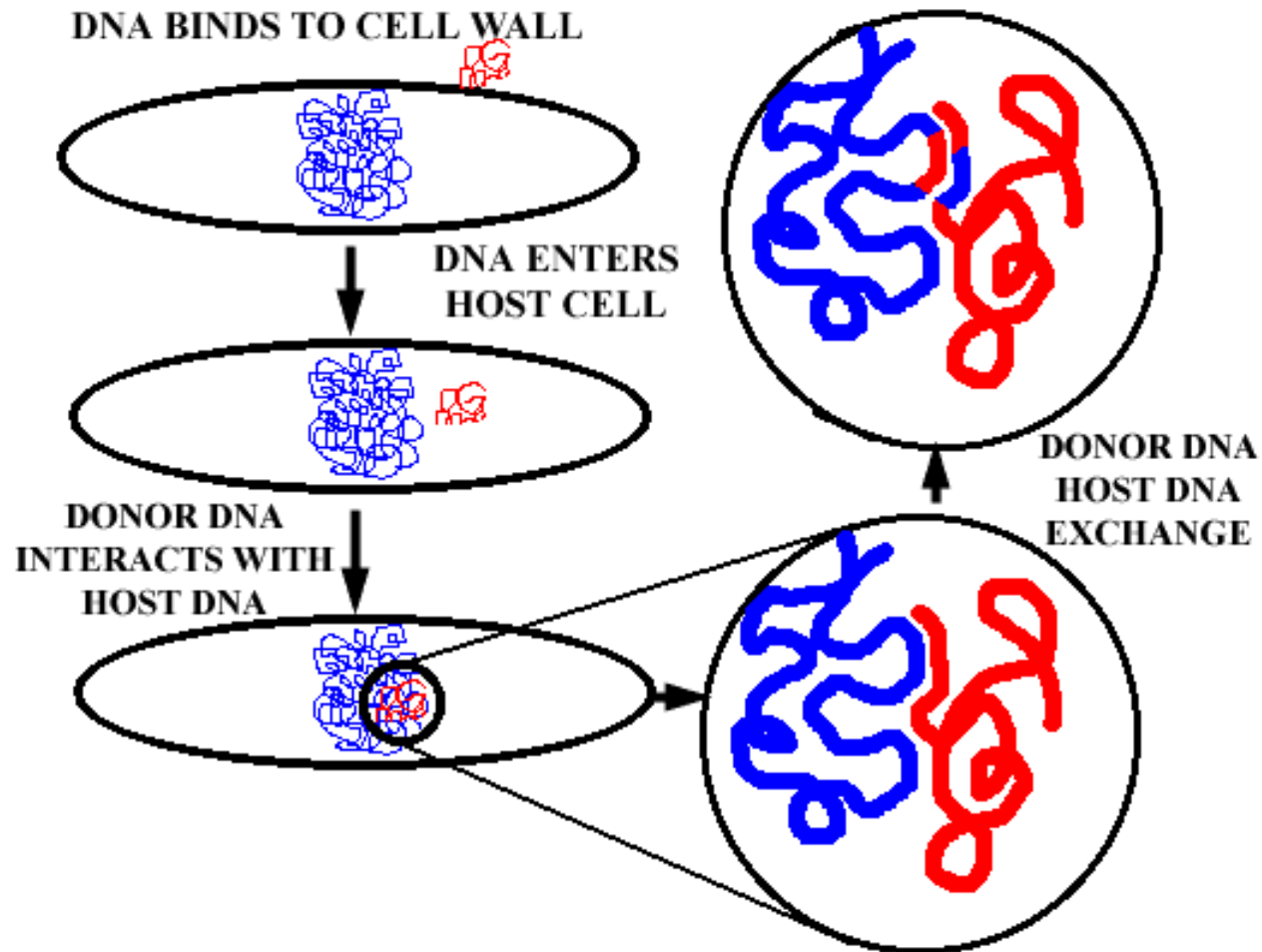
Scambio di materiale genetico tra batteri

