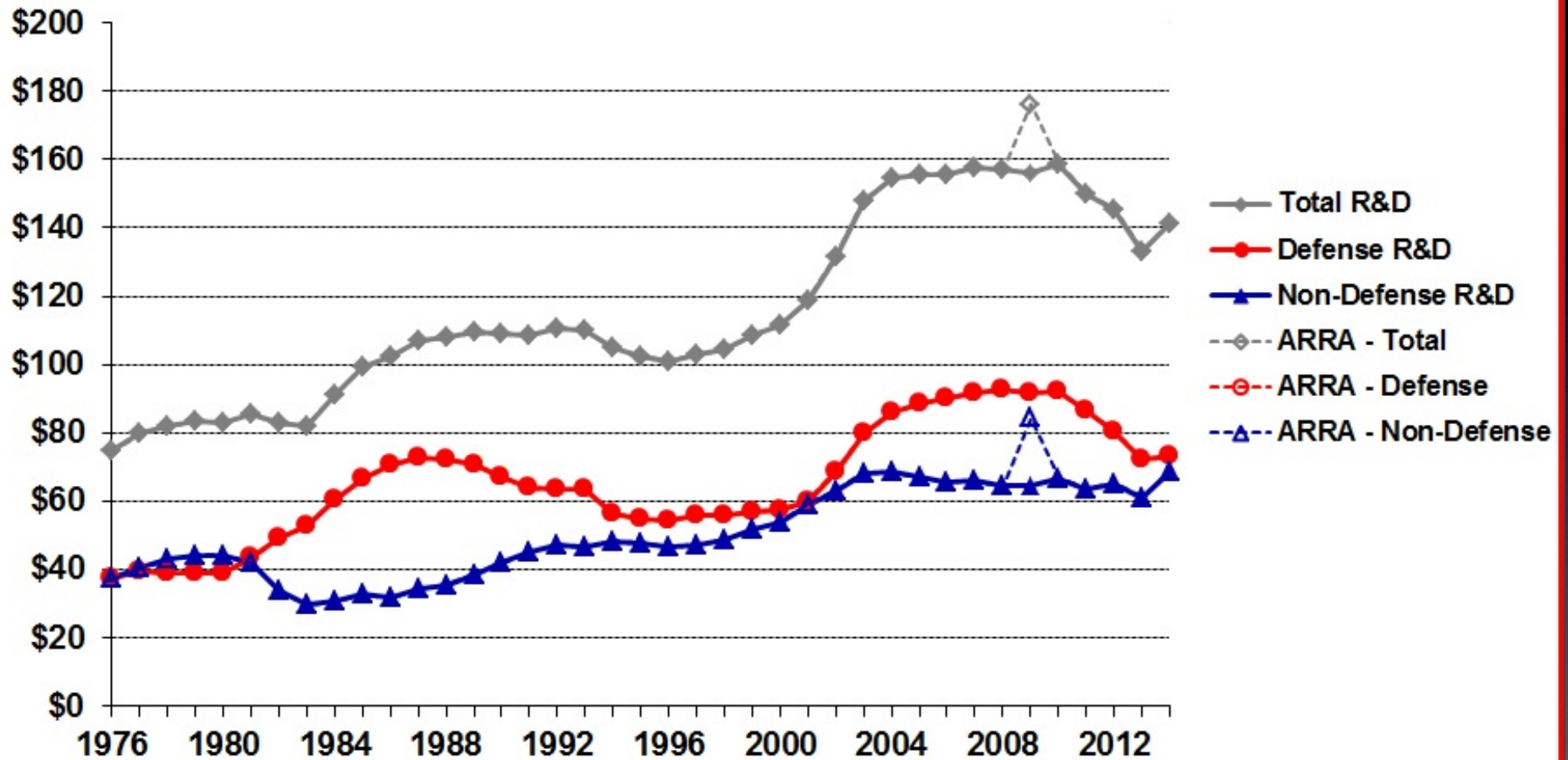


# Research Funding Information

Mark J. McCready  
University of Notre Dame

# Trends in Federal R&D, FY 1976-2014

in billions of constant FY 2013 dollars

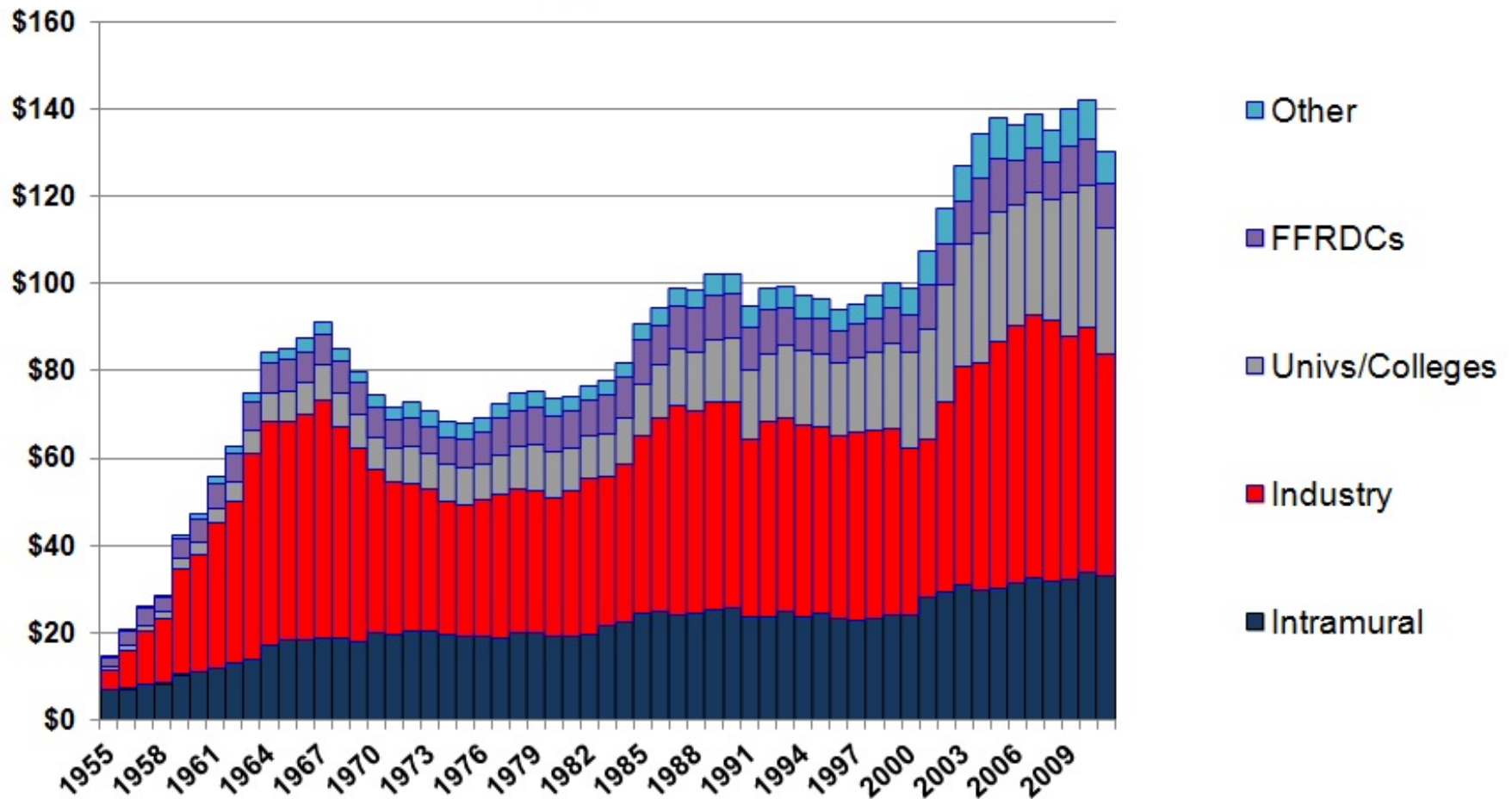


Source: AAAS *Research and Development* series. FY 2013 figures are current AAAS estimates; FY 2014 is the President's request. R&D includes conduct of R&D and R&D facilities.  
© 2013 AAAS



