CHROMOSOMES

Etymology

- Originated from the **Greek** word (***chroma*, colour**) and (***soma*, body**).

DEFINITION

"A **chromosome** is an organized structure of DNA and protein found in cells. It is a single piece of coiled DNA containing many genes, regulatory and other nucleotide sequences. Chromosomes also contain DNA-bound proteins, which serve to package the DNA and control its functions".

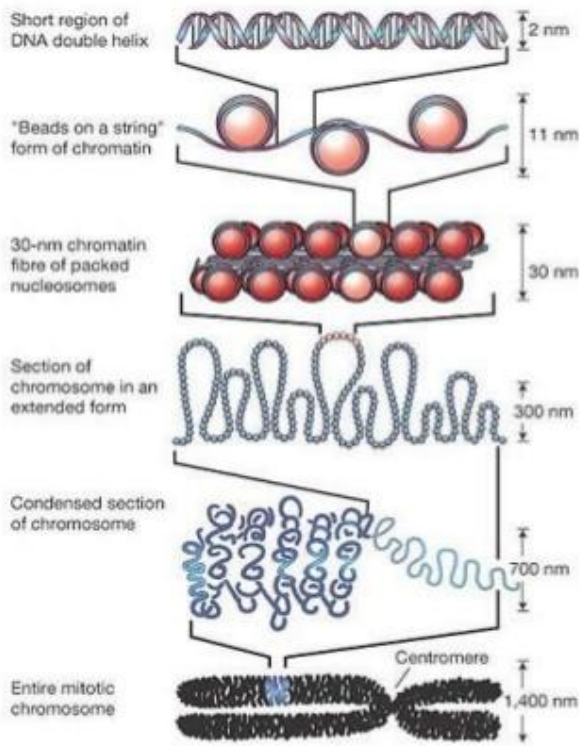
Discovery

- First described by **Strausberger** in **1875**.
- The term **"Chromosome"**, however was first used by **Waldeyer** in **1888**.

Prokaryotic & Eukaryotic Chromosomes

Prokaryotic Chromosomes

- Genomes are simple and the organization of DNA is also different.
- Genomes are contained in single chromosomes, which are usually circular DNA molecules.
- DNA is associated with proteins but no histones present.
- DNA packaging is different from and is not well understood.
- Variation in genome length bearing genes.
- **RNA viruses** having smallest genome.



Structure of Chromosome

- Typically a chromosome is made of two chromatids, a centromere and a secondary constriction.
- **Sister chromatids** are two identical copies of the chromosome connected by a centromere.
- The two chromatids of one homologous chromosome with respect to those of the other homologue are called **Nonsister chromatids.**

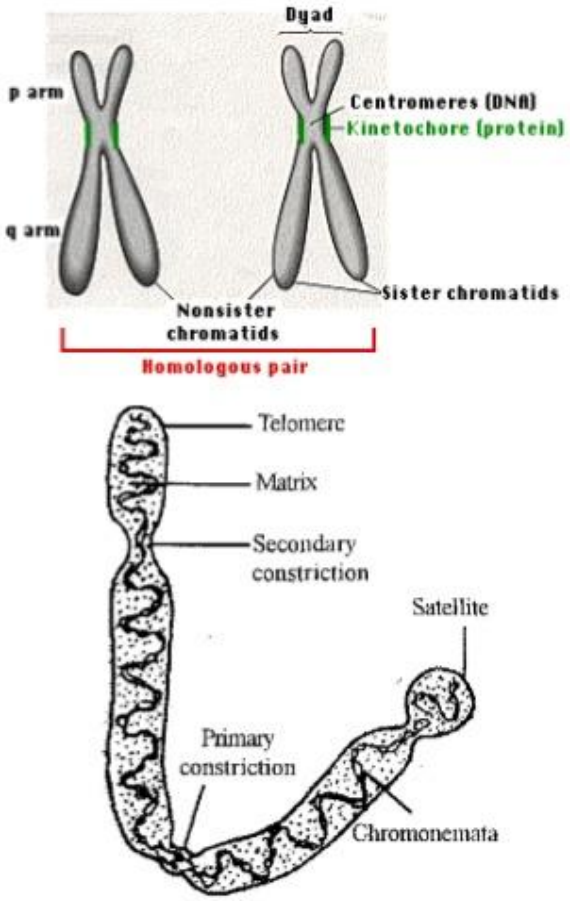


Fig. 3.1 Structure of chromosome

Centromere

- The region where two sister chromatids of a chromosome appear to be joined during cell division is called **Centromere**.
- Also termed as **Primary constriction**.
- **Darkly-stained** region.
- In humans, the centromere contains 1–10 million base pairs of DNA.