

Transforming Health and Medicine Through Discovery

An Introduction to the
National Institutes of Health



NATIONAL INSTITUTES OF HEALTH



NIH Mission

Uncover new knowledge that leads to better health for everyone by:

- Supporting peer-reviewed scientific research at universities, medical schools, hospitals, and research institutions throughout United States and overseas
- Conducting research in its own laboratories
- Training research investigators
- Developing and disseminating credible health information based on scientific discovery



NIH Goal

Acquire new knowledge to help prevent, detect, diagnose, and treat disease and disability.



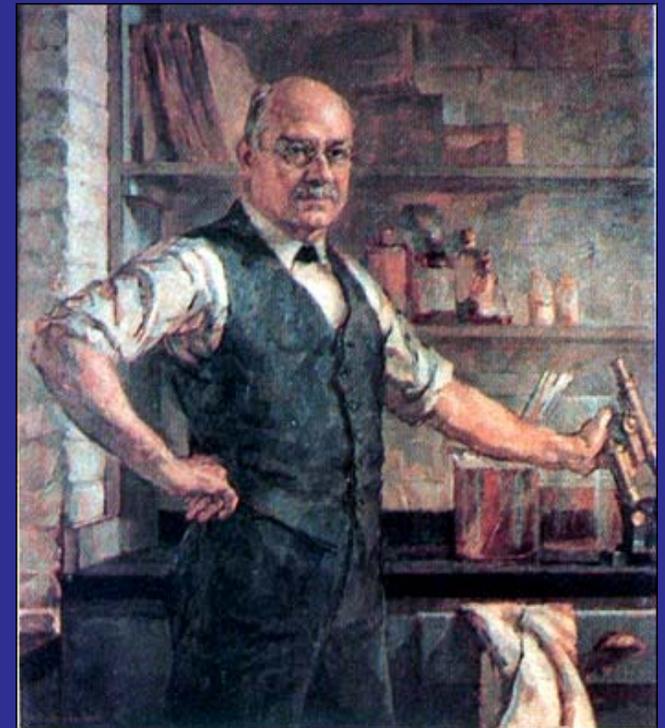
NIH Role

- World's preeminent medical research center and steward of medical and behavioral research for the nation
- Federal Government is single largest sponsor of medical research in the United States, with NIH receiving the vast majority of appropriated funds



Early History of NIH

- **1797**- Marine hospital
- **1887**- Hygienic laboratory of the United States
- **1930** - National institute of health
- **1937**- National institutes of health (national cancer institute)
- **1944**- President Roosevelt creates Federal Funding Law for NIH and NSF



**Joseph James Kinyoun,
founder Hygienic laboratory**



Contemporary NIH

- NIH creates research laboratories and recruits outstanding scientists from universities and abroad
- Institutes and Centers are created in response to public health needs, most with intramural programs
- Many young trainees join NIH and go on to become leaders in science across the US and around the world
- 117 grantees or trainees become Nobel Laureates*

