



# KhIMU

ХАРКІВСЬКИЙ МІЖНАРОДНИЙ  
МЕДИЧНИЙ УНІВЕРСИТЕТ

PRIVATE INSTITUTION OF HIGHER EDUCATION  
«KHARKIV INTERNATIONAL MEDICAL UNIVERSITY»



Rector PIHE «KhIMU»:  
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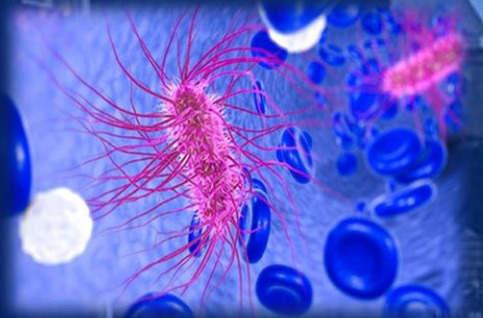
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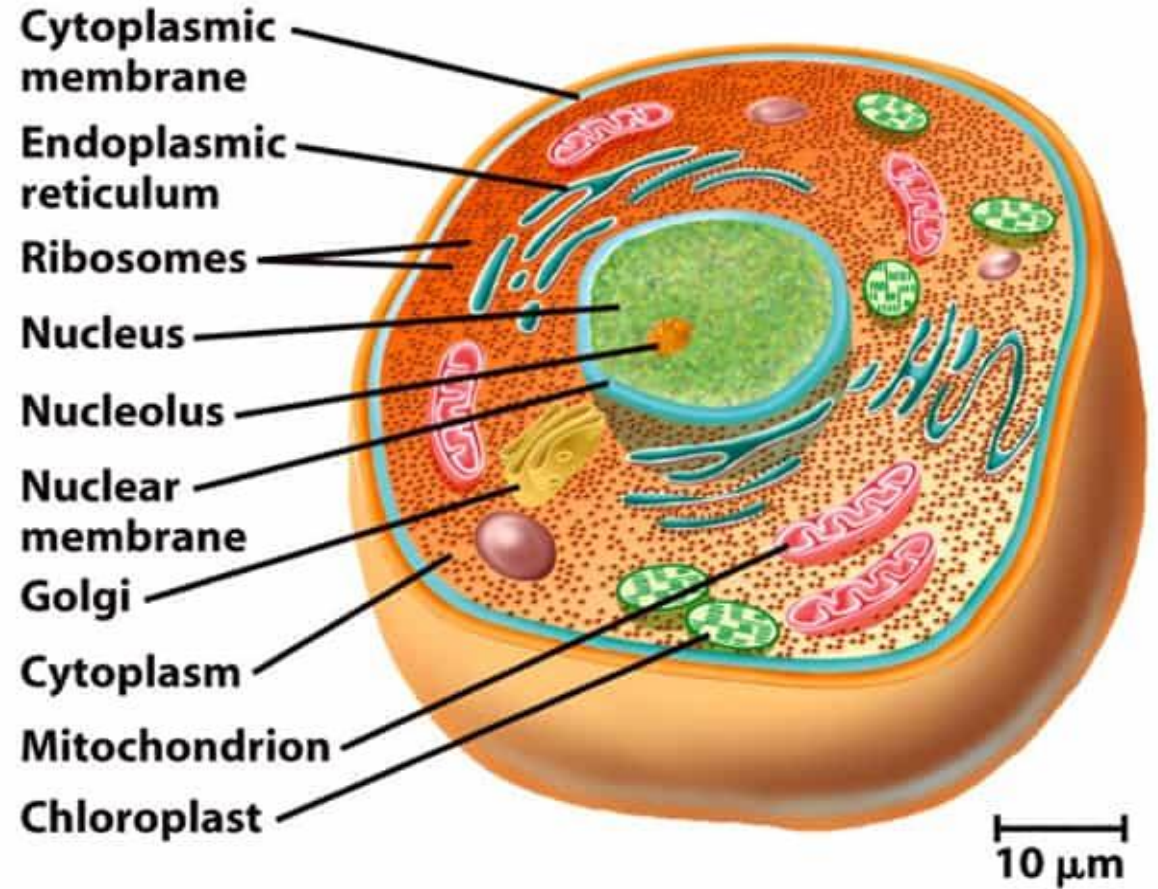
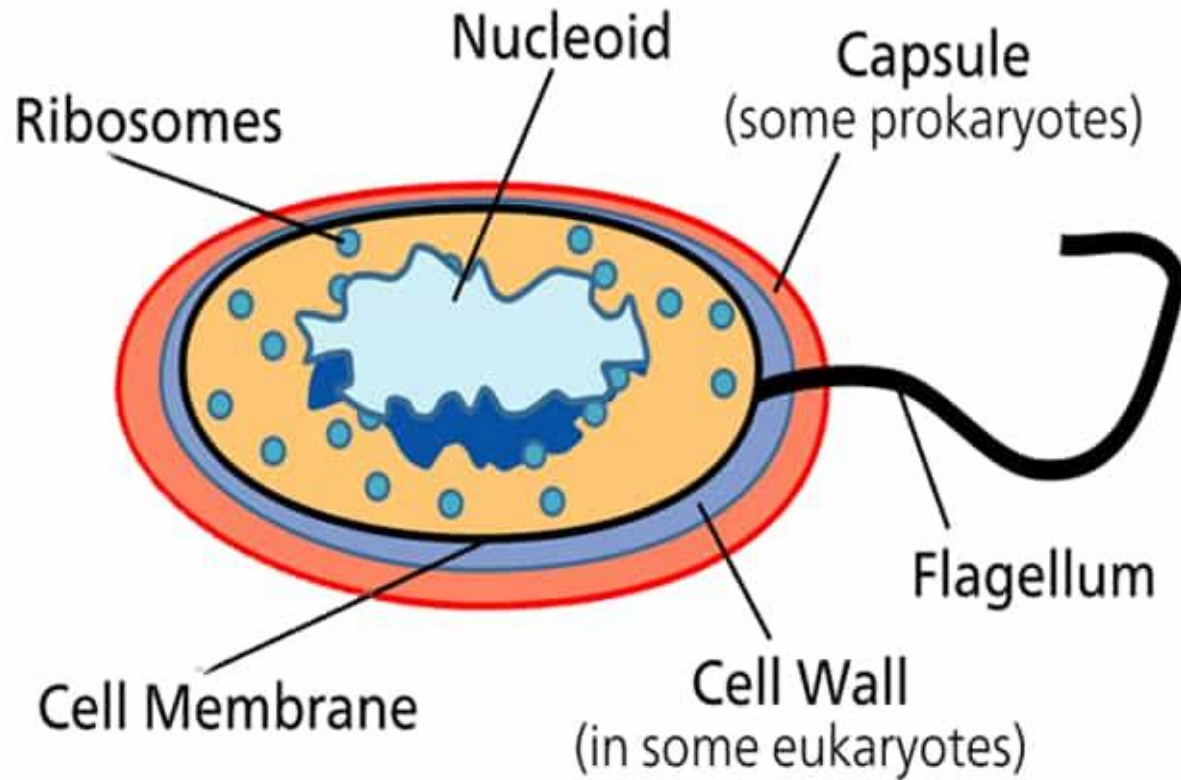
DEPARTMENT OF FUNDAMENTAL  
GENERAL SCIENTIFIC DISCIPLINES

