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PROGRAMME

PUBLIC LECTURE SERIES

Dr Harvey V. Fineberg

M.D., Ph.D., Institute of Medicine President

**The Art of Science
Advice to Policy Makers:
LESSONS FROM
THE U.S. INSTITUTE OF MEDICINE**

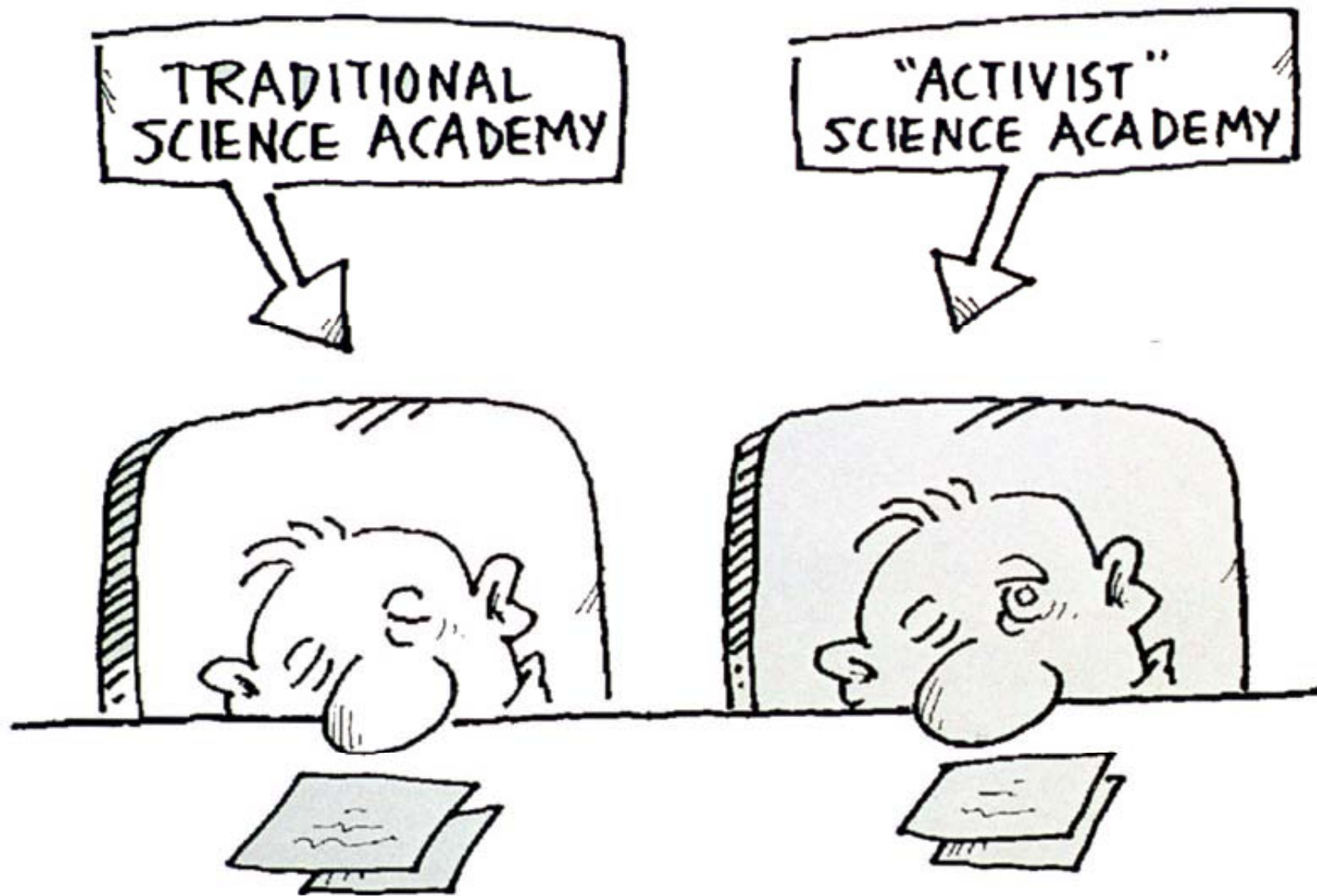


The Art of Science
Advice to Policy Makers:
Lessons from the U.S.
National Academies

Harvey V. Fineberg, M.D., Ph.D.
National University of Singapore
26 February 2008

National Academies in Different Countries Vary in Design and Function

- Purpose: Honorific, Advisory
- Scope of fields covered
- Criteria for membership
- Numbers restricted or open
- Relation to other academies
- Relation to government
- Role in scientific research





THE NATIONAL ACADEMIES

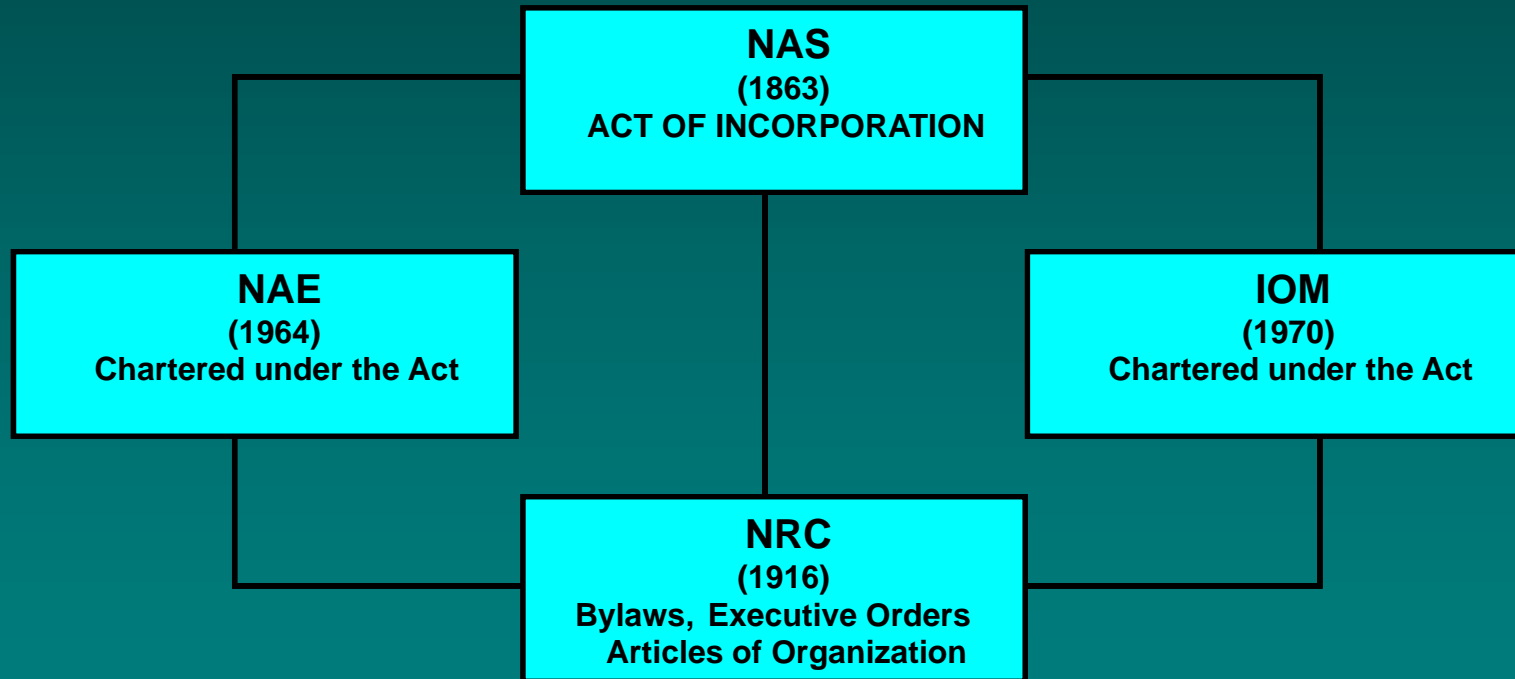
National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council



