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# The Challenge of Access to Oncology Drugs in Canada

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## Prescription for Learning

- 1) Ins and Outs of Cancer;
- 2) Personalized and Precision Medicine;
- 3) Interdisciplinary Aspects;
- 4) Bio-Ethical, Psychological and Social Considerations;
- 5) Future Directions.



# What is cancer?

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- Genetic disease;
- Abnormal pattern in gene expression;
- Accumulation of genetic mutations (epigenetics?)
- Oncogenes;
- Tumour Suppressor Genes (TSGs).



# What is Cancer?

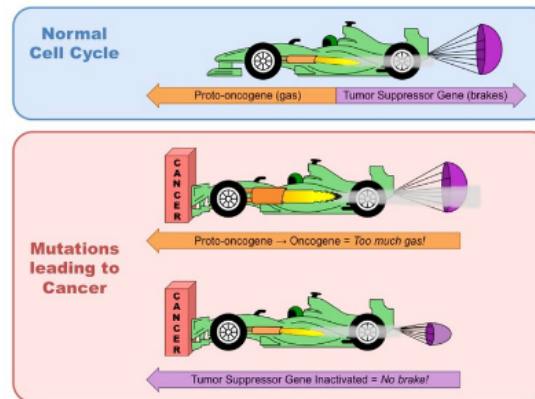
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### Oncogenes

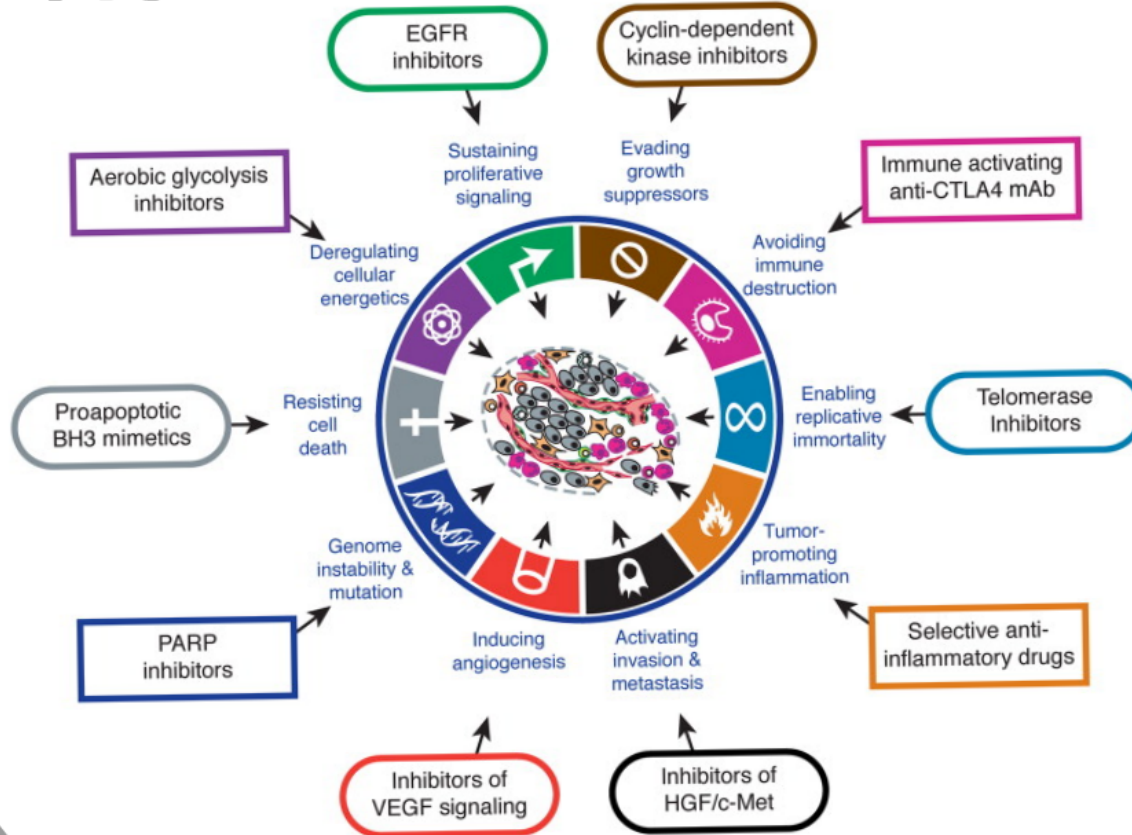
- Mutated versions of normal genes;
- Control cell division, survival & growth;
- Get activated by:
  - Enhanced protein activity;
  - Amplification; and
  - Fusion protein.
- Phenotypically dominant.

### Tumour Suppressor Genes (TSGs)

- Normal cell genes;
- Control cell cycle progression & apoptosis;
- Get inactivated;
- Phenotypically recessive.



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**Hallmarks of cancer**



Reproduced from Cell, 2011, 144, 646

# What Causes Cancer?

## Thecasesolutions.com Genetics?

- Hereditary Cancer Syndromes:
- 5-10% of all cancers:
- Germ line mutation: cancer-predisposing gene.
- Li-Fraumeni:
  - Bone and soft tissue, breast, ovarian and adrenal gland.
- BRACA1-2 mutations: breast and ovarian;
- Cowden: breast, thyroid and endometrial.



## Environment?

- Toxins;
- Radiation;
- Bad luck?

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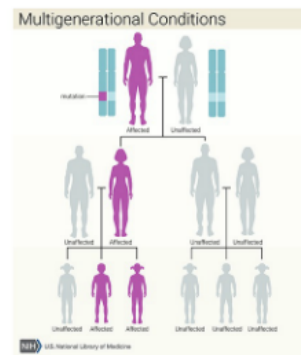


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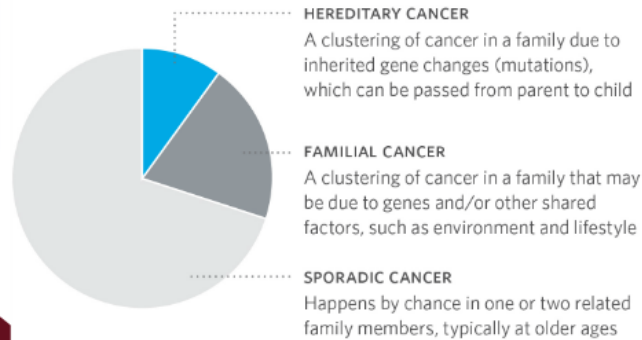




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