TABLE OF CONTENTS

EXECUTIVE SUMMARY

OVERALL APPROPRIATIONS

SUPPLEMENTARY TABLES

ORGANIZATION CHART

National Institutes of Health

Office of the Director
Director: Francis S. Collins, M.D., Ph.D.
Principal Deputy Director: Lawrence Tabak, D.D.S., Ph.D.

- National Cancer Institute — Douglas R. Lowy, M.D. (Acting)
- National Eye Institute — Paul A. Sieving, M.D., Ph.D.
- National Heart, Lung, and Blood Institute — Gary H. Gibbons, M.D.
- National Human Genome Research Institute — Eric D. Green, M.D., Ph.D.
- National Institute on Aging — Richard J. Hodes, M.D.
- National Institute on Alcohol Abuse and Alcoholism — George F. Koob, Ph.D.
- National Institute of Allergy and Infectious Diseases — Anthony S. Fauci, M.D.
- National Institute of Arthritis and Musculoskeletal and Skin Diseases — Stephen Katz, M.D., Ph.D.
- National Institute of Biomedical Imaging and Bioengineering — Roderic I. Pettigrew, M.D., Ph.D.
- National Institute of Child Health and Human Development — Catherine Y. Spong, M.D. (Acting)
- National Institute on Deafness and Other Communication Disorders — James F. Battey, Jr., M.D., Ph.D.
- National Institute of Dental and Craniofacial Research — Martha J. Somerman, D.D.S., Ph.D.
- National Institute of Diabetes and Digestive and Kidney Diseases — Griffin P. Rodgers, M.D.
- National Institute on Drug Abuse — Nora D. Volkow, M.D.
- National Institute of Environmental Health Sciences — Linda S. Birnbaum, Ph.D., D.A.B.T., A.T.S.
- National Institute of General Medical Sciences — Jon R. Lorsch, Ph.D.
- National Institute of Mental Health — Bruce Cuthbert, M.D. (Acting)
- National Institute on Minority Health and Health Disparities — Eliseo J. Perez-Stable, M.D.
- National Institute of Neurological Disorders and Stroke — Walter J. Koroshetz, M.D.
- National Institute of Nursing Research — Patricia Grady, Ph.D., R.N., F.A.A.N.
- National Library of Medicine — Betsy Humphreys, M.L.S. (Acting)
- John E. Fogarty International Center for Advanced Study in the Health Sciences — Roger I. Glass, M.D., Ph.D.
- National Center for Advancing Translational Sciences — Christopher P. Austin, M.D.
- National Center for Complementary and Integrative Health — Josephine P. Briggs, M.D.
- Clinical Center — John I. Gallin, M.D.
- Center for Information Technology — Andrea T. Norris
- Center for Scientific Review — Richard Nakamura, Ph.D.

INTRODUCTION AND MISSION

The mission of the National Institutes of Health (NIH) is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability. In pursuit of this mission, NIH conducts or supports research designed to understand the basic biology of human health and disease; apply this understanding towards designing new approaches for preventing, diagnosing, and treating disease and disability; and ensure that these new approaches are available to all.

As the Nation's medical research agency and the largest source of funding for biomedical and behavioral research in the world, NIH plays a unique role in turning basic scientific discovery into improved health. A significant and enduring investment by NIH in basic research today assures the breakthroughs in the health care of tomorrow, and NIH's translational research aims to enhance the health of each individual. This robust research enterprise depends upon NIH's ability to recruit and retain the brightest minds into successful scientific careers. With continued support, NIH contributes significantly to the economic engine that drives American competitiveness in science and technology in pursuit of advances that will lead to a Nation in which all Americans enjoy long healthy lives.

ALL PURPOSE TABLE

(Dollars in Thousands)[1]	FY 2015 Actual	FY 2016 Enacted	FY 2017 President's Budget[2]	Request +/- FY 2016 Enacted
Total, NIH Program Level	**$30,311,349**	**$32,311,349**	**$33,136,349**	**$825,000**
Less mandatry and funds allocated from different sources:				
Mandatory Type 1 Diabetes Research	-150,000	-150,000	-150,000	0
PHS Program Evaluation	-715,000	-780,000	-847,489	-67,489
Cancer Initiative Mandatory Financing			-680,000	
Other Mandatory Financing			-1,145,000	
Total, NIH Discretionary Budget Authority	**$29,446,349**	**$31,381,349**	**$30,313,860**	**-$1,067,489**
Interior Budget Authority	-77,349	-77,349	-77,349	0
Total, NIH Labor/HHS Budget Authority	**$29,369,000**	**$31,304,000**	**$30,236,511**	**-$1,067,489**
Number of Competing RPGs	*9,540*	*10,753*	*9,946*	*(807)*
Total Number of RPGs	*34,379*	*35,840*	*36,440*	*600*
FTEs	*17,824*	*18,000*	*18,000*	*0*

[1] Excludes Ebola-related funding.

[2] Includes mandatory financing.

OVERVIEW OF BUDGET REQUEST

For FY 2017, NIH requests a total program level of $33.1 billion, which is $825 million more than the FY 2016 Enacted level. This funding request will enable NIH to continue seeking fundamental knowledge about living systems and to translate that knowledge into ways to enhance health, lengthen life, and reduce illness and disability. Since its humble beginnings as a one-room laboratory 130 years ago, the impact of NIH-funded research on the health of all Americans has been truly remarkable. Due in large measure to NIH-funded research, a baby born in the United States today can expect to live to be almost 79 years old – about three decades longer than one born in 1900.[1] The Centers for Disease Control and Prevention (CDC) asserts that much of the recent improvement in life expectancy in the United States can be attributed to reductions in death rates from major causes of death, such as heart disease, cancer, stroke, and chronic lower respiratory diseases.[2] While heart disease remains the leading cause of death in the United States, the death rate from heart disease fell approximately 36 percent from 1999 to 2013.[3] Similarly, cancer death rates have been dropping more than one percent annually for the past 15 years (annual decline of 1.8 percent for men and 1.4 percent for women).[4] Likewise, HIV/AIDS treatments have extended lives greatly, and emerging strategies are enabling us to envision the first AIDS-free generation in 30 years.

A healthier Nation also results in a healthier economy, and every dollar invested by NIH multiplies the Nation's investment. For cancer alone, improvements in treatment and survival rates yield substantial economic value, estimated at nearly $500 billion in savings to current and future generations for every one percent decline in cancer deaths.[5]

NIH's exemplary record of scientific discovery is rooted in its steadfast support of basic research, its flexibility to take advantage of scientific opportunities and respond to emerging public health needs, and its careful stewardship of the resources provided by the American public. To continue in the pursuit of cutting-edge advances at the frontier of biomedical research, in FY 2017, NIH will focus on the following priority themes:

1. Foundation for Discoveries: Basic Research
2. The Promise of Precision Medicine
3. Applying Big Data and Technology to Improve Health
4. Stewardship to Inspire Public Trust

By using these themes to guide strategic investments, NIH will continue to drive biomedical discovery and innovation in the United States, maintain the country's competitive edge as a global leader in research, bolster the U.S. economy, and ultimately make significant inroads in improving the health of the Nation.

