R. K. GROUP OF COLLEGE

BEHIND KALWAR POLICE STATION, KALWAR, JAIPUR (RAJ.)

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Study of Eukaryotic Cell organism electron micrograph

Paractical Excercise

- Study of electromicrograph of eukaryotic cell for various cell organelles

Procedure

Study the Given Photograph and observe the Ultrasturee of various Cell organelles Present in eukaryotic cells

- Important Cell organesis of Eukaryotic Cell

Ribosome

- This is the smallest Cell organelle of Eukaryotic Cell
- It is made up of two sub units.
- It's sendiment Coefficient is 80s
- It helps in Protein Synthesis.

Golgi bodies

- It is madeup of vesicles and Folded membrams or tubules called as Golgi apperatus

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- It Helps in Secreation and intra-cellular transPort of Material and the Cell

Mitochondria

- This is Covered by double membrane.
- These are Small Rod Shaped Structure which Function as Power Generation of the Cell

Cell wall

- It is the outer Covering of Plant Cells absent in animal Cell.
- It is Made UP of Cellulose, hemi-Cellulose and Pectin
- The Cell wall Provide definite Shape to the Cell

Nucleus

- It is Covered by double membrane having Pores Pn it and is Called as Nuclear membrane
- It Contains nucleus and Chromosome which act as Genetic Material

ChloroPlast

- In Eukaryotic Plant Cells ChloroPlast as Present which help is Photosynthesis.

- It is Sourrended by double membrane

Lysosome

- These are Single membrane bound Structure
- It helps in digestion of intra and extra Cellular Substances.

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Study of Prokaryotic Cell organeles electron micrograph.

Paractical exercise

Study of various Cell Orgenelles of Prokaryotic Cell From as electron micrograph.

Requirement

Electron micrograph of Prokaryotic Cell, Note book, Pen, Pencil etc.

Cell organesis of Prokaryotic Cell

(1) Capsule
(2) Flagella
(3) Ribosome
(4) Plasmid
(5) Nucleoid
(6) Cell wall
(7) Cytoplasm
(8) Plasma membrane
(9) Pili and Fimbriae.

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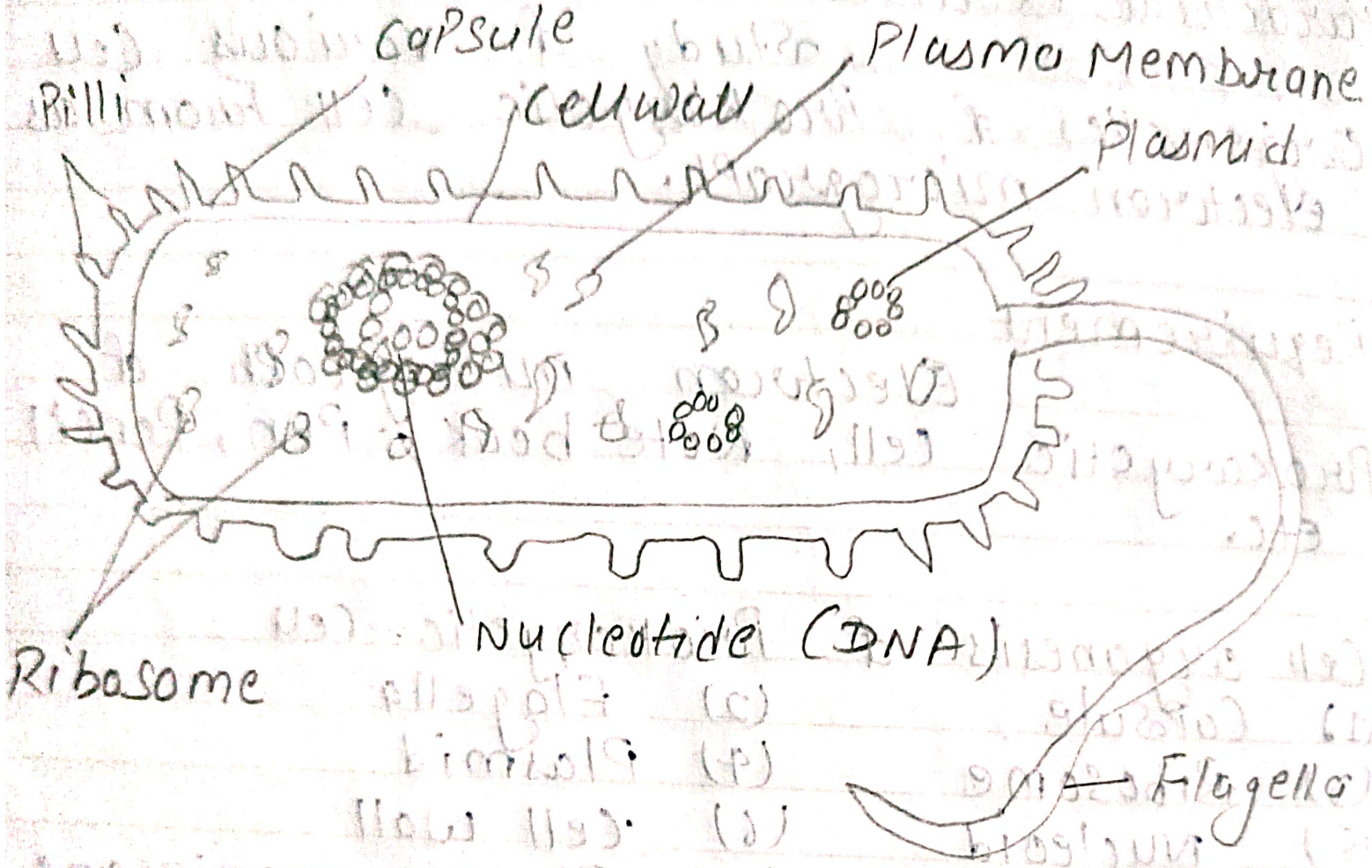

Fig:- Prokaryotic Cell Structure

Virus

Virus :- An electron micrograph of a virus is a direct visualization of the virus, which is possible only through electron microscopy

Diagonasis :-
electron microscopy is used to diagonosis virus in Human, Plant and animals especially when other methods have failed it's also used to monitor emerging disease and Potential bio terrism virus

Research :- electron microscopy is used to study the structure of viruses how they attach to cells and How they Replicate.

Quality Control :- Electron microscopy is used to assess the integrity of Virus Particles, especially when the virus Genome has Changed.

