



## **The President's FY 2011 Budget for Biological Sciences Research**

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### **Summary**

President Obama released his \$3.8 trillion budget plan for fiscal year (FY) 2011 on 1 February 2010. As pledged by the President, the budget includes proposed increases in various federal research and development (R&D) programs.

On average, federal investments in R&D would increase by 6.4 percent to more than \$61 billion under the President's budget. Included in these proposed new investments are the Department of Energy (DoE), Department of Agriculture (USDA), National Institutes of Health (NIH), National Oceanic and Atmospheric Administration (NOAA), National Science Foundation (NSF), and United States Geological Survey (USGS).

Some agencies are slated to receive record R&D budgets in FY 2011. Under the President's proposal, the USDA would receive a record high budget for competitive, extramural research grants. NOAA R&D would also float higher with record new investments proposed.

Some agencies, however, would trim spending on biological and environmental research. The Biological Resources Discipline within the USGS would fall 1.8 percent below the FY 2010 level. Forest and rangeland research at the United States Forest Service (USFS) would be trimmed by 2.5 percent. No funding is allocated for agricultural research buildings and facilities at USDA. A 4.7 percent cut to funding for ocean, coastal, and Great Lakes research at NOAA has also been proposed.

## ***Agency Budget Summaries***

### **Department of Energy (DoE)**

- *2011 DoE Office of Science Budget Request: \$5.121 billion (+\$217.7 million)*

The DoE Office of Science (OS) is slated to receive a 4.4 percent increase, which would continue a five-year trend of budget increases that exceed the rate of inflation. Funding for Biological and Environmental Research would increase at a slightly lower rate (3.8 percent), with total proposed FY 2011 funding of \$626.9 million, a \$22.7 million increase.

A major focus in the FY 2011 budget for the Biological and Environment Research program is Climate and Environmental Sciences, which would receive an additional \$19.2 million (+6.7 percent). If appropriated, most of the new funding would support additional climate and earth system modeling. Biological Systems Science would receive an extra \$3.5 million (+1.1 percent), which would help support an \$11.3 million (+6.8 percent) increase for genomic science.

FY 2011 OS priorities remain investments in high-risk, high-reward research, funding early career scientists, and coordinating basic and applied research programs. Overall, basic research would receive an additional \$226 million (+4.6 percent) in FY 2011.

### **Environmental Protection Agency (EPA)**

- *2011 EPA Science and Technology Budget Request: \$846.7 million (+\$0.65 million)*

Although overall spending at the EPA would decline by 2.7 percent, funding for Science and Technology (S&T) would remain essentially unchanged from FY 2010.

Despite the flat budget proposed for S&T, funding for research and science assessments would increase for healthy communities and ecosystems (+3.2 percent), climate change (+5.6 percent), clean air (+3.5 percent), and clean water (+5.2 percent). Funding would drop, however, for science support for land preservation and restoration (-2.4 percent). For some ecosystem restoration projects, the cuts would be significant. The cleanup of the Great Lakes would lose \$175 million from the FY 2010 level, a 36.8 percent cut.

Within the Office of Research and Development, funding for Human Health and Ecosystems research would increase by \$9.5 million (+3.8 percent) to \$256.2 million. Much of this funding would be directed to Science to Achieve Results (STAR) research fellowships, which would grow by \$6.2 million (+55.9 percent). This increase would allow EPA to award approximately 240 new fellowships.

## **National Aeronautics and Space Administration (NASA)**

- *2011 Budget Request: \$19.0 billion (+\$276 million)*

The FY 2011 budget for NASA includes \$5.0 billion for science (+12.0 percent). Included are funds to fly a replacement of the failed 2009 Orbiting Carbon Observatory, a satellite that would have identified global carbon sources and sinks. Earth science would receive \$1.8 billion, \$381 million more than last year.

The \$146 million designated for education (-20.2 percent), is slightly more than the agency received in FY 2002. NASA plans to support the President's "Educate to Innovate" initiative with a new program, Summer of Innovation, which will partner NASA scientists with middle-school classes in order to inspire students to enter science careers.

