

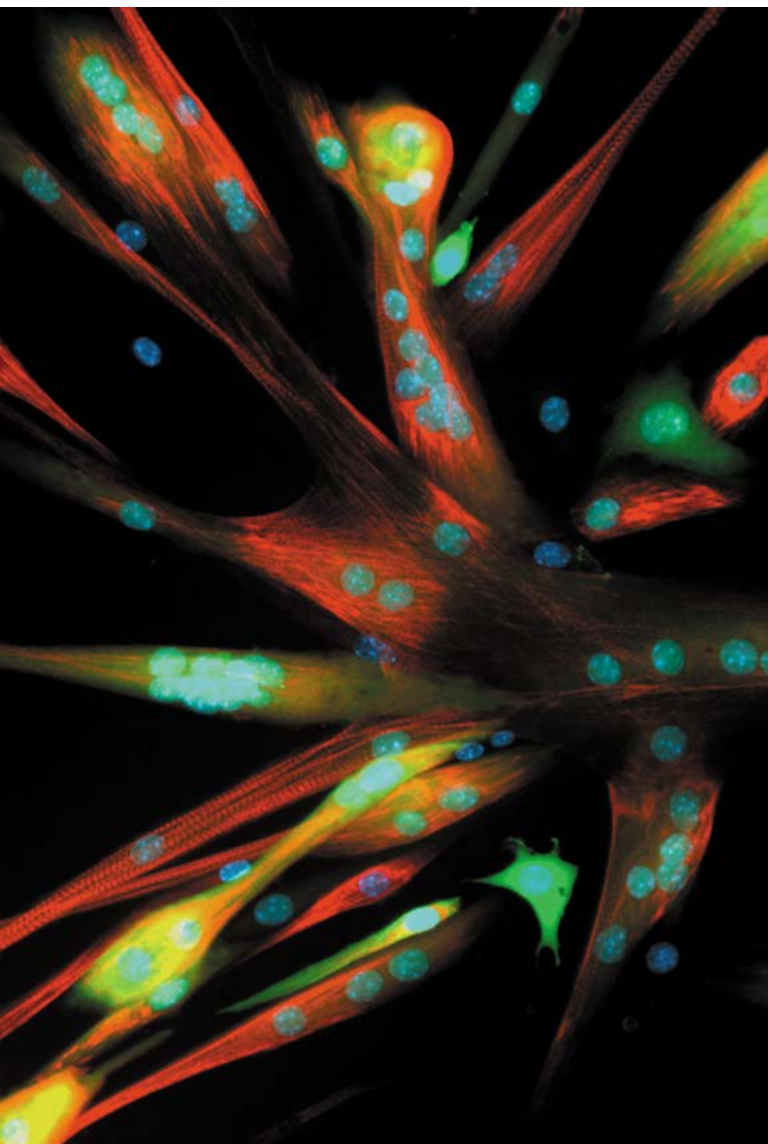


# FASEB

Federation of American Societies  
for Experimental Biology

## **Federal Funding Recommendations**

Biomedical and Related Life  
Sciences Research, FY 2019



**FASEB's FY 2019 Funding Recommendations were released on March 8, 2018. FASEB revised the recommendations following the March 23 passage of the FY 2018 omnibus spending bill and they are outlined in this online brochure.**

## Funding Recommendations

**R**emarkable progress in the biological and biomedical sciences is enabled by federal investments in investigator-initiated basic research across a range of fields. Continued improvements in health, new treatments for life-threatening diseases, and enhanced quality of life all require robust, predictable, and sustained budget increases for science funding agencies.

These are the Federation of American Societies for Experimental Biology's (FASEB's) fiscal year (FY) 2019 funding recommendations for these federal agencies:

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

FASEB recommends at least \$39.3 billion for NIH

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

FASEB recommends at least \$8.45 billion for NSF

### **Veterans Affairs (VA) Medical and Prosthetic Research Program**

FASEB recommends at least \$787 million for the VA Medical and Prosthetic Research Program

