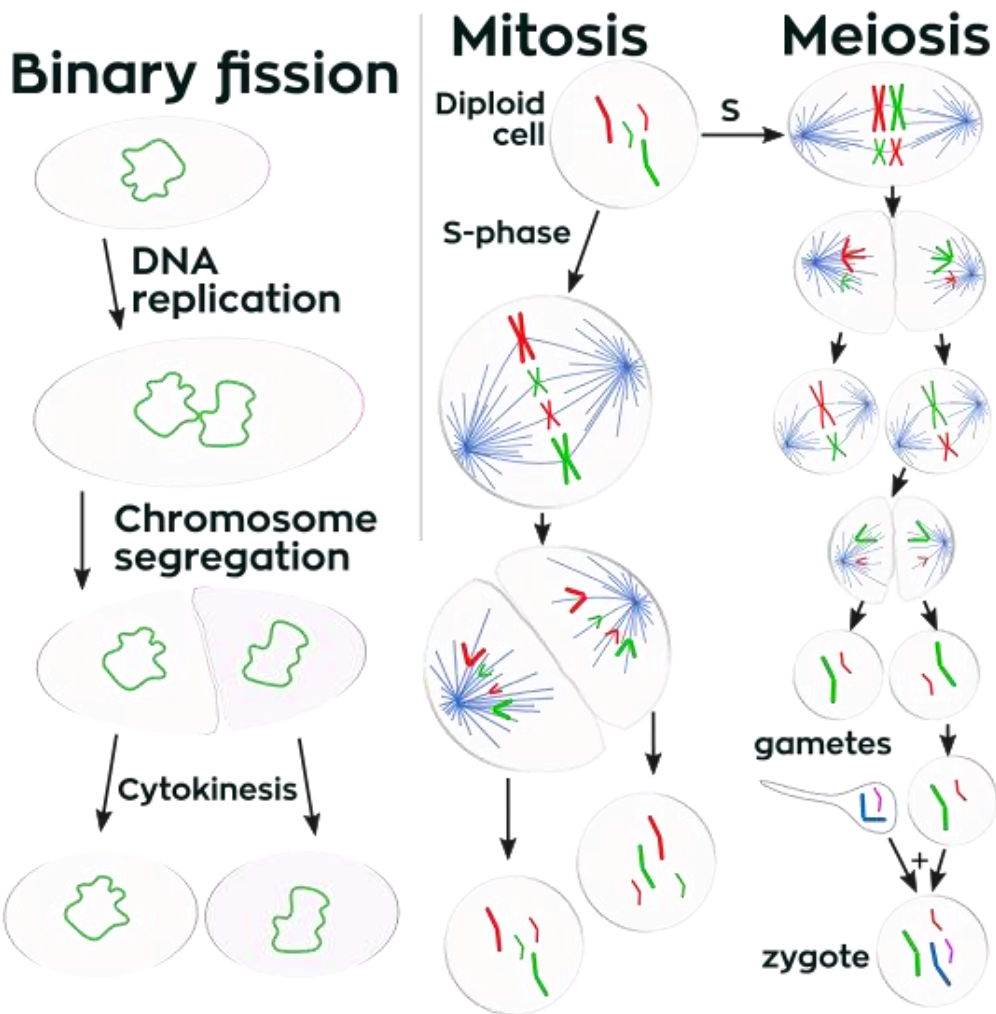


Cell division

Cell division is the process by which a parent cell divides into two or more daughter cells. Cell division usually occurs as part of a larger cell cycle. In eukaryotes, there are two types of cell division: a vegetative division, whereby each daughter cell is identical to the parent cell (mitosis), and a reproductive cell division, whereby the number of chromosomes in the daughter cells is reduced by half to produce haploid gametes (meiosis). In Prokaryotes cell division known as binary fission, where their genetic material is segregated equally into two daughter cells.



