2011 U.S. Investment in Health Research

RESEARCH AMERICA
AN ALLIANCE FOR DISCOVERIES IN HEALTH

Are we willing to relinquish our global leadership?

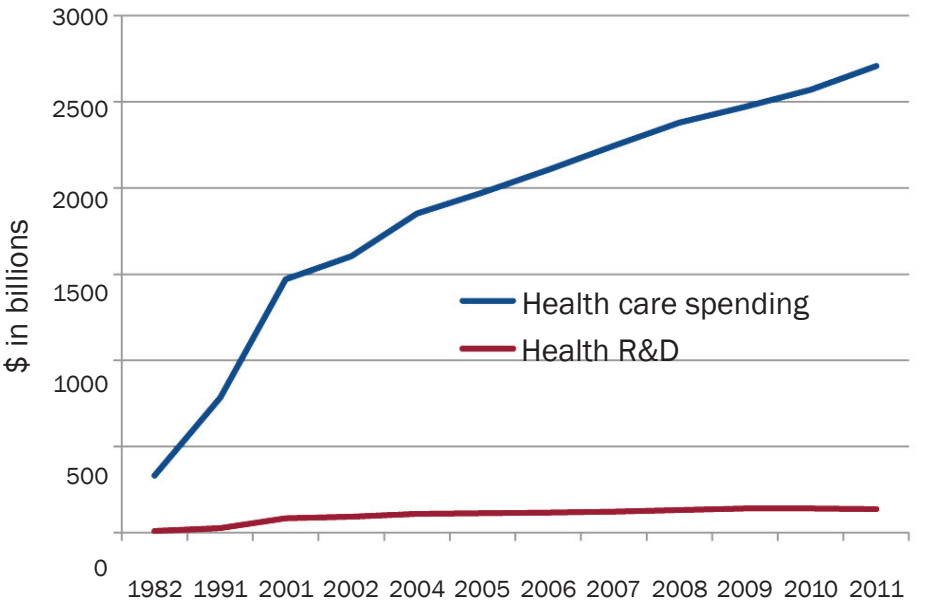
Where We Are Today and the Future Landscape

Biomedical and health R&D spending (all sources) declined by more than $4 billion or 3% in FY11 — the first drop in overall spending since Research!America began keeping track in 2002. While most of that decrease reflects the end of American Recovery and Reinvestment Act (ARRA) funding, which allocated $10.4 billion to the National Institutes of Health (NIH) over two fiscal years (2009-2010), federal funding declined beyond the drop attributable to ARRA. This decline in federal funding, which follows several years of lost purchasing power, is compromising our nation's ability to capitalize on unprecedented scientific opportunity. It comes at a time when other nations are ramping up their own investments in research to fuel economic growth and global competitiveness.

In 2011, federal policy makers passed the Budget Control Act (BCA), which established a decade's worth of stringent caps on annual discretionary funding. These caps could result in flat funding or cuts to every category of federally funded biomedical and health research. The BCA also set the stage for dramatic, across-the-board budget cuts, or sequestration. Unless policy makers act to prevent them, these cuts will take effect on January 2, 2013, reducing federal biomedical and health research funding by 8%-10%.

Sequestration is just one of a confluence of statutory issues collectively known as the "fiscal cliff." The fiscal cliff poses a great threat to our nation's biomedical and health research capacity. To disable the various fiscal landmines comprising the fiscal cliff, discretionary funding cuts, entitlement reform and tax reform are under consideration. If a solution is pursued without regard to the impact on biomedical and health R&D, policy makers could all too easily undermine federal funding as well as incentives for private-sector investment and charitable giving.

Health Research and Health Care Spending in the U.S.



Source: Research!America analysis

Reviewing the Numbers

Federal funding for research totaled $39.5 billion in FY11, a 14% decrease from the previous year when it totaled $45.9 billion. Agency funds were distributed across all 50 states to hospitals, universities, independent research institutes and small businesses. Across-the-board cuts could cut billions more out of the federal research budget. The