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

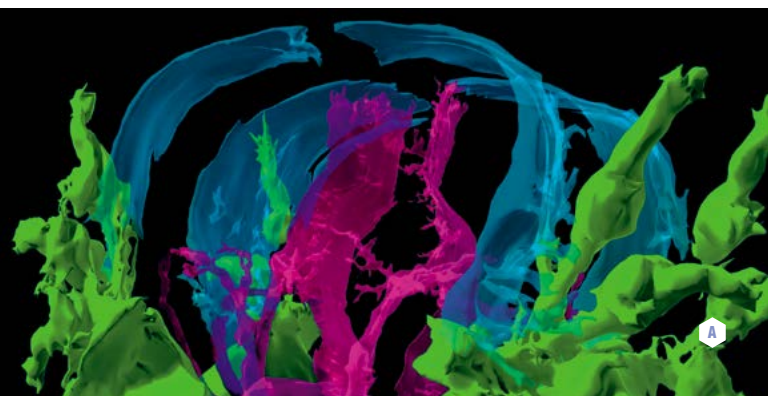
FASEB recommends at least \$700 million for the USDA Agriculture and Food Research Initiative (AFRI)

### **Department of Energy Office of Science (DOE SC)**

FASEB recommends at least \$6.6 billion for the DOE SC

"The partnership between U.S. science and the federal government has a long and storied history. Robust federal investments have led to remarkable advances, making the U.S. a global leader. To maintain our leadership, the federal government should provide sustained and predictable research funding increases, which are vital to continued scientific progress and improved quality of life for all."

—Thomas O. Baldwin, PhD  
FASEB President, 2017–2018



# NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health (NIH) is the nation's largest funder of basic biomedical research, providing competitive grants to more than 300,000 scientists at universities, medical schools, independent research institutions, and biotechnology companies in nearly every state and congressional district.

Increased longevity, a reduced number of deaths from heart disease and stroke, the development of the first hepatitis A and Ebola vaccines, and research that led to treatments for rare autoinflammatory diseases—all are part of NIH's outstanding legacy.<sup>1</sup>

Today, new breakthroughs in biomedical research are transforming medicine. Cancer immunotherapy harnesses a patient's own immune system to fight cancer and is giving new hope to patients who once faced dire prognoses. Groundbreaking discoveries are enabled by a renewed congressional commitment to NIH, including new funding authorized through the 21<sup>st</sup> Century Cures Act. But there is much work to be done; in real dollars, the NIH budget is approximately 12 percent below the FY 2003 level (Figure 1). Congress must marshal additional resources.

Continued progress towards new cures and better therapies also requires support for the best and brightest young scientists. The current funding environment makes it more difficult for younger scientists to establish and maintain independent research careers, and to pursue innovative scientific directions.<sup>2</sup> NIH must be able to provide sufficient support for these essential members of the biomedical workforce.

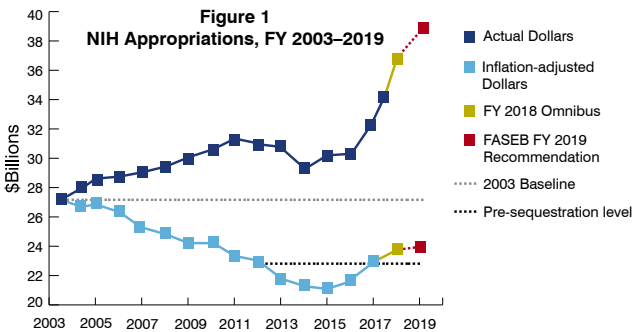
A \$39.3 billion budget (a \$2 billion increase in addition to 21<sup>st</sup> Century Cures funding<sup>3</sup>) would allow NIH to accelerate progress in all areas of biomedical science. This funding level could support about 400 additional early career and early established investigators; provide \$700 million already authorized through the 21<sup>st</sup> Century Cures Act for key research initiatives in cancer, precision medicine, neuroscience, and regenerative medicine; and bolster other areas in urgent need of additional resources, including raising the NIH grant modular budget limit (not increased since its inception in 2000). This funding means NIH could keep pace with the increased cost and sophistication of biomedical research.

## FASEB FY 2019 recommendation: at least \$39.3 billion for NIH

<sup>1</sup> www.nih.gov/about-nih

<sup>2</sup> Sustaining Discovery in the Biological and Biomedical Sciences: A Framework for Discussion. Federation of American Societies for Experimental Biology, Bethesda, MD.

