

The Internationalization of Medicine

IMPACT

Prostate Cancer Research Program

Atlanta

September 5, 2007

Michael Milken

Chairman, Prostate Cancer Foundation

The Internationalization of Medicine

- **A New Global Perspective**
- **Progress - Curing Diseases**
- **Democratization of Capital**
- **Human Capital: The Most Precious Asset**
- **Accelerating Medical Solutions**

*The 21st Century will see a
worldwide competition
for human capital.*

Some CEOs of International Companies



Howard Stringer
Sony



Carlos Ghosn
Renault



Marjorie Scardino
Pearson



Ray Irani
Oxy Pete



Indra Nooyi
PepsiCo



Jean-Pierre Garnier
GlaxoSmithKline



Antonio Perez
Eastman Kodak



Sidney Taurel
Eli Lilly



David Pyott
Allergan



Neville Isdell
Coca-Cola

The World's Top 10 Economies

(Percent of World GDP)

Today

U.S. (26.7%)
Japan (8.4%)
Germany (6.0%)
China (5.9%)
U.K. (5.2%)
France (4.7%)
Italy (3.9%)
Spain (2.6%)
Canada (2.5%)
Brazil (2.3%)

The World's Top 10 Economies

(Percent of World GDP)

Today

2050

U.S. (26.7%)

Japan (8.4%)

Germany (6.0%)

China (5.9%)

U.K. (5.2%)

~~France (4.7%)~~

~~Italy (3.9%)~~

~~Spain (2.6%)~~

~~Canada (2.5%)~~

Brazil (2.3%)

China (18.5%)

U.S. (16.5%)

India (12.0%)

Brazil (4.8%)

Indonesia (3.5%)

Japan (3.1%)

Mexico (3.0%)

Russia (2.7%)

U.K. (2.3%)

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The World's Top 10 Economies

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Japan (3.1%)

Mexico (3.0%)

Russia (2.7%)

U.K. (2.3%)

Germany (2.3%)

China (28.7%)

India (16.0%)

France (5.4%)

England (5.2%)

Prussia (4.9%)

Japan (3.1%)

Austria (1.9%)

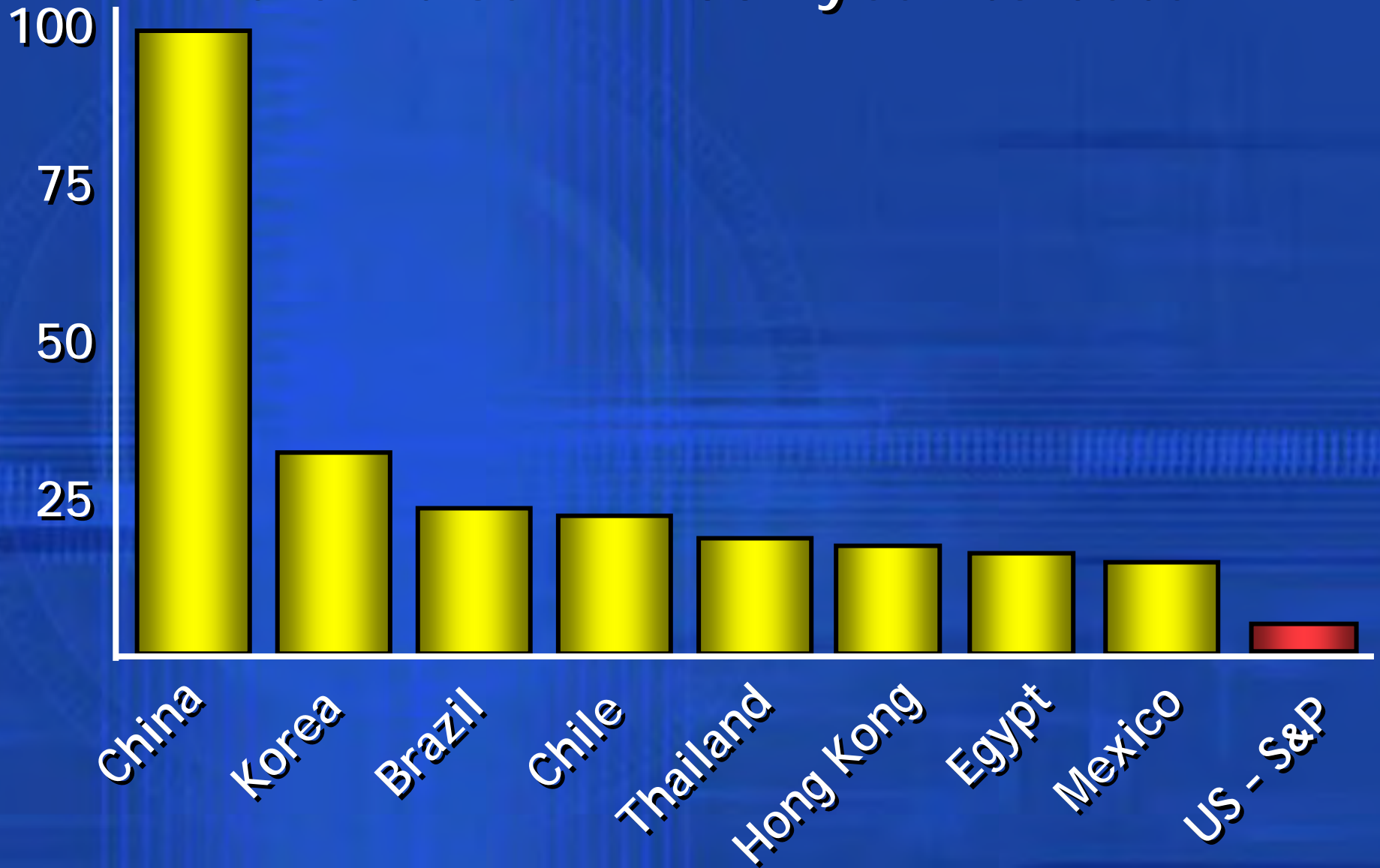
Spain (1.9%)

U.S. (1.8%)

Russia (1.7%)

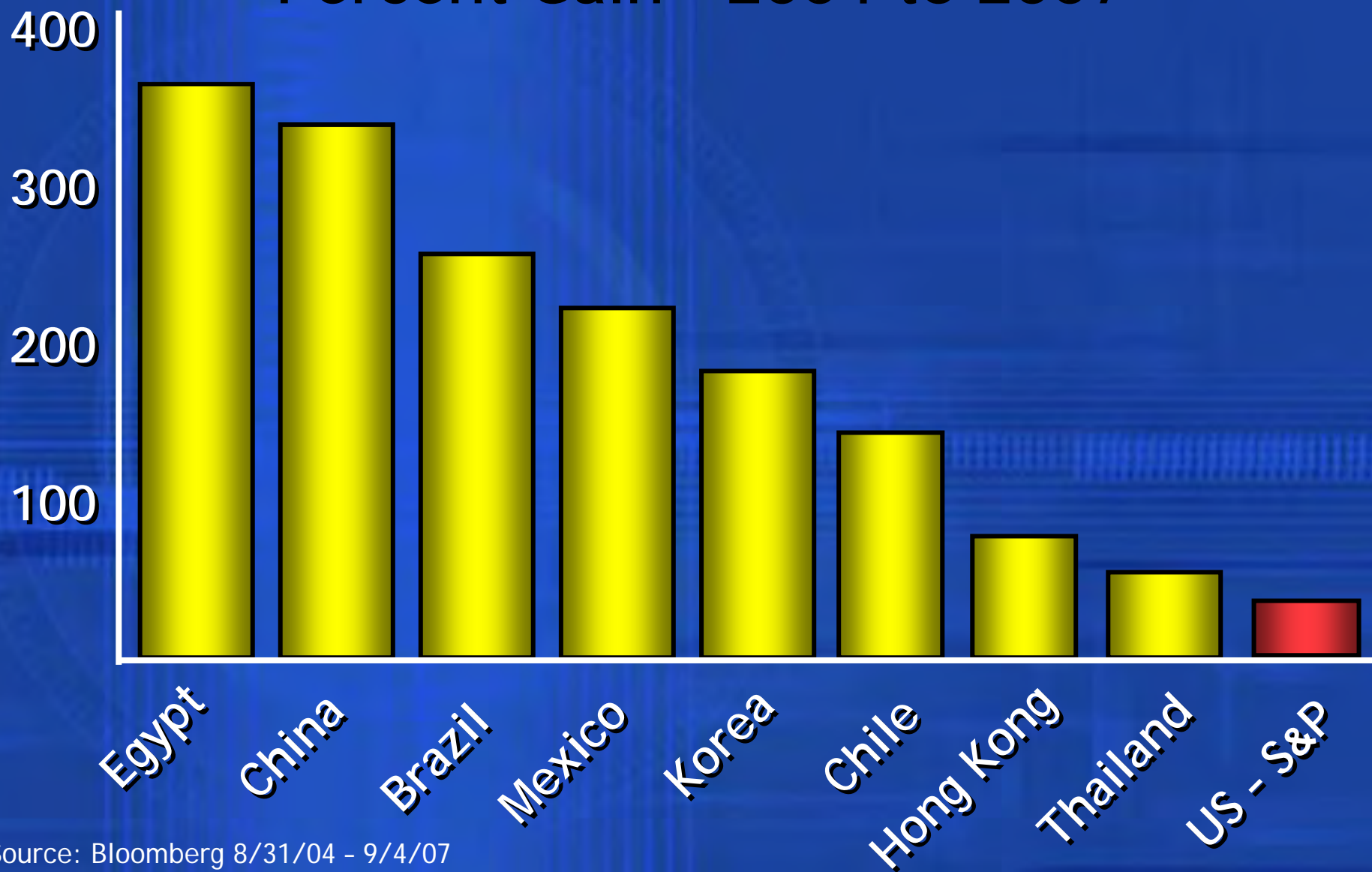
Stock Markets Performance Worldwide

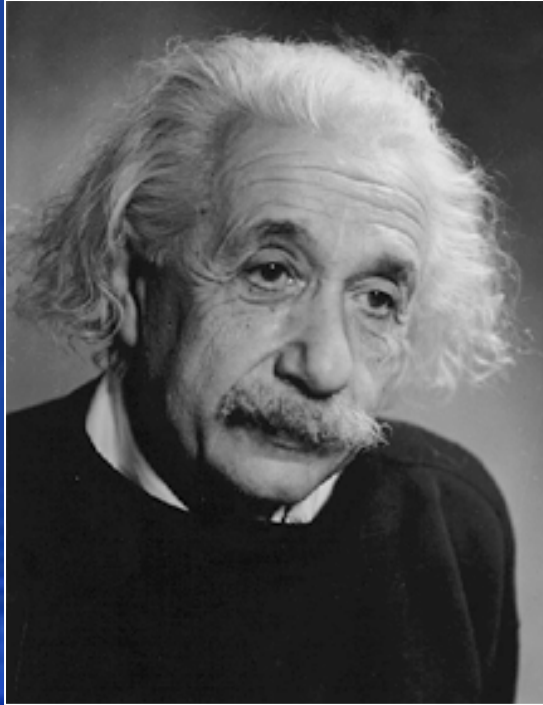
Percent Gain - 2007 year-to-date



Stock Markets Performance Worldwide

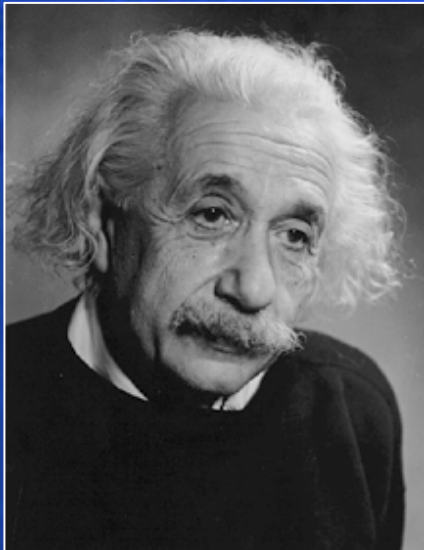
Percent Gain - 2004 to 2007





What is the most powerful force the world has ever produced?

$$a = Pe^{rt}$$



a = Future Value
P = Original Principal
r = Rate
t = Time

Hundreds of billions of dollars in excess liquidity, as much as \$50,000 for every citizen ...