Microbiology, virology, immunology

Structure and function of  
Gram-negative bacteria  
Outer membrane proteins



# Prokaryotes vs Eukaryotes



# Major function of the bacteria cell wall

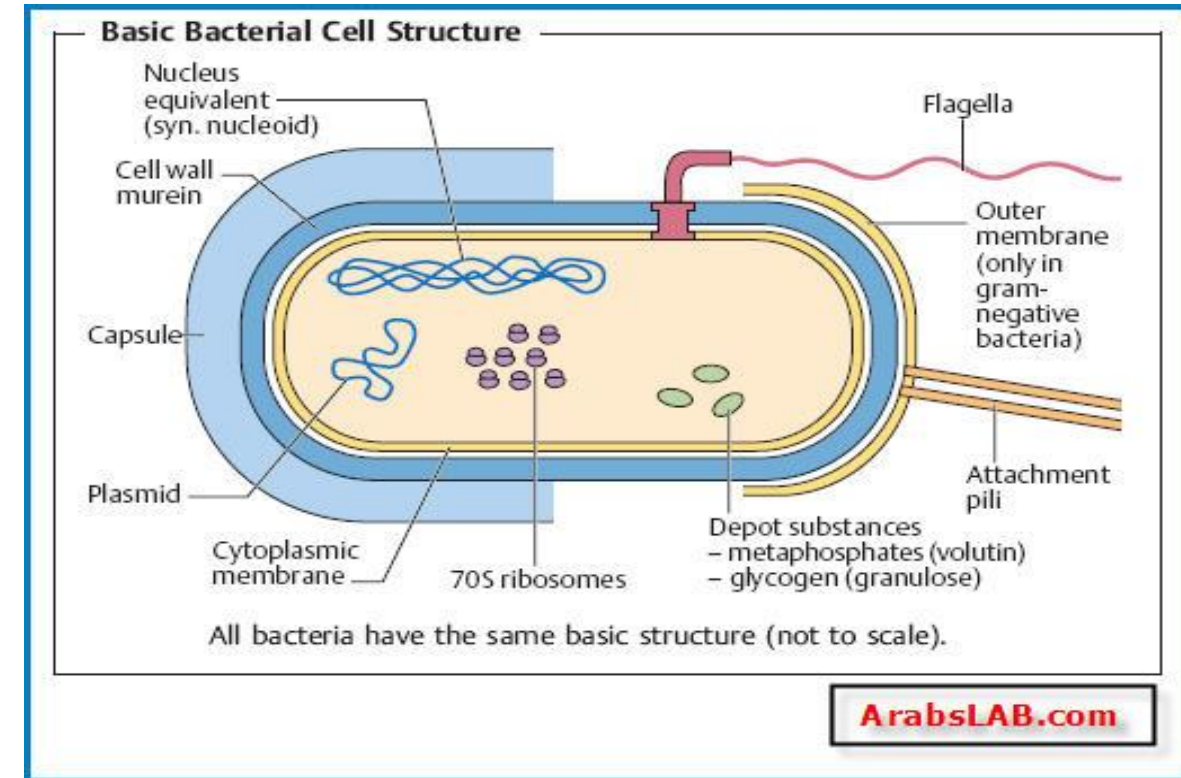
prevent bacterial cells from rupturing

maintain the shape of a bacterium

serves as a point of anchorage for flagella

it contributes to the ability of some species to cause disease

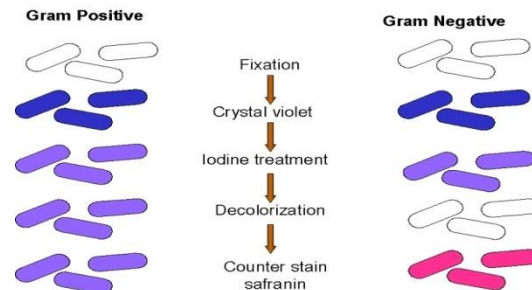
site of action of some antibiotics



**The chemical composition of the cell wall is used to differentiate major types of bacteria**

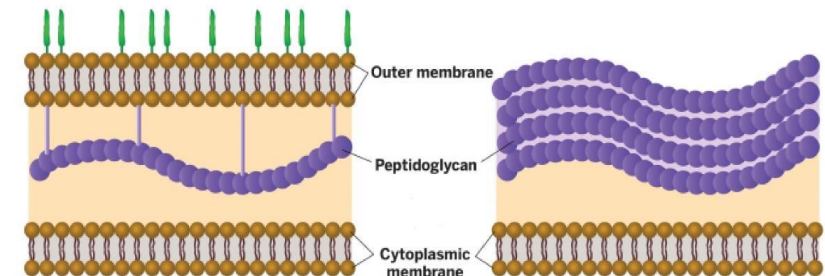


**major types of bacteria**

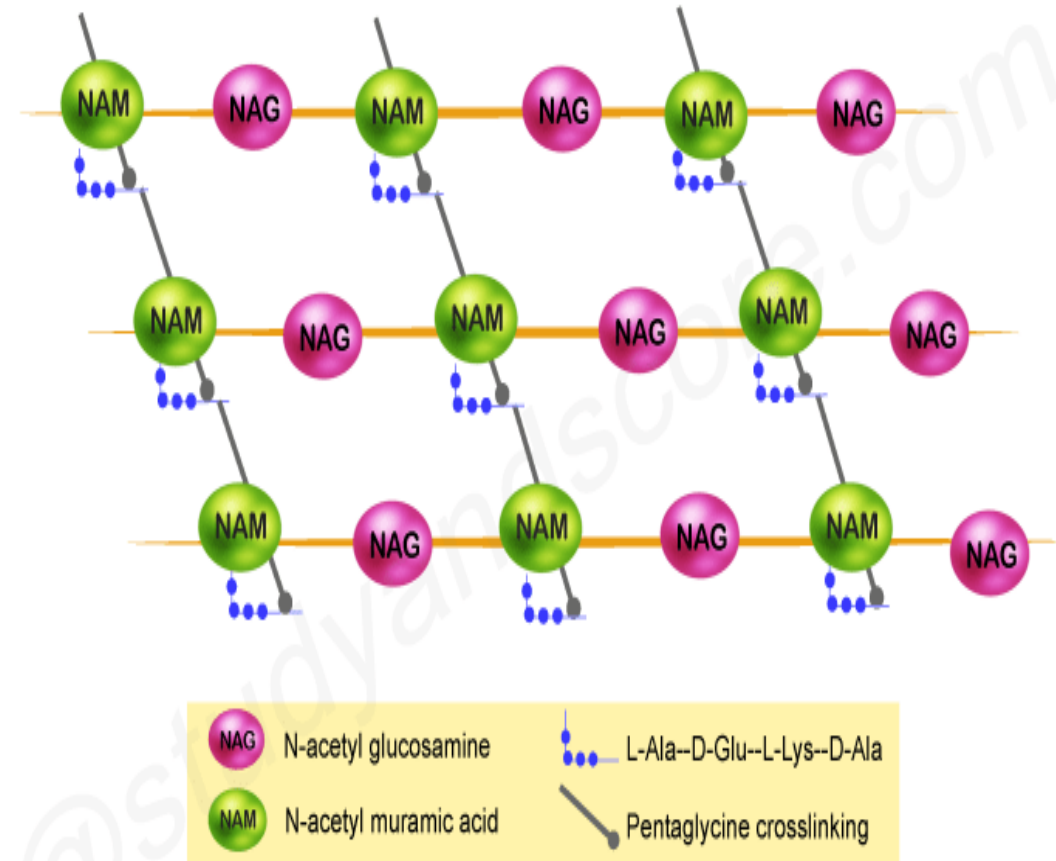
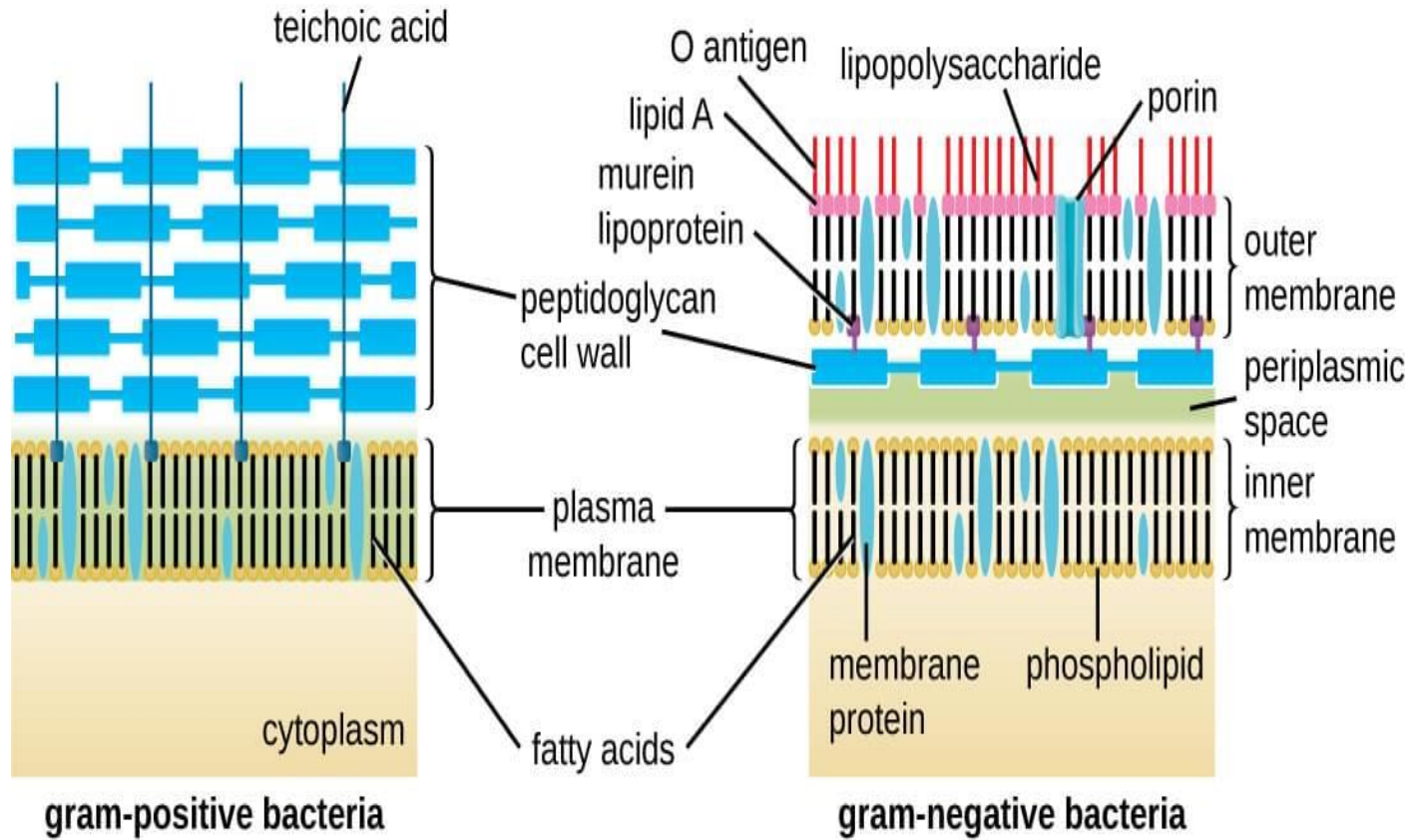


