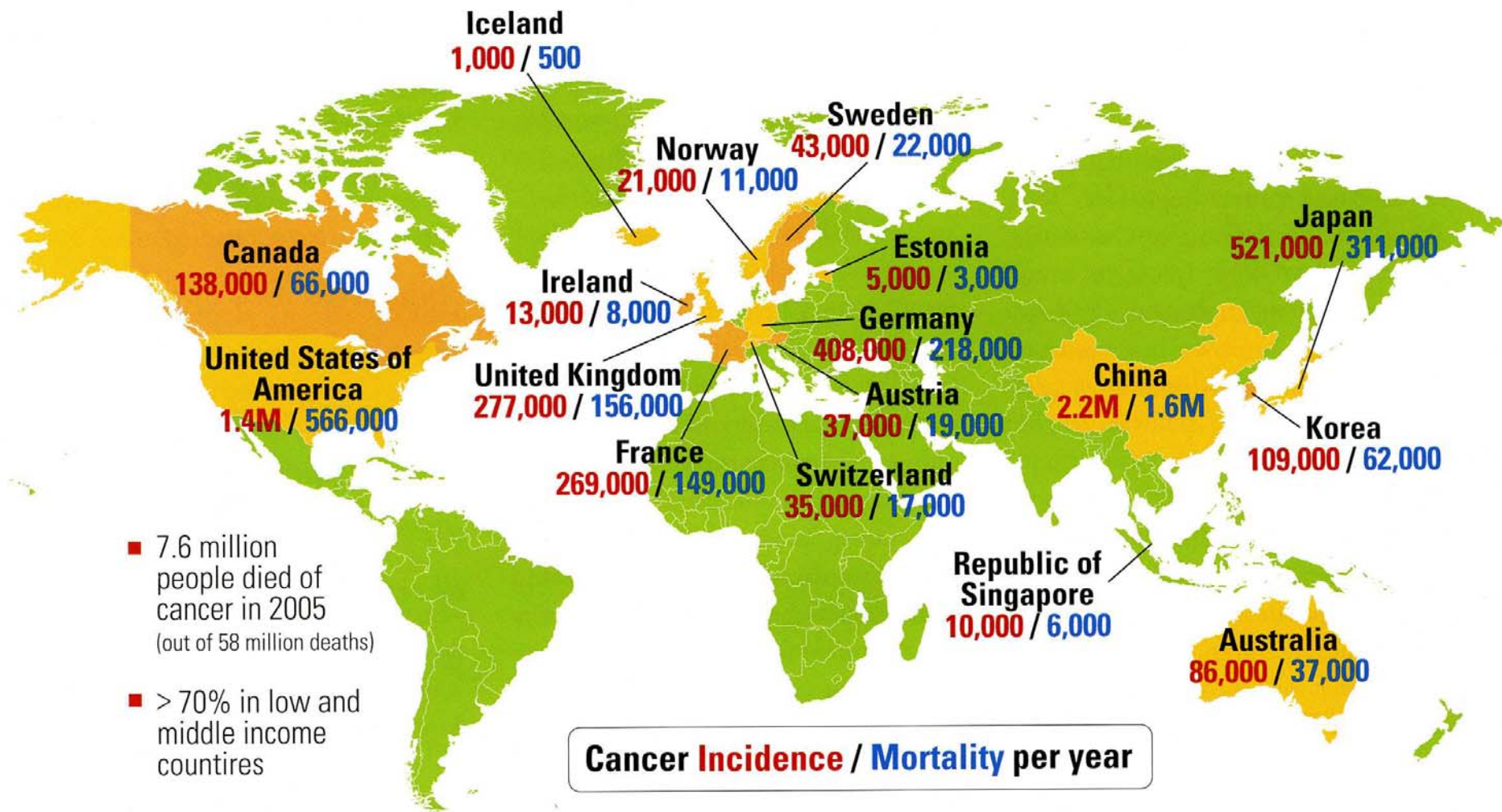




 Penn Medicine

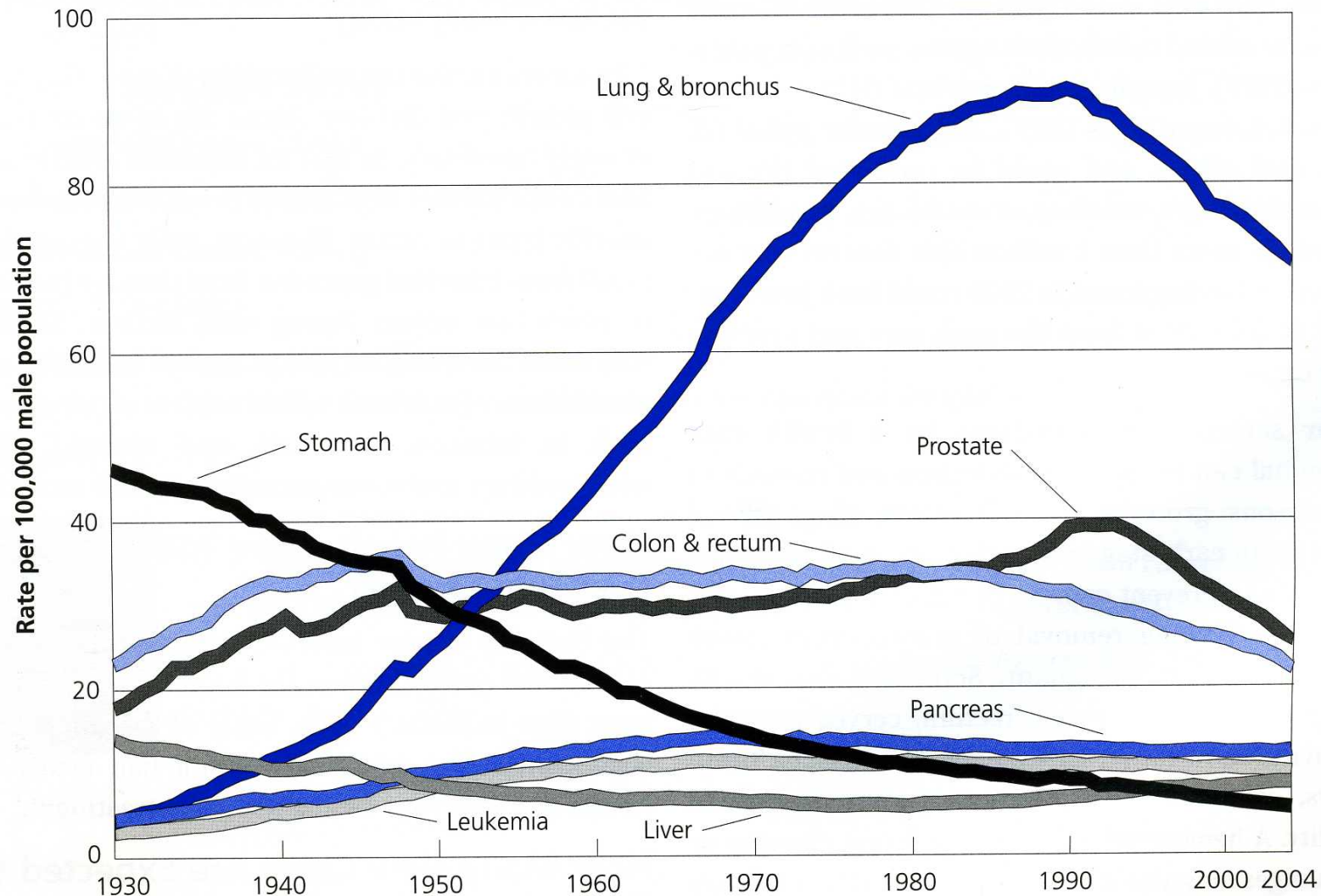
GLOBAL CANCER INCIDENCE AND MORTALITY



- 7.6 million people died of cancer in 2005 (out of 58 million deaths)
- > 70% in low and middle income countries

Cancer **Incidence** / **Mortality** per year