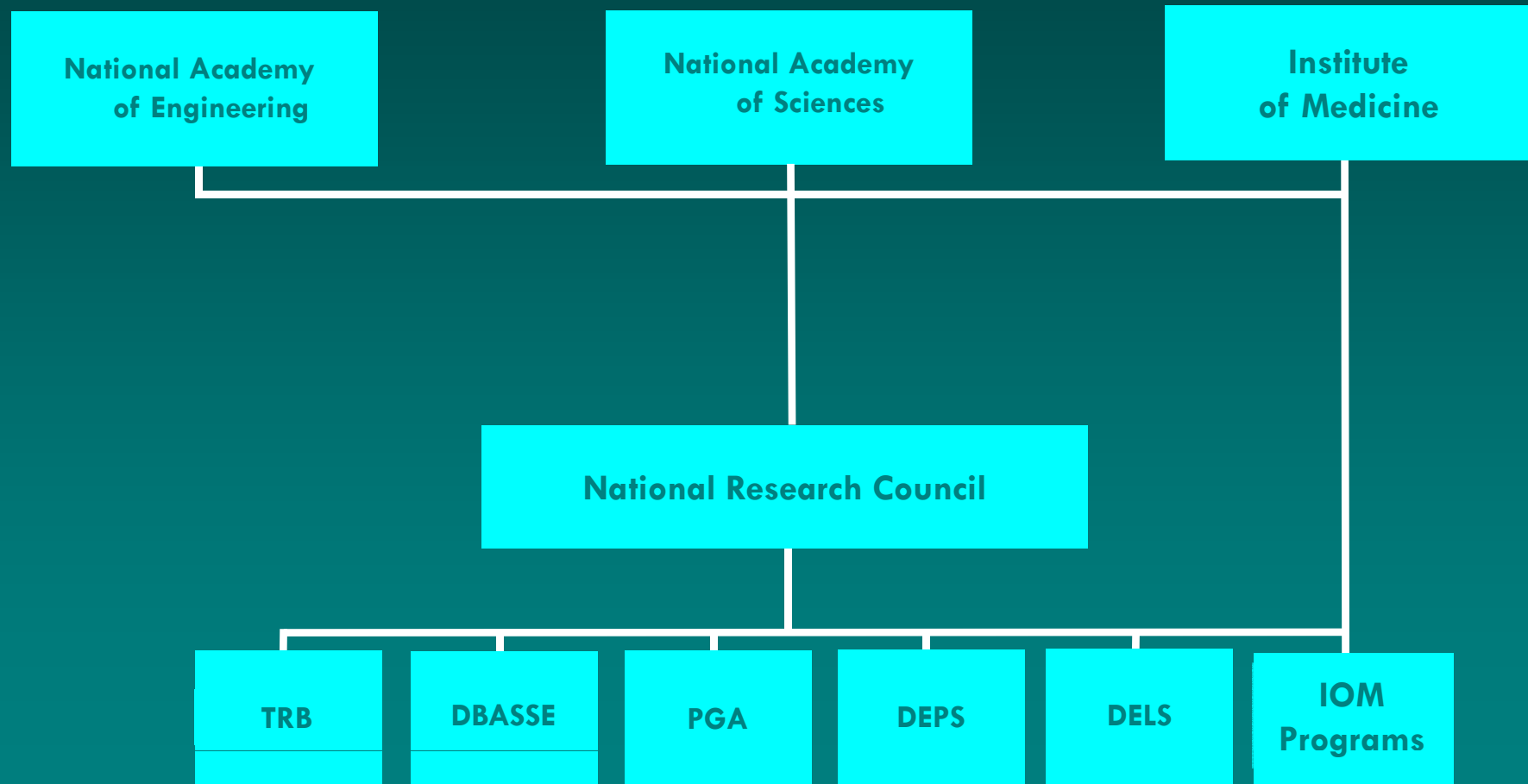
U.S. National Academy of Sciences Charter (1863)

“The academy shall, whenever called upon by any department of the government, investigate, examine... and report upon any subject of science or art ,... but the Academy shall receive no compensation whatsoever for any services to the government of the United States”.

The National Academies



The National Academies



The National Academies

- ~5800 members
 - ~2200 NAE ~2000 NAS ~1600 IOM
- >6000 expert volunteers each year
- ~\$250 million annual program budget
- ~400 projects and convening activities underway at any one time
- >200 reports published annually

Principal Modes of Operation

- Consensus Studies
 - Balanced Composition of Committees
 - Report Review Process
- Convening Activities
 - Workshops
 - Roundtables and Forums
- Education and Service
 - Fellowships
 - Surveys and Data Banks

Two relations of science and policy

- **Science for policy**
 - Environment
 - Health
 - Security
- **Policy for science**
 - Research funding
 - Research strategy
 - Education for science

The National Academies differ from hundreds of other U.S. advisory bodies

- Chartered by the Congress
- Unaffiliated with any government agency
- No direct funding appropriation from the US Congress
- Concern with all science, technology, and health-related policy
- Protection by law: Federal Advisory Committees Act
- Executive Order for direct contracting

Key Audiences

- Policy makers
- Professionals
- Public
- Business and civic leaders
- Interest groups
- Educators and researchers
- Others

QUICK LINKS

Topics

- About the National Academies
- Current Projects
- News Office
- Publications For Congress
- Members' Site
- Marian Koshland Science Museum
- Giving to the National Academies
- Directories
- Contact Us
- Conflict-of-Interest Policy
- National Academies Study Process
- Site Map

- News Feeds
- Podcasts

Popular Searches

- Evolution
- Mammography
- Stem Cells

Career Links

- Employment
- Fellowships & Postdoc
- Career Guides
- For Retirees

Major Divisions

- Division of Behavioral and Social Sciences and Education
- Division on Earth

TOP NEWS

The latest news from the Academies

[U.S. HIV/AIDS Efforts Should Shift Focus to Sustainability](#)



Mar. 30 -- The U.S. government's global HIV/AIDS relief program known as PEPFAR is making significant contributions to addressing the pandemic in hard-hit countries, but it should shift its primary focus from providing immediate, emergency relief to building the capacity of affected nations to sustain their fight against HIV/AIDS over future decades, says a new report from the Institute of Medicine and National Research Council.

- [News Release](#)
- [Opening Statement](#)
- [Full Report](#)
- [Project Web Site](#)
- [Listen to the Public Briefing](#)

[Better Data Could Aid Relief and Development Efforts Worldwide](#)



Mar. 29 -- Reliable data on the demographics and locations of populations can bolster humanitarian relief efforts and subsequent recovery programs. National governments and relief organizations should value this kind of information and train relevant practitioners in their own countries to successfully apply it in times of crisis and in any development planning, says a new report from the National Research Council.

- [Press Release](#)
- [Full Report](#)
- [Report Brief](#)

[Comprehensive Plan Needed for Biomarker R&D](#)



Mar. 29 -- Federal agencies and other research funders, academic scientists, and private industry should take a comprehensive approach to research and development in cancer biomarkers, a field now hindered by piecemeal and

SCIENCE IN THE HEADLINES

Breaking stories in science

[Day Care Linked to Slight Behavioral Problems, Better Vocabulary](#)



Apr. 4 -- A study released by the National Institutes of Health ties day care at child-care centers to modest behavioral problems in children through sixth grade, but indicates that such problems are within the normal range for healthy children. It also finds that kids who receive high-quality care -- defined as care by an engaged, responsive adult or adults in a rich, nurturing setting -- have better vocabulary scores through fifth grade. [\[more\]](#)

[Insomnia May Cost Less to Treat Than to Ignore](#)



Mar. 29 -- Untreated insomnia creates a "significant economic burden" through missed work and medical expenditures, according to a new study in the medical journal Sleep. Roughly 10 percent of the U.S. population is estimated to suffer from chronic insomnia. [\[more\]](#)

[Changing Trends in Organ Donation](#)



Mar. 22 -- Since the 1970s, it has been standard practice to procure organs from deceased donors after irreversible loss of neurologic activity, but a trend has re-emerged in which organs are also being removed after so-called cardiac death. According to a story in the Washington Post, the trend has been accelerating, with the number of such donations more than doubling in the past three years. [\[more\]](#)

[Program Effective in Reducing Dysfunctional Child Behavior](#)



Mar. 21 -- An evidence-based parenting program developed at the University of Washington has effectively reduced dysfunctional child behavior in

NEW & NOTABLE

Featured Books



Read this and more than **3,000** other books online **FREE** at [The National Academies Press](#)

Site Highlights

Koshland Science Museum Opens [New Exhibit](#) on Infectious Diseases

[NAS 144th annual meeting](#) begins Apr. 28. Election of new members to be announced.

Register now for the April 10 lecture by George Whitesides, Harvard University, on [Nanoscience and Nanotechnology: A Portrait in Early Adolescence](#).

This Week in *PNAS*

April 3, 2007:



[Homogenization of river dynamics by dams](#)

Browse the Online **Early Edition** of *Proceedings of the National Academy of Sciences*.