Norway



Qatar



Singapore



Kuwait



Taiwan



Abu Dhabi (UAE)

How will they invest their capital?

- Medical research
- Better medical treatment
- Hospitals and facilities
- Education

Biopolis

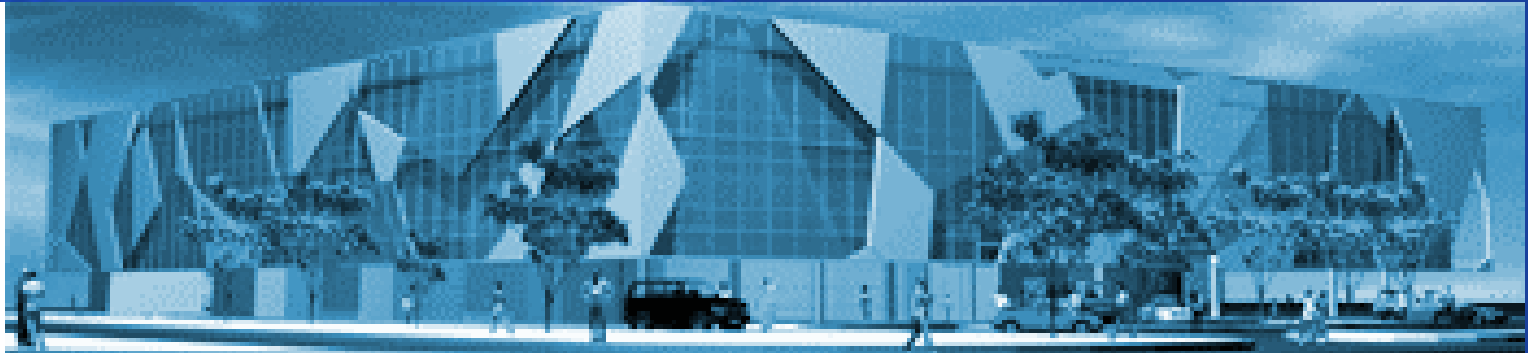
Singapore



Z Park

China

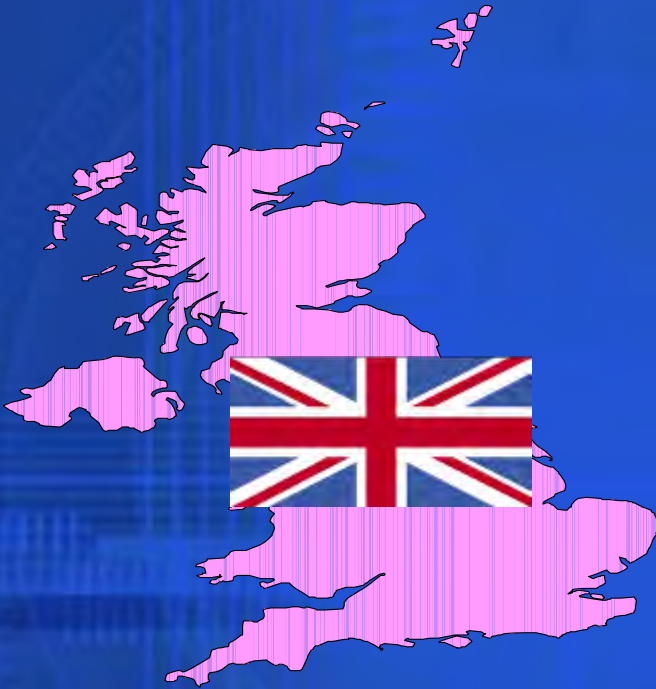




مركز إمبيريال كوليدج لندن للسكري
IMPERIAL COLLEGE LONDON DIABETES CENTRE

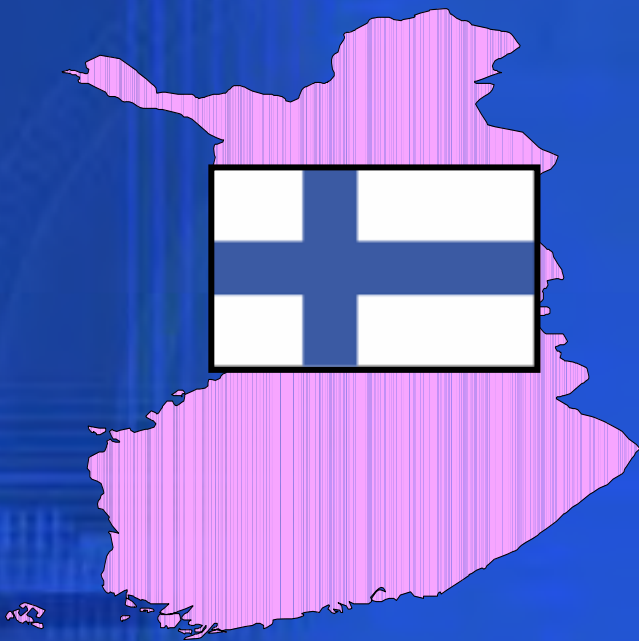
- **Completely paperless facility**
- **Joint project of Abu Dhabi government and Imperial College London**
- **Combines research, treatment, training & public health**
- **UAE has world's 2nd-highest incidence of type-2 diabetes**

U.K.'s Progress on Electronic Records



- England's National Programme for IT (\$11B initiative) will link 30,000 physicians to 300 hospitals by 2012.
- All physicians are "in" unless they opt out.

Finland's Digital Medical Records



- Every cancer case since 1953 has been digitized, including doctors' handwritten notes.
- Today ... there are databases for heart disease, diabetes and a range of other illnesses.

60 percent of our growth will come from developing countries in the next decade, compared to about 20 percent for the past decade.

-- GE Annual Report
2004



GE Healthcare

- \$17 billion unit of General Electric
- 46,000 employees
- Serving healthcare professionals and their patients in more than 100 countries



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**1938:
President
Roosevelt
declares war
on polio**

Solving Medical Problems

Eradicating Disease



1950: It was estimated that polio would cost *\$100 billion* to treat by century's end.

Solving Medical Problems

Eradicating Disease



1955: The Salk polio vaccine was introduced.

Elvis gets his shot to promote immunization 1956



Solving Medical Problems

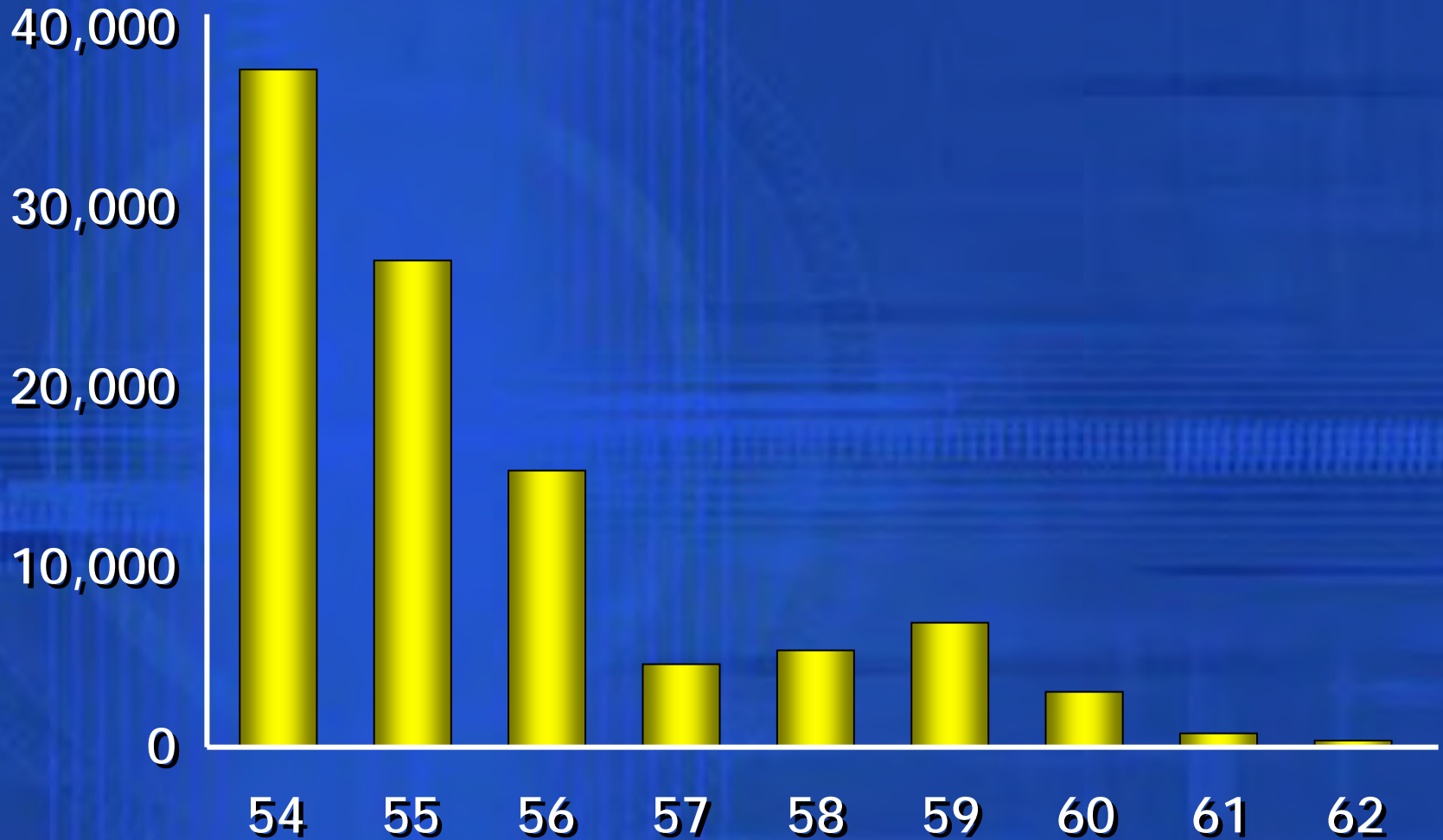
Eradicating Disease



1955: The Salk polio vaccine was introduced.

By 2000, the cost of treating polio was only \$100 million - 1/1000th of the 1950 estimate.

Polio Cases in the U.S.