Age-Adjusted Cancer Death Rates,* Males by Site, US, 1930-2004

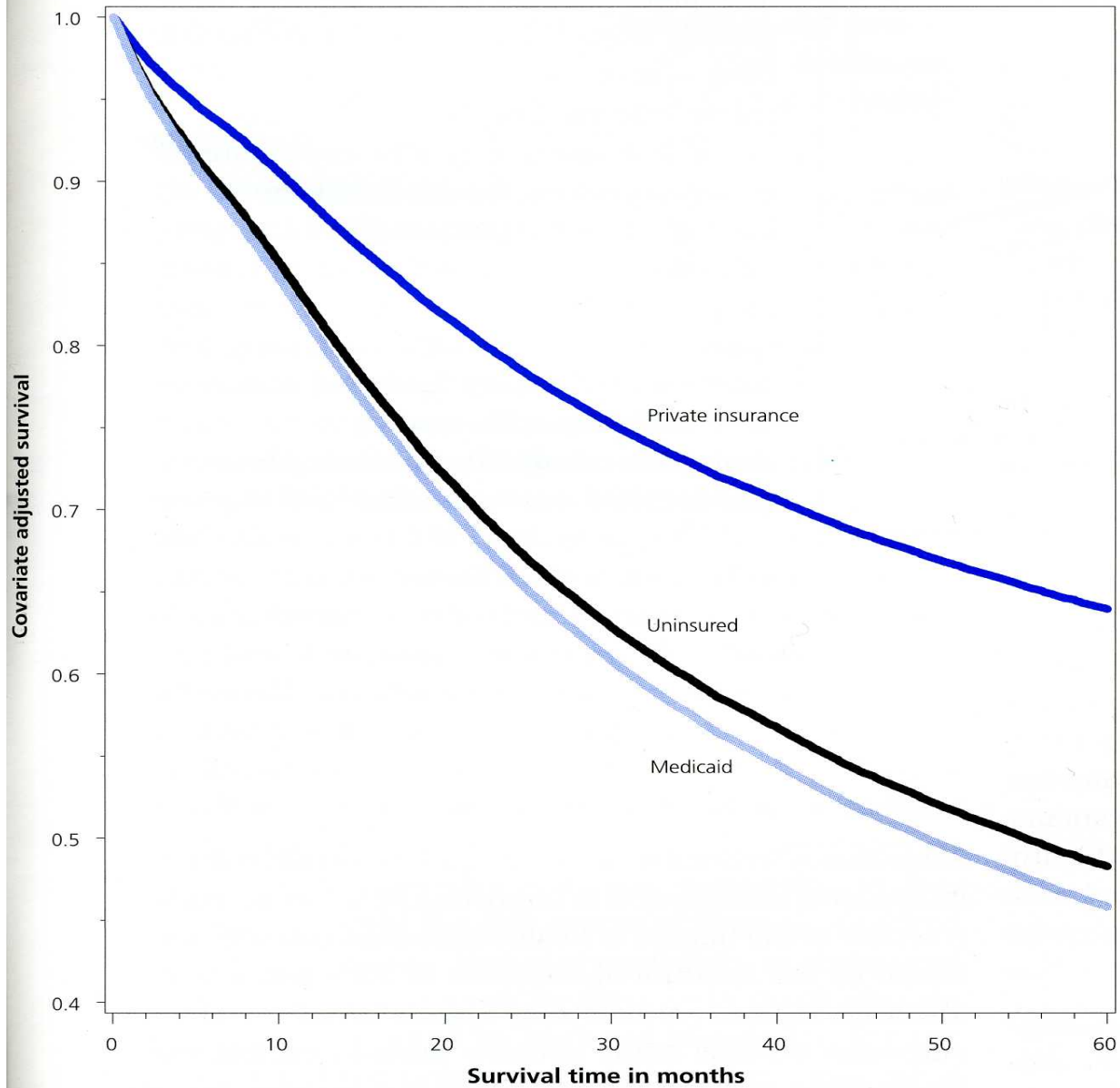


*Per 100,000, age-adjusted to the 2000 US standard population.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the liver, lung and bronchus, and colon and rectum are affected by these coding changes.