To accurately interpret electron micrograph it's important to Consider the biology of the virus in Addition to its Morphology

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Bacteria

→ electron micrograph of bacteria can show the str. of Bacterial cells including their cell wall, cytoplasm membranes, and Flagella.

Cell walls

→ Electron micrograph of sectioned Bacteria show that most bacterial cell envelops have multiple layer. In Garam Positive organism the cell wall is made up of the thin electron dense layers separated by a wider layer of less electron-dense Material

Cyto Plasmic Membrams

Electron Micrograph show Flagella arising from the protoplast and passing through two electron-dense layers separated by a less electron dense layer

SEM (Scaning electron Microscopy)

A Focused beam of the surface of biofilm sample producing signals that contain information

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eukaryotic Cell

Eukaryotic Cell :- electron micrograph can be used to study the Str. of Eukaryotic cells and to learn about their organelles and Function

Organelles :- Electron micrograph can shown the Str. of organelles like the endoplasmic Reticulum and Nucleus

Ribosome :- Ribosome are enzymes complex that Makes Protein in electron micrograph, they appear as Dots or clusters in the cytoplasm

Cell wall :- Some eukaryotic cells have a cell wall

Plasma Membrane :- The Palasma membrane is a phospholipid with embedded Proteins

Mitochondria :- The electron transport system is located in the inner membrane of the Mitochondria.

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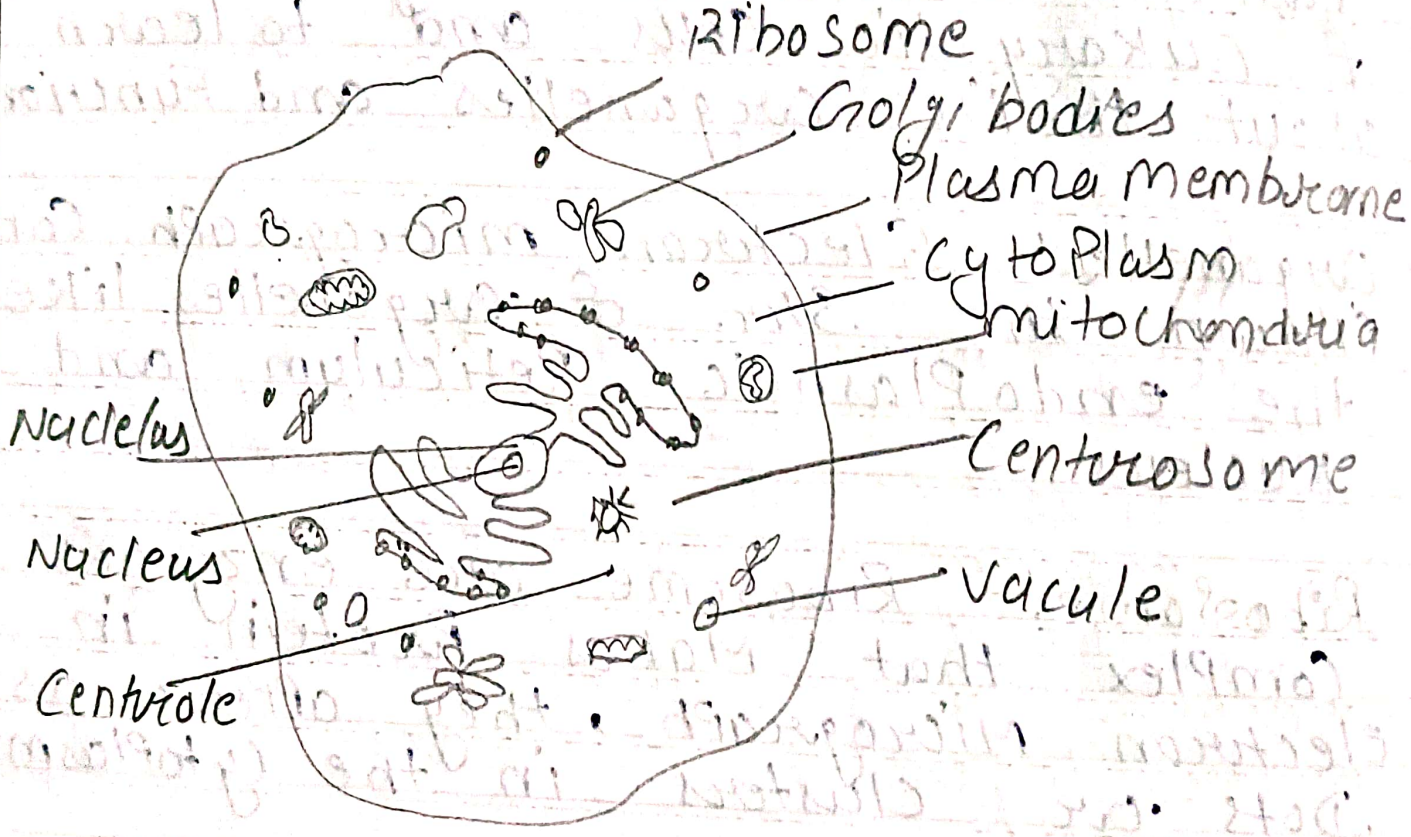

Fig :- Eukaryotic cell.

Study of Cell Str. in onion

AIM:- Comparative Study of Cell Stre in onion Cell

Requirements:- onion Cells, Hydrilla & Pirogra, Tradescantia Flowers, watch Glass, Fore cap Slide, Coverlip, Microscope

Cell Structure in onion Peel

1) A thick onion Scale was taken Out and teard it From Concave Side So as to get transParent thin and Membrane onion Peel

2) Placed the Peel in the watch Glass Containing water and 2-3 drops of Methylene blue

3) Cut a Small Portion of Peel and Placed it on Cleaned Glass Slide with a drop of Glycerine

