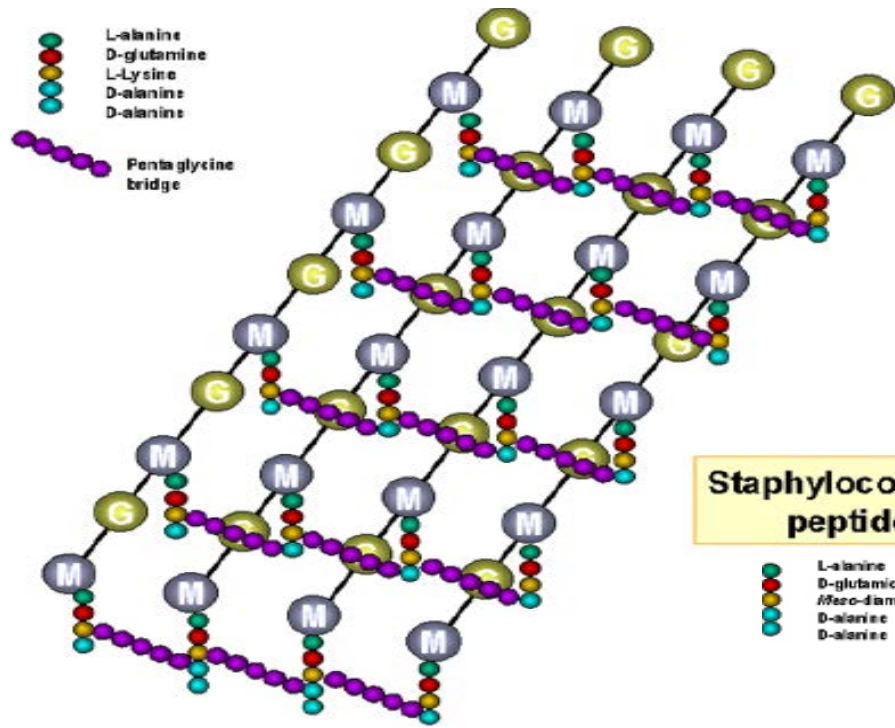
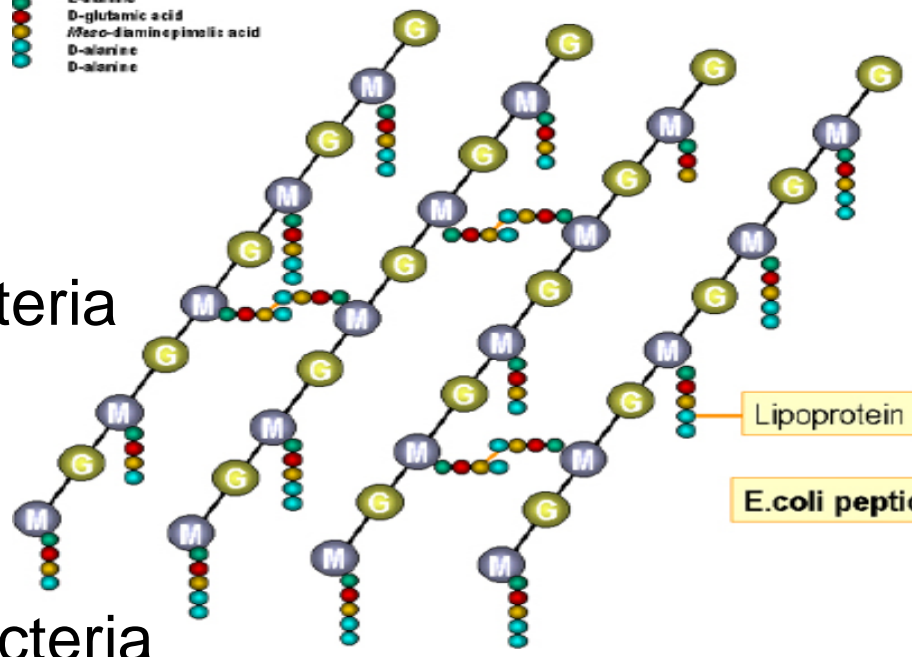