Polio:

One disease

One cure

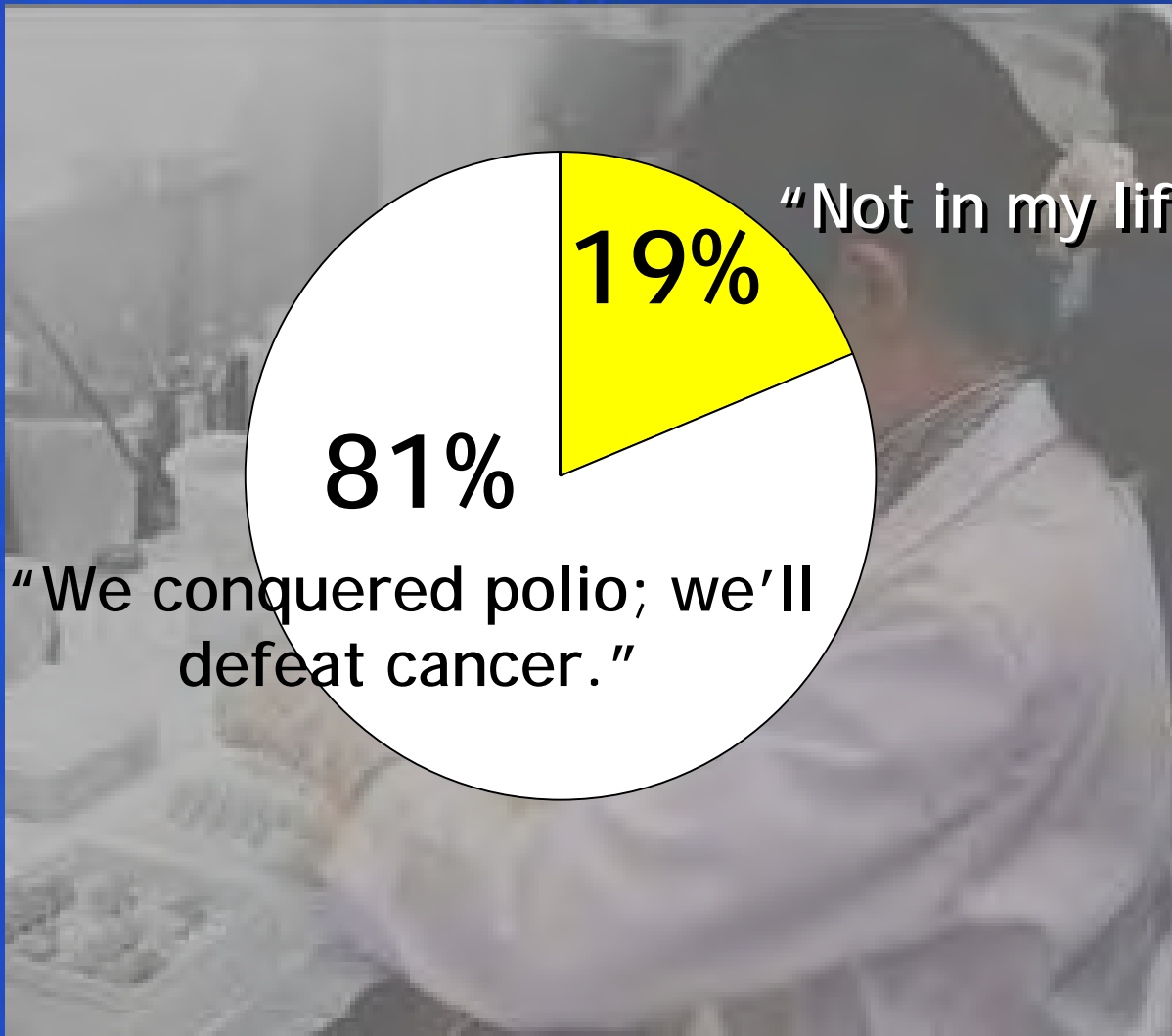
Can we cure cancer?

1957 Gallup Poll



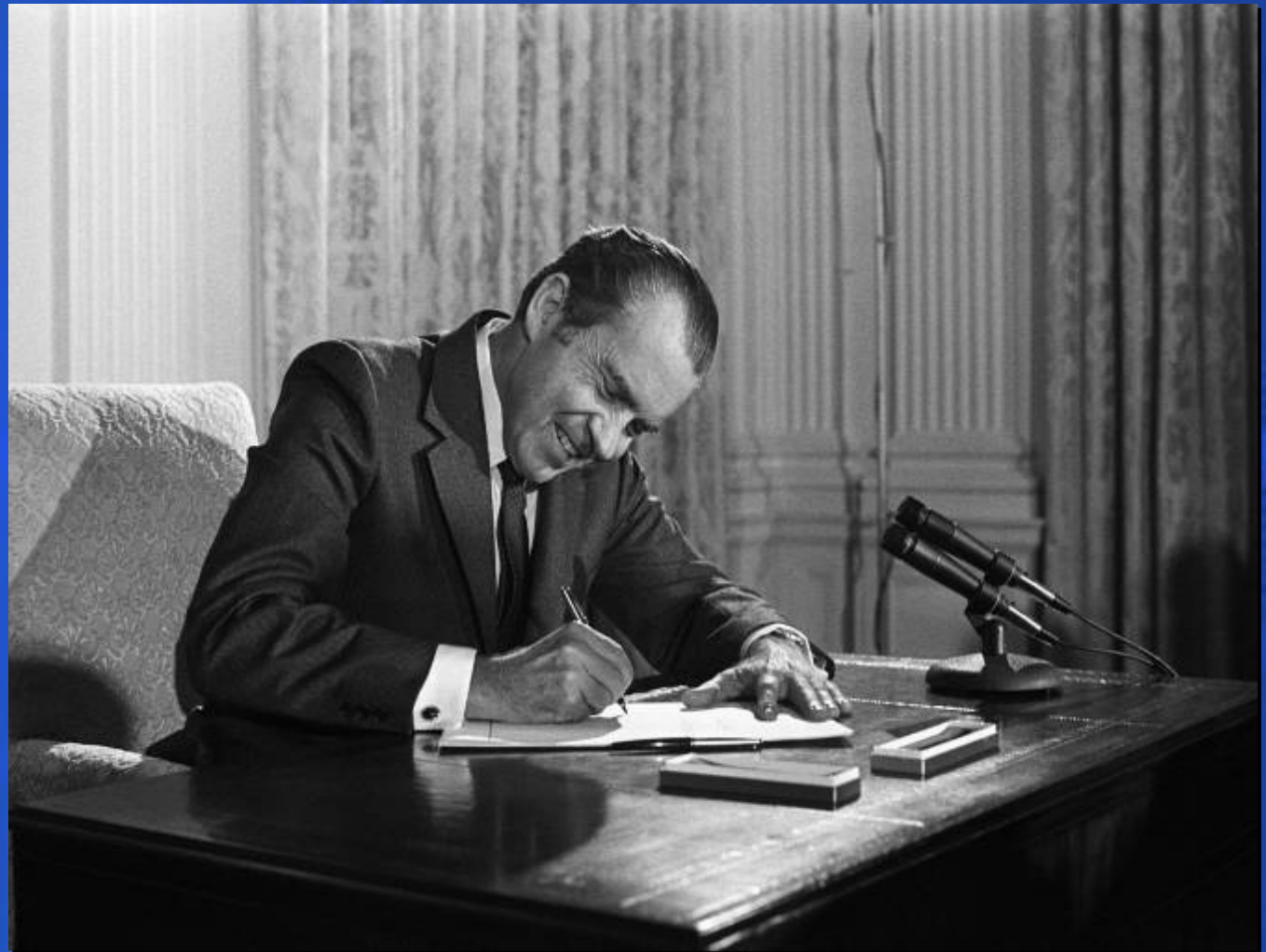
Can we cure cancer?

1957 Gallup Poll



War on Cancer declared

1971

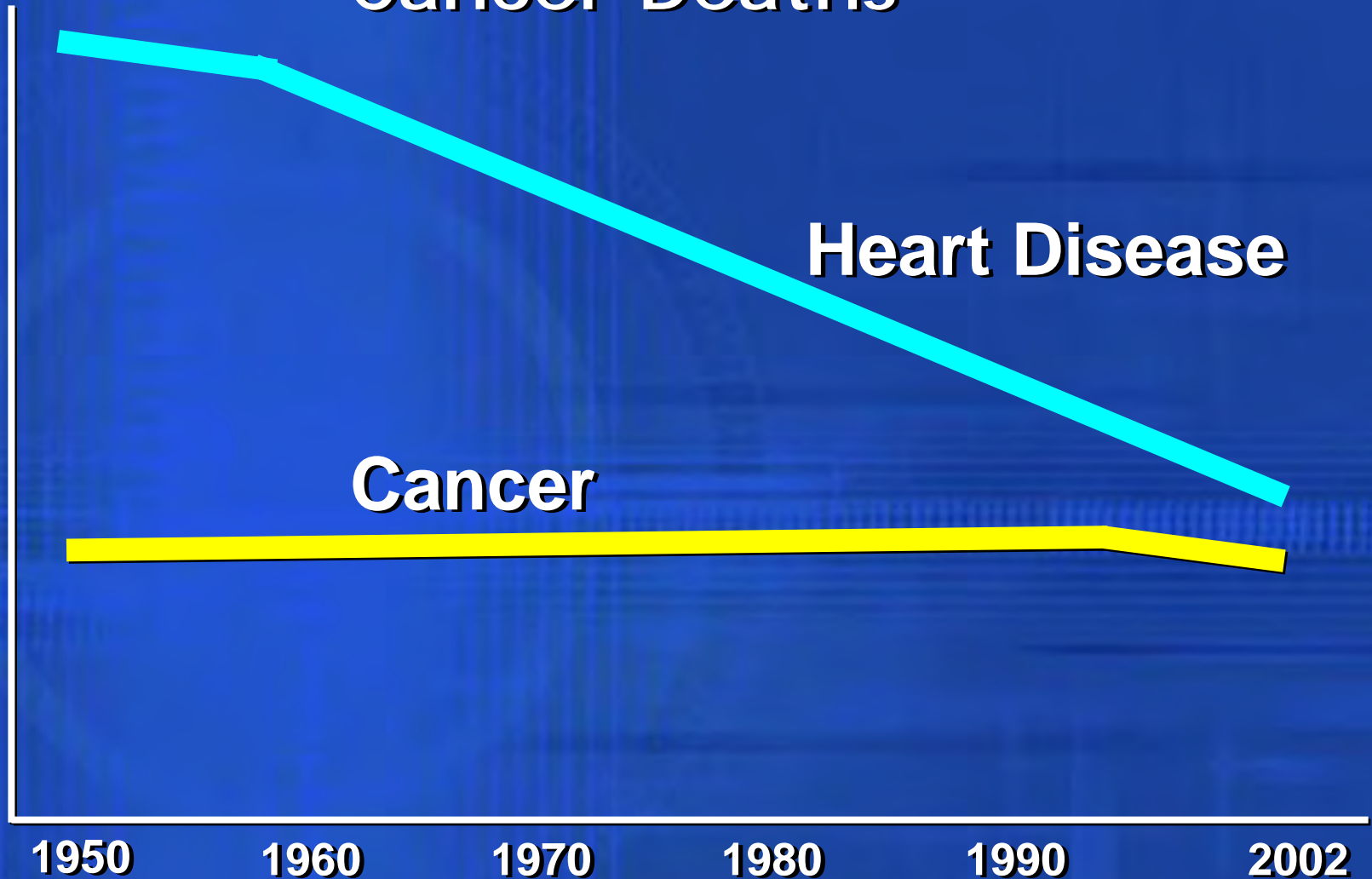


Cancer:

Many diseases.