<sup>3</sup> H.R. 1625—Consolidated Appropriations Act, 2018



## NATIONAL SCIENCE FOUNDATION

With its broad mandate to support fundamental research across all fields of science, technology, engineering, and mathematics, the National Science Foundation (NSF) is the cornerstone of our nation's scientific enterprise.<sup>4</sup> NSF investments in discovery-based research at institutions nationwide generate new knowledge, which in turn leads to transformative innovations that enhance quality of life.

Web browsers, modern weather forecasting, and magnetic resonance imaging (MRI) are just a few of the tangible benefits enabled by NSF-funded research.<sup>5,6</sup>

Many of these advances result from NSF's relationship to mission-oriented scientific agencies such as the NIH. For example, in the biological sciences, NSF supports research that expands the understanding of life at multiple scales of time and space, from molecules to ecosystems.<sup>3</sup>

This knowledge is then applied to advance medicine, enhance agriculture, stimulate new bioenergy technologies, and safeguard our planet's health. NSF is also uniquely positioned to support interdisciplinary collaboration, research facilities, and scientific resources—which no other agency provides.

NSF has a complementary, and critical, educational mission. The Foundation's graduate and postdoctoral fellowships and other educational programs underwrite the training of thousands of young scientists and engineers. This investment ensures a technical and scientific workforce capable of pursuing research and leading the innovative, dynamic industries of the future.

Even as the demand for scientific research has dramatically grown, the NSF budget has remained flat in real terms for 15 years (Figure 2). The federal government must renew its commitment to fundamental, discovery-based science.<sup>7</sup> Providing NSF with a budget of \$8.45 billion (\$683 million above the FY 2018 funding level<sup>8</sup>) would support about 700 additional research grants, enabling researchers to seize new scientific opportunities.

### FASEB FY 2019 recommendation: at least \$8.45 billion for NSF

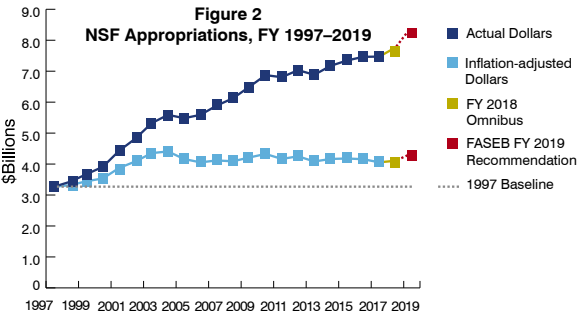
<sup>4</sup> [www.nsf.gov/about](http://www.nsf.gov/about)

<sup>5</sup> Transforming the World Through Science. National Science Foundation, Alexandria, VA

<sup>6</sup> NSF Sensational 60. National Science Foundation, Alexandria, VA

<sup>7</sup> Innovation: An American Imperative

<sup>8</sup> H.R. 1625—Consolidated Appropriations Act, 2018



FASEB advances health and well-being by promoting research and education in biological and biomedical sciences through collaborative advocacy and service to our societies and their members.

## **FASEB Member Societies**

The American Physiological Society  
American Society for Biochemistry and Molecular Biology  
American Society for Pharmacology and  
Experimental Therapeutics  
American Society for Investigative Pathology  
American Society for Nutrition  
The American Association of Immunologists  
American Association of Anatomists  
The Protein Society  
Society for Developmental Biology  
American Peptide Society  
The Association of Biomolecular Resource Facilities  
The American Society for Bone and Mineral Research  
The American Society for Clinical Investigation  
Society for the Study of Reproduction  
The Teratology Society  
Endocrine Society  
The American Society of Human Genetics  
International Society for Computational Biology  
American College of Sports Medicine  
Biomedical Engineering Society  
Genetics Society of America  
The Histochemical Society  
Society for Pediatric Research  
Society for Glycobiology  
Association for Molecular Pathology  
Society for Redox Biology and Medicine  
Society for Experimental Biology and Medicine  
American Aging Association  
U. S. Human Proteome Organization  
Society of Toxicology



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## VETERANS AFFAIRS MEDICAL AND PROSTHETIC RESEARCH PROGRAM

The Department of Veterans Affairs (VA) Medical and Prosthetic Research Program improves veterans' lives through innovations in basic, translational, clinical, health services, and rehabilitation research. Although focused on veterans' health issues, all Americans benefit from Medical and Prosthetic Research Program discoveries.