# The Cell Wall



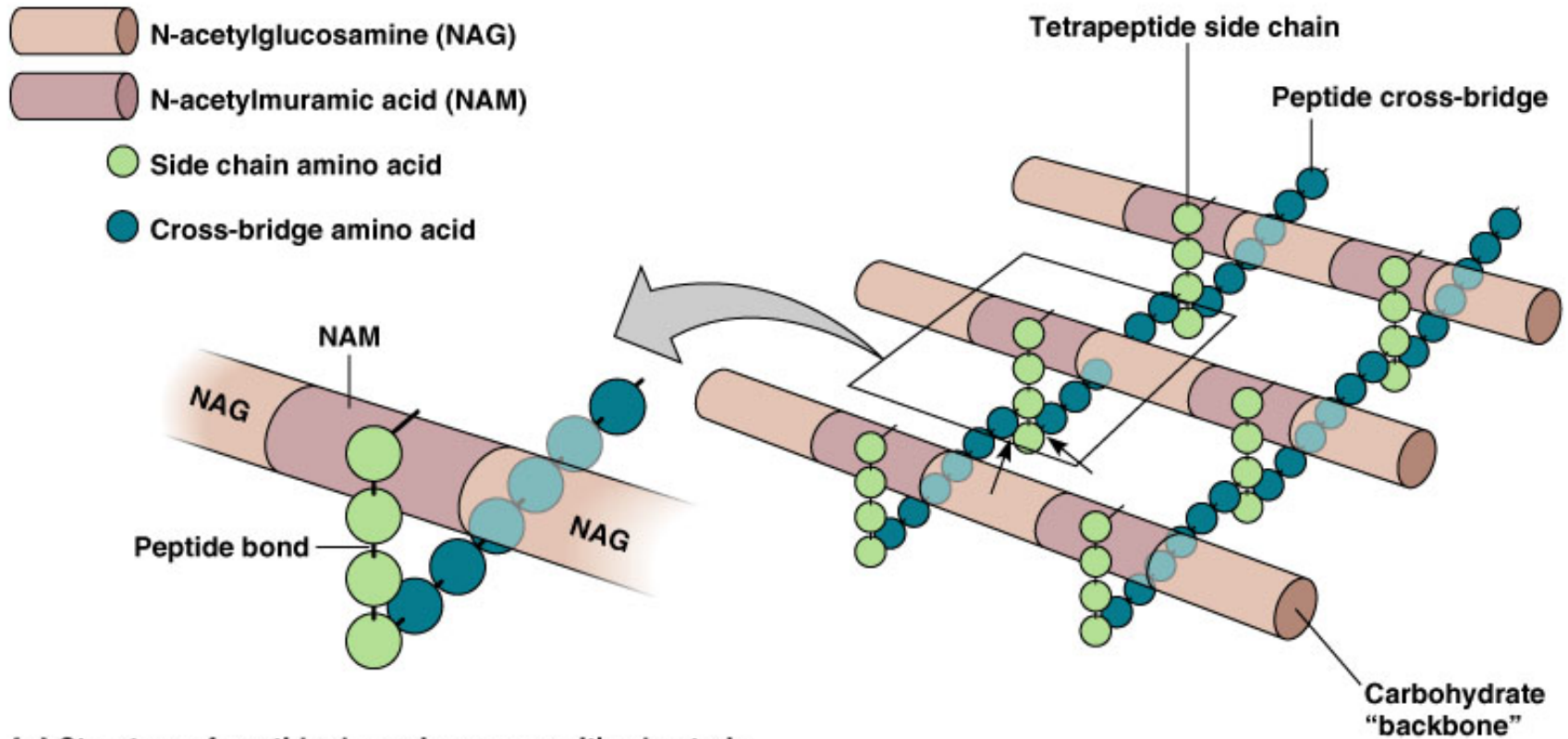
## Peptidoglycan

More than 40 sheets  
in **Gram positive** bacteria



Only 1-2 sheets  
In **Gram negative** bacteria

# Gram<sup>+</sup> Peptidoglycan

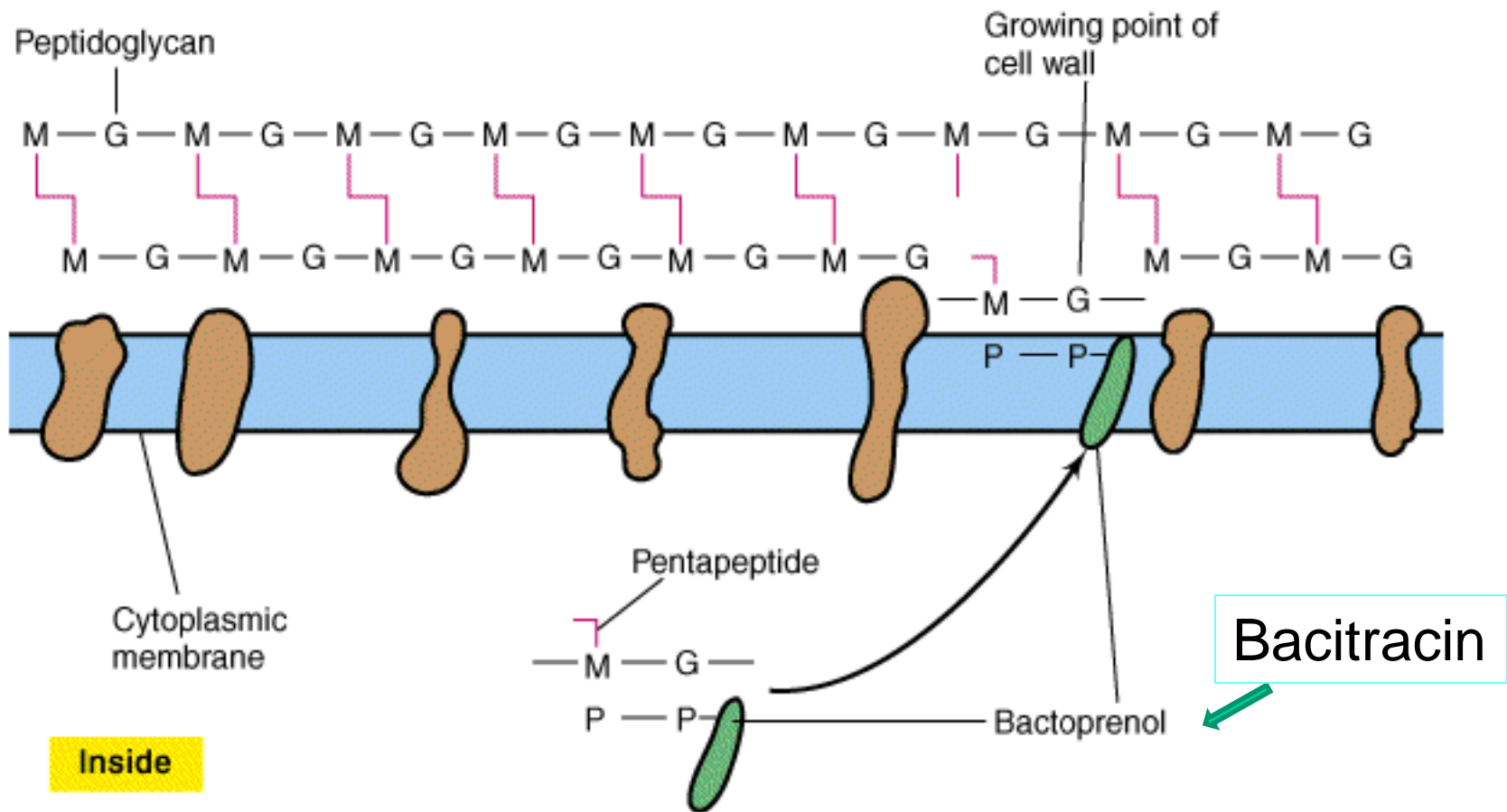


**(a) Structure of peptidoglycan in gram-positive bacteria**

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Outside

## Peptidoglycan synthesis



*Bactoprenol* phosphate transports NAM and NAG across the cell membrane in the synthesis of peptidoglycan