**GRAM-NEGATIVE**

**GRAM-POSITIVE**

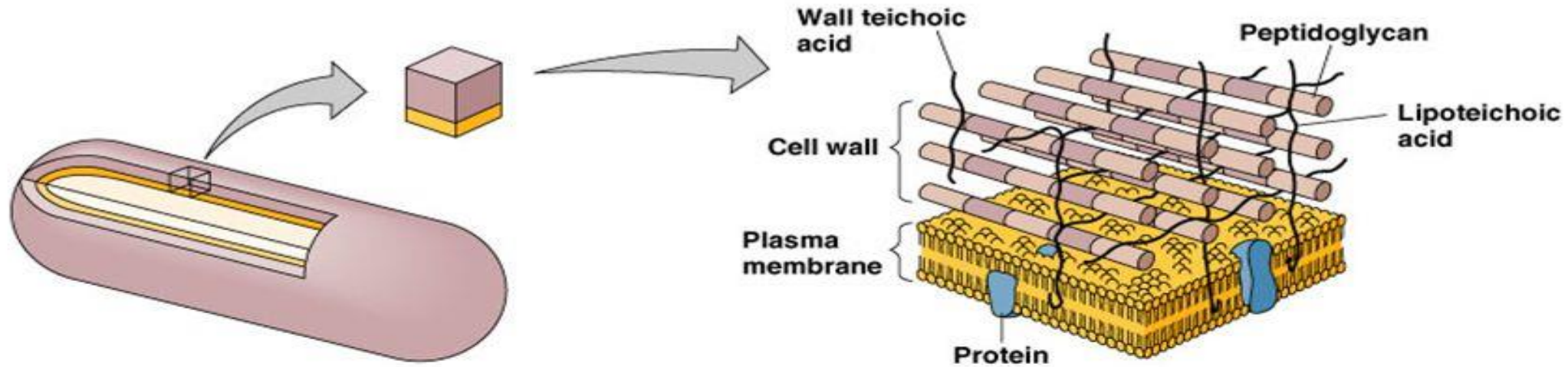


# Structure of bacteria cell wall

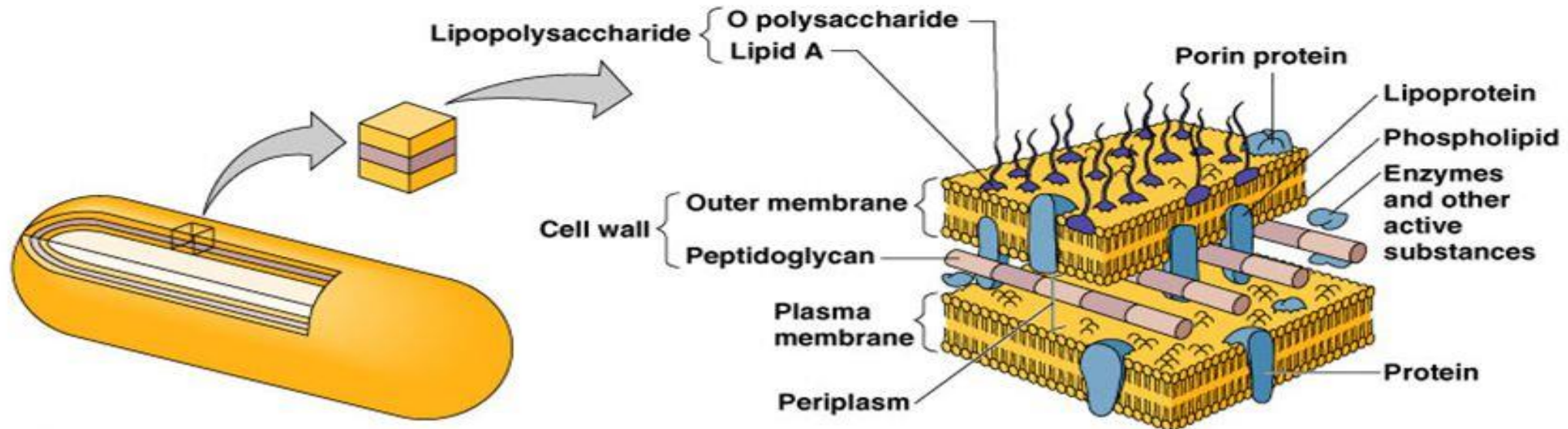


CHEMICAL COMPOSITION OF BACTERIAL CELL WALL

# Gram positive vs. gram negative cell walls

