**Bacteria   
(staining of bacteria)**

**Morphology of bacteria:**

1. Spherical or round called: cocci
2. Rod called: bacilli
3. Coiled or spiral.

**Arrangements of bacteria:**

Cocci:

* Single ---🡪 coccus
* Pairs of cocci ---🡪 diplococci
* Chain of cocci ---🡪 streptococci
* Cluster of cocci ---🡪 staphylococci
* Packet of 4,6,8 cocci ---🡪 micrococci

Bacilli:

* Single ---🡪 bacillus
* Pairs ---🡪 diplobacilli
* Chains ---🡪 streptobacilli
* Narrow bacilli ---🡪 fusiform
* Very short bacilli---🡪 cocco bacilli

Spiral bacteria:

* One rigid curve ---🡪 spirilla
* Several curves (waves)---🡪 spirochaetes
* Short, curved bacteria ---🡪 comma shape

**Staining of bacteria**:

Stain (dye):It is a salts in which one of the salt ions (-ve or +ve) is colored.

Ex. : Methylene blue.

Basic dye: if the color is in the +ve ion of the dye.

Acidic dye: if the color is in the -ve ion of the dye.

**How to make bacterial smear?**

* The slide we use for doing the smear should be clean (no dust or oil on top of it).

Why?

* Place the slide on the slide warmer:

1. To kill the bacteria.
2. Fix the bacteria on the slide by coagulate the protein substance of the bacterial cells.

**Gram stain:**

Consist of 4 reagents:

1. Crystal violet: primary stain.
2. Iodine: mordant.
3. Alcohol or acetone: decolorizer.
4. Safranin: counter stain.

* We will see in the slide:
* Violet bacteria: gram +ve bacteria.
* Red bacteria: gram -ve bacteria

**Spore stain:**

Steps for staining spore are:

1. Malachite green: primary stain (strong stain).
2. Apply heat (water bath) and leave it for 5-10 min.
3. Safranin: counter stain.

* We will see in the slide: Red bacilli with green spores.

**Capsule stain:**

It is called Negative stain

Because the capsule mad of inert polysaccharide (uncharged) so it will not stained. Only the background and the bacteria will stain.

To stain the capsule we use:

Black india ink

OR

Nigrosin + safranin.

* We will see in the slide:

Dark background (purple) with round uncolored capsule and red bacteria inside the capsule