
Object : To study the mitosis by preparing squash of onion root tip.

Materials required :

- (i) Onion root tips

- (ii) Acetic acid
- (iii) Aceto-Carmine
- (iv) Slides
- (v) Cover-slips

Procedure :

- (i) Allow the onion bulbs to grow in bottles filled with water.

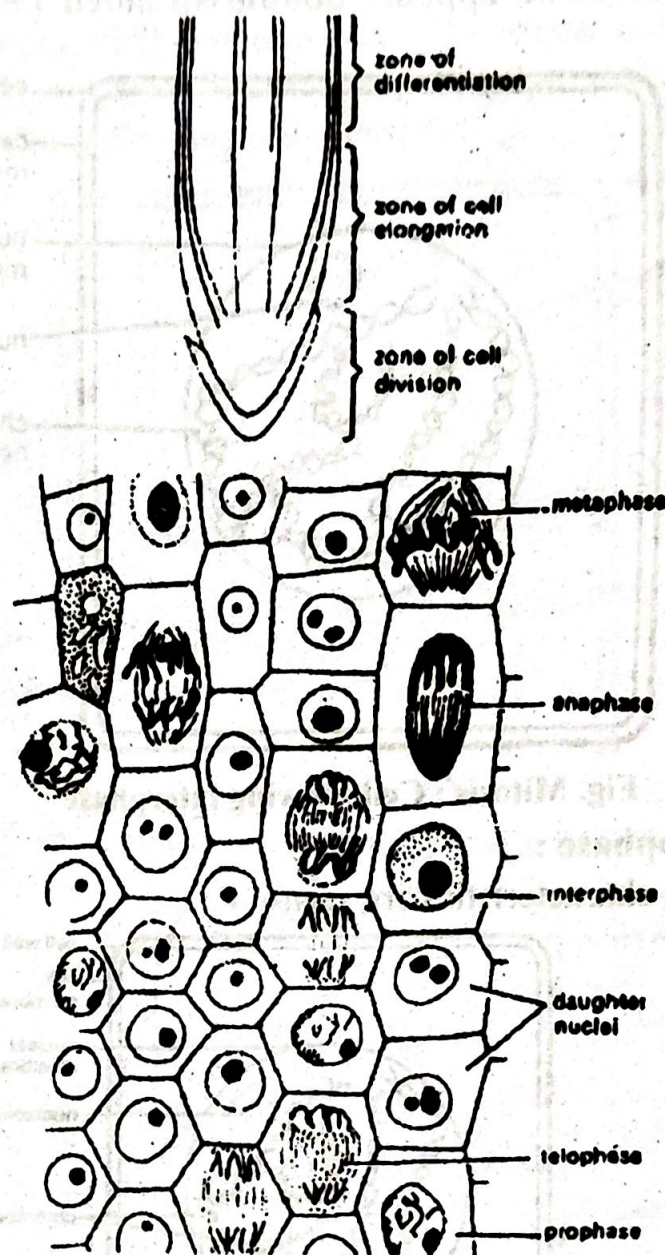


Fig. L.S. onion root tip showing different stages of mitosis

- (ii) If the lower root portion of the bulb dips in water, it quickly sends large number of roots.
- (iii) Cut the root tip.
- (iv) Now, fix them in Carnoy's solution.

Observation :

The slide shows almost all the stages of mitosis.

[I] terphase :

The following characteristics are seen—

- (i) This is a stage prior to actual mitotic cycle.
- (ii) The cell appears to be inactive or in the resting stage but is metabolically the most active. DNA replication occurs during this period.
- (iii) Nuclear membrane and nucleolus are very distinct.
- (iv) Chromosomes are in the form of chromatin network and individual chromosomes can not be seen separately.
- (v) The chromosome appears double stranded i.e., made of two chromatids.