4) Put a Cover Slip over it and Observe Under the microscope

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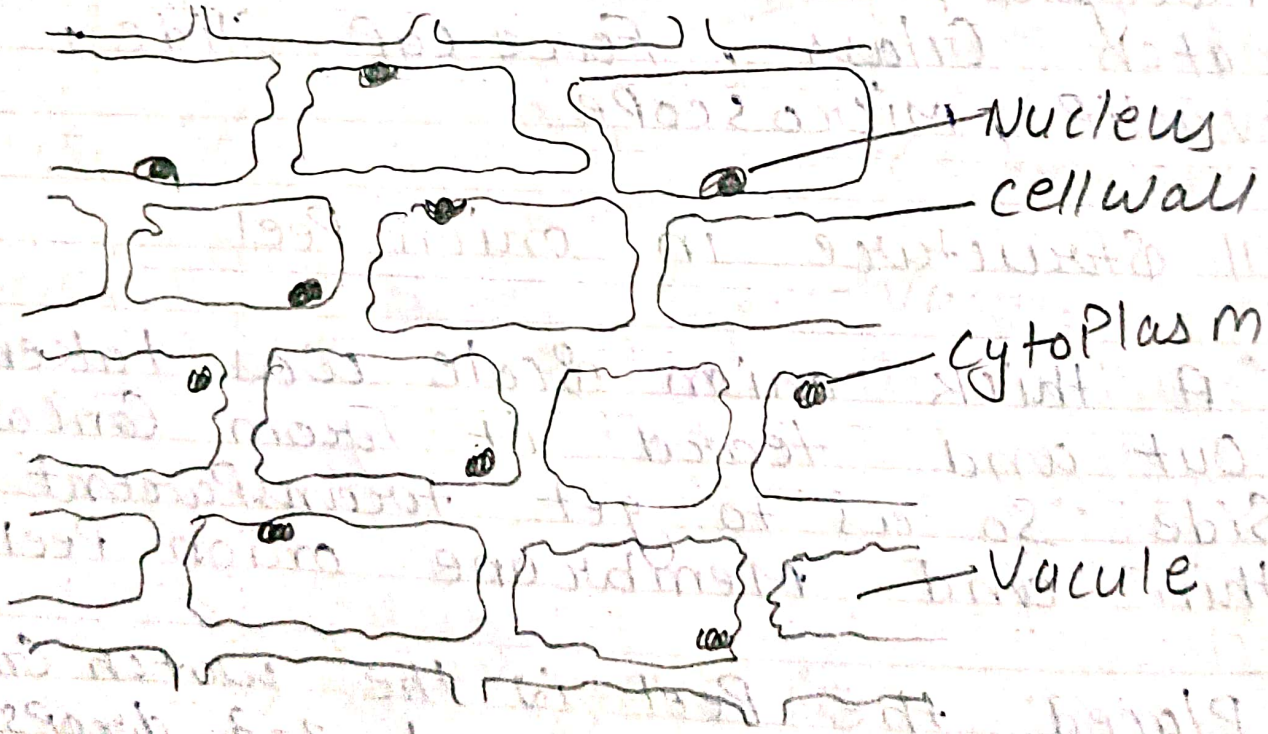

Fig:- Cellular Stru. and Nucleus Pn
crion.

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Spirogyra cell

1) A cleaned Glass Slide was taken

2) Mount the Material on it with a drop of Glycerine

3) Cover it with watch Glass and Observe it under microscope.

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Hydrilla Cell

Study of Cells in Hydrila

Requirements

Hydrilla Plant, Slide, Coverslip watch Glass, distilled water, Safranin Glycerin, microscope

Cell

Cell is the smallest, Fundamental, Structural and Functional unit of an organism In which all metabase Process take Place.

Procedure

Take learns of Hydrilla, Peel their lower Surface and keep in a watch Glass. Take the Peeled epidermis stain In Safranin and Mount in Glycerin by Putting a Cover Slip on it. Study the Cell Structure under microscope.

Observation

(1) Many Cells are Present
(2) It Shows eukaryotic cell organisation
(3) Inner to the Cell wall, Cell Membrane is Present.

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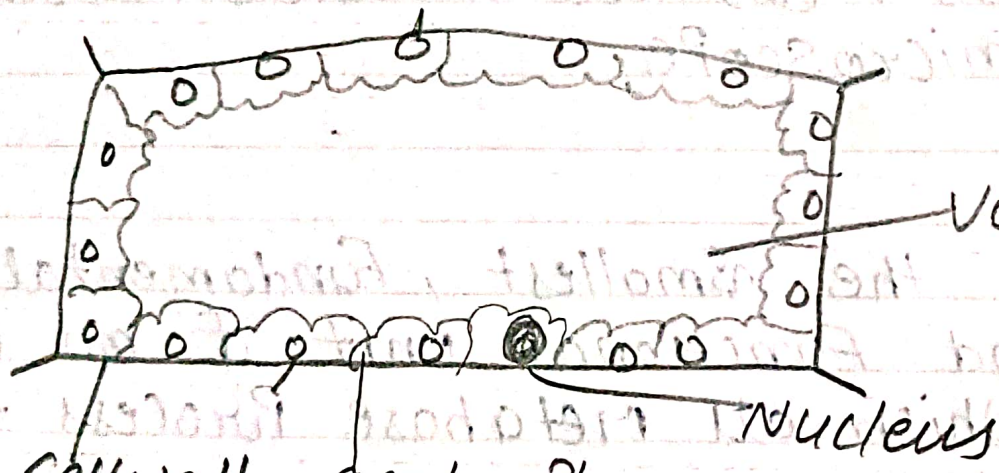


Fig:- Cellular Structure of Hydrilla

(4) Inside Cell Membrane Peripheral Protoplasm with a well defined Nucleus is Present

(5) Each Cell have a Central Vacoule.