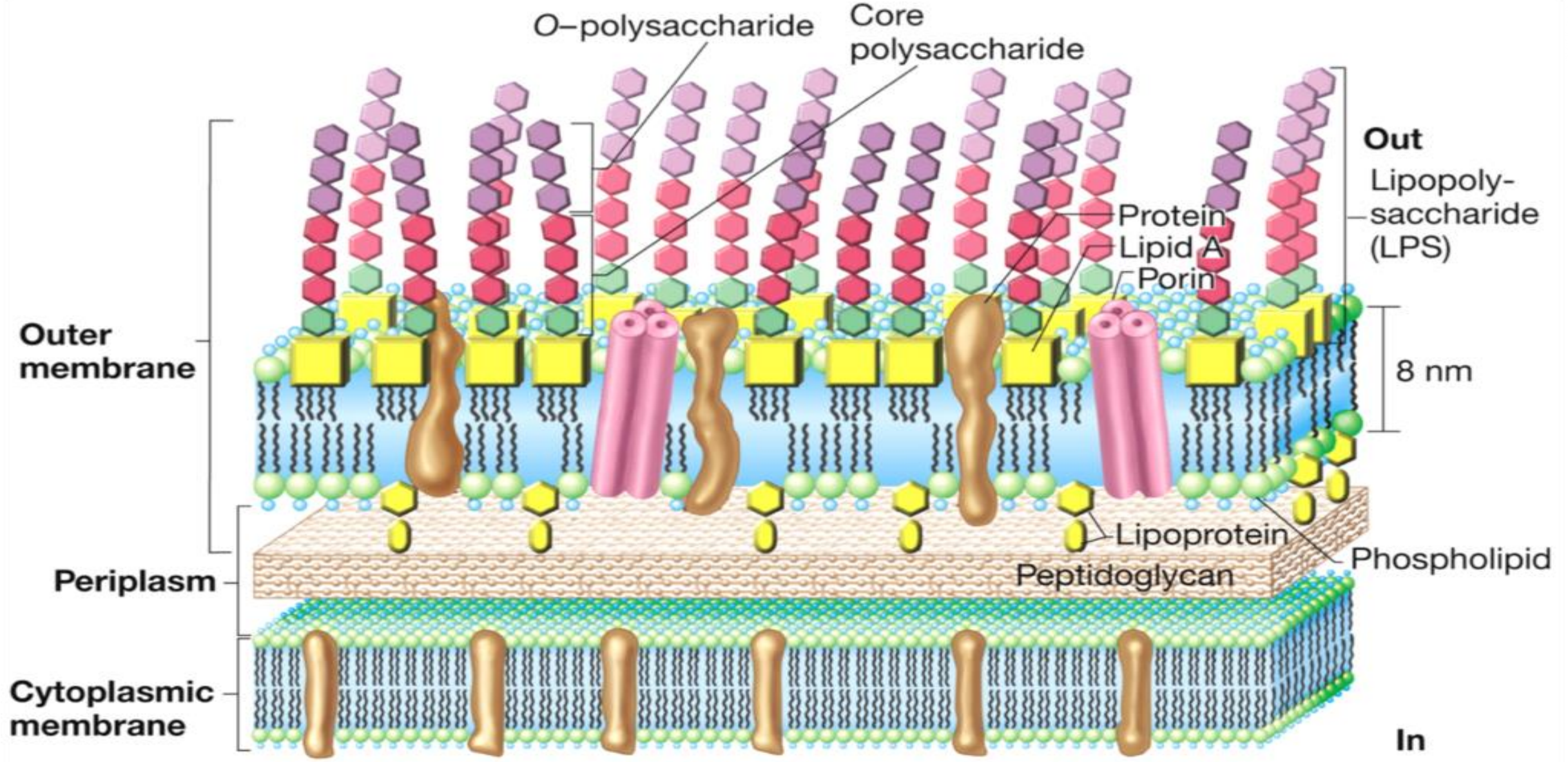


**(b) Gram-positive cell wall**

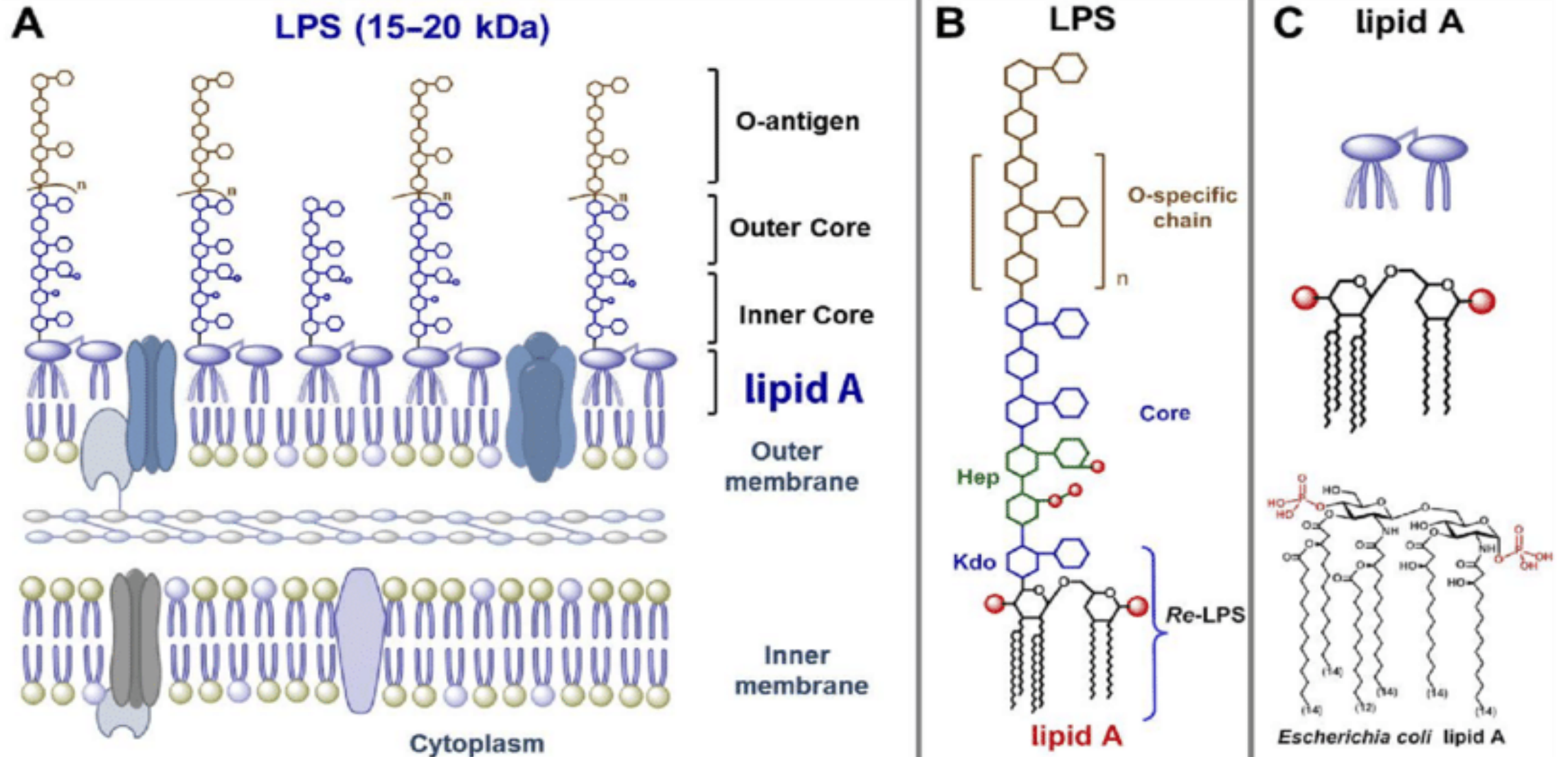


**(c) Gram-negative cell wall**

# Structure of Gram-negative cell wall

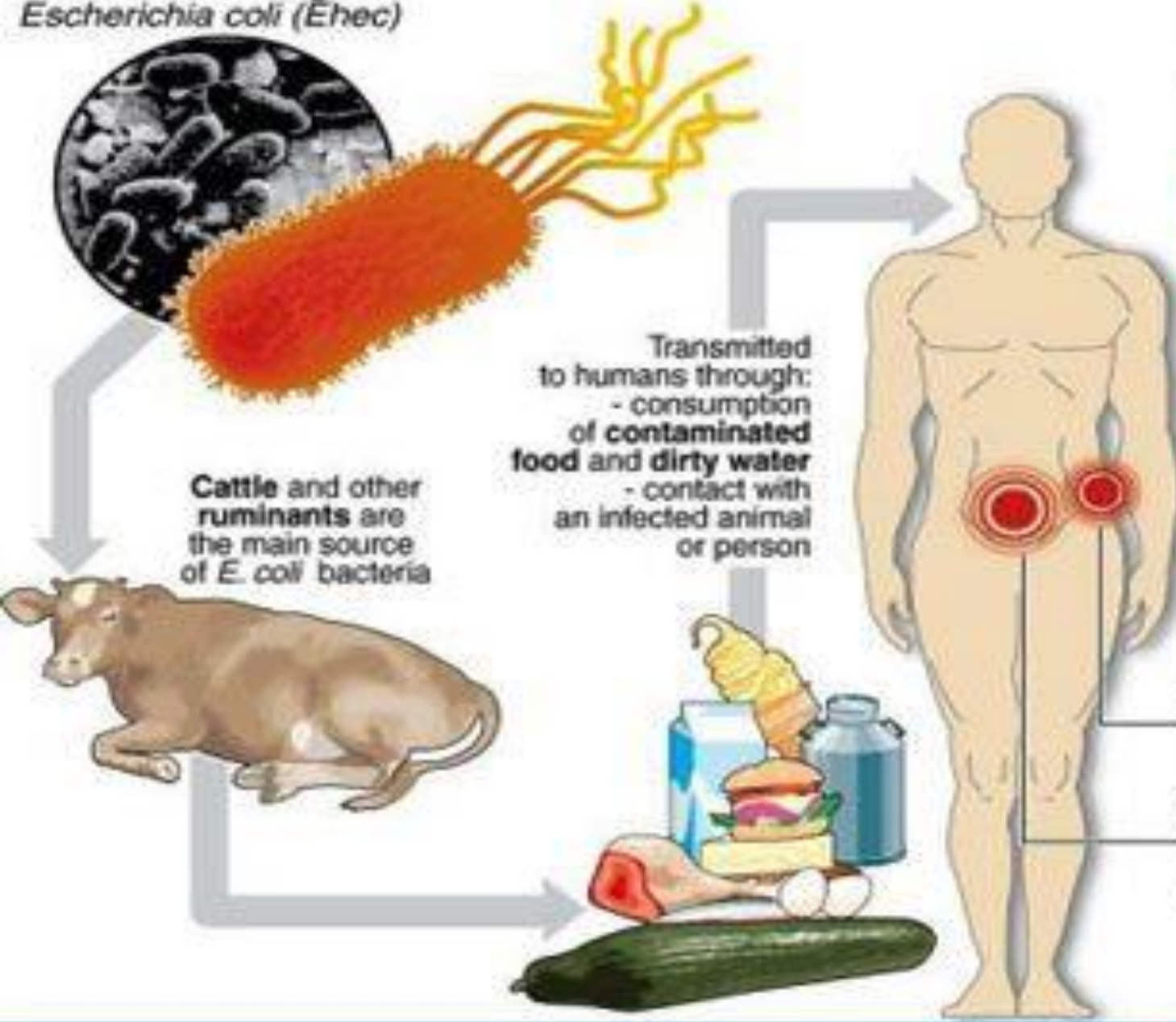


