

Senate Increases DOD R&D by 3.5 Percent, Boosts S&T to \$8.8 Billion

(This analysis is part of a series of AAAS R&D Funding Updates on the FY 2001 congressional appropriations process. This analysis includes information on R&D in Senate appropriations for DOD. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D by agency in FY 2001 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/R&D>) in the "FY 2001 R&D" or the "What's New" sections.)

On May 18, the Senate Appropriations Committee approved its version of the FY 2001 Defense appropriations bill (S 2593) for the Department of Defense (DOD). [The full Senate approved the bill on June 13.] The Senate bill would provide substantial increases for most DOD R&D programs, in contrast to the cuts requested by the Pentagon and the Clinton Administration. DOD's R&D in FY 2001 would total [\$40.7 billion], \$2.1 billion more than the President's request and \$1.4 billion or 3.5 percent more than FY 2000 (see Tables A and B). **The Senate bill would boost DOD funding of basic and applied research above both the President's request and the FY 2000 funding level.** DOD's basic research ("6.1") would jump by more than 10 percent to \$1.3 billion, \$122 million more than FY 2000, while applied research ("6.2") would total \$3.6 billion, 6.1 percent above the current year funding level. Including DOD's medical research programs, **DOD S&T** ("6.1" through "6.3" programs, representing DOD's investment in basic and applied research and technology development) would increase by 1.9 percent to \$8.8 billion, considerably more than the requested level of \$7.6 billion.

The Senate Defense bill contains substantial increases for the overall DOD budget as well as for R&D programs, increases even larger than those proposed by the President in February. The \$287 billion total for the Defense bill, which funds most but not all of DOD, is \$3 billion more than the request and nearly \$20 billion more than FY 2000.

The Senate bill would provide large increases for most **basic research** ("6.1") accounts. DOD requested a 4.9 percent increase for "6.1" but the Senate would boost "6.1" by 10.5 percent for a total of \$1.3 billion (see Table A). Although there would be increases for Army basic research (up 3.6 percent to \$212 million) and Navy basic research (up 6.2 percent to \$397 million), the largest increase would go to "6.1" in the Defense Agencies, which would jump 26.4 percent to \$465 million. Within DA "6.1," Defense Research Sciences would go from \$60 million to \$102 million, and University Research Initiatives would increase from \$224 million to \$264 million. The Air Force, however, requested a sharp cut in its "6.1" support, and although the Senate would add to the request, the \$208 million total for Air Force "6.1" would still represent a cut from FY 2000. In recent years, the Senate has proposed large increases to "6.1" while the House has appropriated smaller increases or cuts, and final appropriations have generally split the difference, but this year there appears to be broad agreement that the basic research accounts need increases.

The **applied research** ("6.2") accounts total \$3.6 billion in the Senate bill, an increase of \$206 million or 6.1 percent. This total is \$473 million more than the requested cut of nearly 8 percent from the current year level. As a result, total DOD support of research (basic plus applied) would be \$4.9 billion (up 7.2 percent).

The "6.1" and "6.2" research accounts provide a significant share of federal support for several **key scientific and engineering disciplines**. DOD provides nearly a third of all federal support for engineering research, and a majority of federal support for some key engineering subfields. DOD also provides more than 40 percent of total federal support for computer sciences research, and plays a strong funding role in other disciplines such as mathematics, oceanography, medical sciences, chemistry, physics, and environmental sciences.

The “6.1” and “6.2” accounts are especially important for the nation’s **colleges and universities**, which perform more than half of “6.1” research and roughly 20 percent of “6.2” research. DOD is the third largest sponsor of federal R&D at colleges and universities, behind only the National Institutes of Health and the National Science Foundation. DOD’s impact, however, is concentrated in the few key fields listed above. DOD provides a tenth of federal support for academic R&D, but more than half of all federal support for mechanical engineering and electrical engineering at universities, and nearly half of all federal support for computer sciences and materials engineering.

The Senate Defense bill contains a separate \$337 million appropriation, outside the regular R&D accounts, for **medical R&D** (see Table A) plus another \$66 million for medical care-related information technology development for a total of \$403 million. This appropriation for peer-reviewed, competitively awarded research grants continues the recent expansion of DOD’s effort in medical research. The Senate would divide the \$337 million medical R&D total into \$175 million for breast cancer research (up from \$172 million in FY 2000) and \$100 million for prostate cancer research (up from \$74 million), plus \$12 million for ovarian cancer research and an additional \$50 million for peer reviewed research on other medical topics. The Senate bill also contains numerous congressionally designated appropriations for medical research in DOD’s regular accounts, including R&D on HIV, alcoholism, neuroscience, bone marrow disease, Gulf War illness, and funding for medical laboratory facilities around the nation.