* As of 2005

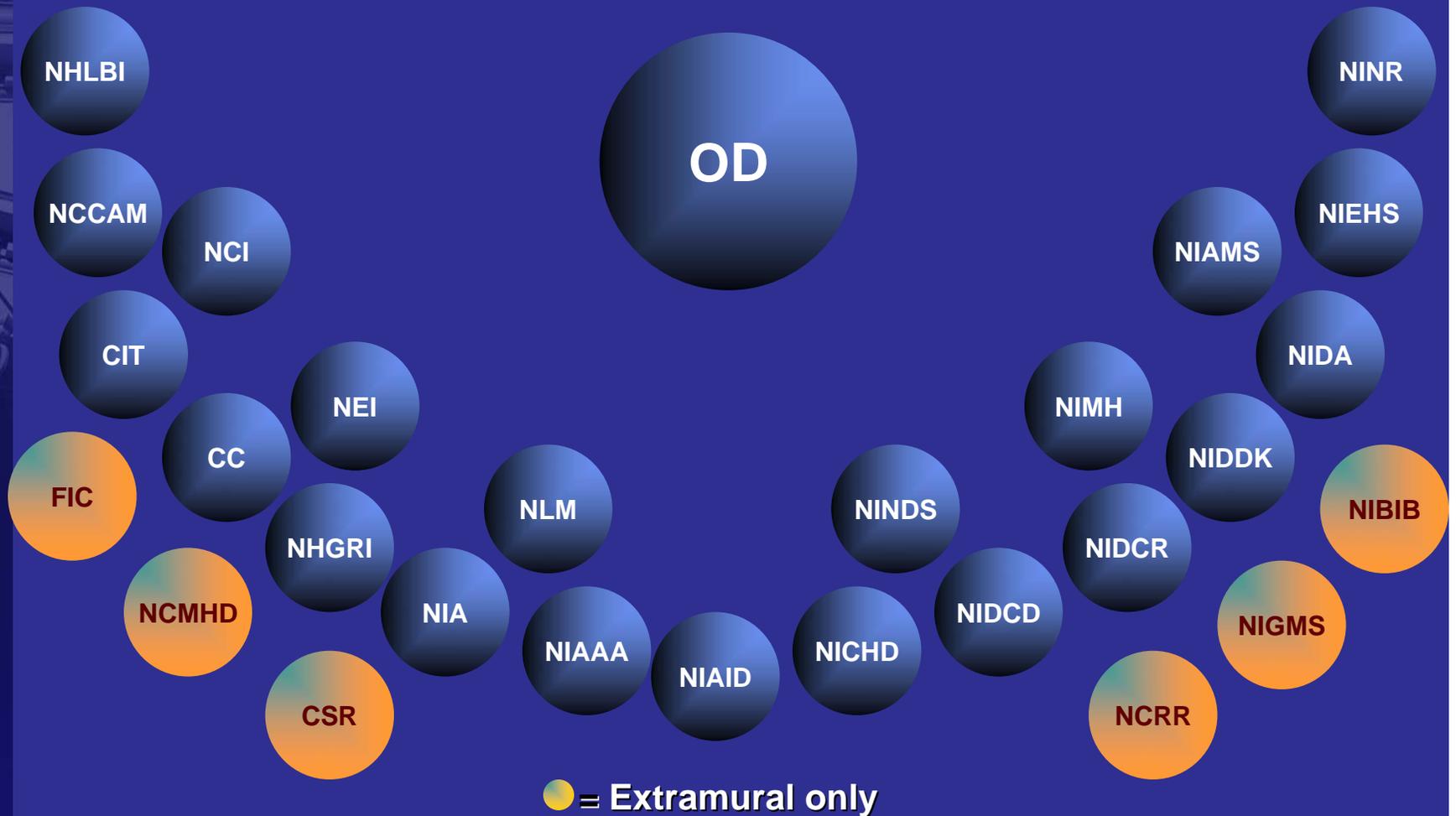


NIH Director Elias A. Zerhouni, M.D.

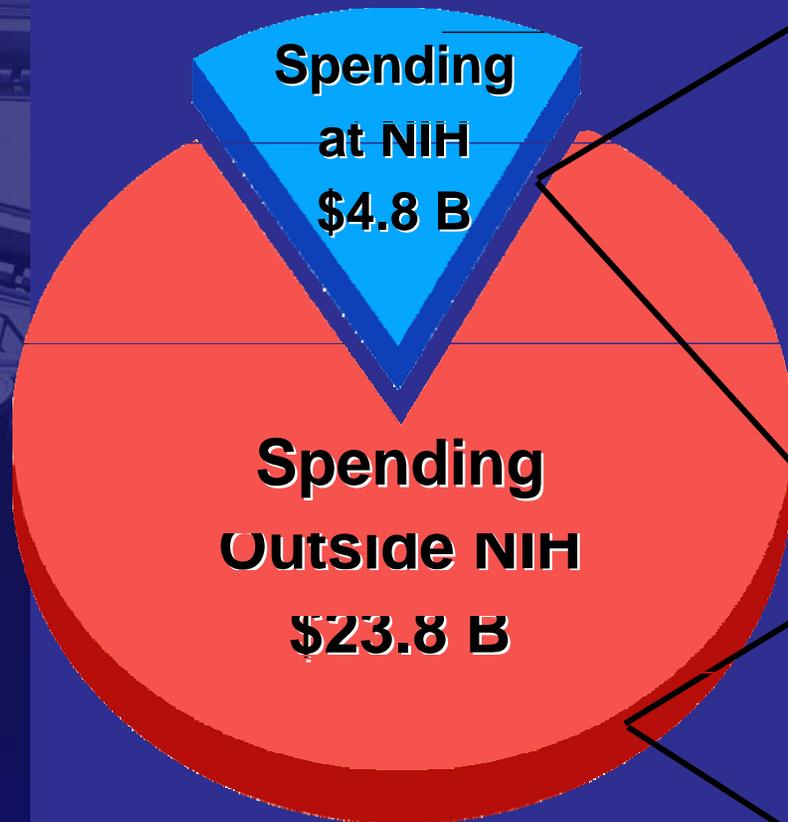
- Serves as the 15th Director of the National Institutes of Health, appointed by George W. Bush May 2002
- Leads the nation's medical research agency and oversees the NIH's 27 Institutes and Centers
- Current activities--
 - Oversaw completion of doubling of the NIH budget
 - Initiated the NIH Roadmap for Medical Research
 - Established NIH-wide research initiative to address the obesity epidemic
 - Supports the NIH Neuroscience Blueprint
 - Supports reduction of health disparities and barriers to opportunity for minority individuals
 - Ensures public access to NIH-funded research results
 - Enhances leadership of NIH and is committed to earning the public's trust