# Lipopolysaccharides (LPS) are the outer membrane of Gram-negative cell wall

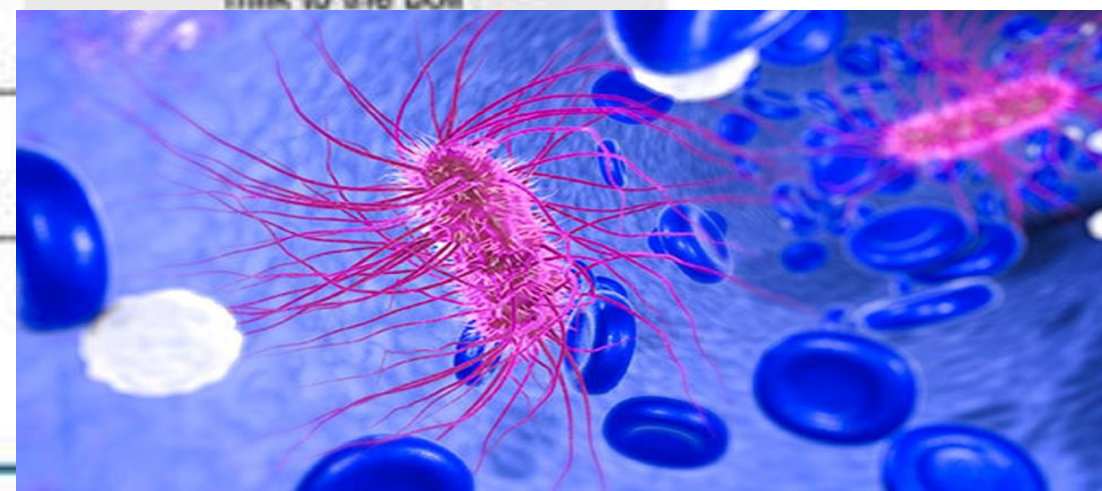


# E. coli - when contamination leads to infection

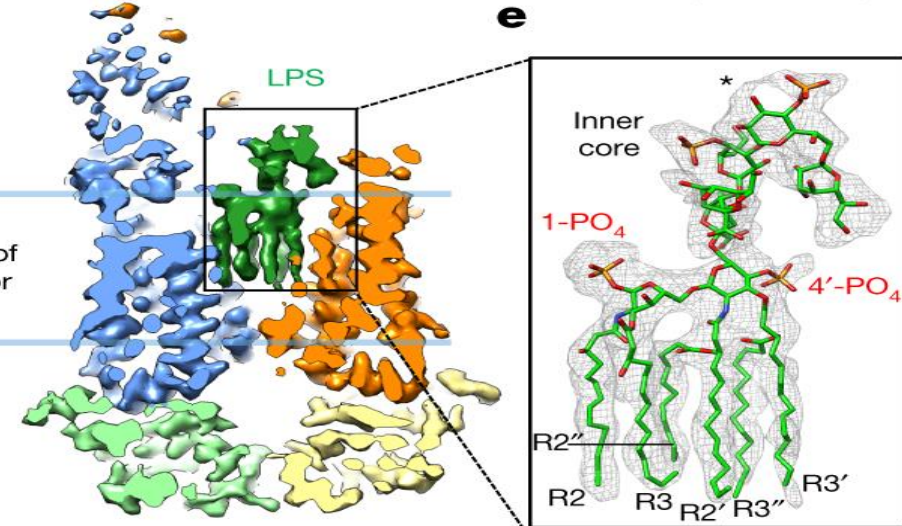
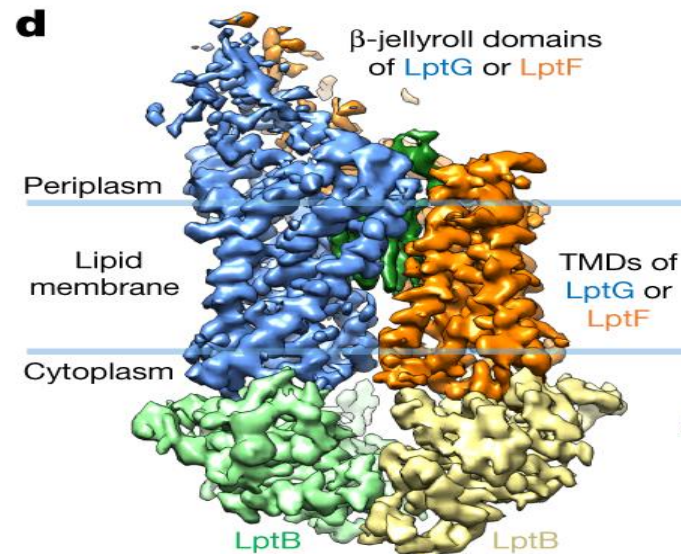