## **National Institutes of Health (NIH)**

- *2011 Budget Request: \$32.089 billion (+\$1 billion)*

The President's budget proposes a 3.2 percent increase for NIH. About half of the budget would go towards extramural research grants (\$17.1 billion), with an additional \$3.4 billion for intramural research at NIH. Funding for research project grants would increase by 3.3 percent over FY 2010, with approximately 46,000 grants supported in FY 2011. The number of full-time training positions would remain essentially unchanged.

## **National Oceanic and Atmospheric Administration (NOAA)**

- *2011 Budget Request: \$5.554 billion (+\$806.1 million)*

Under the President's budget, NOAA's proposed 17 percent increase in FY 2011 would be applied to escalating costs of the agency's acquisition of weather and climate satellites. Funding for NOAA's environmental and science programs would remain flat in FY 2011, despite the addition of new funds for select programs.

NOAA would invest an additional \$165 million (+27.1 percent) in R&D in FY 2011, bringing total R&D investments to \$773 million. Of this, \$522 million (68 percent) would be spent on research. Although this represents an increase in the actual dollars spent on research, the proportion of NOAA's R&D spent on research would decline. About half of NOAA's R&D spending would be directed to extramural work, up from 38% in FY 2010.

Within NOAA's research portfolio, funding would be increased for climate research (+7.3 percent), protected species research and management (+3.1 percent), and fisheries research and management (+7.1 percent). Additionally, \$3.0 million in new funding

would be made available for interagency consultations on endangered and protected species. Despite the promising outlook for research in FY 2011, funding for ocean, coastal, and Great Lakes research would decrease by 4.7 percent.

Funding for NOAA's education program would decrease by \$33.0 million or 61.4 percent, effectively resetting the program's budget to the FY 2005 funding level. Programmatic decreases would also occur in Ocean Resources Conservation and Assessment (-8.8 percent) and Habitat Conservation and Restoration (-5.6 percent).

## **National Science Foundation (NSF)**

- *2011 NSF Budget Request: \$7.424 billion (+\$551.9 million)*
- *2011 Biological Sciences Directorate Request: \$767.8 million (+\$53.3 million)*

The President's budget request for NSF would provide an 8.0 percent increase over the FY 2010 appropriation.

"The essence of NSF's 2011 Budget Request is the reaffirmation of the agency's roots as the nation's wellspring of scientific innovation," said NSF director Dr. Arden Bement, Jr. during the release of the agency's FY 2011 budget. "The plan is part of an overall strategy to increase the nation's total R&D investment to three percent of Gross Domestic Product. In addition, the 2011 Budget Request includes an increase of 41 percent in our Major Research Equipment & Facilities Construction account," said Bement.

The budget request is aligned with the Administration's National Innovation Strategy (NIS), which was released last fall. The NIS "encourages technology and business innovation in the United States. The strategy's three-pronged plan invests in the building blocks of innovation, promotes competitive markets that spur entrepreneurship, and drives breakthroughs for national priorities such as clean energy and healthcare technology," according to NSF documents released with the budget.

For the Research and Related Activities (R&RA) account, which includes funding for the various disciplinary directorates (e.g., Biological Sciences Directorate or BIO), the President has requested \$6.018 billion. If funded at this level, the R&RA account would see an 8.2 percent increase (+\$454.91 million) from the FY 2010 appropriation. Although the account would grow by an average of 8.2 percent, BIO and GEO (Geosciences) would grow by 7.5 and 7.4 percent, respectively. These increases would provide BIO with an FY 2011 budget of \$767.81 million, an increase of \$53.27 million over FY 2010. The GEO account would grow to \$955.29 million, an increase of \$65.65 million from the FY 2010 funding level. At \$268.79 million, the Social, Behavioral, and Economic Sciences Directorate (SBE) would grow by 5.3 percent (+\$13.54 million).

Within the \$767.81 million request for BIO, funding would be allocated among five divisions accordingly:

- ➔ Molecular and Cellular Biosciences \$133.69 million, a \$8.1 million (+6.4 percent) increase;
- ➔ Integrative Organismal Systems \$226.7 million, a \$10.45 million (+4.8 percent) increase;
- ➔ Environmental Biology \$155.59 million, a \$13.04 million (+9.1 percent) increase;
- ➔ Biological Infrastructure \$145.63 million, a \$18.77 million (+14.8 percent) increase; and,
- ➔ Emerging Frontiers \$106.2 million, a \$2.91 million (+2.8 percent) increase.