Many cures.

U.S. Heart Diseases Deaths vs. Cancer Deaths





University of Michigan Gene Fusion Study August 2, 2007, *Nature*

**“There’s not just one kind
of prostate cancer.”**

- Arul Chinnaiyan, M.D. Ph.D.



Ca = Cancer

P = Prostate

CURE = All diseases



**Prostate
Cancer
Foundation**

The Way We Were - 1993

- Young investigators discouraged.
- Nutrition not taken seriously.
- International involvement was rare.
- Little coordination of clinical trials.
- Tissue for research was largely unavailable.

Increasing numbers of men were dying.

From a War Of Attrition to a Plan of Attack

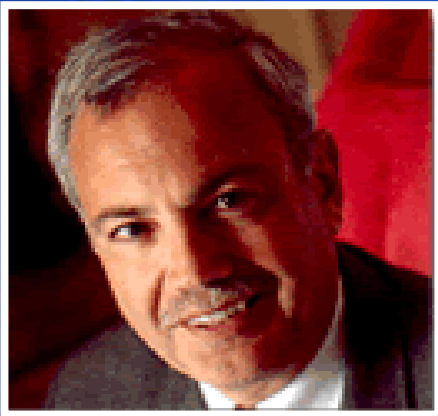
1. Internationalize the war on cancer
2. Invest more
3. Recruit a world-class scientific team
4. Coordinate worldwide cancer resources
5. Accelerate technology transfers
6. Push the technological envelope
7. Create a “world library of organic chemicals”
8. Accelerate approval of new drugs
9. Get product to market faster
10. Mobilize patients and families

How We Approached the Problem

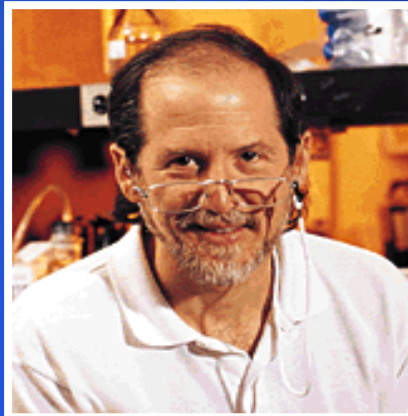
- Limit award applications to five pages
- Make funding decisions in 60 days and fund in 90 days
- Recruit human capital
- Expand collaboration

How We Approached the Problem

Fund Young Investigators



Dennis
Slamon, M.D.



Bert
Vogelstein, M.D.



David
Agus, MD



Jonathan
Simons, MD

How We Approached the Problem



Jonathan Simons

Recipient of the Donald S. Coffey Award

How We Approached the Problem

Annual Scientific Retreat



How We Approached the Problem

Expand collaboration

- Therapy Consortium
- Gene and Family Studies Consortium
- Tissue Banks
- PCF Nutrition Project

How We Approached the Problem

The March - 1998



How We Approached the Problem

Internationalize the Effort

The PCF has:

- Funded more than 1,400 researchers
- Consulted, coordinated or funded programs in more than 30 countries

How We Approached the Problem

Home Run Challenge





Prostate
Cancer
Foundation



Congressionally Directed Medical Research Programs



PCRCP Innovations

- Idea Awards
- First federally funded clinical trials consortium for prostate cancer
- 2-step expedited approval process
 - ✓ Peer review / Programmatic review
- Incentivized project management
- Integration panel that provides vision and funding process

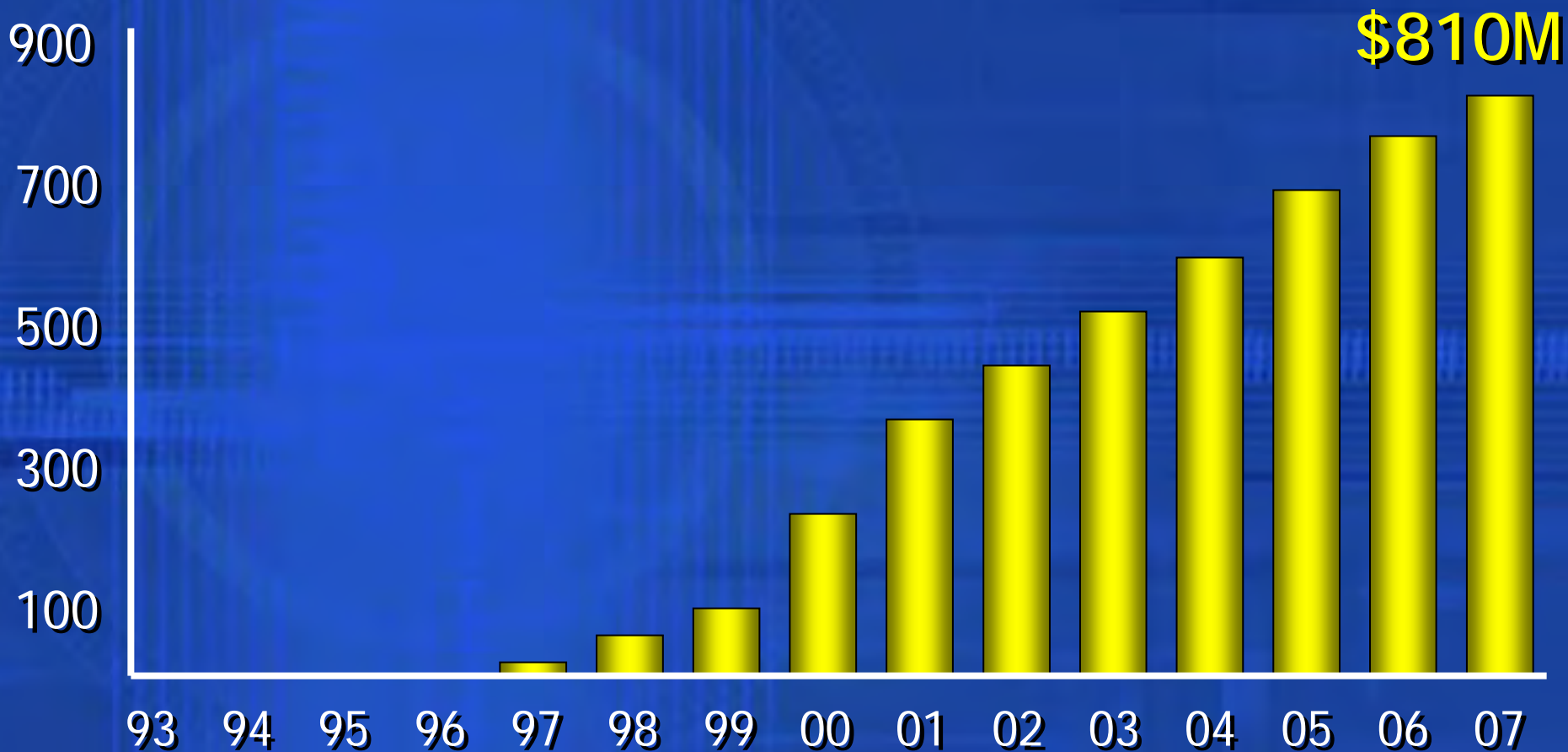


Howard Soule

**Incoming Chairman
Integration Panel**

U.S. Defense Department Prostate Cancer Research Program

(\$US millions - cumulative spending)



2007 - Real Progress

- More drugs in the pipeline than ever
- Increased federal funding for prostate cancer and other forms of cancer
- Accelerated development of better treatments
- Improved quality of life

Fewer men are dying.

The Research Team

1993

PhD

Molecular biologist

MD

2007

PhD

Molecular biologist

MD

Epidemiologist

Physicist

Veterinarian

Mathematician

Ethicist

Nanotechnologist

Political Scientist

Statistician

Engineer

Patient Advocate

Chemist

Clinician

2007:

Where's the money?

“Show me the money!”



*Curing cancer will
require an
international effort.*

*The research
opportunities outside
the United States ... or
funded internationally
... have never been
better.*



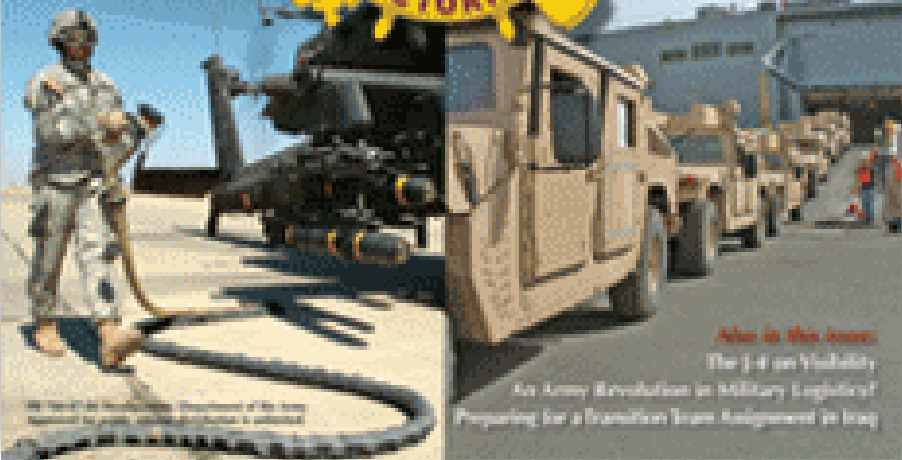
**“Ask not what your
country can do for
you, but what you
can do for your
country.”**

