

# An Overview of R&D in the FY 2009 Budget

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for the Committee on Institutional Cooperation

AAAS R&D Budget and Policy Program

<http://www.aaas.org/spp/rd>

See the “What’s New” section for the latest updates; see the “Seminars and Presentations” section for copies of this presentation.

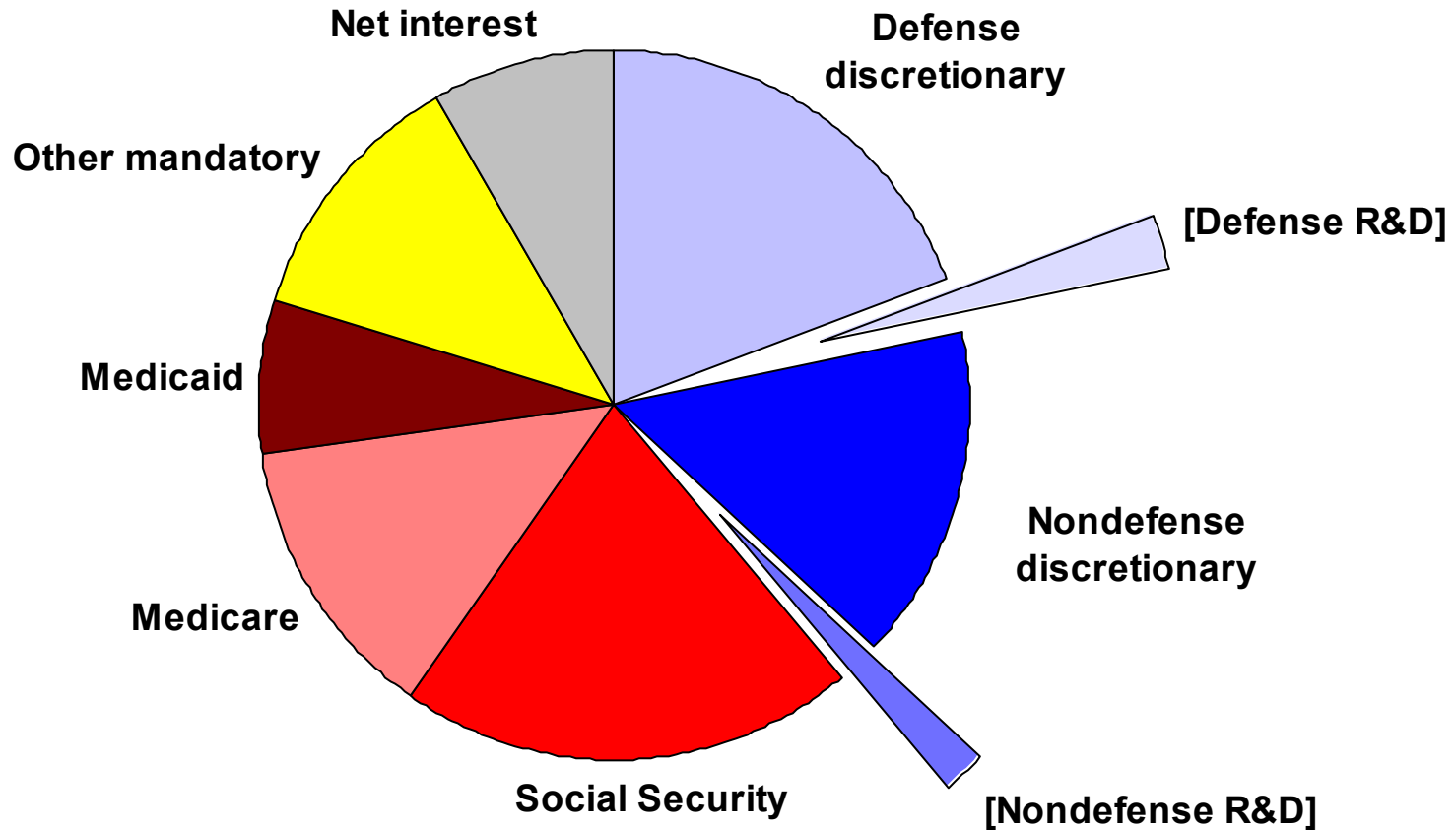


## THE 2009 BUDGET

- The President has proposed a \$3.1 trillion budget for FY 2009.
- To help control the deficit, the President proposes to keep domestic appropriations flat, and leaves most 2009 war funding out of the budget.
- The President's budget proposes steep cuts in many domestic programs and several program eliminations.

# Composition of the Proposed FY 2009 Budget

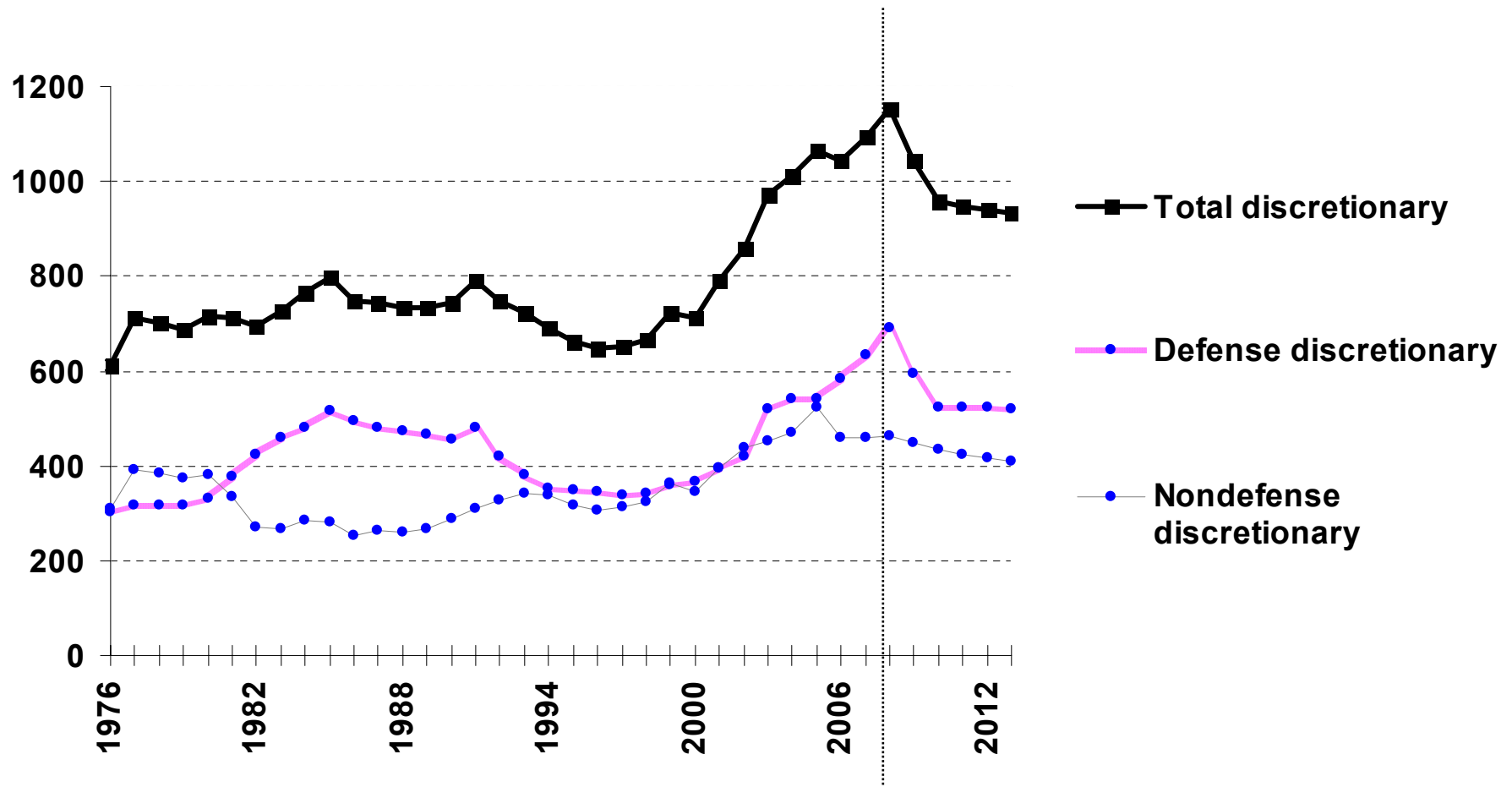
## Total Outlays = \$3.1 trillion



Note: Projected Unified deficit is \$407 billion.  
Figures exclude most Iraq and Afghanistan military costs.  
Source: AAAS, based on *Budget of the United States Government FY 2009*.  
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# Trends in Discretionary Spending, FY 1976-2013