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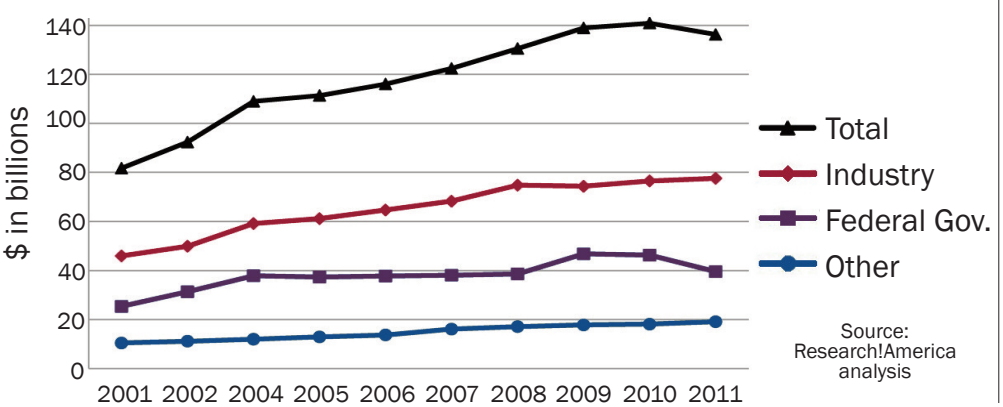
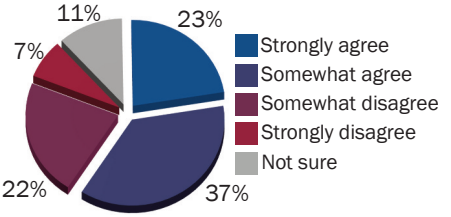
U.S. Health Research Investment by Sector



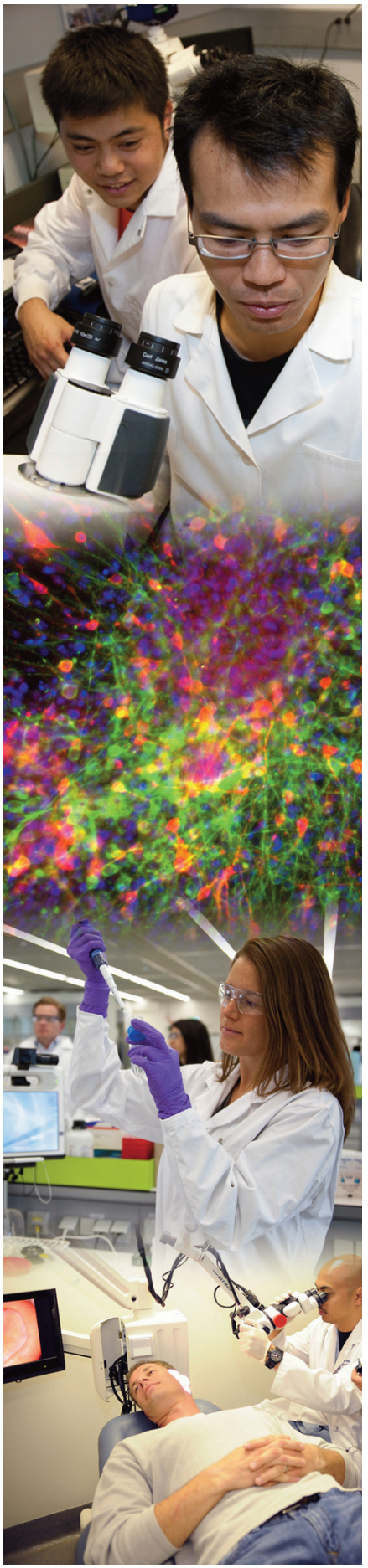
Source: Research!America analysis

Medical Progress Suffers if U.S. Loses Innovation Leadership

"Medical progress will slip in the U.S. if another country takes the lead in science, technology and medical innovation."



Source: A Research!America poll of likely voters conducted in partnership with JZ Analytics in August 2012.



White House Office of Management and Budget has estimated that the NIH alone could lose $2.53 billion in funding in FY13.

Despite inflationary pressure and the economic recession, industry has continually increased investments in R&D. Overall, industry investment increased 1.4% for a total of $77.6 billion in 2011. This estimate is based on the most recent data available for medical devices and biotechnology (2010) and pharmaceutical (2011) spending. The pharmaceutical industry increased its investment to $38.5 billion, a 3% increase from the previous year. In contrast, biotechnology investment declined by nearly $800 million, or 3%. The medical device and technology sector significantly increased investment in research by 7.4%, totaling $9.8 billion.

Currently, more than 80% of R&D among PhRMA member companies is conducted in the United States, but it is noteworthy that R&D spending abroad has more than doubled over the past decade. Domestic pharmaceutical R&D is a boon for our nation, but it may not last long if federal funding for the research that fosters private-sector innovation declines and a deficit-reduction policy environment thwarts medical innovation. Companies will locate their R&D close to the very best academic science; if our nation's investment in basic research spirals downward as that of other nations accelerates, we will effectively propel businesses and jobs overseas. Cuts in federal funding will threaten our nation's world-class research institutions, which produce the human capital and knowledge that is key for attracting innovative businesses and industries to the U.S.