Text-Only Sitemap

- >> HOME
- >> ABOUT
- >> TOPICS
- >> PROJECTS
- >> MEMBERSHIP
- >> BOARDS
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MISSION

The Institute of Medicine serves as adviser to the nation to improve health. As an independent, scientific adviser, the Institute of Medicine strives to provide advice that is unbiased, based



>> TOPICS

- | | |
|---------------------------------|---------------------------------------|
| Mental Health | Global Health |
| Child Health | Workplace |
| Food & Nutrition | Military & Veterans |
| Aging | Health Sciences |
| Women's Health | Environment |
| Education | Treatment |
| Public Policy | Public Health & Prevention |
| Healthcare & Quality | Minority Health |
| Diseases | |

NEWS <<

- > Final report on Uninsurance in America released
- > IOM report addresses mad cow disease
- > New Website on the Health of Veterans and Deployed Forces

FOCUS ON



>> RECENT REPORTS

- > Fulfilling the Potential of Cancer Prevention and Early Detection: An American Cancer Society and Institute of Medicine Symposium
- > Veterans and Agent Orange: Length of Presumptive Period for Association Between Exposure and Respiratory Cancer
- > Infant Formula: Evaluating the Safety of New Ingredients
 - [more reports](#)

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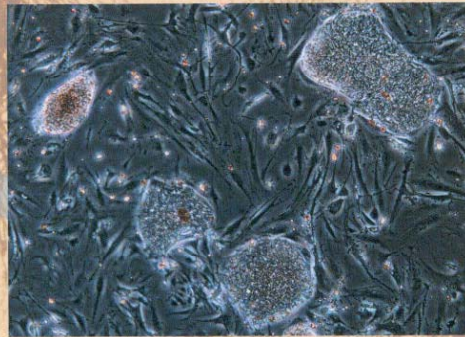
FOCUS ON



>> RECENT REPORTS

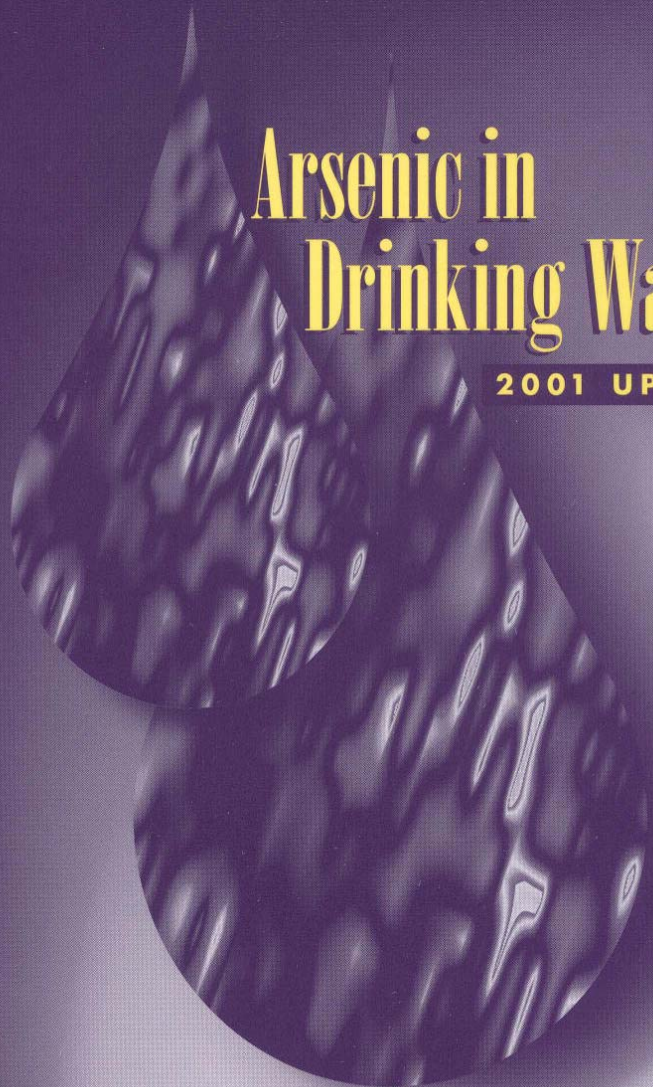
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Stem CELLS



and the
FUTURE OF REGENERATIVE MEDICINE

NATIONAL RESEARCH COUNCIL • INSTITUTE OF MEDICINE



Arsenic in Drinking Water

2001 UPDATE

NATIONAL RESEARCH COUNCIL

The Washington Post

HOME EDITION

Volume 1, Contents on Page 10

25¢

TUESDAY, SEPTEMBER 11, 2001

Broader Stem Cell Research Backed

Key Science Group Differs With Bush

By Rose Wilton
 Washington Post Staff Writer

Research on human embryonic stem cells deserves generous funding by the federal government and will not live up to its therapeutic potential if the work is restricted to a small number of cells from a limited number of embryos, according to a report to be released today by the National Academy of Sciences.

Moreover, scientists should be allowed to pursue research that involves the cloning of human embryos because cells derived from such embryos may prove to be especially useful for the treatment of many degenerative conditions, the report concludes.

The report by the academy, an independent organization chartered by Congress to advise the government on scientific issues, comes one month after President Bush announced his policy regarding federal funding of human embryo cell re-

THE DISTRICT'S LOST CHILDREN | *Babies at Risk*



A twin who died: A photo of Tyrisha Perry, who died at 5 months in 1999, is held by her sister.

EPA to Urge Tighter Rules For Arsenic

Report Raises Agency Concern About Drinking Water Limits

By Eric Power
 Washington Post Staff Writer

The Environmental Protection Agency has concluded that it must adopt a new standard for the amount of naturally occurring arsenic allowed in the nation's drinking water that is at least as tough as the one proposed by the Clinton administration, officials said yesterday.

EPA Administrator Christine Todd Whitman decided to recommend a stringent new limit after receiving a report from the National Academy of Sciences that found that the health risks posed by arsenic are much greater than previously assumed by the EPA, according to agency officials.

"This increases our concern about arsenic and what the level should be," an EPA official said last night.

The decision addresses one of the most controversial environmental decisions the Bush administration has made since coming into office. In March, the administration withdrew a Clinton administration regulation tightening the 50-year federal standard for arsenic levels in drinking water from 50 parts per billion to 10 parts per billion. The move touched off criticism from Democrats, environmentalists and moderate Republicans and prompted a House vote seeking to prevent the action.

Whitman charged at the time that the Clinton rule had been hastily crafted without adequate scientific study or consideration of the costs for small communities that would have to change their filtration systems. She ordered further examination, by the academy and other bodies,



MAKING
THE NATION
SAFER

THE ROLE
OF
SCIENCE
AND
TECHNOLOGY
IN
COUNTERING
TERRORISM

NATIONAL RESEARCH COUNCIL
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**BIOTECHNOLOGY
RESEARCH**
IN THE AGE OF TERRORISM

NATIONAL RESEARCH COUNCIL
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TECHNICAL ISSUES RELATED TO THE
**COMPREHENSIVE
NUCLEAR
TEST BAN TREATY**

NATIONAL ACADEMY OF SCIENCES

EFFECTS OF

**NUCLEAR
EARTH-PENETRATOR**

AND OTHER WEAPONS

NATIONAL RESEARCH COUNCIL
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Effectiveness
and Impact
of Corporate
Average Fuel
Economy (CAFE)
Standards

NATIONAL RESEARCH COUNCIL

The cover features a photograph of a hand buckling a seat belt. The background is a vibrant red with horizontal white lines. The title 'BUCKLING UP' is in large, bold, white capital letters. Below it, the subtitle 'Technologies to Increase Seat Belt Use' is in a smaller, white, italicized font. The report number 'Special Report 278' is in a small, white, sans-serif font. At the bottom, the publisher's name 'TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES' is in a small, white, sans-serif font.