in billions of constant FY 2008 dollars



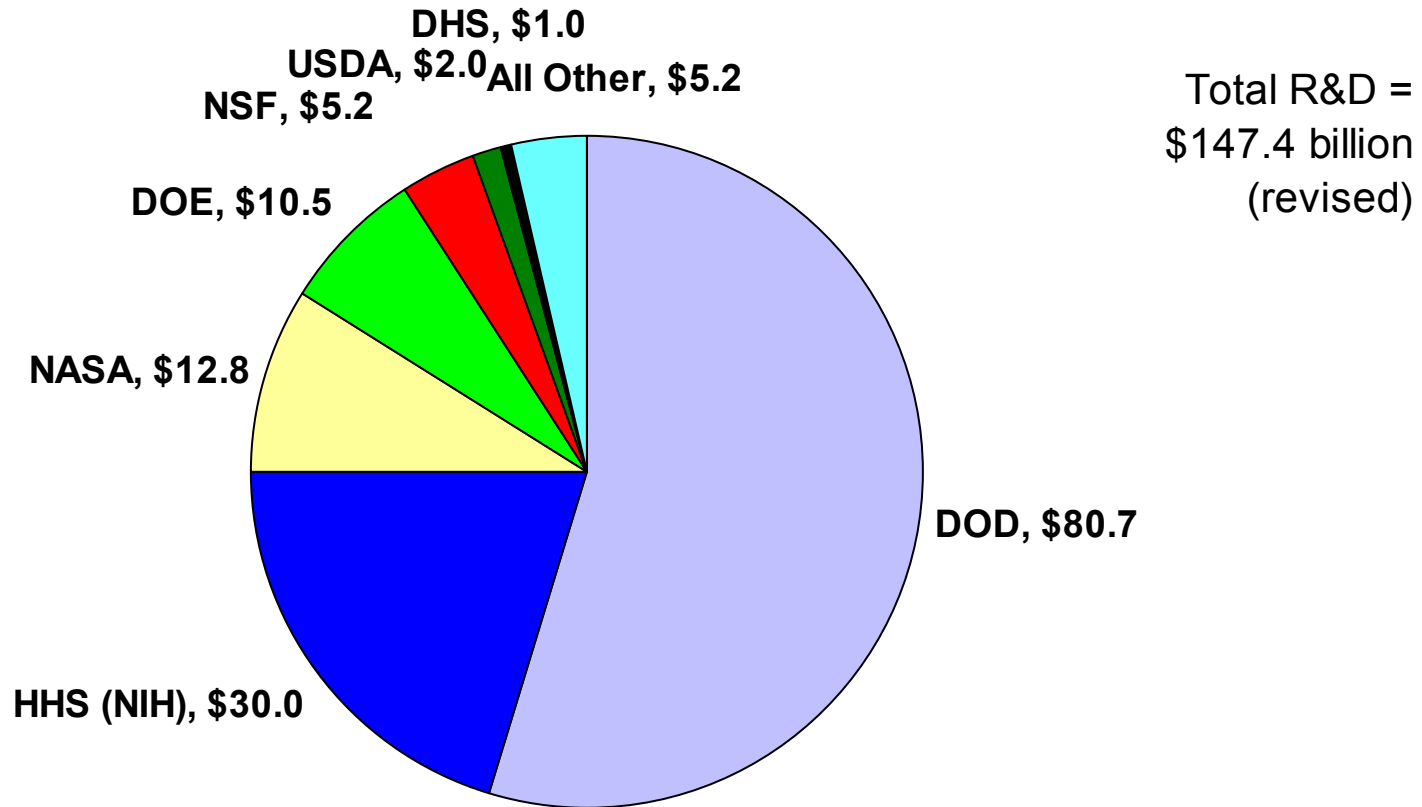
Data in fiscal years. Source: *Budget of the United States Government, FY 2009*.  
FY 2008 data are estimates. FY 2009-2013 data are budget projections. FY 2009-2013 figures exclude Iraq and Afghanistan military costs.  
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## THE 2009 BUDGET FOR R&D

- The ACI continues for a third year, with large increases for NSF, DOE Science, and the NIST labs to catch up to a 10-year doubling track.
- Again, there would be large increases for DOD weapons and NASA spacecraft development, but also increases for most R&D programs.
- The NIH budget would be flat, agricultural and environmental R&D agencies would decline.

# Total R&D by Agency: FY 2009 Proposed

Budget Authority in billions of dollars



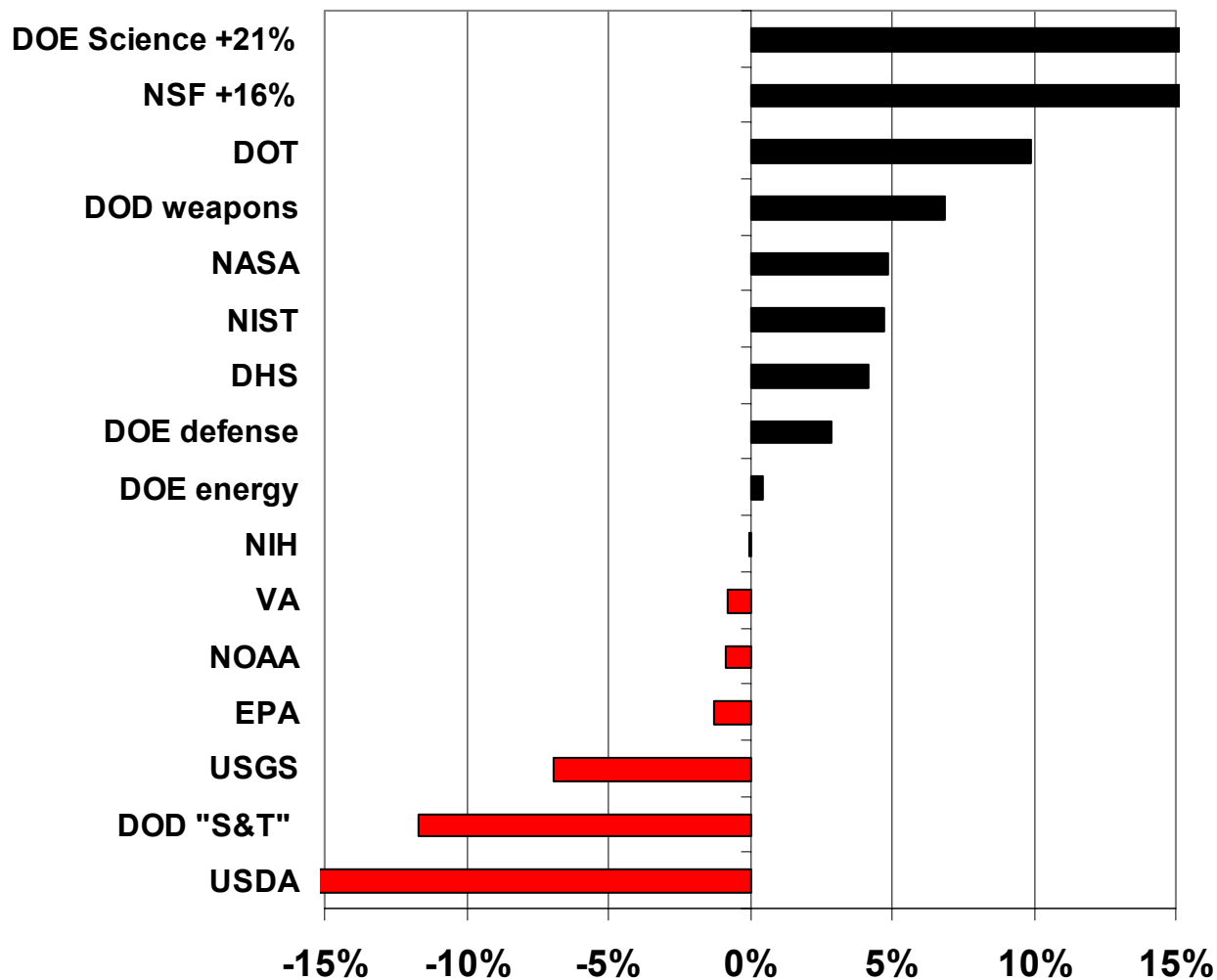
Source: AAAS, based on OMB R&D Budget Data and agency estimates for FY 2009.

