SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr M.G.R Medical University, Chennai

DEPARTMENT OF CARDIO PULMONARY PERFUSION CARE

TECHNOLOGY

COURSE NAME: CLINICAL MICROBIOLOGY

UNIT : 1

TOPIC : STAINING & ITS TYPES

FACULTY NAME: MITHRA V

STAINING (DEFINE)

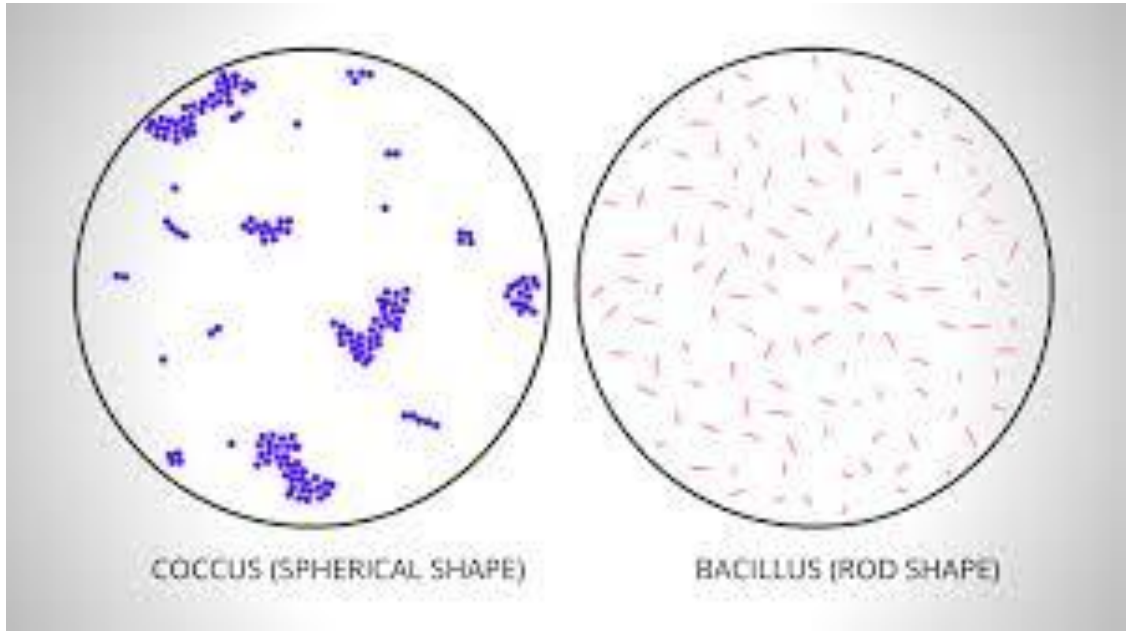
- Substance that adheres to a cell, giving the cell color.
- Used to enhance & contrast a biological specimen at the microscopic level.
- Cytoplasm is transparent - necessary to stain - before they can be viewed.
- Stains and dyes - used to highlight the specimen
- Different stains have different affinities for different organisms