BUCKLING UP

Technologies

to Increase

Seat Belt Use

Special Report 278

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

FIRST, DO NO HARM

TO ERR IS HUMAN

BUILDING A SAFER HEALTH SYSTEM

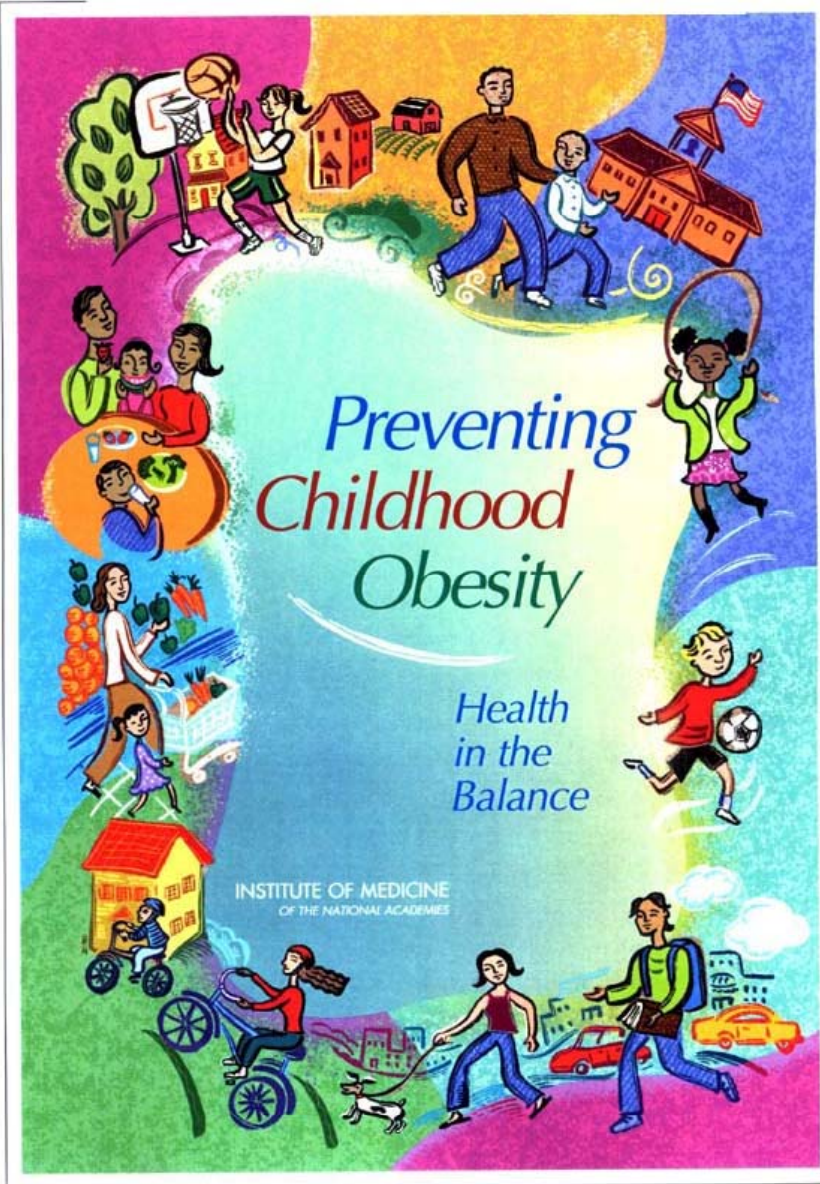
I N S T I T U T E O F M E D I C I N E

I N S T I T U T E O F M E D I C I N E



CROSSING THE QUALITY CHASM

A New Health System for the 21st Century



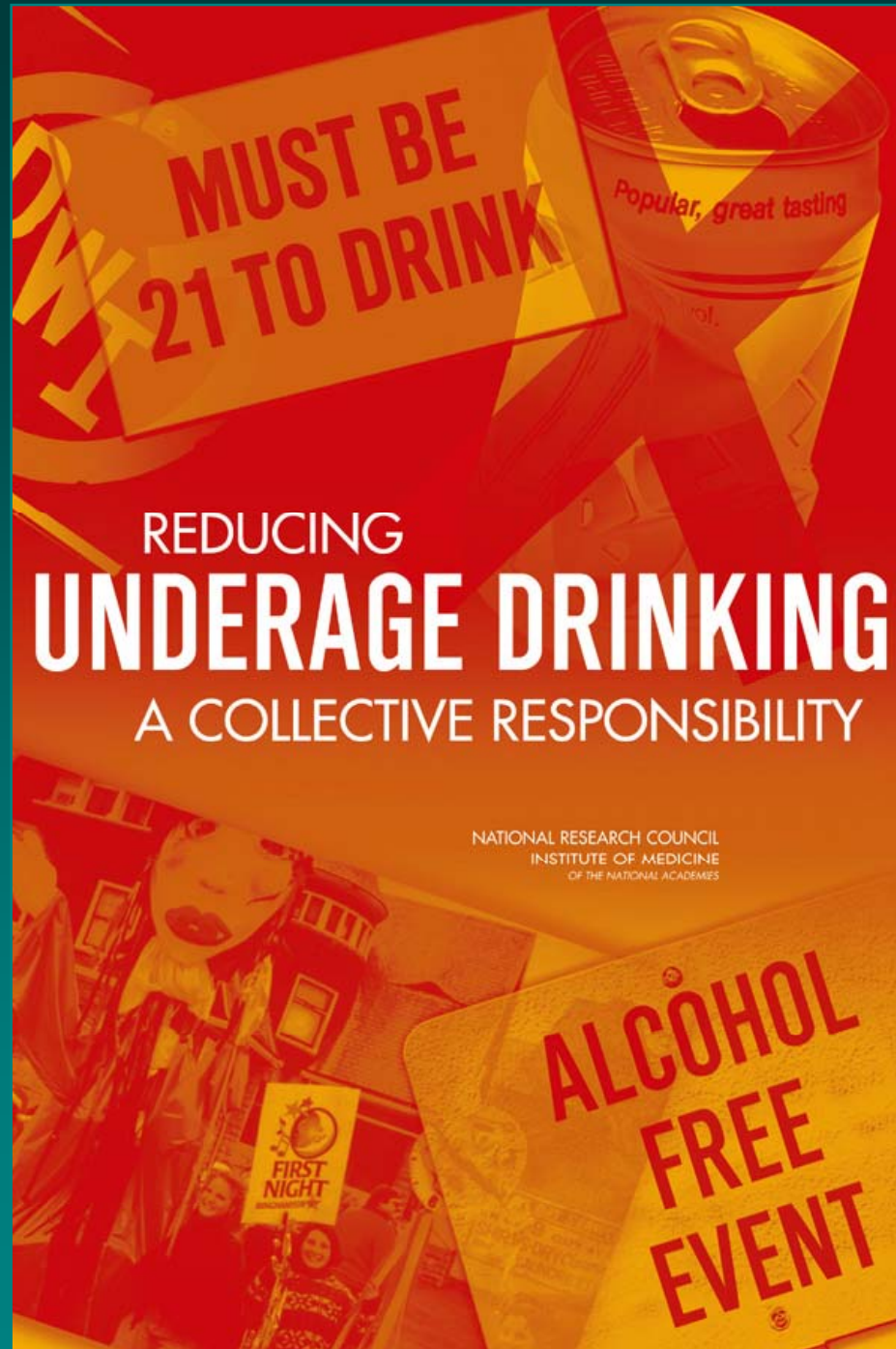
Preventing Childhood Obesity

Health
in the
Balance

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

THE
POLYGRAPH
AND LIE DETECTION

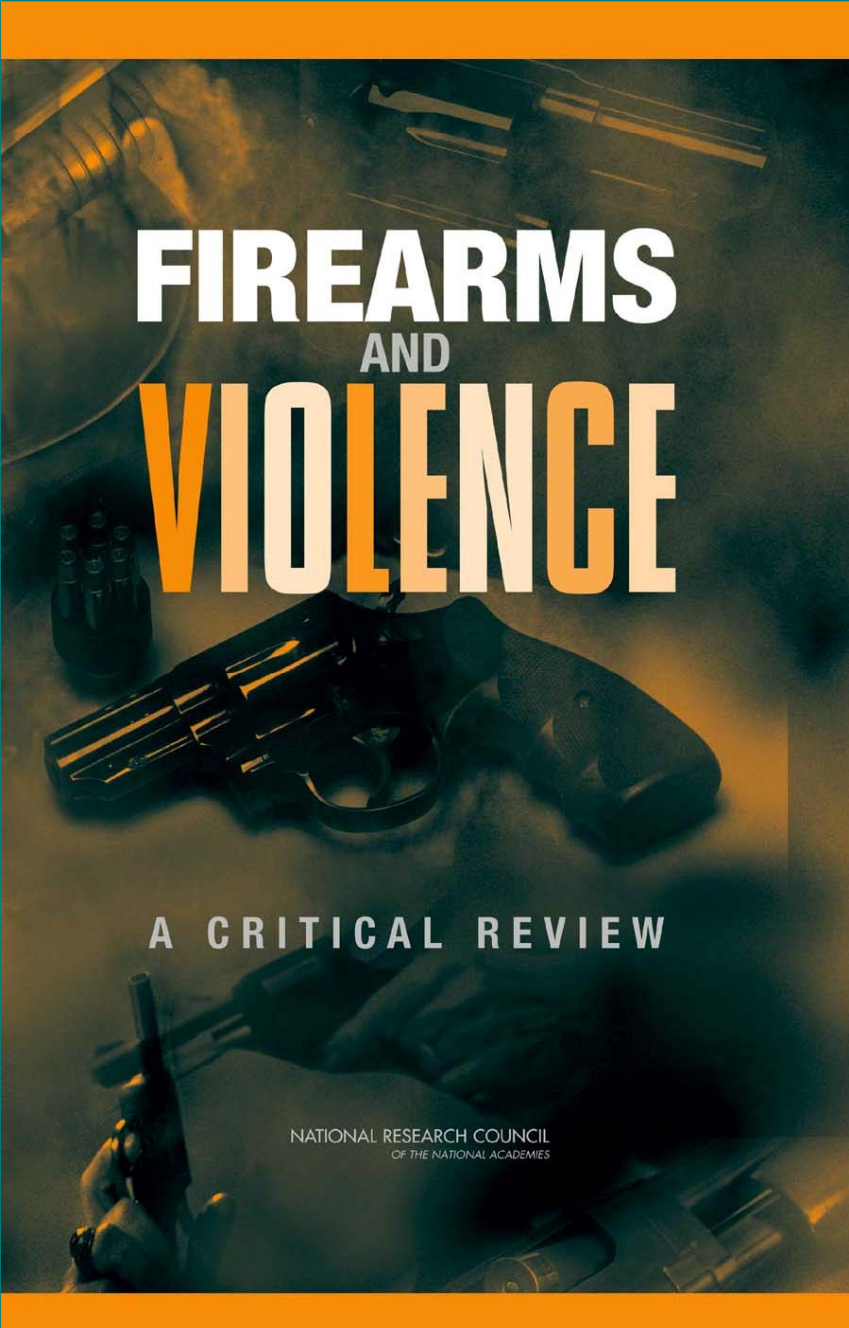
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REDUCING
UNDERAGE DRINKING
A COLLECTIVE RESPONSIBILITY