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# FY 2009 R&D Request

## Percent Change from FY 2008

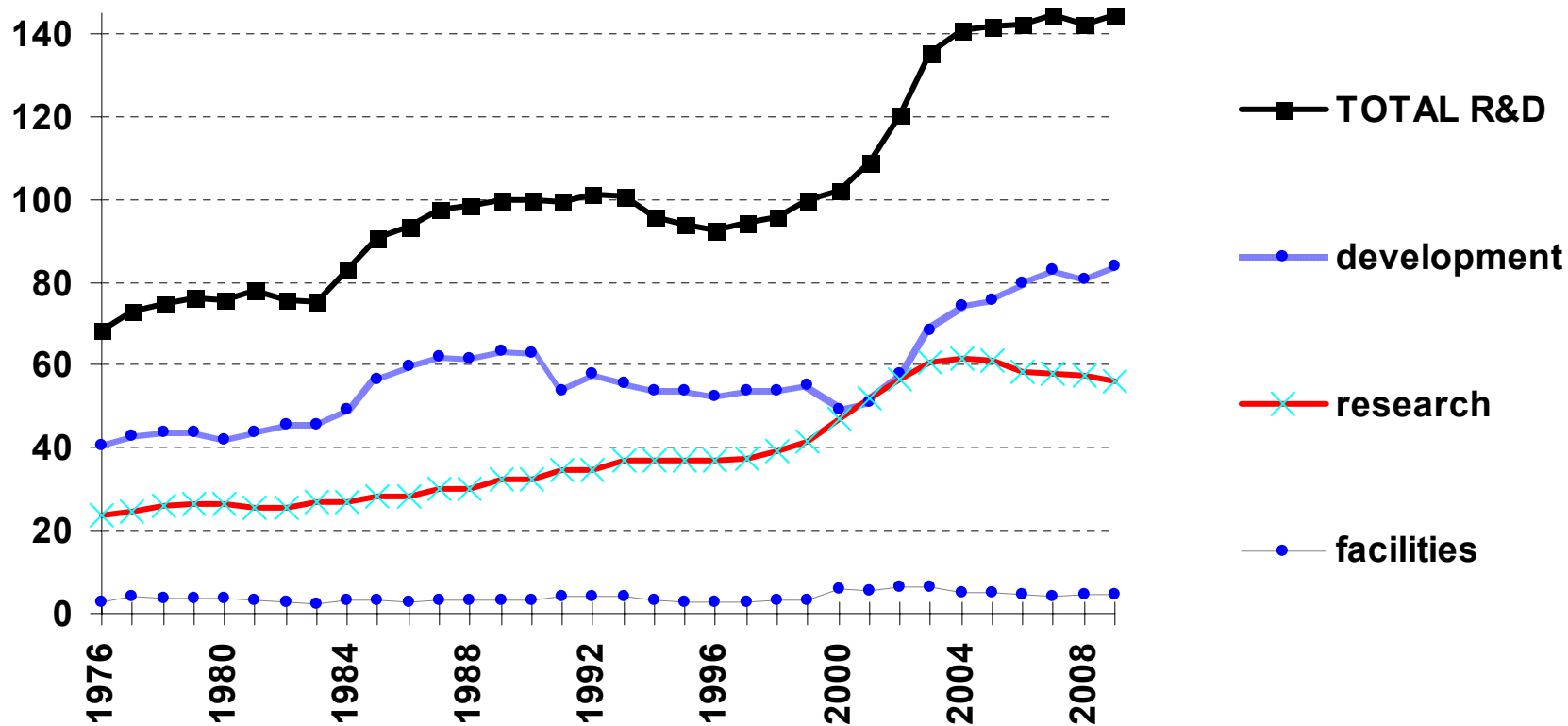


Source: AAAS, based on OMB R&D data and agency estimates for FY 2009.  
 DOD "S&T" = DOD R&D in "6.1" through "6.3" categories plus medical research.  
 DOD weapons = DOD R&D in "6.4" and higher categories.  
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# Trends in Federal R&D, FY 1976-2009 \*

in billions of constant FY 2008 dollars



Source: AAAS analyses of R&D in annual AAAS R&D reports. \* FY 2009 figures are latest AAAS estimates of FY 2009 request. R&D includes conduct of R&D and R&D facilities. Data to 1984 are obligations from the NSF Federal Funds survey. GDP figures are from OMB, Budget of the U.S. Government FY 2009.

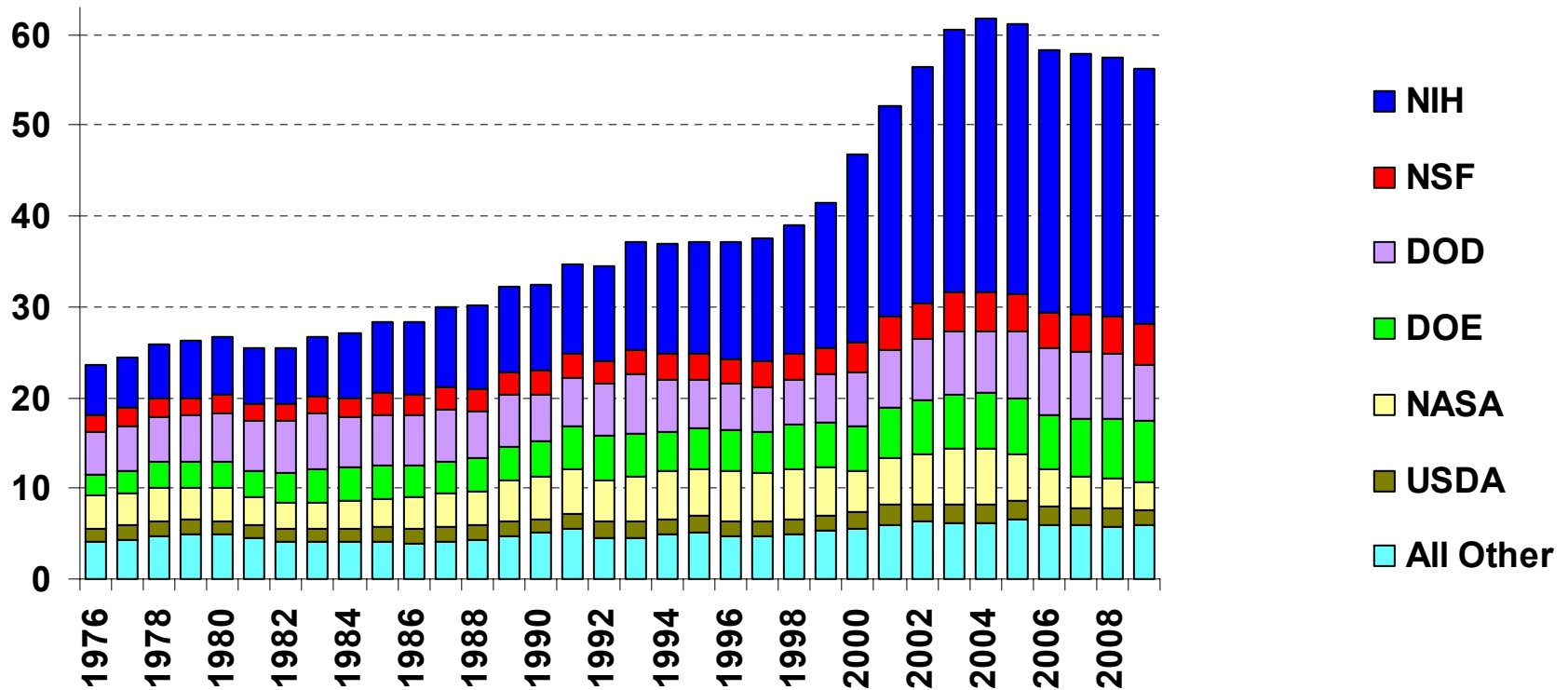
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# Trends in Research by Agency, FY 1976-2009 \*

in billions of constant FY 2008 dollars



Source: AAAS analyses of R&D in annual AAAS R&D reports.

