Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

Subject: Botany

Paper Code: BOC 101

Paper Title: Biodiversity I-(Microbes, Algae, Fungi, Bryophytes)

Unit: 01

Module Name: Eubacteria

Module No:12

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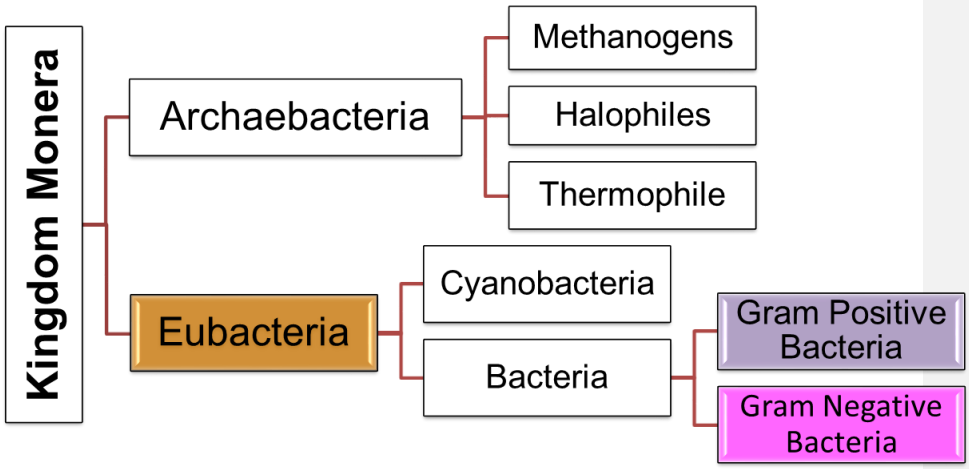
Classification of kingdom Monera



Eubacteria is also known as True Bacteria. It is unicellular organism. They have simple organization they found everywhere on the earth .They are aerobes and anaerobes having heterotrophic or autotrophic, parasitic mode of nutrition.

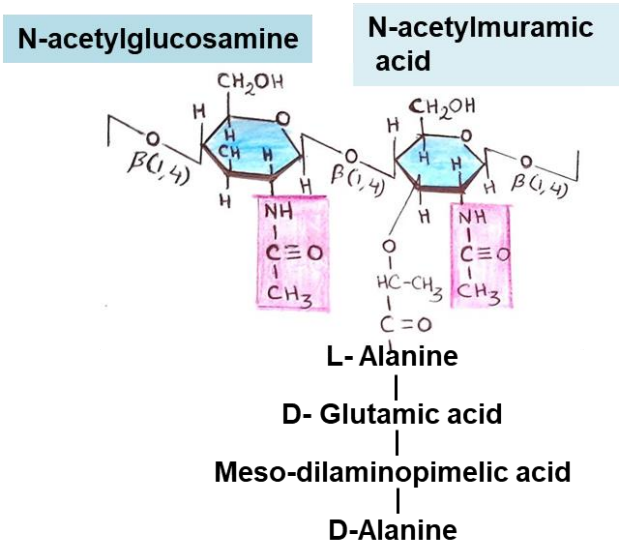
Size: 0.5-2.0 µm in diameter, 2-10 µm in length

Shape: Coccus, Bacillus, Vibrio, Spirillum, etc.

Structure:

Cell wall:

- Peptidoglycan is present with Muramic acid.
- It Provides Structural integrity.
- It also provide Site for attachment of bacteriophage.
- It Regulate in and out movement of substances.



Cell Membrane:

It is made up of Membrane lipid of Eubacteria are ester linked, unbranched aliphatic / isoprenoid side chains containing D glycerol phosphate

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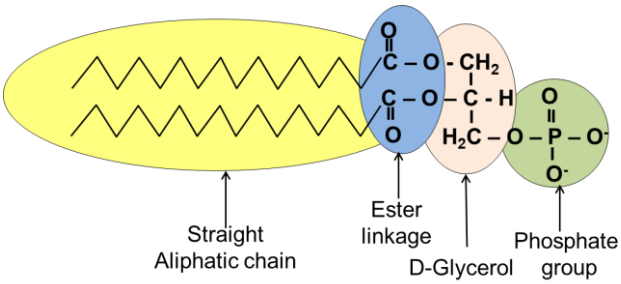


Cell content:

Membrane-bound cell Organelles are **Absent**

Genetic Material: It is Double stranded circular DNA, Plasmid is present and it has Antibiotic resistance nature.

Protein Synthesis: First AA is **Formyl Methionine.** Thymine in TΨC arm of t-RNA.

Other characteristics are as follow:-

- Introns are **absent.**
- Exhibit both **Glycolysis** and **Kreb's cycle.**
- **Nature:** Pathogenic / Non-Pathogenic.

