

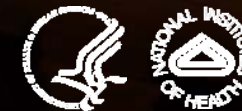
# FY 2007 Budget: NIH and the Transformation of Medicine

House Appropriations Subcommittee  
on Labor/HHS/Education

Elias A. Zerhouni, M.D.  
Director



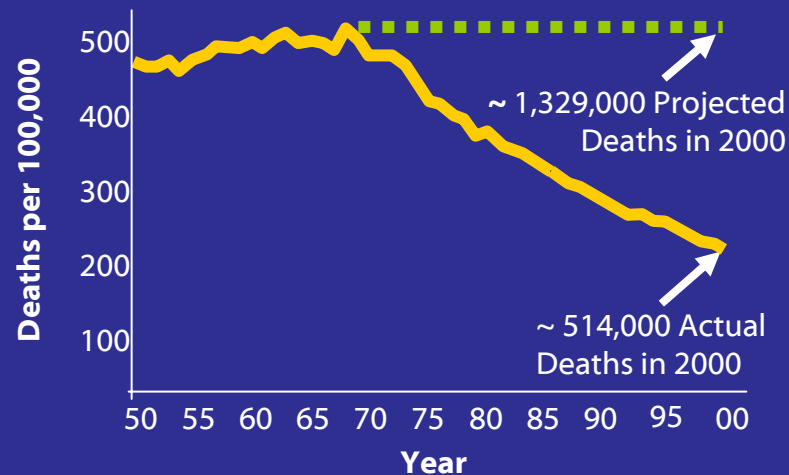
NATIONAL INSTITUTES OF HEALTH



- **What is the return on the American people's investment in the National Institutes of Health?**
- **What has the NIH budget doubling accomplished?**
- **What is the NIH strategy for the future?**