Study of Plastid for Pigment Lycopersium

Sub:- Study of the Structure of cell of a Red tomato

Aim:- To Study of the Str. of a Red tomato cell

Material Required

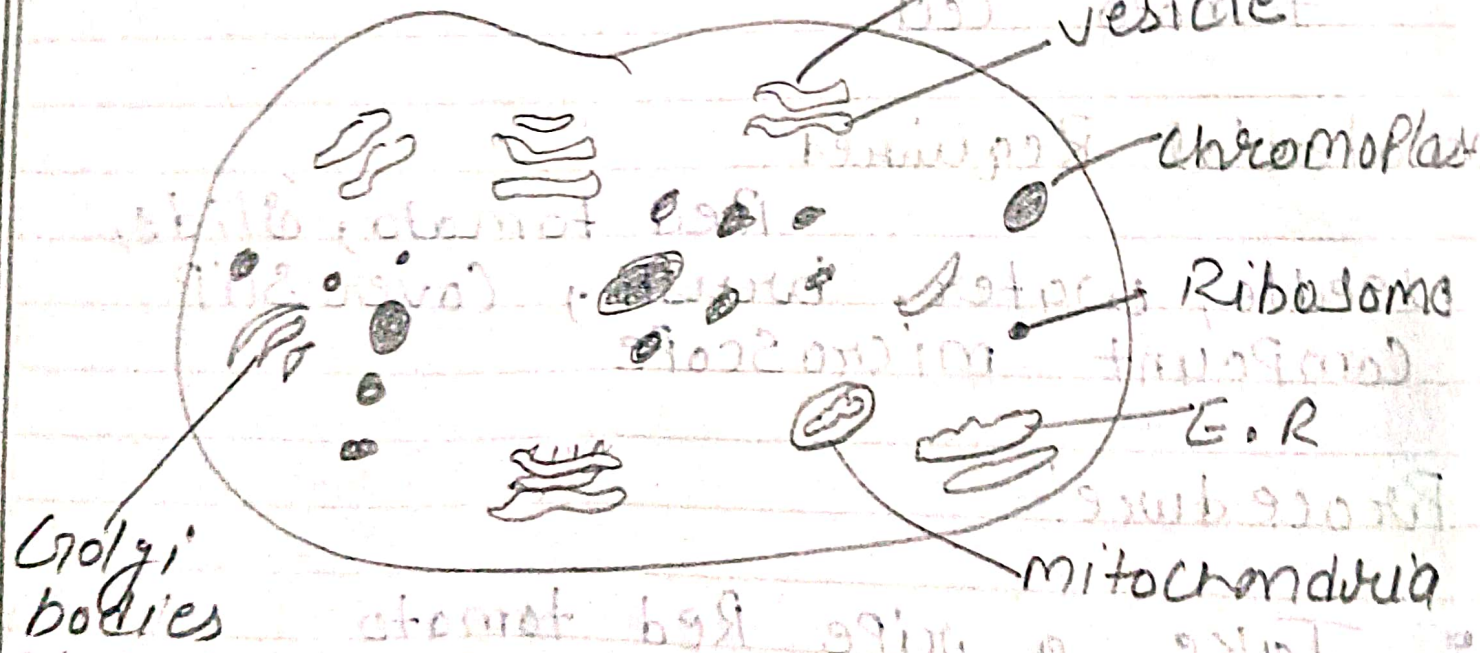
Red tomato, Slide, Needle, water, brush, Cover Slip Compount microscope

Procedure:-

- Take a ripe Red tomato
- Cut a thin Section of tomato Pulp and Place it in a watch Glass Containing water
- Add a drop of water to the Slide
- Observe the Slide under the Compound microscope

Observation

- The tomato cell is Spherical in Shape
- The Cell wall is thin and transparent.



Dig- LYCOPERICUM

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Cassia

AIM :- Study of the Clored Plastid Present in the Yellow Petals of Cassia flower

Requirement :- Yellow Cassia flower, Slide, Tweezers, Filter Paper, Distilled water, Microscope, Five test tubes Needle and brush

ChromoPlast :- ChromoPlast are a type of Plastid. They Contain Colored Pigments like Carotenoids, which Give Fruits and Flower their Red, orange and Yellow Colors

Principle :- ChromoPlast are Responsible for the Yellow Color of the Cassia Flower Petels

Procedure :- Seprate the Yellow Petals of the Fresh Cassia Flower Seprate the Yellow ChromoPlast From the Petals using a brush and Palace them in distilled Water

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Study of Chromoplast

Observation :-

- Chromoplast are found in Plant cells
- They are sourrended by a cell wall

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Capsicum

Aim:- To study the Chromoplasts in Capsicum

Requirements:- Green, Yellow, Red bell Peppers, Forceps, Cover slip, Five Glass Slides, Needles, distilled water, Saline Brush etc.

Chromoplast:- Chromoplast are Colored Plastid that Contain Pigments that Give Fruit and Flower their Red Orange and Yellow Colors. Bell Peppers Come in Green, orange, Red and Yellow Colors

Procedure:-

1. Seperate the outer skin of the bell Pepper using Forceps and Place in it distilled water in a watch Glass
2. Transfer the skin the slide using a brush
3. Add a drop 1% Safranin and Cover with a Cover slip

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Study of Mitosis

Practical exercise

To Study Mitosis is onion Root tip

Requirement

onion, wide Mouthed bottel Scissous water, Cotex or blade forcep, brush watch Glass, Slide, Coverslip 10 HCl Paper etc.

Principle

During Mitosis exact Raplication of Parent Cell occurs which is followed by Cell division into 2 identical cells.

Procedure to develop Root tips for Study of Mitosis Phases

- Select a few medium sized onion bulbs
- Remove if some dry roots are Present.
- Care should be taken that Cell i.e stem Portion of the touches the water.

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- Now Roots May take 3-6 days to Grow Cut the tips of onion Roots Stages of Cell division.
- Keep the Root tips in Fixative for 24 Hours after that transfer them to 70% ethanol for Future Per-vention

Prepation of Slide to study Stages of Mitosis

- with the help of Forcep take one or two Pereserved Roots, wash them in water and Put them on a clean Glass Slide.
- use a to warm it on a Spirit lamp enswring that the Stream does not dry
- Cut a Small Portion of the intermediate Part of the Stained Root using a blade and disbribed the Rest of the Roots

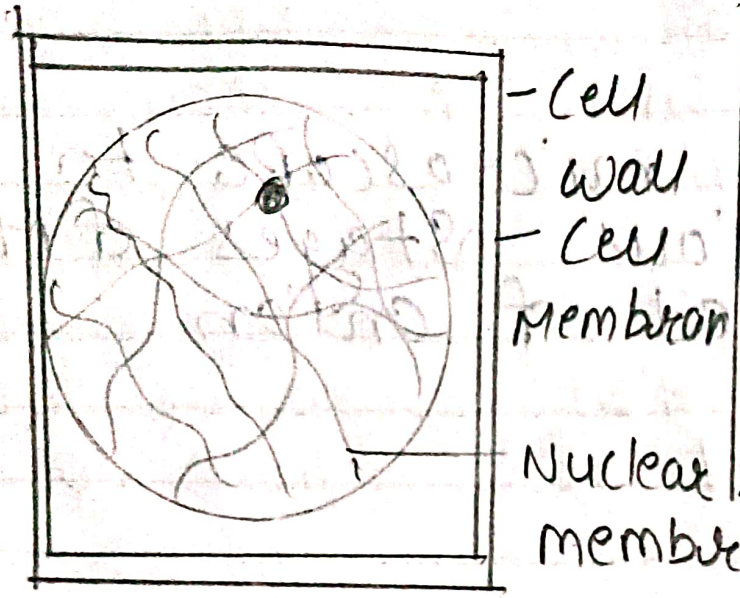
Observation

- use a Compound microscope to study the various stages of Mitosis in Stained of onion