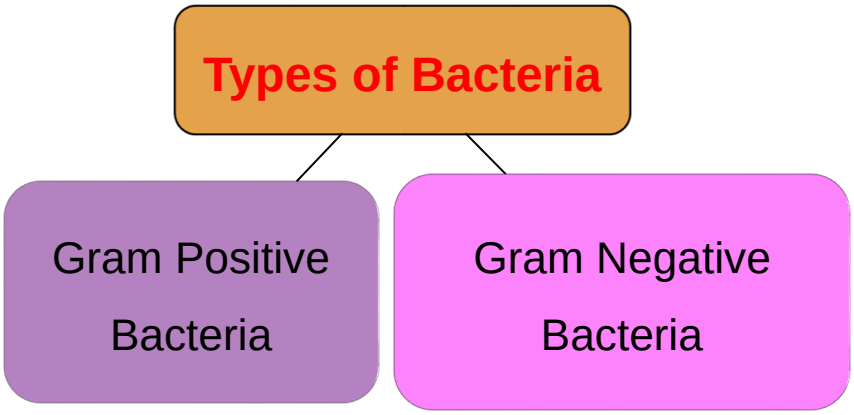
Growth and Reproduction:

1. Asexual-

- Binary fission, Budding, Fragmentation,
- Capable of producing Spore which remain dormant in unfavourable conditions.

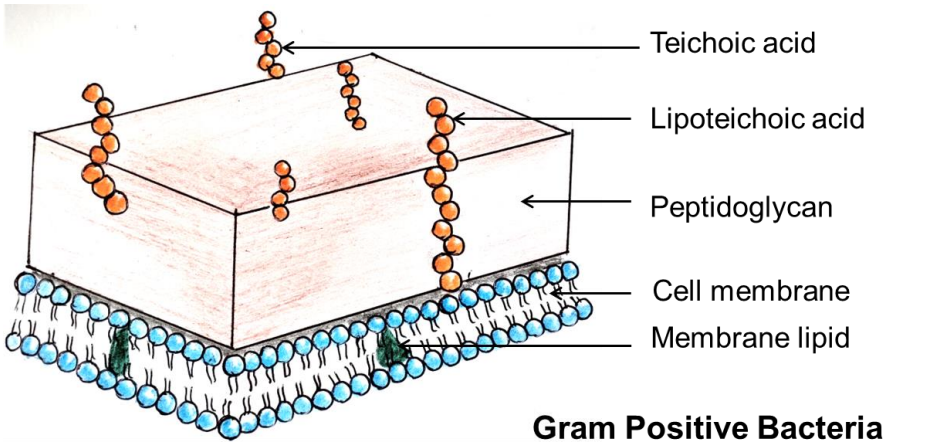
2. Genetic recombination-

- Transformation, Conjugation & Transduction.

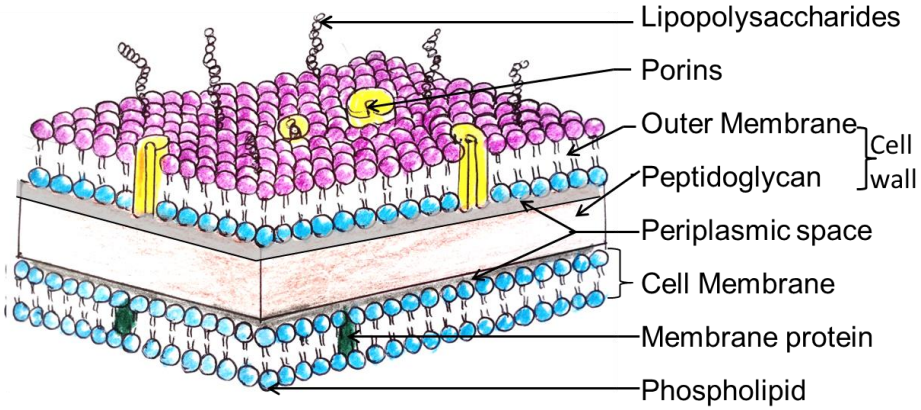

Types of Bacteria
Gram Positive Bacteria
Gram Negative Bacteria

Characteristics	Gram Positive Bacteria	Gram Negative Bacteria
Gram reaction	Retain Crystal Violet dye appear **Dark Violet / Purple**	Counterstain (Saffranine) appear **Red**
Cell wall	**Single layered,** Thick, Smooth (15-20nm)	**Two layered,** Thin Wavy (7.5-12nm)
Peptidoglycan	Multi-Layered	Single Layered
Teichoic acid & Lipoteichoic acid	Present	Absent
Periplasmic space	Absent	Present
Mesosome	Quite Prominent	Less Prominent
Outer Membrane (LPS and Porins)	Absent	Present
Flagellar structure	**2 rings** in basal bodies	**4 rings** in basal bodies

Toxin produced	Exotoxins	Endotoxins
Resistance to Drying	High	Low
Examples	Clostridium, Bacillus, Staphylococcus, Streptococcus, Lactobacillus.	E. coli, Rhizobium, Pseudomonas.



Gram Positive Bacteria



Gram Negative Bacteria

Economic Importance of Eubacteria

1. Integral role in Human Gut.
2. Used in Preparing Antibiotics and Medicines.
3. Useful in Agriculture- Soil Fertility, Nitrogen Fixation, Bio- Pesticides etc.
4. Causes Human diseases.
5. Spoilage of food products.