# Federal R&D Funding By Performer, 1955-2011

Obligations in billions of constant FY 2012 dollars

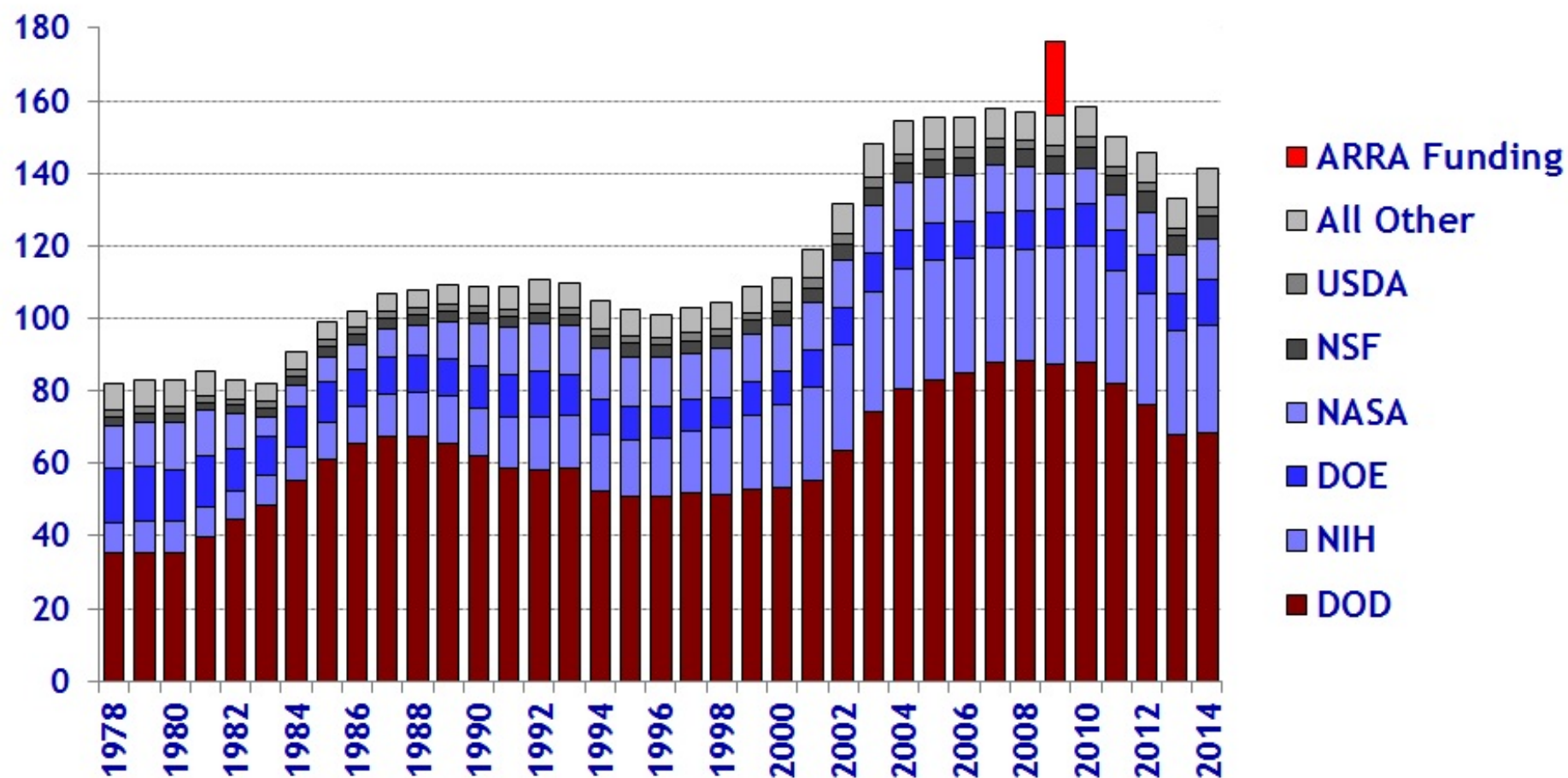


Source: NSF, National Center for Science and Engineering Statistics, *Federal Funds for R&D* series, based on national survey data. FY 2010 and FY 2011 data are preliminary.  
© 2013 AAAS



# Trends in R&D by Agency

in billions of constant FY 2013 dollars

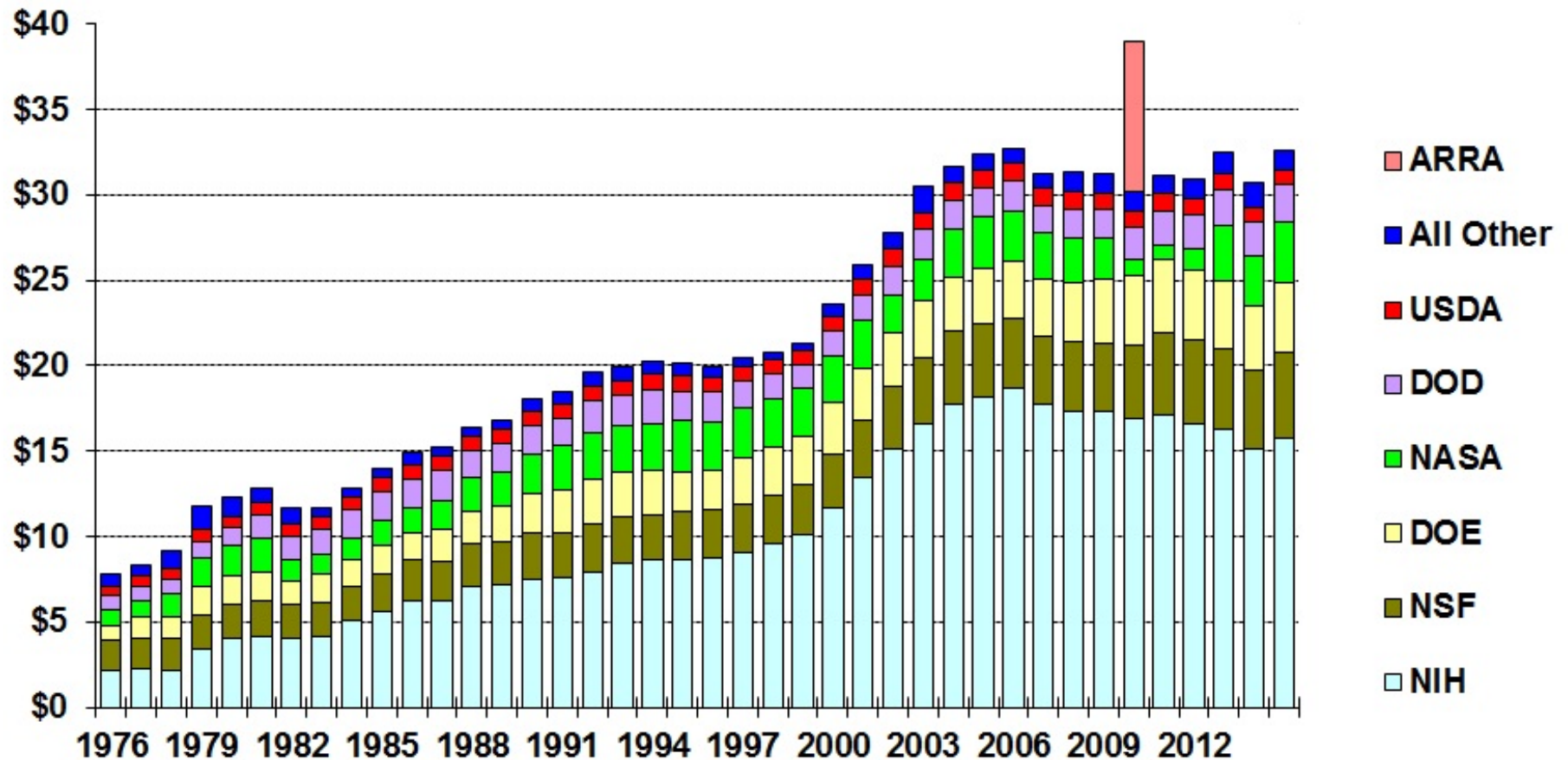


Source: AAAS Report: Research & Development series.  
 FY 2013 and FY 2014 figures are latest estimates.  
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.  
 © 2013 AAAS