# Peptidoglycan synthesis and antibiotics

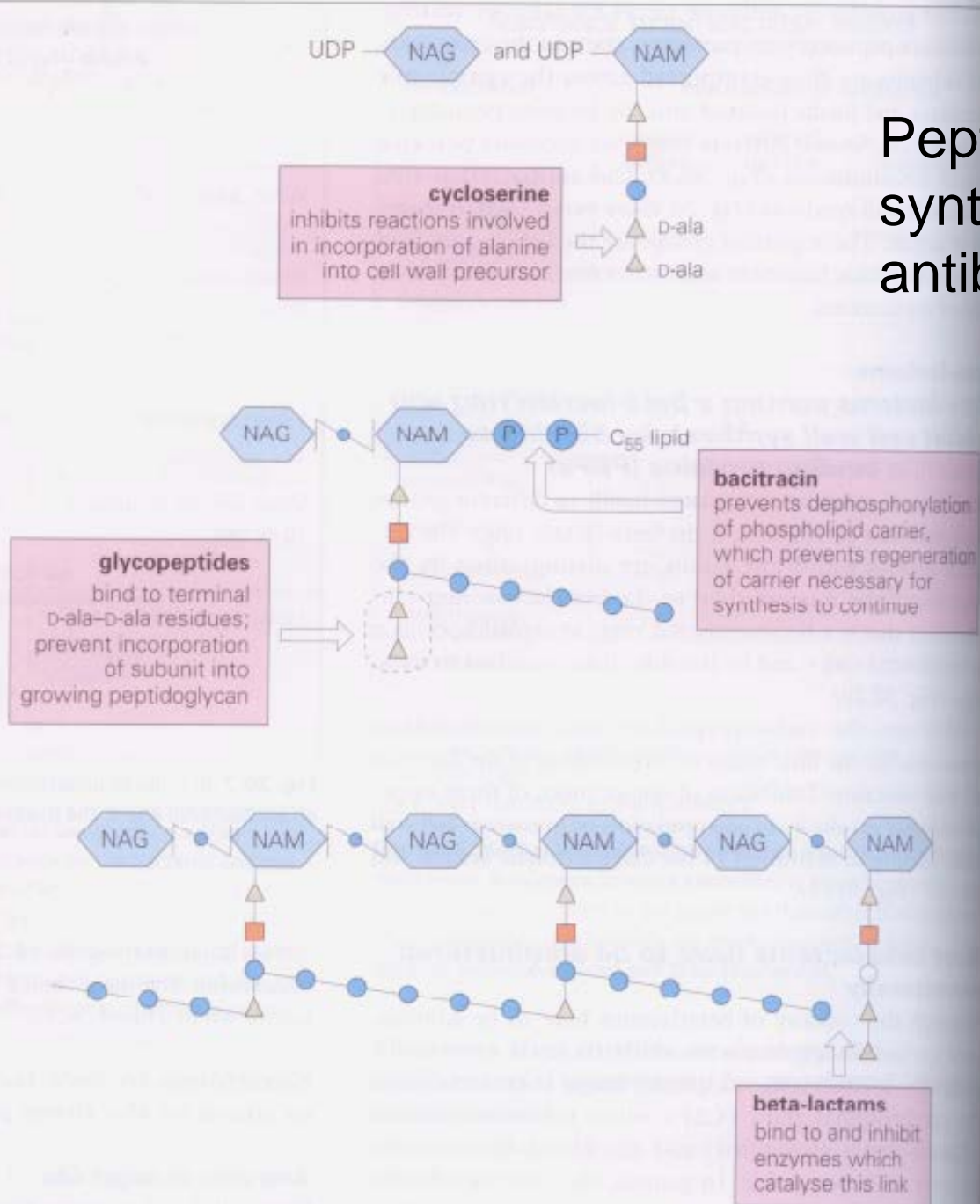
**cytoplasm**  
synthesis of cell wall precursors

