

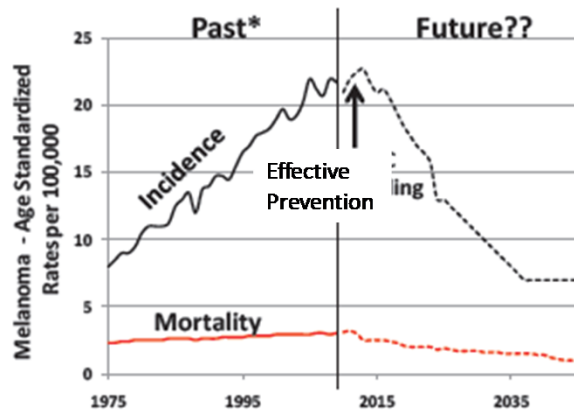
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...such as:
Tobacco
Overweight, obesity
Poor diet
Inactivity
Alcohol
Chemicals
Ultraviolet light, radiation
Infection

Source: National Cancer Institute.

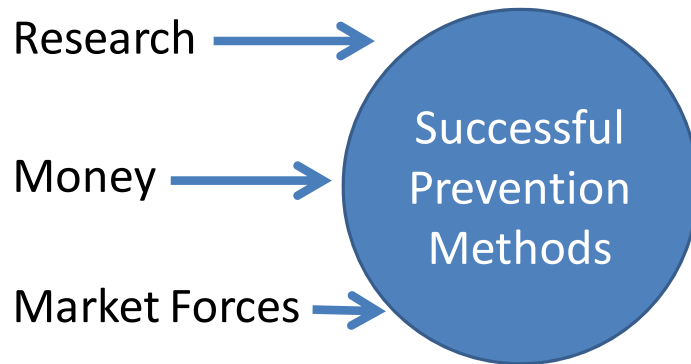
Prevention has more impact than therapy

Age-Adjusted Incidence and Death Rates, Melanoma, U.S. 1975-2008



- Decreased mortality
- Decreased morbidity
- Decreased cost
- Increased quality of life
- Increased productivity
- ? Increased lifespan

Why not more interest in prevention?



**Complex, High bar,
Risk Assessment Difficult**

**Little Monetary Profit
NIH Dollars Down**

**Aging population
Quality of Life Concerns
Risk Tolerance Low**

**Indoor tanning increases melanoma risk
by up to 75%**

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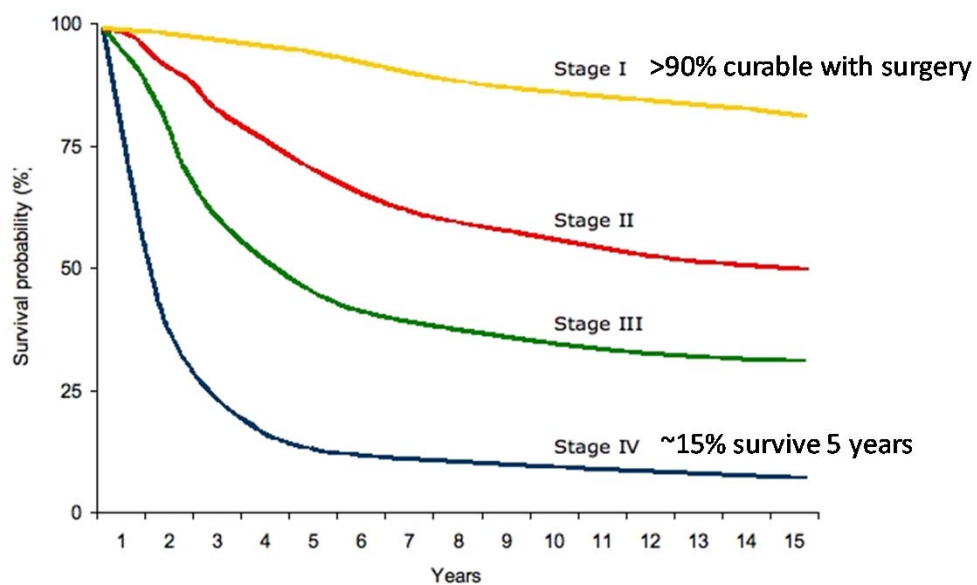


