CHROMOSOME

1. INTRODUCTION :-

- Chromosomes (Gr- chrom - colour) (Soma - body) are darkly stained individualized Protoplasmic body seen only during cell division.
- They are most distinct in metaphase stage.
- It was first observed by Hofmeister and Karl Nageli.
- The term chromosome was introduced by waldeyer in 1888.
- Fleming named it Chromatin.

2. TYPES OF CHROMOSOME :-

(1) Viral Chromosome :—

- In virus a single molecule of DNA or RNA represent the chromosome.
- It may be linear or circular

(2) Bacterial chromosome :—

- In Bacteria and blue green algae the material (DNA) is organised into a single circular chromosome.

(3) Eukaryotic chromosome :—

- In Eukaryotic cell the chromosome are formed of DNA and Protein.
- In inter phase stage, they are in form of an interwoven network of chromatin thread.

— During cell division the chromatin thread condenses

3. STRUCTURE OF CHROMOSOME :-

Chromosome consists of following parts :-

(i) Pellicle :—

- It is an outermost covering of chromosome.
- Its presence is controversial.

(ii) Matrix :—

- It is composed of protein & lipid.
- In it chromonemata remain embedded.
- Its exact function is not known.

(iii) Chromonemata :—

- Chromonemata is two in number, highly twisted coiled.
- Veidovsky named chromonemata to the coiled structure.
- Along the entire length of chromonemata dense granules are found called chromomere
- The coil may be either Plectonemic where the coiling can be easily separated, or Paranemic where the coil cannot be easily separated.
- Chromomere contain gene.

Note :- The length of chromosome is directly proportional to number of gene.

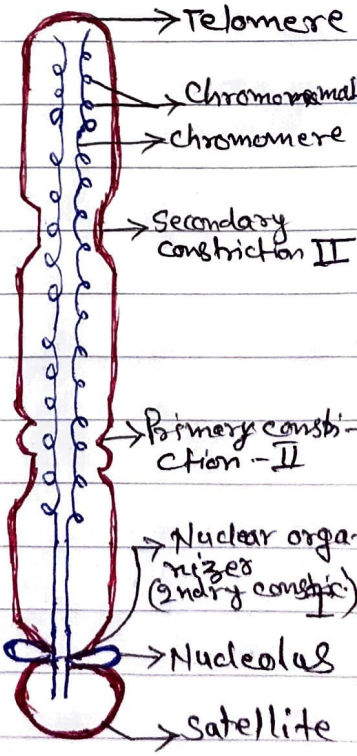

Fig : Structure of chromosome

(iv) Centromere :-

- It is also called Primary constriction or Kinetochore.
- Centromere determine shape of the chromosome by dividing chromosome into two arms.

On the basis of Position of centromere chromosomes are numerous types :-

1. Metacentric :-

- ~~Chromosome~~
- Centromere in middle two arms are equal so chromosome is V-Shaped

2. Submetacentric :-

- Centromere slightly away from middle so chromosomes is L-Shaped

3. Acrocentric :-

- Centromere occupies sub terminal position, so one arm is very long whereas other arm is extremely short, so it is J-Shaped.

4. Telocentric :-

- Centromere occupies terminal most position so chromosome is single armed.
  Telocentric is j-Shaped.

P.T.O.