The VA's collaboration with university partners, non-profit organizations, and private industry is a model for innovative research to advance health care and prevention strategies. The research program also enables the VA to recruit and retain a cadre of outstanding physician scientists to care for the nation's veterans.<sup>9</sup>

Several areas of VA research remain critically underfunded, including post-deployment mental health issues, substance abuse, and the long-term effects of hazardous materials exposure. The VA Medical and Prosthetic Research Program needs a budget of at least \$787 million (an increase of \$65 million above the FY 2018 appropriation<sup>10</sup>) in FY 2019 to address these issues, maintain purchasing power, and support research on conditions such as traumatic brain injury that are common among service members.

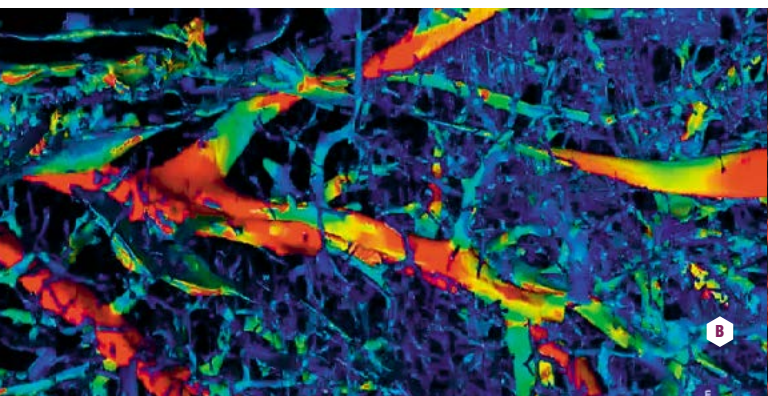
The program will also need these additional resources to address the chronic care needs of our aging veteran population, including cancer and type-2 diabetes.

A significant infusion of funds is also needed to ensure continued VA support of the Million Veterans Program (MVP), without reducing resources for other VA research areas. MVP is a multi-year effort to collect genetic samples and health information from a diverse group of veterans to understand how genes affect health, ultimately improving care.

**FASEB FY 2019 recommendation: at least \$787 million for VA Medical and Prosthetic Research Program**

<sup>9</sup> [www.research.va.gov](http://www.research.va.gov)

<sup>10</sup> H.R. 1625—Consolidated Appropriations Act, 2018



## UNITED STATES DEPARTMENT OF AGRICULTURE—AGRICULTURE AND FOOD RESEARCH INITIATIVE

The rising demand for agricultural products and the need for greater food security and improved sustainability present significant challenges for the global agricultural system.

The United States Department of Agriculture (USDA) funds an interdisciplinary research portfolio that brings cutting-edge science to these complex problems. Key to these efforts is USDA's Agriculture and Food Research Initiative (AFRI) grant program.<sup>11</sup>

AFRI funds agricultural and food sciences research at colleges, universities, and other institutions nationwide.<sup>12</sup> Established by the Farm Bill in 2008, AFRI funding led to numerous advancements, including new cultivars of wheat and better tools for monitoring and preventing avian flu outbreaks.

Additional resources are needed to advance the safety, quality, and nutritive value of food, and to foster childhood obesity and community-based nutrition education programs that help families and communities make informed nutrition choices.<sup>13</sup>

Despite AFRI's progress—and the societal challenges in need of scientifically informed solutions—the program is appropriated at about 50 percent of its full authorization, with hundreds of meritorious proposals unfunded every year.<sup>14</sup>

AFRI should be funded at its full authorization of \$700 million (\$300 million above the FY 2018 appropriation<sup>15</sup>), which would support about 500 additional research grants.

**FASEB FY 2019 recommendation: at least \$700 million for AFRI**

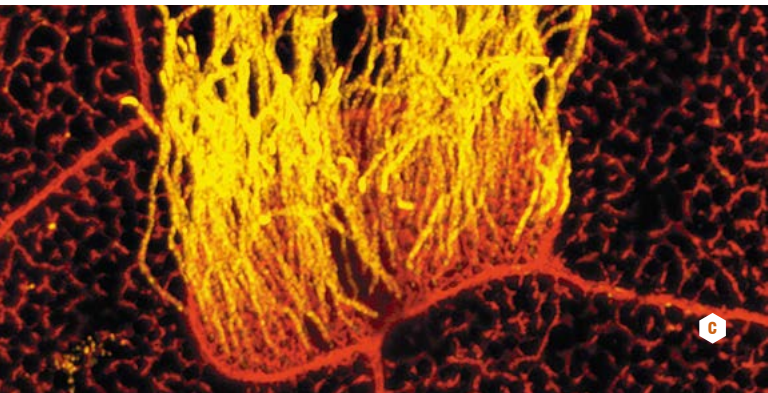
<sup>11</sup> [nifa.usda.gov/about-nifa](http://nifa.usda.gov/about-nifa)