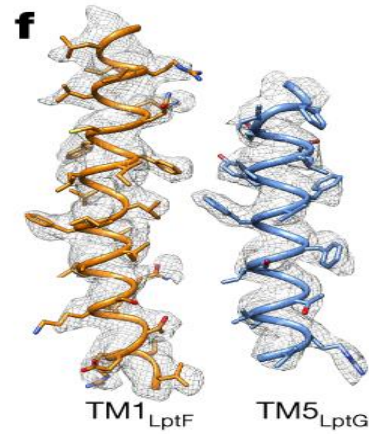
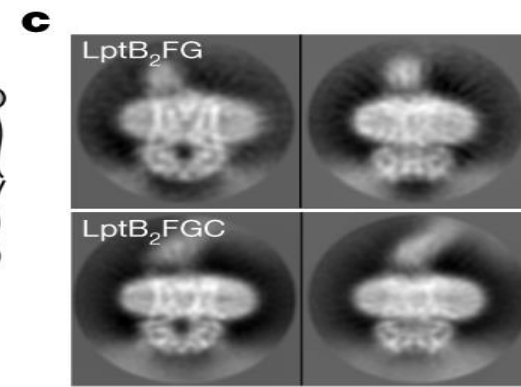
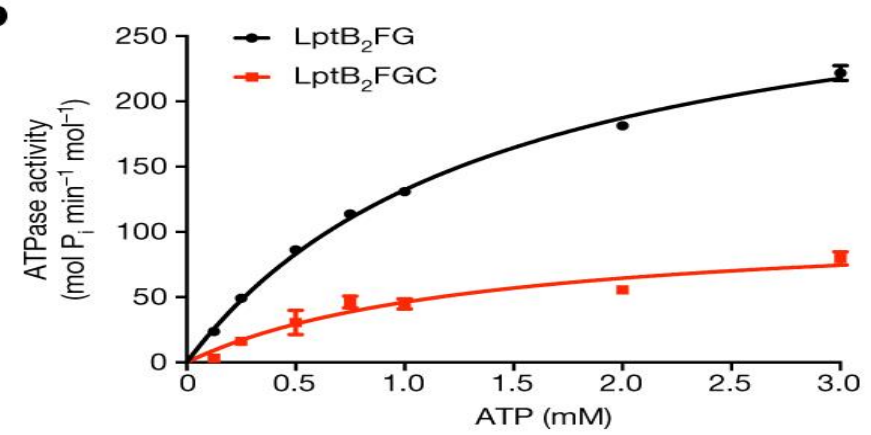
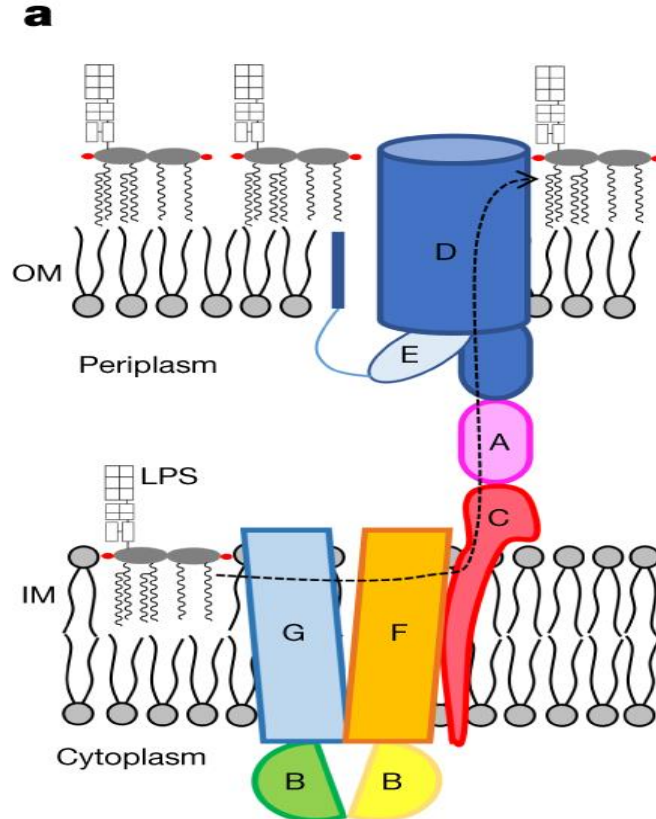
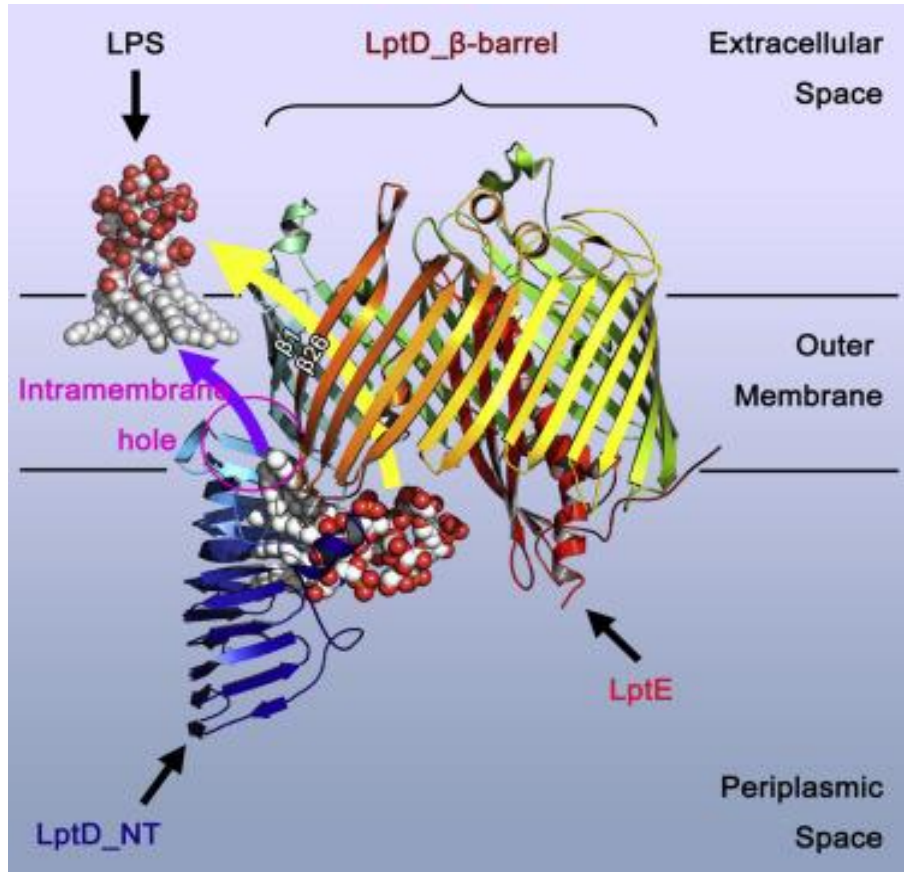
*Enterohaemorrhagic  
Escherichia coli (Ehec)*



