

Topic: Cancer
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- ▶ Cancer is a non-infectious disease. It starts at the molecular level of the cell and, ultimately affects the cellular behavior. Generally, it can be defined as uncontrolled proliferation of cells without any differentiation .
- ▶ Hence, when a cell of a specific tissue divides, it normally produces its own kinds of cell of the tissue to which it belongs. It never produces the cells of other tissues. Therefore, the process by which cells achieve this specification and specialisation is known as cellular differentiation. Differentiation of cell begins during embryonic gastrulation stage and continues through tissue formation.
- ▶ Actually differentiation has a genetic basis and the process results from the interaction of the nucleus and the cytoplasm. After the cells become well-differentiated, they cannot go back normally to the undifferentiated stage unless disturbed internally or externally.

- ▶ Therefore, in multicellular organism, the cell division, differentiation and survival of individual cells are carefully regulated to meet the needs of the organism as a whole. When this regulation is lost due to any reason, the cells behave unusually and defy their control mechanism.
- ▶ Then the cells grow and divide in an uncontrolled manner ultimately spreading throughout the body and interfering with the functions of normal tissues and organs. As a whole, this condition leads to cancer. Cancer develops from defects in fundamental regulatory mechanisms of the cell.
- ▶ **Types of cancer :-**
- ▶ **(i) Carcinomas:**
- ▶ It includes approximately 90% of human cancer. This type is principally derived from epithelial cells of ectoderm and endoderm. The solid tumours in nerve tissue and in tissues of body surfaces or their attached glands are example of carcinomas. **Cervical, breast, skin** and **brain** carcinomas are developed from malignant tumour.

▶ **(ii) Sarcomas:**

- ▶ Sarcomas are solid tumours of connective tissues such as **muscle, bone, cartilage and fibrous tissue**. This type of malignant tumours are rare in human (about 2% of human cancer).

▶ **(iii) Lymphomas:**

- ▶ It is a type of malignancy in which there is excessive production of lymphocytes by **the lymph nodes and spleen**. It accounts for approximately 8% of human cancers. Hodgkin's disease is an example of human lymphoma.

▶ **(iv) Leukemia's:**

- ▶ This type of malignancy arises from the blood forming cell. **Leukemia's are commonly known as blood cancer.** Leukemia's are neoplastic growth (uncontrolled cell growth at the cost of remaining cells) of leucocytes or WBC.
- ▶ They are characterized by excessive production of WBC of the blood. The name leukemia is derived from Greek leukos (white) + haima (blood) the massive proliferation of leukemia cells can cause a patient's blood to appear milky.
- ▶ In addition to the types of cancer mentioned above, cancers are further classified according to tissue of origin, for example lung cancer, breast cancer, and the type of cells involved, for example fibro sarcoma arises from fibroblasts, erythromoid leukemia's from precursor of erythrocytes. Although there are many kinds of cancer, the four most common cancers are those of prostate, breast, lung and colon/rectum.