BIO provides approximately 68 percent of federal funding for non-medical, basic research at academic institutions in the life sciences. This includes research support for environmental biology, which provides the foundation for our understanding and response to complex issues such as climate change, food safety and security, economy, and human well-being.

According to NSF budget documents, funding was allocated to BIO programs based on the following criteria: sustaining core funding, implementing Administration priorities such as climate change research, support for cutting edge transformative research, developing new scientific areas, and broader support for students and new faculty.

Within BIO, a \$10.0 million investment in digitization and networking of specimen-based research collections would be sustained in the coming year. As noted by NSF, “these collections provide proper validation of species including a wealth of ancillary data such as DNA samples and environment/habitat information. These data provide the baseline from which to begin further biodiversity studies and provide critical information about the existing gaps in our knowledge of life on Earth. Filling these gaps is critical to a complete understanding of the biodiversity of the planet, both in space and time, and the history of climate change.”

Additionally, with respect to natural science collections, NSF plans to continue efforts initiated under the federal Interagency Working Group on Scientific Collections. Thus, with FY 2011 funding, BIO would: 1) support the development of a strategic plan for the digitization of the U.S. natural history collections; 2) support research projects designed to develop technologies needed to enhance digitization capabilities; and 3) support initial digitization projects of high priority collections.

Elsewhere at NSF, the Education and Human Resources Directorate (EHR) would receive a 2.2 percent bump, bringing the FY 2011 number to \$892.0 million. The Major Research Equipment and Facilities Construction (MREFC) account would grow by 40.8 percent or \$47.9 million, bringing the program to \$165.19 million in FY 2011. Finally included within the MREFC budget is \$20.0 million in funding to initiate construction of the National Ecological Observatory Network (NEON).

## **Smithsonian Institution (SI)**

- *2011 Budget Request: \$797.6 million (+\$36.2 million)*

The President's proposed 4.7 percent increase for the Smithsonian would provide new funding for Salaries and Expenses (+\$24.7 million) and Facilities Capital (+\$11.8 million). Research funding would increase by approximately \$12 million over FY 2010.

New funding is proposed to address SI's "four grand challenges." As outlined in the agency's strategic plan, these priorities allow SI to integrate the work of many disciplines. Efforts to understand and sustain biodiversity would receive \$8 million, which includes funds for biodiversity and climate change research, DNA barcoding and the Encyclopedia of Life Web site. Other SI priorities include \$1 million for Understanding the American Experience, \$500,000 for Unlocking the Mysteries of the Universe, and \$500,000 for World Cultures.

The budget would also invest an additional "\$2.4 million to improve the preservation, storage, documentation and accessibility to the Institution's collections and for the care of the animals at the National Zoo.... A total of \$1.5 million will be dedicated to staff and computer equipment to continue the process of digitizing the Smithsonian collections." Funding for collections would grow to \$73 million, up from \$69 million in FY 2010.

## **United States Department of Agriculture (USDA)**

- *2011 Research, Education, and Economics Budget Request: \$2.970 billion (-\$36 million)*

Several USDA research priorities would receive substantial budget increases in FY 2011, despite a 4.4 percent decline in overall spending at USDA. Climate change (+42.0 percent), renewable energy (+40.9 percent), addressing obesity (+78.3 percent), and food safety (+7.0 percent) would all benefit from new funding in the President's budget request.

The National Institute of Food and Agriculture (NIFA), formerly the Cooperative State Research, Education, and Extension Service, would receive \$1.347 billion in funding in FY 2011, 0.3 percent less than FY 2010. However, within NIFA, Research and Education Activities would increase by 5.9 percent to \$839 million. Included in this sum would be \$429 million for competitive extramural research grants. This \$262 million increase (+63.7 percent) would be the program's highest funding level ever. The new funds would be directed to climate change mitigation and adaptation research (+\$50 million), alternative and renewable energy research (+\$34 million), and animal and plant disease research (+\$13 million).

The Agricultural Research Service would receive \$1.2 billion in FY 2011, \$51 million less than last year. The decrease results from the removal of \$42 million in Congressional earmarks and all funding for the agency's buildings and facilities (-\$71

million). Other programs within the agency would receive increases in FY 2011, including an extra \$12 million for crop production research and \$9 million for crop protection research. Funding to expand research on grain crop germplasm collection, enhancement, and breeding would be increased by \$4.8 million. Research on improving crop adaptation to climate change would receive an additional \$5.4 million. Research to develop sustainable agriculture practices would grow by \$6.3 million.