NATIONAL RESEARCH COUNCIL
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

**ALCOHOL
FREE
EVENT**



FIREARMS AND VIOLENCE

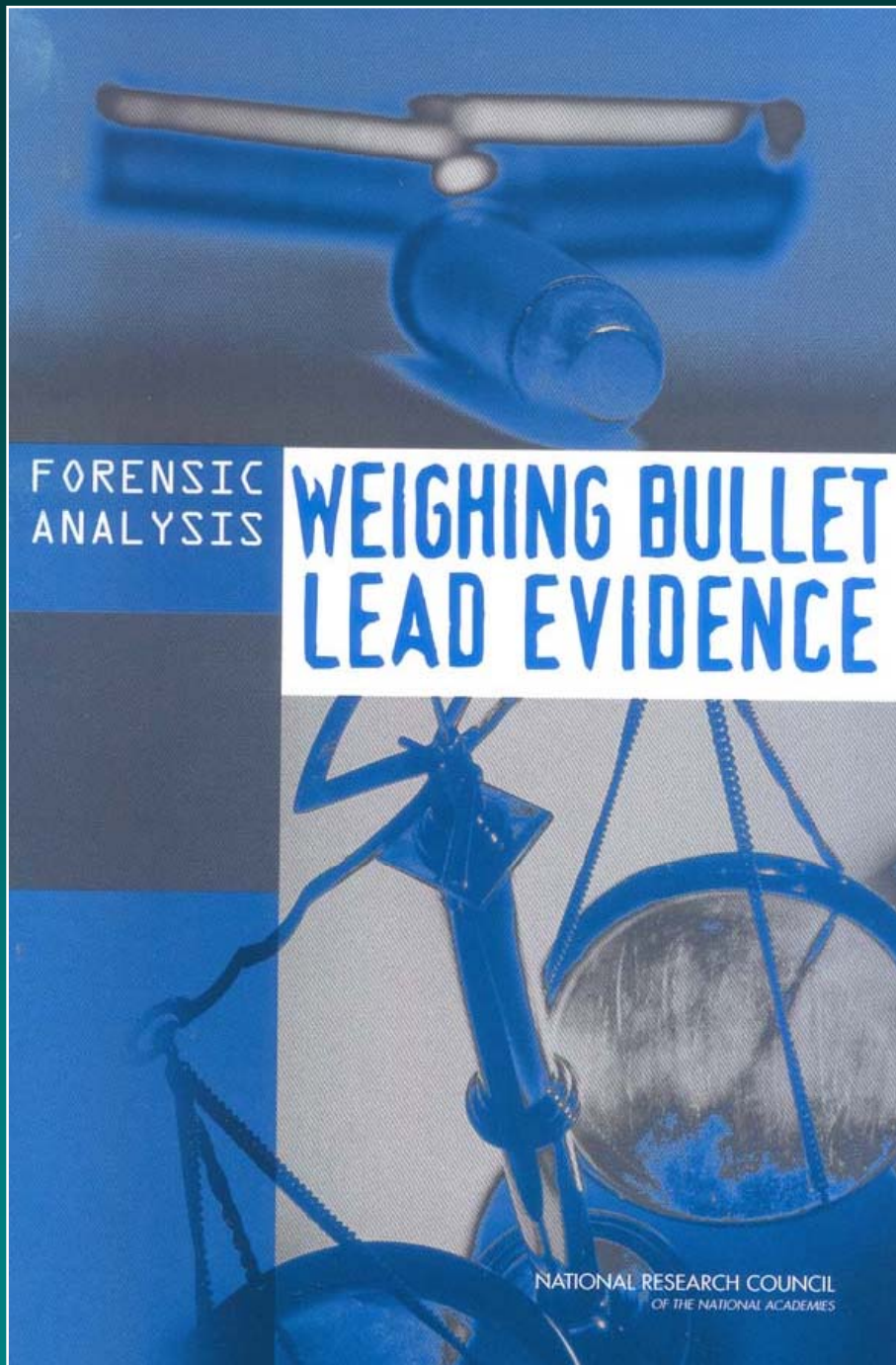
A CRITICAL REVIEW

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A PATENT SYSTEM FOR THE 21ST CENTURY

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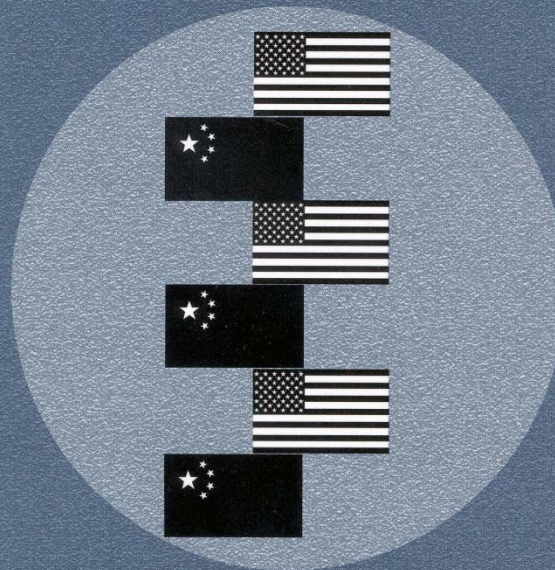


FORENSIC
ANALYSIS

WEIGHING BULLET LEAD EVIDENCE

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**COOPERATION IN THE
ENERGY FUTURES OF CHINA
AND THE UNITED STATES**