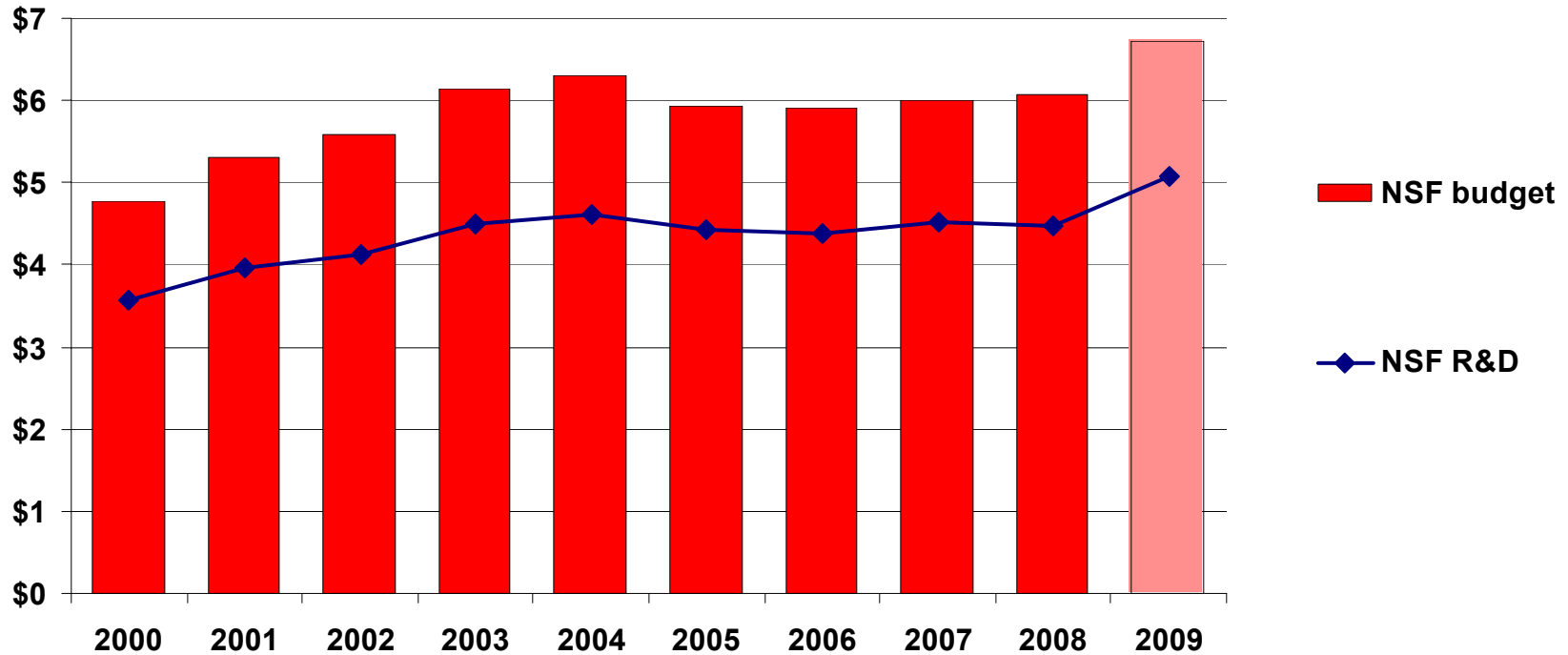
\* FY 2009 figures are latest AAAS estimates of FY 2009 request. Research includes basic research and applied research. 1976-1994 figures are NSF data on obligations in the Federal Funds survey.

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# National Science Foundation Budget, FY 2000-2009

(budget authority in billions of constant FY 2008 dollars)

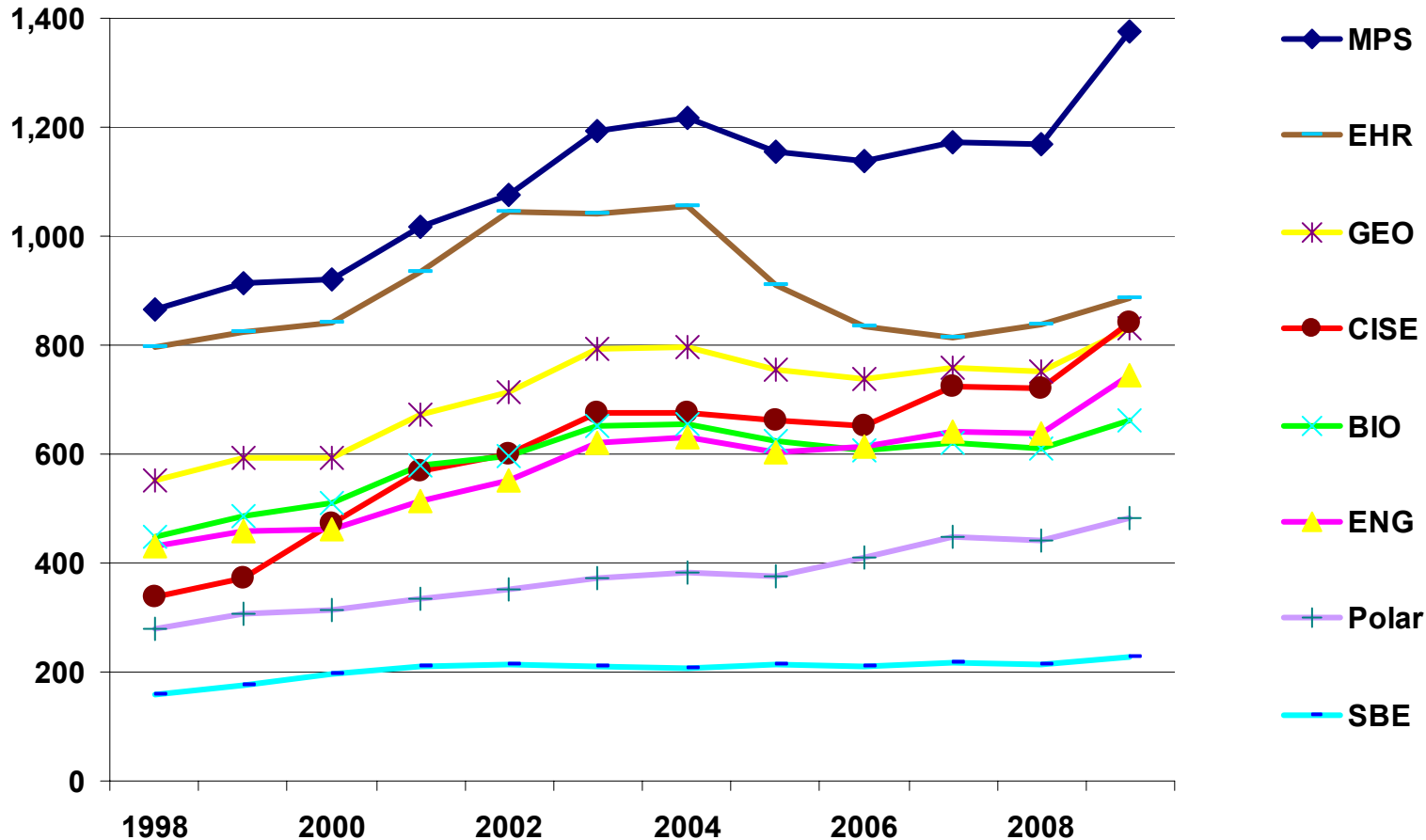


Source: National Science Foundation, and latest AAAS estimates of FY 2009 budget. FY 2009 is budget request.  
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# NSF Budget by Directorate, FY 1998-2009

(budget authority in millions of constant FY 2008 dollars)



Source: National Science Foundation data. FY 2009 figures are President's request.

CISE includes new Office of Cyberinfrastructure.

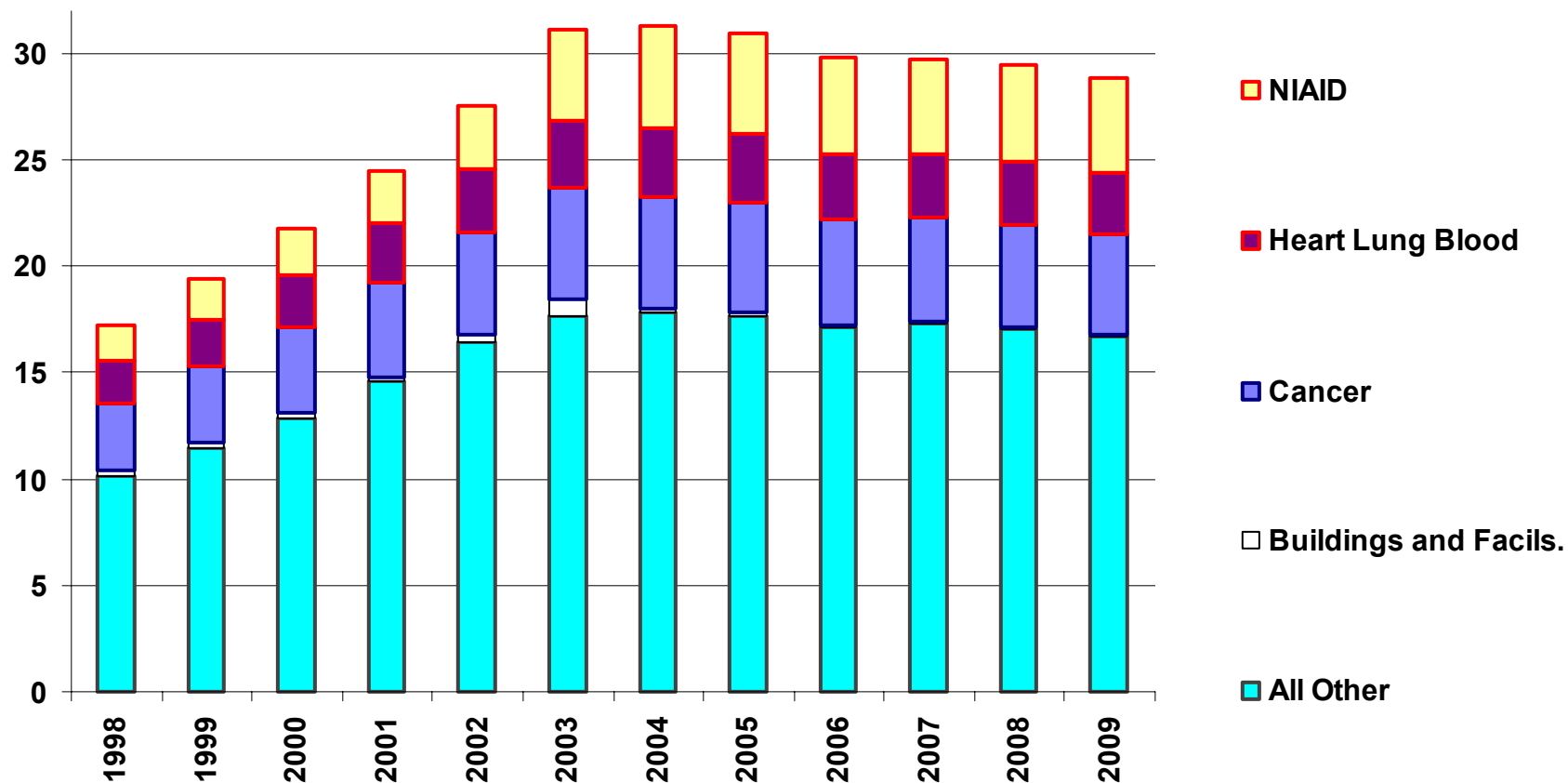
R&D and non-R&D components included in directorate budgets.