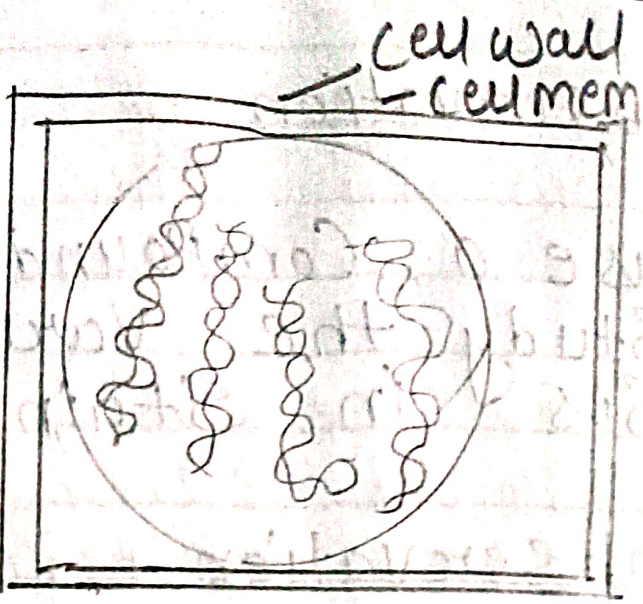
Observation

(I.) Interphase
- This is called the Resting stage of Mitotic
- Chromosome are Scattered in the Form of Chromatin Network

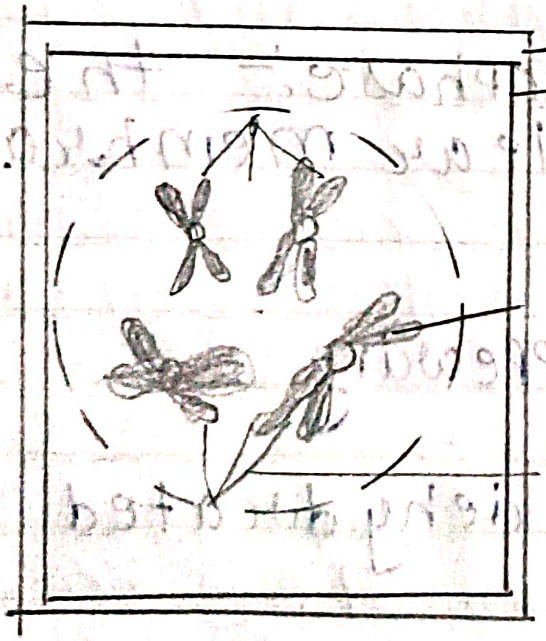
(II) Prophase
- During early Prophase:- the nucleulus and Nuclear membrane are intact
- Spindle Fibre Start appearing
- Chromosome become dehydrated thick an 2 Coiled.



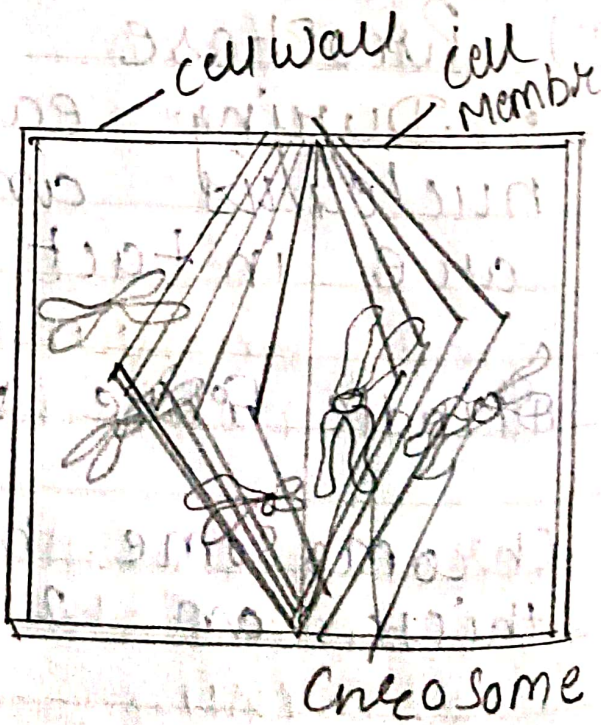
Begning of ProPhase



Early ProPhase



late- ProPhase



MetaPhase

- Spindle Fibre start appearing

(III) MetaPhase

- Nuclear Membrane and Nucleolus disappear.
- Spindle Start Forming From Centromere.

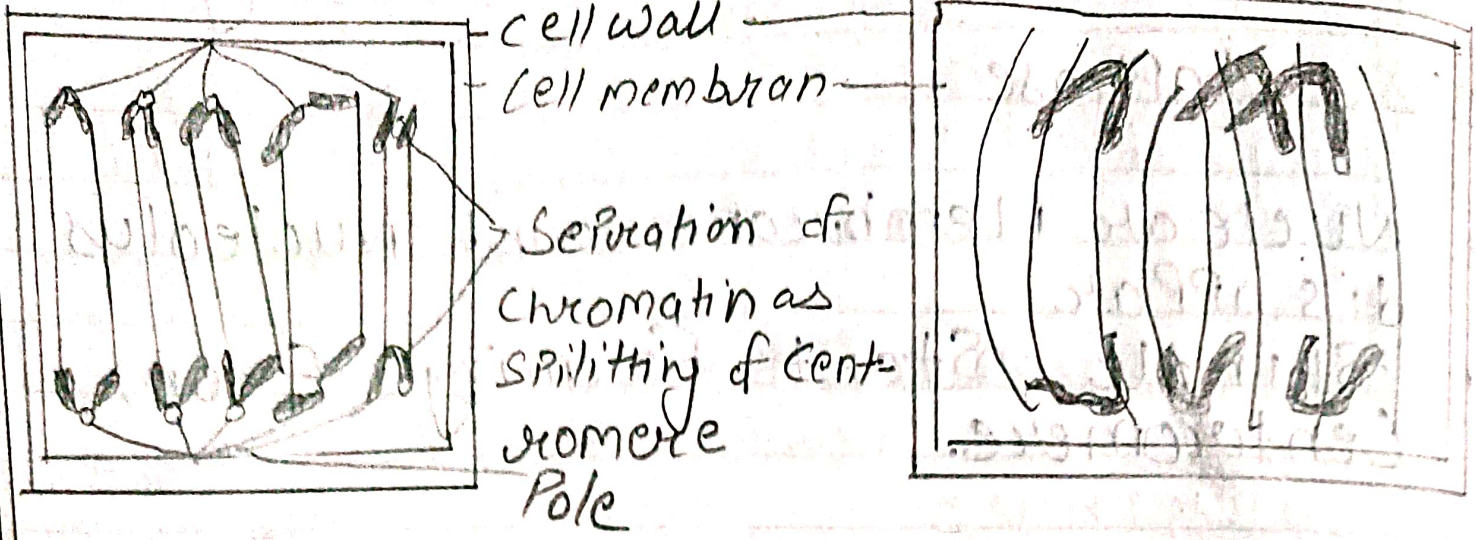
(IV) AnaPhase

This is an the Smallest stage of Mitosis Centromere splits into 2 Chromosome also gets splits into 2 thus one Centromere

- Chromosome Show I, U, V or I Shape.

