

Mitosis and the cell cycle

Name the phases of interphase and what happens in each.

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What happens in prophase?

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What happens in metaphase?

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What happens in anaphase?

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What happens in telophase?

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Give three roles of mitosis.

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Why is a root tip used in the squash practical?

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Why is the root tip warmed in hydrochloric acid?

Chromosomes condense (two sister chromatids), nuclear envelope breaks down, spindle forms (organised by centrioles in animal cells).

G1: growth and protein synthesis. S: DNA replication. G2: growth and preparation for division.

Centromeres divide and spindle fibres pull sister chromatids to opposite poles.

Chromosomes line up on the equator, attached to spindle fibres by centromeres.

Growth, replacement and repair of cells, and asexual reproduction.

Chromosomes uncoil, nuclear envelopes and nucleolus re-form, spindle breaks down.

To break down the middle lamella so cells separate, and to fix (kill) the cells.

The meristem just behind the tip has cells dividing rapidly by mitosis.

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Name a stain used in the root tip squash.

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Why is the root tip squashed?

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Formula for the mitotic index?

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What does a high mitotic index suggest?

To make a layer one cell thick so light can pass through and the cells can be seen clearly.

Acetic orcein (or toluidine blue), which binds to chromosomes.

A large proportion of the cells are dividing, as in a meristem or growing tissue.

Number of cells in mitosis $\div$ total number of cells observed ($\times 100$ for a percentage).