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# National Institutes of Health Budget by Institute, 1998-2009 \*

(budget authority in billions of constant FY 2008 dollars)

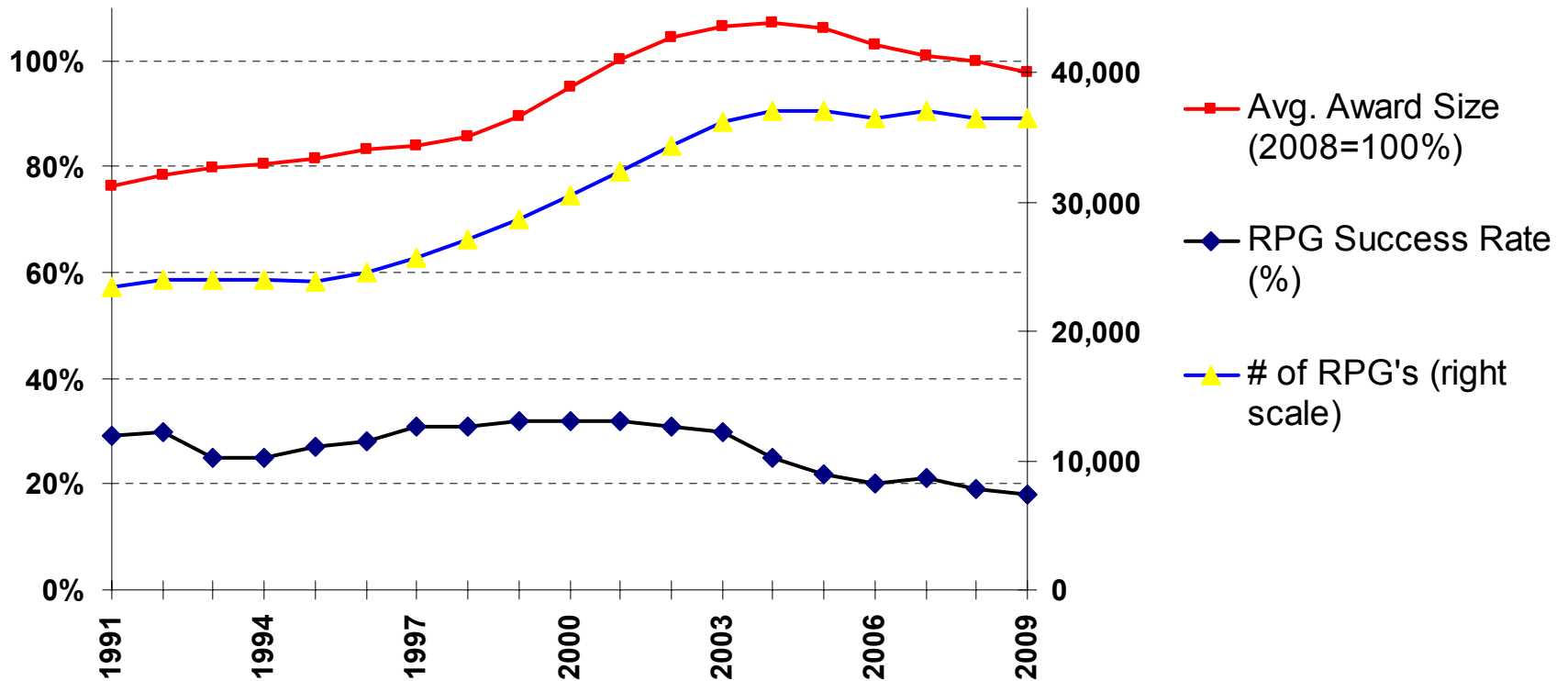


Source: AAAS R&D reports from NIH budget documents 1998-2009. \* 2009 is latest AAAS estimates of FY 2009 request. Adjusted for inflation using OMB's GDP deflators.

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# National Institutes of Health Research Project Grants



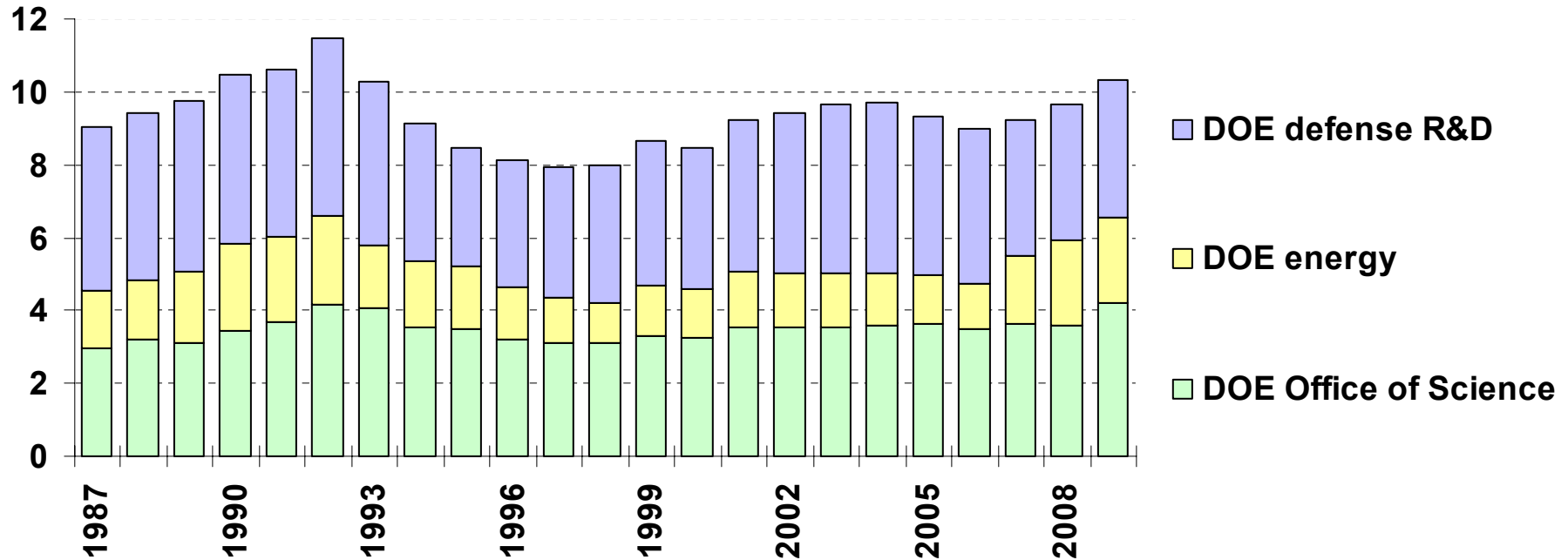
Source: NIH agency budget justification for FY 2009. Average proposed award size \$408,800 in FY 2008. Other years adjusted for inflation.

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# Trends in DOE R&D, FY 1987- 2009 \*

in billions of constant FY 2008 dollars



Source: AAAS analyses of R&D in AAAS Reports VIII-XXXIII. \* FY 2009 figures are latest AAAS estimates of FY 2009 request.