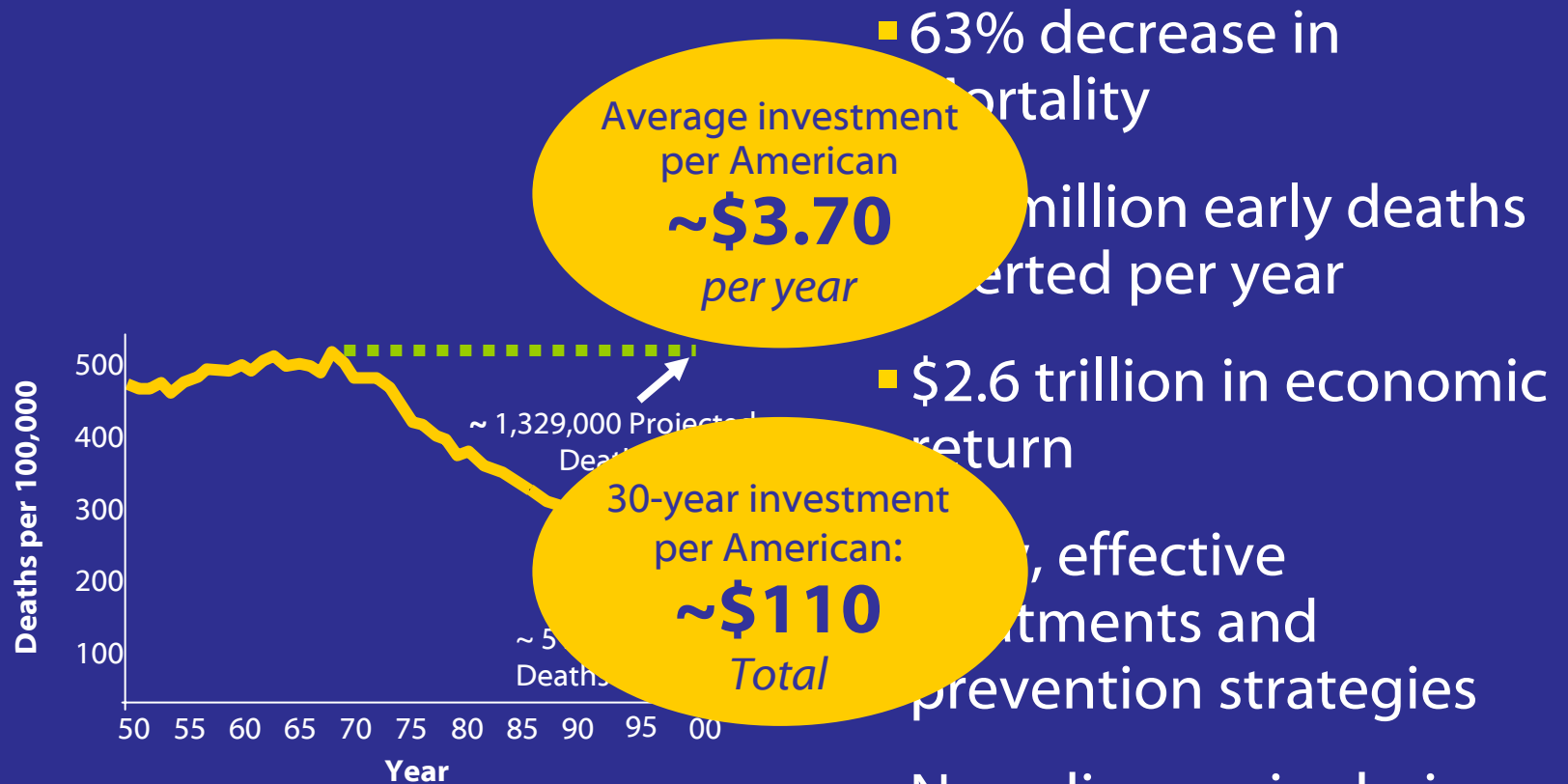
# Coronary Heart Disease



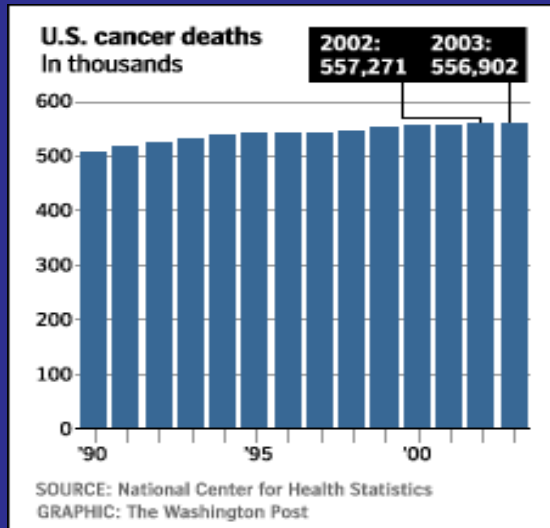
- 63% decrease in Mortality
- ~ 1 million early deaths averted per year
- \$2.6 trillion in economic return
- New, effective treatments and prevention strategies
- New discoveries being developed with industry



# Coronary Heart Disease



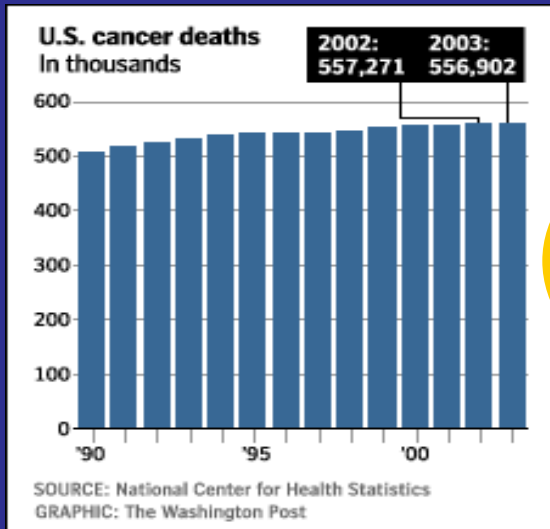
# Cancer



- For the first time in recorded history, annual cancer deaths in the United States have fallen
- 10 million survivors
- Improved effectiveness of early detection and screening
- Thanks to the doubling, new targeted, minimally invasive treatments for cancer multiplied
- New drugs developed for cancer prevention



# Cancer



- For the first time in recorded history, annual cancer deaths in the United States have fallen

