

# Peptidoglycan

**Peptidoglycan** (PG, murein) is the basic polymer of the bacterial wall.

It makes up 30 % of the G+ wall and 10 % of the G– bacteria (archaea and mycoplasmas do not have it). Otherwise, it does not occur anywhere in nature.

## Composition of peptidoglycan

Polymeric glycan chains of **glucosamine** and **muramic acid** (ie. glucosamine linked by ether bond to lactic acid) – diagnostic significance (only in bacteria). Glycan chains are linked by oligopeptide chains (they form a rigid network surrounding the entire bacterium, thus maintaining its shape).

There are a number of variations (more than 100 structural types):

- Type A;
- Type B.

The presence of D-amino acids is a characteristic marker. Bound teichoic acids, polar and non-polar lipids.

Isolated PG shows biological activities:

- **pyrogenicity;**
- **antigenicity;**
- **complement activation.**

## Clinic

Inhibition of PG biosynthesis by  $\beta$ -lactam **antibiotics**, which bind to enzymes synthesizing PG interpeptide bridges, is important, causing bacterial cell lysis. **Lysozyme** acts as a bacteriolytic enzyme (regulates bacterial colonization), cleaving the  $\beta$ -1,4 glycosidic bond between N-acetylmuramic acid and N-acetylglucosamine.

## Links

## Source

- ws:Peptidoglykan

### related articles

- Gram stain
- Bacteria
- Bacterial cell wall

## Source

- JULÁK, Jaroslav. Introduction to medical bacteriology. 1st edition. Prague: Karolinum, 2006. ISBN 80-246-1270-4

Kategorie:Mikrobiologie

