

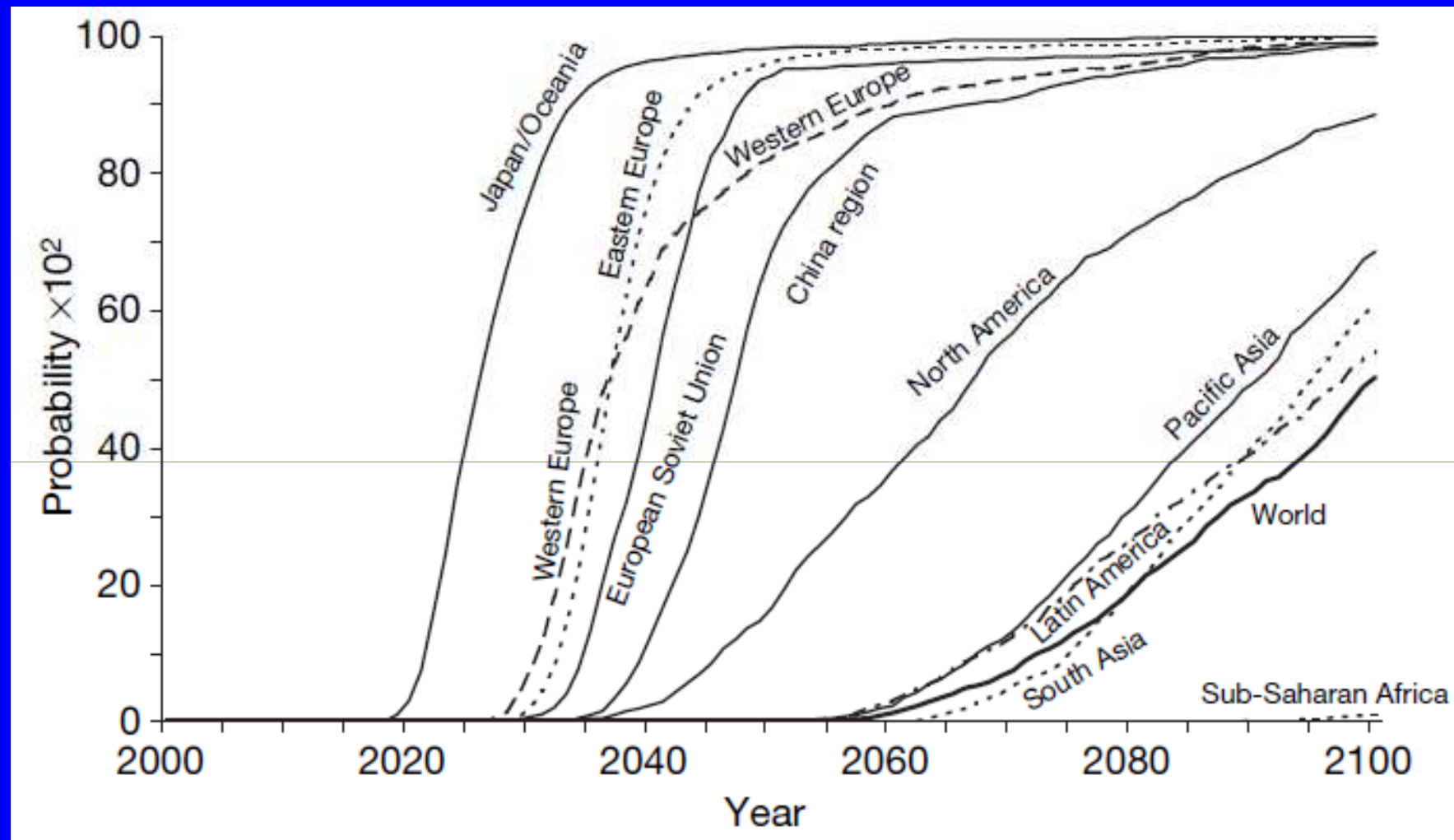
Prevention of Human Cancers in Ageing Society

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The Health Challenge of Ageing Society