**John F. Kennedy
1961 Inaugural**

ARMY LOGISTICIAN

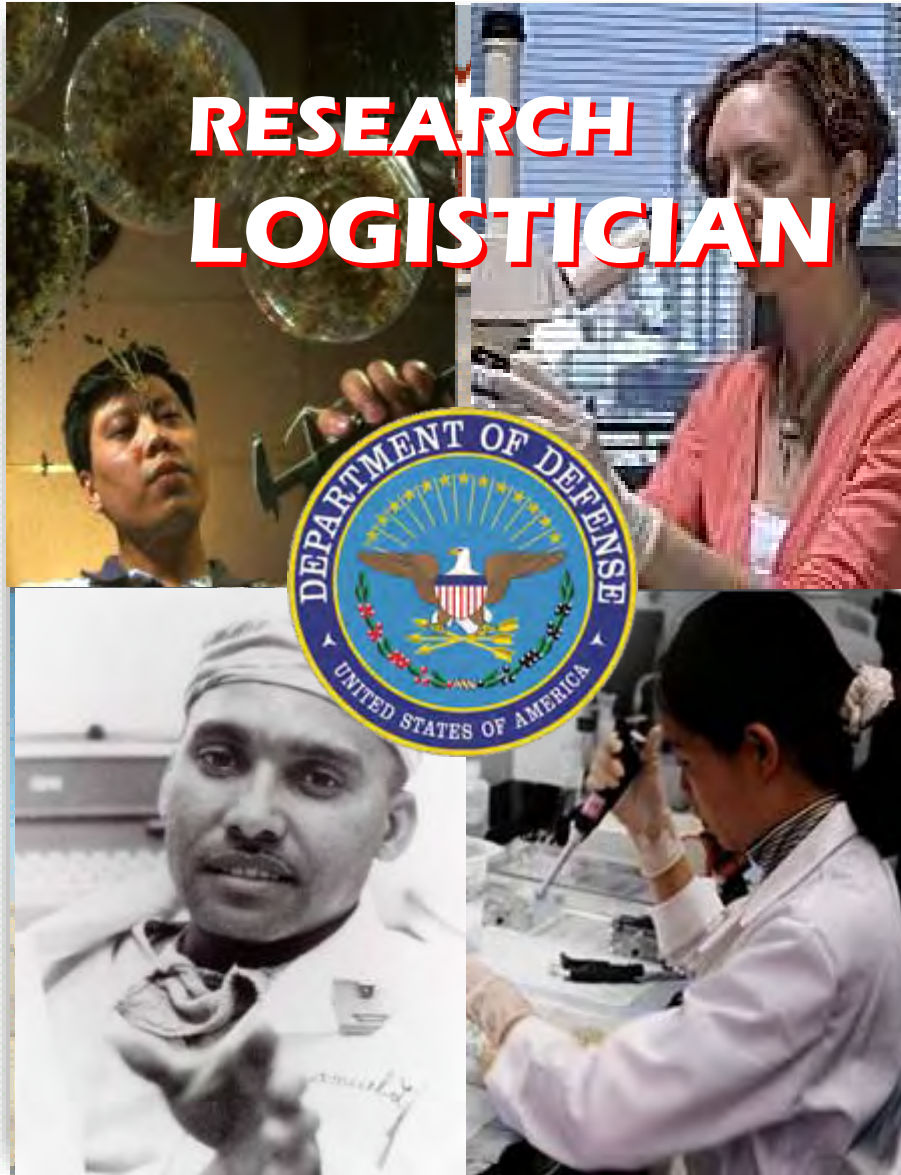


Introducing
the Logistics
Branch



Also in this issue:
The J-4 on Visibility
An Army Revolution in Military Logistics
Preparing for a Transition Team Assignment in Iraq

RESEARCH LOGISTICIAN





VS.



Would everyone attending the annual football game be willing to give \$1 for medical research?



VS.



*Would everyone attending the
annual Michigan-Ohio State
football game be willing to give \$1
for medical research?*



Raised \$11 million in one month from customers at check-out counters that will fund young investigators for three years at four research institutions.



*If each American pledged \$1 a day
for medical research, we'd raise
\$110 billion.*

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$$P = \sum Ft_i^* (\sum HC_i + \sum SC_i + \sum RA_i)$$

P = Prosperity

Ft = Financial Technology

HC = Human Capital

SC = Social Capital

RA = Real Assets

Financial Innovations

- Collateralized loan obligations
- Collateralized bond obligations
- Securitized mortgages
- Securitized credit cards
- Derivatives

Democratization of Capital

Democratization of financial assets



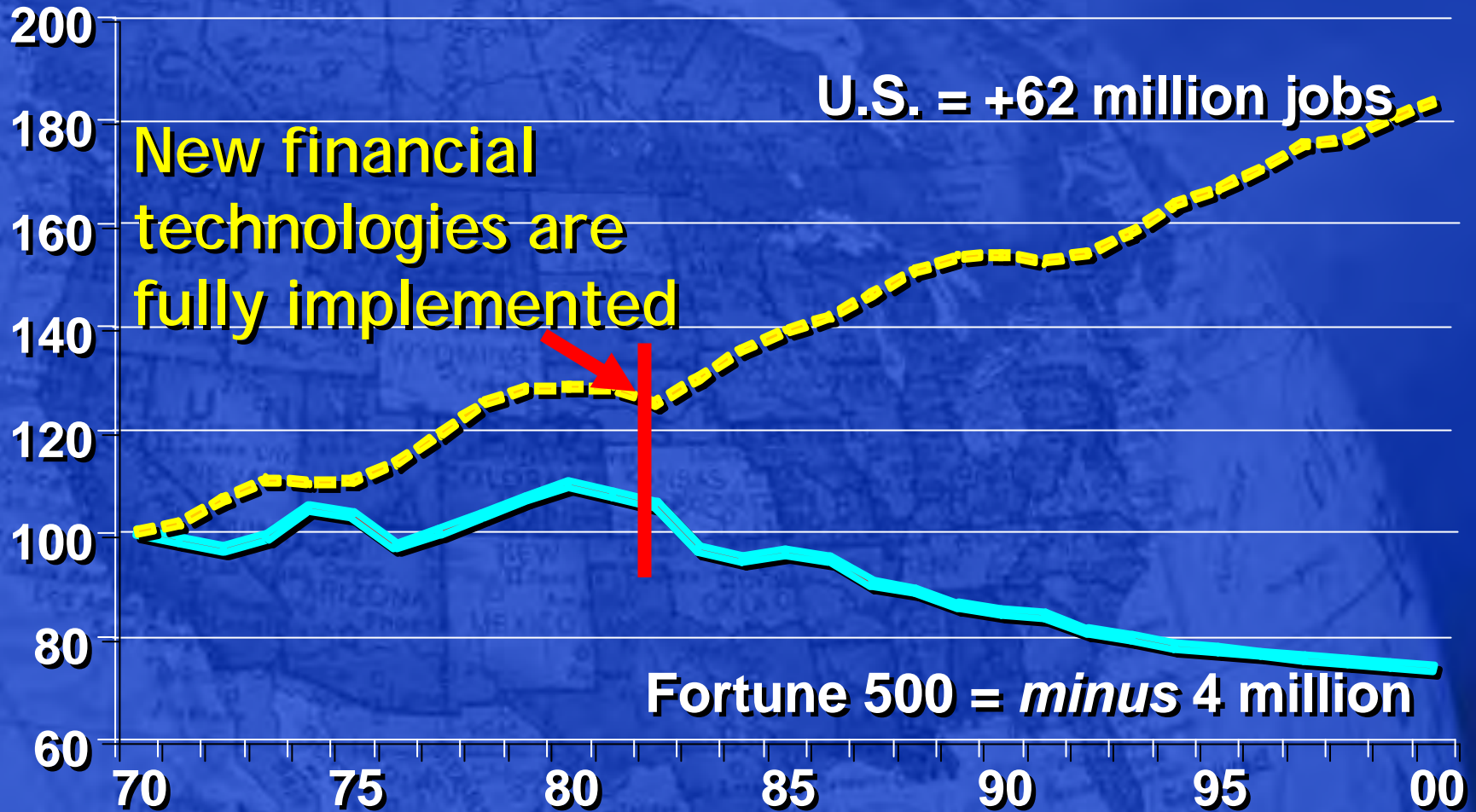
Democratization of industrial assets



Democratization of career opportunities

America Goes to Work

U.S. and Fortune 500 Employment



Index 1970 = 100

First Economist to Win the Nobel Peace Prize Muhammad Yunus



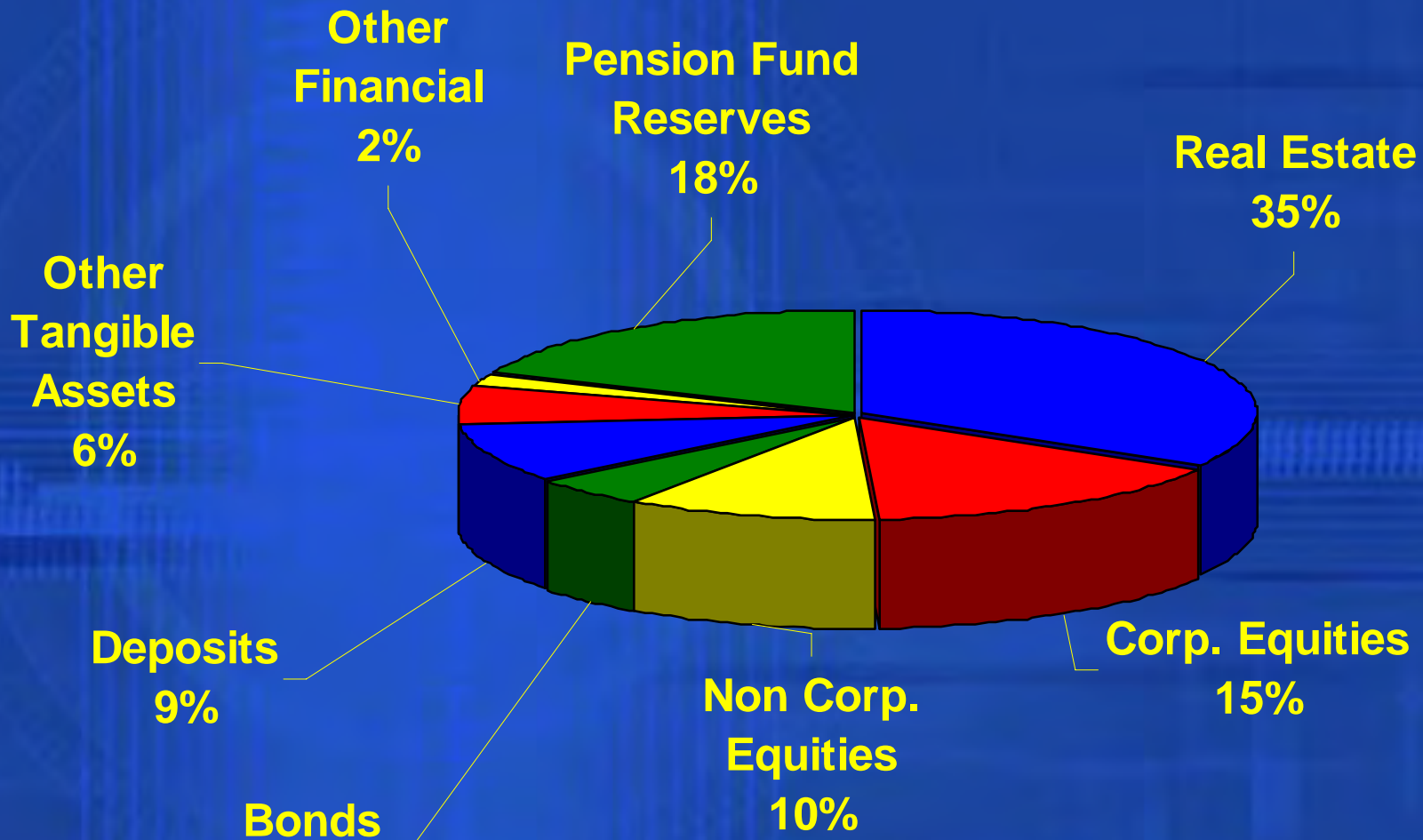
In 1974, began providing access to capital for working women in Bangladesh through micro loans. Won Nobel Peace Prize in 2006.

