Hallmarks Of Cancer

what is cancer? uncontrollable cell growth

Hallmarks of cancer (properties common to all cancers)

1. **Replicative Immortality**- using enzyme telomerase to continue immortal cell division.
2. **Harbor Unstable Genome**-have an abnormal number of chromosomes per cell; low tumor suppressor genes and high oncogenes.
3. **Circumvent Growth Suppressor Signals**-ignore tumor suppressor genes that may otherwise stop their growth.
4. **Avoid Cell Death**- by having high pro-survival proteins (BCL-2)
5. **Sustained Proliferation-** they can multiply indefinitely
6. **Altered Metabolism**- can convert glucose to lactate irrespective of oxygen availability (Walburg Effect).
7. **Avoid Immune System Detection** - T cells can't attack cancer cells.
8. **Tumor Mimic Inflammatory Condition**- tumors mimic inflammation seen in normal tissues so that immune cells will provide essential factors for survival. They are associated with inflammation.
9. **Angiogenesis**-form new blood vessels from existing ones.
10. **Enable Tumors to Form and Metastasize**-by by actively (pushing thru endothelial cells or passively (tumor cells leak thru bloodstreams from leaky, badly formed blood vessels).