<https://www.youtube.com/watch?v=BADXO2Tezhk>

<https://www.youtube.com/watch?v=8jAaUtTg3GI>

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In this video i have discussed 8 hallmarks of cancer and also about the role of oncogenes and oncoproteins in cancer \*\*\*\*Follow me\*\*\*\*\* [http://ilovepathology.com/](https://www.youtube.com/redirect?redir_token=hvQApECZyqibZZGfLicH-gc-wZ98MTU4NTU5NjM3NkAxNTg1NTA5OTc2&v=82n9ZF5ByrU&q=http%3A%2F%2Filovepathology.com%2F&event=video_description) Twitter : [https://twitter.com/VijayPatho](https://www.youtube.com/redirect?redir_token=hvQApECZyqibZZGfLicH-gc-wZ98MTU4NTU5NjM3NkAxNTg1NTA5OTc2&v=82n9ZF5ByrU&q=https%3A%2F%2Ftwitter.com%2FVijayPatho&event=video_description) [https://twitter.com/ilovepathology2](https://www.youtube.com/redirect?redir_token=hvQApECZyqibZZGfLicH-gc-wZ98MTU4NTU5NjM3NkAxNTg1NTA5OTc2&v=82n9ZF5ByrU&q=https%3A%2F%2Ftwitter.com%2Filovepathology2&event=video_description) Facebook: [https://www.facebook.com/ilovepathology/](https://www.youtube.com/redirect?redir_token=hvQApECZyqibZZGfLicH-gc-wZ98MTU4NTU5NjM3NkAxNTg1NTA5OTc2&v=82n9ZF5ByrU&q=https%3A%2F%2Fwww.facebook.com%2Filovepathology%2F&event=video_description) Hallmarks of cancer 8 fundamental changes Protooncogenes , oncogenes & Oncoproteins Role of Oncogenes in cancer Definition A disorder of cell growth Triggered by a series of acquired mutations Affecting a single cell and its clonal progeny HALLMARKS OF CANCER 1. Self sufficiency in the growth Signals 2. Insensitivity to antigrowth/ growth inhibitory signals 3.Evasion of Apoptosis 4. Limitless Replicative Potential 5. Sustained Angiogenesis 6. The Ability to invade and Metastasize 7. Reprogramming Energy Metabolism 8. Evasion of Immune System enablers 9. Genomic Instability 10.Tumor promoting inflammation SELF SUFFICIENCY IN GROWTH SIGNALS Oncogenes: They promote unregulated proliferation/Autonomous cell growth (Self sufficiency in growth signals) The unmutated counterparts of Oncogenes are “proto oncogenes” Growth factors: Cancer cells develop growth self sufficiency ( Synthesize self responsive growth factors) Eg: a. PDGF – Glioblastomas b. TGF-α – Sarcomas c. FGF – Breast ca 2. Growth factor receptors:Cancer cells encode for growth factro receptors. a. EGF-receptor family: ERB-B1 (overexpression) Squamous cell carcinoma b. CSF-1 receptor: FMS (point mutation) – Leukemia c. PGDF receptor: PGDF-R (overexpression) - Gliomas 3. Signal transduction proteins – Receive growth promoting signals. Eg. RAS family (point mutation) – Ca colon, lung. Pancreas 4. Nuclear regulatory proteins: Transcriptional activators Eg: C-MYC (translocated) – Burkitt lymphoma N-MYC (Amplification) – Ca lung, 5. Cell cycle regulatory proteins: Eg: Cyclin D (Translocation) Ca breast, Ca esophagus CDK4 (Amplification) Melanoma

<https://www.youtube.com/watch?v=w4w2VTQqyMM>

<https://www.youtube.com/watch?v=1mo80kTZgW4>