NIH Consists of 27 Institutes and Centers



NIH Budget in FY 2006 is \$28.6 Billion



17%	Amount	Expenditure
10%	\$2.8B	6000 Intramural Scientists & Research Personnel
3.8%	\$1.1B	R M & S
3.2%	\$1.0B	NLM, OD, etc.

83% of the total NIH budget supports about 325,000 **Extramural** Scientists and Research Personnel at 3,000 Institutions Nationwide.





Every Voice Counts



Engaging the Public

- Council of Public Representatives (COPR)
- NIH Web sites
- Research Results for the Public



- Public Outreach Campaigns
- Newsletters
- Exhibits at Health Fairs and Community Events
- Public Inquiry Response



NIH Director's Council of Public Representatives (COPR)

- A Federal Advisory Committee
- Consists of 21 members of the public who have been chosen to provide input and feedback from the public's perspective on emerging health issues and research priorities as identified by the COPR and/or the NIH Director
- A diverse group with a wide range of backgrounds and perspectives



**Balancing Important Perspectives
in the NIH Decision-Making
Process**



Council of Public Representatives (COPR)

- Advises the NIH Director on issues related to:
 - Public input and participation in NIH research priority setting process
 - NIH outreach programs and efforts
- By serving as a public voice to the NIH, COPR members:
 - Bring important matters of public interest to the attention of NIH leadership
 - Increase public participation in NIH activities and initiatives that affect the public
 - Increase public understanding of the NIH and its programs



NIH Web Sites

- NIH Health Information Page
- PubMed
- Medline Plus
- ClinicalTrials.gov



Health Information

Health Information - National Institutes of Health (NIH) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://health.nih.gov/> Go Links

NATIONAL INSTITUTES OF HEALTH U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Home Health Grants News Research Institutes About NIH

Health Information

Quick Links

- ▶ [Child & Teen Health](#)
- ▶ [Men's Health](#)
- ▶ [Minority Health](#)
- ▶ [Seniors' Health](#)
- ▶ [Women's Health](#)
- ▶ [Wellness & Lifestyle](#)

Health Topics A-Z

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) [See all](#)

Search Health

Psycholog (Ecstasy) depressior can occur taking the

True
 False

Health Newsletter

Stay informed!
Subscribe to the free weekly Health Information Newsletter

[Subscribe](#)

Healthy Lifestyles

Are you concerned that your child daydreams a little too much?

▶ [Learn about attention disorders](#)

Research in Action

"You have to believe in yourself. That will open doors..."

▶ [Meet patient recruitment specialist](#)

Now Online

Can you see me? Can you see me now?