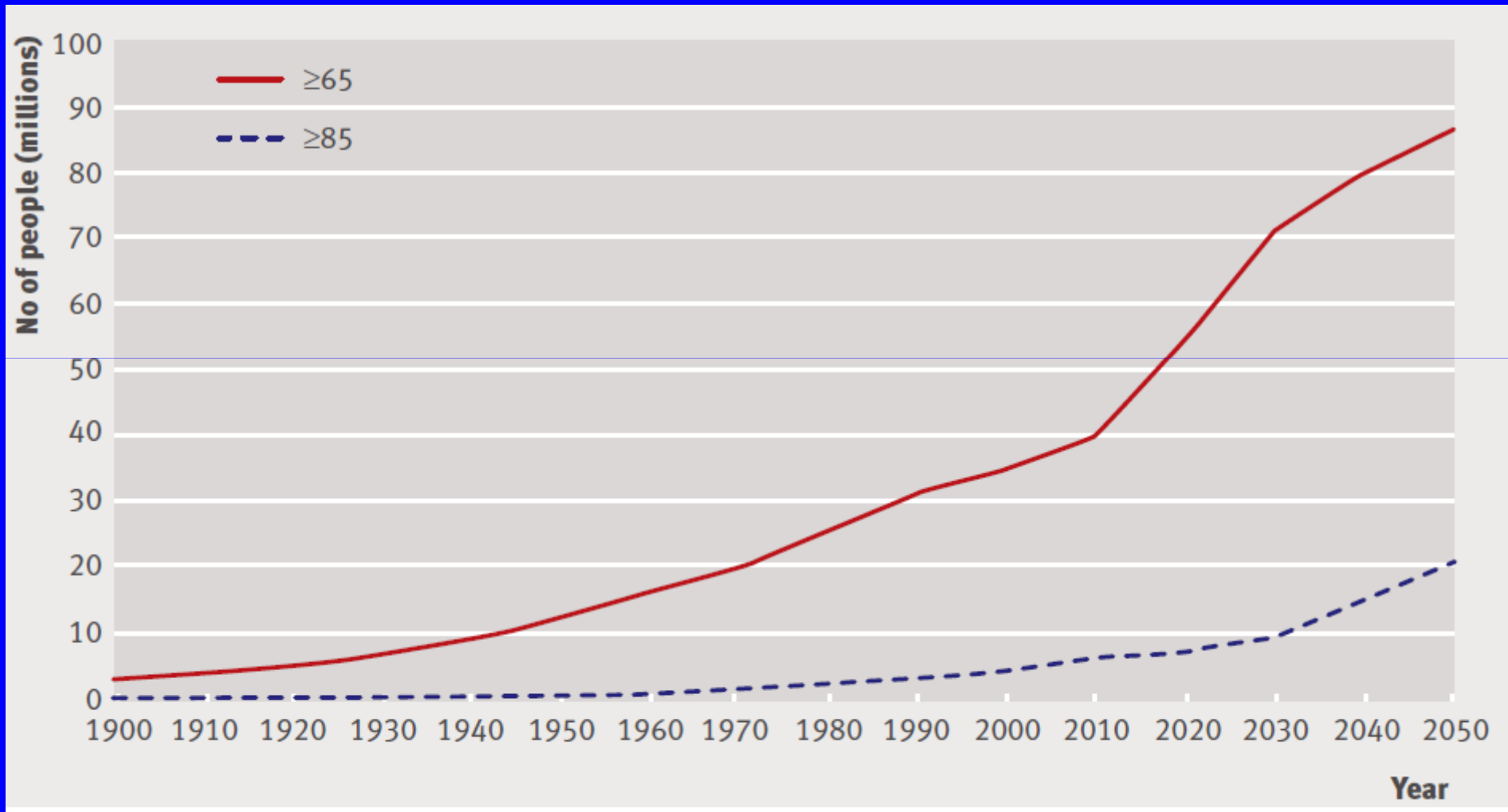
Ageing World



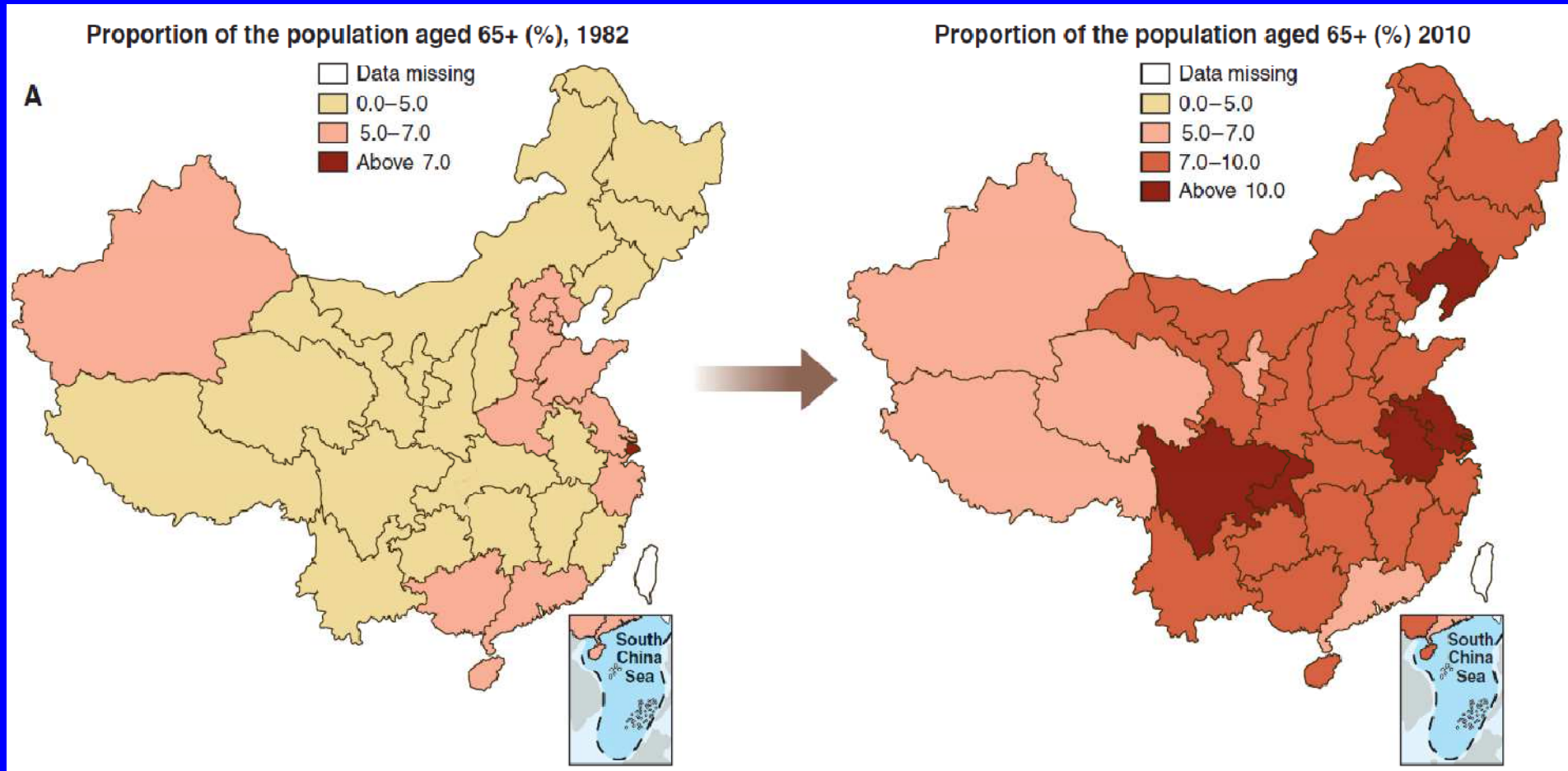
Probabilities of reaching proportion ageing over 60 of one third or more for countries and world