**The number of indoor tanning
salons is higher than that of
Starbucks or McDonalds in many
major U.S. cities**

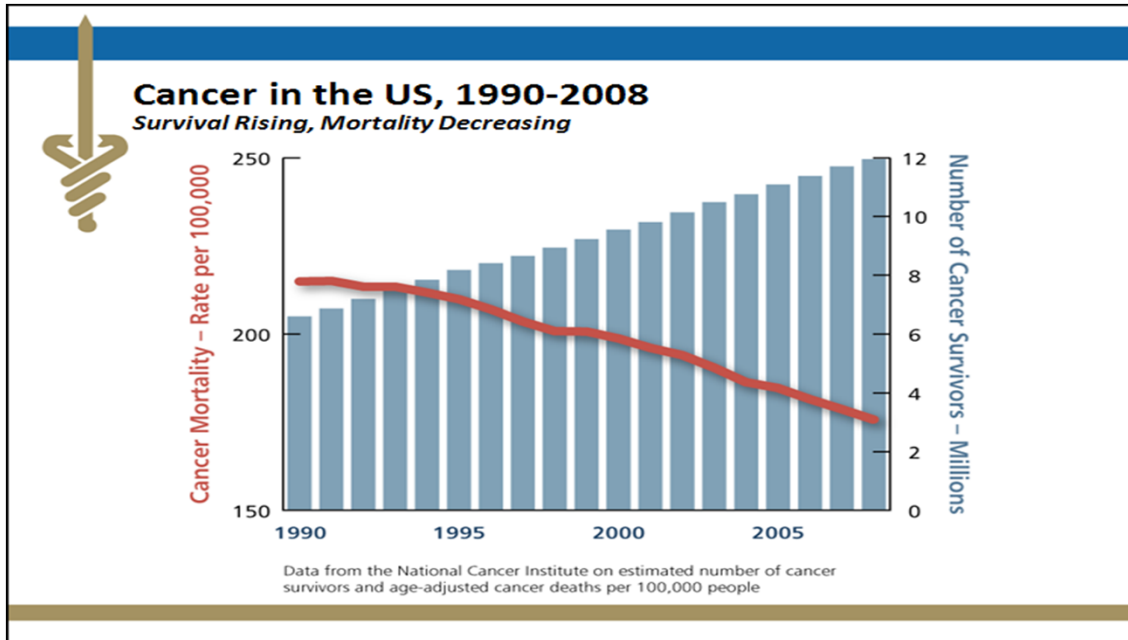
**Melanoma incidence increased among U.S. Caucasian
women aged 15-39 by 50% between 1980 and 2004**

Sources: World Health Organization, San Diego State University, SEER.