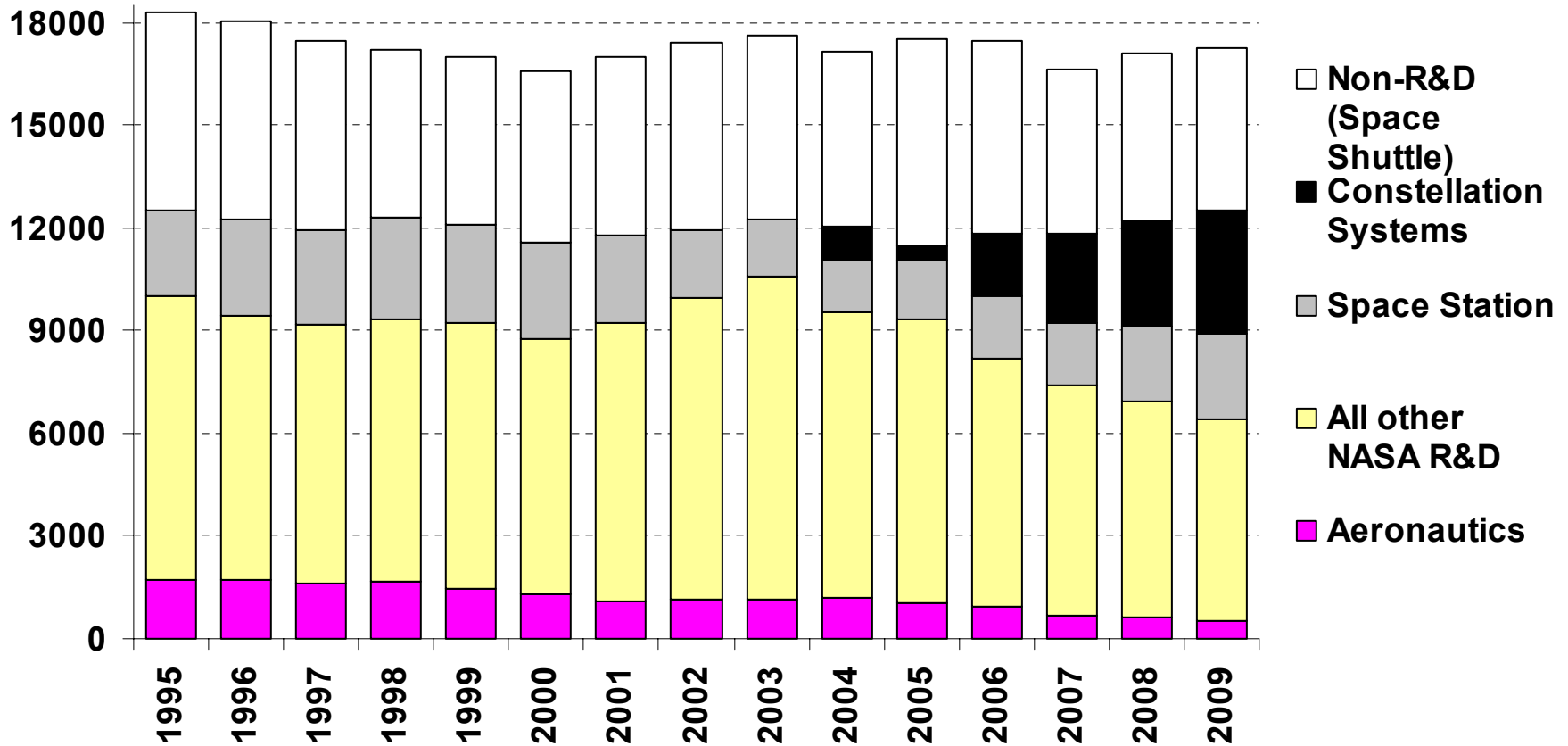
R&D includes conduct of R&D and R&D facilities.

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# Trends in NASA R&D, FY 1995-2009 \*

in millions of constant FY 2008 dollars



Source: AAAS analyses of R&D in AAAS Reports VIII-XXXIII. \* FY 2009 figures are latest AAAS estimates of FY 2009 request. Program budgets include associated support costs.

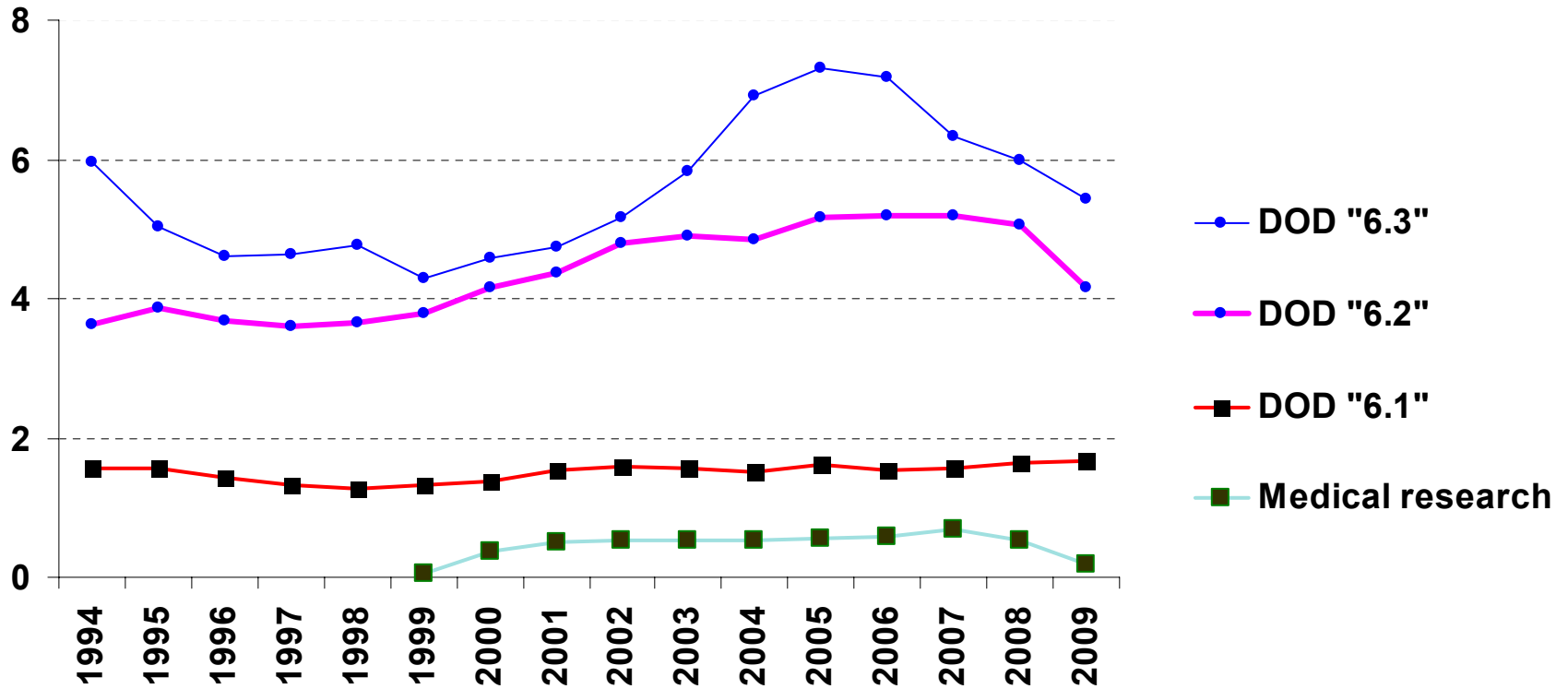
R&D includes conduct of R&D and R&D facilities.

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# Trends in DOD "S&T", FY 1994-2009 \*

in billions of constant FY 2008 dollars



Source: AAAS analyses of R&D in annual AAAS R&D reports.

\* - FY 2009 figures are latest AAAS estimates of FY 2009 request.

Medical research appropriated outside RDT&E; appropriated in "6.2" accounts before 1999.