BIOLOGICAL STAINS

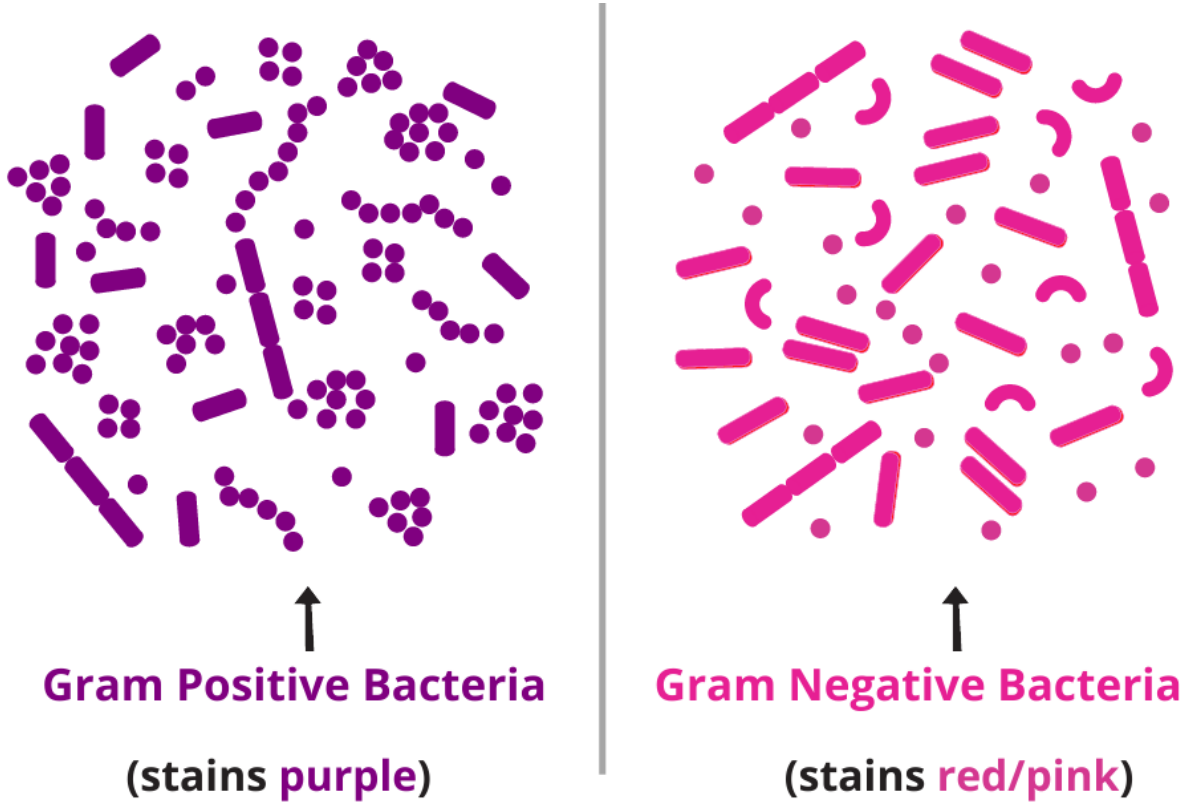
- **Acridine orange** - nucleic acids - to analyse DNA molecules.
- **Coomassie blue** - Stain the proteins blue.
- **Crystal violet** - Gram's staining - Stain bacterial cell wall in purple colour.
- **Ethidium bromide** - Red-orange fluorescent stain to the DNA
- **Iodine** - Mordant in Gram's staining.
- **Methylene blue** - Used to stain animal cells
- **Safranin** - Gram's staining and endospore staining.

TYPES OF STAINING

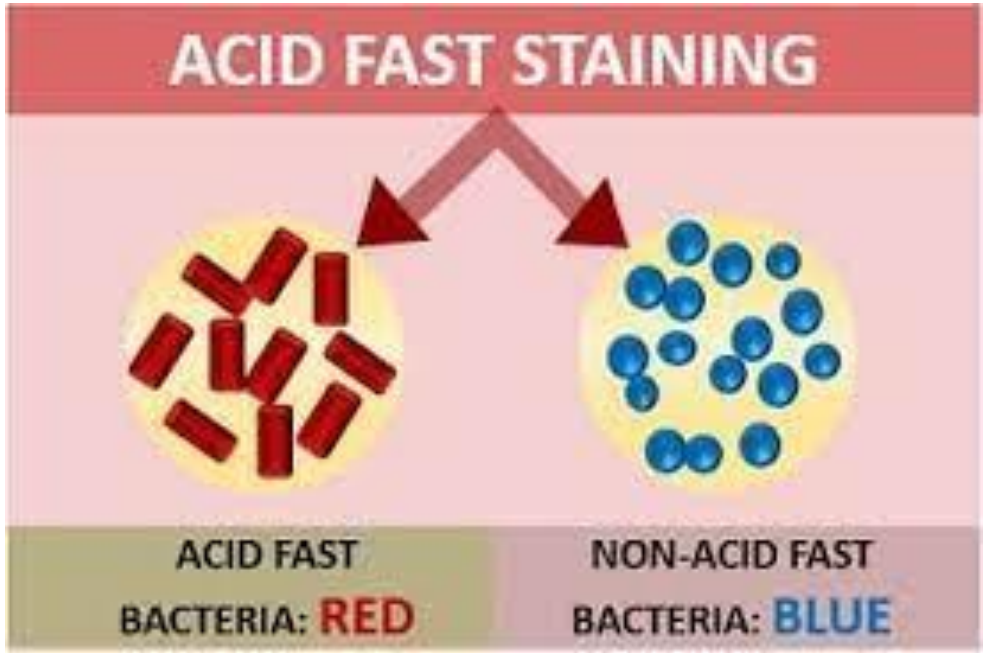
- **SIMPLE STAINING**
- Uses only one dye to determine cell size, morphology and arrangement.
- Crystal Violet, Methylene Blue, Safranin