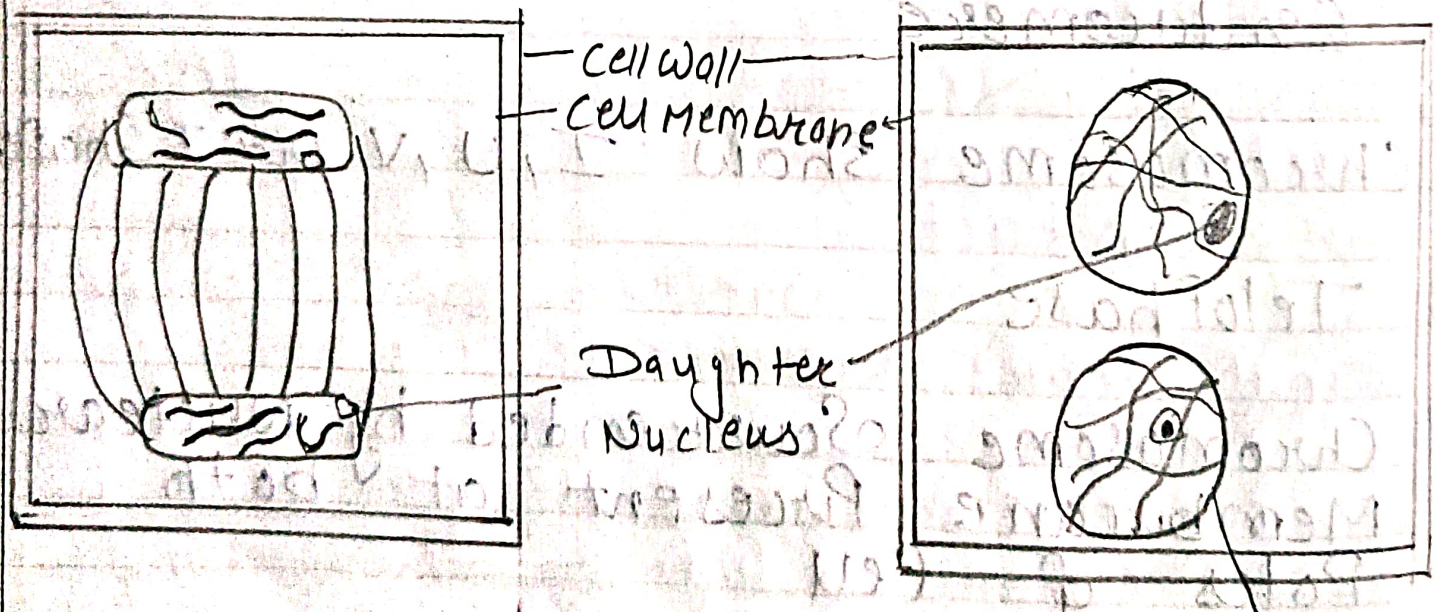
(V) TeloPhase

- Chromosome Sourrended by Nuclear Membrane Present at both Poles of Cell
- Spindles Fibres are absent



Anaphase

Late anaphase



Telophase

Telophase (END

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Study of Meosis

Practical exercise

Study of Meosis in the Flower buds of Study are Tradscantia Flower buds

- Meosis occurs in Reproduction Cell
- Farmers and Meosis Coined as term Meoisis
- Study of Meoisis is done in 2step i.e Meosis I and Meosis II. which are Further divided into 5 Phase described under objection in detail

Procedure

- Young Floral buds of Tradescantia Allium Nictonia or Hilum are Select to study the Various Stage of Meosis
- The extracted anthers are Stained Coverslip is Placed on it

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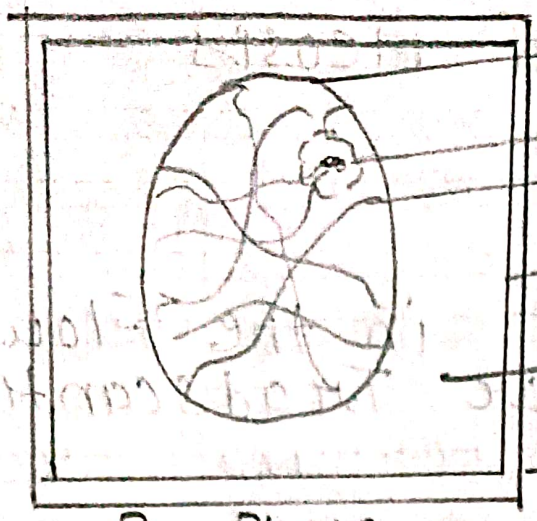
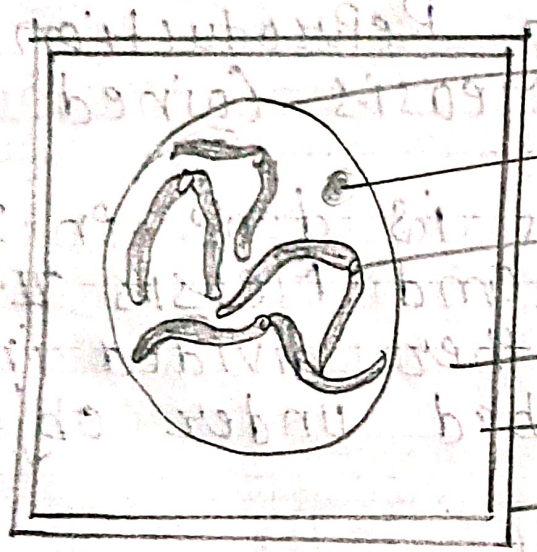
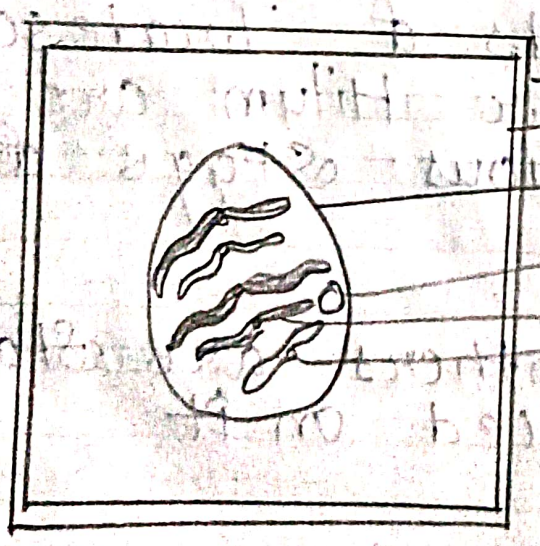


Prophase



Leptotene



Zygotene

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Observation

Prophase - I.