▶ [Take the low vision quiz](#)

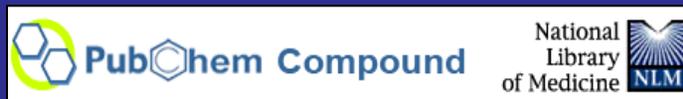
[Submit](#)



health.nih.gov



PubMed Central/ Medline is an International Resource



- Free full-text archive
- 160 journals
- 350,000 items
- Voluntary submissions
- May 2, 2005

**MOST QUERIED
FEDERAL WEBSITE
BY PATIENTS !**



Research Results for the Public

The screenshot shows a Microsoft Internet Explorer browser window displaying the NIH website. The address bar shows the URL: <http://www.nih.gov/about/researchresultsforthepublic/index.htm>. The page header includes the NIH logo and navigation links: Home, Health, Grants, News, Research, Institutes, About NIH. A search bar is located in the top right corner. The main content area features a blue banner with the text "Research Results for the Public" and a photograph of a doctor examining a patient. Below the banner, there is a paragraph: "Explore the following fact sheets to learn more about how NIH is pursuing its goal to make important medical discoveries that improve health and save lives." This is followed by two sections: "Snapshots of Funding" with links to "Extramural Snapshots: Geographic Distribution" and "Success Rates, Percentiles, Paylines ... and your chances of being funded"; and "Fact Sheets" with links to "Doubling Accomplishments-Selected Examples", "Research Into What Works Best", "Amazing Research, Amazing Help", "New Efforts for FY 2007" (marked as updated), and "Driving the Transformation to Predictive, Personalized and Preemptive Medicine". A navigation bar with letters A through Z is provided, with 'A' and 'D' selected. Under 'A', there are links for "Age-Related Macular Degeneration", "Alcohol Dependence (Alcoholism)", "Alcohol-Related Traffic Deaths", "Alzheimer's Disease", "Amblyopia", and "Rheumatoid Arthritis". Under 'D', there are links for "Type 1 Diabetes" and "Type 2 Diabetes".



www.nih.gov/about/researchresultsforthepublic/

Get Involved at the NIH

The screenshot shows a Microsoft Internet Explorer browser window displaying the NIH website. The address bar shows <http://getinvolved.nih.gov/>. The page header includes the NIH logo, the text "U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES National Institutes of Health", and a search bar with a "Search" button and a link to "Advanced Search Page". A navigation menu contains links for Home, Health, Grants, News, Research, Institutes, and About NIH. The main heading is "Get Involved at NIH".

Quick Links

- ▶ [NIH Public Bulletin](#)
- ▶ [Public Input and Participation](#)
- ▶ [Health Programs and Campaigns](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Director's Corner](#)
- ▶ [Director's Council of Public Representatives \(COPR\)](#)
- ▶ [Q&A About NIH](#)

NIH Public Bulletin
NIH Institutes and Centers hold public activities and events in the Washington, DC, area and throughout the country. Read the Bulletin to learn more about:

- ▶ Resources and publications developed with and for the public
- ▶ Events and programs sponsored in communities around the country

Current Issue: [July 2006](#) - [All Issues](#)

Public Input and Participation
Learn about the many ways that NIH encourages public participation and feedback.

Health Programs and Campaigns
Investigate nationwide campaigns and programs created by NIH to inform the public about health issues.

"Engaging the public is



getinvolvedatnih.gov

Public Outreach Campaigns



Babies Sleep Safest
On Their Backs

Reduce the Risk
of Sudden Infant
Death Syndrome
(SIDS)



small steps
big rewards
Prevent type 2 Diabetes



Be Smart
About Your Heart
Control the
ABCs of Diabetes

- A1C
- Blood Pressure
- Cholesterol



Control your
diabetes.
For Life.