Coniugazione



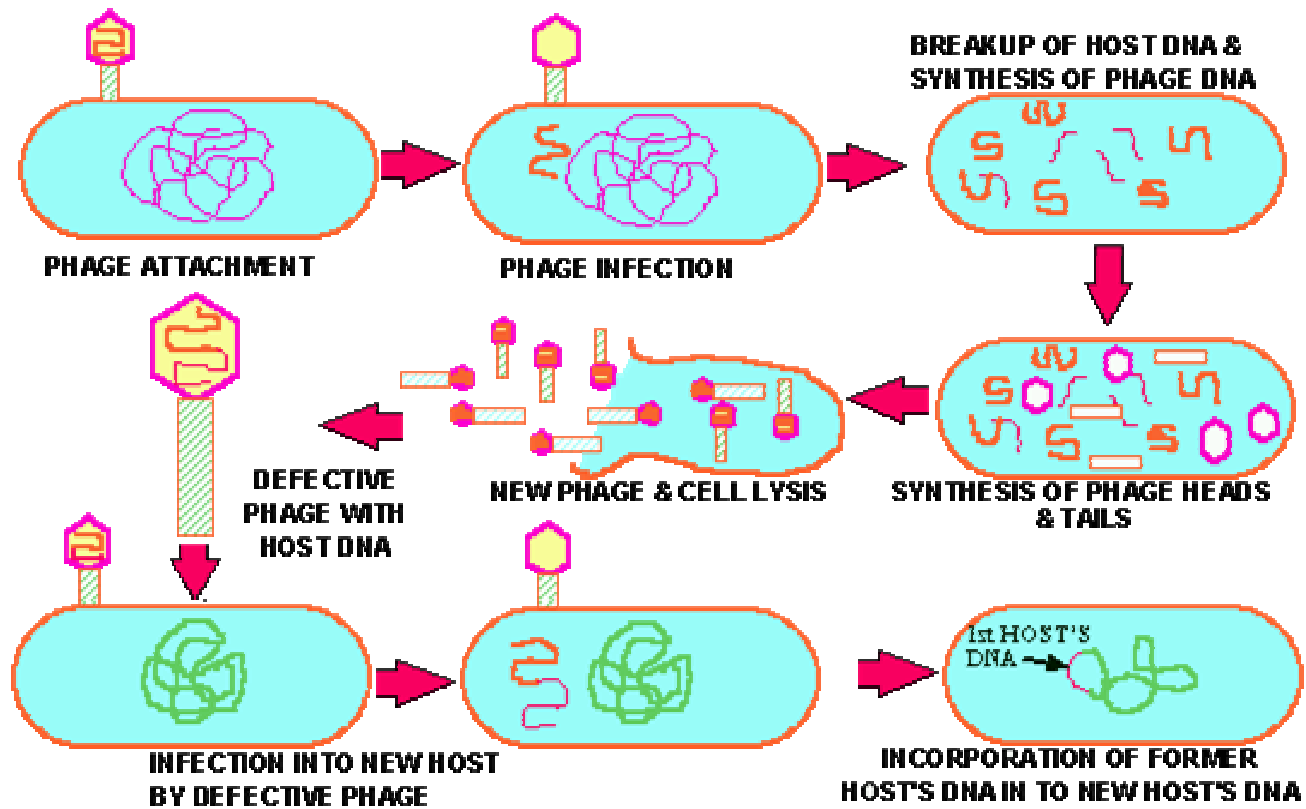
Scambio di materiale genetico tra batteri