## **USDA Forest Service (USFS)**

- *2011 Budget Request: \$5.377 billion (+\$61.4 million)*

In FY 2011, USFS plans to prioritize restoring and sustaining forest landscapes, protecting water resources, making landscapes more resilient to climate change, responsible budgeting for wildfires, and job creation. Although the agency would receive a 1.2 percent increase over FY 2010, many program budgets would be cut to support the creation of a reserve fund for combating wildfires.

Among the cuts would be \$7.7 million from Forest and Rangeland Research, a 2.5 percent drop from FY 2010. Practically all areas of R&D within the program would receive cuts in FY 2011, including invasive species R&D (-3.5 percent), resource management and use R&D (-2.0 percent), water, air, and soil R&D (-3.2 percent), and wildlife and fish R&D (-3.0 percent). The one area that would be increased is inventory and monitoring R&D, which would receive a 1.6 percent bump.

## **United States Geological Survey (USGS)**

- *2011 USGS Budget Request: \$1.133 billion (+\$21.6 million)*
- *2011 USGS Biological Resources Discipline Budget Request: \$201.3 million (-\$3.6 million)*

The Department of the Interior (DOI) is slated for a 0.4 percent budget cut in FY 2011. Consequently, most bureaus within the department would see stagnant or declining funding. The USGS, however, is one of three DOI bureaus that would receive a budget increase (+1.9 percent).

The Department is poised to make new investments in renewable energy (+\$14 million), climate change adaptation (+\$35 million), water conservation (+\$36 million), youth in natural resources (+\$9 million), land conservation (+\$106 million), and ecosystem restoration (+\$71 million). Among Secretary Ken Salazar's goals for 2011 is a 60 percent increase from 2009 levels in the number of youth employed by DOI in conservation jobs.

Interior-wide, \$171 million is designated for climate change, which would allow DOI to complete identification of the areas most vulnerable to climate change and to begin to implement adaptation strategies in these areas. The USGS would spend \$72.1 million

on climate change (+\$13.9 million) in FY 2011 to create and staff two regional Climate Science Centers, support accelerated assessment of biological carbon sequestration, and develop adaptation tools for resource managers.

In addition to climate change, much of the proposed new funding within USGS is designated for administrative costs. However, the agency's fixed cost increases, such as employee pay raises and increased rent for facilities, are not funded in the budget, which creates a \$13.5 million budget shortfall. This means that programs will have to absorb any cost increases through a reduction in services or by finding other administrative efficiencies.

The Biological Resources Discipline within USGS would receive \$201.3 million, a \$3.6 million (-1.8 percent) decrease from FY 2010, although the 2011 budget would still be \$16.0 million above FY 2009. Biological research and monitoring would be cut by \$1.2 million (-0.8 percent) and the budget for the Cooperative Research Units would slip due to a proposed \$170,000 cut. The \$2.2 million (-8.9 percent) decrease in funding for biological information management and delivery would largely be accomplished through removing unrequested Congressional funding ("earmarks") and a reduction in payments to states for data coordination.

Despite the negative top line numbers, some new funding is proposed for programs within BRD. Science support to other Interior bureaus would receive an additional \$4.0 million. Funding for research on the impacts of renewable energy development on wildlife would be increased by \$3.0 million.

### More Resources

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Other budget resources are available on the AIBS website, including information on how the federal budget process works, as well as factsheets on funding for the biological sciences. Please visit [http://www.aibs.org/public-policy/budget\\_source.html](http://www.aibs.org/public-policy/budget_source.html) for more information.

For questions related to this publication, please contact the AIBS Public Policy Office at [publicpolicy@aibs.org](mailto:publicpolicy@aibs.org).

## About AIBS

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AIBS advances its mission through coalition activities in research, education, and public policy; publishing the peer-reviewed journal *BioScience* and the education website [ActionBioscience.org](http://ActionBioscience.org); providing scientific peer review and advisory services to government agencies and other clients; convening meetings; and managing scientific programs. For more information, please visit [www.aibs.org](http://www.aibs.org).