- This begins with the earliest changes in the Nucleus
- It is divided into several Sub-stages like liPtotene, Zygotene Pachytene, diPlotene, diakinesis

Leptotene

- The Chromosome are thin and long inter woven thread like
- Chromosome Number is diploid in the Stage

Zygotene

- Homologous Chromosome become inter-Mately associated or Pair with each other.
- This Process of Pairing of the known as Synosis

Pachytene.

- The Synopetic Chromosome become very intematly associated and become thick
- The two thread of each Chromo-Some is Called as Chromatid.

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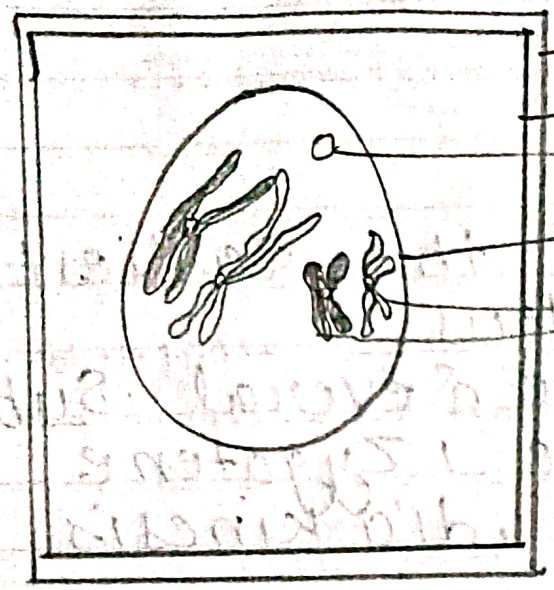
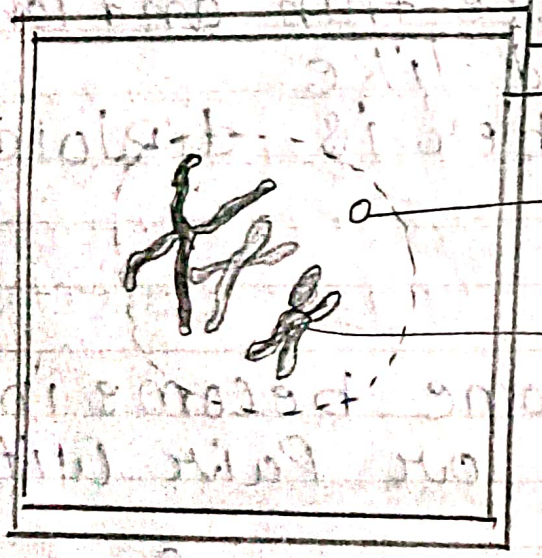
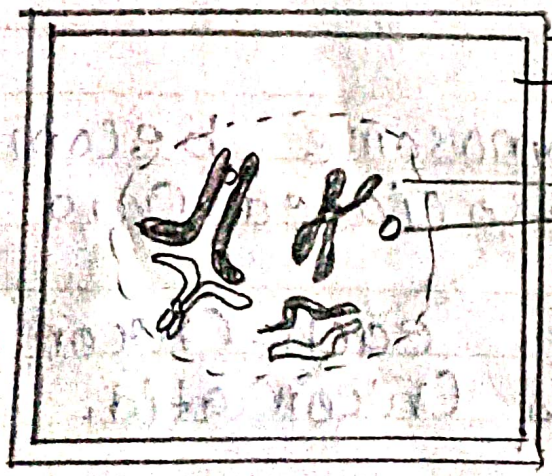


Pachytene



Diplotene



Diakinesis

Diplotene

- Repulsion starts developing in each chromosome of Homologous Pair so that Chaismata are clearly visible

Diakinesis

- The tetrads Now Contract and each lies Saparately becoming distinct in the Nucleus
- Individualy of Chromosome become clear

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Polytene Chromosome

(1) These are very large in size and were First Reported E.G Balbiani

(2) Dark and light Colored bands are found on them

(3) They were first discovered from the salivary Gland of Chironomus larvae

(4) Chironomus larvae From large Chromosomal Puffs Called Balbiani rings

(5) They are found in a Permanent Prophase. State.