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2006 U.S. Household Balance Sheet

\$66 Trillion Total

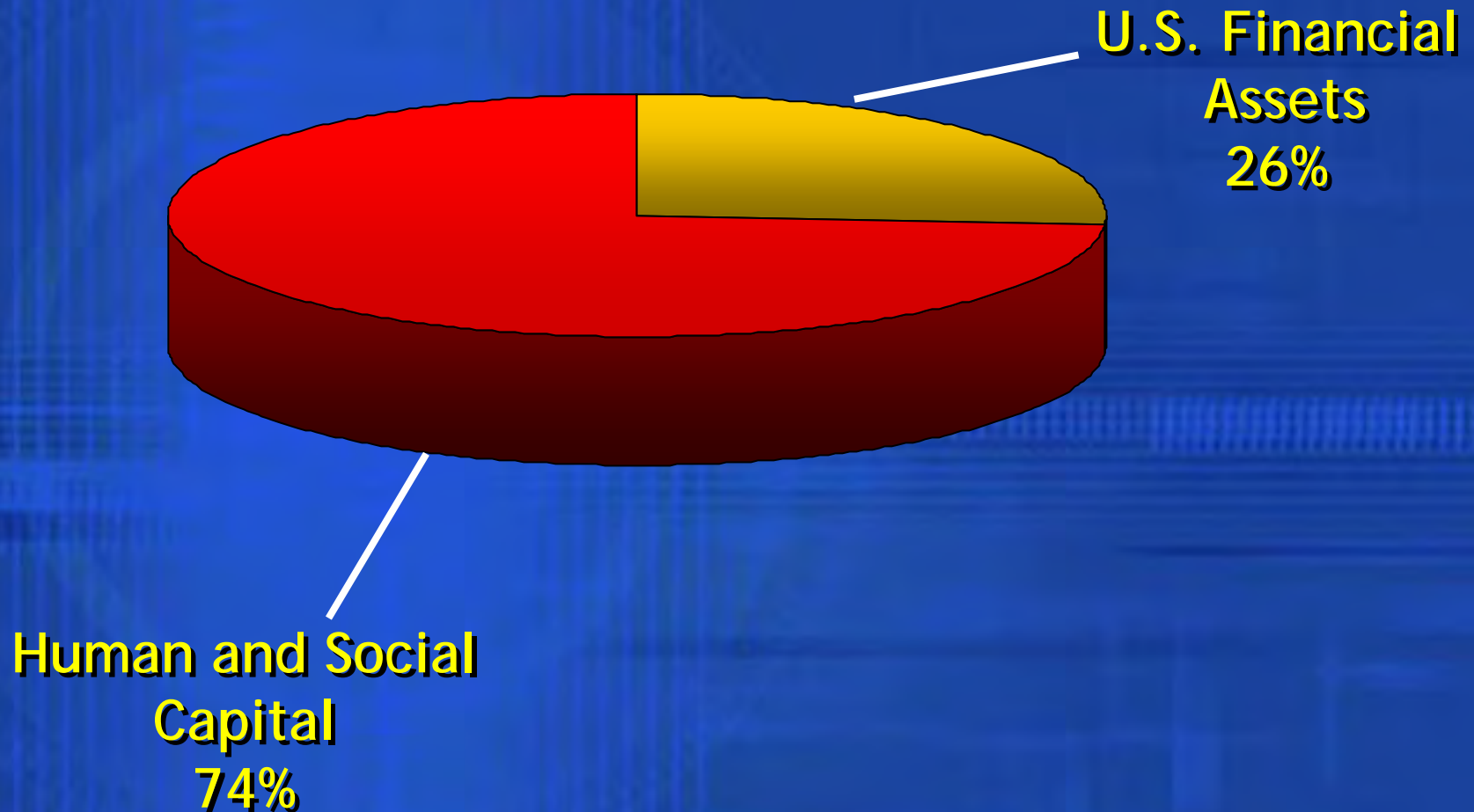




Gary Becker
University of Chicago
1992 Nobel Prize in Economics

2006 Human Capital in the U.S.

\$253 Trillion Total



Human capital is the largest asset class.



Per Capita GDP

1960

2007

Singapore



\$1,900

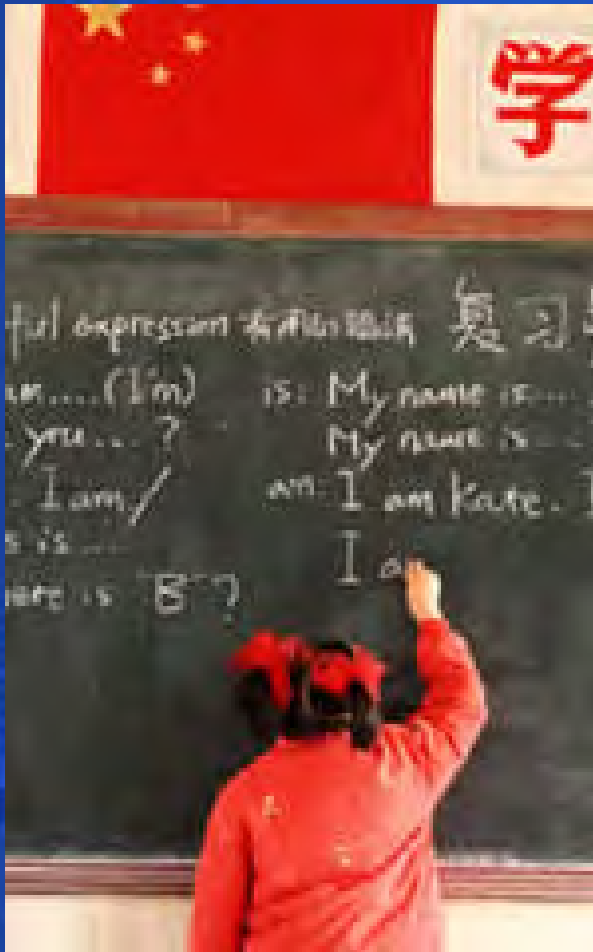
\$32,000

Jamaica



\$1,900

\$3,400



There are 600 million children in India and China whose future buying power will grow at least as fast as their rapidly improving educations.

Three Ways for a Country to Build Human Capital

- **Import people with skills**
- **Increase education and practical skills**
- **Improve health and quality of life so that people are more productive**

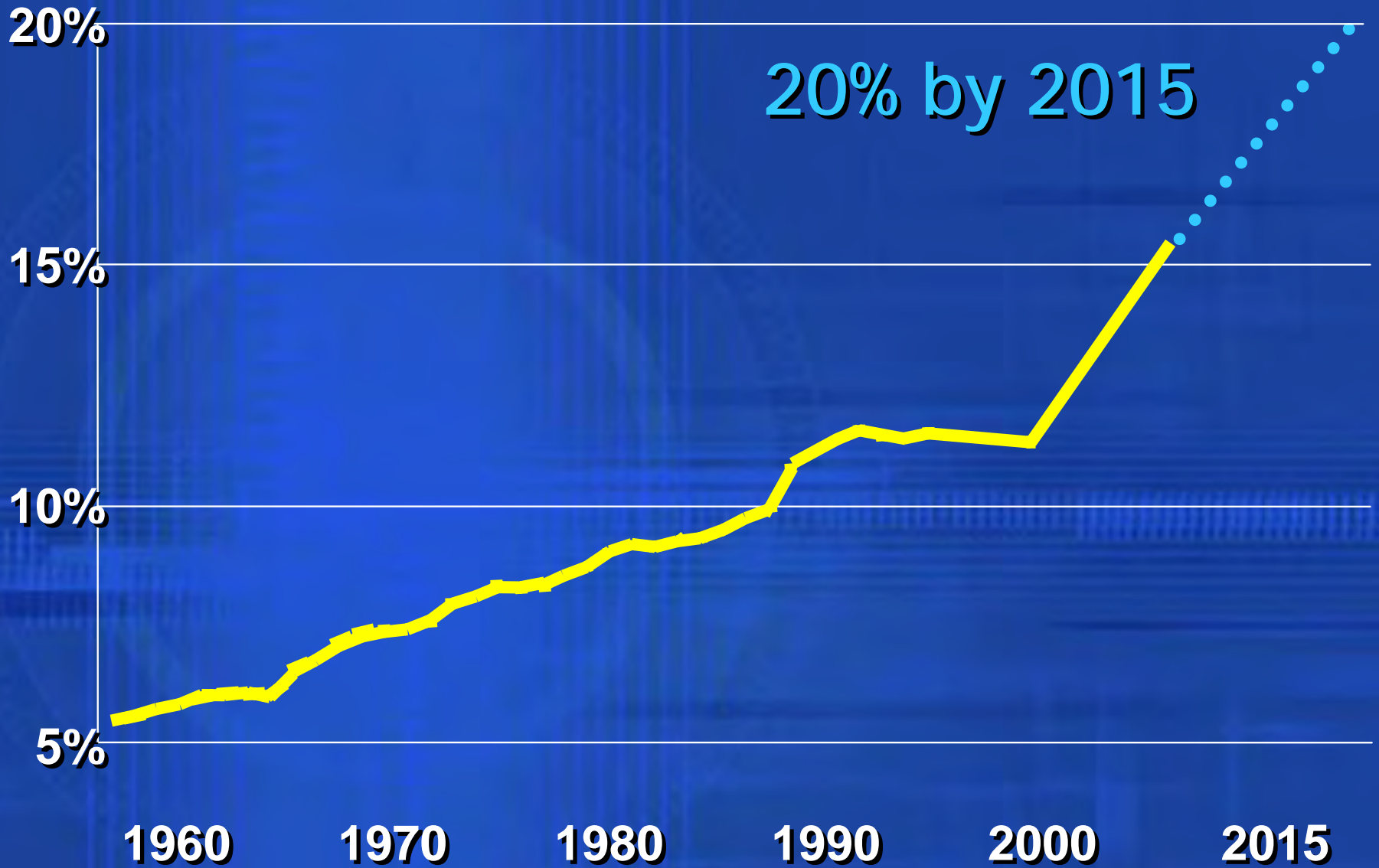
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How do we accelerate medical solutions?

