**Cultural characteristics**

To study the macroscopic characteristics of pure culture on a solid

medium, the following points have to be considered in describing a

colony

-Size: measured in mm.

-Shape: spindle, circular, filamentous irregular.

-Elevation: flat, raised, convex, umbonate .

-Margin: entire, lobate .

-Consistency: dry, mucoid .

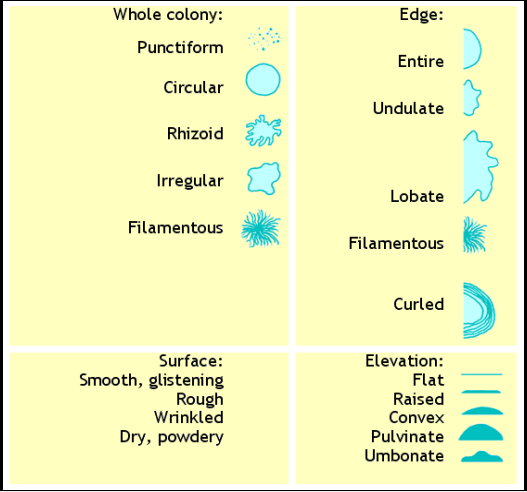
-Surface texture: smooth, rough.

-Color or pigmentation: yellow, green.

-Optical density: opaque, transparent, translucent.

-odour: bad , musty .

-Changes in the inoculated media( hemolysis ) .





**Motility of bacteria**

There are 2 types of movements:

**True movement:** the bacteria can change its position by means of flagella and it is directional Locomotion often quite rapidly.

**Brownian movement** : is oscillatory movement possessed by organisms or other particles suspended in a fluid and it caused by the continuous rapid oscillation of molecule of the fluid , such movement is irregular and non directional ( up and down , back and forth ) but not change position with respect to other objects around them .

This is not movement the microorganism considered non – motile

**Study of motility can be carried out by:**

A- **microscope** :

1. Wet – mount method.
2. Hanging drop method.

B-  **culture media :**

1. Graigies method (semi – solid media called SIM) cultivated by stabbing technique.

2. Swarm movement on solid media.

Flagella stain: It is special stain for motile bacteria in order to stain the flagella which are the organs of locomotion.

**Wet – mount method:**

 Take clean slide, place loopful of broth culture in the center of slide.

 Cover the loopful of broth with cover glass.

 Place the slide on the microscope stage, cover glass up.

 Examine under low and high power objective lens.

Note: lowering the condenser to reduce the light when you exam motility of bacteria.

**Hanging drop method:**

 Take clean cover glass.

 Gently shake the broth culture of bacteria until it is evenly suspended.

 Sterilize the wire loop, remove the cap of the tube and take up a loopful of culture. Be certain the loop has cooled before inserting it into the broth, close and return the tube to the rack.

 Place the loopful of culture in the center of the cover glass, sterilize the loop and put it down.

 Take clean hollow – ground slide, place a thin film of paraffin around the concave well on the slide.

 Hold the hollow – ground slide inverted with the well down over the cover glass, and then press it down gently so the paraffin adheres to the cover glass.

 Now turn the slide over the drop of culture hanging in the well.

 Place the slide on the microscope stage cover glass up, examine with low and high power objective lenses.

**Graigies method (semi – solid medium, SIM(**

Flaming the straight wire of the loop.

Take with cooled loop small port of culture to inoculate it in a tube of semi – solid medium (SIM) (Sulfide Indole motility medium, making a single stab down the center of the tube to a bout half the depth of the medium .

Incubate under the conditions favoring motility.

Examine at intervals, e.g. after 6 hr and 1, 2 and 6 days when incubating at 37 Cº.

Motile bacteria give diffuse growths that spread throughout the medium rendering it slightly opaque.

Non- motile bacteria generally give growths that are confined to the stab – line and leave the surrounding medium clearly transparent.