Average investment per American  
**~\$8.60**  
per year

- Improved effectiveness of early detection and screening

30-year investment per American:  
**~\$260**  
Total

- New drugs developed for cancer prevention





# New Discoveries Make it Possible to “Personalize” Cancer Treatment



*Identified 16  
informative  
genes*



*Test tumor  
samples for  
mutations in  
these genes*

## **Impact:**

**70,000 breast cancer patients *per year* may not have to undergo chemotherapy**

## **Predict which patients need chemotherapy**



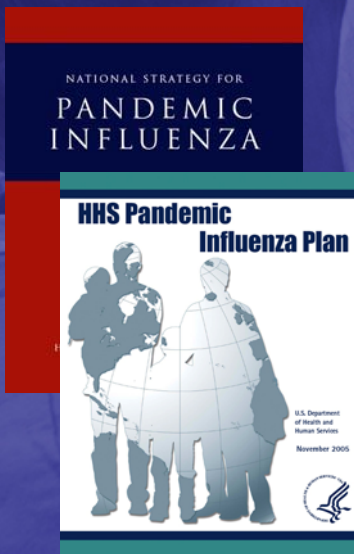
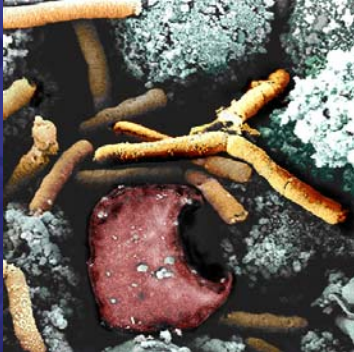
# A World Without a Strong NIH

*How would we face new threats?*





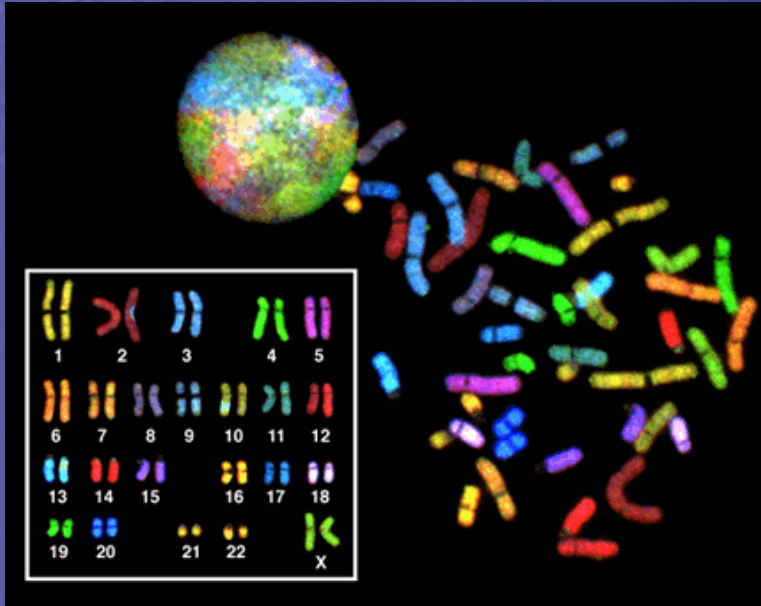
# Doubling the Budget Allowed NIH to Expand the Scope of its Mission



- **New Biodefense Mission**
  - Multiple countermeasures
- **New Vaccine Research Center**
  - Over 14 new vaccines
- **HHS Pandemic Flu Preparedness**
  - H5N1 Vaccines and Drugs
- **New fields of research:**
  - Genomics
  - Bioinformatics
  - Institute of Biomedical Imaging and Bioengineering



# Human Genome Project and HapMap: *The Foundation of a New Medical Era*



- New powerful DNA sequencing technologies
- **2007 Genes, Environment, and Health Initiative**
  - Identify roots of 10 most common diseases within 3 years
  - Devise new ways of monitoring personal environmental exposures
  - Guide new treatments