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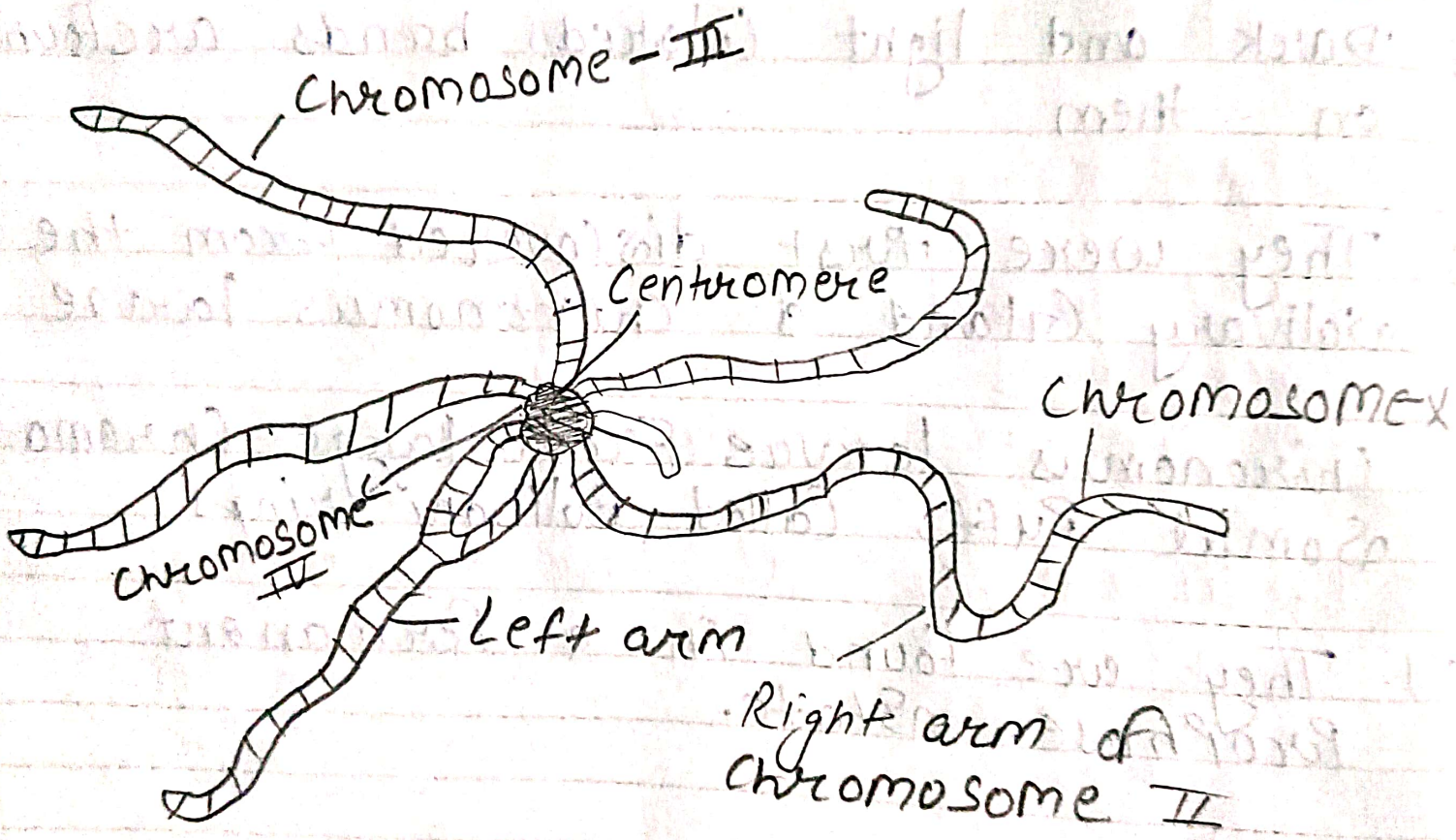

Dig:- Polytene Chromosome

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Lambrush Chromosome

(1) Lampbrush chromosomes in a special type of chromosome found in most animals except mammals

(2) They are found in Growing Oocytes.

(3) They are Highly extended meiotic chromosome, each consisting of two sister chromatids

(4) Due to active transcription they appear "lampbrush-like under a light microscope.

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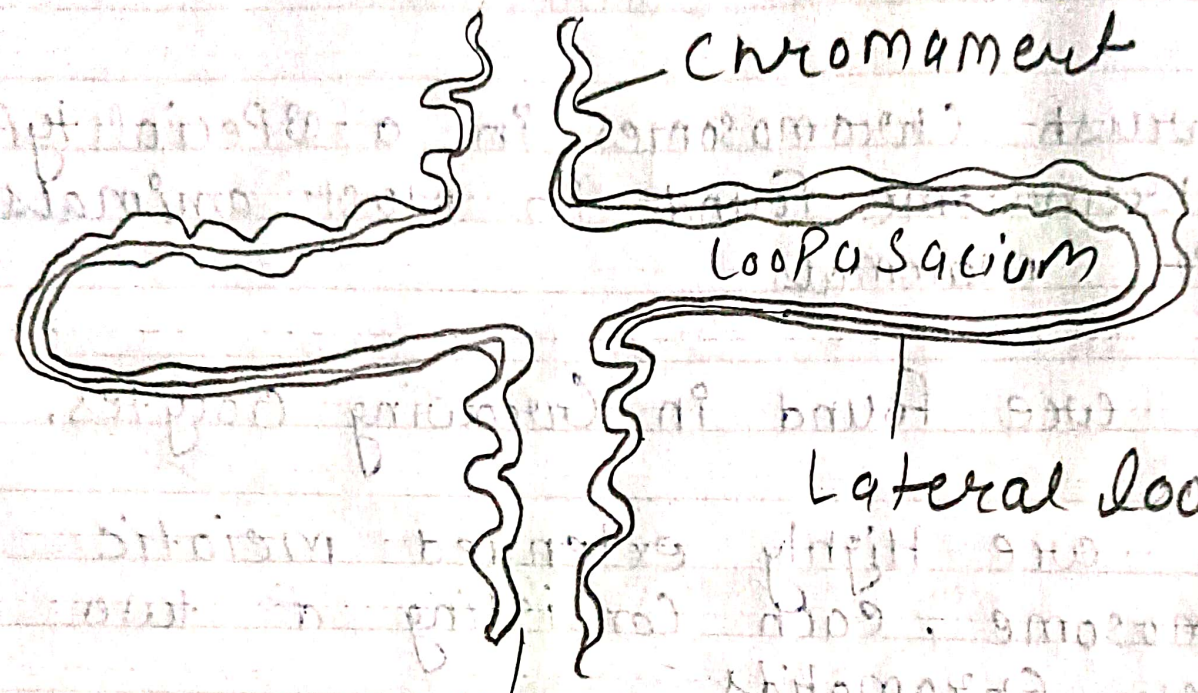

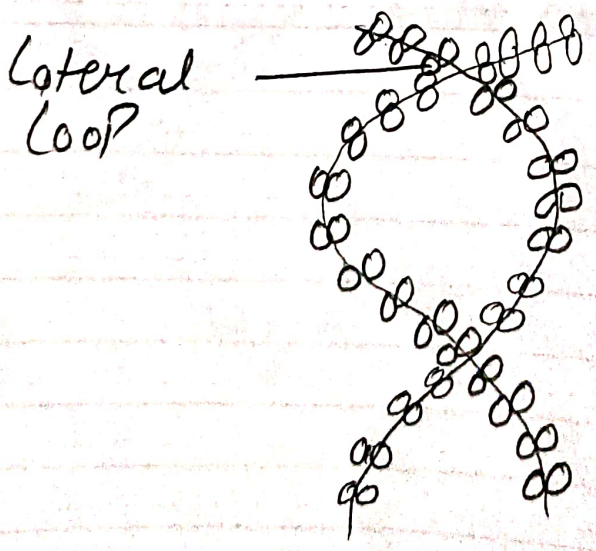

Dig!- Lampbrush chromosome