# Trends in Basic Research by Agency, FY 1976-2014

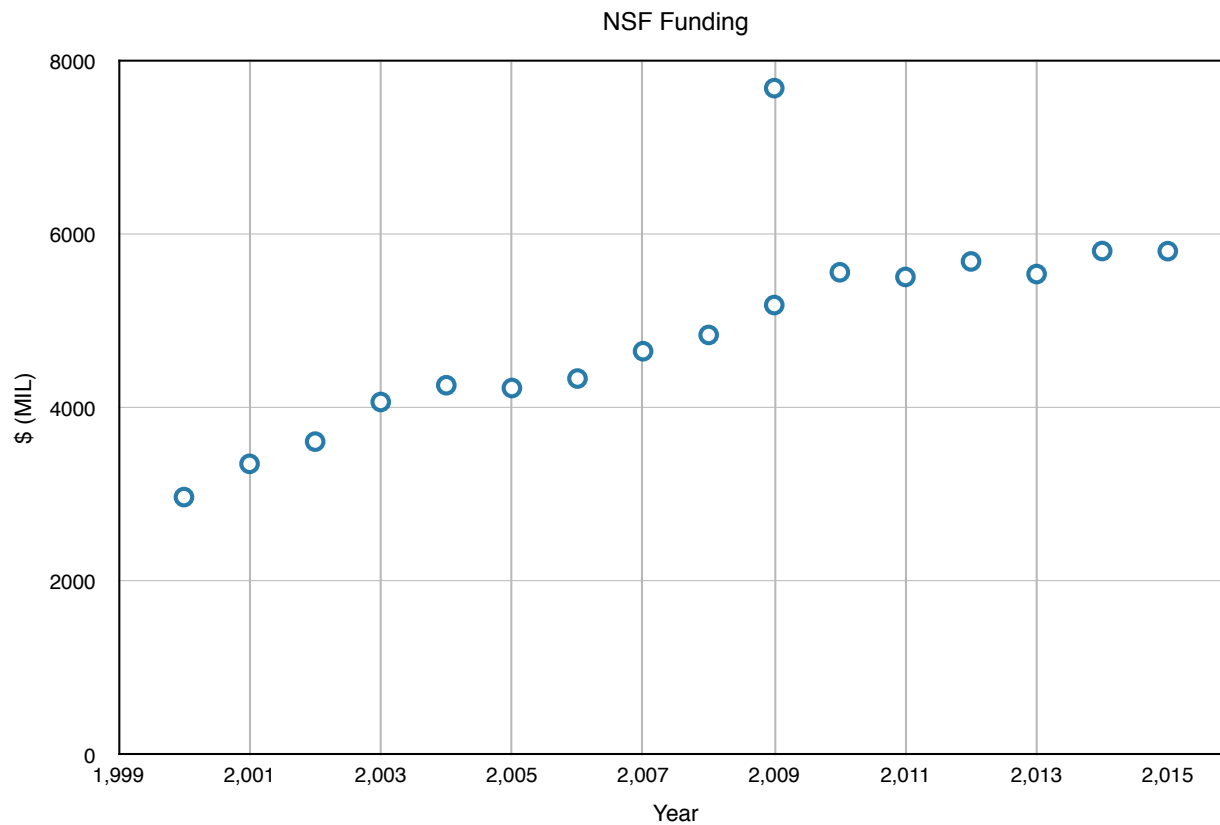
in billions of constant FY 2013 dollars



Source: AAAS Report: Research & Development series. FY 2013 figures are latest estimates, FY 2014 is the President's request.  
© 2013 AAAS



# NSF over time





(Discretionary dollars in thousands)

**Department of Energy Budget by Appropriation**

**Energy and Water Development and Related Agencies**

**Energy Programs**

Energy Efficiency and Renewable Energy

Electricity Delivery and Energy Reliability

Nuclear Energy

**Fossil Energy Programs**

Clean Coal Technology

Fossil Energy Research and Development

Naval Petroleum and Oil Shale Reserves

Elk Hills School Lands Fund

Strategic Petroleum Reserve

Northeast Home Heating Oil Reserve

**Total, Fossil Energy Programs**

Uranium Enrichment D&D Fund

Energy Information Administration

Non-Defense Environmental Cleanup

Science

Advanced Research Projects Agency - Energy

Departmental Administration

Office of Indian Energy Policy and Programs

Office of the Inspector General

Title 17 - Innovative Technology

Loan Guarantee Program

Advanced Technology Vehicles Manufacturing Loan Program

**Total, Energy Programs**

	(Discretionary dollars in thousands)				
	FY 2013 Current	FY 2014 Enacted	FY 2015 Request	FY 2015 vs. FY 2014	
				\$	%
Energy Efficiency and Renewable Energy	1,691,757	1,900,641	2,316,749	+416,108	+21.9%
Electricity Delivery and Energy Reliability	129,196	147,242	180,000	+32,758	+22.2%
Nuclear Energy	708,429	888,376	863,386	-24,990	-2.8%
<b>Fossil Energy Programs</b>					
Clean Coal Technology	0	0	-6,600	-6,600	N/A
Fossil Energy Research and Development	498,715	561,931	475,500	-86,431	-15.4%
Naval Petroleum and Oil Shale Reserves	14,129	19,999	19,950	-49	-0.2%
Elk Hills School Lands Fund	0	0	15,580	+15,580	N/A
Strategic Petroleum Reserve	182,625	189,360	205,000	+15,640	+8.3%
Northeast Home Heating Oil Reserve	3,590	8,000	1,600	-6,400	-80.0%
<b>Total, Fossil Energy Programs</b>	<b>699,059</b>	<b>779,290</b>	<b>711,030</b>	<b>-68,260</b>	<b>-8.8%</b>
Uranium Enrichment D&D Fund	448,231	598,574	530,976	-67,598	-11.3%
Energy Information Administration	99,508	116,999	122,500	+5,501	+4.7%
Non-Defense Environmental Cleanup	223,457	231,741	226,174	-5,567	-2.4%
Science	4,681,195	5,066,372	5,111,155	+44,783	+0.9%
Advanced Research Projects Agency - Energy	250,636	280,000	325,000	+45,000	+16.1%
Departmental Administration	119,195	126,449	129,052	+2,603	+2.1%
Office of Indian Energy Policy and Programs	0	0	16,000	+16,000	N/A
Office of the Inspector General	39,803	42,120	39,868	-2,252	-5.3%
Title 17 - Innovative Technology					
Loan Guarantee Program	0	20,000	7,000	-13,000	-65.0%
Advanced Technology Vehicles Manufacturing Loan Program	5,686	6,000	4,000	-2,000	-33.3%
<b>Total, Energy Programs</b>	<b>9,096,152</b>	<b>10,203,804</b>	<b>10,582,890</b>	<b>+379,086</b>	<b>+3.7%</b>

# DOD Agencies

## **DOD total basic research (about \$2 BIL — largely university research)**

<http://www.aip.org/fyi/2013/067.html>

Army: \$300 MIL

Navy: \$575 Mil

<http://navylive.dodlive.mil/2013/04/10/navy-unveils-fy14-budget-2/>

Air Force \$470 MIL

Defense-wide: \$600 MIL

## **DARPA \$3 Billion**

FY2013\_Budget\_Request\_Overview\_Book

<http://www.darpa.mil/NewsEvents/Releases/2014/03/05.aspx>



# BES

## Funding (\$K)

	FY 2013 Current	FY 2014 Enacted	FY 2014 Current	FY 2015 Request	FY 2015 vs. FY 2014 Enacted
<b>Materials Sciences and Engineering</b>					
Scattering and Instrumentation Sciences Research	61,731	64,022	64,022	64,022	0
Condensed Matter and Materials Physics Research	120,946	120,946	120,946	120,946	0
Materials Discovery, Design, and Synthesis Research	73,983	73,983	73,983	73,983	0
Experimental Program to Stimulate Competitive Research (EPSCoR)	8,416	9,953	9,953	8,520	-1,433
Energy Frontier Research Centers (EFRCs)	57,320	58,000	58,000	58,000	0
Energy Innovation Hubs—Batteries and Energy Storage	24,237	24,237	24,237	24,175	-62
Computational Materials Sciences	0	0	0	24,175	+24,175
SBIR/STTR	0	11,608	11,608	12,757	+1,149
<b>Total, Materials Sciences and Engineering</b>	<b>346,633</b>	<b>362,749</b>	<b>362,749</b>	<b>386,578</b>	<b>+23,829</b>
<b>Chemical Sciences, Geosciences, and Biosciences</b>					
Fundamental Interactions Research	72,757	75,999	75,999	75,999	0
Chemical Transformations Research	93,531	93,531	93,531	93,531	0
Photochemistry and Biochemistry Research	69,556	69,556	69,556	69,556	0
Energy Frontier Research Centers (EFRCs)	42,680	42,000	42,000	42,000	0
Energy Innovation Hubs—Fuels from Sunlight	24,237	24,237	24,237	24,175	-62
General Plant Projects (GPP)	5,950	600	600	600	0
SBIR/STTR	0	10,093	10,093	10,417	+324
<b>Total, Chemical Sciences, Geosciences, and Biosciences</b>	<b>308,711</b>	<b>316,016</b>	<b>316,016</b>	<b>316,278</b>	<b>+262</b>

# Oil Companies

Petroleum spends at a lower rate.  
There are maybe about \$7 Trillion oil  
and gas revenues

[http://en.wikipedia.org/wiki/List\\_of\\_largest\\_oil\\_and\\_gas\\_companies\\_by\\_revenue](http://en.wikipedia.org/wiki/List_of_largest_oil_and_gas_companies_by_revenue)

Shell has \$480 Bil in revenue and  
Exxon about \$450 Bil in revenue, BP  
is about \$360 Bil in revenue.