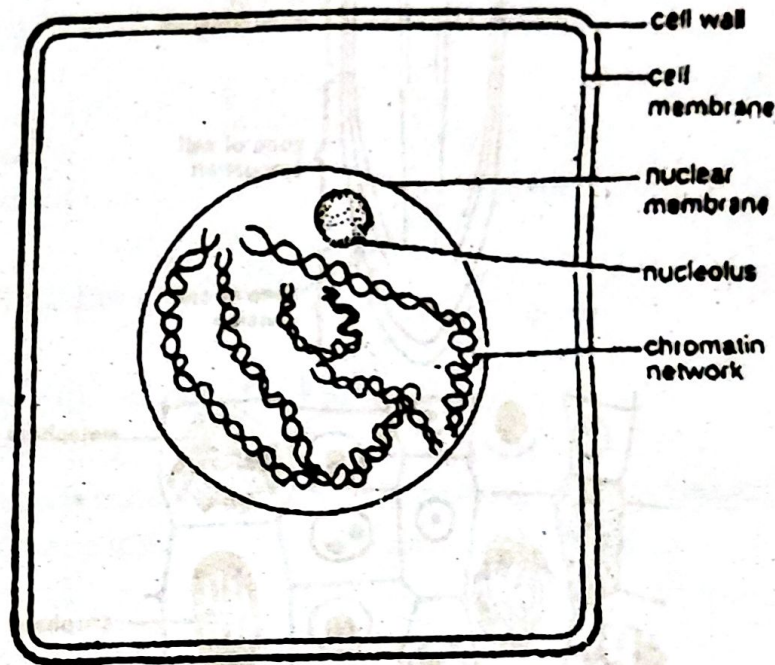


Fig. Mitosis : Cell showing interphase

[II] Early prophase :

The following characteristics are seen—

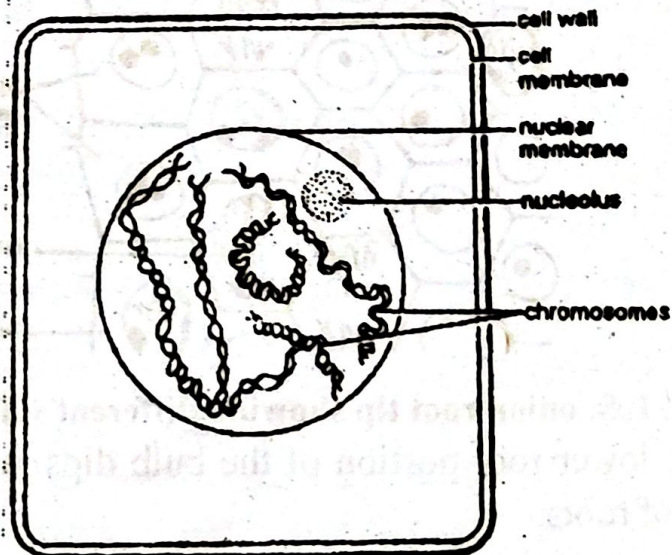


Fig. Mitosis : Cell showing early prophase

- (i) This is the first stage of mitosis that is observed under the microscope.
- (ii) Nuclear membrane appears distinct.
- (iii) Nucleolus is also seen clearly.
- (iv) Chromosomes become coiled and shortens and are more distinct.

[III] Late prophase :

The following characteristics are seen—

- (i) The nuclear membrane and nucleolus have partially or completely disappeared.
- (ii) Each chromosome begins to show chromatids, primary constriction, secondary constriction and centromeres.
- (iii) The equatorial region appears clearly in the centre of the cell.
- (iv) Chromosomes begin to move and gather near the equatorial plate.
- (v) Chromosomes are condensed and thus short and thick.
- (vi) Spindle fibres also begin to appear.