<sup>12</sup> AFRI Annual Review, Fiscal Year 2015. United States Department of Agriculture, Washington, DC.

<sup>13</sup> President's FY 2017 Budget to Invest \$700 million in USDA's Agriculture and Food Research Initiative. NIFA Factsheet. United States Department of Agriculture, Washington, DC.

<sup>14</sup> AFRI 2015 Annual Review, Tables 1 and 2. United States Department of Agriculture, Washington, DC.

<sup>15</sup> H.R. 1625—Consolidated Appropriations Act, 2018





## DEPARTMENT OF ENERGY OFFICE OF SCIENCE

The Department of Energy Office of Science (DOE SC) is the nation's largest funder of basic physical sciences research. Many transformative inventions and technologies can be traced to DOE research, including nuclear energy, radiocarbon dating, and superconductors.<sup>16</sup>

This capacity for discovery comes in large part from DOE SC National Laboratories, which house state-of-the-art scientific instrumentation and computing facilities that no single academic or industrial institution could construct or manage.

The laboratory facilities provide unique equipment to researchers, enabling them to translate discoveries into new inventions that drive the economy and improve quality of life.

In FY 2015, nearly 3,000 NIH and NSF-supported scientific projects utilized DOE SC facilities. In all, more than 32,000 scientists and engineers currently use DOE SC labs for research and development<sup>17,18</sup>—a 20 percent increase since FY 2011.<sup>19</sup>

And the demand for DOE user facilities is growing, necessitating new investments in instrumentation, equipment, and scientific infrastructure. A FY 2019 budget of \$6.6 billion (about \$340 million above FY 2018 funding<sup>20</sup>) would support these critical investments. This recommendation is consistent with the growth trajectory proposed by the Senate Energy and Natural Resources Committee in reauthorizing DOE SC.<sup>21</sup>

**FASEB FY 2019 recommendation: at least \$6.6 billion for DOE SC**

<sup>16</sup> DOE R&D Accomplishments: Interesting Insights. United States Department of Energy Office of Science, Washington, DC.

<sup>17</sup> Department of Energy Office of Science FY 2017 Budget Request to Congress: Overview. United States Department of Energy Office of Science, Washington, DC.

<sup>18</sup> Office of Science User Facilities: Fiscal Year 2015. United States Department of Energy Office of Science, Washington, DC.

<sup>19</sup> Department of Energy Office of Science FY 2011 Budget Request to Congress: Overview. United States Department of Energy Office of Science, Washington, DC.

<sup>20</sup> H.R. 1625—Consolidated Appropriations Act, 2018

<sup>21</sup> S. 2012—North American Energy Security and Infrastructure Act of 2016.

### Image Key



CULTURE-GROWN MUSCLE CELLS FROM A MOUSE, BY KEVIN A. MURACH, CHARLOTTE A. PETERSON, AND JOHN J. MCCARTHY. A FASEB BIOART 2017 WINNING IMAGE.



MODEL OF THE COMPLETE NERVOUS SYSTEM IN ONE ARM SEGMENT OF A BRITTLE STAR BY OLGA ZUEVA, THOMAS HEINZELLER, DARIA MASHANOVA, AND VLADIMIR MASHANOV. A FASEB BIOART 2017 WINNING IMAGE.



BLOOD VESSEL NETWORK INSIDE A MOUSE'S LUNGS BY MATTHEW S. JOENS, KEL VIN WOO, DANIEL J. GEANON, DAVID M. ORNITZ, AND JAMES A.J. FITZPATRICK. A FASEB BIOART 2017 WINNING IMAGE.



HAIR-LIKE STRUCTURES ON CELLS CALLED CILIA BY VANJA STANKIC AND RACHEL K. MILLER. A FASEB BIOART 2017 WINNING IMAGE.