Detecting melanoma early vastly improves outcomes

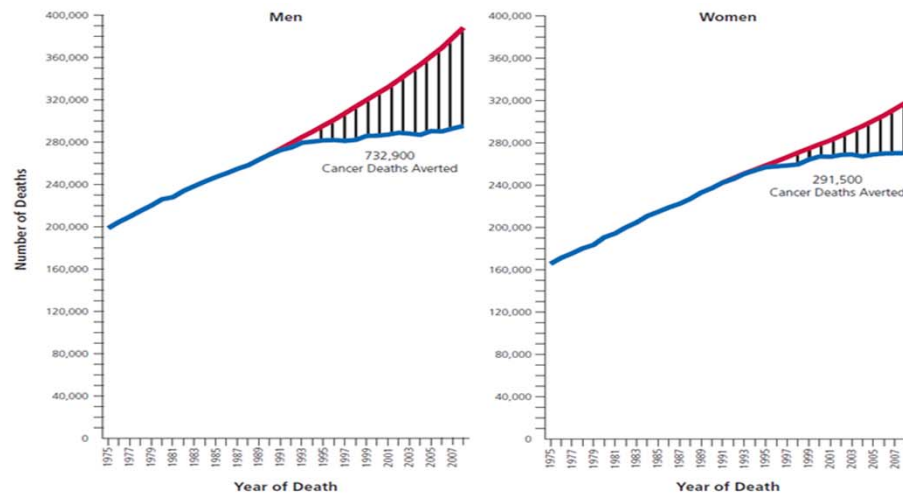


Source: Melanoma Molecular Map Project



Total Number of Cancer Deaths

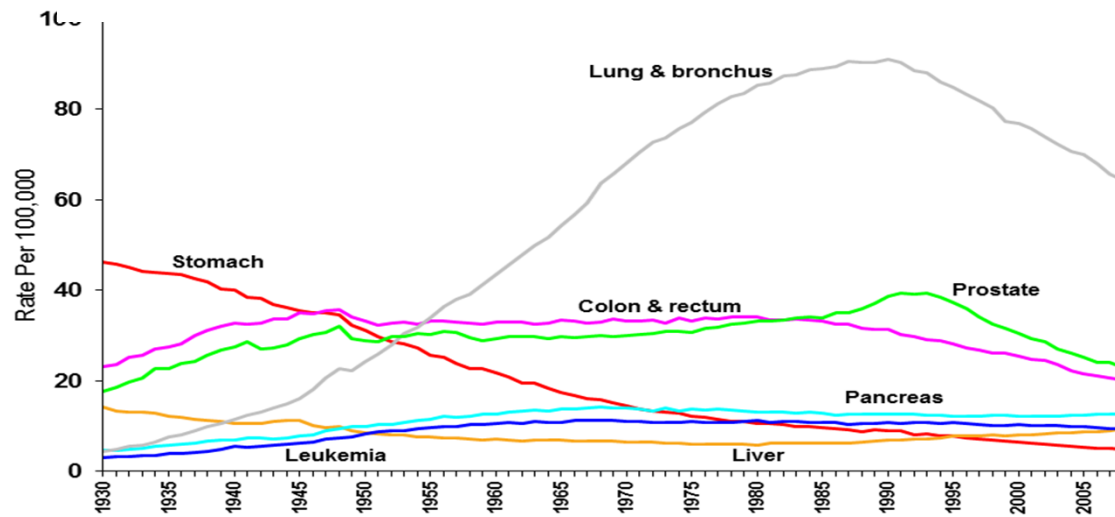
Men (1991-2008) and Women(1992-2008)



The blue line represents the actual number of cancer deaths recorded each year and the red line represents the expected number of cancer deaths if cancer death rates had remained the same since 1990/1991.

Cancer Death Rates* Among Men

U.S. 1930-2008



*Age-adjusted to the 2000 US standard population.
Source: US Mortality Data 1960-2008, US Mortality Volumes 1930-1959,
National Center for Health Statistics, Centers for Disease Control and Prevention.

How Did/Can We Do It?

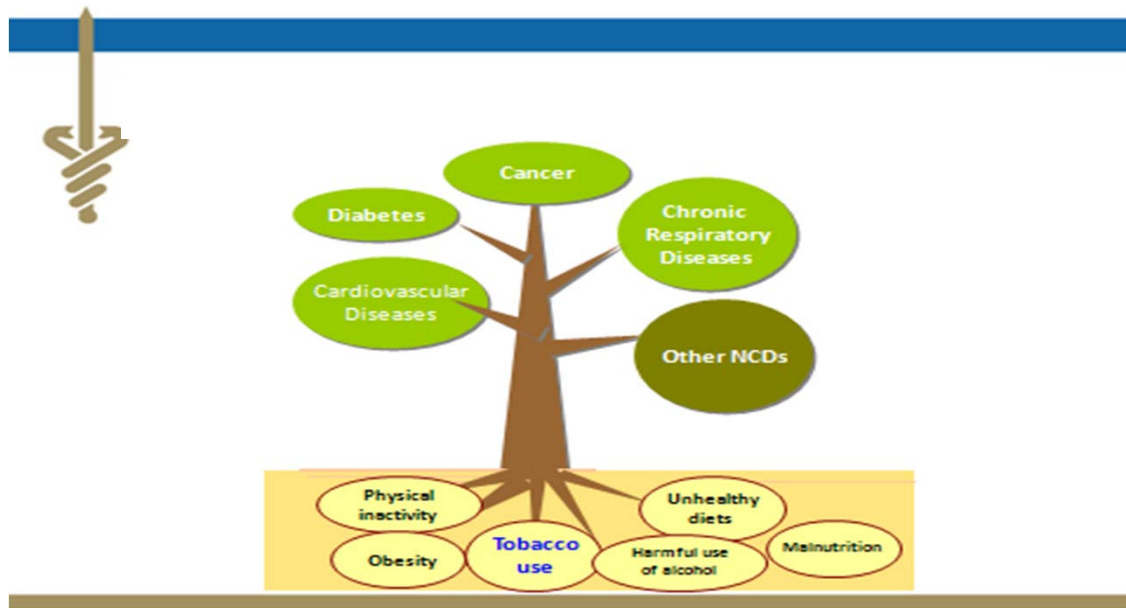
- Tobacco
 - Exercise
 - Healthy Diet
 - Healthy Weight
 - Screening
-
- Early Detection
 - Better Treatments