Trasformazione

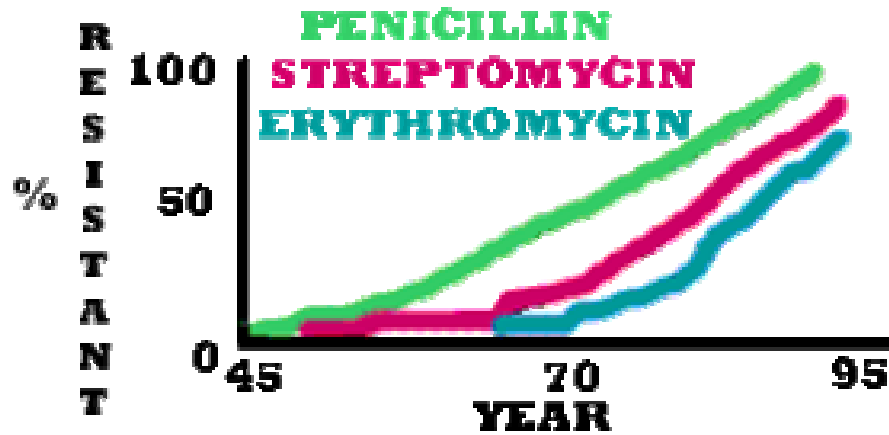


Scambio di materiale genetico tra batteri

Trasduzione fagica

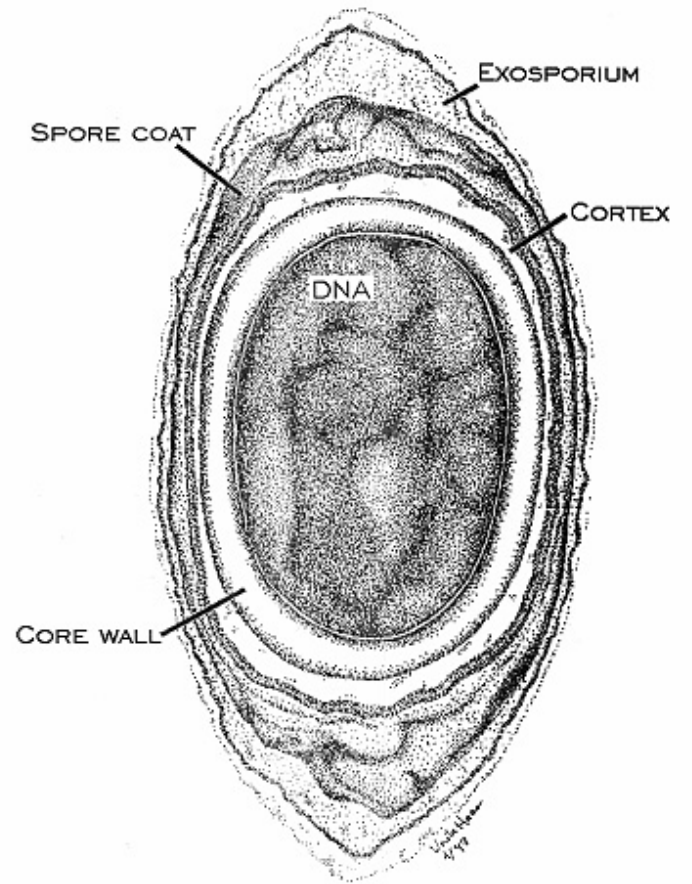
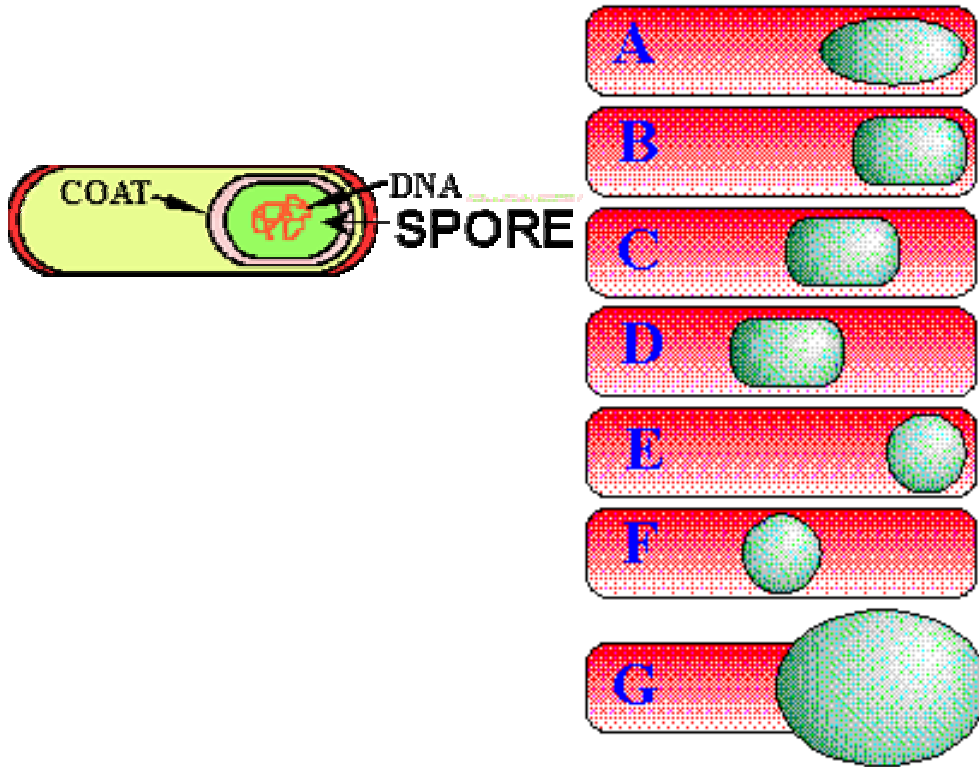


