

# Development of cancer in Humanbody

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## LETTER

Cancer is a disease in which some cells in the body grow out of control and spread to other parts of the body. Cancer can occur almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and proliferate (through a process called cell division) when the body needs them, creating new cells. When a cell becomes old or damaged, it dies and its place is replaced by a new one. From time to time, this ordered process breaks down, causing abnormal and damaged cells to grow and proliferate when they shouldn't. These cells can form tumors, which are masses of tissue. Tumors can be cancerous or non-cancerous. Cancerous tumors spread throughout the body and form new tumors (a process called metastasis). Cancerous tumors are also known as malignant tumors.

### Differences between cancer cells and normal cells

Cancer cells differ from normal cells in many ways. Example: Cancer cells

- Cancer cells grow in the absence of growth-indicating signals. Normal cells grow only when they receive such a signal.
- Normally, it ignores signals that tell cells to stop dividing or die (a process known as programmed cell death or apoptosis).
- Tell the blood vessels to grow towards the tumors. These blood vessels supply the tumor with oxygen and nutrients and remove waste products from the tumor.
- The immune system usually eliminates damaged or abnormal cells.

Develop cancer:

Cancer is a genetic disease. Gene changes cause abnormal cell function (cell growth and division). The genetic changes that cause cancer can occur for the following reasons:

- Errors that occur during cell division.
- They were inherited from our parents.

Normally, the body eliminates cells with damaged DNA before it becomes cancer. However, the body's ability to do this diminishes with age. This is one of the reasons why the risk of cancer increases

in later years. All human cancers have a unique combination of genetic changes. As the cancer continues to grow, further changes will occur. Even within the same tumor, different cells have different genetic changes.

### Types of genes that cause cancer

Genetic alterations cause cancer and tend to affect three major types of genes—proto-oncogenes, tumor suppressor genes, and DNA repair genes. These changes are sometimes referred to as the "driver" of the cancer.

Proto-oncogenes are involved in normal cell growth and division. However, if these genes are more active than normal, they become cancer-causing genes (or oncogenes) that allow cells to grow and survive when they do not grow.

Tumor suppressors are also involved in controlling cell growth and division. Cells with tumor suppression or specific genetic changes can divide in uncontrolled ways.

DNA repair genes are involved in the repair of damaged DNA. Cells with mutations in these genes are prone to make additional mutations in other genes and to cause chromosomal changes such as duplication or deletion of chromosomal parts. Together, these mutations can make cells cancerous.

### Cancer spread

Cancer that spreads from one place in the body to another is known as metastatic cancer. The process by which cancer cells spread to other parts of the body is called metastasis. Metastatic cancer has the same name and type of cancer cells as the original or primary cancer. For example, breast cancer that forms a metastatic tumor in the lung is metastatic breast cancer, not lung cancer. Under a microscope, metastatic cancer cells generally look like the cells of the original cancer. In addition, metastatic cancer cells and cells of the original cancer usually share several molecular features, such as the presence of specific chromosomal changes. In some cases, treatment can help extend the lifespan of people with metastatic cancer. In other cases, the main goal of treating metastatic cancer is to control the growth of the cancer.

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Received: December 07, 2021; Accepted: December 21, 2021; Published: December 28, 2021

Citation: Zweit J (2021) Development of cancer in Humanbody. Bio Med 13: 464. doi: 10.35248/0974-8369.21.13.464

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### Changes in tissues that are not cancer

Not all changes in body tissue are cancer. However, some tissue changes can develop into cancer if left untreated. Here are some examples of non-cancerous tissue changes (hyperplasia, dysplasia, carcinoma in situ), but they can become cancerous and are monitored in some cases.

- Hyperplasia: Occurs when cells in a tissue grow faster than

normal and accumulate additional cells. However, the way cells and tissues are organized still looks normal under a microscope.

- Dysplasia is a more advanced disease than hyperplasia. In dysplasia, there is also an accumulation of extra cells. However, the cells look abnormal and there are changes in the tissue of the tissue.
- Carcinoma in situ is a more advanced disease. Sometimes called stage 0 cancer, it is not cancer because abnormal cells, such as cancer cells, do not invade nearby tissues.