50%



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Tobacco Use: Key Preventable Factor of NCDs



Tobacco



- **# 1 preventable cause of cancer**
- **Increasing price cuts smoking**
 - **Especially among teens**
- **Increasing price saves lives**
 - **\$1 per pack = 100,000 lives in California**

Drugs that Prevent Cancer

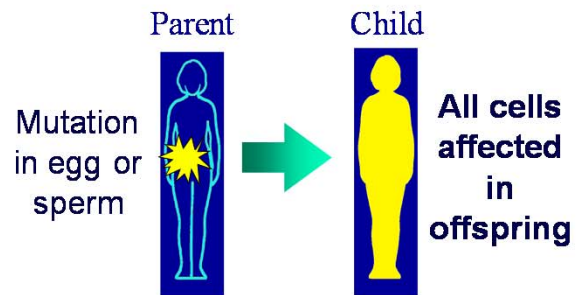


- **Aspirin – aspirin reduces polyps, cancer in half**
- **Oral Contraceptives – cuts risk of uterine and ovarian cancer in half**
- **Statins – 53% reduction in risk of colon cancer**

Source: Poynter, N Engl J Med 2005;352:2184.

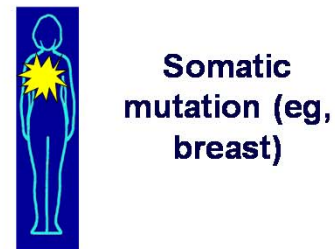
Cancer Arises From Gene Mutations

Germline mutations



- Present in egg or sperm
- Heritable
- Cause cancer family syndromes

Somatic mutations

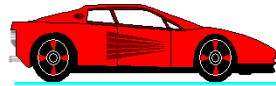


- Nongermline tissues
- Nonheritable

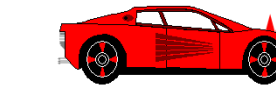
Oncogenes



Normal genes
(regulate cell growth)

