

What is **cancer**?

uncontrolled cell growth

How do cells control cell division?

Contact Inhibition: cell's ability to know when not to divide when in contact w/ another

- If a cell is in contact with another cell, should that cell divide? No
- If a cells loses contact with another cell, should the cell divide? Yes

How do cells start and stop division?

Use enzymes to catalyze chemical reactions to start and stop the cycle.

Enzymes are produced by the direction of DNA.

(car's accelerator)

Proto-oncogenes -- portions of our DNA that make enzymes and cause the cell cycle to go forward

(car's brake)

Tumor Suppressor -- portions of DNA that stop cell cycle

	ON/OFF Proto-oncogene	ON/OFF Tumor Suppressor	Stoplight?
Cell IN Contact With Another Cell	OFF	ON	Green or Red 
Cell LOST Contact With Another Cell	ON	OFF	 Green or Red

What happens if proto-oncogenes become mutated?

Become oncogenes
Like a stuck accelerator, enzymes made
causing the cell cycle forward

What happens if **both** Proto-oncogenes (become oncogenes) and Tumor Suppressors become mutated?

Like stuck accelerator and brakes are out
Enzymes are being made + tumor
suppressors can't halt them

Cell = cancerous

So, mutation in both Proto-oncogenes (become oncogenes) and Tumor Suppressor Genes can result in _____.

What Causes Mutations (Mistakes) in DNA?

1. Error in DNA Replication
2. Energy - UV radiation, X-ray, nuclear radiation
3. Chemicals - Agent Orange

How do we treat cancer?

- Chemotherapy
- Radiation
- Surgery