- Bacteria can spread from one person to another via faeces**
- How to avoid contamination:
-  ■ Wipe down work surfaces and kitchen utensils
  -  ■ Keep hands clean, especially when touching raw meat or vegetables
  -  ■ Avoid eating raw tomatoes, cucumbers and salads
  - Make sure meat is well cooked
  - Bring unpasturised milk to the boil

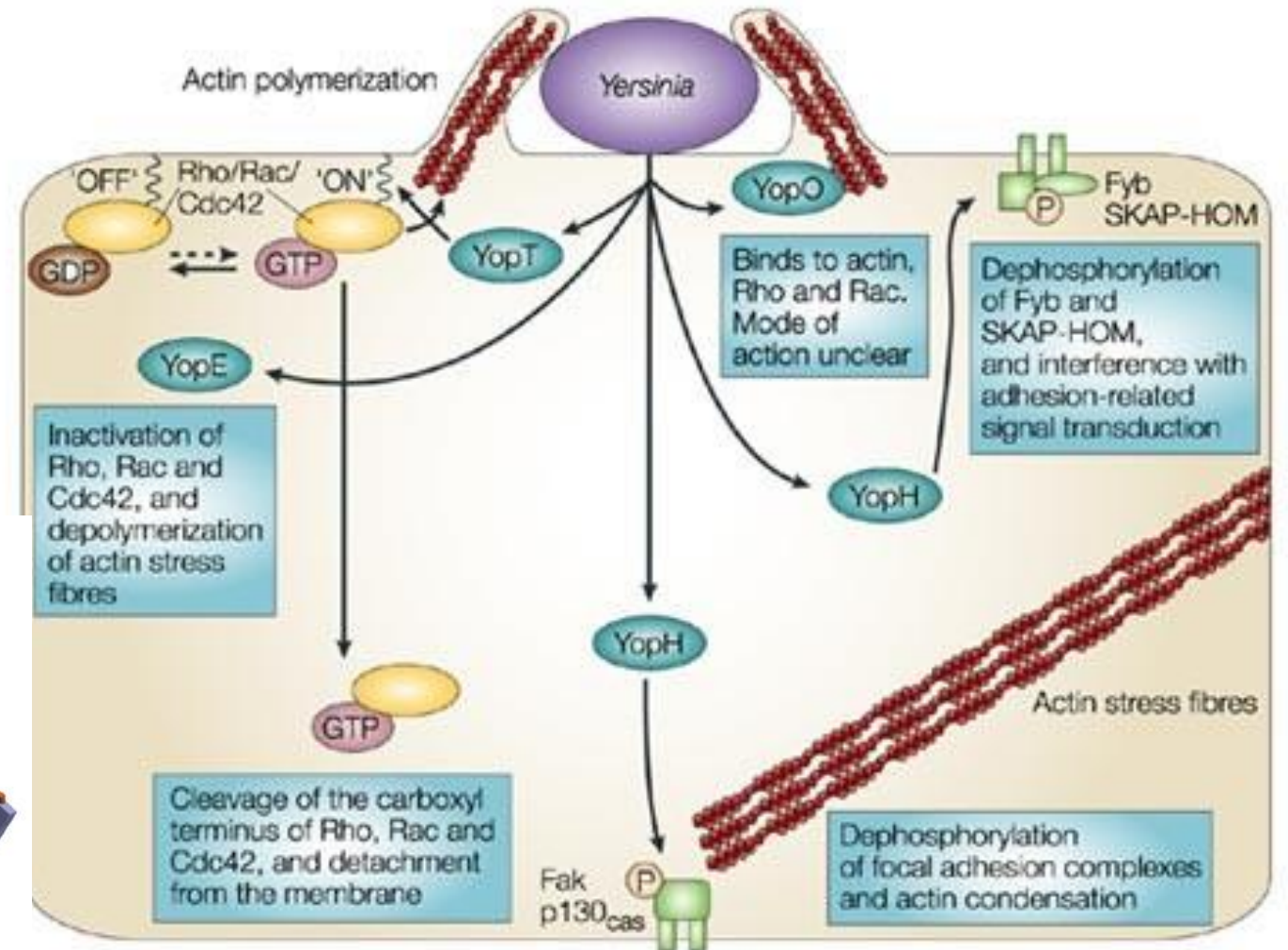
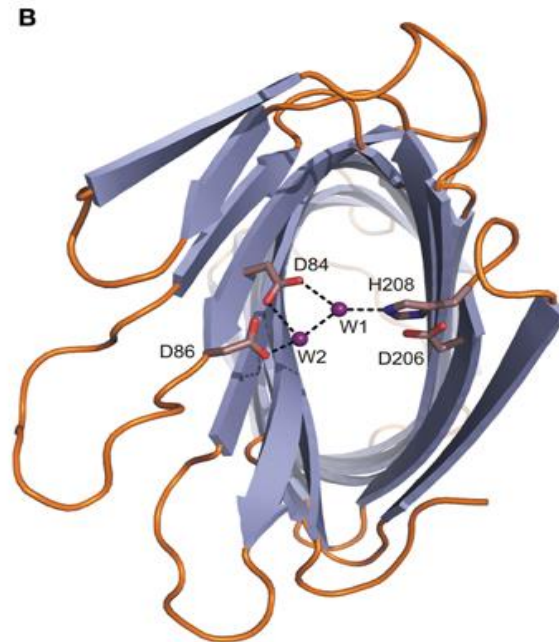
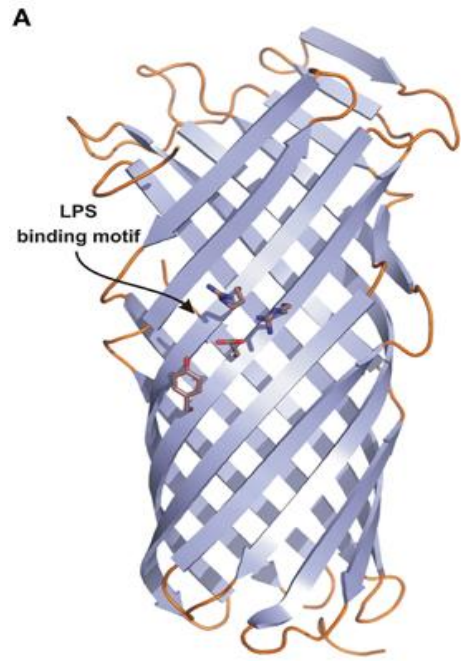
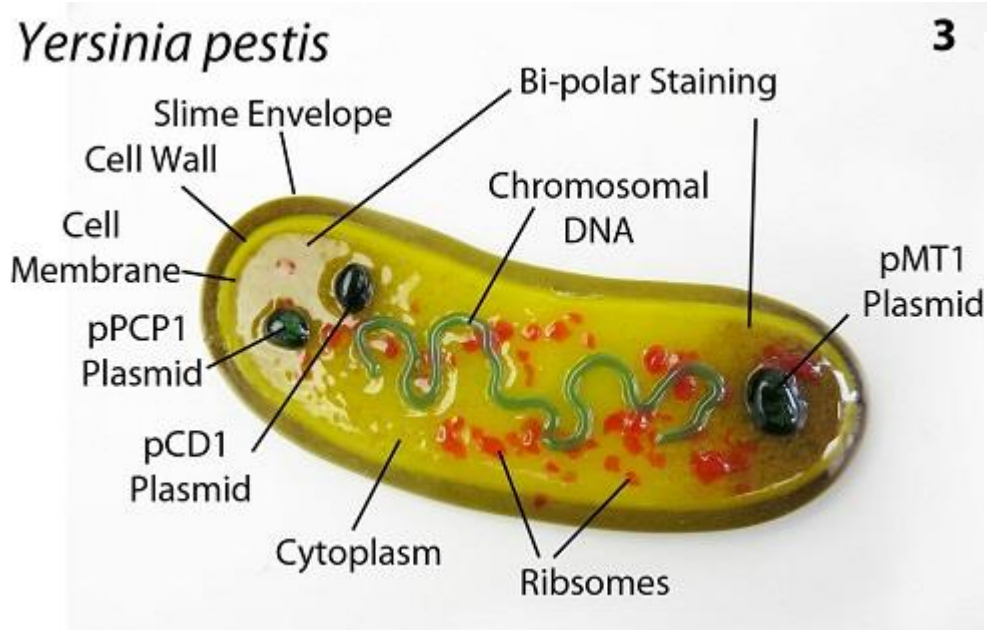