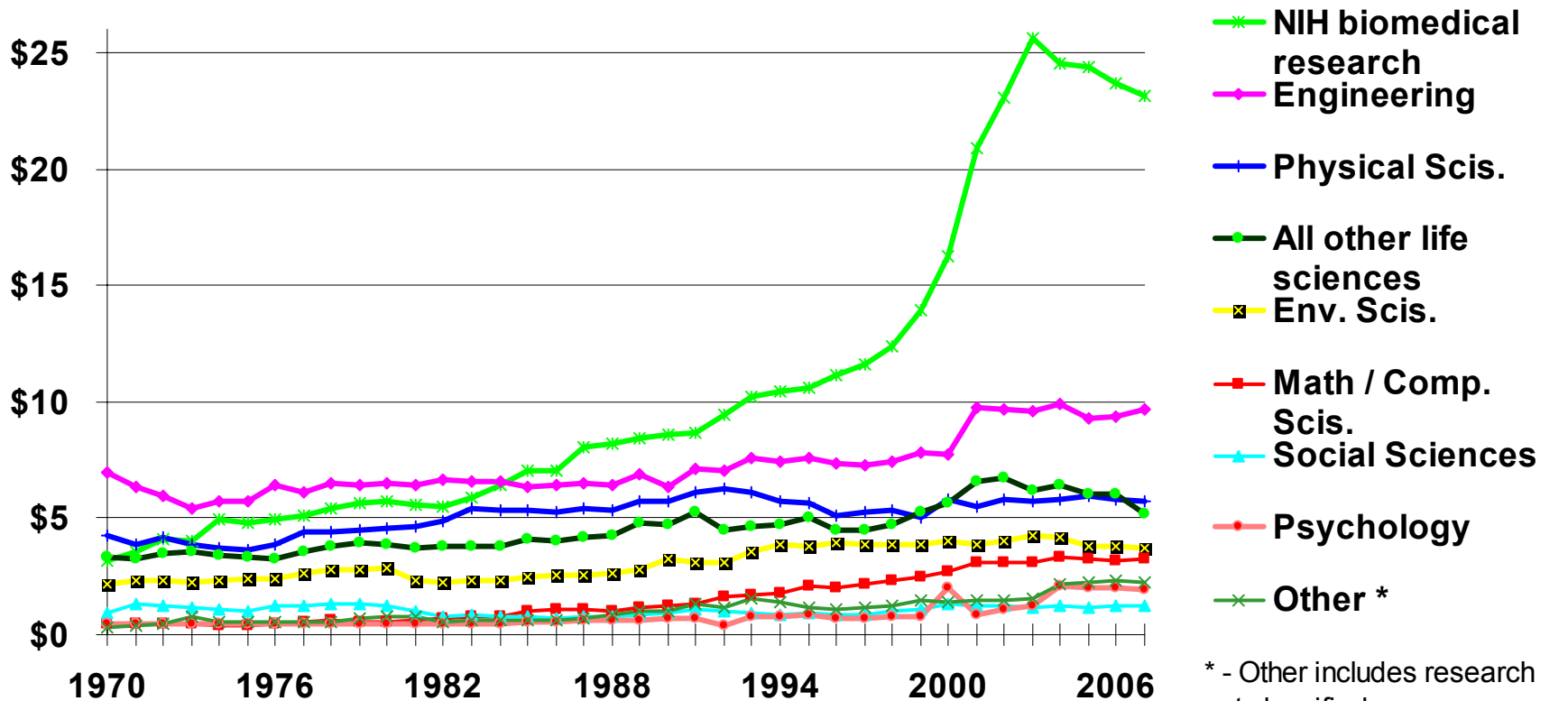
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# Trends in Federal Research by Discipline, FY 1970-2007

obligations in billions of constant FY 2008 dollars

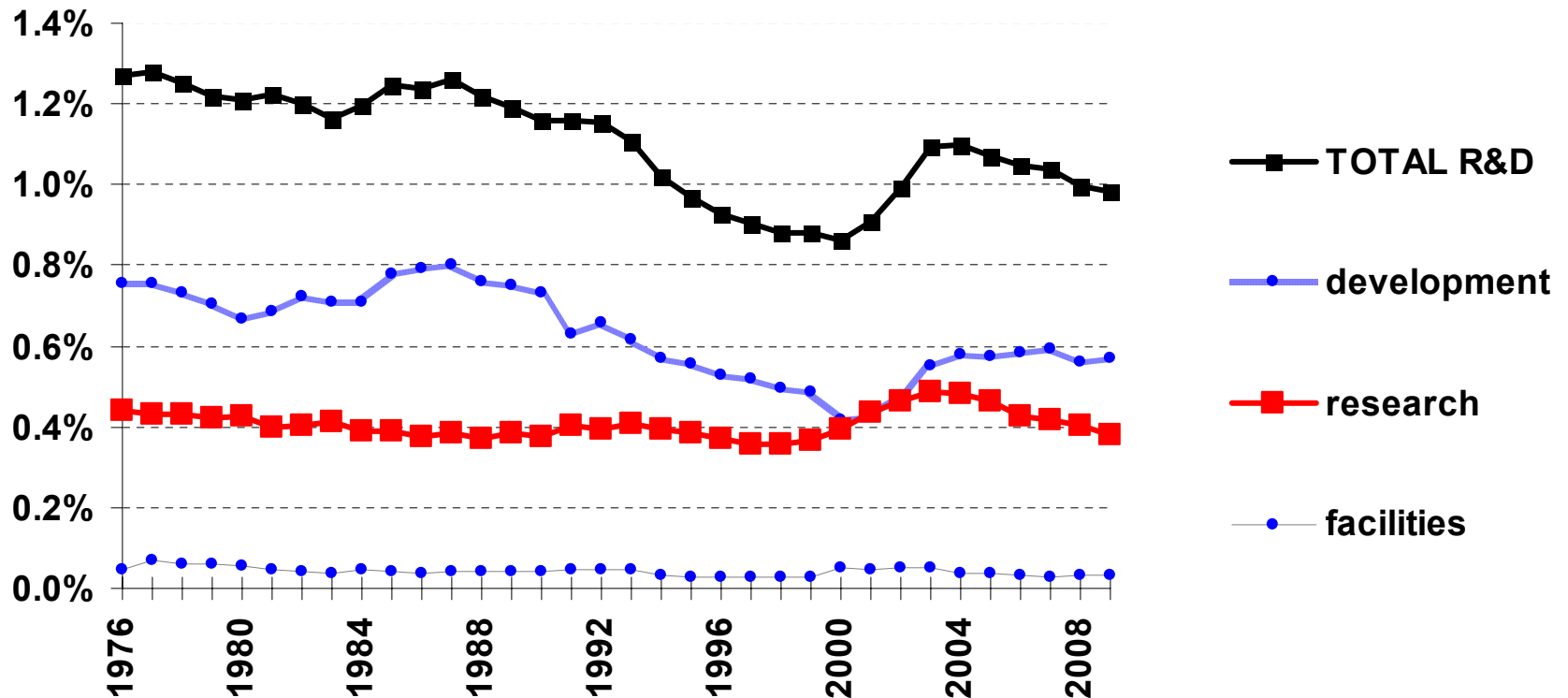


\* - Other includes research not classified (includes basic research and applied research; excludes development and R&D facilities)

Life sciences - split into NIH support for biomedical research and all other agencies' support for life sciences.  
 Source: National Science Foundation, *Federal Funds for Research and Development FY 2005, 2006, 2007, 2008*. FY 2006 and 2007 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators. FEB. '08 © 2008 AAAS



# Trends in Federal R&D as % of GDP, FY 1976-2009 \*



Source: AAAS analyses of R&D in annual AAAS R&D reports. \* FY 2009 figures are latest AAAS estimates of FY 2009 request. R&D includes conduct of R&D and R&D facilities. Data to 1984 are obligations from the NSF Federal Funds survey. GDP figures are from OMB, Budget of the U.S. Government FY 2009.  
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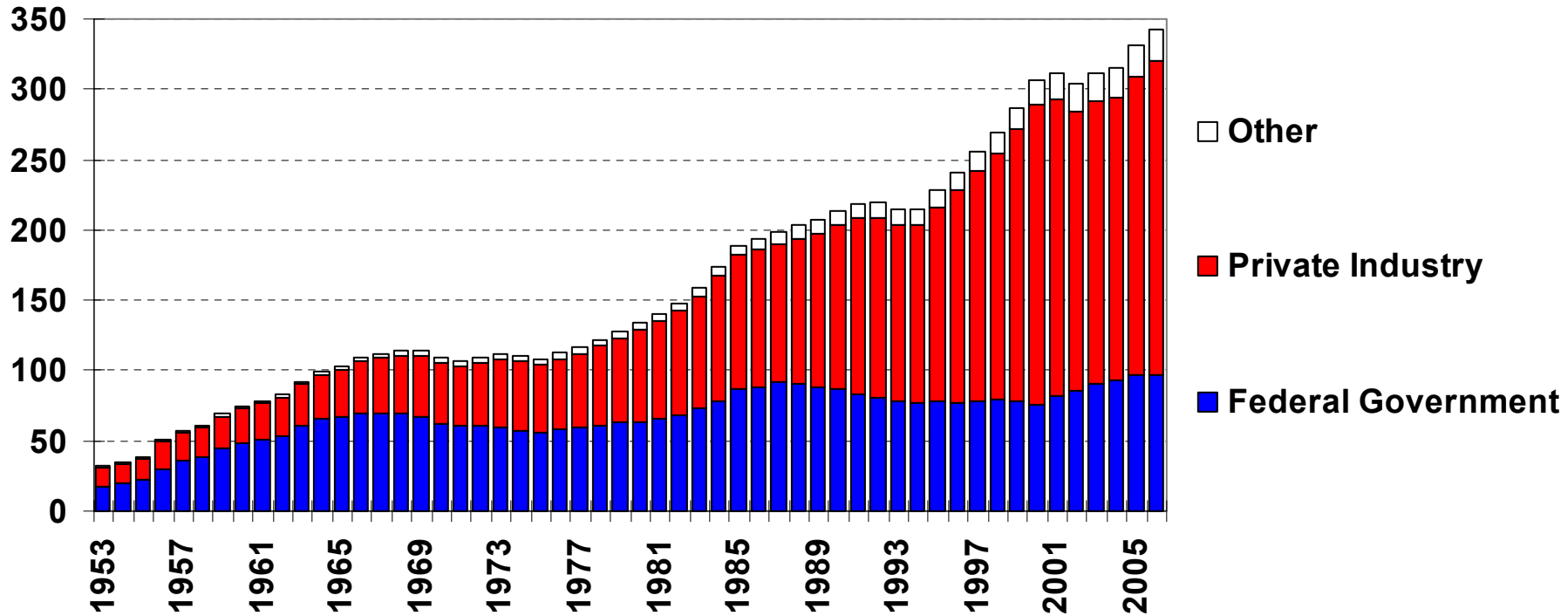


## FEDERAL R&D IN CONTEXT: INDUSTRY AND THE WORLD

- 2/3 of all U.S. R&D is funded by industry, but industry focuses heavily on development; the majority of U.S. research is funded by the federal government.
- The U.S. compares favorably with other nations in R&D spending, but many Asian nations are dramatically increasing their R&D.