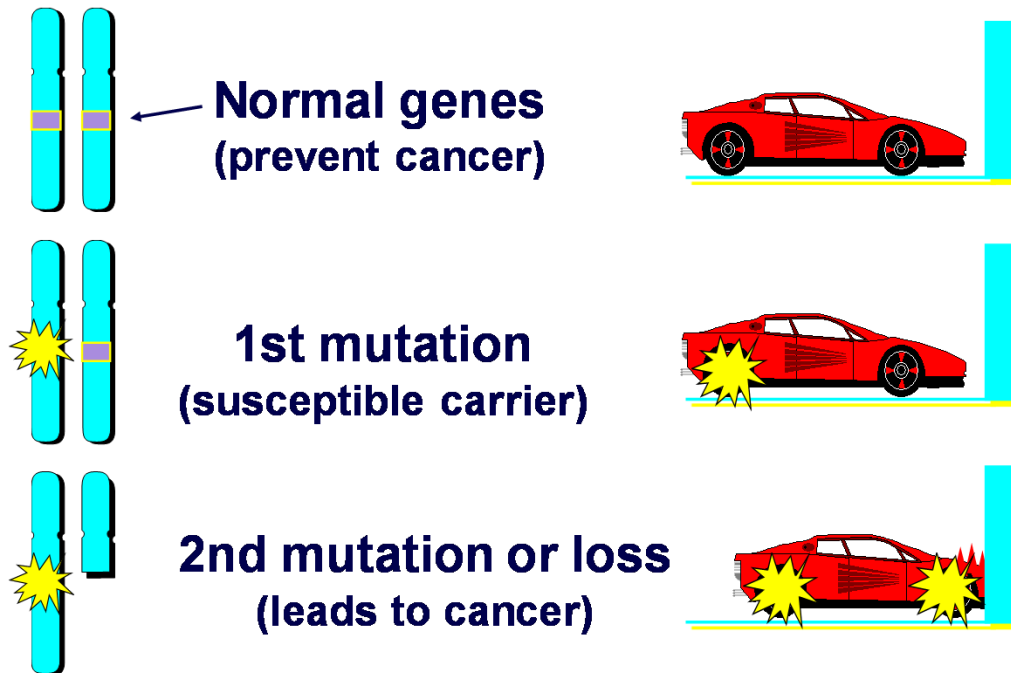


1st mutation
(leads to accelerated cell division)