Aside from federal and industry investment, other institutions spent $19.1 billion on health research, an increase of about 5% from FY10. As the largest share of that amount, universities increased spending of institutional funds for research to $11.9 billion in 2010 — a 6% increase. Philanthropic foundation spending decreased slightly, while voluntary health groups increased investment in research by 15%, or $131 million, from the prior year.

Health Care Spending

As federal investment in medical R&D declined, overall health care spending continued to rise. Between 2010 and 2011, total health care spending increased from $2.6 trillion to$2.7 trillion, a 4% increase. Currently, biomedical and health research is a diminutive portion of total health spending (health care spending plus biomedical and health R&D), accounting for less than 5% of overall spending. Studies have shown that investing in biomedical and health research can help control the cost of health care, which now accounts for nearly 18% of U.S. GDP and 21% of all federal spending.

Federal Biomedical and Health Research Funding Projections

As described above, the biomedical and health research investment landscape in the United States is dismal and could worsen in 2013 and over the next decade. The American Association for the Advancement of Science (AAAS) projects that, for example, over the first 5 years of sequestration (the years for which standard inflation estimates are available), the NIH budget would be cut by more than $11 billion, slashing funding to FY05 levels. Other federal health research spending would be cut by the same percentage, a loss of more than $400 million. AAAS also estimated the impact on NIH of another possible scenario in which the cuts to most non-defense federal programs are more than doubled. Under that scenario, the NIH budget would be cut by more than $26 billion or 17.5%.

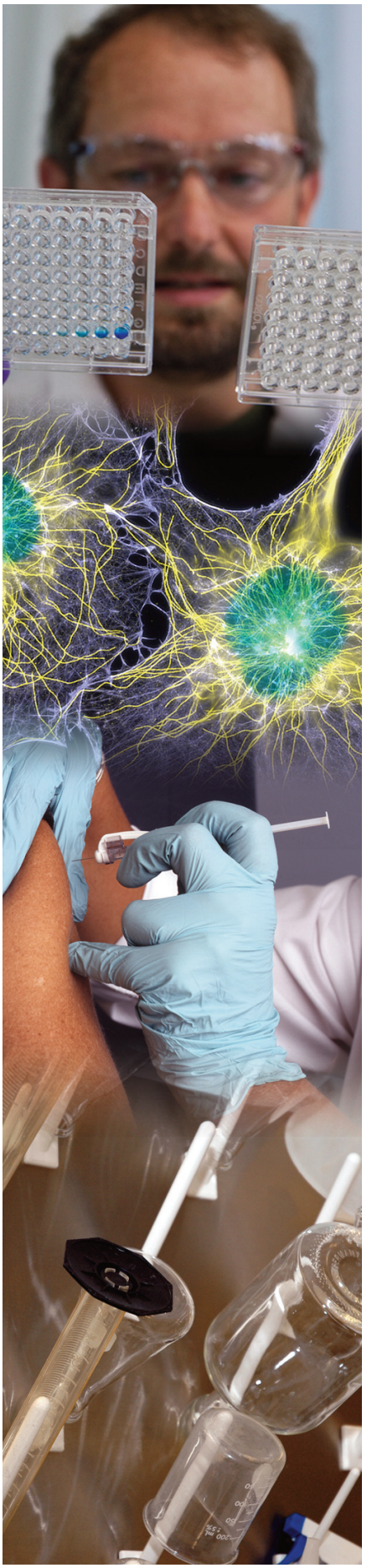
Contrast these budget scenarios with China, which has identified biotechnology as one of seven "strategic and emerging (SEI) pillar" industries and has pledged to invest $308.5 billion in biotechnology during the next 5 years. And not only China, but several other nations — including South Korea, Taiwan, Singapore and Sweden — are aggressively building their research infrastructure, recruiting top researchers from the U.S. and from U.S. industry as well.

