

Late prophase



Metaphase → Complete disintegration
→ of nuclear memb marks the
beginning of metaphase as a
result whole genetic material gets
diffused in cytoplasm.

→ GM = present in their thickest
& shortest form = chromosome

→ A chromosome is made up
2 sister chromatid
held at centromere



10.2 M PHASE

mitosis

This is the most dramatic period of the cell cycle, involving a major reorganisation of virtually all components of the cell. Since the number of chromosomes in the parent and progeny cells is the same, it is also called as **equational division**. Though for convenience mitosis has been divided into four stages of nuclear division (karyokinesis), it is very essential to understand that cell division is a progressive process and very clear-cut lines cannot be drawn between various stages. Karyokinesis involves following four stages.

- Prophase
- Metaphase
- Anaphase
- Telophase

10.2.1 Prophase

Prophase which is the first stage of karyokinesis of mitosis follows the S and G₂ phases of interphase. In the S and G₂ phases the new DNA molecules formed are not distinct but intertwined. Prophase is marked by the initiation of condensation of chromosomal material. The chromosomal material becomes untangled during the process of chromatin condensation (Figure 10.2 a). The centrosome, which had undergone duplication during S phase of interphase, now begins to move towards opposite poles of the cell. The completion of prophase can thus be marked by the following characteristic events:

- Chromosomal material condenses to form compact mitotic chromosomes. Chromosomes are seen to be composed of two chromatids attached together at the centromere.
- Centrosome which had undergone duplication during interphase, begins to move towards opposite poles of the cell. Each centrosome radiates out microtubules called asters. The two asters together with spindle fibres forms mitotic apparatus.

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Question

Which of the following is the most dramatic period of the cell cycle?

A G_1 -phase

B G_2 -phase

C S-phase

D M-phase

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THANK YOU