---

[1] http://www.cdc.gov/nchs/fastats/deaths.htm.
[2] Ibid.
[3] CDC WONDER Compressed Mortality Data, 1999-2013. http://wonder.cdc.gov/mortSQL.html
[4] Jemal A, Simard EP, Dorell C, et al. Annual Report to the Nation on the Status of Cancer, 1975–2009, Featuring the Burden and Trends in HPV-Associated Cancers and HPV Vaccination Coverage Levels. *J Natl Cancer Inst*. 2013 Feb 6;105(3):175-201.
[5] Murphy KM and Topel RH. The Value of Health and Longevity. *Journal of Political Economy*, 2006, 114(5).

Cutting across these themes, NIH requests $680 million in FY 2017 for the National Cancer Moonshot. With passionate and principled leadership from the Vice President, and in partnership with the Food and Drug Administration and other Federal agencies, the National Cancer Institute (NCI) will launch a bold and promising cancer research initiative to make broad advances across a range of exciting opportunities to prevent, diagnose, and treat cancer. In addition to the FY 2017 investment, NCI will also begin the initial work on components of this effort during FY 2016. The initiative has many important facets, including broad engagement across the cancer research and oncology community, and engagement with many other partners and stakeholders to make progress against all forms of cancer.

The elements of the FY 2017 Cancer Research Initiative include:

- developing new techniques to detect cancer earlier
- developing new vaccines to prevent cancer-causing infections and vaccines to target genetic changes that can cause cancer
- expanding recent successes in cancer immunotherapy to a much wider range of tumor types
- expanding research on mutations that drive cancer and determine how cells respond to cancer
- accelerating progress on detecting and treating childhood cancers
- fostering enhanced data sharing to speed discovery and verify treatment response
- funding other promising opportunities in cancer discovery, prevention, and treatment

Theme 1: Foundation for Discovery: Basic Research

NIH invests more than half of its resources in basic biomedical research. Basic research provides the foundational knowledge of the mechanisms of biology and behavior necessary to understand the causes of disease onset and progression, to identify risk factors and biological markers that allow for better diagnostics, and to develop new cures and preventive treatments. Often, this foundational knowledge is built in increments that eventually lead to major breakthroughs, but it also provides essential groundwork for tackling newly emerging infectious diseases or complex chronic diseases that are increasing rapidly in burden. Investments in basic research will continue to yield inestimable rewards and benefits to public health. Because the private sector spends the vast majority of its research dollars on translational and clinical research, NIH spending on basic research is a critical balancing factor for the health of the overall national research enterprise. Therefore, fostering a broad basic research portfolio is critical for the NIH mission. This section highlights a few examples of NIH-supported basic research activities and initiatives providing the foundation for future medical and technological advances in FY 2017 and beyond.

Advances in Microscopy

Advances in imaging techniques are giving scientists a window to observe molecular interactions with extraordinary detail. For example, NIH-funded researchers recently used cryo-electron microscopy (cryo-EM) to view, in near-atomic detail, the configuration of an enzyme while it is bound to a drug that blocks the enzyme’s activity. Enzymes are typically proteins that catalyze biochemical reactions in the cell, and understanding the detailed structure of an enzyme can help enable scientists to design new drugs that change the enzyme’s function to treat a disease, much like understanding the detailed structure of a lock might allow the design of a key. Other techniques used to determine molecular structure, such as x-ray crystallography, require conditions which could alter the structure, and therefore might give inaccurate information. But cryo-EM permits researchers to see the protein in a nearly natural state by flash-freezing the sample so the water around the protein remains liquid-like, preventing the formation of damaging ice crystals. Determining accurate protein structures allows for more reliable drug design and development methods.

Another application of this type of NIH-supported basic research is shedding light on how to develop therapies to target rapidly mutating viruses. Single particle electron microscopy, related to the technique described above, is an imaging approach now being used in Ebola vaccine development. Researchers have determined how the antibodies in a powerful Ebola drug, called ZMapp, attach to the surface of the Ebola virus. The images revealed that some of them can prevent Ebola from invading a host cell, while others act as a beacon, alerting the host immune system that the virus is present and must be destroyed. This basic structural biology experiment provided the scientific rationale for ZMapp as an effective Ebola treatment, currently being tested in clinical trials. These methods can be used for many other diseases, and FY 2017 investments will explore using these techniques for future drug development.

BRAIN Initiative

The Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative continues to address basic neuroscience questions. A collaboration with the National Science Foundation, the Defense Advanced Research Projects Agency (DARPA), the Intelligence Advanced Research Projects Activity, the Food and Drug Administration (FDA), and industry partners, this program is developing and using technologies to produce a clearer, more dynamic picture of how individual cells and neural circuits interact in time and space. Measuring activity at the scale of neural networks in living organisms has the potential to decode sensory experience, memory, emotion, and thought. Furthermore, these developing technologies may help reveal the underlying pathology in various brain disorders and provide new therapeutic avenues to treat, cure, and prevent neurological and psychiatric conditions.

To guide the BRAIN Initiative, a working group of the NIH Advisory Committee to the Director (ACD) developed a plan, released in June 2014, which outlines scientific goals, a timetable, milestones, and a cost estimate for FYs 2016-2025. According to the working group recommendations, accomplishing the ambitious goals of this Initiative will require significant increases in investment. BRAIN will be supported by an NIH total budget of $195 million, an increase of $45 million for FY 2017. The increased funds will continue to support basic neuroscience research, human neuroscience, neuroimaging, and training initiatives, as well as potential projects to collaborate with industry to test novel devices in the human brain, new ways to address big data from the brain, and developing devices for mapping and tuning brain circuitry.

Human Placenta Project

The placenta is arguably one of the most important but most neglected organs in the human body. It influences the health of a woman and developing fetuses during pregnancy and affects the lifelong health of both. Despite this, understanding of the biology of the placenta is very limited. Although some foundational knowledge has resulted from ultrasound exams, blood tests, and examining placental tissue after delivery, countless questions about placental development and function remain. Focusing attention on these basic research questions will enhance understanding of the organ's role in overall health and disease. In FY 2015, NIH launched the Human Placenta Project, a collaborative initiative to understand normal and abnormal placental development, identify biomarkers that predict adverse pregnancy outcomes, and examine the effects of environmental factors on the placenta. Moreover, researchers will be encouraged to develop technologies or innovative applications of existing technologies to assess the structure and function of the human placenta in real time, monitor placental health during pregnancy, and design interventions to prevent abnormal placental and fetal development. In fact, researchers already have developed a tiny device that mimics the functions of the placenta outside the body to enable more rapid and cost effective studies of the placenta. These and other technologies will contribute to the fundamental understanding of how the placenta receives blood and oxygen, attaches to the uterine wall, and conveys nutrients to the fetus. This new knowledge will lead to improved maternal, prenatal, and neonatal health.

