

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

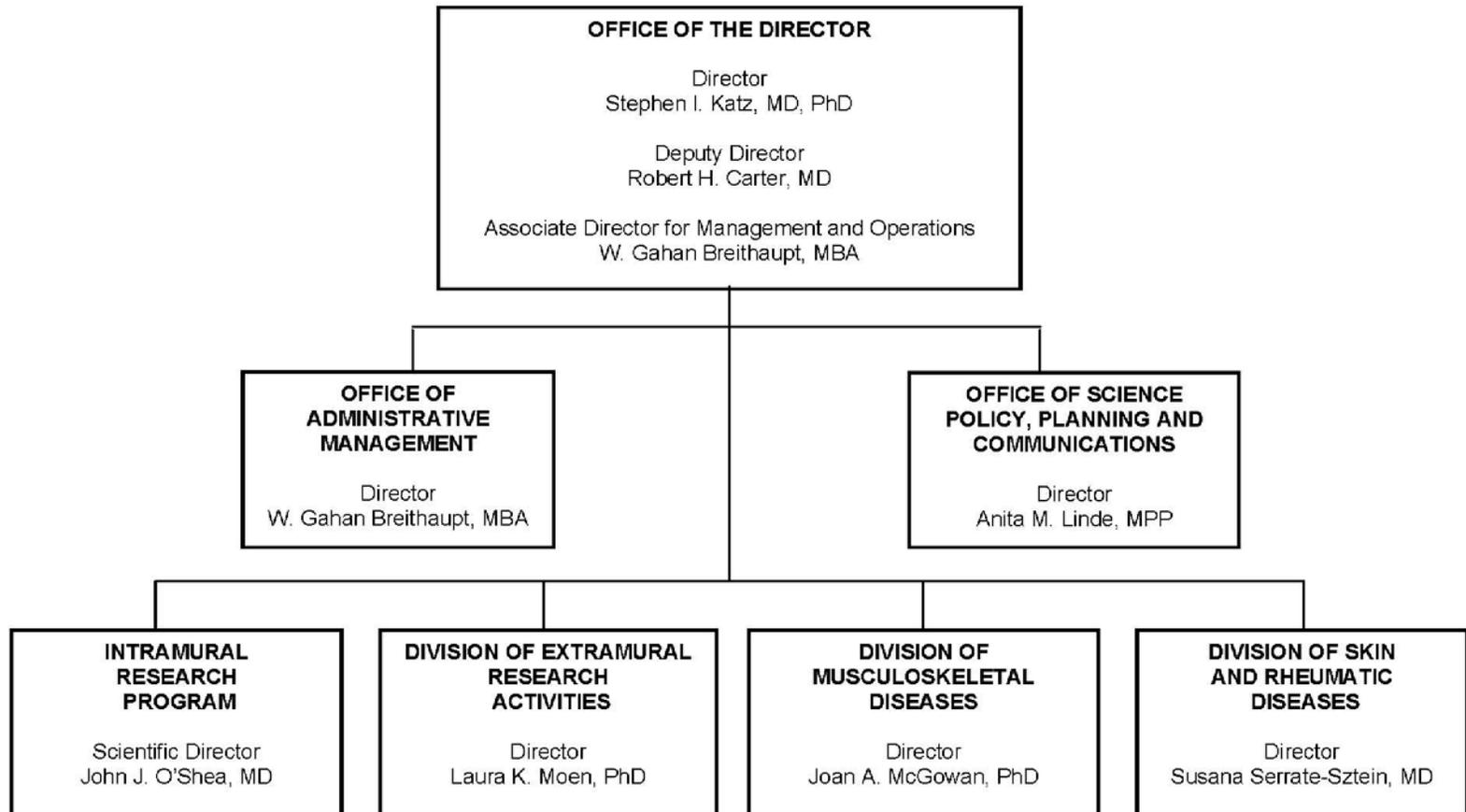
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)

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NATIONAL INSTITUTES OF HEALTH

National Institute of Arthritis and Musculoskeletal and Skin Diseases

Organizational Structure



NATIONAL INSTITUTES OF HEALTH

National Institute of Arthritis and Musculoskeletal and Skin Diseases

For carrying out section 301 and title IV of the PHS Act with respect to arthritis and musculoskeletal and skin diseases, ~~【\$520,053,000】~~*\$520,189,000*.

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Amounts Available for Obligation¹
(Dollars in Thousands)

| Source of Funding | FY 2013 Actual | FY 2014 Enacted | FY 2015 President's Budget |
|---|------------------|------------------|----------------------------|
| Appropriation | \$535,786 | \$520,053 | \$520,189 |
| Type 1 Diabetes | 0 | 0 | 0 |
| Rescission | -1,072 | 0 | 0 |
| Sequestration | -26,893 | 0 | 0 |
| Subtotal, adjusted appropriation | \$507,822 | \$520,053 | \$520,189 |
| FY 2013 Secretary's Transfer | -2,962 | 0 | 0 |
| OAR HIV/AIDS Transfers | 0 | 0 | 0 |
| Comparative transfers to NLM for NCBI and Public Access | -600 | -715 | 0 |
| National Children's Study Transfers | 431 | 0 | 0 |
| Subtotal, adjusted budget authority | \$504,691 | \$519,338 | \$520,189 |
| Unobligated balance, start of year | 0 | 0 | 0 |
| Unobligated balance, end of year | 0 | 0 | 0 |
| Subtotal, adjusted budget authority | \$504,691 | \$519,338 | \$520,189 |
| Unobligated balance lapsing | -85 | 0 | 0 |
| Total obligations | \$504,607 | \$519,338 | \$520,189 |

¹ Excludes the following amounts for reimbursable activities carried out by this account:
FY 2013 - \$3,511 FY 2014 - \$12,035 FY 2015 - \$7,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Budget Mechanism - Total¹

(Dollars in Thousands)