↓

**cytoplasmic membrane**  
synthesis of new cell wall subunit attached to lipid carrier

↓

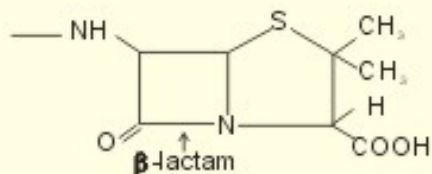
**cell wall**  
attachment of new wall unit to growing peptidoglycan



**Side chain:**

- Ampicillin
- Benzyl-
- Cloxacillin
- Phenoxymethyl-
- Ticarcillin

**General Structure Of Penicillin**



- $\beta$ -lactamase (penicillinase)
- Peptido-glycan matrix
- Penicillin-binding protein

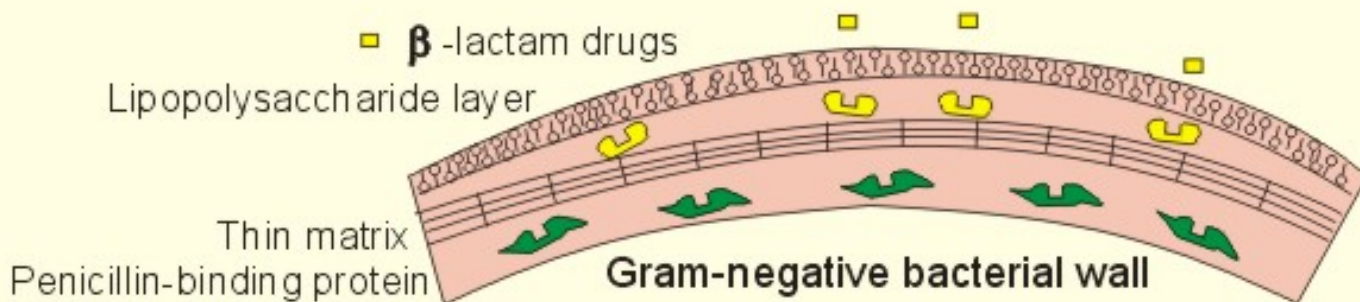
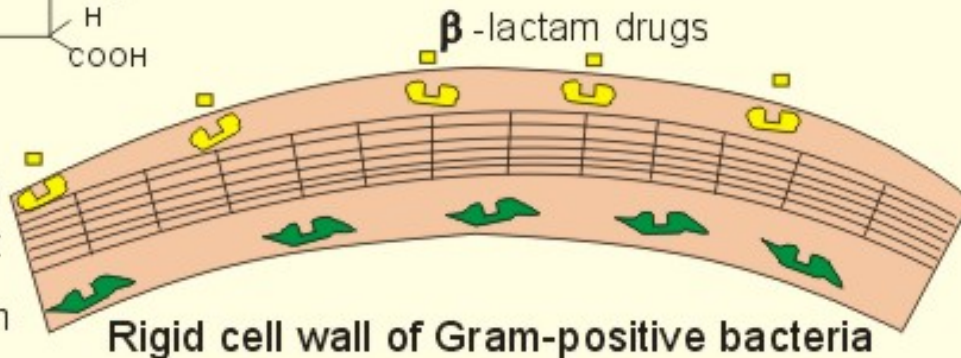
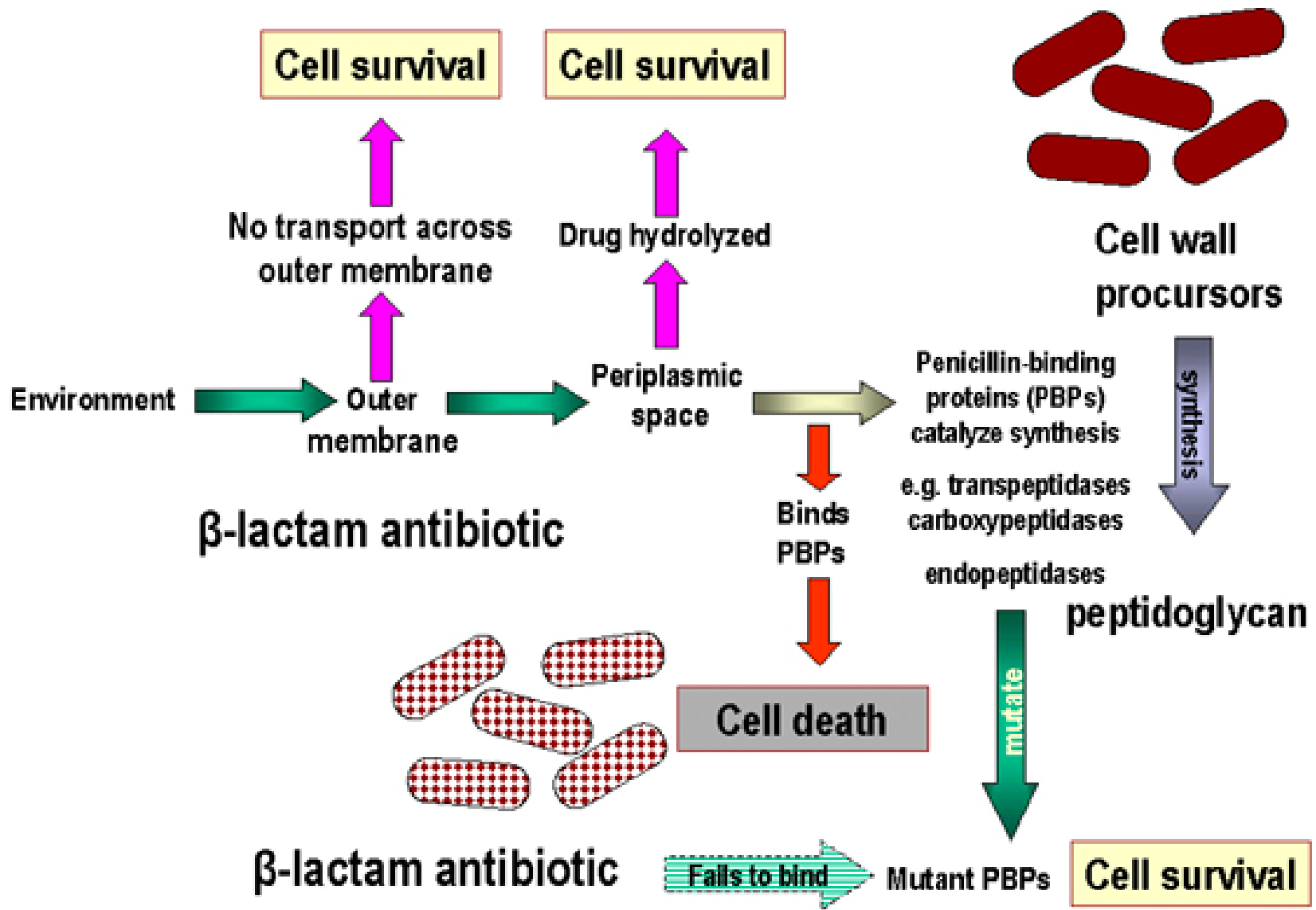