Theme 2: The Promise of Precision Medicine

Turning basic science discoveries into applications for health is a high priority for NIH. To this end, President Obama announced the Precision Medicine Initiative® (PMI) in January 2015. Capitalizing on the alignment of scientific opportunities created by advances in genomics, the widespread adoption of electronic health records, the recent revolution in mobile health technologies, and the emergence of computational tools for analyzing large biomedical data sets, precision medicine could usher in a new era in how we treat and diagnose disease. Historically, physicians have generally had to use a one-size-fits-all approach to make recommendations about disease prevention and treatment based on the expected response of the average patient. Precision medicine takes into account individual variability in genes, environment, and lifestyle for each person. NIH has a leading role in the multi-agency PMI, with a specific $200 million budget in FY 2016, as well as an additional $100 million requested in FY 2017 to support NIH's efforts. The $100 million increase in FY 2017 will continue the ramp-up of the cohort toward one million or more volunteer participants. These funds will support several related activities: 1) informatics; 2) building a biorepository; 3) enrolling and consenting participants; 4) staffing; 5) genome analysis; and 6) core phenotyping. This additional funding is critical to achieving the planned scope of PMI.

National Research Cohort

PMI has two major research aims, both of which are progressing at a rapid pace. The first major research aim of the PMI is the development of a national research cohort of one million or more U.S. volunteers. Increasingly, individuals are interested in taking part in biomedical research and their own health care decision-making, and they will be valuable partners both in developing the framework for sharing their biological, environmental, and lifestyle data, as well as their electronic health records, and in advancing effective treatments and prevention measures. This may be facilitated by new mobile technology platforms. Due to the personal and confidential nature of the data to be collected and shared, focused attention will be paid to ensuring appropriate data protections for the cohort participants. A cohort of this size will capture data on a wide range of diseases and be large enough to detect genetic and environmental effects that are difficult to discern among smaller groups of people. Scientists will be able to use data from this cohort to identify trends and understand health and disease on a much larger scale that will lead to new ideas for diagnostic tests, treatment options, medical devices, and prevention strategies. With FY 2016 funds, NIH issued several PMI Cohort Program funding opportunities to build a solid infrastructure for the PMI Cohort Program, including a national coordinating center, biobank, network of participating healthcare provider organizations, direct volunteer enrollment, and participant mobile technologies. In November 2015, NIH launched a search for a PMI Cohort Program Director and assembled an external Advisory Panel to guide the PMI Cohort Program over the next several years. FY 2017 funds will be used to continue the implementation of this bold initiative to build a research resource that will be a national treasure trove of information for decades to come.

Precision Medicine Initiative for Oncology

Accelerating the field of precision medicine in oncology is the PMI's second research aim. The National Cancer Institute (NCI) is devoting $70 million in FY 2016 funding to the Precision Medicine Initiative for Oncology (PMI-O). The PMI-O seeks to expand significantly on current efforts in cancer genomics to inform prognosis and treatment choice for people with cancer, as well as to enhance precision screening and prevention approaches. A central component of the PMI-O involves expanding support for clinical trials that select targeted drug therapy based on a patient's molecular abnormalities (rather than on the site of the tumor's origin) when standard therapy is not effective. Enhanced precision oncology clinical trials will perform genomic analyses on individual tumors to discern what gene mutations are driving the malignancy. The genomic information will be matched with available targeted drugs provided by pharmaceutical industry partners to optimize responses for the individual. This strategy is already being tested in NCI's Molecular Analysis for Therapy Choice (NCI-MATCH) clinical trial, launched in 2015 and involving participants with a range of cancer types. A similar trial, Pediatric MATCH, expected next year, will test this approach in children with cancer.

Other important components of the PMI-O include intensive efforts to understand the molecular basis of single agent cancer treatment resistance and to overcome resistance through a combination of therapies; to significantly expand the number of available human cancer models through genomics-based preclinical studies; and to build a national information platform or database to support the integration of genomic information with clinical responses and outcomes for use by scientists and other professionals. FY 2017 funding continues at $70 million and will support the continuation and expansion of these and other similar precision oncology research projects.

Enabling Current Advances in Precision Medicine

Although the Precision Medicine Cohort is still in development, NIH already is engaged in research related to precision medicine for many diseases, and in FY 2017, NIH will support initiatives across its Institutes and Centers (ICs) to take advantage of this unprecedented opportunity. For example, the National Heart, Lung, and Blood Institute recently launched its

Trans-Omics for Precision Medicine (TOPMed) program. TOPMed combines whole-genome sequencing and molecular measurements (e.g., metabolites, proteins, RNA) with behavioral, environmental, and clinical data, to facilitate discovery of factors that may affect individual risk for heart, lung, blood, and sleep disorders.

In another example, as mental health research moves toward understanding the underlying biology affecting normal and abnormal behavior, we may be able to identify subgroups of individuals with these brain circuit disorders through converging data from biological, behavioral, familial, cultural, and environmental factors. This is the aim of the National Institute of Mental Health's Research Domain Criteria project, which will develop more precise diagnostic categories that could lead to better, more individualized treatment for mental health disorders. Similarly, the National Institute on Alcohol Abuse and Alcoholism has launched a new program to develop the Alcohol Addiction Research Domain Criteria (AARDoC) framework to better understand and address the biological, cognitive, and behavioral factors that cause individual variation in alcohol misuse and alcohol use disorders.

NIH also plans to support research to explore the promise of precision medicine to improve minority health and reduce or eliminate health disparities. The first wave of these awards, anticipated in FY 2016, will create Transdisciplinary Collaborative Centers to use innovative approaches that combine population science – which focuses on reducing the burden of disease through translation, implementation, and dissemination – with precision medicine. Research projects will examine the relationship between biological, behavioral, social, and environmental predictors of disease susceptibility, and patients' responses to different therapies. All of these efforts will help realize the goal of precision medicine: getting the right treatment to the right person at the right time.

Theme 3: Applying Big Data and Technology to Improve Health

As biomedical science generates larger and more complex datasets through precision medicine and other research projects, it is increasingly important to develop methods for storing, organizing, and analyzing these datasets. Utilizing optimal data methods could enable researchers to gain insights into heretofore unidentified relationships among genes, environment, and behavior that may help explain susceptibility to and progression of disease. These bioinformatics methods stand at the intersection of biomedical science and cutting-edge computing and use innovative, trans-disciplinary thinking to provide new insights into basic science and to envision new strategies for disease diagnosis, prevention, and treatment. Understanding how to glean insights into these vast amounts of data will be key to driving advances in precision medicine and all areas of disease research. In addition to innovations in data science and computing, NIH also is leveraging rapid growth in the technology sector to spur technological innovation to improve biomedical research and practice.

Big Data Initiatives

All NIH ICs support the Big Data to Knowledge (BD2K) initiative, which has expanded since its inception in 2012. This program now includes 11 Centers of Excellence for Big Data Computing as well as NIH-funded scientists across the country working to develop new software, methods, and other solutions to solve the puzzles presented by collecting, analyzing, and sharing large biomedical datasets. In FYs 2014-2015, NIH issued several funding announcements designed to bring together experts in disparate fields to develop, optimize, and disseminate technologies for biomedical computing, informatics, and big data science. The BD2K program also aims to make data accessible for widespread use and to maximize community engagement. To that end, in FY 2015, NIH issued a funding announcement to develop interactive digital media that uses crowdsourcing to engage the public in analyzing biomedical research.