THE heart
TRUTH



Women &
Heart Disease



Friday, February 4, 2005

NATIONAL WEAR *red* DAY



Evolving Public Health Challenges



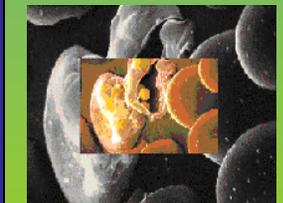
Acute to Chronic Conditions



Aging Population



Health Disparities



Emerging and Re-emerging Diseases



Biodefense





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

Deafness

Vision impairment

– Osteoporosis

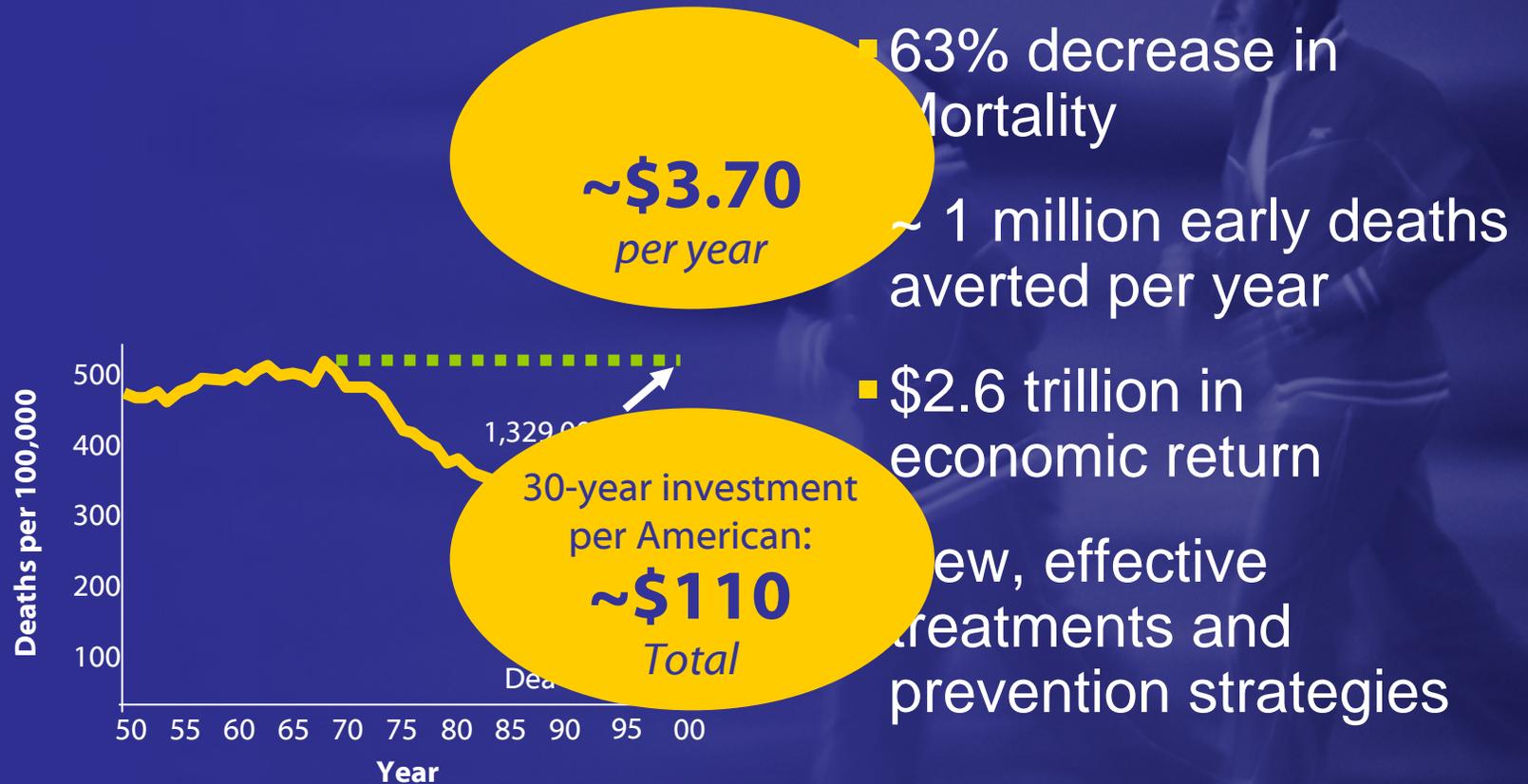
– Bone and joint health

– New, more effective
classes of drugs for
arthritis

– Improvements in joint
replacement
technology

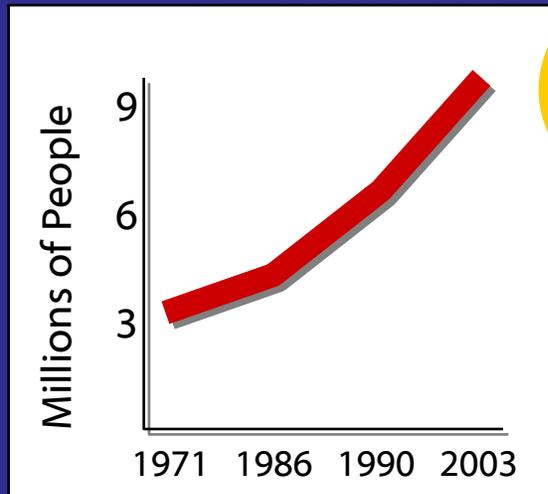
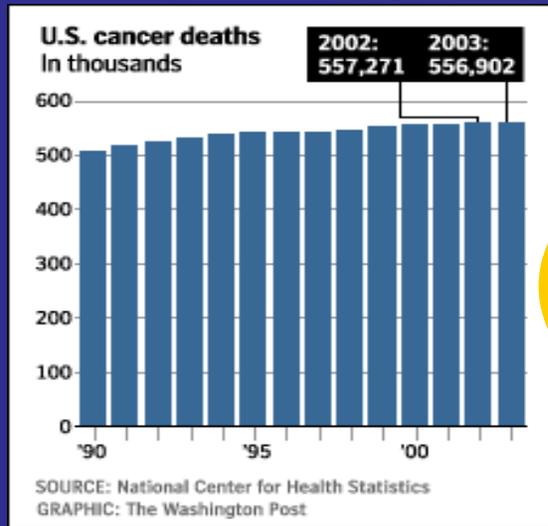


Biomedical Research Has Delivered *Coronary Heart Disease*





Biomedical Research **Has Delivered** *Cancer*