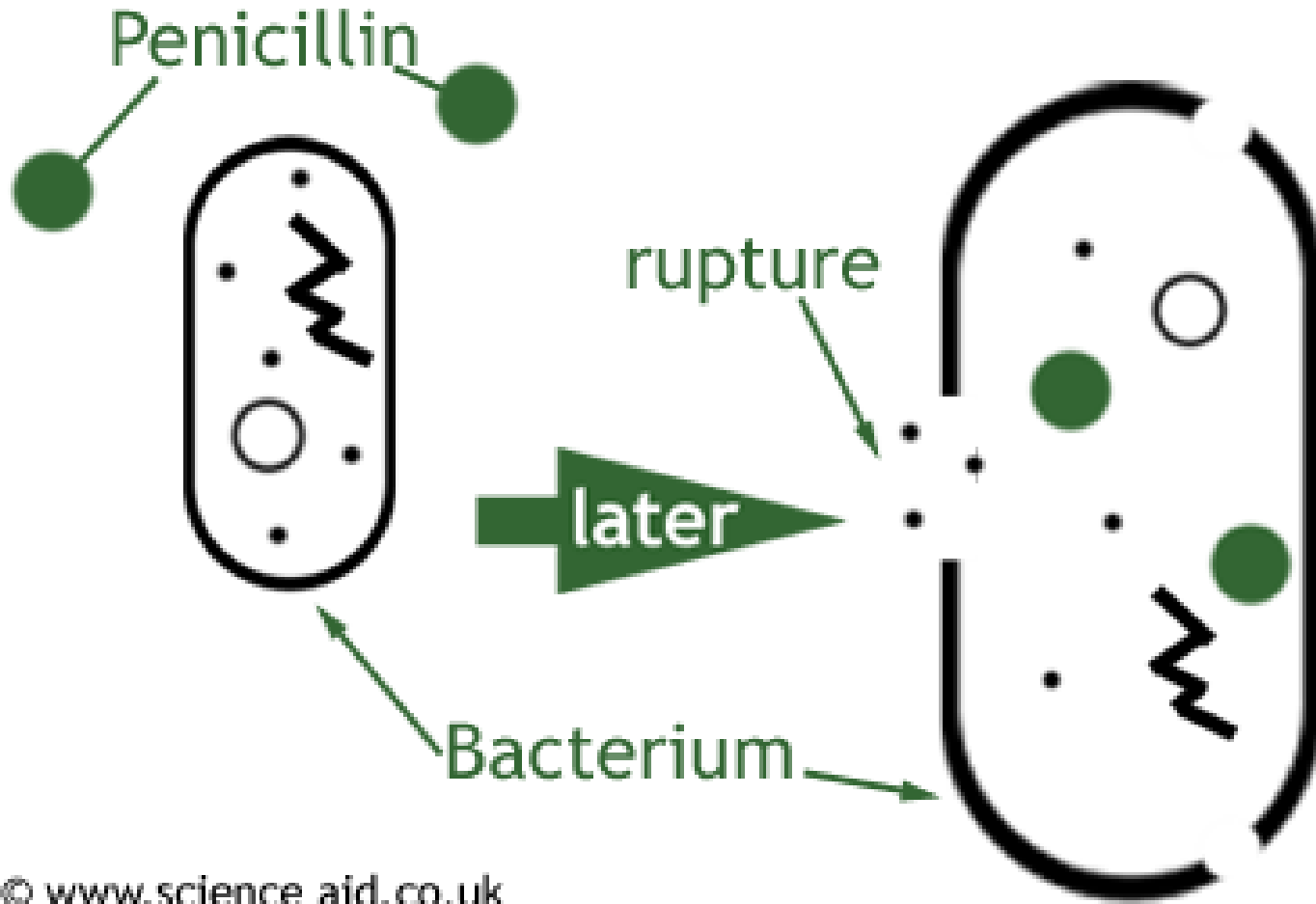
Fig 33-1

KMc





**GRAM-NEGATIVE BACTERIA**



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