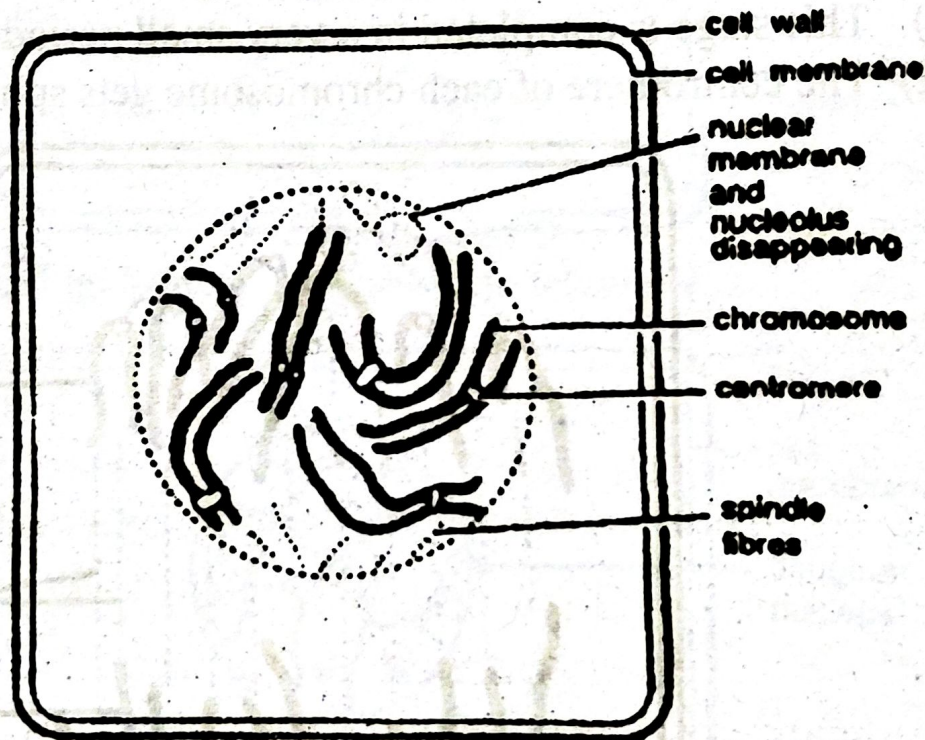


Fig. Mitosis : Cell showing late prophase

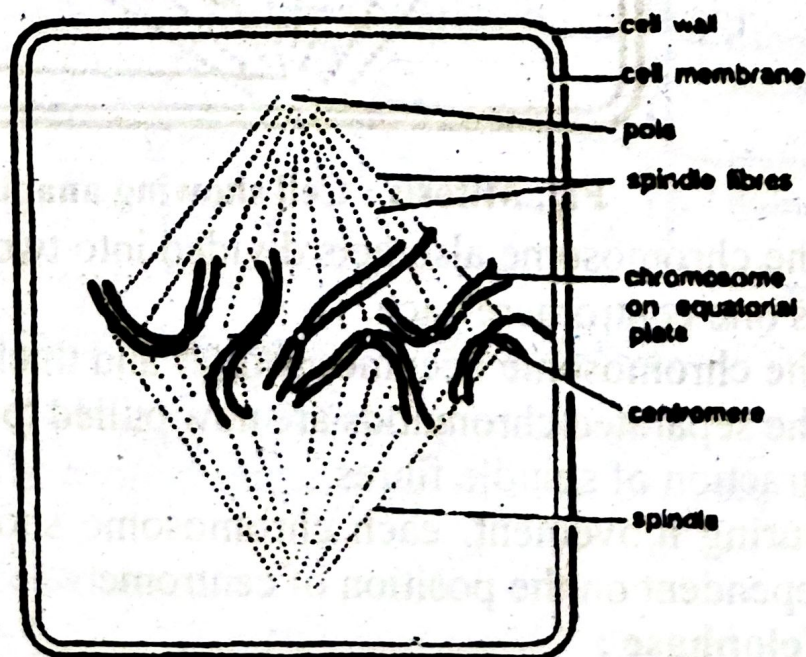


Fig. Mitosis : Cell showing metaphase