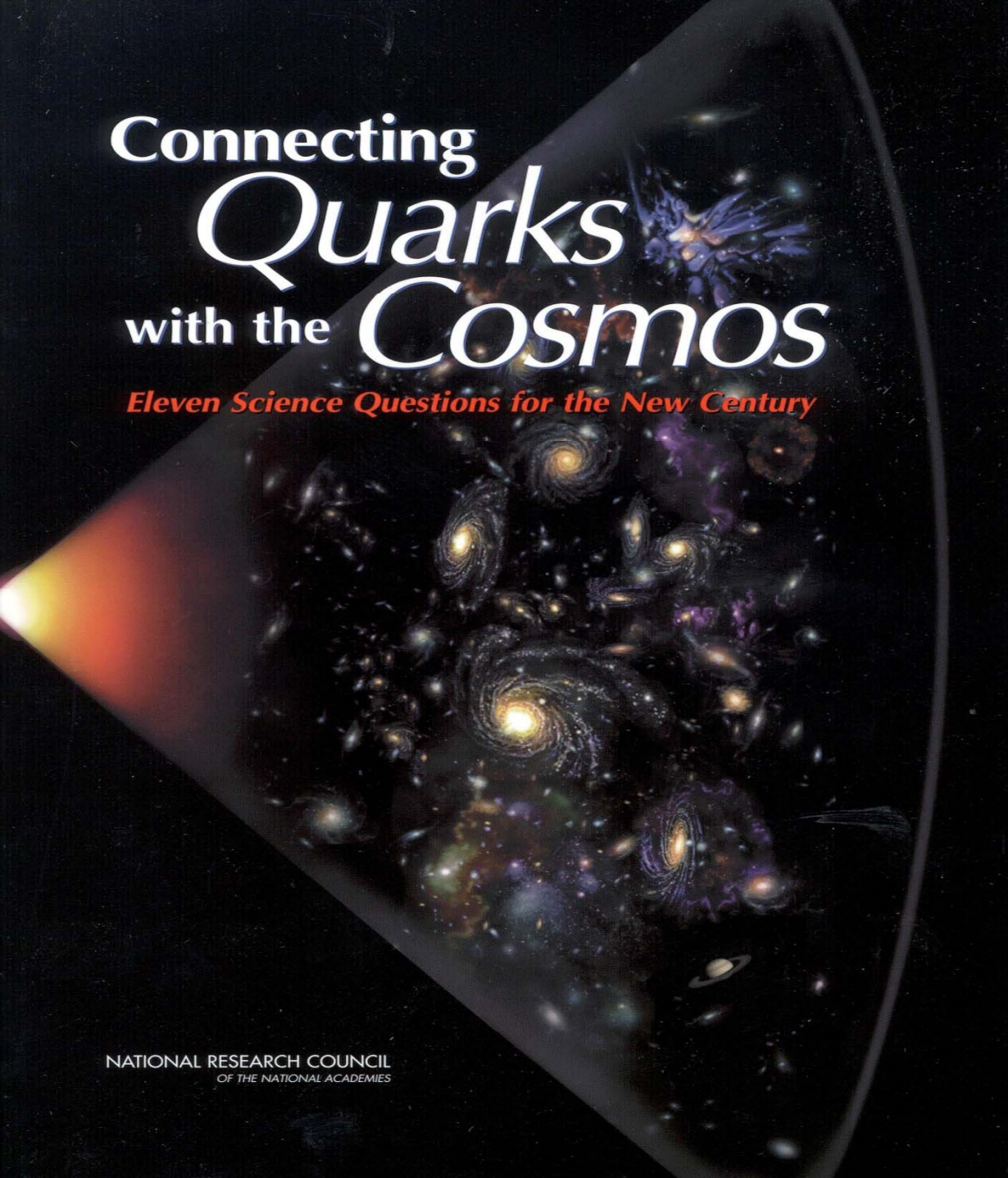


**NATIONAL RESEARCH COUNCIL
CHINESE ACADEMY OF SCIENCES
CHINESE ACADEMY OF ENGINEERING**

SCIENCE
AND
TECHNOLOGY
IN THE
NATIONAL
INTEREST

ENSURING THE BEST PRESIDENTIAL AND FEDERAL ADVISORY
COMMITTEE SCIENCE AND TECHNOLOGY APPOINTMENTS

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING, AND
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