<http://www.oilgaspost.com/2013/05/21/top-40-oil-gas-companies-investment/>

Exxon spends about \$800 Mil in  
research, Shell is about \$900Mil and  
BP is about \$500Mil.

# NIH Breakout

NATIONAL INSTITUTES OF HEALTH  
 FY 2015 Congressional Justification  
 Budget Request by Institute/Center  
 (Dollars in Thousands)

Institute/Center	FY 2013 Actual <sup>1,2</sup>	FY 2014 Enacted <sup>2</sup>	FY 2015 President's Budget
NCI.....	\$4,783,442	\$4,922,771	\$4,930,715
NHLBI.....	2,900,321	2,982,737	2,987,685
NIDCR.....	386,874	397,102	397,131
NIDDK <sup>3</sup> .....	1,692,748	1,741,874	1,743,336
NINDS.....	1,531,975	1,585,797	1,608,461
NIAID.....	4,230,080	4,392,670	4,423,357
NIGMS.....	2,290,525	2,361,894	2,368,877
NICHD.....	1,244,707	1,280,830	1,283,487
NEL.....	656,291	674,249	675,168
NIEHS <sup>4</sup> .....	645,782	664,524	665,080
NIA.....	1,039,399	1,169,427	1,170,880
NIAMS.....	504,691	519,338	520,189
NIDCD.....	392,113	403,493	403,933
NIMH.....	1,394,354	1,416,825	1,440,076
NIDA.....	992,232	1,015,754	1,023,268
NIAAA.....	432,849	445,411	446,017
NINR.....	136,367	140,324	140,452
NHGRI.....	483,107	497,128	498,451
NIBIB.....	318,720	326,359	328,532
NIMHD.....	260,396	267,953	267,953
NCCAM.....	120,624	124,125	124,509
NCATS.....	541,973	632,396	657,471
FIC.....	65,581	67,484	67,776
NLM.....	352,268	367,223	372,851
OD.....	1,410,515	1,399,753	1,451,786
B&F.....	118,109	128,663	128,663
<b>Subtotal, Labor/HHS Discretionary Budget Authority</b>	<b>\$28,926,041</b>	<b>\$29,926,104</b>	<b>\$30,126,104</b>
Superfund (Interior).....	74,871	77,349	77,349
<b>Total, Discretionary Budget Authority.....</b>	<b>\$29,000,912</b>	<b>\$30,003,453</b>	<b>\$30,203,453</b>
Type 1 Diabetes.....	142,350	139,200	150,000
<b>Total, Budget Authority.....</b>	<b>\$29,143,262</b>	<b>\$30,142,653</b>	<b>\$30,353,453</b>
NLM Program Evaluation.....	8,200	8,200	8,200
<b>Total, Program Level.....</b>	<b>\$29,151,462</b>	<b>\$30,150,853</b>	<b>\$30,361,653</b>

# NIH

## History of Obligations by Institute or Center<sup>1</sup> Fiscal Years 2006 - 2015 (Dollars in Thousands)

Institutes and Centers	FY 2006 Actual Obligations	FY 2007 Actual Obligations	FY 2008 Actual Obligations	FY 2009 Actual Obligations	FY 2010 Actual Obligations	FY 2011 Actual Obligations	FY 2012 Actual Obligations	FY 2013 Actual Obligations	FY 2013 Comparable Budget Authority	FY 2014 Comparable Budget Authority	FY 2015 President's Budget
NCI <sup>2</sup>	\$4,754,121	\$4,792,615	\$4,827,552	\$4,966,927	\$5,098,147	\$5,058,105	5,062,763	4,789,014	\$4,783,442	\$4,922,771	\$4,930,715
NHLBI	2,893,527	2,922,323	2,937,333	3,014,552	3,093,501	3,069,550	3,073,302	2,903,768	2,900,321	2,982,737	2,987,685
NIDCR	385,589	389,060	391,136	402,011	412,527	409,549	409,947	387,309	386,874	397,102	397,131
NIDDK <sup>3</sup>	1,688,511	1,702,990	1,712,188	1,761,795	1,808,905	1,792,155	1,793,706	1,694,677	1,692,748	1,741,874	1,743,336
NINDS	1,519,971	1,532,977	1,549,543	1,590,781	1,633,568	1,622,001	1,623,344	1,533,793	1,531,975	1,585,797	1,608,461
NIAID	4,274,201	4,264,034	4,286,410	4,400,398	4,515,426	4,478,595	4,482,369	4,235,094	4,230,080	4,392,670	4,423,357
NIGMS	1,916,927	1,932,481	1,942,783	1,994,426	2,048,112	2,033,663	2,425,522	2,293,044	2,290,525	2,361,894	2,368,877
NICHD	1,252,598	1,252,765	1,259,435	1,292,929	1,327,349	1,317,682	1,318,943	1,246,140	1,244,707	1,280,830	1,283,487
NEI	660,340	665,863	669,534	687,350	705,792	700,781	701,407	657,055	656,291	674,249	675,168
NIEHS <sup>4</sup>	630,454	647,020	651,557	668,037	694,807	683,557	684,297	646,467	645,782	664,524	665,080
NIA	1,036,559	1,045,468	1,050,998	1,079,004	1,108,208	1,100,445	1,120,391	1,040,565	1,039,399	1,169,427	1,170,880
NIAMS	502,954	507,292	510,358	523,887	538,028	534,260	534,791	505,206	504,691	519,338	520,189
NIDCD	389,623	392,937	395,515	406,516	418,001	415,104	415,500	392,540	392,113	403,493	403,933
NIMH	1,390,009	1,402,385	1,414,541	1,454,377	1,493,510	1,477,257	1,477,516	1,396,006	1,394,354	1,416,825	1,440,076
NIDA	990,405	1,001,952	1,007,295	1,039,561	1,066,909	1,050,519	1,051,410	993,404	992,232	1,015,754	1,023,268
NIAAA	431,726	435,366	437,839	449,524	461,544	458,257	458,665	433,247	432,849	445,411	446,017
NINR	136,020	137,167	137,990	141,660	145,420	144,369	144,500	136,516	136,367	140,324	140,452
NHGRI	481,339	508,240	505,380	507,210	524,131	511,469	512,258	483,650	483,107	497,128	498,451
NIBIB	293,954	296,380	299,726	307,701	316,028	313,787	337,728	319,062	318,720	326,359	328,532
NIMHD <sup>5</sup>	193,522	199,083	200,252	205,616	211,194	209,693	275,927	260,671	260,396	267,953	267,953
NCCR <sup>6</sup>	1,088,500	1,131,618	1,153,911	1,224,629	1,267,021	1,257,641	---	---	---	---	---
NCCAM	120,294	121,369	122,013	125,265	128,615	127,706	127,820	120,767	120,624	124,125	124,509
NCATS <sup>6</sup>	---	---	---	---	---	---	574,297	542,598	541,973	632,396	657,471
FIC	65,726	66,348	66,828	68,607	69,957	69,413	69,493	65,627	65,581	67,484	67,776
NLM <sup>7</sup>	311,721	321,354	323,385	329,614	340,267	336,660	364,887	316,888	352,268	367,223	372,851
ORIP & SEPA <sup>6</sup>	---	---	---	---	---	---	303,525	290,042	289,376	294,195	294,195
Common Fund <sup>8</sup>	332,556	482,961	498,240	541,133	544,028	543,017	544,930	513,461	513,476	533,039	583,039
OD - Other <sup>9</sup>	392,275	563,596	613,454	706,295	632,966	623,887	608,713	608,584	607,663	572,519	574,552
B&F <sup>2</sup>	170,456	89,114	127,227	88,815	203,056	62,161	125,308	106,676	118,109	128,663	128,663
<b>Total, Labor/HHS Budget Authority</b>	<b>\$28,303,878</b>	<b>\$28,804,758</b>	<b>\$29,092,423</b>	<b>\$29,978,620</b>	<b>\$30,807,017</b>	<b>\$30,401,283</b>	<b>\$30,623,259</b>	<b>\$28,911,870</b>	<b>\$28,926,041</b>	<b>\$29,926,104</b>	<b>\$30,126,104</b>
Interior/Superfund	79,101	79,111	77,531	78,070	79,201	79,045	78,928	74,864	74,871	77,349	77,349
Type I Diabetes	150,000	150,000	150,000	150,000	150,000	150,000	150,000	142,350	142,350	139,200	150,000
<b>Total, NIH Budget Authority</b>	<b>\$28,532,979</b>	<b>\$29,033,869</b>	<b>\$29,319,954</b>	<b>\$30,206,690</b>	<b>\$31,036,218</b>	<b>\$30,630,328</b>	<b>\$30,852,187</b>	<b>\$29,129,085</b>	<b>\$29,143,262</b>	<b>\$30,142,653</b>	<b>\$30,353,453</b>

<sup>1</sup> Actual fiscal years obligations exclude all lapses and excludes NIAID Global AIDS for FY 2006 through FY 2012. FY 2013 Actual Obligations are displayed in Noncomparable and Comparable levels.