# Broadening the NIH Vision

**FY 2004**



## NIH Roadmap for Medical Research

- Involves entire NIH

**FY 2005**

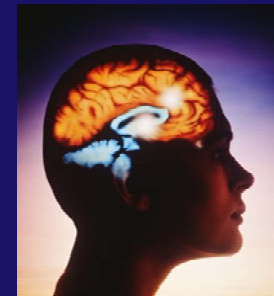


## NIH Strategic Plan for Obesity Research

- Involves 19 Institutes and Centers

Image © Time magazine, June 2004

**FY 2006**



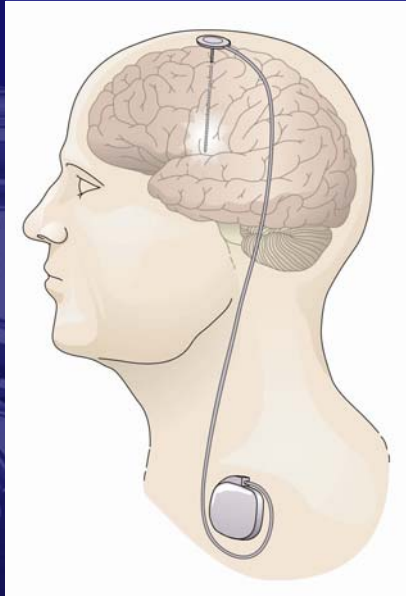
## NIH Neuroscience Blueprint

- Involves 15 Institutes and Centers





# Example of Interdisciplinary Research: *Deep Brain Stimulation Treatment for Parkinson's Disease*



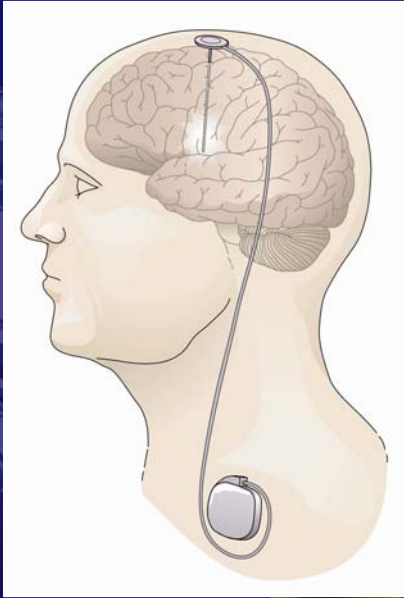
**Without** “Brain Pacemaker” Stimulation





# Example of Interdisciplinary Research: *Deep Brain Stimulation Treatment for Parkinson's Disease*

With “Brain Pacemaker” Stimulation



# Example of Interdisciplinary Research:

*Deep Brain Stimulation Treatment for Parkinson's Disease*





# With Doubling, NIH Expands Funding Across U.S.

## 3,114 New Technologies Brought to Market

By 185 US Research Institutions (1998-2004)

*Funding to Develop Technologies Provided by Both US Government and Private Industry*

## 4,543 New Companies Formed

Around Technologies from US Research Institutions (1980-2004)

*2,671 Companies Still in Operation as of 12/2004*





# America Is Living Longer *And Healthier*



- **Improvements in:**
  - Recovery from heart disease, stroke
  - Deafness
  - Vision impairment
  - Osteoporosis
- **Bone and joint health**
  - New, more effective classes of drugs for arthritis
  - Improvements in joint replacement technology