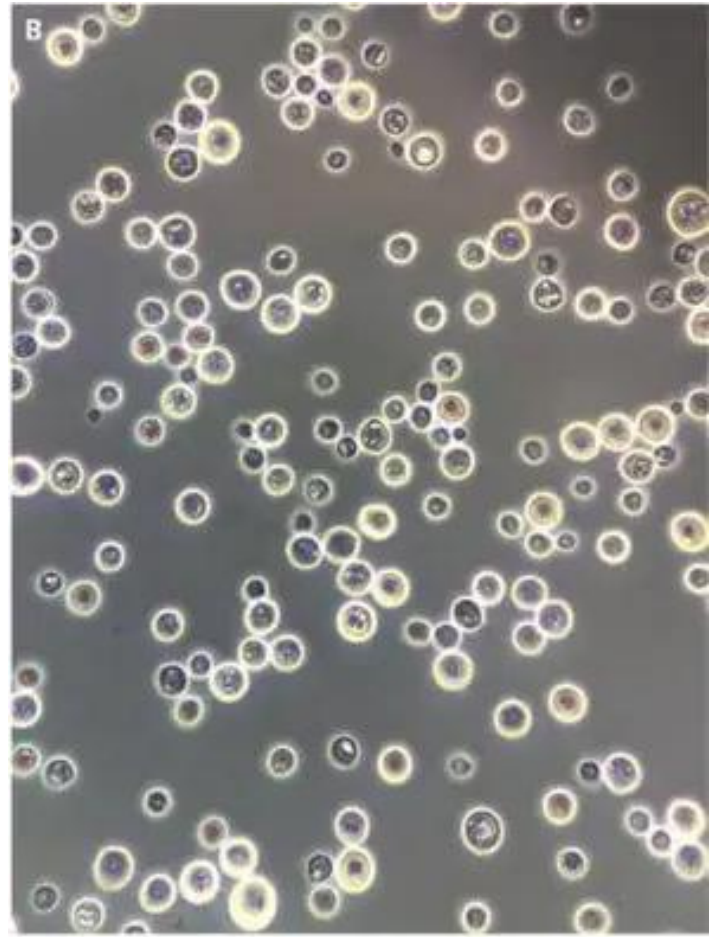
- **GRAM'S STAINING**
- Common differential stain - Gram positive or negative bacteria - reflects cell wall properties.



- **ZIEHL-NEELSEN STAINING:**
- Differential stain - identify acid-fast bacteria such as members of the genus *Mycobacterium* and non – acid fast organisms
- Developed to detect the bacterial species that causes tuberculosis.

