

→ The bacterial cells have ribosomes which occur freely in the cytoplasm and do not remain bounded to membrane.

→ Bacterial ribosome are slightly smaller than the ribosomes of eukaryotes.

→ They contain more RNA than protein. Eukaryotic ribosomes contain 40-50% RNA while prokaryotic 60%.

→ During protein synthesis many many ribosomes read the codes of mRNA from the poly ribosome or polysome.

[Q] IN EUKARYOTES : →

→ Ribosomes are associated closely to E.R. forming rough surface synthesis occurs on the E.R.

→ Protein synthesis occurs on E.R.

→ Each ribosome is composed of two structural units 40S and 60S sub units.

→ The ribosomes are originated in the nucleolus and consists of many mainly ribonucleic acid (RNA) and protein.

→ The ribosome consists of three types of RNA

→ The ribosome also occurs freely in the cytoplasm and are the sites of protein synthesis.

| COMPONENTS          | PROKARYOTIC       | EUKARYOTIC        |
|---------------------|-------------------|-------------------|
| Ribosomal unit :-   |                   |                   |
| Protein             | 35%               | 50%               |
| RNA                 | 65%               | 50%               |
| Sedimentation value | 70S               | 80S               |
| Mol. wt             | $2.5 \times 10^6$ | $4.5 \times 10^6$ |
| Ribosomal sub unit  | 30S, 50S          | 40S, 60S          |
| Sub unit structure  | 30S, 50S          | 40S, 60S          |
| RNA                 | 16S, 23S, 5S      | 18S, 28S, 5S      |
| members of protein  | 21, 33            | 34, 50            |

(Chart shows the properties of Pro & Eukaryotic Ribosomes)

## 4 DNA

### [a] IN PROKARYOTIC CELL: →

- In genetic information of each bacterial cell is carried by DNA molecules which is often called bacterial chromosomes or genophores.
- The DNA present in distinct nucleus, often called nucleo nucleoid.
- It is single, double stranded, circular and 100-8 1500  $\mu\text{m}$  long.
- DNA not contain histones.

### [b] IN EUKARYOTIC CELL: →

- DNA is hereditary material occurs in nucleus.
- It is double helix & made of four nitrogen bases & pentose sugar.
- It is thread like straight & unbranched in shape.

## 5 CHLOROPLAST: →

### [a] IN PROKARYOTIC CELL: →

- ~~Not~~ photosynthetic prokaryotic cell such as Rhodospirillum rubrum ~~contains~~ contain small particles about about 60  $\mu\text{m}$  in diameter called chromatophore.
- Chromatophores have no limiting membranes & they possess all the bacterial chlorophyll. They are the base sites of bacterial photosynthesis.
- In blue green algae no discrete chloroplast is visible but photosynthetic lamellar membrane occupies most of the cell.

### [b] IN EUKARYOTIC CELL: →

- All eukaryotic organism  $\pm$  photosynthetic capabilities have chlorophyll containing organelles called chloroplasts.



→ Chloroplast have a

→ They contain DNA ribosome and complete protein synthetic machinery.

## [6] FLAGELLA

[a] IN PROKARYOTIC CELL: →

→ Many bacteria are able to swim about by beating of whip like cellular outgrowth flagella.

→ Bacterial flagella consists of single fibril 100-200  
thick several microns long basal granules.

→ The fibril is made largely of the protein flagellin.

→ The cell of some bacteria contain hairs like extracellular out growth called pilli similar to that of flagella including a basal body.

[6] IN EUKARYOTIC CELL: →

→ Flagella contain spherical bodies known as basal granules or kinetosome.

→ In cilia & flagella, generally 9+2 arrangement found. 9 are peripheral tubules & 2 are central

→ They are originated from basal body,

SOME OTHER DIFFERENCES BETWEEN PRO & EUKARYOTIC CELL :-

→ Cell size of prokaryotes - mostly small (1-10  $\mu\text{m}$ )  
in Eukaryotes " " larger (10-100  $\mu\text{m}$ )

→ DNA associated w proteins in Eukaryotes  
not " " " " Prokaryotes

- One linkage group in genetic system in pro but two or more linkage group in eukaryotic cell.
- Tissue formation is absent in Prokaryotic but present in Eukaryotic
- Cell division in prokaryotic - Binary fission budding no mitosis but in Eukaryotes associated  $\bar{c}$  mitosis.
- Cholesterol is present in membrane in Eukaryotes but absent in prokaryotes.
- Nutrition - principal absorption, some ~~for~~ photosynthesis in prokaryotes but absorption, ingestion, photosynthesis in Eukaryotes.
- Sexual system unidirectional transfer of genes from donor to recipient, it present in prokaryotes but complete nuclear fusion of equal gamete genome associated  $\bar{c}$  meiosis.

### CONCLUSION : →

From above discussion it is clear that prokaryotes contain primitive type of nucleus which in Eukaryotes it is fully developed prokaryotes are essentially one envelop system. They consist of central nuclear component but lack well defined cytoplasmic organelle like golgi, ER and mitochondria. Nuclear apparatus and respiratory enzymes are also absent in prokaryotes.

But Eukaryotes are widely found & most of living beings is made of Eukaryotes not prokaryotes. Eukaryotes are essentially two envelop systems. They contain all important cytoplasmic organelles like ER, Mitochondria, golgi etc.