Nature 2008, 451:716

Number of people aged over 65 and 85 in US



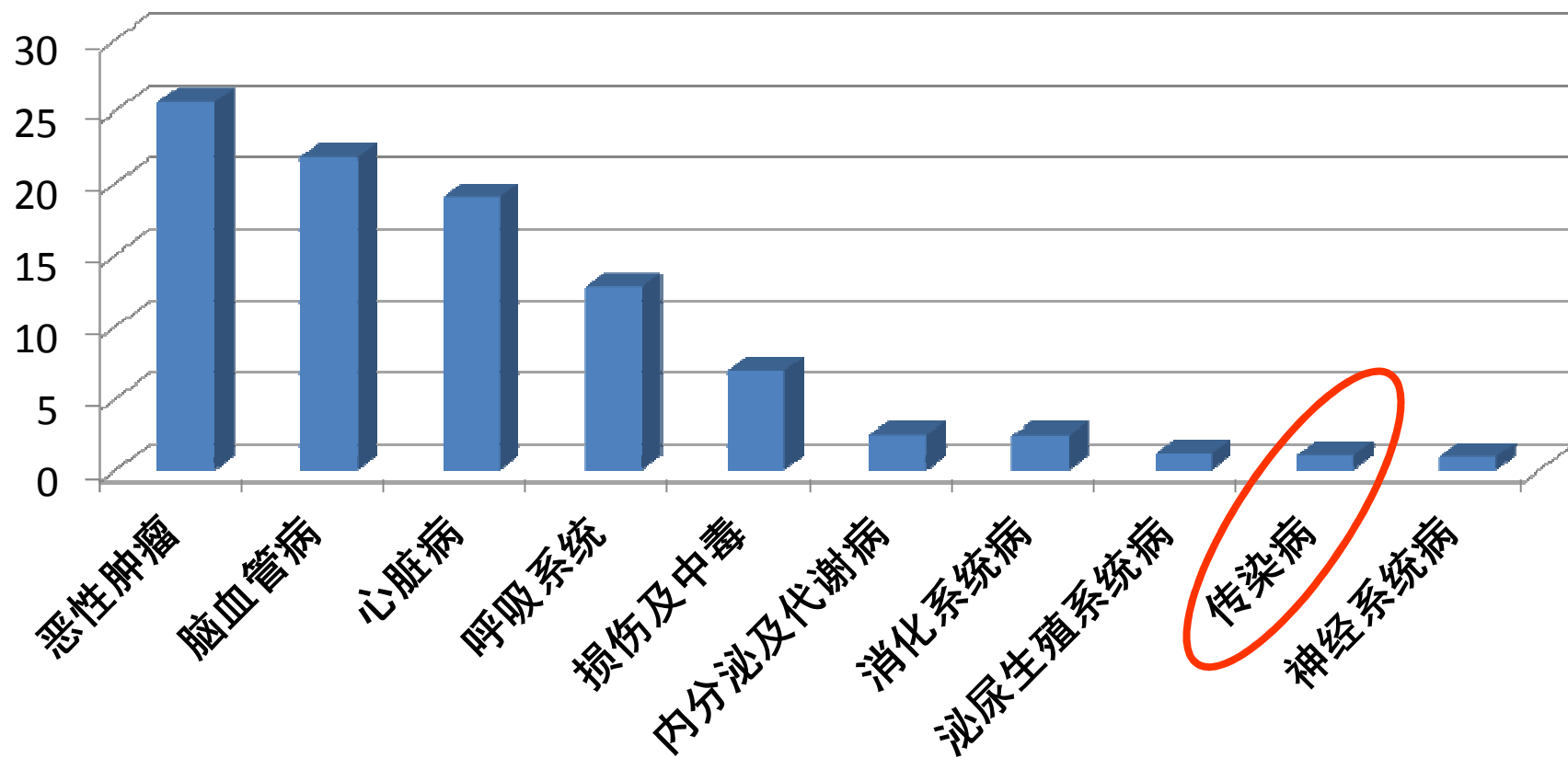
Chinese society becomes aging



Science 2011, 333:581

Chronic diseases are major threat to Chinese

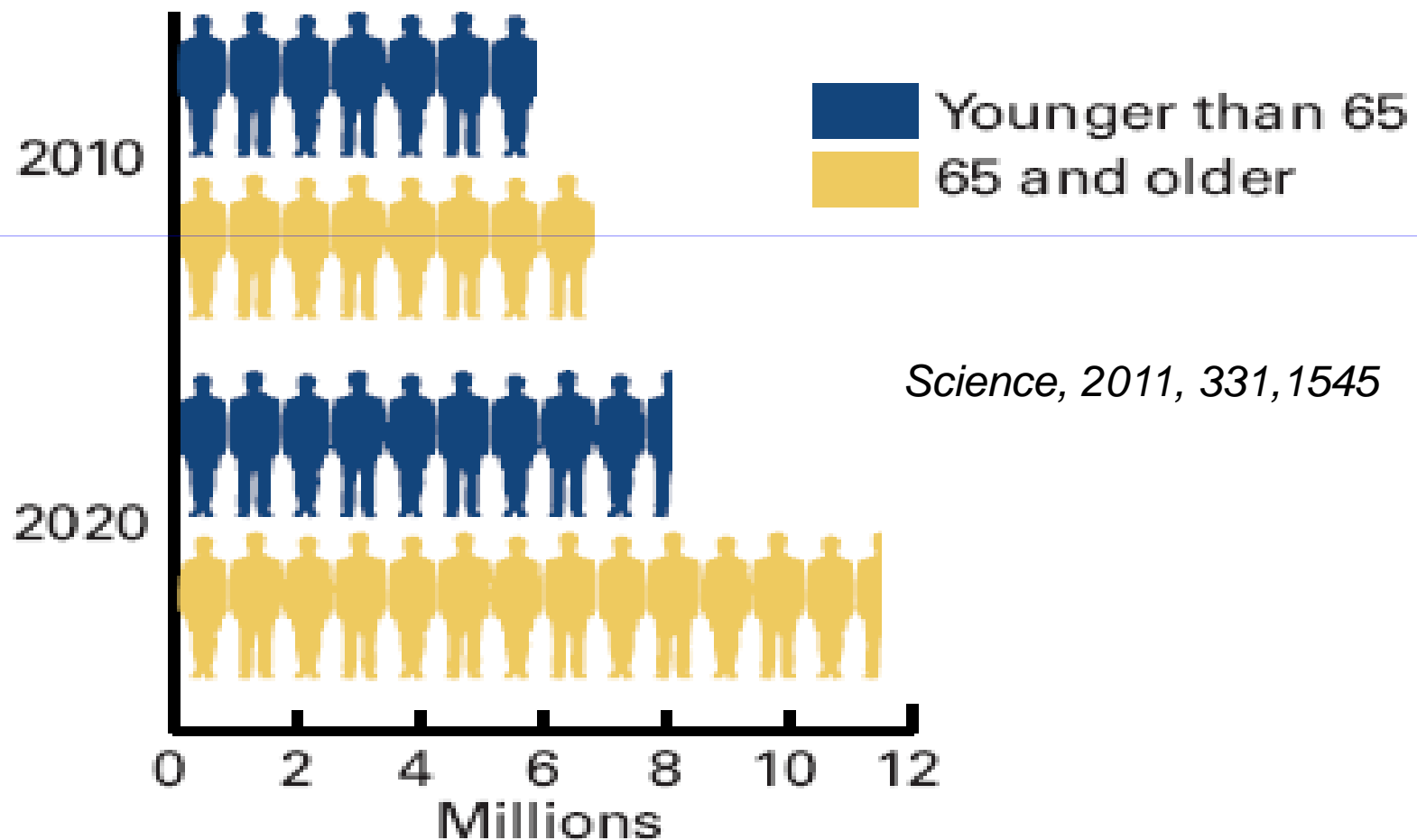
Chinese death caused by particular diseases in 2009 (%)



Age is important risk-factor of cancer

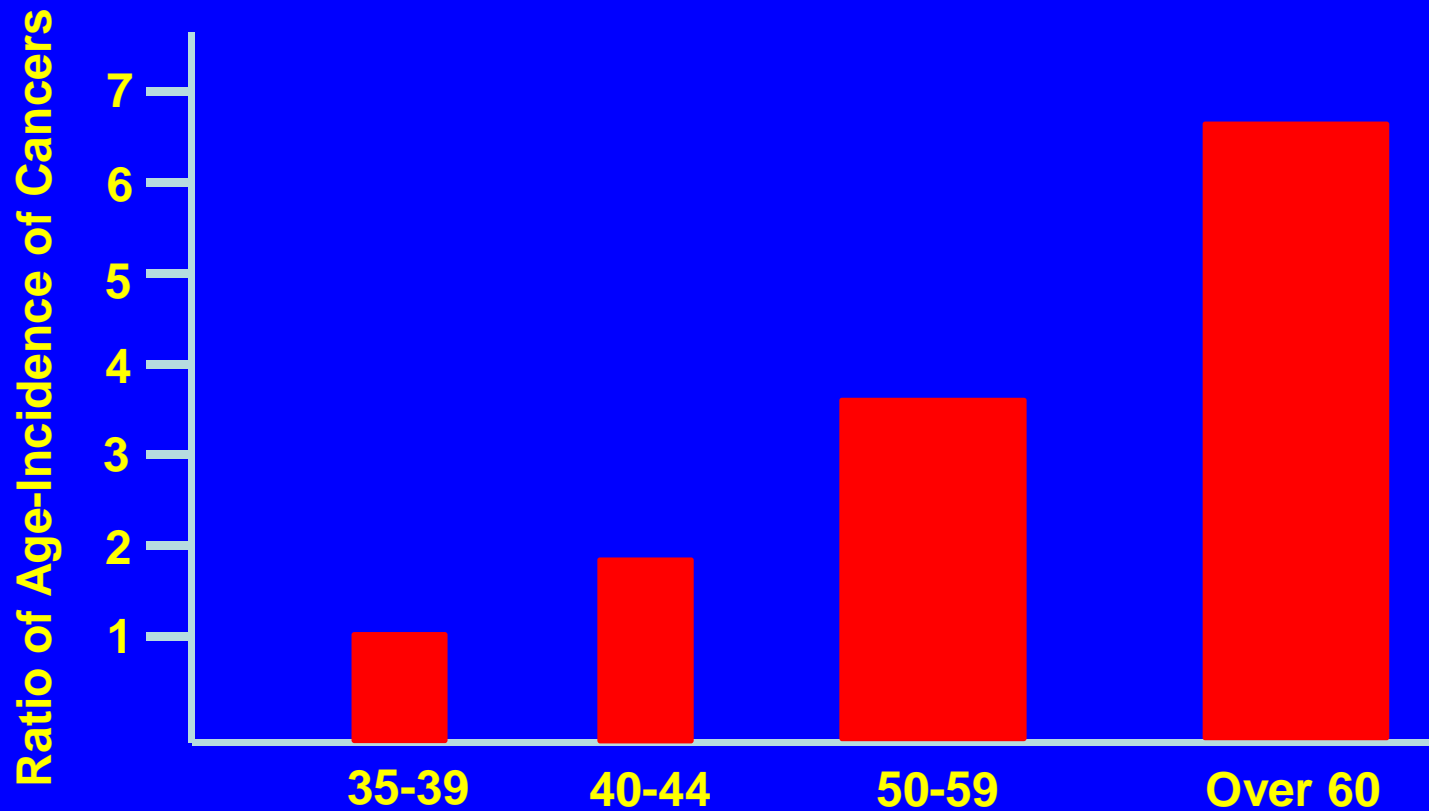
U.S. CANCER PREVALENCE

Number of people living with cancer



Age is important risk-factor of cancer

Exponential age-incidence of cancers in China



Annual Report of Cancers in China (2012)