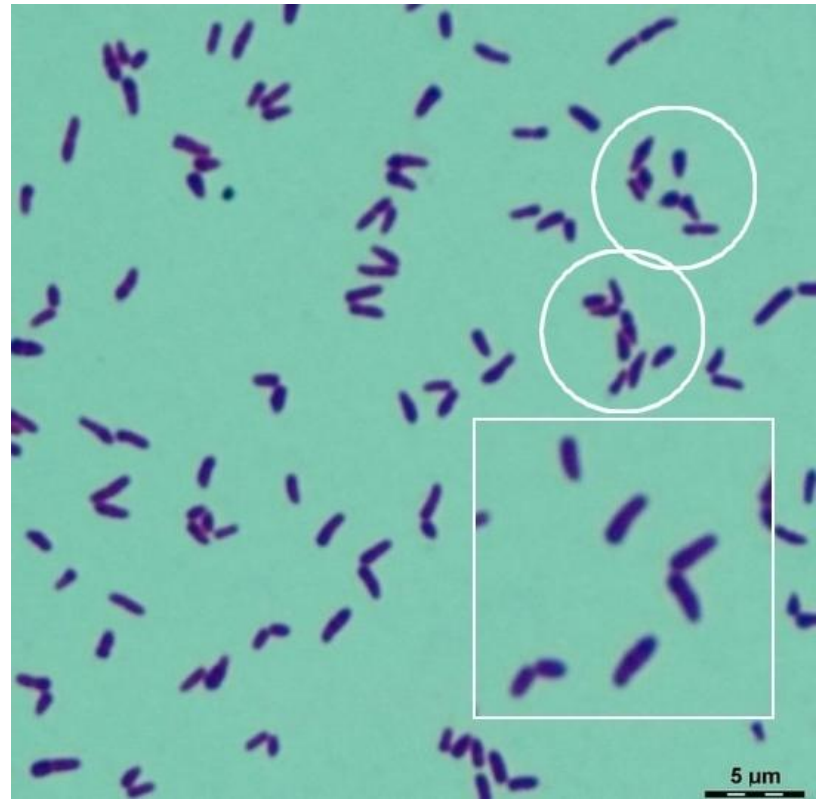


- **CAPSULE STAIN (NEGATIVE STAINING):**
- Microscopic technique where the background is stained, leaving the object (like bacteria or viruses) unstained.
- Visible against a dark background.
- It uses acidic stains with negatively charged chromophores, which are repelled by the negatively charged cell surface.
- Examples of negative stains include Nigrosin and India ink.

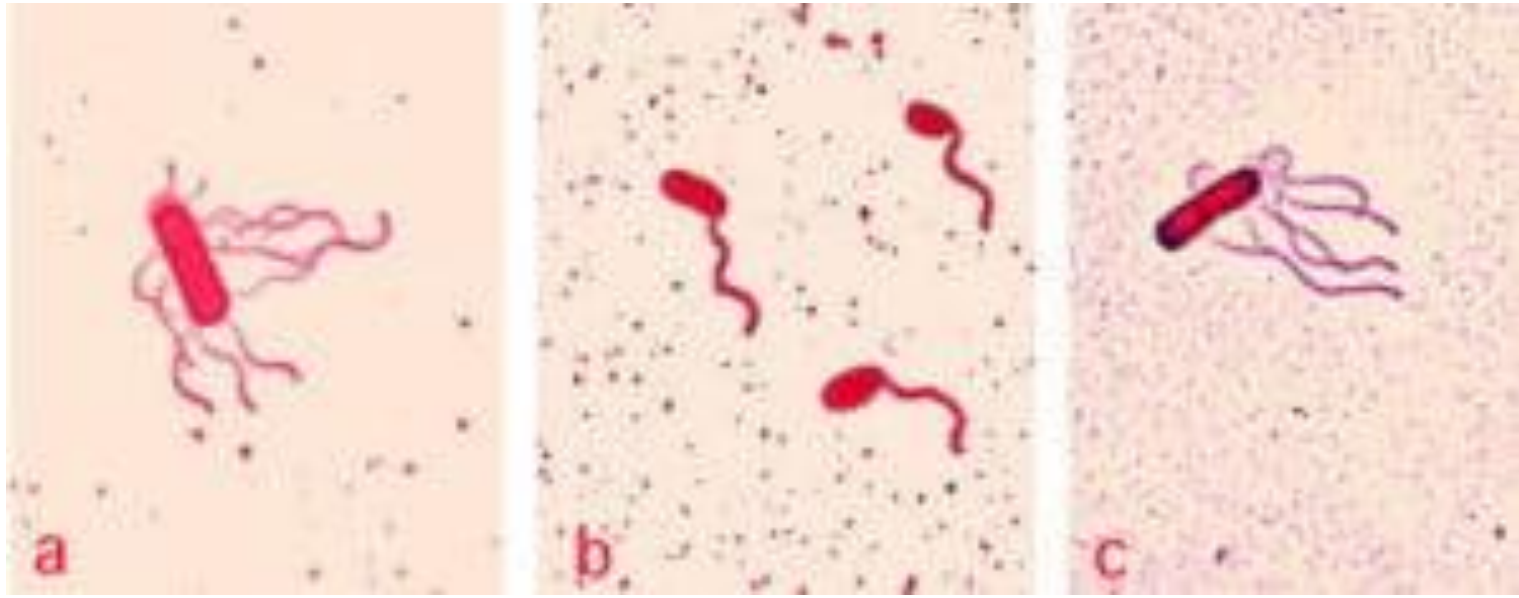


ALBERT STAINING:

