

MITOSIS LAB

Cells normally multiply by means of mitotic cell division. In this process the nucleus breaks down and is then reformed in the two daughter cells. Chromosomes are important components of the nucleus. They carry the genes which regulate heredity, development, and metabolism. For normal functioning, it is important for each cell to obtain a copy of each gene on every chromosome. Mitosis insures this result by distributing a full set of chromosomes to each daughter cell. Each species has a typical number of chromosomes present in every normal body cell of its member organs. Mitosis enables each organism to maintain this chromosome number in its multiplying cells.

Try to find each of the following stages of mitosis on the slide of the prepared onion root tip. (You will have to look at many cells)

INTERPHASE - Stage between active mitotic divisions. Cell is preparing for mitosis as compounds move into the nucleus to prepare for duplication.

PROPHASE - Chromosomes begin to appear. Nuclear membrane disappears

METAPHASE - Chromosomes become much clearer and cluster in the middle of the cell. The spindle fibers are visible.

ANAPHASE - Chromatids move apart. The pulling apart continues until chromosomes exist at each end of the cell.

TELOPHASE - The nucleus reforms. The cell plate forms between the two new cells. The two daughter cells are exactly alike, but about half the size of the original parent cell.

DRAW the stages of mitotic cell division as observed in the cells of the root tip. All drawings should be done on **HIGH POWER**. For each drawing, **label** the **cell wall, cytoplasm, nucleus, chromosomes, spindle fibers, cell plate** wherever they are visible.

QUESTIONS

1. How is mitosis in plant and animal cells similar?
2. How is mitosis in plant and animal cells different?
3. What is meant by the term "cytokinesis?"
4. Why do you think the root tip is a good place to look for mitotic cell division?
5. What is the purpose of mitosis?
6. Where does meiosis occur and what is its purpose?
7. Define the terms diploid and haploid.