Phases of cell division

A-Mitosis

1-Interphase

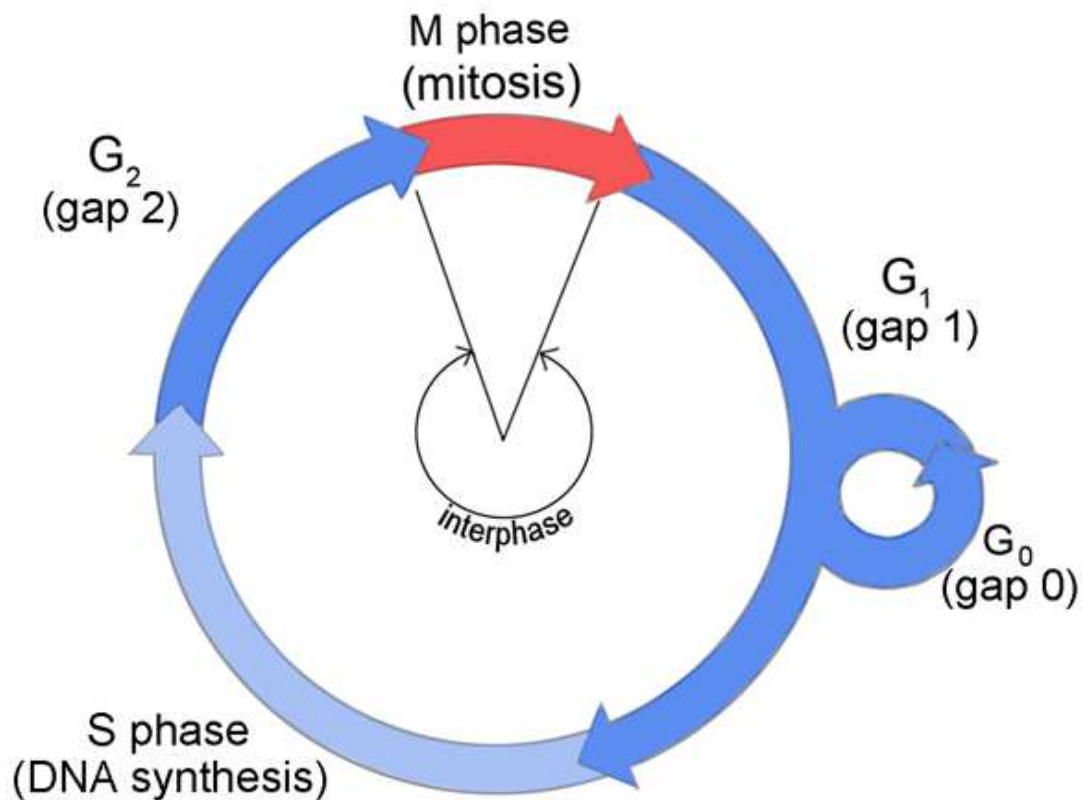
Stages of interphase:

The stages of interphase are:

- G_1 (Gap 1), in which the cell grows and functions normally. During this time, a high amount of protein synthesis occurs and the cell grows— more organelles are produced and the volume of the cytoplasm increases. If the cell is not to divide again, it will enter G_0 .
- Synthesis (S), in which the cell duplicates its DNA .
- G_2 (Gap 2), The mitochondria divide and the cell. In plants, chloroplasts also divide during G_2 .

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- In addition, some cells that do not divide often or ever, enter a stage called G_0 (Gap zero).

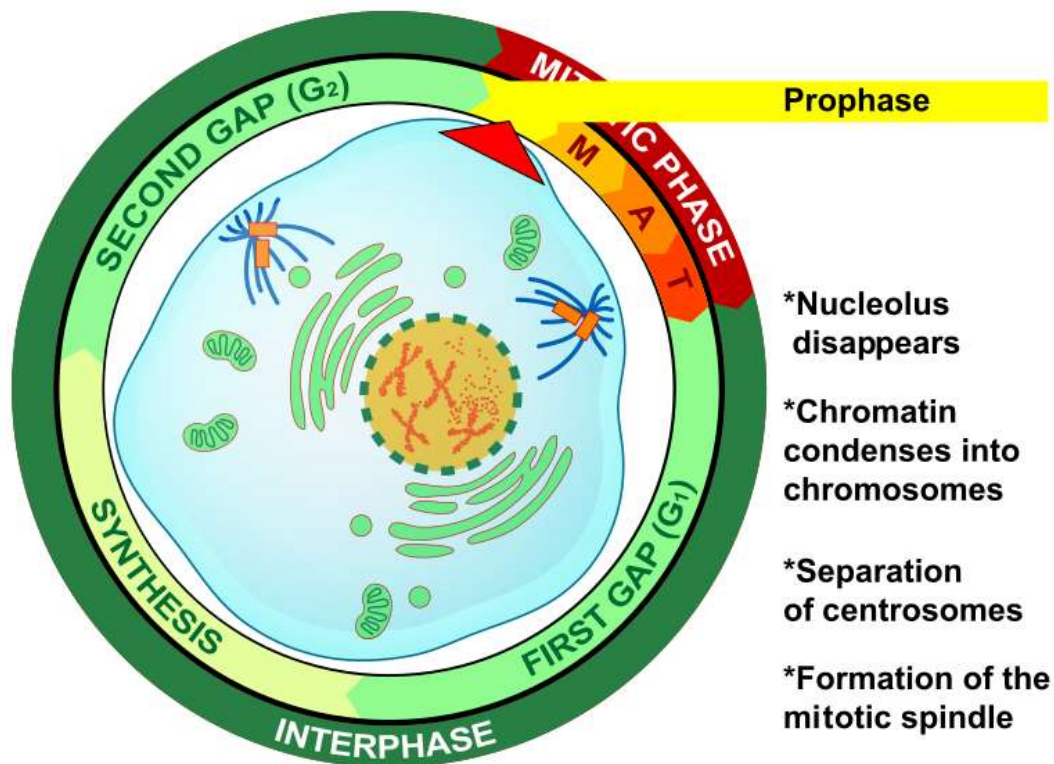


2-Prophase

Prophase is the first stage of division. The nuclear envelope is broken down, long strands of chromatin condense to form shorter more visible strands called chromosomes, the nucleolus disappears, and microtubules attach to the chromosomes at the kinetochores present in the centromere. Microtubules

