

# Phases of a Cell Cycle and its Reproduction

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## DESCRIPTION

Cell growth describes the division of a mother cell into two daughter cells (1->2->4->8, etc.), whereas cell growth refers to the increase in cell size (mass accumulation). The process of making more cells by cell division is known as cell proliferation. Ex: Cell size and DNA concentration can sometimes be proportional. Endoreplication, which is the continuation of DNA replication in the absence of cell division, results in bigger cells. Megakaryoblasts develop into granular megakaryocytes, which are the cells that produce platelets.

## Process of cell growth

This is the usual growth of megakaryoblasts, which develop into granular megakaryocytes, the bone marrow cells that produce platelets. Growth factors, which are typically regarded as a subgroup of cytokines, are the diffusible signaling proteins that promote cell growth, differentiation, survival, inflammation, and tissue repair. They may be released by nearby cells, distant organs and glands, or even tumor cells themselves. The factors involved in cell growth extracellular factors that function as mitogens and growth factors make sure that cells maintain the proper size while they multiply. However, specific extracellular signal proteins can regulate cell division and proliferation in some types of cells. The cell growth present in two types they are present like a cell division: Mitosis and meiosis. When people are talking about "cell division," they usually mean mitosis, which is the process of creating new cells for the body. The process of cell division that produces sperm and egg cells is known as meiosis. The physical process of cell division, known as cytokinesis, separates a mother cell's cytoplasm into two daughter cells. It happens simultaneously with the two nuclear division processes known as meiosis and mitosis that take place in animal cells. In animal cells and models, the management of cell growth and division is crucial for the preservation of cellular homeostasis and for cell proliferation. These pathways may be defective, which could result in cancer formation and abnormal cell growth. Cell life cycles they present these phases are prophase, prometaphase, metaphase, anaphase, and telophase.

## Cell growth and reproduction

Cells split to produce many cells with similar, if not identical, contents through the process of cellular reproduction. Nuclear division during mitosis produces two somatic cells that are genetically identical to the parent cell and have the same genetic complement [1,2].

## Mitosis

One cell (the mother) divides into two genetically identical new cells (the daughters) during the process of mitosis, a kind of cell division. Mitosis, when referring to the cell cycle, is the stage of cell division during which the DNA in the cell's nucleus is divided into two identical sets of chromosomes [3].

## Meiosis

In sexually reproducing organisms, meiosis is a kind of cell division that results in a reduction in the number of chromosomes in gametes. (Sex cells, such as the egg and sperm) Human body cells, also known as somatic cells, have two sets of chromosomes and are diploid (one from each parent) [4].

## Stages involved in Meiosis

Prophase I the nuclear envelope disintegrates.

Prometaphase II Spindle fibres attach to the chromosomes at the centromere.

Metaphase I the homologous chromosomes align at the equatorial plate ensuring genetic diversity among offspring.

- Anaphase I
- Telophase I
- Cytokinesis I
- Prophase II
- Metaphase II

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