Source: US Mortality Data 1960 to 2004, US Mortality Volumes 1930 to 1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

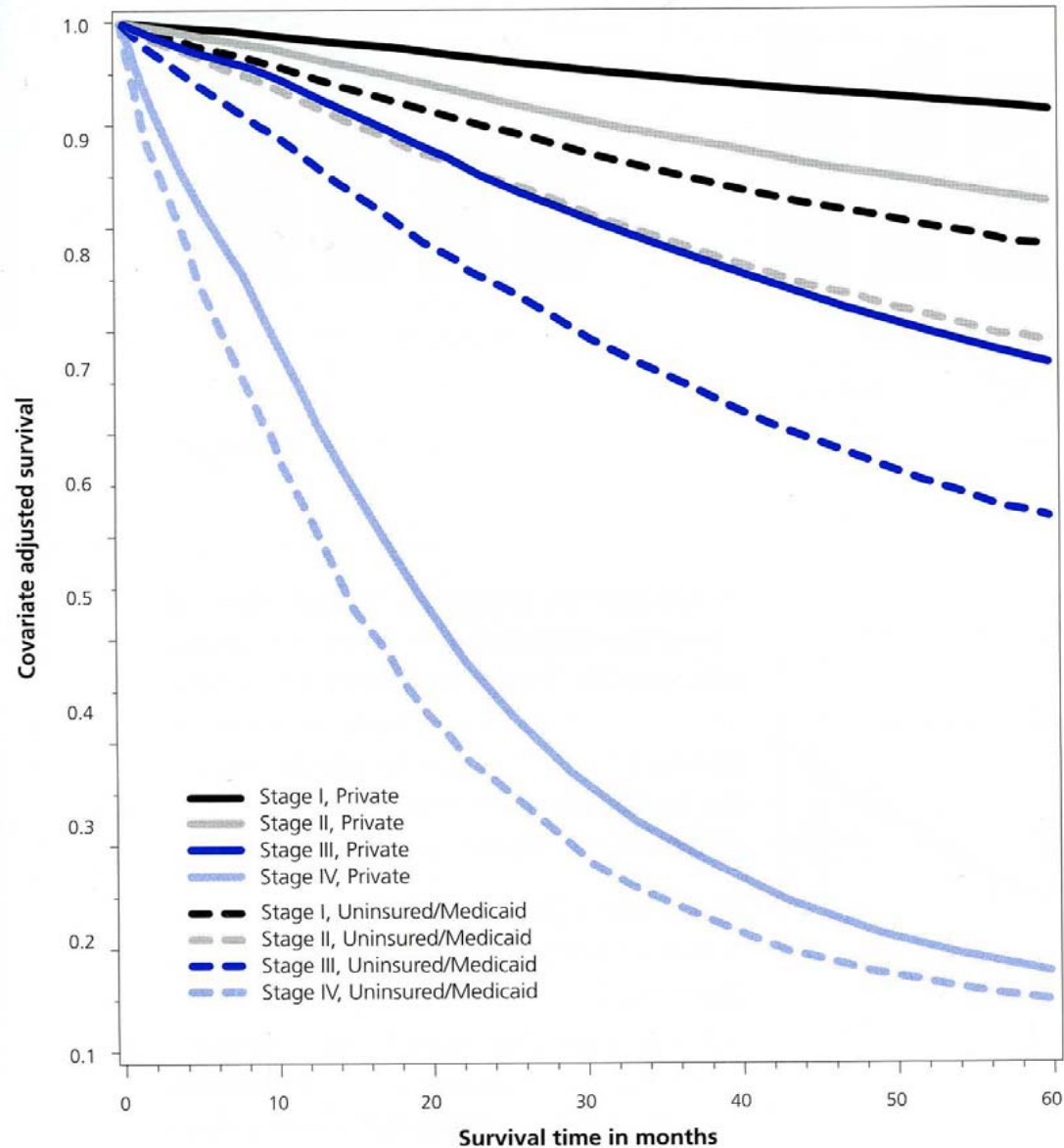
Figure 15. Colorectal Cancer Survival Among Patients Ages 18-64 Years by Insurance Status*



*Patients diagnosed from 1999-2000; excluded from the analysis: unknown stage; race/ethnicity other than white, black, or Hispanic; missing information on stage, age, race/ethnicity, or zip code.

