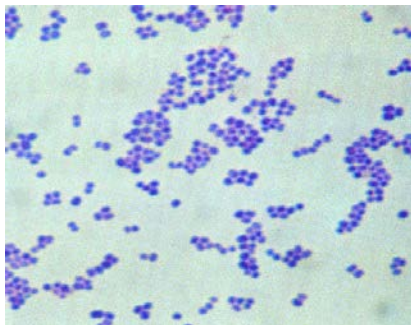


## MORPHOLOGICAL STUDIES ON BACTERIA OF VETERINARY IMPORTANCE

### *Staphylococcus aureus*

- Gram positive, Spherical cocci .
- Measuring 0.8 to 1.0 um in diameter.
- Arranged characteristically in 'Grape like' clusters. Cluster formation is due to cell division occurring in more than one plane with daughter cells remaining closer together.
- Non-spore forming,
- Non-motile,
- Non-capsulated (Exceptions rare strains)



*Staphylococcus aureus*



*Streptococcus pyogenes*

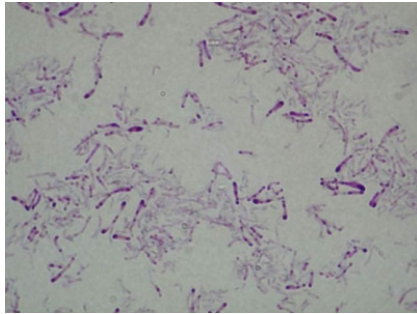
### *Streptococcus pyogenes*

- Gram-positive cocci (In older cultures decolorized).
- *Streptococcus pyogenes* is a coccus 0.5 um to 1 um in size arranged in chains, chains made up of many diplococci. (Division in one plane.)
- Chains are shorter in artificial medium.
- Length of chain is increased by the presence of specific antibodies and is decreased in the absence of abs.
- Non-motile, Non- sporulating.
- Capsule producing strain - *Streptococcus epidemicus*.

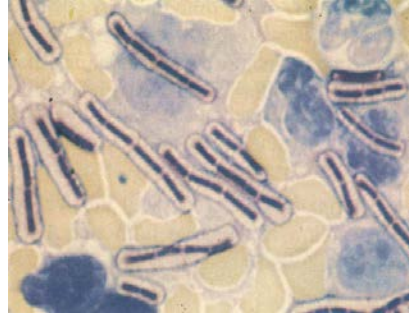
### *Corynebacterium bovis*

- Gram-positive slender rods with a tendency to clubbing at one or both ends;
- Non-sporing,
- Non-motile,
- Non-capsulated,
- Non-acid fast,
- The granules are more strongly Gram positive than the rest of the bacterial cell.
- Stained with Loeffler's methylene blue, the granules take up a reddish purple color and hence they are called metachromatic granules. They are called as **volutin or Babes Ernst Granules**, often situated at the poles of the bacilli and are called polar bodies.

- Special stains, such as Albert's, Neisser's and Ponder's have been devised for demonstrating the granules.
- Stained smears from animal tissues often reveal groups of cells in parallel (Palisades) or cells at sharp angles to each other (**Chinese letter** or Cuneiform arrangement).



*Corynebacterium bovis*



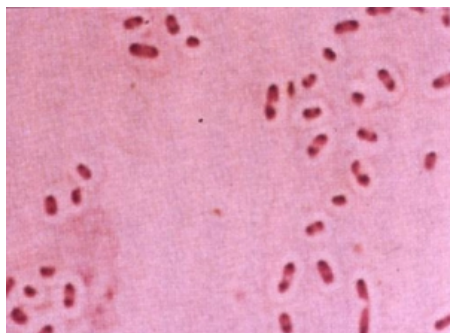
*Bacillus anthracis*

#### ***Bacillus anthracis***

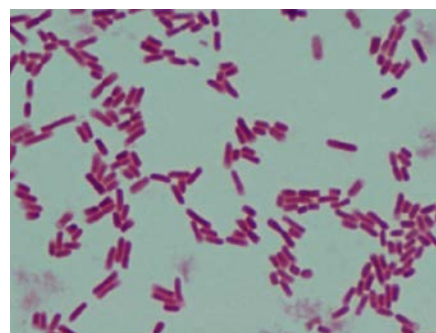
- Largest pathogenic Bacteria, 1-1.5 X4-8 u in size.
- Rod shaped bacilli with truncated ends , Arranged in chain 'Bamboo' like appearance
- Gram Positive,
- Non-motile,
- Capsulated(D-glutamic acid-polypeptide),
- McFadyeans reaction,
- Spore forming.

#### ***Pasteurella multocida***

- Small coccoid rod .
- Measuring 0.25-0.4 u by 0.6-2.6u.
- Pleomorphic.
- Gram negative rods with characteristic '**Bipolar**' appearance in the stained smears.
- Possess capsule (Hyaluronic acid) when recently isolated from the disease process.On subculturing loses the capsule.
- Non-sporulating,
- Non-motile.



*Pasteurella multocida*



*Escherichia coli*

### **Escherichia coli**

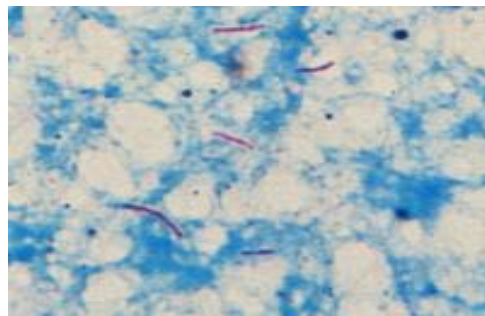
- Gram negative rods, measuring 1-3µm x 0.4-0.7µm in size varying from coccid bipolar to filamentous forms, occurs singly or in short chains.
- Fimbriae are present in 80% of the strains,
- Motile by means of peritrichous flagella,
- Non-capsulated, few extra-intestinal strains possess polysaccharide capsule,
- Non-spore forming.

### **Salmonella Pullorum**

- Gram-negative short plump rods, measuring 0.4-0.6µm x 0.8-1.6µm in size.
- Occur singly or in short chains,
- Non-motile,
- Non-spore forming,
- Non-capsulated, Long filamentous forms occur.



*Salmonella Pullorum*



*Mycobacterium tuberculosis*

### **Mycobacterium tuberculosis**

- *Mycobacterium tuberculosis*: Slender rod, 0.2-0.6µm X 1.5-4.0µm in size.
- Non-spore forming.
- Non-motile.
- Extremely pleomorphic.
- Acid fast (resist acid fast decolourization-due to waxy substances which prevents the ready absorption of dyes.)

### **Exercise**

Q1. Prepare the smear stain with Gram's staining and write the shape, size, arrangement, and staining reaction of the given bacteria.

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