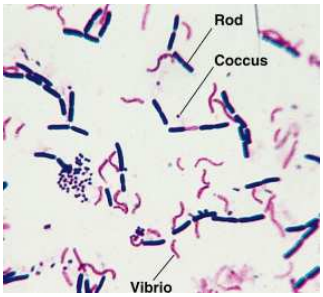
Dyes Used for Staining

- ***Basic Dye***
  - **The color is in the *positive* ion**
  - **Examples:**
    - **Crystal violet**
    - **Methylene blue**
    - **Malachite green**
    - **Safranin**
- ***Acidic Dye***
  - **The color is in the *negative* ion**
  - **Examples:**
    - **Eosin**
    - **Acid fuchsin**
    - **Nigrosin**
    - **India ink**

Bacteria are slightly negatively charged at pH 7

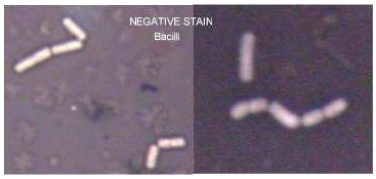
- ***Basic Dye***
  - **Therefore, the colored positive ion in a BASIC dye is**
  - **Attracted to the negatively charged bacterial cell**
- ***Acidic Dye***
  - **The negative ion is**
  - **Not attracted to most bacteria**
  - **It is repelled by the negatively charged bacteria**
  - **Instead, the stain colors the background**
  - **Called: negative staining**

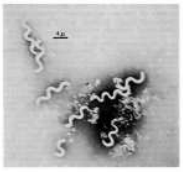
- ***Acidic Dye***
  - **This stain is useful for observation of**
    - **Cell shapes**
    - **Cell sizes**
    - **Capsules**
  - **Because cells are made highly visible**
  - **Against a contrasting dark background**



Basic Dye, *Gram Stain*

Rods, cocci: purple
Vibrios: pink/red





Note: India ink is composed of particles too large to enter the cell, so they have also been called negative stains.