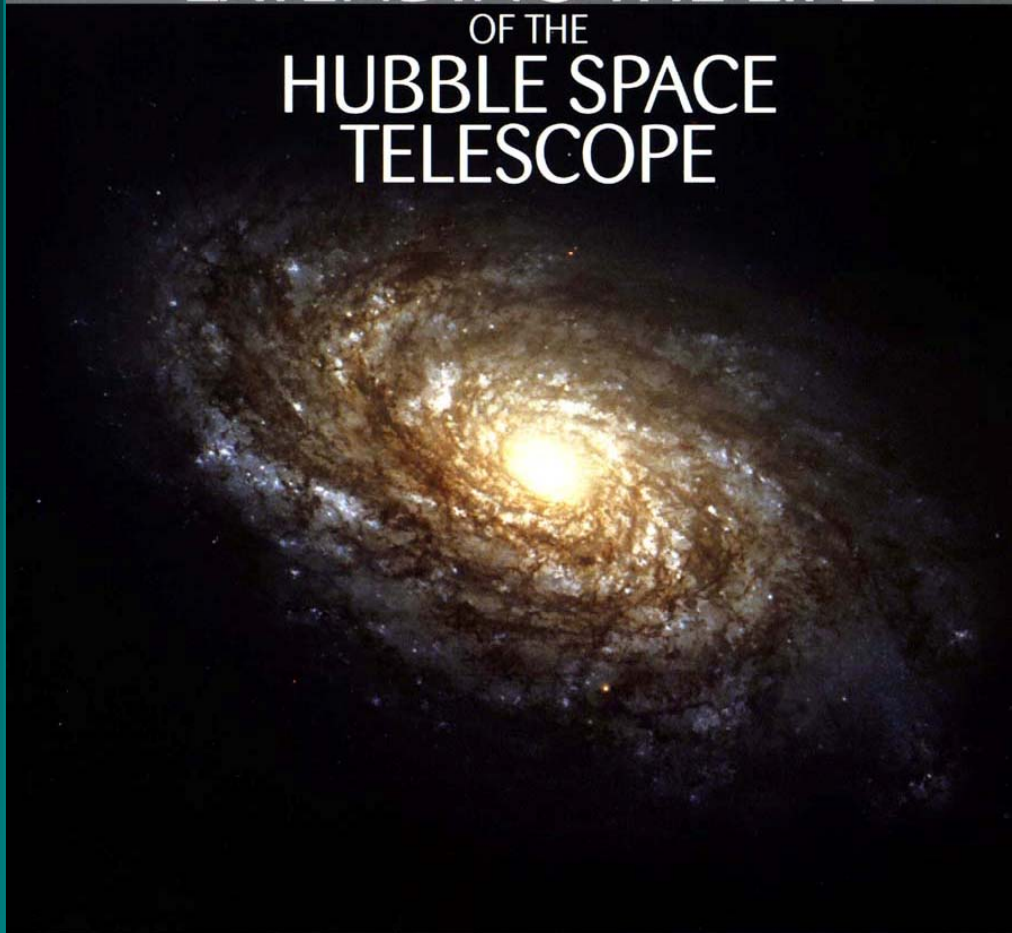


Connecting
Quarks
with the *Cosmos*

Eleven Science Questions for the New Century

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

ASSESSMENT OF OPTIONS FOR
EXTENDING THE LIFE
OF THE
**HUBBLE SPACE
TELESCOPE**



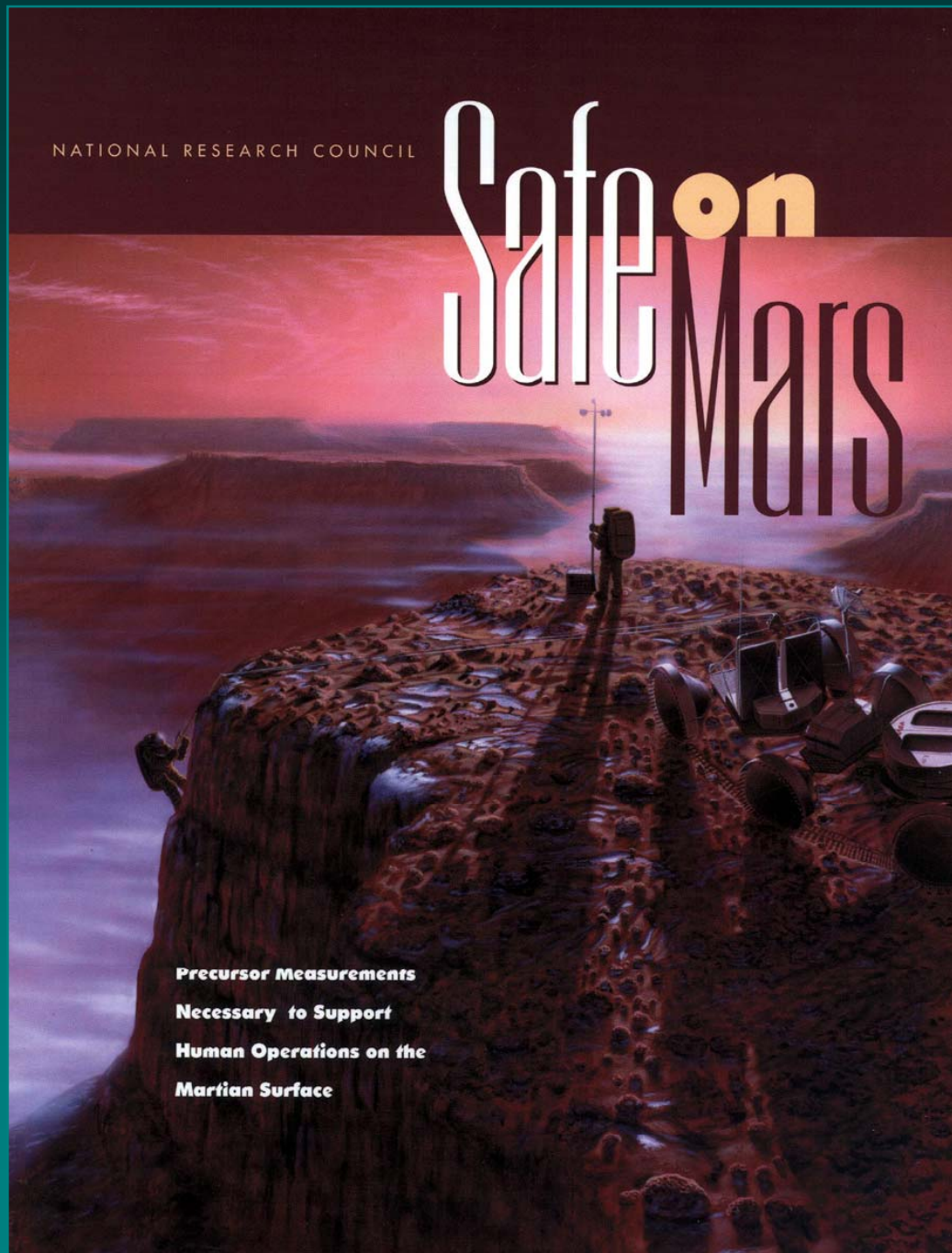
F I N A L R E P O R T

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Safe on Safe Mars

**Precursor Measurements
Necessary to Support
Human Operations on the
Martian Surface**



Immunization Safety Series

IMMUNIZATION SAFETY REVIEW

INFLUENZA VACCINES AND
NEUROLOGICAL COMPLICATIONS

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OF THE NATIONAL ACADEMIES

IMMUNIZATION SAFETY REVIEW

VACCINATIONS AND SUDDEN
UNEXPECTED DEATH IN INFANCY

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IMMUNIZATION SAFETY REVIEW

SV40 CONTAMINATION OF
POLIO VACCINE AND CANCER

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IMMUNIZATION SAFETY REVIEW

HEPATITIS B VACCINE AND DEMYELINATING
NEUROLOGICAL DISORDERS

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SAFETY REVIEW

MULTIPLE IMMUNIZATIONS
AND IMMUNE DYSFUNCTION

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SAFETY REVIEW

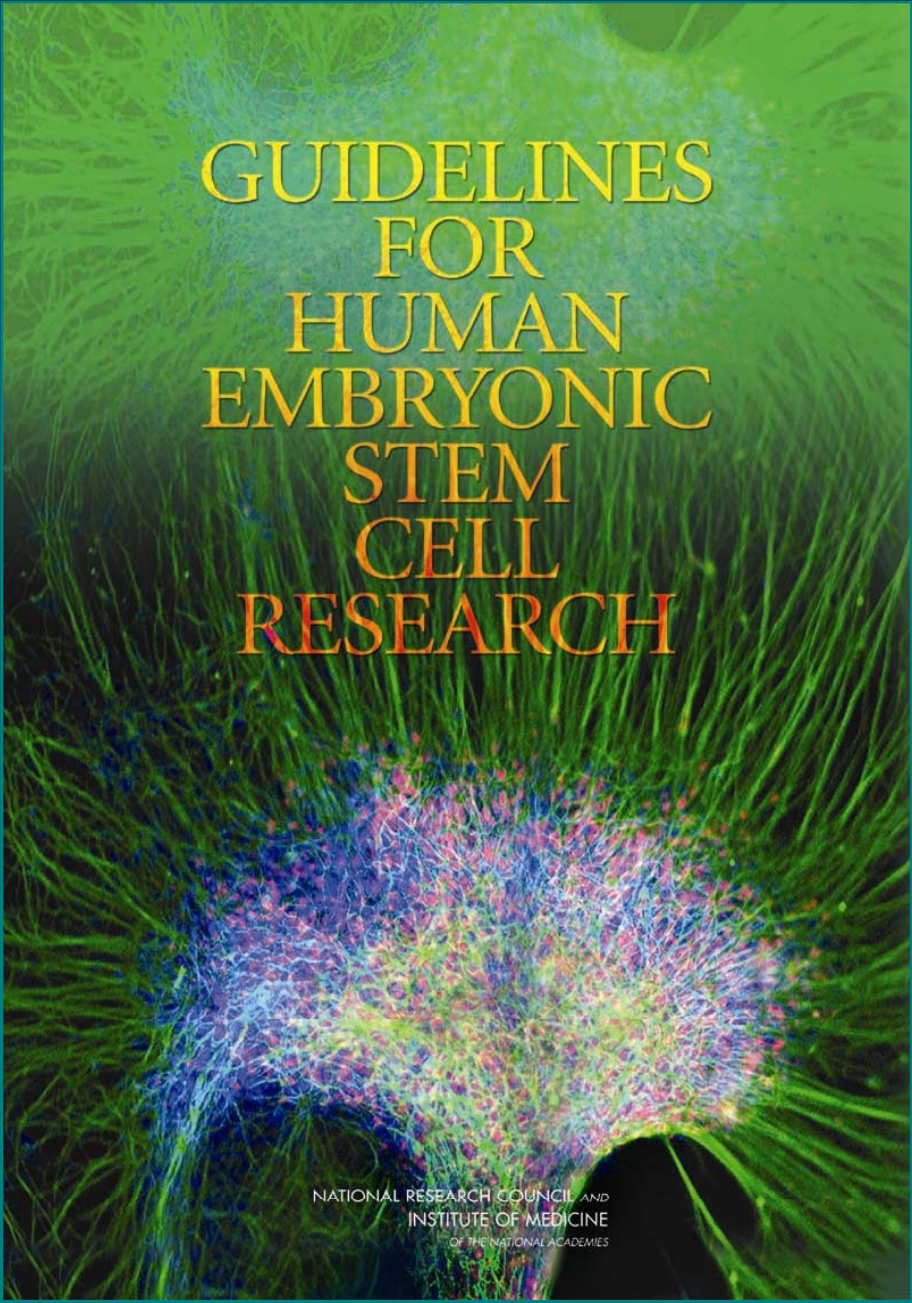
THIMEROSAL-CONTAINING VACCINES
AND NEURODEVELOPMENTAL DISORDERS

INSTITUTE OF MEDICINE

SAFETY REVIEW

MEASLES-MUMPS-RUBELLA
VACCINE AND AUTISM

INSTITUTE OF MEDICINE

A microscopic image of human embryonic stem cells, showing a dense cluster of cells with long, thin, green filaments extending outwards. The cells are stained with various colors, including green, blue, and purple, highlighting different cellular components. The background is a dark, textured green.

GUIDELINES FOR HUMAN EMBRYONIC STEM CELL RESEARCH

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INSTITUTE OF MEDICINE
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Insuring Health Series

INSURING HEALTH

Hidden
Costs,
Value Lost

Uninsurance
in America

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Shared
Destiny

Community
Effects
of Uninsurance

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Health
Insurance
a Family
Matter