■ For the first time in recorded history, the number of cancer deaths in the United States have

Average investment per American
~\$8.60
per year

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

million survivors
of early
detection and
screening



Need to Transform Medical Research in the 21st Century

20th Century	21st Century
Treat disease when symptoms appear and normal function is lost	Intervene before symptoms appear and preserve normal function for as long as possible
Did not understand the molecular and cellular events that lead to disease	Understanding preclinical molecular events and ability to detect patients at risk
Expensive in financial and disability costs	Orders of magnitude more effective

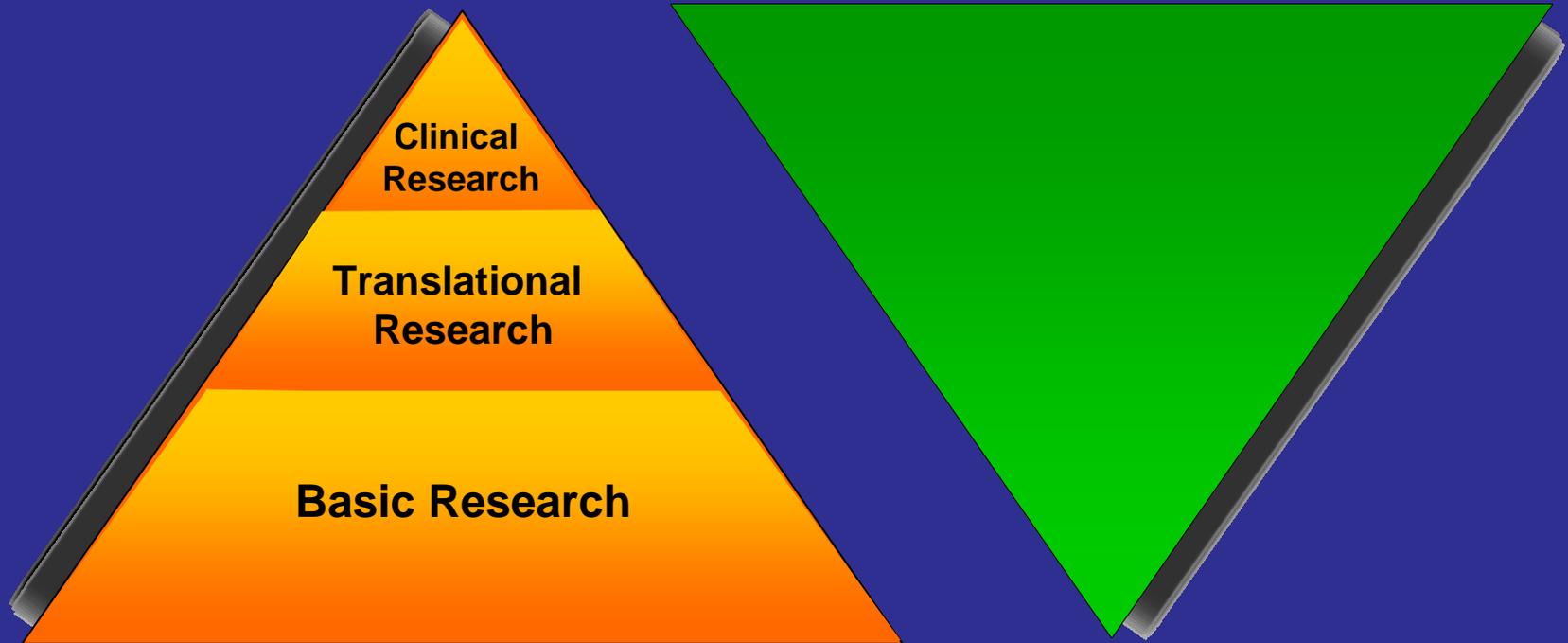
Principle 1:
Protect core values and mission



