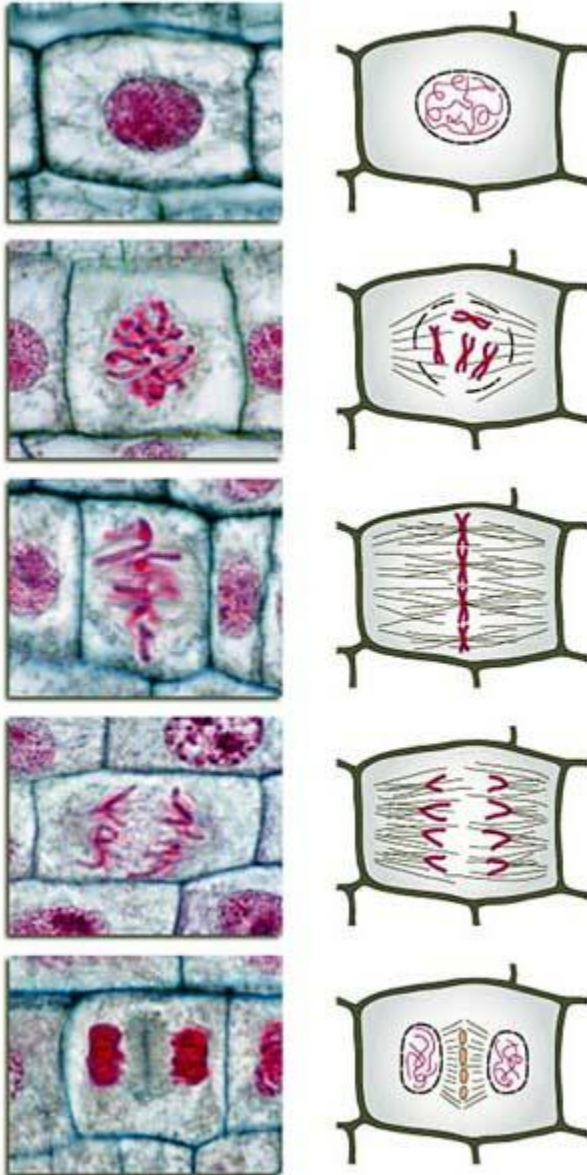


## DIFFERENCES BETWEEN PLANT AND ANIMAL MITOSIS :

1. Since plant cells don't have centrioles, there are no asters at the end of the spindles
2. Plants have a rigid cell wall, so cytokinesis is not a pinching-in but instead a cell plate divides the cell into two daughter cells



## **IMPORTANCE OF MITOSIS**

Life begins as a single cell, but may have to become billions of cells.

In order to grow and repair cells, mitosis and cell division are essential. Old worn out cells must be replaced in order for the body to function properly.

Exact copies of cells must be produced because each cell needs a full copy of the DNA codes for all cell and body functions.

## **Cell Division and Cancer**

A mutation is a permanent change in the DNA of a cell. This change of genetic information can cause the cell to not function at all or to function incorrectly.

Mutations can be caused by:

- chemical compounds
- viruses
- radiation

If the mutation occurs in the gene that controls cell division - it can result in CANCER. These genes are called oncogenes. Cancer is the uncontrolled rapid growth and division of cells.

Examples :

- toxic compounds in cigarette smoke causes a mutation that produces controlled growth in the lung cells, forming tumors.
- exposure to UV light ( tanning beds) causes a mutation of skin cells, resulting in skin cancer

## TREATING CANCER

Since cancer cells divide more quickly than other cells in the body, anything that interferes with cell division will harm cancer cells more than regular cells. Two treatments can do this:

1. Radiation Therapy

Gamma rays or X-rays are directed at the cancer cells.

Used in treating tumors that more localized, like the skin, breast or cervix.

The tumor is bombarded with radiation or sometimes radioactive materials is implanted internally next to the tumor.

Healthy cells usually recover.

Side effects include skin inflammation and fatigue, hair loss if the tumor is on the brain, and sterility if it is testicular cancer (cancer of the testes).

2. Chemotherapy

One or several drugs are fed intravenously into the bloodstream. Some of the drugs attack the cells as they are dividing, some prevent the cells from dividing.

Often used for more widespread cancers such as lymphomas, leukemia, or localized cancers that have spread to other areas.

Chemotherapy is more severe and can affect healthy cells that normally grow and divide rapidly such as - bone marrow, skin cells, hair cells, cells in the digestive system, and sex cells. Other side effects include severe nausea, diarrhea, and hair loss. Some of the side effects are temporary, like the nausea and hair loss, but permanent sterility often results.