**Why we are failed on the
war against cancers**

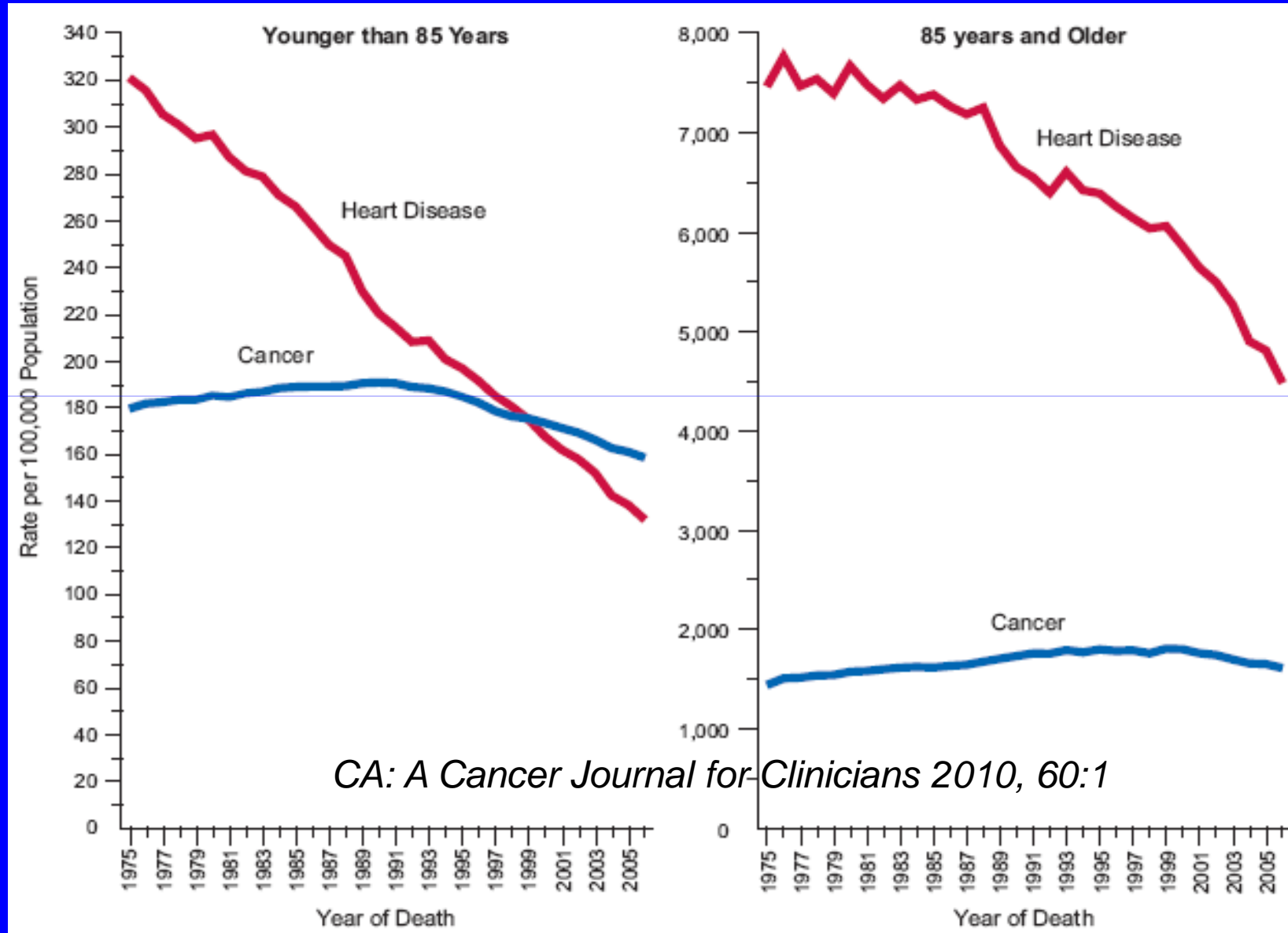
Cancer Crusade



- US President Richard Nixon signed National Cancer Act in 1971.

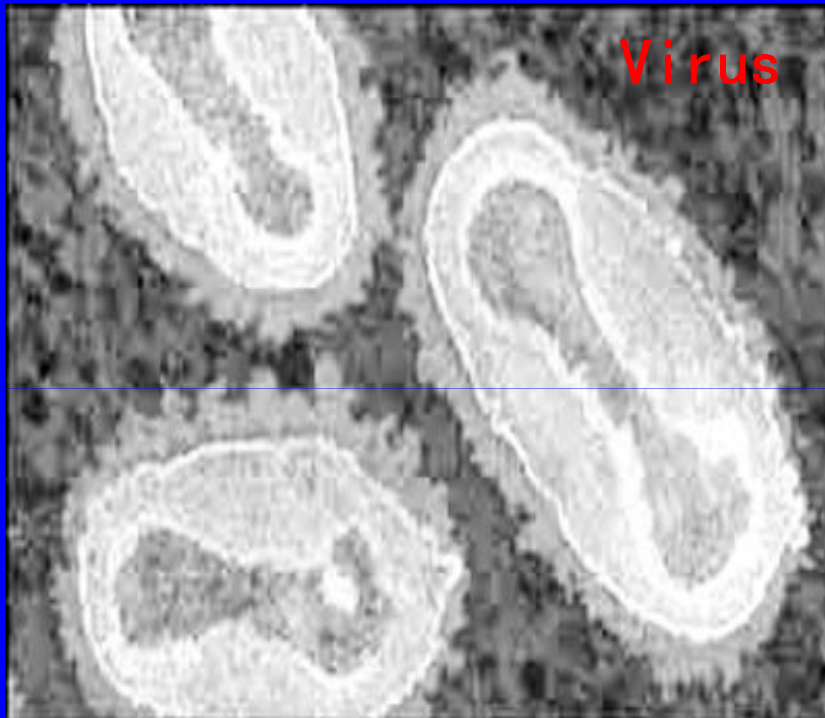
- Since the 1971 act, NCI has spent about \$90 billion on cancer.