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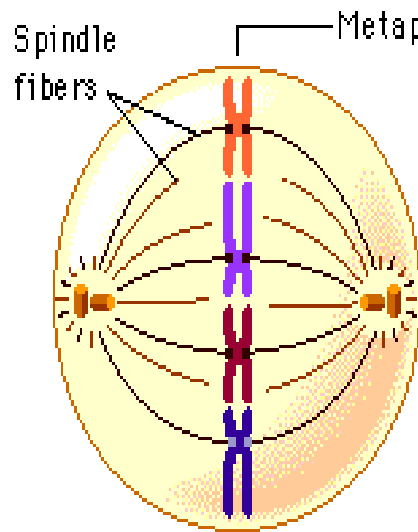
associated with the alignment and separation of chromosomes are referred to as the spindle and spindle fibers.



3-Metaphase

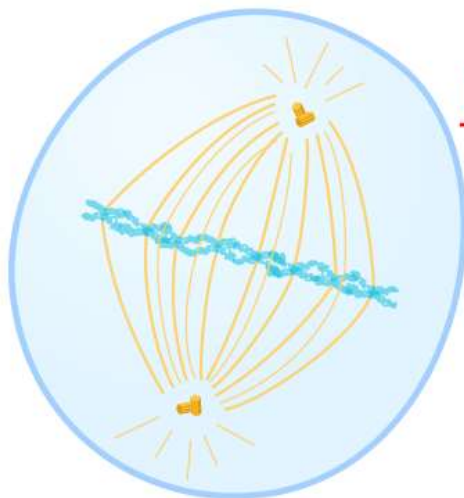
Metaphase is the stage in cell division when the chromosomes line up in the middle of the cell by MTOCs (microtubule organizing center) .

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Metaphase

Thick, coiled chromosomes are lined up in the center of the cell on the metaphase plate. Spindle fibers are attached to the chromosomes.

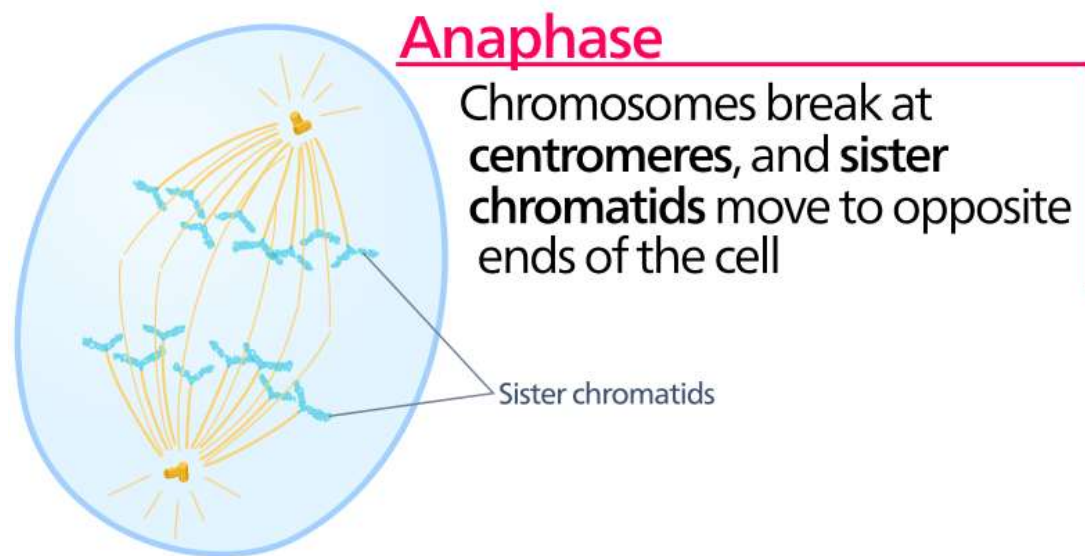


Metaphase

Chromosomes line up along metaphase plate (imaginary plane)

4-Anaphase

Anaphase is a very short stage of the cell cycle. The chromosomes are split apart as the sister chromatids move to opposite sides of the cell.



5-Telophase

Telophase is the last stage of the cell cycle. Two cells form around the chromatin at the two poles of the cell. Two nuclear membranes begin to reform .

