Expt: 8 Meiosis in onion bud cell or grasshopper testis through permanent slides.

Aim

To observe the stages of meiosis on onion bud cell or grasshopper testis through permanent slides.

Materials Required

Permanent slides of meiosis

Compound Microscope

Procedure

Place the slide on the stage of the microscope.

Observe the dividing cells with low power.

Observations

The different stages of meiosis are observed along on the basis of the following features.

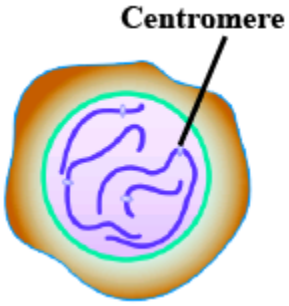
Stages of Meiosis I

Prophase I

Leptotene

The chromosomes become gradually visible under the light microscope.

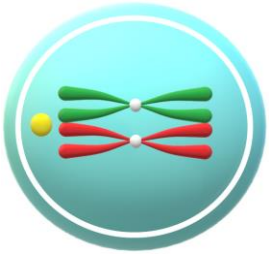
The compaction of chromosomes continues throughout leptotene.



Zygotene

Pairing of paternal and maternal chromosomes occurs. This pairing of chromosomes is called synapsis. Such paired chromosomes are called homologous chromosomes.

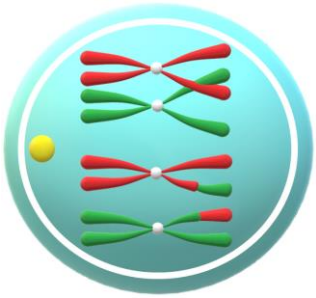
Synapsis is accompanied by the formation of a complex structure called synaptonemal complex.



Pachytene

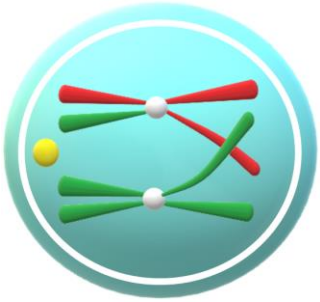
Crossing over is the exchange of genes between two homologous chromosomes which occurs at chiasmata.

It leads to recombination of genetic material in the two chromosomes.



Diplotene

The separation of recombined homologous chromosomes from each other except at the sites of crossovers is known as dissolution of synaptonemal complex.



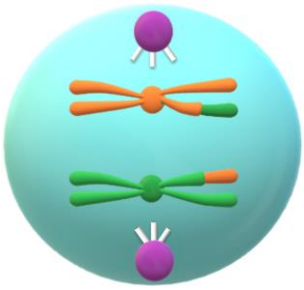
Diakinesis

Terminalisation of chiasmata occur.

Chromosomes are fully condensed.

The meiotic spindle is assembled for the next division of homologous chromosomes.

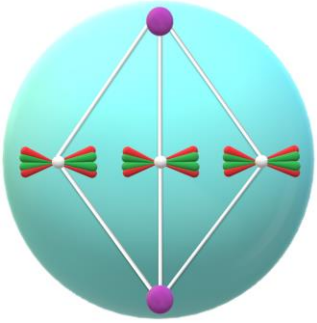
The nuclear membrane and the nucleolus disappear at the end of diakinesis.



Metaphase:1

Alignment of Chromosomes at the Equator occurs

Attachment of Spindle Fibres with the Centromeres of chromosomes occurs.

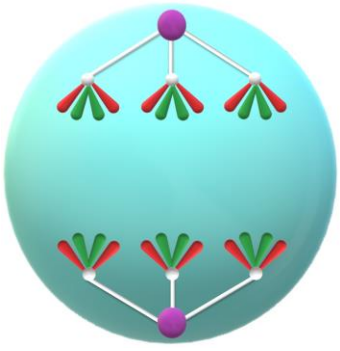


Anaphase:1

Contraction of spindle fibres occurs

Splitting of Centromeres occurs

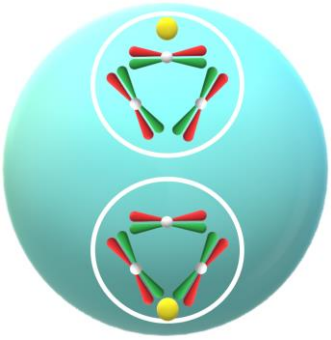
Chromosomes moves towards the opposite poles.



Telophase:1

Disappearance of centrioles and spindle fibres.

Reappearance of Nuclear membrane and nucleolus occur.



After cytokinesis of Meiosis-I, two daughter cells are formed

Stages of Meiosis II

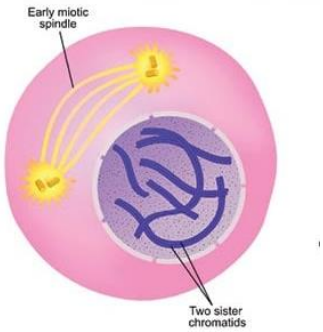
Prophase: II

Condensation of chromosomes occurs.

Nuclear Membrane disappears

Nucleolus disappears.

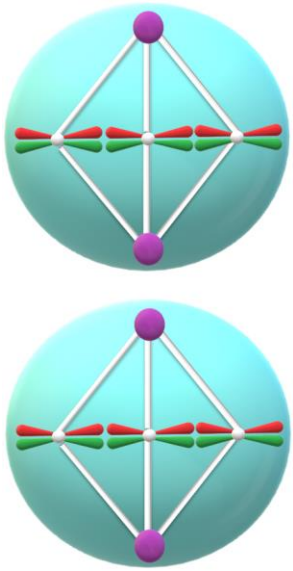
Centrioles start developing spindle fibres



Metaphase: II

Alignment of Chromosomes at the Equator occur

Attachment of Spindle fibres with the Centromeres of chromosomes occur.

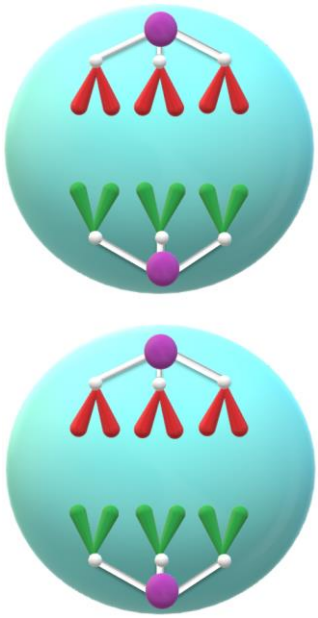


Anaphase: II

Contraction of spindle fibres occur

Splitting of Centromeres occur

Movement of Chromosomes occurs towards the opposite poles.



Telophase: II

Reappearance of nuclear Membrane and nucleolus occur.

After cytokinesis of Meiosis-II, four haploid daughter cells are formed.

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