The “6.1,” “6.2,” and “6.3” categories are often grouped together as **“Science and Technology” (S&T)**. This category encompasses basic research, applied research, and advanced technology development, which contribute to a broad knowledge base with potential applications to a wide variety of military as well as civilian uses. S&T is separate from the “6.4” and higher categories, which are focused on the development and testing of specific weapons systems. DOD S&T declined steeply in the 1990s, but in **FY 2000 DOD S&T**, including the medical research appropriations formerly appropriated within the “6.3” category, **exceeded \$8 billion for the first time since FY 1994 thanks to strong congressional support for an appropriation of \$8.7 billion**. Many science and technology organizations and defense observers called on DOD to maintain S&T funding at a minimum of \$8 billion in 2000 dollars, but the Pentagon requested only \$7.6 billion for S&T in FY 2001. **The Senate would add more than \$1.2 billion to the request to bring S&T to \$8.8 billion**, up 1.9 percent from FY 2000, with large increases in “6.1” and “6.2” partially offset by cuts to “6.3” (advanced technology development) programs.

Among the Defense Agencies, for the first time in years the Senate bill would provide increases for **the Defense Advanced Research Projects Agency (DARPA)**. The \$2.1 billion DARPA appropriation would be [14.0 percent] above FY 2000 funding because of a \$200 million boost to DARPA’s efforts in developing remotely controlled combat systems. The **Ballistic Missile Defense Organization’s (BMDO)** budget would also increase substantially, by 23.8 percent to \$4.2 billion. The BMDO appropriation funds continued development and testing of national and theater missile defense systems, including \$1.9 billion for development of a national missile defense. The President is still scheduled to make a decision in June on whether to commit to deploying a national defense system, although many observers have urged him to delay the decision until more technology tests have been completed.

[Both the House and the Senate have approved their respective versions of the Defense bill, so the bill now moves to House-Senate conference. Because of the generous funding levels, the conference is expected to be an easy one, and the final Defense bill could be one of the first FY 2001 bills to be signed into law.]

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**Table A. Department of Defense by Program
Senate Action on R&D in the FY 2001 Budget
(budget authority in millions of dollars)**

	FY 2000 Estimate	FY 2001 Request	FY 2001 Senate	Action by Senate			
				Chg. from Request		Chg. from FY 2000	
				Amount	Percent	Amount	Percent
Research, Development, Test, and Evaluation:							
Basic Research ("6.1")	1,161	1,217	1,283	65	5.4%	122	10.5%
Applied Research ("6.2")	3,410	3,144	3,617	473	15.0%	206	6.1%
Total Research, or Tech. Base	4,571	4,362	4,900	538	12.3%	328	7.2%
Advanced Tech. Dev. ("6.3")	3,826	3,182	3,550	368	11.6%	-276	-7.2%
Total Science and Technology	8,397	7,543	8,450	906	12.0%	52	0.6%
Demonstration/Validation ("6.4")	6,524	6,810	7,765	955	14.0%	1241	19.0%
Engineering and Manuf. Dev. ("6.5")	8,679	8,661	8,325	-336	-3.9%	-353	-4.1%
RDT&E Management Support ("6.6")	2,552	2,434	2,552	118	4.9%	0	0.0%
Operational Systems Dev. ("6.7")	12,137	12,415	12,526	111	0.9%	389	3.2%
BA Adjustment	68	1	0	--	--	--	--
TOTAL RDT&E	38,357	37,863	39,617	1,754	4.6%	1260	3.3%
Other appropriations ¹	655	647	647	0	0.1%	-8	-1.2%
Medical research ²	270	66	403	337	510.4%	133	49.2%
Total DOD R&D	39,282	38,576	40,668	2,092	5.4%	1,386	3.5%

AAAS estimates based on FY 2001 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2000 and FY 2001 request figures based on OMB R&D data and supplemental agency budget data.

Figures are rounded to the nearest million. Changes calculated from unrounded figures.

¹ R&D support in military personnel, military construction, and other DOD appropriations.

Includes chemical agents and munitions destruction R&D funded outside RDT&E.

² Medical research appropriated in Defense Health Programs, not RDT&E. These funds are not included in "6.2."

May 22, 2000 (revised June 14) - Senate-approved appropriations.

Revised to reflect amendments approved on the Senate floor.

**Table B. Department of Defense by Agency
Senate Action on R&D in the FY 2001 Budget
(budget authority in millions of dollars)**

	FY 2000 Estimate	FY 2001 Request	FY 2001 Senate	Action by Senate			
				Chg. from Request		Chg. from FY 2000	
				Amount	Percent	Amount	Percent
Research, development, test, and evaluation:							
Army	5,200	5,260	5,684	423	8.0%	484	9.3%
Navy	9,001	8,477	8,812	335	4.0%	-189	-2.1%
Air Force	14,487	13,686	13,931	246	1.8%	-556	-3.8%
Defense Agencies	9,373	10,238	10,972	734	7.2%	1599	17.1%
<i>Defense Adv. Res. Projects Agcy.</i>	1,876	1,951	2,139	188	9.6%	263	14.0%
<i>Ballistic Missile Defense Org.</i>	3,428	3,943	4,243	300	7.6%	816	23.8%
<i>Other</i>	4,069	4,344	4,590	246	5.7%	521	12.8%
Director of Test and Evaluation	265	0	0	0	--	-265	-100.0%
Director of Operational Test & Eval.	31	202	219	17	8.4%	188	605.0%
TOTAL RDT&E	38,357	37,863	39,617	1,754	4.6%	1260	3.3%
Other appropriations ¹	655	647	647	0	0.1%	-8	-1.2%
Medical research ²	270	66	403	337	510.4%	133	49.2%
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