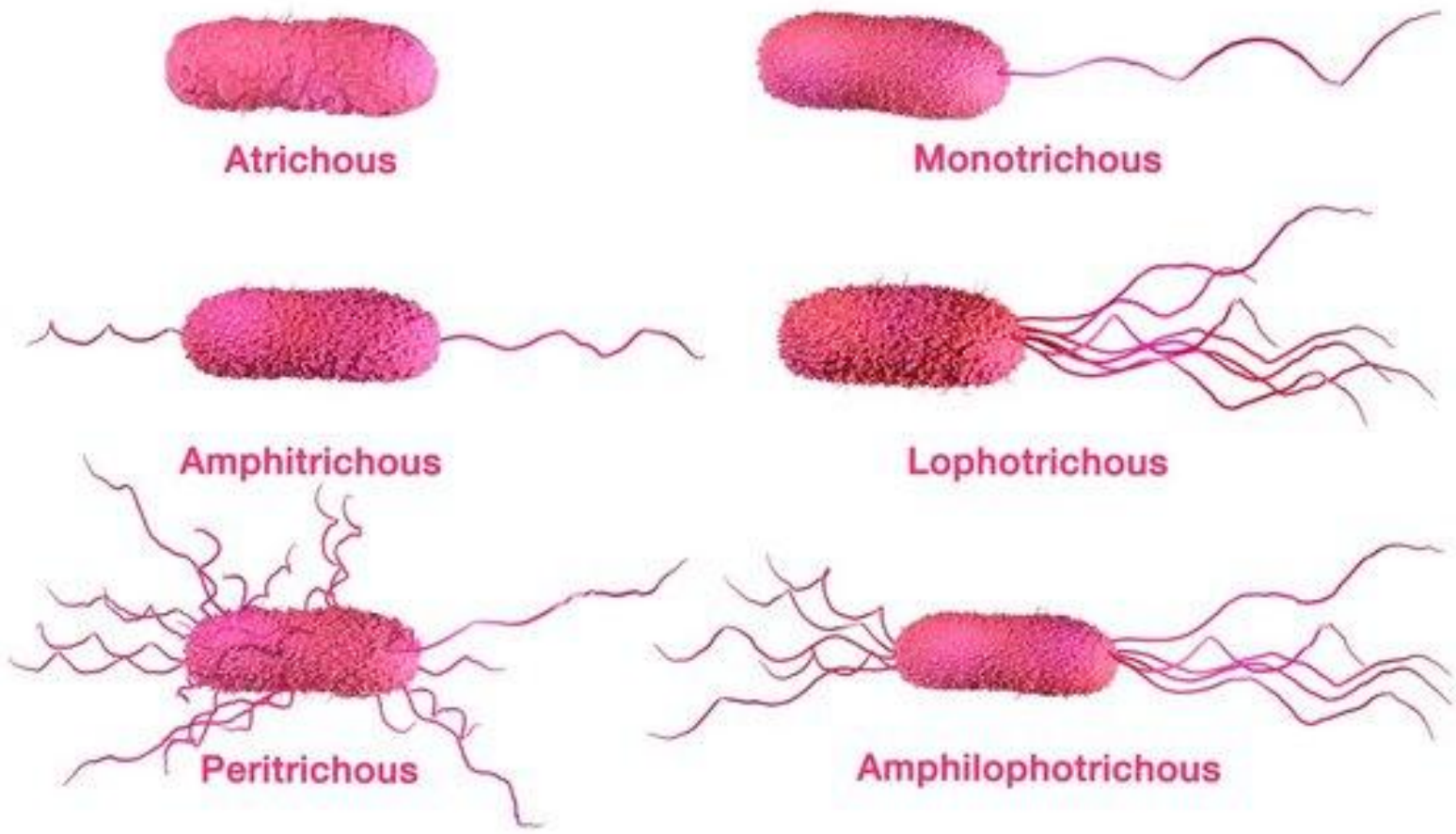
- Used to identify and characterize bacteria, particularly *Corynebacterium diphtheriae*, the bacterium that causes diphtheria.
- Used to demonstrate and detect the presence of metachromatic granulated bodies of *Corynebacterium diphtheriae*



- **FLAGELLA STAIN**
- Used to see bacterial flagella.
- Silver nitrate makes flagella appear larger.
- Can be used to determine arrangement of flagella for identification.



TYPES OF FLAGELLA



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THANK YOU