| MECHANISM | FY 2013 Actual | | FY 2014 Enacted ² | | FY 2015 President's Budget | | FY 2015 +/- FY 2014 | |
|---|----------------|-----------|------------------------------|-----------|----------------------------|-----------|---------------------|----------|
| | No. | Amount | No. | Amount | No. | Amount | No. | Amount |
| Research Projects: | | | | | | | | |
| Noncompeting | 732 | \$246,807 | 701 | \$243,715 | 680 | \$235,330 | -21 | -\$8,385 |
| Administrative Supplements | (22) | 1,090 | (22) | 1,090 | (22) | 1,090 | (0) | 0 |
| Competing: | | | | | | | | |
| Renewal | 37 | 14,967 | 59 | 16,726 | 65 | 18,252 | 6 | 1,526 |
| New | 210 | 57,470 | 227 | 64,226 | 248 | 70,085 | 21 | 5,859 |
| Supplements | 13 | 1,713 | 7 | 1,914 | 7 | 2,089 | 0 | 175 |
| Subtotal, Competing | 260 | \$74,149 | 293 | \$82,866 | 320 | \$90,426 | 27 | \$7,560 |
| Subtotal, RPGs | 992 | \$322,046 | 994 | \$327,671 | 1,000 | \$326,846 | 6 | -\$825 |
| SBIR/STTR | 42 | 12,814 | 45 | 13,763 | 47 | 14,342 | 2 | 579 |
| Research Project Grants | 1,034 | \$334,861 | 1,039 | \$341,434 | 1,047 | \$341,188 | 8 | -\$246 |
| Research Centers: | | | | | | | | |
| Specialized/Comprehensive | 40 | \$40,817 | 41 | \$41,560 | 41 | \$41,560 | 0 | \$0 |
| Clinical Research | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biotechnology | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Comparative Medicine | 0 | 29 | 0 | 29 | 0 | 29 | 0 | 0 |
| Research Centers in Minority Institutions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Research Centers | 40 | \$40,846 | 41 | \$41,589 | 41 | \$41,589 | 0 | \$0 |
| Other Research: | | | | | | | | |
| Research Careers | 155 | \$19,490 | 155 | \$19,490 | 155 | \$19,490 | 0 | \$0 |
| Cancer Education | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cooperative Clinical Research | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomedical Research Support | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Minority Biomedical Research Support | 0 | 264 | 0 | 264 | 0 | 264 | 0 | 0 |
| Other | 33 | 2,788 | 36 | 3,183 | 36 | 3,183 | 0 | 0 |
| Other Research | 188 | \$22,542 | 191 | \$22,937 | 191 | \$22,937 | 0 | \$0 |
| Total Research Grants | 1,262 | \$398,249 | 1,271 | \$405,960 | 1,279 | \$405,714 | 8 | -\$246 |
| Ruth L Kirchstein Training Awards: | | | | | | | | |
| | FTTPs | | FTTPs | | FTTPs | | FTTPs | |
| Individual Awards | 55 | \$2,750 | 63 | \$3,232 | 63 | \$3,283 | 0 | \$51 |
| Institutional Awards | 236 | 11,870 | 236 | 12,199 | 236 | 12,394 | 0 | 195 |
| Total Research Training | 291 | \$14,621 | 299 | \$15,431 | 299 | \$15,677 | 0 | \$246 |
| Research & Develop. Contracts | | | | | | | | |
| (SBIR/STTR) (non-add) | 38 | \$12,103 | 38 | \$14,771 | 38 | \$16,109 | 0 | \$1,338 |
| | (0) | (84) | (0) | (145) | (0) | (145) | (0) | (0) |
| Intramural Research | | | | | | | | |
| Res. Management & Support | 136 | 52,219 | 136 | 53,629 | 136 | 54,165 | 0 | 536 |
| Res. Management & Support (SBIR Admin) | 110 | 27,500 | 110 | 28,242 | 110 | 28,524 | 0 | 282 |
| | (0) | (0) | (0) | (0) | (0) | (0) | (0) | (0) |
| Construction | | | | | | | | |
| Buildings and Facilities | | 0 | | 0 | | 0 | | 0 |
| | | 0 | | 0 | | 0 | | 0 |
| Total, NIAMS | 246 | \$504,691 | 246 | \$519,338 | 246 | \$520,189 | 0 | \$851 |

¹ All items in italics and brackets are non-add entries. FY 2013 and FY 2014 levels are shown on a comparable basis to FY 2015.

² The amounts in the FY 2014 column take into account funding reallocations, and therefore may not add to the total budget authority reflected herein.

Major Changes in the Fiscal Year 2015 President's Budget Request

Major changes by budget mechanism and / or budget activity detail are briefly described below. Note that there may be overlap between budget mechanism and activity detail and these highlights will not sum to the total change for the FY 2015 President's Budget for NIAMS, which is \$0.851 million more than the FY 2014 Enacted level, for a total of \$520.189 million.

Research Project Grants (-\$0.246 million; total \$341.188 million):

NIAMS will support a total of 1,047 Research Project Grant (RPG) awards in FY 2015. Noncompeting awards will decrease by 21 awards and \$8.385 million. Competing RPGs will increase by 27 awards and \$7.560 million. NIAMS continues to place a priority on support to new investigators.

Research Training (+\$0.246 million; total \$15.677 million):

NIAMS will support 299 pre- and postdoctoral trainees in full-time training positions, a flat level from the number funded in FY 2014. Support for NRSA training mechanism will be increased by \$0.246 million amount to cover the cost of increased stipends.

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Summary of Changes¹
(Dollars in Thousands)

| FY 2014 Enacted | | | | \$519,338 |
|--|----------------------------|------------------|---------------------|------------------|
| FY 2015 President's Budget | | | | \$520,189 |
| Net change | | | | \$851 |
| CHANGES | FY 2015 President's Budget | | Change from FY 2014 | |
| | FTEs | Budget Authority | FTEs | Budget Authority |
| A. Built-in: | | | | |
| 1. Intramural Research: | | | | |
| a. Annualization of January 2014 pay increase & benefits | | \$18,905 | | \$18 |
| b. January FY 2015 pay increase & benefits | | 18,905 | | 227 |
| c. Zero more days of pay (n/a for 2015) | | 18,905 | | 0 |
| d. Differences attributable to change in FTE | | 18,905 | | 0 |
| e. Payment for centrally furnished services | | 9,511 | | 159 |
| f. Increased cost of laboratory supplies, materials, other expenses, and non-recurring costs | | 25,749 | | 31 |
| Subtotal | | | | \$435 |
| 2. Research Management and Support: | | | | |
| a. Annualization of January 2014 pay increase & benefits | | \$16,051 | | \$15 |
| b. January FY 2015 pay increase & benefits | | 16,051 | | 194 |
| c. Zero more days of pay (n/a for 2015) | | 16,051 | | 0 |
| d. Differences attributable to change in FTE | | 16,051 | | 0 |
| e. Payment for centrally furnished services | | 3,868 | | 65 |
| f. Increased cost of laboratory supplies, materials, other expenses, and non-recurring costs | | 8,606 | | 31 |
| Subtotal | | | | \$304 |
| Subtotal, Built-in | | | | \$739 |

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National Institute of Arthritis and Musculoskeletal and Skin Diseases

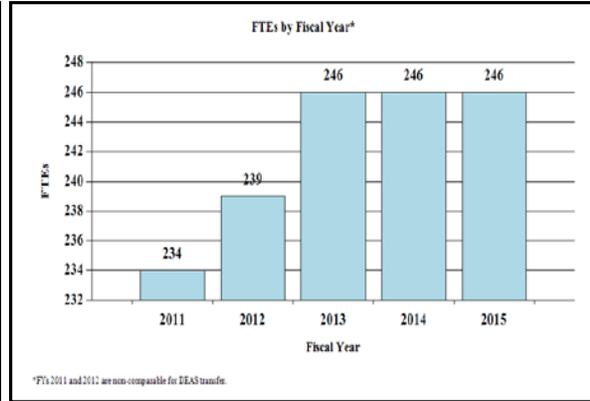
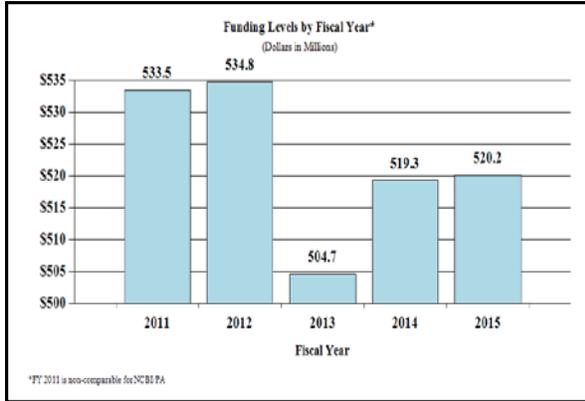
Summary of Changes¹
(Dollars in Thousands)

