

**Topic: Chromosome; structure**  
**B.Sc. Botany Hons. III**  
**Paper: V Group: A**

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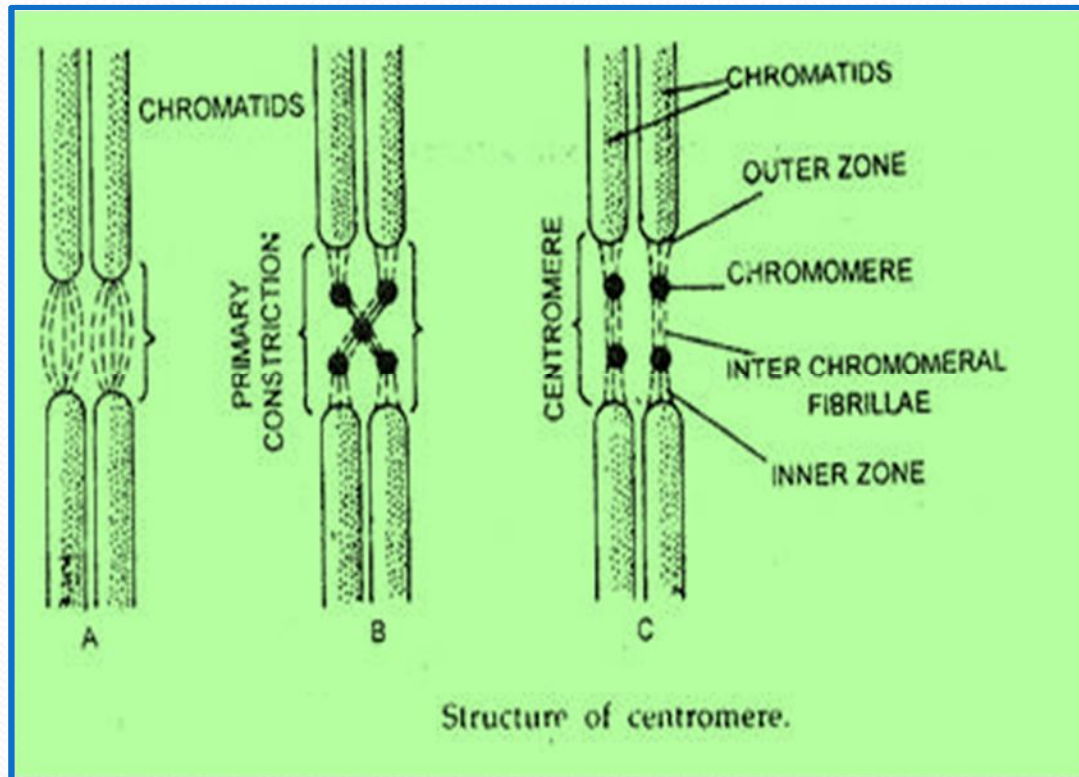
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## Chromomeres:

- In favourable preparations, chromomeres in the form of small dense masses are observed at regular intervals on the chromonemata.
- These are more distinct in the prophase stage when chromonemata are less coiled and most clearly visible during leptotene and zygotene stages of meiotic prophase.
- The thin and lightly stained parts between the adjacent chromosomes are termed as inter-chromomeres.
- The position of chromomeres on chromonemata is constant for a given chromosome.
- While pairing during zygotene of meiotic prophase the homologous chromosomes pair chromomere to chromomere. Chromomeres are regions of tightly folded DNA and are believed to correspond to the units of genetic function in the chromosomes.




### **Chromatid:**

- At mitotic metaphase each chromosome consists of two symmetrical structures called chromatids.
- Each chromatid contains a single DNA molecule. Both chromatids are attached to each other only by the centromere and become separated at the beginning of anaphase, when the sister chromatids of a chromosome migrate to the opposite poles.

### **Centromere:**

- A part of the chromosome is recognized as permanent.
- It is a small structure in the chromonema and is marked by a constriction.
- At this point the two chromonemata are joined together.

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- This is known as centromere or kinetochore or primary constriction.
  - Its position is constant for a given type of chromosome and forms a feature of identification.
  - In thin electron microscopic sections, the kinetochore shows a trilaminar structure, i.e., a 10 nm thick dense outer proteinaceous layer, a middle layer of low density and a dense inner layer tightly bound to the centromere.
  - The chromosomes are attached to spindle fibres at this region during cell division
  - The part of the chromosome which lies on either side of the centromere represents arms which may be equal or unequal depending upon the position of centromere.