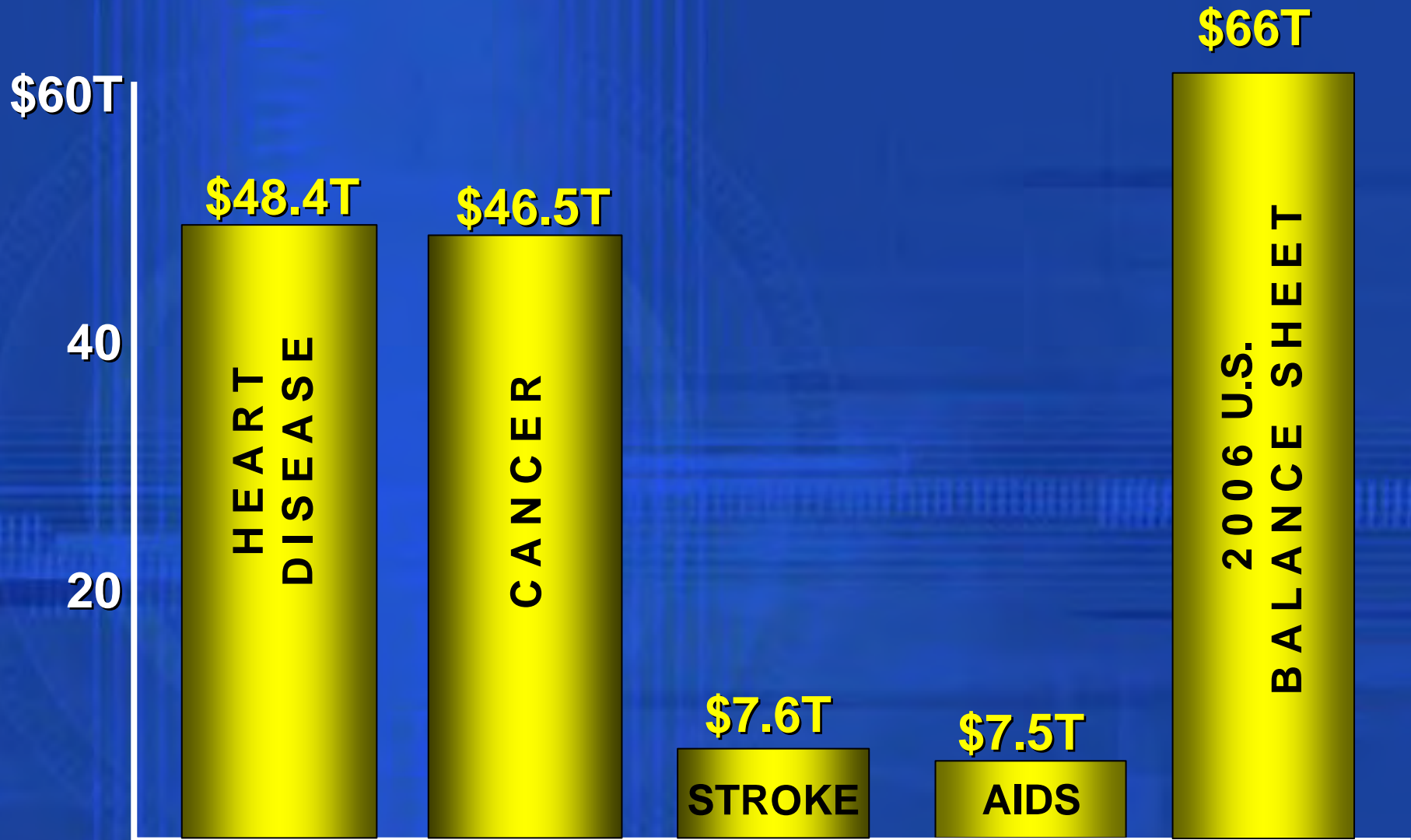
1. **Make a strong economic case**
2. **Address lifestyle issues**
3. **Remove barriers to success**

Healthcare Percent of U.S. GDP



Source: U.S. Department of Health and Human Services

Economic Value of Eliminating Deaths



Source: Kevin M. Murphy and Robert H. Topel/University of Chicago



October 2007

An Unhealthy America: The Economic Burden of Chronic Disease

Charting a New Course to Save Lives and
Increase Productivity and Economic Growth





Chronic Disease Study

- Diabetes
- Heart disease
- Hypertension
- Stroke
- Cancers
- Pulmonary conditions
- Mental disorders



Chronic Disease Study

- 162 million cases reported in the U.S.
- 53 million Americans have more than one chronic condition
- \$277 billion spent annually on non-institutionalized Americans



MILKEN INSTITUTE

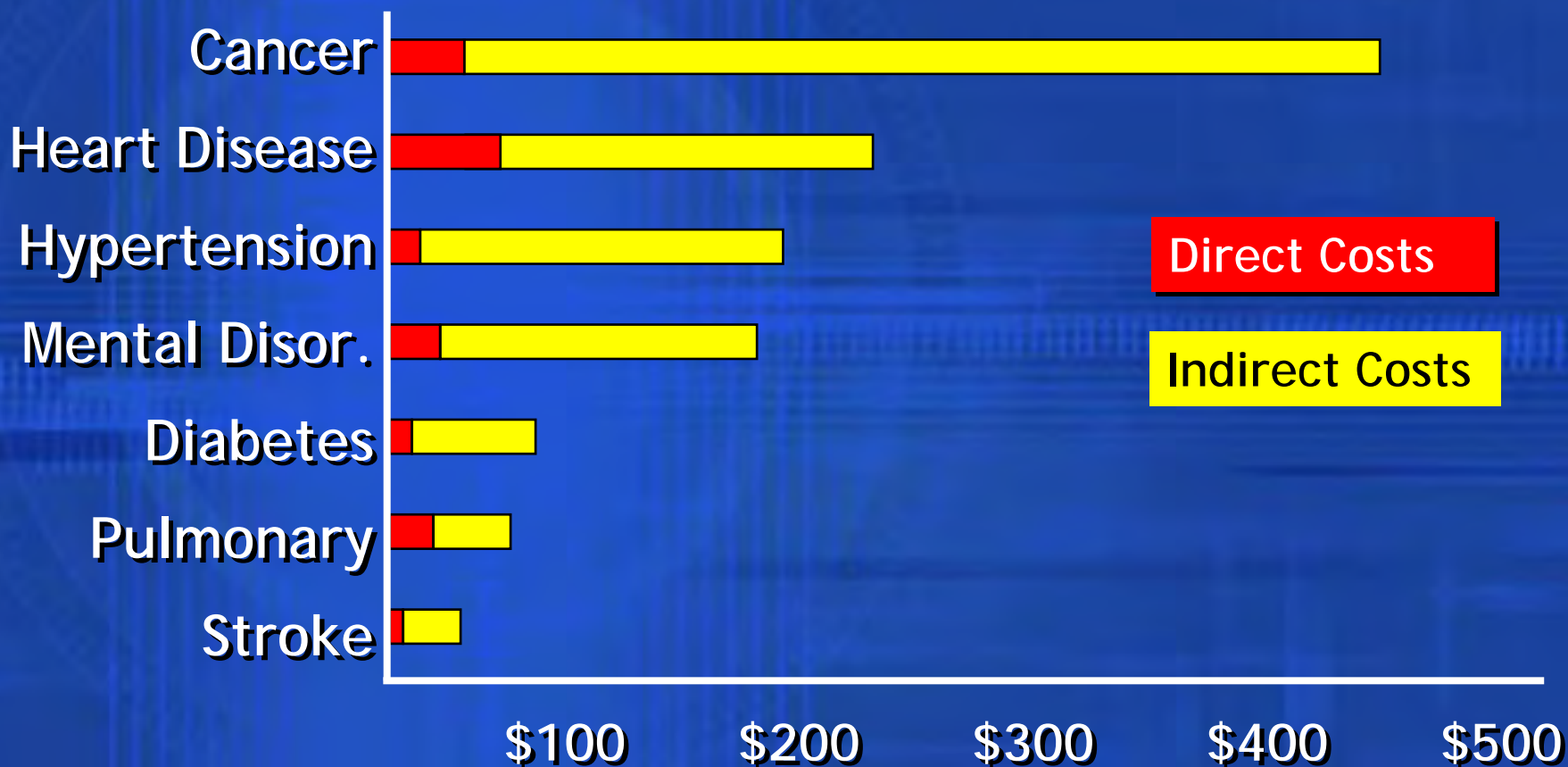
Chronic Disease Study

The added costs of absenteeism, lower productivity and output loss (presenteeism) and diversion of caregivers in the labor market results in a \$1-trillion annual economic impact.

Costs could easily reach \$6 trillion by 2050.



2023 Avoidable Treatment Costs & Output Losses





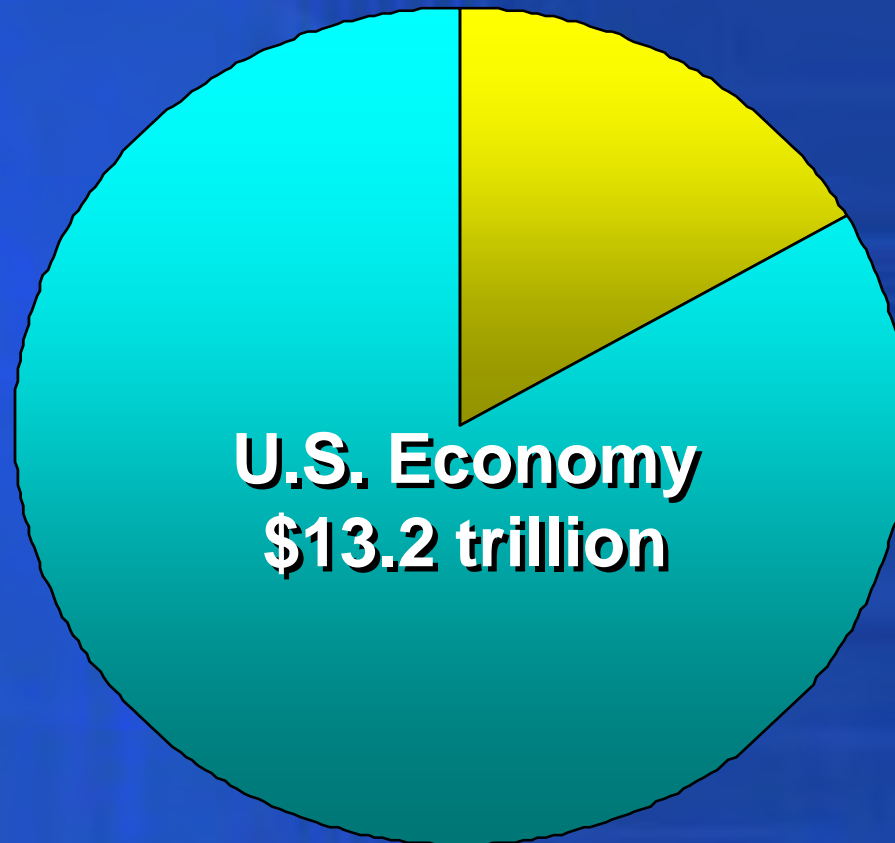
Chronic Disease Study

- Improved nutrition and weight control
- Exercise
- Further reduction in smoking
- Aggressive early detection and treatment

\$1.6 trillion in estimated savings by 2023.