*Discovery and Generation of
New Knowledge*



Balanced National Biomedical Research Portfolio



NIH - \$28B

Private Sector - \$59B



Principle 2: *Protect the Future*

- Launched new “Pathway to Independence Awards;” 150 - 200 per year.
- Each Institute and Center asked to develop policies appropriate to the circumstances for each new investigator.
- New peer-review pilot allows new investigators to re-apply within five months instead of typical nine months.



Principle 3:

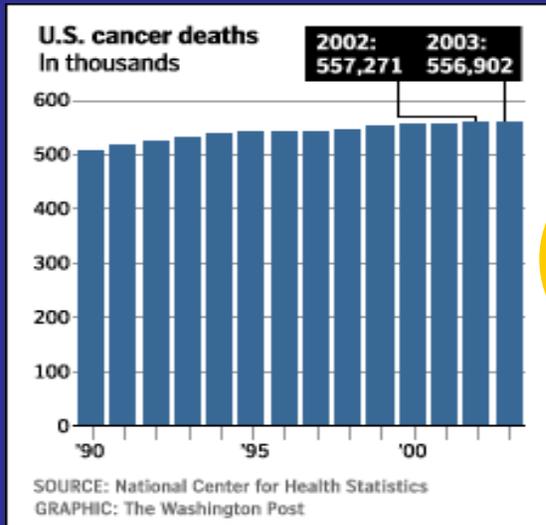
Focus on Balancing Supply/Demand

- Actively manage supply/demand imbalance by adjusting programs
- Recycle budgets into larger number of competing grants (+3% in 2007)
- Prioritize projects to maintain reasonable investigator-initiated success rates
- Maximize research and development activities by managing costs across all portfolios
- Facilitate peer-review processes to reduce need for multiple applications



Principle 4:

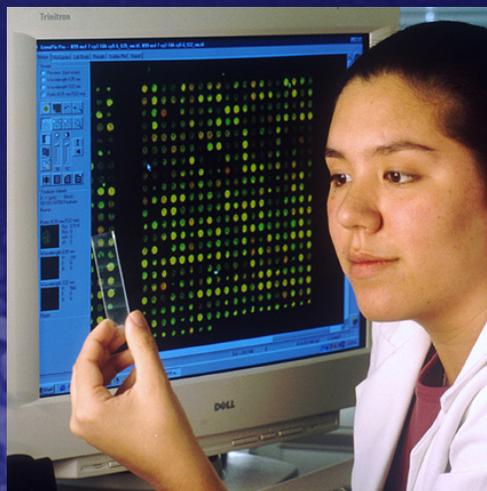
Proactive Communication about Investment in NIH



- For the first time in recorded history, annual cancer deaths in the United States have fallen
- Average investment per American per year for cancer survivors **~\$8.60**
- Improved effectiveness of early detection and screening
- 30-year investment per American: **~\$260 Total**
- The doubling, new minimally invasive treatments for cancer multiplied
- New drugs developed for cancer prevention



