Bacteria

Bacteria live every where most of them are saprophytes [Live on dead organic material] . present in soil and water . all bacteria are unicellular , very small in size about 0.5-1.5um and vary in shape

Type of bacteria according to shape.

1. Coccus bacteria : OO singular cocci diameter 0.8-1um .

Like:

A- Staphylococcus : irregular clusters Staphylococcus aureus +ve - Streptococcus: chain like Streptococcus viridans +ve

B- Diplococcus: pairs of cells Diplococcus pneumonia

C- Tetrad : four of cells arranged as square

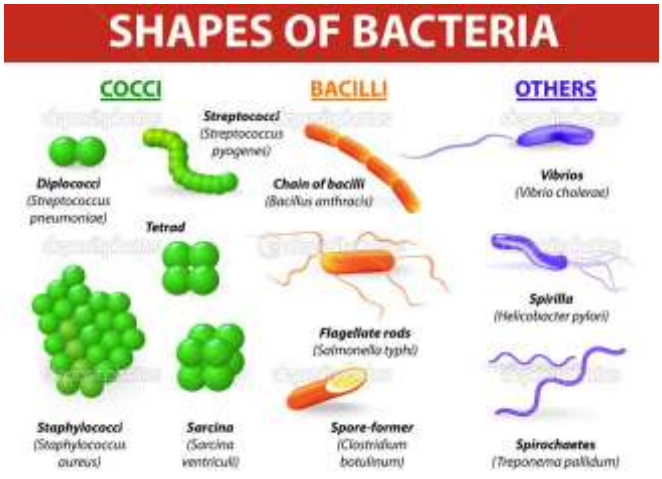
D- Sarccina : cubical arrangement with 8 cells or more .

E- Neisseria: kidney shape .

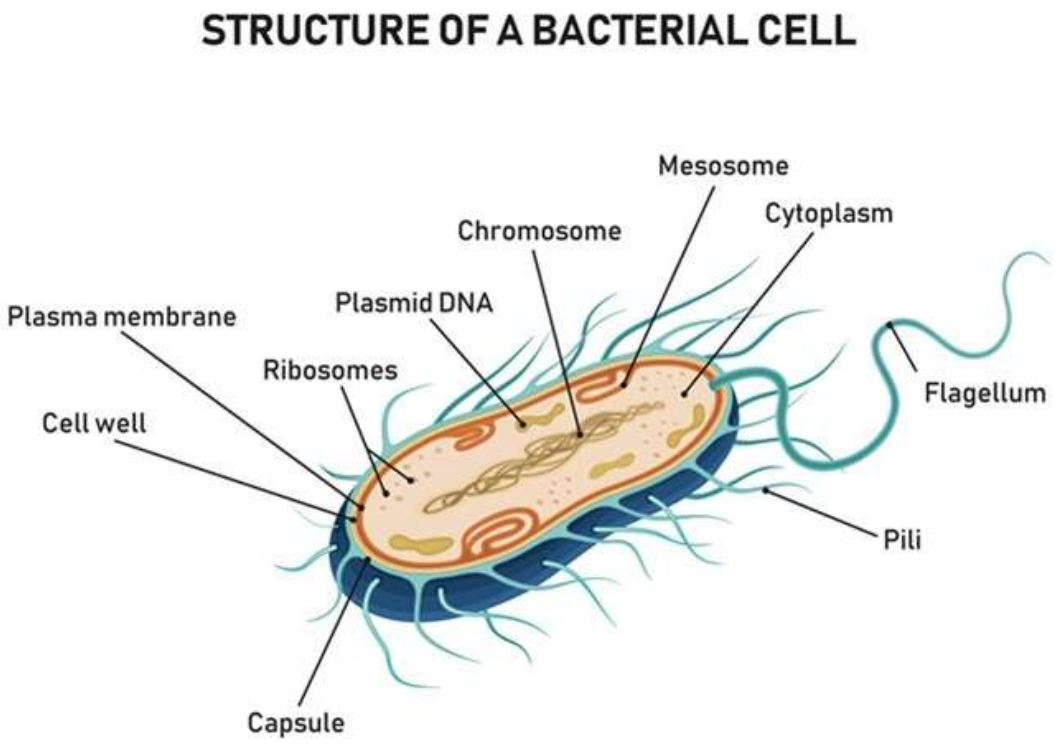
2. Bacillus bacteria : short Bacillus and Long bacillus Like- mycobacterium Tuberculosis

1. Vibraio : comma shape like vibrio choleria.

2. Spirochaete : Spirale Like Treponema pallidum cause syphilis .



The structure of bacteria



1- cell wall :

All bacteria species are surrounded by a rigid mucopeptid .

The function of the cell wall are .

A. give the shape of bacteria .

B. support and protection of internal structure .

C. Antigenic determinants .

Note: -Bacterial cell are divided in two groups according to chemical structure of cell wall .

1.Gram positive bacteria (G +ve).

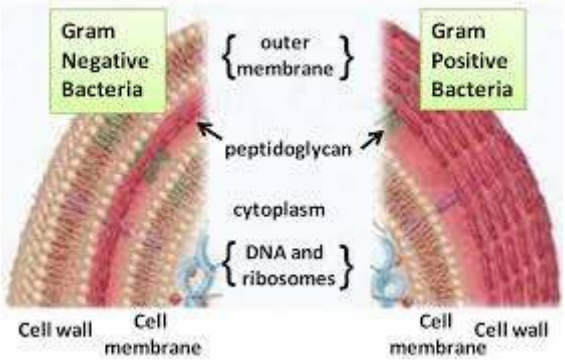
2.Gram negative bacteria(G-ve).

Gram positive bacteria (G +ve)bacteria have cell wall thicker than (G-ve) bacteria **?**

Because G +ve bacteria cell wall contain more peplidoglycone .

1 - G +ve bacteria: purple blue in color because it is contain less Lipid (4-11%). There four it takes the first color stain.

2- Gram Negative bacteria : G-ve bacteria : Red in color because contain more Lipid in cell wall (11-22%) so it takes the second stain .



1-cell wall growth

2-cell septation

3- sporulation

4-Trans formation.

<u>2- Cytoplasmic membrane</u> :

Is Located under cell wall, it composed from phospholipid and protein . The functions of it are:

1-Selective permeability .

2-bacterial electron transport .

3-Enzyme biosynthesis activity .

4- mesosome (an in fold of the outer membrane for respiration)

3.Capsule :

Some bacteria have a mucous capsule around the cell wall example: klebsiella capsule can be Seen by light microscope after special stain of capsule.

The function of capsule:

1- Protection: prevent drying of bacteria by binding with water molecules .

2-inhibit bacteriophage attachment .

3-Antiphagocytosis /in hibit engulfment of bacteria by white blood cell .
NOTE:- (Virulence , bacteria that contain capsule more virulent than bacteria don't have capsule) .

4. Flagella: It's helical appendage originated from cytoplasmic membrane all bacteria have flagella are motile

Some species for example Nisseria gonorrhoea have hair like processes Called Pill the functions of pili are

1. Sex pilus : serve as part of entry of genetic material during bacterial meeting.

2. Attachment to host cell , play role in infection. Pili are shorter than flagella as well as it is more than flagella in number .