| CHANGES | FY 2015 President's Budget | | Change from FY 2014 | |
|---------------------------------------|----------------------------|-----------|---------------------|----------|
| | No. | Amount | No. | Amount |
| B. Program: | | | | |
| 1. Research Project Grants: | | | | |
| a. Noncompeting | 680 | \$236,420 | -21 | -\$8,385 |
| b. Competing | 320 | 90,426 | 27 | 7,560 |
| c. SBIR/STTR | 47 | 14,342 | 2 | 579 |
| Subtotal, RPGs | 1,047 | \$341,188 | 8 | -\$246 |
| 2. Research Centers | 41 | \$41,589 | 0 | \$0 |
| 3. Other Research | 191 | 22,937 | 0 | 0 |
| 4. Research Training | 299 | 15,677 | 0 | 246 |
| 5. Research and development contracts | 38 | 16,109 | 0 | 1,338 |
| Subtotal, Extramural | | \$437,500 | | \$1,338 |
| 6. Intramural Research | <u>FTEs</u> 136 | \$54,165 | <u>FTEs</u> 0 | \$101 |
| 7. Research Management and Support | 110 | 28,524 | 0 | -22 |
| 8. Construction | | 0 | | 0 |
| 9. Buildings and Facilities | | 0 | | 0 |
| Subtotal, Program | 246 | \$520,189 | 0 | \$1,417 |
| Total changes | | | | \$851 |

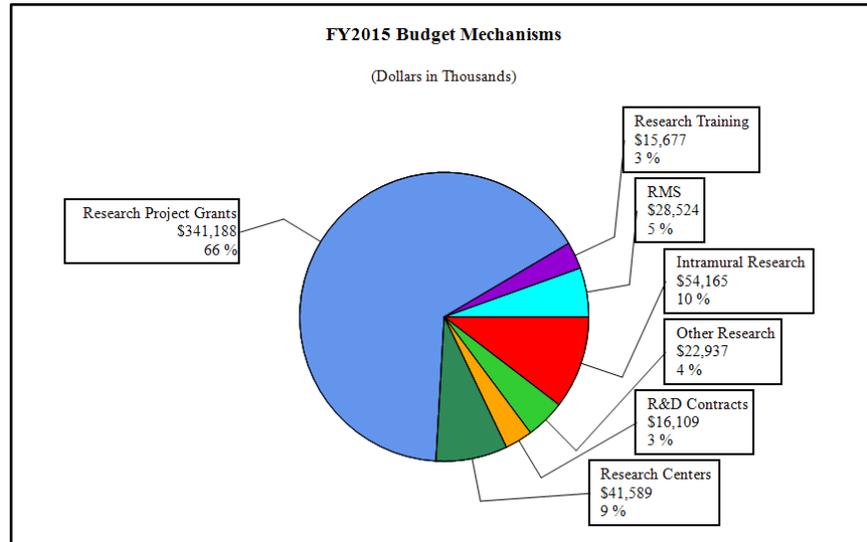
¹ The amounts in the Change from FY 2014 column take into account funding reallocations, and therefore may not add to the net change reflected herein.

Fiscal Year 2015 Budget Graphs

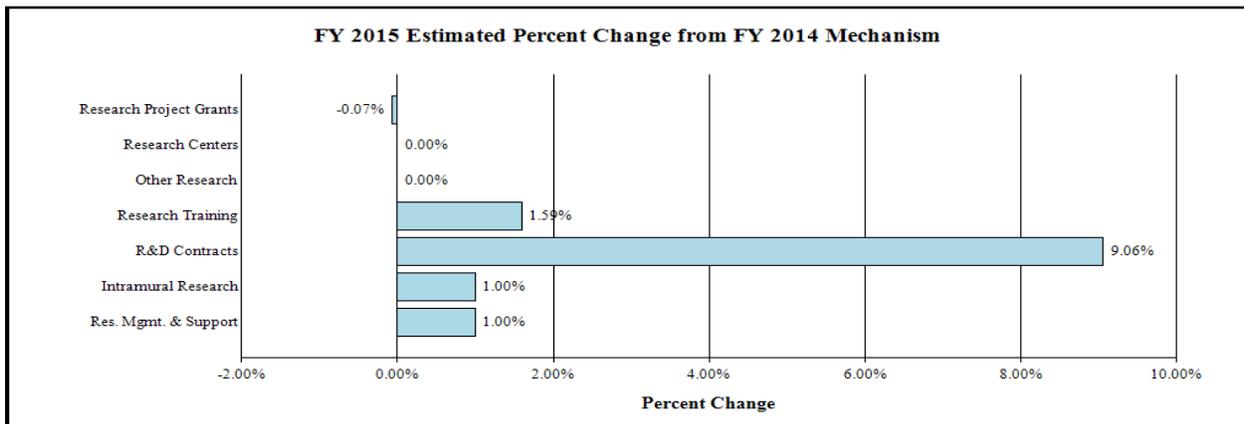
History of Budget Authority and FTEs:



Distribution by Mechanism:



Change by Selected Mechanism:



NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Budget Authority by Activity¹
(Dollars in Thousands)

| | FY 2013 Actual | | FY 2014 Enacted ² | | FY 2015 President's Budget | | FY 2015 +/- FY 2014 | |
|--|----------------|------------------|------------------------------|------------------|-------------------------------|------------------|---------------------------|----------------|
| | FTE | Amount | FTE | Amount | FTE | Amount | FTE | Amount |
| Extramural Research | | | | | | | | |
| <u>Detail</u> | | | | | | | | |
| Arthritis and Rheumatic Diseases | | \$101,184 | | \$103,849 | | \$104,169 | | \$320 |
| Musculoskeletal Biology and Diseases | | 122,790 | | 126,020 | | 126,402 | | 382 |
| Bone Biology and Diseases | | 63,836 | | 65,518 | | 65,720 | | 202 |
| Muscle Biology and Diseases | | 68,708 | | 70,518 | | 70,735 | | 217 |
| Skin Biology and Diseases | | 68,454 | | 70,257 | | 70,474 | | 217 |
| Subtotal, Extramural | | \$424,972 | | \$436,162 | | \$437,500 | | \$1,338 |
| Intramural Research | 136 | \$52,219 | 136 | \$53,629 | 136 | \$54,165 | 0 | \$536 |
| Research Management & Support | 110 | \$27,500 | 110 | \$28,242 | 110 | \$28,524 | 0 | \$282 |
| TOTAL | 246 | \$504,691 | 246 | \$519,338 | 246 | \$520,189 | 0 | \$851 |

¹ Includes FTEs whose payroll obligations are supported by the NIH Common Fund.

² The amounts in the FY 2014 column take into account funding reallocations, and therefore may not add to the total budget authority reflected herein.

**NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases**

Authorizing Legislation

| | PHS Act/ Other Citation | U.S. Code Citation | 2014 Amount Authorized | FY 2014 Enacted | 2015 Amount Authorized | FY 2015 PB |
|--|------------------------------------|-------------------------------|-----------------------------------|------------------------|-----------------------------------|-------------------|
| Research and Investigation | Section 301 | 42§241 | Indefinite | \$519,338,000 | Indefinite | \$520,189,000 |
| National Institute of Arthritis and Musculoskeletal and Skin Diseases | Section 401(a) | 42§281 | Indefinite | | Indefinite | |
| Total, Budget Authority | | | | \$519,338,000 | | \$520,189,000 |

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Appropriations History

| Fiscal Year | Budget Estimate to Congress | House Allowance | Senate Allowance | Appropriation |
|--------------------|------------------------------------|------------------------|-------------------------|----------------------|
| 2005 | \$515,378,000 | \$515,378,000 | \$520,900,000 | \$515,378,000 |
| Rescission | | | | (\$4,221,000) |
| 2006 | \$513,063,000 | \$513,063,000 | \$525,578,000 | \$513,063,000 |
| Rescission | | | | (\$5,131,000) |
| 2007 | \$504,533,000 | \$504,533,000 | \$508,585,000 | \$508,240,000 |
| Rescission | | | | \$0 |
| 2008 | \$508,082,000 | \$516,044,000 | \$519,810,000 | \$517,629,000 |
| Rescission | | | | (\$9,043,000) |
| Supplemental | | | | \$2,075,000 |
| 2009 | \$509,080,000 | \$526,583,000 | \$523,246,000 | \$524,872,000 |
| Rescission | | | | \$0 |
| 2010 | \$530,825,000 | \$543,621,000 | \$533,831,000 | \$539,082,000 |
| Rescission | | | | \$0 |
| 2011 | \$555,715,000 | | \$554,846,000 | \$539,082,000 |
| Rescission | | | | (\$4,733,461) |
| 2012 | \$547,891,000 | \$547,891,000 | \$528,332,000 | \$536,801,000 |
| Rescission | | | | (\$1,014,454) |
| 2013 | \$535,610,000 | | \$537,233,000 | \$535,786,446 |
| Rescission | | | | (\$1,071,573) |
| Sequestration | | | | (\$26,892,795) |
| 2014 | \$540,993,000 | | \$537,398,000 | \$520,053,000 |
| Rescission | | | | \$0 |
| 2015 | \$520,189,000 | | | |

Justification of Budget Request

National Institute of Arthritis and Musculoskeletal and Skin Diseases

Authorizing Legislation: Section 301 and title IV of the Public Health Service Act, as amended.

Budget Authority (BA):

| | FY 2013 Actual | FY 2014 Enacted | FY 2015 President's Budget | FY 2015 +/- FY 2014 |
|-----|-------------------|--------------------|----------------------------------|------------------------|
| BA | \$504,690,546 | \$519,338,000 | \$520,189,000 | +\$851,000 |
| FTE | 246 | 246 | 246 | +0 |

Program funds are allocated as follows: Competitive Grants/Cooperative Agreements; Contracts; Direct Federal/Intramural and Other.

Director's Overview

As the primary Federal agency for supporting medical research on diseases of the bones, joints, muscles, and skin, the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) touches the lives of nearly every American. Arthritis limits the activities of nearly 21 million adults in the United States each year; medical care and lost wages attributable to musculoskeletal conditions cost Americans an estimated \$950 billion annually; and skin conditions such as eczema and psoriasis affect more than 12 percent of people worldwide.¹ NIAMS is working to enhance health, lengthen life, and reduce illness and disability by supporting basic and translational research that will impact clinical practice, training the next generation of bone, joint, muscle, and skin scientists, and disseminating the findings and related health information from the studies it supports to all Americans. The activities described below are a subset of the Institute's many efforts to advance public health.

Over the years, NIAMS-supported research teams have made significant progress in uncovering the causes of and improving the treatments for many disorders of the bones, joints, muscles, and skin. Basic discoveries that have recently been translated into clinical care include the Janus kinase protein (now the target of the new rheumatoid arthritis drug tofacitinib) and the relationship between neonatal-onset multisystem inflammatory disease (NOMID) and defects in

¹ Cheng YJ, et al. Prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation—United States, 2007–2009. *MMWR* 2010;59(39):1261–1265

U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Medical Expenditures Panel Survey, 1996 – 2006. Data analyzed and modeled by Edward H. Yelin, PhD, Institute for Health Policy Studies, University of California, San Francisco, San Francisco, CA, as cited in www.boneandjointburden.org/highlights/FactsinBrief.pdf, accessed September 27, 2013

Vos T, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012 Dec 15;380(9859):2163-96. PMID: 23245607

the pathways targeted by the drug anakinra. (See Program Portrait: Translational Science in the Intramural Research Program, below.)

As researchers learn more about the cellular pathways that control development, growth, and repair, they are discovering many shared processes among the cells of the bones, joints, muscles, and skin. This knowledge is being leveraged to develop therapies that can repair or restore multiple tissues. For example, recent work has demonstrated that activation of a single protein in skin cells at the base of the fingernail is essential for nail regeneration, bone formation, and innervation of a new fingertip following amputation. While regrowth of complete human limbs is still not feasible, this finding provides an important piece of the tissue-regeneration puzzle and may one day lead to functional arms and legs for amputees.

Recent musculoskeletal research advances also have contributed to the recognition that bone, cartilage, connective tissue, and muscle communicate with one another through signaling molecules in health and disease. These complex interactions, which are still being explored, must be considered when developing and testing potential therapies for individual tissues or organ systems. Furthermore, as scientists learn how the circadian day/night cycle influences biologic activities, including muscle function, bone remodeling, and immune and inflammatory responses, they are recognizing that the timing of patients' eating, sleeping, exercise, and medicine delivery may influence results of clinical studies.

Over the past decade, the genome-wide association approach to identify genetic regions related to disease risk has matured from an intriguing concept to a widely used scientific tool. Insights from numerous initial studies are being confirmed by replication of these studies in additional cohorts. For example, NIAMS-supported researchers recently identified 14 genes linked to juvenile idiopathic arthritis (JIA), the most common type of arthritis affecting children, bringing the number of confirmed JIA-linked genes to 17. This better understanding of JIA provides important clues toward improved treatments.

Many of the genetic variants identified in genome-wide association studies occur in segments of DNA that were previously considered to be of little importance because they do not code for functional proteins. These discoveries are leading investigators to decipher the roles these DNA regions play in key cellular functions such as regulating how and when genes are turned on or off. The NIH Encyclopedia of DNA Elements (ENCODE) Project Consortium provides valuable research tools for uncovering such information. In follow-up to a session at its FY 2013 scientific planning retreat, NIAMS is exploring the possibility of leveraging ENCODE resources to generate ENCODE-type data from cells and tissues that are directly relevant to rheumatic, skin, and musculoskeletal diseases. This and other related activities could accelerate the discovery of gene variants that contribute to the risk of diseases within the NIAMS mission, improve knowledge about disease development, and identify potential therapeutic targets.

The NIH recently launched the Accelerating Medicines Partnership (AMP), which is a collaboration between the NIH, the Foundation for the National Institutes of Health, 10 pharmaceutical companies, and several health advocacy organizations. AMP investigators will identify and validate promising biological pathways and targets in three disease areas, including Alzheimer's disease, diabetes, and the autoimmune disorders, rheumatoid arthritis and lupus.

AMP will begin pilot projects lasting 3 to 5 years with the ultimate goal to increase the number of diagnostics and therapies for patients and reduce the time and cost of developing them. As part of the NIH-wide AMP, NIAMS and the National Institute of Allergy and Infectious Diseases are in the early stages of planning a team science research program that will provide investigators with the resources needed to elucidate key molecular signaling networks in rheumatoid arthritis, lupus, and potentially other autoimmune disorders.

NIAMS also supports clinical studies that help patients and their healthcare providers make better-informed decisions. For the past decade, NIH-funded researchers have been monitoring the health of people who have lower-back pain due to intervertebral disk herniation, lumbar spinal stenosis, or degenerative spondylolisthesis. The investigators have developed a rich database of outcomes and a calculator showing possible patient results for physical activity, pain, and overall health after surgical or non-surgical treatment for lower-back pain. As a next step in translating the findings into clinical practice, they are refining the calculator by integrating individual patient characteristics, longer-term outcomes data, information about complications following surgery or the need to have a second procedure, as well as results from other studies.