Failure of Cancer Crusade

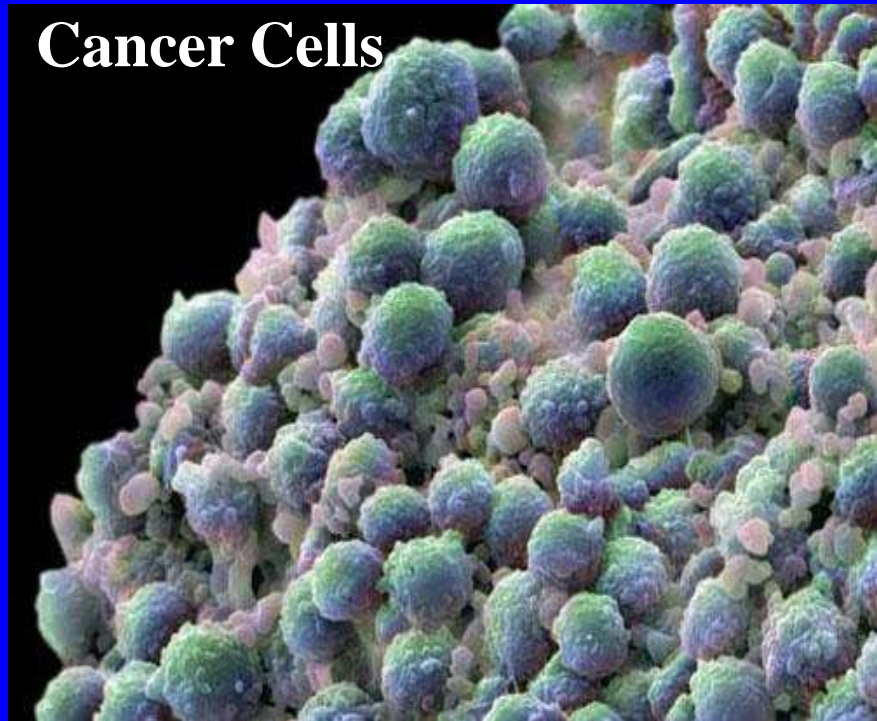


It is difficult to cure chronic diseases

Infection diseases

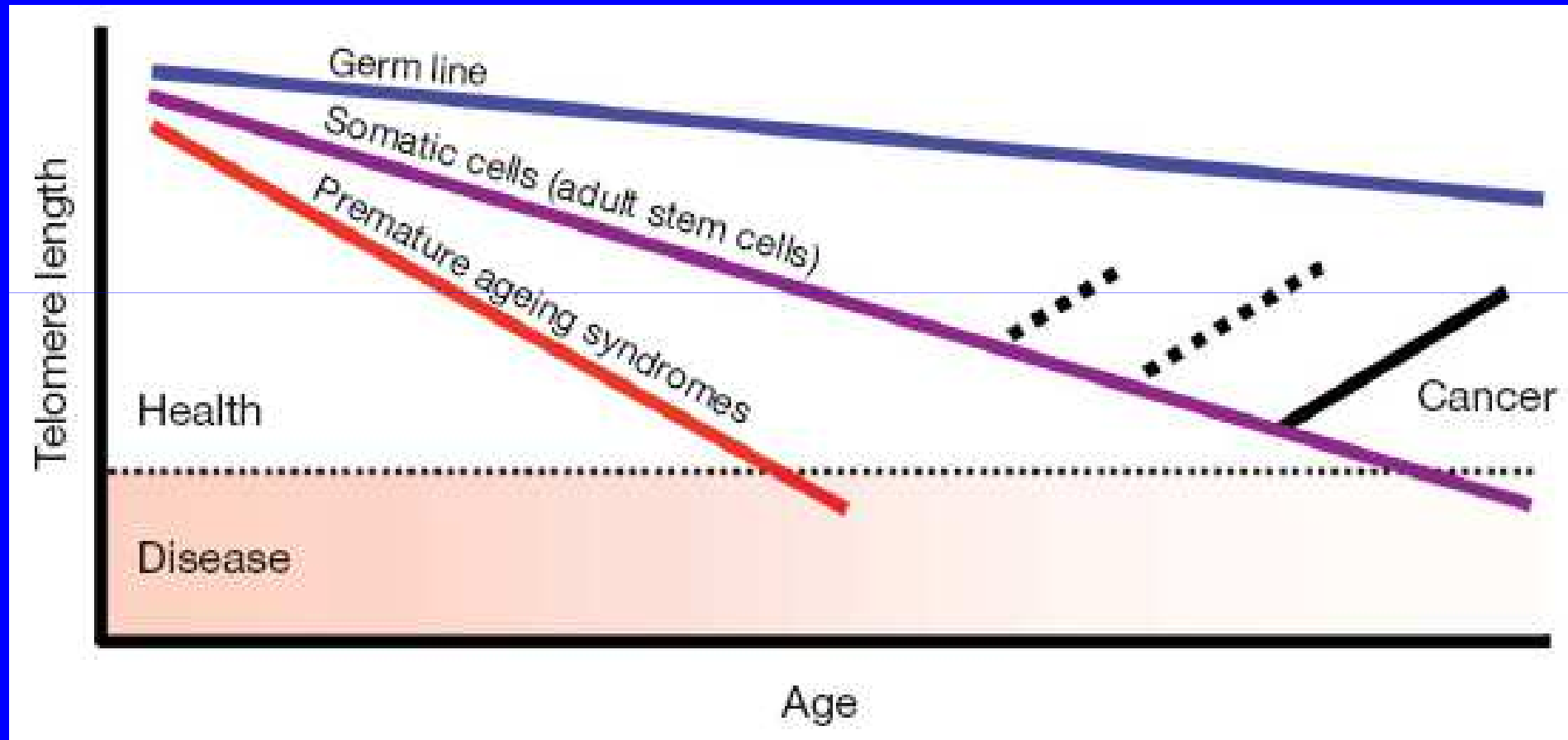


Chronic diseases



- Pathogens of infection disease could be wiped out, but chronic non-communicable diseases derive from body defects are hardly cured completely.