NIH also is committed to data science training within the biomedical research workforce with programs like the NIH Data Science Workforce Development Center, which will include both online and in-person courses that allow researchers to upgrade their data skillset. In addition, as part of the BD2K program, NIH currently sponsors grants that support the development of data training resources and the training of big-data-literate scientists who will be positioned to become the next generation of cutting-edge researchers. In FY 2017, NIH will continue to invest in methods and technologies for big data computing, as well as continued training resources for the growing workforce needs in this area.

mHealth: Leveraging Mobile Technology to Improve Health and Health Research

In recent years, mobile technology has developed at an exponential rate, with more than 7 billion cellular phone subscriptions worldwide as of 2014.[6] A 2013 Pew survey found that, in the United States, 91 percent of adults have a mobile phone, and 58 percent have a smart phone.[7] Research has shown a growing interest in using phones and related devices to obtain health information, and there is a fast-growing market for smart phone "apps" that track health and fitness. This movement towards using personal electronics for health applications, called "mHealth," presents an opportunity to advance research and diagnostics, prevent disease, reduce disparities, and increase access to health care services and information. NIH is committed to using mobile technology to improve research and health care, while maintaining rigorous standards for evaluating the information and utility they provide.

For example, mHealth shows great promise for encouraging healthy behaviors that could reduce obesity, but recent studies found that most commercially available weight loss interventions did not use minimally best practices.[8] NIH currently funds work on creating sensors and activity measures for mobile applications that accurately measure energy metabolism and diet, both through extramural funding opportunities and the Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) program. NIH also supports work on mobile applications that can monitor markers of health and disease, improve adherence to treatment regimens, provide medical information, and support the treatment of substance abuse. In addition, mHealth offers the opportunity for collecting and storing an abundance of real-world data about the behavior and health of consenting individuals in a clinical trial, without participants having to report to a researcher in-person on a regular basis. NIH is working to

---

[6] http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx
[7] Duggan, M. *Cell Phone Activities 2013*. PewResearchCenter Sept 2013. http://www.pewinternet.org/2013/09/19/cell-phone-activities-2013/
[8] Pagoto et al. Evidence-Based Strategies in Weight-Loss Mobile Apps. Am. J. Prev. Med. 2013

develop new sensors and validate existing commercial sensors, and exploring possibilities for recruiting and monitoring clinical trial subjects remotely through their mobile devices.

The Future of the National Library of Medicine

As part of its efforts to build data infrastructure that will support the future of biomedical research, NIH has conceived a long-term scientific vision for the National Library of Medicine (NLM) as a unifying force in biomedicine that promotes and accelerates knowledge generation, dissemination, and understanding in the United States and internationally. In the past, the NLM has been at the forefront of the collection, sharing, and analysis of biomedical and health information, and the NLM pioneered free Internet access to published biomedical literature (PubMed), genetic and genomic data, clinical trial registration and results, and NIH-funded biomedical research as part of the Public Access Policy. NLM's PubMed/MEDLINE is now the most frequently used scientific and medical database in the world, with more than 700 million visits in 2014 by researchers, medical practitioners, and the general public accessing more than 22 million available journal citations. NLM also is engaged in advanced R&D on biomedical informatics through the National Center for Biotechnology Information (NCBI), which received direct funding through FY 2016 appropriations to better address the increasing challenges of collecting, organizing, analyzing, and disseminating the large amounts of data generated by biomedical research.

Recognizing the rapid pace of change in biomedical data science, increasing use of big data, and growing diversity of data types and sources, the NIH ACD was tasked to review the NLM's current mission, organization, and program priorities. In June 2015, the ACD articulated a strategic vision for maintaining NLM's status as an international leader in biomedical and health information that recognizes the need to position the NLM as the epicenter for biomedical data science across the biomedical research enterprise and expand its activities beyond the walls of NIH to funded extramural institutions.

Theme 4: Stewardship to Inspire Public Trust

NIH strives to invest wisely in research that will drive new discoveries that could lead to improving the public's health. As the Nation's biomedical research agency, NIH is acutely aware of its responsibility to be an efficient and effective steward of the resources provided by the American people.

Optimize Priority Setting and Carefully Marshal Resources

Setting clear goals and objectives that are shared across NIH will enable the Agency to prioritize the areas of science that are ripe for advancement or in most need of additional support. To that end, NIH recently released an NIH-Wide Strategic Plan that emphasizes the importance of balancing basic and applied science, transparency in the process of setting research priorities, practicing good stewardship of its resources, and managing for results.[9] To develop this plan, NIH sought extensive input from the public through a Request for Information and webinars in

[9] http://www.nih.gov/sites/default/files/about-nih/strategic-plan-fy2016-2020-508.pdf

addition to feedback from the NIH ACD and the Advisory Councils of individual Institutes and Centers (ICs). The strategic plans of each IC eventually will be linked to this overarching strategic plan to ensure a cohesive priority setting process. Recent advances in portfolio analysis methods will aid efforts to prioritize NIH investments by helping NIH identify emerging scientific opportunities and optimize future scientific investments.

In addition to prioritizing its investments, NIH takes seriously its role as a leader in the biomedical research enterprise. As the primary funder of biomedical research in the United States, it is important for NIH to take the lead in promoting rigorous experimental design, analysis, and reporting as well as emphasizing the importance of reproducible research results. NIH has released principles and guidelines for reporting preclinical research that are intended to enhance rigor and support research that is reproducible, robust, and transparent. These guidelines will reinforce scientific practices that engender confidence in research results within the scientific community and the public. Additionally, in 2014 and 2015, NIH held a series of workshops to examine issues around reproducibility of data collection and analysis with advanced technologies. The workshops were designed to educate intramural researchers about the potentials and pitfalls of these technologies from the perspective of data reproducibility to inform scientists' use of these techniques and also to aid them in interpreting others' results using these methods. NIH also has created materials to enhance training of graduate students and fellows on approaches to enhance the reproducibility of science and currently is supporting development of curriculum on experimental design that will be shared freely.[10] Finally, NIH has implemented a grant policy for enhancing reproducibility through rigor and transparency. Beginning in January 2016, research and career development applications must address scientific premise, scientific rigor, consideration of relevant biological variables such as sex, and authentication of key resources.

NIH bears responsibility for the oversight of its clinical trials portfolio. NIH is making a number of policy and programmatic changes to enhance the quality, relevance, and feasibility of NIH-funded clinical trials. NIH also is establishing a policy for multi-site studies to use a single Institutional Review Board (IRB) for review. This policy will eliminate duplicate IRB reviews and speed up the initiation of clinical research. Another policy initiative aims to enhance clinical trial information dissemination by calling for all NIH-funded clinical trials to register and submit results to ClinicalTrials.gov, a publicly available repository of clinical trials managed by the NIH NLM. Implementation of these reforms, which will continue in FY 2017 and beyond, will enhance the efficiency and effectiveness of NIH-funded clinical trials.

Enhance NIH Prioritization Through Partnerships

To optimize its use of taxpayer funds, NIH leverages resources through key partnerships across ICs, with other Federal agencies, and with the private sector. For example, the NIH Common Fund supports programs that bring together several ICs and are designed to achieve a set of well-defined, high-impact goals within a relatively short timeframe. These projects range from defining the composition of the human microbiome, (the collection of bacteria, fungi, and viruses that live naturally in and on the human body), to developing reliable, easy-to-use patient-

[10] http://www.nih.gov/science/reproducibility/index.htm

centered measurement tools for clinicians and researchers to assess dimensions of health and well-being that are not captured by clinical and laboratory tests. The Common Fund will continue to support ongoing programs and develop new ideas in FY 2017.