NIAMS is committed to ensuring that a sufficient number of well-trained basic scientists and clinical researchers are prepared to conduct cutting-edge studies related to musculoskeletal, skin, and rheumatic diseases. The Institute awards a combination of institutional training grants and individual fellowships for this purpose. Recognizing that the transition from mentored research to full independence is a vulnerable period in clinician-scientists' careers, NIAMS has begun meeting with grantees nearing the end of their clinical or patient-oriented research career development awards to identify challenges and ways to better support them and future career development awardees.

NIAMS is also supporting opportunities for interdisciplinary research to help inform and address Institute mission areas. To encourage established grantees to move beyond their individual disciplines and explore new organizational models for collaborative science, NIAMS reissued its Building Interdisciplinary Research Team (BIRT) awards program. The latest version of the initiative places an increased emphasis on new teams that will conduct highly innovative and potentially high impact basic or translational research. The Institute also provides support that allows clinical research groups to access additional resources from NIH or elsewhere. For example, NIAMS supported a team of scientists to plan a clinical trial in Duchenne muscular dystrophy. Because of the planning efforts, a pharmaceutical company assumed responsibility for funding the randomized, double-blinded, placebo-controlled, phase 3 clinical trial—the largest trial yet conducted in boys with this disease.

Overall Budget Policy:

The FY 2015 President's Budget request for NIAMS is \$520.189 million, an increase of \$0.851 million or 0.2 percent above the FY 2014 Enacted level.

Program Descriptions and Accomplishments

Arthritis and Rheumatic Diseases: This program advances high-quality basic, translational, and clinical biomedical and biopsychosocial research to treat, cure, and prevent arthritis and other rheumatic diseases. It supports the application of new insights in the fields of genetics, genomics, proteomics, immunology, and imaging to understand how the immune system interacts with various tissues in normal and pathological conditions, and to ensure a continuous supply of new targets on which therapies can be based. Investigators also are testing potential therapies in preclinical animal studies and clinical trials. For example, an international team of researchers recently found that the immunosuppressive drug, mycophenolate mofetil (MMF), often given to lupus patients who have kidney inflammation, reduced signs of cardiovascular disease in a mouse model of lupus. Another recent finding, which can be directly applied to clinical practice, comes from members of NIH's international Immune Tolerance Network, some of whom also have NIAMS support. The researchers demonstrated that a once-weekly dose of the drug rituximab for one month is as effective as 18 months of a daily immunosuppressive therapy at preventing life-threatening organ damage in people who have severe vasculitis (i.e., granulomatosis with polyangiitis—formerly known as Wegener's granulomatosis—and microscopic polyangiitis).

Budget Policy:

The FY 2015 budget estimate for this program is \$104.169 million, an increase of \$0.320 million or 0.3 percent above the FY 2014 Enacted level. Program plans for FY 2015 include encouraging investigators to explore the signaling pathways within and between immune cells and their target tissues, with the goal of identifying potential drug targets or diagnostic strategies for autoimmune diseases. In addition, as lead of the Lupus Federal Working Group, NIAMS will continue to facilitate collaborations among the NIH Institutes and Centers, other Federal agencies, voluntary and professional organizations, and pharmaceutical companies with an interest in lupus.

Musculoskeletal Biology and Diseases: This program focuses on understanding the fundamental biology of tissues that constitute the musculoskeletal system, and on translating and applying this knowledge to a variety of diseases and conditions, including osteoarthritis (OA). It supports the development of technologies such as bone and joint imaging, tissue engineering, and regenerative medicine to improve the diagnosis and treatment of skeletal disorders, or to facilitate repair of damage caused by trauma to otherwise healthy tissue. The program oversees clinical research into the treatment and prevention of acute and chronic bone and joint injuries and orthopaedic conditions. For example, a decade-long study of boys and girls who have adolescent idiopathic scoliosis recently demonstrated that wearing a brace to stabilize the spine reduces the need for surgery, and that more hours of brace wear corresponds with higher success rates. Other ongoing, long-term studies are informing the advice surgeons provide to patients who are contemplating surgery to repair anterior cruciate knee ligaments or meniscal tears, or to alleviate lower-back pain.

Budget Policy:

The FY 2015 budget estimate for this program is \$126.402 million, an increase of \$0.382 million or 0.3 percent above the FY 2014 Enacted level. Program plans for FY 2015 include continuing

an effort, begun in FY 2013, to promote the use of data and images collected as part of the Osteoarthritis Initiative in studies of the epidemiology and natural history of OA and its risk factors. NIAMS also will continue to encourage identification of molecular and cellular mechanisms underlying progressive deterioration of joint structure and function in OA. The goal is to accelerate the development of strategies to predict who will experience OA, how OA can be prevented, and how it can be treated once joint degeneration has begun.

Bone Biology and Diseases: The Bone Biology and Diseases program covers a broad spectrum of research designed to better understand genetic and cellular mechanisms involved in the build-up and breakdown of bone. It studies regulation of bone remodeling; bone formation, bone resorption, and mineralization; and effects of hormones, growth factors, and other signaling molecules on bone cells. The program supports several large epidemiologic cohorts for characterization of the natural history of osteoporosis, and for identification of genetic and environmental risk factors that contribute to bone disease. Over the past decades, these studies have provided information that health care providers are using to assess people's bone health. (See Program Portrait: Epidemiologic Studies Explain Osteoporosis, Suggest Fracture-Reduction Strategies, below.) NIAMS also supports a robust portfolio on rare bone diseases and skeletal manifestations of other rare conditions. NIAMS-funded researchers studying neurofibromatosis, for example, are examining how the genetic defect associated with the disease increases patients' risk of fracture and impairs bone healing. Other studies supported through this program are addressing how the musculoskeletal system interacts with other organ systems, including the nervous system, and how these interactions contribute to diseases such as neurofibromatosis.

Program Portrait: Epidemiologic Studies Explain Osteoporosis, Suggest Fracture-Reduction Strategies

FY 2014 Level: \$2.5 million

FY 2015 Level: \$2.5 million

Change: \$0.0 million

Until a few decades ago, osteoporosis and the fractures that accompany it were viewed as an inevitable consequence of aging. It was also viewed solely as a “women’s disease,” rather than a threat to the mobility and independence of all older Americans. Since then, several longstanding prospective cohort studies—including the Study of Osteoporotic Fractures (SOF) in women and Mr. OS, a study of osteoporosis and other age-related diseases in men—have identified specific lifestyle, medical, and demographic characteristics associated with low bone mass and fracture risk.

Through this research, we now know that a balanced diet and modest exercise enhance bone strength. Simple changes to a person's home (e.g., adding more lights, removing clutter) can prevent the falls that precede many osteoporotic fractures. SOF’s finding that bone mineral density (BMD) relates closely to fracture risk contributed to Medicare’s decision to pay for numerous older Americans to get their BMD measured. Many started taking bone-preserving drugs due to the results of these tests, and the rate of hip fractures has since dropped nearly 25 percent among female beneficiaries.² New, longer-term data is suggesting ways to refine the screening guidance. Women at the highest risk of osteoporosis might benefit from annual exams, while women with the lowest risk could be tested much less frequently, unless other aspects of their health change. BMD assessment by dual-energy X-ray absorptiometry remains the gold standard for predicting who will break a bone. However, many fractures occur in adults whose bones are not considered osteoporotic, and many who are diagnosed with osteoporosis never experience a fragility fracture. Therefore, another study is combining other imaging approaches with biomechanical analyses, potential biomarkers, and functional assessments to better understand the deficits that contribute to skeletal fragility and fracture risk. Other work includes mapping genetic variation at several million sites in the genomes of SOF and Mr. OS participants to identify genes that are associated with bone health and, as such, could be promising targets for additional drug development research.