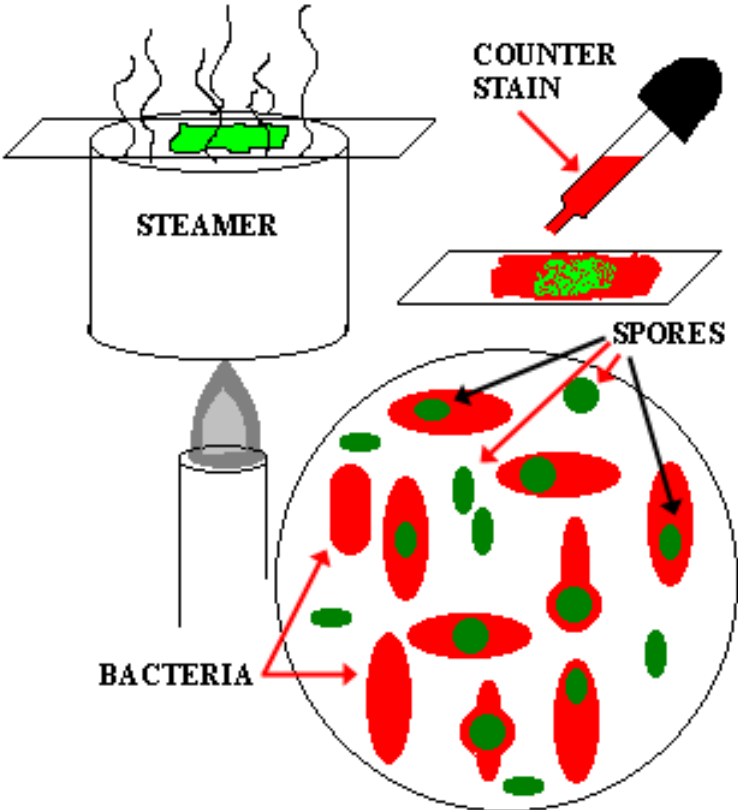
Diffusione resistenza antibiotici



Increase of bacteria resistant to 3 antibiotics over time and cartoon of Superbacteria with many resistance plasmids.

Spore





Bacilli sporigeni aerobi

Bacillus Antracis

Bacillus Subtilis

Bacilli sporigeni anaerobi

Clostridium tetani;

Clostridium botulinum;

Clostridium perfringens

Spore



Spore stain of a Bacillus species. Mature spores stain green whether free or still inside the vegetative sporangium. Vegetative cells and sporangia stain red. The Schaeffer-Fulton stain technique was applied. The primary stain, malachite green, is forced into the spores by heating the prepared slide to boiling for 4-5 minutes. After washing, the vegetative cells are counterstained with safranin.