<sup>2</sup> NCI obligations include obligations associated with repair and improvement (R&I) related construction for the Frederick facility. Those obligations are excluded from amounts identified to B&F.

<sup>3</sup> Excludes amount for Type I Diabetes.

<sup>4</sup> Excludes amount allocated for Superfund Research activities from Interior, Environment & Related Agencies appropriation.

<sup>5</sup> NIMHD was designated as an Institute from Center starting FY 2009 under the section 10334 of the Patient Protection and Affordable Care Act (PPACA; P.L. 111-148).

<sup>6</sup> ICs realigned to reflect creation of NCATS.

<sup>7</sup> NLM is treated as a stand-alone IC starting FY 2009.

<sup>8</sup> Common Fund name was changed from Roadmap starting in FY 2009.

<sup>9</sup> Includes Bridge Award amount of \$89,656 thousand for both FY 2008 and FY 2009.

# NSF Budget

**National Science Foundation  
Summary Tables  
FY 2015 Request to Congress  
(Dollars in Millions)**

NSF by Account	FY 2012 Actual	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	FY 2015 Request over:			
					FY 2013 Actual		FY 2014 Estimate	
					Amount	Percent	Amount	Percent
BIO	\$712.28	\$679.21	\$721.27	\$708.52	-\$3.76	-0.5%	-\$12.75	-1.8%
CISE	937.16	858.13	894.00	893.35	-43.81	-4.7%	-0.65	-0.1%
ENG	824.55	820.18	851.07	858.17	33.62	4.1%	7.10	0.8%
<i>Eng Programs</i>	677.69	658.84	691.68	693.18	15.49	2.3%	1.50	0.2%
<i>SBIR/STTR</i>	146.86	161.34	159.39	164.99	18.13	12.3%	5.60	3.5%
GEO	1,321.37	1,273.77	1,303.03	1,304.39	-16.98	-1.3%	1.36	0.1%
MPS	1,308.70	1,249.34	1,299.80	1,295.56	-13.14	-1.0%	-4.24	-0.3%
SBE	254.19	242.62	256.85	272.20	18.01	7.1%	15.35	6.0%
IIA	398.60	434.28	481.59	473.86	75.26	18.9%	-7.73	-1.6%
U.S. Arctic Research Commission	1.45	1.39	1.30	1.41	-0.04	-2.8%	0.11	8.1%
<b>Research &amp; Related Activities</b>	<b>\$5,758.30</b>	<b>\$5,558.88</b>	<b>\$5,808.92</b>	<b>\$5,807.46</b>	<b>\$49.16</b>	<b>0.9%</b>	<b>-\$1.46</b>	<b>0.0%</b>
<b>Education &amp; Human Resources</b>	<b>\$830.54</b>	<b>\$834.62</b>	<b>\$846.50</b>	<b>\$889.75</b>	<b>\$59.21</b>	<b>7.1%</b>	<b>\$43.25</b>	<b>5.1%</b>
<b>Major Research Equipment &amp; Facilities Construction</b>	<b>\$198.08</b>	<b>\$196.49</b>	<b>\$200.00</b>	<b>\$200.76</b>	<b>\$2.68</b>	<b>1.4%</b>	<b>\$0.76</b>	<b>0.4%</b>
<b>Agency Operations &amp; Award Management</b>	<b>\$299.30</b>	<b>\$293.50</b>	<b>\$298.00</b>	<b>\$338.23</b>	<b>\$38.93</b>	<b>13.0%</b>	<b>\$40.23</b>	<b>13.5%</b>
<b>National Science Board</b>	<b>\$4.37</b>	<b>\$4.10</b>	<b>\$4.30</b>	<b>\$4.37</b>	<b>-</b>	<b>0.0%</b>	<b>\$0.07</b>	<b>1.6%</b>
<b>Office of Inspector General</b>	<b>\$14.12</b>	<b>\$13.17</b>	<b>\$14.20</b>	<b>\$14.43</b>	<b>\$0.31</b>	<b>2.2%</b>	<b>\$0.23</b>	<b>1.6%</b>
OIG FY 2013 ARRA Actual Obligation	\$0.70	\$1.16						
<b>Total, NSF</b>	<b>\$7,105.41</b>	<b>\$6,901.91</b>	<b>\$7,171.92</b>	<b>\$7,255.00</b>	<b>\$149.59</b>	<b>2.1%</b>	<b>\$83.08</b>	<b>1.2%</b>

Totals may not add due to rounding.

# NSF EG divisions

## DIRECTORATE FOR ENGINEERING (ENG)

**\$858,170,000**  
**+\$7,100,000 / 0.8%**

### ENG Funding (Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate	
				Amount	Percent
Chemical, Bioengineering, Environmental, and Transport Systems (CBET)	\$167.01	\$173.00	\$174.99	\$1.99	1.2%
Civil, Mechanical, and Manufacturing Innovation (CMMI)	200.81	209.20	210.40	1.20	0.6%
Electrical, Communications, and Cyber Systems (ECCS)	104.58	110.06	110.41	0.35	0.3%
Engineering Education and Centers (EEC)	115.21	122.24	117.38	-4.86	-4.0%
Industrial Innovation and Partnerships (IIP)	202.41	205.97	213.69	7.72	3.8%
<i>SBIR/STTR</i>	<i>161.34</i>	<i>159.39</i>	<i>164.99</i>	<i>5.61</i>	<i>3.5%</i>
Emerging Frontiers in Research and Innovation (EFRI)	30.16	30.60	31.30	0.70	2.3%
<b>Total, ENG</b>	<b>\$820.18</b>	<b>\$851.07</b>	<b>\$858.17</b>	<b>\$7.10</b>	<b>0.8%</b>

Totals may not add due to rounding.

# NSF physical Science

## DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES (MPS)

**\$1,295,560,000**  
**-\$4,242,000 / -0.3%**

### MPS Funding (Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate	
				Amount	Percent
Astronomical Sciences (AST)	\$232.17	\$239.06	\$236.24	-\$2.82	-1.2%
Chemistry (CHE)	229.39	235.79	237.23	1.44	0.6%
Materials Research (DMR)	291.09	298.01	298.99	0.98	0.3%
Mathematical Sciences (DMS)	219.02	225.64	224.40	-1.24	-0.5%
Physics (PHY)	250.45	266.30	263.70	-2.60	-1.0%
Office of Multidisciplinary Activities (OMA)	27.22	35.00	35.00	-	-
<b>Total, MPS</b>	<b>\$1,249.34</b>	<b>\$1,299.80</b>	<b>\$1,295.56</b>	<b>-\$4.24</b>	<b>-0.3%</b>

Totals may not add due to rounding.

# NSF BIOScience

## DIRECTORATE FOR BIOLOGICAL SCIENCES (BIO)

**\$708,520,000**  
**-\$12,750,000 / -1.8%**

### **BIO Funding** (Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	FY 2014 Estimate	
				Amount	Percent
Molecular & Cellular Biosciences (MCB)	\$123.40	\$129.68	\$128.58	-\$1.10	-0.9%
Integrative Organismal Systems (IOS)	\$204.50	215.74	218.19	2.45	1.1%
Environmental Biology (DEB)	\$133.26	138.87	137.52	-1.35	-1.0%
Biological Infrastructure (DBI)	\$121.16	132.33	136.67	4.34	3.3%
Emerging Frontiers (EF)	\$96.90	104.65	87.56	-17.09	-16.3%
<b>Total, BIO</b>	<b>\$679.21</b>	<b>\$721.27</b>	<b>\$708.52</b>	<b>-\$12.75</b>	<b>-1.8%</b>



# NSF Computer Science

## DIRECTORATE FOR COMPUTER AND INFORMATION SCIENCE AND ENGINEERING (CISE)

**\$893,350,000**  
**-\$654,000 / -0.1%**

### CISE Funding (Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate	
				Amount	Percent
Advanced Cyberinfrastructure (ACI)	\$207.59	\$212.29	\$212.29	-	-
Computing and Communication Foundations (CCF)	178.02	185.19	185.19	-	-
Computer and Network Systems (CNS)	211.03	220.40	220.40	-	-
Information and Intelligent Systems (IIS)	176.23	185.18	185.19	0.01	0.0%
Information Technology Research (ITR)	85.25	90.95	90.29	-0.66	-0.7%
<b>Total, CISE</b>	<b>\$858.13</b>	<b>\$894.00</b>	<b>\$893.35</b>	<b>-\$0.65</b>	<b>-0.1%</b>

Totals may not add due to rounding.