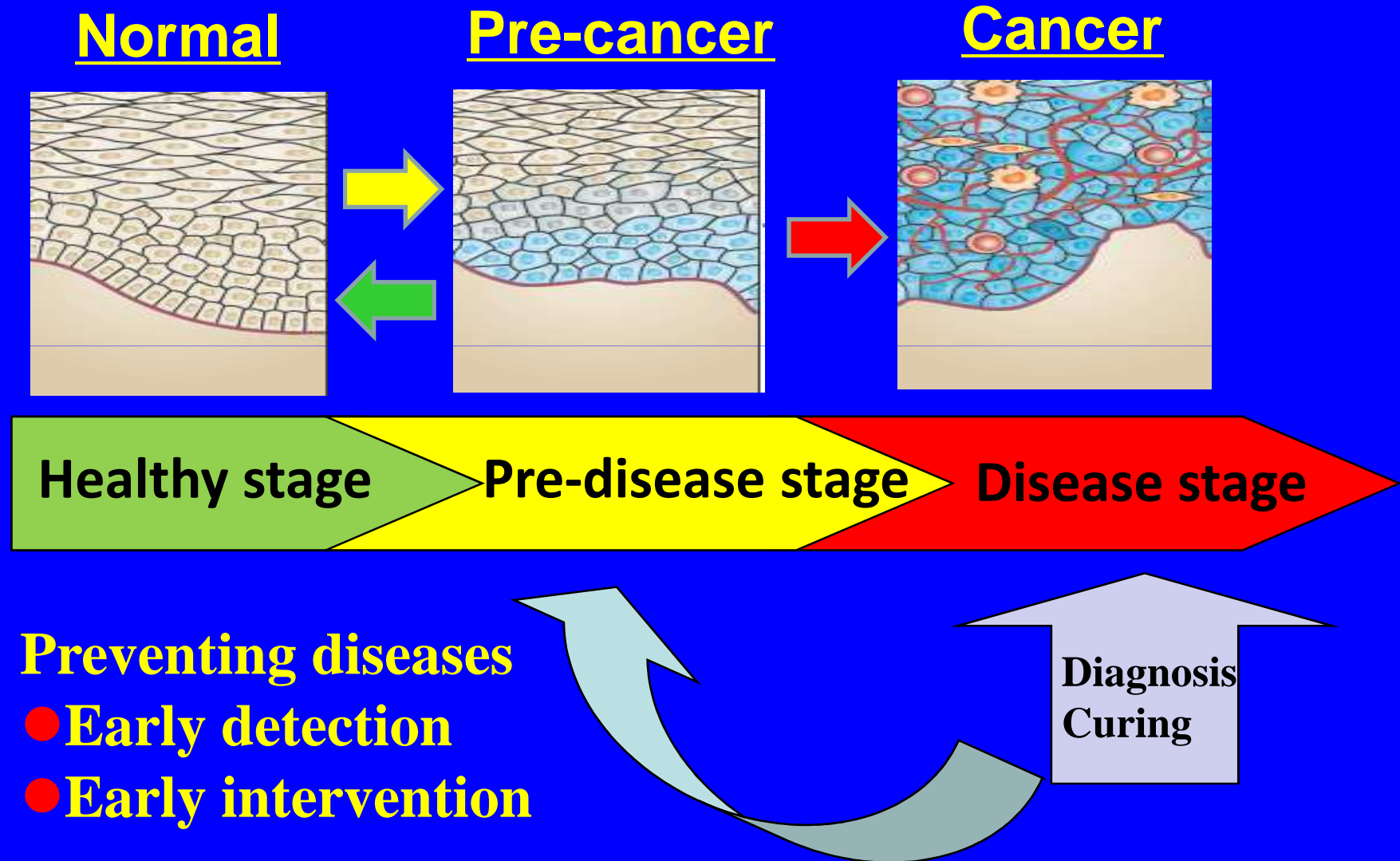
Cancer is ageing-degenerative disease



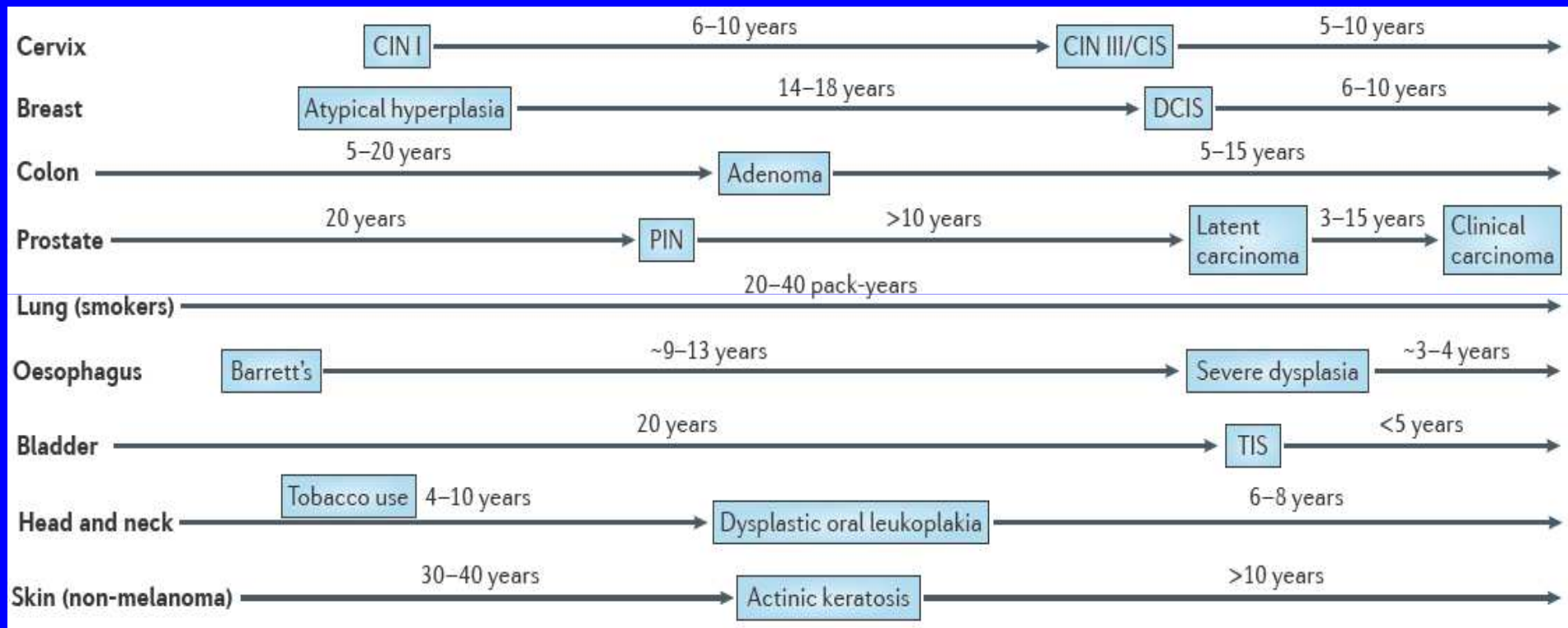
Nature 2007, 448, 767

**Prevention is a better
solution against cancers**

Prevention is a better way to treat chronic diseases

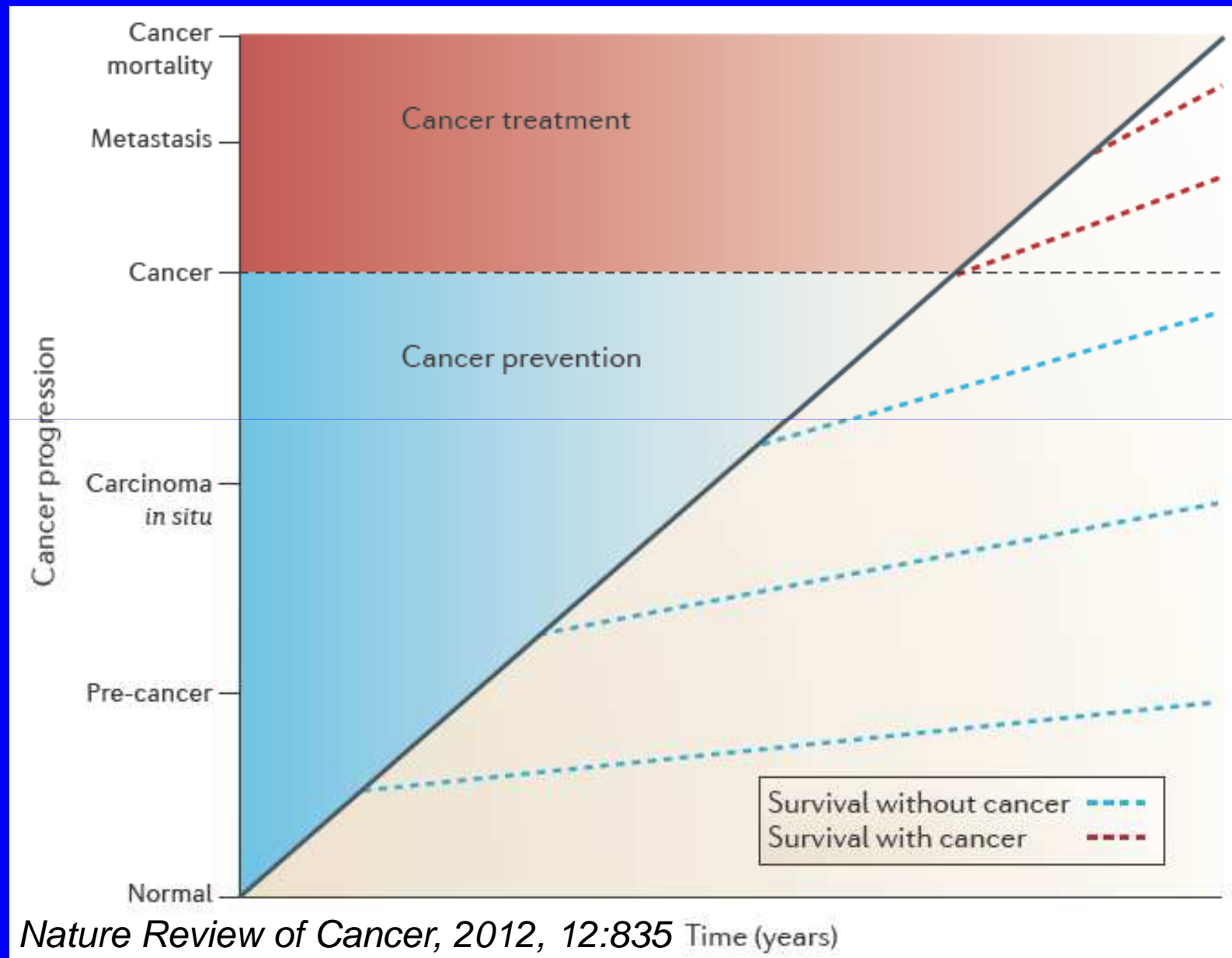


Timeline of Cancer Progression

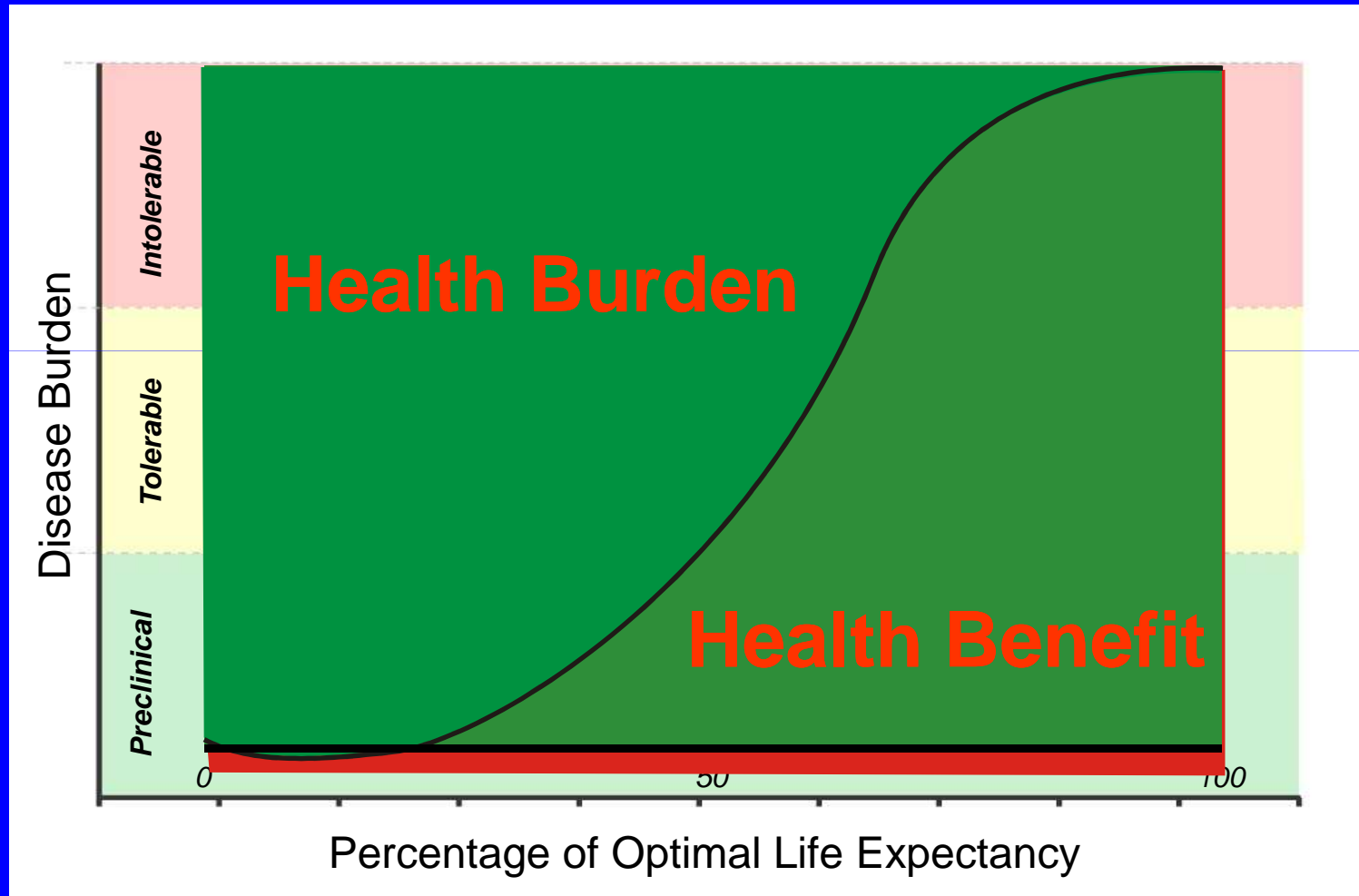


Nature Review of Cancer, 2012, 12:835