NIH also is forging novel interagency partnerships that benefit from the strengths and mission focus of other Federal agencies. One such collaboration is the Tissue Chip for Drug Screening initiative, which aims to create 3-D chips with living cells and tissues that model the function of human organs such as the lung, liver, and heart. Ultimately, the goal of this partnership with FDA and DARPA is to assemble ten different organoids on a single chip to simulate many functions of the human body. This human biochip could be used to test drug toxicity and accelerate the process by which the safety and efficacy of potential drugs are assessed.

Innovative public-private partnerships enable NIH to use expertise in other sectors to advance research further than it could alone. For example, the Accelerating Medicines Partnership seeks to identify new drug targets for Alzheimer's disease, type 2 diabetes, and the autoimmune disorders lupus and rheumatoid arthritis. NIH is partnering with ten pharmaceutical companies and non-profits, as well as FDA, in a way that taps each collaborator's strength to ensure the best contributions to science. With FY 2017 funds, these ongoing partnerships will be bolstered, and new partnerships in other disease areas may be possible.

Strengthen and Sustain the Biomedical Workforce

The biomedical research workforce is the backbone of scientific discovery. NIH continually seeks to cultivate a diverse, creative, innovative, and productive group of scientists who are dedicated to their research and whose work reflects NIH's mission. To fully support and sustain the best scientists in the biomedical workforce, NIH will expand ways to revitalize physician-scientist training, encourage early stage investigators, enhance workforce diversity, and support more person-centered grants that focus on an investigator's entire research program and their history of success rather than a specific project.

Some of these efforts already are underway, and more are planned for FY 2017 and beyond. For example, in order to continue to attract the brightest minds to biomedical research, NIH is committed to enhancing the diversity of its funded workforce. The Enhancing the Diversity of the NIH-funded Workforce program aims to transform the culture and effectiveness of biomedical research training and mentoring to attract and retain individuals from underrepresented groups in biomedical research. This program consists of three integrated initiatives. The Building Infrastructure Leading to Diversity (BUILD) initiative focuses on training awards designed to learn how to attract students from diverse backgrounds into the biomedical research workforce and encourage their persistence in this career field. The National Research Mentoring Network (NMRN) addresses the need for increased access to high quality research mentorship and networking opportunities by establishing a nationwide, interconnected set of skilled mentors linked to mentees. NMRN also will develop best practices for mentoring, provide training for mentors, and provide professional opportunities for mentees. All of the initiatives in this program are coordinated by a central evaluation center that will track effective training and mentoring approaches and serve as a focal point for dissemination of best practices.

To allow scientists more freedom to innovate and explore new lines of inquiry, NIH is piloting longer grant awards to provide more stable support for investigators. This includes the National Cancer Institute's Outstanding Investigator Award, which will provide long-term support to investigators who have extraordinary records of cancer research productivity and who propose to conduct exceptional research, as well as the National Institute of General Medical Science's Maximizing Investigators' Research Award (MIRA). By supporting an investigator's research through a single, unified grant rather than through a series of separate, individual research project grants, MIRA will allow scientists the flexibility to explore new research ideas that arise during the course of their work. Many ICs are piloting similar grant programs to foster creativity and scientific discovery. Collectively, through these high-risk, high reward programs and other efforts, NIH strives to facilitate the best opportunities for researchers to contribute to the scientific enterprise and create a productive, sustainable workforce.

Reduce Administrative Burden to Grantees

NIH grantees must comply with numerous reporting requirements designed to protect humans and animals in research, the public's health and safety, and appropriate expenditure of tax dollars. However, NIH recognizes the significant workload that these administrative requirements produce. In support of the extramural community, NIH is committed to streamlining these reporting processes to ensure that scientists spend as much time as possible in the lab, conducting research, and training the next generation of innovators.

For example, to streamline the pre-award process, NIH introduced the web-based Application Submission System & Interface for Submission Tracking (ASSIST) to prepare and submit grant applications electronically. This user-friendly system simplifies the application process by allowing several processes to occur automatically, including populating many data fields from established profiles, generating a table of contents, and validating the application based on certain business rules prior to submission. While maintaining oversight of the funds it awards is vital, NIH will continue to pursue optimizing processes that relieve administrative burden.

NIH also supported an *ad hoc* committee of the National Academy of Sciences that convened to examine Federal research regulations and reporting requirements and to identify regulations and requirements that are burdensome, as well as to articulate improved approaches to reduce such burdens. Part I of the committee's report, "*Optimizing the Nation's Investment in Academic Research: A New Regulatory Framework for the 21st Century* was released in September 2015. Part II of the report is due in 2016. Additionally, NIH participates in the Federal Demonstration Partnership and the interagency Research Business Models working group of the President's National Science and Technology Council, which provide valuable platforms for discussion and developing solutions for ways to reduce administrative burdens.

Conclusion

The Nation's investment in NIH has led to countless advances in the sciences of human health and disease. Each year, approximately 83 percent of NIH's budget is awarded through more than 57,000 research and training grants to the Nation's finest institutions, small businesses, and scientists.[11] An additional 11 percent is used to support the exceptional cadre of scientists who conduct research in the NIH intramural program.

NIH-funded research not only extends lives and improves the health of Americans but also provides significant benefits to the U.S. economy. NIH research helps to reduce health care spending by producing better, more cost-effective therapies, preventive strategies, and appropriate clinical guidelines.

The economic benefits of improved health are enormous. Research-related gains in average life expectancy for the period from 1970 to 2000 have an economic value estimated at $95 trillion, about $3.2 trillion per year. Investment in one NIH-funded study on postmenopausal hormone therapy resulted in long-term financial and health outcomes worth an estimated $37.1 billion, a return of nearly $140 for each dollar of funding.[12] The promise of NIH research is exemplified by its pursuit of a universal flu vaccine. Such a vaccine could reduce incidence and deaths significantly and potentially reduce the estimated $87.1 billion in annual medical costs, loss of lives, and lost productivity.