Budget Policy:

The FY 2015 budget estimate for this program is \$65.720 million, an increase of \$0.202 million or 0.3 percent above the FY 2014 Enacted level. Program plans for FY 2015 include encouraging investigators to study the cell and mineral changes that lead to atypical femoral fractures—breaks in the upper part of the leg bone that are thought to be a rare side-effect of long-term bisphosphonate treatment for osteoporosis. NIAMS also will promote collaborations and the exchange of information at the agency level through the Federal Working Group on Bone Diseases—an interagency committee led by the Institute.

Muscle Biology and Diseases: This program supports a wide range of basic, translational, and clinical research projects in skeletal muscle biology and diseases. It focuses on the fundamental biology of muscle development, physiology, and muscle imaging. Its overarching objective is to advance the understanding of the role that muscle plays in musculoskeletal and whole body

² Brauer CA, et al. Incidence and mortality of hip fractures in the United States. JAMA. 2009 Oct 14;302(14):1573-9. PMID: 19826027

health and, ultimately, to treat or prevent skeletal muscle diseases and disorders (including the muscular dystrophies, inflammatory myopathies, muscle ion channel diseases, disuse atrophy, skeletal muscle injury, and loss of muscle mass associated with aging and diseases). The NIAMS-funded research community has become increasingly interested in the role of muscle stem cells in muscle growth and regeneration. In one recent discovery, researchers determined that muscle stem cells can develop into a type of fat cell, called brown fat, which burns energy instead of storing it. Scientists have been looking for ways to unlock the potential of brown fat to help people lose weight; such a finding could have implications in the treatment of obesity and the health risks associated with it, such as arthritis, type 2 diabetes, and insulin resistance. NIAMS' translational research portfolio has allowed researchers leveraging the NIH Molecular Libraries Program to identify and test potential therapeutic compounds for myotonic dystrophy. While the molecules that the investigators discovered are not suitable for clinical trials, the findings point the way to molecular modifications that could lead to compounds that are more appropriate for human use.

Budget Policy:

The FY 2015 budget estimate for this program is \$70.735 million, an increase of \$0.217 million or 0.3 percent above the FY 2014 Enacted level. Plans include continued participation in the Senator Paul D. Wellstone Muscular Dystrophy Cooperative Research Centers Program, collaborations with other NIH components and Federal agencies to advance research objectives in the new Action Plan for the Muscular Dystrophies, and efforts to encourage researchers to investigate the molecular processes by which skeletal muscle influences other organ systems.

Skin Biology and Diseases: This program's support for basic, translational, and clinical research includes work on the developmental and molecular biology of skin, the study of skin as an immune organ, and the genetics of skin diseases. The Institute is pursuing opportunities in developing artificial skin, and imaging technologies for diagnosis and tracking progression of skin diseases. In early 2013, NIAMS-funded investigators published mouse and cell-culture data showing that altering a key protein involved in the development of vitiligo may protect against—or even reverse—the pigmentation loss associated with the skin disorder. As there are currently no long-term effective treatments for vitiligo, the researchers' overall goal is to test the approach in clinical trials. In addition, NIAMS-supported scientists have published the results of preclinical testing of two different strategies for replacing type VII collagen—the protein that is defective in people who have recessive dystrophic epidermolysis bullosa, a rare blistering skin disease that affects internal tissues as well as the skin, and leaves people prone to infections, scarring, and fatal cancer. In mice, the intravenous treatment strategy appeared to be safe and effective; the topical formulation corrected defects in existing wounds, but could not penetrate intact skin to prevent formation of new blisters. Related experiments revealed that recombinant collagen VII might have general utility as a topical therapy to accelerate wound healing and reduce scarring in other skin diseases or injuries. If successfully translated into a safe and effective cream, ointment, or lotion, this work will be another example of how studying a very rare disease can benefit a large number of people affected by other conditions.

Budget Policy:

The FY 2015 budget estimate for this program is \$70.474 million, an increase of \$0.217 million or 0.3 percent above the FY 2014 Enacted level. Building on the significant gains in

understanding itch sensation in recent years, NIAMS will continue to encourage basic and translational research that will lead to more discoveries about the mechanisms of itch sensation and the development of interventions to modulate and control itch in disease. Other FY 2015 activities include efforts to help the scientific community continue to expand its knowledge about how skin communicates with the brain and responds to changes in other organ systems. Ongoing programs that NIAMS will continue to support include a clinical trial of an antibody against a key signaling pathway in moderate and severe atopic dermatitis (a type of eczema).

Intramural Research Program: The mission of the Intramural Research Program (IRP) is to conduct innovative basic, translational, and clinical research relevant to the health concerns of the Institute, and to provide training for investigators who are interested in related research careers. The program conducts basic scientific and clinical studies on the genetics, etiology, pathogenesis, and treatment of a variety of rheumatic, autoimmune, inflammatory, joint, skin, and muscle diseases. The NIAMS IRP consists of basic researchers and physician-scientists who have contributed many noteworthy discoveries. Recently, NIAMS intramural researchers collaborated with NIAMS-funded extramural scientists on a study confirming that use of methotrexate, a common therapy for rheumatoid arthritis (RA), reduced RA patients' risk of death. Future studies may explore how methotrexate works to decrease mortality rates. NIAMS is also enhancing the IRP's expertise in rheumatology. The Institute recently recruited new faculty to lead the NIAMS Rheumatology Fellowship and Training Branch and NIH Rheumatology Fellowship Training Program, as well as a new Systemic Autoimmunity Branch that will enhance the Institute's focus on lupus, RA, and organ damage due to these diseases.

Budget Policy:

The FY 2015 budget estimate for this program is \$54.165 million, an increase of \$0.536 million or 1.0 percent above the FY 2014 Enacted level. NIAMS plans for FY 2015 include maintaining a focus on translational research in order to facilitate patient-oriented studies in the areas of arthritis, musculoskeletal, and skin diseases, including their genetic, inflammatory, and immune underpinnings. NIAMS will also continue a long-standing commitment to multidisciplinary training of rheumatology research fellows to strengthen the pipeline of highly qualified physician-scientists in this field. Both efforts will continue to synergize with the NIAMS Community Health Center facility in Silver Spring, Maryland. NIAMS is also continuing participation in an NIH Funding Opportunity Announcement to promote collaborations between intramural and extramural investigators in order to leverage the unique research opportunities and resources available at the NIH Clinical Center

Program Portrait: Translational Science in the Intramural Research Program

FY 2014 Level: \$3.4 million

FY 2015 Level: \$3.4 million

Change: \$0.0 million

The NIAMS Intramural Research Program (IRP) supports a wide range of basic, translational, and clinical research activities with a focus on translating basic research discoveries to novel disease therapeutics, and moving those therapeutics from research to practice. This focus has led to recent Food and Drug Administration (FDA) approval of new treatments for rheumatoid arthritis (RA) and a rare genetic autoinflammatory disease.

