

Stages spindle
extends into the
nuclear area



**ASSIGN
BUSTER**

Stages

(i) Prophase: As an indicative that the cell is preparing to divide, the chromosomes, which were long, slender and loosely packed in the resting stage, gradually contract and thicken owing to coiling and the opposition of material. Each chromosome is seen to be made up of two identical strands or chromatids lying against each other throughout their length.

A chromosome bears a constriction, a region of attachment which is called centromere. As prophase advances the chromatids become closely coiled and thus the double nature of the chromosomes disappears. (ii) Metaphase: In this stage the nucleolus and nuclear membrane disappear, and a spindle-shaped body known as nuclear spindle is formed. The spindle extends into the nuclear area and occupies the centre of the cell.

The chromosomes move to the equatorial plane of the spindle and become attached to it by the centromeres. (iii) Anaphase: The chromosomes begin to separate. Each centromere divides equally. First the two centromeres and later on the chromatids are pulled apart. The two halves or the identical sets of chromatids move to opposite poles of the spindle. The movement of the chromatids is autonomous. Thus the chromatids become separated from each other.

(iv) Telophase: The two groups of chromatids, now known as chromosomes pass towards opposite poles of the spindle. There the chromosomes uncoil and again become thin and long. The polar caps of the spindle disappear; and the nuclear membrane encircling the chromosome develops, nucleoli

reappear. As the telophase proceeds, the division of the cytoplasm into two parts also takes place. And ultimately two daughter cells are formed.

Importance of Mitosis:

Mitotic cell division is very important because of the fact that in spite of repeated cell divisions the constituents of the chromosomes are never reduced, but remain identical in all the daughter cells.

Thus the daughter nuclei are similar to the mother nucleus.

Formation of Body Parts:

The zygote which was got by the fusion of a sperm and an ovum, begins to divide by the process of cell division, and produces large number of interdependent daughter cells. These cells gradually begin to assume different functions and thus the various parts of the body are formed.