CELL CYCLE AND CELL DIVISION

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1. Mitosis results in two daughter cells which are gentically identical.
2. Growth and repair (cells of the upper layer of the epidermis, cells of the lining of the gut, and blood cells are being constantly replaced).
3. To restore nucleole-cytoplasmic ratio.

MODIFICATIONS OF MITOSIS

1. **Free nuclear division :-** Karyokinesis is not followed by cytokinesis as a result of which multinucleated condition arises.
2. **Endomitosis :-** This is duplication of chromosomes without division of nucleus. Endomitosis leads to polyploidy. i.e. Increase in number of set of chromosomes. Colchicine induces polyploidy in plants. Colchicine is a mitotic poison as it arrests the formation of spindle fibres.
3. **Endoreduplication :** Endoreduplication is a modification of endomitosis. The polytene chromosomes are formed by the process of endoreduplication. In endoreduplication, the chromatids replicate but do not get seperated. This process is also known as polyteny.

Key points of Mitosis

- **Number of chromosomes remains same after mitosis.**
- **DNA content of daughter cells will be same as that of parent cell (G_1).**
- **Two cells will be formed after mitosis.**
- **There will be no change in ploidy of the daughter cells.**
- **During metaphase, the chromosomes are arranged in a single metaphasic plane.**
- **Sister chromatids get separated in Anaphase of mitosis.**

Note:

AMITOSIS : It is a simple method of cell division which is also called direct cell division. In this division there is no differentiation of chromosomes and spindle. The nuclear envelope does not degenerate. The nucleus elongates and constricts in the middle to form two daughter nuclei. This is followed by a centripetal constriction of the cytoplasm to form two daughter cells.

eg. Prokaryotes and Some unicellular eukaryotes.