A Better Solution: Cancer Prevention

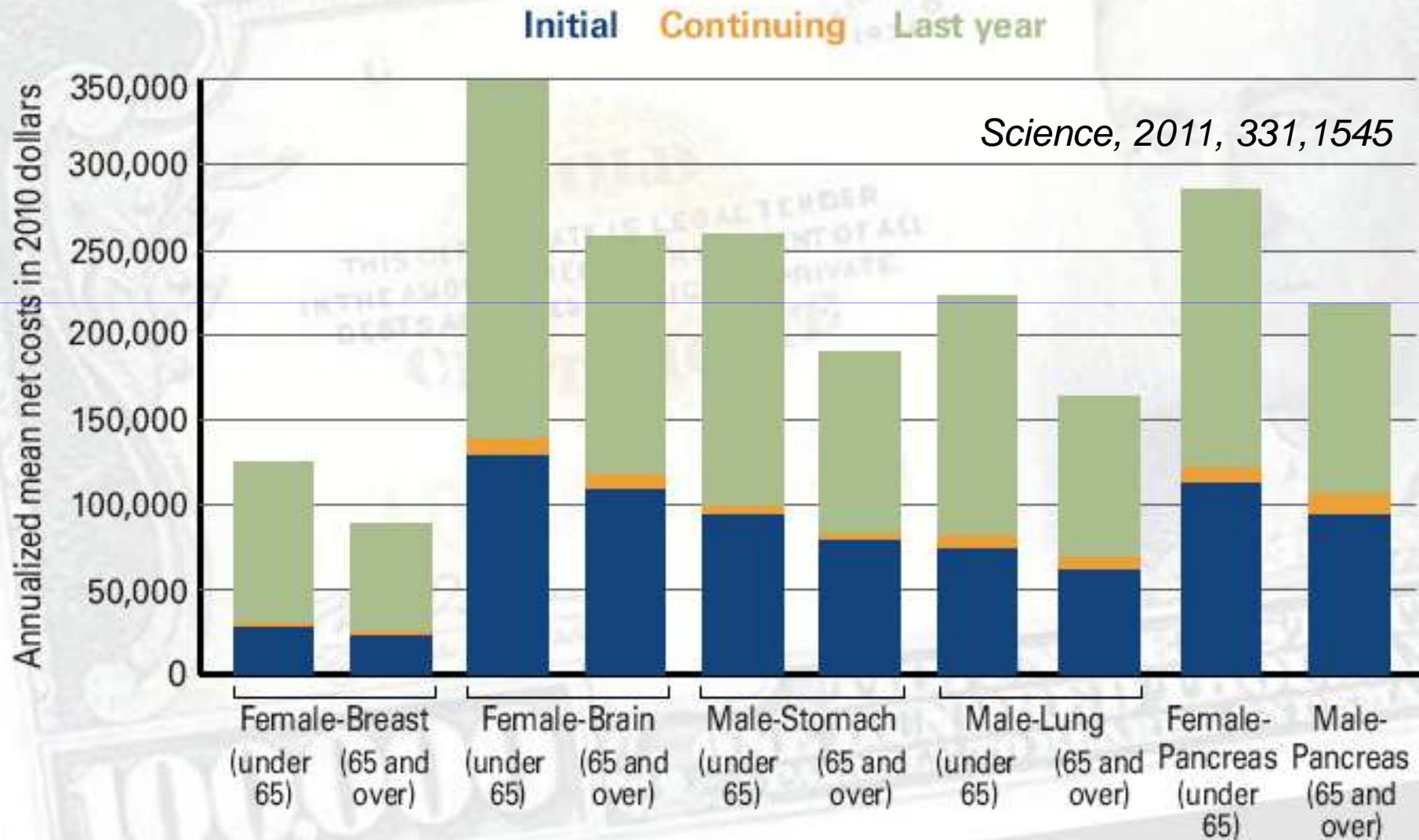


Prevention of chronic disease is economic efficiency

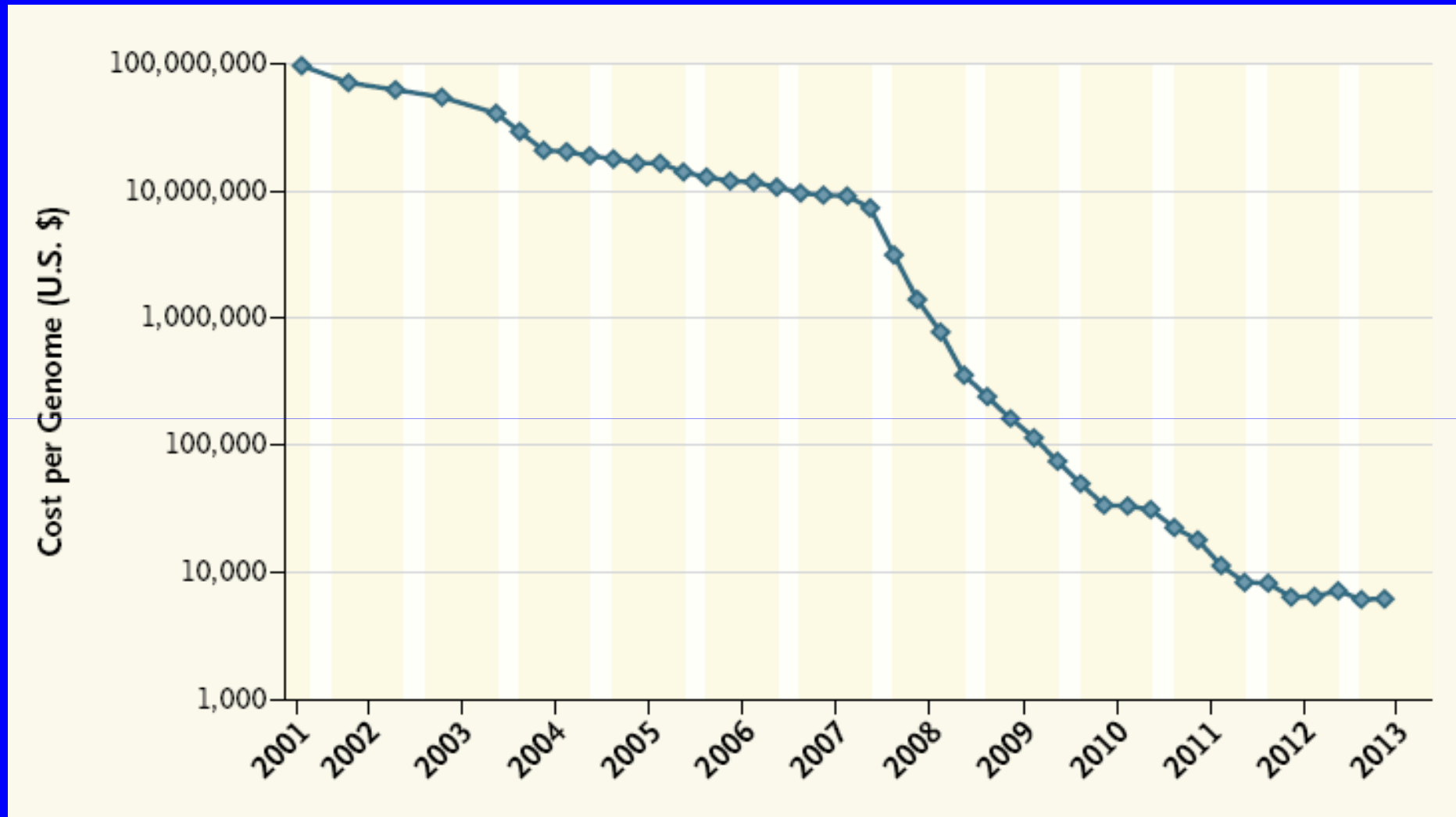


Cost of Cancer Treatments

THE PRICE OF TREATMENT



Prevention tools: genomic sequencing



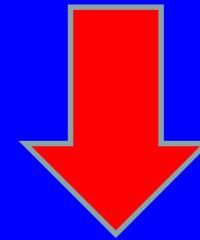
FDA has granted the first high-throughput genomic sequencer, MiSeqDx, for genome-based tests.