# DOE

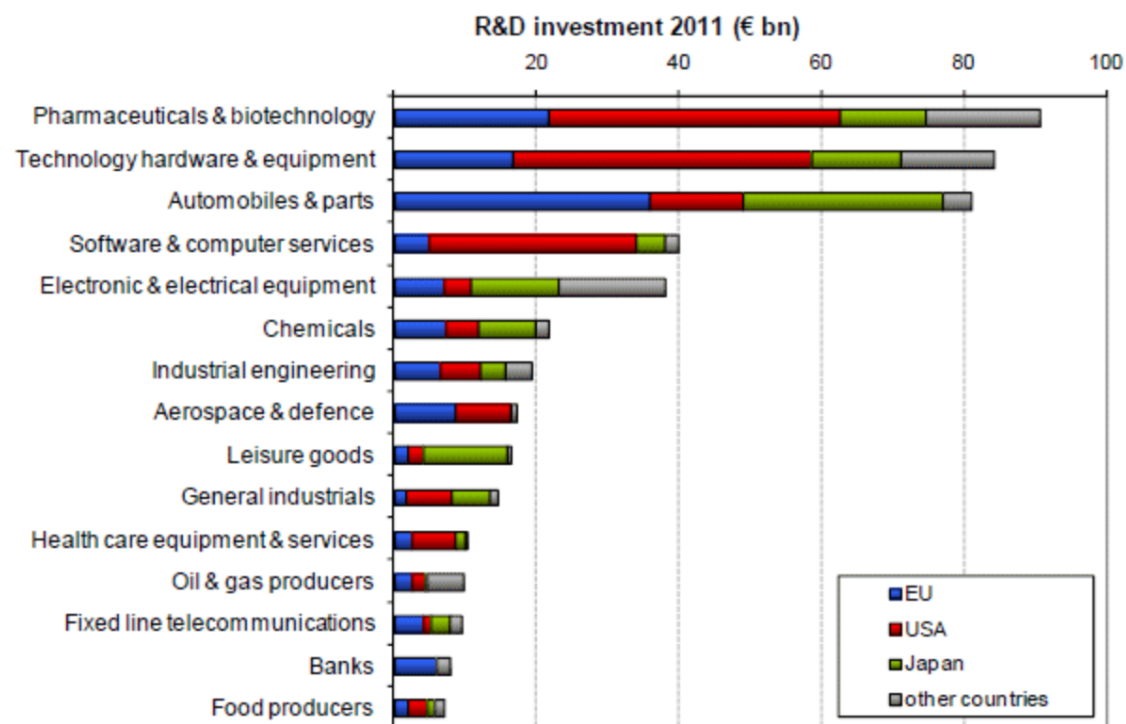
## Overview Appropriation Summary by Program

(dollars in thousands)

	FY 2012 Current	FY 2013 Annualized CR*	FY 2014 Request
Advanced Scientific Computing Research	428,304	443,566	465,593
Basic Energy Sciences	1,644,767	1,698,424	1,862,411
Biological and Environmental Research	592,433	613,287	625,347
Fusion Energy Sciences	392,957	403,450	458,324
High Energy Physics	770,533	795,701	776,521
Nuclear Physics	534,642	550,737	569,938
Workforce Development for Teachers and Scientists	18,500	18,613	16,500
Science Laboratories Infrastructure	111,800	112,485	97,818
Safeguards and Security	80,573	81,066	87,000
Program Direction	185,000	186,132	193,300
Small Business Innovation Research/Technology Transfer (SBIR/STTR) (SC funding)	114,125	0	0
Subtotal, Office of Science	4,873,634	4,903,461	5,152,752
SBIR/STTR (Other DOE funding)	61,346	0	0
Total, Science appropriation/Office of Science <sup>a</sup>	4,934,980	4,903,461	5,152,752

# Industrial R&D

R&D Ranking of Industrial Sectors and Shares of World Regions for the Top 1,500 Companies



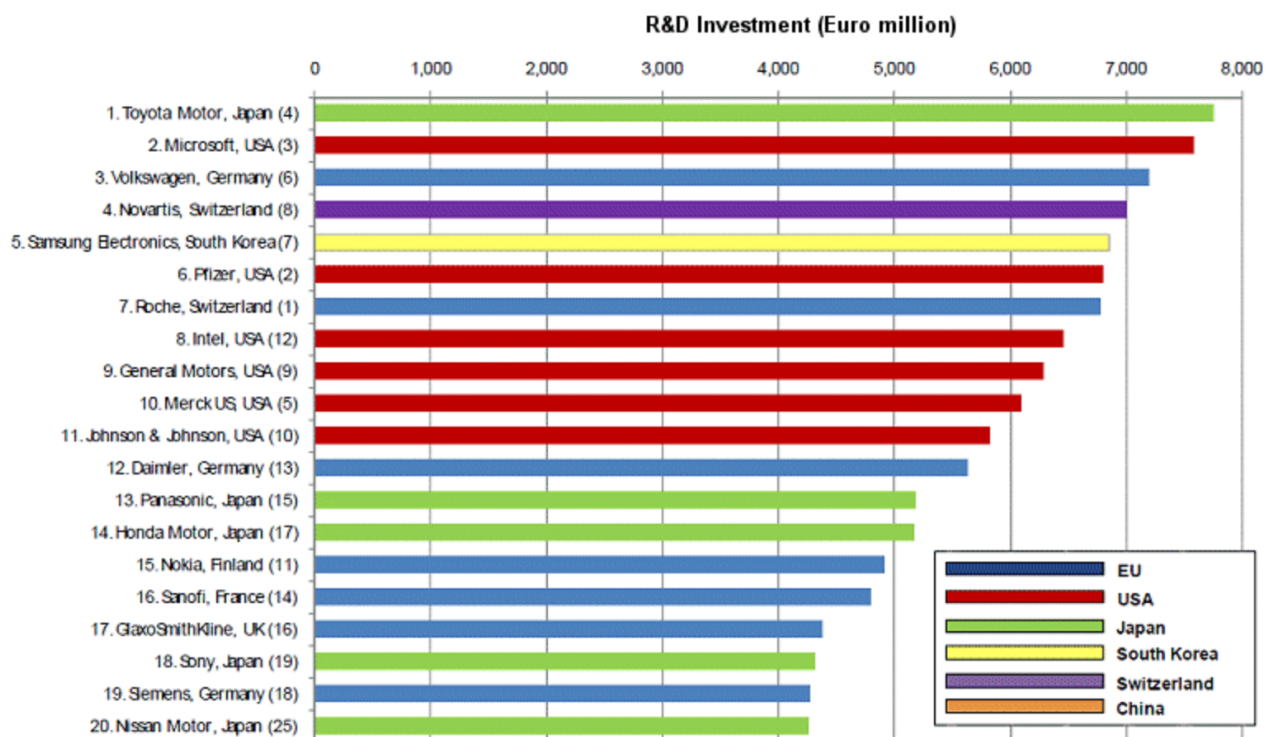
Source: [1]

[http://www.chemistryviews.org/details/ezone/4256721/Industrial\\_RD\\_Investment\\_2011\\_Data.html](http://www.chemistryviews.org/details/ezone/4256721/Industrial_RD_Investment_2011_Data.html)

# Industrial R&D

## World's Top 20 Companies by their R&D Investment in 2011

The top ten companies each invested more than € 5 bn in R&D. They account for 13.5 % of the total R&D investment by the top 1,500 companies – a similar proportion to 2010.



Source: [1]

Number in brackets after the company's name indicates the company's ranking in 2010.