Researchers in every State hold a share of NIH's investment. According to a report from United for Medical Research, in 2012, NIH funding directly supported more than 400,000 jobs across all 50 States and the District of Columbia.[13] Indirectly, NIH-funded discoveries serve as the foundations for the biotechnology, pharmacological, and research tools technology industries, which provide jobs for millions of Americans. The influence of public-sector discoveries on the economy is significant as well: the *Impact of Genomics on the U.S. Economy* study estimates that the $12.3 billion investment by the United States in the Human Genome Project (HGP) and its follow up research programs has resulted in nearly $1 trillion of economic growth – a 178-fold return on investment – at a cost of only $2 per year for each U.S. resident.[14]

Since 1992, the United States has fallen from second to tenth in overall R&D intensity (R&D investment/GDP = 2.8 percent) – now ranking behind Israel, Sweden, Finland, Japan, South Korea, Switzerland, Taiwan, Denmark, and Germany.[15] The United States continues to be the largest public funder of biomedical research worldwide, with more than $117 billion in medical research expenditures, from both public and private sources, in 2011.[16] Recognizing the large role that biomedical science plays in innovation and economic growth, many countries around the world have increased their investment substantially. NIH received a $2 billion (6.6 percent)

---

[11] http://officeofbudget.od.nih.gov/pdfs/FY16/Supplementary%20Tables.pdf
[12] J.A. Roth et al. "Economic return from the Women's Health Initiative estrogen plus progestin clinical trial: a modeling study" Ann. Intern. Med. 2014. http://annals.org/article.aspx?articleid=1867051
[13] United for Medical Research. 2012. *NIH's Role in Sustaining the U.S. Economy*. http://www.unitedformedicalresearch.com/wp-content/uploads/2012/07/NIHs-Role-in-Sustaining-the-US-Economy-2011.pdf
[14] Battelle. 2013. *The Impact of Genomics on the U.S. Economy*. http://web.ornl.gov/sci/techresources/Human_Genome/publicat/2013BattelleReportImpact-of-Genomics-on-the-US-Economy.pdf
[15] "Science and Engineering Indicators 2014" National Science Foundation, February 2014. http://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4h.htm#s2
[16] Moses et al., "The Anatomy of Medical Research: US and International Comparisons" Journal of the American Medical Association, 2015. http://jama.jamanetwork.com/article.aspx?articleid=2089358.

increase in FY 2016. The requested budget, while a substantial investment, is nevertheless lower than the purchasing power NIH had in FY 2003 when adjusted for the biomedical research and development price index (developed for NIH primarily to facilitate analysis of purchasing power). One way NIH and its grantees can make resources go further is to improve productivity and take advantage of the many research techniques and mechanisms, such as human genome sequencing, whose costs have decreased dramatically over the past decade. The FY 2017 Budget provides an increase of $825 million to NIH to continue making progress on the cutting edge frontiers on biomedical research.

Relative to major countries in North America, Europe, and Asia, the United States now has the slowest annual growth rate in medical research investment at 1.0 percent; China (16.9 percent), Australia (9.3 percent), Japan (6.8 percent), Canada (4.5 percent), Europe (4.1 percent), and other Asian countries (20.8 percent) are all increasing their annual investments in medical research at a faster pace.[17] China alone accounts for about one-fourth of the total global growth of R&D. These trends have resulted in the restructuring of the scientific workforce and the share of total global investment in medical research. From 1996 to 2011, China's workforce increased 6 percent annually to reach 1.31 million workers, now making it the largest national science and technology workforce in the world.[18]

Increased global investment in biomedical research is a positive trend for science and for health. With more bright minds focused on the health and disease issues that confront us, the chances of productive partnerships and innovative solutions will reach new heights. However, the country that makes the investments in research traditionally enjoys the greatest benefits in health and economic growth. As the largest funder of biomedical research in the world, NIH must continue as a leader in the biomedical research enterprise, investing in the most promising scientific opportunities in basic science, precision medicine, big data computing, and emerging scientific horizons. By investing wisely in research and maintaining good stewardship of its resources, NIH will remain at the forefront of scientific discovery.

[17] Moses et al., "The Anatomy of Medical Research: US and International Comparisons" Journal of the American Medical Association, 2015. http://jama.jamanetwork.com/article.aspx?articleid=2089358.
[18] "Science and Engineering Indicators 2014" National Science Foundation, February 2014. http://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4h.htm#s2

IMPACT OF BUDGET LEVEL ON PERFORMANCE

Programs and Measures (Dollars in Millions, except where noted)	**FY 2016 Enacted[1]**	**FY 2017 President's Budget[2]**	**FY 2017 +/- FY 2016**
Research Project Grants	$17,820.973	$18,206.620	2.2%
Competing Average Cost (in thousands)	$470.846	$468.489	-0.5%
Number of Competing Awards (whole number)	10,753	9,946	-7.5%
Estimated Competing RPG Success Rate (absolute rate)	19.2%	17.5%	-8.9%
Research Centers	$2,644.811	$2,589.224	-2.1%
Other Research	$2,010.924	$2,083.762	3.6%
Training	$830.430	$848.649	2.2%
Research & Development Contracts	$2,915.243	3,173.386	8.9%
Intramural Research	$3,581.878	3,614.558	0.9%
Research Management and Support	$1,685.252	$1,719.314	2.0%
Common Fund (non-add)	*$675.639*	*$775.639*	*14.8%*
Buildings & Facilities Appropriation	$128.863	$128.863	0.0%
Other Mechanisms[3]	$692.974	$771.973	11.4%
Total, Program Level[4]	**$32,311.349**	**$33,136.349**	2.6%

[1] Excludes Ebola related funding.

[2] Includes mandatory financing.

[3] Includes Office of the Director-Other, building repair & improvement (R&I) funds allocated for the NCI-Frederick facility, and Superfund Research activities funded from the Interior appropriation.

[4] Includes discretionary budget authority received from Labor/HHS appropriations (ICs) and the Interior appropriation (Superfund). Also includes mandatory budget authority derived from the Special Type 1 Diabetes account, Program Evaluation Financing, and other mandatory financing.

OVERVIEW OF PERFORMANCE

The NIH mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability. Investments in basic biomedical and behavioral research make it possible to understand the causes of disease onset and progression, design preventive interventions, develop better diagnostics, and discover new treatments and cures. Realizing the benefits of fundamental biomedical discoveries depends on the translation of that knowledge into the development of new diagnostics, therapeutics, and preventive measures to improve health. Investments in translational research are leading to the identification of new targets and pathways for the development of new therapeutics.

The FY 2017 budget request reflects the Agency's longstanding commitment to invest strategically using performance-based analysis, as emphasized in the GPRA Modernization Act of 2010 (P.L. 111-352). Through the continuous evaluation and strategic management of its research portfolio, NIH focuses on funding research that shows the greatest promise for improving the overall health of the American people. In addition, NIH continually seeks to identify and address high-priority scientific opportunities and emerging public health needs. By managing its research portfolio to support key research priorities, NIH ensures the most effective use of funds to achieve the greatest impact on the health and welfare of the Nation. In particular, NIH's strong peer-review process, site visits, performance monitoring, program evaluation, and performance-based contracting enable the Agency to ensure that its investments generate results for the American people.

NIH strives to achieve transparency and accountability by regularly reporting results, achievements, and the impact of its activities. To increase transparency and promote effective use of resources, NIH began reporting the amount of indirect costs paid per grant on its Research Portfolio Online Reporting Tools website in October 2013. NIH supports a wide spectrum of biomedical and behavioral research and engages in a full range of activities that enable research, its management, and the communication of research results. Because of this diversity and complexity, NIH uses a set of performance measures that is representative of its activities and is useful for tracking progress in achieving performance priorities. This representative approach has helped NIH to share progress of its performance priorities with HHS, the rest of the Executive Branch, the Congress, and the public.