RA is an inflammatory disease that causes pain, swelling, stiffness, and loss of function in the joints. RA occurs when the immune system, which normally defends the body from outside invaders such as bacteria and viruses, attacks the membrane that lines the joints. In the early 1990's, NIAMS IRP researchers discovered a group of proteins, called Janus kinases, that are important in regulating the human immune system. This discovery led to the idea that drugs blocking Janus kinases would suppress the immune system and might protect against the damaging inflammation of RA and certain other autoimmune diseases. A public-private collaboration between NIH and a pharmaceutical company recently led to the approval of tofacitinib by the FDA for the treatment of moderate to severe RA. A member of a new class of drugs targeting Janus kinases, tofacitinib is the first new drug in more than a decade that can be taken as a pill, rather than an injection, to slow or halt RA joint damage.

In addition to translating basic science discoveries into new treatments, NIAMS IRP researchers are also using basic science discoveries about rare genetic autoinflammatory diseases to determine if existing drugs could be repurposed for conditions that previously had no known treatments. Neonatal-onset multisystem inflammatory disease (NOMID) is a rare but debilitating disease striking within the first weeks of life. If left untreated, individuals with NOMID may develop hearing and vision loss, cognitive impairment, and physical disability. Previous NIAMS research showed that the symptoms of NOMID were facilitated through the immune system's interleukin-1 (IL-1) signaling pathway, and that blocking IL-1 with the FDA-approved RA drug anakinra relieved symptoms of NOMID. Recently, NIAMS IRP researchers conducted a successful clinical trial demonstrating that anakinra not only improved the signs and symptoms of NOMID, but also worked over the long-term to stop the progression of organ damage. Based on the trial results, anakinra became the first FDA-approved treatment for NOMID in March 2013.

Research Management and Support (RMS): NIAMS' RMS budget supports the scientific, administrative management, and information technology activities associated with the Institute's day-to-day operations. In FY 2013, the Institute managed more than 1,262 research grants and centers, as well as 38 research and development contracts and 291 individual and institutional full-time research training positions. NIAMS supported 502 clinical research studies, including 82 clinical trials. Recent RMS activities include convening a group of extramural investigators to examine NIAMS' Centers Program and advise NIAMS' leadership about how to adapt the Program to better facilitate research opportunities within the NIAMS' mission. (See Program Portrait: Evaluation of NIAMS Centers Program, below.) In FY 2014, NIAMS will work with researchers, healthcare professionals, and health advocacy organizations to update the Institute's Long-Range Plan. This revised document will provide a broad outline of scientific opportunities and challenges, and will guide the Institute's priority-setting for FY 2015-2019.

Budget Policy:

The FY 2015 budget estimate for this program is \$28.524 million, an increase of \$0.282 million or 1.0 percent above the FY 2014 Enacted level. Plans for FY 2015 include working with national and community partners to develop and disseminate meaningful health information for racial and ethnic minority populations through its National Multicultural Outreach Initiative (NMOI). NIAMS also will continue to enhance its social media presence through outlets such as Facebook and Twitter, and expects to implement a content management system that will tailor the information displayed on the Institute's website to the interests of different audiences.

Program Portrait: Evaluation of NIAMS Centers Programs

FY 2014 Level: \$41.6 million

FY 2015 Level: \$41.6 million

Change: \$0.0 million

The NIAMS supports research in its mission areas through a range of activities. In addition to its support of individual investigators, contracts, and clinical trials, NIAMS also funds Center grants. These assemblies of investigators conduct research within the context of shared resources, a research theme, or a combination of both. NIAMS recently completed an evaluation of its Centers program to determine whether the current configuration of Centers meets the needs of the NIAMS scientific community, given the rapid evolution of biomedicine.

NIAMS formed a Centers Evaluation Working Group (CEWG) to advise the Institute on how its Centers program could be more responsive to current research needs and opportunities. NIAMS also conducted listening sessions with investigators representing the Institute's main mission-related research communities: skin, muscle, bone, rheumatology, and orthopaedics. The CEWG concluded that modern biomedicine requires diverse disciplines to interact within and across academic and other institutions to cross traditional boundaries and achieve a high level of functioning to address human diseases in an integrative and synergistic fashion. As a result of its discussions, the CEWG drew two overarching conclusions:

- NIAMS Centers should support the conduct of interdisciplinary research, in which a team of investigators pools their expertise in different disciplines to create a new, integrated approach to understanding human disease.
- NIAMS should prioritize improving access to resources, keeping in mind the importance of the resource and the potential impact of providing access.

NIAMS' staff will develop strategies to configure Centers that are consistent with the principles set forth in the CEWG's Report and support collaborative, team-based science and essential resources, while maintaining the flexibility to address emerging scientific opportunities and challenges.

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Budget Authority by Object Class¹
(Dollars in Thousands)

| | FY 2014 Enacted | FY 2015 President's Budget | FY 2015 +/- FY 2014 |
|--|------------------------|-----------------------------------|----------------------------|
| Total compensable workyears: | | | |
| Full-time employment | 246 | 246 | 0 |
| Full-time equivalent of overtime and holiday hours | 0 | 0 | 0 |
| Average ES salary | \$180 | \$180 | \$0 |
| Average GM/GS grade | 11.8 | 11.8 | 0.0 |
| Average GM/GS salary | \$95 | \$96 | \$2 |
| Average salary, grade established by act of July 1, 1944 (42 U.S.C. 207) | \$90 | \$92 | \$1 |
| Average salary of ungraded positions | \$115 | \$116 | \$2 |
| | | | |
| OBJECT CLASSES | FY 2014 Enacted | FY 2015 President's Budget | FY 2015 +/- FY 2014 |
| Personnel Compensation | | | |
| 11.1 Full-Time Permanent | \$14,209 | \$14,657 | \$447 |
| 11.3 Other Than Full-Time Permanent | 8,960 | 9,295 | 335 |
| 11.5 Other Personnel Compensation | 268 | 277 | 9 |
| 11.7 Military Personnel | 433 | 447 | 15 |
| 11.8 Special Personnel Services Payments | 2,251 | 2,340 | 89 |
| 11.9 Subtotal Personnel Compensation | \$26,121 | \$27,015 | \$894 |
| 12.1 Civilian Personnel Benefits | \$7,183 | \$7,612 | \$429 |
| 12.2 Military Personnel Benefits | 318 | 329 | 10 |
| 13.0 Benefits to Former Personnel | 0 | 0 | 0 |
| Subtotal Pay Costs | \$33,622 | \$34,956 | \$1,333 |
| 21.0 Travel & Transportation of Persons | \$628 | \$574 | -\$53 |
| 22.0 Transportation of Things | 147 | 137 | -11 |
| 23.1 Rental Payments to GSA | 6 | 6 | 0 |
| 23.2 Rental Payments to Others | 0 | 0 | 0 |
| 23.3 Communications, Utilities & Misc. Charges | 537 | 501 | -37 |
| 24.0 Printing & Reproduction | 2 | 2 | 0 |
| 25.1 Consulting Services | \$1,229 | \$1,089 | -\$140 |
| 25.2 Other Services | 3,032 | 2,858 | -173 |
| 25.3 Purchase of goods and services from government accounts | \$48,934 | \$50,583 | \$1,649 |
| 25.4 Operation & Maintenance of Facilities | \$202 | \$190 | -\$12 |
| 25.5 R&D Contracts | 4,338 | 3,054 | -1,283 |
| 25.6 Medical Care | 4,469 | 4,333 | -136 |
| 25.7 Operation & Maintenance of Equipment | 1,233 | 1,254 | 21 |
| 25.8 Subsistence & Support of Persons | 0 | 0 | 0 |
| 25.0 Subtotal Other Contractual Services | \$63,437 | \$63,362 | -\$75 |
| 26.0 Supplies & Materials | \$4,205 | \$4,000 | -\$205 |
| 31.0 Equipment | 3,363 | 3,261 | -102 |
| 32.0 Land and Structures | 0 | 0 | 0 |
| 33.0 Investments & Loans | 0 | 0 | 0 |
| 41.0 Grants, Subsidies & Contributions | 413,391 | 413,391 | 0 |
| 42.0 Insurance Claims & Indemnities | 0 | 0 | 0 |
| 43.0 Interest & Dividends | 0 | 0 | 0 |
| 44.0 Refunds | 0 | 0 | 0 |
| Subtotal Non-Pay Costs | \$485,716 | \$485,233 | -\$482 |
| Total Budget Authority by Object Class | \$519,338 | \$520,189 | \$851 |

¹ Includes FTEs whose payroll obligations are supported by the NIH Common Fund.

