

## SIGNIFICANCE OF MITOSIS

Mitosis, a fundamental cellular process, holds immense significance in various biological aspects:

- **Growth:** Mitosis plays a pivotal role in the growth and development of multicellular organisms. The transformation of a fertilized egg into an embryo and eventually into an adult involves a series of mitotic divisions. Somatic cells, constituting the body of an organism, are formed through mitotic processes.
- **Maintenance of Cell Size:** Mitosis is crucial for maintaining the proper size of cells. When a somatic cell becomes excessively large, mitosis is triggered to ensure a balanced surface area to volume ratio. This ratio is essential for the efficient functioning of the cell. Mitosis prevents cells from becoming too large and helps in regulating their size.
- **Maintenance of Chromosome Number (Genetic Stability):** A key role of mitosis is to preserve the consistency of chromosome number and type in the two daughter cells. This genetic stability is crucial for the normal functioning of cells and ensures the continuity of the organism's genetic information.
- **Repair:** Mitosis serves as a reparative mechanism, replacing old, damaged, or worn-out cells with newly formed cells. This cellular renewal process contributes to the maintenance of tissues and organs, allowing for effective repair and restoration.
- **Reproduction:** In unicellular organisms, mitosis is the mechanism that brings about reproduction or multiplication. The division of a single cell results in the formation of two genetically identical daughter cells, contributing to the propagation of the organism.
- **Healing and Regeneration:** Mitosis is instrumental in the production of new cells required for healing wounds and facilitating regeneration. After injuries or tissue damage, mitotic divisions generate new cells to replace the damaged ones, promoting the recovery and restoration of tissues.