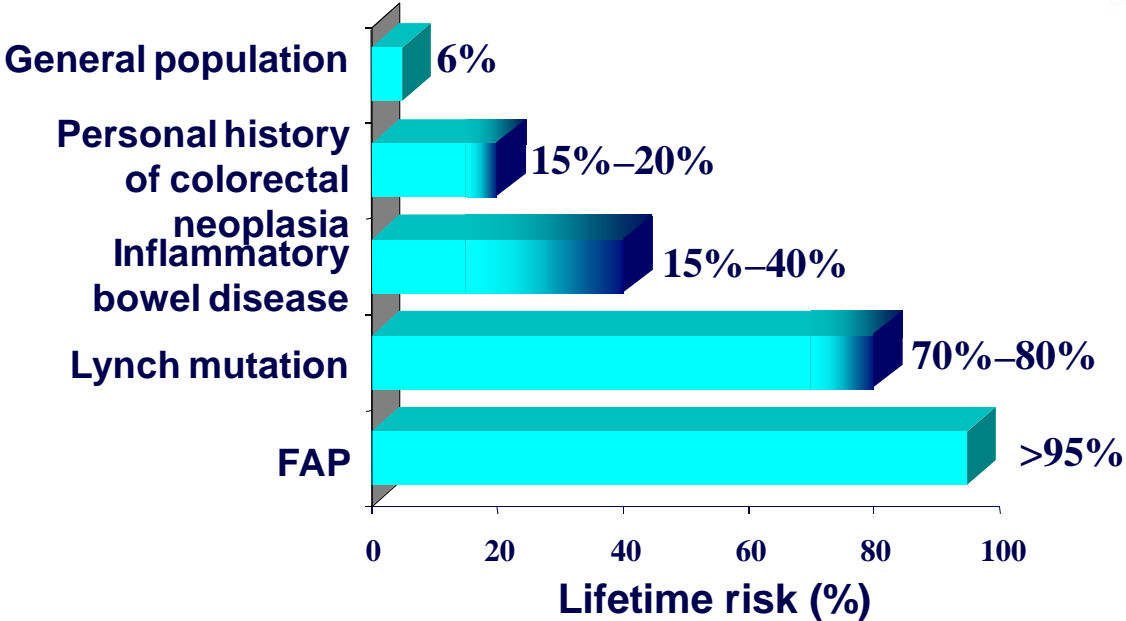


1 mutation sufficient for role in cancer development

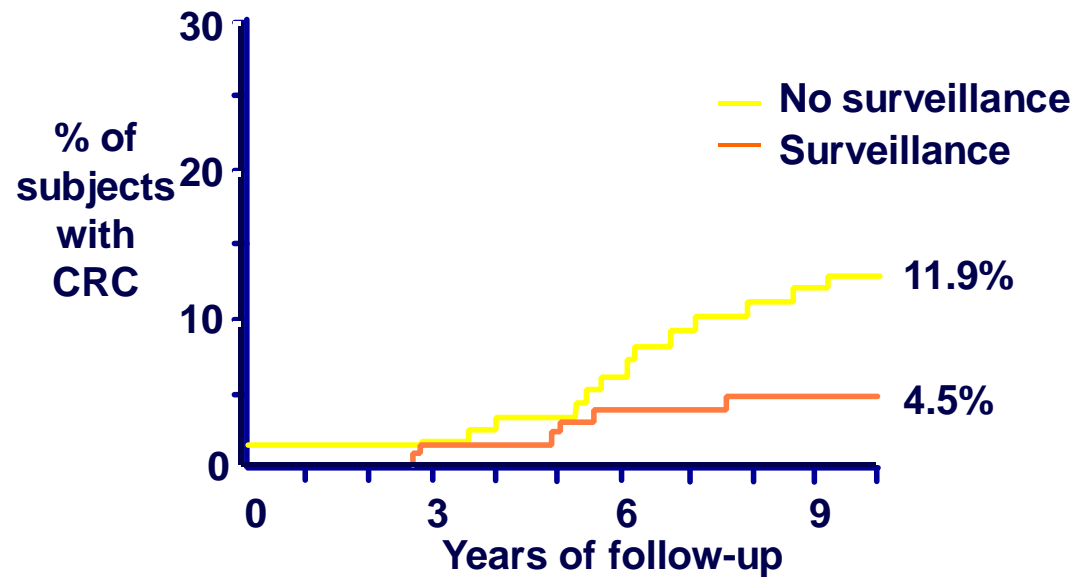
Tumor Suppressor Genes



Risk of Colorectal Cancer (CRC)

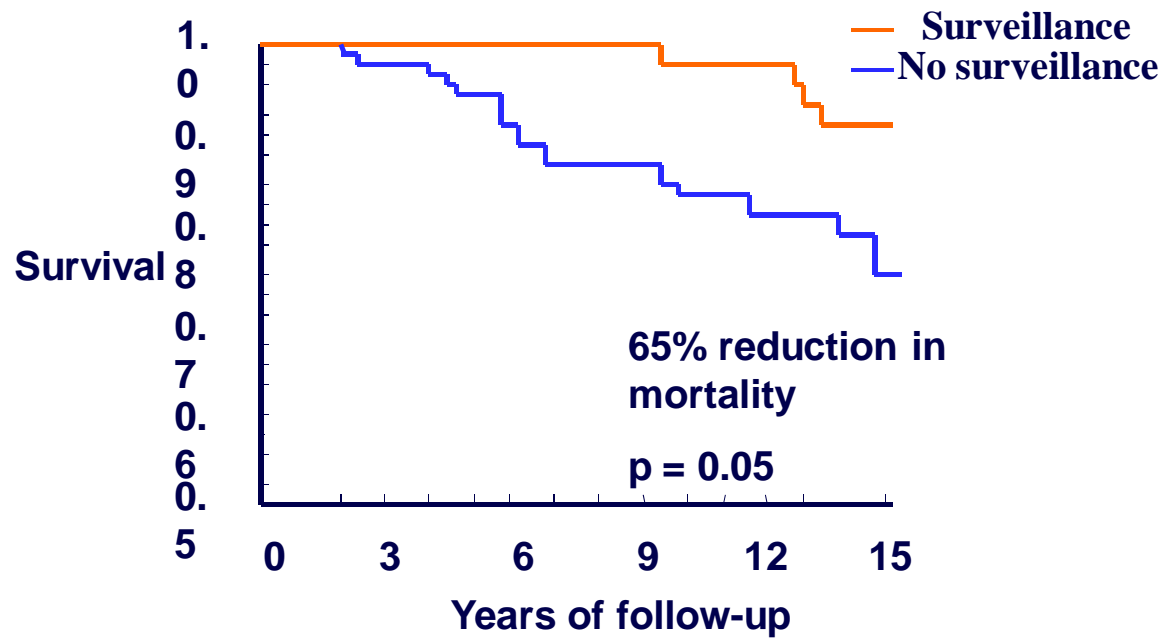


Colonoscopy Reduces Risk of Cancer



Source: Jarvinen HJ et al. *Gastro* 108:1405, 1995.

Colonoscopy Saves Lives



Source: Jarvinen H et al Gastroenterology 118;829, 2000.