

## Commentary on the Genetics of cancer

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### ABSTRACT

Cancer is caused by certain changes to genes that control the way our cells function, especially how they grow and divide. Genes carry the instructions to form proteins, which do much of the work in our cells. Some sorts of cancer run in certain families, but most cancers aren't clearly linked to the genes we inherit from our parents. Gene changes that start during a single cell over the course of an individual's life cause most cancers.

### DESCRIPTION

#### Cancer

Cancer may refer to any person of an outsized number of diseases characterized by the circumstance of irregular cells that split uncontrollably and have the power to infiltrate and destroy normal body tissue. Cancer often has the power to roll out throughout your body. Cancer is the second-leading root of death in the world.

Cancer is dangerous but in these, they are 5 cancers which are more dangerous,

Lung Cancer

Breast Cancer

Colorectal Cancer

Pancreatic Cancer

Prostate Cancer

#### Nature of Genetic Cancer

The order for a normal cell to devolve into a cancer cell, genes which tune cell growth and demarcation must be altered. When normal regulation is amended, uncontrolled growth is initiated and a malevolent tumor develop.

Genetic changes can arise at many levels, from gain or loss of entire chromosomes to a mutation affecting a single DNA nucleotide.

### ONCOGENOMICS

It is a sub-field of genomics that signalize cancer-associated genes. It focuses on genomic, epigenomic and record the alterations in cancer. Cancer is a genetic disease caused by aggregation of DNA mutations and epigenetic alterations leading to unrestrained cell proliferation and neoplasm formation.

### GENETIC TESTING

It helps us to estimate our chance of developing cancer in our lifetime, it does this by searching for specific changes in your genes, chromosomes, or proteins. These changes are called mutations. Usually testing is done on a small sample of body fluid or tissue, for example blood, but sometimes saliva, cells from inside the cheek, skin cells or amniotic fluid

### MUTATION

A mutation in a tumor suppressor gene allows cancer cells to continue growing and accumulating. Make mistakes when repairing DNA errors. DNA repair genes that search for errors in a cell's DNA and make corrections. A mutation in the course of a DNA, repair gene may mean that other errors aren't corrected and key cells to become cancerous.

#### About genetic mutations:

Acquired mutations

Germline mutations

Tumor suppressor genes

Oncogenes

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DNA repair genes

### Warning signs for cancer:

A sore that doesn't mend or continues to bleed or a lump or thickening on the skin or in the Mouth

A stiffen or lump anywhere in the body

Abnormal bleeding or discharge from anybody opening

A tenacious change in bowel or bladder habits

A persistent cough or hoarseness

Difficulty in swallowing or persistent indigestion

Any change in a wart or mole

### GENETIC COUNSELLING

Genetic counselling is a communication process to inform the consultants about the recurrence risk of predisposing familial cancer which might affect the offsprings of future generations. The test will impact the individual's diagnosis, cancer management or cancer risk management, and help out to clarify the risk in family members.

### GENE THERAPY

Gene therapy envisages the replacement of a deficient gene within the sort of a protein or an enzyme or correction of abnormal gene.

They are three different gene therapy treatments:

**Immunotherapy:** It uses genetically modified cells and viral particles to stimulate the immune system to destroy cancer cells.

**Oncolytic Virotherapy:** It uses vigorous particles that clone within the cancer cell to cause a cell death it is an emerging treatment, modality that shows sustainable promise, particularly with metastatic cancers.

**Gene Transfer:** It is a new treatment modality that introduces new genes into a cancerous cell or the surrounding tissue to cause cell death or sedate the growth of the cancer.

Actually, no genetic disorders have been conclusively cured by gene therapy, but some results are obtained from ongoing clinical trails. This treatment technique is immensely flexible, and an ample range of genes and vectors are getting cast-off in clinical trials with successful outcomes.

### CONCLUSION

Cancer may be a genetic disorder during which the normal control of cell growth is lost .The basic mechanism in all cancer is mutation, either within the germ line or much more frequently, in somatic cells. Cancer is multi-factional diseases, much remains to be learned about the genetic processes of carcinogenesis and about the environmental factors that alter DNA and thus lead to malignancy.