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Salaries and Expenses
(Dollars in Thousands)

| OBJECT CLASSES | FY 2014 Enacted | FY 2015 President's Budget | FY 2015 +/- FY 2014 |
|--|-----------------|-------------------------------|---------------------------|
| Personnel Compensation | | | |
| Full-Time Permanent (11.1) | \$14,209 | \$14,657 | \$447 |
| Other Than Full-Time Permanent (11.3) | 8,960 | 9,295 | 335 |
| Other Personnel Compensation (11.5) | 268 | 277 | 9 |
| Military Personnel (11.7) | 433 | 447 | 15 |
| Special Personnel Services Payments (11.8) | 2,251 | 2,340 | 89 |
| Subtotal Personnel Compensation (11.9) | \$26,121 | \$27,015 | \$894 |
| Civilian Personnel Benefits (12.1) | \$7,183 | \$7,612 | \$429 |
| Military Personnel Benefits (12.2) | 318 | 329 | 10 |
| Benefits to Former Personnel (13.0) | 0 | 0 | 0 |
| Subtotal Pay Costs | \$33,622 | \$34,956 | \$1,333 |
| Travel & Transportation of Persons (21.0) | \$628 | \$574 | -\$53 |
| Transportation of Things (22.0) | 147 | 137 | -11 |
| Rental Payments to Others (23.2) | 0 | 0 | 0 |
| Communications, Utilities & Misc. Charges (23.3) | 537 | 501 | -37 |
| Printing & Reproduction (24.0) | 2 | 2 | 0 |
| Other Contractual Services: | | | |
| Consultant Services (25.1) | 1,178 | 1,038 | -141 |
| Other Services (25.2) | 3,032 | 2,858 | -173 |
| Purchases from government accounts (25.3) | 34,720 | 33,775 | -944 |
| Operation & Maintenance of Facilities (25.4) | 202 | 190 | -12 |
| Operation & Maintenance of Equipment (25.7) | 1,233 | 1,254 | 21 |
| Subsistence & Support of Persons (25.8) | 0 | 0 | 0 |
| Subtotal Other Contractual Services | \$40,365 | \$39,115 | -\$1,249 |
| Supplies & Materials (26.0) | \$4,205 | \$4,000 | -\$205 |
| Subtotal Non-Pay Costs | \$45,884 | \$44,328 | -\$1,555 |
| Total Administrative Costs | \$79,506 | \$79,284 | -\$222 |

NATIONAL INSTITUTES OF HEALTH
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Detail of Full Time Equivalent (FTE)

| OFFICE/DIVISION | FY 2013 Actual | | | FY 2014 Est. | | | FY 2015 Est. | | |
|---|-------------------------|----------|------------|--------------|----------|------------|--------------|----------|------------|
| | Civilian | Military | Total | Civilian | Military | Total | Civilian | Military | Total |
| Intramural Research Program | | | | | | | | | |
| Direct: | 124 | 3 | 127 | 124 | 3 | 127 | 124 | 3 | 127 |
| Reimbursable: | 9 | | 9 | 9 | | 9 | 9 | | 9 |
| Total: | 133 | 3 | 136 | 133 | 3 | 136 | 133 | 3 | 136 |
| Office of Extramural Activities | | | | | | | | | |
| Direct: | 53 | 2 | 55 | 53 | 2 | 55 | 53 | 2 | 55 |
| Reimbursable: | - | - | - | - | - | - | - | - | - |
| Total: | 53 | 2 | 55 | 53 | 2 | 55 | 53 | 2 | 55 |
| Office of the Director | | | | | | | | | |
| Direct: | 55 | | 55 | 55 | | 55 | 55 | | 55 |
| Reimbursable: | - | - | - | - | - | - | - | - | - |
| Total: | 55 | | 55 | 55 | | 55 | 55 | | 55 |
| Total | 241 | 5 | 246 | 241 | 5 | 246 | 241 | 5 | 246 |
| Includes FTEs whose payroll obligations are supported by the NIH Common Fund. | | | | | | | | | |
| FTEs supported by funds from Cooperative Research and Development Agreements. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FISCAL YEAR | Average GS Grade | | | | | | | | |
| 2011 | 11.6 | | | | | | | | |
| 2012 | 11.8 | | | | | | | | |
| 2013 | 11.8 | | | | | | | | |
| 2014 | 11.8 | | | | | | | | |
| 2015 | 11.8 | | | | | | | | |

NATIONAL INSTITUTES OF HEALTH
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Details of Positions

| GRADE | FY 2013 Actual | FY 2014 Enacted | FY 2015 President's Budget |
|---|----------------|-----------------|----------------------------|
| Total, ES Positions | 1 | 1 | 1 |
| Total, ES Salary | 179,700 | 179,700 | 179,700 |
| GM/GS-15 | 20 | 20 | 20 |
| GM/GS-14 | 31 | 31 | 31 |
| GM/GS-13 | 41 | 41 | 41 |
| GS-12 | 26 | 26 | 26 |
| GS-11 | 5 | 5 | 5 |
| GS-10 | 0 | 0 | 0 |
| GS-9 | 14 | 14 | 14 |
| GS-8 | 15 | 15 | 15 |
| GS-7 | 5 | 5 | 5 |
| GS-6 | 6 | 6 | 6 |
| GS-5 | 3 | 3 | 3 |
| GS-4 | 2 | 2 | 2 |
| GS-3 | 0 | 0 | 0 |
| GS-2 | 0 | 0 | 0 |
| GS-1 | 0 | 0 | 0 |
| Subtotal | 168 | 168 | 168 |
| Grades established by Act of July 1, 1944 (42 U.S.C. 207) | 0 | 0 | 0 |
| Assistant Surgeon General | 1 | 1 | 1 |
| Director Grade | 1 | 1 | 1 |
| Senior Grade | 2 | 2 | 2 |
| Full Grade | 0 | 0 | 0 |
| Senior Assistant Grade | 0 | 0 | 0 |
| Assistant Grade | 0 | 0 | 0 |
| Subtotal | 4 | 4 | 4 |
| Ungraded | 96 | 96 | 96 |
| Total permanent positions | 168 | 168 | 168 |
| Total positions, end of year | 268 | 268 | 268 |
| Total full-time equivalent (FTE) employment, end of year | 246 | 246 | 246 |
| Average ES salary | 179,700 | 179,700 | 179,700 |
| Average GM/GS grade | 11.8 | 11.8 | 11.8 |
| Average GM/GS salary | 94,082 | 94,767 | 96,330 |

Includes FTEs whose payroll obligations are supported by the NIH Common Fund.