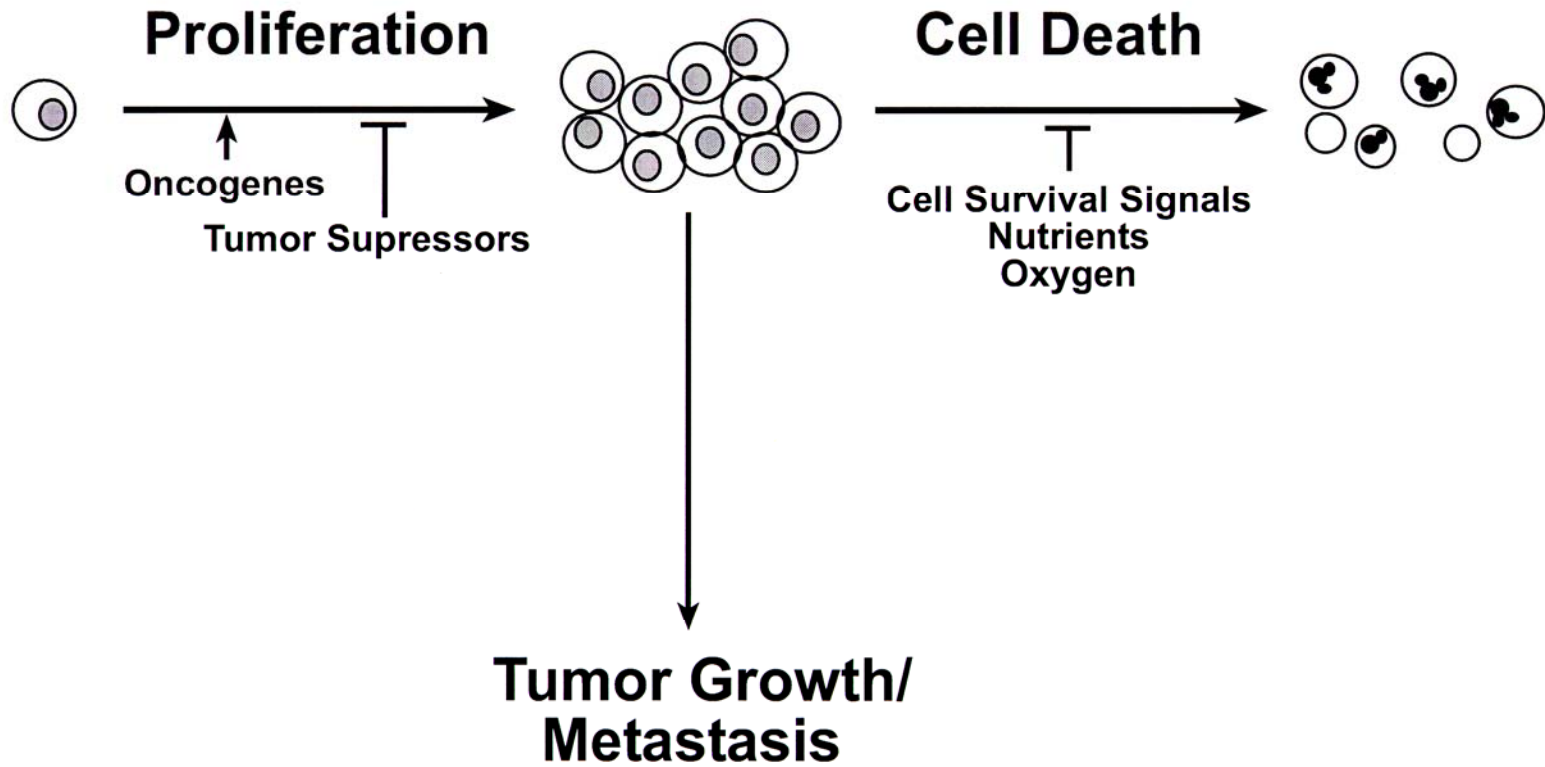
Source: National Cancer Database.

Figure 16. Colorectal Cancer Survival Among Patients Ages 18-64 Years by Stage and Insurance Status*

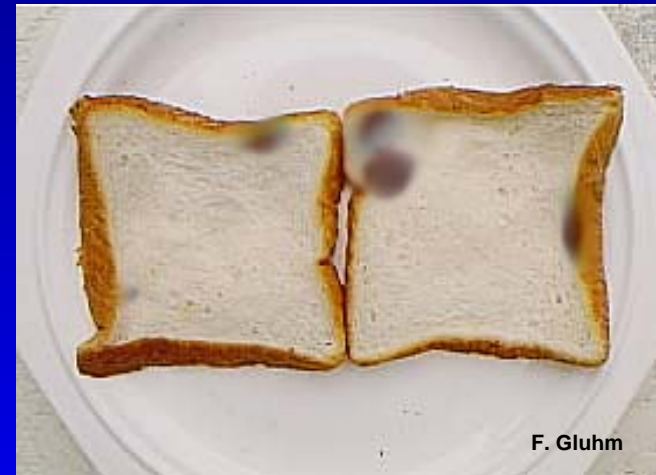
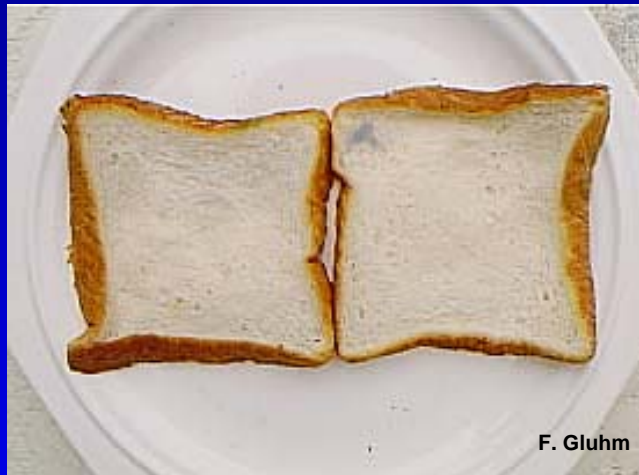


*Patients diagnosed from 1999-2000; excluded from the analysis: unknown stage; race/ethnicity other than white, black, or Hispanic; missing information on stage, age, race/ethnicity, or zip code.

Source: National Cancer Database.



