MITOSIS

INTRODUCTION → The growth and development of every organisms depends exclusively on the multiplication and enlargement of its cells. The development of a multicellular organism from the unicellular zygote is achieved by the cell division, growth difference. The asexual and sexual reproduction also depend on the cell division.

Primarily there are two kinds of cell divisions:

① Mitosis which meant for multiplication of cell number, and

② Meiosis which helps in alternation of generation by reducing the number of chromosomes to half of the parent cell in daughter cells.

DEFINITION → Mitosis can be defined as a kind of cell division taking place in an adult somatic cells due to which a parent cell divide into two alike daughter cells which are essentially same as parent cells. Particularly in genetic make up i-e both the daughter cells possess same number of chromosome as in parent cell. The development of an individual from zygote to adult stage takes place

through mitotic cell division. Although growth also takes place through increase in cell size, but when cell size increases, surface area of cell does not increase in the same proportion as the cell volume. Therefore cell division helps in growth also by way of increasing surface area of the cells. Therefore, mitosis is a necessity for maintenance and perpetuation of life.

CELL CYCLE → Mitosis includes four phases namely G_1, S and G_2 and M phase (Mitotic phase) which occur in succession and form the so called cell cycle. The G_1 phase, S-phase and G_2 phase are collectively known as Interphase.

G_1 Phase → It is known as Gap phase 1 in which synthesis of RNA and different kinds of protein takes place. Thus G_1 phase includes the synthesis and organization of the ~~substance~~ substrates and enzyme necessary for DNA synthesis. G_1 is also marked by transcription of different kinds of RNA.

S - Phase → S-phase or Synthetic phase is the most important phase in which synthesis of DNA takes place and it

continues till amount of DNA gets doubled exactly. As soon as the amount of DNA is doubled P. exactly, synthesis of DNA is stopped and synthetic phase is over.

G_2 -Phase → With the end of S- phase G_2 phase or Gap phase, starts and same processes starts as in G_1 phase. After a fixed time it overs and M - phase or Mitotic phase starts.

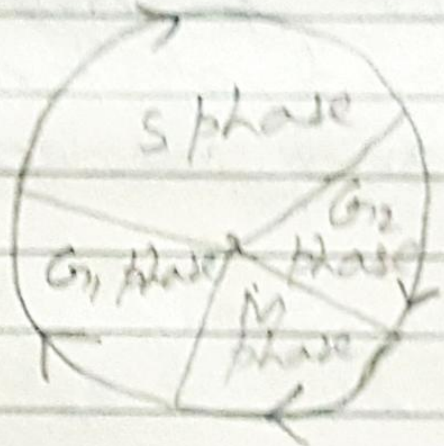

Fig - Diagrammatic representation of a cell cycle.