# America Is Living Longer And Healthier



Since 1982, disability rate for elderly Americans declined by 30%



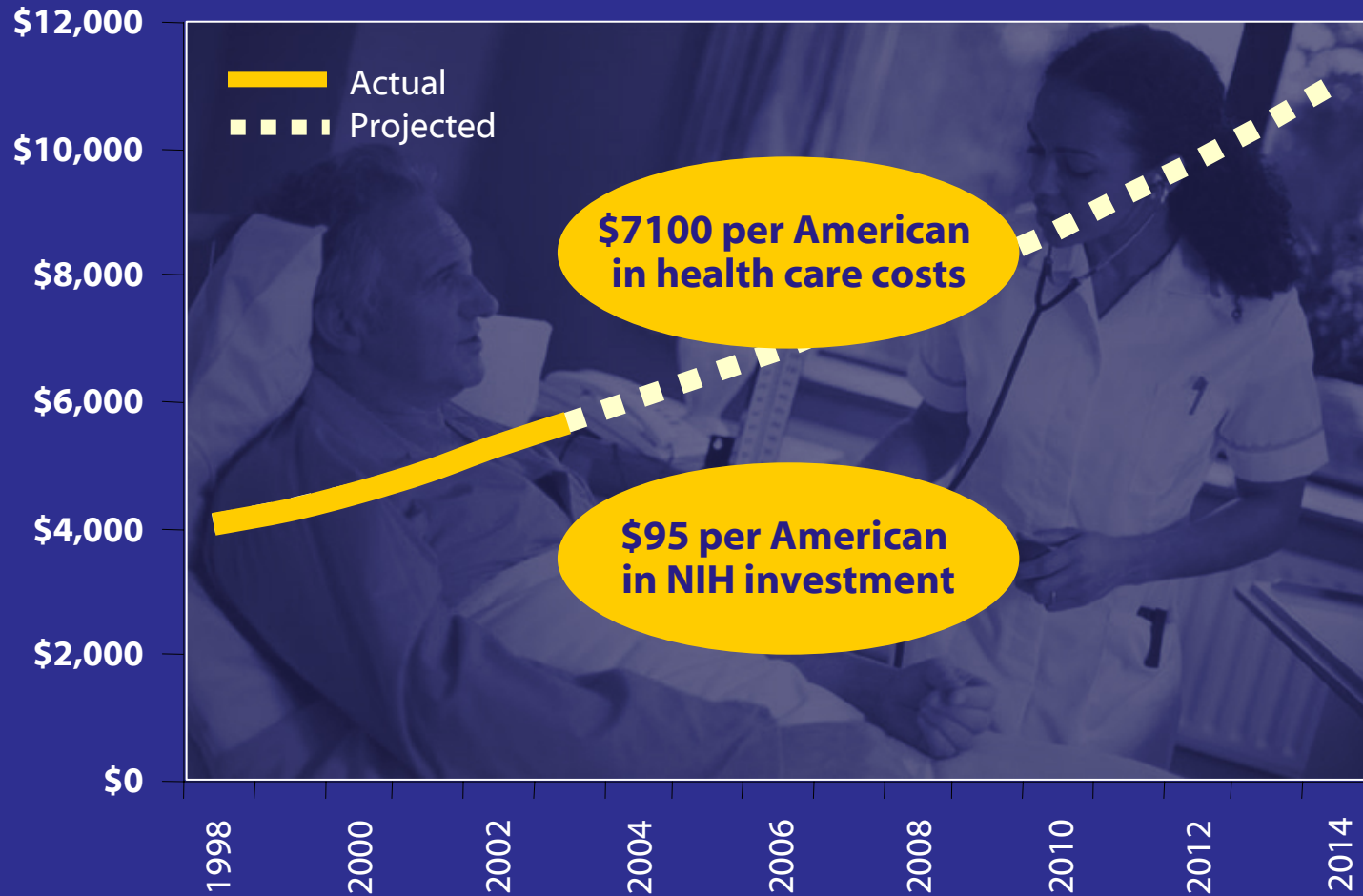
In past 30 years, American life expectancy increased by ~6 years

## ■ Improvements in:

- Recovery from heart disease, stroke
- Hearing loss
- Vision impairment
- Osteoporosis
- **Brain and joint health**
- New, more effective classes of drugs for arthritis
- Improvements in joint replacement technology

# Facing the Rising Challenge

## *U.S. Health Expenditures per capita*



Source: <http://new.cms.hhs.gov/NationalHealthExpendData/downloads/nheprojections2004-2014.pdf>

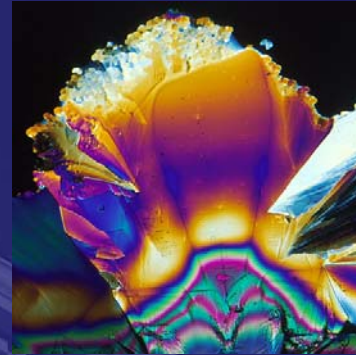
# The Future Paradigm: *Transform Medicine from Curative to Preemptive*



Predictive ↔ Personalized ↔ Preemptive







# NIH *Transforming medicine through discovery*