# U.S. R&D Funding by Source, 1953-2006

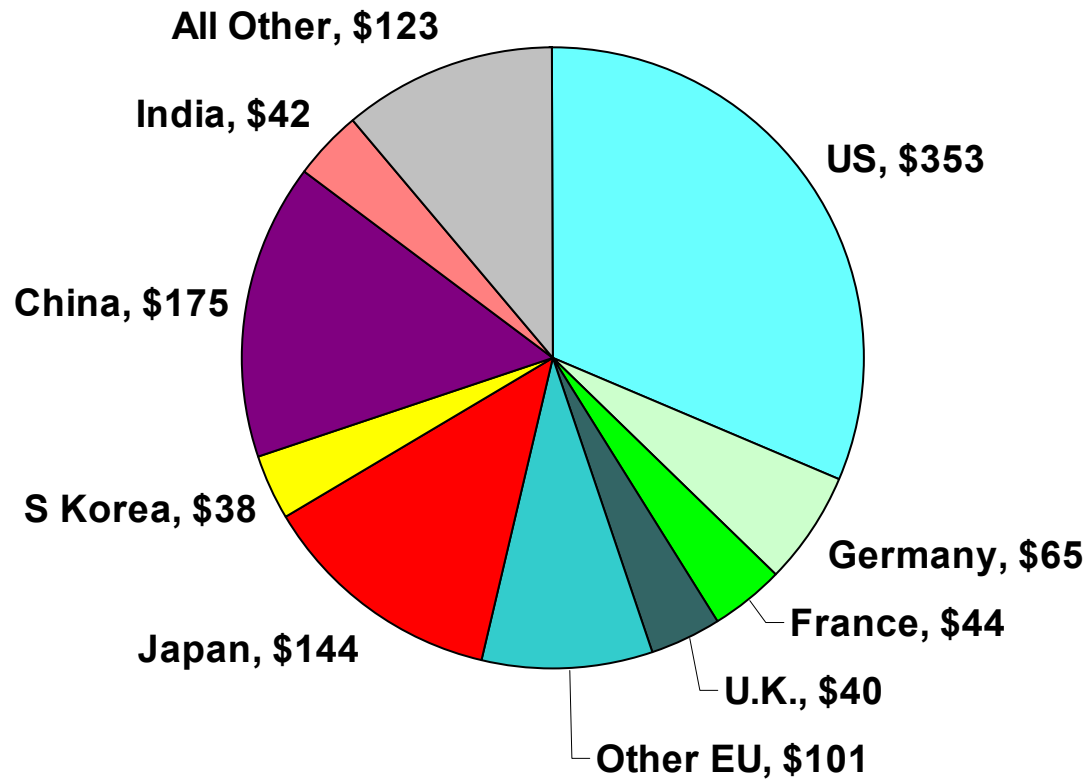
expenditures in billions of constant 2006 dollars



Source: NSF, Division of Science Resources Statistics. (Data for 2005 and 2006 are preliminary.)  
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# Shares of Total World R&D, 2007

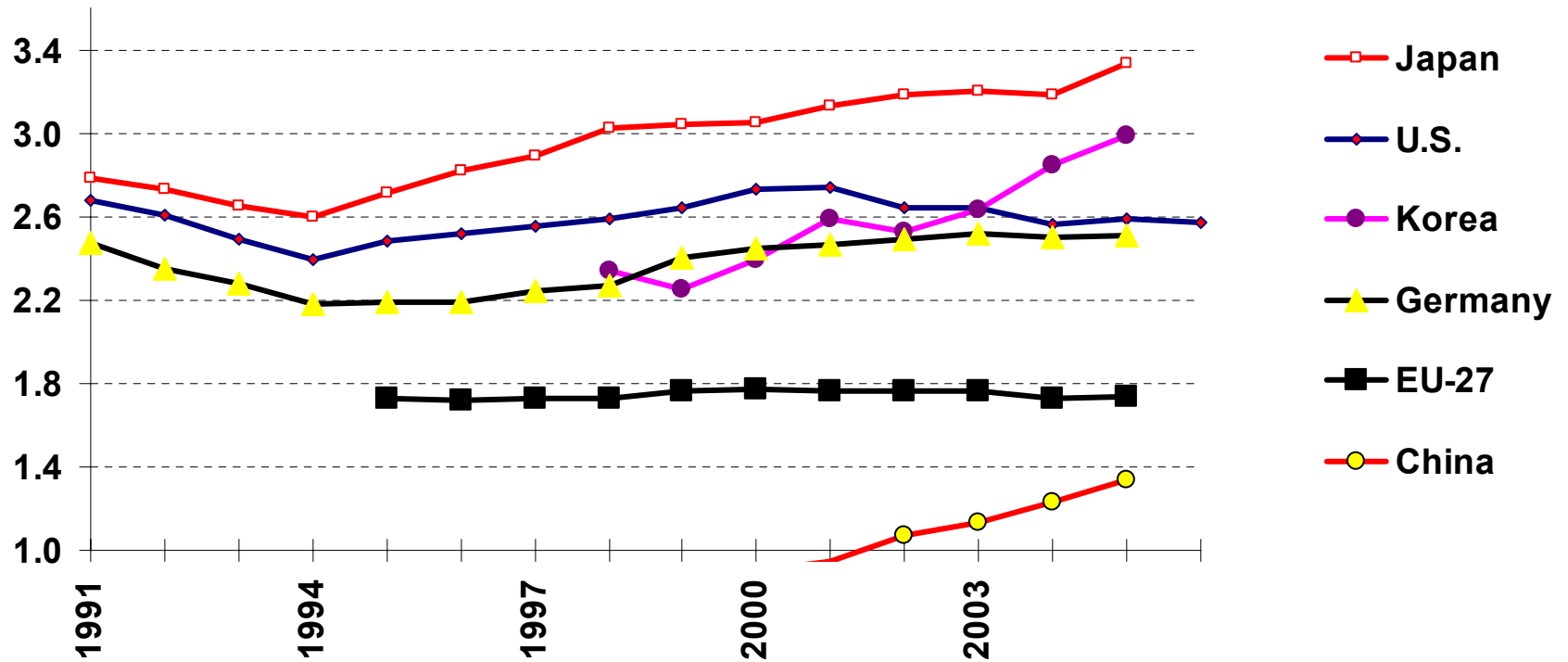


**Total World R&D =  
U.S. \$1,124 billion\*\***

Source: Battelle, Global R&D Report, 2007, from Battelle, OECD, and R&D Magazine data. Projections for 2007, by performer nation. \* \*- calculated using purchasing power parities, in millions of dollars.  
DECEMBER '07 © 2007 AAAS



## Total National R&D as % of GDP, 1991-2006



Source: National Science Foundation, National Patterns of R&D Resources and OECD, Main Science and Technology Indicators. Data not available for all nations for all years. DECEMBER '07 © 2007 AAAS

## WHAT'S NEXT?

- Congress is considering the FY 2009 budget resolution, which could boost domestic appropriations by up to \$24 billion over the President's request. But the President has threatened to veto any appropriations that exceed his request.
- If Congress is forced to stay with the President's total, then ACI and other increases will be trimmed to shore up funding for other domestic programs, as in 2008.
- Many of these proposed R&D increases are authorized in the America COMPETES Act and other legislation, but the problem is in finding the resources.
- The Appropriations Committees will try to write and pass 12 2009 appropriations bills. But Congress is already considering delaying appropriations until the next President is in office.

## FOR MORE INFORMATION...

The AAAS R&D web site is  
[www.aaas.org/spp/rd](http://www.aaas.org/spp/rd)

The AAAS Forum on  
Science and Technology  
Policy is 8-9 May 2008  
in Washington, DC

## AAAS REPORT XXXIII

Research & Development FY 2009

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