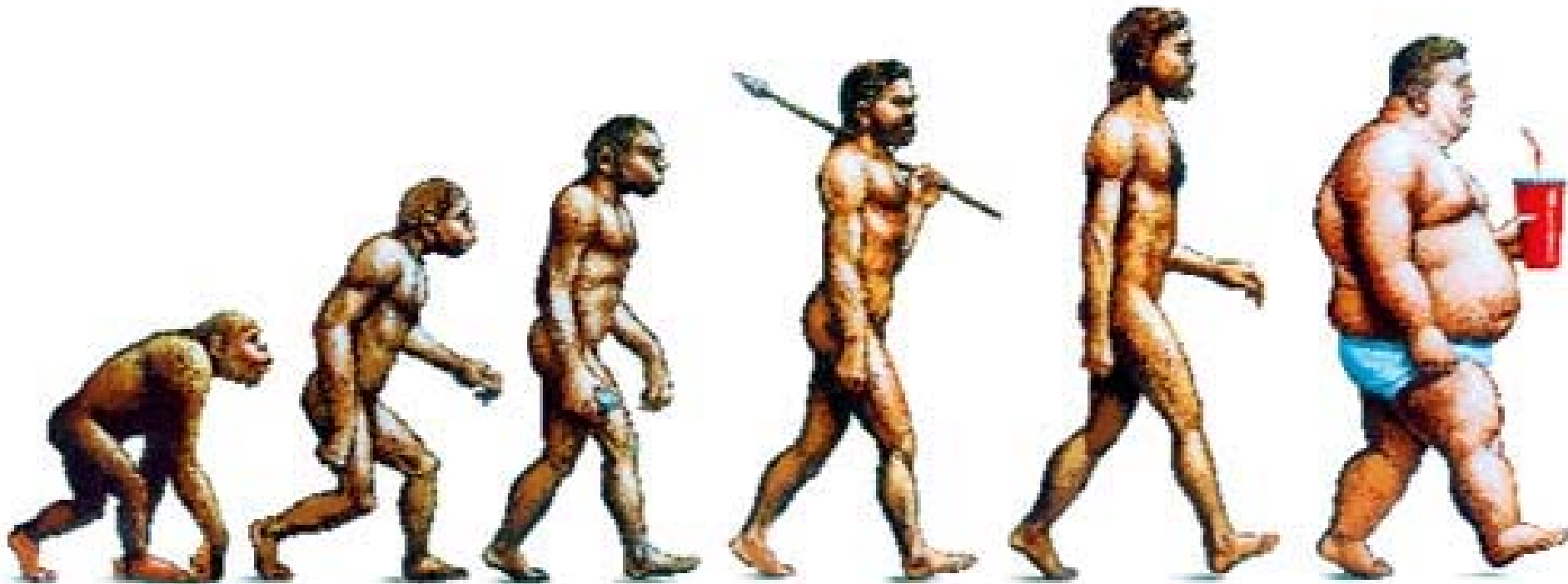
Everyone's first cancer experiment



The growth, invasiveness, and metastasis of single organisms is regulated by nutrients.

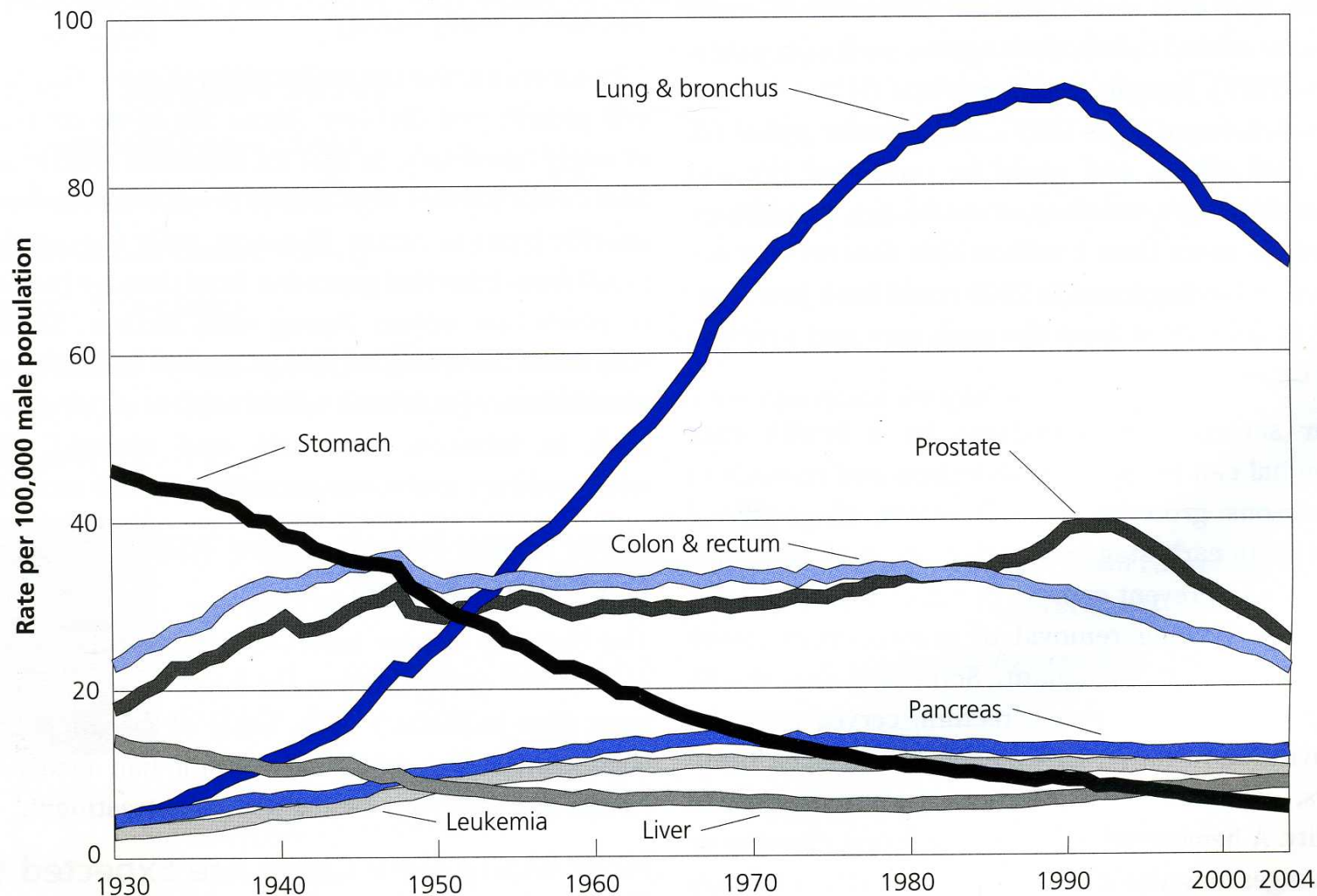
The Shape of Things to Come.

The Economist 12/11/03



(http://www.economist.com/displaystory.cfm?story_id=2282754)

Age-Adjusted Cancer Death Rates,* Males by Site, US, 1930-2004



*Per 100,000, age-adjusted to the 2000 US standard population.

