

## *Topics to be covered*

1

Structure of Chromosome

2

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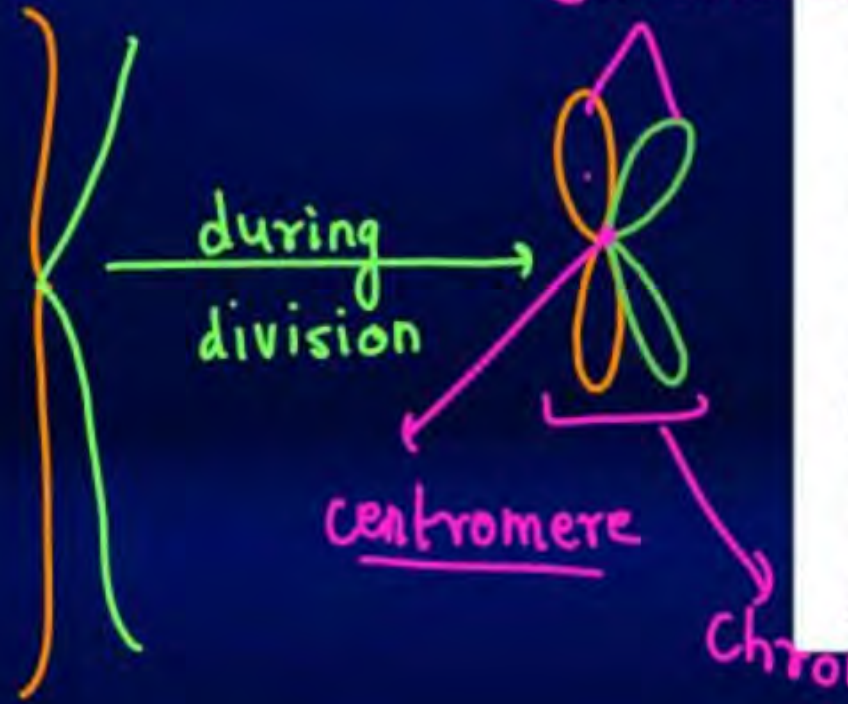
## STRUCTURE OF CHROMOSOME AND THEIR TYPES

Typically a chromosome consist of  
2 sister chromatid attached to common  
centromere

During interphase - genetic material

Chromatin fibre  
→  
Replication

during  
division



The diagram illustrates the process of chromosome formation. On the left, a single green line represents a 'Chromatin fibre'. An arrow labeled 'Replication' points to the right, where the fibre has duplicated into two intertwined green lines. A second arrow labeled 'during division' points to the right, where the two green lines are joined at a central point labeled 'centromere' in pink. This structure is labeled 'Chromosome' in pink. The two green lines are labeled 'sister chromatid' in pink.

You may recall that the interphase nucleus has a loose and indistinct network of nucleoprotein fibres called chromatin. But during different stages of cell division, cells show structured **chromosomes** in place of the nucleus. Chromatin contains DNA and some basic proteins called **histones**, some non-histone proteins and also RNA. A single human cell has approximately two metre long thread of DNA distributed among its forty six (twenty three pairs) chromosomes. You will study the details of DNA packaging in the form of a chromosome in class XII.

Every chromosome (visible only in dividing cells) essentially has a primary constriction or the centromere on the sides of which disc shaped structures called **kinetochores** are present (Figure 8.12). Centromere holds two chromatids of a chromosome. Based on the position of the centromere, the chromosomes can be classified into four types (Figure 8.13). The **metacentric** chromosome has middle centromere forming two equal arms of the chromosome. The **sub-metacentric** chromosome has centromere slightly away from the middle of the chromosome resulting into one shorter arm and one longer arm. In case of **acrocentric** chromosome the centromere is situated close to its end forming one extremely short and one very long arm, whereas the **telocentric** chromosome has a terminal centromere.

# GRAM STAINING:



↳ by Christian Gram

→ On the basis of this technique, bacteria



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→ Those bacteria who  
accepted the colour of crystal-  
violet dye (blue) ever after  
washing with alcohol.

Bacteria who lost the  
stain colour after washing  
with alcohol.

Which is called as power house of the cell

- A** ER
- B** Golgi complex
- C** Lysosomes
- D** Mtochondria

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