The NIH performance measures reflect the Agency's overall goals to advance basic biomedical and behavioral science, support translational research, and enhance the development of human capital, and strengthen the scientific workforce. All of NIH's measures support the goals and objectives of the HHS Strategic Plan 2014-2018. In particular, NIH substantially contributes to the HHS Strategic Goal 2–Advance Scientific Knowledge and Innovation. For example, in FY 2017, in support of Objective A (Accelerate the process of scientific discovery to improve health) under Goal 2, NIH will support promising biomedical research and human capital investment with the goals of: 1) identifying two molecular-targeted therapies for disorders of the immune system in children, 2) completing pre-commercial development of a point-of-care technology targeted for use in primary care setting, and 3) providing research training for predoctoral trainees and fellows as well as postdoctoral fellows to promote greater retention and long-term success in research careers.

Performance Management

Performance management at NIH is an integrated and collaborative process to ensure that the Agency is achieving its mission to conduct and support research to improve public health. At the Agency level, the NIH Director sets priorities, monitors performance, and reviews results across the 27 ICs and OD. OD is the central office responsible for setting policy for NIH, and for planning, managing, and coordinating the programs and activities of all NIH components. The NIH Director provides leadership to the ICs and helps identify needs and opportunities, especially for efforts that involve multiple ICs. Each IC and OD office carries out priority setting, performance monitoring, progress reviews, and makes adjustments based on progress achieved in their respective areas of science. In addition to the performance management processes that occur for the NIH research program, there are equivalent processes for administrative management functions.

The NIH performance framework includes: 1) priority setting with input from key stakeholders; 2) implementation and management of activities that support priorities; 3) monitoring and assessment of progress, and identification of successes and challenges; 4) oversight by IC leadership and OD office directors in assessing overall progress toward priorities and identification of best practices, appropriate next steps, and corrective actions (as needed); 5) incorporation of regular feedback from IC and OD office leadership to enhance activities; 6) regular reviews of priorities, progress, and outcomes by the NIH Director and IC Directors; and 7) regular review of performance and priorities by external expert review groups including grant peer-review groups, Advisory Councils, and ad hoc working groups.

Qualitative and quantitative information is used to monitor progress and help to identify successes, as well as obstacles in achieving short and long-term goals. Supporting high-performing research is a process of adapting to new developments or newly identified barriers, or shifting resources to pursue promising unanticipated results that may provide critical new information. Moreover, the impact of research may not be immediately known and may depend on additional development or on advances in other fields. Despite these challenges, NIH leadership is able to manage performance effectively by using the best available information to assess progress toward achieving priorities and making appropriate adjustments.

Research is an inherently collaborative endeavor, and partnerships are crucial to achieving scientific research outcomes. The role of the extramural research community (the scientists at universities and hospitals across the country and around the world) as NIH's partner in research is well known. However, of increasing importance are partnerships with private companies, not-for-profit institutions, non-governmental organizations, other Federal agencies, and state and international entities. Joint research and training activities and other exchanges with such groups increase the leverage of NIH resources and support vibrant partnerships to help NIH achieve its mission. Moreover, such partnerships facilitate valuable information feedback loops that identify emerging needs, suggest important new research questions, and otherwise inform priority setting. Partnerships also provide access to populations that are essential to advancing knowledge.

All scientific research carried out through NIH support is subjected to a rigorous and consistently applied review process. For example, the Extramural Research Program, which includes the largest category of NIH-funded research, utilizes two levels of peer review. The first level consists of chartered scientific review groups composed of outside experts in particular scientific disciplines. The second level is the National Advisory Councils of the ICs. For the Intramural Research Program, the progress of individual scientists and their laboratories is evaluated once every four years by Boards of Scientific Counselors composed of external experts. These reviews enable ongoing assessments of all intramural labs and the accomplishments of the scientists who contribute to them. It is through this well-honed system of peer review that NIH maintains its focus on supporting research of the highest possible quality.

The NIH approach to performance management is undergirded by the NIH Governance Structure. That structure includes the NIH Steering Committee and seven standing Working Groups.[19,20] Ad-hoc working groups are established, as needed, to address emerging issues. The premise of the structure is that shared governance, which depends on the active participation of the IC Directors with the NIH Director, will foster the collaborative identification of corporate issues and a transparent decision-making process. With active participation by the IC Directors in NIH-wide governance, NIH can maximize its perspective and expertise in the development and oversight of policies common to NIH and its ICs. Through the governance process, corporate decisions are made; these may be long-term and strategic (e.g., facilities planning, budget strategy, research policy direction) or short-term and tactical (e.g., stipend levels, resource allocations, and compliance oversight). This process does not include issues related to the setting of scientific priorities, which is reserved for meetings of all IC Directors. The NIH Director meets with the IC Directors on a bi-weekly basis, and scientific initiatives are discussed, as well as major management issues that affect the Agency. In addition, scientists – from within and outside the Agency – are invited to present on new or emerging research opportunities. The NIH Director stays informed of priorities through regular meetings with IC and OD Office Directors. Similarly, the IC Directors monitor performance through regular meetings with the Division Directors and Scientific/Clinical Directors in their respective ICs.

Based on these reviews, leadership and their staff take appropriate actions to support research activities. For example, the reviews may lead to the development of new award programs for early-career researchers, the development of new funding announcements for promising research areas, or new collaborations across NIH and/or with other Federal and non-Federal partners. The NIH Director and senior leadership receive regular updates on the progress of the priorities, provide feedback, and incorporate the latest information into the NIH's overall planning and management efforts. This constant feedback loop enables NIH to make critical adjustments periodically to align activities and target resources in support of its research priorities.

---

[19] The NIH Steering Committee is composed of the NIH Director, Deputy Director (ex-officio), the Directors of NCI, NHLBI, and NIAID, as well as a balance of Directors from the smaller and medium-sized institutes.
[20] The seven standing working groups are: Extramural Activities, Diversity, Facilities, Management and Budget, Scientific Data Council, Administrative Data Council, and Clinical Center Governing Board.

BUDGET BY HHS STRATEGIC OBJECTIVE

(Dollars in Millions)	FY 2015 Actual[1]	FY 2016 Enacted[1]	FY 2017 President's Budget[2]
1.Strengthen Health Care			
1.A Make coverage more secure for those who have insurance, and extend affordable coverage to the uninsured			
1.B Improve health care quality and patient safety			
1.C Emphasize primary and preventive care, linked with community prevention services			
1.D Reduce the growth of health care costs while promoting high-value, effective care			
1.E Ensure access to quality, culturally competent care, including long-term services and supports, for vulnerable populations			
1.F Improve health care and population health through meaningful use of health information technology			
2. Advance Scientific Knowledge and Innovation	**30,174**	**32,166**	**32,957**
2.A Accelerate the process of scientific discovery to improve health	30,174	32,166	32,957
2.B Foster and apply innovative solutions to health, public health, and human services challenges			
2.C Advance the regulatory sciences to enhance food safety, improve medical product development, and support tobacco regulation			
2.D Increase our understanding of what works in public health and human services practice			
2.E Improve laboratory, surveillance, and epidemiology capacity			
3. Advance the Health, Safety and Well-Being of the American People			
3.A Promote the safety, well-being, resilience, and healthy development of children and youth			
3.B Promote economic and social well-being for individuals, families, and communities			
3.C Improve the accessibility and quality of supportive services for people with disabilities and older adults			
3.D Promote prevention and wellness across the life span			
3.E Reduce the occurrence of infectious diseases			
3.F Protect Americans' health and safety during emergencies, and foster resilience to withstand and respond to emergencies			
4. Ensure Efficiency, Transparency, Accountability, and Effectiveness of HHS Programs	**137**	**145**	**179**
4.A Strengthen program integrity and responsible stewardship by reducing improper payments, fighting fraud, and integrating financial, performance, and risk management			
4.B Enhance access to and use of data to improve HHS programs and to support improvements in the health and well-being of the American people			
4.C Invest in the HHS workforce to help meet America's health and human services needs			
4.D Improve HHS environmental, energy, and economic performance to promote sustainability	137	145	179
TOTAL	**30,311**	**32,311**	**33,136**

[1] Excludes Ebola-related funding.

