

S & E Chromosomes.

Some insects of the family Cecidomyiidae (gall insects) and Chironomidae (Diptera).

In Maistor →

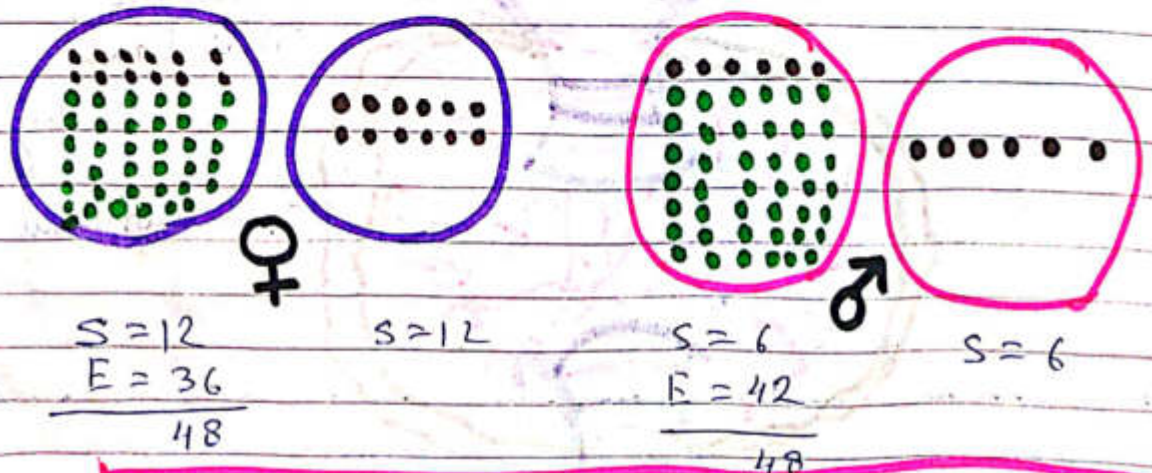
There are certain chromosomes which are seen in both somatic cells and germ cells, where as some are seen only in germ cells.

Those present in somatic as well as germ cells are known as S-chromosomes. In Maistor they are twelve (12) in females and six (06) in males.

The chromosomes which are seen only in germ cells are known as E-chromosomes.

These chromosomes are eliminated during mitotic divisions.

In Maistor there are thirty six (36) in females and in males there are forty two (42) E-chromosomes.



Schematic representation of S & E-Chromosomes.

MEGA CHROMOSOMES.

They are quite larger than the normal chromosomes even upto fifteen times in length of normal ones.

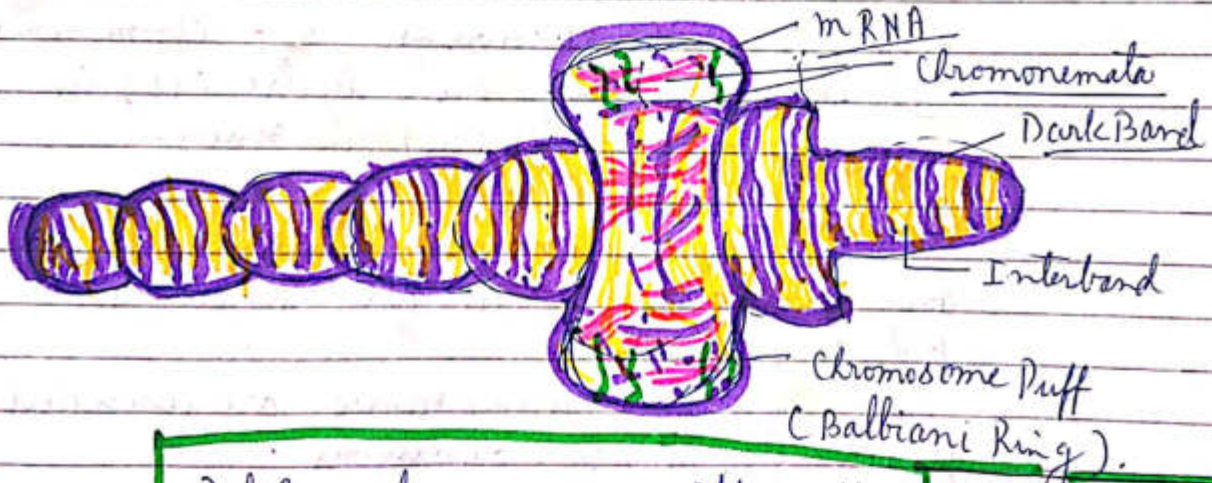
They may be one to seven only.