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Health
Insurance
Coverage

Too Little,
Too Late

INSTITUTE OF MEDICINE

Average
Matters

Insurance
and
Health
Care

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PEPFAR IMPLEMENTATION

PROGRESS
AND
PROMISE



SETTING PRIORITIES
for LARGE RESEARCH
FACILITY PROJECTS
supported by the
NATIONAL SCIENCE
FOUNDATION



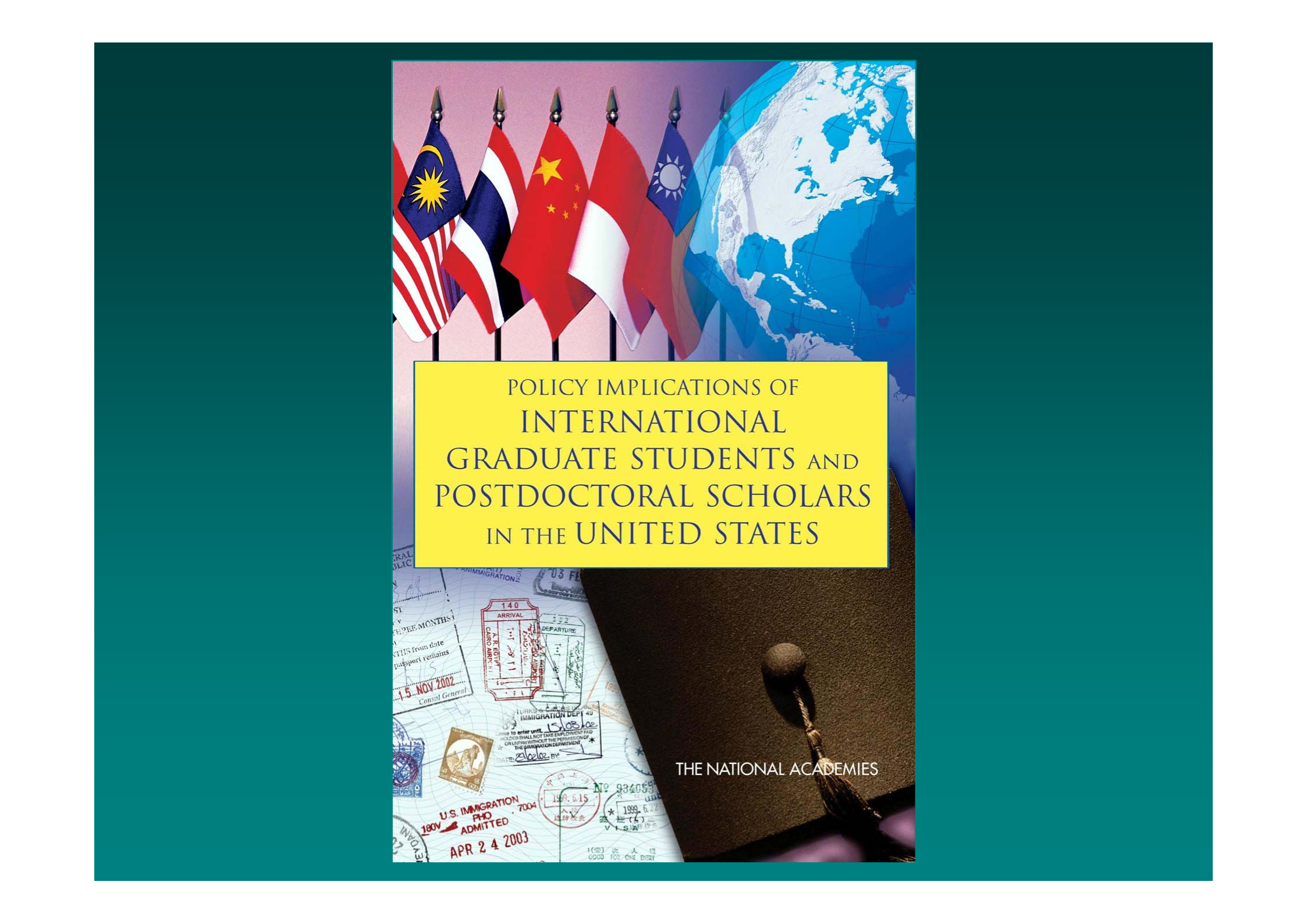
THE NATIONAL ACADEMIES

BRIDGES TO INDEPENDENCE



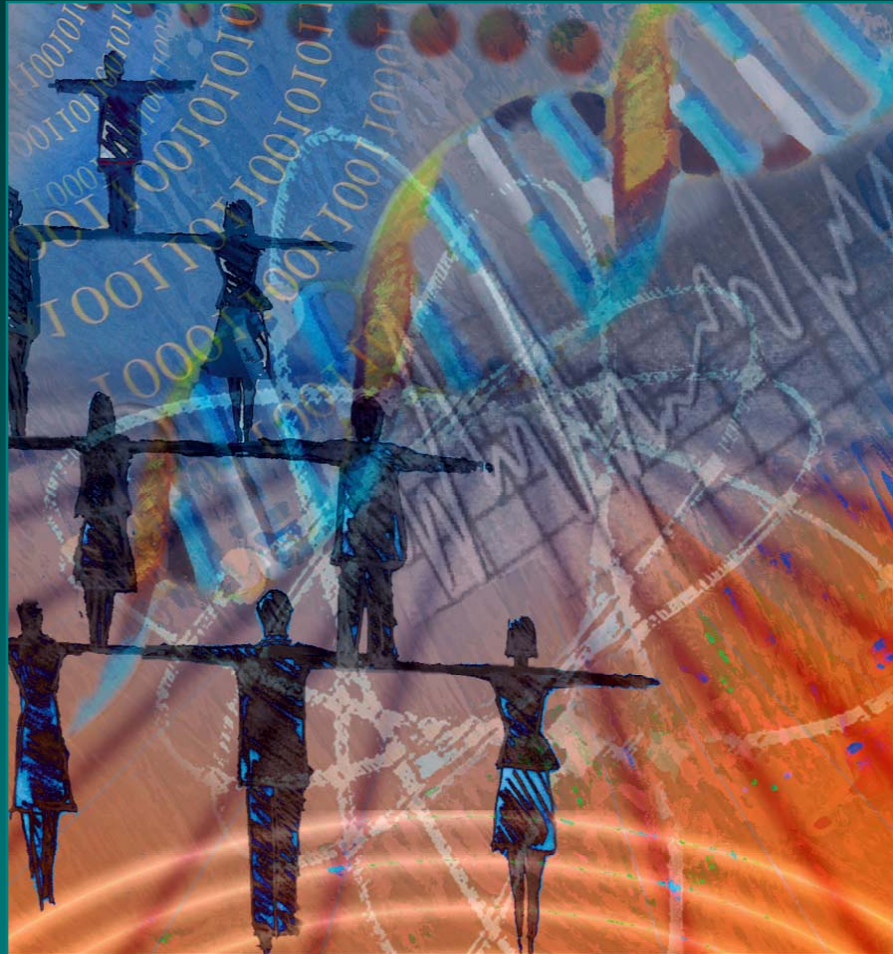
FOSTERING THE INDEPENDENCE
OF NEW INVESTIGATORS IN
BIOMEDICAL RESEARCH

NATIONAL RESEARCH COUNCIL
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POLICY IMPLICATIONS OF
INTERNATIONAL
GRADUATE STUDENTS AND
POSTDOCTORAL SCHOLARS
IN THE UNITED STATES

THE NATIONAL ACADEMIES



FACILITATING INTERDISCIPLINARY RESEARCH

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING, AND
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

NATIONAL

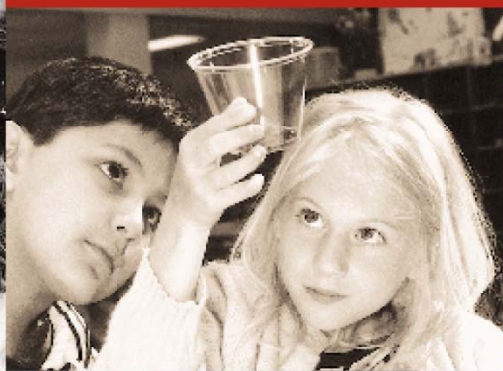
SCIENCE EDUCATION

STANDARDS

understand



wonder



assess



interact



encourage

explore

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TEACHING ABOUT



EVOLUTION



AND THE



NATURE OF



SCIENCE



NATIONAL ACADEMY OF SCIENCES

Mammography and Beyond

*Developing Technologies
for the Early Detection of
Breast Cancer*



INSTITUTE OF MEDICINE
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October 19, 2004

FamilyCircle

Decorating Made Easy
12 Simple Rules

MELT POUNDS AWAY
Ultimate Low-Carb Diet

30-Minute Meals
FREE RECIPE CARDS

Breast Cancer News to Save Your Life

BEST NEW BUYS FOR BEAUTIFUL SKIN

Walk Yourself Happy & Stop Stress

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7 Simple Steps

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Super Sleep Solutions
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Easy-care Cuts

News You Need Before Your Next Mammogram

Julianne Moore
Why she won't have plastic surgery and doesn't want you to, either

It's Pumpkin Time!
From Pancakes to Pasta & Pretty, Cozy Crafts

Pants to Flatter Every Figure

Chocolate Heaven
page 186

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Why Ask the National Academies?

- Uncertainty over the best policy
- Public credibility
- Conflict resolution
- Sounder future decisions



Ingredients for Successful Conduct of a Study

- Scope and clarity of the Charge
- Qualifications and abilities of the Chair
- Expertise and balance of the Committee
- Skill and experience of the Staff
- Adequacy of Funding
- Time frame suited to the assignment

Ingredients for Successful Impact of a Study

- Excellence of the product: objective, evidence-based, grounded in science, well-reasoned, understandable, thorough, and persuasive
- Importance, Timeliness, and Relevance
- Contending Values and Interests
- Communication and Promotion

Ingredients for Sustained Success

- Relation to government: arms length, tightly clasped
 - Relevant, timely, important tasks
 - Independence of appointments, process, findings, conclusions, and recommendations
- Reputation for integrity and quality: credibility and influence
 - Attention to bias and conflict of interest
 - Careful, independent review procedures
 - Volunteer service by member and other experts
 - Publication of all reports

It is easy to lie with statistics.

It is even easier to lie without them.

Frederick Mosteller

*It is easy to make bad policy with science.
It is even easier to make bad policy without
science.*

LEE KUAN YEW

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Dr Harvey V. Fineberg

M.D., Ph.D., Institute of Medicine President

**The Art of Science
Advice to Policy Makers:
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THE U.S. INSTITUTE OF MEDICINE**

