Organization of Prokaryotic Chromosomes

Introduction:

- The term "prokaryote" means "primitive nucleus".
- Cell in prokaryotes have no nucleus.
- prokaryotes are monoploid
- Most prokaryotes contain a single, double-stranded, circular DNA chromosome.
- Non-essential genes are stored outside of chromosome-in plasmids.
- Prokaryotic genome is very compact-contain very little non-coding DNA sequences.
- It also contains extrachromosomal DNA as a plasmid.
- EX:- Bacteria and the blue green algae.

Organization:

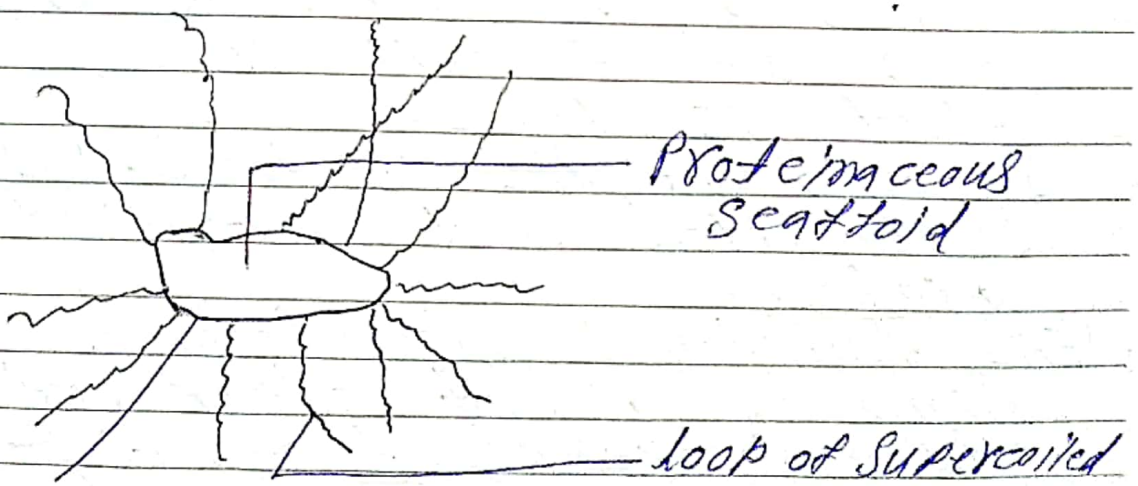

Fig:- organization of DNA and Proteins in bacterial chromosome.

NOTES

- These bodies consist of a network of fine threads.
- The network of threads consists of a single chromosome in the form of a ring.
- The exact three dimensional arrangement by which 1100μ–1400μ long DNA chain.
- which forms 80% of the chromosome by mass.
- which is packed in a 1μ long nucleoid, could also be established now.
- At least dua proteins, which bind DNA, resemble histone of eukaryotes and organize the DNA into structures comparable to nucleosomes of eukaryotes.
- It has been shown that the chromosome of E. coli is organized in about 45 loops.
- In each of the 45 loops, DNA is supercoiled and complexed with protein.
- The functional significance of looped domains is not clear but they do not represent units of transcription as in case of Lampbrush chromosomes.

NOTES