[http://www.chemistryviews.org/details/ezone/4256721/Industrial\\_RD\\_Investment\\_2011\\_Data.html](http://www.chemistryviews.org/details/ezone/4256721/Industrial_RD_Investment_2011_Data.html)

# Chemical R&D

Chemicals & Advanced Materials	2009	2010	Q1-Q3 2011
<b>Top U.S. R&amp;D Expenditures</b>	<b>Millions, U.S.\$</b>		
Dow Chemical	1,492.0	1,660.0	1,213.0
DuPont	1,378.0	1,651.0	1,418.0
3M Co.	1,293.0	1,434.0	1,191.0
PPG Industries	388.0	394.0	321.0
Goodyear Tire & Rubber	337.0	342.0	328.0
Honeywell - Advanced Materials (e)	178.3	207.6	185.8
ALCOA	169.0	174.0	136.0
Huntsman International LLC	145.0	151.0	123.0
Eastman Chemical Co.	137.0	145.0	116.0
Air Products & Chemicals	110.3	116.7	89.6

Source: Battelle/R&D Magazine/Company information; (e) = estimated

Na  
Na  
cor  
app  
app  
year  
in C  
Ins  
cre  
par  
Na  
pro  
of i  
sol  
this  
cor  
ph  
Thi  
nar  
suc  
res  
res  
nov  
Cor  
tha  
are

Chemical Industry: \$4 TRIL revenue,  
research is about \$30 BIL (\$10BIL in US)  
Petroleum is much lower

**Compare to:**

Semiconductor industry: \$300 BIL revenue  
research is about \$53 BIL

[http://electroiq.com/blog/2013/02/  
semiconductor-rand-spending-rises-7percent-  
despite-weak-market/](http://electroiq.com/blog/2013/02/semiconductor-rand-spending-rises-7percent-despite-weak-market/)

# CHEMICAL R&D



<http://www.rdmag.com/articles/2011/12/2012-global-r-d-funding-forecast-industrial-r-d—chemicals-materials>

# NSF over time

## NSF Budget Requests and Appropriations By Account: FY 2000 - FY 2015

(Millions of Current Dollars)

[Click here for complete history](#)

Fiscal Year	Research & Related Activities (R&RA)		Education & Human Resources (EHR)		Major Research Equipment & Facilities Construction (MREFC) <sup>1</sup>		Agency Operations & Award Management (AOAM) <sup>2</sup>		Office of Inspector General (OIG)		National Science Board (NSB)		NSF, TOTAL	
	Request	Appropriation	Request	Appropriation	Request	Appropriation	Request	Appropriation	Request	Appropriation	Request	Appropriation	Request	Appropriation
2000	3,004.00	2,972.90	678.00	690.87	85.00	93.50	149.00	149.28	5.45	5.45	-	-	3,921.45	3,912.00
2001	3,540.68	3,356.29	729.01	785.60	138.54	121.33	157.89	161.09	6.28	6.27	-	-	4,572.40	4,430.57
2002	3,326.98	3,612.26	872.41	894.28	96.33	138.80	170.04	171.26	6.76	6.75	-	-	4,472.52	4,823.35
2003	3,783.21	4,069.29	908.08	903.17	126.28	148.54	210.16	189.43	8.06	9.19	-	3.48	5,035.79	5,323.09
2004	4,106.36	4,262.12	938.04	938.98	202.33	154.98	225.70	218.96	8.77	9.94	-	3.88	5,481.20	5,588.86
2005	4,452.31	4,229.98	771.36	841.42	213.27	173.65	294.00	223.45	10.11	10.03	3.95	3.97	5,745.00	5,482.49
2006	4,333.49	4,339.21	737.00	796.69	250.01	190.88	269.00	247.06	11.50	11.35	4.00	3.95	5,605.00	5,589.14
2007	4,665.95	4,654.24	816.22	796.59	240.45	175.61	281.82	248.50	11.86	10.97	3.91	3.97	6,020.21	5,889.87
2008	5,131.69	4,841.73	750.60	765.60	244.74	220.74	285.59	281.79	12.35	11.43	4.03	3.97	6,429.00	6,125.26
2009	5,593.99	5,186.17	790.41	845.26	147.51	152.01	305.06	294.15	13.10	12.00	4.03	4.03	6,854.10	6,493.61
2009 ARRA	-	2,500.00	-	100.00	-	400.00	-	-	-	2.00	-	-	-	3,002.00
2009 Total	5,593.99	7,686.17	790.41	945.26	147.51	552.01	305.06	294.15	13.10	14.00	4.03	4.03	6,854.10	9,495.61
2010	5,733.24	5,563.92	857.76	872.76	117.29	117.29	318.37	300.00	14.00	14.00	4.34	4.54	7,045.00	6,872.51
2011	6,018.83	5,509.98	892.00	861.03	165.19	117.06	329.19	299.40	14.35	13.97	4.84	4.53	7,424.40	6,805.98
2012	6,253.54	5,689.00	911.20	829.00	224.68	197.06	357.74	299.40	15.00	14.20	4.84	4.44	7,767.00	7,033.10
2013	5,983.28	5,543.72	875.61	833.31	196.17	196.17	299.40	293.60	14.20	13.19	4.44	4.12	7,373.10	6,884.11
2014	6,212.29	5,808.92	880.29	846.50	210.12	200.00	304.29	298.00	14.32	14.20	4.47	4.30	7,625.78	7,171.92
2015	5,807.46	-	889.75	-	200.76	-	338.23	-	14.43	-	4.37	-	7,255.00	-

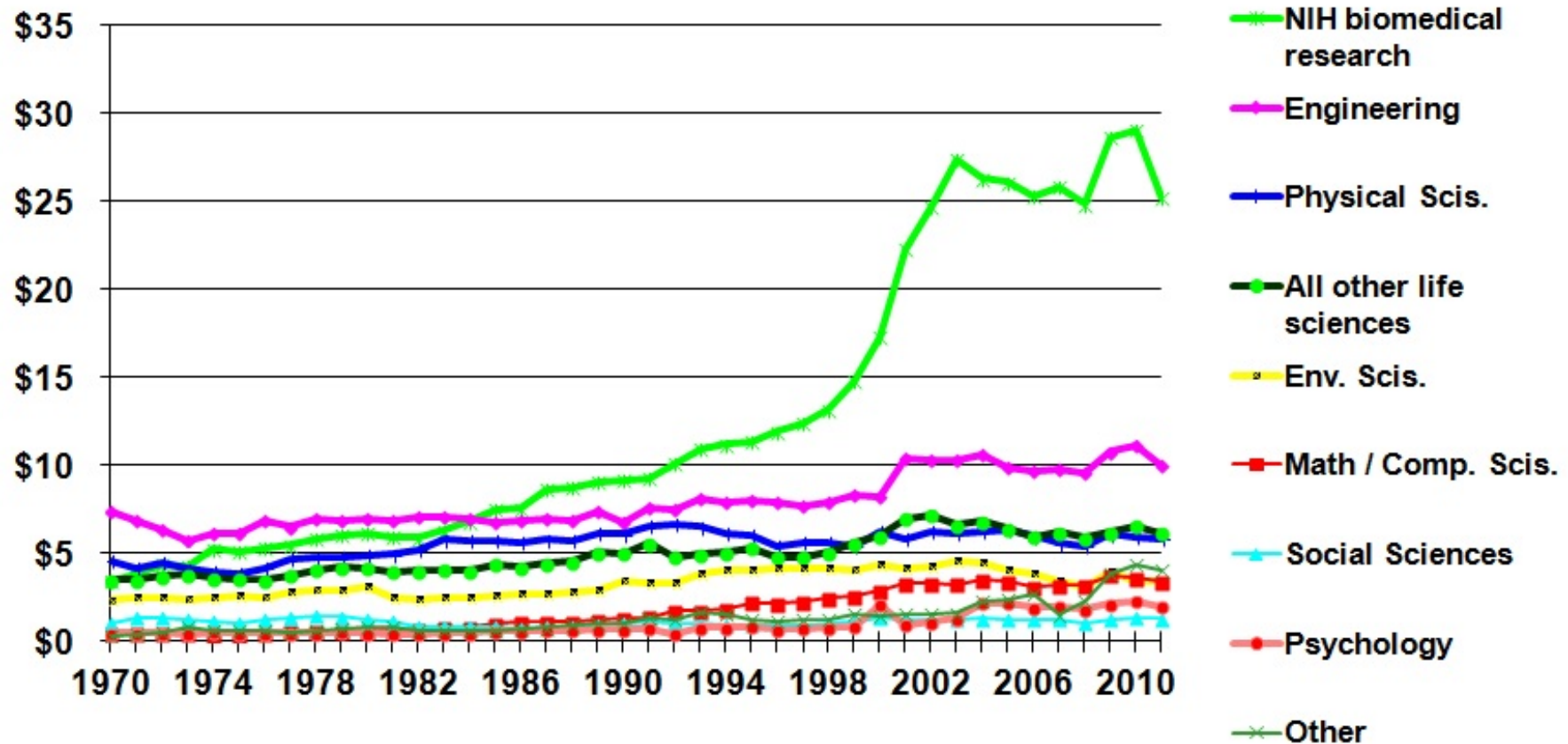
Totals may not add due to rounding.