A case of genomic-test for cancer prevention

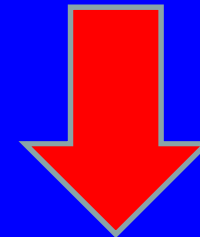


Angelina Jolie

BRCA1 mutation

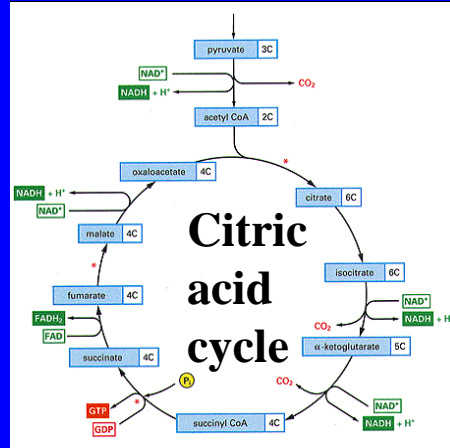


87% of incidence of
breast cancer



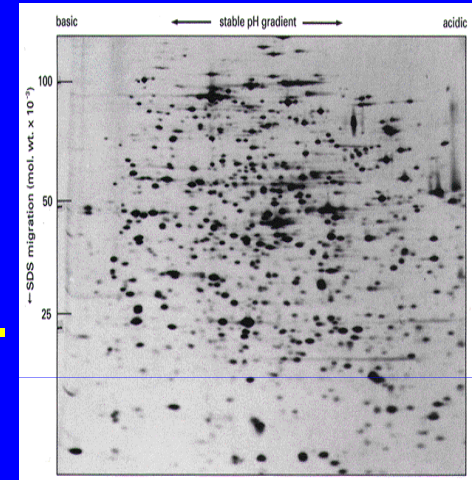
Surgery of breast

Systems biology: integration of biomarkers



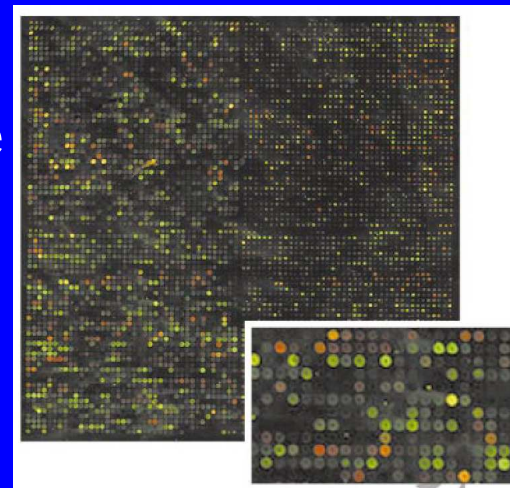
Metabolome

Proteome



Genome

Transcriptome

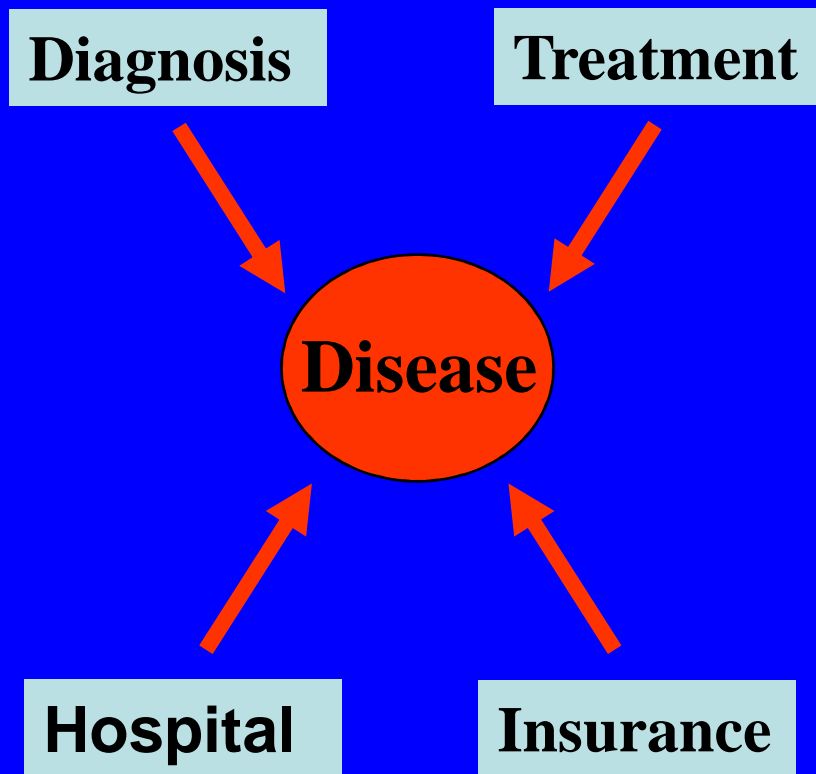


Cancer Intervention reagents: drug and nutrients

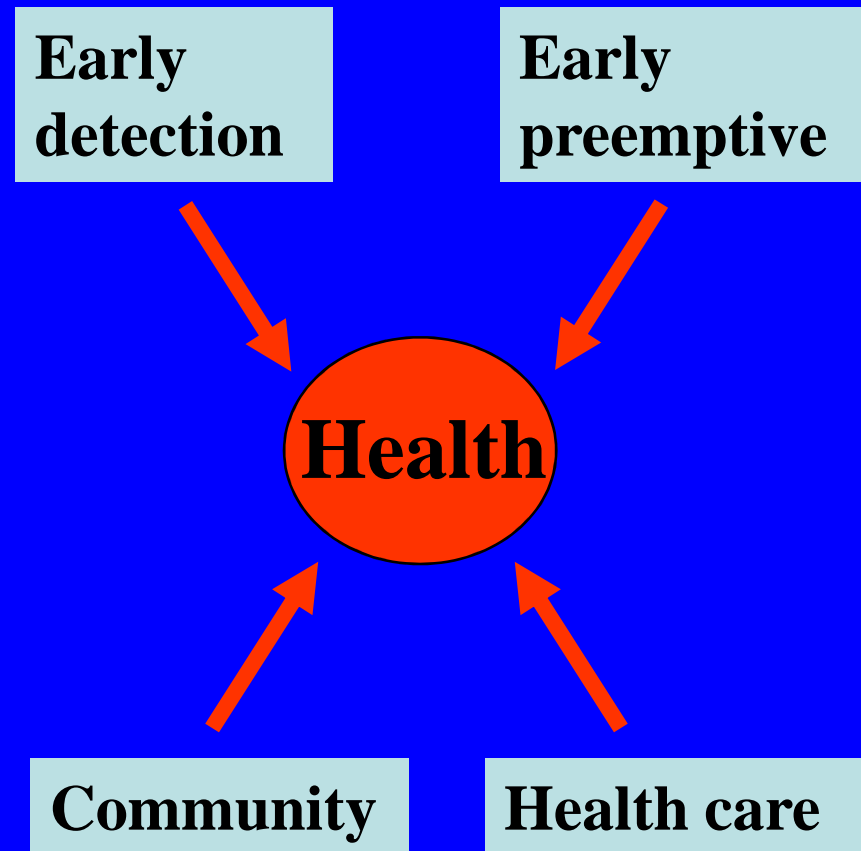
Metformin	Pancreas, HCC, CRC, lung and all-cancer incidence (possibly breast)
Aspirin	All-cancer mortality, colon, CRC, oesophageal and lung
Combination of sulindac and DMFO	Recurrent (advanced) adenoma
5- α -reductase inhibitors finasteride and dutasteride	Prostate
Soy isoflavones	Breast
Lycopene (tomatoes)	Prostate and lung
Resveratrol (grapes and red wine)	Oesophageal, intestinal, colon and others
Omega-3-fatty acids (fish oil)	Prostate, breast and colon

Mankind is into the Health Era

Clinical Era



Health Era



Thanks !