Conclusion

Federal policy makers must make tough budget choices to bring the federal deficit under control; however, divesting from biomedical and health research — and the infrastructure and expertise needed to conduct it — would contravene the very goal it is intended to advance. Biomedical and health research is one of the fundamental underpinnings of our economy. It is a catalyst that creates businesses large and small and generates jobs in research, manufacturing, distribution, export, health care and a host of other business sectors. Those businesses and jobs supply federal revenues needed to reduce the deficit and power our economy to grow again as it has in the past — a formula that competing nations now use to fuel their own economic growth. Research is our best weapon against diseases that breed suffering and fuel runaway federal health spending, one of the most intractable factors contributing to the deficit. This investment report demonstrates that health research is a major force in our nation; its fate and that of America and Americans are interwoven. The budget and policy decisions policy makers make today will have a profound effect on our nation's path forward.

in millions

Total: Estimated U.S. Health Research Expenditures	**136,245**
Pharmaceutical (Research and Development, estimate 2011)	38,530
Biotechnology (Research and Development, 2010)	29,250
Medical Technology (Research and Development, 2010)	9,800
Subtotal: Industry	**77,580**
National Institutes of Health (includes AHRQ)	29,831
National Science Foundation (Biological Sciences, Bioengineering, Chemistry, Math, Physics, Behavioral Sciences, Computer and Information Science and Engineering, and Polar Health)	2,358
Department of Defense (Medical Research, Chemical and Biological Defense)	2,346
Department of Energy (Biological and Environmental Research, Advanced Scientific Computing Research)	1,005
Department of Agriculture (Agricultural Research Service, National Institute of Food and Agriculture, Economic Research Service)	998
Department of Veterans Affairs (Medical and Prosthetic Research)	580
Environmental Protection Agency (Clean Air, Clean Water, Health and Human Ecosystems, Pesticides and Toxics)	582
National Institute of Standards and Technology	532
Centers for Disease Control and Prevention (Disease Control, Research and Training)	457
Food and Drug Administration (salaries and expenses)	254
Department of Homeland Security (Chemical and Biological)	207
U.S. Agency for International Development (targeted health issue research)	158
NASA (Human Research Program)	155
Administration for Children and Families (children's research)	41
Centers for Medicare and Medicaid Services (research, demonstration and evaluation)	36
Health Resources and Services Administration (health resources and services)	12
Subtotal: Federal Government	**39,552**
Universities (Institutional Funds) (2010)	11,897
State and Local Government (2010)	3,854
Independent Research Institutes (Institutional Funds)	1,285
Philanthropic Foundations (2010)	1,069
Voluntary Health Associations	1,008
Subtotal: Other	**19,113**
Total U.S. Health Care Spending	2,708,400
Total U.S. Biomedical and Health R&D Spending	136,245
Total U.S. Health Spending (health care spending + biomedical and health R&D spending)	2,844,645
Biomedical and Health R&D as a Percentage of Total U.S. Health Spending	4.79%



Compiled by: Max Bronstein, Research!America (9/2012)

Method and Rationale

The estimate of the U.S. investment in health research was determined by compiling annual expenditures for all domestic health-related research. This analysis includes fields and disciplines that contribute to improved human health.

Biotechnology research expenditures were estimated using the difference between total life sciences R&D spending (2011), less pharmaceutical (2011) and medical device R&D spending (2010) as reported by Battelle, PhRMA, and Ernst and Young respectively.

Figures for the U.S. Agency for International Development (USAID), Centers for Medicaid and Medicare (CMS), Health Resources Services Administration (HRSA), and the Administration for Children and Families were obtained from agency budget reports to Congress.

The Department of Agriculture estimate includes intramural and extramural research funded by the Agricultural Research Services, the National Institute of Food and Agriculture, and Economic Research Service. Research was determined to be health-related based on the research objectives of each agency.

The National Institute of Standards and Technology (NIST) estimate includes research spending on chemical science and technology, physics, materials science and engineering, information technology, electronics and electrical engineering, Center for Nanoscale Science and Technology, and technology services.

University institutional funds are figures reported by the National Science Foundation (NSF) as part of the Survey of Research and Development Expenditures at Universities and Colleges for FY10. Institutional funds may include endowment income, tuition or gifts/donations. Figures for institutional funds of independent research institutes were provided by the Association of Independent Research Institutes (AIRI).

R&D investment by voluntary health organizations was calculated using the annual reports of 61 of the largest research grant-making organizations.

Research!America produces this investment report annually to assist policy makers and stakeholders in analyzing budget and policy options in order to make the healthiest possible decisions for our nation. This is the ninth annual Investment in Research report. Previous reports are available online at www.researchamerica.org/research_investment.

Sources and Acknowledgements

Budget Table Sources

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- **Research!America** survey of annual reports of voluntary health associations (Voluntary Health Associations)

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