They are largely heterochromatic

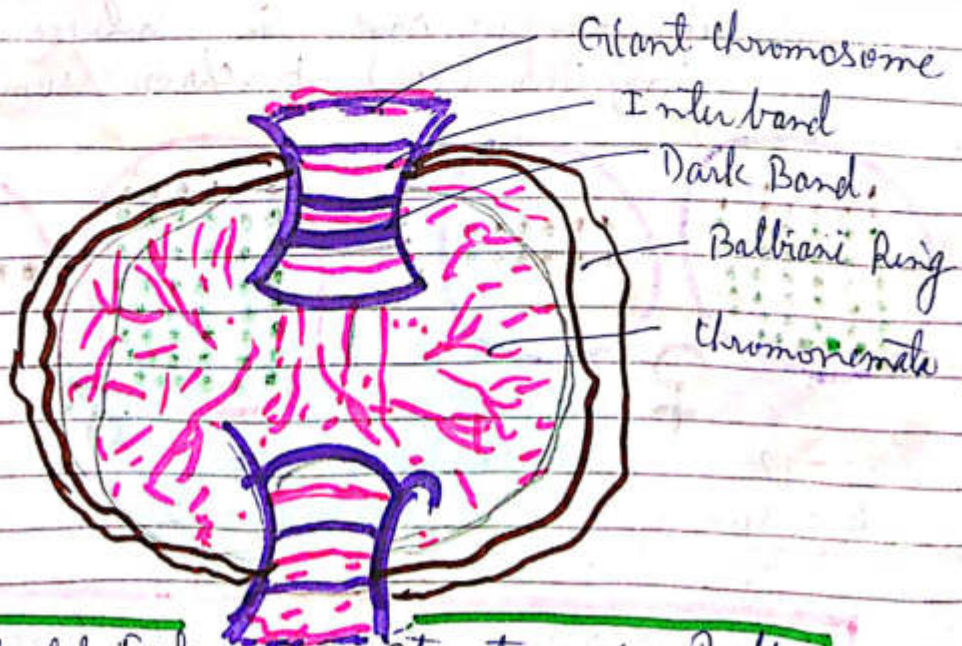
They may be acentric, monocentric or even dicentric.

These are inheritable though they are not transmitted through the gametes.

e.g. Nicotiana spp. (Mainly hybrid ones.)



Polytene chromosome with puff & Dark & Light Band



Detailed Enlarged structure of a Puff.

## GIANT CHROMOSOMES:

Their morphology is special. They are extraordinarily long. Found in some special tissues they are quite large.

These are of two types.

- (A) Polytene chromosome (Salivary chromosome).
- (B) Lampbrush chromosome.

### (A) Polytene chromosomes:

In 1881 1st of all observed by Balbiani in the salivary glands Chironomus sp. Hence known as Salivary Gland Chromosome also.

In 1882 Koller describe it for the 1st time.

They are Besides salivary glands these are reported from trachea, gut, malpighian tubules, fat bodies, nurse cells of ovary.

They consists of a bundle of chromosomal fibrils. These arise due to constant consecutive mitotic duplication (about ten (10) times). It increases the DNA 1000 times. It leads to multistranded condition. Hence named as Polytene chromosome. They are almost in Prophase.

They possess dark bands and light bands alternatively. Dark bands are narrow or broad disc shaped. They are euchromatic in nature, contain large amount of DNA, small amount of RNA & certain basic proteins. They are ~~Fulger~~ negative positive and absorb

ultra-violet light of 2600 Å

The light bands

The interbands are light, bit fibrillar, negative to Feulgen, heterochromatic regions possessing small amount of DNA, large amount of RNA, acidic proteins absorbing little amount of ultra-violet light.

In the homologous polytene chromosomes of *Drosophila* sps., the number, distribution and position of discs/bands/Nodes are similar.

The centromeres of all these chromosomes fuse to form and form chromocentre in *Drosophila* sps.

During thin bands may enlarge get swell and form puffs of chromosomes. These are known as Balbiani rings. These puff represent the area of tightly coiled chromosomal fibres and form many loops. Puffs are formed due to unfolding or encircling of individual chromosome in a band. These are active genes and sites of synthesizing sites of RNA.

The puffs synthesize m-RNA. The m-RNA of one puff varies from the m-RNA of other puff. These m-RNA may move out to nucleus and then in cytoplasm and form specialized proteins.