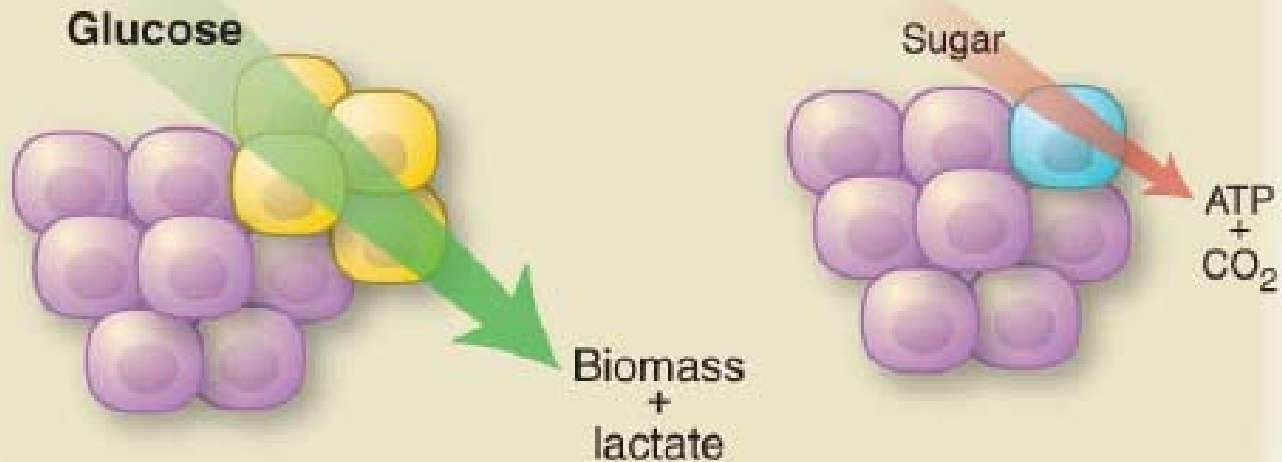
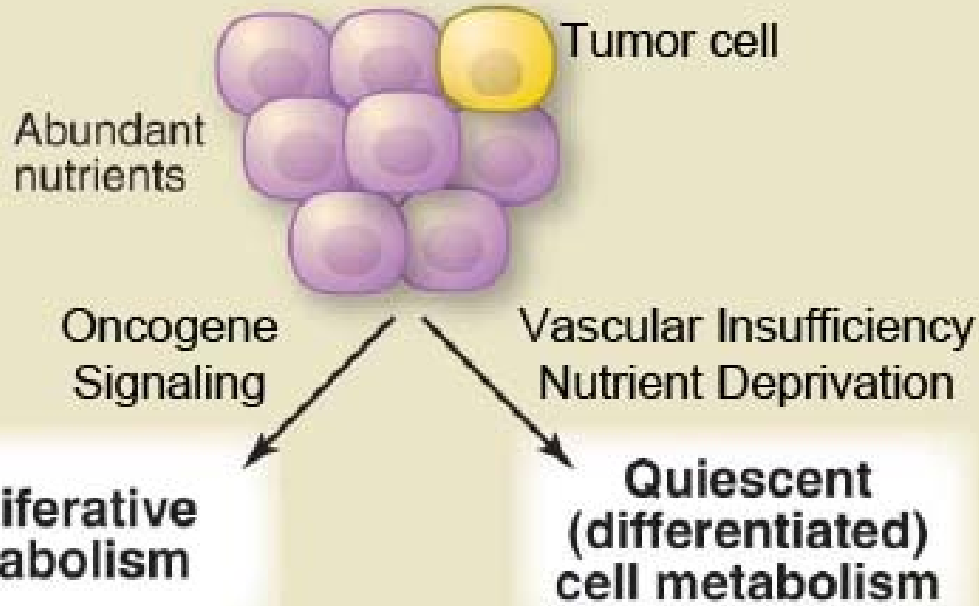
Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the liver, lung and bronchus, and colon and rectum are affected by these coding changes.

Source: US Mortality Data 1960 to 2004, US Mortality Volumes 1930 to 1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

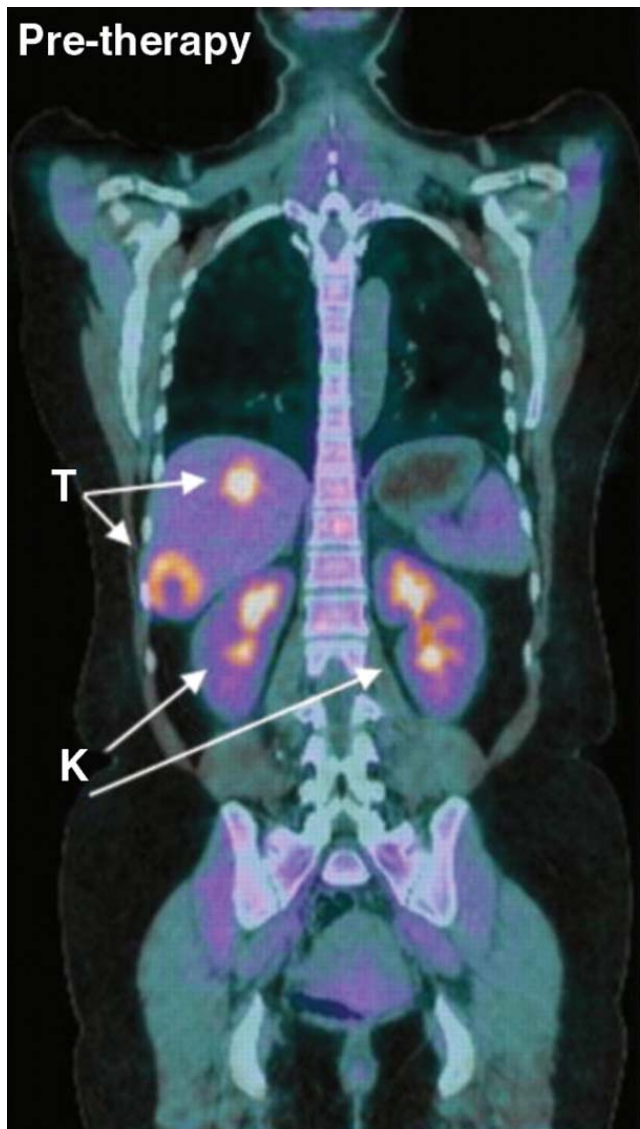
Pancreatic Cancer – Risk Factors

- Proven-
 - Cigarettes
 - Obesity
 - Chronic Pancreatitis
 - Industrial Chemical Exposure
 - Diabetes
- Disproven-
 - Coffee
 - Alcohol