[2] Includes mandatory financing.

BUDGET MECHANISM TABLE

(Dollars in Thousands)[1]	FY 2015 Actual[3]		FY 2016 Enacted[3]		FY 2017 President's Budget[4]		FY 2017 +/- FY 2016	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Projects:								
Noncompeting	23,261	$11,219,523	23,367	$11,770,028	24,608	$12,530,526	1,241	$760,498
Administrative Supplements	*(1,595)*	193,500	*(1,538)*	183,451	*(1,282)*	153,882	*(-256)*	-29,569
Competing:								
Renewal	1,771	919,382	2,080	1,104,786	1,908	1,030,599	-172	-74,187
New	7,737	3,368,395	8,639	3,942,891	8,011	3,617,296	-628	-325,595
Supplements	32	22,921	34	15,331	27	11,700	-7	-3,630
Subtotal, Competing	9,540	$4,310,698	10,753	$5,063,008	9,946	$4,659,596	-807	-$403,412
Subtotal, RPGs	32,801	$15,723,721	34,120	$17,016,487	34,554	$17,344,004	434	$327,517
SBIR/STTR	1,578	717,951	1,720	804,487	1,886	862,616	166	58,129
Research Project Grants	34,379	$16,441,672	35,840	$17,820,973	36,440	$18,206,620	600	$385,646
Research Centers:								
Specialized/Comprehensive	1,093	$1,879,582	1,151	$1,883,688	1,139	$1,862,491	-12	-$21,197
Clinical Research	68	424,704	59	410,660	57	399,319	-2	-11,341
Biotechnology	97	171,994	96	173,457	84	151,600	-12	-21,857
Comparative Medicine	52	132,143	48	119,821	47	118,628	-1	-1,193
Research Centers in Minority Institutions	23	54,641	27	57,185	27	57,185	0	0
Research Centers	1,333	$2,663,064	1,381	$2,644,811	1,354	$2,589,224	-27	-$55,587
Other Research:								
Research Careers	3,593	$608,205	3,700	$632,270	3,700	$641,318	0	$9,049
Cancer Education	85	28,026	87	28,626	91	29,876	4	1,250
Cooperative Clinical Research	369	421,734	349	447,848	335	442,187	-14	-5,661
Biomedical Research Support	110	66,863	106	64,891	106	64,891	0	0
Minority Biomedical Research Support	278	103,446	283	107,398	282	106,858	-1	-540
Other	1,803	574,449	2,222	729,892	2,342	798,632	120	68,740
Other Research	6,238	$1,802,722	6,747	$2,010,924	6,856	$2,083,762	109	$72,838
Total Research Grants	41,950	$20,907,458	43,968	$22,476,709	44,650	$22,879,605	682	$402,896
Ruth L Kirchstein Training Awards:	FTTPs		FTTPs		FTTPs		FTTPs	
Individual Awards	3,161	$136,979	3,346	$149,840	3,411	$154,142	65	$4,302
Institutional Awards	12,429	621,038	12,850	680,590	13,010	694,507	160	13,916
Total Research Training	15,590	$758,017	16,196	$830,430	16,421	$848,649	225	$18,218
Research & Develop. Contracts	2,238	$2,827,544	2,263	$2,915,243	2,281	$3,173,386	18	$258,142
(SBIR/STTR) (non-add) [2]	*(122)*	*(71,236)*	*(128)*	*(80,582)*	*(149)*	*(90,960)*	*(21)*	*(10,378)*
Intramural Research	6,912	$3,410,354	6,956	$3,581,878	6,956	$3,614,558	0	$32,681
Res. Management & Support	5,579	1,620,334	5,658	1,685,252	5,658	1,719,314	0	34,062
Res. Management & Support (SBIR Admin) (non-add) [2]	*(1)*	*(4,362)*	*(3)*	*(7,333)*	*(3)*	*(3,794)*	*0*	*(-3,539)*
Office of the Director - Appropriation [2,5]		*(1,413,734)*		*(1,571,200)*		*(1,716,200)*		*(145,000)*
Office of the Director - Other		573,430		599,625		644,625		45,000
ORIP/SEPA (non-add) [2,5]		*(294,665)*		*(295,936)*		*(295,936)*		*0*
Common Fund (non-add) [2,5]		*(545,639)*		*(675,639)*		*(775,639)*		*(100,000)*
Buildings and Facilities[6]		136,863		144,863		178,863		34,000
Appropriation		*128,863*		*128,863*		*128,863*		*0*
Type 1 Diabetes[7]		-150,000		-150,000		-150,000		0
Program Evaluation Financing[8]		-715,000		-780,000		-847,489		-67,489
Cancer Initiative Mandatory Financing						-680,000		-680,000
Other Mandatory Financing						-1,145,000		-1,145,000
Subtotal, Labor/HHS Budget Authority		**$29,369,000**		**$31,304,000**		**$30,236,511**		**-$1,067,489**
Interior Appropriation for Superfund Research		77,349		77,349		77,349		0
Total, NIH Discretionary B.A.		**$29,446,349**		**$31,381,349**		**$30,313,860**		**-$1,067,489**
Type 1 Diabetes		150,000		150,000		150,000		0
Proposed Law Funding								
Cancer Initiative Mandatory Financing						680,000		680,000
Other Mandatory Financing						1,145,000		1,145,000
Total, NIH Budget Authority		**$29,596,349**		**$31,531,349**		**$32,288,860**		**$757,511**
Program Evaluation Financing		715,000		780,000		847,489		67,489
Total, Program Level		**$30,311,349**		**$32,311,349**		**$33,136,349**		**$825,000**

1 All Subtotal and Total numbers may not add due to rounding.
2 All numbers in italics and brackets are non-add.
3 Excludes Ebola related funding.
4 Includes mandatory financing.
5 Number of grants and dollars for the Common Fund, ORIP and SEPA components of OD are distributed by mechanism and are noted here as a non-add. The Office of the Director - Appropriations also is noted as a non-add since the remaining funds are accounted for under OD - Other.
6 Includes B&F appropriation and funds for facilities repairs and improvements at the NCI Federally Funded Research and Development Center in Frederick, Maryland.
7 Number of grants and dollars for mandatory Type I Diabetes are distributed by mechanism above; therefore, Type I Diabetes amount is deducted to provide subtotals only for the Labor/ HHS Budget Authority.
8 Number of grants and dollars for Program Evaluation Financing are distributed by mechanism above; therefore, the amount is deducted to provide subtotals only for the Labor/HHS Budget Authority.