Principle 5: *Promote NIH's vision for the future*



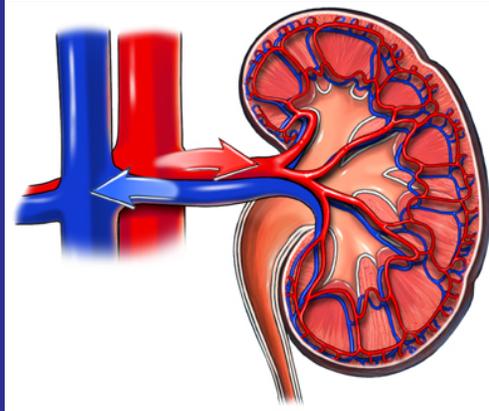
Predictive ↔ Personalized ↔ Preemptive



Participatory



Predictive: End Stage Renal Disease



- End-stage Renal Disease:
 - \$22.8 billion in U.S. public and private spending (2001)
 - In the past decade, the absolute number of ESRD patients more than doubled and the incidence rate doubled
 - More than 85,000 new cases per year



- Apolipoprotein E (APOE)
 - Variation predicts kidney disease progression
 - Prediction independent of diabetes, race, lipid and non-lipid risk factors



Cancer Treatment Gets **Personal**: Potential New Model of Cancer Treatment

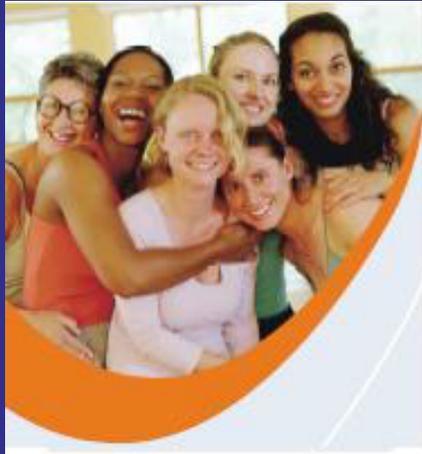


“Advances in understanding genetic basis of cancer have led to promising new therapies, which have fueled discussions about a future model of cancer care-- treatment decisions are guided by the molecular attributes of the individual patient.”

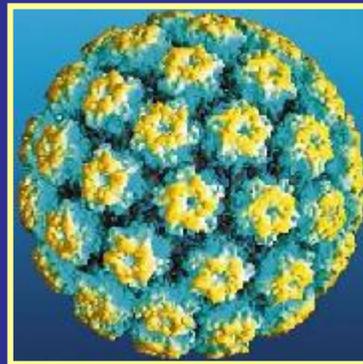
<http://www.sciencemag.org/sciext/cancer/>



Preemptive: HPV Vaccine



© Rex Features



- Human Papillomavirus (HPV) infects over 80% of 15-50 year old women and can cause cervical cancer
- Prevent sexually transmitted HPV infection = prevent cervical cancer
- Anti-Viral Vaccines are among the most cost effective public health interventions (e.g., smallpox, polio, & measles)
- NIH has two vaccines currently in clinical trials



Participatory: Community Involvement



Jackson Heart Study

- Community participation
- Community education
 - Health awareness
 - Student outreach
 - Encourage involvement
- Identify minority risk factors for cardiovascular disease



NIH: A Vision of Hope

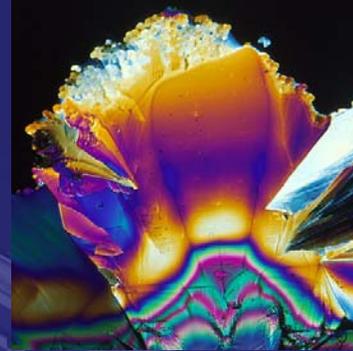


Elias A. Zerhouni, M.D.
Director, National Institutes of Health

“By adopting a strong strategic vision now, the NIH will be able to stand at the ready as future challenges and opportunities emerge. We are in an era of great scientific opportunity, on the brink of transforming medicine and health in the 21st Century. Our hope is to usher in an era where medicine will be *predictive, personalized, preemptive, and participatory.*”

*Clinical Research at a Crossroads:
The NIH Roadmap*





NIH *Transforming medicine through discovery*