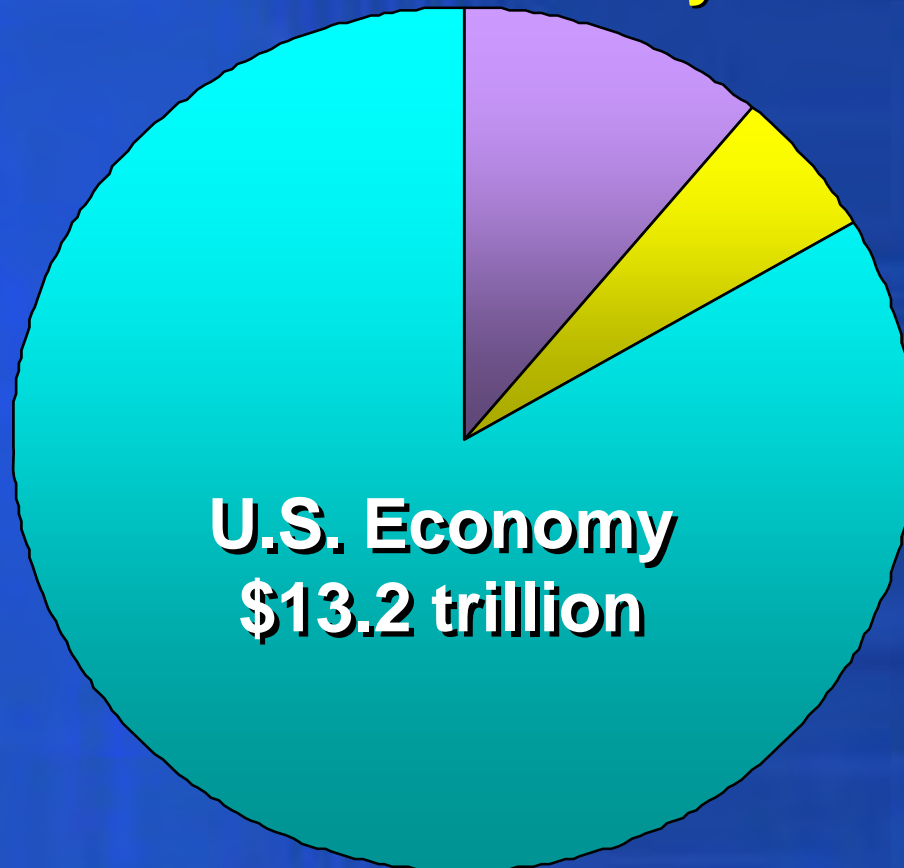
Lifestyle Makes a Difference

**16% = health care spending
\$2 trillion**



Lifestyle Makes a Difference

**70% of health-care spending
– about \$1.4 trillion – is spent
on lifestyle-related diseases.**



EVERY DOCTOR IN PRIVATE PRACTICE WAS ASKED!



Family doctors, surgeons, diagnosticians, nose and throat specialists... doctors in every branch of medicine were asked: "What cigarette do you smoke, Doctor?"

Three nationally known independent research organizations did the asking.

The answers came in by the thousands. Actual statements from doctors themselves. Figures were checked and re-checked! The result? Camels... convincingly!

According to this recent Nationwide survey:

MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE!

This is no casual claim. It's an actual fact. Based on the statements of doctors themselves to three nationally known independent research organizations.

THE QUESTION was very simple. One that you...any smoker...might ask a doctor: "What cigarette do you smoke, Doctor?"

After all, doctors are human too. Like you, they smoke for pleasure. Their taste, like yours, enjoys the pleasing flavor of cooler tobaccos. Their throats too appreciate a cool mildness.

And more doctors named Camels than any other cigarette!

If you are a Camel smoker, this preference for Camels among physicians and surgeons will not surprise you. But if you are not now smoking Camels, by all means try them. Compare them critically in your "T-Zone" (see right).

CAMEL-COSTLIER TOBACCOS

THE "T-ZONE" TEST WILL TELL YOU

The "T-Zone"—T for taste and T for throat—is your own guiding ground for any cigarette. Only your taste and throat can decide which cigarette tastes best to you... how it affects your throat. On the basis of the experiences of many, many millions of smokers, we believe Camels will enter your "T-Zone" as a "T."



© 1954 R.J. REYNOLDS TOBACCO CO.

Only in America



Increased Calories



**Hamburger in
old days**



**Carl's Jr. Guacamole
Bacon Six Dollar Burger**

Obese U.S. Children Ages 6 to 11



As a result, there has been a ten-fold increase in type-2 diabetes in children in just 10 years.

This could produce the first decline in average lifespans in 200 years!

Physical Inactivity



26% of U.S. children ages 8-16 watch TV four or more hours a day.



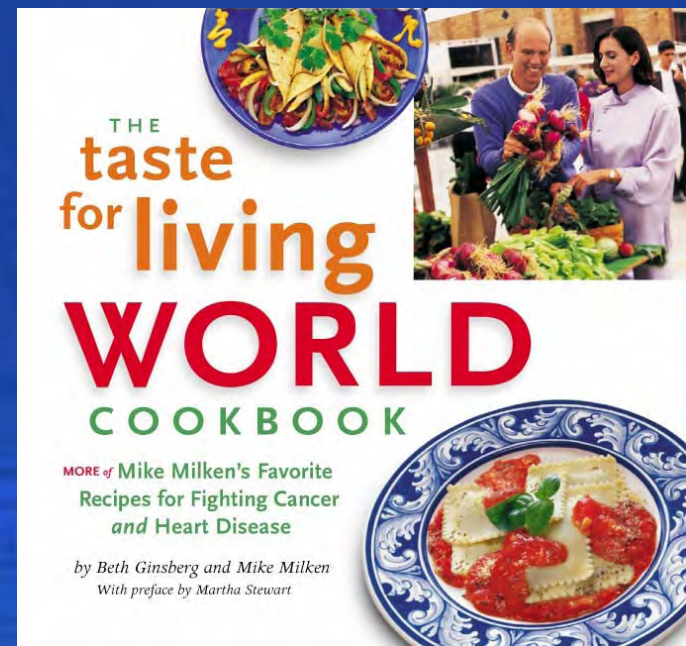
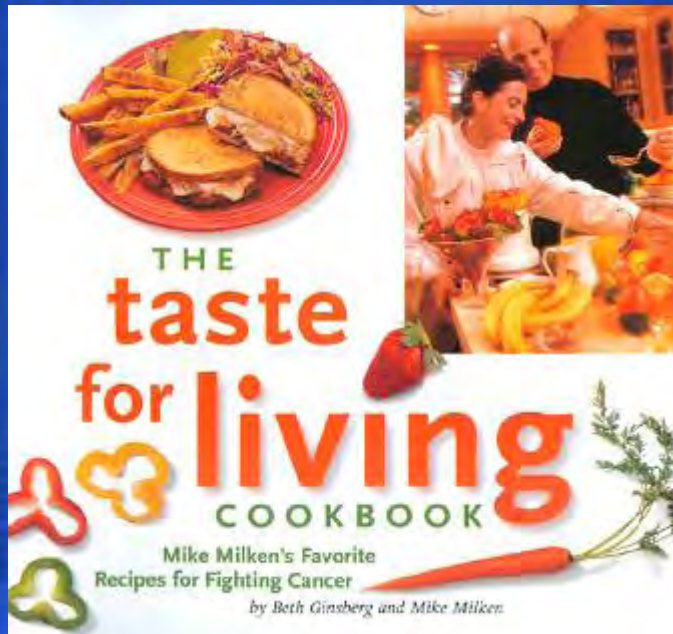
29% of U.S. high school students participate in physical education classes

Overweight People Die Young

- Overweight people are 20-40% more likely to die prematurely.
- People who are obese are 2-3 fold more likely to die prematurely.

National Cancer Institute

- Overweight people had a 10-50% greater risk of dying from cancer or heart disease.



FasterCures

The Center for Accelerating Medical Solutions

An organization dedicated to shortening the time to find cures and better treatments for all life-threatening diseases.



FasterCures does not fund medical research.

FasterCures

The Center for Accelerating Medical Solutions



In theory, 300 mph ...



**In practice, same speed as
100 years ago.**



19th/20th-Century Tracks

19th/20th-Century Thinking

PHD - Patients Helping Doctors

- Educate patients about the crucial role they can play in helping researchers and clinicians.
- Promote patient participation in clinical trials.
- Encourage donation of biological materials and release of personal health records.

PAS - Philanthropy Advisory Service

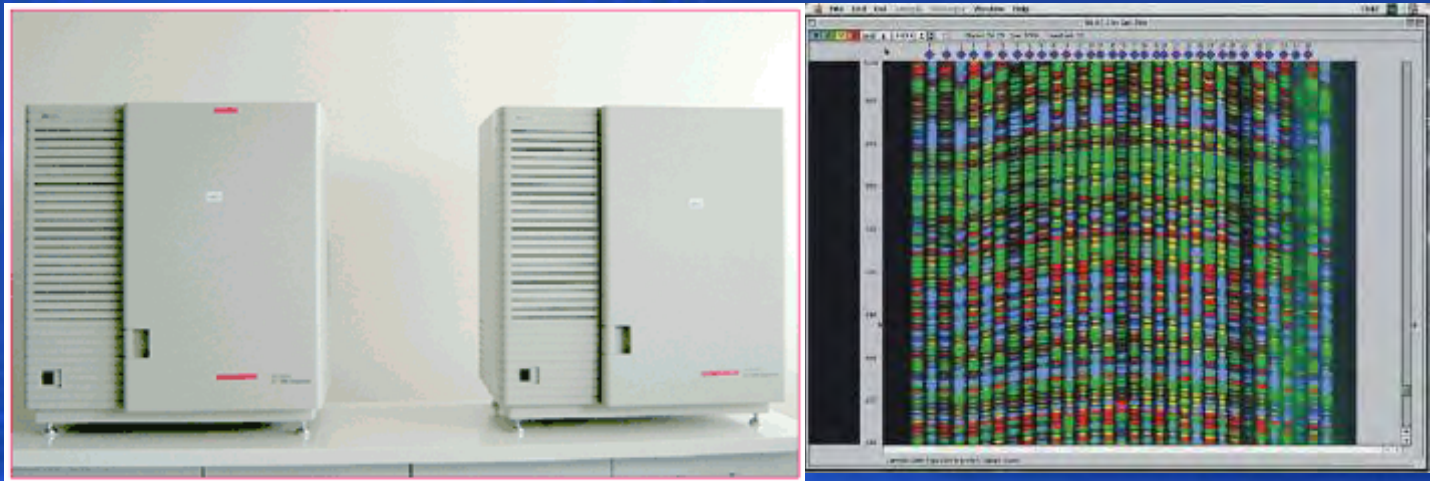
- Interactive relationship database
- Search by disease, philanthropists, government funding agencies, therapies, clinical trials



The TRAIN Network

- Cystic Fibrosis Foundation
- Cure Autism Now
- **Prostate Cancer Foundation**
- Myelin Repair Foundation
- Michael J. Fox Foundation
- Parkinson's Action Network
- Susan G. Komen Breast Cancer Foundation
- Multiple Myeloma Research Foundation
- ALS Therapy & Development Foundation
- Institute for One World Health
- Lance Armstrong Foundation
- Accelerated Cure Foundation
- Pacific Vascular Research Foundation
- Alliance for Aging Research
- Children's Neurobiological Solutions Foundation
- Dr. Susan Love Research Foundation
- The Epilepsy Project
- The National Neurofibromatosis Foundation
- Foundation for Fighting Blindness
- National Alliance for Autism Research
- JDRF
- Alpha-1 Foundation
- Huntington's Disease Research Foundation
- Autism Speaks
- ABC²
- International AIDS Vaccine Initiative

In 1993, one researcher could read 500 letters of the human genome in one day.



2007

A machine reads 3 billion genome letters per day at a cost of \$5,000, which is equivalent to the daily output of 6 million researchers in 1993.

We need YOU to speak up ...
to talk about the impact
and the importance of
medical research.

“By 2015, the burden of cancer will be eliminated as a cause of death and suffering.”

-- Andrew von Eschenbach, M.D.
Commissioner, U.S. Food & Drug Admin.

The number of cancer deaths in the U.S. dropped slightly in 2003, the first decline in more than 70 years.

The American Cancer Society recently reported the 2nd straight year of a slight decline.

**Create a legacy that relegates cancer
and other life-threatening diseases
to our children's history books.**



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