<sup>1</sup>The Major Research Equipment and Facilities Construction (MREFC) account was previously known as Major Research Equipment (MRE) until FY 2002.

<sup>2</sup>The Agency Operations and Award Management (AOAM) account was known as Salaries & Expenses (S&E) until FY 2008.

# Trends in Federal Research by Discipline, FY 1970-2011

obligations in billions of constant FY 2012 dollars



"Other" includes research not classified (includes basic research and applied research; excludes development and R&D facilities). Life sciences are split into NIH support and other agencies' support.

Source: National Science Foundation, *Federal Funds for R&D* series. FY 2010 and 2011 are preliminary. Includes Recovery Act funding beginning in FY09. Constant-dollar conversions based on OMB's GDP deflators.

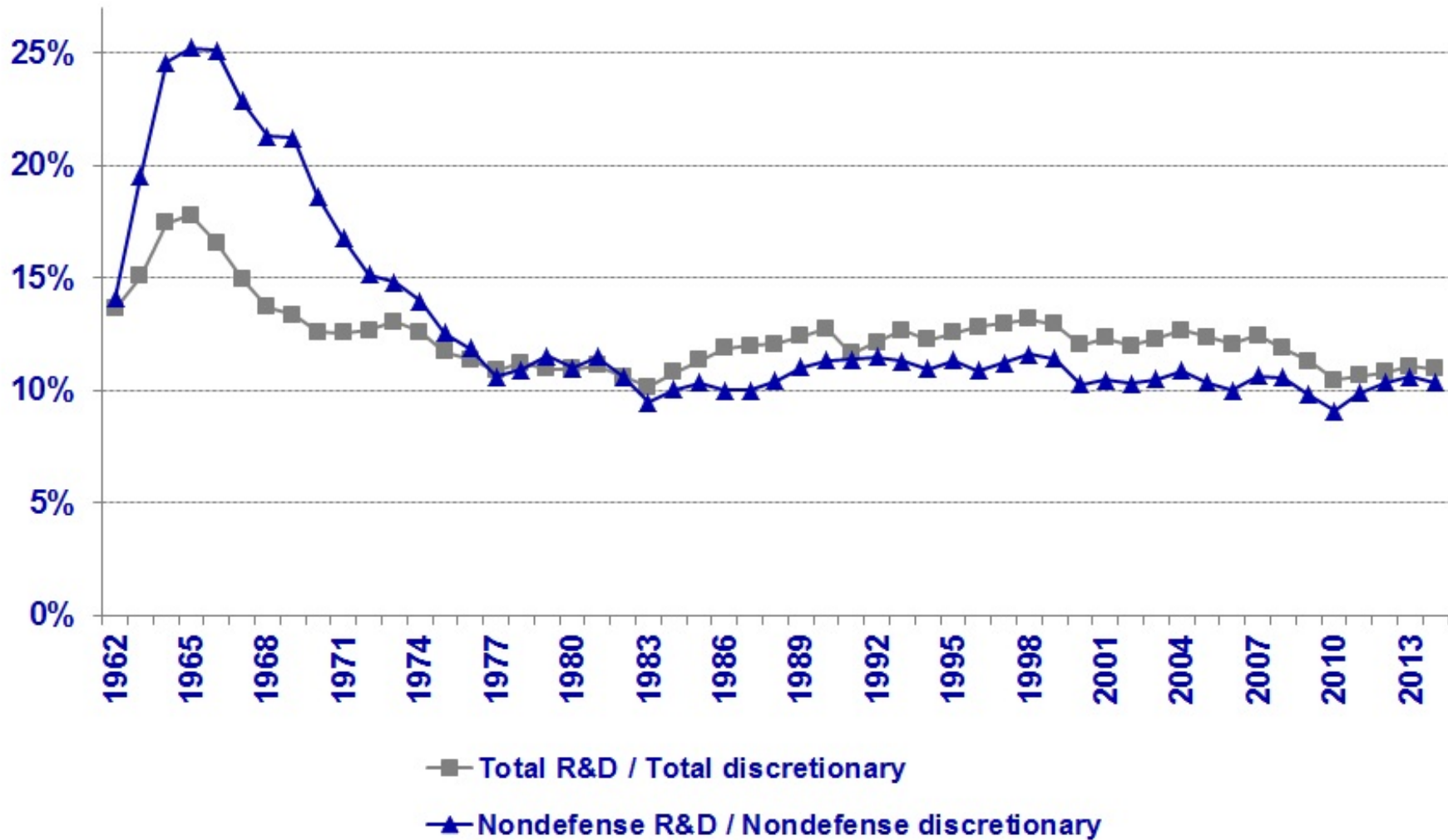
© 2012 AAAS





# R&D as Percent of Discretionary Spending

percentage of outlays, 1962 - 2014



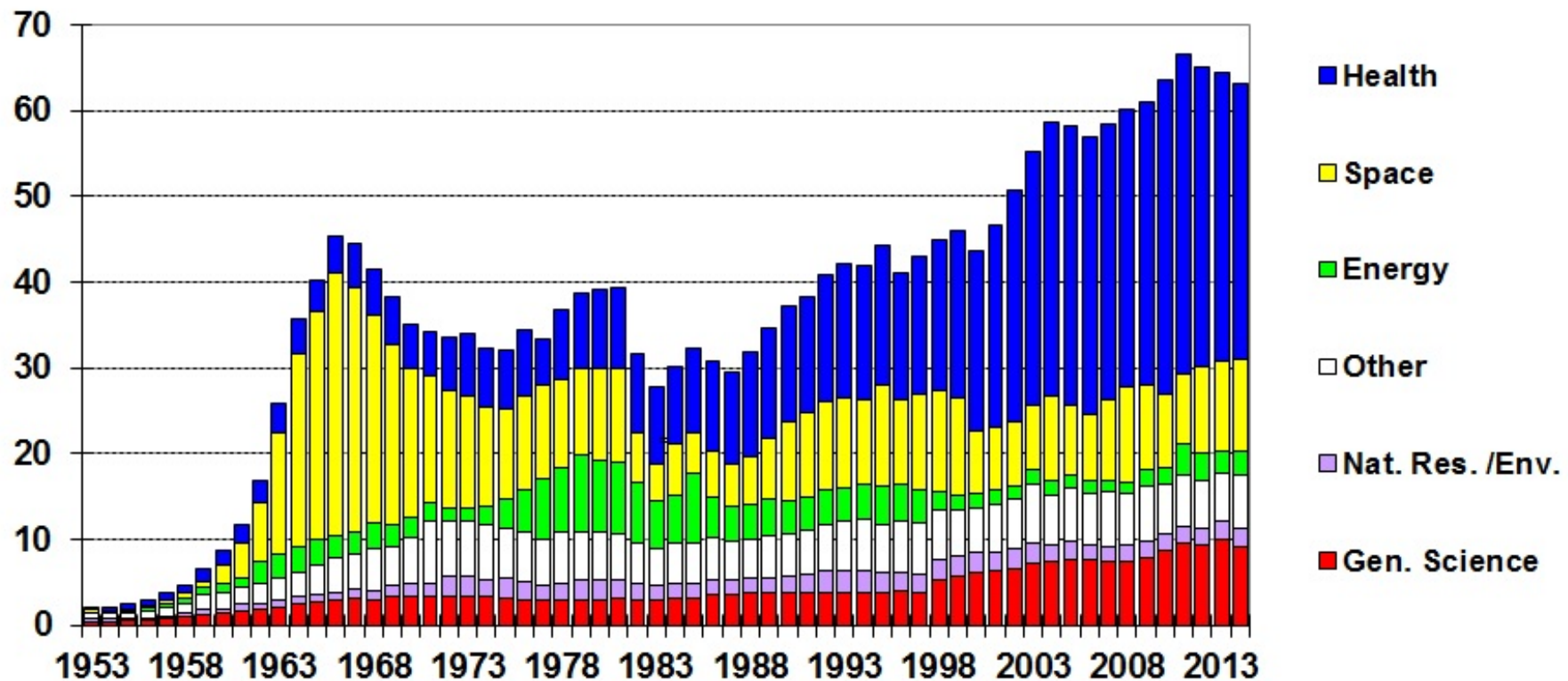
Source: *Budget of the U.S. Government FY 2014*. Note: FY13 figures do not yet reflect final appropriations or sequestration.

© 2013 AAAS



# Trends in Nondefense R&D by Function

outlays for the conduct of R&D, billions of constant FY 2013 dollars



Source: AAAS, based on OMB Historical Tables in *Budget of the United States Government FY 2014*. FY 2014 is the President's request; FY 2013 does not reflect final appropriations or sequestration. Some Energy programs shifted to General Science beginning in FY 1998.

© 2013 AAAS