# Outer membrane proteins (Omp) or porins

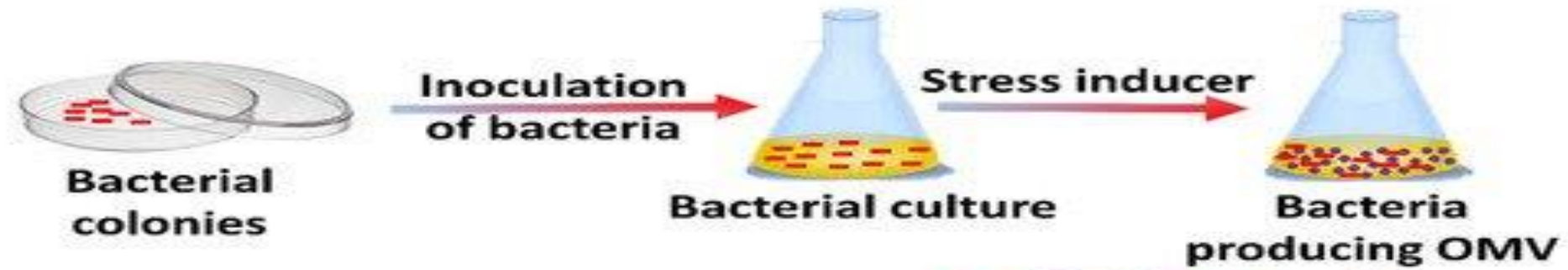




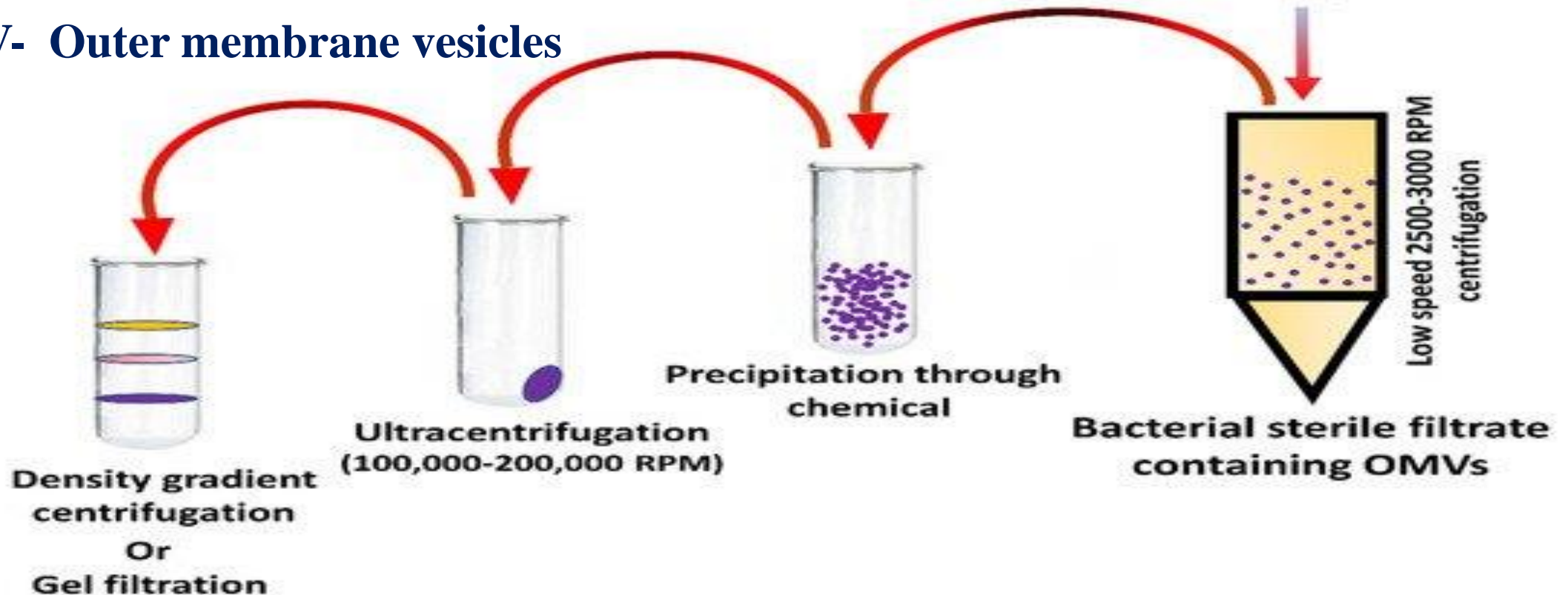
# Yersinia



# Outer membrane proteins are the components of vaccines preparation



**OMV- Outer membrane vesicles**





**Thank You  
for Your  
attention!**

