Cancer Cells Characteristics

Cancer is a malignant neoplasm that is the effect of uncontrolled proliferation of cells. We distinguish between three forms of cancer:
- Sarcoma affecting mesenchymal tissue (muscle, connective tissue, bone).
- Carcinoma affect epithelial tissue.
- Hematopoietic and lymphoid malignant neoplasms. Examples include Leukaemia and Lymphoma.

Characteristics

US cancer researchers Douglas Hanahan and Robert Weinberg published in the year 2000 an article establishing the "Hallmarks of Cancer" these are:
- Cancer cells are self sufficient on growth factors. This means that they can continue to proliferate and divide independently, as opposed to normal cells that need external growth factors.
- They can resist inhibitory signals that normally come from neighbouring cells.
- Resisting apoptosis is also a crucial attribute of a cancer cell. **- Stimulation of angiogenesis** is very important since the rapidly growing cancer needs a high amount of oxygen and nutrients. The stimulation of angiogenesis also serves as a way of metastasis.
- Can multiply forever. Normal cells go through senescence through e.g. shortening of telomeres with every cell division. Cancer cells however have telomerase that will sustain the telomere length of the chromosomes rendering the cell virtually immortal.
- Invade local tissues and metastasize. This means that the cancer cells spread throughout the body by sending out pioneer cells that can form new metastases.

Other characteristics

For a cell to be able to become a cancer cell there must be a mutation of either **protooncogene** or a **tumor supressor gene**. Most often both of these need to occur for a normal cell to turn into a cancer cell.