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## What does it mean?



## Why some cancers are hereditary and some not?



- Hereditary breast/ovarian cancer syndrome caused by mutation of BRCA1 or BRCA2.
- Hereditary colorectal cancer syndrome
  - Hereditary non-poliposis colorectal cancer (HNPCC), caused mutation of a set of genes called mismatched DNA repair genes.
  - Familiar adenomatous poliposis (FAP), caused by mutation of a gene called APC.



- 12 million cancer survivors in the US
- Aging population makes cancer a risk in later years of life
- One out of three Americans will get cancer in lifetime

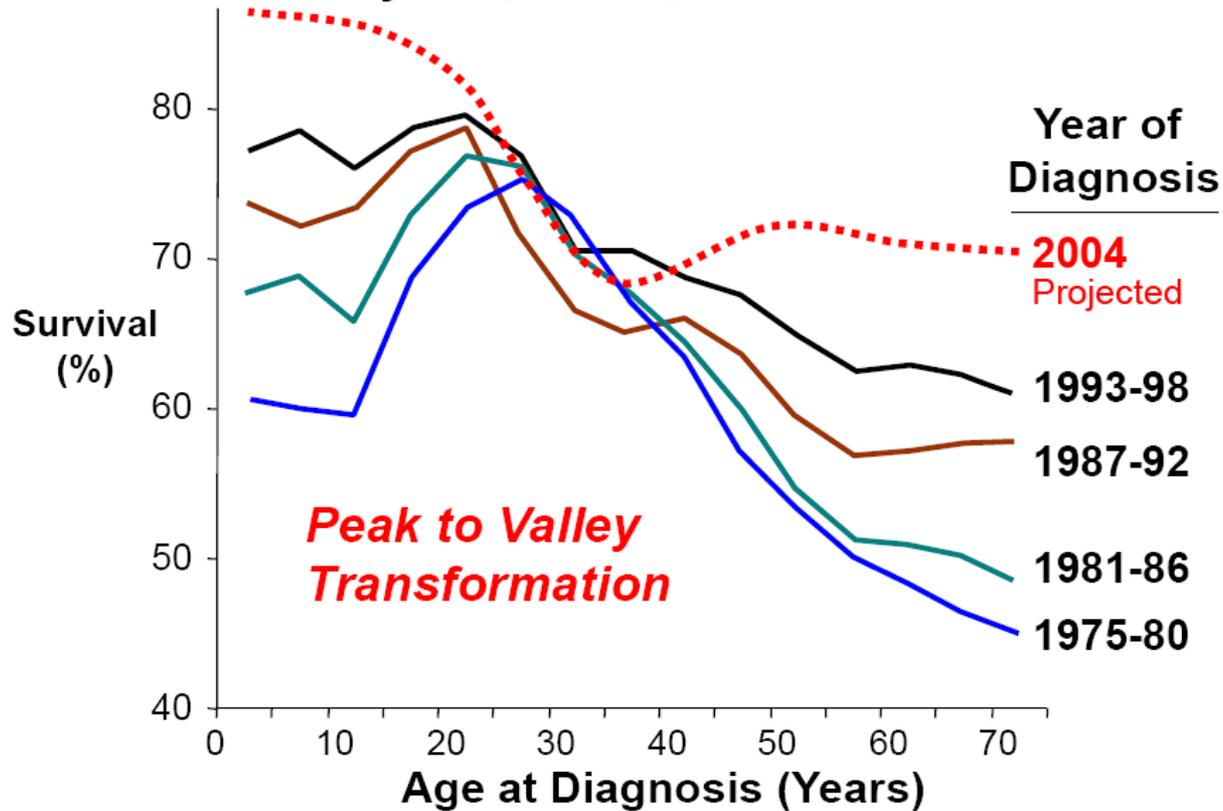


Cancer mortality is decreasing

Cancer mortality is decreasing



## 5-Year Survival of Patients with Cancer by Era, SEER, 1975-1998



# Five year survival has improved significantly in many cancers

Trends in Five-year Relative Survival (%)\* Rates, US, 1975-2003

Site	1975-1977	1984-1986	1996-2003
All sites	50	54	66
Breast (female)	75	79	89
Colon	51	59	65
Leukemia	35	42	50
Lung and bronchus	13	13	16
Melanoma	82	87	92
Non-Hodgkin lymphoma	48	53	64
Ovary	37	40	45
Pancreas	2	3	5
Prostate	69	76	99
Rectum	49	57	66
Urinary bladder	74	78	81

\*5-year relative survival rates based on follow up of patients through 2004.

Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.



## Biological drugs:

Rituxan (Rituximab), Herceptin (Trastuzumab)

## Small molecules:

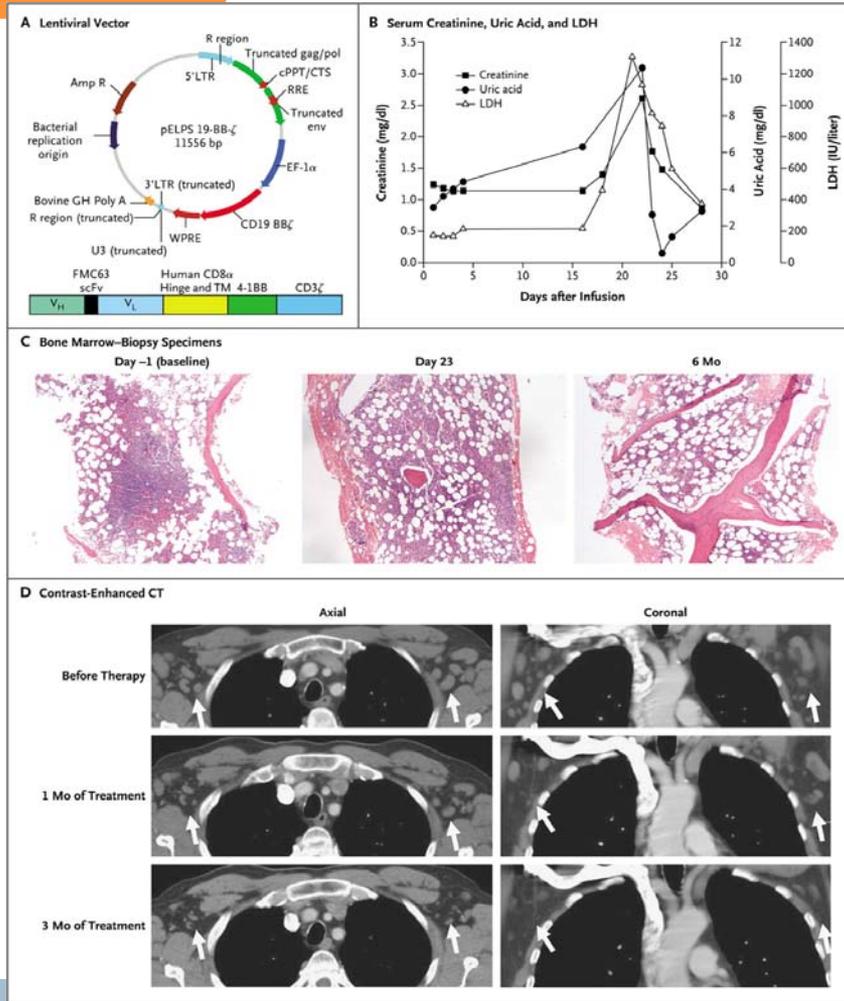
Gleevec (Imatinib), Sutent (sunitinib),  
Dasatinib, erlotinib, ect.



- More Targeted therapeutic drugs.
- Cancer vaccine: Provenge
- Immunotherapy: Chimeric Antigen Receptor (CAR)
- RNA interference:



# Immunotherapy using Chimeric Antigen Receptor



Porter DL et al. N Engl J Med 2011;365:725-733.



The NEW ENGLAND  
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Some drugs work for some patients, but not the others, why?

Gene mutation in cancer:

- KRAS mutation in colorectal cancer and lung cancer

- BRAF mutation in melanoma

- ALK mutation in lung cancer

- EGFR mutation in lung cancer



Diabetes

Cholesterol

Obesity

Food and diet

Vitamins



Life style changes can have positive impact on your quality of life and chance of surviving cancer



[kp.org/santaclara/cancercare/survivorship](https://kp.org/santaclara/cancercare/survivorship)