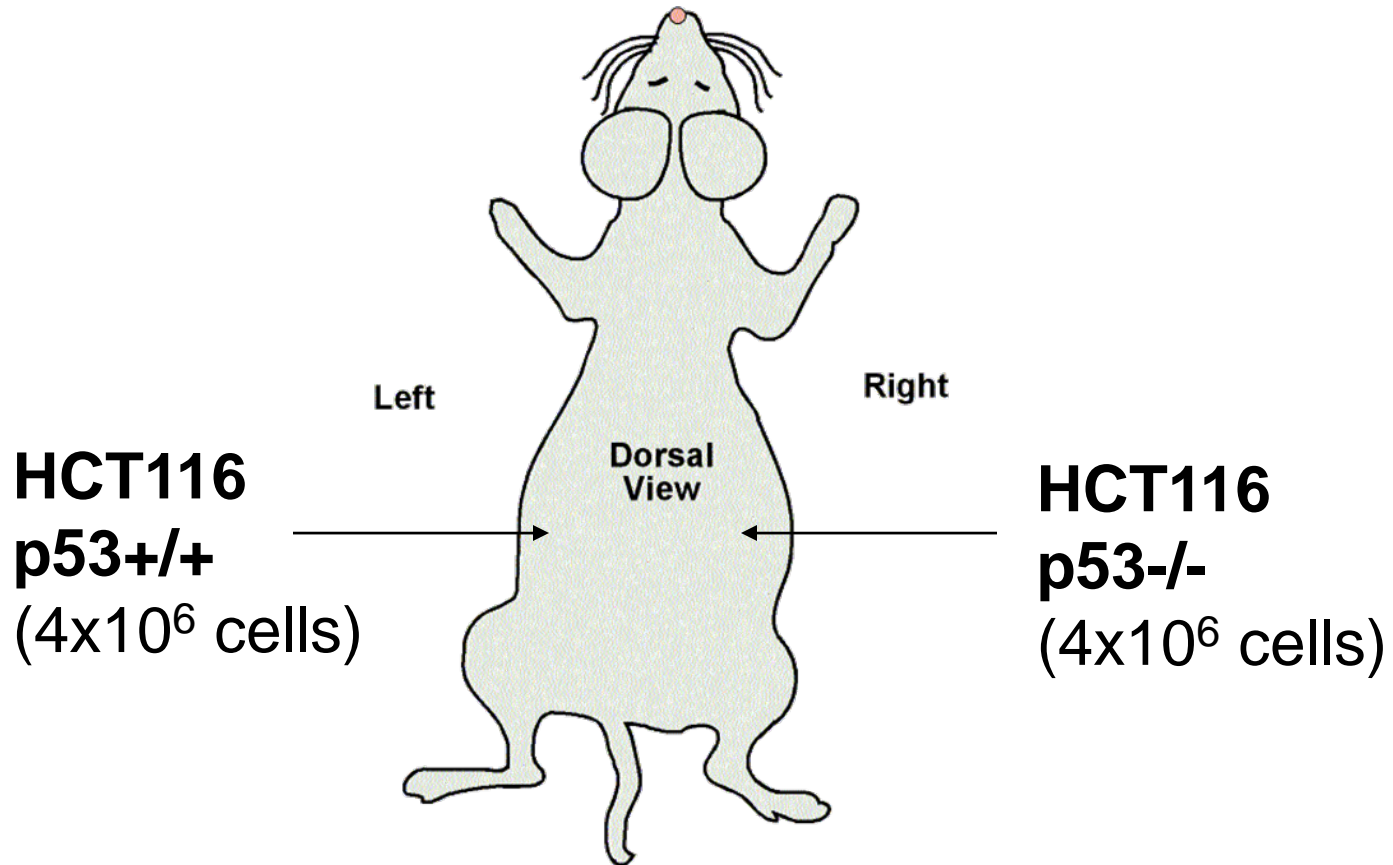
Multicellular organisms



Newer and safer cancer therapies kill tumors by blocking their use of glucose



Xenografts of human cancer cells

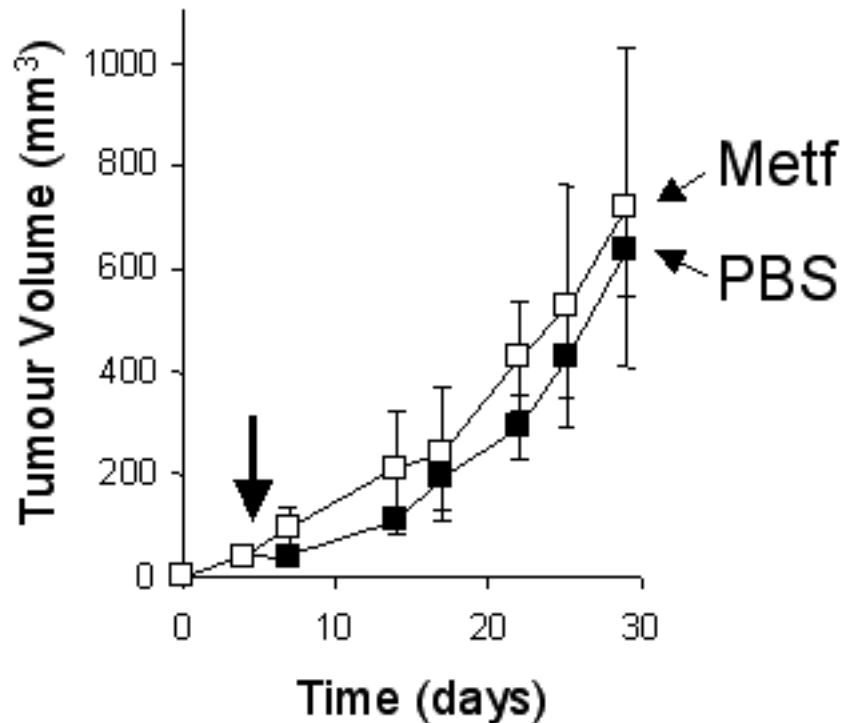


Pharmacological treatment with daily i.p. injections:

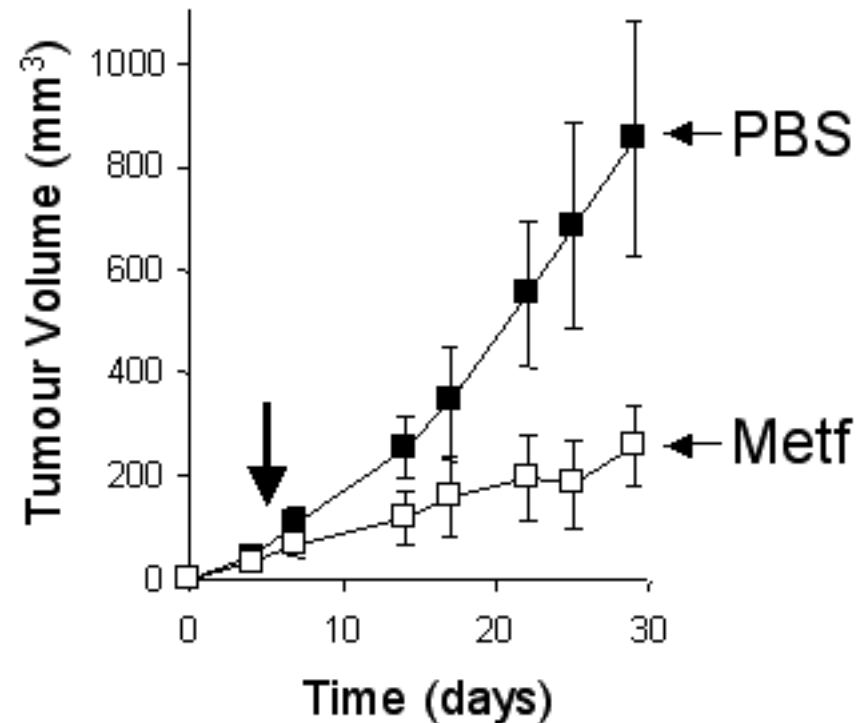
**0.25 mg Metformin /g body weight, or
200ul PBS**

Metformin treatment selectively inhibits the growth of p53^{-/-} human tumors

HCT116 p53^{+/+}

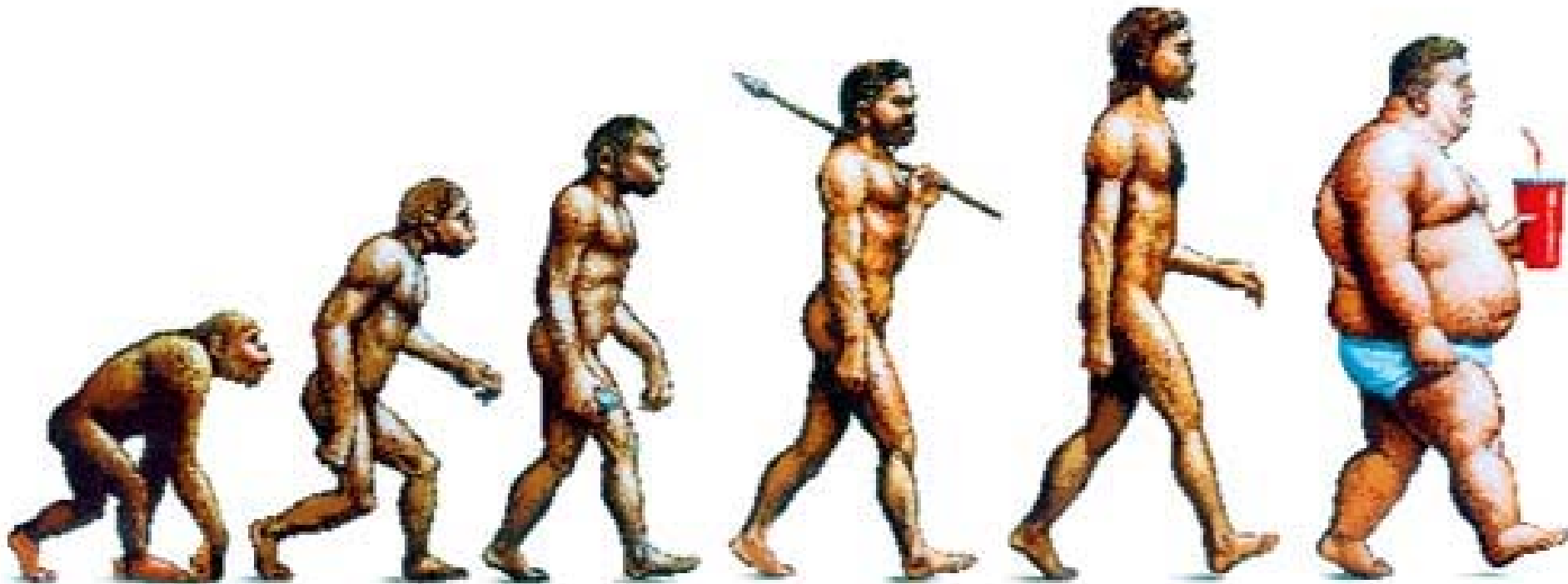


HCT116 p53^{-/-}



The Shape of Things to Come.

The Economist 12/11/03



(http://www.economist.com/displaystory.cfm?story_id=2282754)